

**BigFix Inventory  
User's Guide**



## Special notice

Before using this information and the product it supports, read the information in [Notices \(on page mdcccxxii\)](#).

## Edition notice

This edition applies to version 11 of BigFix Inventory and to all subsequent releases and modifications until otherwise indicated in new editions.

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# BigFix 11 Inventory Documentation

Welcome to the BigFix Inventory documentation, where you can find information about how to install and configure BigFix Inventory. The application provides you with information about your inventory and license metrics. You can manage your software assets, gather information about your hardware, and ensure license compliance for your enterprise using BigFix Inventory.



**Notice:** The BigFix Inventory v10 site is deprecated and no longer used for updates. BigFix Inventory v11 is a continuation of BigFix Inventory v10.

Starting from BigFix Inventory version 10.0.9 or higher, BigFix Inventory supports BigFix version 11. To upgrade to BigFix version 11, you must first upgrade to interim version 10.0.9 or higher of BigFix Inventory. For more information on the upgrade process, refer to [Upgrading BigFix Inventory \(on page dccxxiii\)](#). For information on the system requirements, refer to [software requirements for BigFix version 11 \(on page div\)](#).

BigFix Inventory provides a new predefined vendor-specific report feature with quick access to discovered software assets and licensing information about different vendors. To learn more about vendor-specific predefined reports, refer to [Vendor-specific predefined reports available in dashboard Inventory Reports \(on page cmvii\)](#).

From version 10.0.7, BigFix Inventory supports the discovery of software in Docker container images. From version 10.0.8, Software Data Harvesting Tool, an optional support is introduced. The support is part of the BigFix Inventory Catalog Enhancement Program. The tool supports better software discovery for the endpoints. From version 10.0.9, new template signature types are supported. Version 10.0.10 provides improved discovery for Mac software in BigFix Inventory.

## Getting started

[What's new in this release \(on page ix\)](#)

[Key concepts \(on page ccclxxi\)](#)

[Installing \(on page cdxxxi\)](#)

[Configuring \(on page dxc\)](#)

[Software requirements \(on page div\)](#)

## Common tasks

[Managing the infrastructure \(on page dcclix\)](#)

[Software inventory and license utilization \(on page dcccxcviii\)](#)

[Upgrading \(on page dccxxiii\)](#)

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**Troubleshooting and support**

[BigFix Support](#)

**More information**

[BigFix Forum](#)

[BigFix Developer](#)

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[Software Asset Management](#)

**Got an idea?**

If you want to submit a new idea or an improvement, please use the [Product Ideas Forum](#).

# Overview

Become familiar with key concepts that are necessary to understand how BigFix Inventory works and learn about features and functions that are introduced in every version of the application.

## What's new in this release

BigFix Inventory provides new features and enhancements that facilitate your work with the application. For more information, follow [BigFix Forum - Inventory \(Release Announcements\)](#).

### **11.0.0** Application update 11.0.0

Starting in July 2024, the latest version of the BigFix Inventory server and tools will be available for installation and update on a new site. The same applies to the catalog, which is available on a dedicated site.



**Note:** It is recommended to update to the latest versions, as every update may bring important security updates.

Below are the version numbers for the current release:

#### **Products and published sites**

BigFix Inventory Server version 11.0.0.0 - BigFix Inventory site version 2

BigFix Inventory Catalog version 20240612 - BigFix Inventory Discovery site version 2



**Notice:** The BigFix Inventory version 10 site has been deprecated. BigFix Inventory version 11 is a continuation of BigFix Inventory version 10. Use the new sites for current and future updates. Refresh the 'License Overview Dashboard', enable new sites, and subscribe to the endpoints.

#### **Features available in the current release**

- A new BigFix Inventory site for application updates
- Catalog version 20240612 is included in the server package.
- All BigFix Platform agent-managed computers are now visible in the Computers report.
  - A 'Is Subscribed' column is added to 'Computer Health' properties to localize computers that require actions and subscriptions to the new BigFix Inventory site to manage the inventory.
- Oracle Database Extended Discovery for Oracle Databases and Software Classification Reports is synchronized now with the latest Oracle Measurements. Data collection for Oracle databases on Unix systems
  - Idea [BFINV-I-238](#) is resolved.
- Software discovery in containers

- The Cluster State API is extended with the option to specify columns.
- A 'Containers' report is added in the 'Reports' menu under the 'Infrastructure' section. The report is based on the Cluster State report type. For details regarding this capability refer to: [Software discovery in containers](#).
- Equivalent to IBM License Metric Tool 9.2.35 for IBM Virtualization Capacity reporting



**Note:** The new version is under certification process by IBM on the release date. To view the status of IBM validated releases, refer to [https://public.dhe.ibm.com/software/passportadvantage/SubCapacity/BFI\\_and\\_HCL\\_FAQ.pdf](https://public.dhe.ibm.com/software/passportadvantage/SubCapacity/BFI_and_HCL_FAQ.pdf).

- Security enhancements
  - IBM WebSphere Liberty was updated to version 24.0.0.5.
  - IBM Java was updated to 8.0.8.25.
  - A number of other libraries were updated.

Key features in HCL BigFix Inventory Catalog 20240612:

- A new BigFix Inventory Discovery site for catalog updates
- Reduced Server Software Catalog package size
- Backward compatibility change: This and subsequent catalog releases require BigFix Inventory server version 11.
- A new catalog change list with information about deleted and modified content on top of what was added. The first version covers cumulative changes starting with the catalog update in April.
- Discovery of 250+ new software versions with the use of standard and template signatures, including but not limited to the following software manufacturers: Adobe, Micro Focus, Microsoft, Oracle, and VMware.
- Ideas implemented: [BFINV-I-270](#), [BFINV-I-355](#). GUID are added to the new change list.
- End-of-support information refreshed for Oracle software

To view the complete list of new features and defects that were fixed in this application update, refer to [Server and tools](#) and [Catalog](#) release notes.

For hands-on tutorial for contract management, refer to [https://help.hcltechsw.com/bigfix/11.0/inventory/Inventory/softinv/Contract\\_management.html](https://help.hcltechsw.com/bigfix/11.0/inventory/Inventory/softinv/Contract_management.html).

For status of IBM validated releases, refer to [https://public.dhe.ibm.com/software/passportadvantage/SubCapacity/BFI\\_and\\_HCL\\_FAQ.pdf](https://public.dhe.ibm.com/software/passportadvantage/SubCapacity/BFI_and_HCL_FAQ.pdf).

### **Actions needed**

There are steps before and after the upgrade that are required in case the BigFix Inventory version 10 site was used before. This is not applicable if the BigFix Inventory server was already installed using the new BigFix Inventory site (server release BigFix Inventory v10.0.15.0-20240123-1827); in such a case, only the standard upgrade procedure should be applied. For more information, refer to [Upgrading BigFix Inventory \(on page dccxxiii\)](#).

## 10.0.16 Application update 10.0.16

There are eleven key features in HCL BigFix Inventory 10.0.16.0:

- BigFix Inventory is now a verified tool for Oracle database and database options.

The Oracle package is extended to cover Oracle databases reports.

Format and data collection details are described in the user documentation, [Collecting Oracle Measurements data](#).

Oracle's verification establishes BigFix Inventory as an alternative to the Oracle Collection Tool. See also, [Oracle License Management Services - Tooling](#).

Verified by both Oracle and IBM, BigFix Inventory is now the leading solution for efficient Software Asset Management.

- A new user interface and mechanism for Audit Snapshot generation
- A refreshed Overview dashboard with focus on Inventory Reports and Inventory Health
- A new Partition ID column in the Hardware Inventory report
- VM Managers report serviceability enhancements.
- Enhanced software\_instances v2 API with automatic creation of custom bundling
- Equivalent to IBM License Metric Tool 9.2.34 for IBM Virtualization Capacity reporting



**Note:** The new version is under the certification process by IBM on the release date. To view the status of IBM-validated releases, refer to [BFI and HCL\\_FAQ](#).

- PVU and VPC warm standby license counting covers additional scenarios.
- The IBM PVU Subcapacity report is replaced with IBM Subcapacity report. The new report covers PVU and other subcapacity metrics.
- Server Software Catalog version **20240306**
  - 30 publishers are normalized to address duplicates and cover acquisitions.
  - One new publisher added.
  - Discovery of 450+ new software versions with use of standard and template signatures
  - Ideas implemented: [BFINV-I-236](#), [BFINV-I-160](#), [BFINV-I-323](#), and [BFINV-I-300](#)
  - End-of-support information refreshed for IBM and Microsoft software



**Note:** Catalog version changes with this update.

- Security enhancements
  - IBM WebSphere Liberty was updated to version 24.0.0.2.
  - IBM Java was updated to 8.0.8.20.
  - The number of other libraries are updated.

To view the complete list of new features and defects that were fixed in this application update, refer to the release notes, [Release Notes](#).

For hands-on tutorial for contract management, refer to the [Contract Management](#).

For more information about discovery capabilities, refer to the [Catalog Release Notes](#).

For the status of IBM-validated releases, refer to the [BFI and HCL FAQ](#).

#### Actions needed:

- To upgrade the BigFix Inventory server to application update 10.0.16.0, run the **Upgrade to the latest version of BigFix Inventory** fixlet from the BigFix console.
- To upgrade the BigFix Inventory scanner, run the **Install or Upgrade scanner** fixlet from BigFix console.
- To apply the new discovery capability, run the **Software Catalog Update** fixlet from BigFix console and then wait for the next data import.

### 10.0.15 Application update 10.0.15

There are ten key features in HCL BigFix Inventory 10.0.15.0:

- A new menu to manage software instances in Software Classification report:
  - *Uninstall with BigFix* allows you to uninstall unwanted desktop applications from Windows computers.
  - *Notify User to uninstall* allows to send notification to the user's Windows desktop with a request to uninstall selected software.

- BigFix Inventory is now a verified Oracle partner.

Oracle's verification for Java SE establishes BigFix Inventory as an alternative to the Oracle Collection Tool. See also: <https://www.oracle.com/corporate/license-management-services/tooling.html>.

Verified by both Oracle and IBM, BigFix Inventory is now the leading solution for efficient Software Asset Management and audit readiness.

- A new option *Oracle Auditing Data* available under *Reports* menu.

Use this option to download Oracle Auditing package, that includes Oracle Java usage information. Format and data collection details are described in *Collecting Oracle Measurements Data*.

- Equivalent to IBM License Metric Tool 9.2.33 for IBM Virtualization Capacity reporting



**Note:** The new version is under certification process by IBM on the release date. To view the status of IBM-validated releases refer to the [BFI and HCL\\_FAQ](#).

- Software Summary report enhancements
  - Aggregated *Count* column renamed to *Install Instances*.
  - New *Install Seats* aggregated column represents the count of unique computers.
- Adjusted Server and Scanner Catalog naming in reports and fixlets.
- Interim upgrade and download fixlets offer direct links to download installation package for manual deployment scenario.
- End of Support:
  - MS SQL 2012 is going to be out of support starting from BigFix Inventory 10.0.17. In case you are still on MS SQL 2012 please plan to upgrade at least to version 2014.
- Enhanced End-of-Support information management:
  - Added mechanism to restore Custom End-of-Support information after catalog updates.
  - Starting from BigFix Inventory 10.0.15.0, End-of-Support information is included in catalog package and updated during catalog update process.
- Server Software Catalog version 10.0.15.0:
  - 100+ publishers are normalized to address duplicates and cover acquisitions.
  - 43 new publishers added.
  - Discovery of 500+ new software versions with new template signatures.
  - Added discovery for OpenJDK for various publishers.
  - Ideas implemented are [BFINV-I-291](#), [BFINV-I-302](#), [BFINV-I-339](#), [BFINV-I-201](#), and [BFINV-I-84](#).
  - End-of-Support information refreshed for Red Hat software.
- Security enhancements:
  - IBM WebSphere Liberty updated to version 23.0.0.11.
  - IBM Java updated to 8.0.8.11.
  - Number of other libraries are updated.

To view the complete list of new features and defects that were fixed in this application update, refer to the [Release Notes](#).

For a hands-on tutorial on contract management, refer to [Contract management](#).

For more information about discovery capabilities, refer to the [Catalog Release Notes](#).

For the status of IBM-validated releases, refer to the [BFI and HCL FAQ](#).

**Actions needed:**

- To upgrade the BigFix Inventory server to application update 10.0.15.0, run the **Upgrade to the latest version of BigFix Inventory** fixlet from BigFix console.
- To upgrade the BigFix Inventory scanner, run the **Install or Upgrade scanner** fixlet from BigFix console.
- To apply new discovery capability, run the **Software Catalog Update** fixlet from BigFix console and then wait for the next data import.

A new procedure is required in case the manual scanner catalog distribution option is used. For details, refer to the [Release Notes](#).

## 10.0.14 Application update 10.0.14

There are nine key features in HCL BigFix Inventory 10.0.14.0:

- Enhanced Oracle Databases report for Database identification
  - Idea [BFINV-I-264](#): Detailed Version column added into report, available for filtering and for data export
- Enhanced VM Managers report for Computer and Datasource identification
- New REST API for Cluster State view and Container Solution
- Improved Scanner Catalog distribution to the endpoints
  - If automated scanner catalog distribution is configured, then this new way of distribution is automatically used
  - New procedure is required in case manual scanner catalog distribution option is used - see release notes for procedure details
- Software Catalog version 10.0.14.0
  - Discovery for Eclipse Murine Open and JRE, IBM Semester Runtime JDK and JRE Open Edition
  - Idea [BFINV-I-220](#): Added discovery for Expansible Tower
- Updated End of Support information for Microsoft software
- Technical equivalence to IBM License Metric Tool 9.2.32



**Note:** The new version is under certification process by IBM on the release date. To view the status of IBM validated releases refer to, [BFI and HCL FAQ](#).

- Support for new platforms and systems that includes the following:
  - Oracle Cloud VMware Solution – new VM manager type
  - Red Hat Enterprise Linux 9 on IBM Power as supported device
- Security enhancements
  - IBM WebSphere Liberty updated to version 23.0.0.8
  - IBM Java updated to 8.0.8.10
  - Number of other libraries are updated

To view the complete list of new features and defects that were fixed in this application update, refer to the [release notes](#).

For hands-on tutorial for contract management, refer to the [Hands-on tutorial for contract management](#).

For more information about discovery capabilities, refer to the [Catalog Release Notes](#).

For status of IBM validated releases, refer to the [BFI and HCL FAQ](#).

#### **Actions needed:**

To upgrade the BigFix Inventory server to application update 10.0.14.0, run the **Upgrade to the latest version of BigFix Inventory** fixlet from BigFix console.

To upgrade the BigFix Inventory scanner, run the **Install or Upgrade scanner#fixlet#** from BigFix console.

To apply new discovery capability, run the **Software Catalog Update** fixlet from BigFix console and then wait for the next data import.

A new procedure is required in case manual scanner catalog distribution option is used. See release notes for details.

## **10.0.12 Application update 10.0.12**

- **New Microsoft reports**

BigFix Inventory now provides new Microsoft reports, such as **Microsoft Windows Server Inventory**, **Microsoft Windows Server Contracts**, and **Microsoft SQL Server Contracts** to allow you conveniently use Microsoft reports. These reports can be accessed from the **Overview** dashboard.

- **Improved Microsoft reports**

**Microsoft SQL Server Inventory** report has been redesigned to show more columns. **Microsoft SQL Server Measured License** report has been replaced by **Microsoft SQL Server Contracts**.

- **Improvement in the view of vendor-specific reports**

The default columns in predefined vendor-specific reports are changed to show the basic information, with an option to view more columns using the **Configure** panel. For more information, please refer to [Default columns \(on page cmviii\)](#).

- **Improved filtering in All Contracts report**

You can now filter reports using the Publisher Name and/or Software Product Name.

- **New Microsoft Processor Core Metrics**

From version 10.0.12, new Microsoft metrics for Microsoft Windows and Microsoft SQL Server products have been added for the processor core licensing model. For more information, refer to [Managing Microsoft Processor Core licenses \(on page mclxxiii\)](#).

- **Installation Date and Path collection for Windows packages**

Extension of Package Data report and unified view REST API to include install date and install path details.

- **Support for new platforms and systems**

Added support for the following platforms and systems as managed devices:

- CentOS Stream 9 by using the BigFix® client and disconnected scanner
- Oracle Enterprise Linux 9 by using the BigFix® client and disconnected scanner
- KDDI Cloud for Windows
- Kubernetes version 1.24

- **Security fixes**

- Rails upgraded to version 6.1.7.2
- Rack gem upgraded to version 2.2.6.4
- Rails-HTML-sanitizer gem upgraded to version 1.4.4
- Global id gem upgraded to version 1.1.0
- Json5-2.2.1 upgraded to 1.2.3 and Json5-1.0.1 upgraded to version 1.0.2
- Snakelike library updated to version 2.0 in installer, note that version 1.33 is still used by j Ruby stack, but vulnerable methods are not used
- Removed leftovers of `bzip2 / bzip2.exe` from bin/compressor folders of BigFix Inventory server
- WebSphere Liberty updated to version 23.0.0.1
- Java Runtime Environment for BigFix Inventory tools updated to version 8u362b09
- Java Runtime Environment for BigFix Inventory server updated to version 8.0.7.20
- Updated libraries in BigFix Inventory Cloud Adapter and BigFix Inventory Scanner Service:
  - Kubernetes Java Client API upgraded to version 17.0.1
  - Spring Boot upgraded to version 2.7.9
  - Spring Framework upgraded to version 5.3.25

- **Discovery improvements**

Added discovery for following Microsoft SQL Server 2022 editions:

- Standard
- Enterprise
- Express
- Web
- Developer
- Enterprise Evaluation

Added discovery for the following Microsoft SQL Server components:

- Microsoft SQL Server 2008 R2 Native Client
- Microsoft SQL Server 2012 Native Client
- Microsoft SQL Server 2014 ADOMD.NET
- Microsoft SQL Server 2014 Management Objects
- Microsoft SQL Server 2016 LocalDB

- **End of support for Microsoft Products**

End of support date is added for 28 Microsoft components and updated for 3 Microsoft components.

## **10.0.11 Application update 10.0.11**

- **All Contracts panel changes**

Starting from version 10.0.11, the column 'Current measured values' shows 'n/a' only if a metric is not calculated by BigFix Inventory or if there are no products added to the contract. In any other case, it shows a number.

- **New recalculation button added to All Contracts panel**

Added a new 'Recalculate' button to All Contracts, which is available when one or more Contracts require recalculation under given scenarios. For more information, refer to [All contracts \(on page mlxxiii\)](#).

- **New Product Metrics per Contract panel**

The 'Product Metrics per Group' panel has been replaced with 'Product Metrics per Contract' which can be accessed by clicking on corresponding Products on the All Contracts report. The new panel shows current metric values per each product that is assigned to a particular Contract. It is also enhanced by an additional column 'Is incomplete' which reflects the status of recalculation. *Product Metrics per Group* report is still available from main menu to allow for reporting of high-water mark metrics with split per computer group.

- **New Metric Microsoft SQL Server Physical Processor Cores**

Added a new metric 'Microsoft SQL Server Physical Processor Cores' for the per core physical licensing model. The new metric is calculated as per the current day and follows the latest Microsoft SQL Server product terms.

- **All metrics changes**

Starting from version 10.0.11, the All Metrics report does not display Metric Quantity for the new metric 'Microsoft SQL Server Physical Processor Cores' and all the other upcoming metrics that we will improve or migrate in the future. For such metrics, the column Metric Quantity will display the notification 'Calculated for Contract'.

- **Extended discovery of Oracle Database**

The improved reporting covers Oracle pluggable databases and additional licensable options. For more information, refer to [10.0.11 Handling common situations with extended oracle discovery \(on page mcxx\)](#).

- **Software defined with template signatures is available in BigFix Inventory before discovery**

Software products, for which only template signatures are available, can be used in Contracts, Software Classification, and Product & Metrics panels, even if they have not been discovered on any computer

- **Option to delete from database historical Computers and Software detections**

The "maximum\_data\_lifetime" parameter is added in the Advanced Server Setting to allow you remove from database computer and software detection records closed earlier than the specified number of days.

- **All template derived components are assigned to a single, generic product release**

Components discovered with template signatures are by default bundled to one product having "\*" for the release number instead of numbers which related to auto-detected versions.

- **Additional interim upgrade fixlet**

Added fixlet for interim upgrade to version 10.0.10.0 of BigFix Inventory server instances between version 10.0.2.0 (inclusive) and 10.0.3.0 (exclusive, the minimal version eligible for direct upgrade to latest release).

- **Improved static asset serving**

Improved the performance through Cache-Control header.

- **Enhancement of Oracle Java Detection**

Enhanced discovery of existing Oracle Java signature for versions 7,8, 16 and 17 to include non-standard installations.

- **Support for modification of a software defined with a template signature**

You can now modify the name and publisher of a software that is defined with a template signature in software catalog is propagated to software discovered with the template signature.

- **Support for modification of a template signature**

You can also modify the template signature in Software Catalog that is propagated to software discovered with the template signature.

- **Warning message while downloading Harvested Data for Harvester Tool**

Added an improved and shortened warning message for better readability.

- **Support for new platforms and systems**

Added support for the following platforms and systems as managed devices:

- AIX 7.3 by using the BigFix client
- KDDI Cloud
- Red Hat Enterprise Linux 9 by using the BigFix client
- Ubuntu 22.04 on IBM z Systems by disconnected scanner

- **Security fixes**

- WebSphere Liberty updated to version 22.0.0.11
- Google Protocol Buffers upgraded to version 3.21.9
- Kubernetes Java Client API upgraded to version 16.0.2
- SnakeYAML upgraded to version 1.33 from 1.31

- Spring Boot upgraded to version 2.7.5
- Spring Framework upgraded to version 5.3.23

## 10.0.10 Application update 10.0.10

### • Changes to Mac OS discovery

BigFix Inventory now provides improved automated catalog-less software discovery on Mac OS devices. Vendor information is populated for both Package Data and software inventory reports, for example, Software Classification. Catalog definitions for MAC software include normalized Vendor information for key Vendors and one Product definition compared to previous structure. Inventory reports include detailed discovery of software classified as applications. Complete Package Data with category classification is available with the option to promote selected components to inventory as needed. With improved discovery, a bigger number of MAC software offers usage information.

For more information, refer to [Discovering Mac software in BigFix Inventory \(on page cdxviii\)](#).

### • IBM policy update for subcapacity reporting requirements for VPC license metric

Effective May 10, 2022, IBM requires all Virtual Processor Core (VPC) software licenses that use subcapacity licensing to deploy IBM License Metric Tool or any other tool approved by IBM like HCL BigFix Inventory. Manual capacity counting is no longer permitted. Container Licensing terms are not included in this policy change.

For more information, refer to [IBM subcapacity licensing page](#).

### • Deleted old software signatures to optimize standard catalog processing

Improved catalog processing by removing old software signatures from BigFix Inventory main catalog which results in better performance overall. Deleted signatures refer to software and versions with very low probability of being active or deployed. Deleted signatures are still available as custom catalog content for customers who request specific titles and versions through the standard support channel.

### • Additional information is provided in the audit snapshot

Files with license metric utilization that are a part of the audit snapshot include information when the computer was first seen by the BigFix Inventory server. The information is provided in the Computer First Seen column. For more information, see [Snapshot columns \(on page mclx\)](#).

### • Software Data Harvesting Tool

New fixlet added to clear data collected by Software Data Harvesting Tool.

- **Leveraging data collected by BigFix analysis**

From BigFix Inventory version 10.0.10, the amount of data transferred from endpoint and server is reduced by limiting the data exchange to last upto 30 days. BigFix Inventory combines incoming updates with existing data and because of server side optimization, the already stored data is not processed again in the database. This process of handling data collection leverages in reducing the load on the network and BigFix Platform.

- **Support for new platforms and systems**

Added support for the following platforms and systems as managed devices:

- IBM Cloud LinuxONE VS
- NTT IaaS Powered by VMware
- IBM i 7.5
- Debian 11 x64
- Red Hat Enterprise Linux 9 by using the disconnected scanner
- Ubuntu 22.04 on x86 by using the disconnected scanner
- Azure VMware Solution with use of VM Manager Tool
- IBM z16

- **End of support**

IBM DB2 10.5 is no longer supported as a database for BigFix Inventory Server in line with supported database list for BigFix platform. IBM withdrew support for DB2 10.5 in April 2020.

Microsoft Internet Explorer web browser is no longer supported.

Support is withdrawn for the following platforms and systems:

- VM Managers: Oracle VM Manager
- IBM i 7.1
- RHEL 5 on Power

- **Added end of support data for additional vendors in software catalog**

The end of support information in catalog is automatically populated for Adobe, Oracle, Red Hat and VMware software. No change to end of support information for IBM and Microsoft software. Upgrade BigFix Inventory server to version 10.0.10.0 to see the changes.

- VMware - <https://lifecycle.vmware.com/#/>
- Adobe - <https://helpx.adobe.com/in/support/programs/eol-matrix.html>

## **10.0.9 Application update 10.0.9**

- **Template signature support for catalog management**

The Catalog Customization panel has two new signature types, Package Template signature and File Template signature. Using these signature types, you can create a template signature that works for the

current and future software releases matching defined discovery template. For more information, see [Template signature support \(on page cmxcix\)](#).

- **Improved data import time by removing deprecated features**

Data import performance is improved by removing deprecated panels and related import steps for Contracts (Deprecated), Contract Usage Data (Deprecated), Software Installations (Deprecated), Inventory Exploration (Deprecated), Unrecognized Files. The related sections in the document have been updated/removed.



**Important:** You must migrate the deprecated contacts to the equivalent before upgrading the BigFix Inventory server to 10.0.9. Once the server is upgraded, the deprecated features, such as deprecated contracts and saved reports on deprecated panels, will be deleted and will not be retrievable. The custom saved reports defined on removed panels must be redefined. At the end of migration, a detailed report of the migration is displayed.

- **Experimental cache implementation in BigFix Inventory Scanner**

BigFix Inventory Scanner (CIT) includes a new type of cache for file system information (file listing) that allows to clear query the cache. For more information, see [Use experimental CIT Scanner Cache3 \(on page dclxxxi\)](#).

- **Podman in addition to Docker as the runtime for executing scans of container images**

Image Scanning solution supports use of Podman (<https://podman.io>) in addition to Docker (r) as the runtime for executing scans.

- **Extension of REST APIs**

The `api/sam/v2/license_usage` and `computer_hardware association` APIs have been updated to include more information. For more information, see [Retrieval of license metric utilization \(v2\) \(on page mdlxix\)](#) and [computer\\_hardware association \(on page mdc\)](#).

- **Added log rotation policy**

Added log rotation policy to BigFix Inventory Cloud Adapter and BigFix Inventory Scanner Service.

- **New BigFix Inventory server metrics added**

New metrics, Named User, Client Access License (CAL), Management License (ML) have been added. The metrics are not assigned to any product by default. When BigFix Inventory Server is upgraded, metrics are also added. If a custom metric with the same code name is created, the custom metric is marked as non-custom and its description is updated.

- **Fixed PVU and VPC values for instances running in the warm standby mode**

Fixed the PVU and VPC values for instances that run in warm standby mode to allow the report show the correct metric utilization. For more information, see [the IBM document](#).

- **New discovery for more software titles**

Discovery capability updated for Oracle Financial Services Advanced Analytical Applications Infrastructure, HCL Domino Server and HCL Domino Enterprise Integrator, Microfocus Products (Sentinel Enterprise and Sentinel for Log Management, eDirectory & Access Manager), Tripwire Enterprise Console and Tripwire Axon Agent, and IBM Semester products.

- **Clean-up of Adobe CC suite**

Discovery mechanism of Adobe CC products is improved. Definition source is corrected to HCL for some products. Versions were removed from component names. Old discovery records will be closed and new ones will be available.

- **Patronus library updated to version 2.7.1**

The custom number input component in BigFix Inventory is replaced with Patronus number input component to stay updated and meet Patronus design standards.

- **Support for migration of keystores from JCEKS to PKCS12 in VM Manager and SAP tool for install/upgrade fixlet**

If you upgrade from version lower than 10.0.8.0, the keystores are automatically converted to the new format.

- **Support for migration of keystores from JCEKS to PKCS12 in Cloud Adapter and Scanner Service**

If you upgrade from version lower than 10.0.8.0, the keystores must be migrated manually using keystore migration tool. For details regarding the procedure, refer to the [containers documentation \(on page mcccxi\)](#).

- **Clear corrupt scanner installation fixlet enhancement**

A fixlet is now available to detect corrupt scanner installation files and prevents the catalog from updating with corrupt files.

- **Support for new platforms and systems**

Support is introduced for the following systems:

- Hyper-V on Windows Server 2022
- Ubuntu 18 and Ubuntu 20 on z Systems by using the disconnected scanner
- VMware Cloud on AWS - All equivalent to ESXi 7 or ESXi 6.7

For information about collecting data from this virtualization type, see [Virtualization types that require VM manager connections \(on page dcclxv\)](#).

- **Security fixes**

- IBM Java Runtime updated to version 8.0.7.6 (CVE-2022-21299)
- IBM WebSphere Liberty updated to version 22.0.0.6 (CVE-2022-22475)
- IBM Java Semester Runtime Open Edition (build 1.8.0\_332-b09) for the BigFix Inventory tools (CVE-2022-21299)
- Moment.js library updated to version 2.29.2 (CVE-2022-24785)

- Rack gem upgrade to 2.2.3.1 (CVE-2022-30122)
- Libraries updated in BigFix Inventory Cloud Adapter
- **Software Components End of support dates**

The end of support date updated for 24 Microsoft components and added for 34 more components.

## 10.0.8 Application update 10.0.8

- **Software Data Harvesting Tool**

BigFix introduces an optional Software Data Harvesting Tool to improve software discovery in catalogs.

- **Improvements in Containers solution for software discovery**

A dedicated plugin framework is available to communicate to Kubernetes APIs of on-premise and public cloud containers to determine software usage of container instances.

- **REST API for assigning product to a FlexPoint offering or a Cloud Pak**

You can use the `api/sam/v2/software_instance` REST API to assign products to FlexPoint. For more information, see: [Classifying software \(v2\) \(on page mdlv\)](#).

- **Enabling HTTP Access Logging for BigFix Inventory**

A task enabling the server to log any incoming HTTP request. For more information, see [Enabling HTTP Access Logging for BigFix Inventory \(on page dccxv\)](#).

- **Custom email address for sending feedback**

You can provide use your preferred email address in the sending feedback option instead of the default email address. See also, [Provide feedback email \(on page dcccli\)](#).

- **Custom message when SSO access is blocked**

An option to provide custom message on the login page when an existing SSO user is not yet added to BigFix Inventory. See also, [SSO access blocked message \(on page dcccclviii\)](#).

- **Fixlet to test CIT signatures on endpoints**

Added fixlet to test custom CIT signatures on endpoints.

- **Fixlet for detection and removal of broken scanner installations**

Added fixlet to detect scanner installations on endpoints, where some scanner files lost system read permissions or where files do not meet size criteria, then grants all rights and performs uninstillation

- **End of support for BigFix Platform version 9.2.x**

Effective April 30, 2022, HCL will end service for BigFix Platform version 9.2.x. Since then, all updates to platform components will cease, including security patches. This includes all BigFix Platform components including Root Server, Relay, Client, Console, and Web Reports in version 9.2.x. All customers owning valid

BigFix licenses and current S&S are entitled, under the same part numbers, to BigFix Platform version 9.5.x and version 10.0.x.



**Note:** BigFix Inventory product versions 9.2.6 and above will still be supported, when it runs on a supported BigFix Platform version (9.5.x or 10.0.x).

#### • Extended support for HP-UX

Even with the end of support for BigFix Platform 9.2.x on April 30, 2022, BigFix will continue to support for HP-UX using BigFix Platform 9.2 Agent reporting to BigFix Platform 9.5 or 10.0, connected to BigFix Inventory 10.x. BigFix Platform 9.2 HP-UX Agent patches will be provided only to address PSIRT records or high severity customer reported defects. For more information, see [BigFix forum announcement](#).

Support for IBM subcapacity licensing for all versions of HP-UX is planned to be removed at the end of 2022 as announced by IBM. For IBM Sub capacity license related inquiries, write to [subcap@us.ibm.com](mailto:subcap@us.ibm.com).

#### • Support for new platforms and systems

Support is introduced for the following systems:

- Fujitsu Cloud IaaS Instance - FJcloud-O
- AIX 7.3 - AIX 7.3 is supported only by disconnected scanner. The BES Agent and CIT discovery support is not announced.
- Windows 11 Pro, Pro for Workstation and Enterprise edition
- Windows Server 2022 Standard and Datacenter edition



**Note:** Known defect - Disconnected Scanner does not set Operating System key in `computer.yml` on Windows Server 2022. Before running first scan go to `work\computer.yml` and set the key as, 'Operating System: Windows Server 2022'.

#### • Security enhancements

Default certificate of the BigFix Inventory server and certificate of the VM Manager Tool internal communication were updated with extended validity periods. Validity of the old certificates were extended till 2031/2032.

- Log4J updated to version 2.17.1 (previously 2.15.0 in v10.0.7)
- Apache Xerces updated to version 2.12.2
- Apache httpclient updated to version 4.5.13
- ICU4J updated to version 69.1
- IBM Java Runtime updated to version 8.0.7.0 (CVE-2021-41035)
- IBM WebSphere Liberty updated to version 22.0.0.2 (PH42908 PH41986 PH42759 PH42435 PH42074 PH42762)

- JQuery-UI updated to version 1.13.0 (CVE-2021-41184, CVE-2021-41183, CVE-2021-41182, CVE-2016-7103, CVE-2010-5312)
- React-scripts updated to version 5.0.0

## 10.0.7 Application update 10.0.7

### • Software Discovery in containers

BigFix Inventory supports discovery of software in Docker container images. For more information, refer to [Software discovery in containers \(on page mcccxxii\)](#). Active container metric ID, 17346 added.

### • Contract improvements

REST API to validate string customer fields.

- Custom field values of types: integer, float, boolean are accepted also without quotation marks.
- Software which contains non-ASCII characters is accepted in contracts REST API, as well as in the search field on UI.
- Contract fields like contract name in REST API can contain non-ASCII characters.
- Error reporting for CSV import is improved for the cases when type ID, computer group ID or purchase order quantity is empty, but it is expected to have a value.
- Error language in reporting of CSV import failure is improved. Language for errors is used from user profile instead of header in request.

### • Trace level setting in disconnected scanner

Run the `setcfg.bat` script in windows and `setcfg.sh` script on unix systems to help screen with instruction and requests for new values to be set.

### • Server installation no longer requiring ksh

Installation of the BigFix Inventory server no longer requires **ksh** which is not available by default on newer versions of Linux.

### • Support for new platforms and systems

Support is introduced for the following platforms and systems:

- Windows 11 on 64 bit for CIT scanner on BigFix Agent (10.0.4 or higher) and Disconnected Scanner (10.0.7) client side (discovery, standard and disconnected scans, and complete functional coverage).



**Note:** The support for Windows 11 excludes reporting Windows OS 11 as Software on Software Classification / Package Data where the system is reported as Windows 10. The rest of the software discovery works correctly. (Planned for next update).

- IBM Power 10 processor - supported only by using the disconnected scanner. Operating systems running on Power 10 are not yet supported by the BigFix client.
- NTT Enterprise Cloud Server

- Oracle Linux KVM managed by Oracle Linux Virtualization Manager 4.3 and later
- Debian 11 x86 by using the disconnected scanner
- Debian 11 x64 by using the disconnected scanner
- BIOS limits for Oracle Linux KVM managed by Oracle Linux Virtualization Manager 4.3 and later
- **Security enhancements**
  - Axios upgraded to version 0.21.4, CVE-2021-3749
  - Checkbox to enable TLS 1.2 was removed from Advanced Server settings. TLS 1.2 was already enabled by default from previous release.
  - BigFix Inventory is shipped with TLS 1.2 with enabled cipher suites as included in each Java / WebSphere version. It is possible to restrict the cipher suites with an entry in `customization.xml` file, which is extending `server.xml` definition. See also, [Configuring Cipher suites](#).
  - Log4j updated to version 2.15.0 in VM Manager Tool and SAP Tool - CVE-2021-44228. BigFix Inventory is not affected by CVE-2021-45046.

## 10.0.6 Application update 10.0.6

### • Importing contracts data from CSV files

BigFix Inventory now allows you to import contract data from CSV files through the WebUI and REST API. See also, [Importing contracts \(on page mclxxxviii\)](#) and [API to import and export contracts \(on page mdccxliii\)](#).

### • Migrating contracts

Migrating deprecated contracts to new contracts is now possible. See also, [Migrating contracts \(on page mclxxxvi\)](#).

### • Convert purchase order from number to ELA and ELA to number

Contract management now allows you to convert purchase numbers to ELA and ELA to purchase numbers.

### • Set default product and metric for bundling assistant

You can set a default product and metric in the "Product and Metric" for bundling assistant.

### • Support for new platforms and systems

Support is introduced for the following platform and system:

- Fujitsu Cloud IaaS Instance

Support is added for BIOS limits on the following hypervisors that are installed on bare metal:

- Hyper-V (all supported versions)
- Red Hat Virtualization (managed by Red Hat Virtualization Manager)
- Citrix Hyper visor 8.x
- VMware v Sphere Hyper visor ESXi (all supported versions)

### • End of support

Support is dropped for the following platforms:

- CentOS 6
- Debian 8
- VMware v Sphere 6.0
- Internet Explorer 10

## 10.0.5 Application update 10.0.5

- **Improved contracts management**

The improved contracts management allows you to access and manage contracts from one single report. The new contract supports any license metric and shows 'All Metrics' data. See also, [Contract management \(on page mclxxviii\)](#). The previous contract management functionality is now deprecated.

- **Updated predefined dashboard**

The predefined dashboard now includes contracts with access to contracts of all statuses. You can perform all actions selecting the contract type. The quick search on the predefined dashboard allows you to search contracts with contract name.

- **Custom metrics management on Products & Metrics panel**

BigFix Inventory now allows you to add, modify, and delete metrics using the UI. For more information, see [Managing license metric through the UI \(on page mli\)](#).

- **New Product Publisher Name column**

The "Product Publisher Name" column on Software Classification panel indicates the name of the publisher of a product that a software instance is assigned to.

- **Combine package data with software instance data**

Package data is now combined with software instance data to using a new Unified Software API. For more information, see [Unified software API \(on page mdcc\)](#).

- **Notification about duplicate UUIDs**

The To Do list shows notification about duplicate UUIDs (Universally Unique Identifier). The list of computers with duplicate UUIDs is shown as a warning. For more information, see [Duplicate UUIDs problem \(on page mcccxxix\)](#).

- **Disconnected scanner can be used to mark computers that run on public cloud**

BigFix Inventory allows you to use disconnected scanner mark computers that run on public cloud. For more information, see [Identifying disconnected computers as running on public clouds \(on page dcxxviii\)](#).

- **Splitting of logs in VM Manager tool**

To improve readability of logs, the communication with a hyper visor is captured in the configuration file. For more information, see [Log files \(on page dcccxxvii\)](#).

- **Catalog distributed in GZIP format instead of BZIP2**

The downloaded software catalog from BigFix Inventory by endpoints is now available in .gz (GZIP) format instead of .bz (BZIP2) format. The purpose is to discontinue the use of BZIP2 compressor/format in BigFix Inventory. Next releases will include further changes.

- **Removal of use of zip/unzip binaries on Windows Endpoints**

The multiarchive tool 7zip is used on Windows endpoints instead of zip/unzip binaries. This change is applicable to the scanner update. The zip/unzip binaries are still available for other areas.

- **Suppressed package discovery**

BigFix Inventory adds capability to suppress packages in the Package Data report and Package Summary report to view the relevant packages only.

- **Performance improvement**

Improved processing of computers groups by restricting the default and maximum limit of *maxAggregationThreads* and *maxReaggregationThreads* variables to control the number of CPUs that are used.

- **'Component Detailed Version' column added in some of the predefined reports**

The **Software Installations**, **Current Installations**, and **Software: Discovered in the last 2 weeks** predefined reports now show the Component Detailed Version column by default.

- **BigFix Inventory installation date available in audit snapshot**

The "data\_condition.txt" file of audit snapshot now shows the BigFix Inventory installation date.

- **Trace scanner setting change**

Trace scanner settings now shows two options, Default and Verbose, where Default represents the min and Verbose represents the max.

- **Skip lock flag is Advance Server Settings**

Skip lock flag is added to exclude the locked endpoints while downloading the catalog.

- **Security enhancements**

- Rails upgraded to version 5.2.6 - CVE-2021-22880, CVE-2021-22904, CVE-2021-22885
- Updated Ruby bundler - CVE-2019-3881, CVE-2020-36327
- IBM Java JRE upgraded to version 8.0.6.30
- IBM WebSphere Liberty upgraded to version 21.0.0.6
- Using POST parameters as GET parameters to enhance security.
- TLS 1 and TLS 1.1 are disabled and TLS 1.2 is supported - Install appropriate service pack or content update for Microsoft SQL Server database. See also, [Software requirements \(on page div\)](#).
- VMware ESXi minimum version requirement updated to VMware ESXi 6.0 Update 3. See also, [Detailed System requirements \(on page cdxxxii\)](#).

- **Support for new platforms and systems**

- Debian 10 x86 (64 bit) by using the BigFix client
  - Red Hat Enterprise Linux 8 on z Systems by using the BigFix client
  - Red Hat Virtualization 4.4
  - SLES 15 on z Systems by using the BigFix client
  - Ubuntu 18 guest on Ubuntu KVM on Power using BigFix client and the disconnected scanner
  - NEC Cloud IaaS Instance
  - MS SQL 2019
- **End of support**
    - Support is withdrawn for Windows 2008 and 2008 R2.

## 10.0.4 Application update 10.0.4

- **REST APIs for license metrics**

BigFix Inventory now allows you to retrieve, create, change, and delete license metrics using REST APIs. For more information, refer to [10.0.4 REST API for managing license metrics \(on page mdccxxv\)](#).

- **REST APIs to integrate multicluster licensing data in IBM License Service Reporter**

You can use REST APIs to view licensing information about software that is needed to integrate with other licensing tools in multicluster environments. For more information, refer to [Retrieval of license metric utilization \(v2\) \(on page mdlxix\)](#). The REST API provides the same information as the IBM License Metric tool. The License Sender tool uses the API to integrate multicluster licensing data in IBM License Service Reporter. See also, [Tracking license usage in multicluster environment with License Service Reporter](#).

- **Improvements in file facts import**

Improved file fact import performance. The `import.log` shows status of file imports. This helps in distinguishing between correct files, files with errors, files encountering unpacking issues, and invalid files. The import progress shows estimated time left to complete an import. The file path is recorded in the import log.

- **Removal of the “Caused Detection” column and the “enable\_caused\_detection” setting**

The **Caused Detection** column is removed from the Package Data and Scanned File Data reports. The **enable\_caused\_detection** parameter is also removed from the advanced server setting. Saved reports that use this column are not automatically migrated and you must manually re-create the reports. The **Recognized** column is now the primary option to perform your tasks.

- **Reporting information about the detailed version of applications discovered by package-based signatures**

Installed software components that are discovered by specific packages are reported with a detailed component version which is the same as the package version. The version information is shown in the **Component Detailed Version** column in the [Software Classification \(on page cmlviii\)](#) report and in `component_detailed_version` column in REST API.

- **Improvements in reporting information about detailed version and file size**

The rules used to determine the version information to be shown when there are multiple discoveries, have been updated. For details, refer to [Component Detailed Version \(on page m1xxix\)](#). On the Details page of Software Classification panel, detailed versions of for all such matched discovery means are displayed, together with the overall Component Detailed Version for a given software component instance. The file size information for matched file signatures is also displayed.

- **Database connection encryption**

With BigFix Inventory you can encrypt your database connection by using the encryption that the database engine and JDBC driver support. For more information, refer to [Configuring database connection encryption \(on page mcclvii\)](#).

- **Regular database index rebuilding**

Starting from the version 10.0.4, BigFix Inventory has a script that manages regular database index rebuilding.

- **Search software catalog by component name on the new dashboard**

The new dashboard is extended with the functionality of catalog search by component name. Catalog search widget is removed from the old dashboard. The new quick search option and existing filters in reports provide equivalent functionality.

- **Fixlet available to download PVU table**

The 'Download PVU table' option now allows you to download the latest PVU table. Download the file and then manually upload it to BigFix Inventory server. For BigFix Inventory to be compliant with IBM Subcapacity, you must upgrade the server.

- **Parameter added to show hidden values**

A "show\_hidden\_values" parameter has been created and added in **Advanced Server Settings**, which allows you to manage hidden parameters.

- **Suppressed discovery of certain software products**

Added new custom rules to suppress the discovery of software publishers, such as Adobe Systems Incorporated and Microsoft Corporation, and Red Hat Enterprise Linux software component. With the rules implemented, the reports for those vendors do not appear under the **Software Classification** report.

- **Automatically enabled performance logs**

Performance logs are now automatically enabled. The logs can be disabled and enabled back if required.

- **Updated the EOS (End of Support) date for Microsoft software products**

The EOS date of Microsoft products, such as Microsoft SQL Server, Microsoft Excel, Windows OS, and Visual Studio has been updated. The EOS of non-IBM components has also been updated.

- **Security enhancements**

- `axios` NPM package upgraded to version 0.21.1 - CVE-2020-28168
- IBM JRE is upgraded to version 8.0.6.25 due to critical CVE-2020-27221
- WebSphere Liberty updated to v.21.0.0.1
- `rest-client` updated to version 2.0.1
- `formtastic` updated to version 4.0.1

- **Support for new platforms and systems**

Support is introduced for the following platforms and systems:

- Oracle Enterprise Linux 8 on x86 by using the BigFix client
- Red Hat Enterprise Linux 8.1 and higher 8.x versions on Power by using the BigFix client
- Red Hat Enterprise Linux 8 on z Systems by using the disconnected scanner
- Ubuntu 20.04 on x86 by using the BigFix client
- IBM Power Systems Virtual Servers on IBM Cloud
- Tencent Cloud Server Instance

- **End of support**

Starting from version 10.0.4, support is dropped for Windows 7.

### 10.0.3 Application update 10.0.3

- **Notifications for failed data and catalog imports**

The To Do list now shows notifications about failed data and catalog import. You can also enable email notifications for failed imports. For more information, refer to [Notifications that are sent when imports of data and catalogs fail \(on page dclxxvii\)](#).

- **Certification of License Activation Process for BigFix**

BigFix Inventory now supports automatic component assignment for all active BigFix products. For more information, refer to [Assigning components to active BigFix products <deprecated> \(on page mcxlii\)](#).

- **Improved user interface**

Improved interface in the menus, dialogs, and reports

- **Support for new platforms and systems**

Support is introduced for the following platforms and systems:

- Alibaba Elastic Computer Service
- Red Hat 8.2 or a higher version for BigFix Inventory server. Check BigFix Platform [system requirement](#).
- Disconnected scanner on Red Hat Enterprise Linux 8 on z Systems

- **Security enhancements**

To maintain security, the following selected components and libraries were updated:

- Rails upgraded to version 5.2.4.4
- Upgraded icu4j libraries to supported version
- WebSphere Application Server Liberty is upgraded to version 20.0.0.11
- Changed Websphere configuration to use TLS 1.2 by default for fresh installation. For existing and upgraded BigFix Inventory installations, manual configuration is required. For more information, refer to [Enabling secure communication \(on page dlxxvii\)](#).
- Addressed the security vulnerability of SSO login by implementing secure SSL cookie. For more details, refer to the [Knowledge Base article](#).

## **10.0.2 Application update 10.0.2**

- **New vendor-specific predefined reports**

BigFix Inventory offers vendor-specific predefined reports that provide software discovery and licensing information for specific software vendors like Adobe, IBM, Microsoft, Oracle, SAP, VMware, and HCL. These reports help Software Asset Managers manage software at their organization and get prepared for contract negotiations and license audits. For more information, see [Vendor-specific predefined reports available in dashboard Inventory Reports \(on page cmvii\)](#).

- **New default dashboard**

BigFix Inventory now shows the predefined vendor-specific reports on the default dashboard to provide some out of the box data to the vendors.

- **Installation path of all discovered software**

Inventory reports now show the installation path of all discovered software (IBM and non-IBM). If a product is installed in multiple paths, all paths are reported as separate instances. Previously it was applicable only to IBM software.

- **Software Classification details view**

The details view now shows only matched detection. It does not show signatures that does not match. It includes a link with complete list of signatures.

- **Extended list of default exclusion list on Windows for scanner installation**

For a newly installed scanner, the list of exclusions has been extended with directories containing large files that are not related to the software discovery. For upgraded scanner, to extend the list of exclusions with directories containing large files that are not related to the software discovery, follow the procedure described in the [KB article](#).

- **IBM software catalog delivered only with application updates**

Starting from 10.0.2, the IBM software catalog is a part of BigFix Inventory application and BigFix Inventory does not support manual update of HCL catalog any longer. However, manual catalog update continues to be supported for non-IBM vendors.

- **Setting entitlements**

BigFix Inventory now allows you to mark products as entitled through for products and metrics. Setting entitlement works along with bundling assistant.

- **Audit trail for user management operation**

You can now enable a conditional user management parameter to allow the audit trail report capture information, such as creation and deletion of users. It also shows any modification in the user role and user computer group.

- **Streaming of JSON responses for UI and API requests**

Starting from 10.0.2, BigFix Inventory uses HTTP streaming in JSON responses. With this improvement, pagination in the API is optional and all data can be fetched with a single query. The applications integrated with BigFix Inventory and using the pagination feature, should consider increasing the page size or dropping the paging option for improved response time. For more information, see also [REST API considerations \(on page mcdlxiv\)](#).

- **Support for ISO 19770-2 delta/patch tags**

Component Detailed Version now provides complete information about fix packs through ISO 19770-2 patch/delta tags. Previously the tags used to get rejected on both, endpoint side and server side. The functionality works with BigFix Inventory server version 10.0.2 or higher and Initiate Software Scan fixlet version 10.0.2 or higher.

- **Support for new platforms and systems**

Support is introduced for the following platforms and systems:

- SLES 15 SP1 on Power
- v Sphere ESXi 7.0 and v Sphere v Center Server 7.0
- Disconnected scanner on Red Hat Enterprise Linux 8.1 on Power
- Disconnected scanner on Ubuntu 20 x86

- **Security enhancements**

- IBM JRE is upgraded to version 8.0.6.15
- WebSphere Application Server Liberty is upgraded to version 20.0.0.5
- Several libraries for Ruby on Rails component are upgraded
- Upgraded jQuery to 3.5.1
- Obsolete and unused libraries removed from production

- **End of support**

- Starting from version 10.0.2, support is dropped for the following:
  - IBM DB2 10.1 as database for BigFix Inventory server
  - VM Manager tool version 32-bit
  - IBM i 6.1

## 10.0.1 Application update 10.0.1

### • Updated software catalog

New version of Catalog for enhanced software discovery. The catalog includes:

- IBM License Metric Tool Software Catalog version 9.2.19.0.
- capability to discover and collect evidence about usage of Oracle Java Commercial Features: 'Java Flight Recorder' and 'JRE Usage Tracking'. This discovery is intended to help customers to check usage of Java Commercial Features. The knowledge about usage of these features is needed for older Oracle Java commercial licenses that are applicable for Oracle Java before version 11.
- added discovery capability for 800+ software versions for number of titles including Symantec, Hewlett-Packard, Oracle software
- 5 Ideas to discover or enhance discovery of specific software

### • Package Data report is updated with data from Solaris IPS package manager

Support for Solaris IPS package manager is available for endpoints with BigFix client installed.

### • Configurable limit of custom software classification rules

More custom software classification rules can be defined now to automate classification process. Provides ability to redefine limit on custom software classification rules using Advanced Server Settings panel. Supports up to 100 custom rules.

### • Enhanced API for Scanned File data with additional properties for Windows executables

Collection of additional properties for Windows executables is optional feature that is disabled by default. This function is limited to 50 000 endpoints, has additional storage requirements and impact on data import time. Rollout to endpoints requires proper planning and verification before function is enabled.

### • The Software Summary report becomes an integral part of BigFix Inventory

The Software Summary report provides an overview of software inventory in your environment. Each row represents a set of software instances that are grouped by the selected columns. The report was introduced as a preview feature and improved over the past releases. It now becomes an integral part of BigFix Inventory. For more information, see [Available reports \(on page mlvi\)](#).

### • User interface changes

User interface is updated in line with HCL brand for login window.

- **Updated scanner**

New version of Scanner for Windows to allow collection of additional properties for Windows executables.

- **IBM Virtualization Capacity reporting equivalent**

BigFix Inventory 10.0.0.0 is equivalent to IBM License Metric Tool (ILMT) 9.2.18 for IBM Virtualization Capacity reporting.

- **Enabler for reporting IBM Cloud Paks**

BigFix Inventory reports information about utilization of license metrics by non-containerized products that are installed as part of IBM Cloud Paks. For more information, see: [Licensing of non-containerized Cloud Pak programs \(on page cdii\)](#).

- **Inventory Exploration report becomes deprecated**

Instead of the deprecated report, use the Software Summary report that provides extended information about your software inventory. For more information, see [Available reports \(on page mvi\)](#).

- **Support for MS SQL 2016 Express and 2017 Express as a database for BigFix Inventory**

Express editions of MS SQL 2016 and 2017 are supported as a database for the BigFix Inventory server. For specific requirements, see: [Software requirements](#).

- **Support for new platforms and systems**

Support is introduced for the following platforms and systems:

- Citrix Hyper visor 8
- IBM i 7.4
- Oracle Compute Instance

- **End of support for some operating systems and virtualization technologies**

Support is dropped for the following operating systems and virtualization technologies. If you are using any of them, upgrade to newer versions that are supported by BigFix Inventory

- Operating systems
  - Debian 7
  - IBM i 5.1
  - Oracle Solaris 10
  - Red Hat Enterprise Linux 5 on x86
  - Ubuntu 12
  - Ubuntu 14
  - Windows Vista
- Hyper visor and virtualization technologies

- Red Hat Virtualization 3.x
- VMware v Sphere 5.x
- XenServer/ Citrix XenServer 6.x

- **Security enhancements**

To maintain security:

- IBM JavaJRE is updated to version: 8.0.6.5.
- WebSphere Application Server Liberty is upgraded to version 20.0.0.2.
- A number of libraries has been updated.

## Application update 10.0.0

- **10.0.0 Detailed Component Version discovery for Oracle Java and Oracle Weblogic**

Starting from this release new mechanism is available for Patch level reporting. Detailed Component Version discovery is supported by Extended Signature feature and recent catalog content.

This functionality is available for:

- Oracle Java Runtime Environment
- Oracle Java JDK/SDK
- Oracle Weblogic
- Oracle Weblogic Enterprise Edition
- Oracle Weblogic Suite

- **10.0.0 Extension of the computer\_hardware API association and related computers report**

- You can retrieve information about parent layer hostname.

- **10.0.0 IBM Virtualization Capacity reporting equivalent**

- BigFix Inventory 10.0.0.0 is equivalent to IBM License Metric Tool (ILMT) 9.2.18 for IBM Virtualization Capacity reporting.

- **10.0.0 User interface visual changes**

- User interface visual changes in line with HCL brand.

- **10.0.0 Update of the end of support dates for IBM software**

- Information about the end of support dates is refreshed for the IBM software basing on the IBM Lifecycle data

- **10.0.0 Usability improvement to the user interface**

To improve user experience, the following name changes are applied:

- Scan Health is renamed to **Software Scan Health**
- Missing Software Scan is renamed to **Missing Scan**
- IBM Capacity Data Completeness is renamed to **Capacity Scan Health**

- IBM Software Classification is renamed to **Software Classification**
- The Latest Software Scan column is renamed to **Last Software Change**

- **10.0.0 Support for DB2 11.5 as a database for BigFix Inventory server**

DB2 11.5 is supported as a database for the BigFix Inventory server. For specific requirements, see: [Software requirements \(on page div\)](#).

- **10.0.0 Security enhancements**

To maintain security:

- IBM JavaJRE is updated to version: 8.0.6.0.
- WebSphere Application Server Liberty is upgraded to version 19.0.0.11.
- Several libraries for Ruby on Rails component are upgraded.

- **10.0.0 Support for new systems and hypervisors**

The following new systems and hypervisors are supported:

- IBM z15
- AMD Epyc processor
- zCX (System Z Container Extensions)
- Nutanix on x86 with AHV

## Application update 9.2.17

- **9.2.17 Support for new platforms and systems**

The following platforms and systems are now supported:

- Hyper-V 2019
- Linux VMs on Nutanix AVH (IBM Power only)
- Red Hat Enterprise Linux 8 endpoints
- RHV 4.2 and 4.3 using new API available in RHV-M 4.x

- Important changes:

- **9.2.17 Removal of the legacy IBM Software Classification panel**

The IBM Software Classification was already deprecated and substituted with Software Classification panel in application update 9.2.13. At this point, the IBM Software Classification panel is entirely removed. The new Software Classification panel allows simple software classification and ensures better performance. It is fully customizable and allows you to create custom classification rules.

- **9.2.17 End of support for MS SQL 2008 and 2008 R2 database for BigFix Inventory server**

The support for MS SQL 2008 and 2008 R2 database for BigFix Inventory server is discontinued. It is related to Microsoft officially ceasing the support in July 2019. For more information, see: [Prepare now](#)

for end of support in 2019 and 2020 (Microsoft). To upgrade to BigFix Inventory 9.2.17, first migrate to newer MS SQL version that is supported by BigFix Inventory. For the list, see: [Software requirements \(on page div\)](#).

## Application update 9.2.16

- **9.2.16 Drill down for better understanding of reported values on Software Summary report extended to software usage statistics**

You can additionally use drill down on Software Summary report to see the detailed information about the software instances that contribute to software usage through the related columns, for example, **Used, Unused, Used in the Last Month** and other summary columns. For more information, see: [Available reports \(on page mlvj\)](#).

- **9.2.16 Improved reporting of FlexPoints**
  - BigFix Inventory reports information about the highest license consumption of FlexPoints over a specified reporting period for an entire FlexPoint bundle as well as the contributing products.
  - You can view the license metric utilization trends for the entire bundle, as well as its components on the Metric Quantity History graph. The graph presents information about the values calculated by the system and the values that are declared by the user.
  - Two new columns are now available on metric reports: Peak Date and Metric Quantity. For more information, see: [Report columns \(on page mlxxvi\)](#).
  - The All IBM Metrics report shows only license consumption on a bundle level. To see the detailed information about license consumption for the contributing products, drill down by clicking the name of the bundle.
  - Audit snapshot is extended with an additional file that outlines the usage of FlexPoints in your environment. The `flexpoints.csv` file contains information about the FlexPoint bundles and the underlying products.

For more information, see: [IBM FlexPoints \(on page cmxvi\)](#).

- **9.2.16 Setting metric quantity for license metrics that are not calculated by BigFix Inventory**

You can manually declare the metric quantity for selected license types for which BigFix Inventory does not calculate license metric utilization out of the box. You can also use this option to customize the metric quantity if needed. For more information, see: [Setting and removing the declared metric quantity \(on page cmxxviii\)](#).

- **9.2.16 Extension of the `computer_hardware` API association**

You can retrieve information about additional hardware parameters, such as the serial number, vendor, model, or type of the physical server. For more information, see: [computer\\_hardware association \(on page mdc\)](#).

- **9.2.16 Custom rules for automatically suppressing components that meet specified criteria**

By specifying the relevant criteria, you can create the custom rule which automatically suppresses the matching components in the future. For more information, see: [Creating and managing custom rules \(on page cmlxxxiii\)](#).

- **9.2.16 Extended support**
  - Support for new platforms and systems
    - Certified support for the newest BigFix platform updates: 9.2.18 and 9.5.13
    - Debian 9 x86 and x64
    - SUSE Linux Enterprise Server 15 x86-64
    - SMBIOS3 on Linux
    - server on Windows 2019
    - server on MS SQL 2017 version 14.0.3162.1 for fresh installations
- **9.2.16 Security enhancements**
  - Rails is upgraded to version 5.1.7 to maintain security.
  - WebSphere Liberty Profile is upgraded to version 19.00.4 to maintain security.
  - Update of the Xerces library to version 3.2.1 on AIX to keep the scanner secure and reliable.

## Application update 9.2.15.2

- **Security enhancements**
  - WebSphere Liberty Profile is upgraded to version 19.00.4 to maintain security.

## Application update 9.2.15

- **9.2.15 Preview feature: New Software Summary (Preview) report**

The report provides an overview of software inventory in your environment. Each row in the report represents a set of software instances that are grouped by the selected columns. You can drill down the Software Summary report to view the details of the instances in a group. The report also provides software usage statistics that contain information about usage of the specific software based on the listed instances. You can check how many instances of a product within the group are used and how many are not. You can see an overview of software usage statistics from last month, last quarter, and last year. You can also track the number of software instances within the group for which software usage is monitored and for which it is not. For more information, see: [Available reports \(on page mlvi\)](#).

- **9.2.15 Extended reporting of usage statistics for Java**

BigFix Inventory introduces a new and improved method of reporting usage for Java Virtual Machine and Runtime Environments. Paths to Java processes that run on a computer are matched with paths in which the software is discovered. Based on this information, BigFix Inventory can determine exactly which Java instance was used. It is possible to distinguish between usage of BigFix and Oracle Java installed on a single computer. For more information, see: [Monitoring and reporting software usage \(on page cmxci\)](#).

Software catalog in version 9.2.15 does not contain usage signatures for Java any more. To report usage of Java, upgrade the BigFix Inventory server to version 9.2.15.

- **9.2.15 Extended support**

- Support for new platforms
  - Windows 2019
  - Oracle SPARC-M8 processor
  - Ubuntu 18.04 on x86
- Support for new virtualization technologies
  - v Center with external Platform Services Controllers (PSC) on different computers
  - Solaris Kernel zones on Oracle Solaris x86 and SPARC with nested virtualization. For more information, see: [Client installation on Oracle Solaris \(on page dcxx\)](#)

- **9.2.15 New Software Installations report that is based on the new data model**

The new version of the Software Installations report is introduced. The old report is deprecated and moved to the bottom of the Reports menu. It is planned to be entirely removed in the future. The new report view is based on the new data model and consistent with other reports. For more information, see: [Available reports \(on page mlvi\)](#).

- **9.2.15 Extension of the To Do list**

The To Do list is extended and additionally displays information about the outdated scanning actions that need to be restarted. For more information, see: [To Do list \(on page ccclxxvi\)](#).

- **9.2.15 Documentation extended with new topics**

Documentation is extended with new content, including the following help topics.

- [Keeping BigFix Inventory up-to-date \(on page ccclx\)](#)
- Software license optimization
- [Tuning performance based on scalability guidelines \(on page mcdxxxvi\)](#)

- **9.2.15 New look and feel of the user interface**

The look and feel of the user interface is refreshed. The reports are now more vivid with a new blue action bar, updated action icons and selected buttons.

- **9.2.15 Usability improvements on the management panels**

Several improvements are introduced to simplify the navigation and usability of the selected management panels, including Users, Saved Reports, Advanced Server Settings and Contracts. You can use filters based on the available columns, and save the custom view as a predefined view. You can also export these reports to a [CSV](#) or [PDF](#) file.

Limitation: To filter the Contracts report by the All Computers computer group, use its English name regardless of the interface language. The name of this group is not translated.

- **9.2.15 Filtering reports by using `matches exactly` operator**

You can filter reports and retrieve data from specified columns by using the `matches exactly` operator. This operator is used to exactly match two values, including upper and lowercase characters.

- **9.2.15 New naming convention for the exported reports**

The names of report files that are exported, or received in a scheduled email follow a new, more meaningful naming convention. Additionally, the email subject contains the name of the predefined or custom report that is included.

- **9.2.15 Extended discovery of Oracle Databases certified for Oracle Database 18c: 18.3.**

- **9.2.15 Discovery of new components from Citrix, Hewlett-Packard, Oracle and other**

The software catalog is extended to discover a number of new components from Citrix, Hewlett-Packard, Oracle and other. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.15.

Below is the list of the most important newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added discovery capability for Citrix products
  - Citrix XenApp
  - Citrix XenApp Reports
  - Citrix XenDesktop
- Added discovery capability for Hewlett-Packard products
  - HP Business Process Monitor
  - HP Business Service Management
  - HP Operations Agent
  - HP Operations Manager
- Added discovery capability for Oracle products
  - Oracle Clusterware
  - Oracle Linux
  - Oracle SOA Suite

- **9.2.15 Names of BigFix Inventory fixlets in the BigFix console contain information about version**

Names of the BigFix Inventory fixlets are extended with the information about the currently available version. By default, fixlet version is updated with each release of BigFix Inventory server. For more information, see: [Ensuring currency of scanner actions and fixlets \(on page ccclxii\)](#).

- **9.2.15 Security enhancements**

Rails is upgraded to version 5.0.7 to maintain security.

## Application update 9.2.14

- **9.2.14 Reporting license usage for Adobe Creative Cloud products on Windows**

BigFix Inventory reports utilization of the Registered User metric for Adobe Creative Cloud products. The information is extracted during regular software scans directly from computers where components of some Adobe Creative Cloud products are installed. Based on the scan results, the Registered User metric is calculated and its utilization is displayed on the All Metrics report. Detailed information about users is shown on the Software Users report.

Thanks to this feature, you can track licenses of Adobe CC products in BigFix Inventory to analyze trends, define thresholds and optimize costs by identifying users of unused instances. For more information, see: [Software Users report \(on page mlxviii\)](#) and [Registered User \(on page cmxxxvi\)](#).

- **9.2.14 Reporting license usage for BigFix Rational portfolio**

Information about the usage of Floating User metric is now available on the All Metrics report for BigFix Rational products. The calculations are available thanks to integration with BigFix Rational License Key Server. The usage is provided by the `.slmtag` files. For more information, see: Other IBM metrics.

- **9.2.14 Tagging software for more flexible categorization**

You can now tag software components, or instances of the discovered software to classify them. The tags might, for example, emphasize the ownership of a software product, categorize it as a test or free of charge instance, or mark it as blacklisted or approved. For more information, see: [Adding and removing tags \(on page mciv\)](#).

- **9.2.14 Preview feature: The new dashboard is extended with additional widgets and quick search**

The newest additions to the new BigFix Inventory dashboard include the summary of the most important inventory data, recent changes, discovery gaps, and security issues in one place. The dashboard is also extended with quick search that allows you to easily find information related to file hashes, file names, vulnerabilities and software inventory. For more information, see: [Dashboard \(on page ccclxxi\)](#).

- **9.2.14 New predefined reports**

New predefined reports are available under the Software Classification, Scanned File Data and Computers reports. For more information, see: [Available reports \(on page mlvi\)](#).

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- **9.2.14 Reporting end of support dates for Microsoft products**

The end of support dates are automatically populated for Microsoft software that according to information provided on 20 November 2018 is announced to be out of support between 30 November 2015 and 1 November 2021.

- **9.2.14 Best practices for configuring VM managers**

Documentation provides best practices for configuring VM managers. For more information, see: [Best practices for configuring VM managers \(on page dcccxlili\)](#).

- **9.2.14** Top navigation bar extended with the  icon for providing feedback
- **9.2.14** Changes in the Report menu

The Software Catalog report is renamed to Products & Metrics. A link to Software Components report is added under Reports in the main menu.

- **9.2.14** Users panel is expanded with the information about time and date of the last login
- **9.2.14** Improvements on the VM Managers panel

Several improvements are introduced to simplify the navigation and usability of the VM Managers panel. You can filter the report by any available column, and save the custom view as a predefined view. You can also export the report to a [CSV](#) or [PDF](#) file.

- **9.2.14** Migrating software classification with REST API

The [PUT](#) operation on the `/api/sam/v2/software_instances` REST API allows you to define, change, or migrate your current software classification. It can be used to migrate your software assignments when moving clients between the instances of BigFix server. For more information, see: [Classifying software \(v2\) \(on page mdlv\)](#) and [Tutorial: Migrating software assignments between two BigFix Inventory servers \(on page mcccxlvi\)](#).

- **9.2.14** Retrieving information about the license utilization peak and the contributing software instances through REST API in version 2

If you have custom tools or internal processes that use the `software_instances` REST API, you can now achieve your goals by using the `v2/license_usage` and `v2/software_instances` REST API. It is best to adjust the tools to use REST API in version 2. For more information, see: [Mapping functions of the software\\_instances REST API \(on page mcdlxxxv\)](#).

- **9.2.14** Discovery of new components from Citrix, Oracle and SAP and other

The software catalog is extended to discover a number of new components from Citrix, Oracle, SAP and other. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.14.

Below is the list of the most important newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added discovery capability for Citrix products
  - Citrix Diagnostic Facility
  - Citrix PowerShell Snap-In
- Added discovery capability for Oracle products
  - Oracle Discoverer
  - Solaris
- Added discovery capability for SAP products
  - SAP PowerBuilder

- Added discovery capability for Adobe CC 2019
- Improved usage reporting for Java products
- **9.2.14 Certification of Microsoft Edge browser**

Microsoft Edge is certified as a supported browser for BigFix Inventory. For more information, see: [Software requirements \(on page div\)](#).

- **9.2.14 Support for new virtualization technologies**
  - <deprecated> Oracle VM Server for x86 (on page [dcclxxxix](#)) 3.4.x
  - Solaris Kernel zones on x86 without nested virtualization (not yet announced as BigFix subcapacity eligible). For more information, see: [Client installation on Oracle Solaris \(on page dcxx\)](#).
  - SLES 11 for PowerVM on Power9 in Power8 compatibility mode.
  - SLES 12 for PowerVM on Power9 in native mode.
  - SLES 15 on Power9 with disconnected scanner in P9 native mode.
- **9.2.14 Security enhancements**
  - To maintain security, Java is upgraded to the newest version: 8.0.5.25.
  - WebSphere Application Server Liberty is upgraded to version 18.0.0.3.
  - Update of the Xerces library to version 3.2.1 on Solaris Sparc and Solaris x86 to keep the scanner secure and reliable.

- **9.2.14 Information about the session time out after a period of user inactivity**

The session timeout specifies the period of user inactivity after which the session ends, and the user is required to log in again. Before it happens, you are notified that the session is about to end.

## Application update 9.2.13

- **9.2.13 Utilization of the Registered User metric for Microsoft Office 365**

BigFix Inventory reports utilization of the Registered User metric for Microsoft Office 365. The information is extracted during regular software scans directly from computers where components of Office 365 are installed. Based on the scan results, the Registered User metric is calculated and its utilization is displayed on the All Metrics report. Detailed information about users is shown on the Software Users report.

Thanks to this feature, you can track licenses for Office 365 in BigFix Inventory to analyze trends, define thresholds and optimize costs by identifying users of unused instances. For more information, see: [Registered User \(on page cmxxxvi\)](#).

- **9.2.13 Reporting additional IBM metrics based on the resource utilization data that is delivered by `.slmtag` files**

Additional IBM metrics that are based on the resource utilization data are displayed on the All IBM Metrics and All Metrics reports. BigFix Inventory scans computers in your infrastructure to find the software components that are reported with `.slmtag` files and then aggregates their metric quantity. For more information, see: [Reported license metrics \(on page cmxii\)](#).

- **9.2.13 Version currency of Internet browsers and other selected software that changes frequently**

BigFix Inventory automatically detects all versions of a number of software components on Windows. These components include Internet browsers (Chrome, Edge, Firefox, and Opera) as well as components such as Adobe Air, Adobe Flash Player, Slack, and other. The components are detected by generic signatures while their versions are automatically retrieved from files or packages that caused detection. Such an approach allows for avoiding catalog gaps and ensures full discovery currency.

- **9.2.13 Reporting utilization of FlexPoints**

FlexPoint is a license metric unit that can be used to determine the cost of IBM products that are purchased as part of FlexPoint bundles. Each product from a bundle is licensed based on a different license metric but all metrics are converted into FlexPoints. Products that are currently available as part of FlexPoint bundles are products from the IBM Cloud and IBM Analytics brands. For more information, see: [IBM FlexPoints \(on page cmxvi\)](#), and Classifying FlexPoint bundles.

- **9.2.13 Preview feature: Visibility of Common Vulnerabilities and Exposures (CVEs)**

- Information about CVEs is shown on the Software Classification report on which CVEs are matched with software components through component detailed versions.
- The details of CVEs are extended to include a link to a description of the CVE in the National Vulnerability Database as well as the version of the CVSS, either 2.0 or 3.0.
- Information about CVEs can be filtered and sorted by the CVE name. The filter shows the software that meets the specified criteria by searching through the full list of CVEs of each reported software instance.

Thanks to the improvements in showing information about CVEs you can better identify, monitor, and analyze potentially vulnerable software and at the same time prevent potential threats.

- **9.2.13 New predefined reports available under Software Classification panel**

The Software Classification report is extended with four predefined views:

- Out of Support Software that shows software installations for which support already ended
- Software Approaching End of Support that shows software installations for which support ends within the next three months
- Vulnerable Software that shows software installations for which at least one CVE was matched
- Vulnerable Software - Recent that shows software installations that were discovered within the last two weeks and for which at least one CVE was matched

The views provide you with a quick overview of software that might pose security threats in your environment.

- **9.2.13 Preview feature: Security dashboard and reporting**

The new security dashboard shows a preview of security features in the form of widgets. To view the dashboard, click **Go to New Dashboard & Reporting** on the homepage. For more information, see: [Dashboard \(on page ccclxxi\)](#).

- **9.2.13 New To Do list on the top navigation bar**

The top navigation bar is extended with a To Do list that, at present, displays the following information under the  icon:

- Failed imports of data
- Availability of a new version of the application
- The need to configure connections to virtualization hosts for some of the computers

The relevant information is indicated with a number that is displayed on the icon. The number is shown until you take action to address the displayed information. For more information, see: [To Do list \(on page ccclxxvi\)](#).

- **9.2.13 Information about the shared processor pool**

BigFix Inventory displays information about the identifier of the shared processor pool under the Shared Pool ID column on the Hardware Inventory, Computers, Software Installations, Oracle Databases and Software Classification reports.

- **9.2.13 REST API associations for quick analysis of security risks**

The `/api/sam/v2/software_instances` REST API is extended with two associations:

- `cve` that allows to retrieve information about Common Vulnerabilities and Exposures (CVEs) that were matched with a particular component through its detailed version
- `release_component_lifecycle` that allows to retrieve information about when a component reaches its end of support

The associations provide you with a method for retrieving information about software that might pose security threats by using REST API.

- **9.2.13 Filtering reports and retrieving data through REST API request by using `is empty` and `is not empty` operators**

You can filter reports and retrieve data from specified columns by using the `is empty` and `is not empty` operators.

- **9.2.13 Support for BigFix Inventory server on MS SQL 2016**

BigFix Inventory server is now supported on MS SQL 2016 for fresh installations. If you used MS SQL 2016 with earlier versions of the product, see: [Software requirements \(on page div\)](#).

- **9.2.13 Discovery of new components from Citrix, Symantec, Oracle and other**

The software catalog is extended to discover a number of new components from Citrix, Symantec, Oracle and other. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.13.

Below is the list of the newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added discovery capability for Citrix products
  - Citrix Edgesight
  - Citrix Presentation Server
  - Citrix XenDesktop

- Added discovery capability for Symantec products
  - Veritas Cluster Enterprise Agents
  - Veritas Cluster Server
  - Veritas Cluster Server Bundled Agents
  - Veritas Cluster Server Disk Reservation Modules and Utilities
- Added discovery capability for Oracle products
  - Oracle Clusterware
  - Oracle GoldenGate
  - Sun Cluster HA for WebSphere MQ
- **9.2.13 List of software components with end of support dates is updated**

The information about the end of support dates is refreshed for your BigFix software components for which the dates were announced since the last update of the list. The data is based on the information contained in BigFix Lifecycle in September.

- **9.2.13 Performance improvements**
  - The import of VM Manager data is optimized to decrease the processing time.
- **9.2.13 Security enhancements**
  - Java is upgraded to the newest version to maintain security.
  - TLS 1.2 is enabled in BigFix Java by default.
  - WebSphere Application Server Liberty is upgraded to version 18.0.0.2 to address CVE-2018-1553.
  - Update of the Xerces library to version 3.2.1 on Windows to keep the scanner secure and reliable.
- **Support for new virtualization technologies**
  - v Sphere ESXi 6.7 and v Sphere v Center Server 6.7.
- **9.2.13 End of support for migration from License Metric Tool (LMT) and Tivoli® Asset Discovery for Distributed (TAD4D) version 7.x**

Starting from 1st October 2018, migration from License Metric Tool 7.x and Tivoli® Asset Discovery for Distributed 7.x will no longer be supported. The support will not be available regardless of the version of License Metric Tool 9.x or BigFix Inventory 9.x that you are using. For more information, see: [End of support for migrating from LMT and TAD4D version 7.x](#).

## Application update 9.2.12

- **9.2.12 Reporting detailed hardware information**

BigFix Inventory introduces a detailed hardware scan that allows you to retrieve detailed hardware information related to memory, operating systems, storage, processors, partitions, network adapters, SMBIOS data, IP addresses and logical processor capacity data. You can use the collected information to report and monitor hardware in your infrastructure. The new scan gives you a clear overview of your physical assets. For more information, see: [Detailed hardware scan \(on page dcxxix\)](#).

- **9.2.12 Preventing security threats with information about Common Vulnerabilities and Exposures (CVE) added to the software catalog**

Common Vulnerabilities and Exposures (CVE) is a list of known security threats that are assigned identification numbers. BigFix Inventory uses CVE that is provided by the National Vulnerability Database to help you identify potential threats in your environment. In this release, BigFix Inventory presents initial integration with National Vulnerability Database as a preview feature. Thanks to the visibility of potentially vulnerable software, it is possible to identify and prevent potential threats. For more information, see: [Preview: Checking Common Vulnerabilities and Exposures \(CVEs\) \(on page mccxxx\)](#).

- **9.2.12 Retrieving information about the discovered software component as specified in the Common Platform Enumeration (CPE) dictionary**

Common Platform Enumeration is a standardized naming scheme for software. This information is available in REST API for integration scenarios. BigFix Inventory uses the CPE dictionary to match CVEs and indicate known vulnerabilities in software products. You can analyze and compare the CPEs based on the data feeds provided by BigFix Inventory with other sources, such as CVEs that are available in the National Vulnerability Database. For more information, see: [component\\_cpe association \(on page mdxciii\)](#).

- **9.2.12 Enhancements to reporting end of support dates**

The end of support dates for selected BigFix software products and components for which the information has been announced are now available on the Software Classification panel. Additionally, a new Predefined End of Support column is available on the Software Components report. The column indicates whether the end of support date was provided by BigFix or was specified manually by a user.

- **9.2.12 Using Review Lite script for extended discovery of Oracle databases**

Review Lite is a standard script used by the Oracle auditors to control the number of Oracle licenses within a company. BigFix Inventory allows you to automatically run this script on all computers in your environment. The results are interpreted by BigFix Inventory which provides you with an overview of the report that you are required to deliver to the auditors. For more information, see: [Discovering usage of Oracle Database features \(on page mcxv\)](#).

- **9.2.12 Automatic scanning of remote shared disks**

Until now, remote shared disks could only be scanned with a manual procedure. With the newest release of BigFix Inventory, you can optimize this process and set up automatic scans. As a result, a single computer is designated to scan a specific shared disk and discover the installed software. The data is then automatically populated to all computers on which the same shared disk is mounted. For more information, see: [Discovering software on shared disks \(on page dcxxx\)](#).

- **9.2.12 Collecting utilization data of SAP license metrics with License Administration Workbench 2.0**

Support for collecting SAP license metric utilization data is extended to License Administration Workbench (LAW) 2.0. LAW 2.0 allows the creation and storage of multiple consolidations. SAP Metric Data Collector

uses these consolidations to display the SAP utilization data in BigFix Inventory. For more information, see: [Collecting utilization of SAP license metrics \(on page mcxxix\)](#).

- **9.2.12 Flexible license management by specifying the type of relation between a component and a product as charged or not charged based on the specific license agreement**

BigFix Inventory allows you to specify the individual relation between a product and a component as charged or not charged. For example, when the existing relation between the component and the product is charged, but your license agreement states that the component is not charged.

- **9.2.12 Refreshing scan data on a computer through the Support Page**

When the software scan, capacity scan, or VM Manager Tool scan finishes successfully on a particular computer but its results are not uploaded to the BigFix server, you can force upload of the data. You can do it directly from BigFix Inventory without the need of accessing the BigFix console and running a separate fixlet for each type of scan. For more information, see: [Troubleshooting problems with computers \(on page mcccxxvii\)](#).

- **9.2.12 Resuming a connection to the VM manager**

You can resume a connection to a VM manager that is in the *Invalid credentials - suspended* status by clicking the Resume button on the VM managers panel. For more information, see: [Understanding the VM Managers panel \(on page dccxcii\)](#).

- **9.2.12 Information about full version of already discovered files**

Scanned File Data report displays the full version of discovered files. After upgrade, the data is imported to BigFix Inventory during a number of consecutive data imports to avoid performance issues. Each consecutive import contains data from 10000 computers.

- **9.2.12 Extension of audit snapshot**

Audit snapshot is extended with the following information.

- The PVU audit snapshot package is extended with an `audit_snapshot_summary.csv` report. The report contains a summary of all software products that were installed in your environment during the period for which the snapshot is generated and which are charged. For more information, see: [Content of the audit snapshot \(on page mcliv\)](#).
- Charged column is added to the audit snapshot report. It indicates whether the relation between the component and the product is charged based on the license terms.

- **9.2.12 A new link to Learning Resources under Help** 

The list of quick links under Help  is updated with the link to Learning Resources on the BigFix Security Learning Academy. The site consists of video tutorials for the product.

- **9.2.12 Security enhancements**

- Java upgrade which addresses the following CVEs: CVE-2018-2633, CVE-2018-2618, CVE-2018-2603, CVE-2018-2602, CVE-2018-2579, CVE-2018-1417, CVE-2018-2783, CVE-2018-2794.
- Update of the Xerces library to version 3.2.1 on Linux to keep the scanner secure and reliable.
- **9.2.12 Support for new virtualization technologies**
  - Power VM on Power9 on AIX, IBM i and Linux.
  - KVM on IBM Power8.
  - Management of Citrix Xen through VM manager.

- **9.2.12 Deprecated content**

The following reports and panels are deprecated with this application update:

- Usage Properties
- Package Properties
- UNIX Package Properties
- Current State Values

## Application update 9.2.11

- **9.2.11 Improved license planning and prevention of security risk by setting up and monitoring end of support dates for specific software**

BigFix Inventory provides end of support dates for BigFix software components as announced in BigFix Lifecycle. You can also specify the dates manually, both for IBM and non-IBM components. You can use this information to easily define license demand for the future. You can also use it for security purposes. For example, to determine whether software installed on a computer that is under investigation is still supported.

- **9.2.11 Utilization of the Virtual Processor Core (VPC) metric for BigFix products**

BigFix Inventory measures utilization of the Virtual Processor Core (VPC) metric. The metric is based on the number of virtual cores (vCPUs) that are available to the product. VPC consumption is reported on the physical server level as well as across servers similarly to other license metrics such as PVU. For more information, see: [IBM Virtual processor core \(VPC\) \(on page cmxli\)](#).

- **9.2.11 Introduction of the Package Data Summary report**

The Package Data report lists software packages that are discovered on the computers in your infrastructure. You can find out what is the name of every package, its version, vendor, description, and type. Every occurrence of the package is listed as a separate row on the report.

This application update introduces the Package Data Summary report. The report provides an aggregated view of the discovered packages with a number of times each package appears in the infrastructure. This number is a hyperlink that brings you to the detailed list of computers where the package is deployed.

From the Package Data Summary report, you can generate software signatures with one click. You can also select multiple packages and create signatures in bulk. As a result, the process of creating signatures from

package data is simplified. You can easily create software signatures for up to 20 components at once. Additionally, the report provides information about which packages were already used as signatures so you can focus only on the remaining ones. For more information, see: [Available reports \(on page mlvi\)](#) and [Creating signatures from package data \(on page mxlv\)](#).

- **9.2.11 Reporting information about the detailed version of Windows applications**

Installed software components that are detected based on the presence of specific files are reported with a detailed version which is the same as the file version. The information is shown in the Component Detailed Version column on the Software Classification report. The information can help you decide whether versions of installed software components are covered by your entitlements and are in line with the company policy. It can also be used for security purposes. For example, to check whether the latest security patches are installed or whether versions with vulnerabilities exist in the infrastructure.

- **9.2.11 Discovery of new components from Windows, Corel, Adobe, Symantec and SAP**

The software catalog is extended to discover a number of new components from Windows, Corel, Adobe, Symantec and SAP. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.11.

Below is the list of the newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added discovery capability for Windows products
  - Windows Defender
- Added discovery capability for Corel products
  - CorelDraw Graphic Suite
- Added discovery capability for Adobe products
  - Adobe Flash Player
  - Adobe Lightroom CC
  - Adobe Lightroom Classic
- Added discovery capability for Symantec products
  - Altiris Deployment Solution Agent
  - Altiris Patch Management Agent
  - Symantec Encryption Desktop
  - Veritas Enterprise Vault
- Added discovery capability for SAP products
  - Sybase Central

- **9.2.11 Simplification of updating the software catalog**

The process of updating the software catalog is simplified. You simply need to run the Software Catalog Update task that downloads the software catalog, and automatically uploads it to the BigFix Inventory server during the next import of data. Manual upload of the software catalog through the BigFix Inventory user interface is no longer needed. For more information, see: [Updating server software catalog \(on page cmxciv\)](#).

- **9.2.11 Optimizing data imports thanks to enabling a new schema of the BigFix database**

The process of importing data from BigFix to BigFix Inventory is optimized thanks to using an improved schema of the BigFix database. The improved schema is enabled by default in fresh installations and during upgrades from earlier versions. The only requirement is to have the BigFix server in version 9.5.5 or higher.

- **9.2.11 Preventing accumulation of unprocessed data in case of failing imports**

When the imports of data are failing for a longer period of time, you can enable skipping certain import steps. In such a case, the import continues even if these steps fail. When the import finishes, it is marked as partial because only data from successfully completed steps is processed. Enabling partial imports allows for quicker system recovery after a problematic import and prevents accumulation of unprocessed data. For more information, see the description of the **enable\_partial\_imports** parameter in: [Advanced server settings \(on page dcccl\)](#).

## Application update 9.2.10

- **9.2.10 Reporting usage of products such as Microsoft Office at suite level aggregated per computer**

The Usage per Computer report shows product usage aggregated per computer so that you can easily identify where the product is deployed and how frequently it is used. Based on this information, you can decide whether you want to extend the license for this product or not.

For product suites such as Microsoft Office, the usage is reported for the entire suite rather than separately for Word, PowerPoint, Excel, and other components. By default, the report is calculated regularly after every import, but you can also configure it to be calculated on demand. For more information, see: [Available reports \(on page mlvi\)](#).

- **9.2.10 Collecting and measuring utilization of SAP license metrics**

This application update provides an end-to-end automation process for scheduling generation and retrieval of SAP license utilization reports by leveraging the provided ABAP plug-in. The process can now be handled entirely by the Administrator of BigFix Inventory without the need to engage the SAP Administrator.

Once the SAP license utilization reports are processed by BigFix Inventory, the related SAP license usage data is available on the Resource Utilization report. For more information, see: [Measuring and collecting utilization of SAP license metrics \(on page mcxxxiv\)](#).

- **9.2.10 Adding products to the software catalog**

You can easily add a custom product and the license metric that it uses to the software catalog. You can then assign the relevant components to this product so that your software classification is correct. For more information, see: [Adding a new product to software catalog \(on page ml\)](#).

- **9.2.10 Information about imported part numbers that influenced the initial classification is visible on the Software Classification panel**

Part numbers that are available on Passport Advantage represent products that you purchased and license metrics that these products use. When you upload part numbers to BigFix Inventory, they affect the default

assignment of components. Information about part numbers which caused that a component was assigned to a particular product is displayed on the Software Classification panel. The information gives you a better understanding of rationale behind the default classification that was proposed.

- **9.2.10 REST API for advanced integration and data sharing**

You can retrieve information about utilization of license metrics, query and set thresholds of the utilization as well as query and set values of custom fields by using the `api/sam/v2/license_usage` REST API. For more information, see: [Retrieval of license metric utilization \(v2\) \(on page mdlxix\)](#) and [Setting license metric thresholds and custom field values \(v2\) \(on page mdlxxx\)](#).

You can also retrieve computer properties, including custom computer properties, by using the `computer_details` association for the `api/sam/v2/computers` REST API. For more information, see: [computer\\_details association \(on page mdxcvi\)](#).

- **9.2.10 New computer status - Outdated VM Manager Data**

When hardware inventory data is not retrieved from a VM manager for more than 30 days, default PVU counting is applied and higher utilization might be reported. To allow the Infrastructure Administrator to troubleshoot problems with VM manager connection before they affect the reports, the *Outdated VM Manager Data* status is introduced. The status indicates that there are problems but license metric utilization is not yet affected. For more information, see: [Computer statuses \(on page dcclix\)](#).

- **9.2.10 Stand-alone scanner for monitoring isolated HP-UX computers**

If some of your HP-UX computers cannot be managed from a central location due to security reasons, you can discover software and hardware inventory by using disconnected scans. Scan results are placed in files that can be later on used to import the collected data to the BigFix Inventory server. For more information, see: [Discovering software and hardware with disconnected scanner on Windows and UNIX \(on page dclvi\)](#).

- **9.2.10 Information about the number of partition cores**

The number of partition cores that were assigned to a virtual machine when the peak of the metric value occurred is shown in the Partition Cores column on the All Metrics report and in the audit snapshot. You can use the information to better understand how particular VMs contributed to license metric consumption. For more information, see: [Report columns \(on page mlxxvi\)](#).

- **9.2.10 Discovery of new components from HP, SAP, BMC and other**

The software catalog is extended to discover a number of new components from Oracle, SAP, and Red Hat. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.10.

Below is the list of the newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added discovery capability for HP products
  - HP Application Lifecycle Management
  - HP Business Process Monitor

- HP GlancePlus
- HP OpenView Internet Services
- HP OpenView Performance Agent
- HP-UX Image Viewer Subsystem
- HP-UX LAN Link Product
- Mercury Business Availability Center
- Mercury Interactive Quick Test Professional
- Added discovery capability for SAP products
  - BusinessObjects Enterprise
  - Crystal Reports .NET Server
  - SAP BusinessObjects WebIntelligence
  - SAP Crystal Reports
  - SAP SQL Anywhere Network Database Server
  - Sybase PowerDesigner
  - Sybase Software Developer Kit
- Added discovery capability for BMC products
  - BMC Atrium Orchestrator
  - BMC Batch Impact Manager
  - BMC BladeLogic RSCD Agent
  - BMC Control-M Agent
  - BMC Control-M CM For Advanced File Transfer
- Added discovery capability for CA products
  - CA Erwin Data Modeler
  - CA Application Management .NET Agent
  - CA ARCserve Backup Diagnostic Utilities
  - CA Clarity and Portfolio Management
  - CA ControlMinder
  - CA eHealth
  - CA Erwin Data Modeler License Server
  - CA Erwin Mart Server
  - CA Plex
  - CA Process Automation Orchestrator
  - CA SiteMinder
  - CA SiteMinder Web Agent
  - CA Spectrum
  - CA Unicenter CA-XCOM Data Transport
  - CA Unicenter DSM Agent + Remote Control Plugin
  - CA Unicenter NSM
  - CA Unicenter Software Delivery
  - CA Universal Job Management Agent
- Added discovery capability for Tibco products

- Tibco ActiveMatrix Adapter for Database
- Tibco ActiveMatrix BusinessWorks Service Engine
- TIBCO Designer
- Tibco Hawk
- TIBCO iProcess Workspace
- TIBCO Spotfire
- TIBCO Third-Party Core Libraries
- Added discovery capability for Veritas products
  - NetBackup Bare Metal Restore
  - NetBackup for Microsoft Exchange Server
  - NetBackup for Microsoft SQL Server
  - NetBackup for SAP
  - NetBackup for Vmware
  - NetBackup Remote Administration Console
  - Symantec System Recovery
- **9.2.10 Optimizing the import of data**

You can optimize the process of importing data from BigFix to BigFix Inventory. The option is available for BigFix 9.5.5 and higher. To enable the feature, change the value of the **schema\_next** parameter to true. For more information, see: [Advanced server settings \(on page dccc1\)](#).

- **9.2.10 Serviceability improvements**

To avoid a situation in which the import of data fails due to deadlocks of SQL queries, the step during which the deadlock occurs is retried up to 5 times before the import fails.

- **9.2.10 Support for Docker containers under Red Hat OpenShift**

BigFix Inventory supports software discovery on Docker containers under the Red Hat OpenShift container application platform. For more information, see: [Discovery of software in Docker containers \(on page cdxiv\)](#).

## Application update 9.2.9

- **9.2.9 Reporting of SAP license usage with integration of SAP License Administration Workbench (SLAW) and SAP USMM**

You can have reports of SAP license usage consolidated into BigFix Inventory by integration with the SLAW and USMM tools. The measurements from all SAP systems in the SAP landscape are transferred to the central SAP and combined into one SLAW report. You can integrate the report into BigFix Inventory so that utilization of license metrics for SAP products is shown on the Resource Utilization report. The capability is available for all SAP products that can be measured by SAP SLAW and USMM tools. For more information, see: [Collecting utilization of SAP license metrics \(on page mcxxix\)](#).

- **9.2.9 Discovery of Oracle Database extended to Solaris**

Reporting of Oracle Databases is extended to Solaris 10 and 11 for all discoverable versions. You can retrieve granular information about the edition (Standard or Enterprise), options, Management Packs (including Oracle Real Application Cluster, RAC), and user concurrent sessions of Oracle Databases that are deployed in your environment. For more information, see: [Extended discovery of Oracle Database \(on page mcxiii\)](#).

#### • **9.2.9 Discovery of new components from Oracle, SAP, and Red Hat**

The software catalog is extended to discover a number of new components from Oracle, SAP, and Red Hat. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.9.

Below is the list of the newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added discovery capability for Oracle products
  - Oracle Business Process Management Suite
  - Oracle Database Gateway for APPC
  - Oracle Database Gateway for Informix
  - Oracle Database Gateway for Microsoft SQL Server
  - Oracle Database Gateway for ODBC
  - Oracle Database Gateway for Sybase
  - Oracle Database Gateway for Teradata
  - Oracle Database Gateway for WebSphere MQ
  - Oracle JRockit
  - Oracle Procedural Gateway for APPC
  - Oracle Transparent Gateway for DRDA
  - Oracle Transparent Gateway for Microsoft SQL Server
  - Oracle Transparent Gateway for Sybase
  - Oracle Transparent Gateway for Teradata
- Added discovery capability for SAP products
  - SAP Crystal Server
  - Sybase Adaptive Server Enterprise
  - Sybase Enterprise Connect Data Access
  - Sybase IQ Server
  - Sybase Replication Server
- Added discovery capability for Veritas products
  - Veritas NetBackup Client
  - Veritas NetBackup Media Server
- Added discovery capability for CA Technologies products
  - CA Unified Infrastructure Management
  - CA Unified Infrastructure Management Snap
- Added discovery capability for Red Hat Technologies products

- Red Hat JBoss Data Grid
- Red Hat JBoss Enterprise Application Platform
- Red Hat Satellite Server
- Added discovery capability for AXWAY products
  - Axway Transfer CFT
  - Axway Transfer Interpel
- Added discovery capability for RES products
  - RES ONE Automation Agent
  - RES ONE Automation Console
  - RES ONE Automation Dispatcher

- **9.2.9 Adding custom fields to license metric reports**

You can extend information that is related to software products by adding custom fields on the All Metrics report and its derivatives. The information can be of any type and therefore can help you better identify ownership and purpose of the discovered products as well as license management information such as purchase orders, product owners or other. After the information is added, you can use it to create filtering and grouping criteria such as contract name, placement, allocation, date, or other. For more information, see: [Adding custom information to license metric reports \(on page mcxlix\)](#).

- **9.2.9 Reporting information about the detailed version of software components**

The installed software components that are detected with software identification tags are reported with the detailed version, on condition that the tag collects this information. The information is shown in the Component Detailed Version column. It can help you decide whether versions of the installed software instances are covered by your entitlements and are in line with the company policy. It can also be used for security purposes, for example to check whether the latest patches are installed for security purposes. For the components that are discovered with other detection methods, the values in Component Detailed Version and Component Version columns are duplicated.

- **9.2.9 Stand-alone scanner for monitoring isolated AIX computers**

If some of your AIX computers cannot be managed from a central location due to security reasons, you can discover software and hardware inventory by using disconnected scans. Scan results are placed in files that can be later on used to import the collected data to the BigFix Inventory server. For more information, see: [Discovering software and hardware with disconnected scanner on Windows and UNIX \(on page dclvi\)](#).

- **9.2.9 Filtering the Package Data report to view the packages that can be used to create new software signatures**

Package Data report is extended with information about which of the packages that are discovered in your infrastructure are already used as software signatures. Thus, it is easier to identify which packages can be used to extend software discovery. To narrow down the Package Data report to packages that can be used to create new software signatures, filter the Package Data report by the Recognized and Caused Detection columns.

- **9.2.9 Improved security of storing VM manager passwords**

You can overwrite the default key that is used to encrypt VM manager passwords or change the default password to the VM Manager Tool keystore. For more information, see: [Improving security of storing VM manager passwords \(on page mccccix\)](#).

- **9.2.9 Configuring LDAP server that uses load balancer to preserve server certificates**

If your LDAP server uses load balancer that dynamically changes the list of hosts, and the connection between LDAP and the BigFix Inventory server is secure, set up the BigFix Inventory server to preserve certificates of the LDAP server.

- **9.2.9 User interface improvements**

The following user interface improvements are introduced:

- The look and feel of the application is improved to be more in line with other BigFix applications.
- A panel that is used for configuring the collection of data that is displayed on the Unrecognized Scan Data report is removed. Collection of the data is now enabled by setting a parameter that is available on the Advanced Server Settings panel.

- **9.2.9 Scanner improvements**

The following scanner improvements are introduced:

- The scanner provides support for a wider range of national characters. Character encoding in scan outputs and in scan configuration files is in the UTF-8 format.
- 64-bit version of the scanner is available for AIX. The 32-bit version is removed.

- **9.2.9 Version of the application build visible in PDF reports**

The PDF reports that are generated in BigFix Inventory contain detailed information about the version of the application. The information can be helpful for troubleshooting purposes.

- **9.2.9 Software catalog enhancements**

The Software Catalog column is replaced with a set of columns that define the organization that provides the definition of a component, product, publisher, release, signature and version. For more information, see: [Report columns \(on page mlxxvi\)](#).

- **9.2.9 Changes in PVU calculation on PowerKVM**

Rules of counting subcapacity licenses on PowerKVM systems were clarified and multithreading no longer impacts the number of reported cores. BigFix Inventory is adjusted to the change and thus the number of PVUs that it reports is lower. For more information, see: [Subcapacity \(Virtualization\) License Counting Rules](#).

To ensure that the change in counting rules is reflected in BigFix Inventory, restart the Run Capacity Scan on Virtualization Hosts fixlet and run the import of data. The reported value might not change immediately, as the report shows the peak value.

## Application update 9.2.8

- **9.2.8 Utilization of the Single and Dual Physical Processor metrics for Microsoft Windows Server**

BigFix Inventory measures utilization of the Single Physical Processor and Dual Physical Processor metrics for Microsoft Windows Server. You can use the information to calculate the license demand for this product. The feature is supported for Windows Server 2008 R2 Datacenter, Windows Server 2012 Datacenter, and Windows Server 2012 R2 Datacenter. For more information, see: [Microsoft Single and Dual Physical Processor \(on page cmxix\)](#).

- **9.2.8 Utilization of the Oracle Processor Core metric for Oracle Databases**

Reporting of Oracle Databases is enhanced by processing the core factor and measuring utilization of the Oracle Processor Core metric. You can use the information to calculate the license demand for Oracle Databases without the need to manually calculate core factors. The feature is supported for all discoverable versions of Oracle Database (Enterprise Edition). For more information, see: [Oracle Processor Core \(on page cmxxvi\)](#).

- **9.2.8 Reporting software installed on shared disks based on software templates**

To ensure completeness of software discovery, it is necessary to collect data from shared disks. The solution that was available in the previous application updates could be resource-consuming when shared disks were used extensively. The new solution is based on creating software templates which allows for limiting the impact of the shared disks scan on the performance of the infrastructure.

To report software that is installed on a shared disk, one of the computers on which the disk is mounted is scanned to create a software template. Then, the template is replicated within a computer group that contains other computers on which the same disk is mounted. For more information, see: [Discovery of software on shared disks and Limiting scope of automated scan \(on page dcxxxvi\)](#).

- **9.2.8 Collecting executable files based on application usage**

To improve software discovery on Linux and Solaris systems, you can use files associated with processes that have been run on the computers in your infrastructure, regardless of their extension. These files, with supplementing information such as path and size, are available on the Scanned File Data report and can be used to create custom discovery and usage signatures for software components. For more information, see: [File system scan \(on page dcxiv\)](#).

To use this feature, you require the BigFix server and client in version 9.5.5 or higher. Collecting the files is enabled by default for new installations. If you are upgrading from earlier versions, restart the Initiate Software Scan actions, and start them again by using the new version of the fixlet. Ensure that you run the file system scan and application usage statistics scan.

- **9.2.8 Version 2 of REST APIs for software and hardware inventory**

New REST APIs for software inventory (`api/sam/v2/software_instances`) and hardware inventory (`api/sam/v2/computers`) provide the following improvements:

- Historical information about uninstalled software and removed computers
- Complete information about software classification, including product to which the component is assigned and its license metric as well as the status of confirmation, exclusion, and suppression
- Associations that allow for retrieving additional hardware inventory information, computer health or usage data with a single REST API call
- Improved security to ensure that a user who has access to a subset of computers can retrieve data only from these computers

The APIs are planned to substitute the following existing APIs: `software_inventory` and `computer_systems`. For more information, see: [Retrieval of software inventory \(v2\) \(on page mdxliv\)](#) and [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#).

- **9.2.8 Assigning a new license metric to an existing product**

When your license terms define that a particular product uses a specific license metric but such a relation is not available in the software catalog, you can assign any of the license metrics available in BigFix Inventory to any of the products. It gives you more flexibility to accommodate the assignment of license metrics to products in accordance with your contract terms. For more information, see: [Assigning an additional metric to a product \(on page ml\)](#).

- **9.2.8 Configuration of user account lockout**

To increase BigFix Inventory security, you can set conditions under which user account is locked. You can set the maximum number of failed login attempts, the period within which these attempts must occur for the account to be locked, and the period for which the account is locked. By default, user account is locked for 5 minutes after the user attempts to log in to BigFix Inventory more than 10 times within 5 minutes. For more information, see: [Configuring user account lockout \(on page mcccxxiii\)](#).

- **9.2.8 Stand-alone scanner for monitoring isolated Solaris computers**

If some of your Solaris computers cannot be managed from a central location due to security reasons, you can discover software and hardware inventory by using disconnected scans. Scan results are placed in files that can be later on used to import the collected data to the BigFix Inventory server. For more information, see: [Discovering software and hardware with disconnected scanner on Windows and UNIX \(on page dclvi\)](#).

- **9.2.8 Automatic decommissioning of computers that are inactive for a specified period of time**

When infrastructure management policy makes a process of deleting decommissioned clients in BigFix difficult or impossible, you can enable automatic decommissioning of inactive computers directly in BigFix Inventory. Inactive computers are then decommissioned after a specified period of time, and are no longer included in metric calculation. For more information, see: [Automatically decommissioning inactive computers \(on page dcccxc\)](#).

- **9.2.8 Fixlet for collecting logs to troubleshoot problems with computers**

If you are asked to provide data for troubleshooting problems with computers in your infrastructure, you can run the Collect Logs from Endpoints fixlet, and provide the generated output to BigFix Support. The output contains log files needed for troubleshooting purposes. For more information, see: [Troubleshooting problems with computers \(on page mccccxxvii\)](#).

- **9.2.8 Viewing all signatures that are defined for a component in the software catalog**

When a component that is installed in your infrastructure is not discovered, you can check signatures that are defined for that component in the software catalog. You can then use this information to troubleshoot software discovery. To find the list of signatures, use the Software Catalog widget and search for the component. The list of all signatures is displayed on the component details page. For more information, see: [Troubleshooting software discovery \(on page mccccxx\)](#).

- **9.2.8 Improvements of the VM Manager tool**

VM Manager tool is further enhanced to attempt to automatically fix common problems with the VM manager connection parameters. For example, it tries using a default port or a different URL suffix as well as changing the VM manager type. It also tries to correct more than one mistake at a time.

- **9.2.8 Improved browsing of the software catalog content**

Browsing the Software Catalog report is improved so that it is more intuitive and consistent.

- **9.2.8 Serviceability improvements**

To improve serviceability of the application, the following enhancements are introduced:

- BigFix Inventory can reconnect to its database when the active connection was reset or closed without the need of restarting the application server.
- Logging of the disconnected scanner on IBM i is improved.

- **9.2.8 Information about supported operating systems can be dynamically generated through SPCR**

Information about operating systems and hypervisors that are supported by each component of BigFix Inventory including the server, the BigFix client, and disconnected scans is moved to the [Software Product Compatibility Reports \(SPCR\)](#). You can dynamically generate reports with information about specific operating system or hyper visor, as well as selected components. To view predefined reports generated per component and per operating system, see: [Detailed System requirements \(on page cdxxxii\)](#).

- **9.2.8 Support for new operating systems and public clouds**

You can install the BigFix Inventory server on Windows Server 2016. You can also identify computers as running on the Google Compute Engine public cloud. For more information, see: [Detailed System requirements \(on page cdxxxii\)](#).

- **9.2.8 Discovery of new components from Oracle, SAP, and Red Hat**

The software catalog is extended to discover a number of new components from Oracle, SAP, and Red Hat. To discover the components, ensure that you upgrade BigFix Inventory to version 9.2.8.

Below is the list of the newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Added signatures for Oracle products
  - Oracle Linux
  - Oracle Data Integrator
  - Oracle JDeveloper
  - Oracle Service Bus
- Added signatures for SAP products
  - SAP SQL Anywhere Personal Database Server
  - SAP SQL Anywhere Network Database Server
  - SAP SQL Anywhere High Availability Option
- Added signatures for Red Hat products
  - Red Hat JBoss Fuse
  - Red Hat JBoss Developer Studio
  - Red Hat JBoss Enterprise Application Platform
  - Red Hat JBoss Web Server
- Added signatures for TIBCO Rendezvous
- Added signatures for SUSE Linux Enterprise Server for SAP Applications

## Application update 9.2.7

- **9.2.7 New Software Classification panel replaces the BigFix Software Classification panel**

The Software Classification panel introduces a new way of looking at software inventory and relations between the discovered components and licensable products. It provides a flat structure with software installations broken into single components, which makes it easier to view software assets and manage relations between them. The new panel provides functions such as reassigning, suppressing and sharing components, excluding products as well as confirming software classifications. The panel replaces the existing BigFix Software Classification panel. For more information, see: [Software Classification panel \(on page cmlviii\)](#).

- **9.2.7 Creation of custom classification rules**

When you are assigning a component, or excluding a product, you can create a custom classification rule that will be applied when the same component or product is discovered in the future. It allows for automating actions on analogical components or products, and facilitates the process of software classification. For more information, see: [Creating and managing custom rules \(on page cmlxxxiii\)](#).

- **9.2.7 Utilization of the Physical Core and Virtual Core metrics for Microsoft SQL Server with Software Assurance**

BigFix Inventory measures utilization of the Physical Core and Virtual Core metrics for Microsoft SQL Server. You can use this information to calculate the demand for Microsoft SQL Server licenses. The feature is

supported for Microsoft SQL Server 2012, 2014, and 2016 (Standard and Enterprise edition) with Software Assurance. For more information, see: [<deprecated> Microsoft Physical Core with SA \(on page cmxx\)](#) and [<deprecated> Microsoft Virtual Core with SA \(on page cmxxiv\)](#).

- **9.2.7 Utilization of license metrics for VMware v Center and v Sphere**

You can retrieve information about license metric utilization for VMware v Center and v Sphere. You can use this information to calculate the demand for VMware licenses. The data is collected by the VM Manager Tool and is displayed on the Resource Utilization report. For more information, see: [Measuring license metric utilization of VMware products \(on page mcxxiv\)](#).

- **9.2.7 Discovery of SAP components**

You can retrieve information about SAP components that are installed on Linux and AIX computers in your infrastructure. The discovery is supported for all SAP components that are based on SAP NetWeaver 7.x. For more information, see: [Discovering SAP components \(on page mcxxviii\)](#).

- **9.2.7 Utilization of the Install Instances metric for BigFix products**

The All Metrics report is extended to include information about the utilization of the Install Instances metric for BigFix products. You can see not only the current number of installed product instances, but also how that number changed over time. You can also set a threshold, to easily monitor when the number of installed instances exceeds your expectations. For more information, see: [License metric utilization \(on page mcxlii\)](#), and [Reported license metrics \(on page cmxii\)](#).

- **9.2.7 Overview of license metrics that are used by BigFix products in your infrastructure**

The All Metrics report is extended to include not only products with license metrics for which utilization is calculated, but also all other BigFix products in your infrastructure. Even though metric utilization might not be calculated for these products, it gives you an overview of all IBM metrics for which you should have licenses. For more information, see: [License metric utilization \(on page mcxlii\)](#) and [Reported license metrics \(on page cmxii\)](#).

- **9.2.7 Discovery of software and hardware inventory with disconnected scans on Windows and Linux**

If there is no direct connection between some of the Windows or Linux computers in your infrastructure and the BigFix server, you can discover software and hardware inventory by using disconnected scans. Scripts that are provided in the disconnected scanner package initiate software and capacity scans, and prepare scan results that you later upload to BigFix Inventory. For more information, see: [Discovering software and hardware with disconnected scanner on Windows and UNIX \(on page dclvi\)](#).

- **9.2.7 REST API for adding and changing VM managers**

If you have a large number of VM managers to define, you can use REST API requests to add and change VM managers in your infrastructure. For more information, see: [REST API for managing VM managers \(on page mdccvi\)](#).

- **9.2.7 Adding custom part numbers to the catalog**

Custom part numbers can be assigned to products with custom deals, or any other software that is not included in the software catalog by default. Custom part numbers that you add are matched against the part numbers that you obtain from Passport Advantage to improve the accuracy of bundling assistance. You can check which of your uploaded part numbers were matched against the catalog part numbers or custom part numbers on the Software Catalog report. For more information, see: [Part numbers \(on page cml\)](#) and [Adding custom part numbers \(on page cmlii\)](#).

- **9.2.7 Extension of two bundling rules: bundling tags and part numbers**

The bundling tags and part numbers rules are extended to increase the accuracy of bundling assistance. The rules now use information contained in part numbers to assign components not only to proper products but also to proper license metrics. For more information, see: [Bundling tags \(on page cmxlv\)](#) and [Part numbers \(on page cml\)](#).

- **9.2.7 Two-phase matching of file signatures**

When a file signature used for discovering a component on Windows had size and version specified, the component was discovered only when both properties matched. Applications that are frequently patched required separate signatures for every patch. Currently, if a patch modifies only the size of the file signature, the signature will cause software discovery.

- **9.2.7 Configuring security policy for user passwords**

If your company has a security policy for user passwords, or you want to improve the application security, you can configure BigFix Inventory to require that user passwords fulfill specific requirements. By default, user passwords are required to be at least 8 characters long and contain one lowercase character, one uppercase character, and one digit. For more information, see: [Configuring security policy for user passwords \(on page mcccxiv\)](#).

- **9.2.7 Improvements of the VM Manager tool**

VM Manager tool is enhanced to attempt to automatically fix the most common problems with the VM manager connection parameters such as adding default URL suffix, correcting the user name format, and testing the WinRM and PowerShell protocols for Hyper-V VM managers. For information about disabling this functionality, see: [VM Manager Tool settings \(on page dcccxxviii\)](#).

- **9.2.7 New look and feel of the user interface**

Look and feel of the user interface is updated for improved experience. The possibility of selecting all columns while configuring the report view is added.

- **9.2.7 Support for new operating systems and virtualization technologies**

You can use Microsoft Hyper-V Server 2016, Xen Hyper visor, Oracle VM, RHEV-M 3.6 as well as VMware v Center, and ESXi 6.5 as supported virtualization technologies on selected operating systems. You can also install the BigFix client on AIX VIOS. For more information, see: [Detailed System requirements \(on page cdxxxii\)](#).

## • **9.2.7 Discovery of new components from Microsoft, SAP, and Oracle**

The software catalog is extended to discover a number of new components from Microsoft, SAP, and Oracle. To discover the components, ensure that you upload the software catalog published in March 2017, and upgrade BigFix Inventory to version 9.2.7.

Below is the list of the newly added components. To learn about their exact versions, use the Software Catalog widget in BigFix Inventory to browse the catalog content.

- Components of Microsoft SQL Server
  - Analysis Services
  - Integration Services
  - Master Data Services
  - Reporting Services
- Components of SAP
  - SAP Crystal Reports
  - SAP Crystal Reports Viewer
- Components of Oracle
  - Oracle Adapter
  - Oracle B2B
  - Oracle BPEL Process Manager
  - Oracle Business Process Management Suite
  - Oracle Business Rules
  - Oracle Coherence
  - Oracle Human Workflow
  - Oracle Mediator
  - Oracle SOA Suite
  - Oracle Virtual Assembly Builder
  - Oracle WebLogic Server Enterprise Edition
  - Oracle WebLogic Suite
  - Oracle WebLogic Server
  - Service Architecture Leveraging Tuxedo
  - Tuxedo Jolt
  - Tuxedo Message Queue
  - Tuxedo Server
  - Tuxedo System and Application Monitor Plus
  - MySQL Connector C
  - MySQL Workbench
- TIBCO Enterprise Message Service

## Application update 9.2.6

- **9.2.6 Preview Feature: Utilization of the physical core-based metric for Microsoft SQL Server**

BigFix Inventory measures utilization of the physical core-based licenses for Microsoft SQL Server. You can use this information to calculate the demand for Microsoft SQL Server licenses. The feature is supported for versions 2012, 2014, and 2016 (Standard and Enterprise edition). For more information, see: [<deprecated> Microsoft Physical Core with SA \(on page cmxx\)](#).

- **9.2.6 Preview Feature: Extension of the Software Classification panel**

The Software Classification panel introduces a new way of looking at software inventory and relations between the discovered components and licensable products. It provides a flat structure with software installations broken into single components, which makes it easier to view software assets and manage relations between them. The preview panel is extended with the following functions:

- Selecting the license metric of a product to which you are assigning the component
- Excluding a product or a component from license calculations, for example when it is a trial version
- Viewing information about components that were installed during a specific period and their assignment

- **9.2.6 Enhanced discovery of Microsoft Exchange editions**

You can retrieve information about editions of Microsoft Exchange Servers that are installed in your infrastructure and verify how many licenses are needed for each edition. For more information, see: [Discovering Microsoft Exchange edition \(on page mcxxiii\)](#).

- **9.2.6 Reporting high water mark of Oracle Database user sessions**

BigFix Inventory retrieves the number of user sessions that are registered into the Oracle Databases deployed in your environment, and provides their high water mark. You can use this information to calculate the demand for the Oracle Named User Plus license. For more information, see: [Metering the number of Oracle Database concurrent sessions \(on page mcxix\)](#).

- **9.2.6 Measuring application usage on Mac OS X**

Information about application usage for software that is installed on Mac OS X is available on the Software Installations report. You can use this information to verify whether extension of license is needed for particular software instances based on their frequency of use.

To enable collecting application usage on Mac OS X, stop actions created by the Initiate Software Scan task that are currently running. Then, activate the Application Usage Statistics analysis, and start the package data and application usage statistics scans by using the updated task. For more information, see: [Activating the analyses \(on page dcvii\)](#) and [Initiating software scans \(on page dcx\)](#).

- **9.2.6 Utilization of the Install Seats metric for products discovered by SWID tags**

The All Metrics report is extended to include information about the utilization of the Install Seats metric for non-IBM products that are discovered by SWID tags. You can now see the number of installations of software

that is discovered by SWID tags and for which the software catalog does not define license details. For more information about SWID tags, see: [Support for ISO/IEC 19770-2 \(on page cdxvii\)](#). For more information about the Install Seats metric and the All Metrics report, see: [License metric utilization \(on page mcxliii\)](#).

- **9.2.6 Upload of PVU table and software catalog during the upgrade**

During the upgrade, new versions of the software catalog and PVU table are uploaded to BigFix Inventory to ensure that the latest software is properly discovered and that new processors are correctly matched. The versions that are uploaded are the newest ones that were available during the release of the application update to which you are upgrading. For more information, see: [Upgrading BigFix Inventory \(on page dccxxiii\)](#).

- **9.2.6 Reduced impact of scans due to the optimization of the scanner cache folder on the endpoints**

The scanner cache folder is used to store information about scanned files and directories in your file system. By knowing the hierarchy of files, the scanner can locate them quicker, which results in shorter scans. The amount of disk space that is needed for the cache depends on the number of files that are being scanned.

Fresh installations of BigFix Inventory use the optimized cache which includes only files that are relevant for the types of software scans that you are running. The optimization results in a reduced size of the cache on the monitored computer. Scanner cache settings are not changed during the upgrade. For more information, see: [Optimizing scanner cache configuration \(on page dclxxxiv\)](#).

- **9.2.6 Searching the software catalog by part number**

The Software Catalog report provides information about product part numbers and associated license metrics. Thus, you can check which products your part numbers represent and what license metrics they use. This information facilitates the process of software classification. You can also verify whether a particular part number is contained in the current software catalog, and thus influences bundling assistance.

- **9.2.6 Best practices for database backup**

Documentation provides best practices for creating database backups. For more information, see: [Backing up and restoring the database \(on page dccclxxvii\)](#).

- **9.2.6 Fixlet version visible in the BigFix client logs**

The BigFix client log contains information about versions of fixlets that were run on the specific computer. The information can be used for troubleshooting purposes, for example to determine whether the action should be restarted because it was created by an old version of the fixlet. For information about the location of client logs, see: [Component log files](#).

- **9.2.6 Additional options for migrating from License Metric Tool and Tivoli Asset Discovery for Distributed 7.x**

You can decide whether you want to migrate the following items that used to be migrated by default:

- Software bundlings
- Software exclusions
- VM managers

- **9.2.6 Improved performance of generating CSV reports**

Generation of CSV reports is now faster and consumes less resources.

- **9.2.6 Support for new operating systems and virtualization technologies**

You can detect software that is installed on Windows Server 2016, Ubuntu 16 for IBM Power Systems, and SUSE Linux 12 for IBM Power Systems on Little Endian Architecture. You can use XenServer and Citrix XenServer as supported virtualization technologies on selected operating systems. For more information, see: [Detailed System requirements \(on page cdxxxii\)](#).

## Application update 9.2.5

- **9.2.5 Utilization of the Install metric for non-IBM products**

Information about non-IBM products that use the Install metric is available on the All Metrics report. You can see not only the current number of computers on which the product is installed but also how that number changed over time. You can also set a threshold, to easily monitor when the number of installed instances exceeds your expectations. For more information, see: [License metric utilization \(on page mcxlii\)](#).

- **9.2.5 Preview Feature: Extension of the Software Classification panel**

The Software Classification panel introduces a new way of looking at software inventory and relations between the discovered components and licensable products. It provides a flat structure with software installations broken into single components, which makes it easier to view software assets and manage relations between them. The preview panel is extended with the following functions:

- Selecting and assigning multiple components at once
- Confirming the assignment of components
- Classifying products from vendors other than BigFix

- **9.2.5 Bundling tags for improved software classification**

Bundling tags facilitate the process of software classification allowing you to save time and effort related to analyzing to which product a particular component belongs. They contain information about the part number of a product to which the instance of a component should be assigned. Thus, they increase accuracy of the automated bundling. For more information, see: [Bundling tags \(on page cmxlvii\)](#).

- **9.2.5 Software discovery on IBM i**

You can discover software that is installed on the IBM i systems. The discovery is based on a semi-automatic procedure that uses scripts to initiate software and capacity scans. Because there is no direct connection between the IBM i systems and the BigFix server, the scans that are initiated on these systems are called *disconnected scans*. Although the scans run automatically, you must perform several manual actions, such as installing the scanner, or uploading the results to BigFix Inventory. For more information, see: [Discovering software and hardware on IBM i \(on page dclxxxviii\)](#).

- **9.2.5 Software discovery in Docker containers**

Docker is a platform that allows for automating the deployment of applications inside software containers. BigFix Inventory discovers software that is installed inside Docker containers. It also measures license metric utilization of the discovered BigFix products. For more information, see: [Discovery of software in Docker containers \(on page cdxiv\)](#).

- **9.2.5 Determining the usage of Virtual Processor Cores (VPC)**

You can use BigFix Inventory to track the consumption of Virtual Processor Cores (VPC). VPC is a unit of measure by which a program can be licensed. It can be considered as a physical processor core, if the server is not partitioned for virtual machines, or as a virtual core assigned to a virtual machine. For more information, see: [Determining the usage of Virtual Processor Cores \(VPC\)](#).

- **9.2.5 Information about software scan duration**

Information about the duration of the software scan is available in the Software Scan Status analysis. You can use this information, for example, to review the scanner timeout settings or verify whether optimization is needed to reduce the length of the scan.

- **9.2.5 New VM manager status - Insufficient rights**

The *Insufficient rights* status indicates that no data was collected from the VM manager because the user that is defined for this VM manager does not have sufficient rights.

- **9.2.5 Information about processor brand string**

Information about the processor brand string is available on the Hardware Inventory report. It contains a full specification of the processor including its brand, model, and speed as read from the computer operating system. You can use this information to apply vendor Core Factor values.

- **9.2.5 Forcing reupload of software scan results**

When the import of software scan results fails, or when software is not reported properly on the Software Installations report, you can use the Force Reupload of Software Scan Results task to troubleshoot the problem.

- **9.2.5 Installing the scanner in an alternative path**

You can choose whether you want to install the scanner in the default directory (on the `C:` or `opt` drive) or the directory where the BigFix client is installed. This option is useful, for example, when the security policy in your company does not allow for installing software on the `C:` or `opt` drive. For more information, see: [Installing the scanner \(on page dcviii\)](#).

- **9.2.5 Support for new operating systems and virtualization technologies**

You can detect software that is installed on Debian 8 for x86 and Ubuntu 16 for x86. You can use z/KVM as a supported virtualization technology on SUSE Linux 12.

## Application update 9.2.4

- **9.2.4 Setting metric thresholds for BigFix products**

You can specify a metric threshold that is used to show how the metric consumption that you would like to maintain relates to the actual consumption. You can then schedule emails to be sent whenever metric consumption for any product exceeds the threshold. For more information, see: [Setting license metric threshold \(on page mcxlvj\)](#).

- **9.2.4 Sharing feedback**

If you encounter problems with panels and reports or think that some of them might be improved, you can quickly share your feedback by simply clicking the **Send Feedback** button that is in the top-right corner of the user interface. Each panel has a separate button that creates an email message with the panel name, version of the application that you are using, and your comment. For more information about other available communication channels, see: [Give us feedback \(on page cdxxx\)](#).

- **9.2.4 Preview features**

Preview features allow you to work with the newly implemented functions and to provide your feedback to influence their final form. These features are subject to BigFix Support. For more information, see: [Preview features \(on page ccclxiv\)](#).

- **9.2.4 Improvements for VM managers**

The following improvements are introduced in the area of VM managers:

- Until now, the VM Managers panel listed only VM managers that are managed in central mode. Now, it also lists those that are managed in the distributed mode. Options such as editing, deleting, or testing connection are still applicable only for the former. However, the read-only view of the latter gives you a clear overview of all VM managers that are defined in your infrastructure. For more information, see: [Understanding the VM Managers panel \(on page dccxcij\)](#).
- VMware v Sphere Fault Tolerance allows for reducing virtual machine and application downtime to zero. If a server failure occurs, a live shadow instance of a virtual machine is created. The instance is up-to-date with the primary virtual machine. BigFix Inventory can handle situations when shadow instances of virtual machines are created and can properly calculate PVU utilization of software that is installed on such machines.
- When VM managers in your infrastructure have status other than OK, and you are not sure how to troubleshoot the problem, you can simply click the name of the status. You will be redirected to a documentation page that provides the most common reasons for each status and how to proceed.
- When the security policy in your company does not allow for transferring VM manager credentials through the network, you can configure BigFix Inventory so that the credentials are not transferred to the server. They are also not displayed on the VM Managers panel when you edit the VM manager. For more information, see: [Advanced server settings \(on page dcccl\)](#).

- **9.2.4 API to retrieve cluster information**

Information about the cluster to which a computer belongs is available on the Hardware Inventory report. Now, the information can also be retrieved through REST API. It can be then used, for example, to calculate license demand for Oracle or Microsoft. For more information, see: [Retrieval of clusters \(on page mdccclxii\)](#).

- **9.2.4 Support for BigFix database restoration**

You can enable an import that retrieves all software scan data from the restored BigFix database. Such an import is time-consuming and should be run only when problems with incomplete data occur after the database is restored. When you enable the option, the import runs once and returns to the normal operation mode. For more information, see: [Database problems \(on page mcccclx\)](#).

- **9.2.4 Optimization of the scanner cache configuration**

The scanner cache folder stores information about scanned files and directories in your file system. By knowing the hierarchy of files, the scanner can locate them quicker, which results in shorter scans. The amount of disk space that is needed for the cache depends on the number of files that are being scanned. If the current location of the cache folder cannot ensure sufficient disk space, you can optimize the cache. Thanks to the optimization, the cache includes only files relevant for the types of software scans that you are running. For more information, see: [Optimizing scanner cache configuration \(on page dclxxxiv\)](#).

- **9.2.4 Discovery of software that is not in the current software catalog**

When BigFix software is discovered with a software ID tag but is not in the current catalog, a warning sign is displayed on the Software Catalog widget. It indicates that a newer version of the catalog needs to be uploaded. For more information, see: [Support for ISO/IEC 19770-2 \(on page cd xvii\)](#).

- **9.2.4 Support for new operating systems and virtualization technologies**

The BigFix client can be installed on Oracle Linux 7 and on Power Linux on the Little Endian architecture. Support is added for PowerKVM virtualization technology. Additionally, support for Multiple Shared Processor Pools is extended to Linux. For more information, see: [Detailed System requirements \(on page cd xxxii\)](#)

## Application update 9.2.3

- **9.2.3 Support for Unicode**

Starting from V9.5, the BigFix Platform can gather data from BigFix clients that are deployed in different geographical locations and thus use different code pages and languages. The data is encoded into UTF-8 format, and reported back to the BigFix server. As a result, regardless of the system and encoding that the clients use, the data is correctly displayed both in BigFix and BigFix Inventory. For more information, see: [Unicode \(on page cd xx\)](#).

- **9.2.3 Collecting file MD5 and SHA256 checksums for security purposes**

Checksums are long strings that describe the content of files and act as their fingerprints. You can enable the calculation of checksums for files on your computers to check their integrity and to ensure that they were not altered or tampered with. For more information, see: [Collecting file checksums \(on page mcccxxv\)](#).

- **9.2.3 Conditional report emails based on the number of rows in the report**

You can configure reports to be emailed to specified recipients regularly or when a specific number of rows is exceeded in the report. This option is useful for alerting the recipients about changes to the key data or when the recipients do not work with BigFix Inventory, yet must have access to the reports. For more information, see: [Scheduling report emails \(on page mcix\)](#).

- **9.2.3 Controlling scan schedule directly from the BigFix Inventory user interface**

The **Scan Configurations** panel is extended to allow for basic configuration of software scans per computer groups directly from the BigFix Inventory user interface. Use this method as an alternative to scheduling scans from the BigFix console.

- **9.2.3 Data visibility and license reporting per computer group limited to authorized users**

Improvements that are introduced in the area of data visibility and license reporting per computer group include:

- Limitation of information that is displayed on the Audit Trail report to actions performed only within the computer group to which the user who views the report has access.
- Possibility of enabling and disabling subcapacity calculations per computer group. For more information, see: [Setting up computer groups \(on page dxcvi\)](#).
- Reporting historical data for deleted computers within the scope of a computer group.
- Introduction of permissions to upload part numbers and view contracts. For more information, see: [Roles \(on page dxc\)](#).

The improvements give more flexibility and better management of data visibility in situations where computers are divided into groups and each group is managed by a different person. For example, in the service provider's environment or when computers are divided into regions or business units.

- **9.2.3 Replacing Software Knowledge Base Toolkit with BigFix Inventory for managing the software catalog content**

You can use a tool that moves the custom catalog content from Software Knowledge Base Toolkit to BigFix Inventory. Then, you can stop using Software Knowledge Base Toolkit and start managing the catalog content entirely in BigFix Inventory. Managing signatures in one application instead of two saves your time, facilitates the work, and reduces maintenance costs.

- **9.2.3 Flexible date filtering**

You can use time filters to display data starting from or ending at a particular date. For example, you can view computers that were not seen within the last week or contracts for which maintenance ends within a month. When you combine this feature with conditional report emails, you get instant notifications about changes within your environment including reports on which data fulfills specific time conditions.

- **9.2.3 Collecting host serial numbers**

You can collect serial numbers of VM manager hosts and define the format in which the information is displayed on the reports. For more information, see: [Advanced server settings \(on page dccc1\)](#).

- **9.2.3 Forcing capacity scan data uploads**

When the import of capacity scan data fails, you can run a single capacity scan and force the upload of its results to ensure that the data on reports is refreshed. For more information, see: [Initiating the capacity scan on all computers \(on page dcxix\)](#).

- **9.2.3 Changing advanced server settings from the application user interface**

You can change advanced settings of the BigFix Inventory server, for example settings related to the configuration of the central VM Manager tool, on the **Advanced Server Settings** panel. Additionally, a number of new parameters is added. For more information, see: [Configuring advanced server settings \(on page dcccxlx\)](#).

- **9.2.3 Manually adjusting the PVU per core value from the BigFix Inventory user interface**

In earlier versions of BigFix Inventory, the PVU per core value was adjusted by using a fixlet. Starting from this version, the fixlet is deprecated. The PVU value can be changed on the **Hardware Inventory** panel instead. For more information, see: [Changing the PVU per core value \(on page mcdxxiv\)](#).

- **9.2.3 Support for new operating systems and virtualization technologies**

The BigFix client can be installed on Cent OS 6 and 7. Red Hat Enterprise Linux 7 and SUSE Linux Enterprise Server 12 are supported on z/VM. Additionally, support for RHEV-M 3.5 is provided. For more information, see: [Detailed System requirements \(on page cdxxii\)](#).

## Application update 9.2.2

- **9.2.2 License reports per BigFix subcapacity region**

BigFix subcapacity licensing rules define three regions. To properly calculate subcapacity values for products that are installed in multiple regions, generate the audit snapshot for each region. Then, for every product, sum up the subcapacity values from all regions. The value that you obtain is the overall subcapacity usage for the particular product. For more information, see: [Virtualization Capacity License Counting Rules, BigFix subcapacity regions \(on page cdxxiv\)](#) and [Tutorial: Reporting subcapacity usage per computer group \(on page mccxxxiv\)](#).

- **9.2.2 License reports per organizational business unit**

You can manage software and view reports per organizational business unit. To do this, divide the computers in your infrastructure into groups that represent these units. Then, create dedicated users, each with access only to a particular computer group. For more information, see: [Organizational business units \(on page cdxxix\)](#) and [Tutorial: Reporting subcapacity usage per computer group \(on page mccxxxiv\)](#).

- **9.2.2 License reports in the service provider environment**

A service provider is a company that provides other organizations with access to software installed on machines that are owned and maintained by the service provider. **9.2.2** Available from 9.2.2. To properly calculate subcapacity values in the service provider environment, divide the computers in your infrastructure into groups that represent your customers. Then, manage software and generate audit snapshots separately for each customer. For more information, see: [Service providers \(on page cdxix\)](#) and [Tutorial: Managing software in the service provider environment \(on page mcccxl\)](#).

- **9.2.2 Creating extended signatures**

Extended software signatures are based on data elements such as file names, registry keys, or specific strings. They allow for discovering software that otherwise might not be discovered with file or package signatures. You can now create extended software signatures directly in BigFix Inventory without the necessity of installing Software Knowledge Base Toolkit. For more information, see: [Creating extended signatures](#).

- **9.2.2 Software Knowledge Base Toolkit is being sunset**

Software Knowledge Base Toolkit was used by BigFix Inventory users to create complex signatures, and was required at the time when BigFix Inventory could not provide equal capabilities. Now, with the possibility of creating complex signatures directly in BigFix Inventory, Software Knowledge Base Toolkit becomes deprecated and will be discontinued.

- **9.2.2 Consolidated endpoint information**

Hardware information, such as processor details, is available on the Computers, Software Installations, and Oracle Databases reports. Combination of software and hardware information on a single report facilitates the calculation of processor-based and core-based licenses for non-IBM products.

- **9.2.2 Disabling the calculation of extended software aggregates**

Software aggregates are pieces of data that are gathered during software scans. They are processed during the successive data imports and later on displayed on the Inventory Exploration report. You can disable the calculation of extended software aggregates to reduce the length of data imports in very large environments where multiple computer groups are defined. For more information, see: [Disabling the calculation of extended software aggregates \(on page mcdxliii\)](#).

- **9.2.2 Configuring location of the scanner cache folder**

The scanner cache folder is used to store information about scanned files and directories in your file system. By knowing the hierarchy of files, the scanner can locate them quicker, which results in shorter scans. Change the location of the cache folder if the default one cannot ensure sufficient disk space. For more information, see: [Optimizing scanner cache configuration \(on page dclxxxiv\)](#).

- **9.2.2 Identifying VM manager duplicates**

You can use the `vmman_collecting_hostnames_enabled` parameter to identify duplicate UUIDs on VMware vSphere. When you set the parameter to true, host names of virtual machines with duplicate UUIDs are written in the log file. For more information, see: [VM Manager Tool settings \(on page dcccxxviii\)](#).

- **9.2.2 Defining time range of reports in relation to the current date**

You can define the time range of reports in relation to the current date. Then, the report provides you with data for a specific period, for instance the last 2 weeks.

- **9.2.2 REST API for retrieving raw scan results**

You can retrieve raw scan results through REST API to improve the monitoring of your environment by quickly discovering software that was installed or modified recently. Shortened data imports cause that data about installed software reaches the server more quickly. They also allow for increasing the number of imports that you run each day. For more information, see: [REST API for retrieving raw scan results \(on page mdcxxvii\)](#).

- **9.2.2 Support for new platforms**

The BigFix client can be installed on SUSE Linux Enterprise Server 12 (x86). Additionally, support for Red Hat Enterprise Linux 7 on Power 8 is provided. For more information, see: [Detailed System requirements \(on page cdxxxii\)](#).

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Related information

[Software Use Analysis versions](#)

## <discontinued> Updates and patches for BigFix Inventory up to version 10.0.13.1

This page provides information about application updates released for BigFix Inventory.



**Notice: Starting from BigFix Inventory version 10.0.13.2, this section will not be updated to follow a single source of information through [BigFix Forum - Inventory \(Release Announcements\)](#). Please refer to the [Inventory release announcements for release-specific highlights](#).**

Table 1. Updates and patches

Update	Site version	Target customers	Comments and upgrade considerations	More information
<b>10.0.13.1</b> Application update 10.0.13.1 <i>July, 2023</i>	169	All customers		<a href="#">Release notes (on page cxxxv)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Added new publishers</li> <li>• Discovery improvements</li> <li>• Defect fixes</li> </ul>				
<p><b>10.0.13</b> Application update <b>10.0.13</b></p> <p><i>June, 2023</i></p> <ul style="list-style-type: none"> <li>• Installation Date and Path collection for Linux packages</li> <li>• Security updates</li> <li>• Fixlet improvements</li> <li>• Defect fixes</li> <li>• Discovery improvements</li> </ul>	168	All customers	You must upgrade BigFix Inventory server to 10.0.13 to allow the new capabilities work for you.	Release notes
<p><b>10.0.12.2</b> Application update <b>10.0.12.2</b></p> <p><i>May, 2023</i></p> <ul style="list-style-type: none"> <li>• Discovery improvements - added or updated more than 500 new signatures, that includes software publishers, such as Oracle, Microsoft, Google Inc., Red Hat, SAP, VMware, and Cyberark, etc.</li> <li>• Defect fixes</li> </ul>	164	All customers		<a href="#">Release notes (on page cxxxix)</a>
<p><b>10.0.12.1</b> Application update <b>10.0.12.1</b></p> <p><i>April, 2023</i></p>	163	All customers		<a href="#">Release notes (on page cxlv)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Discovery improvements - added or updated more than 90 new signatures, that includes software publishers, such as Microsoft, Cisco, Google, McAfee, etc.</li> <li>• Defect fixes</li> <li>• Best practices for security improvements</li> </ul> <p><i>Certification for BigFix Inventory 10.0.12 (LMT 9.2.30 equivalent) is complete.</i></p>				
<p><b>10.0.12</b> <b>Application update</b> <b>10.0.12.0</b> <i>March, 2023</i></p> <ul style="list-style-type: none"> <li>• Improvements in software vendor reports view - added new Microsoft reports</li> <li>• Improvement in default columns under software vendor reports</li> <li>• Improvements in All Contracts panel</li> <li>• Support for new Microsoft Processor Core Metrics</li> <li>• Improvement is Package installation path and date extensions summary</li> </ul>	160	All customers	You must upgrade BigFix Inventory server to 10.0.12 to allow the new capabilities work for you. Use <b>Upgrade to the latest version of BigFix Inventory</b> fixlet from BigFix console to upgrade BigFix Inventory server.	<a href="#">Release notes (on page cxlvii)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Defect fixes</li> <li>• Security improvements</li> </ul> <p><i>Certification for BigFix Inventory 10.0.12 (LMT 9.2.30 equivalent) is pending.</i></p>				
<p><b>10.0.11.2</b> Application update 10.0.11.2</p> <p><i>February, 2023</i></p> <ul style="list-style-type: none"> <li>• Added or updated more than 530+ new signatures</li> <li>• Enhanced Oracle Java (JRE &amp; JDK) Signature's for accurate discovery</li> <li>• Enhancement is done for Windows &amp; UNIX platform covering versions 9,10,11,12,13,14,15,16 &amp; 17</li> <li>• Discovery is based on CIT signature</li> <li>• Defect fixes</li> </ul>	159	All customers		<a href="#">Release notes (on page clx)</a>
<p><b>10.0.11.1</b> Application update 10.0.11.1</p> <p><i>January, 2023</i></p>	158	All customers		<a href="#">Release notes (on page clxiii)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Capability to discover more than 47 new software versions</li> <li>• Added new template signatures</li> <li>• Defect fixes</li> </ul> <p><i>Certification for BigFix Inventory 10.0.11 (LMT 9.2.29 equivalent) is complete.</i></p>				
<p><b>10.0.11 Application update</b> <b>10.0.11</b></p> <p><i>December, 2022</i></p> <ul style="list-style-type: none"> <li>• In the "All Contracts" panel, contracts updated for new metrics</li> <li>• Product Metrics option added per Contract panel</li> <li>• New recalculation button added to All Contracts</li> <li>• New Metric Microsoft SQL Server Physical Cores</li> <li>• All template derived components assigned to a single, generic product release</li> <li>• Managing Microsoft Processor Core licenses</li> <li>• Improved template signatures</li> </ul>	157 BigFix Inventory update	All customers	You must upgrade BigFix Inventory server to 10.0.11 to allow the new capabilities work for you. Use <b>Upgrade to the latest version of BigFix Inventory</b> fixlet from BigFix console to upgrade BigFix Inventory server.	<a href="#">Release notes (on page cxxxv)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Oracle features discovery improvements</li> <li>• Improved handling of CDB/PDB support for Oracle pluggable databases CDB/PDB discovery and reporting of their licensable options</li> <li>• Improved discovery of several licenses</li> <li>• Improved error handling and reporting</li> <li>• Security improvements</li> <li>• Defect fixes</li> </ul> <p><i>Certification for BigFix Inventory 10.0.11 (LMT 9.2.29 equivalent) is pending.</i></p>				
<p><b>10.0.10.1</b> Application update 10.0.10.1</p> <p><i>November, 2022</i></p> <ul style="list-style-type: none"> <li>• Capability to discover more than 460+ new software versions</li> <li>• Added new template signatures</li> <li>• Updated the publisher name from Microfocus to Micro Focus</li> <li>• Changed definition source of selected Microsoft components</li> <li>• Defect fixes</li> </ul>	156	All customers		<a href="#">Release notes (on page clxxiv)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><i>Certification for BFI 10.0.10 (LMT 9.2.28 equivalent) is complete.</i></p>				
<p><b>10.0.10</b> <b>Release notes</b></p> <p><i>September, 2022</i></p> <ul style="list-style-type: none"> <li>• Changes to Mac OS discovery</li> <li>• IBM policy update for subcapacity reporting requirements for VPC license metric</li> <li>• Optimized standard catalog processing</li> <li>• Additional information provided in the audit snapshot</li> <li>• Improvement in Software Data Harvesting Tool</li> <li>• Leveraging data collected by BigFix analysis</li> <li>• Support for new platforms and systems</li> <li>• Defect fixes</li> <li>• Improved discovery for several software titles</li> <li>• Technical equivalence to IBM License Metric Tool 9.2.28. The new version is under certification process by IBM on the release date. To view the status of IBM</li> </ul>	<p><b>155</b> BigFix Inventory update</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to 10.0.10 to allow the new capabilities work for you. Use <b>Upgrade to the latest version of BigFix Inventory</b> fixlet from BigFix console to upgrade BigFix Inventory server.</p>	<p><a href="#">Release notes (on page clxxvii)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>validated releases refer to, <a href="#">BigFix Inventory FAQ</a>.</p> <p><i>Certification for BFI 10.0.10 (LMT 9.2.28 equivalent) is in progress.</i></p>				
<p><b>10.0.9.1</b> Application update <b>10.0.9.1</b></p> <p><i>August, 2022</i></p> <ul style="list-style-type: none"> <li>• Capability to discover more than 880 new software.</li> <li>• Improved discovery for various existing software.</li> <li>• Added SentinelOne Endpoint Protection Agent for Unix &amp; Windows platform.</li> <li>• The <b>Update Software Catalog</b> and <b>Run Software Data Harvesting Tool</b> fixlets were updated.</li> <li>• Updated MSI Install location property of package information to prefer regular paths over system paths.</li> <li>• Changed definition source information on product, version, release, component and signature view to HCL</li> </ul>	<p><b>154</b> BigFix Inventory update</p>	<p>All customers</p>		<p><a href="#">Release notes (on page clxxxix)</a></p>

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>or IBM Internal Development for entries in Catalog which uses executable and package information.</p> <ul style="list-style-type: none"> <li>• Minimal permissions documented for BigFix Cloud Adapter Kubernetes.</li> <li>• Defect fixes.</li> </ul> <p><i>Certification for BFI 10.0.9 (LMT 9.2.28 equivalent) is complete.</i></p>				
<p><b>10.0.9 Application update</b> <b>10.0.9</b></p> <p><i>July, 2022</i></p> <ul style="list-style-type: none"> <li>• Template signature to support catalog customizations</li> <li>• Improved data import performed by removing deprecated features and panels</li> <li>• New predefined license metrics</li> <li>• Security upgrades</li> <li>• Support for new platforms and systems</li> <li>• Patronous update</li> <li>• Conversion of key-stores</li> <li>• Experimental Cache 3 support</li> </ul>	<p><b>153</b> BigFix Inventory update</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to 10.0.9 to allow the new capabilities work for you.</p>	<p><a href="#">Release notes (on page cxcvi)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• BigFix Inventory Scans and BigFix Client CPU utilization</li> <li>• Discovery improvements</li> <li>• Harvesting tool improvements</li> <li>• Containers support improvements</li> </ul> <p><i>Certification for BFI 10.0.9 (LMT 9.2.28 equivalent) is pending.</i></p>				
<p><b>10.0.8.1</b> Application update <b>10.0.8.1</b></p> <p><i>May, 2022</i></p> <ul style="list-style-type: none"> <li>• Enterprise signature content integration for more than 105 new software</li> <li>• Updates includes for publishers, such as Adobe, Canonical, Dell, Microsoft, etc.</li> <li>• SAP Crystal Reports for Enterprise</li> <li>• Definition source changed to HCL for Microsoft Office, SQL Server, and MS Operating systems</li> <li>• Name of <b>Veritas NetBackup Server</b> to <b>Veritas NetBackup Master Server</b> for all the ex-</li> </ul>	<p><b>152</b> BigFix Inventory update</p>	<p>All customers</p>		<p><a href="#">Release notes (on page ccxi)</a></p>

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>isting signatures from GAM.</p> <ul style="list-style-type: none"> <li>• New Discovery of Microsoft Visual Studio 2022</li> <li>• Signatures modified for Quest Web Parts for SharePoint , Remotely Anywhere and Remotely Anywhere for IBM , SaltStack Salt &amp; Salt Minion signatures , MongoDB, and Tripwire Enterprise Agent</li> <li>• Harvesting tool improvements</li> <li>• Defect fixes</li> </ul> <p><i>Certification for BFI 10.0.8 (LMT 9.2.26 equivalent) is complete.</i></p>				
<p><b>10.0.8</b> Application update <b>10.0.8</b></p> <p><i>March, 2022</i></p> <ul style="list-style-type: none"> <li>• Improvements in container support for software discovery - new cluster technologies verified for Kubernetes API compatibility.</li> <li>• Extended support for HP-UX managed services</li> </ul>	<p><b>151</b> BigFix Inventory update</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to 10.0.8 to allow the new capabilities work for you. To upgrade the BigFix Inventory server to application update 10.0.8.0, run the 'Upgrade to the latest version of BigFix Inventory' fixlet from the BigFix console.</p>	<p><a href="#">Release notes (on page ccxvii)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Optional software data harvesting tool for better software discovery</li> <li>• Option to add custom information in the access blocked error for SSO user</li> <li>• Option to change the <i>Provide Feedback</i> email in the custom email address</li> <li>• Improved scanner cache optimization</li> <li>• Keystore format changed from <b>JCEKS</b> to <b>PKCS12</b></li> <li>• Added CVE metadata to Log4j update fixlet</li> <li>• Improved serviceability settings for better catalog customization</li> <li>• Updated End-of-support for BigFix 9.2 and 9.5 components</li> <li>• IEST API for assigning a product to a Flex-Point or a Cloud Pack offering</li> <li>• Support for new platforms and systems</li> <li>• Defect fixes</li> </ul> <p><i>Certification for BFI 10.0.8 (LMT 9.2.26 equivalent) is pending.</i></p>				

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><b>10.0.7.1</b> Application update <b>10.0.7.1</b></p> <p><i>February, 2022</i></p> <ul style="list-style-type: none"> <li>• Detection of Windows 11 after running the Initiate Software Scan fixlet</li> <li>• New template signatures added</li> <li>• Discovery of 300 and more software versions including Autodesk Inc., Microsoft, Oracle, Red Hat</li> <li>• Update the Log4j library in VM Manager Tool to version 2.17.1 - (10.0.7.0.1)</li> <li>• Update VM Manager Tool to version (10.0.7.1)</li> <li>• Unified naming convention for Java</li> <li>• Defect fixes</li> </ul> <p><i>Certification for BFI 10.0.7 (LMT 9.2.25 equivalent) is complete.</i></p>	150 BigFix Inventory update	All customers		<a href="#">Release notes (on page ccxxix)</a>
<p><b>10.0.7</b> Application update <b>10.0.7</b></p> <p><i>December, 2021</i></p>	148 BigFix Inventory update	All customers	You must upgrade BigFix Inventory server to 10.0.7 to allow the new capabilities work for you.	<a href="#">Release notes (on page ccxxxvii)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Software discovery in containers</li> <li>• Support for Windows 11 using BigFix Client</li> <li>• Improved contracts REST API.</li> <li>• Trace level setting in disconnected scanner to set new values.</li> <li>• <b>ksh</b> no longer required for installing BigFix Inventory</li> <li>• Capability to discover 440+ software titles.</li> <li>• Defect fixes.</li> </ul> <p><i>Certification for BFI 10.0.7 (LMT 9.2.25 equivalent) is pending.</i></p>				
<p><b>10.0.6.1</b> Application update <b>10.0.6.1</b></p> <p><i>November, 2021</i></p> <ul style="list-style-type: none"> <li>• New discovery capabilities for: <ul style="list-style-type: none"> <li>◦ Adobe</li> <li>◦ BMC</li> <li>◦ CA Technologies</li> <li>◦ Cisco Systems Inc</li> <li>◦ Citrix</li> <li>◦ Dell Computer Corporation</li> <li>◦ Hewlett-Packard</li> </ul> </li> </ul>	<p><b>147</b> BigFix Inventory update</p>	<p>All customers</p>		<p><a href="#">Release notes (on page ccli)</a></p>

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>◦ Intel</li> <li>◦ Microsoft</li> <li>◦ Oracle</li> <li>◦ Red Hat</li> <li>• Several defects fixed and client ideas implemented.</li> <li>• This release includes Software Catalog version 10.0.6.1 with capability to discover more than 320 new software versions.</li> </ul>				
<p><b>10.0.6</b> Application update <b>10.0.6</b> <i>September, 2021</i></p> <ul style="list-style-type: none"> <li>• API to create and modify contracts</li> <li>• Ability to import contracts from CSV file</li> <li>• Ability to migrate deprecated contracts</li> <li>• Allows to convert purchase order from number to ELA and vice versa</li> <li>• Set a default products and metric for bundling assistant</li> <li>• Discovery for more than 435 new signatures, such as Adobe , AutoDesk Inc., Citrix , Microsoft , Ora-</li> </ul>	145 BigFix Inventory update	All customers	You must upgrade BigFix Inventory server to 10.0.6 to allow the new capabilities work for you.	<a href="#">Release notes (on page cclvii)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>cle , SAP , SAS, SOLAR-WINDS, Tableau Software, and VMware.</p> <ul style="list-style-type: none"> <li>• ILMT core module update</li> <li>• Security updates</li> <li>• Defect fixes</li> </ul> <p><i>Certification for BFI 10.0.6 (LMT 9.2.24 equivalent) is pending.</i></p>				
<p><b>10.0.5.1</b> Application update <b>10.0.5.1</b></p> <p><i>August, 2021</i></p> <ul style="list-style-type: none"> <li>• New discovery capability for Adobe, Autodesk, Citrix, JetBrains, McAfee, Microsoft, MongoDB, Oracle, Veritas, VMware.</li> <li>• Defect fixes and client ideas implemented.</li> <li>• Capability to discover more than 270 new software components.</li> </ul> <p><i>Certification for BFI 10.0.5 (LMT 9.2.23 equivalent) is complete.</i></p>	<p><b>144</b> BigFix Inventory update</p>	<p>All customers</p>		<p><a href="#">Release notes (on page cclxviii)</a></p>
<p><b>10.0.5</b> Application update <b>10.0.5</b></p> <p><i>July, 2021</i></p>	<p><b>143</b> BigFix Inventory update</p> <p> <b>Note:</b> Original site version 142 has been</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to 10.0.5 to allow the new capabilities work for you.</p>	<p><a href="#">Release notes (on page cclxxii)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Improved contracts management to define contracts through the new <i>All Contracts</i> report and access contracts through the predefined report dashboard</li> <li>• Unified software inventory view supported by a new API to combine software instances and package data</li> <li>• Duplicate UUIDs (Universally Unique Identifier) shown in the To Do list for computers with duplicate UUIDs</li> <li>• Suppress Package Data option in the UI to suppress data that is not relevant for reporting or integration</li> <li>• Support for BigFix Platform Server Based Computer Groups to enable cloud specific reporting</li> <li>• Disconnected scanner can be used to mark computers that run on public cloud</li> <li>• Product publisher name available on Software Classification panel</li> </ul>	 refreshed to address link issues.			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Catalog distributed in GZIP format instead of BZIP2</li> <li>• Added discovery capability for 350+ software titles and publishers, such as Adobe, Citrix, Microsoft, SolarWinds, Symantec, VMware</li> <li>• Security enhancements</li> <li>• Support for new platform and systems</li> </ul> <p><i>Certification for BFI 10.0.5 (LMT 9.2.23 equivalent) is complete.</i></p>				
<p><b>10.0.4.1 Application update</b> <b>10.0.4.1</b> <i>May, 2021</i></p> <ul style="list-style-type: none"> <li>• Added capability to discover 160 software versions, that includes: <ul style="list-style-type: none"> <li>◦ BMC</li> <li>◦ CA Technologies</li> <li>◦ Citrix</li> <li>◦ Oracle</li> <li>◦ Red Hat</li> <li>◦ Veritas</li> <li>◦ VMware</li> </ul> </li> <li>• Implemented customer ideas</li> <li>• Defect fixes</li> </ul>	141 BigFix Inventory update	All customers		Release notes ( <a href="#">on page cclxxxvii</a> )

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><i>Certification for BFI 10.0.4 (LMT 9.2.22 equivalent) is now complete.</i></p>				
<p><b>10.0.4 Application update</b> <b>10.0.4</b> <i>March, 2021</i></p> <ul style="list-style-type: none"> <li>• REST APIs available to retrieve, create, change, and delete license metrics</li> <li>• REST APIs to integrate multicluster licensing data in IBM License Service Reporter</li> <li>• Removal of the “Caused Detection” column and the “enable_caused_detection” setting in Advanced Server Parameters. Recognized column is now the primary option to perform your tasks.</li> <li>• Reporting information about the detailed version of applications discovered by package-based signatures.</li> <li>• Database connection encryption</li> <li>• Regular database index rebuilding</li> <li>• Search software catalog by component</li> </ul>	<p><b>140</b> BigFix Inventory update</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to 10.0.4 to allow the new capabilities work for you.</p>	<p><a href="#">Release notes (on page ccxc)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>name on the new dashboard</p> <ul style="list-style-type: none"> <li>• Fixlet available to download PVU table</li> <li>• Parameter added to show hidden values</li> <li>• Improvements in reporting information about detailed version and file size</li> <li>• Suppressed discovery of certain software products</li> <li>• Automatically enabled performance logs</li> <li>• Security enhancements</li> <li>• Support for new platforms and systems</li> <li>• Added capability to discover 350 software versions.</li> </ul> <p><i>Certification for BFI 10.0.4 (LMT 9.2.22 equivalent) is pending.</i></p>				
<p><b>10.0.3.1</b> Application update</p> <p><b>10.0.3.1</b></p> <p><i>February, 2021</i></p> <ul style="list-style-type: none"> <li>• Updated software catalog to discover: <ul style="list-style-type: none"> <li>◦ Adobe</li> <li>◦ Apache Software Foundation</li> </ul> </li> </ul>	<p><b>139</b> BigFix Inventory update</p>	<p>All customers</p>		<p>&lt;discontinued&gt; Release notes up to version 10.0.13.1 (on page cxxxv)</p>

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>◦ BMC</li> <li>◦ CA Technologies</li> <li>◦ Dell</li> <li>◦ Docker</li> <li>◦ EMC Corporation</li> <li>◦ Hewlett-Packard</li> <li>◦ Jet-Brains</li> <li>◦ Microsoft</li> <li>◦ Oracle</li> <li>◦ Red Hat</li> <li>◦ SAP</li> <li>◦ TIBCO</li> <li>◦ VMware</li> <li>• Added 500+ new signatures</li> <li>• Defect fixes</li> </ul>				
<p><b>10.0.3 Application update</b>  <b>10.0.3</b>  <i>December, 2020</i></p> <ul style="list-style-type: none"> <li>• Changes to supported systems and upgrade paths - BigFix Inventory version 10.0.3 supports direct upgrade from version 9.2.14 onwards. For version below 9.2.14, you need to upgrade to BigFix Inventory 10.0.2 and then upgrade to the recent version.</li> </ul>	<p><b>138</b> BigFix Inventory update</p>	<p>All customers</p>		<p>&lt;discontinued&gt; Release notes up to version 10.0.13.1 (on page cxxxv)</p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Improved user interface - improved icons in the menus, dialogs, and reports</li> <li>• Discovery of Red Hat JBoss Enterprise Application Platform version 6.0-6.4.</li> <li>• Notifications on failed data and catalog imports.</li> <li>• Assigning components to active BigFix products.</li> <li>• Security enhancements.</li> <li>• Discovery improvements               <ul style="list-style-type: none"> <li>◦ 221 new signatures added</li> <li>◦ 14 new manufacturers added</li> </ul> </li> <li>• Support for new systems and hypervisors.</li> </ul> <p><i>Certification for BFI 10.0.3 (LMT 9.2.21 equivalent) is complete.</i></p>				
<p><b>10.0.2.1 Content pack</b>  <b>10.0.2.1</b>  <i>November, 2020</i></p> <ul style="list-style-type: none"> <li>• Updated Software Catalog to discover:               <ul style="list-style-type: none"> <li>◦ BMC software</li> <li>◦ Oracle software</li> </ul> </li> </ul>	<p><b>137</b> BigFix Inventory update</p>	<p>All customers</p>		<p><a href="#">Release notes (on page cxxxv)</a></p>

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>◦ SAP software</li> <li>◦ Tibco software</li> <li>◦ Red Hat software</li> <li>◦ Open source Apache software</li> <li>◦ Oracle Java Advanced Management Console Agent as part of Oracle Java auditing function</li> <li>◦ Microsoft 365 Apps as part of Microsoft Office 365 product</li> <li>• Defect fixes</li> <li>• Added 352 new signatures</li> </ul>				
<p><b>10.0.2 Application update</b> <b>10.0.2</b> <i>October, 2020</i></p> <ul style="list-style-type: none"> <li>• Default dashboard now shows vendor-specific reports with an option to switch to the old dashboard.</li> <li>• Inventory reports now shows installation path of all discovered products. If a product is in-</li> </ul>	<p><b>136</b> BigFix Inventory update</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to 10.0.2 to allow the new capabilities work for you.</p>	<p><a href="#">Release notes (on page cxxxv)</a></p>

**Table 1. Updates and patches (continued)**

<b>Update</b>	<b>Site version</b>	<b>Target cus- tomers</b>	<b>Comments and up- grade considera- tions</b>	<b>More information</b>
<p>stalled at multiple instances, it reports all paths as separate instances.</p> <ul style="list-style-type: none"> <li>• The <b>Software Classification</b> details view now shows only matched detections. The signature shows a list of all signatures.</li> <li>• Extended exclusion list on Windows for scanner installation.</li> <li>• Manual update of IBM catalog is no longer supported by BigFix Inventory.</li> <li>• Settling entitlement feature allows to mark products as entitled.</li> <li>• User management parameter allows to capture any change to the user and user permissions.</li> <li>• Streamed JSON responses to improve API response time.</li> <li>• Component Detailed Version provides complete information about the fix packs.</li> <li>• Security enhancements.</li> </ul>				

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Support for new systems and hypervisors.</li> <li>• <i>Certification for BFI 10.0.2 (LMT 9.2.20 equivalent) is complete.</i></li> </ul>				
<p><b>Application update 10.0.1.1</b> <i>August, 2020</i></p> <ul style="list-style-type: none"> <li>• Added capability to discover Docker engine and Kubernetes software</li> <li>• Added discovery capability for 100+ software versions for software titles, such as Oracle, Hewlett-Packard, McAfee, Microsoft, Red Hat, SAP, and VMware</li> <li>• Optional feature: Scanner installation for BigFix Inventory on Windows.</li> </ul>	135 BigFix Inventory update	All customers		<a href="#">Release notes (on page cxxxv)</a>
<p><b>10.0.1 Application update 10.0.1</b> <i>July, 2020</i></p> <ul style="list-style-type: none"> <li>• Updated HCL Catalog</li> <li>• Package Data report is updated with data from Solaris IPS package manager.</li> </ul>	134 BigFix Inventory update	All customers		<a href="#">Release notes (on page cxxxv)</a>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Configurable limit for custom software classification rules</li> <li>• Enhanced API for Scanned File data with additional properties for Windows executables</li> <li>• Software Summary report provides extended information about your software inventory.</li> <li>• Updated user interface</li> <li>• Updated scanner</li> <li>• IBM Virtualization Capacity reporting equivalent</li> </ul> <p><i>Certification for BFI 10.0.1 is complete.</i></p> <ul style="list-style-type: none"> <li>• Enabler for reporting IBM Cloud Paks</li> <li>• Inventory Exploration report is deprecated.</li> </ul>				
<p><b>Content pack 10.0.0.1</b> <i>May, 2020</i></p> <ul style="list-style-type: none"> <li>• Updated HCL Catalog</li> <li>• Improved Microsoft .NET Framework version discovery</li> <li>• Microsoft SQL Server 2019 discovery</li> <li>• Microsoft SQL Server 2019 discovery</li> </ul>	<p><b>133</b> BigFix Inventory catalog update</p>			<p><a href="#">Release notes (on page cxxxv)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><b>Application update 10.0.0.0</b> <i>March, 2020</i></p> <ul style="list-style-type: none"> <li>• Detailed Component Version discovery for Oracle Java and Oracle Weblogic</li> <li>• Extension of the computer hardware API association and related Computers report</li> <li>• Updated HCL catalog to 10.0.0.0 that includes IBM catalog 9.2.18.0.</li> <li>• User interface visual changes</li> <li>• Update of the end of support dates for IBM software</li> <li>• Usability improvement to the user interface</li> <li>• Security enhancements</li> <li>• Support for new systems and hypervisors</li> </ul> <p><i>Certification for BFI v10 (LMT 9.2.18.0 equivalent) is completed. For current status of IBM validated releases, see <a href="#">Passport Advantage</a>.</i></p>	<p><b>132</b> BigFix Inventory update</p>	<p>All customers</p>	<p>You must upgrade BigFix Inventory server to v10 to upgrade database to DB2 11.5.</p>	<p><del>&lt;discontinued&gt;</del> <a href="#">Release notes up to version 10.0.13.1 (on page cxxxv)</a></p>

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><b>Application update 9.2.17.0</b> <i>February, 2020</i></p> <ul style="list-style-type: none"> <li>• Equivalence to IBM License Metric Tool 9.2.17. For current status of IBM validated releases, see <a href="#">Passport Advantage</a>.</li> <li>• Software Catalog version 9.2.17 containing: <ul style="list-style-type: none"> <li>◦ IBM License Metric Tool Software Catalog version 9.2.17.0</li> <li>◦ Added discovery capability for Microsoft Windows 2019</li> <li>◦ Added discovery capability for components of Adobe Create Cloud 2020</li> <li>◦ Added discovery capability for 1300+ other software versions</li> </ul> </li> <li>• Support for new systems <ul style="list-style-type: none"> <li>◦ Hyper-V 2019</li> <li>◦ Linux VMs on Nutanix AVH</li> </ul> </li> </ul>	<p><b>130</b> BigFix Inventory v9</p>	<p>All customers</p>		<ul style="list-style-type: none"> <li>• <a href="#">Enhancements</a></li> <li>• <a href="#">APAR Fixes (on page cxxxv)</a></li> <li>• <a href="#">Internal Defect Fixes (on page cxxxv)</a></li> <li>• <a href="#">Scanner changes (on page cxxxv)</a></li> </ul>

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
(IBM Power only) ◦ RHEV 4.2 and 4.3 using new API available in RHEV-M 4.x				
<p><b>Application update 9.2.16.2</b> <i>December, 2019</i></p> <p>Updates include Software Catalog version 9.2.16.2 containing</p> <ul style="list-style-type: none"> <li>• IBM License Metric Tool Software Catalog version 9.2.17.0</li> <li>• Improved Oracle Java Runtime Environment discovery</li> </ul>	129 BigFix Inventory v9	All customers		<ul style="list-style-type: none"> <li>• Enhancements</li> <li>• APAR Fixes (<i>on page cxxxv</i>)</li> <li>• Internal Defect Fixes (<i>on page cxxxv</i>)</li> <li>• Scanner changes (<i>on page cxxxv</i>)</li> </ul>
<p><b>Application update 9.2.16.1</b> <i>October, 2019</i></p> <ul style="list-style-type: none"> <li>• Enhanced software discovery capability</li> <li>• For more information please refer to Catalog Release Notes: <a href="#">Catalog release notes</a></li> <li>• Scanner version 9.2.17.0000 improvements</li> </ul>	128 BigFix Inventory v9	All customers		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Oracle Feature Health Check analysis is updated</li> <li>• Support for new platforms               <ul style="list-style-type: none"> <li>◦ On the endpoint side: Red Hat Enterprise Linux 8.0</li> </ul> </li> </ul>				
<p><b>Application update 9.2.16</b> <i>September, 2019</i></p> <ul style="list-style-type: none"> <li>• Improved reporting of IBM FlexPoints</li> <li>• Setting metric quantity for license metrics that are not calculated by BigFix Inventory</li> <li>• You can manually declare the metric quantity for selected license types for which BigFix Inventory does not calculate license metric utilization out of the box.</li> <li>• Extension of the computer_hardware API association</li> <li>• You can retrieve information about additional hardware parameters, such as the serial number, vendor, model,</li> </ul>	<p><b>127</b> BigFix Inventory v9</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>or type of the physical server.</p> <ul style="list-style-type: none"> <li>• Custom rules for automatically suppressing components that meet specified criteria</li> <li>• By specifying the relevant criteria you can create the custom rule which automatically suppresses the matching components in the future.</li> <li>• Support for BigFix Inventory server on MS SQL 2017</li> <li>• MS SQL 2017 is now supported as a database for BigFix Inventory for fresh installations.</li> <li>• Discovery with the latest 9.2.15.3 software catalog</li> <li>• The included software catalog is the latest 9.2.15.3.</li> <li>• It includes IBM License Metric Tool Software Catalog version 9.2.16.0.</li> <li>• Security enhancements               <ul style="list-style-type: none"> <li>◦ On the endpoint side:                   <ul style="list-style-type: none"> <li>▪ Update of the Xerces</li> </ul> </li> </ul> </li> </ul>				

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>library to version 3.2.1 on AIX to keep the scanner secure and reliable.</p> <ul style="list-style-type: none"> <li>• Support for new platforms <ul style="list-style-type: none"> <li>◦ On the server side: <ul style="list-style-type: none"> <li>▪ Windows 2019</li> </ul> </li> <li>◦ On the endpoint side: <ul style="list-style-type: none"> <li>▪ Debian 9 x86 and x64</li> <li>▪ SUSE Linux Enterprise Server 15 x86-64</li> <li>▪ SMBIOS3 on Linux</li> </ul> </li> </ul> </li> </ul>				
<b>Application update 9.2.15.2</b>	<b>125 - BigFix Inventory update 9.2.15.2</b>	All customers		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><i>May, 2019</i></p> <ul style="list-style-type: none"> <li>• 'Detecting malware threats based on SHA-256 file checksums' Preview Feature deactivation announcement.</li> <li>• End of the support for MS SQL 2008 and 2008 R2 database is planned for September 2019.</li> </ul>				
<p><b>Content pack 9.2.15.1</b></p> <p><i>April, 2019</i></p> <ul style="list-style-type: none"> <li>• Discovery capability for a number of software components</li> </ul>	<p><b>124 - BigFix Inventory content pack 9.2.15.1</b></p>	<p>All customers</p>		
<p><b>Application update 9.2.15</b></p> <p><i>March, 2019</i></p> <ul style="list-style-type: none"> <li>• Preview feature: New Software Summary (Preview) report.</li> <li>• Extended reporting of usage statistics for Java.</li> <li>• Extended support for new platforms and new virtualization technologies.</li> <li>• New Software Installations report that is</li> </ul>	<p><b>123 - BigFix Inventory 9.2.14 update</b></p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>based on the new data model.</p> <ul style="list-style-type: none"> <li>• Extension of the To Do list.</li> <li>• Documentation extended with new topics.</li> <li>• New look and feel of the user interface.</li> <li>• Usability improvements on the management panels.</li> <li>• Filtering reports by using matches exactly operator.</li> <li>• New naming convention for the exported reports.</li> <li>• Extended discovery of Oracle Databases certified for Oracle Database 18c: 18.3.</li> <li>• Discovery of new components from Citrix, Hewlett-Packard, Oracle and other.</li> <li>• Names of BigFix Inventory fixlets in the BigFix console contain information about version.</li> <li>• Security enhancements.</li> </ul>				
<p><b>Content pack 9.2.14.1</b></p> <p><i>February, 2019</i></p>	<p><b>122 - BigFix Inventory content pack 9.2.14.2</b></p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>Discovery capability for a number of software components</li> </ul>				
<p><b>Content pack 9.2.14.1</b></p> <p><i>January, 2019</i></p> <ul style="list-style-type: none"> <li>Discovery capability for a number of software components</li> <li>Improved discovery of the Oracle database features with the use of the ReviewLite.sql script and the extension of the Oracle Feature Health Check analysis with additional information for better serviceability.</li> <li>Modification of the file compression utility used by the fixlets.</li> </ul>	<p><b>121</b> - BigFix Inventory content pack 9.2.14.1</p>	<p>All customers</p>		
<p><b>Application update 9.2.14</b></p> <p><i>December, 2018</i></p> <ul style="list-style-type: none"> <li>Reporting license usage for Adobe Creative Cloud products on Windows.</li> <li>Reporting license usage for IBM Rational portfolio.</li> </ul>	<p><b>120</b> - BigFix Inventory 9.2.14 update</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

<b>Update</b>	<b>Site version</b>	<b>Target customers</b>	<b>Comments and upgrade considerations</b>	<b>More information</b>
<ul style="list-style-type: none"> <li>• Tagging software for more flexible categorization.</li> <li>• Preview feature: The new dashboard is extended with additional widgets and quick search.</li> <li>• New predefined reports.</li> <li>• Preview feature: Detecting malware threats based on SHA-256 file checksums.</li> <li>• Reporting end of support dates for Microsoft products.</li> <li>• Best practices for configuring VM managers.</li> <li>• Top navigation bar extended with the icon for providing feedback.</li> <li>• Changes in the Report menu.</li> <li>• Users panel is expanded with the information about time and date of the last login.</li> <li>• Improvements on the VM Managers panel.</li> <li>• Migrating software classification with REST API.</li> <li>• Retrieving information about the license utilization peak and</li> </ul>				

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p>the contributing software instances through REST API in version 2.</p> <ul style="list-style-type: none"> <li>• Discovery of new components from Citrix, Oracle, SAP and other.</li> <li>• Certification of Microsoft Edge browser.</li> <li>• Support for new virtualization technologies.</li> <li>• Security enhancements.</li> <li>• Information about the session time out after a period of user inactivity</li> </ul>				
<p><b>Content pack 9.2.13.2</b></p> <p><i>November, 2018</i></p> <ul style="list-style-type: none"> <li>• Discovery capability for a number of software components</li> <li>• Software classification capability for new releases of IBM software products.</li> <li>• Multiple updates and additions for non-IBM software titles. See the change list for additional details.</li> </ul>	<p><b>119</b> - BigFix Inventory content pack 9.2.13.2</p>	<p>All customers</p>		
<p><b>Content pack 9.2.13.1</b></p>	<p><b>118</b> - BigFix Inventory content pack 9.2.13.1</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

<b>Update</b>	<b>Site version</b>	<b>Target customers</b>	<b>Comments and upgrade considerations</b>	<b>More information</b>
<p><i>October, 2018</i></p> <ul style="list-style-type: none"> <li>• Discovery capability for a number of software components</li> </ul>				
<p><b>Application update 9.2.13</b></p> <p><i>September, 2018</i></p> <ul style="list-style-type: none"> <li>• Utilization of the Registered User metric for Microsoft Office 365</li> <li>• Reporting additional IBM metrics based on the resource utilization data that is delivered by .slmtag files</li> <li>• Version currency of Internet browsers and other selected software that changes frequently</li> <li>• Reporting utilization of FlexPoints</li> <li>• Preview feature: Visibility of Common Vulnerabilities and Exposures (CVEs)</li> <li>• New predefined reports available under Software Classification panel</li> <li>• Preview feature: Security dashboard and reporting</li> </ul>	<p><b>117 - BigFix Inventory</b> 9.2.13 update</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

<b>Update</b>	<b>Site version</b>	<b>Target customers</b>	<b>Comments and upgrade considerations</b>	<b>More information</b>
<ul style="list-style-type: none"> <li>• New To Do list on the top navigation bar</li> <li>• Information about the shared processor pool</li> <li>• REST API associations for quick analysis of security risks</li> <li>• Filtering reports and retrieving data through REST API request by using is empty and is not empty operators</li> <li>• Support for BigFix Inventory server on MS SQL 2016</li> <li>• Discovery of new components from Citrix, Symantec, Oracle and other</li> <li>• List of software components with end of support dates is updated</li> <li>• Performance improvements</li> <li>• Security enhancements</li> </ul>				
<p><b>Content pack 9.2.12.2</b></p> <p><i>August, 2018</i></p> <ul style="list-style-type: none"> <li>• Discovery capability for a number of software components</li> </ul>	<p><b>116 - BigFix Inventory</b> content pack 9.2.12.2</p>			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><b>Content pack 9.2.12.1</b></p> <p><i>July, 2018</i></p> <ul style="list-style-type: none"> <li>• Discovery capability for a number of software components</li> </ul>	<p><b>115</b> - BigFix Inventory content pack 9.2.12.1</p>			
<p><b>Application update 9.2.12</b></p> <p><i>June, 2018</i></p> <ul style="list-style-type: none"> <li>• Reporting detailed hardware information</li> <li>• Preventing security threats with information about Common Vulnerabilities and Exposures (CVE) added to the software catalog</li> <li>• Retrieving information about the discovered software component as specified in the Common Platform Enumeration (CPE) dictionary</li> <li>• Enhancements to reporting end of support dates</li> <li>• Using Review Lite script for extended discovery of Oracle databases</li> <li>• Automatic scanning of remote shared disks</li> </ul>	<p><b>114</b> - Fix for <a href="#">APAR IJ07404</a></p>	<p>Customers who scan shared disks</p>		
	<p><b>113</b> - BigFix Inventory 9.2.12 update</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Collecting utilization data of SAP license metrics with License Administration Workbench 2.0</li> <li>• Flexible license management by specifying the type of relation between a component and a product as charged or not charged based on the specific license agreement</li> <li>• Refreshing scan data on a computer through the Support Page</li> <li>• Resuming a connection to the VM manager</li> <li>• Information about full version of already discovered files</li> <li>• Extension of audit snapshot</li> <li>• A new link to Learning Resources under Help</li> <li>• Security enhancements</li> <li>• Support for BigFix Inventory server on DB2</li> </ul>				
<p><b>Content pack 9.2.11.3</b></p> <p><i>June, 2018</i></p>	<p><b>112 - BigFix Inventory content pack 9.2.11.3</b></p>			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>Discovery capability for a number of software components</li> </ul>				
<p><b>Content pack 9.2.11.2</b></p> <p><i>April, 2018</i></p> <ul style="list-style-type: none"> <li>Discovery capability for a number of software components</li> </ul>	<p><b>110</b> - BigFix Inventory content pack 9.2.11.2</p>			
<p><b>Application update 9.2.11.1</b></p> <p><i>April, 2018</i></p> <ul style="list-style-type: none"> <li>Fix for APAR IJ05768</li> </ul>	<p><b>107, 108</b> - BigFix Inventory 9.2.10.1 update</p>	<p>Customers with large environments with more than 3 millions files used for software detection.</p>		
<p><b>Application update 9.2.11</b></p> <p><i>March, 2018</i></p> <ul style="list-style-type: none"> <li>Improved license planning and prevention of security risk by setting up and monitoring end of support dates for specific software</li> <li>Utilization of the Virtual Processor Core (VPC) metric for IBM products</li> <li>Introduction of the Package Data Summary report</li> </ul>	<p><b>106</b> - Refresh of the DB2 license terms</p>			
	<p><b>105</b> - BigFix Inventory 9.2.11 update + March catalog update</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

<b>Update</b>	<b>Site version</b>	<b>Target customers</b>	<b>Comments and upgrade considerations</b>	<b>More information</b>
<ul style="list-style-type: none"> <li>• Reporting information about the detailed version of Windows applications</li> <li>• Discovery of new components from Windows, Corel, Adobe, Symantec and SAP</li> <li>• Simplification of updating the software catalog</li> <li>• Optimizing data imports thanks to enabling a new schema of the BigFix database</li> <li>• Preventing accumulation of unprocessed data in case of failing imports</li> </ul>				
<p><b>Application update 9.2.10.1</b></p> <p><i>January, 2018</i></p> <ul style="list-style-type: none"> <li>• Fix for APAR IJ03008</li> </ul>	<b>104</b> - February catalog update	All customers		
	<b>103</b> - January catalog update	All customers		
	<b>102</b> - BigFix Inventory 9.2.10.1 update	All customers		
<p><b>Application update 9.2.10</b></p> <p><i>December, 2017</i></p> <ul style="list-style-type: none"> <li>• Reporting usage of products such as Microsoft Office at suite level aggregated per computer</li> </ul>	<b>99, 100</b> - BigFix Inventory 9.2.10 update + December catalog update	All customers		

**Table 1. Updates and patches (continued)**

<b>Update</b>	<b>Site version</b>	<b>Target customers</b>	<b>Comments and upgrade considerations</b>	<b>More information</b>
<ul style="list-style-type: none"> <li>• Collecting and measuring utilization of SAP license metrics</li> <li>• Adding products to the software catalog</li> <li>• Information about imported part numbers that influenced the initial classification is visible on the Software Classification panel</li> <li>• REST API for advanced integration and data sharing</li> <li>• New computer status - <i>Outdated VM Manager Data</i></li> <li>• Stand-alone scanner for monitoring isolated HP-UX computers</li> <li>• Information about the number of partition cores</li> <li>• Discovery of new components from HP, SAP, BMC and other</li> <li>• Optimizing the import of data</li> <li>• Serviceability improvements</li> <li>• Support for Docker containers under Red Hat OpenShift</li> </ul>				
<b>Application update 9.2.9</b>	<b>98</b> - November catalog update	All customers	APARs delivered in the catalog update	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><i>October, 2017</i></p> <ul style="list-style-type: none"> <li>• Reporting of SAP license usage with integration of SAP License Administration Workbench (SLAW) and SAP USMM</li> <li>• Discovery of Oracle Database extended to Solaris</li> <li>• Discovery of new components from Oracle, SAP, and Red Hat</li> <li>• Adding custom fields to license metric reports</li> <li>• Reporting information about the detailed version of software components</li> <li>• Stand-alone scanner for monitoring isolated AIX computers</li> <li>• Filtering the Package Data report to view the packages that can be used to create new software signatures</li> <li>• Improved security of storing VM manager passwords</li> <li>• Configuring LDAP server that uses load balancer to preserve server certificates</li> </ul>			<ul style="list-style-type: none"> <li>• IJ00010</li> <li>• IJ00393</li> <li>• IJ00821</li> </ul>	
	<p><b>97</b> - VM Manager Tool updated to version 1.6.0.1</p>	<p>All customers</p>	<p>VM Manager Tool version 1.6.0.1 supports RHEV-M version 4.x. The support covers instances that use HTTP Basic Authentication and version 3 REST API.</p> <p>RHEV-M 4.x uses different URL than the earlier versions.</p>	
	<p><b>96</b> - October catalog update</p>	<p>All customers</p>		
	<p><b>95</b> - BigFix Inventory 9.2.9 update + September catalog update</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• User interface improvements</li> <li>• Scanner improvements</li> <li>• Version of the application build visible in PDF reports</li> <li>• Software catalog enhancements</li> </ul>				
<p><b>Application update 9.2.8</b> <i>June, 2017</i></p> <ul style="list-style-type: none"> <li>• Utilization of the Single and Dual Physical Processor metrics for Microsoft Windows Server</li> <li>• Utilization of the Oracle Processor Core metric for Oracle Databases</li> <li>• Reporting software installed on shared disks based on software templates</li> <li>• Collecting executable files based on application usage</li> <li>• Version 2 of REST APIs for software and hardware inventory</li> <li>• Assigning a new license metric to an existing product</li> <li>• Configuration of user account lockout</li> </ul>	<p><b>94</b> - August catalog update</p>	<p>All customers</p>	<p>APARs delivered in the catalog update</p> <ul style="list-style-type: none"> <li>• IV98394</li> <li>• IV99115</li> </ul>	
	<p><b>93</b> - July catalog update</p>	<p>All customers</p>	<p>APARs delivered in the catalog update</p> <ul style="list-style-type: none"> <li>• IV96696</li> <li>• IV97087</li> <li>• IV97770</li> </ul>	
	<p><b>92</b> - Disconnected scanner package updated with the scanner version 2.8.0.4001</p>	<p>Customers who use disconnected scans</p>		
	<p><b>91</b> - Fixlet site update to address a problem with scanner performance and the software scan</p>	<p>All customers</p>	<p>If you installed the scanner in version 2.8.0.4000, upgrade it to version 2.8.0.4001.</p> <p>If you started the software scan by using the Initiate</p>	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Stand-alone scanner for monitoring isolated Solaris computers</li> <li>• Automatic decommissioning of computers that are inactive for a specified period of time</li> <li>• Fixlet for collecting logs to troubleshoot problems with computers</li> <li>• Viewing all signatures that are defined for a component in the software catalog</li> <li>• Improved browsing of the software catalog content</li> <li>• Serviceability improvements</li> <li>• Information about supported operating systems can be dynamically generated through SPCR</li> <li>• Discovery of new components from Oracle, SAP, and Red Hat</li> </ul>			Software Scan fixlet from site number 90, restart the scan action by using the fixlet from site number 91.	
	<b>90</b> - Fixlet site update to address a problem with initiating the software scan	All customers	If you started the software scan by using the Initiate Software Scan fixlet from site number 89, restart the scan action by using the fixlet from site number 90.	
	<b>89</b> - BigFix Inventory 9.2.8 update + June catalog update	All customers	APARs delivered in the catalog update: <ul style="list-style-type: none"> <li>• IV95226</li> </ul>	
<b>Application update 9.2.7</b>  <i>March, 2017</i>	<b>88</b> - May catalog update	All customers	APARs delivered in the catalog update:	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• New Software Classification panel replaces the IBM Software Classification panel</li> </ul>			<ul style="list-style-type: none"> <li>• IV95322</li> <li>• IV94805</li> <li>• IV95235</li> </ul>	
<ul style="list-style-type: none"> <li>• Creation of custom classification rules</li> </ul>	<p><b>87</b> - April catalog update</p>	<p>All customers</p>		
<ul style="list-style-type: none"> <li>• Utilization of the Physical Core and Virtual Core metrics for Microsoft SQL Server with Software Assurance</li> <li>• Utilization of license metrics for VMware vCenter and vSphere</li> <li>• Discovery of SAP components</li> <li>• Utilization of the Install Instances metric for IBM products</li> <li>• Overview of license metrics that are used by IBM products in your infrastructure</li> <li>• Discovery of software and hardware inventory with disconnected scans on Windows and Linux</li> <li>• API for adding and changing VM managers</li> <li>• Adding custom part numbers to the catalog</li> <li>• Extension of two bundling rules:</li> </ul>	<p><b>86</b> - BigFix Inventory 9.2.7 update + March catalog update</p>		<p>APARs delivered in the catalog update:</p> <ul style="list-style-type: none"> <li>• IV80621</li> <li>• IV81865</li> <li>• IV81714</li> <li>• IV80371</li> <li>• IV81815</li> <li>• IV93555</li> <li>• IV93252</li> </ul>	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>bundling tags and part numbers</li> <li>• Two-phase matching of file signatures</li> <li>• Configuring security policy for user passwords</li> <li>• Improvements of the VM Manager Tool</li> <li>• Optimization of migration</li> <li>• New look and feel of the user interface</li> <li>• Discovery of new components from Microsoft, SAP, and Oracle</li> </ul>				
<p><b>Application update 9.2.6</b> <i>December, 2016</i></p> <ul style="list-style-type: none"> <li>• Enhanced discovery of Microsoft Exchange editions</li> <li>• Reporting high watermark of Oracle Database user sessions</li> <li>• Measuring application usage on Mac OS X</li> <li>• Utilization of the Install Seats metric for products discovered by SWID tags</li> <li>• Upload of PVU table and software catalog during the upgrade</li> </ul>	<p><b>84, 85</b> - February catalog update</p>	<p>All customers</p>	<p>APARs delivered in the catalog update:</p> <ul style="list-style-type: none"> <li>• IV87656</li> <li>• IV92592</li> </ul>	
	<p><b>83</b> - January catalog update</p>		<p>APARs delivered in the catalog update:</p> <ul style="list-style-type: none"> <li>• IV91508</li> <li>• IV90557</li> <li>• IV90764</li> <li>• IV91182</li> </ul>	
	<p><b>82</b> - BigFix Inventory 9.2.6 update + December catalog update</p>			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Reduced impact of scans due to the optimization of the scanner cache folder on the endpoints</li> <li>• Searching the software catalog by part number</li> <li>• Best practices for database backup</li> <li>• Fixlet version visible in the BigFix client logs</li> <li>• Improved performance of generating CSV reports</li> <li>• Additional options for migrating from License Metric Tool and Tivoli Asset Discovery for Distributed 7.x</li> <li>• <b>PREVIEW FEATURE:</b> Utilization of the physical core-based metric for Microsoft SQL Server</li> <li>• <b>PREVIEW FEATURE:</b> Extension of the Software Classification panel</li> </ul>				
<b>Application update 9.2.5.1</b>  <i>October, 2016</i>  <ul style="list-style-type: none"> <li>• Fix for APARs IV89617, IV90167, IV90129</li> </ul>	<b>81</b> - November catalog update	All customers		
	<b>80</b> - October catalog update	All customers		
	<b>79</b> - BigFix Inventory 9.2.5.1 update	All customers		

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><b>Application update 9.2.5</b></p> <p><i>September, 2016</i></p> <ul style="list-style-type: none"> <li>• Utilization of the Install metric for non-IBM products</li> <li>• Software discovery on IBM i</li> <li>• Software discovery in Docker containers</li> <li>• Bundling tags for improved software classification</li> <li>• Determining the usage of Virtual Processor Cores (VPC)</li> <li>• Information about software scan duration</li> <li>• New VM manager status - Insufficient rights</li> <li>• Information about processor brand string</li> <li>• Forcing re-upload of software scan results</li> <li>• Installing the scanner in an alternative path</li> <li>• <b>PREVIEW FEATURE:</b> Extension of the Software Classification panel</li> </ul>	<p><b>78</b> - Fixlet site update to address security vulnerability in the compressing utility used by the scanner</p>	<p>All customers</p>		
	<p><b>77</b> - BigFix Inventory 9.2.5 update + September catalog update</p>	<p>All customers</p>		
<p><b>Application update 9.2.4</b></p> <p><i>June, 2016</i></p>	<p><b>76</b> - August catalog update</p>	<p>All customers</p>		
	<p><b>75</b> - July catalog update</p>	<p>All customers</p>		

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Setting metric thresholds for IBM products</li> <li>• Sharing feedback</li> <li>• Improvements for VM managers</li> <li>• API to retrieve cluster information</li> <li>• Support for BigFix database restoration</li> <li>• Optimization of the scanner cache configuration</li> <li>• Discovery of software that is not in the current software catalog</li> <li>• <b>PREVIEW FEATURE:</b> New Software Classification panel</li> </ul>	74 - June catalog update	All customers		
	72, 73 - BigFix Inventory 9.2.4 update	All customers		
<p><b>Application update 9.2.3.1</b></p> <p><i>April, 2016</i></p> <ul style="list-style-type: none"> <li>• Fix for APAR IV83558 (Upgrade issue on DB2)</li> <li>• Performance improvements</li> </ul>	71 - May 2016 catalog update	All customers	<p><b>Upgrade from version earlier than 9.2.3:</b> Stop the actions created by the Initiate Software Scan and Upload Software Scan Results fixlets and start them again by using the fixlets from the updated BigFix Inventory site.</p>	
	70 - April 2016 catalog update			
	69 - BigFix Inventory 9.2.3.1 update	<p>Customers who have not yet upgraded to application update 9.2.3.</p> <p>If you already upgraded to version 9.2.3, you can install the update to improve the</p>		

Table 1. Updates and patches (continued)

Update	Site version	Target customers	Comments and upgrade considerations	More information
		application performance.	<b>Upgrade from version 9.2.3:</b> Stop the actions created by the Initiate Software Scan fixlet and start them again by using the fixlet from the updated BigFix Inventory site.	
<p><b>Application update 9.2.3</b> <i>March, 2016</i></p> <ul style="list-style-type: none"> <li>• Support for Unicode</li> <li>• Collecting file MD5 and SHA256 checksums for security purposes</li> <li>• Conditional report emails based on the number of rows in the report</li> <li>• Controlling scan schedule directly from the BigFix Inventory user interface</li> <li>• Data visibility and license reporting per computer group limited to authorized users</li> <li>• Replacing Software Knowledge Base Toolkit with BigFix Inventory for managing the software catalog content</li> <li>• Flexible date filtering</li> </ul>	<p><b>67, 68</b> - BigFix Inventory 9.2.3 update + March 2016 catalog update</p>	All customers	<p>Stop the actions created by the Initiate Software Scan and Upload Software Scan Results fixlets and start them again by using the fixlets from the updated BigFix Inventory site.</p> <p>If you do not restart these actions, results of the delta file system scan are not generated and the full file system scan is always uploaded to the BigFix server.</p>	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Collecting host serial numbers</li> <li>• Forcing capacity scan data uploads</li> <li>• Changing advanced server settings from the application user interface</li> <li>• Manually adjusting the PVU per core value from the BigFix Inventory user interface</li> </ul>				
<p><b>Application update 9.2.2</b></p> <p><i>December, 2015</i></p> <ul style="list-style-type: none"> <li>• License reports per IBM subcapacity region</li> <li>• License reports per organizational business unit</li> <li>• License reports in the service provider environment</li> <li>• Creating extended signatures</li> <li>• REST API for retrieving raw scan data</li> <li>• Consolidated endpoint information</li> <li>• Disabling the calculation of extended software aggregates</li> <li>• Configuring location of the scanner cache folder</li> </ul>	66 - February catalog update	All customers		
	65 - January catalog update			
	64 - December catalog update			
	63 - BigFix Inventory 9.2.2 update			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Identifying VM manager duplicates</li> <li>• Defining time range of reports in relation to the current data</li> <li>• Support for new platforms</li> </ul>				
<p><b>Application update 9.2.1</b></p> <p><i>October, 2015</i></p> <ul style="list-style-type: none"> <li>• Rebranding from IBM Endpoint Manager for Software Use Analysis to IBM BigFix Inventory</li> <li>• Discovery of software installed on Mac OS</li> <li>• Extended discovery of Oracle Database</li> <li>• Monitoring utilization of license metrics other than PVU and RVU MAPC</li> <li>• Single Sign-On</li> <li>• Coexistence of multiple instances of BigFix Inventory on one BigFix platform</li> <li>• Identifying computers running on public clouds</li> <li>• Creating custom signatures based on non-standard file types</li> <li>• Adding custom bundling options</li> </ul>	<p><b>62</b> - November catalog update</p>	<p>All customers</p>		
	<p><b>61</b> - October catalog update</p>			
	<p><b>59</b> and <b>60</b> - Fix for incorrectly encoded Japanese and Chinese translated files introduced during site propagation 58.</p>			
	<p><b>58</b> - Fix of relevance errors reported by BigFix console for one of troubleshooting fixlet (internal defect 143747)</p>			
<p><b>57</b> - BigFix Inventory 9.2.1 update + September 2015 catalog</p>				

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Checking why a Fixlet is not relevant</li> <li>• Manually adjusting the PVU per core value</li> <li>• Importing delta file system scan</li> </ul>				
<p><b>Application update 9.2.0.2</b></p> <p><i>June 25, 2015</i></p> <ul style="list-style-type: none"> <li>• Migrating customizations from Software Use Analysis 2.2</li> <li>• Coexistence of Software Use Analysis and License Metric Tool on one Endpoint Manager server</li> <li>• Collecting capacity data directly from KVM hosts</li> <li>• Hiding free software instances from the IBM Software Classification panel</li> <li>• PowerShell as the communication interface for Hyper-V</li> </ul>	<p><b>55 and 56</b> - August 2015 catalog</p>	<p>All customers</p>		
	<p><b>53 and 54</b> - July 2015 catalog</p>			
	<p><b>52</b> - June 2015 catalog</p>			
	<p><b>50, 51</b> - SUA 9.2.0.2 update</p>			
<p><b>Application update 9.2.0.1</b></p> <p><i>May 19, 2015</i></p> <ul style="list-style-type: none"> <li>• Fixes for critical APARs</li> </ul>	<p><b>48</b> - Fixed pre-fetch syntax error</p>	<p>Customers with IEM enhanced security mode enabled and SHA-256</p>	<p>Only fixlet for upgrading to the newest version of SUA changed.</p>	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
		downloads required		
<p><b>Application update 9.2</b></p> <p><i>March 19, 2015</i></p> <ul style="list-style-type: none"> <li>• Windows installer for the Software Use Analysis server working with MS SQL server database</li> <li>• Migration from TAD4D 7.2.2 and 7.5</li> <li>• Scan groups and scan schedule migration</li> <li>• Coexistence between SUA 2.2 and 9.x</li> <li>• Serviceability improvements for VM managers</li> </ul> <p><a href="#">What's new in this release (on page ix)</a></p>	<p><b>46</b> - April 2015 catalog</p> <p><b>45</b> - April 2015 catalog; SwKBT database refreshed with new catalog</p> <p><b>44</b> - Refreshed installers with fix for APAR IV70954</p> <p><b>42, 43</b> - Removal of the ability to install/upgrade because of APAR IV70954</p> <p><b>41</b> - SUA 9.2 GA</p>	All customers	Coexistence with Software Use Analysis 2.2.	
<p><b>Application update 9.0.1.2</b></p> <p><i>December 19, 2014</i></p> <ul style="list-style-type: none"> <li>• Migration from TAD4D 7.5</li> <li>• Optimized volume of scanned file data</li> </ul>	<p><b>40</b> - February 2015 catalog</p> <p><b>39</b> - January 2015 catalog</p> <p><b>38</b> - SUA 9.0.1.2 refresh</p>	Customers migrating from Tivoli Asset Discovery for Distributed 7.5	The number of file extensions that are scanned and analyzed on the endpoints is smaller, which reduces the load on the Software Use Analysis serv-	

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<ul style="list-style-type: none"> <li>• Information about software that is installed on UNIX shared disks</li> <li>• Scan health widget</li> </ul> <p><a href="#">What's new in this release (on page ix)</a></p>	37 - VM MAN Tool/1.0.0.6		<p>er. To get accurate results, you must run a new software scan shortly after you have applied this patch.</p> <p>The ability to scan shared disks on demand. This can result in multiple clients scanning a shared disk at the same time, which can lower the performance of the shared disk. Moreover, software scans and data imports can be longer.</p>	
	36 - November 2014 catalog			
	35 - SUA 9.0.1.2 update with September 2014 catalog			
	34 - November 2014 catalog fix			
<p><b>Application update 9.0.1.1</b></p> <p><i>October 30, 2014</i></p> <ul style="list-style-type: none"> <li>• Export of the entire software inventory to a CSV file</li> <li>• Support for Power Systems on Linux (Endpoint Manager client)</li> </ul> <p><a href="#">What's new in this release (on page ix)</a></p>	33 - November 2014 catalog			
	32 - Minor content updates			
	31 - Minor content updates			
	30 - Minor content updates			
	29 - SUA 9.0.1.1 update			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
<p><b>Application update 9.0.1</b></p> <p><i>August 17, 2014</i></p> <ul style="list-style-type: none"> <li>• Deployment Health widget</li> <li>• Integration with Smart-Cloud Control Desk (SCCD)</li> <li>• Managing the software scan from the web user interface</li> <li>• Customized report views</li> <li>• REST API for exporting and importing customized report views</li> <li>• REST API for retrieving computers, software, and license use</li> <li>• Automatic capacity configuration for Linux on z/VM</li> <li>• Support for the ISO/IEC 19970-2 standard</li> <li>• CPU pooling on Linux for IBM System z</li> <li>• Shorter catalog import time</li> </ul> <p><a href="#">What's new in this release (on page ix)</a></p>	28 - CIT v 2.7.0.2043			
	27 - September 2014 catalog			
	26 - July 2014 catalog			
	25 - SUA 9.0.1 GA with June 2014 catalog			
<p><b>Application update 9.0.0.2</b></p> <p><i>June 2014</i></p>	24 - July 2014 catalog			
	23 - Minor content updates			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
This update contains fixes for APARs.  <a href="#">What's new in this release (on page ix)</a>	<b>22</b> - SUA 9.0.0.2 update			
<b>Application update 9.0.0.1</b>  <i>March 2014</i> <ul style="list-style-type: none"> <li>• Native catalog export and import</li> <li>• IBM software catalog versioned according to its release date</li> <li>• Fixlet for diagnosing the Common Inventory Technology scanner</li> <li>• APARS and defects</li> </ul> <a href="#">What's new in this release (on page ix)</a>	<b>21</b> - April 2014 catalog <b>20</b> - CIT version 2.7.0.2039 <b>19</b> - March 2014 catalog <b>18</b> - February 2014 catalog <b>17</b> - SUA 9.0.0.1 update			
<b>Application update 9.0</b>  <i>December 2013</i> <ul style="list-style-type: none"> <li>• Subcapacity reports</li> <li>• New and enhanced user interface: dashboard and top menu</li> <li>• Audit log</li> </ul> <a href="#">What's new in this release (on page ix)</a>	<b>16</b> - Minor content updates <b>15</b> - Minor content updates <b>14</b> - Minor content updates <b>13</b> - CIT version 2.7.0.2000 <b>12</b> - Minor content updates <b>11</b> - Minor content updates			

**Table 1. Updates and patches (continued)**

Update	Site version	Target customers	Comments and upgrade considerations	More information
	10 - SUA 9.0 GA			

## <discontinued> Release notes up to version 10.0.13.1

The release notes outline the features, updates and patches that are included in each version of BigFix Inventory, including the latest application updates. The latest update is cumulative and includes changes from previous releases.



**Notice:** Starting from BigFix Inventory version 10.0.13.2, this section will not be updated to follow a single source of information through [BigFix Forum - Inventory \(Release Announcements\)](#). Please refer to the [Inventory release announcements for release-specific highlights](#).

## Installing the update

To upgrade the BigFix Inventory server to the latest version, see [Upgrading BigFix Inventory \(on page dccxxiii\)](#).



**Important:** When Microsoft SQL Server is configured to encrypt the connection and encryption is forced through the setting, 'Force Encryption = Yes' but BigFix Inventory is not configured for encrypted database connection, the connection to database fails. To overcome issue follow steps described in [KB01060048](#).

## 10.0.13.1 Application update 10.0.13.1

**Table 2. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	169	Yes
BigFix Inventory Software Catalog (main version)	10.0.13.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638792	Yes
BigFix Inventory Server	10.0.13.0	No
BigFix Inventory Server: ILMT Core library	9.2.31.0	No
BigFix Inventory Server: ILMT Catalog	9.2.31.2	No

**Table 2. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Scanner	9.2.29.0000 on HP-UX	No
	9.2.31.1000 on Windows	No
	9.2.31.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.13.0	No
	9.2.31.0 on IBM I	No
BigFix Inventory VM Manager Tool	10.0.13.0	No
SAP Metric Data Collector	10.0.13.0	No
BigFix Inventory Image Scanner Script	10.0.13.0	No
BigFix Inventory Scanner Service	10.0.13.0	No
BigFix Inventory Cloud Adapter	10.0.13.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

**Included Software Catalog**

This release includes Software Catalog version 10.0.13.1 with capability to discover 110+new software versions including but not limited software manufacturers, such as Microsoft, GitHub & Cisco Systems Inc.

New template signatures included in this release:

*Template signature is a method of discovery where the version of a component is detected automatically, and a specific version is dynamically added to the catalog. Such template signatures include all component versions. They are used when the software is frequently updated, and the deployment method has not changed. One template covers 10+ software versions.*

Publisher name	Component name	Platform
DBSofts	ESF Database Migration Toolkit - Pro	Windows
Elprotronic	FET-Pro-430-LITE	Windows
ETH Zurich	Safe Exam Browser	Windows

Publisher name	Component name	Platform
GitHub	GitHub Desktop	Windows
Microsoft	Test Runner (Azure Test Plans)	Windows
TortoiseGit	<b>TortoiseGit</b>	Windows
TortoiseSVN	<b>TortoiseSVN</b>	Windows
Ipswitch Inc	MOVEit Transfer	Windows
Cisco Systems Inc.	Cisco AnyConnect Secure Mobility Client	Windows



**Note:** Changes made to the software component definition in catalog (for example, modification of component name, version, or publisher) may cause creation of new definition of the component and removal of previous one. This leads to loss of Tagging, Classification and custom EOS information.

Additionally, when discovery is based on a signature evaluated on an endpoint, previous discovery results temporarily disappear until the next software scan and related data import. New catalog must be propagated to the endpoints before the scan execution.

Updated discovery mechanism for specific software with this behavior includes specific notes (for details refer to the list of enhancements and list of defects).

For more information, refer to [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is 10.0.13.1. The **Update Software Catalog** fixlet was updated and should be run to install the latest versions of the specific components.

### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update.

ID	Description	Available since
Add discovery for MOVEit transfer	Added template signature for MOVEit transfer for windows platform	10.0.13.1
Discovery method was replaced with template signature	Replaced discovery method with template signature for improved discovery of the following components: <ul style="list-style-type: none"> <li>• TortoiseGit</li> <li>• TortoiseSVN</li> </ul>	10.0.13.1

ID	Description	Available since
	 <b>Note:</b> For TortoiseGit and TortoiseSVN, old discovery records will be closed, and new ones will be opened.	
Added new publishers	Added 6 new publishers: <ul style="list-style-type: none"> <li>• DBSofts</li> <li>• Elprotronic</li> <li>• ETH Zurich</li> <li>• GitHub</li> <li>• TortoiseGit</li> <li>• TortoiseSVN</li> </ul>	10.0.13.1

### Ideas implemented

The following table lists BigFix Inventory Catalog Ideas that are implemented in this update.

ID	Symptoms	Behavior after you install the update	Available since
BFINV-I-304	Discovery of Microsoft BizTalk Server 2020	Added discovery for following Microsoft BizTalk Server 2020 Editions: <ul style="list-style-type: none"> <li>• Standard</li> <li>• Enterprise</li> <li>• Branch</li> <li>• Developer</li> </ul>	10.0.13.1
BFINV-I-296	Usage tracking for WinZip	Updated existing template signature of WinZip to allow usage tracking	10.0.13.1
BFINV-I-303	Discovery for Skype for Business Server 2019	Added discovery for Skype for Business server 2019	10.0.13.1
BFINV-I-81	Discovery for Cisco AnyConnect Secure Mobility Client for Window	Added a template signature for Cisco AnyConnect Secure Mobility Client for Windows platform	10.0.13.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0104553</a>	Publishers named ACRO SOFTWARE and Acro Software Inc. existed in catalog. Also, Publishers named Symantec, Symantec Corporation, Eikon Systems Inc. (see Symantec), Symantec (PowerQuest), Symantec (Quarterdeck), Whitewater Group (see Symantec Corp.) existed in catalog.	Only one publisher named Acro Software exists in catalog.  Also, Symantec and Symantec Corporation exist in catalog.	10.0.13.1
<a href="#">KB0105106</a>	False Positive Discovery for Symantec Enterprise Vault	Symantec Enterprise Vault 10.0 CIT signature for windows is deleted to avoid false discoveries with other versions.	10.0.13.1

### **10.0.12.2** Application update 10.0.12.2

**Table 3. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	164	Yes
BigFix Inventory Software Catalog (main version)	10.0.12.2	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638774	Yes
BigFix Inventory Server	10.0.12.0	No
BigFix Inventory Server: ILMT Core library	9.2.30.0	No
BigFix Inventory Server: ILMT Catalog	9.2.30.5	No
BigFix Inventory Scanner	9.2.29.0000 on HP-UX	No

**Table 3. Published site version (continued)**

<b>Name of component</b>	<b>Version</b>	<b>Updated in the release</b>
	9.2.30.1000 on Windows 9.2.30.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.12.0 9.2.30.0 on IBM I	No No
BigFix Inventory VM Manager Tool	10.0.12.0	No
SAP Metric Data Collector	10.0.12.0	No
BigFix Inventory Image Scanner Script	10.0.12.0	No
BigFix Inventory Scanner Service	10.0.12.0	No
BigFix Inventory Cloud Adapter	10.0.12.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

**Included Software Catalog**

This release includes Software Catalog version 10.0.12.2 with capability to discover more than 500 new software versions including but not limited to software manufacturers, such as Oracle, Citrix, Microsoft, Google Inc., Red Hat, VMware, Micro Focus, SAP, Symantec, Palo Alto, Hewlett-Packard, Intel, and Dell.

New template signatures included in this release:

<b>Publisher name</b>	<b>Component name</b>	<b>Platform</b>
Box Inc	Box Tools	Windows
Brave San Francisco	Brave	Windows
CyberArk	CyberArk AIMWebService	Windows
CyberArk	CyberArk Application Access Manager	Windows
CyberArk	CyberArk Application Identity Manager	Windows
CyberArk	CyberArk Digital Vault	Windows

Publisher name	Component name	Platform
CyberArk	CyberArk Identity Connector	Windows
CyberArk	CyberArk Privileged Session Manager	Windows
CyberArk	CyberArk SafeShare	Windows
CyberArk	CyberArk Vault Disaster Recovery	Windows
Docker	Docker Desktop	Windows
Emurasoft	Emurasoft EmEditor	Windows
FileZilla.org	FileZilla Server	Windows
Hewlett-Packard	HP OpenView Performance Access	Windows, Linux
Micro Focus	Silk Performer	Windows
Micro Focus	Silk TrueLog Explorer	Windows
Microsoft	Microsoft Azure Storage Explorer	Windows
PTC	PTC Creo View	Windows
Schneider Electric	Floating License Manager	Windows
TIBCO	TIBCO Spotfire Analyst	Windows
Y. Hirata/T. Teranishi	Tera Term	Windows
Codec Guide	Codec Tweak Tool	Windows
IDEMIA	MorphoManager Client	Windows
Mendix	Mendix Studio Pro	Windows
MPC-HC Team	Media Player Classic - Home Cinema	Windows
CPlusSharp	GraphStudioNext	Windows



**Note:** Changes made to the software component definition in catalog (for example, modification of component name, version, or publisher) may cause creation of new definition of the component and removal of previous one. This leads to loss of Tagging, Classification and custom EOS information. Also, when discovery is based on a signature evaluated on an endpoint, previous discovery results temporarily disappear until the next software scan and



related data import. New catalog must be propagated to the endpoints before the scan execution.

Updated discovery mechanism for specific software with this behavior includes specific notes. For details refer to the list of enhancements and list of defects. For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is 10.0.12.2.

The **Update Software Catalog** fixlet was updated and should be run to install the latest versions of the specific components.

### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update:

Abstract	Description	Available since
Unused duplicated publishers deleted from the catalog	Deleted 10 unused duplicated publishers from the catalog: <ul style="list-style-type: none"> <li>• Apache.org</li> <li>• The MathWork Inc</li> <li>• SuSE Linux</li> <li>• Altair Engineering Inc.</li> <li>• IrfanSkiljan</li> <li>• PostgreSQL Inc.</li> <li>• FUJI/XEROX</li> <li>• Yukihiro Matsumoto</li> <li>• LIGHTNING UK</li> <li>• PRISYMID</li> </ul>	10.0.12.2
Added new publishers	Added 6 new publishers: <ul style="list-style-type: none"> <li>• Y. Hirata/T. Teranishi</li> <li>• Codec Guide</li> <li>• IDEMIA</li> <li>• Mendix</li> <li>• MPC-HC Team</li> <li>• CPlusSharp</li> </ul>	10.0.12.2

Abstract	Description	Available since
Discovery method was replaced with template signature	<p>Replaced discovery method with template signature for improved discovery of the following components:</p> <ul style="list-style-type: none"> <li>• Tera Term</li> <li>• Codec Tweak Tool</li> <li>• MorphoManager Client</li> <li>• Media Player Classic - Home Cinema</li> </ul> <p>Old discovery records will be closed, and new ones will be opened.</p>	10.0.12.2
New Discovery for Mendi Studio Pro	New discovery for Mendix Studio Pro is added as a template signature for Windows platform.	10.0.12.2
New Discovery for CPlusSharp Graph Studio Next	New discovery for Graph Studio next is added as a template signature for Windows platform.	10.0.12.2

### Ideas implemented

The following table lists BigFix Inventory Catalog Ideas that are implemented in this update.

ID	Idea	Description	Available since
<a href="#">BFINV-I-137</a>	Add discovery of Red Hat Enterprise Linux Server	Added discovery of Red Hat Enterprise Linux Server for version 8.7 and 9.1	10.0.12.2
<a href="#">BFINV-I-278</a>	Add discovery for CrushFTP	<p>Added discovery for CrushFTP for version 8, 9 &amp; 10. Discovery is added for Windows and LINUX platform. <b>Limitations</b></p> <p>User must run the CrushFTP application at least once to make the discovery possible. After upgrading the application, the version does not update automati-</p>	10.0.12.2

ID	Idea	Description	Available since
		cally in the configuration file. User should update CrushFTP configuration file manually to get proper version discovery.	

**Defect fixes**

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0104564</a>	False positive for AppDynamics - Machine Agent	Faulty signatures were deleted. New CIT Signatures are added to improve discovery for versions 4,20,21,22 & 23   <b>Note:</b> Old discovery records will be closed, and new ones will be opened.	10.0.12.2
<a href="#">BI-17385</a>	Inconsistent Component version for SAS Enterprise Guide	Updated SAS Enterprise Guide from version 8.3 to version 9. This update aligns SAS Enterprise Guide with the other components in the SAS 9.4 family.   <b>Note:</b> Old discovery records will be closed,	10.0.12.2

ID	Symptoms	Behavior after you install the update	Available since
		 and new ones will be opened.	

### 10.0.12.1 Application update 10.0.12.1

**Table 4. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	163	Yes
BigFix Inventory Software Catalog (main version)	10.0.12.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638772	Yes
BigFix Inventory Server	10.0.12.0	No
BigFix Inventory Server: ILMT Core library	9.2.30.0	No
BigFix Inventory Server: ILMT Catalog	9.2.30.5	No
BigFix Inventory Scanner	9.2.29.0000 on HP-UX	No
	9.2.30.1000 on Windows	No
	9.2.30.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.12.0	No
	9.2.30.0 on IBM I	No
BigFix Inventory VM Manager Tool	10.0.12.0	No
SAP Metric Data Collector	10.0.12.0	No
BigFix Inventory Image Scanner Script	10.0.12.0	No
BigFix Inventory Scanner Service	10.0.12.0	No
BigFix Inventory Cloud Adapter	10.0.12.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No

**Table 4. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Keystore Migration Tool	1.0	No

### Included Software Catalog

This release includes Software Catalog version 10.0.12.1 with capability to discover 110+ new software versions including but not limited to the following software manufacturers: Cisco, Google, McAfee, Micro Focus, VMware, SAP, Symantec, NVIDIA, Palo Alto, Microsoft, Dell, and SAS.

New template signatures included in this release:

***Template signature is a method of discovery where the version of a component is detected automatically, and a specific version is dynamically added to the catalog. Such template signatures include all component versions. They are used when the software is frequently updated, and the deployment method has not changed. One template covers 10+ software versions.***

Publisher name	Component name	Platform
CyberArk	CyberArk Central Policy Manager	Windows



**Note:** Changes made to the software component definition in catalog (for example, modification of component name, version, or publisher) may cause creation of new definition of the component and removal of previous one. This leads to loss of Tagging, Classification and custom EOS information. When discovery is based on a signature evaluated on an endpoint, previous discovery results temporarily disappear until the next software scan and related data import. New catalog must be propagated to the endpoints before the scan execution.

Updated discovery mechanism for specific software with this behavior includes specific notes. For details refer to the list of enhancements and list of defects below.

For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is 10.0.12.1.

The **Update Software Catalog** fixlets were updated and should be run to install the latest versions of the specific components.

### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update:

Abstract	Description	Available since
Added discovery for SAS Enterprise Guide	Added discovery for SAS Enterprise Guide for version 8.3. Discovery is added for Windows-platform.	10.0.12.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0103102</a>	Incorrect discovery of CyberArk Endpoint Privilege Manager Agent	Signature is updated for CyberArk Endpoint Privilege Manager Agent to improve discovery and regular signatures of CyberArk Central Policy Manager is deleted and replaced by template signature.   <b>Note:</b> Old discovery records will be closed, and new ones will be opened.	10.0.12.1

## 10.0.12 Application update 10.0.12

**Table 5. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	160	Yes
BigFix Inventory Software Catalog (main version)	10.0.12.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638768	Yes
BigFix Inventory Server	10.0.12.0	Yes

**Table 5. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Server: ILMT Core library	9.2.30.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.30.5	Yes
BigFix Inventory Scanner	9.2.29.0000 on HP-UX	No
	9.2.30.1000 on Windows	Yes
	9.2.30.0000 on other platforms	Yes
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.12.0	Yes
	9.2.30.0 on IBM I	Yes
BigFix Inventory VM Manager Tool	10.0.12.0	Yes
SAP Metric Data Collector	10.0.12.0	Yes
BigFix Inventory Image Scanner Script	10.0.12.0	Yes
BigFix Inventory Scanner Service	10.0.12.0	Yes
BigFix Inventory Cloud Adapter	10.0.12.0	Yes
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

**Allowed upgrade path**

Starting from BigFix Inventory version 10.0.10.0, to ensure smooth upgrade process, direct upgrade is supported from the last 8 server versions. The minimal version for direct upgrade path increases with every release.

Depending on version number, one or more upgrade steps are necessary. The minimal version for direct upgrade path is 10.0.3.0. For versions up to 10.0.1.0 (inclusive), upgrade first to 10.0.2.0 then upgrade to 10.0.10.0 using *Upgrade to interim version* fixlets.



**Tip:** It is recommended to upgrade BigFix Inventory frequently to make the new features and security fixes available. At least one upgrade per year is important.

**Changes to supported systems**

Added support for the following platforms and systems as managed devices:

- CentOS Stream 9
- Oracle Enterprise Linux 9
- KDDI Cloud for Windows

For more information about supported systems, refer to the [Detailed System requirements \(on page cdxxxii\)](#).

### Enhancement to Microsoft software reporting

#### • Microsoft Licensing update

This release offers several changes for Microsoft software inventory and license reporting.

The following metrics have been added to BigFix Inventory to reflect the recent Microsoft Licensing changes.

- Microsoft Windows Server Physical Processor Core
- Microsoft Windows Server Virtual Processor Core
- Microsoft Windows Server Standard Physical Processor Core
- Microsoft SQL Server Virtual Processor Core

Along with previously delivered Microsoft SQL Server Physical Processor Core.

After carefully reviewing the current Microsoft licensing requirements, we advise migrating to the new metrics. In order to facilitate the migration, we have made changes in the configuration of Bundling Assistant - the newly discovered Microsoft products (SQL Server and Windows Server) will be classified to the new metrics. In the future, the old metrics will be deprecated.



**Note:** The new Microsoft metrics are calculated only when there is an existing contract created with these metrics. The Metric value is not visible from the *All Metrics* panel.

Along with new Microsoft Metrics, ready to use Microsoft Reports were adjusted by:

- License compliance reports, for Microsoft SQL Server and Windows Server are based on *All Contracts* instead of *All Metrics*.
- - New inventory reports, for Microsoft SQL Server and Windows Server are based on *Software Classification* panel with adjusted set of visible columns to help with Microsoft license optimization.

#### • Updated discovery for Microsoft SQL Server and its components

For information on this, refer to the [What's New \(on page xv\)](#).

#### • Refreshed End of Support for Microsoft Products

For information on this, refer to the [What's New \(on page xvii\)](#).

- **Contract management changes**

The All Contracts panel has been enriched with Publisher and Software Product filtering capability which lets users to easily narrow down the scope of their work and define custom contract reports for particular Publisher or Software Product.

The enhanced new recalculate button enables a simple 'what if' analysis as users no longer have to wait for recalculation until the next data import.



**Note:** Recalculation is narrowed down to computer groups assigned to users. For example, if a user has the access to only one department, then only this department will be calculated upon clicking the button. This approach can be useful when distributing work to different Software Asset Managers.

For the complete list of changes see [What's New \(on page xv\)](#).

### Enhancement to Package Data reporting

Top voted idea [BFINV-I-193](#) is addressed. Package Data report is extended with installation date and path for Windows-type entries. The actual installation date of software is helpful in ensuring license compliance, while package installation path improves software discovery reporting.

The new information is based on system registry data provided by the package vendor, and Microsoft Installer (MSI) packages are supported. Moreover, the installation date and path are collected for Windows operating system packages.

Note: this feature requires both upgrading BigFix Inventory server and restarting Initiate Software Scan fixlet (or upgrading Windows disconnected scanners). In order to ensure the new data is processed in the most efficient way it is recommended to **upgrade the server first and then restart the fixlet**.

### Included Software Catalog

This release includes Software Catalog version 10.0.12.0 with capability to discover 170+ new software versions including but not limited to the following software manufacturers: Adobe, Autodesk, Cisco, Citrix, McAfee, Microsoft, Oracle, RED HAT, and VMware.

New template signatures included in this release:

***Template signature is a method of discovery where the version of a component is detected automatically, and specific version added to the catalog on fly. Such template signatures include all component versions. They are used when the software is frequently updated and the deployment method is not changed. One template covers 10+ software versions.***

Publisher name	Component name	Platform
Tenable Network Security Inc.	Nessus Agent	Windows, Linux



**Note:** Changes made to the software component definition in catalog (for example, modification of component name, version, or publisher) may cause creation of new definition of the component and removal of previous one. This leads to loss of Tagging, Classification and custom EOS information.

Additionally, when discovery is based on a signature evaluated on an endpoint, previous discovery results temporarily disappear until the next software scan and related data import. New catalog must be propagated to the endpoints before the scan execution.

Updated discovery mechanism for specific software with this behavior includes specific notes (for details refer to the list of enhancements and list of defects).

For more information, refer to [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is: 10.0.12.0.

The following #fixlets# were updated and should be run to install the latest versions of the specific components:

- Upgrade to the latest version of BigFix Inventory
- Update VM Manager Tool to version
- Install VM Manager Tool
- Install Additional VM Manager Tool
- Install SAP Metric Data Collector
- Update SAP Metric Data Collector
- Download the Disconnected Scanner Package for IBM i
- Download the Disconnected Scanner Package
- Download the BigFix Inventory Container Solution Packages
- Download BigFix Inventory
- Install or Upgrade Scanner in private mode on Windows
- Install or Upgrade Scanner
- Software Catalog Update (*if BigFix Inventory is not upgraded*)

The following #fixlets# were updated and require that actions created by their previous versions are stopped and then started by using the updated #fixlets#. Restarting actions is necessary to ensure that new features work properly:

- Run Capacity Scan and Upload Results
- Initiate Software Scan on Shared Disks
- Initiate Software Scan

The following #fixlets# were updated or added:

- Get Oracle Features
- Get Oracle Concurrent Sessions Number

### Enhancements and important changes

For complete list of enhancements, refer to the [What's New \(on page xv\)](#).

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

**Table 6. The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update.**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0103184</a>	BigFix Inventory long startup time due to initialization of Computer System API	The issue is fixed.	10.0.12.0
<a href="#">KB0102192</a>	Database schema update to BigFix Inventory 10.0.11 fails on 1663767482_template_signature_defs_create_products.rb migration script.	The issue is fixed.	10.0.12.0
BI-14930	An error message appears after opening a Product Name link in the Product Metrics per Contract and Product Metrics per Group panels when the web browser local date is different than UTC date.	The issue is fixed.	10.0.12.0
BI-15132	'Is Incomplete' information on All Contracts/Product Metrics per Contract panels is not calculated for metrics other than Microsoft SQL Serv-	If there are no software instances under the contract, the value is 'No'. Otherwise, the information is calculated based on hardware inventory status for the	10.0.12.0

**Table 6. The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update. (continued)**

ID	Symptoms	Behavior after you install the update	Available since
	er Physical Processor Cores	following metrics: Oracle Processor Core, Microsoft Physical Core with SA, Microsoft Single Physical Processor, Microsoft Dual Physical Processor (as on All Metrics panel).	
BI-14185	Mac Software is by default classified to Unknown metrics instead of Install Seats	The issue is fixed	10.0.12.0
BI-15144	Blue code library defect	<p>IJ44202 9.2.30 Partition cores are limited by the maximum capacity value on uncapped PowerPC Linux LPARs although they should not be limited. The problem does not occur. Because partition cores are no longer limited (which is the correct behavior), license metric utilization for products that are installed on the affected machines might be higher after you upgrade to application update 9.2.30.</p> <p>IJ42751 9.2.30 Information from the VM Manager Tool is not merged with information from the scanner in case of</p>	10.0.12.0

**Table 6. The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update. (continued)**

ID	Symptoms	Behavior after you install the update	Available since
		KVM hosts. As a result, the machine might appear as two separate entities on the PVU reports when software is installed both on the KVM host and on the VM. The problem does not occur.	
BI-15070	Recalculation triggered from All Contracts does not remove the 'Recalculation Needed' icon.	The 'Recalculation Needed' icon disappears properly after recalculation is completed.	10.0.12.0
BI-15065	'Recalculation needed' icon is sometimes not displayed on Contracts panel for PVU / RVU MAPC metrics	Recalculation icon is properly displayed.	10.0.12.0
BI-14772	User-assigned default metrics are re-assigned during data or catalog import.	The issue is fixed.	10.0.12.0
BI-16092	It is not possible to create a contract from BFI UI for important products	Improved searching of Software Product on add/edit contract window.  After change results will be first queried by the product name. Should query not retrieve any results, it will fall back to previous behavior.	10.0.12.0

**Table 6. The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update. (continued)**

ID	Symptoms	Behavior after you install the update	Available since
BI-14940	A Product Name link in the Product Metrics per Contract and Product Metrics per Group panels doesn't redirect to proper Software Classification report for Microsoft metrics and the Oracle Processor Core metric.	<p>A Product Name link in the Product Metrics per Contract and Product Metrics per Group panels now redirects to Software Classification report with proper set of filters and columns.</p> <p>The Product Name link for products with any of Microsoft metrics redirects to Software Classification report with the same set of columns as on predefined <i>Microsoft SQL Server Inventory</i> and <i>Microsoft Windows Server Inventory</i> reports. The Product Name link for products with Oracle Processor Core metric redirects to Software Classification report with the same set of columns as on predefined <i>Oracle Database Inventory</i> report.</p>	10.0.12.0
<a href="#">KB0101675</a>	SAP Metric Data Collector failing with error 21	The issue is fixed.	10.0.12.0

**Table 7. The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update:**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0102567</a>	SSH Tectia Server detailed version was not reported due to the presence of regular signatures along with template signatures.	SSH Tectia signatures were removed and now template signatures report the detailed version.   <b>Note:</b> Old discovery records will be closed, and new records will be opened.	10.0.12.0
<a href="#">KB0102546</a>	Nessus Agent is incorrectly discovered	Deleted incorrect signatures of Nessus Agent and added a template signature for both Windows and Linux platform.   <b>Note:</b> Old discovery records will be closed, and new records will be opened.	10.0.12.0
BI-15668	Version typo issue in SentinelOne Agent Signature	Typo error has been corrected in Signature tags for Sentinel one Agent Signature   <b>Note:</b> Old discovery records will be closed, and new	10.0.12.0

**Table 7. The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update: (continued)**

ID	Symptoms	Behavior after you install the update	Available since
		 records will be opened.	

**Table 8. The following table lists BigFix Inventory tools APARs and other defects that are fixed in this update. It covers VM Manager, SAP Data Collector, Image Scanner, Scanner Service, Cloud Adapter:**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0101168</a>	VM Manager 10.0.10 contains incorrectly named DLL file which causes problems with removal functionality	Incorrect file name "vcrunt~1.dll" has been corrected to "vcruntime140.dll".	10.0.12.0
BI-15049	When a cache file was accidentally deleted from a given computer, VM Manager was showing an incorrect message about invalid credentials.	Previous message with "After {0} {0,choice,0# attempt 1< attempts}, the server suspended contacting the host {1} so as not to block the account. Correct the VM manager parameters to resume the operation."  Corrected to:  After a maximum number of attempts, the server suspended contacting the host {1} so as not to block the account. Correct the VM manager parameters to resume the operation.	10.0.12.0

**Table 8. The following table lists BigFix Inventory tools APARs and other defects that are fixed in this update. It covers VM Manager, SAP Data Collector, Image Scanner, Scanner Service, Cloud Adapter: (continued)**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0101675</a>	SAP Metric Data Collector failing with error 21	The issue is fixed.	10.0.12.0

**Table 9. The following table lists BigFix Inventory Scanner APARs and other defects that are fixed in this update:**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0101390</a>	Created files by user on endpoint side ends up on BigFix server and break BFI import due to special characters in the capacity scan file names.	Prevention added to endpoint side for the files and Server will no longer break the import if some Capacity Scan files will fail.	10.0.12.0
<a href="#">KB0103188</a>	Detailed Hardware Scan corrupted results when UTF-8 character is incorrect in local character set.	There is enforced to use UTF-8 to read the file by analysis.	10.0.12.0
<a href="#">KB0103232</a>	Multiple instances of Software Scan able to run simultaneously and cause 100% CPU usage	Fixlet checks for active scanner processes once again, before starting them	10.0.12.0

**Table 10. The following table lists BigFix Inventory Fixlets APARs and other defects that are fixed in this update.:**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0101440</a>	"Get Oracle Features" creates incorrect detailed version in Oracle DB swidtag	Improved collection of the correct detailed version from Oracle Database updates. Before the change version re-	10.0.12.0

**Table 10. The following table lists BigFix Inventory Fixlets APARs and other defects that are fixed in this update.: (continued)**

ID	Symptoms	Behavior after you install the update	Available since
		ported was 19.0.0.0.0, now 19.17.0.0.221018.	
BI-14226	Extended application usage is not collected when amount of usage data to process exceeds 1 MB.	Extended application usage collection is by default disabled for all processes except Java. The data collection for all processes can be enabled with a new "Collect extended application usage statistics" option in the "Initiate Software Scan" fixlet.	10.0.12.0

**Table 11. The following table lists user documentation APARs and other defects that are fixed in this update:**

ID	Symptoms	Behavior after you install the update	Available since
BI-15939	Missing information about interim upgrade on Upgrading to BigFix Inventory site	Updated the information about interim server upgrade in the document.  Doc link: <a href="#">Upgrading BigFix Inventory (on page dccxxiii)</a>	10.0.12.0
<a href="#">KB0102706</a>	BFI Catalog download failing with BigFix 10.0.8.0 / Certificate validation on	Added new topics to provide solution on regenerating self-signed certificates and structuring private keys and certificates.  Doc link:	10.0.12.0

**Table 11. The following table lists user documentation APARs and other defects that are fixed in this update: (continued)**

ID	Symptoms	Behavior after you install the update	Available since
		<ul style="list-style-type: none"> <li>• <a href="#">Structuring and formatting private keys and certificates</a></li> <li>• <a href="#">Regenerating self-signed certificates</a></li> </ul>	
BI-15740	Extend Nutanix documentation	Added information about supported Nutanix version (Nutanix Prism Element) and the required user role to perform access the connection in the document.	10.0.12.0

#### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.12.0.

#### Scanner version and changes

The scanner version that is used with this update is 9.2.30.1000 for Windows and 9.2.30.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.12.0 and 9.2.30.0 for IBM I.

### 10.0.11.2 Application update 10.0.11.2

**Table 12. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	159	Yes
BigFix Inventory Software Catalog (main version)	10.0.11.2	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638762	Yes
BigFix Inventory Server	10.0.11.0	No

**Table 12. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Server: ILMT Core library	9.2.29.0	No
BigFix Inventory Server: ILMT Catalog	9.2.29.0	No
BigFix Inventory Scanner	9.2.29.1000 on Windows	No
	9.2.29.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (including package for Containers)	10.0.11.0	No
	9.2.29.0 on IBM I	No
BigFix Inventory VM Manager Tool	10.0.11.0	No
SAP Metric Data Collector	10.0.11.0	No
BigFix Inventory Image Scanner Script	10.0.11.0	No
BigFix Inventory Scanner Service	10.0.11.0	No
BigFix Inventory Cloud Adapter	10.0.11.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

**Included Software Catalog**

This release includes Software Catalog version 10.0.11.2 with capability to discover more than 530 new software versions including but not limited to software manufacturers, such as Oracle, Microsoft, Dell, and SAS.

For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

**Table 13. New template signatures included in this release:**

*Template signature is a discovery method to automatically detect the version of a component and a specific version is dynamically added to the catalog. Such template signatures include all component versions. They are used when the software is frequently updated, and the deployment method has not changed. One template covers more than 10 software versions.*

Publisher Name	Component Name	Platform
FinalWire	AIDA64 Extreme	Windows
Lizard Labs	Log Parser Lizard	Windows
Loftware	LLMWIN32	Windows
NetWrix Corporation	PPE Configuration	Windows
OutSystems	OutSystems Integration Studio	Windows
Perforce	Helix ALM Client	Windows
SolarWinds.Net	FireDaemon Service Manager	Windows

#### Modified content

The version number of the fixlet is 10.0.11.2. The **Update Software Catalog** fixlet was updated and should be run to install the latest versions of the specific components.

#### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update:

Abstract	Description	Available since
Enhancement of Oracle Java Detection	Enhanced discovery of existing Java signature for versions 9, 10,11, 12, 13, 14 ,15,16 and 17 to cover non-standard installations.	10.0.11.2

#### Ideas implemented

The following table lists BigFix Inventory Catalog Ideas that are implemented in this update.

ID	Idea	Description	Available since
BFINV-I-259	Add discovery of Kafka of Confluent publisher	New signature for Kafka of Confluent publisher was added in the catalog.	10.0.11.2

#### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0102548</a>	False positive for Cisco AMP for Endpoints Connector	Existing signatures for Cisco AMP for endpoints were replaced to avoid false discovery.   <b>Note:</b> Old discovery records will be closed, and new ones will be opened.	10.0.11.2

#### 10.0.11.1 Application update 10.0.11.1

**Table 14. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	158	Yes
BigFix Inventory Software Catalog (main version)	10.0.11.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638758	Yes
BigFix Inventory Server	10.0.11.0	No
BigFix Inventory Server: ILMT Core library	9.2.29.0	No
BigFix Inventory Server: ILMT Catalog	9.2.29.0	No
BigFix Inventory Scanner	9.2.29.1000 on Windows	No
	9.2.29.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.11.0	No
	9.2.29.0 on IBM I	No
BigFix Inventory VM Manager Tool	10.0.11.0	No

**Table 14. Published site version (continued)**

Name of component	Version	Updated in the release
SAP Metric Data Collector	10.0.11.0	No
BigFix Inventory Image Scanner Script	10.0.11.0	No
BigFix Inventory Scanner Service	10.0.11.0	No
BigFix Inventory Cloud Adapter	10.0.11.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

**Included Software Catalog**

This release includes Software Catalog version 10.0.11.1 with capability to discover 47 new software versions including but not limited to the Dell, Docker, Microsoft, Oracle, and SAS, etc.

For more information, refer the [Catalog Release Notes](#) and [Catalog Change List](#).

**Modified content**

The version number of the fixlet is 10.0.11.1.

The following fixlets were updated and should be run to install the latest versions of the specific components:

- Update Software Catalog
- Upgraded to the latest version 10.0.11.1 of BigFix Inventory; updated Release Date to Jan, 23rd 2023. Fixlet patches the BigFix Inventory Server for KB0102192.

**Enhancements and important changes**

The following table lists enhancements and changes that are introduced in this update:

Abstract	Description	Available since
Added discovery for Base SAS	<ul style="list-style-type: none"> <li>• Added discovery for Base SAS version 9.</li> <li>• Added discovery for Windows and Unix platforms.</li> <li>• Deleted detection for SAS Base for AIX platform.</li> </ul>	10.0.11.1

Abstract	Description	Available since
Added discovery for SAS/ACCESS Interface to DB2	<ul style="list-style-type: none"> <li>• Added discovery for SAS/ACCESS interface in DB2 version 9.</li> <li>• Added discovery for Unix platform.</li> </ul>	10.0.11.1
Added discovery for SAS Enterprise Miner	<ul style="list-style-type: none"> <li>• Added discovery for SAS Enterprise Miner version 9.</li> <li>• Added discovery for Windows platform.</li> </ul>	10.0.11.1
Added discovery for Oracle JDK/SDK	Added discovery for Oracle JDK/SDK version 18 & 19 for Windows & Unix platforms.	10.0.11.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0101866</a>	False discovery of Microsoft SQL Server Management Studio, version 18.1	<p>Microsoft SQL Server Management Studio, version 18.1 signatures are improved for accurate discovery.</p> <p> <b>Note:</b> Old discovery records are be closed, and new ones are opened.</p>	10.0.11.1
<a href="#">KB0102451</a>	Signatures for World of Warcraft causes false discovery	World of Warcraft Signatures are removed to avoid false discovery with other applications.	10.0.11.1

The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0102192</a>	Database schema migration to BigFix Inventory fails when the installation has more than 2 entries for the same product name and metric. The system is not accessible until the migration of the database is successful	Issue is fixed	10.0.11.1

**10.0.11** Application update 10.0.11

**Table 15. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	157	Yes
BigFix Inventory Software Catalog (main version)	10.0.11.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638755	Yes
BigFix Inventory Server	10.0.11.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.29.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.29.0	Yes
BigFix Inventory Scanner	9.2.29.1000 on Windows	Yes
	9.2.29.0000 on other platforms	Yes
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.11.0	Yes
	9.2.29.0 on IBM I	Yes
BigFix Inventory VM Manager Tool	10.0.11.0	Yes
SAP Metric Data Collector	10.0.11.0	Yes
BigFix Inventory Image Scanner Script	10.0.11.0	Yes
BigFix Inventory Scanner Service	10.0.11.0	Yes
BigFix Inventory Cloud Adapter	10.0.11.0	Yes

**Table 15. Published site version (continued)**

Name of component	Version	Updated in the release
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

**Allowed upgrade path**

Starting from BigFix Inventory version 10.0.10.0, to ensure smooth upgrade process, direct upgrade is supported from the last 8 server versions. The minimal version for direct upgrade path increases with every release.

Depending on version number, one or more upgrade steps are necessary. The minimal version for direct upgrade path is 10.0.3.0. For versions up to 10.0.1.0 (inclusive), upgrade first to 10.0.2.0 then upgrade to 10.0.10.0 using *Upgrade to interim version* fixlets.



**Tip:** It is recommended to upgrade BigFix Inventory frequently to make the new features and security fixes available. At least one upgrade per year is important.

**Changes to supported systems**

Added support for the following platforms and systems as managed devices:

- AIX 7.3
- Red Hat Enterprise Linux 9
- Ubuntu 22.04
- KDDI Cloud for Linux
- Solaris 10



**Note:** Solaris 10 is supported by BigFix Inventory with the use of BigFix Platform Agent 9.5 on both BigFix Platform 9.5 and 10. IBM has discontinued Solaris 10 as IBM sub capacity eligible platform. Use actions like "Initiate Software Scan" from this release as it includes improved support for handling Solaris package manager combinations.

For more information about supported systems, refer to [Detailed System requirements \(on page cdxxxii\)](#).

**Changes to contracts management**

This release offers additional enhancements for contracts management.

- A new *Product Metrics per Contract* report is available using the dropdown option from Products column.
- A recalculation option is available in the All Contracts panel to quickly recalculate metric value in case of changes in contract definition. For contracts that require recalculation a special icon is added.

- Support for a new metric Microsoft SQL Server Physical Processor Cores in line with the latest Microsoft product terms. The new metric is calculated once contract is defined to give SAM full control for what specific contract and group it is needed. Enabling license usage calculation on computer group definition to calculate this metric is no longer required. This new metric is managed through contract definition and due to this reason its value is not presented in *All metrics* panel.



**Note:** The current metric value for this particular metric is calculated based on recent data. In case of *All metrics*, calculation is available by default for 90 days period (depending on computer group definition). Newly supported metrics and selected existing metrics will use this new mechanism in future releases.

- Quick link to *All Contracts* is available from *All Metrics* originated reports.
- Hands-on tutorial is available in product documentation under [Contract Management \(on page mcxciii\)](#).

For the complete list of changes see [What's new \(on page ix\)](#).



**Note:**

- The option for contract management with support of *All Metrics* panel and its custom fields definition will be deprecated in the future.
- IBM Flexpoint bundles, IBM Cloud Paks are not supported by contracts management function.
- *Product Metrics per Group* report is still available from main menu to allow for reporting of high-water mark metrics with split per computer group.

### Extended Oracle Database Features Discovery

Reporting covers Oracle pluggable databases and additional licensable options including Tuning Pack, Oracle Database Lifecycle Management Pack, Data Masking and Subsetting Pack.

Improved support for Oracle Database 11, old versions of UNIX devices (Solaris & AIX) and extended list of return codes for troubleshooting.

### Included Software Catalog

This release includes Software Catalog version 10.0.11.0 with capability to discover 170+ new software versions including but not limited to the software manufacturers, such as Adobe, Autodesk, Cisco, Citrix, McAfee, Microsoft, and VMware.

For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is: 10.0.11.0

*The following fixlets were updated and should be run to install the latest versions of the specific components:*

- Upgrade to the latest version of BigFix Inventory
- Update VM Manager Tool to version
- Update SAP Metric Data Collector
- Install VM Manager Tool
- Install SAP Metric Data Collector
- Install Additional VM Manager Tool
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package
- Download the BigFix Inventory Container Solution Packages
- Download BigFix Inventory
- Install or Upgrade Scanner in private mode on Windows
- Install or Upgrade Scanner
- Software Catalog Update (if BigFix Inventory is not upgraded)
- Download PVU table (if BigFix Inventory is not upgraded)
- Upgrade to the interim version 10.0.2.0 of BigFix Inventory (translation correction)
- Upgrade to the interim version 10.0.10.0 of BigFix Inventory (adjusted applicability to follow minimal version for direct upgrade to current version)

*The following fixlets were updated and require that actions created by their previous versions are stopped and then started by using the updated fixlets. Restarting actions is necessary to ensure that new features work properly:*

- Run Capacity Scan and Upload Results
- Initiate Software Scan on Shared Disks
- Initiate Software Scan
  
- Upload Software Scan Results – no updates, but recommended to be refreshed to match Initiate

*The following fixlets were updated or added:*

- Get Oracle Features
- Get Oracle Concurrent Sessions Number
- Identify Computers on Public Clouds
- Analyze the Relevance of a Fixlet or Task
- Force Reupload of Software Scan Results

### **Enhancements and important changes**

For complete list of enhancements, refer to the [What's new \(on page ix\)](#).

## Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0101057</a>	Update Schema runs for days when environment contains Mac OS devices	Migration script has been re-engineered to reduce duration to minutes.	10.0.11.0
BI-11517	All Metrics reports shows only 500 records instead of the correct number of the records	The issue is fixed.	10.0.11.0
<a href="#">KB0101000</a>	Arithmetic overflow error in Data Import log files on DB2	Import step "Processing of bundling tags" completes successfully.  Affected only DB2 deployments.	10.0.11.0
<a href="#">KB0101628</a>	BFI Import fails - sam.instance_hash - SQL Arithmetic Overflow on MS SQL	Import step "Inventory-Builder" completes successfully.  Affected only MS SQL deployments.	10.0.11.0
BI-13844	Empty publisher on HCL Inventory report	HCL Inventory report is regenerated during upgrade so that the filter criteria are fixed. <b>Limitation:</b> Any report subscriptions or default report settings related to this report will be deleted during upgrade.	10.0.11.
<a href="#">KB0100847</a>	Package Summary report failing to calculate	The issue is fixed.	10.0.11.0

The following table lists BigFix Inventory Scanner APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
KB0099621	Data encrypted on share disk using Guardium/Vormetric solution is recognized as local filesystem and, is therefore, scanned by default on every endpoint when such volume is mounted and decrypted. Scan of the remote disk multiple times from many endpoints might lead to unnecessary overload of such share disk.	Data encrypted on share disk using Guardium/Vormetric solution is recognized as shared drive	10.0.11.0

The following table lists BigFix Inventory tool APARs and other defects that are fixed in this update. It includes VM Manager, SAP Data Collector, Image Scanner, Scanner Service, and Cloud Adapter.

ID	Symptoms	Behavior after you install the update	Available since
BI-11147	Hyper-V VMs with the same UUID and located on the same host are not detected as duplicates and only one of them is returned by the scan.	Hyper-V VMs with the same UUID and located on the same host are excluded from scan results and the VM Manager status is set to "OK - duplicated UUIDs discarded".	10.0.11.0

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
KB0101234	The software 'Snagit' was not being discovered due to incorrect	Snagit template signature updated to improve discovery. Also deleted the regular signatures of Snagit to avoid double discovery.	10.0.11.0

ID	Symptoms	Behavior after you install the update	Available since
	package and file rules	 <b>Note:</b> <i>Old discovery records will be closed, and new ones will be opened.</i>	
KB0101283	Lack of discovery for Red Hat JBoss Enterprise Application Platform	Discovery is added for Red Hat JBoss Enterprise Application Platform,6.4 to cover non-standard installations	10.0.11.0
BI-13474	Enhancement of Microsoft SQL Server Management Studio and Citrix XenDesktop detection	<p>Changed the way of detecting signature for Microsoft SQL Server Management Studio and Citrix XenDesktop and added new detection for Microsoft SQL Server Management Studio for version 18.12</p>  <b>Note:</b> <i>Old discovery records will be closed, and new ones will be opened.</i>	10.0.11.0
KB0101314	Adobe Acrobat components did not provide usage monitoring.	Discovery now provides usage monitoring for Adobe Acrobat components.	10.0.11.0
KB0101687	False positive discovery of SiteMinder Web Agent v6.0	<p>To provide better discovery moved the existing 'CA SiteMinder Web Agent' v6.0, v12.0 and v12.5 GAM signature to server-side signature</p>  <b>Note:</b> <i>Old discovery records will be closed, and new ones will be opened.</i>	10.0.11.0

The following table lists BigFix Inventory Fixlets APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
BI-14163	The property 'Application Usage by Path' in 'Application Usage Statistics' analysis is not updated on Windows after running the Software Scan	The issue is fixed.	10.0.11.0
<a href="#">KB0100567</a>	Scan related fixlets not relevant on SunOS endpoints with no Image Packaging System (IPS)	Fixlets relevancy is correctly evaluated.	10.0.11.0
<a href="#">KB0101246</a>	Client setting <code>BESRelay_Upload-Manager_CleanupHours</code> value resetting after executing some fixlets	The issue is fixed.	10.0.11.0

The following table lists user documentations APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">BI-13122</a>	Integrate Contracts business document into BFI official documentation	Added a section to include the hands-on tutorial for contract management. Doc link: <a href="#">Contract Management</a>	10.0.11.0

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.11.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.29.1000 for Windows and 9.2.29.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.11.0 and 9.2.29.0 for IBM I.

## 10.0.10.1 Application update 10.0.10.1

**Table 16. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	156	Yes
BigFix Inventory Software Catalog (main version)	10.0.10.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638749	Yes
BigFix Inventory Server	10.0.10.0	No
BigFix Inventory Server: ILMT Core library	9.2.28.0	No
BigFix Inventory Server: ILMT Catalog	9.2.28.0	No
BigFix Inventory Scanner	9.2.28.1000 on Windows	No
	9.2.28.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (includes package for Containers)	10.0.10.0	No
	9.2.28.0 on IBM I	No
BigFix Inventory VM Manager Tool	10.0.10.0	No
SAP Metric Data Collector	10.0.10.0	No
BigFix Inventory Image Scanner Script	10.0.10.0	No
BigFix Inventory Scanner Service	10.0.10.0	No
BigFix Inventory Cloud Adapter	10.0.10.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Keystore Migration Tool	1.0	No

### Included Software Catalog

The release includes Software Catalog version 10.0.10.1 with capability to discover 460+ new software versions that includes Adobe, BMC Software, Cisco Systems Inc., Citrix, Hewlett-Packard, Microsoft, RED HAT, SUSE, and VMware using standard or template signatures. One template signature covers 10+ software versions.

Added discovery for the following SAS software:

- SAS/GRAPH (Windows, Unix)
- SAS/ACCESS Interface to PC Files (Windows, Unix)
- SAS/ACCESS Interface to Hadoop (Unix)

#### **New template signatures included in this release:**

Refer to the below links to see the new added template signatures:

- [Catalog Release Notes](#)
- [Catalog Change List](#)

#### **Modified content**

The version number of the fixlet is 10.0.10.1.

The **Update Software Catalog** fixlet was updated and should be run to install the latest versions of the specific components.

#### **Enhancements and important changes**

The following table lists enhancements and changes that are introduced in this update:

<b>Abstract</b>	<b>Description</b>	<b>Available since</b>
Enhancement of Oracle Java Detection	Enhanced discovery of existing Java signature for versions 7, 8, 9, 10, 12, 13, 14 and 15 to cover non-standard installations.	10.0.10.1
Added discovery for SAS/ACCESS Interface to Hadoop	Added discovery for SAS/ACCESS Interface to Hadoop version 9 for Linux platform.	10.0.10.1
Added discovery for SAS/ACCESS Interface to PC Files	Added discovery for SAS/ACCESS Interface to PC Files for version 9. Discovery is added for Windows and UNIX platforms.	10.0.10.1
Added discovery for SAS/GRAPH	Added discovery for SAS/GRAPH version 9. Discovery is added for Windows and UNIX platforms.  Deleted detection for SAS/GRAPH for AIX platform.	10.0.10.1
Added discovery for Microsoft Project 365	Added discovery for Microsoft Project 365 for Windows platform.	10.0.10.1

Abstract	Description	Available since
Added discovery for Adobe ColdFusion	Added discovery for Adobe ColdFusion for versions 2018.0 and 2021.0 for Windows and Unix platform.	10.0.10.1
Microfocus publisher name update	Updated the publisher name from Microfocus to Micro Focus.   <b>Note:</b> Previously discovered records will be closed, and new ones will be available.	10.0.10.1
Changed definition source of selected Microsoft components	For several Microsoft components, the definition source has been updated to HCL. <ul style="list-style-type: none"> <li>• Microsoft SQL Server Management Studio – 17.9, 18.0, 18.1, 18.2, 18.3, 18.5, 18.6, 18.9</li> <li>• Microsoft Host Integration Server - 2016.0</li> <li>• Machine Learning Server – 9.2, 9.3, 9.4</li> </ul>	10.0.10.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0100409</a>	NetBackup signatures from two different sources leading to double discovery	Signatures from one of the sources were deleted to avoid double discovery.	10.0.10.1
<a href="#">KB0100717</a>	Incorrect Vendor for SUSE Linux Enterprise Server for SAP Applications	The publisher was changed to SUSE as SUSE is no longer part of Micro Focus.	10.0.10.1
<a href="#">KB0100631</a>	Wrong identification of Oracle Java software component	Oracle Java 11 Signatures were improved for accurate discovery.	10.0.10.1

## 10.0.10 Application update 10.0.10

**Table 17. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	155	Yes
BigFix Inventory Software Catalog (main version)	10.0.10.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638744	Yes
BigFix Inventory Server	10.0.10.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.28.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.28.0	Yes
BigFix Inventory Scanner	9.2.28.1000 on Windows	Yes
	9.2.28.0000 on other platforms	Yes
BigFix Inventory Disconnected Scanner (include package for Containers)	10.0.10.0	Yes
	9.2.28.0 on IBM I	Yes
BigFix Inventory VM Manager Tool	10.0.10.0	Yes
SAP Metric Data Collector	10.0.10.0	Yes
BigFix Inventory Image Scanner Script	10.0.10.0	Yes
BigFix Inventory Scanner Service	10.0.10.0	Yes
BigFix Inventory Cloud Adapter	10.0.10.0	Yes

### Allowed upgrade path

*It is recommended to upgrade BigFix Inventory frequently to benefit from new features and security fixes. Please plan at least one upgrade per year.*

Starting from 10.0.10 release to ensure smooth upgrade process there will be kept support for direct update from last 8 server releases. The minimal version for direct upgrade path will be increased with every release.

There will be preserved every 8th release to allow upgrade from past releases any time. Currently available release is 10.0.2. Release **10.0.10** is the next planned version to be preserved.

**Minimal version recommended for direct upgrade path:**

For versions up to 10.0.1 (inclusive), upgrade first to 10.0.2 using already available interim fixlet.

Version 10.0.2 is the oldest version supporting direct upgrade to 10.0.10. Update to the next version of BigFix Inventory will require to be at least at 10.0.3 release or upgrade to the 10.0.10 first.

*Q: I'm on version 10.0.5 and would like to install 10.0.10 release.*

A: Upgrade directly to the 10.0.10 release.

*Q: I'm on version 9.2.17 and would like to install 10.0.10 release.*

A: Update first to the 10.0.2 and then to the 10.0.10 release.

*Q: I'm on version 10.0.2, but plan to do the upgrade in January 2023 to the most recent release.*

A: It would be version 10.0.11. You will have to upgrade first to the 10.0.10 and then to the 10.0.11, as 10.0.11 will support upgrade from version 10.0.3 or higher.

*Q: I'm on version 9.2.13 and would like to upgrade in April 2023 to the most recent release.*

A: At that time version 10.0.12 should be available. You will need to upgrade first to the 10.0.2 and then to the 10.0.10.

**Changes to supported systems**

IBM DB2 10.5 is no longer supported as a database for BigFix Inventory Server in line with supported database list for BigFix platform. IBM withdrew support for DB2 10.5 in April 2020.

Microsoft Internet Explorer web browser is no longer supported.

Added support for the following platforms and systems as managed devices:

- IBM Cloud LinuxONE VS
- NTT IaaS Powered by VMware
- IBM i 7.5
- Debian 11 x64
- Red Hat Enterprise Linux 9 by using the disconnected scanner
- Ubuntu 22.04 on x86 by using the disconnected scanner
- Azure VMware Solution with use of VM Manager Tool

The following systems are withdrawn:

- VM Managers: Oracle VM Manager
- IBM i 7.1
- RHEL 5 on Power

For more information about supported systems, refer to [Platform detailed system requirements](#).

### Extended upgrade time for environments with Mac OS

Due to rework of Mac OS package discovery, during the application upgrade whole catalog and discoveries coming from Mac OS machines will be removed. This removed data will be replaced by data from new software scan during Data Import.

Due to removal process, application upgrade may take longer than usual when there is Mac software and machines in the environment. Time, in minutes, required for application upgrade can be estimated using the following query:

```
select count(*) / 20 from sam.software_components c
join sam.publishers p on c.publisher_id = p.id
where p.name = 'Unclassified Mac Software'
```

### Changes to software discovery on Mac OS devices

This release includes improved automated catalog-less software discovery on Mac OS devices. Now Vendor information is populated for both Package Data and software inventory reports, such as Software Classification. Catalog definitions for MAC software include normalized Vendor information for key Vendors and one Product definition compared to previous structure. Inventory reports cover detailed discovery of software classified as applications. Complete Package Data with category classification is available with the option to promote selected components to inventory as needed. With improved discovery, a bigger number of MAC software offers usage information.

### IBM Policy update for subcapacity reporting requirements for VPC license metric

Effective May 10, 2022, IBM requires all Virtual Processor Core (VPC) software licenses that use subcapacity licensing to deploy IBM License Metric Tool or any other tool approved by IBM like HCL BigFix Inventory. Manual capacity counting is no longer permitted. Container Licensing terms are not included in this policy change.

Details of the change are available and documented on the main [IBM subcapacity licensing page](#).

### Changes to End of Support definitions in catalog

The end of support information in catalog is automatically populated for Adobe, Oracle, Red Hat and VMware software. No change to End of support information for IBM and Microsoft software. Upgrade BigFix Inventory server to version 10.0.10.0 to see the changes.

Definition of End of Support dates for Software Components is part of Software Catalog distributed with BigFix Inventory Server component. Only upgrading the BigFix Inventory Server updates them.

Listing of state of End of Support dates for Software Components included in BigFix Inventory Server update:

Publisher Name	Additional Comment	Last Update	Updated in this Release
IBM		10.0.9	
IBM i 7.1		10.0.9	
RHEL 5 on Power		10.0.9	
<ul style="list-style-type: none"> <li>• VM Managers: Oracle VM Manager</li> <li>• IBM i 7.1</li> <li>• RHEL 5 on Power</li> </ul>			

### Deleted old software signatures to optimize standard catalog processing

This release includes improvement for catalog processing which is done by removing old software signatures from BigFix Inventory main catalog which results in better performance overall (Mentioned in BigFix Inventory Release Notes for version 10.0.9.1). Deleted signatures refer to software and versions with very low probability of being active or deployed.

Deleted signatures are still available as custom catalog content for customers who request specific titles and versions through the standard support channel.

### Included Software Catalog

This release includes Software Catalog version 10.0.10.0 with capability to discover 330+ new software versions including but not limited to the following software manufacturers: Adobe, Autodesk, Cisco, Citrix, McAfee, Microsoft, Samsung, VMware

New template signatures included in this release:

*Template signature is a method of discovery where the version of a component is detected automatically, and specific version added to the catalog on fly. Such template signatures include all component versions. They are used when the software is frequently updated and deployment method is not changed.*

Publisher Name	Component Name	Platform
Red Hat	Red Hat Enterprise Linux	Linux
Apache Software Foundation	Apache HTTP Server	Windows
CrowdStrike Inc.	CrowdStrike Falcon Sensor	Linux
Siemens	Siemens PLM License Server	Windows & UNIX

For more information, refer to [Catalog release notes](#) and [Catalog change list](#).

## Modified content

The version number of the fixlet is: 10.0.10.0

*The following #fixlets# were updated and should be run to install the latest versions of the specific components:*

- Upgrade to the latest version of BigFix Inventory
- Upgrade to the interim version 10.0.2 of BigFix Inventory if version older than 10.0.2
- Software Catalog Update (if BFI not upgraded)
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Install SAP Metric Data Collector
- Update SAP Metric Data Collector
- Install VM Manager Tool
- Update VM Manager Tool
- Install Additional VM Manager Tool (OPTIONAL)
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package
- Download BigFix Inventory
- Download the BigFix Inventory Container Solution Packages

*The following #fixlets# were updated and require that actions created by their previous versions are stopped and then started by using the updated #fixlets#. Restarting actions is necessary to ensure that new features work properly:*

- Initiate Software Scan
- Upload Software Scan Results – no updates, but recommended to be refreshed to match Initiate
- Run Capacity Scan and Upload Results

*The following fixlets were updated or added:*

- Clear Data Collected by Software Data Harvesting Tool
- Get Oracle Features
- Get Oracle Concurrent Sessions Number
- Identify Computers on Public Clouds

## Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update.

Abstract		
Mac OS discovery improvements	<p>Added vendor information, introduced package categories to filter-out non-applications from Inventory, improved usage detection.</p> <p>For list of all improvements see the documentation section: <a href="#">MAC OS discovery</a>.</p>	10.0.10.0
Normalized vendors for Mac OS discovery	Vendors from detected software are in line with publishers from software catalog.	10.0.10.0
End of support information added for Adobe	Added end of support dates to 64 Adobe products.	10.0.10.0
End of Support information added for Oracle	Added end of support dates to 118 Oracle products.	10.0.10.0
End of Support information added for Red Hat	Added end of support dates to 15 Red Hat products.	10.0.10.0
End of Support information added for VMware	Added end of support dates to 41 VMware products.	10.0.10.0
Catalog clean-up – deletion of obsolete signatures	Deleted 14850 obsolete signatures from more than 11400 releases to improve the performance of Software Scan	10.0.10.0
Removal of unused tags created for software components or instances	<p>Added a possibility to automatically remove tags not assigned to any software component or instance (during data import).</p> <p>To turn this feature on, switch on 'delete_unused_tags_automatically' advanced server setting (it is disabled by default). If this clean-up action is needed only once, then disable this option after the import.</p>	10.0.10.0

<b>Abstract</b>		
Computer First Seen column	<p>Added the 'Computer First Seen' column to license metric utilization CSV reports which are part of the Audit Snapshot. The column shows the time when the computer was first detected by BigFix Inventory server.</p>	10.0.10.0
Optimized data transferred for software usage monitoring	<p>The amount of software usage data stored in BigFix database is optimized resulting in less data to transfer and store.</p>	10.0.10.0
New fixlet to clear collected harvester data	<p>Added a 'Clear Data Collected by Software Data Harvesting Tool' fixlet which removes the data collected by Software Data Harvesting Tool from endpoints and the BigFix server.</p>	10.0.10.0
Updated component version for Oracle Database Client 19	<p>Updated component version for Oracle Database Client from 19 to 19.3.</p>	10.0.10.0
Enhancement of Oracle Java Signatures	<p>Enhanced discovery of existing Java signature for version 8.0 to account for non-standard installations.</p>	10.0.10.0
IBM Virtualization Capacity reporting equivalent	<p>BigFix Inventory 10.0.10.0 is equivalent to IBM License Metric Tool (ILMT) 9.2.28 for IBM Virtualization Capacity reporting.</p> <p>The update covers IBM sub-capacity calculation, IBM Catalog, PVU and Scanner parity.</p> <p>For status of IBM validated releases see following <a href="#">BFI FAQ Document</a>.</p>	10.0.10.0

<b>Abstract</b>		
Updated PVU table	Updated Processor Value Unit table to version 06/07/2022.	10.0.10.0
Updated 'Apple Computer Corporation' publisher name to 'Apple'	Adjusted publisher name.	10.0.10.0
Added discovery for Red Hat Enterprise Linux	Added a new CIT signature for Red Hat Enterprise Linux 9.	10.0.10.0
Added discovery for Team Quest Analyzer	Added a new CIT signature for Team Quest Analyzer version 11 on UNIX.	10.0.10.0
Added discovery for CrowdStrike Falcon Sensor on Linux platform	Added template signature for CrowdStrike Falcon Sensor on Linux platform. Now, Template signature exists for both Windows and Linux platform.  Existing regular signatures were deleted for Windows platform.	10.0.10.0
Discovery improvements for Adobe Captivate	Added discovery by File Name and Package Name.  Changed definition source to HCL.  Updated the component version for Adobe Captivate from 2015 to 2015.0 and 2017 to 2017.0.	10.0.10.0
Removed discovery of Adobe Download Manager	Removed the discovery of Adobe Download Manager.	10.0.10.0
Removed discovery of Adobe Acrobat Distiller	Removed discovery of Adobe Acrobat Distiller since it cannot be licensed, downloaded, and/or installed as a separate product.	10.0.10.0

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory **Server** APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the updatee	Available since
<a href="#">KB0098499</a>	Poor data import performance after enabling Group Aggregation in Computer Groups Management.	Data Import performance is correct.	10.0.10.0
<a href="#">KB0098905</a>	Clusters API returns outdated data, also showing duplicated entries from old and new data source (VM Manager Tool).	Clusters API returns only current data.	10.0.10.0
<a href="#">KB0099323</a>	Wrong database is reported in the log message when connection error occurs (always BFI database).	Correct database is reported in error message.	10.0.10.0
<a href="#">KB0099152</a>	Mismatch of count in dashboard fields and number of endpoints in reports.	Dashboard fields show correct numbers of endpoints.	10.0.10.0
BI-13117	Software from Mac OS 11.5.1 or later does not appear on Software Classification panel. It is present only on Package Data panel.	Software from Mac OS is reported properly.	10.0.10.0
BI-12646	No information about used threads during import for the Capacity / VM Manager Data.	Added additional log entries to Data Import log with the actual number of threads used during Data Import of the Capacity / VM Manager Data Import.	10.0.10.0
BI-13397	Input error messages in the Edit Contract dialog	Input field error messages are located below the input fields.	10.0.10.0

<b>ID</b>	<b>Symptoms</b>	<b>Behavior after you install the updatee</b>	<b>Available since</b>
	are located on the right side of the inputs.		
BI-11848	Contract custom fields for decimal number input will now be restricted either to comma or period as a decimal separator depending on the user's language settings.	Decimal separator is aligned with a chosen language.	10.0.10.0
BI-11803	Details of deleted signatures in Catalog Audit not available after a certain amount of time.	Link to details panel is not shown in case no details are available.	10.0.10.0
BI-12133	Grid row count value is incorrect in the Advanced Server Settings panel after filtering and sorting by the Name column.	The count value is correct.	10.0.10.0
BI-11837	Custom fields in the Edit Contract dialog are missing length and range validation.	Validation is added.	10.0.10.0

The following table lists BigFix Inventory **Scanner** APARs and other defects that are fixed in this update.

<b>ID</b>	<b>Symptoms</b>	<b>Behavior after you install the update</b>	<b>Available since</b>
	The same exclude directory ending with a slash sign included in both catalog (wscansw) and file system (wscanfs) scan configurations cause physical scan	All exclude and include directories are converted to a 'canonical' form. So all the following 3 example paths effectively meaning the same:	10.0.10.0

ID	Symptoms	Behavior after you install the update	Available since
	of the file system and cache recreation when wscanfs is run right after wscansw.	<ul style="list-style-type: none"> <li>• /abc</li> <li>• /abc/*</li> <li>• /abc/</li> </ul> <p>/abc are converted to one form:</p> <p>After the changes md5 hash of the scan configuration is the same and as a result the physical scan of the file system is not performed by wscanfs. Instead the data is read from the cache, which was created by wscansw before.</p>	

The following table lists BigFix Inventory **tools** APARs and other defects that are fixed in this update. It covers **VM Manager, SAP Data Collector, Image Scanner, Scanner Service, Cloud Adapter**.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0099902</a>	Status 'Invalid Credentials' returning for VM Manager Hyper-V configurations using WinRM and authenticating with MD4 algorithm.	VM Manager Tool can authenticate with MD4 algorithm to Hyper-V hosts via WinRM.	10.0.10.0

The following table lists BigFix Inventory **Catalog** APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0100119</a>	Autodesk Composite discovered incorrectly.	Autodesk Composite signatures are updated to report the correct version and also avoid false discovery.	10.0.10.0

<b>ID</b>	<b>Symptoms</b>	<b>Behavior after you install the update</b>	<b>Available since</b>
<a href="#">KB0099763</a>	Apache HTTP Server lost discovery for 2.4 version.	Deleted existing signatures for Windows platform and added template signature for Apache HTTP Server for Windows platform. Now, template sign exists for both Windows and Linux platform.	10.0.10.0
KB0099831	Siemens PLM License Server 8.2 Version is incorrectly discovered.	Deleted existing signature for Siemens PLM License Server and replaced it with template signature for Windows and UNIX Platforms for accurate discovery.	10.0.10.0

The following table lists BigFix Inventory **Fixlets** APARs and other defects that are fixed in this update.

<b>ID</b>	<b>Symptoms</b>	<b>Behavior after you install the update</b>	<b>Available since</b>

The following table lists **user documentation** APARs and other defects that are fixed in this update.

<b>ID</b>	<b>Symptoms</b>	<b>Behavior after you install the update</b>	<b>Available since</b>
<a href="#">KB0073035</a>	Db2 temp tablespace can grow in an uncontrolled way on DB2 when statement heap is exhausted.	Documentation will contain additional section under "Tuning DB2 application database" describing how to change statement heap setting in case of issues with disk space used by queries.	10.0.10.0
BI-13572	Internet Explorer is no longer supported as a	References to Internet Browser has been re-	10.0.10.0

ID	Symptoms	Behavior after you install the update	Available since
	browser by BigFix server.	moved from the document.	

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.10.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.28.1000 for Windows and 9.2.28.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.10.0 and 9.2.28.0 for IBM I.

## 10.0.9.1 Application update 10.0.9.1

**Table 18. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	154	Yes
BigFix Inventory Software Catalog (main version)	10.0.9.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638735	Yes
BigFix Inventory Server	10.0.9.0	No
Software Data Harvesting Tool for BigFix Inventory	1.1	No
BigFix Inventory Server: ILMT Core library	9.2.27.0	No
BigFix Inventory Server: ILMT Catalog	9.2.27.0	No
BigFix Inventory Scanner	9.2.27.1000 on Windows	No
	9.2.27.0000 on other platforms	No
BigFix Inventory Disconnected Scanner including package for Containers	10.0.9.0	No
	9.2.27.0 on IBM I	No
BigFix Inventory VM Manager Tool	10.0.9.0	No
SAP Metric Data Collector	10.0.9.0	No

**Table 18. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Image Scanner Script	10.0.9.0	No
BigFix Inventory Scanner Service	10.0.9.0	No
BigFix Inventory Cloud Adapter	10.0.9.0	No

**Included Software Catalog**

This release includes Software Catalog version 10.0.9.1 and is capable to discover more than 880 new software versions including but not limited to software manufacturers, such as Adobe, Amazon.com, Citrix, Dell Computers, General Electric, Hewlett-Packard, Intel, Kodak, Microsoft, Logitech Inc, Nvidia, Red Hat, and Schneider Electric.

New template signatures included in this release:

***Template signature is a method of discovery where the version of a component is detected automatically, and a specific version is randomly added to the catalog. Template signatures include all component versions. They are used when the software is frequently updated and deployment method is not changed. One template covers more than 10 software versions.***

Publisher Name	Component Name	Platform
SentinelOne	SentinelOne Agent	Windows, UNIX



**Note:** Changes made to the software component definition in catalog, for example modification of component name, version, or publisher may cause creation of new definition of the component and removal of previous one. This leads to loss of Tagging, Classification and custom end-of-support information.

In addition to the above, when discovery is based on a signature evaluated on an endpoint, previous discovery results temporarily disappear until the next software scan and related data import. A new catalog must be propagated to the endpoints before the scan execution.

Updated discovery mechanism for specific software with this behavior includes specific notes (for details refer to the list of enhancements and list of defects).

**Planned improvement for catalog processing**

Efficiency improvement is planned for the next release of BigFix Inventory version 10.0.10. Old software signatures are planned to be removed from BigFix Inventory main catalog which will result in better overall performance. Deleted signatures refer to software and versions with very low probability of being active or deployed. Deleted signatures will be still available as custom catalog content for customers

who request specific titles and versions through the standard support channel. For list of signatures to be deleted, check the [link](#).

For more information, refer to the [Catalog release notes](#) and [Catalog change list](#).

### Modified content

Fixlet version number: 10.0.9.1

Fixlet names: The **Update Software Catalog** fixlet was updated and should be run to install the latest version of the catalog. The **Run Software Data Harvesting Tool** fixlet was updated.

### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update.

Abstract	Description	Available since
Software Data Harvesting Fixlet: Changed content of uninstall packages.	The MSI Install location property of package information was enhanced to prefer regular paths over system paths.	10.0.9.1
Change of the definition source for catalog definitions which use executable and package information.	Definition source information was changed on product, version, release, component and signature view to HCL or IBM Internal Development for those entries in Catalog which uses executable and package information.  This change is for improved serviceability and does not impact the discovery results.	10.0.9.1
SentinelOne Endpoint Protection Agent discovery	Created a new template signature for SentinelOne Endpoint Protection Agent for Unix & Windows platform.	10.0.9.1
Adoptium discovery	Added discovery for:	10.0.9.1

Abstract	Description	Available since
	<ul style="list-style-type: none"> <li>• Eclipse Temurin JDK - Versions:8.0, 11.0, 16.0, 17.0, and 18.0</li> <li>• Eclipse Temurin JRE - Versions: 8.0, 11.0, 17.0 and 18.0</li> <li>• Windows and Unix platform.</li> </ul>	
Red Hat Fuse discovery	<p>Added discovery for:</p> <ul style="list-style-type: none"> <li>• Red Hat Fuse to include versions 7.0, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, and 7.10.</li> <li>• Windows and Unix platform</li> </ul>	10.0.9.1
Oracle Instant Client discovery	<p>Improved discovery for Oracle Instant Client. Discovery for missing version was added for Windows and UNIX versions, 19.14, 19.3, 19.6, 19.8.</p> <p>Added new package signatures for Linux versions 10.1, 10.2, 11.1, 11.2, 12.1, 12.2, 18.3, 18.4, 18.5,19.1, 19.12, 19.13, 19.14, 19.3, 19.5, 19.6, 19.8, 19.9, and 21.</p> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Discovery will disappear until the next scan and data import for version 21. Catalog propaga-</li> </ul>	10.0.9.1

Abstract	Description	Available since
	 <p>tion to endpoints is required.</p> <ul style="list-style-type: none"> <li>• Old discovery records will be closed, and new ones will be opened for version 21.</li> </ul>	
BFI Cloud Adapter: minimal Kubernetes permissions documented	In order to manage security of BigFix Inventory Cloud Adapter deployment refer to “BigFix Inventory 10. Software Discovery in Containers” for minimal permissions required.	10.0.9.1

**Defect fixes**

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0098806</a>	Citrix XenDesktop, XenApp, and StoreFront signatures cause false discovery.	Template signatures for Citrix XenDesktop, XenApp and StoreFront are improved to not detect other modules. Regular signatures are removed and replaced by template coverage which also reports detailed version. XenDesktop Controller signatures are removed as they were often providing false discovery, and XenDesktop signature is providing	10.0.9.1

ID	Symptoms	Behavior after you install the update	Available since
		<p>proper detection for this component.</p> <p> <b>Note:</b> Old discovery records will be closed, and new ones will be opened.</p>	
BI-11162	TIBCO Businessworks version 6.3 was leading to duplicated software titles.	<p>The component name of TIBCO Businessworks for version 6.3 was corrected.</p> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Discovery disappears until the next scan and data import. Catalog propagation to endpoints is required.</li> <li>• Old discovery records will be closed,</li> </ul>	10.0.9.1

ID	Symptoms	Behavior after you install the update	Available since
		 and new ones is opened.	
KB0099659	Microsoft Edge template signature previously based on <code>MicrosoftEdge.exe</code> was reporting incorrect version.	Improved template signatures show correct version. Also, the component name is updated to "Microsoft Edge" from "Edge".   <b>Note:</b> Old discovery records will be closed, and new ones will be opened.	10.0.9.1
KB0099546	Oracle products, such as Oracle Adapter, Oracle Mediator were incorrectly discovered.	Discovery of the following Oracle products were corrected/added to detect proper version: <ul style="list-style-type: none"> <li>• Oracle Adapter</li> <li>• Oracle BPEL Process Manager</li> <li>• Oracle Business Process Management Suite</li> <li>• Oracle Business Rules</li> <li>• Oracle Human Workflow</li> <li>• Oracle Mediator</li> <li>• Oracle SOA Suite</li> </ul>	10.0.9.1

ID	Symptoms	Behavior after you install the update	Available since
		 <b>Note:</b> Discovery for Oracle SOA Suite 11.1 disappears until the next scan and data import. Catalog propagation to endpoints is required.	
KB0099462	UltraEdit signatures duplicated discovery	Duplicate signatures for UltraEdit were deleted for versions: 8.0,10.0,13.2,14.0,14.10,14.20, and15.0.	10.0.9.1

### 10.0.9 Application update 10.0.9

**Table 19. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	153	Yes
BigFix Inventory Software Catalog (main version)	10.0.9.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638729	Yes
BigFix Inventory Server	10.0.9.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.27.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.27.0	Yes
BigFix Inventory Scanner	9.2.27.1000 on Windows	Yes
	9.2.27.0000 on other platforms	Yes
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.9.0	Yes

**Table 19. Published site version (continued)**

Name of component	Version	Updated in the release
	9.2.27.0 on IBM I	Yes
BigFix Inventory VM Manager Tool	10.0.9.0	Yes
SAP Metric Data Collector	10.0.9.0	Yes
BigFix Inventory Image Scanner Script	10.0.9.0	Yes
BigFix Inventory Scanner Service	10.0.9.0	Yes
BigFix Inventory Cloud Adapter	10.0.9.0	Yes
Software Data Harvesting Tool for BigFix Inventory	1.1	Yes
BigFix Inventory Keystore Migration Tool	1.0	New

**Allowed upgrade path**

Minimal version recommended for direct upgrade path is 9.2.16.

For versions older than 9.2.16, first upgrade to version 10.0.2 using an already available fixlet.

BigFix Inventory Scanner Service 10.0.8.0 (previous version) is not compatible with BigFix Inventory Server 10.0.9 due to a change of success response code from 200 to 204. BigFix Inventory Server 10.0.9.0 supports BigFix Inventory Scanner Service version 10.0.9.0 only.

After upgrading BigFix Inventory server with FIPS function enabled ensure that java.security files contain **RSAPSS, RSASSA-PSS** listed in `jdk.tls.disabledAlgorithms`. For more information, see [Configuring the server to achieve FIPS compliance](#).

**DB2 10.5 End of Support by BigFix Inventory starting from future release**

BigFix Inventory v10.0.9.0 is the last release with support for DB2 10.5. Future releases of BigFix Inventory will no longer support DB2 10.5.

IBM withdrew support for DB2 10.5 in April 2020. For more information, see: [Software lifecycle](#).

**Microsoft Internet Explorer 11 support will be removed starting from future release**

BigFix Inventory version 10.0.9.0 is the last release with support for Microsoft Internet Explorer 11. Future releases of BigFix Inventory will no longer support Microsoft Internet Explorer 11.

Microsoft withdrew support for Internet Explorer on certain versions of Windows 10 on June 15, 2022. For more information, see, [Microsoft Announcement](#).

## Changes to Software Discovery in Containers

*This feature is licensed under Active Container SKU/unit of measure.*

Image Scanning solution now supports use of Podman in addition to Docker (r) as the runtime for executing scans. Image scanner was verified against Podman versions: 1.9.x, 3.2.x.



**Note:** Podman version 2.0.x is not supported due to a known issue, <https://github.com/containers/podman/issues/7515>.

BigFix Inventory Server 10.0.9.0 supports BigFix Inventory Scanner Service v 10.0.9.0 only due status code change for successful data upload.

## Changes to UI Components in New Contracts

UI components were updated to the latest version to resolve a few usability issues and limitations. With this change there is one new limitation: it's not possible to type "-" in Number text fields of Edit/New Contract dialog in Firefox web browser. Users can use mouse wheel or arrow keys to get negative numbers.

## Included software catalog

This release includes Software Catalog version 10.0.9.0 with capability to discover 470+ new software versions including but not limited to the following software manufacturers: Adobe, AutoDesk, Cisco Systems, HCL, Hewlett-Packard, Microfocus, Microsoft, Oracle.

New template signatures included in this release cover 50+ new software versions:

***Template signature is a method of discovery where the version of a component is detected automatically, and specific version added to the catalog on fly. Such template signatures include all component versions. They are used when the software is frequently updated and deployment method is not changed. One template covers 10+ software versions.***

Publisher Name	Component Name	Platform	Release
Tripwire, Inc.	Tripwire Axon Agent	Windows, UNIX	10.0.9.0
Tripwire, Inc	Tripwire Enterprise Console	Windows	10.0.9.0
Microfocus	eDirectory	Windows, UNIX	10.0.9.0
Microfocus	Access Manager	UNIX	10.0.9.0
OpenSSL Project	OpenSSL	UNIX	10.0.9.0



**Note:** Changes made to the software component definition in catalog (for example, modification of component name, version, or publisher) may cause creation of new definition of the component and removal of previous one. This will lead to loss of Tagging, Bundling and custom EOS dates.



When changes are made to a signature evaluated on an endpoint, previous discovery results temporarily disappear until the next software scan and related data import. (Catalog with changed signatures has to be propagated to the endpoints).

Updated discovery mechanism for specific software with this behavior includes specific notes (for details refer to the list of enhancements and list of defects).

For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is: 10.0.9.0

*The following fixlets were updated and should be run to install the latest versions of the specific components:*

- Upgrade to the latest version of BigFix Inventory
- Software Catalog Update (if BigFix Inventory is not upgraded)
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Install SAP Metric Data Collector
- Update SAP Metric Data Collector
- Install VM Manager Tool
- Update VM Manager Tool
- Install Additional VM Manager Tool (OPTIONAL)
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package
- Download BigFix Inventory
- Download the BigFix Inventory Container Solution Packages

*The following fixlets were updated and require that actions created by their previous versions are stopped and then started by using the updated fixlets. Restarting actions is necessary to ensure that new features work properly:*

- Initiate Software Scan
- Initiate Software Scan on Shared Disks
- Run Capacity Scans and Upload Results
- Get Oracle Features
- Get Oracle Concurrent Sessions Number

*The following fixlets were updated or added:*

- Configure Scan Cache
- Uninstall Scanner

- Test CIT Signature
- Run Software Data Harvesting Tool
- Clear cache to force rescan Docker containers during next Software Scan (*this task refers to the old functionality, ISO tagged software scan on Docker containers*)
- Force Re-upload of Software Scan Results
- Upgrade to the interim version 10.0.2 of BigFix Inventory if version older than 9.2.14 (*no changes in 10.0.9*)
- Update the Log4j library in VM Manager Tool to version 2.17.1 (*no changes in 10.0.9*)

### Enhancements and important changes

For a list of enhancements introduced in this release, see [What's new. \(on page ix\)](#)

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Server APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
BI-9838	Import fails after update from 9.2.16 when detected ISO tag signature has changed in software catalog. Error in logs: <code>Java::ComIbmDb2JccAm::SQLException: An error occurred in a triggered SQL statement in trigger "SAM.SOFTWARE_COMPONENTS_TRIGG".</code>	Issue is fixed.	10.0.9.0
BI-10180	Generated error message on Server Settings panel contains punctuation errors.	Error messages displayed on UI have been corrected.	10.0.9.0
BI-9857	Catalog customization allows to rename a product to a name which is already used by the same publisher.	An error message is displayed that the product name is already used.	10.0.9.0
<a href="#">KB0097450</a>	There is a red 'X' mark next to signature dis-	There is a yellow '!' mark showing a poten-	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
	covery explanation for positive past CIT detection.	tial scan issue with explanation on next steps.	
<a href="#">KB0097416</a>	Warning in IsotagRule step of Data Import - 'Could not save Active-Model'	Improved handling of ISO files with empty publisher. Clear messages are displayed.	10.0.9.0
<a href="#">KB0072863</a>	Incorrect interpretation of template signatures by BigFix Inventory server may lead to multiple product discovery.	Complex template signatures are correctly handled.	10.0.9.0
BI-10321	Drill down to the Software Classification is not adjusted to reporting period for Install Seats metric in All Metrics and Product Metrics per Group reports.	Reporting period of the Software Classification report is the same as in the All Metrics and Product Metrics per Group reports.	10.0.9.0
BI-9984	Mac OS signatures always display "Has Usage" set to "Yes" even if signature couldn't provide such information	Usage information is corrected.	10.0.9.0
BI-10260	The Package Summary report shows computers for which a user has no permission to access.	Fixed by listing only the computers which the user has access to.	10.0.9.0
<a href="#">KB0098523</a>	Contract reporting does not take into account different computer group aggregation periods	Every Data Import refresh of view <b>sam.current_metric_values</b> uses proper aggregation period for computer group.	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
BI-10875	Import from BigFix 9.5.4 fails when the BigFix was not available during previous import	BigFix DataSource version is not cached in case of issue with accessing datasource.	10.0.9.0
<a href="#">KB0098658</a>	When BFI server is being started when its database is not available, BFI may not be available	BigFix Inventory Server initialization waits indefinitely until database is available.	10.0.9.0
BI-10655	SLM tags for template component can cause failure of InsertForNew-SlmTags import step	SLM tags for template component do not cause import failure anymore.	10.0.9.0
<a href="#">KB0095262</a>	Cannot delete SSO configuration	Skipping deletion of <b>&lt;samlWebSso20&gt;</b> tag no longer causes an error when deleting SAML SSO configuration.	10.0.9.0
<a href="#">KB0098526</a>	Unable to remove computer property even if not used	The issue is fixed.	10.0.9.0
BI-10997	<p>1. Enabling debug logs for tema was enabling debug logs for import as well</p> <p>2. Only commented -DTEMA_LOG_DEBUG parameter in jvm.options was making debug logs for tema disabled. Any other value of the parameter either if it was 'false' or anything else was making debug logs for tema enabled</p>	<ul style="list-style-type: none"> <li>Enabling debug logs for tema does not enable debug logs for import anymore.</li> <li>DTEMA_LOG_DEBUG parameter accepts only 2 values - 'true' and 'false'. Any other value will be rejected. Commenting the parameter</li> </ul>	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
	3. Description of a setting "Enable debug level logging during data imports" in Advanced Server Settings wasn't describing what "default logging level" is	<p>ter works as a false.</p> <ul style="list-style-type: none"> <li>• Description of what "default logging level" means in imports has been added under the setting.</li> </ul>	
<a href="#">KB0098382</a>	Old scan file data not removed leading false-positive discoveries	The issue is fixed.	10.0.9.0
<a href="#">KB0098905</a>	Clusters API /api/sam/clusters returns both deleted and inactive VM Managers with no information which are active, creating confusion.	Data from deleted VM Managers is not shown. Added ability to filter by and display VM Manager status.	10.0.9.0
<a href="#">KB0098416</a>	Data import failing with message "The update count value is out of range."	<p>Added a new hidden/opt-in feature for regular pruning of historical data. In advanced server settings, the maximum_data_lifetime parameter is set by default to 0 (disabled).</p> <p>With enabled feature historical entries closed before defined number of days are removed completely from the BigFix Inventory.</p> <p>This improves the overall performance of future data imports.</p>	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0098413</a>	Modification of product's default metric assignment reverts after import.	The issue is fixed.	10.0.9.0
BI-8457	React-UI Patronus Defect Fixes	<ul style="list-style-type: none"> <li>• Ctrl + A selection shortcut works in number inputs in Edit Contract dialog box.</li> <li>• Date Selector allows to translate "Select Month" and "Select Year" labels.</li> <li>• Date Selector – Correct month shown after selecting a month with less days than currently selected day of a month.</li> </ul>	10.0.9.0
BI-10871	Custom rules are not applied in some cases	Import now applies custom rules also for discoveries found in current import, not only previous successful import process.	10.0.9.0
<a href="#">KB0098863</a>	BFI Server Installer. Keystore file "key_bfi_d-b.jks" is not converted during upgrade	Keystore for the Database certificate is preserved and converted when needed during upgrade.	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0098383</a>	The upgrade to BFI 10.0.8.0 fails because of additional SSL tags in server.xml:  Exception:Unexpected number of the <ssl> tags in server.xml.	All found SSLs are processed during the upgrade of the BFI server.	10.0.9.0

The following table lists BigFix Inventory **Scanner APARs** and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0093801</a>	Missing UUID for Solaris 11 VMs on VMWARE	Improved reading SMBIOS data on this setup.	10.0.9.0
-	Using CIT 9.2.25 import of HW scan fails because physical Hyper-V boxes are treated as VMs., Physical Hyper-V boxes are incorrectly recognized as Virtual-MachineGuest group is being included in the HW scan output.	Introduced regression. Physical Hyper-V boxes are correctly recognized.	10.0.9.0

The following table lists BigFix Inventory tools APARs and other defects that are fixed in this update. It covers **VM Manager, SAP Data Collector, Image Scanner, Scanner Service, Cloud Adapter**.

ID	Symptoms	Behavior after you install the update	Available since
BI-11155	VM Manager Tool produces misleading logs	When VM Manager Tool connects to a Hyper-V instance, logs on INFO level will be more readable, explaining that different protocols are checked. Logs on DE-	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
		BUG level will contain details when a protocol does not work.	

The following table lists BigFix Inventory **Catalog APARs** and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
BI-10414	There were 3 duplicate Micro Focus publishers.  (Micro Focus Ltd., Micro Focus (NetManage) and Micro Focus International Limited)	Duplicate publishers were deleted and products assigned to them were moved to correct Micro Focus publishers.   <b>Note:</b> Old discovery records will be closed, and new ones will be opened.	10.0.9.0
<a href="#">KB0098728</a>	The "LMTTOOLS Utility" component was wrongly discovered with Adobe as publisher.	"LMTTOOLS Utility" is embedded software it is not detected. The discovery was removed.	10.0.9.0
BI-11643	Oracle Database and Oracle Database Client 18, 19 and 21 components had version number with ".0" added but shouldn't because they report release in the detailed version.	Version numbers were corrected.   <b>Note:</b> Old discovery records will be closed, and new records will be created.	10.0.9.0
<a href="#">KB0099114</a>	Microsoft Visio and Project versions 2019 and 2021 had no usage capability after change	Enhanced capability to discover the following 9 components:	10.0.9.0

ID	Symptoms	Behavior after you install the update	Available since
	<p>of the discovery mechanism.</p>	<ul style="list-style-type: none"> <li>• Microsoft Project Professional 2019</li> <li>• Microsoft Project Professional 2021</li> <li>• Microsoft Project Standard 2019</li> <li>• Microsoft Project Standard 2021</li> <li>• Microsoft Visio for Microsoft 365</li> <li>• Microsoft Visio Professional 2019</li> <li>• Microsoft Visio Professional 2021</li> <li>• Microsoft Visio Standard 2019</li> <li>• Microsoft Visio Standard 2021</li> <li>• Microsoft Visio for Microsoft 365</li> </ul> <p> <b>Note:</b> Discovery will disappear until the next scan and data import. Catalog propagation to endpoints is required.</p>	

ID	Symptoms	Behavior after you install the update	Available since
		 <b>Note:</b> Old discovery records will be closed, and new ones will be opened.	

The following table lists BigFix Inventory **Fixlets APARs** and other defects that are fixed in this update:

ID	Symptoms	Behavior after the update	Available since
<a href="#">KB0098299</a>	Get Oracle features fixlet failing to read ORACLE home and SID	Issue is fixed.	10.0.9.0
<a href="#">KB0098415</a>	Run Capacity Scan and Upload Results fails with exit code 0	The issue is fixed. The setting <b>capacityNewFile</b> is assigned only once.	10.0.9.0
<a href="#">KB0097418</a>	Filtering of App Usage from endpoint is insufficient. After deleting an executable file of a running application, the process name in collected usage data has unwanted "(deleted)" suffix.	Applications with deleted executable files are excluded from usage collection.	10.0.9.0
BI-11130	Clear Scanner Installation fixlet was failing when cit.ini was empty or unreadable	Issue is fixed.	10.0.9.0
<a href="#">KB0098714</a>	Initiate Software Scan fails on Sun OS v5.10 client due to failing relevance	Issue is fixed.	10.0.9.0
<a href="#">KB0098639</a>	Issue with docker scan cache cleaner fixlet:	Created a new fixlet: 'Clear cache to force rescan of Docker con-	10.0.9.0

ID	Symptoms	Behavior after the update	Available since
	BigFix Inventory Scanners do not seem to clean-up after themselves with regards to Docker container discoveries	ainers during next Software Scan'.	
<a href="#">KB0099155</a>	CPU spikes during capacity scan	Created KB0099155 about controlling CPU usage by BigFix Client and BigFix Inventory scans.  Improved Client Properties setting and enforcing lower process priority on non-Windows endpoints in Run Capacity Scan and Upload Results fixlet.	10.0.9.0

The following table lists **user documentation APARs** and other defects that are fixed in this update:

ID	Symptoms	Behavior after the update	Available since
<a href="#">KB0097891</a>	Mistake in docs regarding key generation	Updated the command with " <code>-aes256_2048</code> " in the private key.  Doc link: <a href="#">Creating private keys and certificates</a>	10.0.9.0
<a href="#">KB0099289</a>	No information about <code>computer_group_id</code> filter limitation in Retrieval of hardware inventory (v2)	Removed the parameter, <code>computer_group_id</code> from the document as this is an internally used column.  Doc link:	10.0.9.0

ID	Symptoms	Behavior after the update	Available since
		<ul style="list-style-type: none"> <li>• <a href="#">Retrieval of hardware inventory (v2)</a></li> <li>• <a href="#">Retrieval of software inventory (v2)</a></li> </ul>	
<a href="#">KB0098857</a>	Contract documentation incorrect and confusing	<p>Added precise information about CSV file encoding and content requirements in contracts import page.</p> <p>Doc link: <a href="#">Importing contracts using CSV files</a></p>	10.0.9.0

### BigFix Inventory Server API changes

- Historical API `/api/sam/software_instances` is now based on new software installations instead of the deprecated ones. The meaning of columns `deleted`, `ID`, `software_fact_id` and `underlying_data_model` is changed. It is recommended to use the new API `api/sam/v2/software_instances` (no changes in it).
- Disconnected scanner upload API (`/api/upload_scan` REST API) reports in case of success HTTP code 204 instead of 200.
- The `api/sam/v2/license_usage` is extended with information about ratio that is applied to convert product license metrics to license metrics of the Cloud Pak or FlexPoint Bundle to which the product is assigned. New columns available are; `product_bundle_ratio_divider` and `product_bundle_ratio_factor`.
- The `computer_hardware` association is extended with information about the hardware architecture. New column available: `platform`
- [KB0098905](#): Clusters API `/api/sam/clusters`: data from deleted VM Managers is not shown. Added ability to filter by and display VM Manager status.

### Removed Data Import steps

As part of "Removal of deprecated features and panels" the following Data Import steps were removed:

- SAM::ContractFact.before\_snapshot
- SAM::Contract
- SAM::SoftwareFact

- SAM::SoftwareFactHierarchy
- SAM::SoftwareFactHierarchyPivot
- SAM::ComputerGroupCatalogHierarchy
- SAM::ContractDimension
- SAM::ContractFact
- SAM::ComputerGroupDiscoverableRollup
- SAM::ComputerGroupCatalogHierarchyRollup
- SAM::ComputerGroupUnmatchedFile

After upgrade these steps no longer contributes to data import duration resulting in shorter Data Import time. Sum of the execution time of the above steps gives the import time improvement after upgrade.

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.9.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.27.1000 for Windows and 9.2.27.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.9.0 and 9.2.27.0 for IBM I.

## 10.0.8.1 Application update 10.0.8.1

**Table 20. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	152	Yes
BigFix Inventory Software Catalog (main version)	10.0.8.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638712	Yes
BigFix Inventory Server	10.0.8.0	No
BigFix Inventory Server: ILMT Core library	9.2.26.0	No
BigFix Inventory Server: ILMT Catalog	9.2.26.0	No
BigFix Inventory Scanner	9.2.25.1000 on Windows 9.2.25.0000 on other platforms	No
BigFix Inventory Disconnected Scanner	10.0.8.0 9.2.26.0 on IBM I	No

**Table 20. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory VM Manager Tool	10.0.8.0	No
SAP Metric Data Collector	10.0.8.0	No
BigFix Inventory Image Scanner Script	10.0.8.0	No
BigFix Inventory Scanner Service	10.0.8.0	No
BigFix Inventory Cloud Adapter	10.0.8.0	No

**Included Software Catalog**

This release includes Software Catalog version 10.0.8.1 with capability to discover more than 100 new software versions, such as Adobe, Canonical, Dell Computer Corporation, Microsoft, Red Hat, SAP, SAS, Tripwire Inc., Veritas, and VMware.

**Table 21. New template signatures included in this release:**

**Template signature is a method of discovery where the version of a component is detected automatically and specific version is randomly added to the catalog. The template signatures cover all component versions. They are used when the software is frequently updated and deployment method is unchanged.**

Publisher Name	Component Name	Platform
Dell Computer Corporation	Quest Web Parts for SharePoint	Windows
HelpSystems LLC	TeamQuest Manager	Windows
ImageMagick Studio	ImageMagick	Windows
Microsoft	Microsoft Visual Studio Test Professional	Windows
Oracle	Oracle Insurance Compliance Tracker	Windows
Red Hat	Red Hat Satellite Capsule Server	Linux
Red Hat	Red Hat Satellite Server	Linux
SAP	SAP Crystal Reports for Enterprise	Windows
SAS	SAS IML Studio	Windows
SAS	SAS Personal Login Manager	Windows
Tripwire, Inc.	Tripwire Enterprise Agent	Windows, Linux

**Table 21. New template signatures included in this release:**

*Template signature is a method of discovery where the version of a component is detected automatically and specific version is randomly added to the catalog. The template signatures cover all component versions. They are used when the software is frequently updated and deployment method is unchanged.*

(continued)

<b>Publisher Name</b>	<b>Component Name</b>	<b>Platform</b>
VMware	Salt Master	Unix
VMware	Salt Minion	Unix
VMware	Salt SSH	Unix
VMware	VMware Tools	Windows, Linux

For more information, refer to [Catalog release notes](#) and [Catalog change list](#).

### Modified content

The version number of the fixlet is: 10.0.8.1.

The following #fixlets# were updated and should be run to install the latest versions of the specific components:

- Update Software Catalog

The following #fixlets# were updated:

- Run Software Data Harvesting Tool
- Update VM Manager Tool

### Enhancements and important changes

The following enhancements and changes are introduced in this update:

<b>Abstract</b>	<b>Description</b>	<b>Avail- able since</b>
Clean-up of SAP Crystal Reports for Enterprise.	Discovery is improved by replacing existing signatures for new template signature for SAP Crystal Reports for Enterprise.	10.0.8.1
New discovery for Veritas NetBackup Client, Master Server, Media Server.	Added discovery for versions 9.0 and 9.1.  The name of component Veritas NetBackup Server has been updated to Veritas NetBackup Master Server for versions above 5.0.	10.0.8.1

Abstract	Description	Available since
New Discovery for Microsoft Visual Studio 2022.	Discovery based on file and package for 5 different editions: <ul style="list-style-type: none"> <li>• Microsoft Visual Studio 2022 Community Edition</li> <li>• Microsoft Visual Studio 2022 Professional Edition</li> <li>• Microsoft Visual Studio 2022 Enterprise Edition</li> <li>• Microsoft Visual Studio 2022 Professional LTSC Edition</li> <li>• Microsoft Visual Studio 2022 Enterprise LTSC Edition</li> </ul>	10.0.8.1
Signature for TeamQuest Manager.	Deleted existing signature and created a new template signature to identify all versions.	10.0.8.1
Modify signatures for Quest Web Parts for SharePoint.	Discovery is improved by replacing existing signatures to new template signature for SAP Crystal Reports for Enterprise.	10.0.8.1
Modify signatures for Remotely Anywhere and Remotely Anywhere for IBM.	Removed detection for version 12.4 and by template signature. Added new signature that reports the version 12 and all its releases under 'Detailed Version'.	10.0.8.1
Modify signatures for Tripwire Enterprise Agent.	All existing discoveries of TRIPWIRE ENETRPRISE AGENT have been replaced with template signatures, one each for Windows and Unix platforms.  Publisher name changed from "Tripwire Inc." to "Tripwire, Inc."	10.0.8.1
Definition source changed to HCL for Microsoft Office, SQL Server, MS Operating systems.	Definition source was corrected on product, version, release, component and signature view to HCL or IBM Internal Development for the following Microsoft products: <ul style="list-style-type: none"> <li>• Windows</li> <li>• Windows Server</li> <li>• Storage Server</li> </ul>	10.0.8.1

Abstract	Description	Available since
	<ul style="list-style-type: none"> <li>• SQL Server</li> <li>• Office</li> </ul>	
Improved discovery for Adobe Acrobat Pro and Standard. New discovery for Adobe Acrobat Reader.	<p>Improved discovery for Pro and Standard to distinguish 2 categories:</p> <ul style="list-style-type: none"> <li>• Classic (versions: 2015, 2017, 2020)</li> <li>• Continuous (versions: 2015, 2017, 2018, 2019, 2020, 2021, and 2022)</li> </ul> <p>Added discovery for Reader for both categories.</p>	10.0.8.1
Improved discovery for MongoDB Community Server and MongoDB Enterprise Server.	Improved discovery for MongoDB Community Server and MongoDB Enterprise Server.	10.0.8.1
Software Data Harvesting Tool: Improved collection of installation location	Software Data Harvesting Tool uses MSI data from package information to determine installation path	10.0.8.1
Software Data Harvesting Tool: Improved collection of shortcuts	The range of shortcuts collection was increased in Software Data Harvesting Tool.	10.0.8.1
Software Data Harvesting Tool: Improved collection of 64 bits application	Collection of uninstall packages belonging to 64 bits applications was improved.	10.0.8.1
Software Data Harvesting Tool: Does not store username mapping file on the endpoint.	The storing of the username mapping file is configurable now. Default behavior being not creating the file.	10.0.8.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists BigFix Inventory Catalog APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
BI-8989	Ubuntu Server discovery does not work properly.	Issue is fixed. Improved discovery by adding detailed version of the software.	10.0.8.1

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0097361</a>	Lost discovery for Oracle SOA in some cases.	Issue is fixed. Discovery supports bigger file sizes.	10.0.8.1
<a href="#">KB0097668</a>	Discovery for ImageMagick was based on executable. Vendor stopped updating the version of the file which was causing false detection.	Discovery is improved. Added template signature for this product.	10.0.8.1
<a href="#">KB0097979</a>	Discovery of Salt products (Salt and Salt minion) reported wrong version information due to an incorrect package rule.	Current discovery has been removed and replaced by a template for Salt Minion, Master and SSH. The names were not distinguishable previously. Updated publisher to 'VMware'.	10.0.8.1
<a href="#">KB0098000</a>	Discovery for Tripwire Enterprise was based on executable which exists in different product (Tripwire Enterprise Agent)	Deleted Tripwire Enterprise signatures after investigation. No product, name as Tripwire Enterprise existed.	10.0.8.1
<a href="#">KB0098232</a>	Oracle Insurance Compliance Tracker detection caused false-positive discovery.	Faulty detection for Oracle Insurance Compliance Tracker has been changed to a new template signature.	10.0.8.1
BI-10860	Wrong product name for Windows, Windows Server 2008, 2012, 2016	Windows, Windows Server 2008, 2012, 2016 had component name previously changed, "Microsoft" was removed from component name, but product name still contained "Microsoft". Product names were corrected.	10.0.8.1
<a href="#">KB0097998</a>	False-positive discovery of Microsoft Visual Studio Test Professional	Faulty detection for Microsoft Visual Studio Test Professional was changed to a new template signature.	10.0.8.1

ID	Symptoms	Behavior after you install the update	Available since
		 <b>Note:</b> Discovery may disappear until the next scan and data import.	
<a href="#">KB0098554</a>	Fixlet "Update VM Manager Tool to version 10.0.8" fails due to hash mismatch.	The incorrect hash is fixed and the fixlet works correctly.	10.0.8.1

## 10.0.8 Application update 10.0.8

**Table 22. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	151	Yes
BigFix Inventory Software Catalog (main version)	10.0.8.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638693	Yes
BigFix Inventory Server	10.0.8.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.26.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.26.0	Yes
BigFix Inventory Scanner	9.2.25.1000 on Windows	No
	9.2.25.0000 on other platforms	No
BigFix Inventory Disconnected Scanner (incl. package for Containers)	10.0.8.0	Yes
	9.2.26.0 on IBM I	Yes
BigFix Inventory VM Manager Tool	10.0.8.0	Yes
SAP Metric Data Collector	10.0.8.0	Yes
BigFix Inventory Image Scanner Script	10.0.8.0	Yes

**Table 22. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Scanner Service	10.0.8.0	Yes
BigFix Inventory Cloud Adapter	10.0.8.0	Yes

**Changes to supported platforms**

The end-of-support for the following platforms announced in BigFix Inventory is related to IBM Subcapacity reporting capability:

- Windows 7 announced in BigFix Inventory v10.0.4.0
- Windows 2008 announced in BigFix Inventory v10.0.5.0

BigFix Platform still supports the above operating systems through [9.5 agents](#) and BigFix Inventory continues support for those operating systems for Software Inventory and Hardware Inventory.

Vendor-specific licensing metrics might include restrictions on operating system eligibility. For IBM Subcapacity eligible systems, refer to [Sub-capacity \(Virtualization capacity\) licensing \(IBM site\)](#).

Effective, April 30, 2022, HCL will end services for BigFix Platform version 9.2.x. For more details, refer to <https://forum.bigfix.com/t/bigfix-platform-9-2-will-be-end-of-support-on-april-30th-2022/37948>

**Support for HP-UX**

Despite the end-of-support of BigFix Platform 9.2 on April, 30th 2022, the support for HP-UX managed will be extended using BigFix Platform 9.2 Agent reporting to BigFix Platform 9.5 or 10.0 connected to BigFix Inventory 10.x.

BigFix Platform 9.2 HP-UX Agent patches will be provided only to address PSIRT records or high severity customer reported defects.

For more information, refer to the announcement on the BigFix Forum: [BigFix v9.2 agent: support extension for HP-UX operating system - Release Announcements / Platform \(Release Announcements\) - BigFix Forum](#).

Support for IBM Subcapacity Licensing purposes of all versions of HP-UX is planned to be removed at the end of 2022 as announced by IBM. For IBM Subcapacity License terms inquiries reach out to IBM at [subcap@us.ibm.com](mailto:subcap@us.ibm.com).

**Support for Microsoft Internet Explorer 11 Web Browser**

Starting from BigFix Inventory v10.0.8.0 it is recommended to use Web Browsers, such as Edge, Firefox, and Chrome instead of Microsoft Internet Explorer 11 (IE11).

There are known issues related to IE11 and support for this browser will be discontinued in the future:

- ES5 Syntax issues due to ES6 syntax usage
- [Improved Contracts Management] Edit Contract window is not displayed on IE11
- BigFix Inventory UI not responsive on IE11 after number of actions

<https://docs.microsoft.com/en-us/lifecycle/faq/internet-explorer-microsoft-edge#what-is-the-lifecycle-policy-for-internet-explorer->

#### **[KB0093678] BigFix Inventory and BigFix Compliance using the same session cookie**

[https://support.hcltechsw.com/csm?id=kb\\_article&sysparm\\_article=KB0093678](https://support.hcltechsw.com/csm?id=kb_article&sysparm_article=KB0093678)

Collocation of the BigFix Inventory and BigFix Compliance on the same VM is not supported.

If deployed on the same VM, when using a single, standard Web Browser instance only one of the applications can be used. Once logged into one application, if there is an open session with the other application, it would be lost.

#### **Workaround**

Use the Private Mode in browser to access.

#### **Deprecated Features prepared for removal in the next release**

To continuously improve BigFix Inventory application and optimize import process to eliminate unnecessary actions and deprecated features are planned to be completely removed in the next application update version 10.0.9.0.

BigFix Inventory v10.0.8.0 is the last release with the option to activate and use the following features.

<b>Deprecated function</b>	<b>Replacement</b>	<b>Comments</b>
Contracts (Deprecated) report Contracts Usage Data (Deprecated) report	All Contracts	Complete replacement
Inventory Exploration (Deprecated) report	Software Summary	Complete replacement
Software Installations (Deprecated) report	Software Installations based on Software Classification	Complete replacement
Unrecognized Files report	N/A	Feature discontinued as not used in business scenarios.

#### **Changes to Software Discovery in Containers**

BigFix Inventory Image Scanner can now scan optimized docker images which do not satisfy requirements of BigFix Inventory Disconnected Scanner if the host where Image Scanner is run meets specific requirements.

Since BigFix Inventory v10.0.7.0 dedicated plugin framework is available to talk to Kubernetes APIs of on-premise and public cloud containers to determine software usage of container instances.

Collection of container details is with the use of two Cloud Adapter configurations:

- Kubernetes-based solutions that are compatible with standard Kubernetes API v1.18 or newer (see note below for details).
- Generic Kubernetes API available in case own access method is preferred.

**Note:** Examples of compatible solutions verified in test lab environment are Vanilla (unmodified) Kubernetes v1.18, v1.21 and v1.23, Google Cloud v1.20, RedHat OpenShift Container Platform v4.9.

BigFix Inventory is certified for IBM Virtualization Capacity License reporting on physical machines, virtual machines on premise and in the cloud. For IBM Certified Containers the only approved licensing counting is through IBM License Service. Feedback or questions regarding this capability and strategy should be provided directly to IBM.

Currently the BigFix Inventory Software Discovery in Containers is limited to software discovery only without license management capability but provides visibility to a large set of vendor software in Kubernetes compatible environments including RedHat OpenShift.

As BigFix Inventory feature matures over time, driven by customer feedback, support for a wide variety of license management within containers will be added, beyond IBM/RedHat container license management including Microsoft, Adobe, SAP, HP, BMC, CA, Citrix, Corel, Symantec, TIBCO, VMware and many others.

HCL looks forward to continuing partnership with IBM/RedHat to address their container license management as a leading software vendor.

### **Optional Software Data Harvesting Tool for BigFix Inventory**

This release introduces an optional tool called Software Data Harvesting Tool for BigFix Inventory which is part of BigFix Inventory Catalog Enhancement Program. The tool provides a better discovery of softwares installed at the endpoints.

Please contact us through [talk2sam@hcl.com](mailto:talk2sam@hcl.com) if you would like to take part in this program.

### **Included Software Catalog**

This release includes Software Catalog version 10.0.8.0 with capability to discover 400+ new software versions including but not limited to the following software manufacturers: Adobe, AutoDesk, BMC Software, Cisco, Hewlett-Packard, JetBrains, Microfocus, Microsoft, Red Hat

New template signatures included in this release:

***Template signature is a method of discovery where the version of a component is detected automatically, and specific versions are randomly added to the catalog.***

***The template signatures includes all component versions. They are used when the software is frequently updated and deployment method is not changed.***

Publisher name	Component name	Platform
Forcepoint	Forcepoint Endpoint	Windows
Hewlett-Packard	HP Business Service Management	Windows
Adobe	Adobe Lightroom Classic	Windows

For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is 10.0.8.0.

*The following fixlets were updated and should be run to install the latest versions of the specific components:*

- Upgrade to the latest version of BigFix Inventory
- Upgrade to the interim version 10.0.2 of BigFix Inventory if version older than 9.2.14
- Software Catalog Update (if BFI not upgraded)
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Install SAP Metric Data Collector
- Update SAP Metric Data Collector
- Install VM Manager Tool
- Update VM Manager Tool
- Install Additional VM Manager Tool
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package
- Download BigFix Inventory
- Download the BigFix Inventory Container Solution Packages

*The following fixlets were updated and require that actions created by their previous versions are stopped and then started by using the updated fixlets. Restarting actions is necessary to ensure that new features work properly:*

- Initiate Software Scan
- Initiate Software Scan on Shared Disks
- Upload Software Scan Results – no updates, but recommended to be refreshed to match Initiate

The following fixlets were updated or added:

- Configure Scan Cache
- Uninstall Scanner
- Test CIT signature
- Clear Scanner Installation
- Run Software Data Harvesting Tool

### Enhancements and important changes

For a list of enhancements introduced in this release, see: [What's New \(on page xxv\)](#).

### Defect fixes

ID	Symptoms	Behavior after you install the update	Available since
<b>Server updates</b>			
<a href="#">KB0094309</a>	Software Classification report with filters of "Publisher in set IBM" and "Confirmed equal to No" taking way too long to process.	Change the filter "Publisher in set IBM" to "Publisher Name equal to IBM". Significant speed improvement on report page with this specific filter.	10.0.8.0
<a href="#">KB0094967</a>	Inventory Builder: DictionariesBO: selecting File Facts to process to temporary table on MS SQL 2016 can have invalid plan filling in whole available Temp-DB	Issue is fixed	10.0.8.0
<a href="#">KB0095233</a>	Data Import fails to complete Custom Rule step	Temporary bundle ids cleared if last import is failed with the info in the log 'Bundle id table truncated due to last import failed.'	10.0.8.0
<a href="#">KB0095723</a>	Update VM Manager Tool to Version 10.0.7.0 fails on the pre-fetch command	The process of upgrade has been simplified to avoid conditional pre-fetches.	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
	with message:Command failed (File was not marked for pre-fetch in download pre-pass 'http://software.bigfix.com/download/tema/lmt/7za.exe		
KB0095913	SLM Tag Import failed with ArrayIndexOutOfBoundsException error	Discontinued using SimpleDateFormat to make sure the error won't appear anymore in the future and improved error handling.	10.0.8.0
KB0096286	ISO Tag import fails when exception got a nil message	Improved handling variety types of errors in multithreaded environment	10.0.8.0
KB0096623	High memory usage in ProductInventory-BO.processPathUpdates step	Issue is fixed.	10.0.8.0
KB0096967	Redundant /migration/ folder containing old log4j (1.2.16) is present in BFI directory	"Upgrade to the latest version of BigFix Inventory (10.0.8.0)" fixlet removes redundant /migration/ folder	10.0.8.0
KB0096662	BigFix Inventory Bundling Tags breaks the BFI import.	Issue is fixed.	10.0.8.0
KB0097218	Data import fails due to version values not cut to fit into sam.versions table.	Issue is fixed	10.0.8.0
KB0097328	If the import schedule was not updated since	Issue is fixed.	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
	version 9.2.11 or older, after upgrading to 10.0.7, imports fail with the following error message: "no implicit conversion of Time into Array"		
BI-8739	Server installer does not create clusterstate directory, causing error in logs.	Clusterstate directory is automatically created.	10.0.8.0
BI-8740	Missing default value for cluster_state_dir advanced server setting.	Default value is set properly.	10.0.8.0
BI-8715	K8s computers show "No Scan Data" for Hardware/Capacity Scan	Hardware/Capacity Scan status no longer shows "No Scan Data" for K8s computers – status is always "Not Applicable" for them.	10.0.8.0
BI-7608	[Serviceability] Cryptic error messages in logs when scheduler starts a Data Import when Import is already in progress	Instead of unnecessary messages there is only one info in the log "Scheduled import will not run because an import is already in progress."	10.0.8.0
BI-8548	In /api/get_token REST API, response status code 500 is returned in case of invalid credentials. Body contains HTML page.	Response 401 will be returned with JSON in body. Response about invalid content type only will be returned when requested content type will be different than JSON.	10.0.8.0
BI-9107	Contract delta is not calculated when pur-	Delta is calculated.	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
	chase order period does not include current date.		
BI-8907	Internal Server Error while Import - Routes started reloading	Updated handling of inaccessibility while user is trying to access application when routes are reloaded in memory of application.	10.0.8.0
BI-8797	API Language is invalid sent to java via brigde call	Regional language code was sent with not acceptable separating symbol and modified to lower case. Updated sending of language and internal domain logic to handle language code and region code.	10.0.8.0
BI-9528	IBM software is not found when searched for on Catalog Customizations panel. The problem happens if the software was created in BigFix Inventory version 9.2.15 or older and then imported from IBM catalog.	The issue will be fixed after the 1st import after upgrade.	10.0.8.0
BI-9449	On Windows tema.log contains extra new line (line feed) characters	Tema.log new lines representation has been adjusted for Windows CR-LF	10.0.8.0
BI-7885	Unwanted quotation mark at the beginning of value in PDF and CSV when the value starts with hyphen.	Issue is fixed.	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
BI-9323	In 'All Contracts' panel, value 'Never' is included in 'is empty' filter result for 'Next Entitlement Change Date' column	Value 'Never' is not included in the 'is empty' filter result.	10.0.8.0
BI-8793	After BFI update from 10.0.6 to 10.0.7 multiple IBM DB2 Extensions for IBM Cloud Pak for Data products were duplicated in multiple places in WebUI.	The Cloud Pak duplications don't appear.	10.0.8.0
<b>Container support updates</b>			
BI-8710	BFI Scanner Service does not scan images without registry hostname in name, for example, 'mysql:latest'	Images without registry hostname will be scanned. Require additional configuration of BFI Scanner Service	10.0.8.0
<b>Scanner updates</b>			
BI-9212	Disconnected scanner reports Windows 11 as Windows 10.	Windows 11 detection is now correct on the disconnected scanner. Additionally, a detailed version of Windows is returned.	10.0.8.0
<b>Catalog updates</b>			
<a href="#">KB0096969</a>	Discovery for Peoplesoft Tools 8.17 was causing false discovery.	Detection of Peoplesoft Tools 8.17 was deleted.	10.0.8.0
BI-8639	Microsoft Team Foundation Server has wrong component name for versions 2017 and 2018.	The component name is changed from the "Microsoft Visual Studio Team Foundation Server" to "Microsoft Team Foundation Server" for versions 2017	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
		and 2018 to be in line with Microsoft naming scheme.	
BI-9439	Microsoft Project 2019 not detected after Microsoft updates the software.	Discovery is fixed for Microsoft Project Professional and Microsoft Project Standard.  Due to changes in the detection mechanism, it is necessary to Initiate Software Scan to collect new discovery results.	10.0.8.0
BI-8535	False discovery of Adobe Lightroom	Discovery is fixed by creating new template signature for Adobe Lightroom Classic and deleting existing signatures for Adobe Lightroom, Adobe Lightroom Classic and Adobe Photoshop Lightroom.	10.0.8.0
BI-9735	Incorrect file version in one of executables for Qualys Cloud Security Agent 1.6 & 2.1	Issue is fixed by updating the correct file version for the executables.	10.0.8.0
BI-9448	SnagIt 2.2 discovery did not provide usage monitoring.	Discovery now provides usage monitoring for versions 2.2 and 2.5.	10.0.8.0
BI-9741	Cleanup of Forcepoint Endpoint	Discovery is improved.  Four signatures for Forcepoint Endpoint are deleted and replaced by a template signature for Windows platform.	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
BI-9965	Microsoft Visio installed with Microsoft 365 was not detected correctly.	Added detection for Microsoft Visio for Microsoft 365.	10.0.8.0
<b>Fixlets</b>			
<a href="#">KB0092645</a>	BigFix Inventory Actions might be hanging on Windows endpoints due to issues with Windows Scripting Host.	BigFix Inventory actions include the timeout setting inside to detect such situations and then terminate such hanging scripts.	10.0.8.0
BI-8919	Collect Logs from Endpoint fixlet fails on Windows machine with CIT private installation	The issue has been fixed. The Collect Logs from Endpoint fixlet works properly with CIT private installation.	10.0.8.0
BI-8785	"Initiate Software Scan" fixlet occasionally fails on Mac OS.	The scan succeeds.	10.0.8.0
<b>User Documentation updates</b>			
<a href="#">KB0095270</a>	Custom metric requirements too vaguely specified	<p>Updated the document with information about conditions required for the metric to be displayed on All Metrics panel.</p> <p>Doc link:</p> <ul style="list-style-type: none"> <li>• <a href="#">License metric utilization</a></li> <li>• <a href="#">Reported license metrics</a></li> </ul>	10.0.8.0
<a href="#">KB0096529</a>	Supported managed devices documentation outdated	Updated the document for "Supported managed devices documentation outdated". Added	10.0.8.0

ID	Symptoms	Behavior after you install the update	Available since
		Windows 7 as supported version and updated the notes to provide correct information.  Doc link: <a href="#">Supported managed devices</a>	
BI-10142	Document difference between BES Inventory and License – Application Information* analysis and BigFix Inventory Reports.	Added a new topic to include the article.  Doc link: Difference between Web Reports and BigFix Inventory software discovery results	10.0.8.0
BI-9266	Improved Software Scan return codes documentation to cover statuses shown on the Software Scan Status analysis and missing Scanner error codes	<a href="#">Software scan return codes (hcltechsw.com)</a>	10.0.8.0

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.8.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.25.1000 for Windows and 9.2.25.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.8.0 and 9.2.26.0 for IBM I.

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**Table 23. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	150	Yes
BigFix Inventory Software Catalog (main version)	10.0.7.1	No

**Table 23. Published site version (continued)**

<b>Name of component</b>	<b>Version</b>	<b>Updated in the release</b>
BigFix Inventory Software Catalog (version on endpoint)	2638678	Yes
BigFix Inventory Server	10.0.7.0	Yes
BigFix Inventory Server: ILMT Core li- brary	9.2.25.0	No
BigFix Inventory Server: ILMT Catalog	9.2.24.0	No
BigFix Inventory Scanner	9.2.25.1000 (Windows) 9.2.25.0000 (other platforms)	Yes
BigFix Inventory Disconnected Scan- ner	10.0.7.0 9.2.25.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.7.0	Yes
SAP Metric Data Collector	10.0.7.0	Yes

**Included Software Catalog**

- This release includes Software Catalog version 10.0.7.1 with capability to discover more than 300 new software versions.

Some of the new software versions that can be discovered are:

- AutoDesk Inc.
  - Microsoft
  - Oracle
  - Red Hat
  - SAP
  - VMware
- Several defect fixes.

**Table 24. New template signatures included in this release:**

**Template signature is a method of discovery where the version of a component is detected automatically and specific version is randomly added to the catalog. The template signatures cover all component versions. They are used when the software is frequently updated and deployment method is unchanged.**

<b>Publisher Name</b>	<b>Component Name</b>	<b>Platform</b>
PostgreSQL Global Development Group	PostgreSQL	LINUX
AccessData Corporation	FTK Imager	Windows
Broadcom	BacsTray Application	Windows
CA Technologies	CA Application Management .NET Agent	Windows
CollabNet Inc	Collabnet Subversion	Windows
Mobatek	MobaXterm	Windows
NetSDK Software	S3 Browser	Windows
NICE	NICE Storage Center	Windows
PyScripter	PyScripter	Windows
SlikSVN	SlikSVN	Windows
TortoiseCVS	TortoiseSVN	Windows
Verint Systems Inc.	Logger Package	Windows
VisualSVN Ltd.	VisualSVN Server	Windows
WANdisco Inc.	SmartSVN	Windows
Quest Software Inc.	Toad for IBM DB2	Windows
Quest Software Inc.	Toad for MySQL	Windows
Quest Software Inc.	Toad for SAP Solutions	Windows
Quest Software Inc.	Toad Edge Preview	Windows
Quest Software Inc.	Toad Data Point	Windows
Quest Software Inc.	Toad for SQL Server	Windows
Trend Micro	Trend Micro OfficeScan Agent version 13 and older	Windows
Trend Micro	Trend Micro Apex One Security Agent version 14 and newer	Windows

**Table 24. New template signatures included in this release:**

*Template signature is a method of discovery where the version of a component is detected automatically and specific version is randomly added to the catalog. The template signatures cover all component versions. They are used when the software is frequently updated and deployment method is unchanged.*

(continued)

Publisher Name	Component Name	Platform
Trend Micro	Trend Micro Worry-Free Business Security Agent	Windows
Trend Micro	Trend Micro Security Agent	Windows
SAP	SAP Crystal Reports version 14 and newer	Windows
Free Software Foundation Inc.	Gzip	LINUX

For more information, refer to [Catalog release notes](#) and [Catalog change list](#).

#### Modified content

The version number of the fixlet is 10.0.7.1.

The following #fixlets# were updated and should be run to install the latest versions of the specific components:

- Update Software Catalog
- Initiate Software Scan
- Update VM Manager Tool

#### Enhancements and important changes

The following enhancements and changes are introduced in this update:

Abstract	Description	Available since
Windows 11 detection and Operating System version reported in Software Classification	Windows 11 is now detected after updating the Initiate Software Scan fixlet. Operating System detailed version is also added for all of the Windows systems.   <b>Note:</b> It requires an update of Initiate Software Scan fixlet.	10.0.7.1

Abstract	Description	Available since
Discovery for Oracle Weblogic Server, Oracle Weblogic Server Enterprise Edition, Weblogic Suite	Discovery for version 14.1 (both Windows and Unix) is added.	10.0.7.1
Improved discovery for Oracle Tuxedo Server, Oracle Tuxedo Jolt, Tuxedo System and Application Monitor Plus (TSAM Plus), Services Architecture Leveraging Tuxedo (SALT)	Discovery for versions 12.1 and 12.2 for both Windows and Unix are improved. The discovery now provides information about detailed version.	10.0.7.1
Improved discovery for Oracle Database 12c	Discovery for versions 12.1 and 12.2 for both Windows and Unix are improved. The discovery now provides information about detailed version.	10.0.7.1
Improved discovery for PostgreSQL	Added discovery capability for PostgreSQL on Linux platform.	10.0.7.1
Improvement of discovery for BMC Control-M Agent	Improved discovery for BMC Control-M Agent for Windows platform. Versions include 6.0, 6.1, 6.3, 7.0, 8.0, 9.0 the discovery returns a detailed version now.	10.0.7.1
Discovery for Microsoft Office 2021	Discovery for Microsoft Office 2021 added for Windows.	10.0.7.1
Improved discovery for Oracle Java Runtime Environment, JDK/SDK and OpenJDK.	Java Runtime Environment 7.0, JDK/SDK 7.0 and OpenJDK 7.0, 8.0 return detailed version on Windows and Unix platforms.	10.0.7.1
Improved discovery for Red Hat Jboss Data Grid 6.0 - 6.6 and added new discovery for Red Hat Data Grid 7.0-7.3, 8.0-8.2.	Discovery for releases 6.0-6.6 was improved to have better performance and to return the detailed version. Discovery for releases 7.0-7.3 and 8.0-8.2 was added for Windows and Unix platforms.	10.0.7.1
Improved naming convention of Linux OS	Changed naming for 3 Linux operating systems: <ul style="list-style-type: none"> <li>• Canonical Ubuntu Server → Ubuntu Server</li> <li>• Fedora Project Fedora → Fedora</li> <li>• Centos Linux → CentOS</li> </ul>	10.0.7.1

Abstract	Description	Available since
Improved discovery for TOAD	<p>Improved discovery of TOAD on Windows platform with template signatures:</p> <ul style="list-style-type: none"> <li>• Toad for IBM DB2</li> <li>• Toad for MySQL</li> <li>• Toad for SAP Solutions</li> <li>• Toad Edge Preview</li> <li>• Toad Data Point</li> <li>• Toad for SQL Server</li> </ul>	10.0.7.1
Unified naming convention of Java	<p>Java is merged into 2 components; JDK/SDK and Java Runtime Environment:</p> <ul style="list-style-type: none"> <li>• Java Developers Kit → JDK/SDK</li> <li>• Sun Java Development Kit → JDK/SDK</li> <li>• Java 2 Runtime Environment Standard Edition → Java Runtime Environment</li> <li>• Java 2 Platform Standard Edition 5.0 Update x → Java Runtime Environment</li> </ul> <p> <b>Note:</b> Detection can disappear, but it will appear once again when customers propagate a new catalog to the endpoints. It will happen because this type of signature is validated on the endpoint side.</p>	10.0.7.1
Unified name convention of SAP Crystal Reports	<p>All components were moved to SAP publisher, deleted multiple signatures for one version and merged into one signature.</p> <p>Components that were modified:</p> <ul style="list-style-type: none"> <li>• SAP Crystal Reports</li> <li>• SAP Crystal Reports for Enterprise</li> <li>• SAP Crystal Reports Server</li> <li>• SAP Crystal Reports Viewer</li> </ul>	10.0.7.1

Abstract	Description	Available since
Discovery for Zimbra Collaboration	New discovery added to the catalog for versions 8.8 and 9.0. Added signatures are for Linux platform.	10.0.7.1
Discovery for SAP Crystal Reports	A new Windows template signature was added for SAP Crystal Reports which will assure discovery of versions starting from 14.0 onwards.	10.0.7.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<b>Catalog updates</b>			
<a href="#">KB0094682</a>	Discovery for Gzip 1.5, 1.6 returned faulty Install Path to "gzip" when "bash completion" function was installed on endpoint.	This defect has been fixed.	10.0.7.1
BI-8765	The Microsoft Office Language Pack 2016 and 2019 are faulty and both are detecting same version	Deleted detection for both versions.	10.0.7.1
BI-8550	Discovery for VisualSVN Server caused false positives, after further investigation the issue could also happen in other SVN/Subversion products	We replaced the old discovery of TortoiseSVN, SlikSVN, SmartSVN, VisualSVN Server, CollabNet Subversion with discovery by a template signature. The new discovery fixes the false-positive issue and provides discovery for previously missing versions	10.0.7.1
<a href="#">KB0096090</a>	Trend Micro Apex One Security Agent improperly discovered	Discovery was fixed and improved by replacing method of detection with template signatures for Trend Micro OfficeS-	10.0.7.1

ID	Symptoms	Behavior after you install the update	Available since
		can Agent, Trend Micro Apex One Security Agent, Trend Micro Worry-Free Business Security Agent, Trend Micro Security Agent.	
<a href="#">KB0095764</a>	Red Hat Cygwin wrong version reported	Discovery for version 2.9 was fixed (no longer discovers other versions and reports them as 2.9). Discovery for newer missing versions was also provided (3.0-3.3).   <b>Note:</b> Detection can disappear, but it will appear once again when customers propagate a new catalog to the endpoints.	10.0.7.1
BI-8752	McAfee Agent discovery was faulty	This defect has been fixed.	10.0.7.1
<a href="#">KB0095523</a>	Microsoft OneDrive duplicated discovery	There was a duplicated discovery of Microsoft OneDrive (due to a template signature on top of non-template and they both reported the same version differently, for ex, 19.42 and 19.423). Non-template signatures were removed.	10.0.7.1
<b>Documentation updates</b>			
BI-8978	Incorrect SQL database requirements for BFI 9.2.16	Updated the information about MS SQL 2008 and 2008 R2 server edition in BigFix Inventory version 9.2.16 document.  Doc link: <a href="#">Software requirements</a>	10.0.7.1

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0094013</a>	Lack of clearly documented process for license counting of BigFix Inventory and related products	Created a documentation page with step-by-step guidance for the license counting.  Doc link: <a href="#">Using BigFix Inventory to calculate license for BigFix products</a>	10.0.7.1
<b>Fixlet updates</b>			
<a href="#">KB0095723</a>	Update VM Manager Tool to version (10.x) fixlet fails	Updated the code so the fixlet no longer fails.	10.0.7.1

## 10.0.7 Application update 10.0.7

**Table 25. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	148	Yes
BigFix Inventory Software Catalog (main version)	10.0.7.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638667	Yes
BigFix Inventory Server	10.0.7.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.25.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.25.0	Yes
BigFix Inventory Scanner	9.2.25.1000 (Windows) 9.2.25.0000 (other platforms)	Yes
BigFix Inventory Disconnected Scanner	10.0.7.0 9.2.25.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.7.0	Yes
SAP Metric Data Collector	10.0.7.0	Yes

## Allowed upgrade path

Minimal version recommended for direct upgrade path: 9.2.16

For version older than 9.2.16 upgrade first to 10.0.2 using already available fixlet.

## Software discovery in containers

BigFix Inventory, starting from version 10.0.7.0, supports the discovery of software in Docker container images through standard discovery methods including catalog signatures, template signatures, installation registry and ISO SWID tags to cover traditional model of software deployment.

The application provides information about software running in containers, the container instances with basic properties and their status. This information allows you to determine the software deployment across container resources that are allocated.

BigFix Inventory was instrumented to allow for a separate BigFix Inventory server instance setup for software on image with container data collection and reporting. The supported maximum number of images, in a separate BigFix Inventory server instance, is equal to maximum number of supported disconnected endpoints as in case of standard BigFix Inventory server instance if configured in line with scalability guidelines.

A new plugin framework is available to talk to Kubernetes APIs of on-premise and public cloud containers to determine software usage of container instances.

Collection of container details is with use of two Cloud Adapter configurations

- Standard Kubernetes API for Kubernetes v1.18.0, Kubernetes v1.21.2 and Google Cloud v1.20.10.
- Generic Kubernetes API available in case own access method is preferred.

Image Scan solution covers two integration scenarios

- Automated monitoring - available as a service to monitor and request image scan only for images used in existing containers.
- Pipeline build process - to integrate with pipeline solution before image is available for deployment.

This dedicated solution does not require any BigFix component to be added into image neither installed in container.



**Note:** Software discovery in containers is covered by Active Container license metric. For details refer to license information text (English only) included in BigFix Inventory server package.

## Included Software Catalog

This release includes Software Catalog version 10.0.7.0 with capability to discover around 440+ new software versions.

As an enhancement we added a discovery capability of Check Point SmartConsole on Windows platform for version - 80.40.

New template signatures included in this release:

Publisher Name	Component Name
Microsoft	Microsoft Visual Studio Code
Microsoft	Azure Data Studio
Microsoft	Microsoft Power BI Desktop
Adobe	Adobe Creative Cloud
Adobe	Adobe Genuine Software Integrity Service
Hewlett-Packard	HP Device Manager Configuration Center

For more information, refer to the [Catalog Release Notes](#) and [Catalog Change List](#).

### Modified content

The version number of the fixlet is: 10.0.7.0

The following fixlets were updated and should be run to install latest versions of the specific components:

- Upgrade to the latest version of BigFix Inventory
- Upgrade to the interim version 10.0.2 of BigFix Inventory if version older than 9.2.14
- Software Catalog Update (if BigFix Inventory is not upgraded)
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Install SAP Metric Data Collector
- Update SAP Metric Data Collector
- Install VM Manager Tool
- Update VM Manager Tool
- Install Additional VM Manager Tool (OPTIONAL)
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package
- Download BigFix Inventory

The following fixlet was added and should be used to obtain install media for BigFix Inventory Container Solution:

- Download the BigFix Inventory Container Solution Packages

The following #fixlets# were updated and require that actions created by their previous versions are stopped and then started by using the updated #fixlets. Restarting actions is necessary to ensure that new features work properly:

- Initiate Software Scan
- Upload Software Scan Results – no updates, but recommended to be refreshed to match Initiate Software Scan version

### Enhancements and important changes

For a list of enhancements introduced in this release, see: [What's New \(on page xxv\)](#).

### Defect fixes and enhancements

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<b>Server updates</b>			
<a href="#">KB0093673</a>	Unable to access Contracts after first data import post BFI 10.0.5 upgrade	All Contracts panel works correctly after the first successful import after upgrade. BigFix Inventory restart after the import may be required.	10.0.7.0
<a href="#">KB0093969</a>	Contracts API and CSV import return errors on DB2	The issue affected BigFix Inventory which in past was in version before 10.0.0 and is migrated to 10.0.6. In version 10.0.7, the problem is fixed.	10.0.7.0
<a href="#">KB0093647</a>	Too many filters in new custom rule cause SQL error	Adding many filters in "Software Classification" cause error on BFI 10.0.6 and down versions. The reason of the error is DB Column size exceed for the related	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
		column. After the implementation, DBs migrated and incorrect data was removed with migration and maximized the column size.	
<a href="#">KB0094205</a>	Unsuccessful OS matching for Mac OS 11. Application could not identify Mac OS 11 machines as Mac OS, because the operating system is reported in a different way. This causes that package data is not reported for such machine.	Mac OS 11 is recognized properly, and package data is displayed.	10.0.7.0
<a href="#">KB0094388</a>	Hundreds of open connections to BigFix database. BigFix database may stop accepting new connections. BigFix Inventory may stop working properly and be able to run Data Imports.	The issue is fixed.  There was provided 10.0.6.0.1 hotfix.	10.0.7.0
<a href="#">KB0093835</a>	Software not displayed on Software Classification despite signature matching. This can happen if a custom metric was assigned to the product.	The issue is fixed.	10.0.7.0
<a href="#">KB0092682</a>	WAS Liberty PVU option found	The issue is fixed. WAS Liberty SWID ISO tags were removed from BigFix Inventory Serv-	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
		er 10.0.7.0 installation package	
<a href="#">KB0095168</a>	In some scenarios an import process is failing on Unix package facts step, due to improper parsing of long strings with special characters, which is breaking the import process	The issue is fixed.	10.0.7.0
<a href="#">KB0094017</a>	<p>Unix packages on Ubuntu operating system are empty if RPM Package Manager is installed.</p> <p>The sua_package_data file in the client's CIT folder is empty. There is no proper discovery on the endpoint where RPM Package Manager is installed; thus, BigFix Inventory does not report installed software for Linux Ubuntu clients.</p>	The issue is fixed.	10.0.7.0
<a href="#">KB0093628</a>	During import, while processing file facts SQL query fails due to too big difference between 2 dates	The issue is fixed, and corresponding validation has been added to catch issue early and not stop import process	10.0.7.0
<a href="#">KB0091998</a>	Additional CIT Signatures in Endpoint Catalog that does not result in discovery of the software: ILMT core processing the ILMT cat-	The issue is fixed in ILMT 9.2.25 adopted by BFI	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
	alog created some additional CIT rules and then signatures, which were propagated to the endpoints. There were matches, but not resulting in the software discovery during the import on BFI.		
BI-7645	Cross-site Request Forgery vulnerability in Login Form	After the changes attacker will get "Token has expired or is invalid. Refresh page to login." error and login from cross origin will be blocked.	10.0.7.0
BI-6318	<p>Inconsistency between UI and CSV/PDF in "Connection Test Status" column for distributed VM Managers:</p> <ul style="list-style-type: none"> <li>• UI - always "Not Applicable" value</li> <li>• CSV/PDF – adequate connection test status</li> </ul>	"Connection Test Status" for distributed VM Managers will always have "Not Applicable" value in UI and CSV/PDF reports.	10.0.7.0
BI-7185	Contracts REST API validates required string custom fields	Validation of required string custom fields in PUT REST API is introduced.	10.0.7.0
BI-7324	Contracts REST API accepts non-string custom fields	Custom field values of types: integer, float, boolean are accepted	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
		also without quotation marks.	
BI-7365	Contracts REST API and contracts UI support software having non-ASCII characters in names or publisher names	Software which contains non-ASCII characters is accepted in contracts REST API, as well as in the search field on UI. These issues occurred only in BigFix Inventory using SQL server database.	10.0.7.0
BI-7354	Contracts REST API supports non-ASCII characters	Contract fields like contract name in REST API can contain non-ASCII characters.	10.0.7.0
BI-7168	Improved error reporting for contracts CSV import	Error reporting for CSV import is improved for the cases when type id, computer group id or purchase order quantity is empty but it is expected to have a value.	10.0.7.0
BI-7207	Part of texts is translated according to Web browser's lang setting instead of user profile lang setting	Contracts CSV import logic was using language header instead of user language from profile. Which was leading to mismatch in language on errors inside modal window and outside of it.	10.0.7.0
BI-7318	Windows 2019 Exploit Protection feature can break SAML without exclusions in place for Java	On Windows 2019 Standard the default setting for Exploit Protection is "on". No BFI malfunctions were observed when launching the ap-	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
		plication in SSO mode when switching Exploit Protection on and off, restarting the server, etc.	
<b>Scanner updates</b>			
<a href="#">IJ34778</a>	VMware VMs with Hyper-V feature enabled are treated as physical machines.	The problem does not occur.	10.0.7.0
199533	Due to Kernel Lockdown feature CIT generates a lot of Operating System warnings during '/dev/mem' access.	No Kernel Lockdown warnings in dmesg output.	10.0.7.0
199463	The existing 'dumpsmbios' method doesn't allow to dump 'raw' sbmbios memory area. If _SM_ & _DMI_ anchor-strings are not discovered '--dumpsmbios' switch doesn't work at all.	'--dumpsmbios' switch allows to dump the whole sbmbios memory area.	10.0.7.0
199380 / IJ33747 (199413)	On machines with SeaBIOS '_DMI_' anchor string used to discover the SMBIOS Entry Point is being stated twice. The first entry points to some invalid memory address.	SMBIOS data can be correctly collected by CIT and returned in the hardware scan output.	10.0.7.0
199432	SQLite API have a problem with accessing its own Database file when path contains some	'provider_cache3' can be used with UTF character set.	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
	character outside of ASCII character set.		
199481	The existing 'Nested Virtualization' discovery method is not reliable and provide ambiguities. Furthermore, some Nested Virtualization scenarios like running VM inside the VM of the same vendor are not being discovered at all.	'Nested Virtualization' check has been removed.	10.0.7.0
199338 (199110) / IJ33481	SharedPoolCapacityInCores and LparCapacityInCores fields are reported as -1 on local zone with pset assigned.	When local zone is assigned processor pool (pset), then we cannot report the totals of the LPAR capacity as based on the comment from the code, we: "invalidate because we don't know how many packages the system has beside what's in the pool". The fix is to changing the capacity scan in such a way that it reports the pool resources as the LPAR capacity (so potentially ignoring the additional packages not coming from the pool mentioned by the comment).	10.0.7.0
199307 / RFE 199191	CIT wscanvdp scanner hangs on a system with a corrupted rpm registry due to hanging rpm command.	rpm command execution is now done with a 300 seconds (5 minutes) timeout. After the	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
		<p>timeout expires the rpm process is finished and the CIT scanner command exits.</p> <p> <b>Note:</b> wscanvdp will return empty results on Linux in such case (if rpm is the only software registry scanned) and will exit with no error (return code 0). The current behavior is that wscanvdp does not return any error in case a given provider of software registry returns empty results.</p> <p>Nevertheless CIT logs will contain the following error messages (MIN level):</p> <p>Unable to execute rpm command, error code=-1. No output has been returned.</p> <p>Unable to preload packages ( err = -1 )</p>	

ID	Symptoms	Behavior after you install the update	Available since
		<p>Unable to get result from expression Rpm-ProductList ( err = -13111)</p> <p>(Error -13111 is a Reg-Plugin error meaning REG_PLUGIN_ERROR_UNABLE_TO_GET_PROGRAM_LIST</p>	
199540	<p>The timestamp prefix of each cpuid log line (from 'cpuid -d' command) contains garbage or incomplete timestamp instead of a full correct timestamp. The problem was returning a locally defined variables, which were lost on a function exit.</p>	<p>The timestamp string is correctly returned, and the proper value is displayed in the cpuid log.</p>	10.0.7.0
<b>Catalog updates</b>			
<a href="#">KB0094222</a>	<p>Wrong discovery for SQL Server Management Studio.</p>	<p>Package information is used to determine version.</p> <p>Discovery for all existing releases 16.5 - 18.10 was added.</p>	10.0.7.0
<a href="#">KB0094717</a>	<p>Wrong information about installed VisualSVN instances</p>	<p>Package information is used to determine version.</p> <p>Discovery for all existing releases 1.0 - 5.6 was added.</p>	10.0.7.0

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0094947</a>	False discovery of HP Device Manager 4.7	Old way of discovery got removed.  Template signature was added for HP Device Manager Configuration Center instead.	10.0.7.0
<a href="#">KB0095067</a>	SAP Open Client 16.0 was detected as version 15	Old components for versions 15 were replaced by the new ones which provide better discovery with the detailed version returned.  Additionally, detection of version 16.0 was added.	10.0.7.0
BI-8516	There was the duplicated Java SE Development Kit discovery for version 8 (Oracle).	Java SE Development Kit discovery for version 8 was removed.	10.0.7.0
<b>Document updates</b>			
<a href="#">KB0094774</a>	No data (previously Insufficient rights) VM status	Updated the document for "VM Manager – No data status (previously insufficient rights). Document link: <a href="#">VM manager statuses</a>	10.0.7
BI-7532	Connection to BigFix database using TLS fails when MS SQL Server does not support TLS 1.2.	Added information about minimum fixpack level for MS SQL Server database having TLS 1.2 support.	10.0.7
<a href="#">KB0094774</a>		Updated the document for "VM Manager – No data status (previously	10.0.7

ID	Symptoms	Behavior after you install the update	Available since
	No data (previously Insufficient rights) VM status	insufficient rights). Document link: <a href="#">VM manager statuses</a>	
<a href="#">KB0093658</a>	IBM i Disconnected scanner package no longer matches our documentation	Updated the disconnected scanner topics to keep it up to date.  Document link: <ul style="list-style-type: none"> <li>• <a href="#">Preparing installation files for disconnected scans for IBM i</a></li> <li>• <a href="#">Installing the scanner and gathering initial data on IBM i systems</a></li> </ul>	10.0.7
BI-7532	Connection to BigFix database using TLS fails when MS SQL Server does not support TLS 1.2.	Added information about minimum fixpack level for MS SQL Server database having TLS 1.2 support.	10.0.7.0
BI-6668	Rework of Detailed System requirements section  <a href="#">Detailed System requirements</a>	Dedicated pages have been created to list systems that are managed by BigFix Inventory and requirements for systems to host BigFix Inventory Server.  Earlier, the information was on a single page.	10.0.7.0
<b>VM Manager Tool / SAP Tool</b>			

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0095486</a>	Log4j vulnerability in BigFix products	Updated Log4j to version 2.15.0 due to CVE-2021-44228.	10.0.7.0

### Security enhancements

To maintain security, the following selected components and libraries were updated:

- Axios to version 0.21.4 - CVE-2021-3749
- Log4j to version 2.15.0 in VM Manager Tool and SAP Tool - CVE-2021-44228. BigFix Inventory is not affected by CVE-2021-45046.

BigFix Inventory is shipped with TLS 1.2 with enabled algorithms as included in each Java / WebSphere version. It is possible to restrict the algorithms with an entry in `customization.xml` file, which is extending `server.xml` definition.

Currently available algorithm list:

Algorithm considered as safe:

- TLS\_DHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256
- TLS\_DHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384
- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256
- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384

Algorithm considered as weak, but accepted by scanning tools:

- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA256
- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA384
- TLS\_DHE\_RSA\_WITH\_AES\_128\_CBC\_SHA256
- TLS\_DHE\_RSA\_WITH\_AES\_256\_CBC\_SHA256

Algorithm considered as weak but still included in standard setup:

- TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA
- TLS\_DHE\_RSA\_WITH\_AES\_128\_CBC\_SHA
- TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA
- TLS\_DHE\_RSA\_WITH\_AES\_256\_CBC\_SHA
- TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA256

- TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA256
- TLS\_RSA\_WITH\_AES\_128\_GCM\_SHA256
  
- TLS\_RSA\_WITH\_AES\_256\_GCM\_SHA384
- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA
- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA

Web Browsers used by users to connect to BigFix Inventory must support at least one of shortlisted algorithm in case of adjusting this list further.

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.7.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.25.1000 for Windows and 9.2.25.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.7.0 and 9.2.25.0 for IBM I.

## 10.0.6.1 Application update 10.0.6.1

**Table 26. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	147	Yes
BigFix Inventory Software Catalog (main version)	10.0.6.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638663	Yes
BigFix Inventory Server	10.0.6.0	No
BigFix Inventory Server: ILMT Core library	9.2.24.0	No
BigFix Inventory Server: ILMT Catalog	9.2.24.0	No
BigFix Inventory Scanner	9.2.24.1000 (Windows) 9.2.24.0000 (other platforms)	No
BigFix Inventory Disconnected Scanner	10.0.6.0 9.2.24.0 (for IBM I)	No
BigFix Inventory VM Manager Tool	10.0.6.0	No

**Table 26. Published site version (continued)**

Name of component	Version	Updated in the release
SAP Metric Data Collector	10.0.6.0	No

**Included Software Catalog**

- New discovery capabilities for:
  - Adobe
  - BMC
  - CA Technologies
  - Cisco Systems Inc
  - Citrix
  - Dell Computer Corporation
  - Hewlett-Packard
  - Intel
  - Microsoft
  - Oracle
  - Red Hat
- Several defects fixed.
- This release includes Software Catalog version 10.0.6.1 with capability to discover more than 320 new software versions. For more information, please refer to the [Catalog Release Notes](#) and the [Catalog Change List](#).

**Modified content**

The version number of the fixlet is: 10.0.6.1

The following #fixlets# were updated and should be run to install latest versions of the specific components:

- Update Software Catalog

**Enhancements and important changes**

The following table lists enhancements and changes that are introduced in this update:

Abstract	Description	Available since
Oracle Database Client on Linux	Discovery for version 11.2, 12.1, 12.2, 18, 19, 21 on Linux platform was made.	10.0.6.1

Abstract	Description	Available since
Red Hat Enterprise Application Platform version 4.3 and 7.4	Discovery for version 4.3 and 7.4 was made, older discovery got improved and returns a detailed version.	10.0.6.1
New discovery for Oracle Database Client on Linux	Discovery for version 11.2, 12.1, 12.2, 18, 19, 21 on Linux platform.	10.0.6.1
New discovery for Red Hat Enterprise Application Platform version 4.3 and 7.4	Discovery for version 4.3 and 7.4 was added, older discovery got improved and returns a detailed version.	10.0.6.1
RED HAT High Availability Add-On vendor name change	Discovery is now based on the "Red Hat, Inc." package.	10.0.6.1
New discovery for RED HAT AMQ Streams	New signatures for RED HAT AMQ Streams for 1.0 - 1.8 versions for LINUX platform.	10.0.6.1
New discovery for Red Hat AMQ Interconnect	New discovery for Red Hat AMQ Interconnect for Linux, versions: 1.5, 1.6, 1.7, 1.8, 1.9, 1.10.	10.0.6.1
Improvement of discovery for BMC Control-M Agent	Improvement of discovery for BMC Control-M Agent for versions: 6.0, 6.1, 6.3, 7.0, 8.0, 9.0.	10.0.6.1
New discovery capability for Adobe CC 2022	New discovery based on executables and packages for Adobe CC 2022: After Effects, Animate, Dreamweaver, Illustrator, InDesign, PhotoShop, Premiere Pro	10.0.6.1
New discovery capability based on template signatures for Linux and Windows for Vormetric 6	New discovery capability based on template signatures for Linux and Windows	10.0.6.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
BI-6247	Discovery for Microsoft Visio Professional and Standard 2019 were based on package. After the Visio update package name was changed and discovery didn't work properly.	Discovery now is based on the registry key, what prevent lack of detection.	10.0.6.1
BI-6838	There were two Sophos Endpoint Defense signatures in the catalog that should be under Sophos Endpoint component and not under Sophos Endpoint Defense.	Now there is no signature with the name of the Sophos Endpoint Defense component.	10.0.6.1
BI-7293	Discovery of SAS Data Integration Studio was based on checking if distudio.exe file exists. Problem occurs when new update is installed and software manufacture is not updating installation path.	Discovery is based on different file which contains proper version of SAS Data Integration Studio.	10.0.6.1
<a href="#">KB0094183</a>	TOAD for Oracle catalog mismatches caused by template signature taking version from the package instead of the executable	Discovery was fixed by taking version from the executable instead of the package. Also some components were deleted to improve detection provided by the template component.	10.0.6.1
BI-7812	Detection of the BMC Control-M Server 9.0 was based on the folder name which can be	Now discovery is based on installed-versions.txt file which contains version information.	

	changed and lead to false positives or lack of detection.		
BI-6415	Wrong platforms for two components caused warnings in the logs.	Platforms were corrected.	10.0.6.1
BI-6247	Discovery for Microsoft Visio Professional and Standard 2019 were based on package. After the Visio update package name was changed and discovery didn't work properly.	Signatures were updated to use Visio configuration data.	10.0.6.1
BI-6838	There were two Sophos Endpoint Defense signatures in the catalog that should be under Sophos Endpoint component and not under Sophos Endpoint Defense.	Now there is no signature with the name of the Sophos Endpoint Defence component.	10.0.6.1
BI-7293	Discovery of SAS Data Integration Studio was based on checking if distudio.exe file exists. Problem occurs when new update is installed, and software manufacture is not updating installation path.	Discovery is based on different file which contains proper version of SAS Data Integration Studio.	10.0.6.1
<a href="#">KB0094183</a>	TOAD for Oracle catalog mismatches caused by template signature taking version from the package instead of the executable	Discovery was fixed by taking version from the executable instead of the package. Also, some components were deleted to improve detection provided by the template component.	10.0.6.1

BI-7812	Detection of the BMC Control-M Server 9.0 was based on the folder name which can be changed and lead to false positives or lack of detection.	Now discovery is based on installed-versions.txt file which contains version information.	10.0.6.1
BI-6415	Too wide operating system designation in two signatures caused warnings in Common Inventory Toolkit logs on some BigFix endpoints.	Operating system designation in signatures were corrected.	10.0.6.1
<a href="#">KB0094212</a>	HP Insight Diagnostics Online Edition for Windows discovery was based on a certain registry key that was found in different software on customer environment causing false discovery	HP Insight Diagnostics Online Edition for Windows and HP Insight Diagnostics discovery was improved.	10.0.6.1

## 10.0.6 Application update 10.0.6

**Table 27. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	145	Yes
BigFix Inventory Software Catalog (main version)	10.0.6.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638648	Yes
BigFix Inventory Server	10.0.6.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.24.0	Yes
BigFix Inventory Server: ILMT Catalog	9.2.24.0	Yes
BigFix Inventory Scanner	9.2.24.1000 (Windows)	Yes

**Table 27. Published site version (continued)**

Name of component	Version	Updated in the release
	9.2.24.0000 (other platforms)	
BigFix Inventory Disconnected Scanner	10.0.6.0 9.2.24.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.6.0	Yes
SAP Metric Data Collector	10.0.6.0	Yes

**Allowed upgrade path**

Minimal version recommended for direct upgrade path: 9.2.16

For version older than 9.2.16 upgrade first to 10.0.2 through available fixlet.

**Changes to contract management**

We continue bringing better contract management experience to our clients. In this release there are several improvements implemented as well as some defects fixed. Including adding ability to create or update contract through Rest API and through CSV file import. There is also a new feature allowing to migrate old contracts to new improved contract management and support for ELA (Enterprise License Agreement). The old contract management has been disabled starting this release.

**Changes to shared disks scan configuration**

We continue bringing better contract management experience to our clients. In this release there are several improvements implemented as well as some defects fixed. Including adding ability to create or update contract through Rest API and through CSV file import. There is also a new feature allowing to migrate old contracts to new improved contract management and support for ELA (Enterprise License Agreement). The old contract management has been disabled starting this release.

**Changes to shared disks scan configuration**

A mechanism has been added to prevent the misuse of Initiate Software Scan on Shared Disk using the Console.

BigFix Inventory since 9.2.12 version provides automation to manage the status of computers and scans. It is recommended to use this capability where Initiate Software Scan on Shared Disk is managed by BigFix Inventory.

Furthermore, '.snapshot' directory has been added to the default exclusion list for new installations. This directory is special directory on some share disks that should be not scanned as contains time-based copies of the disk.

## Included Software Catalog

This release includes Software Catalog version 10.0.6.0 with capability to discover around 500 new software versions.

For more information, please refer to:

- Catalog Release Notes: [Release Notes for BFI Catalog Content](#)
- Catalog Change List: [BFI\\_catalog\\_changelist\\_2021\\_09](#)

## Modified content

The version number of the fixlet is: 10.0.6.0

*The following#fixlets#were updated and should be run to install latest versions of the specific components:*

- Upgrade to the latest version of BigFix Inventory
- Upgrade to the interim version 10.0.2 of BigFix Inventory if version older than 9.2.14
- Software Catalog Update (if BFI not upgraded)
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Install SAP Metric Data Collector
- Update SAP Metric Data Collector
- Install VM Manager Tool
- Update VM Manager Tool
- Install Additional VM Manager Tool (OPTIONAL)
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package
- Download BigFix Inventory (10.0.6.0)

*The following#fixlets#were updated and require that actions created by their previous versions are stopped and then started by using the updated#fixlets. Restarting actions is necessary to ensure that new features work properly:*

- Initiate Software Scan on Shared Disks
- Collect Detailed Hardware Information
- Get Microsoft Exchange Edition
- Initiate Collection of SAP Metric Data
- Initiate Software Scan
- Run Capacity Scan and Upload Results
- Upload Software Scan Results
- Get Oracle Concurrent Sessions Number
- Get Oracle Features

The following #fixlets# were added or updated but it does not require any additional action:

- Identify Computers on Public Clouds
- Interrupt BigFix Inventory Software Scans

### Enhancements and important changes

For a list of enhancements introduced in this release, see: [What's New \(on page ix\)](#).

### Defect fixes and enhancements

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<b>Server updates</b>			
<a href="#">KB0091385</a>	There is no translation in the Connection Test Status column when exporting table from Management -> VM Managers to CSV or PDF.	The issue is fixed.	10.0.6.0
<a href="#">KB0092554</a>	Upgrade to BigFix Inventory 10.0.5 fails if the "All Computers" group has license usage calculations disabled	The issue is fixed. Moreover, the case when license usage calculations are disabled after upgrade is also correctly handled.	10.0.6.0
<a href="#">KB0092588</a>	Truststore location and password parameters requirements are wrongly displayed (in case JavaScript disabled) in Internet Explorer but not in Chrome on database creation and configuration phase.	The issue is caused by disabled JavaScript, no-script error message displayed. JavaScript must be enabled on IE settings as a workaround of the defect.	10.0.6.0
<a href="#">KB0092812</a>	Data Pruning - all records are erased at	Data Pruning is split and committed in chunks.	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
	<p>once instead of done in chunks.</p> <p>This is causing huge transaction logs and long execution time.</p>		
IJ31178	SLM tag files might be reported as correct files by data import despite containing issues preventing their successful processing.	Reporting was corrected.	10.0.6.0
<a href="#">KB0092546</a>	Some details of Extended Hardware REST API are not working	Conditions on which REST API endpoints data are prepared were updated. Now they are looser and are prepared in proper place in application initialization.	10.0.6.0
<a href="#">KB0093047</a>	False detection on duplicated UUID on AIX	Duplicated UUIDs detection is corrected after the first import after upgrade.	10.0.6.0
BI-6875	Upgrade failing when MS SQL database user have no privileged to manage MS SQL Agent Jobs	There is possible to upgrade when current permission of database user is not allowing to create / update MS SQL Agent jobs.	10.0.6.0
BI-7106	EOS Import hit predefined in past dates restriction - 2001 is already 20 years ago	There was constraint during EOS dates import relative to current date. This leads to rejecting EOS more then 20 years ago (WARN:	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
		<p><i>End of support date out of scope:#).</i></p> <p>Now the allow dates are fixed to range in years from 1990 to 2100</p>	
BI-6283	In some time zones after selecting a date in New/Edit Contract dialog the date changes to one day before the selected date.	The issue is fixed.	10.0.6.0
BI-6946	Cannot show a list of contracts in All Contracts panel when any contract is assigned to a computer group which was created after last successful data import.	The issue is fixed.	10.0.6.0
BI-6797	Cannot determine hierarchy of deeply nested computer groups in Add/Edit Contract dialog because long and deeply nested computer group names are trimmed.	The issue is fixed. A horizontal scroll bar appears when there is any long or deeply nested computer group in the computer group dropdown.	10.0.6.0
BI-6790	Software picker in Add/Edit Contract dialog trims long software names in the search result list without possibility to see whole software name.	The issue is fixed. A horizontal scroll bar appears when a software name exceeds width of the software search result list.	10.0.6.0
BI-6793	User cannot unset the metric on edit contract modal dialog. The only	This issue is fixed. Now when metric is already chosen new option is	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
	option is to set different one.	shown in metric drop-down, <not set> which allows to clear/unset metric selection.	
BI-6794	Cannot set negative number in a custom field on edit contract modal dialog.	This issue is fixed. User can type minus in front of number on integer and float custom fields.	10.0.6.0
BI-5883	0 values in CSV and PDF Usage per Computer reports when there is no usage	The issue is fixed by displaying empty value instead of 0.	10.0.6.0
BI-6499	All Contracts/Purchase Orders - 'Delete' button doesn't get enabled as expected	The issue has fixed by activating JQuery elements on React state change	10.0.6.0
BI-5903	Cannot assign a component instance to a product via public API	The issue is fixed.	10.0.6.0
BI-6350	Re-import stuck for hours in ILMT Core 'IBMAggregationHandler' in 'PreInventoryMove-DataStep'	The issue is fixed	10.0.6.0
BI-5905	BigFix Inventory: Create a fixlet that would search for and terminate all running scan actions	Added Troubleshooting fixlet 114 Interrupt BigFix Inventory Software Scans to interrupt scans (background parts)	10.0.6.0
BI-5906	Add warning pop up to share drive scan fixlet if possible	Protection against unintentional scanning of all mounted share disks	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
KB0092644	Multicloud support blocks the Central VM Manager capabilities	The issue is fixed	10.0.6.0
KB0093108	Installation fails at "Changing default key-store password"	Achieved via Java upgrade to 8.0.6.35	10.0.6.0
<b>Scanner updates</b>			
<a href="#">IJ32101</a>	Some Intel Hexa-core CPUs, such as i5-8600T, i5-8500, and i7-8850H are assigned 100 PVUs, despite all i3, i5, i7 CPUs being worth 70 PVUs.	The problem does not occur.	10.0.6.0
<a href="#">IJ31903</a>	Not enough information is provided in case when the scanner does not have sufficient rights to collect all required hardware information from the Solaris systems.	An appropriate warning is added in the scanner and the server data import log.	10.0.6.0
199195	The scanner discovers only 4 cores per chip on SPARC T5-2.	The problem does not occur.	10.0.6.0
199011	Installation of the disconnected scanner fails on Windows with following error.  Initial hardware scan failed with error -1073740940	The problem does not occur.	10.0.6.0
<b>Content updates</b>			
<a href="#">KB0093463</a>	Software Catalog Update fixlet breaks fresh-	Software Catalog Updates not longer con-	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
	ly upgraded BFI instance leading to database corruption	duct additional cleanup actions, only place the new catalog.	
<b>Catalog updates</b>			
<a href="#">KB0092760</a>	The Citrix Storefront 1811.0 signature inaccurately matches to the configurationzipmanager.exe file. There are duplicate components for the Citrix StoreFront.	Duplicated components for Citrix StoreFront with worse quality were deleted. Components which provide better discovery were left in the Catalog.	10.0.6.0
<a href="#">KB0092323</a>	The BEA WebLogic Server discovery was catching false positives due to incorrect filter.	BEA WebLogic Server discoveries (from 8.1 up to 10.0) were improved. The filter doesn't use * anymore but more exact wording so only the correct software gets discovered.	10.0.6.0
BI-6619	Discovery of Oracle WebLogic Server only detect standard installations	Oracle WebLogic Server discoveries (12.1.* and 12.2.*) were improved and they currently distinguish between different installation media	10.0.6.0
BI-6329	Oracle WebLogic Server Enterprise Edition discoveries caused an error in customer citlog.xml file	Discovery of the Oracle WebLogic Server Enterprise Edition for versions 10.3, 12.1, 12.2 was improved and doesn't cause any errors in the citlog.xml file.	10.0.6.0
BI-6693	Component for Magic ISO Maker 5.3. had platform set to "ANY" instead of "Windows"	Platform for the component was set to "Windows".	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
	which caused warnings in the logs.		
<a href="#">KB0093614</a>	Detection of the BMC Control-M Agent 9.0 was based on the folder name which can be changed and lead to false positives or lack of detection.	Now discovery is based on CONFIG.dat file which contains version information.	10.0.6.0
<a href="#">KB0093294</a>	Discovery for Oracle Database 19c doesn't work correctly	Fixed discovery capability of Oracle Database 18c , 19c and 21c to support both software with updates installed and without them.	10.0.6.0
<b>Document updates</b>			
<a href="#">BI-5922</a>	Updated the document about support for Hyper-V, Red Hat Virtualization, Citrix Hypervisor 8.x, VMware vSphere Hypervisor ESXi , and Fujitsu.	<a href="#">What's New</a> <a href="#">System Requirements</a>	10.0.6.0
<a href="#">BI-7050</a>	Added a duplicate link <a href="#">Duplicate UUIDs problem</a> along with the existing link, <a href="#">Duplicate UUIDs problem</a> so that users can access both, the application and their bookmark (if they have done so).	<a href="#">Duplicate UUID</a>	10.0.6.0
<a href="#">BI-6715</a>	Added information about BFI reindexing job to be running for version below 10.0.4. Also, added links to config-	<a href="#">Database index rebuilding</a>	10.0.6.0

ID	Symptoms	Behavior after you install the update	Available since
	ure and start SQL Server Agents for reference.		
<a href="#">BI-5977</a>	<p>Updated the document for:</p> <ul style="list-style-type: none"> <li>• Add information for analysis and warnings associated with the task when run sub-optimally</li> <li>• Configure NAS shared drives through exclusion</li> <li>• Remind the user to send in UTC or otherwise take into account the system clock on the endpoint when sending actions</li> </ul>	<a href="#">Discovering software on shared disks</a>	10.0.6.0
<a href="#">BI-7040</a>	Removed an empty URL as the same was not required and was a repetition.	<a href="#">Coexistence of BigFix Inventory and License Metric Tool in the same infrastructure</a>	10.0.6.0
<a href="#">KB0093153</a>	Removed an empty URL as the same was not required and was a repetition.	<a href="#">Coexistence of BigFix Inventory and License Metric Tool in the same infrastructure</a>	10.0.6.0
<a href="#">KB0091963</a>	Replaced the incorrect IBM link with the correct one that includes a list of all products that deliver <code>.simtag</code> files.	Other IBM metrics	10.0.6.0

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10.0.6.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.24.1000 for Windows and 9.2.24.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.6.0 and 9.2.24.0 for IBM I.

## 10.0.5.1 Application update 10.0.5.1

**Table 28. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	144	Yes
BigFix Inventory Software Catalog (main version)	10.0.5.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638638	Yes
BigFix Inventory Server	10.0.5.0	No
BigFix Inventory Server: ILMT Core library	9.2.23	No
BigFix Inventory Server: ILMT Catalog	9.2.23	No
BigFix Inventory Scanner	9.2.23.1000 (Windows)	No
	9.2.23.0000 (other platforms)	No
BigFix Inventory Disconnected Scanner	10.0.5.0	No
	9.2.23.0 (for IBM I)	
BigFix Inventory VM Manager Tool	10.0.5.0	No
SAP Metric Data Collector	10.0.5.0	No

### Included software catalog

- New discovery capability for:
  - Adobe
  - Autodesk
  - Citrix
  - JetBrains

- McAfee
- Microsoft
- MongoDB
- Oracle
- Veritas
- VMware
- Defect fixes and client ideas implemented.
- Software Catalog version 10.0.5.1 with capability to discover more than 270 new software components.

For more information, refer to:

Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf) Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2021\\_08.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2021_08.pdf)

### Modified content

The version number of the fixlet is: 10.0.5.1

The following #fixlets# were updated and should be run to install latest versions of the specific components:

- Update Software Catalog
- Initiate Software Scan

### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update:

Abstract	Description	Available since
Improved signature discovery for Oracle Database and Oracle Database Client versions 18, 19 and 21	Signatures for Oracle Database and Oracle Database Client versions 18, 19 and 21 were improved and the product patch level will be available in BigFix Inventory as Detailed Version. Due to this change, after importing software catalog 10.0.5.1 the previous discovery of these products in versions 18 and above may disappear until a next software scan is completed on BigFix endpoints	10.0.5.1

Abstract	Description	Available since
Improved discovery of Oracle Clusterware	Added discovery for releases 11.2, 12.1 and 19.0	10.0.5.1
Improved discovery for Oracle Essebase	Signature for releases 11.1 w changed and signatures for versions 11.2, 19.3, 21.1, 21.2 were added for Windows and Linux platforms.	10.0.5.1
Improved discovery for Database Gateway for Microsoft SQL Server	Signatures for releases 11.1 and 12.1 were changed and additionally a signature for 12.2 was added.	10.0.5.1

### Client ideas

The following client ideas were implemented:

ID	Description	Available since
BFINV-I-148	Expand and improve Discovery Support for MongoDB products: MongoDB Community Server, MongoDB Enterprise Server, MongoDB Compass, MongoDB Ops Manager, MongoDB Kafka Connector, MongoDB BI Connector	10.0.5.1
BI-5862	Added signatures for versions 16.4 and 16.7 for Linux and Windows.	10.0.5.1

### Defect fixes and enhancements

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
Catalog updates			
<a href="#">KB0092040</a>	PostgreSQL discovery capability which us-	Changed signature components of discov-	10.0.5.1

ID	Symptoms	Behavior after you install the update	Available since
	es File Version different from the component version need to be changed to use file size.	ery capability for versions: 10.0, 10.1, 10.3, 10.4, 10.5, 10.6, 10.9, 11.3, 12.1, 12.4 so they now use file size which solves this issue	
<a href="#">KB0091156</a>	NetBackup publisher for version 8.0 and above should be changed to Veritas.	NetBackup publisher was changed from “Symantec” to “Veritas” for components with version 8 and above.	10.0.5.1
<a href="#">KB0087826</a>	Discovered Essbase Server version does not exist.	Signature for version 11.3 was deleted.	10.0.5.1
<a href="#">KB0091939</a>	Signatures for Apache Web Server are delivering false discovery due to duplicated signatures with Apache HTTP Server.	Apache Web Server component was merged to Apache HTTP Server – one signature for version 2.0 on Windows was moved, the rest were deleted.	10.0.5.1
<a href="#">KB0091078</a>	Lack of discovery for Oracle Database 18c	Fixed signature deliver correct discovery.	10.0.5.1
<a href="#">KB0091349</a>	Oracle Database Client can be installed in a different folder than existing signatures.	Fixed signature is using different file for version extraction delivering correct discovery.	10.0.5.1
<a href="#">KB0092098</a>	Oracle Database Gateway for Microsoft SQL Server 11.2 reports wrong version	Signatures for release 11.2 were changed.	10.0.5.1
<a href="#">KB0092650</a>	Installshield Isscript signature v.11.5 should be remapped to InstallShield Scripting Engine v.11.50	Discovery capability was fixed for version 11.50 to show InstallShield Software Corp-	10.0.5.1

ID	Symptoms	Behavior after you install the update	Available since
		ration publisher instead Roxio Inc.	
BI-6584	Missing link to IBM limitations concerning BigFix Inventory	Added the link to IBM limitations at Limitations section in BigFix Inventory Documentation  Link: <a href="#">Limitations</a>	10.0.5.1
BI-6375	Incorrect SLM tag generated for Adobe Muse CC by Initiate Software Scan fixlet in version 10.0.5.0	Customers who use fixlet 'Initiate Software Scan' in version 10.0.5.0 may observe incorrect license calculation for Adobe Muse CC. In such case update fixlet to version 10.0.5.1 or above is required.	10.0.5.1

### 10.0.5 Application update 10.0.5

**Table 29. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	143	Yes
BigFix Inventory Software Catalog (main version)	10.0.5.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638622	Yes
BigFix Inventory Server	10.0.5.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.23	Yes
BigFix Inventory Server: ILMT Catalog	9.2.23	Yes
BigFix Inventory Scanner	9.2.23.1000 (Windows	

**Table 29. Published site version (continued)**

Name of component	Version	Updated in the release
	9.2.23.0000 (other platforms)	
BigFix Inventory Disconnected Scanner	10.0.5.0 9.2.23.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.5.0	Yes
SAP Metric Data Collector	10.0.5.0	Yes

**Changes to TLS support**

After upgrading to version 10.0.5, TLS 1 and TLS 1.1 are disabled and do not work. Only TLS 1.2 is supported. Therefore, customers may notice connection issues to database and hypervisors from VM Tool.

To mitigate problem on MS SQL, please install appropriate Software Pack / Content Update for Microsoft SQL Server database ([Software requirements](#)).

To migrate problem on VMware ESXi upgrade to VMware ESXi 6.0 Update 3 ([Detailed system requirements](#)).

**Changes to contract management**

Contract can now be defined for product and any metric in new *AllContracts* report. This report is available from *Reports* menu and from new *Contracts* section in main dashboard. This upgrade includes the capability to define contracts manually. API for integration and automation will be available shortly.

Custom metrics management is available in both *Products & Metrics* and *All Contracts* reports. New custom metrics can be added, modified, assigned to products, used in new contracts definition, software bundling and as filtering option. *Product Metric per Group* is new report with supporting data for contracts but also offers more reporting capability. With new *Product Metric per Group* report, it is now possible to see product metric calculation per computer group in one view. For optimal performance in current version, this report supports by default up to 20 computer groups Even if more computer groups are defined, the additional reports are not listed.

All panels related to previous contract management functionality are marked as deprecated and will be hidden by default in the future BigFix Inventory release with option to enable them back.

For more information refer to user [documentation](#).

**Support for BigFix platform Server Based Computer Groups**

BigFix 10.0.4 introduced Server Based Computer Groups which require dedicated support. If BigFix Inventory import was already run with previous version of BigFix Inventory (lower than 10.0.5) then there is a need to resynchronize computer group definition, for details please see [documentation](#).

### Included software catalog

This release includes Software Catalog version 10.0.5.0 with capability to discover around 360 new software versions.

For more information, please refer to:

- Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf).
- Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2021\\_07.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2021_07.pdf).

### Modified content

The version number of the fixlets is 10.0.5.0.

The following #fixlets# were updated and will no longer use zip/unzip in order to pack/unpack files, but 7zip on Windows:

- Scanner
  - Install or upgrade scanner
  - Install or upgrade scanner in private mode on Windows
  - Initiate software scan
  - Upload software scan results
  - Force re-uploading of software scan results
  - Run capacity scan and upload results
- VM Manager
  - Install VM Manager tool
  - Install additional VM Manager tool
  - Update VM Manager tool to version
  - Force VM Manager tool scan results upload
  - Schedule VM Manager tool scan results upload
- Troubleshooting
  - Collect logs from endpoints
  - Edit Scanner Trace Settings
- BigFix Inventory update
  - Upgrade to the latest version of BigFix Inventory
  - Upgrade to the interim version 10.0.2.0 of BigFix Inventory if version older than 9.2.14
  - Download the Disconnected Scanner Package
  - Download the Disconnected Scanner Package for IBM i
  - Software Catalog Update

- Other
  - Install SAP Metric Data Collector
  - Update SAP Metric Data Collector
  - Identify Computers on Public Clouds
  - Get Oracle Concurrent Sessions Number
  - Get Oracle Features
  - Test CIT signature

### Enhancements and important changes

For a list of enhancements introduced in this release, see: [What's new](#)

### Defect fixes and enhancements

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<b>Server updates</b>			
<a href="#">KB0088181</a>	On Windows systems, when Scanner trace log level is set to MAX, wscansw.exe Catalog Based Scan step significantly increases its duration also causing high CPU usage.	This has been resolved and duration or CPU usage do not occur any more.	10.0.5.0
<a href="#">KB0089750</a>	Shared Disk import fails with ERROR: LMT ETL step failed, Value is too long.	The issue is fixed.	10.0.5.0
<a href="#">KB0089733</a>	BFI cannot connect to LDAP/LDAPS.	The issue is fixed. If the problem persists after upgrade, refer to <a href="#">documentation</a>	10.0.5.0
<a href="#">KB0089710</a>	Issue with the branches cause that Oracle discovery based on ISO is not reported.	The issue is fixed.	10.0.5.0
<a href="#">KB0091200</a>	Schema update fails on dropping DBO.SAM_FILE_FACTS_SCD_SCAN_FILE_ID_INDEX	The issue is fixed, and schema update works properly.	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0091029</a>	OutOfMemory exception during File Facts import. Import is hanging.	The issue is fixed.	10.0.5.0
<a href="#">KB0090178</a>	Performance fix on Inventory Builder: Discovered Software Details	Optimized algorithm to overcome bad execution plans on MS SQL	10.0.5.0
<a href="#">KB0089730</a>	BigFix Inventory 10.0.4.0 schema update is failing	Defect fixed and the update is not failing	10.0.5.0
<a href="#">KB0090975</a>	BigFix Inventory SQL temadb maintenance job is failing on MS SQL with SQL_Latin1_General_CP1_CS_AS collation is set on the MS SQL instance	Job definition has been adjusted to work on case sensitive environments. Jobs has been also split into two tasks: Check the BFI Import and Reorganize all indexes	10.0.5.0
<a href="#">KB0091207</a>	"Has Usage" values in the in the Usage per Computer panel were set incorrectly to "No" in some cases. Moreover, CSV and PDF report files exported in the panel were missing usage details for records with the "Has Usage" value set to "No".	The issue is fixed for new and updated systems.	10.0.5.0
<a href="#">KB0091264</a>	BFI server upgrade issue from V.9.2.11 to v10.0.2 when executing migration script 1526296744_jupiter_fix_prod_inv_apar_ij06399.rb	The fix is included in BigFix Inventory 10.0.5, however, HCL support should be contacted to get a hotfix for BigFix Inventory version 10.0.2.	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0090734</a>	Import fails with duplicate key error after upgrade to BFI v10.0.4	Adjusted population of the dictionary, as well as trimming the data after gathering.  Server now supports versions with the trailing spaces.	10.0.5.0
<a href="#">KB0090014</a>	Import fails with duplicate key error after upgrade to BFI v10.0.4	Adjusted the checksum calculation for the version text.  The server will now calculate proper checksum for the '0.0' version	10.0.5.0
<a href="#">KB0091465</a>	Outdated VM Manager Status for non VM Manager managed endpoints	Incorrect condition for highlighting results as outdated adjusted to exclude physical/bare metal endpoint.	10.0.5.0
<a href="#">KB0091337</a>	Solaris x86 Partition Cores not updated after upgrading to 10.0.2	Due to changes in underlying Solaris x86 processing, information shown on UI was not updated.	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
		Information is updated after first data import.  PVU / RVU MAPC calculation was not affected.	
<a href="#">KB0091089</a>	Delete false end of support date for HCL products	End of supports dates set by IBM to 2019-07-01 for HCL products were deleted since support is continued by HCL now. In Big-Fix Inventory lower than v10.0.5 and IBM License Metric Tool those dates are still set. For details see <a href="#">Interpret EOS dates</a> .	10.0.5.0
BI-3828	BFI is starting for a long time (30 minutes or more), nothing shown on UI. Occurs when application is not able to connect to database.	Database connection handling was improved. Proper messages appear when connection to database is lost. Re-connecting was also improved.	10.0.5.0
BI-5125	During Install Path update step of inventory builder (adding ISV paths) - instance and bundling tags updated improperly on shared instances, such as, shared instances have tags from original instances.	This issue is fixed, and tags are updated properly.	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
BI-5202	After adding a new metric to a product, Install Seats metric is removed from this product after the next data import.	The issue is fixed.  When there is first import after Big-Fix Inventory upgrade, missing metrics will be restored.	10.0.5.0
BI-4601	Registered Users metric aggregation performance is very slow.	Performance of Registered Users and other metrics aggregation is improved. Aggregation calculation uses now all logical CPUs by default.	10.0.5.0
BI-4728	VMManager Upgrade was behaving different in non-windows when Copy folder was not present	VMManager action for non-windows is now inline with windows.	10.0.5.0
BI-5168	When Upgrade was triggered, if there were no necessary permissions for the re-indexing job then there was an error without sufficient information	During upgrade, checks were added to validate DB owner and edition of DB and necessary warnings/ information is displayed.	10.0.5.0
IJ30106	When a new connection to Oracle VM Server is defined in License Metric Tool, status of all existing Hyper-V connections changes to <i>Invalid Credentials</i> .	The issue does not occur.	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
198690	An unexpected error might occur when SSO is configured without properly configured Web-seal Reverse Proxy.	The issue does not occur.	10.0.5.0
198541	When FIPS compliance is enabled and server is upgraded, it is not possible to log in to UI.	The issue is fixed.	10.0.5.0
198507	The OutOfMemoryError exception is thrown by the application server.	Max heap size has been increased for default configuration.	10.0.5.0
198503	When the Docker scan is disabled, the /var/lib/docker folder is unnecessarily scanned.	Docker directory is excluded from scan when docker scan is disabled.	10.0.5.0
198769	When you run the vmman -retrieve debugdata command, the connection fails with the following status: <i>Invalid Credentials - Cannot complete login due to an incorrect username or password</i> . The problem occurs if the username or password that is specified for the VM manager contains the ampersand (&).	The issue is fixed.	10.0.5.0
<b>Content updates</b>			
<a href="#">KB0089469</a>	Run Capacity Scan on Virtualization Hosts is relevant even for endpoint not being hypervisor host	Updated relevance to check if system is capable to be a hypervisor:  module kvm listed in /proc/modules  processor got flag vmx or svm in /proc/cpuinfo. As a result, fixlet is no longer applicable for the end-	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
		point not capable to host.	
<a href="#">KB0091295</a>	"Get Oracle Features" fixlet placing the file lmt_bfi_get_script.sh always in instance owner's folder	An option to use temporary folder instead of Oracle instance owner's folder is added.	10.0.5.0
<a href="#">KB0090976</a>	docker host's BESClient installation is discovered in docker containers when the host volume is visible on docker	The docker host's BESClient installation is not discovered on docker	10.0.5.0
<a href="#">KB0087650</a>	Software Scan returns with error code 1	Fixed and the behavior is no longer observed	10.0.5.0
<a href="#">KB0092316</a>	Fixlet "Upgrade to the latest version of BigFix Inventory (10.0.5.0)" may fail during the execution.	The issue does not occur.	
<b>Catalog updates</b>			
<a href="#">KB0091403</a>	Signature for Sybase Adaptive Server Enterprise v11.1 needs to be deleted due to false discovery with other products.	The signature was deleted.	10.0.5.0
<a href="#">KB0091154</a>	NetBackup 3.0 signature is falsely discovering other software due to wrong CIT operator	The CIT operator was changed. The discovery is now valid.	10.0.5.0
<a href="#">KB0091415</a>	Signatures for "Checkpoint SmartConsole" require deletion of file version.  Only file size should be checked.	Two signatures with incorrect "1.0" version were modified – check for the version was deleted.	10.0.5.0
<a href="#">KB0091284</a>	Signatures for "Microsoft .NET Core" v1.1 and v1.0 need to be deleted.	Signatures for "Microsoft .NET	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
	Template signature with version restriction needs to be updated for version 1.x	Core" v1.1 and v1.0 were deleted.  Template signature with version restriction was updated for version 1.x	
<a href="#">KB0089612</a>	Signature for component IBM Tivoli Enterprise Console 3.9 delivers false discovery.	The signature was deleted.	10.0.5.0
<a href="#">KB0089415</a>	File confix.xml is used as main discovery point causing extensive file read (long scan time and CPU utilization).	Two signatures were deleted.	10.0.5.0
<a href="#">KB0091120</a>	Discovery for Oracle Clusterware reports wrong component version.	Signature for version 10.2 was fixed. Next catalog will provide new way of discovery for this software.	10.0.5.0
BI-5659	Component name of "InstallShield" 11.0 and 11.5 should be changed to "InstallShield Scripting Engine".	Product "InstallShield Scripting Engine" was added.  Component name was changed for the version and two releases.	10.0.5.0
BI-5954	Signatures for the Adobe Acrobat Reader DC versions 2020, 2021, 2022 are missing.	Signatures for the Adobe Acrobat Reader DC ver-	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
		sions 2020, 2021, 2022 were added.	
<b>Documentation updates</b>			
<a href="#">KB0089517</a>	'Bundling assistant' still not referred as 'Automated bundling' across the document.	Corrected the phrase 'Bundling assistant' across the document. After changing 'Automatic Bundling' feature name to 'Bundling Assistant' not all documentations pages were updated.  Doc link: <a href="#">BFI_10.0 document</a>	10.0.5.0
<a href="#">KB0090889</a>	Document limitation on vulnerabilities found in BFI	Improved documentation about elements impacting accuracy of CVE reporting in BFI  Doc link: <a href="#">Checking common vulnerabilities</a>	10.0.5.0
<a href="#">KB0089359</a>	Issue with VM manager central ID	Added a note in the VM Manager Installation requirement section about the BES-RootServer.	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
		Doc link: <a href="#">VM Manager Tool installation requirements</a>	
<a href="#">KB0092166</a>	BFI 10.0.3 import after upgrade from 10.0.1 taking over 500 hours	<p>Updated the document about performance improvement of computers that involves using the <i>maxAggregationThreads</i> and <i>maxReaggregationThreads</i> variables to control the number of CPUs being used.</p> <p>Doc link: <a href="#">Advanced server settings</a></p>	10.0.5.0
BI-5023	Update the document for UUID, Outdated VM Manager Data status and correct the information about WinRM command and Hyper_v URL.	<p>Updated the document with information about:</p> <ul style="list-style-type: none"> <li>• Troubleshooting No VM Manager data status</li> <li>• Corrected the syntax of a WinRM command.</li> </ul>	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
		<ul style="list-style-type: none"> <li>• Updated 'Identifying computers in public clouds' section.</li> <li>• Corrected the 'default port' used in configuring WinRM.</li> </ul> <p>Doc links:</p> <ul style="list-style-type: none"> <li>• <a href="#">Licensing rules</a></li> <li>• <a href="#">Identifying computers in public cloud</a></li> <li>• <a href="#">Configuring WinRM</a></li> <li>• <a href="#">Adding VM managers in central mode</a></li> </ul>	
BI-5256	End Of Support Date is not correct for various Microsoft Products	Added the information that the End of Support date for Microsoft	10.0.5.0

ID	Symptoms	Behavior after you install the update	Available since
		<p>Component in Software Component shows the 'extended support date' and not the 'end of support date'. The date can be manually updated.</p> <p>Doc link: <a href="#">Changing the EOS</a></p>	
BI-6025	Update software requirements and SPCR details	<p>Updated 'security enhancements' in the what's new, new requirements in the software requirements and system requirements.</p> <p>Doc links:</p> <ul style="list-style-type: none"> <li>• <a href="#">What's new</a></li> <li>• <a href="#">Software requirements</a></li> <li>• <a href="#">System requirements</a></li> </ul>	10.0.5.0

### VM Manager Tool version and changes

The VM Manager Tool version that is used with this update is 10050. Logs per VM Manager are included in config files for better readability of logs.

#### Scanner version and changes

The scanner version that is used with this update is 9.2.23.1000 for Windows and 9.2.23.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.5.0 and 9.2.23.0 for IBM I.

### 10.0.4.1 Application update 10.0.4.1

**Table 30. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	140	Yes
BigFix Inventory Software Catalog (main version)	10.0.4.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638593	Yes
BigFix Inventory Server	10.0.4.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.22	Yes
BigFix Inventory Server: ILMT Catalog	9.2.22	Yes
BigFix Inventory Scanner	9.2.22.1000 (Windows) 9.2.22.0000 (other platforms)	Yes
BigFix Inventory Disconnected Scanner	10.0.4.0 9.2.22.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.4.0	Yes
SAP Metric Data Collector	10.0.4.0	Yes

#### Included software catalog

- New discovery capabilities for:
  - BMC
  - CA Technologies
  - Citrix
  - Oracle
  - Red Hat

- Veritas
- VMware
- Several defect fixes and customer Ideas
- This release includes Software Catalog version 10.0.4.1 with capability to discover more than 160 software versions.

For more information, refer to:

- Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)
- Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2021\\_05.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2021_05.pdf)

### Modified content

- The version included in the fixlet names is: 10.0.4.1
- The software catalog was updated and the catalog fixlet must be run to install latest versions of the specific components.

### Enhancements and important changes

**Table 31. Enhancements**

Abstract	Description	Available since
New Oracle Java 6 discovery	Added new signatures for Java 6 based on package data for UNIX and Windows platform.	10.0.4.1
Oracle SQL Developer 4.1. missing discovery for Unix	Implemented Oracle SQL Developer 4.1. signature for UNIX.	10.0.4.1
SolarWinds TFTP Server signatures using too generic executable name.	Added new template signature based on package.	10.0.4.1
McAfee agent signatures missing discovery for Unix.	Enhanced existing signature for UNIX discovery.	10.0.4.1

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

Table 32. Defect fixes

ID	Symptoms	Behavior after you install the update	Available since
Catalog updates			
<a href="#">KB0089722</a>	NetBackup from Symantec and Veritas signatures were creating duplicate discovery and double backslashes in the installation path.	Change in discovery no longer causes duplication and duplicate backslashes in the installation path.	10.0.4.1
<a href="#">KB0089553</a>	Windows Defender signatures were based on the wrong executable name	The existing signatures are replaced with a template signature using a correct executable.	10.0.4.1
<a href="#">KB0089920</a>	Robocopy & Robust File Copy Utility are the same component and separate signatures for them cause double discovery	Robocopy signatures were deleted and product is discovered under Robust File Copy Utility.	10.0.4.1
<a href="#">KB0089876</a>	Sun Calc and Windows Calculator signatures causing mismatch	Signatures that use generic file names were removed.	10.0.4.1
<a href="#">KB0090200</a>	Discovery for Oracle JDK/SDK 14.0 is mismatched with Adopt OpenJDK	Change in discovery for Oracle JDK/SDK ensures proper reporting of vendors and its components.	10.0.4.1
<a href="#">KB0090106</a>	Collabnet Subversion discovery was using file version and common file name	Discovery method was updated to file size discovery and the result no longer mismatches with other components.	10.0.4.1
<a href="#">KB0089924</a>	SUN Java Support version 5.2 is delivering false discovery based on installation files for IBM DB2 component	Signatures for Java Support that caused the false-positive discovery were deleted from the catalog.	10.0.4.1

## Implemented customer ideas

<a href="#">BFINV-I-181</a>	AdoptOpenJDK-JRE 8 (Runtime-Only, no JDK)	10.0.4.1
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<a href="#">BFINV-I-182</a>	AdoptOpenJDK-JRE 9 (Runtime-Only, no JDK)	10.0.4.1
<a href="#">BFINV-I-183</a>	AdoptOpenJDK-JRE 10 (Runtime-Only, no JDK)	10.0.4.1
<a href="#">BFINV-I-184</a>	AdoptOpenJDK-JRE 11 (Runtime-Only, no JDK)	10.0.4.1
<a href="#">BFINV-I-185</a>	AdoptOpenJDK-JRE 12 (Runtime-only, no JDK)	10.0.4.1
<a href="#">BFINV-I-186</a>	AdoptOpenJDK-JRE 13 (Runtime-Only, no JDK)	10.0.4.1
<a href="#">BFINV-I-187</a>	AdoptOpenJDK-JRE 14 (Runtime-Only, no JDK)	10.0.4.1
<a href="#">BFINV-I-188</a>	AdoptOpenJDK-JRE 15 (Runtime-Only, no JDK)	10.0.4.1

#### 10.0.4 Application update 10.0.4

**Table 33. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	140	Yes
BigFix Inventory Software Catalog (main version)	10.0.4.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638578	Yes
BigFix Inventory Server	10.0.4.0	Yes
BigFix Inventory Server: ILMT Core li- brary	9.2.22	Yes
BigFix Inventory Server: ILMT Catalog	9.2.22	Yes
BigFix Inventory Scanner	9.2.22.1000 (Windows) 9.2.22.0000 (other platforms)	Yes
BigFix Inventory Disconnected Scan- ner	10.0.4.0 9.2.22.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.4.0	Yes

**Table 33. Published site version (continued)**

Name of component	Version	Updated in the release
SAP Metric Data Collector	10.0.4.0	Yes

**Included software catalog**

This release includes Software Catalog version 10.0.4.0 containing:

- Added capability to discover 350 software versions.
- Defect fixes

For more information, please refer to:

- Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)
- Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2021\\_03.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2021_03.pdf)

**Modified content**

The version included in the fixlet names is: 10.0.4.0

*The following #fixlets# were updated and should be run to install latest versions of the specific components:*

- Upgrade to the latest version of BigFix Inventory 10.x
- Software Catalog Update
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Update SAP Metric Data Collector
- Update VM Manager Tool
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package

*The following fixlets were updated and require that actions created by their previous versions are stopped and then started by using the updated fixlets. Restarting actions is necessary to ensure that new features work properly:*

- Run Capacity Scan and Upload Results (10.0.4.0)
- Initiate Software Scan (10.0.4.0)
- Get Oracle Features (10.0.4.0)
- Get Oracle Concurrent Sessions Number (10.0.4.0)
- Discover Remote Shared Disks (10.0.4.0)

The following fixlets were updated but it does not require any additional action:

- Uninstall Scanner (10.0.4.0)
- Download BigFix Inventory (10.0.40)
- Identify Computers on Public Clouds (10.0.4.0)
- Install Additional VM Manager Tool (OPTIONAL) (10.0.4.0)
- Update VM Manager Tool to version (10.0.4.0)
- Download BigFix Inventory (10.0.34/0)

### Enhancements and important changes

For a list of enhancements introduced in this release, see: [What's new](#)

### Defect fixes and enhancements

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

**Table 34. Defect fixes**

ID	Symptoms	Behavior after you install the update	Available since
Server updates			
<a href="#">KB0085297</a>	CIT Upgrade fails if Alternate location is used and BesClient is uninstalled/reinstalled	Install or Upgrade Scanner fixlet can successfully install the scanner.	10.0.4.0
<a href="#">KB0085082</a>	Data Import: Getting the scan results fails when file has been changed since data import and is requested to fetch during import	For the File Facts scan results operation is repeated in the new implementation.	10.0.4.0
<a href="#">KB0075700</a>	BigFix Inventory Data Imports suddenly increase in time due to File Facts ETL step	There is provided improved implementation of File Facts import significantly improving the duration of File Fact import and additional protection mechanism against overload.	10.0.4.0

Table 34. Defect fixes (continued)

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0086966</a>	<p>Some AIX systems might have a 'sed' command that is not handling the requests to put line endings. Instead of a new line, 'n' character is placed by dropping '\n' from '\n', which is expected to be interpreted as new line.</p> <p>As a result, it creates invalid output and it's neither shown in the BigFix Console nor imported to the BigFix Inventory.</p>	The problem does not occur.	10.0.4.0
<a href="#">KB0086020</a>	Improved actions performance on file scanned data report	Removed some excessive indexes and added new indexes related to Scanned File Data.	10.0.4.0
<a href="#">KB0086349</a>	Add support for ISO SWID Tag in 2009 specification: NetBackup, Splunk, McAfee and more.	BFI supports software identification through files which are complaint to 2009 specification.	10.0.4.0
<a href="#">KB0087604</a>	Saved Reports do not Automatically Email when SSO debug logs are enabled.	Saved Reports e-mail notification works properly.	10.0.4.0
<a href="#">KB0085584</a>	File Facts scan with issue in payload - Endpoint side prevention.	[Windows only] Status code 5 is visible because of Initiate software Scan in 'Software Scan status' analysis after finishing the system	10.0.4.0

Table 34. Defect fixes (continued)

ID	Symptoms	Behavior after you install the update	Available since
		file scan with empty result.	
<a href="#">KB0088612</a>	Data Import hangs on DB2 11.5	There is confirmed DB2 bug causing that sporadically query might hang. BFI restart resolves the issue. There is recommended to apply <a href="#">IT35984</a> as soon as would be released by IBM DB2.	10.0.4.0
<a href="#">KB0085086</a>	Data Import: Using the re-sync option expose issue with getting the file is no longer there - file is tried to be fetch every import	Files with not matching computer id are discarded and not preserved in database avoiding picking them up again during re-synchronization.	10.0.4.0
BI-3899	Empty rows are displayed when filtering by 'Recognized', 'Caused Detection' columns on Package Data and Scanned File Data reports	For 'Recognized' column, the problem has been fixed. 'Caused Detection' column has been completely removed, as well as related 'enable_caused_detection' setting. Saved reports which use this column should be recreated manually.	10.0.4.0
BI-4654	Warning dialog shows up when stopping application using Windows service.	Stopping and restarting application using Windows service does not trigger any warning pop-ups.	10.0.4
BI-4513	For software_instances v2 API, suppression	Suppression works with NULL product fields,	10.0.4

Table 34. Defect fixes (continued)

ID	Symptoms	Behavior after you install the update	Available since
	does not work when JSON is submitted with NULL product fields. Also confirmation is not always migrated.	confirmation is always migrated.	
BI-3438	Re-sync option does not work for DB2 if compatibility vector is not set to MYS.	Re-sync option works properly.	10.0.4
<a href="#">IJ29172</a>	Software Scan Status Analysis fails when BESClient.exe and _-BESData folder are on different drives.	The issue does not occur.	10.0.4
<a href="#">IJ29179</a>	Part of the hosts from the same cluster may not be processed even though the scan results are correct (mostly HYPER-V)	The issue does not occur.	10.0.4
198123	Audit trail for setting and clearing entitlements does not provide information about the computer group for which the operation was performed	The issue does not occur.	10.0.4
198493	After upgrade on Windows tema.log shows database errors.	The issue does not occur.	10.0.4

Table 34. Defect fixes (continued)

ID	Symptoms	Behavior after you install the update	Available since
	<pre>tema]:.[ERROR] Ja- va::ComMicrosoft- SqlServerJd- bc::SQLServerException: Cannot drop the trig- ger 'sam.software_fact- s_persistent_trigger_u- uid_discoverable_guid', because it does not ex- ist, or you do not have permission.: drop trig- ger sam.software_fact- s_persistent_trigger_u- uid_discoverable_guid</pre>		
Scanner updates			
	Memory allocation statistics for 'Out of memory' exceptions	When performing file system or software scanning the memory requirements for the scanner may reach defined limits. To verify these limits, additional logs with memory allocation statistics have been added, exclusively for the AIX platform.	10.0.4
Catalog updates			
<a href="#">KB0087392</a>	SolarWinds Network Config Generator 1.0 discovery too generic.	Discovery changed from file version to file size.	10.0.4.0
<a href="#">KB0088629</a>	VisualSVN Server signatures mismatch due to different manufactures compilations.	Discovery changed from file version to file size.	10.0.4.0

Table 34. Defect fixes (continued)

ID	Symptoms	Behavior after you install the update	Available since
BI-268	Unified versioning of Microsoft Visual Studio.	Version of older Microsoft Visual Studio components was changed to meet Microsoft approach to component version.	10.0.4.0
BI-4565	New template discovery for McAfee Agent.	All installed versions of the component are being detected.	10.0.4.0
Document updates			
<a href="#">BI-2480</a>	Updated the phrase “Automated bundling” with “Bundling assistant.”	<a href="#">Bundling assistant</a>	10.0.4
<a href="#">BI-4414</a>	Updated the document about “upgrade paths for versions 9.2.14, higher and lower.”	<a href="#">Upgrading BigFix Inventory (on page dccxxiii)</a>	10.0.4
<a href="#">BI-4901</a>	Update the document with information about the suggested number of VMs managed by VM Manager tool.	VM Managers performance and stability recommendation is to have less than 10 VM Manager Tool connections for a single VM Manager Tool. Use distributed VM Manager Tools to manage additional connections.	10.0.4
<a href="#">BI-4435</a>	Update the document with information about the DEBUG level parameter.	<a href="#">Server log file</a>	<u>10.0.4</u>

**VM Manager Tool version and changes**

The VM Manager Tool version that is used with this update is 10.0.4.0.

**Scanner version and changes**

The scanner version that is used with this update is 9.2.22.1000 for Windows and 9.2.22.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.4.0 and 9.2.22.0 for IBM I

### 10.0.3.1 Application update 10.0.3.1

**Table 35. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	139	Yes
BigFix Inventory Software Catalog (main version)	10.0.3.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638573	Yes
BigFix Inventory Server	10.0.3.0	No
BigFix Inventory Server: ILMT Core library	9.2.21	No
BigFix Inventory Server: ILMT Catalog	9.2.21	No
BigFix Inventory Scanner	9.2.21.1000 (Windows) 9.2.21.0000 (other platforms)	No
BigFix Inventory Disconnected Scanner	10.0.3.0 9.2.21.0 (for IBM I)	No
BigFix Inventory VM Manager Tool	10.0.3.0	No
SAP Metric Data Collector	10.0.3.0	No

#### Included software catalog

This release includes Software Catalog version 10.0.3.1 containing:

- New discovery capabilities
- Added 500+ new signatures
- Defect fixes

For more information, please refer to:

Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)

Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2021\\_02.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2021_02.pdf)

### Modified content

- The version included in Fixlet name is: 10.0.3.0 with two exceptions.
- The following Fixlets are updated and should be run to install latest versions of the specific components.
  - Software Catalog Update – Fixlet version 10.0.3.1
  - Initiate Software Scan – Fixlet version 10.0.3.1

### Enhancements and important changes

The following table lists important changes that are introduced in this update:

**Table 36. Enhancement and important changes**

Abstract	Description	Available since
<b>Catalog updates</b>		
New Adobe Apps 2021 CC discovery	Added Adobe Apps 2021 CC discovery capability based on the executable and package data.	10.0.3.1
New .NET Core discovery	Added discovery capability of .NET Core version 2.0 and newer.	10.0.3.1
New JRE and JDK/SDK discovery	Added discovery capability of JRE and JDK/SDK versions 14 and 15 on Windows and Linux platforms.	10.0.3.1
New Red Hat AMQ Broker discovery	Added discovery capability of AMQ Broker versions 7.0-7.8.	10.0.3.1
New JBoss Web Server discovery	Added discovery capability of JBoss Web Server versions 5.0-5.4.	10.0.3.1
New Apache Cassandra discovery	Added discovery capability of Apache Cassandra versions 2.1-2.2 and versions 3.0-3.11.	10.0.3.1

### Defect fixes and enhancements

For the list of known defects, refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update:

Table 37. Defect fixes

ID	Symptoms	Behavior after you install the update	Available since
<b>Catalog updates</b>			
BI-3463	Google Chrome signatures are incorrectly discovering Chromium.	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0084420</a>	Discovery that is supposed to discover ActivePerl discovers other non-ActivePerl installations.	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0085410</a>	Discovery that is supposed to discover Strawberry Perl discovers other non-Strawberry Perl installations.	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0085953</a>	Discovery Blend for Visual Studio is delivering false discovery of "Blend for Visual Studio SDK for .NET 4.5" and "Blend for Visual Studio Silverlight 5".	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0086514</a>	Discovery is misidentifying other installed software as Kofax Capture due to common executable name.	Created new discovery based on the package data for version 9.0, 10.0, 10.1, 10.2, 11.0 and for 8.0 replaced executable version with its size.	10.0.3.1
<a href="#">KB0086734</a>	Discovery of Oracle Java Platform SE 11 which is in the catalog conflicts with other Oracle Java discovery capability.	Discovery capability was removed.	10.0.3.1

**Table 37. Defect fixes (continued)**

ID	Symptoms	Behavior after you install the update	Available since
<b>Fixlet updates</b>			
<a href="#">KB0085584</a>	<p>File Facts scan result might be corrupted by Scanner or post processing in some rare conditions like:</p> <ul style="list-style-type: none"> <li>• Disabled Windows Host Script (possibility to execute vbs scripts) on Windows endpoints</li> <li>• Terminated/empty result from Scanner itself</li> </ul>	<p>Added the following prevention checks to the 'Initiate software scan' fixlet to handle corrupted scan results or post processing issues:</p> <p>1) Pre-check if script can be run and stop the 'Initiate Software Scan' if fails.</p> <p>2) avoid creation of the delta file if data are corrupted</p>	<p>10.0.3.1</p>

**10.0.3.1 Application update 10.0.3.1**

**Table 38. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	139	Yes
BigFix Inventory Software Catalog (main version)	10.0.3.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638573	Yes
BigFix Inventory Server	10.0.3.0	No
BigFix Inventory Server: ILMT Core library	9.2.21	No
BigFix Inventory Server: ILMT Catalog	9.2.21	No

**Table 38. Published site version (continued)**

Name of component	Version	Updated in the release
BigFix Inventory Scanner	9.2.21.1000 (Windows)	No
	9.2.21.0000 (other platforms)	
BigFix Inventory Disconnected Scanner	10.0.3.0	No
	9.2.21.0 (for IBM I)	
BigFix Inventory VM Manager Tool	10.0.3.0	No
SAP Metric Data Collector	10.0.3.0	No

**Included software catalog**

This release includes Software Catalog version 10.0.3.1 containing:

- New discovery capabilities
- Added 500+ new signatures
- Defect fixes

For more information, please refer to:

Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)

Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2021\\_02.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2021_02.pdf)

**Modified content**

- The version included in Fixlet name is: 10.0.3.0 with two exceptions.
- The following Fixlets are updated and should be run to install latest versions of the specific components.
  - Software Catalog Update – Fixlet version 10.0.3.1
  - Initiate Software Scan – Fixlet version 10.0.3.1

**Enhancements and important changes**

The following table lists important changes that are introduced in this update:

**Table 39. Enhancement and important changes**

Abstract	Description	Available since
<b>Catalog updates</b>		

**Table 39. Enhancement and important changes (continued)**

Abstract	Description	Available since
New Adobe Apps 2021 CC discovery	Added Adobe Apps 2021 CC discovery capability based on the executable and package data.	10.0.3.1
New .NET Core discovery	Added discovery capability of .NET Core version 2.0 and newer.	10.0.3.1
New JRE and JDK/SDK discovery	Added discovery capability of JRE and JDK/SDK versions 14 and 15 on Windows and Linux platforms.	10.0.3.1
New Red Hat AMQ Broker discovery	Added discovery capability of AMQ Broker versions 7.0-7.8.	10.0.3.1
New JBoss Web Server discovery	Added discovery capability of JBoss Web Server versions 5.0-5.4.	10.0.3.1
New Apache Cassandra discovery	Added discovery capability of Apache Cassandra versions 2.1-2.2 and versions 3.0-3.11.	10.0.3.1

**Defect fixes and enhancements**

For the list of known defects, refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update:

**Table 40. Defect fixes**

ID	Symptoms	Behavior after you install the update	Available since
<b>Catalog updates</b>			
BI-3463	Google Chrome signatures are incorrectly discovering Chromium.	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0084420</a>	Discovery that is supposed to discover ActivePerl discovers other non-ActivePerl installations.	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0085410</a>	Discovery that is supposed to discover Strawberry Perl discov-	After catalog upload and import, discovery will appear immediately.	10.0.3.1

Table 40. Defect fixes (continued)

ID	Symptoms	Behavior after you install the update	Available since
	ers other non-Strawberry Perl installations.		
<a href="#">KB0085953</a>	Discovery Blend for Visual Studio is delivering false discovery of "Blend for Visual Studio SDK for .NET 4.5" and "Blend for Visual Studio Silverlight 5".	After catalog upload and import, discovery will appear immediately.	10.0.3.1
<a href="#">KB0086514</a>	Discovery is misidentifying other installed software as Kofax Capture due to common executable name.	Created new discovery based on the package data for version 9.0, 10.0, 10.1, 10.2, 11.0 and for 8.0 replaced executable version with its size.	10.0.3.1
<a href="#">KB0086734</a>	Discovery of Oracle Java Platform SE 11 which is in the catalog conflicts with other Oracle Java discovery capability.	Discovery capability was removed.	10.0.3.1
<b>Fixlet updates</b>			
<a href="#">KB0085584</a>	File Facts scan result might be corrupted by Scanner or post processing in some rare conditions like: <ul style="list-style-type: none"> <li>• Disabled Windows Host Script (possibility to execute vbs scripts) on</li> </ul>	Added the following prevention checks to the 'Initiate software scan' fixlet to handle corrupted scan results or post processing issues: <ol style="list-style-type: none"> <li>1) Pre-check if script can be run and stop the</li> </ol>	10.0.3.1

**Table 40. Defect fixes (continued)**

ID	Symptoms	Behavior after you install the update	Available since
	Windows endpoints  <ul style="list-style-type: none"> <li>• Terminated/empty result from Scanner itself</li> </ul>	'Initiate Software Scan' if fails.  2) avoid creation of the delta file if data are corrupted	

**10.0.3 Application update 10.0.3****Table 41. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	138	Yes
BigFix Inventory Software Catalog (main version)	10.0.3.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638564	Yes
BigFix Inventory Server	10.0.3.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.21	Yes
BigFix Inventory Server: ILMT Catalog	9.2.21	Yes
BigFix Inventory Scanner	9.2.21.1000 (Windows)  9.2.21.0000 (other platforms)	Yes
BigFix Inventory Disconnected Scanner	10.0.3.0  9.2.21.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.3.0	Yes
SAP Metric Data Collector	10.0.3.0	Yes

**Changes to supported systems and upgrade paths**

BigFix Inventory supports direct upgrade to the latest version. For versions lower than 9.2.14, it is not possible to upgrade BigFix Inventory directly to the latest version. To upgrade to the latest version, upgrade to version 10.0.2 first using this fixlet, migrate the Database Schema and then use Upgrade to the latest version of BigFix Inventory (10.0.4.0) to upgrade to the latest version.

For details on how to upgrade BigFix Inventory, refer to [Upgrading BigFix Inventory \(on page dccxxiii\)](#)

### **Changes to user interface**

Improved icons in menus, reports, and dialog boxes.

### **Included software catalog**

This release includes Software Catalog version 10.0.3.0 which includes:

- IBM License Metric Tool Software Catalog version 9.2.21.0
- Added discovery capability for 228 software versions including discovering Red Hat JBoss Enterprise Application Platform

For more information, refer to

Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)

Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2020\\_12.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2020_12.pdf)

### **Modified content**

The version included in the fixlet names is: 10.0.3.0

The following fixlets were updated and should be run to install latest versions of the specific components:

- Upgrade to the latest version of BigFix Inventory 10.x
- Software Catalog Update
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Update SAP Metric Data Collector
- Update VM Manager Tool
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package

The following fixlets were updated and should be run to install newer versions of the specific components. Restarting actions is necessary to ensure that new features work properly:

- Run Capacity Scan and Upload Results (10.0.3.0)
- Initiate Software Scan (10.0.3.0)

- Get Oracle Features (10.0.3.0)
- Get Oracle Concurrent Sessions Number (10.0.3.0)
- Discover Remote Shared Disks (10.0.3.0)

The following #fixlets# were updated but it does not require any additional action:

- Uninstall Scanner (10.0.3.0)
- Download BigFix Inventory (10.0.3.0)
- Identify Computers on Public Clouds (10.0.3.0)
- Install Additional VM Manager Tool (OPTIONAL) (10.0.3.0)
- Update VM Manager Tool to version (10.0.3.0)
- Download BigFix Inventory (10.0.3.0)

**Enhancements and important changes**

For a list of enhancements introduced in this release, see: [What's new](#)

**Defect fixes**

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the updates	Available since
<b>Server updates</b>			
<a href="#">KB0082269</a>	BigFix Inventory production.log file does not rotate	Configuration has been updated and production.log is no longer produced to avoid duplicated logging	10.0.3.0
<a href="#">KB0084887</a>	While running data imports after upgrading to BFI 10.0.2, there is error in import log as below:  Cannot insert duplicate key row in object 'sam.file_facts_scd' with unique index 'sam_file_facts_scd_comput-	The problem does not occur.	10.0.3.0

ID	Symptoms	Behavior after you install the updates	Available since
	er_id_full_path_shal_valid_to_index'		
<a href="#">KB0085129</a>	New dashboard config will not show up after upgrade to 10.0.2 in case a saved report was deleted before upgrade	The problem does not occur.	10.0.3.0
<a href="#">KB0085155</a>	Data Import step Usage-Manager fails on Null value insert into non null column.	The problem does not occur.	10.0.3.0
<a href="#">KB0084825</a>	Metric Quantity field is not displaying proper value formatting for following languages CS, DE, ES, NL, pt-BR,SL, HR, HU, RU, PL	Metric Quantity field is proper value formatting for given languages <ul style="list-style-type: none"> <li>• CS:100,000,99 =&gt; 100 000,99</li> <li>• DE,ES,NL,pt-BR,SL:100,000.99 =&gt; 100.000,99</li> <li>• HR,HU,RU:100,000.99 =&gt; 100 000,99</li> <li>• PL:</li> <li>• 100.000,99 =&gt; 100 000,99</li> </ul>	10.0.3.0
<a href="#">KB0085226</a>	API request returns unexpected character '\n' for IP addresses and discovery paths. IP address list is a single text string instead of a table.	The problem does not occur. The previous format (used before BFI v10.0.2) is restored.	10.0.3.0
<a href="#">KB0085446</a>	Get Oracle Features fixlet in some cases	The problem does not occur.	10.0.3.0

ID	Symptoms	Behavior after you install the updates	Available since
	does not detect Advanced Compression feature		
<a href="#">KB0085384</a>	<p>File Facts scan with unicode character in payload is imported partially when also file checksums are collected. Furthermore, there were kept only records processed.</p> <p>The Import log file shows the following errors:</p> <p>WARN: Exception Encoding::Compatibility-Error while processing data in file itsitsearch_0_1.xml on computer 30. Message: incompatible character encoding: UTF-8 and ASCII-8BIT</p>	The problem does not occur.	10.03.0
<a href="#">KB0085027</a>	During installation of BFI 10.0.2 on a clean system, default installation directory contains a typo: "C:\Program Files\BigFix Enterprise\BFI", where the word "Enterprise" is spelled "Enterprise" (missing a "r" letter). and resulting in an unexpected location after installation.	Typo is corrected and default path is: "C:\Program Files\BigFix Enterprise\BFI"	10.0.3.0
<a href="#">KB0085442</a>	Capacity scans not uploading leading to Out-	The problem does not occur.	10.0.3.0

ID	Symptoms	Behavior after you install the updates	Available since
	dated or No VM Manager status		
BI-1207	Empty 'File path' displayed on Scanned File Data when file is placed in the root ( / ) directory	When file is placed in root directory then Scanned File Data report displays path to this file correctly	10.0.3.0
BI-1104	When BESClient id has changed and there are old, scanned files with old BESClient ids these files are causing warning generation during import process	Before files upload old, scanned files are removed	10.0.3.0
BI-2184	When BFI loses connection to database server contract management will display strange message	Message has been corrected to display information that connection to database has been lost	10.0.3.0
<a href="#">IJ25637</a>	<p>Installation of the Big-Fix Inventory server fails because the password for the default KeyStore was not set up correctly. The following error is written in the logs.</p> <pre>com.ibm.license.mgmt.install.ia.actions.EnableEncryption.execute - securityUtility execution failed with return code: 1, stdout: , stderr: JVMJ9VM015W</pre>	The problem does not occur.	10.0.3.0

ID	Symptoms	Behavior after you install the updates	Available since
	Initialization error for library j9jit29(11): cannot initialize JIT		
IJ25638	Multiple selection for monthly and weekly schedule of exporting reports does not work correctly.	The selection is now intuitive and information about the current setting is displayed.	10.0.3.0
<a href="#">IJ26396</a>	License usage is displayed on the All Metrics report for a product on a computer where no component of that product is installed. It happens on computers where IBM DB2 Advanced Workgroup Server Edition OEM Limited Use 11.1 component was previously bundled to that product (as a charged assignment).	The problem does not occur.	10.0.3.0
<a href="#">IJ26514</a>	Import of data fails after manual modification of the etl_settings.yml and the following error is written in the tema.log file.  ERROR (Default Executor-thread-3) loadSystemProperties  java.lang.IllegalArgumentException: No enum constant	The problem does not occur.	10.0.3.0

ID	Symptoms	Behavior after you install the updates	Available since
	com.ibm.license.mgmt-.dao.system.EtlSettings		
<a href="#">IJ26522</a>	Scheduling capacity scan with a disconnected scanner fails on SUSE Linux Enterprise Server 11.	The problem does not occur.	10.0.3.0
<a href="#">IJ26708</a>	When more than one-dollar sign (\$) is used for any parameter in the installation response file, the value is incorrectly interpreted. Installation of the BigFix Inventory server might fail. If it does not fail, the value of the parameter that is used is not the same as the one that was provided in the response file. It might result in unexpected behavior.	The problem does not occur.	10.0.3.0
<a href="#">IJ26973</a>	In general, the No Host Scan Data status means that the VM is not considered in PVU calculations. To correctly calculate PVU utilization on such a VM, its host must report to BigFix Inventory. However, HP-UX computers with the No Host Scan Data status are contributing to calculation of PVU	The problem does not occur.	10.0.3.0

ID	Symptoms	Behavior after you install the updates	Available since
	based on default PVU values.		
197915	Some errors occurring during schema update are not properly handled. Thus, BigFix Inventory upgrade may be shown as successful in case it failed.	The problem does not occur.	10.0.3.0
197966	Disconnected scanner can use up to 100% CPU for a long period of time on Windows 2008.	The problem does not occur.	10.0.3.0
198084	In case a VM Manager tool configuration file is invalid because the password is blank, "vmman.bat -reloadconfig" command returns error code 0 despite it failed.	The problem does not occur.	10.0.3.0
198085	"vmman.bat -stop" command fails on timeout.	The problem does not occur.	10.0.3.0
<b>Documentation updates</b>			
BI-2346	Added information about Lowering user permissions for BigFix Platform database access database.	<a href="#">Managing data sources-Lowering user permission</a>	10.0.3.0
<a href="#">BI-3050</a>	Added more information about the "resync_imports" in the Advanced Server Parameters section based on the information available on the UI.	<a href="#">Advanced Server Parameters</a>	10.0.3

ID	Symptoms	Behavior after you install the updates	Available since
<a href="#">BI-3049</a>	In the description of “re-sync_mode”, added the information about Catalog Scan Only (2).	<a href="#">Advanced Server Parameters</a>	10.0.3

### VM Manager tool version and changes

The VM Manager Tool version that is used with this update is 10.0.3.0.

### Scanner version and changes

The scanner version that is used with this update is 9.2.21.1000 for Windows and 9.2.21.0000 for other platforms. The disconnected scanner version that is used with this update is 10.0.3.0.

## 10.0.2.1 Content pack 10.0.2.1

**Table 42. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	137	Yes
BigFix Inventory Software Catalog (main version)	10.0.2.1	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638562	Yes
BigFix Inventory Server	10.0.2.0	No
BigFix Inventory Scanner	9.2.20.2000 (Windows) 9.2.20.1000 (Other platforms)	No
BigFix Inventory Disconnected Scanner	10.0.2.0 9.2.20.0 (for IBM I)	No
BigFix Inventory VM Manager Tool	10.0.2.0	No
SAP Metric Data Collector	10.0.2.0	No

### Included software catalog

This release includes Software Catalog version 10.0.2.1 containing:

- Capability to discover products including the following:
  - BMC software
  - Oracle software
  - SAP software
  - Tibco software
  - Red Hat software
  - Open source Apache software
  - Oracle Java Advanced Management Console Agent as part of Oracle Java auditing function
  - Microsoft 365 Apps as part of Microsoft Office 365 product
- Defects fixes
- Discovery capability for 290+ software versions

For more information, please refer to:

Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)

#### Modified content

- The version included in Fixlet name is: 10.0.2.1
- The 'Software Catalog Update' fixlet was updated and should be run to install latest versions of the specific components.

#### Important changes

The following table lists important changes that are introduced in this update.

**Table 43. Catalog release updates**

Abstract	Description	Available since
Java Advanced Management Console Agent Evidence	New signatures providing evidence for auditing use of Oracle Java commercial features	10.0.2.1
Microsoft 365 Apps	Discovery enhancement for Microsoft 365 applications as part of Microsoft Office 365 product. Supported editions are: Enterprise, Business and Home with discovery of their components: Excel, Word, PowerPoint, Access, Publisher, Outlook and OneNote.	10.0.2.1

#### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

**Table 44. Defect fixes**

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0081696</a>	SQR server for Sybase was incorrectly discovered	Corrected signature by replacing component version with the .exe file size.	10.0.2.1
<a href="#">KB0080084</a>	Microsoft ASP.NET Core not in the catalog	Template package signatures were extended to avoid discovering plugins with similar package name.	10.0.2.1
<a href="#">KB0074700</a>	Missing detailed version for Microsoft System Center Configuration Manager Client	Previously added signatures due to different Microsoft versioning were not able to properly discover the product. New signatures check three different possible component version.  Additionally, there is new package signature to provide discovery before running CIT scan.	10.0.2.1
<a href="#">KB0084446</a>	Veritas Storage Foundation for Windows was incorrectly discovered	Signature has been deleted.	10.0.2.1
BI-1832 Idea: BFINV-I-152	Microsoft OneDrive is not being discovered for some of its releases	New template signature created which includes all Microsoft OneDrive releases.	10.0.2.1
BI-1819	Signature for SPSS OEM Connect for ODBC 5.0 1 1.0 is no longer needed	Signature deleted for this component.	10.0.2.1

## 10.0.2 Application update 10.0.2

**Table 45. Published site version**

Name of component	Version	Updated in the release
BigFix Inventory Content Site	136	Yes
BigFix Inventory Software Catalog (main version)	10.0.2.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638555	Yes
BigFix Inventory Server	10.0.2.0	Yes
BigFix Inventory Server: ILMT Core library	9.2.20	Yes
BigFix Inventory Server: ILMT Catalog	9.2.20	Yes
BigFix Inventory Scanner	9.2.20.2000 (Windows) 9.2.20.1000 (other platforms)	Yes
BigFix Inventory Disconnected Scanner	10.0.2.0 9.2.20.0 (for IBM I)	Yes
BigFix Inventory VM Manager Tool	10.0.2.0	Yes
SAP Metric Data Collector	10.0.2.0	Yes

### Change to supported systems and upgrade paths

- IBM DB2 10.1 is no longer supported as a database for BigFix Inventory Server in line with supported database list for BigFix platform

### Change in delivery method for IBM Catalog Product Definitions

Starting with BigFix Inventory version 10.0.2.0, updates to licensing definitions and bundling information for IBM products is available only with updates to BigFix Inventory server code. Before this change, these updates were packaged with updates to the BigFix Inventory software catalog. In order to remain compliant with IBM licensing and bundling requirements, you will need to stay current with the latest BigFix Inventory release and cannot manage IBM changes through monthly catalog distribution. This change was introduced to align with IBM announcement for version 9.2.20.0 of IBM License Metric Tool. For more information please refer to this link [BigFix Forum](#).

### Changes to user interface

- Default dashboard now shows vendor-specific reports with an option to switch to the old dashboard.
- Vendor-specific predefined reports provide software discovery and licensing information for specific software vendors, such as Microsoft, Oracle, Adobe, IBM, HCL, SAP, and VMware.
- Installation path is now visible on inventory reports for all discovered software (previously it was visible only for IBM software).

### **Includes software catalog**

- Added 631 new signatures and 70 new software vendors
- Added discovery capability of Tableau Desktop and Tableau Server
- Several defects has been fixed

For more information please refer to:

- Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)
- Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2020\\_09.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2020_09.pdf)

### **Modified content**

The version included in the fixlet names is: 10.0.2.0

The following fixlets were updated and should be run to install latest versions of the specific components:

- Upgrade to the latest version of BigFix Inventory 10.x
- Software Catalog Update
- Install or Upgrade Scanner
- Install or Upgrade Scanner in private mode on Windows
- Update SAP Metric Data Collector
- Update VM Manager Tool
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package

The following fixlets were updated and should be run to install newer versions of the specific components. Restarting actions is necessary to ensure that new features work properly:

- Initiate Software Scan
- Initiate Software Scan on Shared Disks
- Upload Software Scan Results
- Run Capacity Scan and Upload Results
- Run Capacity Scan on Virtualization Hosts
- Collect Detailed Hardware Information

- Schedule VM Manager Tool Scan Results Upload
- Discover Remote Shared Disks

The following fixlets were updated but it does not require any additional action:

- Configure File Checksum Collection
- Download BigFix Inventory
- Install Additional VM Manager Tool (OPTIONAL)
- Install SAP Metric Data Collector
- Install VM Manager Tool
- Configure Scanner Query Timeout
- Configure Scan Cache
- Collect Specific Registry from Windows Endpoints
- Change Scanner Cache Folder
- Edit Scanner Trace Settings
- Force VM Manager Tool Scan Results Upload
- Uninstall Scanner
- The following fixlet was added but it does not require any additional action.
- Configure Collection of Additional Properties of Windows Executables

### Enhancement and important changes

For a list of enhancements introduced in this release, see: [What's new \(on page ix\)](#)

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update:

**Table 46. Defect fixes**

ID	Symptoms	Behavior after you install the updates	Available since
<b>Server updates</b>			
KB0080818	When script "setup-server-linux-x86_64.sh" is executed to run BFI installer, following error message is shown on RHEL 6:  ./setup-server-linux-x86_64.sh[141]: [:	No error messages	10.0.2.0

Table 46. Defect fixes (continued)

ID	Symptoms	Behavior after you install the updates	Available since
	6Server: arithmetic syntax error		
KB0081683	Added information in the document about IBM i Catalog. Updated relevant sections that IBM i Disconnected Scanner package includes an embedded Software Catalog and the option to update Software Catalog has been disabled since BFI version 9.2.17.	<a href="#">Preparing installation files for disconnected scans for IBM i (on page dxcii)</a>	10.0.2.0
KB0079282	Changed documentation to point to HCL support instead of IBM support	<a href="#">Configuring cryptographic keystore password and encryption (on page mccc xv)</a>	10.0.2.0
KB0080332	Updated documentation on DB2 maintenance procedures	<a href="#">Maintaining the DB2 database (on page mcdxlv)</a>	10.0.2.0
KB0081958	Added information in the documentation that creating more than 20 computer groups may impact the performance.	<ul style="list-style-type: none"> <li>• <a href="#">Setting up computer groups (on page dxcvi)</a></li> <li>• <a href="#">Tuning performance (on page mcdxxxvi)</a></li> </ul>	10.0.2.0
KB0078838	BFI session timeout doesn't work when SSO is enabled.	Session will respect value set for time out.	10.0.2.0

Table 46. Defect fixes (continued)

ID	Symptoms	Behavior after you install the updates	Available since
	<p>After 20 minutes of inactivity after page is being refresh, BFI is redirected to default identity provider page which is serving new cookie. On most panels it is not causing any problems, but when customer will apply any filter to the panel then Unexpected Single Sign On Error is appearing. In dev tools SAML20UnsolicitedState is visible during wrong redirection.</p>		
KB0078044	<p>"Catalog Download" task overwrites the new catalog on endpoints because the relevance clause inside checks if the catalog version is different.</p>	<p>"Catalog Download" task is relevant only if the existing endpoint catalog is older. The documentation has been updated with information that changes in the file extension list should be made after contacting HCL support.</p>	10.0.2.0
KB0081727	<p>Failed Imports might cause keeping removed File Facts, ISO Tags and Catalog Scan results</p>	<p>There has been adjusted condition used to nominate facts for removal to properly consider all scan results processed in current import</p>	10.0.2.0

**Table 46. Defect fixes (continued)**

<b>ID</b>	<b>Symptoms</b>	<b>Behavior after you install the updates</b>	<b>Available since</b>
KB0081307	Package Data view shows removed data in context of the Computer	Removed package data is no longer displayed when viewing reports from a computer or computer group context	10.0.2.0
<a href="#">KB0081394</a>	Java usage will be not reported on selected computer with deactivated collection	Application usage by path can create a huge result file and impact Platform Replication. The output of the usage scan has been limited, and the maximal size of it has been set to 1 MB to prevent impact on BigFix Platform.	10.0.2
IJ26396	Import of data fails during the upload of the PVU table and the following error is written in the log. ERROR: [ILMT-Core] (ImportThread) doAction java.lang.ArithmeticException: divide by zero at com.ibm.ilmt.core.etl.core.actions.pvutable.RefreshProcessorMeasuresForx86ManagedNodes.execute (RefreshProcessorMeasuresForx86ManagedNodes.java:48) at com.ibm.ilmt.core.etl.core.actions.VUTImportAction.doAction(VUTImportAction.java:78)	Import does not fail any more after the PVU table upload.	10.0.2.0

Table 46. Defect fixes (continued)

ID	Symptoms	Behavior after you install the updates	Available since
IJ25430	Security Identity Manager and Role Management Unlimited User Option are detected as version 5.1 but should be detected as version 6.0.	The issue does not occur.	10.0.2.0
IJ25458	The Schedule VM Manager Tool Scan Results Upload fixlet is not relevant on Cent OS due to relevance restriction according to which the fixlet should be relevant on Red Hat Linux but not SUSE Linux.	Scheduling of VMManager Tool Scan Results Upload fixlet is relevant on Cent OS endpoint.	10.0.2.0
IJ25599	Computer that is identified as Oracle Public Cloud has wrong value in the Computer Type column on the Hardware Inventory report.	The issue does not occur.	10.0.2.0
<a href="#">IJ25697</a>	When the number of partition cores exceeds 999 on the Hardware Inventory report, the following error is displayed: <code>Your database is offline/inaccessible or your database server credentials are incorrect or have expired. Please contact the administrator or refer to</code>	The issue does not occur.	10.0.2.0

**Table 46. Defect fixes (continued)**

ID	Symptoms	Behavior after you install the updates	Available since
	tema.log for more information.		
197234	When the number of CPUs is increased on an LPAR that is monitored by using a disconnected scanner, the changed number of CPUs is not reflected in BigFix Inventory.	The issue does not occur.	10.0.2.0
BI-1255	BFI Data Import: Improve "DictionariesBO: updated Version dictionary" processing time and stability by adding index	Hotfix released for one customer included in official release. Avoid inefficient execution plans especially when majority of File Facts has been changed.	10.0.2.0
BI-817	Long execution of "Generate Software Components" Data Import step up to 10h	There has been rewritten the query with dedicated implementation for MS SQL and DB2 databases to optimize execution time.	10.0.2.0
<b>Scanner updates</b>			
197183	Software scan unnecessarily follows symlinks for paths defined in excludeDirectory/includeDirectory properties.	The issue does not occur.	10.0.2.0
<a href="#">IJ24961</a>	4 cores Oracle Netra Sparc T4-1 is being discovered as 8 cores. Number of cores mismatch has caused a	The issue does not occur.	10.0.2.0

Table 46. Defect fixes (continued)

ID	Symptoms	Behavior after you install the updates	Available since
	misleading hardware scan output.		
<a href="#">IJ23404</a>	It has been confirmed that in a very rare case, on some unusual UNIX OS setups, under circumstances that have not yet been precisely defined, the mechanism of caching the scan data by the software scanner fails. Due to this error, the scanner is looping through the cache data, and as a result occupies one of the threads available on the machine. The issue is caused by the incorrect processing of scanner cache data.	New experimental cache was introduced. For more information, see: <a href="#">APAR IJ23404</a> .	10.0.2.0
<a href="#">IJ23587</a>	The capacity scan returns the following error: "Could not load a transcoding service". The problem is caused by incorrect settings of the system's locale.	The issue does not occur.	10.0.2.0
197728	Subcapacity values are incorrectly counted on Solaris x86 with kernel zones.	The issue does not occur.	10.0.2.0
KB0080200	Scanner misinterprets SMBIOS structure on	The issue does not occur.	10.0.2.0

Table 46. Defect fixes (continued)

ID	Symptoms	Behavior after you install the updates	Available since
	Linux. 'ComponentID' section is empty due to cpuid component not being able to read SMBIOS data on Linux		
KB0081623	File facts/package data are not being preserved in database despite setting <code>raw_data_api_history_keep_days</code> value as more than 0. <code>raw_data_api_history_keep_days</code> was being overwritten by <code>pruning_days_to_keep</code>	BFI will keep the raw data in the database for a duration specified in <code>raw_data_api_history_keep_days</code> parameter	10.0.2.0
<b>Content updates</b>			
KB0081663	Initiate Software Scan fixlet not applicable on Solaris endpoints	Initiate Software Scan becomes relevant on all Solaris endpoints	10.0.2.0
<b>Catalog updates</b>			
KB0080543	Documentation is updated with information about excluded or suppressed instances of licensed computers not being shown under Contract data. The advantage of using Metrics over Contracts is added in the document.		10.0.2.0
KB0081696	SoftArtisan OfficeWriter is being mismatched with other products	Change file version, to file size for all signatures based on 'license-manager.exe'.	10.0.2.0

**Table 46. Defect fixes (continued)**

ID	Symptoms	Behavior after you install the updates	Available since
	based on the same file and file version		
KB0081725	Tibco Rendezvous is being detected twice on one software installation	Change in signature body to filter installation path by 'bin/' and the end.	10.0.2.0
KB0081437	Tableau software is being detected with wrong version reported	Deletion of old, and creation of new template signatures, that differ between Server and Desktop version based on package name.	10.0.2.0
KB0081777	Signature for Studio for ActiveX is not supporting newer versions	Deletion of old file signature and replacing it with new package template signature.	10.0.2.0

**Security enhancements**

To maintain security, the selected components and libraries were updated:

- Rails upgraded to version 5.2.4.3 - CVE-2019-5418, CVE-2019-5419, CVE-2019-5420
- Nokogiri-1.6.8.1 patched to use newer Xerces 2.12.0
- jQuery upgraded to 3.5.1 - CVE-2020-11022, CVE-2020-11023
- Websphere WLP upgraded to 20.0.0.5 - CVE-2020-4329, CVE-2020-4303, CVE-2020-4304
- Java upgraded to 8.0.6.15 - CVE-2020-2781, CVE-2020-2601, CVE-2020-14621, CVE-2020-14581, CVE-2020-14579, CVE-2020-14578, CVE-2020-14577, CVE-2020-2590

**VM Manager Tool version and changes**

- The VM Manager tool version that is used with this update is 10.0.2.0 and it includes fix for IJ24961. Please refer to the defect fixes table for details.
- The 32-bit version of the VM Manager tool is no longer supported.

**Scanner version and changes**

The scanner version that is used with this update is 9.2.20.2000 for Windows and 9.2.20.1000 for other platforms. The disconnected scanner version that is used with this update is 10.0.2.0. As an exception, the disconnected scanner version for IBM I is 9.2.20.0.

### Support for new systems and hypervisors

The following new systems and hypervisors are supported starting this release:

- SLES 15 SP1 on Power
- vSphere ESXi 7.0 and vSphere vCenter Server 7.0
- Disconnected scanner on Red Hat Enterprise Linux 8.1 on Power
- Disconnected scanner on Ubuntu 20 x86

### End of support

Starting from version 10.0.2, support is dropped for the following:

- IBM DB2 10.1 as database for BigFix Inventory server
- VM Manager tool version 32-bit
- IBM i 6.1

### Application update 10.0.1.1

**Table 47. Published site version**

Name of the component	Version	Updated in this release
BigFix Inventory Content Site	135	Yes
BigFix Inventory Software Catalog (main version)	10.0.1.1	Yes
BigFix Inventory Software Catalog (version on end-point)	2638548	Yes
BigFix Inventory Server	10.0.1.0	No
BigFix Inventory Scanner	9.2.19.0000 9.2.19.1000 (Windows)	No
BigFix Inventory Disconnected Scanner	10.0.1.0 9.2.19.0 (for IBM I)	No
BigFix Inventory VM Manager Tool	10.0.1.0	No
SAP Metric Data Collector	10.0.1.0	No

### Included Software Catalog

This release includes Software Catalog version 10.0.1.1 containing:

- Added capability of discovering Docker engine and Kubernetes software
- Added discovery capability for 100+ software versions for number of software titles including Oracle, Hewlett-Packard, McAfee, Microsoft, Red Hat, SAP, and VMware

For more information please refer to:

Catalog Release Notes: [https://software.bigfix.com/download/tema/catalog/BFI\\_catalog\\_release\\_notes.pdf](https://software.bigfix.com/download/tema/catalog/BFI_catalog_release_notes.pdf)

Catalog Change List: [https://software.bigfix.com/download/tema/catalog/changelist/BFI\\_catalog\\_changelist\\_2020\\_08.pdf](https://software.bigfix.com/download/tema/catalog/changelist/BFI_catalog_changelist_2020_08.pdf)

### Modified content

The version included in Fixlet is 10.0.1.1.

The following fixlets were updated and should be run to install newer versions of the specific components:

- Software Catalog Update
- Initiate Software Scan

The following new fixlets were created to support install or upgrade scanner for BigFix Inventory use only on Windows:

- Install or Upgrade Scanner in private mode on Windows
- Update Catalog Download fixlet templates on BFI server

The following fixlets were updated to support the scanner for BigFix Inventory use only on Windows. After first use of fixlet 'Install or Upgrade Scanner in private mode on Windows', it is required to stop all scheduled actions based on the updated fixlets and schedule new actions based on them:

- Initiate Software Scan
- Configure Scanner Query Timeout
- Configure Scan Cache
- Install or Upgrade Scanner
- Uninstall Scanner
- Change Scanner Cache Folder
- Run Capacity Scan and Upload Results
- Edit Scanner Trace Settings
- Configure File Checksums Collection (MD5/SHA-256)
- Configure Collection of Additional Properties of Windows Executables
- Collect Detailed Hardware Information

Additionally, the following analyses were updated to support the scanner for BigFix Inventory use only on Windows:

- Scanner Information
- Scanner Trace Settings
- File Checksums Collection Settings (MD5/SHA-256)
- Additional Properties of Windows Executables Collection Settings

### Enhancements and important changes

The following table lists enhancements and changes that are introduced in this update.

Abstract	Description	Available since
<p>New capability: 'Scanner installation for BigFix Inventory use only on Windows'</p>	<p>This task installs or upgrades the scanner for BigFix Inventory use only to version 9.2.19.1000 (20/06/25) on Windows. Using this task allows installing separate instance of scanner for BigFix Inventory. The separate HCL CIT installation allows coexistence with IBM CIT where other IBM products are IBM CIT exploiters. The separate instance does not impact the compatibility and upgrades of the IBM CIT caused by other IBM exploiters.</p> <p>The scanner includes an optional feature to collect a Windows executable metadata information.</p> <p>When this scanner is installed, the other fixlet should be run as well: 'Update Catalog Download fixlet templates on BFI server' to allow automatic catalog software propagation with new CIT Scanner instance.</p>	<p>10.0.1.1</p>

Abstract	Description	Available since
Document describing how to manage in BigFix Inventory license for HCL software products that are licensed for IBM metrics	HCL Acquired from IBM software products that are developed by HCL and new versions of them were released. Some of them are licensed according to IBM metrics. This document describes how customers can manage licenses for these products in BigFix Inventory and can be obtained from BigFix Inventory support.	10.0.1.1
New discovery capability: Docker	Discovery of software for Linux: <ul style="list-style-type: none"> <li>• Docker Engine Community Edition</li> <li>• Docker Engine Enterprise Edition</li> <li>• Docker Engine (enhanced discovery mechanism)</li> <li>• Docker Engine EnterpriseEdition</li> </ul>	10.0.1.1
New discovery capability: Kubernetes	Discovery of software for Linux: <ul style="list-style-type: none"> <li>• Kubernetes kubeadm</li> <li>• Kubernetes kubectl</li> <li>• Kubernetes kubelet</li> </ul>	10.0.1.1
<b>Catalog updates</b>		
Enhanced discovery capability: ASP.Net Core	Discovering additional versions for <i>Microsoft ASP.NET Core</i> . This discovery mechanism is based on 'template signature', so version is gathered automatically for all software releases.	10.0.1.1

**Defect fixes**

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update.

ID	Symptoms	Behavior after you install the update	Available since
<a href="#">KB0080737</a>	Components discovered/reported in SUA package data not imported due to parsing error	Correct processing on endpoint side to assure well- formed result when Package Data contains new line character in value (Windows Endpoint Only)	10.0.1.1
<a href="#">KB0080844</a>	Initiate Software Scan Fails on Windows systems with Hyper-V or Docker Desktop	Corrected Action Script to handle case when path is not reported for process	10.0.1.1
<b>Catalog updates</b>			
<a href="#">KB0075995</a>	Some versions of 'CrowdStrike Falcon Sensor' were not discovered	Missing versions will be discovered	10.0.1.1
<a href="#">KB0080366</a>	VMware vSphere Update Manager indicates incorrect version in BFI software classification	VMware vSphere Update Manager will have versions synchronized with file version of the application main executable <i>vmware-umd-s.exe</i> .	10.0.1.1
<a href="#">KB0078849</a>	PowerShell 1.0 and 2.0 signature being detected as separated installation on newer systems	Problem occurred with Windows version 7 and higher, where PowerShell 2.0 is still visible in registry as separate installation. Fixed signature is not being detected when there is	10.0.1.1

ID	Symptoms	Behavior after you install the update	Available since
		newer version of PowerShell visible in registry or package data – <i>PowerShell</i> , and vendor - <i>Microsoft Corporation</i>	

### 10.0.1 Application update 10.0.1

**Table 48. Published site version**

Name of the component	Version	Updated in this release
BigFix Inventory Content Site	134	Yes
BigFix Inventory Software Catalog (main version)	10.0.1.0	Yes
BigFix Inventory Software Catalog (version on endpoint)	2638546	Yes
BigFix Inventory Server	10.0.1.0	Yes
BigFix Inventory Scanner	9.2.19.0000	No
	9.2.19.1000 (Windows)	Yes
BigFix Inventory Disconnected Scanner	10.0.1.0	Yes
	9.2.19.0 (for IBM I)	
BigFix Inventory VM Manager Tool	10.0.1.0	Yes
SAP Metric Data Collector	10.0.1.0	Yes

#### Included software catalog

This release includes Software Catalog version 10.0.1.0 that contains:

- IBM License Metric Tool Software Catalog version 9.2.19.0
- capability to discover and collect evidence about usage of Oracle Java Commercial Features: 'Java Flight Recorder' and 'JRE Usage Tracking'.

For more information please refer to:

- [Catalog Release Notes](#)
- [Catalog Change List](#):

**Modified content**

The version included in fixlet's name is 10.0.1.0.

The following fixlets were updated and should be run to install newer versions of the specific components.

- BigFix Inventory upgrade to version 10.x
- Updated Software Catalog
- Upgraded Scanner
- Update SAP Metric Data Collector
- Update VM Manager Tool
- Download the Disconnected Scanner Package for IBM I
- Download the Disconnected Scanner Package

The following fixlets were updated and require that actions created by their previous versions are stopped and then started by using the updated fixlets. Restarting actions is necessary to ensure that new features work properly.

- Initiate Software Scan
- Initiate Software Scan on Shared Disks
- Upload Software Scan Results
- Run Capacity Scan and Upload Results
- Run Capacity Scan on Virtualization Hosts
  
- Get Oracle Concurrent Sessions Number
- Get Oracle Features

The following fixlets were updated but it does not require any additional actions.

- Collect Detailed Hardware Information
- Configure File Checksum Collection
  
- Download BigFix Inventory
- Identify Computers on Public Clouds
- Install Additional VM Manager Tool (OPTIONAL)
- Install SAP Metric Data Collector
- Install VM Manager Tool

The following fixlet was added but it does not require any additional actions.

- Configure Collection of Additional Properties of Windows Executables

**Enhancement and important changes**

For a list of enhancements introduced in this release, see: [What's New \(on page ix\)](#)

### Defect fixes

For the list of known defects please refer to [HCL Knowledge Base](#).

The following table lists APARs and other defects that are fixed in this update:

ID	Symptoms	Behavior after you install the update	Available since
<b>Server updates</b>			
<a href="#">KB0069306</a>	Instructions for Discovering usage of Oracle Database features are incorrect.  Reference to incorrect folder.	Documentation is corrected.	10.0.1.0
<a href="#">KB0074225</a>	Missing platform check when using Docker scan.	Check added to the Initiate Software Scan fixlet for Docker scan support for Linux only.	10.0.1.0
<a href="#">KB0079766</a>	Package Summary report calculation fails.	Package Summary report calculated properly.	10.0.1.0
<a href="#">KB0080092</a> <a href="#">IJ22881</a>	Catalog import fails during merge step with IBM catalog.	Catalog import is successful.	10.0.1.0
<a href="#">KB0080339</a>	<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;">Invalid credentials - suspended</div> status on the VM Manager Panel.	Configuration to be used in special cases when communication between vmtool and hypervisor hangs (PowerShell integration only) due to network issues.  Set <code>vmm_max_subsequent_login_failures</code> to 0 in <code>vmmmainconf.properties</code>	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
		in order to avoid hard timeout.	
<a href="#">KB0079609</a>	<p>On the VM Managers panel the following error occurs when DSA environment is detected.</p> <pre> Before you can configure VM managers, you must install and run the BigFix services, including Web Reports, on the %{host}. Ensure also that the BigFix server user that is defined for the primary data source has sufficient rights. For more information, see the product documentation. </pre> <p>All the VM Managers appear distributed.</p>	<p>Additional logic added to discard all root computers which are not seen for over a month, if multiple remain then the one with VM Man Tool installed is selected, in case there are more the one with the lower id is selected.</p>	10.0.1.0
<a href="#">KB0079543</a>	<p>Degradation of response time on API Software Instances v2 on long running environments.</p>	<p>Improved response time on API Software Instances v2.</p>	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
KB0079197	Get Oracle Features task failure in case of usernames with >8 characters.	Scenario with username with >8 characters is addressed.	10.0.1.0
KB0079191	Data import fails with the following error: <pre>SQL0433N Value is too long. SQLSTATE=22001</pre>	Data import is successful.	10.0.1.0
KB0078385	Run Capacity Scan fixlet fails when there are many scanfiles.	Run Capacity Scan is successful.	10.0.1.0
KB0078264	The old slmtagsearch files with old computer_id are kept and uploaded to the BigFix server upload sha1 directory.	When a computer gets a new computer ID the old slmtagsearch zip files are deleted on the endpoint.	10.0.1.0
KB0075611	Scanner triggering mounts of shares.	Protection mechanism was added to Initiate Software Scan to prevent exclusion without wildcard.	10.0.1.0
KB0077322	Error in assigning a part number that has been assigned in the past to a deleted custom product.	Part number can be assigned now to a different product.	10.0.1.0
KB0076885	Software not discovered when signature is added to an existing product created earlier.	Software is discovered.	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
	er in Products and Metrics.		
IJ16175	The Initiate Software Scan fixlet requires the <code>pkgdb</code> to work.	The requirement is removed.	10.0.1.0
IJ21733	<p>Creation of the Big-Fix Inventory database fails on Windows due to compatibility issues even though the database compatibility level is correct. The following error is displayed.</p> <pre> The database must have an SQL Server compatibility level of least 110 (it's currently 90). If you have migrated this database from an earlier version of SQL Server, you must update its compatibility level before it can be used. </pre>	The problem does not occur.	10.0.1.0
IJ21747	<p>BigFix Inventory does not work and the following error is written in the <code>tema.log</code> file.</p> <pre> com.ibm.ws.webcontai ner.webapp I SRVE0292I: Servlet </pre>	The problem does not occur.	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
	<p>Message</p> <pre>[tema]:.[FATAL]   ActionView::Templat e::Error (Unknown error  (SystemCallError)  - Unknown Error (0)  -  /var/opt/IBM/LMT/il mt/  wlp/usr/servers/ser ver1/apps/tema.war/ WEB-INF/tmp/cache/A0 2/2C1/  views%2Fsoftware_in stalls_widget_0_ true_0_en%2F5887e2c0 4c983629206d86835e34 da4b) [...]</pre>		
IJ21800	<p>Update of the database schema fails due to invalid handling of existing indexes. The following error is visible in the tema.log file.</p> <pre>createOutputTable  com.ibm.db2.jcc.am. SqlSyntaxErrorException: The name of  the object to  be created is  identical to the  existing name  "AGGR.METRIC_OTHER_ GR_1_IDX1"</pre>	The problem does not occur.	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
	<pre>of type "INDEX".SQLCODE=-6 01, SQLSTATE=42710, DRIVER=3.72.24</pre>		
IJ22183	<p>Documentation does not specify that HOSTID values on a local zone and its parent global zone must be the same in order to match the guest and host system. Otherwise, BigFix Inventory is unable to properly build virtualization structure information and the "No Host Scan Data" status is displayed for the guest system.</p>	<p>Documentation is corrected.</p>	10.0.1.0
IJ22221	<p>A user cannot generate the audit snapshot under the following circumstances:</p> <ul style="list-style-type: none"> <li>• The user is not an Administrator</li> <li>• The user is assigned a role that allows for generating the audit snapshot</li> <li>• The user does not have a permission to view the Audit Trail</li> </ul>	<p>The problem does not occur.</p>	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
IJ22241	A disconnected data source cannot be created on a computer on which a custom computer property is defined.	The problem does not occur.	10.0.1.0
IJ22562	A KVM has the "No Data" status despite it was successfully scanned by the Run Capacity Scan on Virtualization Hosts fixlet. The problem occurs because the output of the virsh command does not show any guest systems even though they are present and active.	The problem does not occur.	10.0.1.0
IJ22782	Relevance 11 of the Initiate Software Scan fixlet returns the following error on Solaris. <pre>Singular expression refers to nonexistent object</pre>	The problem does not occur.	10.0.1.0
IJ23216	The VM Managers panel cannot be displayed because Web Reports are not running. However, only a general error message is displayed.	The error message is improved to indicate what is the cause of the problem.	10.0.1.0
IJ23221	When a software component was discovered in the past and later on it was removed from the software cat-	The problem does not occur.	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
	<p>alog, the information about the component becomes inconsistent. The BigFix Inventory database contains correct information. However, the Software Classification and the PVU Subcapacity reports provide incorrect information.</p>		
IJ23369	<p>Documentation provides incorrect description of the <code>catalog_dimensions</code> columns.</p>	<p>Documentation is corrected.</p>	10.0.1.0
IJ22565	<p>The "No VM Manager Data" status is displayed for virtual machines that are hosted on VMware ESXi 6.7. The problem occurs because the UUID from a local/guest hardware scan does not match the value returned in vCenter. The initial three portions of the UUID appear to be mixed. As a result, BigFix Inventory cannot match VMs and calculate PVU values.</p>	<p>The problem does not occur.</p>	10.0.1.0
BI-537	<p>Signature description text misleading for software that is discovered with package data.</p>	<p>Signature description corrected.</p>	10.0.1.0
BI-733	<p>When BigFix server is configured to use backup server (BigFix DSA</p>	<p>The problem does not occur.</p>	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
	scenario), all the VM Managers appear distributed after BigFix Inventory application upgrade.		
BI-454	When trying to access VM Managers management screen, if a data source isn't available it throws the following UI error: We are sorry, but something went wrong.	The problem does not occur.	10.0.1.0
BI-253	REST API filtering criteria of associated tables does not work.	Filtering criteria work properly.	10.0.1.0
BI-277	<div style="border: 1px solid gray; background-color: #f0f0f0; padding: 5px; margin-bottom: 5px;">Collecting utilization of SAP license metrics</div> not working properly, error in SAP tool log "Persistent ID is invalid".	The problem does not occur.	10.0.1.0
BI-711	Too restrictive version check prevent installation on supported editions of DB2 v11.5	Installation is successful.	10.0.1.0
BI-529	All Metrics - filters work incorrectly when comma or + is used in text filter criteria.	Filters work correctly.	10.0.1.0
BI-762	Catalog Search on the dashboard does not work after reinstalling BFI with the same database.	Catalog search works properly.	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
BI-1164	<p>Data import fails with following error:</p> <pre> One or more values in the INSERT statement, UPDATE statement, or foreign key update caused by a DELETE statement are not valid because the primary key, unique constraint or unique index identified by "2" constrains table "SAM.VERSIONS" from having duplicate values for the index key..  SQLCODE=-803, SQLSTATE=23505, DRIVER=3.72.24 </pre>	Data import is successful.	10.0.1.0
196939	It is not possible to use the Airgap Tool in non-extraction mode because information about the e-mail address and license serial number that is needed for this procedure is not available to the user.	Documentation is updated to provide information on how to extract the information about the e-mail address and the serial number. For more information, see: Updating the content of the fixlet site on Linux and Updating the content of the fixlet site on Windows.	10.0.1.0

ID	Symptoms	Behavior after you install the update	Available since
196937	The <code>/usr/lpp</code> folder is incorrectly excluded from the software scan.	The <code>/usr/lpp</code> folder is removed from the list of excluded directories. Software that is installed in this folder is correctly discovered.	10.0.1.0
196797	In very rare cases, the VM Managers panel does not show any existing VM entries because it treats the VM Manager Tool as deleted.	The problem does not occur.	10.0.1.0
196971	Serial number of the hypervisor missing in retrieveddebugdata output.	The <code>-retrieveddebugdata</code> command collects information about the serial number of the hypervisor.	10.0.1.0
<b>Catalog updates</b>			
<a href="#">KB0077313</a>	BEA WebLogic Server v7 incorrect discovery.	Invalid signature is no longer in catalog to not cause incorrect discovery results.	10.0.1.0
<a href="#">KB0076466</a>	Invalid signatures for Microsoft Project Server 2016/2019.	Invalid signatures is no longer in catalog.	10.0.1.0
<a href="#">KB0080084</a>	Change component name from 'Microsoft ASP .NET' to 'Microsoft ASP .NET Core'.	New software name is visible in reports.	10.0.1.0

### Security enhancements

To maintain security, few selected components and libraries were updated. For more information, see the security enhancement updates under [Application updates 10.0.1 \(on page xxxiv\)](#).

### VM Manager Tool version and changes

The version of the VM Manager Tool that is used with this application update is 10.0.1.0.

### Scanner version and changes

The version of the scanner that is used with this update is, 9.2.19.1000 for Windows and 9.2.19.0000 for other platforms.

The version of the disconnected scanner that is used with this update is 10.0.1.0. As an exception, the version for disconnected scanner for IBM I is 9.2.19.0

### Support for new systems and hypervisors

The following table lists new systems and hypervisors that are supported starting this release:

Supported systems and hypervisors	Requirements
MS SQL 2016 Express	BigFix Inventory database
MS SQL 2017 Express	BigFix Inventory database
Citrix Hypervisor 8	
IBM i 7.4	Disconnected scanner
Oracle Compute Instance	

### End of support for systems and hypervisors

Support is dropped for the following operating systems and virtualization technologies

- Operating systems
  - Debian 7
  - IBM i 5.1
  - Oracle Solaris 10
  - Red Hat Enterprise Linux 5 on x86
  - Ubuntu 12
  - Ubuntu 14
  - Windows Vista
- Hypervisor and virtualization technologies
  - Red Hat Virtualization 3.x
  - VMware vSphere 5.x
  - XenServer/ Citrix XenServer 6.x

### Previous application updates

For a full list of enhancements introduced in older versions of the product, see [What's new in this release](#).

### APARS that were fixed in the previous updates

The following table lists the APARs and other defects that were fixed in the previous updates:

ID	Symptoms	Behavior after you install the update	Available since
KB0078569	<p>Incorrect discovery of Oracle WebLogic v10.3 detailed version</p> <p>Detailed Component Version may include additional characters in some cases</p>	<p>Discovery corrected for version 10.3</p> <p>Detailed Component Version does not include extra characters</p>	10.0.0.1
KB0077224	Golden Gate 11 and 12 on Linux not discovered	Discovery corrected	10.0.0.1
KB0077320	Microsoft Host Integration Server 2016.0 not discovered	Discovery corrected	10.0.0.1
KB0078545	Veritas Perl for VRTSvcS and VRTSPerl version discovery issues	Discovery corrected	10.0.0.1
KB0078543	Incorrect discovery of Audible Manager 5.1	Discovery corrected	10.0.0.1
IJ20095	<p>IBM Cognos Analytic Server (IBM Cognos Analytic Server for Non-Production Environment) changed name to IBM Planning Analytics Local TM1 Server (IBM Planning Analytics Local TM1 Server for Non-Production Environment). The part number that should discover the new product is assigned to the old product in the software catalog. As a result, the</p>	<p>To keep backward compatibility of IBM catalog import some part numbers that were associated with product IBM Cognos Analytic Server will not be associated with product IBM Planning Analytics Local TM1 Server. It might affect automated bundling capability. To resolve the issue, use custom bundling to assign components to correct products.</p>	10.0.0.1

ID	Symptoms	Behavior after you install the update	Available since
	old product is discovered.		
IJ21789	IBM Tivoli Workload Scheduler - Agent 8.2 is not discovered	IBM Tivoli Workload Scheduler - Agent 8.2 is properly discovered	10.0.0.1
IJ22354	Informix 4GL 7.51 is not discovered	Informix 4GL 7.51 is discovered	10.0.0.1
KB0073588	Reported lower number of Server Active Sockets	There is reported correct number of sockets	9.2.19
KB0075037	Incorrect number of cores detected for certain Xeon E7 processors (regression in 9.2.17 and 9.2.18 Scanner)	There is reported correct number of cores	9.2.19
IJ21455	<p>Import of data fails with the following error.</p> <pre>WARN:(ImportCapacity-Thread:0) CapacityScanFileHandler::processTask:: Some error occurred during importing the capacity scan from file ./file_name.xml for endpoint : endpoint_id</pre>	The problem does not occur	9.2.19

ID	Symptoms	Behavior after you install the update	Available since
196957	Capacity scan fails to read SMBIOS data on UNIX due to memory access error.	The SMBIOS data is retrieved from DMI tables prior to other methods.	9.2.19
<a href="#">KB0076873</a>	Hyper-V VM Managers go "Invalid credentials - suspended" even though the credentials work fine.	VM Managers behavior corrected and issue resolved.	10.0.0.0
<a href="#">KB0076850</a>	Wrong format for the Metric Quantity column in All Metric Report	Number format for the Metric Quantity column is in line with other number formats	10.0.0.0
<a href="#">KB0076241</a>	App error while trying to suppress multiple rows of software	Suppress option for multiple rows working properly and no error is displayed.	10.0.0.0
<a href="#">KB0075708</a>	Incorrect date time zones produced by Collect Detailed Hardware Information fixlet	Date stamp collection corrected for the Collect Detailed Hardware Information fixlet	10.0.0.0
<a href="#">KB0075619</a>	Import failing at ETL step related to UsageManager - on Linux	Import runs successfully for this step and configuration	10.0.0.0
<a href="#">KB0075451</a>	Out of Memory issues may occur	IBM WebSphere Application Server Liberty was upgraded to higher version and issue is	10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
		addressed	
<a href="#">KB0074869</a>	Large amount of Registered User metric causes slow data import time	Improved import time for large amount of Registered User metric	10.0.0.0
<a href="#">KB0074818</a>	Duplicated entries when a template signature is updated	Issue with duplicated entries resolved	10.0.0.0
<a href="#">KB0074707</a>	Adobe Animate CC discovered due to incorrect signature definition.	Signature for other component was corrected to not discover Adobe Animate CC	10.0.0.0
<a href="#">KB0074700</a>	Microsoft System Center Configuration Manager 2012 is reported using scclient.exe	Discovery method corrected to exclude client	10.0.0.0
<a href="#">KB0074748</a>	Incorrect MySQL Server version detected	Correct MySQL Server version discovery	10.0.0.0
<a href="#">KB0074686</a>	Old edition still reported after Microsoft SQL Server reinstallation	Old edition of Microsoft SQL Server 2016 is not reported after it is replaced with new edition	10.0.0.0
<a href="#">KB0074643</a>	CIT installation files permissions issue	CIT installation files have correct permissions	10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
BI-79	Error when sending email may crash scheduler	Scheduler working properly	10.0.0.0
BI-142	Icon for CIT signatures in Catalog Customizations is misleading	Updated icon in Catalog Customizations for Extended Signature	10.0.0.0
BI-174	Non admins cannot get Support Data despite it is documented in Doc	Non-admin user with proper permission has this option available now	10.0.0.0
BI-386	Supplementary fix for to KB0073588 - change the processors view to handle incorrect data	Incorrect data is properly handled	10.0.0.0
BI-456	Incorrect Logs during FileFact Import - all the time Processed 0% of files	Logs are corrected	10.0.0.0
BI-367	Remove bzip2 from Install Scanner	Install Scanner fixlet does not include bzip2	10.0.0.0
BI-384	Disconnected Scanner for IBMi fixlet description contains incorrect build	Correct build version in Disconnected Scanner for IBMi	10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
	version	fixlet description	
BI-60	<p>Template signatures based on package version are incorrectly generated when</p> <p>package version is like '9.0 (6028)'</p>	Correct template signatures are generated	10.0.0.0
BI-27	<p>Sybase Adaptive Server Enterprise 15.7 - existing signature expect "SAP" in name of product, whereas name does not</p> <p>contain it</p>	Signature updated to assure correct discovery	10.0.0.0
BI-104	<p>Wrong file name in the CIT signature for</p> <p>SQL Data Compare component</p>	Signature updated to assure correct discovery	10.0.0.0
BI-281	Disk2Vhd 2.1 should have version 2.01	Component Version is 2.01 Detailed Component Version stays in line with file version 2.1.	10.0.0.0
IJ21245	<p>After upgrading to 9.2.17, the server cannot be accessed with the following message: We are sorry, but something</p>	<a href="#">IJ21245</a>	10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
	went wrong.		
IJ21162	Incorrect end of support date for IBM MQ 9.0.	<a href="#">IJ21162</a>	10.0.0.0
IJ21140	The partition cores reported on the Hardware Inventory report do not match the CPU Core Subcapacity Limit on the IBM PVU Subcapacity report for machines on Amazon public cloud.	<a href="#">IJ21140</a>	10.0.0.0
IJ21123	Schema update fails with compatibly level check error reported in tema.log.	<a href="#">IJ21123</a>	10.0.0.0
IJ21002	When importing capacity scan with the future date, the import of current scans fails.	<a href="#">IJ21002</a>	10.0.0.0
IJ20158	When config.sso.debug is enabled, a clear text password is shown in team.log.	<a href="#">IJ20158</a>	10.0.0.0
IJ19979	Import of data fails with the following error:		10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
	<p>INFO: ETL from Data Source - SAM::ScanFile  ERROR: Sequel::Check-ConstraintViolation: The UPDATE statement conflicted with the CHECK constraint</p> <p>"ckt_samscan_files_scd".</p>	<a href="#">IJ19979</a>	
IJ19901	<p>Central VM Manager Tool is incorrectly determined when using the BigFix disaster recovery model with the DSA server as a backup existing in the environment.</p>	<a href="#">IJ19901</a>	10.0.0.0
IJ21042	<p>Software scan based on package data fails on Solaris servers due to missing implementation of IPS repository for package data collection.</p>	<a href="#">IJ21042</a>	10.0.0.0
IJ20419	<p>Fixlets related to VM managers are not relevant on Debian OS.</p>	<a href="#">IJ20419</a>	10.0.0.0
IJ17980	<p>The Run Capacity Scan and Upload Results (9.2.15.0) fixlet shows the -1 exit code. The fixlet action script</p>	<a href="#">IJ17980</a>	10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
	<p>shows the following information:-- Completed wait sh -c "{parameter "homefolder" as string}/runcit_tlm_hw.sh' &gt; '{parameter "logfilepath" as string}' 2&gt;&amp;1" Failed</p> <p>continue if {exit code of action = 0}</p>		
IJ20761, IJ20776	<p>The vendor information is not collected by the capacity scan because the newer version of BIOS is available on the physical server.</p>	<p><a href="#">IJ20761IJ20776</a></p>	10.0.0.0
IJ20098	<p>Capacity scan does not collect information about BIOS.</p>	<p><a href="#">IJ20098</a></p>	10.0.0.0
196556	<p>Scanner upgrade on Windows 2019 fails with the following message: Can't execute command "C:\Program Files\tivoli\cit\bin\wscanfg.exe" -enable all', result was: 0 Exec "C:\Program Files\tivoli\cit\bin\wscanfg.exe" -enable all' returned -1 *** Error: could not restart CIT. Installation failed, rolling back</p>	<p>Scanner upgrade successful</p>	10.0.0.0

ID	Symptoms	Behavior after you install the update	Available since
	Done.		
196412	The capping values of CPU pool, LPAR group and tenant resource group are not converted or are incorrect.	Capping values corrected	10.0.0.0
196379	The disconnected scanner scans the paths defined as \$DOCKER_EXCLUDED_PATHS.	Paths corrected	10.0.0.0
196332	Using the disconnected scanner on a machine with locale suffix set to @euro causes the scan failure with a 255 error and the following message: COULD NOT LOAD A TRANSCODING SERVICE	No scan failure in the described scenario	10.0.0.0
196207	The warning that is displayed during import is not clear: WARN: Can't find component : #<SAM::Component-LifecycleEntry:0x43f7cf2>	Warning message corrected	10.0.0.0
<a href="#">KB0074925</a>	When BigFix Inventory agents complete	Consistent date format for last scan attempt date.	9.2.17

ID	Symptoms	Behavior after you install the update	Available since
	scans, last scan attempt date is showing inconsistently sometimes with dd/mm/yy format and sometimes with mm/dd/yy format.		
KB0074586	"Publisher Name" and "Vendor" fields are wrongly populated on non-English UI with the equivalent of "&lt;no data>" in the given language when trying to create signature from Package data.	"Publisher Name" and "Vendor" fields correctly populated on non-English UI	9.2.17
KB0074358	User not able to delete saved reports using BFI console but able to delete them using developer tools	Authorization in place to not allow to delete saved reports from developer tools	9.2.17
KB0075033	Incorrect discovery of Python versions 2.x, 3.2, and 3.4.	Corrected discovery of Python software	9.2.17
KB0074191	Data Import fails when BigFix Inventory and BigFix are using different database type	Data import is successful.	9.2.17

ID	Symptoms	Behavior after you install the update	Available since
KB0074063	<p>CSV and PDF reports for Software Installations (Deprecated) panel do not show Total Runs number for usage data</p>	<p>Total Runs number exported into reports</p>	9.2.17
KB0073902	<p>Data Import fails when two scan results exists for a given computer</p>	<p>Additional erroneous files are discarded. Only file assigned to given computer is imported.</p>	9.2.17
KB0073349	<p>Bundling status widget causes Data Import to fail</p>	<p>Data import is successful</p>	9.2.17
KB0073035	<p>Unable to download PVU Audit snapshot</p>	<p>Successful download of PVU Audit snapshot</p>	9.2.17
KB0072803	<p>Column reorder is not updated when column selection is changed</p>	<p>Column selection and reorder preserved for scheduled reports</p>	9.2.17
KB0073085	<p>Missing data due to a reaggregation issue</p>	<p>Re-aggregation requests are correctly set in identified scenarios</p>	9.2.17
KB0072802	<p>Import errors - Cannot insert duplicate key row for Software Users</p>	<p>Software Users are imported properly</p>	9.2.17
KB0074680	<p>Adobe PhotoShop applications usage statistics</p>	<p>Correct Adobe PhotoShop applications usage statistics</p>	9.2.17

ID	Symptoms	Behavior after you install the update	Available since
	are not accurate on Mac OS	on MAC OS	
IJ19251	The Initiate Software Scan fixlet should verify the OS platform as Docker scan is supported only on Linux.	The Initiate Software Scan fixlet is updated.	9.2.17
IJ18134	When a docker image does not have any .SWIDTAG signature file inside, the following error message is returned: cp: cannot stat '/var/opt/BESClient/LMT/CIT/docker/images/z987654321y0/*': No such file or directory	The issue does not occur	9.2.17
IJ17594	PVU table specifies 120 PVUs for the IBM z14 LR1 (3907) Rockhopper 1 processor. However, the value should be 100 PIUs	PVU table is updated	9.2.17
IJ17219	Run Capacity Scan on Virtualization Hosts fails with the Exit Code 1 on KVM hosts.	Run Capacity Scan on Virtualization Hosts on KVM	9.2.17

ID	Symptoms	Behavior after you install the update	Available since
		hosts runs successfully	
BI-23	Cannot create disconnected datasource - Something went wrong	Issue resolved	9.2.17
BI-17	Issue with formatter SAMprocessors_by_- computer_type_fo rmatter: handling nil values	Formatter corrected to handle nil values	9.2.17
BI-58	Modify schwrapper.vbs in disconnected scanner to avoid false spyware detection	No false spyware detection for schwrapper.vbs	9.2.17
BI-111	Windows installer: installer hangs when trying to stop BI server.	Issue resolved	9.2.17
BI-18	'NaN.undefined' instead of <no data> in Average Runs per Day	<no data> presented properly in Average Runs per Day	9.2.17
BI-217	BFI upgrade fails due to database schema update issue caused by invalid entry in software catalog	Invalid entry in software catalog does not impact upgrade	9.2.17

## Keeping BigFix Inventory up-to-date

BigFix Inventory updates and content packs are released periodically. Ensure that you upgrade the BigFix Inventory server with each release to take advantage of the new features and apply the application patches.

### Periodical updates

#### Release of a BigFix Inventory BigFix Inventory application update

BigFix Inventory BigFix Inventory update is released periodically, typically at the end of each calendar quarter. The update contains a variety of new and improved features as well as the application patches. BigFix Inventory BigFix Inventory version increments with each release, and is independent of the version of the BigFix platform.

### Release of a content pack

Apart from application updates, a content pack is released usually at the end of each month. A content pack provides new discovery capability for a number of software components, and might contain modifications to fixlets. Content pack does not upgrade the BigFix Inventory server.

## How to turn on automatic notifications about application updates and content packs

To keep current with BigFix Inventory BigFix Inventory and receive notifications about application updates, subscribe to [Announcements for BES Administrators](#). After you subscribe, you will receive e-mail notifications related to the announcements.

## Information about the latest releases and content packs

- For a list of features added in a particular application updates, see: [What's new \(on page ix\)](#).
- For a list and description of every release and content pack as well as the list of patches, see [<discontinued> Updates and patches for BigFix Inventory up to version 10.0.13.1 \(on page lxxv\)](#) and [<discontinued> Release notes up to version 10.0.13.1 \(on page cxxxv\)](#).

## Currency of BigFix Inventory components

### Keeping BigFix Inventory up-to-date

It is important to upgrade BigFix Inventory server with each release. You do not need to upgrade the remaining infrastructure components, such as the BigFix server or clients that frequently. BigFix Inventory is compatible with any supported version of BigFix. Upgrading the BigFix Inventory server resolves the majority of known defects and allows you to take advantage of the newly developed and improved features.

### Versioning of the BigFix Inventory components

Versions of BigFix Inventory and the BigFixplatform are independent and they differ.

**9.2.15** Starting from application update 9.2.15, the version of the application update and versions of the internal tools of BigFix Inventory, such as, the scanner, SAP Metric Data Collector and VM Manager tool are unified. In this update the version of each component is 9.2.15. In the future, the version of each component will change to the version of the application update only when this component will change.

### Updating BigFix Inventory components

To make sure that your BigFix Inventory architecture is up-to-date, analyze the list of actions according to their priority.

1. [Upgrade to the newest version of](#) (on page [dcccxxiii](#))
2. Stop your active actions, and then restart them using the newest versions of fixlets.
3. Upgrade the internal BigFix Inventory tools, such as, the scanner, SAP Metric Data Collector and VM Manager tool. For more information, see: [Installing the scanner](#) (on page [dcviii](#)) and [Updating VM Manager Tool](#) (on page [dccccli](#)).
4. Optional: Upgrade the BigFix platform components. This step is optional and mainly depends on your business needs and requirements. Upgrading the platform might be related to the security measures as each update might bring a number of security enhancements. From BigFix Inventory perspective, upgrading BigFix is usually not required for BigFix Inventory to work properly. The majority of the features are independent and work with older versions of the platform.

## Ensuring currency of scanner actions and fixlets

Make sure that the scanner actions that are running on your endpoints are updated after each application release. The fixlet names contain the information about version to help you easily determine which actions are activated with the outdated fixlets and should be restarted after the application update.

### Versioning of fixlets

**9.2.15** Starting from application update 9.2.15, names of all BigFix Inventory fixlets include their version in brackets, for example; **Initiate Software Scan (9.2.15.0)**.

The fixlet version is updated with each release of the product, regardless of whether the definition of the fixlet changed. However, the versions of the internal tools, such as the scanner, SAP Metric Data Collector and VM Manager tool are updated only when these tools change. Therefore, it might occur that the version of the installation or upgrade fixlet and the version of the tool that it deploys differ.

### Best practices

#### Limit modifications of the fixlet names

Do not modify the entire name of the fixlet, but rather add a meaningful prefix or suffix to it. Keep the version in the fixlet name, so that it is reflected in the name of the initiated action. Thanks to this, you can easily distinguish the actions that are initiated with different version of the fixlet.

#### Ensure currency of your scanner actions

Your actions are not automatically updated upon installing a new application release. Whenever new version of fixlets are available, restart your current actions. To check what actions to restart, compare the names of the active actions with the names of the relevant fixlets. If the versions that are included in these names are different, restart the actions.

To restart the single scanning action, perform the following steps.

1. Go to the BigFix console, and select **Actions** in the navigation tree.
2. Right-click the chosen action, and select **Stop Action**.

3. Go to **Sites > External Sites > BigFix Inventory**.
4. Choose **Fixlets and Tasks**, select the fixlet that you want to restart and click **Take Action**. Make sure that the fixlet parameters are the same as those set in the previously stopped action.



**Note:** BigFix Inventory server is compatible with the actions that were initiated with the previous versions of the server. However, only by ensuring the currency of your scanner action and fixlets you take advantage of new features and improvements that are implemented in the new release.

### Plan ahead

Plan ahead and be ready to restart your current actions every time a new release of BigFix Inventory is installed. The plan should be aligned with your business needs and should not prevent you from upgrading the server.

## Features and functions

BigFix Inventory provides useful features for managing physical and virtualized environments. It discovers the software that is installed in your infrastructure, helps you to analyze the consumption data, and allows you to generate reports.

### Hardware

BigFix Inventory shows detailed information about hardware that are integrated with 3rd party applications.

### Software discovery and identification

BigFix Inventory scans your infrastructure to determine the software that is installed on the monitored computers.

### Extending software discovery with custom signatures

BigFix Inventory allows to create a custom signatures. Creating custom signatures allow you to manage software that are not discovered or are missing form the installation registry. For more information, see [Exporting and importing custom signatures \(on page mlv\)](#). BigFix Inventory includes a catalog of software products along with a set of rules called signatures. The signatures are matched against the results of the scan to build a complete overview of software that is installed in your infrastructure.

### Software usage monitoring

BigFix Inventory leverages the capabilities of BigFix Platform to show a statistical data about software usage.

### IBM license usage reporting and compliance

BigFix Inventory, a replacement of IBM License Metric Tool, is an IBM certified application for IBM sub-capacity.

BigFix Inventory provides the information that is needed to ensure compliance with Processor Value Units (PVU), and Resource Value Units (RVU MAPC) audit reports licensing terms.

BigFix Inventory calculates the maximum core capacity of the server that is available to the installed IBM software. The application also determines the number of processor value units (PVU) or processor-core entitlements that are required. If you deploy a supported virtualization technology, the tool provides processor core capacity information for the whole virtualized environment.

You can generate IBM permitted audit snapshot for IBM PVU and IBM RVU MAPC in your infrastructure.

## Enterprise software discovery and license usage reporting

BigFix Inventory has capabilities to discover selected enterprise software and calculate its license usage.

## Verification for Oracle Java SE and Oracle Database and Database Options usage data collection

**10.0.15** BigFix Inventory is a verified third party tool (alternative to the Oracle Collection Tool) for Java SE: <https://www.oracle.com/corporate/license-management-services/tooling.html>. For more information about the procedure to generate Oracle Java auditing data, refer to Collecting Oracle Measurements Data.

**10.0.16** BigFix Inventory is a verified third party tool (alternative to the Oracle Collection Tool) for Oracle Database and Database Options: <https://www.oracle.com/corporate/license-management-services/tooling.html>. Oracle database auditing information is included in the same package as Oracle Java information. For more information, refer to Collecting Oracle Measurements Data.

## Preview features

BigFix Inventory provides a set of preview features that give you a chance to take a sneak peek at what we are currently developing and researching. Whether it is a small function or an extended report, you can check how it works and tell us about your ideas. The previews can change with each release, which means that you can still influence their final form.

### Disclaimer

The preview features are subject to change and can be modified and improved based on the customer needs and feedback. Some previews might gradually subside or be entirely removed from the product.

### Providing your feedback

Your feedback is crucial for the development team and your comments and suggestions are very much appreciated. Test the new features and let us know what you think and what can be improved. Use the following communication channels to provide your feedback at [talk2sam@hcl.com](mailto:talk2sam@hcl.com).

## Limitations

Review the list of BigFix Inventory limitations. For information on IBM limitations, refer to [IBM limitations](#).

## Installation and configuration

- **Limited information about version of some components**

The component version of some components that is not installed through RPM package version is displayed as *n/a*.

There are multiple methods to install a software. The one method is through the RPM package installation and another is by directly downloading the executables to the disk. For RPM based installation BigFix Inventory can detect the component version and signatures are available in BigFix Inventory. If an application is installed by directly copying the executables or downloading the files to the disk, the component version is not detected. Only installed software is detected in this case. On Linux and Unix Operating System, executables do not include metadata to read the header for obtaining the version details. To avoid potential security breach, BigFix Inventory does not discover applications by running application files or executables.

- **Support for Distributed Server Architecture (DSA) is limited to one backup server**

Distributed Server Architecture (DSA) allows for setting up multiple BigFix servers that can replicate data between each other. BigFix Inventory does not support failover but BigFix Inventory can work with BigFix Inventory configured in DSA mode. It is recommended to configure BigFix Inventory server with primary BigFix Inventory server. If the configured BigFix Platform server fails, BigFix Inventory server imports continues to fail. It is recommended to restore BigFix Inventory and discontinue using BigFix Inventory as a primary server. If you need to switch to BigFix Inventory server as primary server, you need to reconfigure existing data source with BigFix Inventory and then resynchronize datasources through [resynchronize\\_datasources\\_once \(on page dcccclxvi\)](#) parameter in **Advanced Server Settings**."

- **Microsoft™ SQL Server used as the BigFix database cannot be case sensitive**

Only case insensitive Microsoft™ SQL Server database is supported.

- **Changing the host name of the BigFix server is not supported**

The host name of the BigFix server cannot be changed because it is recorded in the license certificate during the installation. To change the host name of BigFix, reinstall the application.

- **Creating clones of virtual machines that are running is not supported**

Cloning virtual machines that are running might produce unexpected results in BigFix Inventory.

- **Language of the installer depends on the system locale**

To run the BigFix Inventory installer in a language other than English, system locale must be set to that language.

- **Permissions that are defined for the Administrator role cannot be changed**

The Administrator role is assigned all available permissions. It prevents from creating separate Administrator roles, for example one responsible for data, the other for users.

## Using BigFix Inventory

- **The scanner does not scan paths that contain certain whitespace characters and other special characters**

The scanner does not scan file paths that contain the following whitespace characters:

- Carriage return (CR, character code 13)
- Line feed (LF, character code 10)
- Whitespace characters whose decimal codes are in the following ranges: 0- 8, 11-12, 14-31

It also does not scan shared disks whose mount point paths contain an asterisk (\*) or a question mark (?). To avoid a situation in which software is not discovered, ensure that files paths in your infrastructure do not contain the unsupported characters.

- **Software installed in the `/Libraries` directory on Mac OS X is not discovered**

Only software that is installed in the `/Applications` directory is discovered.

- **Information about Mac OS X computers is not presented on the IBM Capacity Data Completeness widget**

Computers running on Mac OS X are not included in the computer count on the IBM Capacity Data Completeness widget. It happens because the types of scans that produce results displayed on this widget are not run on Mac OS X. However, these computers are included in the computer count on the Scan Health widget. It causes that the overall number of computers displayed on each widget is different.

- **Calculating utilization of the Managed PVU metric requires an additional configuration of BigFix Inventory**

Managed PVU metric is based on the number of processor cores available on computers that are managed by an application, for example by BigFix Spectrum Protect for Virtual Environments. Calculating utilization of the Managed PVU metric is not available out of the box. To calculate its utilization, place an appropriate `isotag` file on the computers that are managed by the particular application.

- **Creating contracts and catalog customizations for IBM products is limited**

IBM provides catalog content that allows for discovering practically all IBM products. Due to internal reasons, entries for some products are duplicated in this catalog. Thus, it is not possible to modify the correct entry and creating contracts for IBM products might not work correctly. Moreover, BigFix Inventory supports contracts only for installation-based licenses which are not applicable to the majority of IBM products. Creating contracts for IBM products and customizing BigFix products in the software catalog is discouraged.



**Note:** This limitation is applicable to the old contracts that were created before BigFix Inventory version 10.0.5.

**10.0.5** The new contracts are shown only for first 20 computer groups. The contracts for any computer group that is beyond 20 is excluded from the report. Computer groups are selected as per the order they were created (computer ID). It excludes the computer groups that have metrics disabled. However, you can select the computer groups using the `'new_contracts_max_computer_groups'` and `'new_contracts_selected_computer_groups'` hidden parameters from the [Advanced Server \(on page dcccliii\)](#) settings.

- **Signatures with the same GUID and different rules might be overwritten**

When you import a signature that has the same GUID as a signature that already exists in BigFix Inventory and the new signature has a different number of rules than the existing one, the signatures are not merged. Instead, the new signature overwrites the existing one. The problem does not occur when the imported signature has a different or no GUID.

- **Software is detected twice if a custom catalog entry is the same as an entry in the BigFix catalog or an entry generated from an `isotag` file**

If you create a custom catalog entry which has the same publisher name, software name, and version as an entry in the BigFix catalog or an entry generated from an `isotag` file, both the custom and original entry is visible as detected.

- **`slmtag` files with overlapping entries are not supported**

Start time of one entry in an `slmtag` file cannot overlap with the previously reported period. It should start at the end time of the previous entry or later.

- **Adding excluded directories fails on Solaris when the number of characters in the task exceeds 1000**

When you use the Add Excluded Directories task and the specified list of directories is longer than 1000 characters, the task fails on Solaris.

- **Specific start time cannot be set for actions by using REST API**

BigFix REST API requires that the start time for an action is specified as an offset from the time on the BigFix server. The solution is prone to network latency problems. It might cause that the action starts at time different from the intended one.

## Reports

- **Custom rule to suppress the discovery of software components of publishers from SWID tags**

**10.0.2** **10.0.4** With improvements for ISO SWID tags processing in versions 10.0.2 and 10.0.4, BigFix Inventory is capable to read information from most ISO SWID tags released by vendors. This includes the ability to recover from issues within the tag itself.

Reporting of software through ISO SWID tags is not normalized and the reports are shown as usual. Currently, the following ISO SWID tags were identified that results in duplicate discovery of existing software catalog entries with below names:

- with the published defined as: Adobe Systems Incorporated
- with the published defined as: Microsoft Corporation
- with the component name of: Red Hat Enterprise Linux

**10.0.4** Starting from version 10.0.4, predefined custom rules have been created to suppress the duplicate discovery of software which have been already discovered once. **10.0.9** With version 10.0.9, the issue of not

marking already discovered software have been addressed. In future releases, there might be added capability to reject ISO SWID tags overlapping with catalog content.

- **Reports show the current PVU per core value instead of the value that occurred during the license peak time**

All Metrics reports including IBM Subcapacity reports and the audit snapshot show the current PVU per core value instead of the value that occurred during the license peak time. It does not affect the calculation of PVU subcapacity and full capacity. To display the value that occurred during the license peak on the reports, change the start date of the report to a more recent date. Try changing the date until you find the date when the PVU per core value changed. It allows you to have consistent information displayed on the reports.

- **Data on the Software Installations report is inconsistent with data on other reports**

Information on the Software Installations report regarding software installed on shared disks or components installed multiple times on the same computer is inconsistent with information on other reports. The inconsistency occurs also when a column on a report links to a filtered view of the Software Installations report such as in case of the Installed Software column on the Computers report. It happens because the Software Installations report is based on the old data model that does not take shared disks and multiple component instances into account.

**9.2.15**

Starting from application update 9.2.15, the old Software Installations report is deprecated and substituted with a new report view. It is based on a new data model and consistent with other reports. The limitation no longer applies.

- **Scheduling multiple report e-mails requires ensuring an appropriate interval between each report e-mail**

When you schedule multiple reports to be sent to your email, you must ensure that they are not being sent at the same time. The reason is that each report is managed in a different session that starts when the report is being sent, and ends when the action is completed. Each closed session, however, terminates also other sessions, in this case the delivery of other reports. Therefore, the schedule must be different for each report. The sufficient interval is about 5-10 minutes. You can specify it while setting the start time.

- **Audit Trail limitations**

Audit Trail report cannot be filtered by the Details column and does not contain information about uploads and imports of part numbers. What is more, audit trail does not contain information about software classification when either component, product or both are non-IBM.

- **Non-IBM software discovered both on a local system and a shared disk is shown only as installed locally**

When non-IBM software is installed on a local system and on a shared disk, it is shown only as installed locally on the Software Classification panel.

- **Filtering computers based on their IP addresses does not work under certain conditions**

When you filter your computers based on their IP addresses and specify the relation as `ends with`, no computers are displayed even if some computers match the criteria. To work around this issue, you can choose other relations, such as `contains` or `begins with`. This limitation concerns all reports.

- **Filtering by installation path does not work under certain conditions**

When the installation path is specified as report filtering criteria, and contains `-1`, for example: `C:\My_App-1`, the filter returns inaccurate results. The filter returns not only the content of the specified directory, but also all non-IBM products that are installed on the computer.

- **Filtering causes that the content of the window is scrolled up**

When you filter a report by using the `in set` filter, the content of the entire window is scrolled up to the top. You have to scroll down to add another filter.

- **Incorrect number of rows can be displayed on reports that are saved as PDF files**

The number of rows that is displayed in the upper right corner of a PDF file can differ from the number of rows that is displayed on the user interface. This problem was only encountered with Mounted Shared Disks column in the Computers report because it contains multi-line entries.

- **Time values are provided in different time zones on the user interface and in PDF or CSV reports**

On some reports, time values are expressed in the local time zone when the report is viewed on the user interface but in the UTC time when the report is exported to a PDF or CSV file. What is more, the format of the date and time is hardcoded in PDF reports.

- **Signature definitions are not available on the Catalog Audit report for custom signatures that were deleted**

When you delete a custom signature from the software catalog, definition of this signature is not available on the Catalog Audit report. The definition section is empty.

- **Package Data limitations**

The version format on Package Data report may differ for disconnected software scan results when compared to regular scan results. For disconnected scan, the dash (-) is replaced with a period (.).

For example, the version shows as follows:

- Disconnected scanner reports: 1.8.3.1.11.e17
- Regular scanner reports: 11.8.3.1-11.e17



**Note:** The limitation is applicable to Linux Disconnected Scanner version 10.0.12 and lower, and all versions of Unix disconnected scanner.

On Solaris platform, inconsistencies in Package Data report version may happen because of collecting data from various package managers. Disconnected scanner does not support IPS package manager.

On Windows platform, InstallDate for Uninstall Registry may have various formats such as "20190801", "Jan 26, 2023", "2023/1/25", or "Tue Sep 27 16:12:01 CEST 2022". The resulting date will be in the local time zone due to technical limitations of VBS.

The character encoding used for the install location is determined by the regional settings of the operating system. If the character encoding of the registry entry does not match the regional settings, the path may contain question marks. However, MSI packages fully support character encoding in their location paths.

- **Non-English characters are incorrectly displayed on the Package Data report for IBM i systems**

If the name of a package that is discovered on an IBM i system contains non-English characters, the characters are incorrectly displayed on the Package Data report.

- **Sorting by name does not work on the predefined reports.**

## Security

- **SP800-131a compliance cannot be enabled with Microsoft™ SQL Server**

If the SP800-131a cryptographic standard is enabled in strict mode in BigFix Inventory and the enhanced security mode is configured on the BigFix and MS SQL servers, connection between the BigFix Inventory server and the SQL Server cannot be established.

- **The pvk format of the encrypted private key is not supported**

You can use an encrypted private key in the openSSL or pkcs8 formats.

- **Key pair generated for BigFix Inventory can be used for Web Reports only if the private key is not password-protected**

## Other

- **Custom page URL does not work on Microsoft Edge**

The Custom Rule URL, accessed throughout **Management > Custom Rules > Rule Details** page may not work on Microsoft Edge because of the browser's limitation in handling the length of URL.

- **The To Do List displays the names of outdated scanning actions always in English.**

- **Catalog search does not work during the import of data** - This is applicable to versions lower than 10.0.4.

- **Fixlet for distributing scanner catalogs to the endpoints is not translated**

The Catalog Download (Version: *version*) fixlet is a custom fixlet that is not delivered with the BigFix Inventory fixlet site. Thus, it is not translated.

- **Process IDs are not present in audit snapshots**

- **Eastern Arabic numerals are not supported**

## Key concepts

There are several concepts that will help you to understand how BigFix Inventory works and how to use it effectively.

### Dashboard

The dashboard provides with a quick access to information about deployments, scans, computers, and software assets in your infrastructure.



**Note:** To provide feedback about the dashboard, write to [talk2sam@hcl.com](mailto:talk2sam@hcl.com).

#### 10.0.2 Dashboard and reports

Starting from 10.0.2.0, BigFix Inventory default dashboard displays vendor-specific predefined reports available in dashboard summary of the selected inventory reports and a preview of the security features. The reports are grouped in a specific order. For more information, refer to [Vendor-specific predefined reports available in dashboard Inventory Reports \(on page cmvii\)](#).

To view the old dashboard, click **Inventory Health**. You can set the previous or new dashboard as your default dashboard when required. To do so, click the **user** icon and select **Set as homepage**.

The screenshot shows the BigFix Inventory dashboard interface. At the top, there is a navigation bar with 'BigFix Inventory', 'Reports', and 'Management' menus. Below the navigation bar, the main heading is 'Overview: Inventory Reports' with a sub-link 'Inventory Health'. A search bar is present with the text 'Discovered Software' and a search icon. The dashboard content is organized into several sections:

- Welcome to the dashboard:** A message stating 'The dashboard shows a summary of selected inventory reports and a preview of security features.'
- Software Vendor Reports:** A grid of six report cards:
  - Adobe Reports: 5
  - HCL Reports: 2
  - IBM Reports: 7
  - Microsoft Reports: 10
  - Oracle Reports: 10
  - SAP Reports: 3
- VMware Reports:** A single report card showing 3 reports.
- Computers:** Two report cards:
  - Computers: Discovered in the last 2 weeks: 66
  - Computers: No Scan Attempt in the last 2 weeks: 38
- Software:** Three report cards:
  - Software: Discovered in the last 2 weeks: 1344
  - Software: Out of support: 116
  - Software: Approaching end of support: 9

The reports are grouped to help you find all your related reports together. For more information about the reports, refer to [Available reports \(on page mlvi\)](#).

Use the search option to search your preferred reports. You can search with file name, file hash, CVE name, and software component. To search your preferred files, use File Name or File Hash. Enter the software component name to discover the software. To search data about vulnerable software, use CVE name. The default search filter is set to **Discovered Software**.

**10.0.5** The quick search on the top right corner allows you to search contracts with contract name.

## Inventory Health

If you use BigFix Inventory 9.2.12 or earlier, your dashboard contains the following widgets:

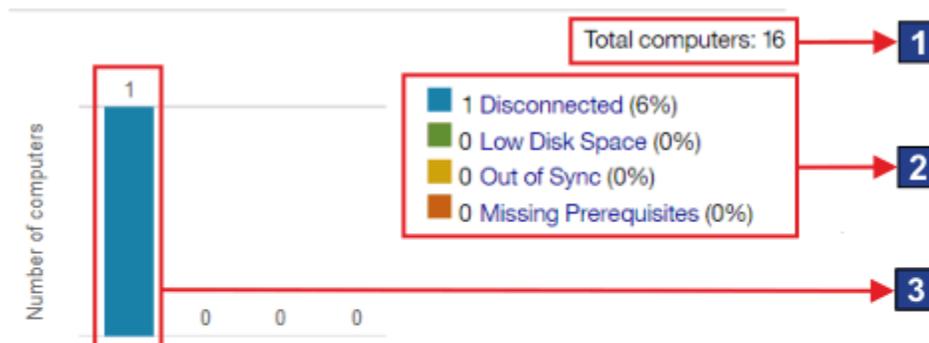
- [Deployment Health](#) (on page ccclxxii)
- [Software Scan Health](#) (on page ccclxxiii)
- [Capacity Scan Health](#) (on page ccclxxiv)
- [IBM Software Classification](#) (on page ccclxxv)

## Deployment Health

Deployment Health widget shows whether BigFix clients that are installed in your infrastructure are connecting to the BigFix server. It also reports the most common issues that occur when clients are operating such as, problems with disk space or missing scanner prerequisites.

**i** **Tip:** Read the Deployment Health, Scan Health, and IBM Capacity Data Completeness widgets from left to right and fix issues in the same order.

### Deployment Health



Last successful complete import at 05/30/2018 03:15 AM

To learn more about troubleshooting the problems, see the help topic

[Agent problems.](#)

### Elements of the widget

- 1** The total number of computers to which the user has access. The number is determined by the computer group to which the user is assigned.

**Mac OS X** The total number of computers includes Mac computers. However, information about deployment health is not collected from these systems. Thus, they are not included in the counts for particular statuses.

**2** Links to the report with results narrowed down to computers with the particular status.

**3** The number of computers with a particular status.

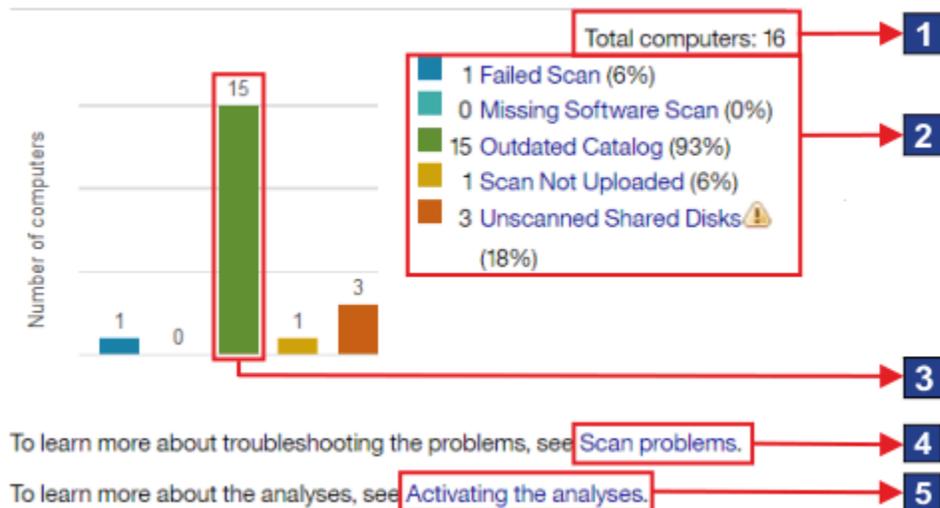
**4** Link to information about [actions that you can take to resolve the reported problems \(on page mcccxi\)](#).

## Software Scan Health

The Software Scan Health widget shows the health of scans that are running in your infrastructure. When software scans are not working correctly, the installed software might not be discovered.

**!** **Important:** The Software Scan Status analysis must be activated for the widget to show valid data. If the analysis is not activated, all computers are reported with the Failed Scan, Missing Software Scan, and Outdated Catalog statuses.

### Scan Health



### Elements of the widget

**1** The total number of computers to which the user has access. The number is determined by the computer group to which the user is assigned.

**Mac OS X** The total number of computers includes Mac computers. However, only information about the status of the package data scan is collected from these systems. Therefore, Mac computers are

included in the count for the Failed Scan status. They are not included in the counts for the remaining statuses.

**2** Links to the report with results narrowed down to computers with the particular status.

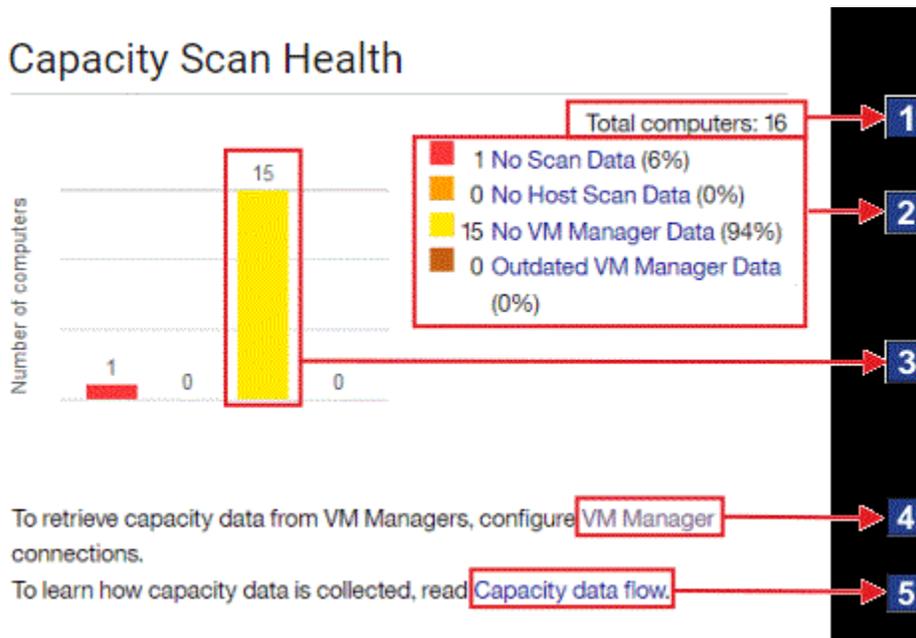
**3** The number of computers with a particular status.

**4** Link to information about [scan problems](#) (on page [mccclxxiv](#)).

**5** Link to information about [activating analysis](#) (on page [dcvii](#)) required to collect data that is displayed on the widget.

## Capacity Scan Health

The Capacity Scan Health widget shows whether capacity data is correctly gathered from the computers in your infrastructure. The lack of capacity data might impact calculation of PVU consumption.



### Elements of the widget

**1** The total number of computers to which the user has access. The number is determined by the computer group to which the user is assigned.

**Mac OS X** The total number of computers includes Mac computers. However, information about capacity data is not collected from these systems. Thus, they are not included in the counts for particular statuses.

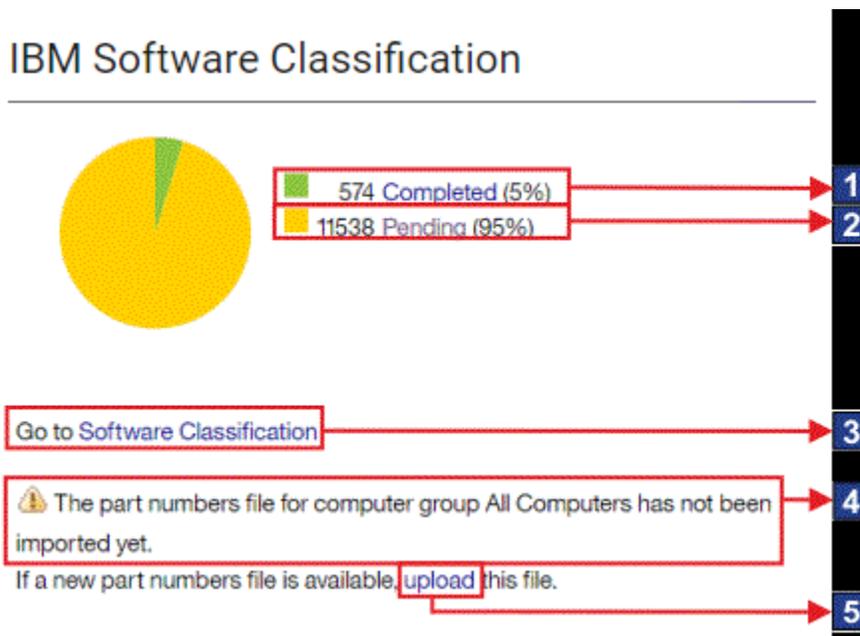
- 2** Links to the report with results narrowed down to computers with the particular status. For more information about each status, see: [Computer statuses \(on page dcclix\)](#).
- 3** The number of computers with a particular status.
- 4** A link to the **VM Managers** panel.
- 5** A link to information about the [flow of capacity data \(on page dccxc\)](#) between virtual machines, VM Manager tool, and the BigFix Inventory server.

## IBM Software Classification

The widget shows the number of completed and pending classifications of the software that is installed in your infrastructure.

The accuracy of the displayed data depends on when the scan data was imported and whether the part numbers file is up-to-date. If any of these factors was changed, an appropriate message is displayed on the widget.

If the widget shows `No data`, the data is not available. It might occur when scan data was not uploaded, the upload of the data has not finished yet, or inventory scans do not work properly. The message is no longer displayed if scan data from at least one BigFix client is successfully updated.



### Elements of the widget

- 1** A link to the Software Classification panel with results narrowed down to software installations with complete classification.

**2** A link to the Software Classification panel with results narrowed down to software installations that are still pending classification completion. Go through these items and either confirm their default assignment or reassign them to different products so that all installations in your infrastructure are confirmed.

**3** A link to the Software Classification panel.

**4** The date when the last part numbers file was imported.

**5** A link to the **Part Numbers Upload** panel on which you can upload the part numbers file.

## To Do list

**9.2.13** Available from 9.2.13. The To Do list provides you with information about items that might require your action including failed imports of data, availability of a new version of BigFix Inventory or the need to configure a connection to VM managers.

### To Do items

The number of To Do items is indicated by the number that is displayed on the To Do icon . It is shown until the appropriate action is undertaken, which can be done if you are an Administrator or have the required permissions. Otherwise, you are advised to contact the BigFix Inventory Administrator to undertake the action for you. To update the To Do List, refresh the BigFix Inventory user interface.

**Table 49. Information that is displayed on the To Do list**

Type of information	Details
<b>10.0.5</b> Duplicate UUID issue	States that there are computers with duplicate UUIDs (universally unique identifier). The list of computers with duplicate UUIDs is shown in the <a href="#">import log (on page mcdxii)</a> .  For information on troubleshooting, refer to <a href="#">Duplicate UUIDs problem (on page mcccxxix)</a> .
Failed data and catalog import	Shows the date and time when the data import has failed along with the date and time of the last successful import.
<b>10.0.3</b> Failed catalog import	Shows the date and time when the catalog import has failed along with the date and time of the last successful import. For more information, refer to <a href="#">Notifications that are sent when imports of data and catalogs fail (on page dclxxvii)</a> .

**Table 49. Information that is displayed on the To Do list (continued)**

Type of information	Details
<b>10.0.3</b> Failed IBM catalog import	Shows the date and time when the IBM catalog import has failed along with the date and time of the last successful catalog import.
Availability of a new version of BigFix Inventory	Provides information about the new version of the BigFix Inventory server that is available as well as the version that you are currently running.
The need to configure connections to virtualization hosts	Provides information about the need of configuring connections to VM managers to avoid overcounting subcapacity licenses. For more information about the impact of not configuring connections to VM managers, see: <a href="#">Managing VM managers (on page dcclxi)</a> .
<b>9.2.15</b> Outdated scanning actions	<p>Provides information about the scanning actions that are running and which were started using the older versions of the Initiate Software Scan and Upload Software Scan Results fixlets. To address this issue, restart these action in the <b>BigFix Inventory</b> fixlet site. For more information, see: <a href="#">Ensuring currency of scanner actions and fixlets (on page ccclxii)</a>.</p> <p> <b>Note:</b> The To Do List displays the names of outdated scanning actions in English.</p> <p> <b>Note:</b> The action does not detect actions from <b>BigFix Inventory v10 (Deprecated)</b>. During the upgrade to version 11, refresh the actions and start them from <b>BigFix Inventory</b> site.</p>

### Changing the scope of the To Do list

If you are an Administrator, you can change which information is shown on the To Do list. Currently, you can disable displaying information about the need of configuring connections to VM managers. To disable the information, go to **Management > Advanced Server Settings**, and change the value of the `todo_display_vm_managers_need` parameter to false.

### Extract, Transform, Load (ETL)

The *Extract, Transform, Load* (ETL) is a process in the database usage that combines three database functions that transfer data from one database to another. The first stage, *Extract*, involves reading and extracting data from various source systems. The second stage, *Transform*, converts the data from its original format into the format that meets the requirements of the target database. The last stage, *Load*, saves the new data into the target database, thus finishing the process of transferring the data.

In BigFix Inventory, the *Extract* stage involves extracting data from the BigFix server. The data includes information about the infrastructure, installed agents, and detected software. ETL also checks whether a new software catalog is available, gathers information about the software scan and files that are present on the endpoints, and collects data from VM managers.

The extracted data is then transformed to a single format that can be loaded to the BigFix Inventory database. This stage also involves matching scan data with the software catalog, calculating processor value units (PVUs), processing the capacity scan, and converting information that is contained in the XML files. After the data is extracted and transformed, it is loaded into the database and can be used by BigFix Inventory. The hardest load on the BigFix Inventory server occurs during ETL when the following actions are performed:

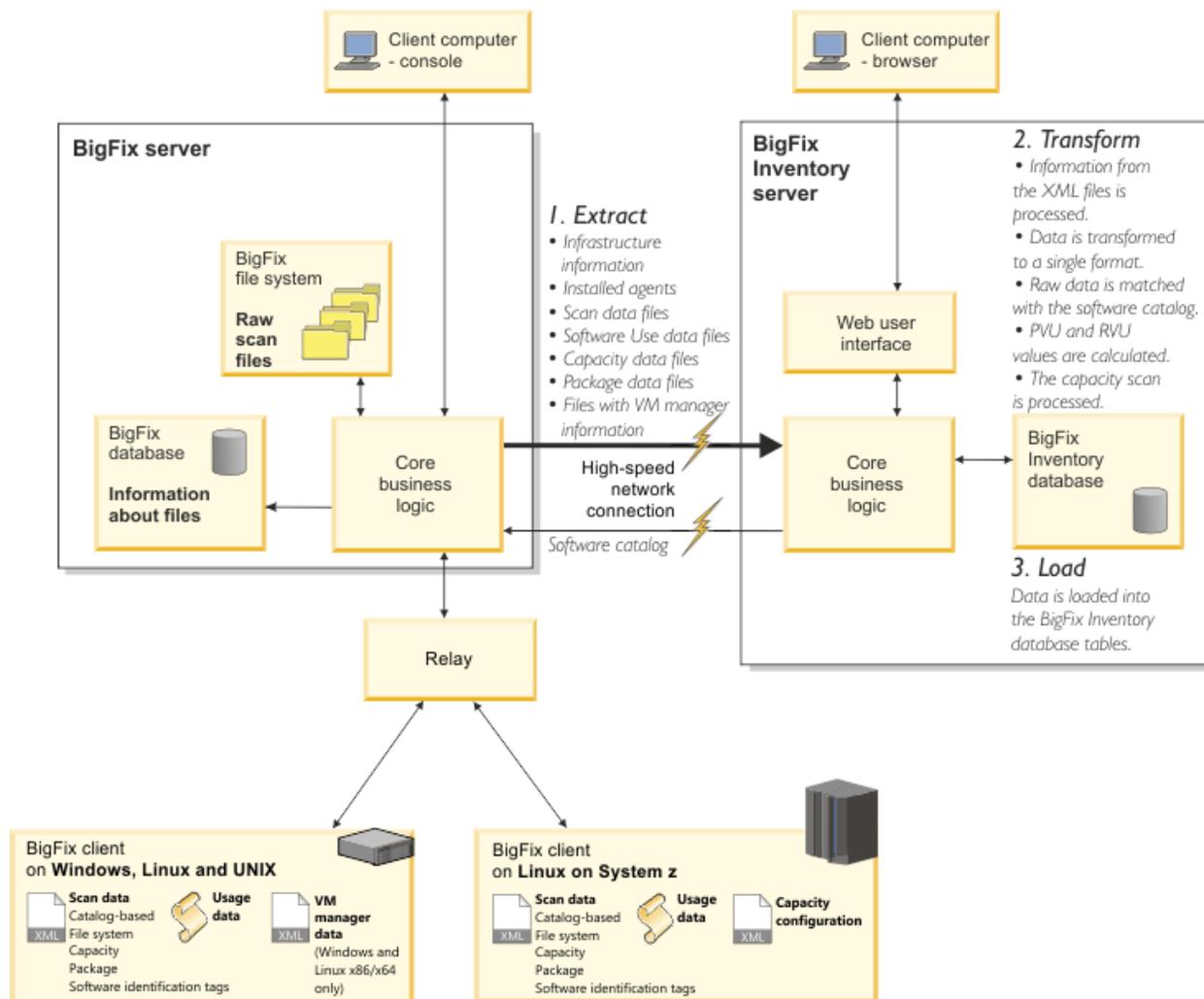
- A large number of small files is retrieved from the BigFix server (Extract).
- Many small and medium files that contain information about installed software packages and process usage data are parsed (Transform).
- The database is populated with the parsed data (Load).

At the same time, BigFix Inventory prunes large volumes of old data that exceeds its data retention period.

Performance of the ETL process depends on the number of scan files, usage analyses, and package analyses that are processed during a single import. The main bottleneck is storage performance because many small files must be read, processed, and written to the BigFix Inventory database in a short time. By properly scheduling scans and distributing them over the computers in your infrastructure, you can reduce the length of the ETL process and improve its performance.

An important factor that influences the duration of the ETL process is the amount of updates on the file system since the last scan. Such operations as security updates or significant system upgrades can cause ETL to run longer, because it has to process information about all modified files. For example, regular updates released by Microsoft on Tuesdays would significantly lengthen the Wednesday import in environments with many Windows platforms.

# Extract, Transform, and Load



## Software and hardware discovery

BigFix Inventory discovers hardware and software in your IT infrastructure.

With BigFix Inventory you can accomplish the following goals by using software and hardware discovery:

- Manage software inventory
- Monitor license consumption
- Achieve basic license compliance
- Create an inventory of hardware in the enterprise

## Infrastructure analysis

The first step, before you start discovering software and hardware, is to obtain the baseline of computers that exists in your environment. Estimate the total number of computers and organize them into computer groups in the BigFix console to avoid overloading the infrastructure.

## Discovery of software and hardware

Collect information about your software, license compliance and hardware inventory. It is commonly achieved by activating the capacity and software scans in the BigFix console. For more information, see: [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

Discovery	Description
<b>Software inventory</b>	<p>Software inventory is analyzed by the scanner that searches for different types of information to determine whether the software is installed or to measure its usage. You should set up the appropriate software scans during the initial configuration of BigFix Inventory. For more information, see: <a href="#">Types of software scans (on page dcxiv)</a>.</p> <p>Thanks to BigFix Inventory you can understand and manage your software inventory, especially through the following practices:</p> <ul style="list-style-type: none"> <li>• Discovering IBM and non-IBM software to view and classify your software inventory on the Software Classification panel.</li> <li>• Measuring utilization of license metrics that are used within your organization. You can view the details on the All Metrics report that shows utilization of the assigned license metric by all instances of a particular product. However, it is limited to a subset of license metrics. For more information, see: <a href="#">License metric utilization (on page mcxlii)</a>.</li> <li>• Estimating resource utilization of products that deliver .slmtags. The Resource Utilization report shows utilization of all license metrics that can be used by a particular product. However, the data is not aggregated and requires further processing. For more information, see: <a href="#">Raw utilization of license metrics (on page mclxix)</a>.</li> <li>• Measuring current application usage by monitoring the information about packages and files that exist on the computers in your environment. You can view the usage statistics on the Inventory Exploration and Usage per Computer report.</li> <li>• Discovering software that is installed on Mac OS. To discover software that is installed on Mac OS, run the package data scan on Mac computers. Other types of software scans are not needed. On the reports, the publisher of these products is generic and called Unclassified Mac Software because the information about the publisher is not available directly. In this case, the publisher should be considered as unknown and no manual action is required to set it.</li> </ul>

Discovery	Description
<b>Hardware information and capacity data</b>	<p>Thanks to BigFix Inventory you can collect information about the processors and the processor capacity that is assigned to each computer in your infrastructure.</p> <p><b>Capacity scan</b></p> <p>Capacity scan collects data about the physical processor, system type (physical or virtual), guest operating system, and logical partitions. It must be activated on every computer, virtualization host and virtual machine. For more information, see: <a href="#">Initiating the capacity scan on all computers (on page dcxix)</a>.</p> <p><b>Capacity scan on virtualization hosts</b></p> <p>To collect capacity data on Xen and KVM hosts, you need to activate an additional fixlet: Run Capacity Scan on Virtualization Hosts. For more information, see: <a href="#">Collecting capacity data from virtualization hosts for Xen and KVM (on page dcxxv)</a>.</p> <p><b>Capacity scan on virtual machines</b></p> <p>To collect capacity data on VMware, Hyper-V, KVM RHV-M, and Citrix Hypervisor (formerly XenServer), you must add relevant VM managers in BigFix Inventory. For more information, see: <a href="#">Adding VM managers for VMware, Hyper-V, KVM with RHV-M, Citrix Hypervisor and Nutanix (on page dcxxii)</a>.</p> <p>The hardware information and capacity data are displayed on the Hardware Inventory report.</p> <p><b>9.2.12 Detailed Hardware Scan</b></p> <p>To collect information about memory, operating systems, storage, processors, partitions, network adapters, SMBIOS data, IP addresses and logical processor capacity data, you need to activate the Collect Detailed Hardware Information fixlet. For more information, see: <a href="#">Detailed hardware scan (on page dcxxix)</a>.</p> <p>Starting from application update 9.2.12, thanks to BigFix Inventory you can collect detailed information about hardware in your infrastructure. You can retrieve this data with REST API. For more information, see: <a href="#">REST API for retrieving detailed hardware information (v2) (on page mdv)</a>.</p>

#### Related information

[Installing the scanner \(on page dcviii\)](#)

[Initiating software scans \(on page dcx\)](#)

[Uploading software scan results \(on page dcxvii\)](#)

## Fixlets, tasks, and analyses

Fixlets and tasks are central to BigFix platform. BigFix Inventory, as a part of this platform, uses them to perform required actions on selected computers. Fixlets and tasks define these actions and specify the criteria that make them relevant. Usually, an action is deployed with a simple click.

### Overview



**Note:** **11.0.0.0** BigFix Inventory version 11.0.0.0 introduces new sites for the product. Ensure that you have using correct site: **BigFix Inventory**

Fixlets, tasks, and analyses are available on the dedicated **BigFix Inventory** that can be accessed through the BigFix console.

ID	Name	Category	Source Severity	Applica...
18	Install or Upgrade Scanner in private mode on Windows (11.0.0.0)	Scanner	High	7 / 22 E
20	Run Capacity Scan and Upload Results (11.0.0.0)	Scanner	High	19 / 22 E
21	Discover Remote Shared Disks (11.0.0.0)	Scan Management	High	10 / 22 E
28	Disable Application Usage Statistics (11.0.0.0)	Configuration	Low	22 / 22 E
30	Add Targeting Exception to Temporarily Disable Scans (11.0.0.0)	Configuration	Low	22 / 22 E
31	Remove Targeting Exception to Resume Scans (11.0.0.0)	Configuration	Low	0 / 22 E
33	Initiate Software Scan on Shared Disks (11.0.0.0)	Scanner	Medium	9 / 22 E
36	Collect Detailed Hardware Information (11.0.0.0)	Scanner	Medium	19 / 22 E
63	Add Excluded Directories (11.0.0.0)	Scan Management	Low	22 / 22 E
64	Remove Excluded Directories (11.0.0.0)	Scan Management	Low	22 / 22 E
65	Configure File Checksums Collection (MD5/SHA-256) (11.0.0.0)	Scan Management	Low	22 / 22 E
66	Configure Collection of Additional Properties of Windows Executables (11.0.0.0)	Scan Management	Low	6 / 22 E

**Task: Run Capacity Scan and Upload Results (11.0.0.0)**

**Description**

This task runs the capacity scan to retrieve subcapacity data from the specified endpoints. If the action is completed, it means that the results were gathered and uploaded from the endpoints.

There are two modes of the capacity scan:

- Regular capacity scan
- Single capacity scan

Regular capacity scan runs every 30 minutes by default and gathers hardware information necessary to calculate

For more information, see: [Sites](#) in the BigFix documentation.

### Relevance

You can run a fixlet or task only on the computers for which it is relevant. Relevance indicates which computers meet the relevance conditions that are listed for each fixlet or task on the Details tab. The Applicable Computer Count column shows the number of computers that apply. Relevance is determined per computer, and is continuously re-evaluated by BigFix. It helps you understand the sequence of actions. In some cases, it might be required to run one fixlet or task, to enable action defined by another. Relevance of the deployment fixlets indicates that a new component version is available, and you should run it to ensure that the latest code level is used. For more information, see: [Fixlets and tasks](#) in the BigFix documentation.



**Note:** If you need to run a task on a computer that is not relevant, see: [Checking why a fixlet or task is not relevant \(on page mcdxx\)](#).

## Analyses

Analyses provide an overview of the most important information about the computers in the environment, the installed scanner version, or status of the last software scan. You can use these details to monitor health and understand if all necessary actions were successfully completed. For more information, see: [Analyses](#) in the BigFix documentation.

## Initial configuration

The required configuration fixlets and tasks ensure that BigFix Inventory works properly.

If you selected **Enable default scan schedule for this data source** during initial configuration, the scans are configured automatically. Otherwise, you must configure the scans manually. For more information, see: [Manual scan configuration \(on page dcvi\)](#).

## List of fixlets and tasks

The list and description of fixlets and tasks available in the BigFix console on the **BigFix Inventory** site.

## Required configuration fixlets and tasks

There are four basic fixlets and tasks that are required to configure BigFix Inventory to collect all necessary data from the computers in your environment.

**Table 50. Required configuration fixlets and tasks**

Name	Category	Description
<b>11.0.0</b> <b>Get Oracle Database Measurements</b>	Scanner	<p>This task retrieves details regarding database editions and features utilized across your infrastructure. It executes usage reporting script, generating information about the Oracle Database and Licensable Options inventory.</p> <p> <b>Note:</b> Ensure that you collect the Oracle Data with the same version of the fixlet and the BigFix Inventory server. Different version may be incompatible.</p>
<b>10.0.15</b> <b>Configure Collection of Oracle Auditing Data in VM Manager Tool</b>	VM Managers	<p>Use this task to enable or disable collection of Oracle auditing data in VM Manager tools. To review the current setting, check the results of Oracle Auditing Data Collection Settings analysis. For more information, refer to <a href="#">Configuring VM Managers (on page cmii)</a>.</p>

Table 50. Required configuration fixlets and tasks (continued)

Name	Category	Description
<b>11.0.0 Upgrade to the interim version 11.0.0.0 of BigFix Inventory</b>	Deployment	<p>Use this fixlet to upgrade BigFix Inventory through the required interim version (11.0.0) and then to be able to upgrade to the latest version. This is applicable depending on the current BigFix Inventory version.</p> <p>The fixlet description includes links that allow you to manually download BigFix Inventory.</p>
<b>Upgrade to the latest version of BigFix Inventory</b>	Deployment	<p>Use this fixlet to directly upgrade BigFix Inventory to the latest version.</p> <p>The fixlet description includes links that allow you to manually download BigFix Inventory.</p> <p> <b>Note:</b> For BigFix Inventory to be compliant with IBM Subcapacity, you must upgrade the server.</p>
<b>10.0.4 Download PVU table</b>	Deployment	<p>This task provides a link to the latest PVU table. Download the file and then manually upload it to the BigFix Inventory server. For more information, refer to <a href="#">download instructions (on page cmxxxv)</a>.</p>
<b>Install or Upgrade Scanner</b>	Scanner	<p>BigFix Inventory requires a dedicated scanner to be installed on each endpoint. This task installs the scanner or upgrades it to the latest version on the specified endpoints. For more information, see: <a href="#">Installing the scanner (on page dcviii)</a>.</p> <p><b>Analysis:</b> Scanner Information</p>
<b>Run Capacity Scan and Upload Results</b>	Scanner	<p>After you install the scanner, you need to schedule capacity scans on all endpoints to ensure that the data in BigFix Inventory is complete. By default, the capacity scan is set to run every 30 minutes and usually takes a few seconds. The frequency is required by the IBM pricing for subcapacity reporting. This task runs the capacity scan to retrieve data from the specified endpoints. If the action is completed, the results were gathered and uploaded. For more information, see: <a href="#">Initiating the capacity scan on all computers (on page dcxix)</a>.</p>
<b>Initiate Software Scan</b>	Scanner	<p>Use this fixlet to configure software scan that analyzes the file system and registry, and discovers the installed software. The scan can take from few minutes to few hours depending on the number of files in your file system. You can specify the exact date and time of the</p>

Table 50. Required configuration fixlets and tasks (continued)

Name	Category	Description
		<p>scan, not to affect other business applications running on the system. Additionally, you can set a CPU threshold for the scan to minimize its impact, however, that will make the scan last longer.</p> <p>Select all the listed scan types. If the task is not relevant for some endpoints, log in to the BigFix Inventory and run the initial import to ensure that the catalog is propagated to all endpoints. This task is not relevant on endpoints where the scanner is not installed. For more information, see: <a href="#">Initiating software scans (on page dcx)</a>.</p> <p><b>Analysis:</b> Software Scan Status</p>
<b>Upload Software Scan Results</b>	Scanner	This task uploads inventory data that is collected by the software scans from the specified endpoints to the BigFix server. Each endpoint should be targeted only once. For more information, see: <a href="#">Uploading software scan results (on page dcxvii)</a> .

## Troubleshooting fixlets

There are several fixlets and tasks that can help you troubleshoot the most common issues and questions related to the application.

Table 51. Troubleshooting fixlets

Name	Category	Description
<b>Analyze the Relevance of a Fixlet or Task</b>	Troubleshooting	This task creates an analysis that checks which relevance conditions of a particular fixlet or task are not met. Check the results of the analysis to learn why a fixlet or task is not relevant on a particular endpoint. The analysis is created in the Master Action site. For more information, see: <a href="#">Checking why a fixlet or task is not relevant (on page mcdxx)</a> .
<b>Force Reupload of Software Scan Results</b>	Troubleshooting	This task forces reupload of inventory data that was gathered by the software inventory and the file system scans. The data is reuploaded to BigFix once and no schedule is set. The data is then transferred to BigFix Inventory during the import. The import includes results of the full file system scan, not the delta scan. It might affect the length of the import.
<b>Linux Gather Environment Information</b>	Troubleshooting	This task retrieves information about BigFix Inventory and BigFix environment for troubleshooting purposes. The task is relevant only for the Linux operating system.

**Table 51. Troubleshooting fixlets (continued)**

Name	Category	Description
<b>Check Windows Registry for VBS library paths (version)</b>	Troubleshooting	This task is used to check Windows OS configuration of Visual Basic scripts required libraries to use BigFix Inventory Software Scan.
<b>Clear Data Collected by Software Data Harvesting Tool (version)</b>	Troubleshooting	<p>This task clears the data collected by Software Data Harvesting Tool from target computers and deletes related files that have been uploaded to the BigFix server.</p> <p>For more information refer to <a href="#">10.0.8 Software data harvesting tool (on page mccxxiii)</a></p>
<b>Collect Specific Registry from Windows Endpoints (version)</b>	Troubleshooting	<p>This task is used to collect specific registry from endpoints.</p> <p>Once the action is completed you can collect the output with running the Collect Logs from Endpoints (version) fixlet.</p>
<b>Interrupt BigFix Inventory Software Scans (version)</b>	Troubleshooting	<p>This task interrupts the BigFix Inventory software scan.</p> <p>The task terminates processes related to the scan on the chosen endpoints, but it does not delete the scan schedule.</p> <p>To restart the scan, either run it from the Fixlet (starts a new schedule), or wait until another scan runs according</p>
<b>List files in a directory (version)</b>	Troubleshooting	This task lists all files from provided directory within a given depth, generating a file saved as "list.txt". To access the file, go to BigFix Inventory, open "Computers" panel, select the name of the target computer, click "Computer Support Data" and then download the log package. The file will be present in both "files" and "sha1_files" directories in a compressed package named "files_x_list.zip/tar.gz".
<b>Test CIT signature (version)</b>	Troubleshooting	<p>Use this task to test custom CIT signature. For more information, see <a href="#">Testing using BigFix Console (on page mxlii)</a>.</p> <p>Software scan on an endpoint must complete at least once for this task to be relevant.</p>

### Other fixlets

The remaining fixlets and task can help you manage, configure, troubleshoot, deploy and migrate the product and its components, and manage VM Managers.

Table 52. Other fixlets

Name	Category	Description
<b>Download the BigFix Inventory Container Solution Packages (version)</b>	Deployment	<p>This task provides links to the latest BigFix Inventory Container Solution packages (11.0.0.0).</p> <p>For more information refer to <a href="#">10.0.7 Software discovery in containers (on page mcccxxii)</a></p>
<b>Run Software Data Harvesting Tool (version)</b>	Scanner	<p>This task runs Software Data Harvesting Tool for BigFix Inventory that collects software data from target computers.</p> <p>It is an optional task dedicated to customers who choose to use the Software Data Harvesting Tool.</p> <p>For more information refer to <a href="#">10.0.8 Software data harvesting tool (on page mcccxxiii)</a></p>
<b>Install or Upgrade Scanner in private mode on windows</b>	Scanner	<p>BigFix Inventory requires a dedicated scanner to be installed on each endpoint. This task installs the scanner or upgrades it to the latest version on the specified endpoints in a private mode. It installs CIT binaries in &lt;BES Client&gt;\LMT\CIT\scanner directory, but without registering the instance in CIT global files (no cit.ini or other global CIT configuration files). In case when there is a global CIT with SUA exploiter already installed, the SUA exploiter will be uninstalled from the global CIT and upgraded to the private version.</p>
<b>Add Excluded Directories</b>	Scan Management	<p>This task is used to add entries to the list of directories that are excluded from scanning. After you specify the directories, run the task against the chosen endpoints. The directories are then sent to the scanner that omits them during the software scan. For more information, see: <a href="#">Excluding additional directories (on page dclii)</a>.</p>
<b>Add Targeting Exception to Temporarily Disable Scans</b>	Configuration	<p>This task prevents software and capacity scans that are scheduled on the endpoint from running without the need of modifying the entire scan schedule. You can use it to temporarily disable scans on a computer that undergoes maintenance, patching, or some other resource-consuming action that could be disturbed by the software or capacity scan.</p>
<b>Change Scanner Cache Folder</b>	Scanner	<p>This task allows you to select a new cache folder to store the scanned cache data. The task cannot be performed when a scan is in progress.</p>

Table 52. Other fixlets (continued)

Name	Category	Description
		<p>If the task is relevant, the scanner is installed in all applicable endpoints. The task is not applicable to endpoints which have HCL scanner installed in private mode.</p> <p>For more information, see: <a href="#">Optimizing scanner cache configuration (on page dclxxxiv)</a>.</p>
<b>9.2.12 Collect Detailed Hardware Information</b>	Scanner	<p>This task runs a detailed hardware scan on the specified endpoints. It collects information related to memory, operating systems, storage, processors, partitions, network adapters, SMBIOS data, IP addresses and logical partition capacity data. The solution is supported on Windows, Linux x86 and AIX. The task can be run also on other operating systems but the returned results might not be accurate. For more information, see: <a href="#">Detailed hardware scan (on page dcxxxix)</a>.</p> <p><b>Analysis:</b> Detailed Hardware Information</p>
<b>9.2.8 Collect Logs from Endpoints</b>	Troubleshooting	<p>The task collects BigFix client logs, scanner logs, scan configuration logs, VM manager configuration files, and files generated during scans. Run this task when you are requested by BigFix Support to collect log files for troubleshooting purposes.</p>
<b>10.0.1 Configure Collection of Additional Properties of Windows Executables</b>	Scan Management	<p>This task allows you to enable the collection of additional properties of Windows executables by running a fixlet that changes the configuration of the software scan for BigFix Inventory. For more information, see: <a href="#">Enabling collection of additional properties of Windows executables (on page mdcxxx)</a>.</p>
<b>Configure File Checksums Collection (MD5/SHA-256)</b>	Scan Management	<p>This task enables the collection of file checksums and is intended for advanced security scenarios only. The MD5 and SHA-256 checksums are calculated during the file system scan, and are created for each file that is discovered by the software scan. For more information and requirements, see: <a href="#">Collecting file checksums (on page mccxxv)</a>.</p>
<b>Configure Scan Cache</b>	Scanner	<p>This task allows for configuring the file system scan cache. By default, the cache is enabled and is cleared after every scan. The cache is shared by different scan types. Disabling the cache will significantly impact scan performance, and it is not recommended, unless absolutely necessary. The task is relevant only on computers where the scanner is installed. For more information, see: <a href="#">Optimizing scanner cache configuration (on page dclxxxiv)</a>.</p>

Table 52. Other fixlets (continued)

Name	Category	Description
<b>Configure Scanner Query Timeout</b>	Scanner	This task allows you to set the maximum time in which the software scan process should finish. As the software scan involves scanning as well as additional evaluation, the overall software scan time might exceed the value provided.
<b>Linux Create Capacity Configuration for Linux on z Systems</b>	Configuration	This task creates a file that contains the manually-entered capacity values. If this task is relevant, it means that no capacity configuration exists on this endpoint yet and the manual configuration is required. If this fixlet is not relevant on a computer, you do not have to perform any manual actions to calculate the capacity values. For more information, see: <a href="#">Creating capacity configuration for Linux on z Systems (on page dclxxix)</a> .
<b>Linux Delete Capacity Configuration for Linux on z Systems</b>	Configuration	This task deletes the file that contains the manually-entered capacity values.
<b>Disable Application Usage Statistics</b>	Configuration	This task disables the collection of application usage statistics on endpoints. For more information, see: <a href="#">Disabling the collection of software usage (on page dclxxxvii)</a> .
<b>9.2.8 Linux Solaris Disable Collecting Executable Files Based on Application Usage</b>	Configuration	Collecting executable files based on application usage is automatically enabled when you have the BigFix client and server in version 9.5.5 or higher, use Linux or Solaris system, and have the Application Usage Statistics analysis activated. This task disables collection of executable files that are based on the list of processes on endpoints. If you run this task, the files associated with these processes are not displayed on the Scanned File Data report.
<b>Discover Remote Shared Disks</b>	Scan Management	This task identifies shared disks that exist in your environment. For more information, see: <a href="#">Discovering software on shared disks (on page dcxxx)</a> and <a href="#">Limiting scope of automated scan (on page dcxxxvi)</a> .  <b>Analysis:</b> Shared Disk Information
<b>Download BigFix Inventory</b>	Deployment	This task downloads the newest BigFix Inventory server installer to the specified endpoint.  <b>10.0.15</b> The fixlet description include links that allow you to manually download BigFix Inventory.

Table 52. Other fixlets (continued)

Name	Category	Description
<b>Download the Disconnect- ed Scanner Package (ver- sion)</b>	Deployment	This task provides a link to the latest disconnected scanner package. The package contains installation and configuration files, and the scripts that are required for software and capacity discovery on Windows and Linux computers. This solution can only be used if the Big-Fix client cannot be installed due to legal, business, or technical reasons. For more information, see: <a href="#">Discovering software and hardware with disconnected scanner on Windows and UNIX (on page dclvi)</a> .
<b>IBM i</b> <b>Download the Disconnected Scanner Package for IBM i (version)</b>	Deployment	This task provides a link to the latest disconnected scanner package for IBM i. The package contains installation and configuration files, and the scripts that are required for software and capacity discovery on IBM i systems. For more information, see: <a href="#">Discovering software and hardware on IBM i (on page dclxxxviii)</a> .
<b>Linux</b> <b>Edit Capacity Configuration for Linux on z Systems</b>	Configuration	This task edits the file that contains the manually-entered capacity values. If this task is relevant, it means that the capacity configuration already exists on this endpoint.
<b>Edit Scanner Trace Set- tings</b>	Troubleshoot- ing	This task allows you to set debug traces for the scanner. If this task is relevant, it means that the scanner is installed on an endpoint. For more information, see: <a href="#">Changing scanner trace settings (on page mcdxix)</a> .
<b>9.2.8</b> <b>Linux</b> <b>Solaris</b> <b>Enable Collect- ing Executable Files Based on Application Usage</b>	Configuring	This task enables collection of executable files that are based on the list of processes on endpoints. If you run this task, the files associated with these processes will be displayed on the Scanned File Data report. Use this task if you previously disabled the feature using the Disable Collecting Executable Files Based on Application Usage fixlet.
<b>Force VM Manager Tool Scan Results Upload</b>	Troubleshoot- ing	This task forces the upload of capacity data collected by VM Manager Tool or by the Run Capacity Scan on Virtualization Hosts task. The data is uploaded to BigFix and can be transferred to BigFix Inventory by running a data import. The data is uploaded only once and no schedule is set. For more information, see: <a href="#">Forcing the upload of collected data (on page dcccxxxix)</a> .
<b>Get Microsoft Exchange Edition</b>	Scanner	This task allows you to retrieve information about the editions of Microsoft Exchange servers that are installed on the computers in your infrastructure. For more information, see: <a href="#">Discovering Microsoft Exchange edition (on page mcxxiii)</a> .

Table 52. Other fixlets (continued)

Name	Category	Description
<b>Get Oracle Concurrent Sessions Number</b>	Scanner	This task allows you to retrieve information about the high water mark value of concurrent sessions for Oracle Databases that are installed on the computers in your infrastructure. For more information, see: <a href="#">Metering the number of Oracle Database concurrent sessions (on page mcxix)</a> .
<b>Get Oracle Features</b>	Scanner	This task allows you to retrieve information about the editions and features of Oracle Databases that are installed on the computers in your infrastructure. For more information, see: <a href="#">Extended discovery of Oracle Database (on page mcxiii)</a> .
<b>Get SAP Components</b>	SAP Systems	This task allows you to retrieve information about the SAP components that are installed on the computers in your infrastructure. For more information, see: <a href="#">Discovering SAP components (on page mcxxviii)</a> .
<b>Identify Computers on Public Clouds</b>	Configuration	This task marks targeted endpoints as computers that are running on a public cloud. It allows the specific license model for the PVU count without hypervisor access. For more information and a list of supported public clouds, see: <a href="#">Identifying computers on public clouds (on page dcxxviii)</a> .
<b>9.2.9 Initiate Collection of SAP Metric Data</b>	SAP Systems	This task runs the SAP Metric Data Collector. The tool collects license metric utilization data from a single SAP landscape. For more information, see: <a href="#">Collecting utilization of SAP license metrics (on page mcxxix)</a> .
<b>9.2.8 Initiate Software Scan on Shared Disks</b>	Scanner	<p>This task runs the catalog-based scan, file system scan, and software identification tags scan to discover software that is installed on shared disks. Scan results are used to create software templates that represent the discovered software. The templates are later on shared between all computers on which the disks are mounted to ensure that the software is reported on these computers. For more information, see: <a href="#">Discovering software on shared disks (on page dcxxx)</a> and <a href="#">Limiting scope of automated scan (on page dcxxxvi)</a>.</p> <p><b>Analysis:</b> Status of Shared Disks Software Scan</p>
<b>Install Additional VM Manager Tool <i>version number</i> (OPTIONAL)</b>	VM Managers	This task installs an additional VM Manager Tool in the specified version on any computer. The tool should only be used to manage VM managers that are in separated networks and cannot be reached

Table 52. Other fixlets (continued)

Name	Category	Description
		by the BigFix server. For more information, see: <a href="#">Managing VM managers (on page dcclxi)</a> .
<div style="display: flex; align-items: center; gap: 5px;"> <div style="background-color: #0056b3; color: white; padding: 2px 5px; font-weight: bold;">9.2.9</div> <div style="background-color: #800040; color: white; padding: 2px 5px; font-weight: bold;">Windows</div> </div> <div style="display: flex; align-items: center; gap: 5px; margin-top: 5px;"> <div style="background-color: #800040; color: white; padding: 2px 5px; font-weight: bold;">Linux</div> <div style="font-weight: bold;">Install SAP Metric Data Collector</div> </div>	SAP Systems	This task installs the SAP Metric Data Collector in the specified version on a selected computer. The tool collects license metric utilization data from a single SAP landscape. For more information, see: <a href="#">Collecting utilization of SAP license metrics (on page mcxxix)</a> .
<b>Install VM Manager Tool</b> <i>version number</i>	VM Managers	This task installs VM Manager Tool in the specified version on the BigFix server. Use this task if automatic installation failed. For more information, see: <a href="#">(Optional) Installing VM Manager Tool (on page dcccxi)</a> .
<b>Refresh Re-Subscribed Endpoints</b>	Scanner	This fixlet detects endpoints that were re-subscribed from a different fixlet site and is used for the coexistence of License Metric Tool and BigFix Inventory. For such endpoints, it forces the upload of capacity data, and refreshes properties to ensure that they are related to the relevant fixlet site. An endpoint is refreshed after each re-subscription. The initial subscription is set after running the software scan.
<b>Remove Capacity Scan Data from Virtualization Hosts</b>	VM Managers	This task applies to the KVM and Xen hosts only. It removes the data that was generated on virtualization hosts during the capacity scan. For more information, see: <a href="#">Collecting capacity data from virtualization hosts for Xen and KVM (on page dcxxv)</a> .
<b>Remove Excluded Directories</b>	Scan Management	This task is used to remove entries from the list of directories that are excluded from scanning. After you specify the directories, run the task against the chosen endpoints. The directories are then sent to the scanner that includes them back in the software scan. For more information, see: <a href="#">Including the excluded directories back in scans (on page dcliv)</a> .
<b>Remove Targeting Exception to Resume Scans</b>	Configuration	This task resumes software and capacity scans that were temporarily disabled by using the Add Targeting Exception to Temporarily Stop Scans task.
<b>Run Capacity Scan on Virtualization Hosts</b>	VM Managers	This task applies to the KVM and Xen hosts only. It runs a capacity scan on virtualization hosts to retrieve capacity data from all virtual machines that are managed by the specified host. Schedule the scan on every host that manages virtual machines which have the BigFix client installed. For more information, see: <a href="#">Collecting capacity data from virtualization hosts for Xen and KVM (on page dcxxv)</a> .

Table 52. Other fixlets (continued)

Name	Category	Description
<b>Schedule VM Manager Tool Scan Results Upload</b>	VM Managers	This task schedules regular uploads of capacity data collected by VM Manager Tool or by the Run Capacity Scan on Virtualization Hosts task. The data is uploaded to BigFix and can be transferred to BigFix Inventory by running a data import. For more information, see: <a href="#">Changing the upload schedule (on page dccccxxviii)</a> .
<b>Solaris Set DSD Mode</b>	Configuration	This task sets the DSD mode on Solaris endpoints. If the Solaris system is in the DSD domain, set this mode so that the PVU data is correctly calculated. For more information, see: <a href="#">Setting the DSD mode on Solaris (on page dclxxx)</a> .
<b>Server Software Catalog Update (version)</b>	Deployment	<p><b>9.2.11</b> Starting from application update 9.2.11, the catalog update process is automatized. This task automatically downloads the software catalog, and uploads it to the BigFix Inventory server during the next import of data. No further action is required.</p> <p>For versions before 9.2.11, this task downloads the latest software catalog to the computer where the BigFix Inventory server is installed. After the file is downloaded, you must upload it to the BigFix Inventory server. For more information, see: <a href="#">Updating server software catalog (on page cmxciv)</a>.</p> <p> <b>Warning:</b> Since catalog version 10.0.2, Software Catalog Update fixlet updates only non-IBM part of the catalog. The same applies to the manual catalog upload. To get the latest supported IBM catalog part you must upgrade BigFix Inventory. It is in line with IBM ILMT 9.2.20, <a href="https://www.ibm.com/support/pages/node/6223460">https://www.ibm.com/support/pages/node/6223460</a>.</p> <p>However, the definition of the software catalog does not change for other vendors, and the manual updates continue to be supported.</p>
<b>9.2.9 Uninstall SAP Metric Data Collector</b>	SAP Systems	This task uninstalls the SAP Metric Data Collector from the selected computer. It also removes folders that the tool uses as well as deletes settings of the BigFix client specific to the tool.
<b>Uninstall Scanner</b>	Scanner	This task uninstalls the scanner and the corresponding configuration files from the specified endpoints.

Table 52. Other fixlets (continued)

Name	Category	Description
<b>Uninstall VM Manager Tool</b>	VM Managers	This task uninstalls the VM Manager Tool from the specified endpoints. It also deletes the client settings and folders used by the VM Manager Tool. For more information, see: <a href="#">Uninstalling VM Manager tool (on page dcccxi)</a> .
<b>Solaris Unset DSD Mode</b>	Configuration	This task unsets the DSD mode on Solaris endpoints. For more information, see: <a href="#">Setting the DSD mode on Solaris (on page dclxxx)</a> .
<b>9.2.9 Update SAP Metric Data Collector</b>	SAP Systems	This task updates the SAP Metric Data Collector to the latest version.
<b>Update VM Manager Tool to version <i>version number</i></b>	VM Managers	This task updates VM Manager Tool to the specified version. For more information, see: <a href="#">Updating VM Manager Tool (on page dcccxi)</a> .
<b>Upgrade to the latest version of BigFix Inventory10</b>	Deployment	This fixlet upgrades BigFix Inventory to the latest version. It also uploads the latest software catalog and PVU table to the BigFix Inventory server.
<b>WARNING: Endpoints Subscribed to Multiple Sites</b>	Troubleshooting	Some of your endpoints are subscribed to both the <b>IBM License Reporting (ILMT) v9</b> and the <b>BigFix Inventory</b> fixlet site, which will lead to issues with software discovery that are not supported. An endpoint can report to only one application at a given moment. Remove the endpoints from one of the sites.
<b>10.0.9 Clear cache to force rescan Docker containers during next Software Scan</b>	Deployment	Use this fixlet to force rescanning of docker containers during the next Initiate Software Scan. You need to clear cache of already scanned images. This task refers to the ISO tagged software scan on Docker containers. This fixlet is related to <a href="#">Discovery of software in Docker containers (on page cdxiv)</a> .

## High-water mark

Utilization of license metrics can fluctuate depending on the location and configuration of virtual machines in the physical environment. High-water mark is the peak in the utilization of a license metric by a product during the reporting period. It represents the number of metric units that are needed to license a product during that period.

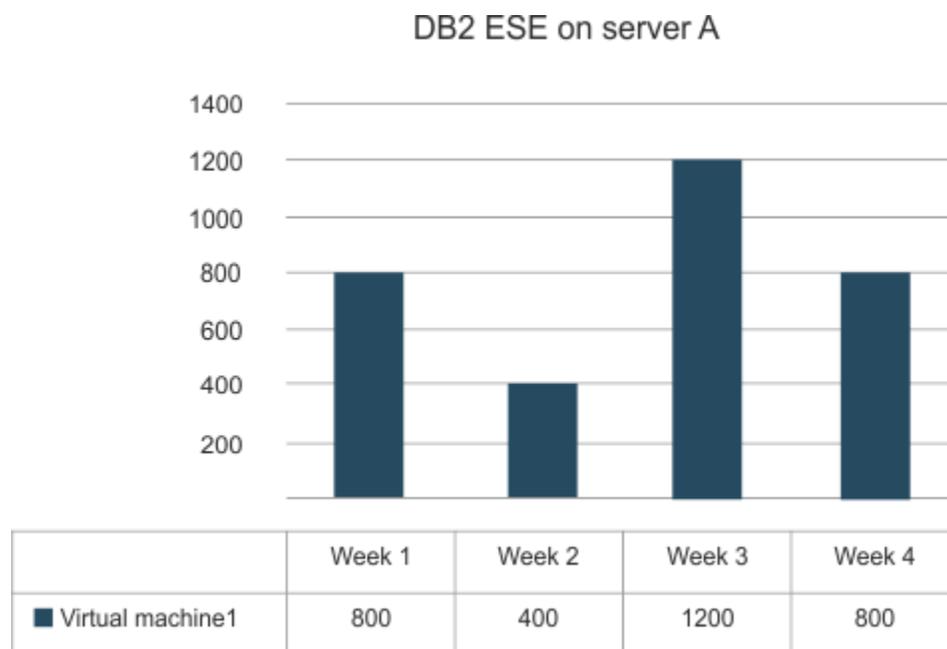
The following examples are based on sample utilization of PVUs by DB2 Enterprise Server Edition during a four-week period.

### Example 1: High-water mark for a single server with one virtual machine

In this example, DB2 is installed on a single virtual machine. Configuration of this machine changes over time so the number of processor cores that are available to DB2 varies every week. DB2 consumes the following number of PVUs.

- 800 PVUs in the first week
- 400 PVUs in the second week
- 1200 PVUs in the third week
- 800 PVUs in the fourth week

High-water mark for DB2 in this four-week period occurs in the third week and equals 1200 PVUs.

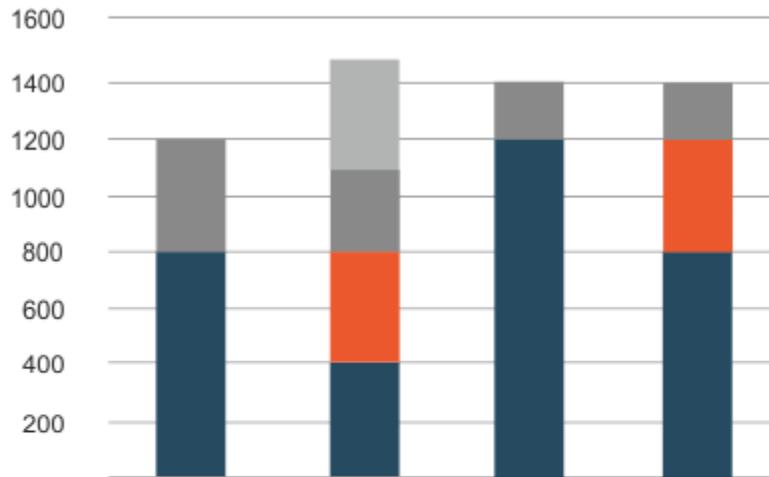


### Example 2: High-water mark for a single server with four virtual machines and no CPU overcommitment

In this example, a server has four virtual machines whose configuration changes over time. The machines do not share any processor cores, and no capping is needed. The server-level utilization of PVU is the sum of PVUs used by DB2 on each virtual machine.

Peak value from a single virtual machine is 1200 PVUs and occurs in the third week. However, DB2 is installed on all virtual machines so values from all virtual machines must be added to calculate the high-water mark. High-water mark for DB2 in this four-week period occurs in the second week and equals 1500 PVUs.

DB2 ESE on server A



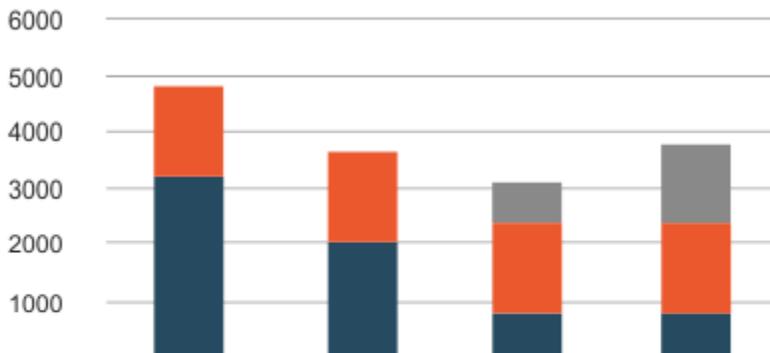
	Week 1	Week 2	Week 3	Week 4
■ Virtual machine 1	800	400	<b>1200</b>	800
■ Virtual machine 2		400		400
■ Virtual machine 3	400	300	200	200
■ Virtual machine 4		400		
Total	1200	<b>1500</b>	1400	1400

### Example 3: High-water mark in the entire infrastructure

In this example, there are three servers with many virtual machines. The infrastructure-level PVU utilization is the sum PVUs used by DB2 on each server and utilization on each server is the sum of PVUs used by DB2 on each virtual machine that exists on that server.

High-water mark for DB2 in this four-week period occurs in the first week and equals 4800 PVUs.

## DB2 ESE in the entire infrastructure



	Week 1	Week 2	Week 3	Week 4
Server A	3200	2000	800	800
Server B	1600	1600	1600	1600
Server C			700	1500
Total	4800	3600	3100	3900

### Related information

[IBM Processor value unit \(PVU\) \(on page cmxxxi\)](#)

[IBM Resource value unit \(RVU MAPC\) \(on page cmxxxix\)](#)

## Main background application tasks

The main goal of BigFix Inventory is to generate PVU, and RVU audit reports based on the collected data. All calculations are done in accordance with PVU, and RVU license pricing rules that are described in the official subcapacity licensing documents.

### Aggregation

Aggregation is the main calculation task in BigFix Inventory. The aggregation process is a scheduled background task that is run on a daily basis at a particular hour. By default it is performed when the server time is midnight. The task calculates the PVU, and RVU values based on the data that is collected from the agents during software and capacity scans.

### Reaggregation

If the initial software bundles are correct after software discovery and rebundling is unnecessary, aggregation is the only calculation process that is required on the side of the BigFix Inventory server and the data that was once calculated is always correct. However, this is rarely the case. You must always modify some parts of the initial

bundles that are proposed by BigFix Inventory. You must always confirm which bundles are correct for complex products. A complex product is a product that can be bundled with more than one software offering. After rebundling is complete, the PVU and RVU values that were already calculated must be refreshed. Reaggregation tasks were designed to recalculate or refresh PVU and RVU values that were already calculated. Manual actions that might trigger the data reaggregation include:

- Rebundling a software instance from one product to another
- Confirming the default bundle
- Including software instance in PVU, or RVU calculations
- Excluding software instance from PVU, or RVU calculations
- Sharing an instance

These five actions are very basic operations that the application users perform frequently to adjust the bundling data. In addition to manual actions, refresh of the calculated data can also be triggered by bundling assistance.

### **Aggregation versus reaggregation**

The aggregation process was designed to calculate the data from many agents for all products over a short time. In contrast, reaggregation process was designed to perform quick recalculation of PVU, and RVU values for a selected subset of products that were already aggregated. Aggregation of all products from all agents is much quicker (even hundreds of times) than reaggregation of the same amount of data. However, when you must recalculate the PVU and RVU values of only one product, reaggregation should be quicker than aggregation, which cannot recalculate the reporting value of only one product, but must reaggregate it for all discovered products simultaneously.

### **Inventory builder**

Inventory builder is another background task that is executed periodically. During this time, the software inventory is built based on the data from the agent software scans. In other words, this task transforms a list of discovered software components to a list of the discovered software products. In most cases, the initial software bundling of detected components performed by the inventory builder has a very low level of confidence.

### **Bundling assistance**

Similarly to aggregation, bundling assistance is a periodic background task. It is strictly related to the inventory builder task - when the execution of inventory builder ends, bundling assistance starts.

When the bundling assistance task runs, it determines the best bundle connections to all unconfirmed product instances. If the newly calculated bundles have a higher level of confidence than the current product bundles, bundling assistant rebundles those product instances to the new product with the best match. In the vast majority of cases, subsequent bundling assistant runs calculate the same level of confidence for most or even for all of the unconfirmed product instances. However, from time to time, especially in large environments with a large percentage of unconfirmed instances where it can actually happen frequently, the newly calculated confidence level can turn out to be higher than the old one. In this case, the software instance is rebundled. The most common reasons why automatic bundling is able to rebundle some old unconfirmed product instances are:

- Import of a new set of part numbers
- Import of a new software catalog
- After manual rebundling or manual confirmation of one product instance, other unconfirmed product instances can be better bundled by using partition or infrastructure collocation rules
- Detection of a new simple software component (a component that can be assigned to only one product) by agents might also change the calculations for other unconfirmed instances due to partition or infrastructure collocation bundling assistance rules.

However, bundling assistance does not replace the manual work that must be done to confirm or rebundle all unconfirmed product instances. The confidence level that is calculated by bundling assistant is supposed to facilitate manual bundling by providing the best potential bundling options for all unconfirmed product instances.

### **Extract, Transform, Load (ETL)**

In general, Extract, Transform, Load (ETL) is the process in database usage that combines three database functions that aim at transferring data from one database and placing it into another. The first stage, Extract, involves reading and extracting data from various source systems. The second one, Transform, converts the data from its original form into the form that meets the requirements of the target database. The last stage, Load, saves the new data into the target database, thus finishing the process of transferring the data.

In BigFix Inventory, the Extract stage involves extracting data from the BigFix server. Such data includes information about the infrastructure, installed agents and detected software. ETL also checks if the new software catalog is available, gathers information about the software scan and files that are present on the endpoints, and collects data from the VM managers.

The extracted data is then transformed to a single format that can be loaded to the BigFix Inventory database. This stage also involves matching scan data with the software catalog, calculating processor value units (PVU), processing the capacity scan, and converting information that is contained in the XML files.

After the data is extracted and transformed, it is loaded to the database and can be used by BigFix Inventory.

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Related information

[Bundling Assistant \(on page cmxlv\)](#)

## **Products, components, and bundles**

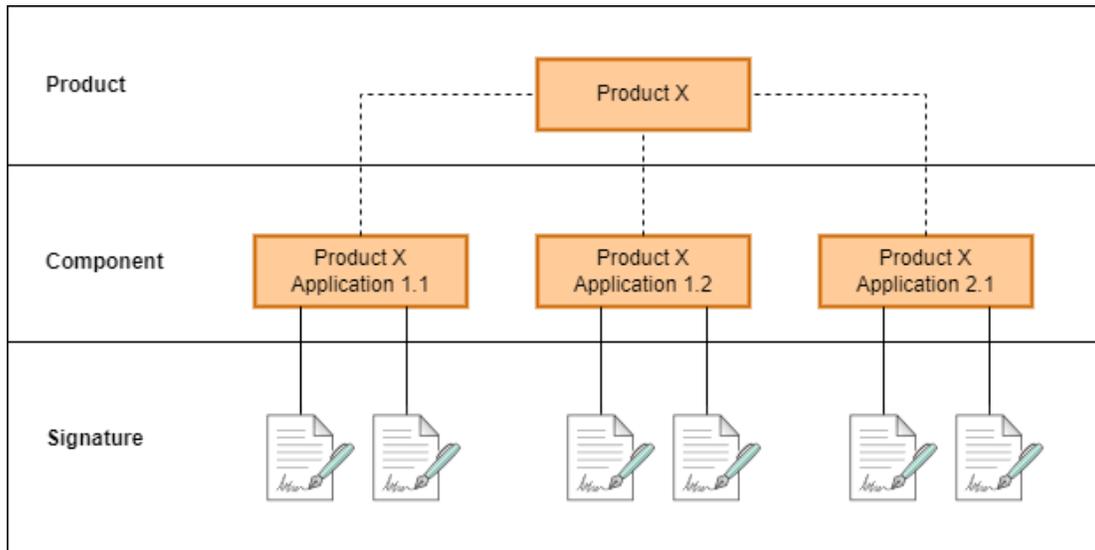
BigFix Inventory discovers software components, and bundles them to products basing on the data contained in the software catalog. Get familiar with these notions to understand the capabilities and performance of BigFix Inventory.

### **Software catalog**

A *software catalog* is a collection of the definitions of software products, their relations and data (signatures) that are used to detect software as installed or used in an IT environment.

An initial software catalog is included in the tool. You must update it regularly. HCL delivers and maintains the Software Catalog that includes a set of IBM and non-IBM product definitions and signatures.

The following diagram represents the catalog definition for the product Product X. It shows how the various catalog definitions are related and how they provide a structure that supports identification of the software.



The catalog also contains information indicating what license metric each product uses and how the license quantity is calculated.

The software catalog is a knowledge database that contains information about:

### **Software product (Offering)**

A *software product* is a logical unit of software packaging and sharing that has a managed development and maintenance lifecycle and customer visible attributes. It can be a collection of components, software products whose licensing can be dependent on the licensing of the offering as a whole.

### **Component**

A *component* is a unit of software that can be detected as installed or running on computer systems independently of other software items. It can be a part of a software product, and might be separately identified, but is not individually licensed.

### **Signature**

A *signature* is a unique set of data that is used to discover a given release of the software component. It is used to identify a distributed software release as installed or running on a computer system. There are two types of signatures:

- Inventory recognition signatures detect if a product or component release is installed on the system.
- Usage monitoring signatures detect if a product or component release is running on the system.

A signature can be a file, registry entry, or another identifier, that acts as a fingerprint for identifying software products. The catalog can be augmented with information about custom or proprietary software products in your IT environment.

### **Hierarchy**

A *hierarchy* is a structure that represents software versions, releases, and variations.

### **Bundle**

A *bundle* is set of products that are offered under a single entitlement or license with no dedicated components. In the catalog, a bundle is modeled as a software product with setup relationships to all of the software products that it consists of.

When a file system is scanned, components are discovered by matching the relevant information against signatures that are defined in the catalog. Basing on the match, the most suitable product is selected for each component. You can change the default bundling on the Software Classification panel.

## **IBM Software licensing rules on public clouds**

**10.0.3** IBM software that is installed on computers that run on public clouds is licensed according to the IBM BYOSL policy. To ensure that license metric utilization is properly calculated for such software, computers must be identified as running on public clouds.

For more information, see: [IBM Eligible Public Cloud BYOSL Policy](#).

### **Supported public clouds**

Public clouds that are currently supported by BigFix Inventory include:

- Amazon EC2
- IBM SoftLayer
- Microsoft Azure
- **9.2.8** Google Compute Engine
- **10.0.1** Oracle Compute Instance
- **10.0.3** Alibaba Elastic Compute Service
- **10.0.4** IBM Power Virtual Server
- **10.0.4** Tencent Cloud Server Instance
- **10.0.5** NEC Cloud IaaS Instance
- **10.0.6** Fujitsu Cloud IaaS Instance

- **10.0.6** FJcloud-V
- **10.0.8** FJcloud-O
- **10.0.7** NTT Enterprise Cloud Server
- **10.0.11** KDDI Cloud
  
- **10.0.12** KDDI Cloud for Windows - Windows VMs can now be marked as a Public Cloud.

See also:

- [Identifying computers on public clouds \(on page dcxxviii\)](#)
- [Identifying disconnected computers as running on public clouds \(on page dcxxviii\)](#)

## Limitations

BigFix Inventory does not support public cloud VMs that are identified by duplicated serial numbers. The serial number is usually the UUID of the virtual machine that is assigned by the VM manager of the particular public cloud.

## Licensing of non-containerized Cloud Pak programs

**10.0.1** Available from 10.0.1 IBM Cloud Paks deliver IBM enterprise software and open source components in open and secure solutions that are easily consumable and can run anywhere. BigFix Inventory collects information about the utilization of license metrics by non-containerized products that are installed as part of IBM Cloud Paks.

## Conversion options

For each product that is a part of a Cloud Pak, a separate conversion option is specified in the License Information document. For example, if you install IBM MQ Advanced as part of the Cloud Pak for Integration, the conversion option is 2 VPCs /1 VPC. It means that when IBM MQ Advanced uses 200 VPCs, 100 VPCs contribute to the utilization of VPCs by the entire Cloud Pak. For more information about conversion options, search the [License Information documents](#).

## Classifying non-containerized products as belonging to IBM Cloud Paks

Classification of non-containerized products to IBM Cloud Paks is a two-step process. First, you classify components that are discovered by BigFix Inventory to products with proper license metrics. Then, you assign products to IBM Cloud Paks. For more information and detailed instructions, see: [Assigning products to Cloud Paks \(on page cmlxxxiv\)](#).

## Reading metric utilization

### Information about IBM Cloud Paks

You can view information about IBM Cloud Paks on the IBM Flex Points and IBM Cloud Paks report. The report lists IBM Cloud Paks based on the decisions that you make during software classification. The Metric Quantity column represents utilization of license metric units by non-containerized products that are assigned to the Cloud Pak.

Product Name	Metric	Metric Quantity	Metric Quantity History		
			12/04/2019	-	03/03/2020
IBM Cloud Pak for Integration	Virtual Processor Core	3			

### Information about non-containerized products that are a part of Cloud Paks

To view the detailed report with non-containerized products that are assigned to the IBM Cloud Pak, go to the IBM Flex Points and IBM Cloud Paks report, and click the name of the Cloud Pak in the Product Name column. The detailed report provides the following information:

- License metric that the product is assigned
- Number of license metric units that the product uses
- Date when utilization of the license metric by the product was the highest during the reporting period
- Number of license metric units that the product contributes to the license metric utilization of the Cloud Pak

Product Name	Metric	Metric Quantity	Peak Date	Bundle Metric Contri...	Metric Quantity History		
					12/04/2019	-	03/03/2020
IBM MQ	Virtual Processor Core	4	03/03/2020	1			

### Information about IBM Cloud Paks in the audit snapshot

When you generate the audit snapshot, information about IBM Cloud Paks is contained in the `cloud_paks.csv` file. The file contains the following information:

- IBM Cloud Paks and their license metric utilization
- Products that are installed as part of IBM Cloud Paks and the number of license metric units that they contribute to metric utilization of the IBM Cloud Pak

**Table 53. A fragment of the `cloud_paks.csv` file**

Row No.	Publisher	Product Name	Cloud Pak or FlexPoint Bundle	Metric	Metric Quantity	Peak Date	Bundle Metric Contribution	Imported Part Numbers	Recalculation Needed
1	IBM	IBM Cloud Pak for Integration	None	Virtual Processor Core	3	27-02-20			No
2	IBM	IBM MQ	IBM Cloud Pak for Integration	Virtual Processor Core	10	27-02-20	3		No

## Example

The following scenario describes how utilization of license metrics is calculated for Cloud Paks under different circumstances. The calculations are based on sample values and should be treated as examples.

Three products from Cloud Pak for Multicloud Management are installed:

- IBM Cloud Automation Manager
- IBM Tivoli Monitoring for Linux on System z
- IBM SmartCloud Application Performance Management Standard

The following table shows an example of how utilization of license metrics by non-containerized products is calculated by BigFix Inventory.

**Table 54. Example of contribution of license metrics by non-containerized products to Cloud Pak for Multicloud Management**

*Summary for complex table*

Product	License metric	License metric quantity	Conversion option	License metric quantity after conversion
IBM Cloud Automation Manager	MVS	100	25 MVS/1 MVS	4
IBM Tivoli Monitoring for Linux on System z	MVS	100	8 MVS/1 MVS	12.5 rounded up to 13
IBM SmartCloud Application Performance Management Standard	MVS	50	2 MVS/1 MVS	25
<b>Total</b>				<b>42</b>

## Configuration parameters of the disconnected scanner (disconnected scenario)

You can edit the configuration files to customize the disconnected scanner behavior and the scans. For example, you can schedule scans and specify directories to exclude from scans.



**Important:** Do not change parameters that are not described.

UNIX | Windows `setup_config.ini`

The file contains general parameters for scheduling software and capacity scans.

Table 55. Parameters in the `setup_config.ini` file.

Parameter	Default value	Possible values	Description
<code>DOCKER_SCAN_ENABLED</code>	FALSE	<ul style="list-style-type: none"> <li>• TRUE</li> <li>• FALSE</li> </ul>	Enables discovery of software that is installed in Docker containers. For more information on how License Metric Tool reports software that is installed in Docker containers, see: <a href="#">Discovering software in Docker containers</a> .
<b>Linux</b> <code>HW_SCAN_SCHEDULE_ENABLED</code>	TRUE	<ul style="list-style-type: none"> <li>• TRUE</li> <li>• FALSE</li> </ul>	<p>Enables scheduling capacity scans in cron.</p> <p>By default, the capacity scan is scheduled to run every 30 minutes. The frequency cannot be modified.</p> <p>When you set the value of this parameter to FALSE, a single capacity scan is run but no schedule is set.</p>
<code>PACKAGE_OUTPUT_DIR</code>	.\output	Directory name	Defines the directory in which scan results are stored. By default, the .\output directory is created in the installation directory of the disconnected scanner.
<b>10.0.8</b> <code>PUBLIC_CLOUD_TYPE</code>	The field is empty by default	<ul style="list-style-type: none"> <li>• <b>10.0.11</b> KDDI Virtual Server</li> <li>• IBM Power Virtual Server</li> <li>• IBM SoftLayer</li> <li>• Microsoft Azure</li> <li>• Amazon EC2</li> </ul>	Specifies the type of a public cloud on which the computer is running. It allows proper counting of the number of Processor Value Units (PVUs) per virtual core.

Table 55. Parameters in the `setup_config.ini` file. (continued)

Parameter	Default value	Possible values	Description
		<ul style="list-style-type: none"> <li>• Google Compute Engine</li> <li>• Oracle Compute Instance</li> <li>• Alibaba Elastic Compute Service</li> <li>• Tencent Cloud Server Instance</li> <li>• NEC Cloud IaaS Instance</li> <li>• <b>10.0.6</b> Fujitsu Cloud IaaS Instance</li> </ul> <p> <b>Note:</b> For application updates <b>10.0.6</b> and <b>10.0.7</b>, Fujitsu Cloud IaaS Instance indicates FJcloud-V. Starting from application update <b>10.0.8</b>, it indicates both FJcloud-V and FJcloud-O.</p>	<p> <b>Note:</b> Ensure the name of the public cloud is enclosed in quotation marks.</p>

Table 55. Parameters in the `setup_config.ini` file. (continued)

Parameter	Default value	Possible values	Description
<b>SW_SCAN_SCHEDULE_ENABLED</b>	FALSE	<ul style="list-style-type: none"> <li>• TRUE</li> <li>• FALSE</li> </ul>	Enables software scans scheduling in crontab. If you set <b>SW_SCAN_SCHEDULE_ENABLED</b> to TRUE, the first software scan is initiated after you install the scanner. Subsequent scans will run on that time with the frequency you choose (defined by <b>SW_SCAN_FREQUENCY</b> )
<b>SW_SCAN_FREQUENCY</b>	WEEKLY	<ul style="list-style-type: none"> <li>• DAILY</li> <li>• WEEKLY</li> </ul>	Defines the frequency of software scans, either daily or weekly.

UNIX | Windows **isotag\_config.xml and slmtag\_config.xml**

The `isotag_config.xml` file contains parameters for tuning the software identification tags scan. The `slmtag_config.xml` contains parameters for tuning the resource utilization scan. For more information about these scans, see: [Types of software scans](#).

Table 56. Parameters in the `isotag_config.xml` and `slmtag_config.xml` files

Parameter	Default value	Possible values	Description
<b>AssumeAutoFS</b>	remote	<ul style="list-style-type: none"> <li>• local</li> </ul> <p>Recognizes disks mounted by autofs as local disks.</p> <ul style="list-style-type: none"> <li>• remote</li> </ul> <p>Recognizes disks mounted by autofs as remote disks.</p> <ul style="list-style-type: none"> <li>• other</li> </ul> <p>Recognizes disks mounted by autofs</p>	Specifies how the scan recognizes disks that were mounted by the automatic mounting service (autofs). <b>IBM i</b> The parameter is not available .

**Table 56. Parameters in the `isotag_config.xml` and `slmtag_config.xml` files (continued)**

Parameter	Default value	Possible values	Description
		as disks of other types, for example: DVD.	
<b>ExcludeDirectory</b>	For the list of directories that are excluded by default, see: <a href="#">Excluding directories from being scanned.</a>	Directory name	Specifies directories that are excluded from software scans. For more information, see: <a href="#">Excluding directories from software scans by disconnected scanner (disconnected scenario).</a>
<b>ExcludeGuestDirectories</b>	true	<ul style="list-style-type: none"> <li>• true</li> <li>• false</li> </ul>	Specifies whether catalogs that belong to zones or WPARs are scanned. When the value of the parameter is set to true, the catalogs are not scanned.
<b>IncludeDirectory</b>	\$local:*	<p>[media_type::]drive:path- Where:</p> <p><b>media_type</b></p> <p>Specifies the media type. Possible values:</p> <ul style="list-style-type: none"> <li>• \$local</li> </ul> <p>Includes local disks.</p> <ul style="list-style-type: none"> <li>• \$remote</li> </ul> <p>Includes re-</p>	Specifies directories to be included in the software scan.  The parameter is not available.

Table 56. Parameters in the `isotag_config.xml` and `slmtag_config.xml` files (continued)

Parameter	Default value	Possible values	Description
		<ul style="list-style-type: none"> <li>mote disks.</li> <li>• \$other</li> </ul>	
		<ul style="list-style-type: none"> <li>Includes other disk types, for example: DVD.</li> <li>This option is supported only on Windows.</li> <li>• \$all</li> </ul>	
		<ul style="list-style-type: none"> <li>Includes all disks that are listed above.</li> </ul>	
			<p>If the <code>media_type</code> variable is not specified, the <code>\$local</code> value is assumed.</p>
		<b>drive</b>	

**Table 56. Parameters in the `isotag_config.xml` and `slmtag_config.xml` files (continued)**

Parameter	Default value	Possible values	Description
		Specifies drives to be included. You can indicate one or more drives or you can use the \$local, \$remote, \$other, and \$all values. In the latter case, all drives of a particular type are included in the scan. This variable is optional on UNIX.	
		<b>path</b> Specifies the path to be included. The following wildcards are supported: asterisks (*) and question mark (?).	
<b>Timeout</b>	43200	Any positive number	Specifies the number of seconds after which a query times out.

 **schedule\_scans.sh**

Replace the default user profile name QSECOFR with your preferred profile name to use it to run capacity scans. The user profile must meet the following requirements:

- Class set to \*USER
- Special authority set to \*NONE

You can use the same user profile that is used to install the scanner and run the software scan. Set up the special authority to \*ALLOBJ.

### sw\_config.xml

The file contains parameters for tuning the catalog-based scan. For more information about this scan, see: [Types of software scans](#).

**Table 57. Parameters in the sw\_config.xml file.**

Parameter	Default value	Possible values	Description
<b>assumeAutoFS</b>	remote	<ul style="list-style-type: none"> <li>• local Recognizes disks mounted by autofs as local disks.</li> <li>• remote Recognizes disks mounted by autofs as remote disks.</li> <li>• other Recognizes disks mounted by autofs as disks of other types, for example: DVD.</li> </ul>	Specifies how the scan recognizes disks that were mounted by the automatic mounting service (autofs). <b>IBM i</b> The parameter is not available .
<b>excludeDirectory</b>	For the list of directories that are excluded by default, see: <a href="#">Excluding directories from being scanned (BigFix scenario)</a> .	Directory name	Specifies directories that are excluded from software scans. For more information, see: <a href="#">Excluding directories from software scans by disconnected scanner (disconnected scenario)</a> .
<b>excludeGuestDirectories</b>	true	<ul style="list-style-type: none"> <li>• true</li> <li>• false</li> </ul>	Specifies whether catalogs that belong to zones or WPARs are scanned. When the value of the parameter

Table 57. Parameters in the sw\_config.xml file. (continued)

Parameter	Default value	Possible values	Description
			is set to true, the catalogs are not scanned.
<b>includeDirectory</b>	\$local::*	<p>[media_type::]drive:path- Where:</p> <p><b>media_type</b></p> <p>Specifies the media type. Possible values:</p> <ul style="list-style-type: none"> <li>• \$local Includes local disks.</li> <li>• \$remote Includes remote disks.</li> <li>• \$other Includes other disk types, for example: DVD. This option is support-</li> </ul>	Specifies directories to be included in the software scan. <b>IBM i</b> The parameter is not available .

Table 57. Parameters in the sw\_config.xml file. (continued)

Parameter	Default value	Possible values	Description
		<p>ed on-ly on Windows.</p> <ul style="list-style-type: none"> <li>• \$all</li> </ul> <p>Includes all disks that are listed above.</p> <p>If the media_type variable is not specified, the \$local value is assumed.</p> <p><b>drive</b></p> <p>Specifies drives to be included. You can indicate one or more drives or you can use the \$local, \$remote, \$other, and \$all values. In the latter case, all drives of a particular type are included in the scan. This</p>	

**Table 57. Parameters in the sw\_config.xml file. (continued)**

Parameter	Default value	Possible values	Description
		<p>variable is optional on UNIX.</p> <p><b>path</b></p> <p>Specifies the path to be included. The following wildcards are supported: asterisks (*), question mark (?).</p>	
<b>maxQueryTime</b>	43200	Any positive number	Specifies the number of seconds after which a query times out.

### Configuration files that should not be modified

Do not modify any parameters in the following configuration files. Otherwise, the disconnected scanner might stop working.

- `tlm_hw_config.xml`
- `vpd_config`

## Discovery of software in Docker containers

**9.2.5** Available from 9.2.5. Docker is a platform that allows for automating the deployment of applications inside software containers. BigFix Inventory discovers software that is installed inside Docker containers. It also measures license metric utilization of the discovered products.

### Discovering software

BigFix Inventory discovers software that is installed in Docker containers on condition that:

- Only one Docker engine is deployed on the host computer.
- The Docker container is deployed on one of the following platforms:
  - Red Hat Enterprise Linux 7 for x86
  - Red Hat Enterprise Linux 7 for IBM System z (64-bit)
  - SUSE Linux 12 for x86

- The Docker container is running.
- The BigFix client is installed on the host computer.
- Scans and uploads of their results are enabled on the host computer.
- Software that is installed in the Docker container delivers software ID tags.
- To ensure proper discovery of software on Docker containers, the content of a Docker container cannot change throughout its lifecycle.

**9.2.10** Starting from application update 9.2.10, BigFix Inventory additionally supports software discovery on Docker containers under the Red Hat® OpenShift container application platform.

## Viewing software

Software that is installed in Docker containers can be viewed on the Software Installations report. It is presented under the host computer. To learn why the software was discovered, click **Details**.

IBM SPSS Statistics Base was detected because the following condition was met:

**1** Software identification tag found

✔ Software identification tag `/var/opt/BESClient/LMT/CIT/docker/containers/0d4a4099ceb3/swidtags-python/2429/`

**2** `ibm.com_IBM_SPSS_Statistics_Base-24.0.0.swidtag` with following data:

Publisher Name: IBM

Name: IBM SPSS Statistics Base

Version: 24.0.0

Unique ID: `ibm.com-1f1bf9d5371243de8cd0971c93dfc274-24.0.0`

Tag Creator Name: IBM

Licenser Name: IBM

Tag Version: 0

Detected on: 06/28/2016 04:20 PM

The details include, among other, information about:

- 1** Container on which the software was detected.
- 2** Software ID tag that caused the detection.

## Additional configuration

In some Docker environments, you might need to perform additional steps to specify a non-default installation path, or to exclude directories from scanning. For more information, see: [Configuring scans on Docker containers \(on page dcxlvii\)](#).

## Measuring license metric utilization

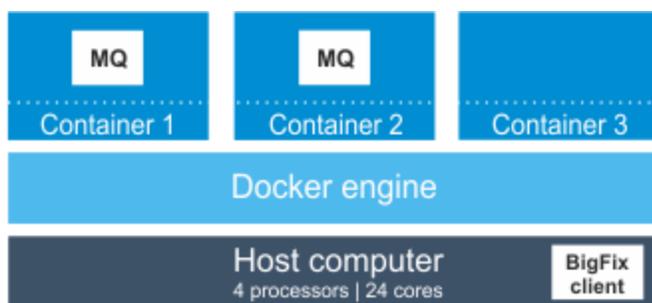
Apart from discovering software that is installed in Docker containers, BigFix Inventory also reports license metric utilization of the discovered products. When the Docker is deployed on a physical host, license metric utilization is calculated on the level of the host. When it is deployed on a virtual machine, utilization is calculated on the level of the virtual machine. For more details, see the following scenarios.

**!** **Important:** Docker is not a subcapacity eligible virtualization but it can be used in combination with a subcapacity eligible virtualization. The scenarios show how utilization of PVU and RVU MAPC is calculated. Utilization of other reported metrics is calculated in an analogical way.

### Scenario 1: Docker deployed on a physical server

When the Docker engine is deployed directly on a physical server, PVU and RVU MAPC utilization is measured on the level of the host computer.

**Example:** Three containers are deployed on a physical server that has four Intel Xeon 3400 processors, each with six cores. It gives 24 cores in total. IBM MQ is installed in two out of three containers. BigFix Inventory counts PVU and RVU MAPC utilization on the level of the host computer.



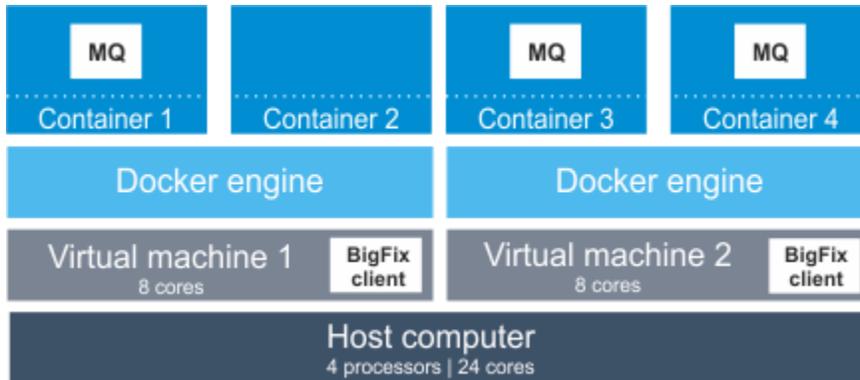
In this case, IBM MQ has access to 24 cores. According to the PVU table, when the server has four sockets, this processor model is assigned 100 PVUs per core. Thus, PVU utilization for IBM MQ equals 2400 PVUs. The value would be the same if another instance of IBM MQ was installed in the third container.

### Scenario 2: Docker deployed on a virtual machine

When the Docker engine is deployed on a virtual machine, PVU and RVU MAPC utilization is counted as the highest number of PVUs that are available for the virtual machine.

**Example:** Two virtual machines are installed on a physical server that has four Intel Xeon 3400 processors, each with six cores. It gives 24 cores in total. Each virtual machine is assigned eight cores and has two containers deployed. IBM MQ is installed:

- In one container on the first virtual machine
- In two containers on the second virtual machine



In this case, IBM MQ that is installed on each of the virtual machines has access to eight cores. In total, it has access to 16 cores out of 24 cores that are available on the physical computer. According to the PVU table, when the server has four sockets, this processor model is assigned 100 PVUs per core. Thus, PVU utilization for IBM MQ equals 1600 PVUs. If the Docker engine was deployed directly on the physical server, IBM MQ would have access to 24 cores and its PVU utilization would equal 2400 PVUs.

### Disabling software discovery

By default, BigFix Inventory scans all Docker containers that are deployed on computers where the BigFix client is installed. If you do not want to scan the containers, but still want to monitor the host computer, you can disable scanning of Docker containers. For more information, see: [Disabling scans on Docker containers \(on page dcxlix\)](#).

### Logs

To troubleshoot problems with discovery of software that is installed in Docker containers, see the `docker_scan.log` log. The log is stored in the BigFix client installation directory. By default, it is:

```
Linux  var/opt/BesClient/LMT/CIT/docker_scan.log
Windows C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT
\docker_scan.log
```

#### 10.0.9 Fixlet to force rescan Docker containers during next Software Scan

The fixlet, "Clear cache to force rescan Docker containers during next Software Scan" forces rescanning of docker containers during the next Initiate Software Scan. This is achieved by clearing cache of already scanned images. This task refers to the ISO tagged software scan on Docker containers.

### Support for ISO/IEC 19770-2

ISO/IEC 19770-2 is an international standard for creating software identification (SWID) tags. The tags are XML files that are used for discovering and identifying software. They are delivered with software products and contain unique product-related information such as its name, edition, version, whether it is a part of a bundle and more. SWID tags facilitate software discovery and the overall process of software asset management.

**10.0.2** Component Detailed Version now provides complete information about fix packs through ISO 19770-2 patch/delta tags. Previously the tags used to get rejected on both, endpoint side and server side. The functionality works with BigFix Inventory server version 10.0.2 or higher and Initiate Software Scan fixlet version 10.0.2 or higher.

## Supported schemas

BigFix Inventory supports SWID tags in the 19770-2:2014-CD1 and 19770-2:2015 schemas. BigFix Inventory supports ISO 19770-2 SWID tags. Initial support for provided for the 19770-2:2014-CD1 and 19770-2:2015 schemas and only primary tags. With version 10.0.2 there has been added support for delta/patch tags. Starting from version 10.0.4 there has been added support for 19770-2:2008 schema as well improved recovering information from not well formed ISO tags, including tags without changed tagID/tagVersion but updated release information.

## BigFix

When BigFix is discovered with an SWID tag that is not contained in the current catalog, a warning sign is displayed on the Software Catalog widget. If you want to see what components were detected, perform the following steps:

1. In the top navigation bar, click **Reports > Software Installations**.
2. Hover over **Configure**, and click **Configure View**. Select the **Component Definition Source** check box to display the column, and add the following filter: `Component Definition Source, equal to, SWID IBM Tags Without License Info`. Then, click **Submit**.

To be able to bundle such components, upload the latest software catalog.



**Tip:** **9.2.7** You can create a custom bundling definition on the Software Classification panel.

## Limitations

- [Bundling assistance \(on page cmxliv\)](#) might not be available for IBM components that are discovered with the SWID tag. To assign such a component to a product, upload the latest software catalog to BigFix Inventory. If the catalog contains the relation, automatic bundling is done. You have to either confirm the suggested relation or, if the relation is not correct, reassign the component to a different product.

---

Related information

[Bundling tags \(on page cmxlvi\)](#)

## **10.0.10** Discovering Mac software in BigFix Inventory

With BigFix Inventory version 10.0.10, software discovery is extended on Mac endpoints or computers. The discovery is based on catalog-less mechanism and catalog entries are created automatically based on discovery results and algorithm/logic for Mac discovery.

Mac application packages have well-defined naming convention and versioning, but vendor of an application is not normalized. BigFix Inventory includes an algorithm to determine and normalize the names of software vendors for Mac software packages. This feature replaces the previous method of software discovery. All catalog definitions including signatures created by “Automatic Signature creation for installed software on Mac Computers” and dependent discovery are removed during upgrade.

#### To be able to use new Mac software discovery:

- Update “Initiate Software Scan” action to version 10.0.10
- Update “BigFix Inventory Server” to version 10.0.10

### Before upgrading

As Mac OS package discovery is improved, current catalog and software discovered for Mac OS machines are removed during the application upgrade. The data is replaced with data imported during new software scan. As the data is removed, application upgrade may take longer than usual if there are Mac software and machines in the environment.

The time required for upgrade is estimated by the following query:

```
select count(*) / 20 from sam.software_components c
join sam.publishers p on c.publisher_id = p.id
where p.name = 'Unclassified Mac Software'
```



**Note:** Stop old actions and start new actions using updated version of “Initiate Software Scan” fixlet. The result of this fixlet produces package data for Mac OS machines in a format that is accepted by BigFix Inventory 10.0.10.0. Data from old format is still shown on Package Data panel, but no longer on software inventory reports, like Software Classification.

### New features

The new features are listed below:

#### Vendor name

The new package scan for Mac OS provides information about the package vendor. Additionally, during data import, vendor names are normalized to avoid duplicate vendor names. For example, “HCL America” is normalized to “HCL” and “International Business Machines” to “IBM”, etc.

#### Extended usage data

The new package scan for Mac OS includes improvements for usage signatures generation. As a result, number of software components with the ability to report usage is higher than in previous implementation.

#### Package categories

To further improve the Mac software reporting, a “category” of the package has been introduced. In current implementation each package on Mac is classified as “Application” or “Other”. Only the entries categorized as “Application” are promoted to Catalog and reported under Software Classification.

It is also possible to promote entries classified as “Other” by manually creating the signature from the Package Data view. It is recommended to adjust signature to include any patch for given software and normalize Publisher and Software Name.

### New catalog hierarchy

Components discovered on Mac machines are bundled to one product having release number ‘\*’ instead of numbers depending on package version. The change is also applicable to 'product\_release' column in `api/sam/v2/software_instances` REST API. It does not affect license calculations.

Component version is limited to two numbers, for example, 1.2 where the whole version string is present in Component Detailed Version column.

## Unicode

**9.2.3** Available from 9.2.3. Starting from V9.5, BigFix Platform has the capability to gather data from BigFix clients deployed with different code pages and languages, encode the data into UTF-8 format, and report it back to the BigFix server. As a result, regardless of the system and encoding that your clients use, the data is correctly displayed both in BigFix and in BigFix Inventory. This capability is useful when your environment has clients with different code pages and data that contains non-ASCII characters.

This capability has the following main assumptions:

- The data is correctly displayed only if the characters belong to the code page of a particular client. Your clients can use various code pages and all of them are supported by BigFix, but from the perspective of a single client, all outgoing data must be consistent with the code page of this client. For example, if you install software whose name contains the `æ` character (which is specific to Windows 1252 code page) on a client that uses the Windows 1250 code page, this character will not be correctly displayed in BigFix Inventory, because it does not belong to the code page of the client.
- Encoding into UTF-8 format is supported only for the bottom-up data flow, that is, for the data that flows from the BigFix clients to the BigFix server. The top-down data flow does not support this encoding, which means that all actions sent towards the clients, for example through Fixlets, cannot contain non-ASCII characters. The top-down data flow always uses the code page of the BigFix server.

### Prerequisites

- BigFix server 9.5 or higher
- BigFix agent 9.5 or higher
- BigFix Inventory 9.2.3 or higher

## Limitations

- Results of the package data scan

All results of the package data scan, that is, packages and data retrieved from the registry, are omitted if they contain characters that do not belong to the code page of the client on which they are installed. Such results are filtered out on the client side and are not uploaded to BigFix. Other types of the software scan are not affected.

- Names of all items created in the BigFix interface

All items created in the BigFix interface, such as custom sites, Fixlets and analyses, computer groups, and so on, will not be correctly displayed if they contain characters that do not belong to the code page of the BigFix server. All these items are a part of the top-down data flow, which does not support encoding into UTF-8 format.

- BigFix Inventory Fixlets that has user-specified paths

Avoid using non-ASCII characters while specifying paths in BigFix Inventory Fixlets, because such paths might not be accepted. The affected Fixlets are: Add Excluded Directories, Remove Excluded Directories, and Change Scanner Cache Folder.

- VM managers credentials

Avoid using non-ASCII characters in user names that are used to log in to VM managers, because the VM Manager Tool that connects to those VM managers does not support encoding into UTF-8 format.

- Subscription e-mails

Avoid using non-ASCII characters in email addresses, which are used as the recipients of scheduled reports.

---

Related information

[Unicode in BigFix](#)

### 10.0.6 Time handling

From version 10.0.6, contract values are calculated in UTC (Coordinated Universal Time) time zone. Before version 10.0.6, BigFix Inventory used to calculate contract values in server OS's time zone for All Contract reports and in local time for edit contracts.

Dates are shown in local time zone if no time zone is mentioned for a component. Dates are shown in UTC if the same is mentioned during the creation. For example, when creating a new contract, BigFix Inventory indicates that the considered time zone is UTC.

**Example:** All Metrics panel

In UTC In UTC, daylight saving does not impact the start and end time. In UTC, any computation for the date considers the start time as 00:00:00 UTC and end time as 23:59:59 UTC.

#### **Example: Data Imports**

A data import is scheduled in Central European Time (CET) for October, 14th 2021 at 03:00 PM (15:00). In UTC, the import is scheduled for 1:00 PM (13:00). This means that after switch to Winter time on October 31, 3:00 AM, data import will be still triggered at 1:00 PM (13:00) UTC, which mean that the import will happen at 2:00 PM (14:00) CET instead of 03:00 PM (15:00).

#### **Example: Saved Reports**

In Asia-Pacific time zone, at the start of the day, reports show data from 'previous day' and in Americas, at the end of the day, reports show data from 'next day'. To avoid this discrepancy, API calls are made based on the UTC time zone. When you select to view a report, the API converts the report in UTC and the report is shown in UTC.

## Scenarios

To understand the business goals that you can achieve with BigFix Inventory, familiarize yourself with the main user scenarios. Each scenario presents a real-life example of using the application and lists personas who are typically involved in achieving a business goal.

### Service providers

**9.2.2** Available from 9.2.2. To properly calculate subcapacity values in the service provider environment, divide the computers in your infrastructure into groups that represent your customers. Then, manage software and generate audit snapshots separately for each customer.

A service provider is a company that provides other organizations with access to software installed on machines that are owned and maintained by the service provider. There are three typical scenarios that are used in the service provider environment.

#### **Scenario 1: Software that is installed on one virtual machine is used by one customer**

In this scenario, all products that are installed on one virtual machine are used by one customer. To properly calculate PVU values for each customer, perform the following steps:

1. Configure VM managers that control virtual machines in your environment.

 **Tip:** If each customer should be allowed to view information about all VM managers in the infrastructure, use [basic VM management \(central\)](#) (on page [dcccxi](#)). If each customer should be allowed to only view information about VM managers that control the virtual machines that he uses, use [advanced VM management \(distributed\)](#) (on page [dcccxiv](#)).

2. If you grant your customers access to the BigFix console to allow them to run scans and perform other actions on computers, create a site, a computer group, and an operator that is dedicated to each customer.

Then, provide the customer with credentials for the dedicated operator. This way, you ensure that each customer has access only to computers on which the software that he uses is installed.

3. Create computer groups that represent your customers in BigFix Inventory. Ensure that each group contains only machines with software that is used by one customer. Avoid creating computer groups that overlap as it might distort the obtained results.
4. Bundle software and generate reports per customer:
  - If you give customers access to BigFix Inventory or when each customer account is managed by a separate person, create dedicated BigFix Inventory users, each with access to one computer group. Then, provide each customer with credentials for the user dedicated to their company. Each customer can manage software and generate reports for the software that they use.

 **Restriction:** To ensure that each user has access to information only about computers that he uses, do not assign the user with the Administrator role. By default, this role has access to the All Computers group. Thus, a user who is assigned this role can view information about all computers in the infrastructure.

- If you manage customer software, generate a separate audit snapshot for each computer group. Then, provide each customer with their report.

For detailed instructions, see: [Tutorial: Managing software in the service provider environment \(on page mccc1\)](#).

## **Scenario 2: Some of the software that is installed on a virtual machine is used by the service provider**

In this scenario, some of the software products that are installed on a virtual machine are used by the service provider, not the customer. To ensure that the customer is not charged for these products, perform the following steps for each computer group:

1. Open the All Metrics report and filter out the product that is not used by the customer.
2. Set the report as the default view for the computer group to which your user is assigned.
3. Generate the audit snapshot. It will not contain the software that is not used by the customer.

 **Restriction:** All instances of the product that you filter out must be used by the service provider.

For detailed instructions, see: [Tutorial: Managing software in the service provider environment \(on page mccc1\)](#).

## **Scenario 3: Software that is installed on one virtual machine is used by many customers**

In this scenario, multiple customers access software that is installed on one virtual machine. This scenario is not supported in BigFix Inventory.

## Data visibility

Some of the items in BigFix Inventory are visible globally to all users. Other items are visible only for the user who has access to a particular computer group. If you grant your customers access to BigFix Inventory, review which items are visible globally and which are visible per computer group.

**Table 58. Data visibility**

*The table consists of three columns and 17 rows.*

Item	Visible global-ly to all users	Visible per computer group
Data retention period	Yes	
Email server	Yes	
LDAP server	Yes	
PVU table	Yes	
Retrieved computer properties	Yes	
Software catalog	Yes	
VM managers (in the <a href="#">basic VM management scenario (on page dccxcii)</a> )	Yes	
Audit trail		Yes
Bundling		Yes
Computer groups		Yes
Contracts		Yes
Part numbers		Yes
Reports		Yes
Software exclusions		Yes
VM managers (in the <a href="#">advanced VM management scenario (on page dcccxiv)</a> )		Yes
Unrecognized files		Yes

## BigFix subcapacity regions

**9.2.2** Available from 9.2.2. BigFix subcapacity licensing rules define three regions. To properly calculate subcapacity values for products that are installed in multiple regions, generate the audit snapshot for each region. Then, for every product, sum up the subcapacity values from all regions. The value that you obtain is the overall subcapacity usage for the particular product.

## BigFix subcapacity regions

Regions that are defined by BigFix subcapacity licensing rules include:

- Region 1: North America and South America
- Region 2: Europe and Africa
- Region 3: Asia and Australia

For more information, see: [Virtualization Capacity License Counting Rules](#).

## Steps to calculate subcapacity values

To properly calculate subcapacity values in an environment that spans over multiple BigFix subcapacity regions, perform the following steps:

1. Divide the computers in your infrastructure into groups that reflect BigFix subcapacity regions. Ensure that each group contains only computers that are located in one region. Do not create computer groups that overlap as it might distort the obtained results.
2. Optional: If software in each region is managed by a different person, create dedicated BigFix Inventory users, each with access only to computers in one region.
3. Import part numbers for each computer group and bundle software within each region.
4. Generate audit snapshots for each region. Ensure that the snapshots cover the same or approximately the same period.
5. For every product, sum up the subcapacity values from all regions. The value that you obtain is the overall subcapacity usage for the particular product.

 **Important:** If you generate the audit snapshot for the All Computers group, the PVU usage might differ from the value that you obtain by summing up PVU values from snapshots generated for each region. PVU usage for the All Computers group is measured at the time when the sum of PVU values from all regions is the highest. However, this value might not reflect the highest PVU usage in each region. To comply with the subcapacity licensing rules, you must know what is the highest PVU usage in each region, and then sum up these values to obtain the overall PVU usage for a product. To better understand the logic, see the example below.

For detailed instructions, see: [Tutorial: Reporting subcapacity usage per computer group \(on page mcccxxxiv\)](#).

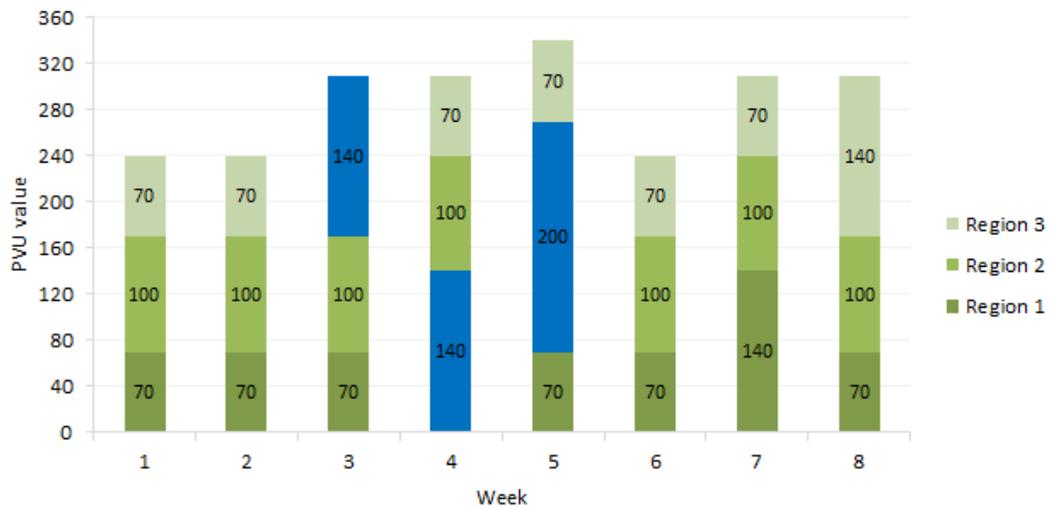
## Example

A large international company has offices in Australia, Europe, and North America. To fulfill the subcapacity licensing requirements, computers in this company are divided into three groups. The computer group hierarchy looks as follows.

- All Computers
  - Region 1: North America
  - Region 2: Europe
  - Region 3: Australia

Product A is installed on computers in all regions. To obtain information about the highest PVU usage in each region, the Software Asset Manager generates the audit snapshot for each region. [Figure 1: The highest PVU usage for Product A in each region. \(on page cdxxvi\)](#) is a visualization of PVU usage for Product A. The highest PVU usage for each region is marked in blue.

Figure 1. The highest PVU usage for Product A in each region.



According to the generated snapshots, the highest PVU values are:

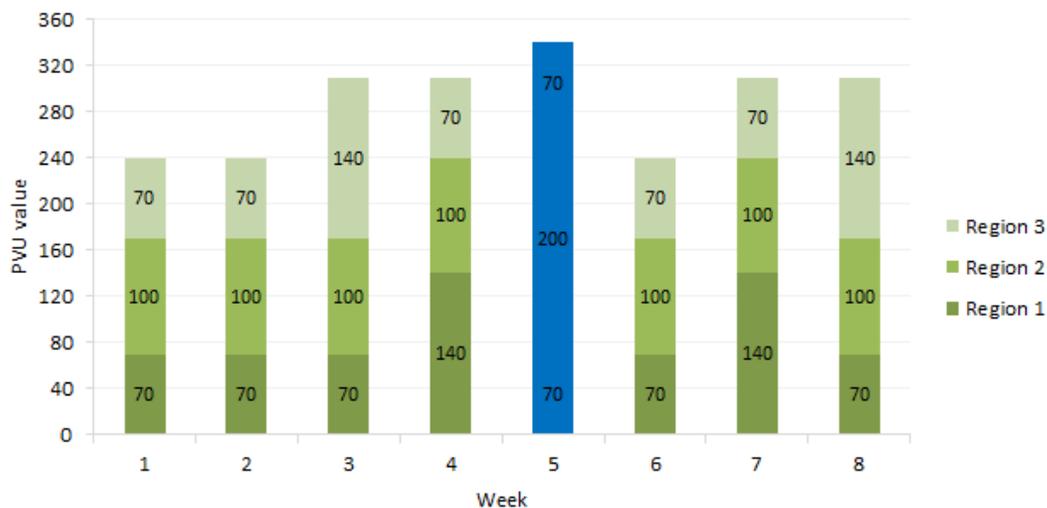
- 140 PVUs in Region 1
- 200 PVUs in Region 2
- 140 PVUs in Region 3

To obtain the overall PVU usage for Product A, the Software Asset Manager sums up the highest PVU values from each region.

$$140 + 200 + 140 = 480 \text{ PVUs}$$

The total PVU usage for Product A is 480 PVUs. If the Software Asset Manager generated a single audit snapshot for the All Computers group, the reported PVU usage would be 340 PVUs. [Figure 2: The highest PVU usage for Product A in the All Computers group. \(on page cdxxvii\)](#) is a visualization of PVU usage for Product A calculated on the level of the All Computers group. The highest PVU usage is marked in blue.

Figure 2. The highest PVU usage for Product A in the All Computers group.



The correct PVU value for Product A is the value obtained by summing up the PVU values from three regions, namely 480 PVUs.

### Possible setup of the BigFix infrastructure

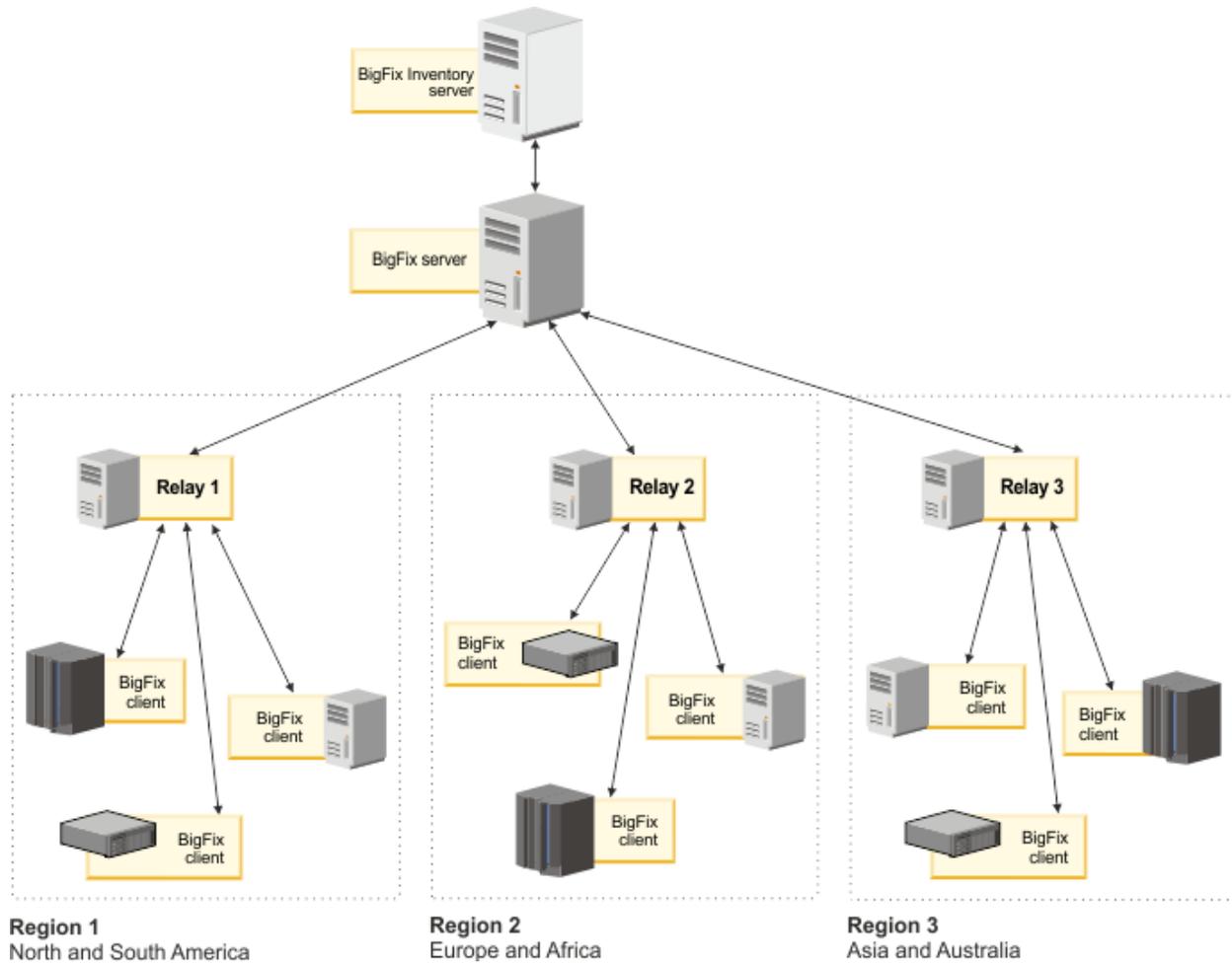
To facilitate infrastructure management and the creation of computer groups, you can set up the BigFix infrastructure in one of the following ways.

**!** **Important:** These setups are provided as examples only. You can set up the BigFix infrastructure in any way that suits your needs.

#### One BigFix server with three relays

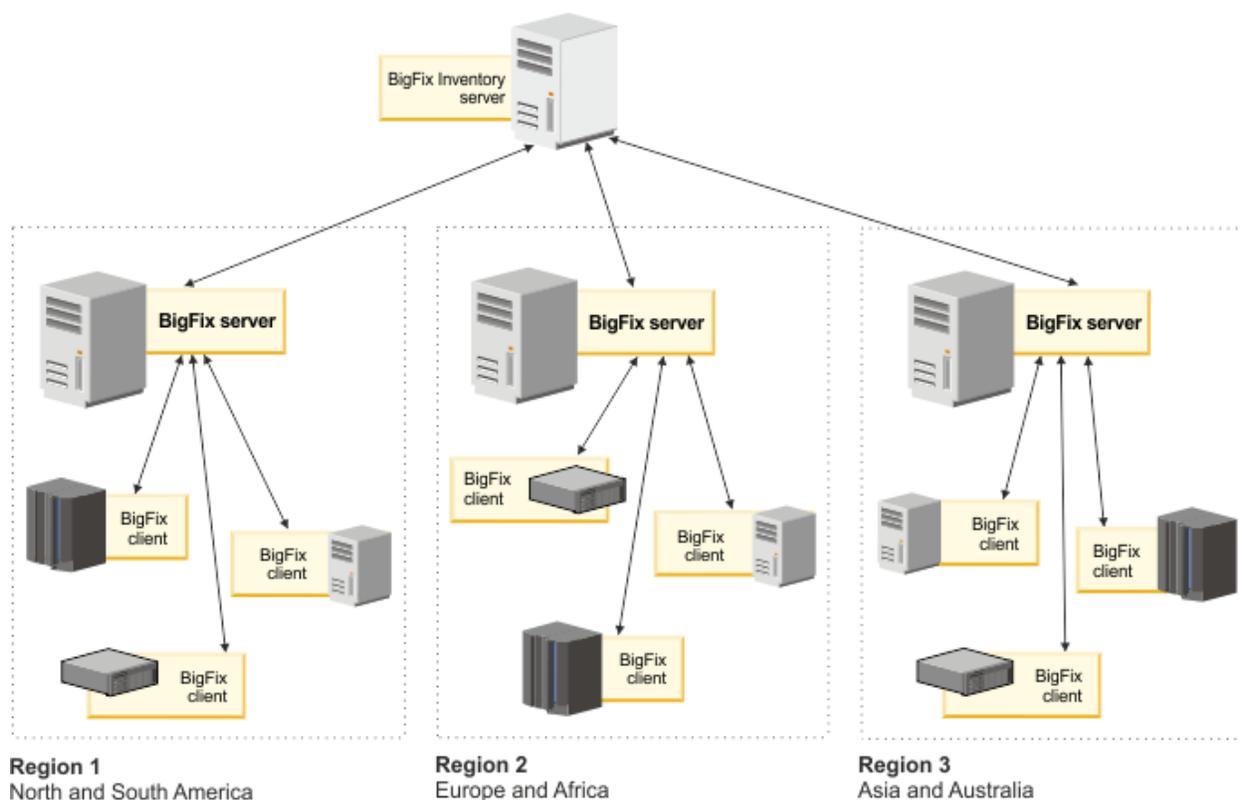
In this case, one BigFix server monitors all computers in your infrastructure. You set up three relays, each dedicated to handling the traffic from computers in one BigFix subcapacity region. Then, in the BigFix console, you create computer groups that reflect the BigFix subcapacity regions. You can later on use these groups to easily create computer groups in BigFix Inventory.

**📌 Note:** Computer groups created in the BigFix console are used to manage the infrastructure, and run Fixlets against selected computers. They are not automatically copied to BigFix Inventory. However, they can be used as the basis for creating computer groups that define the scope of reports in BigFix Inventory.



### Three BigFix servers

In this case, you set up an infrastructure with three BigFix servers. Each server is dedicated to one BigFix subcapacity region and collects data only from the computers in that region. Data from all BigFix servers is imported to one instance of BigFix Inventory in which you create three computer groups. Each computer group reflects one BigFix server.



## Organizational business units

**9.2.2** Available from 9.2.2. To manage software and view reports per organizational business unit, divide the computers in your infrastructure into groups that represent these units. Then, create dedicated users, each with access to a particular computer group.

To manage software per organization business unit, perform the following steps:

1. Divide the computers in your infrastructure into groups that reflect the departments. Ensure that each group contains only computers from one department. Do not create computer groups that overlap as it might distort the obtained results.
2. If software in each department is managed by a different person, create dedicated BigFix Inventory users, each with access to computers in one department.
3. Import part numbers for each computer group and bundle software within each department.

For detailed instructions, see: [Tutorial: Reporting subcapacity usage per computer group \(on page mcccxxxiv\)](#).

### Example

A company that is located in the United States has three departments: Finance, HR, and IT. Because employees in each department use software that is typical for their position, the Software Asset Manager wants to manage the software for each department separately. To do this, he asked the IT Architect to create three computer groups in

BigFix Inventory, each containing computers from only one business unit. The computer group hierarchy looks as follows.

- All Computers
  - Computer Group 1: Finance Department
  - Computer Group 2: HR Department
  - Computer Group 3: IT Department

The Software Asset Manager can now import part numbers that are dedicated for each computer group and manage the software within each department separately. He can also generate separate subcapacity reports to get an overview of PVU consumption for BigFix software within each department. However, to create the audit snapshot with the PVU consumption within the entire company he must generate the audit snapshot for the All Computers group.

## Give us feedback

The BigFix Inventory development team is open to any kind of feedback that can help improve our application and better tailor it to your needs. You can leave your comments or ask questions through several channels.

### Forum

*Use for: quick problem solving*

If you are not necessarily looking to give us feedback, but rather need a quick solution to your problem, visit our forum and check whether we already helped in a similar situation. If you cannot find a solution, describe the problem and get help from other experienced users or our team, which constantly monitors the submitted posts. This is not an official, but a very quick way to get support.

- [Go to Inventory forum](#)

### Service Request (PMR)

*Use for: defects and problems, official support channel*

Service Requests, or PMRs, are an official way of communicating with our support teams. Day and night, in Americas, Europe, or Asia, there is always someone who will find a solution to your problem, regardless of how complicated it may seem.

- [Open a Service Request](#)

### RFE

*Use for: ideas for enhancements and new functions*

RFE, or Request for Enhancement, is a way to submit an idea for a new function in BigFix Inventory.

- [Submit an idea](#)

# Installing

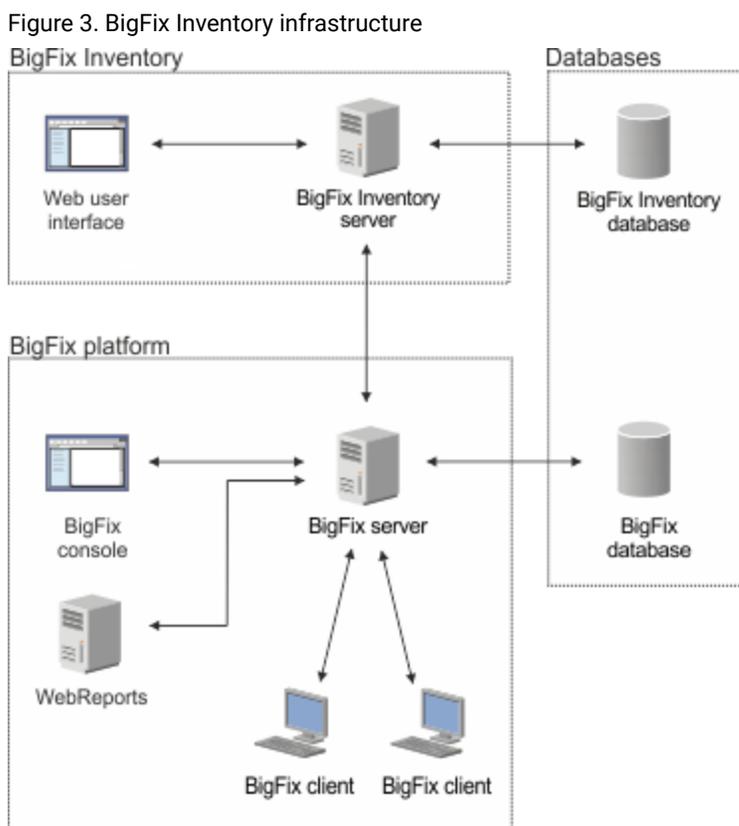
Learn about the requirements and available installation scenarios to ensure that the deployment of BigFix Inventory goes smoothly in your environment.

## Planning the installation

Before you start the installation, review information about hardware and software requirements and other considerations to ensure that the installation completes successfully.

## BigFix Inventory infrastructure

A complete deployment of BigFix Inventory consists of the BigFix Inventory server and its database, the BigFix server and its database, and a BigFix console. Additionally, a BigFix client must be installed on every computer from which you want to collect software inventory data. Depending on the environment size, you can install all components on a single computer, or distribute them among multiple computers.



### BigFix Inventory server

The BigFix Inventory server provides a reporting interface for the inventory data that is collected from the computers managed by BigFix. To process the data in real time and to ensure reporting accuracy, the BigFix Inventory server should run all the time. Users access the application server through a web user interface.

### **BigFix server**

The BigFix server forms the heart of the BigFix infrastructure. It coordinates the flow of data to and from individual computers. The server stores the results of capacity scans for up to five days, and thus should not be stopped for a longer period. It also stores the results of the last successful software scan from each computer. If new software scans are run more than once during server maintenance, not all of them are processed after the restart.

### **BigFix console**

The BigFix console provides a system-wide view of all computers in the infrastructure and their configuration. It is used to target computers with specific actions such as installing the scanner or scheduling software and capacity scans.

### **Web Reports**

Web Reports is a high-level web application that allows for visualizing data collected from the BigFix infrastructure. It is required by BigFix Inventory to connect with the VM Manager Tool that collects data from the VM managers in your infrastructure.

### **BigFix clients**

BigFix client is common for all products that are based on the BigFix platform and should be installed on every computer, including backup and recovery machines, to ensure audit readiness. It provides information about computer properties, and is used to perform tasks such as installing the scanner on the computers. The BigFix client runs on all operating systems supported by BigFix Inventory, except for IBM i that uses disconnected scans instead of the client.

Apart from the BigFix client, a scanner should also be installed on every monitored computer. The scanner is an independent component that is used by BigFix Inventory to collect information about the hardware, as well as the software that is installed on the computers in your infrastructure.

### **Databases**

BigFix server and BigFix Inventory server require their separate database instances. Depending on the size of your environment, these can be two database instances running on a single database engine, or two separate database engines. The data is extracted from the BigFix server database and imported to the BigFix Inventory database during the Extract, Transform, and Load (ETL) import process.

## Detailed System requirements

The tables in this section provide detailed information about the system requirements for BigFix Inventory 10.

[Operating systems \(on page cdxxxiii\)](#)

[Hypervisors \(on page cdl\)](#)

[Prerequisites \(on page cdlxi\)](#)

## Supported managed devices

The tables in this section provide detailed information about supported managed devices for BigFix Inventory version 10.



**Important:** Software vendors might restrict eligible platform for their software licensing and change the eligibility in future for reasons, such as end of support of given technology. To stay compliant with vendor rules, refer to the vendor documentation about current platform eligibility for a given licensing metric. For IBM Sub-capacity eligible systems, check [Sub-capacity \(Virtualization capacity\) licensing](#) page.

### Navigation

**Operating Systems:** [AIX \(on page 434\)](#) [HP \(on page cdxxxv\)](#) [IBM i \(on page cdxxxvi\)](#) [Linux \(on page cdxxxvi\)](#) [Solaris \(on page cdxlii\)](#) [Windows \(on page cdxliii\)](#) [Mac OS \(on page cdl\)](#)

**Hypervisors:** [AIX \(on page 451\)](#) [HP \(on page cdlii\)](#) [IBM I \(on page cdlii\)](#) [Linux \(on page cdliii\)](#) [Solaris \(on page cdlvii\)](#) [Windows \(on page cdlx\)](#)

## Operating Systems



**Note:** While installing BigFix Inventory, if the path of the operating system is too long, error might occur. To avoid this, the path of operating system must be restricted to 256 characters for Windows and 4096 characters for Linux.

**Table 59. AIX**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes
			BigFix Agent	Disconnected Scanner		
AIX 6.1	POWER System - Big Endian	64-Exploit	Yes	Yes	TL4	(1)
AIX 7.1	POWER System - Big Endian	64-Exploit	Yes	Yes	Varies	(1)
AIX 7.2	POWER System - Big Endian	64-Exploit	Yes	Yes	Base	(1)
AIX 7.3	POWER System - Big Endian	64-Exploit	No	Yes	Base	(1)

**AIX notes:**

## 1. Supported Virtualization Technologies

- PowerVM®
  - LPAR
  - DLPAR
  - Single Shared Processor Pool
  - Micro-Partitioning®
  - Multiple Shared Processor Pools
  - Shared Dedicated Processor
  - Mobility (Live Partition Mobility)
  - System WPARs (Both regulated and unregulated, also RSET bound)
  - WPAR mobility (Live Application Mobility)
- IBM zEnterprise® BladeCenter Extension (zBX)
- Processor Core Deconfiguration
- Power Enterprise Pools (Supported for all IBM Power Systems that support this technology)
- Both regulated and unregulated, also RSET bound



**Note:** Ensure that on AIX the `xlc.rte` library version 13.1.0.0 or higher is installed on the target computer.

**Table 60. HP**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnect-ed Scanner				
HP-UX 11i v3	IA64	32, 64-Exploit	Yes	Yes	Base	Yes		
HP-UX 11i v3	PA-RISC	32, 64-Exploit	Yes	Yes	Base	Yes		

**Notes:**

1. Effective April 30, 2022, HCL will end service for BigFix Platform version 9.2.x. Even with the end of support for BigFix Platform 9.2.x, BigFix will continue to support for HP-UX using BigFix Platform 9.2 Agent reporting to BigFix Platform 9.5 or 10.0, connected to BigFix Inventory 10.x. BigFix Platform 9.2 HP-UX Agent patches will be provided only to address PSIRT records or high severity customer reported defects. For more information, see [BigFix forum announcement](#).

**Table 61. IBM i**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
IBM i 7.1	POWER System - Big Endian	32	No	Yes	Base (1)	(1)		10.0.10
IBM i 7.2	POWER System - Big Endian	32	No	Yes	Base (1)	(1)		
IBM i 7.3	POWER System - Big Endian	32	No	Yes	Base (1)	(1)		
IBM i 7.4	POWER System - Big Endian	32	No	yes	Base	No		
IBM i 7.5	POWER System - Big Endian	32	No	Yes	Base	No	10.0.10	

**IBM i notes:**

## 1. Supported Virtualization Technologies PowerVM

- LPAR
- DLPAR
- Single Shared Processor Pool
- Micro-Partitioning
- Multiple Shared Processor Pools
- Shared Dedicated Processor
- Mobility (Live Partition Mobility)

**Table 62. Linux**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
CentOS Stream 9	x86-64	64-Exploit	Yes	Yes	Base	No	10.0.12	
CentOS 7	x86-64	64-Exploit	Yes	No	Base	No		
CentOS 8	x86-64	64-Tolerate	Yes	Yes	Base (2)	(2)		
Debian 9.8	x86-64	64-Exploit, 64-Tolerate	Yes	No	Base	No		

Table 62. Linux (continued)

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
Debian 10	x86 and x64	64-Tolerate	Yes	No	Base	No		
Debian 11	x86 and x64	64-Tolerate	Yes	Yes	Base	No		
Debian 11	x86 and x64	64-Tolerate	Yes	Yes	Base	No		
Debian 12	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	No	10.0.16	
Oracle Enterprise Linux 6	x86-64	32, 64-Exploit	Yes	No	Base	No		
Oracle Enterprise Linux 7	x86-64	64-Exploit	Yes	No	Base	No		
Oracle Enterprise Linux 8	x86-64	64-Exploit	Yes	Yes	Base (2)	(2)		
Oracle Enterprise Linux 9	x86-64	64-Exploit	Yes	No	Base (2)	(2)	10.0.13	
Red Hat Enterprise Linux (RHEL) 5 Advanced Platform	POWER System - Big Endian	64-Exploit	Yes	No	Base (2)	(2)		10.0.1
Red Hat Enterprise Linux (RHEL) 5 Server	IBM z Systems	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)	(2)		10.0.1

**Table 62. Linux (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
Red Hat Enterprise Linux (RHEL) 5 Server	POWER System - Big Endian	64-Exploit	Yes	No	Base (2)	(2)		10.0.1
Red Hat Enterprise Linux (RHEL) Server 6	IBM z Systems	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)	(2)		
Red Hat Enterprise Linux (RHEL) Server 7	IBM z Systems	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)	(2)		
Red Hat Enterprise Linux (RHEL) 6 Server	POWER System - Big Endian	64-Tolerate	Yes	Yes	Base (2)	(2)		
Red Hat Enterprise Linux (RHEL) 7 Server	POWER System - Big Endian	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)	(2)		
Red Hat Enterprise Linux (RHEL) Server 7	POWER System - Little Endian	64-Exploit, 64-Tolerate	Yes	Yes	7.1	Yes		
Red Hat Enterprise Linux	POWER System - Big Endian	64-Exploit	Yes	Yes	Base (2)	(2)		

Table 62. Linux (continued)

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
ux (RHEL) Server 6								
Red Hat Enterprise Linux (RHEL) Server 6	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)	(2)		
Red Hat Enterprise Linux (RHEL) Server 7	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)	(2)		
Red Hat Enterprise Linux (RHEL) Server 8.1	POWER System - Little Endian	64-Exploit, 64-Tolerate	Yes	Yes	Base	(3)	10.0.2	
Red Hat Enterprise Linux (RHEL) 8	IBM z Systems	64-Tolerate	No	Yes	Base	(3)	10.0.3	
Red Hat Enterprise Linux (RHEL) 8	x86-64	64-Tolerate	Yes	Yes	Base (1) (2)	(1) (2) (3)		
Red Hat Enterprise Linux (RHEL) 9	x86-64	64-Tolerate	Yes	Yes	Base (2)	(2)		
SUSE Linux Enterprise Serv-	IBM z Systems	64-Exploit	Yes	No	Base	No		

**Table 62. Linux (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
er (SLES) 11								
SUSE Linux Enterprise Server (SLES) 12	IBM z Systems	64-Exploit	Yes	No	Base	No		
SUSE Linux Enterprise Server (SLES) 15	IBM z Systems	64-Tolerate	Yes	Yes	Base	No		
SUSE Linux Enterprise Server (SLES) 15	POWER System - Little Endian	64-Exploit, 64-Tolerate	Yes	Yes	Base	No	11.0.0	
SUSE Linux Enterprise Server (SLES) 11	POWER System - Big Endian	64-Exploit	Yes	No	Base	No		
SUSE Linux Enterprise Server (SLES) 12	POWER System - Little Endian	64-Exploit, 64-Tolerate	Yes	Yes	SP3, SP4, SP5	No		
SUSE Linux Enterprise Server (SLES) 15	POWER System - Little Endian	64-Tolerate	No	Yes	Base, SP1	No	10.0.2	
SUSE Linux Enter-	x86-32	32	Yes	No	Base	No		

Table 62. Linux (continued)

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
prise Server (SLES) 11								
SUSE Linux Enterprise Server (SLES) 11	x86-64	64-Exploit	Yes	No	Base	No		
SUSE Linux Enterprise Server (SLES) 12	x86-64	64-Exploit	Yes	No	Base	No		
SUSE Linux Enterprise Server (SLES) 15	x86-64	64-Exploit	Yes	No	Base	No		
SUSE Linux Enterprise Server (SLES) 15	zSystems	64-Exploit	Yes	No	Base	No		
Ubuntu 16.04 LTS	POWER System - Little Endian	64-Exploit	Yes	No	Base	No		
Ubuntu 16.04 LTS	x86-32	32	Yes	No	Base	No		
Ubuntu 16.04 LTS	x86-64	64-Exploit	Yes	No	Base	No		
Ubuntu 16.04 LTS	KVM	64-Exploit	Yes	No	Base	No		

**Table 62. Linux (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Notes	Product minimum	End of support
			BigFix Agent	Disconnected Scanner				
Ubuntu 18.04 LTS	POWER System - Little Endian	64-Exploit, 64-Tolerate	Yes	Yes	Base	No	10.0.5	
Ubuntu 18.04 LTS	x86-64	64-Tolerate	Yes	No	Base	No		
Ubuntu 18.04 LTS	IBM z Systems	64-Tolerate	No	Yes	Base	No	10.0.9	
Ubuntu 20.04 LTS	x86-64	64-Tolerate	Yes	No	Base	No	10.0.2	
Ubuntu 20.04 LTS	IBM z Systems	64-Tolerate	No	Yes	Base	No	10.0.9	
Ubuntu 22.04 LTS	x86-64	64-Tolerate	No	Yes	Base	No	10.0.10	
Ubuntu 22.04 LTS	IBM z Systems	64-Tolerate	No	Yes	Base	No	10.0.11	

**Linux notes:**

1. Ensure that on Red Hat Enterprise Linux 8.0 `libstdc++.so.6` library is installed on the target computer.
2. Ensure that the `libstdc++.so.6` library is installed on the target computer.
3. To verify the requirement about Red Hat 8, refer to BigFix Platform [system requirement report](#).

**Table 63. Solaris**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
Solaris 10	SPARC	32	Yes	Yes	Base		10.0.11	Use
Solaris 10	x86-64	64-Tolerate	Yes	Yes	Base		BigFix Inventory	
Solaris 11	SPARC	32	Yes	Yes	Base			

**Table 63. Solaris (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
Solaris 11	x86-32	32	Yes	Yes	Base		10.0.11 Actions	
Solaris 11	x86-64	64-Tolerate	Yes	Yes	Base			

**Solaris Notes:**

1. Solaris 10 is no longer IBM Sub-capacity eligible platform
2. Solaris 10 is supported with use of BigFix Platform Agent 9.5
3. Use the BigFix Inventory 10.0.11 actions like "Initiate Software Scan" as they contain improved relevance for handling Solaris package managers

**Table 64. Windows**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
Windows 11 Pro	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	No	
Windows 11 Pro for Workstation	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	No	
Windows 11 Enterprise	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	No	
Windows 11	x86-64	64-Tolerate	Yes	Yes	Base		(5)	
Windows 10 Enterprise	x86-32	32	Yes	Yes	Base, Anniversary Update, Creator Update, Fall Creator Update, April 2018		No	

Table 64. Windows (continued)

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
					Update, 1809, 1903, 1909			
					Base, Anniversary Update, Creator Update, Fall Creator Update, April 2018 Update, 1809, 1903, 1909			
Windows 10 Enterprise	x86-64, 64-Exploit,	64-Tolerate	Yes	Yes	Base, Anniversary Update, Creator Update, Fall Creator Update, April 2018 Update, 1809, 1903, 1909		(2)	
					Base (2), Anniversary Update (2), Creator Update (2), Fall Creator Update (2), April 2018 Update (2), 1809 (2), 1903 (2), 1909 (2)			
Windows 10 Pro	x86-32	32	Yes	Yes	Base, Anniversary Update, Creator Update, Fall Creator Update, April 2018 Update, 1809, 1903, 1909		No	

Table 64. Windows (continued)

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
					Base, Anniversary Update, Creator Update, Fall Creator Update, April 2018 Update, 1809, 1903, 1909			
Windows 10 Pro	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base, Anniversary Update, Creator Update, Fall Creator Update, April 2018 Update, 1809, 1903, 1909		(2)	
					Base (2), Anniversary Update (2), Creator Update (2), Fall Creator Update (2), April 2018 Update (2), 1809 (2), 1903 (2), 1909 (2)			
Windows 8 Enterprise	x86-64	64-Tolerate	Yes	No	Base		No	
Windows 8 Professional	x86-32	32	Yes	No	Base		No	
Windows 8 Professional	x86-64	64-Tolerate	Yes	No	Base		No	
Windows 8 Standard	x86-32	32	Yes	No	Base		No	

**Table 64. Windows (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
Windows 8 Standard	x86-64	64-Tolerate	Yes	No	Base		No	
Windows Server 2019 Datacenter Edition	x86-64/64-Exploit,	64-Tolerate	Yes	Yes	Base		(1)	
					Base			
Windows Server 2019 Essentials Edition	x86-64/64-Exploit,	64-Tolerate	Yes	Yes	Base		(1)	
					Base			
Windows Server 2019 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base		(1)	
					Base			
Windows Server 2008 Datacenter Edition	x86-32	32	Yes	Yes	Base (3), SP2 (3)		(2) (3)	
					Base (2)(3), SP2 (2)(3)			
Windows Server 2008 R2 Datacenter Edition	x86-64	64-Exploit,	Yes	Yes	Base (3), Service Pack 1 (3)		(1) (2) (3)	
		64-Tolerate			Base (2)(3), Service Pack 1 (2) (3)			
Windows Server 2008 Enterprise Edition	x86-32	32	Yes	Yes	Base (3), SP2 (3)		(3)	
					Base (3), SP2 (3)			
Windows Server 2008 Enterprise Edition	x86-64	64-Exploit,	Yes	Yes	Base (3), SP2 (3)		(2) (3)	
					Base (2)(3), SP2 (2)(3)			

Table 64. Windows (continued)

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
		64-Tolerate						
Windows Server 2008 R2 Enterprise Edition	x86-64	64-Exploit,	Yes	Yes	Base (3), Service Pack 1 (3)		(2) (3)	
		64-Tolerate			Base (2)(3), Service Pack 1 (2) (3)			
Windows Server 2008 Standard Edition	x86-32	32	Yes	Yes	Base (3), SP2 (3)		(3)	
Windows Server 2008 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base (2)(3), SP2 (2)(3)		(2) (3)	
Windows Server 2008 R2 Standard Edition	x86-64	64-Exploit,	Yes	Yes	Base (3), Service Pack 1 (3)		(1) (2) (3)	
		64-Tolerate			Base (2)(3), Service Pack 1 (2) (3)			
Windows Server 2012 Datacenter Edition	x86-64	64-Exploit,	Yes	Yes	Base		(1) (2)	
		64-Tolerate			Base (2)			
Windows Server 2012 R2	x86-64	64-Exploit,	Yes	Yes	Base		(1)	
		64-Tolerate			Base (2)			

**Table 64. Windows (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
Datacenter Edition								
Windows Server 2012 Essentials Edition	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base		(1)	
					Base (2)			
Windows Server 2012 R2 Essentials Edition	x86-64	64-Exploit, 64-Tolerate	Yes	No	Base		(1)	
Windows Server 2012 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base		(1)	
					Base (2)			
Windows Server 2012 R2 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base		(1)	
					Base (2)			
Windows Server 2016 Datacenter Edition	x86-64	64-Exploit, 64-Tolerate	Yes	No	Base		(1)	
Windows Server 2016 Essentials Edition	x86-64	64-Exploit,	Yes	No	Base		(1)	

**Table 64. Windows (continued)**

Operating System	Hardware	Bitness	Supported		Operating System minimum	Product minimum	Notes	End of support
			BigFix Agent	Disconnected Scanner				
		64-Tolerate						
Windows Server 2016 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Yes	No	Base		(1)	
Windows Server 2022 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	(2)	
Windows Server 2022 Standard Evaluation	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	(2)	
Windows Server 2022 Datacenter	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	(1) (2)	
Windows Server 2022 Datacenter Evaluation	x86-64	64-Exploit, 64-Tolerate	Yes	Yes	Base	10.0.8	(1) (2)	

**Windows Notes:**

1. Installation with Server Core or Nano Server is not supported.
2. If you use a 64-bit system, always run the disconnected scanner scripts in the 64-bit command prompt.

3. This operating system is no longer in service. Please refer to IBM's policy on unsupported operating systems: [IBM Support Guide](#).
4. The support for Windows 7 is limited.
  - The support for older Windows versions is provided on BigFix Platform 10 with BigFix 9.5 Agents [BigFix Platform 9.5 system requirements](#).
  - Licensing metrics for vendors might include restrictions on supported OS for eligibility to use the metric. For IBM Sub-capacity eligible systems check Sub-capacity (Virtualization capacity) licensing (IBM site).
5. In BigFix Inventory version 10.0.7, we are announcing support for Windows 11 on 64 bit. It is possible to run the scans and capture the software discovery on Windows 11.
  - Windows 11 does not have updated version. Internally in Windows Registry it is represented as version 10 and there is only possible to distinguish it by Build Number 22000 or higher
  - Computer Property: Operating System - BigFix Client must be in version 10.0.4 or higher, otherwise system reports as Windows 10.
  - Software Classification and Package Data: System in BigFix Inventory version 10.0.7 is reported as Windows 10. The rest of the software discovery works correctly.
  - Detailed Hardware Scan: Operating System - `major_version` and `minor_version` is still 10.0.

## Mac OS

BigFix Platform supports Mac OS operating system. To know more about the supported versions, refer to the articles, [BigFix Platform version 10](#) and [BigFix Platform version 9.5](#). For Mac OS, only BigFix Agent is supported (Disconnected Scanner is not supported), and only package scan and application usage statistics are supported on this platform.

## Hypervisors

Table 65. AIX

Hypervisor	Supported		Any supported version	Operating System minimum	Notes
	BigFix Agent	Disconnect- ed Scanner			
IBM PowerVM Hypervisor (LPAR, DPAR, Micro-Partition) - any supported version	Yes	Yes	(2)	AIX 6.1 POWER System - Big Endian AIX 7.1 POWER System - Big Endian AIX 7.2 POWER System - Big Endian	(2)
IBM PowerVM VIOS - any version	Yes	Yes	(1)	AIX 6.1 POWER System - Big Endian AIX 7.1 POWER System - Big Endian AIX 7.2 POWER System - Big Endian	(1)
Live Application Mobility (LAM) for Workload Partition (WPAR) AIX 6.1	Yes	Yes	AIX 6.1	AIX 6.1 POWER System - Big Endian AIX 7.1 POWER System - Big Endian AIX 7.2 POWER System - Big Endian	No
Live Application Mobility (LAM) for Workload Partition (WPAR) AIX 7.1	Yes	Yes	AIX 7.1	AIX 6.1 POWER System - Big Endian AIX 7.1 POWER System - Big Endian AIX 7.2 POWER System - Big Endian	No

**Notes applying to hypervisors on AIX operating systems:**

1. Supported Virtual I/O Server (VIOS) version 2.2.3 or higher. Before you start installation of the BigFix client, run `oem_setup_env` command to place the user into the OEM software installation and setup environment.
2. In rare cases when machine is live migrated using Live Partition Mobility technology BigFix Inventory may wrongly calculate PVU values (high watermarks). This is known limitation that will be mitigated in future releases.

**Table 66. HP**

Hypervisor	Supported		Any supported version	Operating System minimum	Notes
	BigFix Agent	Disconnected Scanner			
HP-UX Virtual Partitions (vPars) - any version	Yes	Yes	any version (1)	HP-UX 11i v3 IA64 HP-UX 11i v3 PA-RISC	(1), (2)

**Notes applying to hypervisors on HP operating systems:**

1. HP-UX Virtual Partitions v6.0 (vPars v6.0) and later on HP Integrity Server Blade is not supported.
2. Effective April 30, 2022, HCL will end service for BigFix Platform version 9.2.x. Even with the end of support for BigFix Platform 9.2.x, BigFix will continue to support for HP-UX using BigFix Platform 9.2 Agent reporting to BigFix Platform 9.5 or 10.0, connected to BigFix Inventory 10.x. BigFix Platform 9.2 HP-UX Agent patches will be provided only to address PSIRT records or high severity customer reported defects. For more information, see [BigFix forum announcement](#).

**Table 67. IBM i**

Hypervisor	Supported		Any supported version	Operating System minimum	Notes	Product minimum
	BigFix Agent	Disconnected Scanner				
IBM Power-VM Hypervisor (LPAR, DPAR, Micro-Partition) - any supported version	Yes	Yes	(1)	IBM i 7.1 POWER System - Big Endian IBM i 7.2 POWER System - Big Endian IBM i 7.3 POWER System - Big Endian	(1)	<b>10.0.2</b> only for IBM i 7.4 POWER System - Big Endian
			(1)			

Table 67. IBM i (continued)

Hypervisor	Supported		Any supported version	Operating System minimum	Notes	Product minimum
	BigFix Agent	Disconnected Scanner				
				IBM i 7.4 POWER System - Big Endian		

## Notes applying to hypervisors on IBM i operating systems

1. In rare cases when machine is live migrated using Live Partition Mobility technology BFI may wrongly calculate PVU values (high watermarks). This is known limitation that will be mitigated in future releases.

Table 68. Linux

Hypervisor	Supported		Any supported version	Operating System minimum	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
Citrix Hypervisor 8.0	Yes	Yes	8.0	<a href="#">View (on page cdlxxii)</a>	No		
Citrix Hypervisor 8.1	Yes	Yes	8.1	<a href="#">View (on page cdlxxii)</a>	No		
Citrix Hypervisor 8.2	Yes	Yes	8.2	<a href="#">View (on page cdlxxii)</a>	No		
Citrix XenServer 7	Yes	Yes	7 (1)	<a href="#">View (on page cdlxxiii)</a>	(1)		
IBM PowerKVM any supported version	Yes	Yes	any version	<a href="#">View (on page cdlxxiii)</a>	No		
IBM PowerVM Hypervisor (LPAR, DPAR, Micro-Partition) any supported version	Yes	Yes	any version (5)	<a href="#">View (on page cdlxxiv)</a>	(5)		

**Table 68. Linux (continued)**

Hypervisor	Supported		Any supported version	Operating System minimum	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
IBM z/VM Hypervisor 6.4	Yes	Yes	6.4	<a href="#">View (on page cdlxxiv)</a>	No		
KVM in SUSE Linux Enterprise Server (SLES) 11	Yes	Yes	11	<a href="#">View (on page cdlxxiv)</a>	No		
KVM in SUSE Linux Enterprise Server (SLES) 12	Yes	Yes	12	<a href="#">View (on page cdlxxv)</a>	No		
KVM in SUSE Linux Enterprise Server (SLES) 15	Yes	Yes	12	<a href="#">View (on page cdlxxv)</a>	No		
KVM on Ubuntu 16.04 LTS	Yes	Yes	16.04 LTS	<a href="#">View (on page cdlxxvi)</a>	No		
Microsoft Hyper-V Server 2008 R2	Yes	Yes	2008 R2	<a href="#">View (on page cdlxxvii)</a>	No		
Microsoft Hyper-V Server 2012	Yes	Yes	2012	<a href="#">View (on page cdlxxviii)</a>	No		
Microsoft Hyper-V Server 2012 R2	Yes	Yes	2012 R2	<a href="#">View (on page cdlxxix)</a>	No		
Microsoft Hyper-V Server 2016	Yes	Yes	2016	<a href="#">View (on page cdlxxx)</a>	No		
Microsoft Hyper-V Server 2019	Yes	Yes	2019	<a href="#">View (on page cdlxxxi)</a>	No		

Table 68. Linux (continued)

Hypervisor	Supported		Any supported version	Operating System minimum	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
Hyper-V on Windows Server 2022	Yes	Yes	2022	<a href="#">View (on page div)</a>	No	10.0.9	
Nutanix Acropolis 5.10	Yes	Yes	5.10 (4)	<a href="#">View (on page cdlxxxii)</a>	(4) (6)		
Oracle VM Server for SPARC All Versions	Yes	Yes	(2)	<a href="#">View (on page cdlxxxii)</a>	(2)		
Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 6.0	Yes	Yes	6.0	<a href="#">View (on page cdlxxxiii)</a>	No		
Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 7.0	Yes	Yes	7.0	<a href="#">View (on page cdlxxxiii)</a>	No		
Red Hat Virtualization 4.0	Yes	Yes	4.0	<a href="#">View (on page cdlxxxv)</a>	No		
Red Hat Virtualization 4.1	Yes	Yes	4.1	<a href="#">View (on page cdlxxxvi)</a>	No		
Red Hat Virtualization 4.2	Yes	Yes	4.2	<a href="#">View (on page cdlxxxvii)</a>	No		
Red Hat Virtualization 4.3	Yes	Yes	4.3	<a href="#">View (on page cdlxxxviii)</a>	No		

Table 68. Linux (continued)

Hypervisor	Supported		Any supported version	Operating System minimum	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
Red Hat Virtualization 4.4	Yes	Yes	4.4	<a href="#">View (on page cdlxxxviii)</a>	No	10.0.5	
VMware ESXi 6.5	Yes	Yes	6.5 (6)	<a href="#">View (on page cdlxxxix)</a>	(6)		10.0.16
VMware ESXi 6.7	Yes	Yes	6.7	<a href="#">View (on page cdlxxxix)</a>	(6)		10.0.16
VMware ESXi 7.0	Yes	Yes	7.0	<a href="#">View (on page cdxxc)</a>	No	10.0.2	
Xen 4.4	Yes	Yes	4.4.(3)	<a href="#">View (on page cdxxcii)</a>	(3)		
Xen 4.5	Yes	Yes	4.5 (3)	<a href="#">View (on page cdxxcii)</a>	(3)		
Xen 4.6	Yes	Yes	4.6 (3)	<a href="#">View (on page cdxcciii)</a>	(3)		
z/VM 6.1	Yes	Yes	6.1	<a href="#">View (on page cdxcciv)</a>	No		
z/VM 6.2	Yes	Yes	6.2	<a href="#">View (on page cdxcciv)</a>	No		
z/VM 6.3	Yes	Yes	6.3	<a href="#">View (on page cdxccv)</a>	No		

Notes applying to hypervisors on Linux operating systems:

1. Hardware-assisted Virtualization (HVM) and Paravirtualization (PV) are supported.
2. Oracle VM Server for SPARC (formerly Logical Domains also called LDOMs) 2.0, 2.1, 2.2, 3.0, 3.1, 3.2, 3.3, 3.4
3. To collect capacity data, use the Run Capacity Scan on Virtualization Hosts task. For more information, see: [Collecting capacity data directly from virtualization hosts \(on page dcxxv\)](#).
4. Support for Linux guests on AHV 5.11+ on IBM Power CS appliances, managed by Nutanix Prism Element.  
Support for Linux and Windows guests on AHV 5.11+ on x86 appliances, managed by Nutanix Prism Element.
5. In rare cases when machine is live migrated using Live Partition Mobility technology BFI may wrongly calculate PVU values (high watermarks). This is known limitation that will be mitigated in future releases.
6. Single Server, Cluster, Mobility (VMware Vmotion)

**Table 69. Solaris**

Hypervisor	Supported		Supported version	Supported guest operating system	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
KVM in SUSE Linux Enterprise Server (SLES) 11	Yes	Yes	11	Solaris 11 SPARC  Solaris 11 x86-64	No		
Oracle VM Server for SPARC All Versions	Yes	Yes	(2)	Solaris 11 SPARC  Solaris 11 x86-64	(2)		
Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) 6.0	Yes	Yes	6.0	Solaris 11 SPARC  Solaris 11 x86-64	No		
Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 6.0	Yes	Yes	6.0	Solaris 11 SPARC  Solaris 11 x86-64	No		

**Table 69. Solaris (continued)**

Hypervisor	Supported		Supported version	Supported guest operating system	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 7.0	Yes	Yes	7.0	Solaris 11 SPARC  Solaris 11 x86-64	No		
Sun Solaris 10 Global/Local Zones (SPARC) 10	Yes	Yes	10	Solaris 11 SPARC  Solaris 11 x86-64	No		
Sun Solaris 10 Global/Local Zones (x86-64) 10	Yes	Yes	10	Solaris 11 SPARC  Solaris 11 x86-64	No		
Sun Solaris 11 Global/Local Zones (SPARC) 11	Yes	Yes	11 (1)	Solaris 11 SPARC	(1)		
Sun Solaris 11 Global/Local Zones (x86-64) 11	Yes	Yes	11 (1)	Solaris 11 x86-64	(1)		
VMware ESXi 6.5	Yes	Yes	6.5 (4)	Solaris 11 SPARC  Solaris 11 x86-64  Solaris 11 x86-64	(4)		<a href="#">10.0.16</a>
VMware ESXi 6.7	Yes	Yes	6.7	Solaris 11 x86-64	(4)		<a href="#">10.0.16</a>

Table 69. Solaris (continued)

Hypervisor	Supported		Supported version	Supported guest operating system	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
VMware ESXi 7.0	Yes	Yes	7.0	Solaris 11 x86-64	(4)	10.0.2	
VMware ESXi 7.1	Yes	Yes	7.0	Solaris 11 x86-64	(4)	10.0.6	
Xen 4.4	Yes	Yes	4.4	Solaris 11 SPARC  Solaris 11 x86-64	(3)		
Xen 4.5	Yes	Yes	4.5	Solaris 11 SPARC  Solaris 11 x86-64	(3)		
Xen 4.6	Yes	Yes	4.6	Solaris 11 SPARC  Solaris 11 x86-64	(3)		

**Notes applying to hypervisors on Solaris operating systems:**

1. Oracle Solaris Kernel Zone, also called a `solaris-kz` branded zone is not supported
2. Oracle VM Server for SPARC (formerly Logical Domains also called LDOMs) 2.0, 2.1, 2.2, 3.0, 3.1, 3.2, 3.3, 3.4
3. To collect capacity data, use the Run Capacity Scan on Virtualization Hosts task. For more information, see: [Collecting capacity data directly from virtualization hosts \(on page dcxxv\)](#).
4. Single Server, Cluster, Mobility (VMware Vmotion)

**Table 70. Windows**

Hypervisor	Supported		Supported version	Supported guest operating system	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
Citrix Hypervisor 8.0	Yes	Yes	8.0	<a href="#">View (on page cdxcv)</a>	No		
Citrix Hypervisor 8.1	Yes	Yes	8.1	<a href="#">View (on page cdxcvi)</a>	No		
Citrix Hypervisor 8.2	Yes	Yes	8.2	<a href="#">View (on page cdxcvi)</a>	No		
Citrix XenServer 7	Yes	Yes	7	<a href="#">View (on page cdxcvii)</a>	(1)		
Microsoft Hyper-V Server 2016	Yes	Yes	2016	<a href="#">View (on page cdxcvii)</a>	No		
Microsoft Hyper-V Server 2019	Yes	Yes	2019	<a href="#">View (on page cdxcviii)</a>	No		
Hyper-V on Windows Server 2022	Yes	Yes	2022	<a href="#">View (on page diii)</a>	No	<b>10.0.9</b>	
Nutanix Acropolis 5.10	Yes	Yes	5.10 (1)	<a href="#">View (on page cdxcix)</a>	(2)		
Red Hat Virtualization 4.0	Yes	Yes	4.0	<a href="#">View (on page cdxcix)</a>	No		
Red Hat Virtualization 4.1	Yes	Yes	4.1	<a href="#">View (on page di)</a>	No		
Red Hat Virtualization 4.2	Yes	Yes	4.2	<a href="#">View (on page di)</a>	No		
Red Hat Virtualization 4.3	Yes	Yes	4.3	<a href="#">View (on page dii)</a>	No		
VMware ESXi 6.5	Yes	Yes	6.5 (3)	<a href="#">View (on page dii)</a>	(3)		<b>10.0.16</b>
VMware ESXi 6.7	Yes	Yes	6.7	<a href="#">View (on page cdlxxxix)</a>	No		<b>10.0.16</b>

**Table 70. Windows (continued)**

Hypervisor	Supported		Supported version	Supported guest operating system	Notes	Product minimum	End of support
	BigFix Agent	Disconnected Scanner					
VMware ESXi 7.0	Yes	Yes	7.0	<a href="#">View (on page cdx)</a>	No	10.0.2	

**Notes applying to hypervisors on Windows operating systems**

1. Hardware-assisted Virtualization (HVM) and Paravirtualization (PV) are supported.
2. Support for:
  - a. Linux guests on AHV 5.11+ on IBM Power CS appliances, managed by Nutanix Prism Element
  - b. Linux and Windows guests on AHV 5.11+ on x86 appliances, managed by Nutanix Prism Element
3. Single Server, Cluster, Mobility (VMware Vmotion)

**Supported software for BigFix Inventory Server**

The tables in this section provide detailed information about the system prerequisites for BigFix Inventory 10.

**Operating systems:** [Linux \(on page cdlxi\)](#) [Windows \(on page cdlxii\)](#)

**Prerequisites:** [Asset Management \(on page cdlxiii\)](#) [Databases \(on page cdlxiv\)](#) [Runtime Environment \(on page cdlxvi\)](#) [Web Browsers \(on page cdlxvi\)](#)

**Table 71. Linux**

Operating system	Hardware	Bitness	Operating system minimum	Notes	Product minimum
Red Hat Enterprise Linux (RHEL) Server 6	x86-64	64-Exploit, 64-Tolerate	6.3	(2)	
Red Hat Enterprise Linux (RHEL) Server 7	x86-64	64-Exploit, 64-Tolerate	Base (2)	(2)	
Red Hat Enterprise Linux (RHEL) Server 8.2	x86-64	64-Tolerate	8.2		10.0.3

**Table 72. Windows**

<b>Operating system</b>	<b>Hardware</b>	<b>Bitness</b>	<b>Operating system minimum</b>	<b>Notes</b>	<b>Product minimum</b>	<b>End of support</b>
Windows Server 2019 Datacenter Edition	x86-64	64-Exploit,64-Tolerate	Base (1)	(1)		
Windows Server 2019 Essentials Edition	x86-64	64-Exploit,64-Tolerate	Base (1)	(1)		
Windows Server 2019 Standard Edition	x86-64	64-Exploit,64-Tolerate	Base (1)	(1)		
Windows Server 2008 R2 Datacenter Edition	x86-64	64-Exploit,64-Tolerate	Base (1)(3), Service Pack 1 (1)(3)	(1) (2) (3)		Not supported
Windows Server 2008 R2 Enterprise Edition	x86-64	64-Exploit,64-Tolerate	Base (1)(3), Service Pack 1 (1)(3)	(2) (3)		Not supported
Windows Server 2008 Standard Edition	x86-32	32	Base (3), SP2 (3)	(3)		Not supported
Windows Server 2008 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Base (3), SP2 (3)	(2) (3)		Not supported
Windows Server 2008 R2 Standard Edition	x86-64	64-Exploit,64-Tolerate	Base (1)(3), Service Pack 1 (1)(3)	(1) (2) (3)		Not supported
Windows Server 2012 Datacenter Edition	x86-64	64-Exploit,64-Tolerate	Base (1)	(1) (2)		
Windows Server 2012 R2 Datacenter Edition	x86-64	64-Exploit, 64-Tolerate	Base (1)	(1)		
Windows Server 2012 Essentials Edition	x86-64	64-Exploit,64-Tolerate	Base (1)	(1)		
Windows Server 2012 R2 Essentials Edition	x86-64	64-Exploit,64-Tolerate	Base (1)	(1)		
Windows Server 2012 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Base (1)	(1)		
Windows Server 2012 R2 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Base (1)	(1)		

**Table 72. Windows (continued)**

Operating system	Hardware	Bitness	Operating system minimum	Notes	Product minimum	End of support
Windows Server 2016 Datacenter Edition	x86-64	64-Exploit, 64-Tolerate	Base (1)	(1)		
Windows Server 2016 Essentials Edition	x86-64	64-Exploit, 64-Tolerate	Base (1)	(1)		
Windows Server 2016 Standard Edition	x86-64	64-Exploit, 64-Tolerate	Base (1)	(1)		

1. BigFix Inventory works with Windows 2019 Exploit Protection feature turned on including configurations with SSO enabled.

**Table 73. Asset Management**

Prerequisite	Version	Prerequisite minimum	Available for version	Operating system restrictions	End of support
BigFix Platform	10.0.0	10.0.0	10.0.0	No	
	9.5	9.5	9.5	No	
	9.2.6 and future fix packs	9.2.6	9.2.6, 9.2.7, 9.2.8, 9.2.9, 9.2.10, 9.2.11, 9.2.12, 9.2.14, 9.2.16, 9.2.17, 10.0.0	No	(1)
Endpoint Manager Platform	9.2.0 and future fix packs	9.2.0	9.2.0, 9.2.1.0, 9.2.2.0, 9.2.3.0, 9.2.5.0	No	(1)

1. Support for BigFix Platform 9.2 ends on April 30th, 2022. For more information, see [BigFix forum announcement](#).

Table 74. Database

Prerequisite	Version	Prerequisite minimum	Operating system restrictions	Only supported on	Available for version	Future versions, releases	Future fix packs	Notes	Product minimum
DB2 Advanced Edition VPC Option	11.5.0.0	11.5.0.0	Yes	<a href="#">View (on page cdlxxi)</a>	11.5.0.0 (1)			(1)	
DB2 Standard Edition VPC Option	11.5.0.0	11.5.0.0	Yes	<a href="#">View (on page cdlxxi)</a>	11.5.0.0 (1)			(1)	
Microsoft SQL Server Enterprise Edition	2012 and future fix packs	2012	No		2012 (3)	No	Yes	(3)	
	2014 and future fix packs	2014	No		2014 (2)	No	Yes	(2)	
	2016 and future fix packs	2016	No		2016	No	Yes	(2)	
	2017 and future fix packs	2017	Yes	<a href="#">View (on page cdlxxi)</a>				(5)	
Microsoft SQL Server Express	2012 and future fix packs	2012	No			No	Yes	(4)	
	2014 and future fix packs	2014	No			No	Yes	(6)	
	2016 and future fix packs	2016	No			No	Yes	(2)	

Table 74. Database (continued)

Prerequisite	Version	Prerequisite minimum	Operating system restrictions	Only supported on	Available for version	Future versions, releases	Future fix packs	Notes	Product minimum
	2017 and future fix packs	2017	No			No	Yes	(5)	
Microsoft SQL Server Standard Edition	2012 and future fix packs	2012	No			No	Yes	(3)	
	2014 and future fix packs	2014	No			No	Yes	(2)	
	2016 and future fix packs	2016	No			No	Yes	(2)	
	2017 and future fix packs	2017	Yes	<a href="#">View (on page cdlxxi)</a>		No	Yes	(5)	
Microsoft SQL Server	2019 - All editions - Standard, Enterprise, and Express	2019	Yes	<a href="#">View (on page cdlxxi)</a>		No	Yes	(5)	10.0.5

1. To use DB2 as a database, BigFix Inventory server must be installed on Linux. Use a DB2 instance with default settings. Other required database settings are configured by BigFix Inventory server installer. Restriction: If you specify non-default DB2 settings, BigFix Inventory server might not work properly.
2. To use SQL Server as a database, BigFix Inventory server must be installed on Windows. Ensure that snapshot isolation is enabled in the SQL Server. For information about the requirements, see the Microsoft SQL Server documentation. The support for AlwaysOn solution has not been tested.
3. To use SQL Server as a database, BigFix Inventory server must be installed on Windows. Ensure that snapshot isolation is enabled in the SQL Server. For information about the requirements, see the Microsoft SQL Server documentation. The support for AlwaysOn solution has not been tested. Important: If you use SQL Server 2012, install cumulative update 5 for SQL Server 2012 SP2 to prevent possible corruption of the database.

4. To use SQL Server as a database, BigFix Inventory server must be installed on Windows. Ensure that snapshot isolation is enabled in the SQL Server. For information about the requirements, see the Microsoft SQL Server documentation. The support for AlwaysOn solution has not been tested. Important: If you use SQL Server 2012, install cumulative update 5 for SQL Server 2012 SP2 to prevent possible corruption of the database. Express Editions are supported only for environments with up to 500 endpoints, because they limit the disk space available to each database instance. For the same reason, BigFix must be dedicated to BigFix Inventory server and contain only the BigFix Inventory server fixlet site. Other applications and their fixlet sites would increase the required disk space resulting in problems with the database.
5. To use SQL Server as a database, BigFix Inventory server must be installed on Windows. Ensure that snapshot isolation is enabled in the SQL Server. For information about the requirements, see the Microsoft SQL Server documentation. The support for AlwaysOn solution has not been tested. Cumulative Update Package 15 (or later) for SQL Server 2017 - KB4498951 must be installed. To use SQL Server as a database, BigFix Inventory server must be installed on Windows.
6. To use SQL Server as a database, BigFix Inventory server must be installed on Windows. Ensure that snapshot isolation is enabled in the SQL Server. For information about the requirements, see the Microsoft SQL Server documentation. The support for AlwaysOn solution has not been tested. Express Editions are supported only for environments with up to 500 endpoints, because they limit the disk space available to each database instance. For the same reason, BigFix must be dedicated to BigFix Inventory server and contain only the BigFix Inventory server fixlet site. Other applications and their fixlet sites would increase the required disk space resulting in problems with the database.

**Table 75. Runtime Environment**

Prerequisite	Version	Prerequisite minimum	Future Versions, Releases	Future Fix Packs	Operating system restrictions	Notes
Windows Script Host	5.8 and future fix packs	5.8	No	Yes	<a href="#">View (on page cdlxviii)</a>	(1)

**Runtime Environment notes**

1. Windows Script Host must be enabled on Windows endpoints.

**Table 76. Web Browsers**

Prerequisite	Version	Prerequisite minimum	Future Versions, Releases	Future Fix Packs	Operating system restrictions	Notes
Google Chrome	35 and future versions, releases and fix packs	35	Yes	Yes	No	No

**Table 76. Web Browsers (continued)**

Prerequisite	Version	Prerequisite minimum	Future Versions, Releases	Future Fix Packs	Operating system restrictions	Notes
Microsoft Edge	13 and future versions, releases and fix packs	13	Yes	Yes	No	No
Mozilla Firefox ESR	17.0 and future versions, releases and fix packs	17.0	Yes	Yes	No	(1)

**Web Browser notes:**

- Starting from 10.0.3 TLS 1.2 is used by default. It is not recommended to use older, less secure protocols.

**System requirement terms**

Below table provides terms and descriptions for BigFix Inventory system requirements.

**Bitness**

Compatibility of the product with the bit version support that is provided by an operating system. Different parts of a product might run on the same operating system but support different application bitness. For example, one part of the product might run only in 32-bit mode, whereas another might support 64-bit tolerate mode.

**31:** The product or part of the product runs as a 31-bit application in a 31-bit operating environment.

**32:** The product or part of the product runs as a 32-bit application in a 32-bit operating environment.

**64-tolerate:** The product or part of the product runs as a 32-bit application in a 64-bit operating environment.

**64-exploit:** The product or part of the product runs natively as a 64-bit application in a 64-bit operating environment.

**Deployment unit and component**

Deployment structure identifies pieces of a product that can be independently deployed onto one or more machines in a distributed infrastructure.

- The top level of the deployment structure consists of one or more deployment units. There are four possible deployment units that a product might support: Desktop, Server, Agent or client, Mobile.
- Deployment units may be further divided into deployable components

**Desktop** deployment unit: Part of the deployment structure intended for use by a single user, typically installed on the user desktops. Examples of desktop deployment units include development tools, administrative tools, stand-alone business applications.

**Server** deployment unit: Part of the deployment structure that can provide services to multiple clients, providing the server in a client-server architecture. Examples of server deployment units include application servers, management servers, database servers and server-based business applications.

**Agent or client** deployment unit: Part of the deployment structure that allows remote connection between software. Examples of agent or client deployment units include agents in management system that are installed in the same tier as the managed resources, a remote application, or database clients that are installed with the software accessing the remote services.

**Mobile** deployment unit: Part of the deployment structure intended for use by a single user, typically installed on a mobile device. An example of a mobile deployment unit is a mobile application.

Product minimum	The minimum maintenance level that is required for the product to run on the operating system, on an hypervisor, or work with a prerequisite product or supported software.
End of support	The maintenance level of the product when end of support has been announced for the operating system, an hypervisor, or work with a prerequisite product or supported software.
Operating system minimum	The minimum operating system maintenance level that is required to run on the product.

## SPCR Related topic

### Prerequisites

**Table 77. Prerequisites - Runtime Environment - Windows Script Host 5.8 and Future Fix Packs**

Component	Supported operating systems
Agent or client	
<ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Anniversary Update Enterprise x86-64</li> <li>• Windows 10 Creators Update Enterprise x86-64</li> <li>• Windows 10 Fall Creators Update Enterprise x86-64</li> <li>• Windows 10 April 2018 Update Enterprise x86-64</li> </ul>

**Table 77. Prerequisites - Runtime Environment - Windows Script Host 5.8 and Future Fix Packs (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows 10 1809 Enterprise x86-64</li> <li>• Windows 10 1903 Enterprise x86-64</li> <li>• Windows 10 1909 Enterprise x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 10 Anniversary Update Pro x86-64</li> <li>• Windows 10 Creators Update Pro x86-64</li> <li>• Windows 10 Fall Creators Update Pro x86-64</li> <li>• Windows 10 April 2018 Update Pro x86-64</li> <li>• Windows 10 1809 Pro x86-64</li> <li>• Windows 10 1903 Pro x86-64</li> <li>• Windows 10 1909 Pro x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows 7 Service Pack 1 Enterprise x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 7 Service Pack 1 Professional x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 SP2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Service Pack 1 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows Server 2008 SP2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Service Pack 1 Enterprise Edition x86-64</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 SP2 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Service Pack 1 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> </ul>

**Table 77. Prerequisites - Runtime Environment - Windows Script Host 5.8 and Future Fix Packs (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 78. Prerequisites - Database - DB2 Advanced Enterprise Server Edition 10.5**

Component	Supported operating systems
Server <ul style="list-style-type: none"> <li>• BigFix Inventory Server</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 79. Prerequisites - Database - DB2 Advanced Workgroup Server Edition 10.5**

Component	Supported operating systems
Server <ul style="list-style-type: none"> <li>• BigFix Inventory Server</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 80. Prerequisites - Database - DB2 Enterprise Server Edition 10.5**

Component	Supported operating systems
Server <ul style="list-style-type: none"> <li>• BigFix Inventory Server</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 81. Prerequisites - Database - DB2 Workgroup Server Edition 10.5**

Component	Supported operating systems
Server <ul style="list-style-type: none"> <li>• BigFix Inventory Server</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 82. Prerequisites - Database - Db2 Advanced Edition VPC Option 11.5.0.0**

Component	Supported operating systems
Server  • BigFix Inventory Server	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 83. Prerequisites - Database - DB2 Standard Edition VPC Option 11.5.0.0**

Component	Supported operating systems
Server  • BigFix Inventory Server	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 84. Prerequisites - Database - Microsoft SQL Server Enterprise Edition 2017 and Future Fix Packs**

Component	Supported operating systems
Server  • BigFix Inventory Server	<ul style="list-style-type: none"> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 85. Prerequisites - Database - Microsoft SQL Server Standard Edition 2017 and Future Fix Packs**

Component	Supported operating systems
Server  • BigFix Inventory Server	<ul style="list-style-type: none"> <li>• Windows Server 2022</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> </ul>

**Table 85. Prerequisites - Database - Microsoft SQL Server Standard Edition 2017 and Future Fix Packs (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

## Hypervisor

**Table 86. Hypervisors - Citrix Hypervisor 8.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Debian 9.8 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> </ul>

**Table 87. Hypervisors - Citrix Hypervisor 8.1**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Debian 9.8 x86-64</li> <li>• Debian 10 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 87. Hypervisors - Citrix Hypervisor 8.1 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• <b>10.0.2</b> Ubuntu 20.04 LTS x86-64</li> </ul>

**Table 88. Hypervisors - Citrix Hypervisor 7**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Debian 9.8 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 89. Hypervisor - IBM PowerKVM any supported version**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> </ul>

**Table 90. Hypervisor - IBM PowerVM Hypervisor (LPAR, DPAR, Micro-Partition) any supported version**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> </ul>

**Table 91. Hypervisor - IBM z/VM Hypervisor 6.4**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> </ul>

**Table 92. Hypervisor - KVM in SUSE Linux Enterprise Server (SLES) 11**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.5 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 92. Hypervisor - KVM in SUSE Linux Enterprise Server (SLES) 11 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP1 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP3 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 93. Hypervisor - KVM in SUSE Linux Enterprise Server (SLES) 12**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> </ul>

**Table 93. Hypervisor - KVM in SUSE Linux Enterprise Server (SLES) 12 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 94. Hypervisors - KVM on Ubuntu 16.04 LTS**

Component	Supported operating systems
<p>Agent or client</p> <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 94. Hypervisors - KVM on Ubuntu 16.04 LTS (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• Ubuntu 18.04 on zSystems by using the disconnected scanner</li> <li>• Ubuntu 20.04 on zSystems by using the disconnected scanner</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 95. Hypervisors - Microsoft Hyper-V Server 2008 R2**

Components	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> </ul>

**Table 95. Hypervisors - Microsoft Hyper-V Server 2008 R2 (continued)**

Components	Supported operating systems
	<ul style="list-style-type: none"> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 96. Hypervisors - Microsoft Hyper-V Server 2012**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> </ul>

**Table 96. Hypervisors - Microsoft Hyper-V Server 2012 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 97. Hypervisors - Microsoft Hyper-V Server 2012 R2**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> </ul>

**Table 97. Hypervisors - Microsoft Hyper-V Server 2012 R2 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 98. Hypervisors - Microsoft Hyper-V Server 2016**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Debian 10 x86-32</li> <li>• Debian 9.8 x86-64</li> <li>• Debian 10 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> </ul>

**Table 98. Hypervisors - Microsoft Hyper-V Server 2016 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> </ul>

**Table 99. Hypervisors - Microsoft Hyper-V Server 2019**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Debian 10 x86-32</li> <li>• Debian 9.8 x86-64</li> <li>• Debian 10 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> </ul>

**Table 100. Hypervisors - Nutanix Acropolis 5.10**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> </ul>

**Table 101. Hypervisors - Oracle VM Server for SPARC All Versions**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Debian 9.8 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.5 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP1 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP3 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 102. Hypervisors - Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 7.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> <li>• CentOS 7 x86-64</li> </ul>	<ul style="list-style-type: none"> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.5 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP1 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP3 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 103. Hypervisors - Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 7.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> </ul>

**Table 103. Hypervisors - Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) and its RHEV equivalent 7.0 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 104. Hypervisors - Red Hat Virtualization 4.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 105. Hypervisors - Red Hat Virtualization 4.1**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 106. Hypervisors - Red Hat Virtualization 4.2**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> </ul>

**Table 107. Hypervisors - Red Hat Virtualization 4.3**

	<b>Supported operating systems</b>
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 108. Hypervisors - VMware ESXi 6.5**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Debian 10 x86-32</li> <li>• Debian 9.8 x86-64</li> <li>• Debian 10 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> </ul>

**Table 109. Hypervisors - VMware ESXi 6.7**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Debian 10 x86-32</li> <li>• Debian 10 x86-64</li> <li>• Debian 9.8 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

**Table 109. Hypervisors - VMware ESXi 6.7 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• Ubuntu 20.04 LTS x86-64</li> </ul>

**Table 110. Hypervisors - VMware ESXi 7.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Debian 10 x86-32</li> <li>• Debian 9.8 x86-64</li> <li>• Debian 10 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• Ubuntu 20.04 LTS x86-64</li> </ul>

**Table 111. Hypervisors - VMware ESXi 6.7**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Little Endian</li> <li>• Ubuntu 18.04 LTS x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Oracle Enterprise Linux 8 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• Debian 10 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• Debian 10 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Debian 9.8 x86-64</li> </ul>

**Table 112. Hypervisors - Xen 4.4**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.5 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP1 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP3 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 113. Hypervisors - Xen 4.5**

Component	Supported operating systems
Agent or client  <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Oracle Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> </ul>

**Table 113. Hypervisors - Xen 4.5 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.5 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP1 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP3 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-32</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> </ul>

**Table 114. Hypervisors -Xen 4.6**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• Debian 9.8 x86-64</li> <li>• Oracle Enterprise Linux 6 x86-64</li> <li>• Enterprise Linux 7 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Advanced Platform POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) 5 Server POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 POWER System - Big Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 POWER System - Big Endian</li> </ul>

**Table 114. Hypervisors -Xen 4.6 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) Server 7.1 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7.5 POWER System - Little Endian</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-32</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6.3 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP1 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 15 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 POWER System - Big Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 12 SP3 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 15 POWER System - Little Endian</li> <li>• SUSE Linux Enterprise Server (SLES) 11 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 12 x86-64</li> <li>• SUSE Linux Enterprise Server (SLES) 15 x86-64</li> <li>• Ubuntu 16.04 LTS POWER System - Little Endian</li> <li>• Ubuntu 16.04 LTS x86-32</li> <li>• Ubuntu 16.04 LTS x86-64</li> <li>• Ubuntu 18.04 LTS x86-64</li> </ul>

**Table 115. Hypervisors - z/VM 6.1**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> </ul>

**Table 116. Hypervisors - z/VM 6.2**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> </ul>

**Table 116. Hypervisors - z/VM 6.2 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> </ul>

**Table 117. Hypervisors - z/VM 6.3**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux (RHEL) 5 Server IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 IBM z Systems</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 11 IBM z Systems</li> <li>• SUSE Linux Enterprise Server (SLES) 12 IBM z Systems</li> </ul>

**Table 118. Hypervisors - Windows - Citrix Hypervisor 8.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 Standard Edition x86-32</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> </ul>

**Table 118. Hypervisors - Windows - Citrix Hypervisor 8.0 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 119. Hypervisors - Windows - Citrix Hypervisor 8.1**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-32</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 120. Hypervisors - Windows - Citrix Hypervisor 7**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 121. Hypervisors - Windows - Microsoft Hyper-V Server 2016**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> </ul>

**Table 121. Hypervisors - Windows - Microsoft Hyper-V Server 2016 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> </ul>

**Table 122. Hypervisors - Windows - Microsoft Hyper-V Server 2019**

Component	Supported operating systems
<p>Agent or client</p> <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-32</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-32</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-32</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-32</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 Standard Edition x86-32</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> </ul>

**Table 122. Hypervisors - Windows - Microsoft Hyper-V Server 2019 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 123. Hypervisors - Windows - Nutanix Acropolis 5.10**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 124. Hypervisors - Windows - Red Hat Virtualization 4.0**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> </ul>

**Table 124. Hypervisors - Windows - Red Hat Virtualization 4.0 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> </ul>

**Table 125. Hypervisors - Windows - Red Hat Virtualization 4.1**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> </ul>

**Table 125. Hypervisors - Windows - Red Hat Virtualization 4.1 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> </ul>

**Table 126. Hypervisors - Windows - Red Hat Virtualization 4.2**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> </ul>

**Table 127. Hypervisors - Windows - Red Hat Virtualization 4.3**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows Server 2008 Datacenter Edition x86-32</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows 7 Professional x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Professional x86-32</li> <li>• Windows 8 Enterprise x86-32</li> <li>• Windows 8 Standard x86-32</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> </ul>

**Table 128. Hypervisors - Windows - VMware ESXi 6.5**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 7 Enterprise x86-64</li> <li>• Windows 7 Professional x86-64</li> </ul>

**Table 128. Hypervisors - Windows - VMware ESXi 6.5 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2008 Datacenter Edition x86-64</li> <li>• Windows Server 2008 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2008 Enterprise Edition x86-64</li> <li>• Windows Server 2008 R2 Enterprise Edition x86-64</li> <li>• Windows Server 2008 Standard Edition x86-64</li> <li>• Windows Server 2008 R2 Standard Edition x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> </ul>

**Table 129. Windows - Hyper-V on Windows Server 2022**

Component	Supported operating systems
<p>Agent or client</p> <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 10 Enterprise x86-32</li> <li>• Windows 10 Enterprise x86-64</li> <li>• Windows 10 Pro x86-32</li> <li>• Windows 10 Pro x86-64</li> <li>• Windows 11 Enterprise x86-64</li> <li>• Windows 11 Pro x86-64</li> <li>• Windows 8 Enterprise x86-32</li> <li>• Windows 8 Enterprise x86-64</li> <li>• Windows 8 Professional x86-32</li> <li>• Windows 8 Professional x86-64</li> <li>• Windows 8 Standard x86-32</li> <li>• Windows 8 Standard x86-64</li> <li>• Windows 8.1 Enterprise x86-32</li> <li>• Windows 8.1 Enterprise x86-64</li> </ul>

**Table 129. Windows - Hyper-V on Windows Server 2022 (continued)**

Component	Supported operating systems
	<ul style="list-style-type: none"> <li>• Windows 8.1 Professional x86-32</li> <li>• Windows 8.1 Professional x86-64</li> <li>• Windows 8.1 Standard x86-32</li> <li>• Windows 8.1 Standard x86-64</li> <li>• Windows Server 2012 Datacenter Edition x86-64</li> <li>• Windows Server 2012 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Datacenter Edition x86-64</li> <li>• Windows Server 2012 R2 Essentials Edition x86-64</li> <li>• Windows Server 2012 R2 Standard Edition x86-64</li> <li>• Windows Server 2012 Standard Edition x86-64</li> <li>• Windows Server 2016 Datacenter Edition x86-64</li> <li>• Windows Server 2016 Essentials Edition x86-64</li> <li>• Windows Server 2016 Standard Edition x86-64</li> <li>• Windows Server 2019 Datacenter Edition x86-64</li> <li>• Windows Server 2019 Essentials Edition x86-64</li> <li>• Windows Server 2019 Standard Edition x86-64</li> <li>• Windows Server 2022 Datacenter Edition x86-64</li> <li>• Windows Server 2022 Standard Edition x86-64</li> </ul>

**Table 130. Linux - Hyper-V on Windows Server 2022**

Component	Supported operating systems
Agent or client <ul style="list-style-type: none"> <li>• BigFix Agent</li> <li>• Disconnected scanner</li> </ul>	<ul style="list-style-type: none"> <li>• CentOS 7 x86-64</li> <li>• CentOS 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) 8 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 6 x86-64</li> <li>• Red Hat Enterprise Linux (RHEL) Server 7 x86-64</li> </ul>

## Software requirements

Ensure that all prerequisite software is installed on the computers in your infrastructure.

### Server requirements

For information about operating systems on which BigFix, DB2® and SQL Server are supported, see: [Detailed System requirements \(on page cdxxxii\)](#).

To learn about BigFix Platform system requirements, refer to [BigFix 11 - Detailed System Requirements](#).

**Table 131. Requirements for the BigFix Inventory server**

Version	Description
<p>BigFix</p> <ul style="list-style-type: none"> <li>• 11.0</li> <li>• 10.0</li> <li>• 9.5</li> </ul> <p> <b>Note:</b> Support for BigFix Platform 9.2 ends on April 30th, 2022. For more information, see <a href="#">BigFix forum announcement</a>.</p>	<p>For information about the requirements, see:</p> <ul style="list-style-type: none"> <li>• <a href="#">BigFix 11.0 product documentation</a></li> <li>• <a href="#">BigFix 10.0 product documentation</a></li> <li>• <a href="#">BigFix 9.5 product documentation</a></li> </ul> <p> <b>Important:</b> <b>10.0.5</b> BigFix Inventory can use TLS 1.2 and TLS 1.3 (since version 10.0.9) for outbound communication. When using TLS encryption for BigFix Platform MS SQL database, please ensure that MS SQL database is on appropriate fixpack level that supports at least TLS 1.2. Otherwise data imports in BigFix Inventory will not work. For details on MS SQL minimum fixpack levels supporting TLS 1.2, refer to <a href="#">TLS 1.2 support article</a>.</p> <p>Starting from BigFix Inventory version 10.0.9 or higher, BigFix Inventory supports BigFix version 11. To upgrade to BigFix version 11, you must first upgrade to interim version 10.0.9 or higher of BigFix Inventory. You can enforce TLS 1.3 on BigFix, it is supported with BigFix Inventory version 10.0.9 and higher.</p>
<p>DB2®</p> <ul style="list-style-type: none"> <li>• <b>10.0.0</b> <b>DB2 11.5</b></li> </ul> <p>(The fixpack level should be in line with BigFix requirements.)</p>	<p><b>Operating system requirements</b></p> <p><b>Firefox</b></p> <p>To use DB2 as a database, BigFix Inventory must be installed on Linux™.</p> <p><b>DB2 version</b></p> <p> <b>Note: DB2 11.5</b> For the list of databases supported by the BigFix plat-</p>

Table 131. Requirements for the BigFix Inventory server (continued)

Version	Description
	<p>  form, see: <a href="#">BigFix Platform 9.5: Detailed System Requirements</a> and <a href="#">BigFix Platform 10: Detailed System Requirements</a>.         </p> <p><b>DB2® requirements</b></p> <p>For information about the database requirements, see, <a href="#">DB2® 11.5 product documentation</a>.</p> <p><b>DB2® edition</b></p> <p>DB2® Workgroup Server Edition is sufficient to work with BigFix Inventory regardless of the number of endpoints. You can use DB2® Enterprise Server Edition, or Advanced Enterprise Server Edition to have access to advanced features of DB2®.</p> <p><b>DB2 upgrade considerations</b></p> <p>Below are some of the DB2 upgrade considerations:</p> <ul style="list-style-type: none"> <li>• You can upgrade the DB2 to version 11.5 using the same machine as well using a new machine.             <ul style="list-style-type: none"> <li>◦ If you consider upgrading DB2 using the same machine, make sure that RHEL operating system is on version 7.6 or higher, or 8.1 or higher. Refer to <a href="#">DB2 upgrade on Linux</a> for more information.</li> <li>◦ If you consider using a new machine, you can move the BigFix Inventory database to the new machine and upgrade DB2. To know more about it, refer to <a href="#">Moving the BigFix Inventory database</a>.</li> </ul> </li> </ul>

Table 131. Requirements for the BigFix Inventory server (continued)

Version	Description
	<ul style="list-style-type: none"> <li>• DB2 upgrade is multistep process. Refer to the <a href="#">IBM DB2</a> documentation for details.</li> <li>• Upgrading the database needs sufficient disk space.</li> </ul> <p><b>DB2 settings</b></p> <ul style="list-style-type: none"> <li>• Use a DB2 instance with default settings. Other required database settings are configured by BigFix Inventory installer.</li> </ul> <p> <b>Restriction:</b> If you specify non-default DB2 settings, BigFix Inventory might not work properly.</p> <p><b>Download DB2® software</b></p> <p>For more information, see: <a href="#">Downloading and installing DB2® (on page dlvi)</a>.</p> <p><b>Support for DB2 11.5 GA</b></p> <p>Refer to the <a href="#">support article</a> to know about how support works for DB2 11.5 GA.</p>
SQL Server <ul style="list-style-type: none"> <li>• 2016 Express SP2</li> <li>• 2012 SP2 CU 10 , SP3 CU 3</li> <li>• 2012 Express® SP2 CU 10, SP3 CU 3</li> <li>• 2014 CU 12, SP1 CU 5</li> <li>• 2014 Express® CU 12, SP1 CU 5</li> <li>• <b>9.2.13</b> 2016</li> <li>• <b>10.0.1</b> 2016 Express SP2 or higher</li> <li>• <b>9.2.16</b> 2017 version 14.0.3162.1 or higher</li> <li>• <b>10.0.1</b> 2017 Express CU15 or higher</li> </ul>	<p>To use SQL Server as a database, BigFix Inventory must be installed on Windows™.</p> <p><b>SQL Server settings</b></p> <p>Ensure that <a href="#">snapshot isolation</a> is enabled in the SQL Server. For information about the requirements, see the <a href="#">Microsoft™ SQL Server documentation</a>.</p> <p>The support for AlwaysOn solution has not been tested.</p> <p><b>Permissions and roles</b></p> <p>For more information about permissions and roles of MS SQL Server user, see: <a href="#">Installation accounts (on page dxij)</a>.</p>

**Table 131. Requirements for the BigFix Inventory server (continued)**

Version	Description
<ul style="list-style-type: none"> <li>• <b>10.0.5</b> 2019</li> <li>• <b>10.0.13</b> Microsoft SQL Server 2022</li> </ul> <p> <b>Note:</b> SP = Service Pack, CU = Content Update</p>	
<p><b>Linux</b></p> <p>X server</p> <ul style="list-style-type: none"> <li>• <b>X11R7.x</b></li> </ul>	<p>The X server is required if you want to install or uninstall the BigFix Inventory server in interactive mode on Red Hat Enterprise Linux™. It is also required if you want to complete the server configuration by using a browser that is available on the computer where the BigFix Inventory server is installed.</p> <p> <b>Restriction:</b> Xming X Server for Windows™ is not supported.</p>

**Other software requirements****Table 132. Other software requirements for BigFix Inventory**

Required software	Required versions	Comments
Web Reports		A component of the BigFix platform that is required by BigFix Inventory to configure VM managers. Web Reports can be installed during the installation of BigFix, and must reside on the same server.
Browser	<b>Firefox 17 Extended Support Release (ESR) or higher ESR editions</b>	<b>Requirements</b>

Table 132. Other software requirements for BigFix Inventory (continued)

Required software	Required versions	Comments
	 <b>Note:</b> To use TLS 1.3, check whether your version of the browser supports it and whether TLS 1.3 is enabled. Otherwise, use TLS 1.2 for secure communication with SSL.	<ul style="list-style-type: none"> <li>• JavaScript™ must be enabled in the browser.</li> <li>• Minimal supported screen resolution is 1360x768 pixels.</li> <li>• Recommended screen resolution is 1920x1080 pixels.</li> </ul>
	<p><b>Chrome 35 or higher</b></p>  <b>Restriction:</b> You can experience problems with checking the detailed information about the metric quantity on the Metric Quantity History and Maximal Trend Value History graphs on License Metrics reports. Once you hover over the graph, the information about metric quantity might not be properly displayed, or might not appear at all.	<p><b>Proxies</b></p> <p>Proxies are supported and depend on the server configuration. With the default configuration, use SSL proxies. If you disabled SSL on the server, then use HTTP proxies. In big environments, the connections might time out with time-consuming operations (downloading extensive reports). In such a case, increase the time-out limit for communication between the proxy and BigFix Inventory.</p>
	<p><b>9.2.14 Microsoft Edge</b></p>  <b>Restriction:</b> <ul style="list-style-type: none"> <li>• Reports cannot be exported to PDF when multiple columns are selected. Export the data to CSV file instead.</li> <li>• In reports where IP Address column is enabled, the IP address is a link that is activated by an external plug-in, such as Skype. To remove the link, disable the plug-in.</li> <li>• You can experience problems with checking the detailed information about the metric quantity on the Metric Quantity History and Maximal Trend Value History graphs on License Metrics reports. Once you hover over the graph, the information about metric quantity might not be properly displayed, or might not appear at all.</li> </ul>	

**Table 132. Other software requirements for BigFix Inventory (continued)**

Required software	Required versions	Comments
Bash		
National language pack for PDF reader		To display PDF reports in a native language, a language pack that displays the native language fonts might be required.

### Red Hat packages

The following packages are required if you install the components on Red Hat Enterprise Linux™.

**Table 133. Red Hat packages that are required for the installation**

Component	Required packages
BigFix Inventory server	<ul style="list-style-type: none"> <li>• <code>bash</code></li> </ul>
DB2®	<ul style="list-style-type: none"> <li>• <code>libstdc++.so.6.0.8</code></li> <li>• Red Hat binutils</li> </ul>

## Hardware requirements

Before deploying BigFix Inventory review hardware specifications required to serve your environment.

BigFix Inventory is one of the products in BigFix suite.

The key element of successful BigFix deployment is high performance storage behind the MS SQL database where data, transactions log and temporary space is kept with latency on read/write operations is in range of few milliseconds.

For deployments of size greater than 100 000+ endpoints latency of 1ms for disk used to host BigFix databases is required.

For a detailed discussion of BigFix Platform and BigFix Inventory specific performance topics and tools, including planning, monitoring, and maintenance, see the [BigFix Capacity Planning Guide](#).

Use the recommendations as a general guidance.

## Port requirements

When planning the infrastructure, ensure that port numbers used by BigFix Inventory, BigFix, and the database are free to enable communication between those components.

The following is the list of default ports used by the BigFix Inventory infrastructure. You can change them during the installation of each component:

**Table 134. Default ports used by the BigFix Inventory infrastructure**

Type	Port number	Description
BigFix Inventory	9081	The web browser connects to the server (HTTPS) to display the user interface. The BigFix server uses this port to connect to the BigFix Inventory server.
DB2®	50000	The server connects to DB2®.
SQL Server	1433	The server connects to SQL Server.
BigFix	52311	BigFix clients and console connect to the server. The BigFix Inventory server uses this port to connect to the BigFix server.

For more information about port numbers and interactions between components of the BigFix Inventory infrastructure, see: [Flow of data \(on page mccliii\)](#).

Make sure that relevant web addresses are accessible from the computer where the BigFix server is installed. For more information, see: [Firewall exceptions \(on page dxi\)](#).

## Firewall exceptions

Some of the fixlets require that the BigFix server connects to the Internet and downloads necessary files and updates. To ensure that they can be downloaded, relevant web addresses must be accessible from the computer where the server is installed. Add those addresses as firewall exceptions and ensure that they are accessible to the proxy server if you are using it.

Ensure that the following web addresses are accessible from the computer where the BigFix server is installed

- `esync.bigfix.com`
- `gatherer.bigfix.com`
- `software.bigfix.com`
- `support.bigfix.com`
- `sync.bigfix.com`

The HTTP port 80 must be open for communication.

**9.2.12** BigFix Inventory occasionally offers you a customer feedback survey. This quick survey allows you to rate the product and provide valuable feedback that can help us improve our services. To be able to participate in the survey, allow the connection to the following web page from your browser: <https://survey.medallia.eu/>.

## Proxy exceptions

If the BigFix server uses a proxy for Internet connection to access fixlet sites or prefetch downloads, the BigFix Inventory server must be added to an exception list to ensure that the catalog propagation works properly.

In an environment with a proxy, propagation of the catalog might fail because the BigFix server connects to the proxy to download the catalog file instead of connecting to the BigFix Inventory server directly. To ensure that the problem does not occur, add the following entries to the proxy exception list in the BigFix server configuration:

- IP address of the BigFix Inventory server
- FQDN host name of the BigFix Inventory server

Additionally if the BigFix server is installed on the same computer as BigFix Inventory server, add the following entries to the proxy exception list:

```
localhost, 127.0.0.1
```

For more information, see: [Setting a proxy connection on the server](#).

## Installation accounts

You can install all the infrastructure components as an administrative user. You can also install some components as a non-administrative user, but some limitations apply.



**Note:** To install BigFix Inventory on Windows in Korean, you must have administrator role with English language. Some of the symbols are not supported in Korean language and this may lead to crash the installer.

**Table 135. Installation accounts for the components of the BigFix Inventory infrastructure on Windows**

Account	Account Permissions and Roles
OS Account to install and run BigFix Inventory server	User with administrative privileges with the log on as a service permission.  If you want to use the Windows authentication mode and your database server is remote, ensure that the user that accesses the database is a domain user. This user needs to have the <b>dbcreator</b> or <b>sysadmin</b> rights in MS SQL database.
OS Account to install and run SQL Server database	User with administrative privileges
SQL Server database user for BigFix Inventory database	User account that either:

**Table 135. Installation accounts for the components of the BigFix Inventory infrastructure on Windows (continued)**

Account	Account Permissions and Roles
SQL Server database user for BigFix Inventory to access SQL Server BigFix Platform BFEnterprise database	<ol style="list-style-type: none"> <li>1. the system admin</li> <li>2. has permissions listed below and user mapping to access the BigFix Inventory database.</li> </ol> <p><b>Important:</b> This requires manual database creation during the installation.</p> <p>User has the default language set to "English" (not a variety of English).</p> <p>The permissions required for non system admin are:</p> <ul style="list-style-type: none"> <li>• user role: public</li> <li>• mapping: BigFix Inventory database, Master, MSDB</li> <li>• permission: INSERT, SELECT, EXECUTE, ALTER</li> <li>• <b>10.0.5</b> has "SQLAgentUserRole" for <code>msdb</code> database to manage SQL Server agent jobs. Without access, the user cannot manage the BigFix Inventory index maintenance job. Instead to the index maintenance job being created/updated, warning appears in the <code>tema.log</code> log file.</li> </ul>
SQL Server database user for BigFix Inventory to access SQL Server BigFix Platform BFEnterprise database	<p>Database user has have following permissions on BFEnterprise database: <code>CREATE FUNCTION, CREATE SCHEMA, CREATE TABLE, CREATE VIEW, EXECUTE, SELECT</code></p> <p>User has the default language set to "English" (not a variety of English).</p> <p>Once BigFix Inventory is installed or updated and the first data import is complete, MS SQL users with lower permissions can access BigFix Platform database. Before any BigFix Inventory update, the data source must be reconfigured to allow the database user, <code>db_owner</code> access to BigFix Platform database. If you do not reconfigure the data source, the next data import might fail.</p> <p>Following are the required minimal permission for a user on BigFix Platform database to run regular import:</p> <pre> DEFAULT_DATABASE=[BFEnterprise] DEFAULT_LANGUAGE=[us_english] Server Role: public </pre>

**Table 135. Installation accounts for the components of the BigFix Inventory infrastructure on Windows (continued)**

Account	Account Permissions and Roles
SQL Server database user for BigFix Inventory to access SQL Server BigFix Platform Web Reports database (BESReporting)	<pre> Permissions: CONNECT TO ANY DATABASE CONNECT SQL  BFEnterprise database permissions Roles: public, db_datareader  Permissions: EXECUTE  GRANT EXEC TO &lt;user&gt; </pre>
	User has the default language set to "English" (not a variety of English). <code>SELECT</code>

**Table 136. Installation accounts for the components of the BigFix Inventory infrastructure on Linux**

Account	Account Permissions and Roles	Limitations
OS Account to install and run BigFix Inventory server	root or non-root user	Server that is installed by a non-root user is not registered as a system service. It also cannot be upgraded with a fixlet. It must be upgraded in interactive or silent mode.
OS Account to install and run DB2® database	root or non-root user	For information about limitations that apply when you install DB2® as a non-root user, see the following links. <ul style="list-style-type: none"> <li>• <a href="#">Non-root installation overview</a> <a href="#">DB2® 11.5 documentation</a></li> </ul>
DB2 database user for BigFix Inventory database	To allow the application installation and operation user with authorities: DBADM, DATAACCESS, and ACCESSCTRL is required.	There is recommended to create a dedicated database user for BigFix Inventory with about authorities.

**Table 136. Installation accounts for the components of the BigFix Inventory infrastructure on Linux (continued)**

Account	Account Permissions and Roles	Limitations
	The user got assigned roles and permissions for created BigFix Inventory Database during database creation.	
DB2 database user for BigFix Inventory to access DB2 BigFix Platform database (BFENT)	<b>DBAUTHDATAACCESS</b>	
DB2 database user for BigFix Inventory to access DB2 BigFix Platform Web Reports database (BESREPOR)	<b>DATAACCESS</b>	

## Coexistence scenarios

This topic describes supported scenarios for the coexistence of BigFix Inventory and License Metric Tool. tm  
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**11.0.0.0** BigFix Inventory not longer supports dividing computers on single BigFix Platform server to more than one BigFix Inventory Server. BigFix Inventory is importing always all of the computers managed by BigFix Platform Agent.

### Coexistence of BigFix Inventory and License Metric Tool in the same infrastructure

License Metric Tool and BigFix Inventory can coexist within the same infrastructure. They can be connected to the same BigFix server but monitor different sets of computers. You can then use BigFix Inventory to discover non-IBM software and measure its license metric utilization on selected computers, and use License Metric Tool to monitor computers on which only IBM software is installed. Thanks to connecting both applications to a common BigFix server, you can manage them by using one console. It makes monitoring the environment much easier.

Although License Metric Tool and BigFix Inventory are connected to a common BigFix server, they work as separate applications and must be installed on separate computers. Each application manages a separate set of computers that can report to only one application at a given moment. The applications also use different fixlet sites and dedicated sets of fixlets for installation and configuration. Apart from the common BigFix server, all other aspects, such as software and capacity scans or the software catalog, are specific to each application.

**11.0.0.0** **Adjusting reports to not include License Metric Tool only computers**

To have licensing reports limited to computers subscribed to BigFix Inventory Site use Computer Group mechanism to narrow the computer set. Use the Computer Health: Is Subscribed flag to define the group. See [Lesson 2: Creating computer groups that define the scope of reports \(on page mccxxvi\)](#).

## Limitations

- **11.0.0.0** BigFix Inventory will show also computers subscribed only to License Metric Tool site. Those computers will have Computer Health: Is Subscribed flag set to No.
- **11.0.0.0** BigFix Inventory Will shown License Metric Tool based discovery as well. There is no guarantee that detection based on LMT Software Catalog will be completely reporting. IBM Software discovered through ISO tags will be reported also in BigFix Inventory.

- **Separate installation**

BigFix Inventory and License Metric Tool must be installed on separate computers.

- **VM managers**

You can add VM managers through the user interface only for the application that has the BigFix server subscribed to its fixlet site. It happens because VM managers added through the user interface must be managed by the VM Manager tool that is installed on the BigFix server. For the other application, use advanced VM management. For more information, see: [Advanced VM management \(distributed\) \(on page dcccxiv\)](#).

If you collect VM manager data directly from virtualization hosts by using the Run Capacity Scan on Virtualization Hosts fixlet, the coexistence is possible only if all endpoints from this host report to the same application. For more information about the fixlet, see: [Collecting capacity data from virtualization hosts for Xen and KVM \(on page dcxxv\)](#).

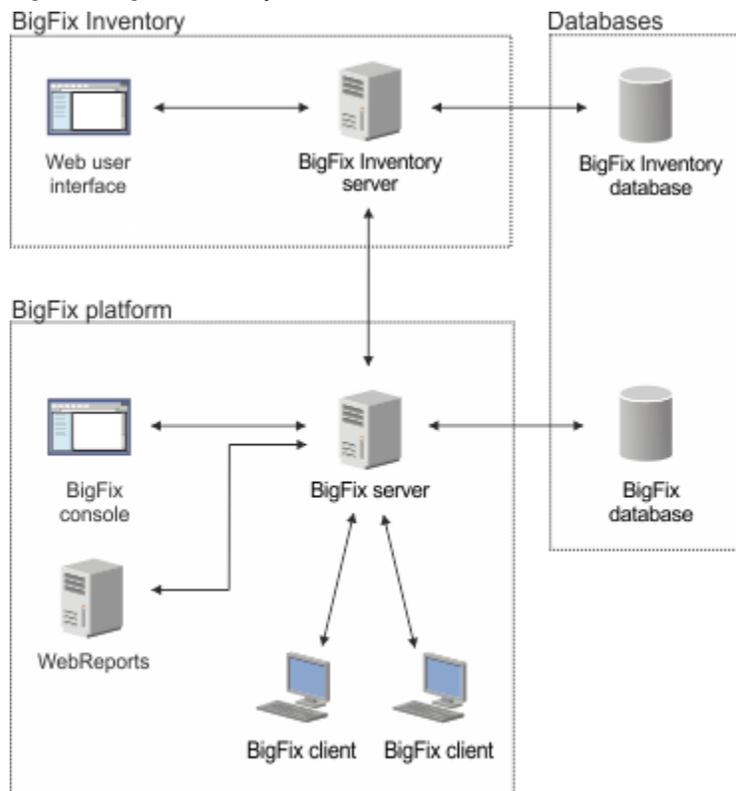
- **Many re-subscriptions**

You might encounter problems with the missing software catalog or scan results if you often re-subscribe endpoints between the two applications. These problems occur only if you re-subscribe endpoints more than once. For example, if you re-subscribe an endpoint from BigFix Inventory to License Metric Tool, and then subscribe it back to BigFix Inventory

## Installing on Windows

A complete deployment of BigFix Inventory on Windows requires the installation of three components: the BigFix platform, the BigFix Inventory server, and an MS SQL database. Additionally, a BigFix client must be installed on every computer from which you want to collect software inventory data. You can install all components from scratch or add the BigFix Inventory server to the existing BigFix infrastructure. Depending on the environment size, you can install all components on a single computer, or distribute them among multiple computers.

Figure 4. BigFix Inventory infrastructure



## Step-by-step installation guide for Windows

Use the step-by-step installation guide to ensure that you complete all steps necessary to successfully install BigFix Inventory on Windows.

**Table 137. Step-by-step guide for installing and configuring BigFix Inventory**

Stage	Installation step
1.	<p><b>Plan the installation</b> to ensure that the computer on which you want to install BigFix Inventory fulfills the following requirements:</p> <ul style="list-style-type: none"> <li>• Runs on a <a href="#">Detailed System requirements (on page cdxxxii)</a></li> <li>• Fulfills the minimum <a href="#">hardware requirements (on page dx)</a></li> <li>• Has sufficient disk space</li> <li>• Has the <a href="#">required software (on page div)</a> installed</li> </ul>
2.	<p><b>Install the BigFix platform</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Create the license authorization file (on page dxix)</a></li> <li>• <a href="#">Download the BigFix installer (on page dxx)</a></li> <li>• <a href="#">Install the BigFix server, console and the first client (on page dxx)</a></li> </ul>

**Table 137. Step-by-step guide for installing and configuring BigFix Inventory (continued)**

Stage	Installation step
	<ul style="list-style-type: none"> <li>• <a href="#">Install the BigFix client (on page dxviii)</a> on every computer from which you want to collect software inventory data</li> </ul>
	<p> <b>Tip:</b> You can install the clients at this point or proceed with the installation of BigFix Inventory and install the clients later on.</p>
3	<b>Install BigFix Inventory</b>
	<ul style="list-style-type: none"> <li>• Install MS SQL Server</li> <li>• <a href="#">Enable the BigFix Inventory fixlet site (on page dxv)</a></li> <li>• <a href="#">Install the BigFix Inventory server (on page dxviii)</a></li> <li>• <a href="#">Perform initial configuration (on page dxli)</a></li> <li>• <a href="#">Verify the current application and catalog version (on page dxlviii)</a></li> </ul>
4	<b>Create users and groups</b> to give users access to BigFix Inventory and to define computers for which they can see data.
	<ul style="list-style-type: none"> <li>• <a href="#">Set up users (on page dxcv)</a></li> <li>• <a href="#">Set up computer groups (on page dx cvi)</a></li> </ul>
5	<b>Set up scans</b> to discover software and hardware inventory in your infrastructure.
	<p> <b>Important:</b> The steps are not required if you enabled the default scan configuration during the installation.</p>
	<ul style="list-style-type: none"> <li>• Optional: <a href="#">Distribute scans for improved performance (on page dxvi)</a></li> <li>• <a href="#">Activate the required analyses (on page dxvii)</a></li> <li>• <a href="#">Install the scanner (on page dxviii)</a></li> <li>• <a href="#">Initiate software scans (on page dxix)</a></li> <li>• <a href="#">Schedule uploads of software scan results (on page dxvii)</a></li> <li>• <a href="#">Collect capacity data (on page dxix)</a></li> </ul>

## Installing the BigFix platform on Windows

The BigFix platform is the core of the BigFix Inventory infrastructure. It consists of a server that coordinates the flow of data to and from the monitored computers, an administrative console, and clients that collect data from the computers in your infrastructure. Before you can install BigFix Inventory, install all components of the BigFix platform.

---

## REFERENCE

[BigFix Inventory infrastructure \(on page cdxxx\)](#)

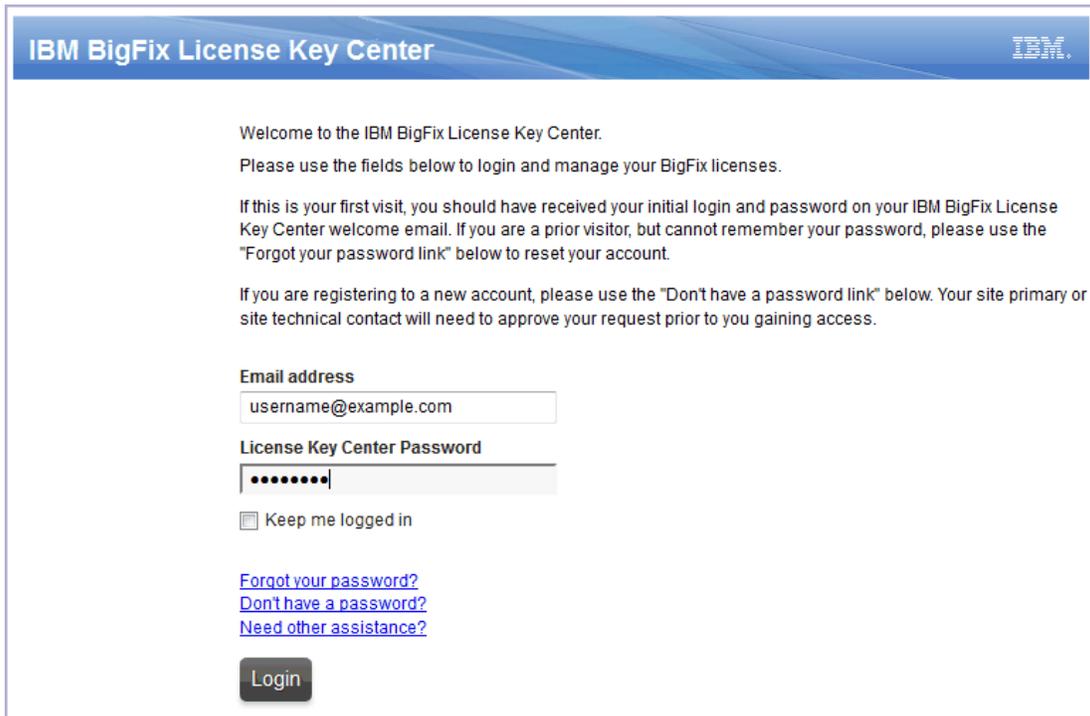
[Software requirements \(on page div\)](#)

[Hardware requirements \(on page dx\)](#)

## Creating the license authorization file

After you order BigFix Inventory from Passport Advantage, you receive a welcome email with information how to access the BigFix License Key Center. Go to the Key Center and create the license authorization file that contains deployment and licensing information. The file is needed during the installation of the BigFix platform.

1. Go to the [License Key Center](#).
2. Enter your email address and the password that you received in the welcome email.



The screenshot shows the IBM BigFix License Key Center login page. The page has a blue header with the text "IBM BigFix License Key Center" and the IBM logo. The main content area is white and contains the following text:

Welcome to the IBM BigFix License Key Center.  
Please use the fields below to login and manage your BigFix licenses.

If this is your first visit, you should have received your initial login and password on your IBM BigFix License Key Center welcome email. If you are a prior visitor, but cannot remember your password, please use the "Forgot your password link" below to reset your account.

If you are registering to a new account, please use the "Don't have a password link" below. Your site primary or site technical contact will need to approve your request prior to you gaining access.

**Email address**  
username@example.com

**License Key Center Password**  
••••••••

Keep me logged in

[Forgot your password?](#)  
[Don't have a password?](#)  
[Need other assistance?](#)

3. For each product that you purchased, specify the allocated client quantity. If you leave 0, you cannot install the particular product.
4. To generate the license authorization file, click **Create Serial Number**.
5. To download the file, click **Download**.

The `LicenseAuthorization.BESLicenseAuthorization` file is downloaded to your computer. The file is needed during the installation of the BigFix platform.

[Download the BigFix installer. \(on page dxx\)](#)

## Downloading the BigFix installer for Windows

To obtain the BigFix installer for Windows, go to the BigFix download center and download the Installation Generator.

1. Go to <http://support.bigfix.com/bes/release/>, and choose the latest version of the BigFix platform.
2. Download the Installation Generator.

### Installation Generator

Operating System	Download
Windows	<a href="#">Download</a>

3. To save the installer, click **Save File**.

Move the installer to the computer on which you want to install the BigFix platform and [start the installation \(on page dxx\)](#).

## Installing BigFix on Windows

To install the BigFix platform on Windows, run the installation wizard that will guide you through the installation of the BigFix server, console, and the first BigFix client.

The BigFix platform installed on Windows requires MS SQL Server as a database. Ensure that you have MS SQL Server installed and running before you start the installation of BigFix. For information about supported versions of MS SQL Server, see: [Software requirements \(on page div\)](#).



### Restriction:

The BigFix installer allows for the installation of an evaluation version of MS SQL Server. However, such version expires after 180 days and should not be used in a production environment.

The following procedure shows the most common installation scenario for Windows. If it does not fit your environment, you need more information about each step, or other installation tasks, see: [Installing on Windows systems](#) in the BigFix documentation.

1. Request a license certificate.
  - a. To start the installation, run the `BigFix-BES-version.exe` file.
  - b. When prompted, choose the **Production** installation.
  - c. After you read and accept the license agreement, select **I want to install with an BigFix license authorization file**.
  - d. Specify the location of the [license authorization file \(on page dxix\)](#), and click **Next**.

- e. Enter the DNS name or IP address of the computer on which you want to install the BigFix platform, and click **Next**.
- f. Create a public/private key pair that will be used to authorize all users of the BigFix console. Enter the password and choose the key size, then click **Create**.

**Request License**

Before finishing your license request, you must create a public/private key pair, which will be used to create and authorize all users of the IBM BigFix Console.

Please provide the key size that you would like to use, as well as a password that will be used to encrypt the private key file.

**It is important that the key file is stored in a secured location so that it is not compromised or lost.**

Password:

Verify password:

Key size:

< Back   Create   Cancel

- g. Save the created files in a secure folder, and click **OK**.

**!** **Attention:** If you lose the private key file, a new license certificate needs to be created, which requires a new installation.

- h. Submit the request to BigFix to obtain the license certificate.
  - If the computer can access the Internet, select the first option, and click **Request**. The request is submitted automatically.
  - If the computer cannot access the Internet, select the second option. The `request.BESLicenseRequest` file is generated, and saved to a chosen folder. Copy the file to a computer with Internet access. Go to [BES License Request Handler](#), and submit the request file. In return, the `license.crt` file is saved to your computer. Copy the file back to the computer where you are installing BigFix. Return to the installation, and click **Import** to import the certificate. Then click **Create**.

2. Enter the parameters of the masthead file that contains configuration and license information. Then, click **OK**.

**i** **Tip:** Default settings are suitable for most deployments. For detailed information about the parameters, see: [Requesting a license certificate and creating the masthead](#).

**Advanced Masthead Parameters**

The default values for these parameters should be suitable for most IBM BigFix deployments. For further information about the implications of these parameters, please contact a IBM BigFix support technician.

Server Port Number:

Gathering Interval:

Initial Action Lock:   minutes

Action Lock Controller:

Exempt the following site URL from action locking:

Require use of FIPS 140-2 compliant cryptography.

Allow use of Unicode filenames in archives.

3. Choose the destination folder for the installers of the BigFix components, and click **Next**. After the component installers are deployed, click **Finish**.

The Installation Guide is launched to lead you through the installation of BigFix components: server, console, and client.

4. Install the BigFix server.
  - a. In the Installation Guide, click **Install Server**, and click **Install or Upgrade the Server on this computer**.
  - b. Follow instructions in the installation wizard. When prompted, specify the location of the `license.pvk` file, and enter the password that you specified in step 1.f (on page dxxi). Click **OK** to continue.
  - c. Create an account that you want to use to log in to the BigFix console, and click **OK**.
  - d. To complete the installation, click **Finish**.
5. Install the BigFix console.
  - a. In the Installation Guide, click **Install Console**, and click **Install or Upgrade the Console on this computer**.
  - b. Follow instructions in the installation wizard.
  - c. To complete the installation, click **Finish**.

 **Tip:** You can log in to the console with the user that you created in step 4.c (on page dxxi).

6. Install the BigFix client on the computer on which you installed the BigFix server.
  - a. In the Installation Guide, click **Install Clients**, and click **Install or Upgrade the Client on this computer**.
  - b. Follow instructions in the installation wizard.
  - c. To complete the installation, click **Finish**.
7. If you want to install the BigFix Inventory server on a different computer, install the BigFix client on that computer.

You can proceed with the [installation of the BigFix client \(on page dxxiii\)](#) on every computer from which you want to collect software inventory data or with the [installation of the BigFix Inventory server \(on page dxxiv\)](#). You can perform these tasks in any order.

## Installing the BigFix clients

Install the BigFix client on every computer in your network that you want to monitor, including the backup and recovery machines.

### Installation methods

Methods for installing the clients vary depending on the operating system. Even if you install the BigFix server on Linux™, you might need to install some of the clients on Windows™ if your network consists of such computers. For more information, see:

- [Installing clients on Windows™ computers](#)
- [Installing clients on Linux™ and UNIX™ computers](#)

If you are not sure which installation method to choose, install the client manually.



**Note:** There is a fixlet available to move the BESClient and create symbolic links. To know more about the fixlet, refer to <https://bigfix.me/fixlet/details/3637>. In case you face issues with the installation, follow the troubleshooting steps mentioned at [Troubleshooting and support \(on page mcccxxvii\)](#).

### Additional installation requirements

- If you are using HP Integrity VM, install the client on the virtual machines and their host operating systems.
- If you are using Solaris Containers/Zones or Logical Domains (LDOM), install the client in the global zone on the control domain and in other global zones. For more information, see: [Client installation on Oracle Solaris \(on page dcxx\)](#).

### Installation packages

The BigFix installation image available on the Passport Advantage® contains client installers. You can also download client installation packages from the [BigFix® support web page](#).

 **Important:** Not all of the operating systems for which installation packages are provided as part of the BigFix installation image are supported by BigFix Inventory. For more information, see: [Detailed System requirements \(on page cdxxxii\)](#).

## Client vs scanner

The BigFix client is common for all BigFix products that are based on the BigFix platform, and is used to perform various tasks on the endpoints. It provides information about a set of computer properties like its host name or the IP address. It is also used to install the scanner on the computers, and enables scanner management through fixlets.

The scanner is an independent component that is used by BigFix Inventory. It collects information about the hardware, as well as the software that is installed on the computers in your infrastructure. The data is sent to the BigFix server. You can then import it to the BigFix Inventory server.

Apart from installing the BigFix client, install also the scanner on every computer that you want to monitor to ensure that all necessary data is collected. For more information, see: [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

## Installing BigFix Inventory on Windows

Before you start the installation of BigFix Inventory on Windows, ensure that an MS SQL Server is installed in your infrastructure. Then, enable a dedicated fixlet site in the BigFix console and download the BigFix Inventory installer. Next, run the installation in interactive or silent mode.

---

### REFERENCE

[BigFix Inventory infrastructure \(on page cdxxxii\)](#)

[Software requirements \(on page div\)](#)

[Hardware requirements \(on page dx\)](#)

## Installing MS SQL Server for BigFix Inventory on Windows

BigFix Inventory that is installed on Windows requires MS SQL Server as a database. However, the software is not delivered as part of BigFix Inventory. Ensure that you install MS SQL Server before you proceed with the installation of the BigFix Inventory server.

The database can be installed on the same computer as the BigFix Inventory server or on a separate one. You can also reuse the MS SQL Server that you installed for the BigFix platform.

For detailed installation instructions, see: [Installing SQL Server](#).

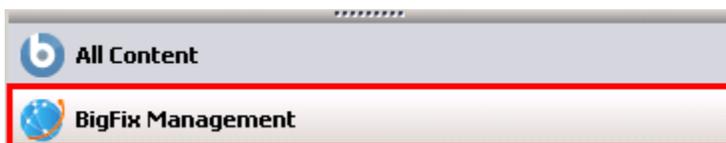
## Enabling the fixlet site

A fixlet site is a collection of fixlets, tasks, and analyses that are related to a particular BigFix application. To get access to the content that is specific to BigFix Inventory, enable the application fixlet site. The procedure differs depending on whether the computer where the BigFix server is installed has the Internet access or not.

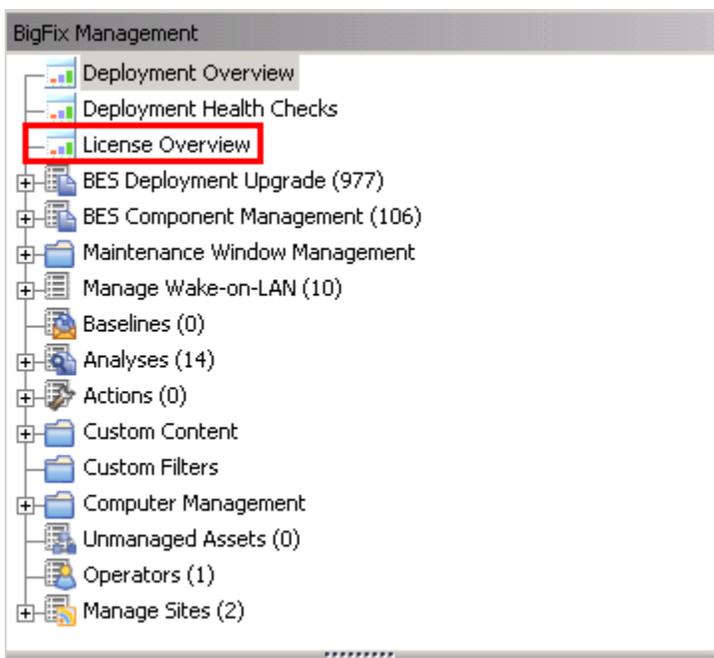
### Enabling the fixlet site on Windows with Internet access

If the BigFix server can access the Internet, enable the BigFix Inventory site from the BigFix console. Then, subscribe computers that you want to monitor to this site so that its content becomes applicable on these computers.

1. Log in to the BigFix console.
2. In the bottom-left corner of the console, click **BigFix Management**.



3. In the left navigation panel, click **License Overview**.



4. In the pane on the right, locate the entry called **Inventory**, and accept the license agreement.
5. From the list of available sites, enable the **BigFix Inventory** site.  
The content of the site is downloaded to the BigFix server.
6. Subscribe all computers that you want to monitor to the fixlet site so that its content becomes applicable to these computers.

- a. In the bottom-left corner of the console, click **All Content**.
- b. In the left navigation panel, expand **Sites > External Sites**, and open the **BigFix Inventory** site.
- c. In the pane on the right, open the **Computer Subscriptions** tab, select computers that you want to monitor. If you want to monitor the entire infrastructure, select **All Computers**. Otherwise, specify appropriate filtering criteria.

 **Tip:** If the option is not active, click **Gather** to download the content of the fixlet site.



- d. Click **Save Changes**.

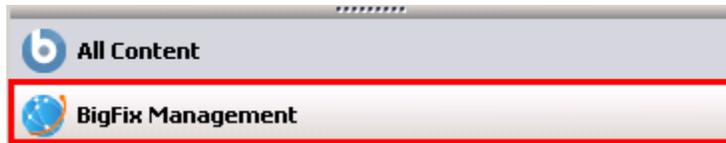
You enabled the BigFix Inventory site and subscribed computers that you want to monitor to this site.

Download the BigFix Inventory installer to a selected computer and [start the installation \(on page dxxviii\)](#).

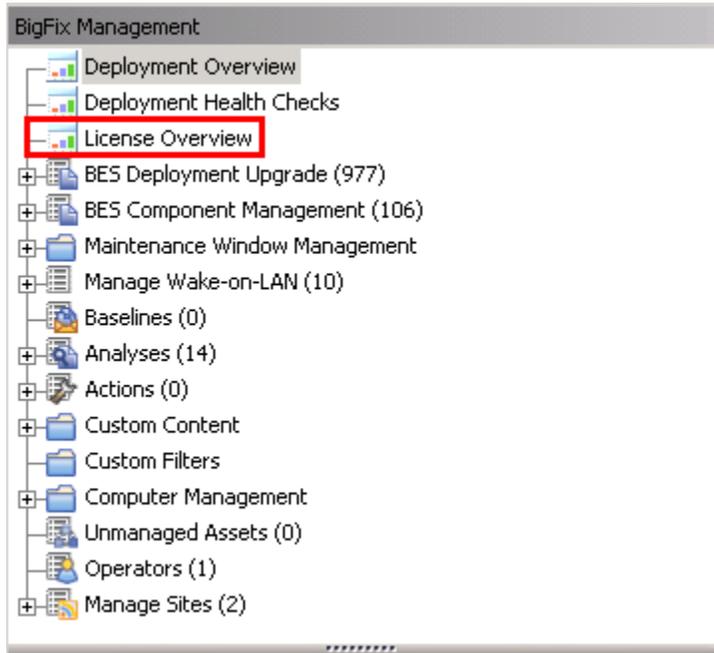
## Enabling the fixlet site on Windows without Internet access

If the BigFix server cannot access the Internet, use the Airgap tool to enable the fixlet site. When the site is enabled and the content loaded, use the BES Download Cacher to download and cache the files on the BigFix server.

1. Create a request file to obtain the list of fixlet sites to which you are entitled.
  - a. Go to the BigFix server installation directory, by default `C:\Program Files (x86)\BigFix Enterprise\BES Server`, and run the `BESAirgapTool.exe` file. When prompted, save the files to a dedicated folder, for example `Airgap`.
  - b. Copy the created files to a computer with Internet access, and run the `BESAirgapTool.exe` file on that computer. This action exchanges the request file for a response file.
  - c. Copy the `AirgapResponse` file back to the computer where the BigFix server is installed, and place it in the `Airgap` folder. Run `BESAirgapTool.exe` to load the response to the BigFix server.
2. Enable the BigFix Inventory site.
  - a. Log in to the BigFix console.
  - b. In the bottom-left corner of the console, click **BigFix Management**.



- c. In the left navigation panel, click **License Overview**.



- d. In the pane on the right, locate the entry called BigFix Inventory, and accept the license agreement.

- e. From the list of available sites, enable the **BigFix Inventory** site.

3. To create a request file to load the content into the site, repeat step 1 ([on page dxxvi](#)).
4. Subscribe all computers that you want to monitor to the BigFix Inventory fixlet site so that its content becomes applicable to these computers.
  - a. Log in to the BigFix console.
  - b. In the left navigation panel, click **Sites > External Sites > BigFix Inventory**.
  - c. In the pane on the right, open the **Computer Subscriptions** tab, and select computers that you want to monitor. If you want to monitor the entire infrastructure, select **All Computers**. Otherwise, specify appropriate filtering criteria. Click **Save Changes**.

The `License Reporting.efxmBigFix Inventory.efxm` file is created on the server.

5. Cache the content of the fixlet site on the BigFix server.

- a. On the computer where the BigFix server is installed, go to: `install_dir\BES Server\wwwrootbes\bfsites`. Copy the `BigFix Inventory.efxm` file to a Windows computer with Internet access, and place it in the `C:\BigFix` directory.
- b. In the `C:\BigFix` directory create a folder called `downloads`.
- c. Run the BES Download Cacher with the following command:

```
BESDownloadCacher.exe -m "C:\BigFix\BigFix Inventory.efxm"
-x C:\BigFix\downloads
```

The BES Download Cacher downloads approximately 1 GB of required files.

- d. **Optional:** The default cache size is enough if you use only the **BigFix Inventory** fixlet site. However, if you plan to run fixlets from other sites, such as **BES Support**, increase the cache size so that the BigFix server does not try to delete any files.
  - i. Log in to the BigFix console.
  - ii. In the left navigation bar, click **Computers** and right-click the computer on which the BigFix server is installed. Then, click **Edit Computer Settings**.
  - iii. Increase the value of the `_BESGather_Download_CacheLimitMB` setting. If the setting is not on the list, add it and specify the value in MB.



**Tip:** The size depends on each fixlet site, however you might need to increase it to at least a couple of gigabytes.

- e. Copy the contents of the `downloads` folder from the computer with Internet access to the following directory on the computer where the BigFix server is installed:

```
install_dir\BES Server\wwwrootbes\bfmirror\downloads\shal
```

You enabled the BigFix Inventory fixlet site and loaded its content.

Download the BigFix Inventory installer to a selected computer and [start the installation \(on page dxxviii\)](#).

## Installing the server on Windows

After you enable the fixlet site, download the BigFix Inventory installer, and proceed with the installation. You can install the server in interactive or silent mode.

### Installing the server on Windows in interactive mode

To install the BigFix Inventory server on Windows, download the application installer to a selected computer and run the `setup-server-windows-x86_64.bat` script. Then, follow instructions in the installation wizard.

- Ensure that the BigFix client is installed on the computer on which you want to install the BigFix Inventory server.
- Log in as user with administrative privileges and run the installer with the **Run as Administrator** option.
- Disable or reduce the User Account Control in Windows to avoid warnings during the installation.

1. Download the BigFix Inventory installer.

- Log in to the BigFix console.
- In the navigation panel, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- In the upper right pane, select **Download BigFix Inventory**, and click **Take Action**.
- Select the computer to which you want to download the installer, and click **OK**.  
Wait until the status of the action is Completed. The installer is downloaded to the **BES Installers \BFI\_installer** directory on the selected computer. By default, the directory is in the following location: **C:\Program Files (x86)\BigFix Enterprise\BES Installers \BFI\_installer**.

 **Tip:** If the computer is not available, ensure that it has the BigFix client installed and is subscribed to the BigFix Inventory fixlet site.

- Log in to the computer where you downloaded the installer as a user with administrative privileges.
- Go to the directory where the installer was downloaded, and extract the installation files.
- To start the installation, run the **setup-server-windows-x86\_64.bat** file.

Run the installer with the **Run as Administrator** option.

 **Tip:** If you encounter a slow installation, check the following items:

- Check the performance and speed of the hard disk.
- Check whether the antivirus is scanning each file separately as it might slow down packaging. If this is the case, turn off the antivirus. If the antivirus cannot be turned off, expect the installation to be slower.

- Select the language of the installation, and click **OK**. The installation wizard starts, and the welcome panel opens. Click **Next**.  
If you cannot choose your language in the installation wizard, set the system locale to a chosen language. For more information, see [Troubleshooting \(on page mccc1xv\)](#).
- Read and accept the license agreement, and click **Next**.
- Follow instructions in the installation wizard and provide the required parameters.
- On the last panel, specify the user account that you want to be used for running the application service.

- If you choose **Local System account**, the service runs under the `NT AUTHORITY\SYSTEM` user, which has all required rights.
- If you choose **Other account**, specify a user with the **log on as a service** right and administrative privileges. The User Account Control in Windows must be reduced or disabled, because it might block the service from starting. The user must be entered as `domain\username`, `machine\username`, or `.\username` if it is a local account.

**Specify a service account**

Local System account  
 Other account:

User name:

Password:

---

**Help**

Choose the user account for running the application service. The account should be chosen depending on the authentication mode you are using to access the databases:

SQL Server auth. - choose any account.

**!** **Important:** To use Windows authentication to access the database, the service owner chosen on this panel must be available both to BigFix Inventory and the relevant database server for which you use this authentication. For local databases, you can use the Local System account. For remote databases, specify a domain user that is shared between the two servers.

9. When the installation is complete, click **Done** to exit the wizard.

**i** **Tip:** If you encountered problems during the installation, analyze the log file that is in the following directory: `%USERPROFILE%/BF19.2.16`.

The BigFix Inventory server is installed and the initial configuration opens in the browser. If you do not have a browser installed or want to complete the configuration from a different computer, go to: `https://host_name:port`, where `host_name` and `port` are the values that you specified during the installation.

[Complete the initial configuration \(on page dxli\).](#)

## TASK

[Resuming a stopped or failed interactive installation \(on page dlxxxiv\)](#)

## REFERENCE

[Installation and upgrade problems \(on page mcccclxii\)](#)

[Server installation and upgrade logs \(on page mcccxcii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Installing the server on Windows in silent mode

To install the BigFix Inventory server on Windows, download the application installer to a selected computer, edit parameters in the `install_response.txt` file, and run the installation command.

- Ensure that the BigFix client is installed on the computer on which you want to install the BigFix Inventory server.
- Log in as user with administrative privileges and run the installer with the **Run as Administrator** option.
- Disable or reduce the User Account Control in Windows to avoid warnings during the installation.

### 1. Download the BigFix Inventory installer.

- Log in to the BigFix console.
- In the navigation panel, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- In the upper right pane, select **Download BigFix Inventory**, and click **Take Action**.
- Select the computer to which you want to download the installer, and click **OK**.  
Wait until the status of the action is Completed. The installer is downloaded to the `BES Installers \BFI_installer` directory on the selected computer. By default, the directory is in the following location: `C:\Program Files (x86)\BigFix Enterprise\BES Installers \BFI_installer`.

 **Tip:** If the computer is not available, ensure that it has the BigFix client installed and is subscribed to the BigFix Inventory fixlet site.

- Log in to the computer where you downloaded the installer as a user with administrative privileges.
- Go to the directory where the installer was downloaded, and extract the installation files.
- Read the license agreement in the `BES Installers\BFI_installer\licenses\LA_language.txt` file.
- Edit the `install_response.txt` response file and adjust it to your installation. Ensure that the **RSP\_LICENSE\_ACCEPTED** parameter is set to true. If you do not accept the license, the installation fails. For more information about installation parameters, see: [Server installation response file \(on page dxxxii\)](#).
- Start the command line and change to the directory with installation files. To start the installation, run the following command.

```
setup-server-windows-x86_64.bat -f response_file_path -i silent
```

Where *response\_file\_path* is the absolute path to the response file that you are using. For example:

```
setup-server-windows-x86_64.bat -f "C:\Program Files (x86)\BigFix Enterprise\BES
Installers\BFI_installer\install_response.txt" -i silent
```

 **Tip:** Use the `-h` option to view help information about using the script, for example: `setup-server-windows-x86_64.bat -h`.

 **Tip:** If you encounter a slow installation, check the following items:

- Check the performance and speed of the hard disk.
- Check whether the antivirus is scanning each file separately as it might slow down packaging. If this is the case, turn off the antivirus. If the antivirus cannot be turned off, expect the installation to be slower.

Access the BigFix Inventory user interface to [complete the initial configuration \(on page dxli\)](#). To access the user interface, go to: `https://host_name:port`, where *host\_name* and *port* are the values that you specified during the installation.

#### TASK

[Resuming a stopped or failed interactive installation \(on page dlxxxiv\)](#)

#### REFERENCE

[Installation and upgrade problems \(on page mcccxi\)](#)

[Server installation and upgrade logs \(on page mcccxcii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Server installation response file

The `install_response` file specifies input parameters that are used during the installation of the BigFix Inventory server in silent mode.

**Table 138. Response file parameters**

Parameter key name	Description	Default
<b>RSP_LICENSE_ACCEPTED</b>	Accepts the license agreement.  The installation fails if you do not change the value of the parameter to <code>true</code> .	<code>false</code>
<b>RSP_DISABLE_PREREQ_WARNINGS</b>	Disables prerequisite checking warnings.	<code>false</code> (warnings are enabled)

Table 138. Response file parameters (continued)

Parameter key name	Description	Default
	If the server does not have enough memory or processor cores, the silent installation fails. You can change this behavior by setting the value of this parameter to <code>true</code> . The installation can complete even if the requirements are not fulfilled, however insufficient resources might impact performance.	
<b>RSP_TLM_ROOT</b>	Specifies the installation location.  Specify an empty directory in which you want to install the server. If the directory does not exist, it is created.	<b>Windows</b> <code>C:\Program Files\BigFix Enterprise\BFI</code>  <b>Linux</b> <code>/opt/BFI</code>
<b>RSP_TLM_HTTPS_PORT</b>	Specifies the port that is used by the server.  If you do not specify the port number, a default value is used. If the selected port is already used by a different application, the installation fails.	9081
<b>RSP_DISABLE_COMMUNICATION_WARNINGS</b>	Disables communication warnings.  If any of the ports that you specified in the <b>RSP_TLM_HTTPS_PORT</b> is locked by another application, silent installation fails. To specify a port that is temporarily used but will be available later, set the <b>RSP_DISABLE_COMMUNICATION_WARNINGS</b> parameter to <code>true</code> .	false
<b>Windows</b> <b>RSP_USER_ACCOUNT</b>	Specifies the user account for running the application service.  The User Account Control in Windows must be reduced or disabled. Otherwise, it might block the service from starting.  If you leave the value <code>current</code> , the service runs under the <code>NT AUTHORITY\SYSTEM</code> user, which has all required rights. If you specify a different user, ensure that the following requirements are met:	current

**Table 138. Response file parameters (continued)**

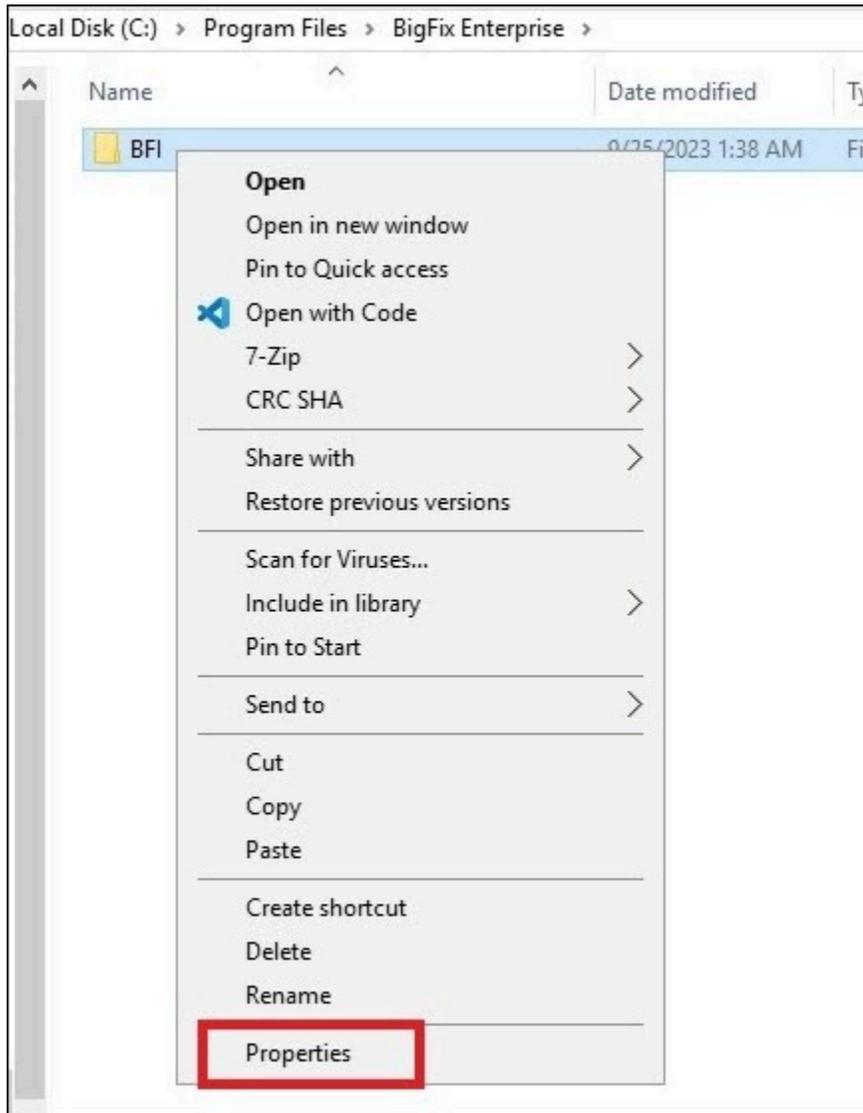
Parameter key name	Description	Default
	<ul style="list-style-type: none"> <li>• The user has the <b>log on as a service</b> right and administrative privileges.</li> <li>• The user is entered as <code>domain\username</code>, <code>machine\username</code>, or <code>.\username</code> if it is a local account</li> </ul> <p> <b>Important:</b> To use Windows authentication to access the database, the service owner chosen here must be available both to BigFix Inventory and the relevant database server for which you use this authentication. For local databases, you can use <code>current</code>, but for remote ones it must be a domain user that is shared between the two servers.</p>	
<span style="background-color: #800040; color: white; padding: 2px;">Windows</span> <b>RSP_USER_ACCOUNT_PWD</b>	Specifies the password of the user account for running the application service.	

## Hardening server installation directory

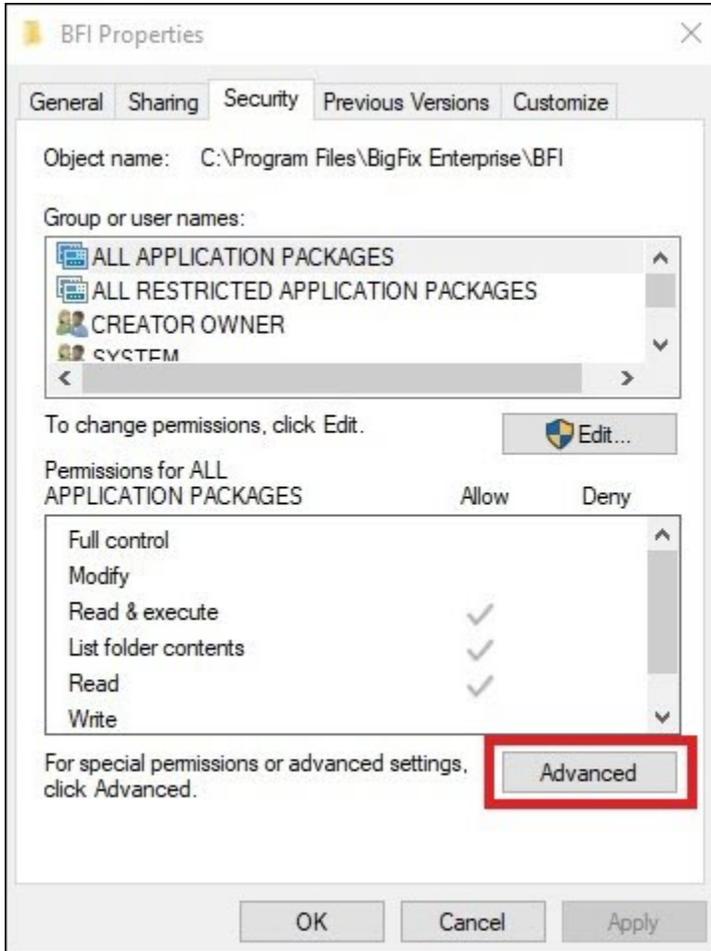
By default, BigFix Inventory server installation directory inherits the permission from the parent folder. To improve and make appropriate permissions available, it is recommended to disable the inheritance and update the permissions. Changes made in the parent installation directory are preserved during upgrade.

Perform the below steps to provide the access:

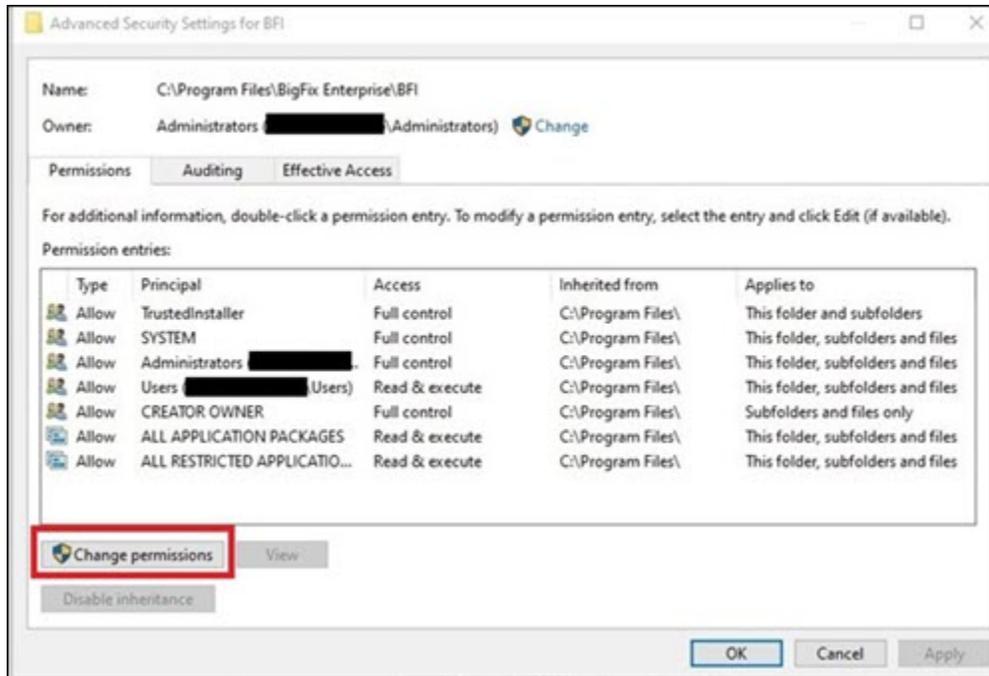
1. Go to BigFix Inventory installation folder and choose **Properties**.



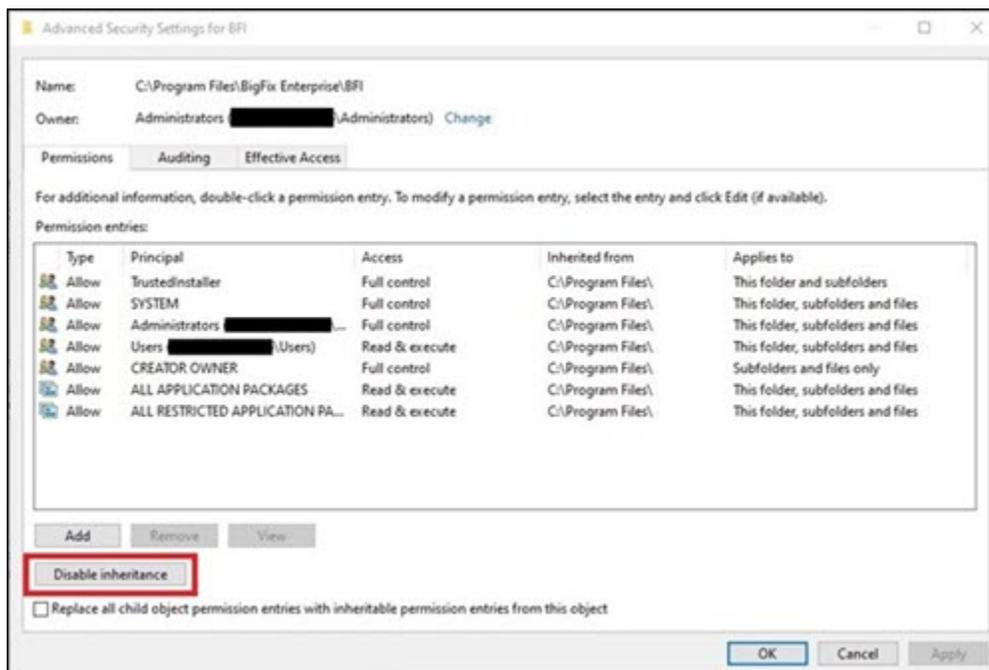
2. Go to the **Security** tab and select **Advanced**.



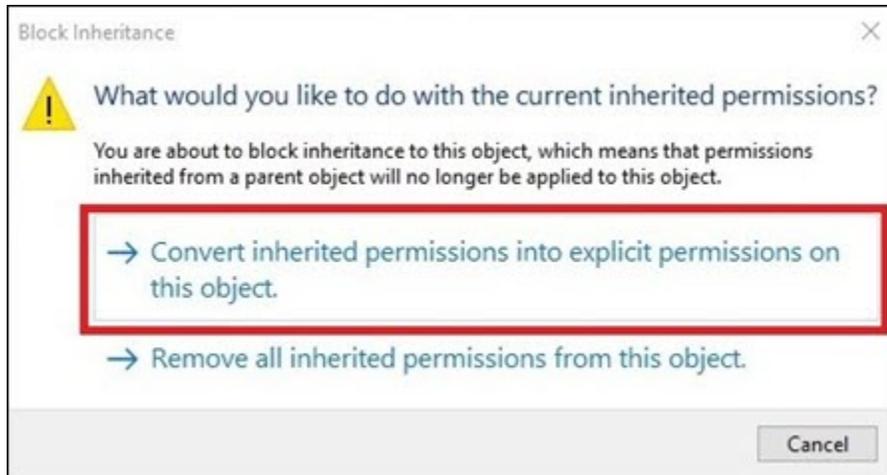
3. Select **Change permissions** (needed only if not logged in from Administrator account).



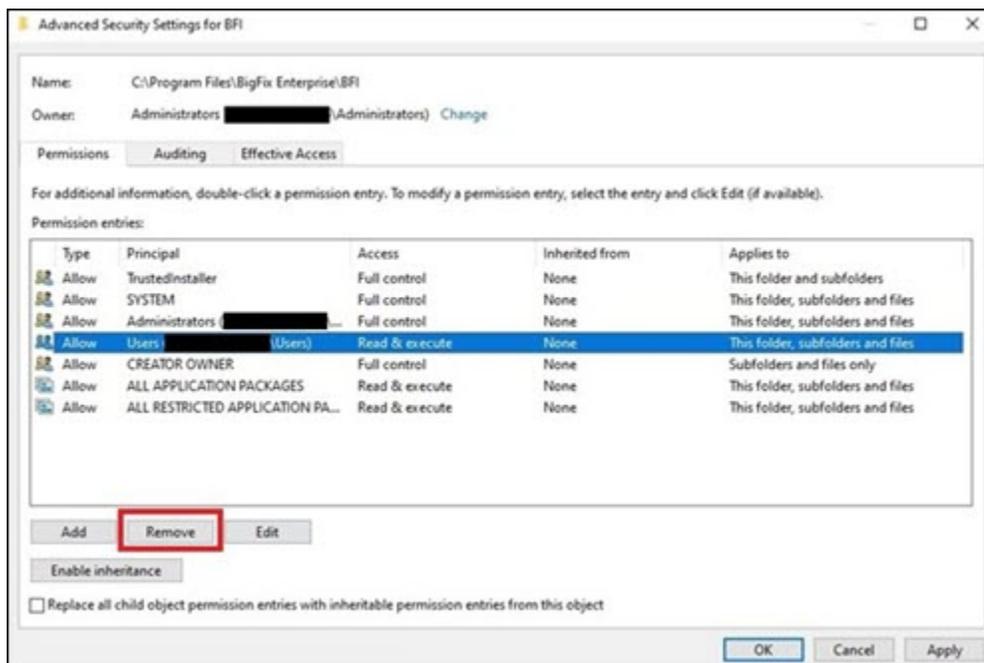
4. Click on the **Disable inheritance** button.



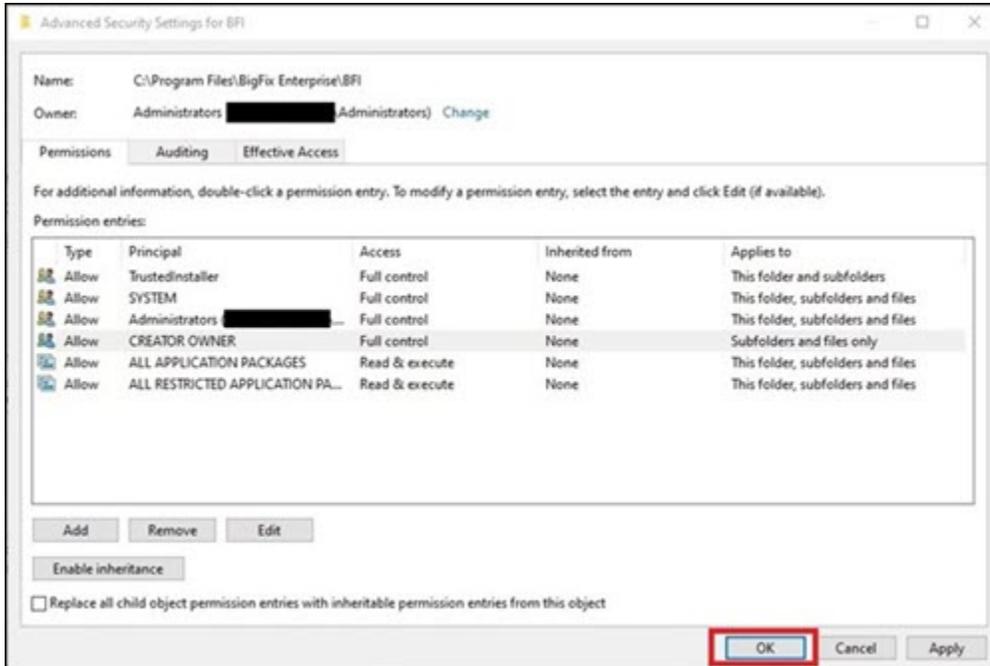
5. Select the option to convert permissions.



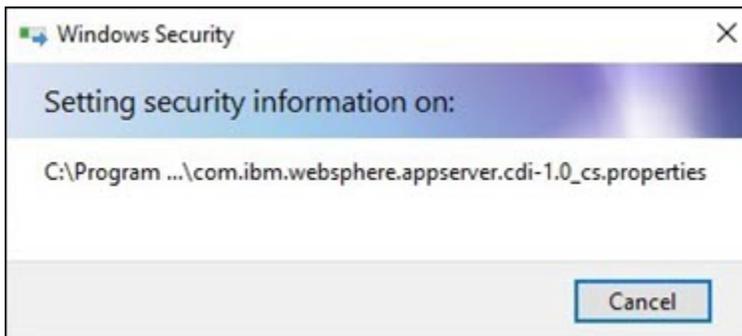
6. Select the group you want to remove (in this case, **Users**) and click **Remove**.



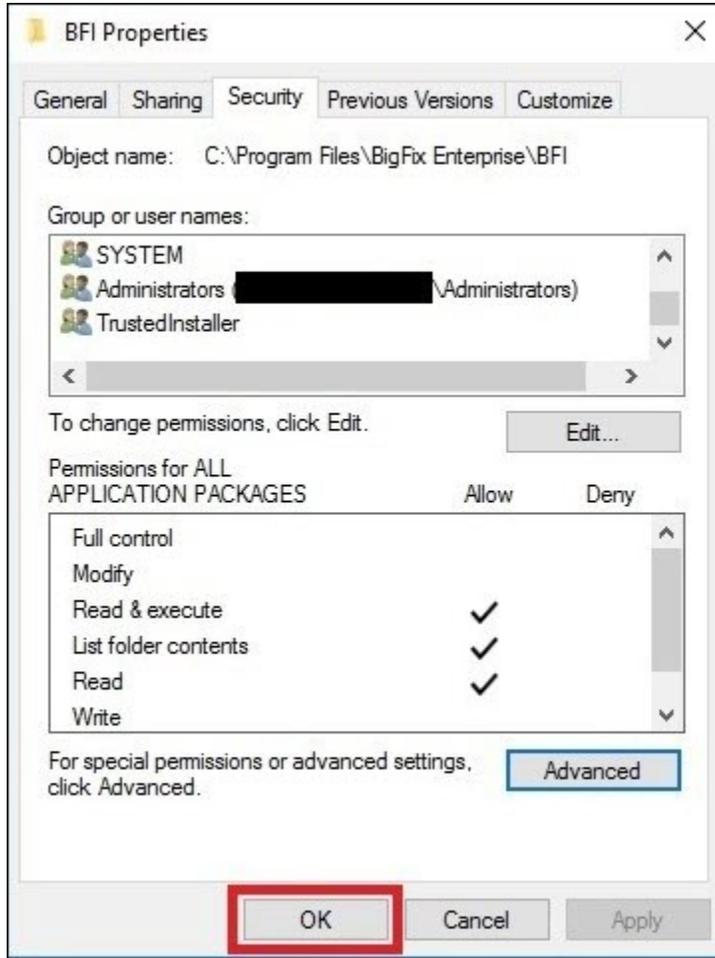
7. Click **OK**.



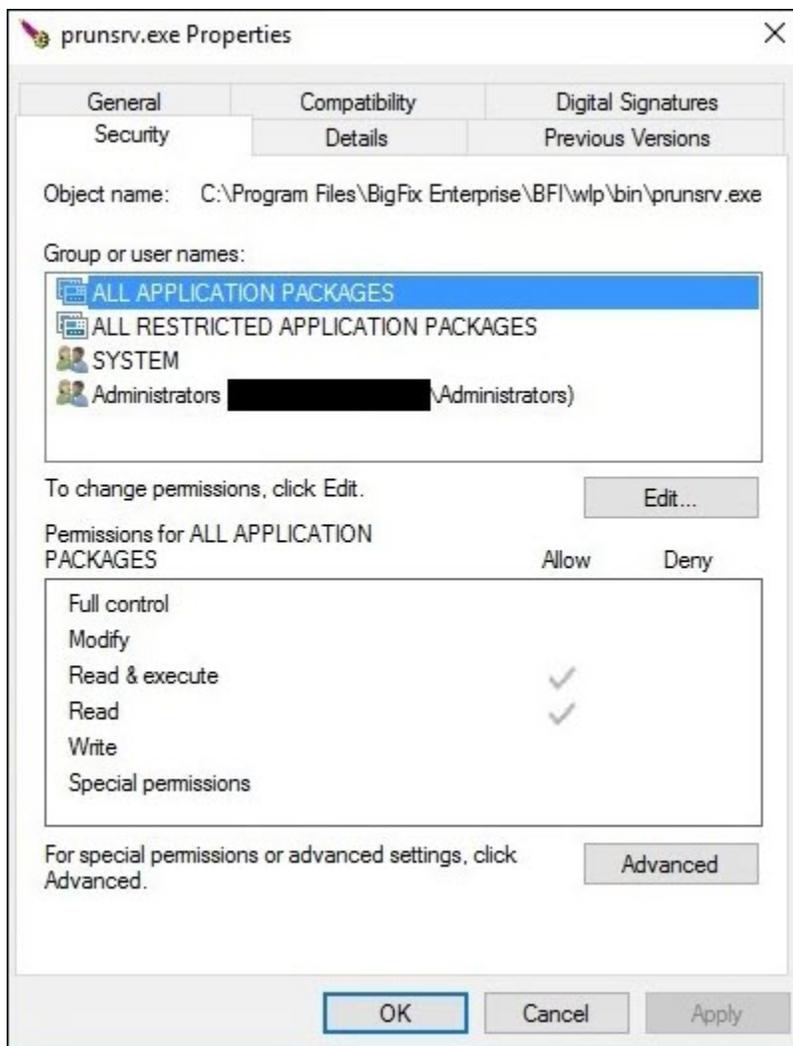
8. Let all directories and files under the installation directory get updated with the permissions.



9. Close the open window.



**Result:** The new permissions are applied to all files.



The permissions you configured are applicable when the application is upgraded.

## Performing initial configuration on Windows

During the initial configuration, you create a BigFix Inventory database and the application administrator. You also set up a connection to the BigFix server and database. As an option, you can configure a connection to the Web Reports database to give the Web Reports users access to BigFix Inventory.

- Ensure that you have SQL Server database user for BigFix Inventory database as defined on [Installation accounts \(on page dxii\)](#) page.

### Creation of the BigFix Inventory database

- To create a new database during initial configuration in BigFix Inventory, the user must have the `sysadmin` role in MS SQL Server.
  - If you chose local system account as the service owner during the installation, provide the `sysadmin` role to the `NT AUTHORITY\SYSTEM` user in MS SQL server.
- Alternately manually create an MS SQL before the configuration. Make sure that:
  - the database is empty
  - use the `SQL_Latin1_General_CP1_CS_AS` collation. You must have the `db_owner` role in MS SQL Server to perform this action.
  - Snapshot isolation is allowed in the database. To allow snapshot isolation, use `ALTER DATABASE DatabaseName and SET ALLOW_SNAPSHOT_ISOLATION ON` queries.

### Other considerations

- If you want to use Windows authentication to connect to the databases, the following requirements must be fulfilled:
  - BigFix and BigFix Inventory must be installed on Windows.
  - To use a local user for authentication, BigFix and BigFix Inventory must be installed on the same instance of Windows. The applications can run on different hosts if the user is a domain user.
  - The owner of the BigFix Inventory service must also be able to access this database.

#### 1. Create the BigFix Inventory database.

##### a. Enter the host name of the database server.

If you want to configure a named database instance or specify a non-default port, provide the host name in the following format:

- `hostname\instance_name`, for example `localhost\MyInstance`
- `hostname:port_number`, for example `localhost:1444`

##### b. Enter the name of the application database.

##### c. Select the authentication mode.

- Select **Windows Authentication**, to authenticate with a Windows user that you specified as the service owner during the installation of BigFix Inventory.



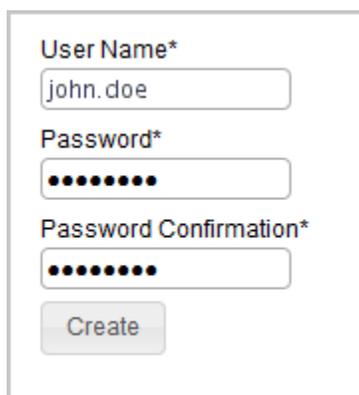
**Restriction:** If the MS SQL Server is installed on the same computer as BigFix Inventory, enter the database host name without its domain name (FQDN) or use `localhost` instead. The host name can be specified as `NC1985110` or `localhost`, but not as `NC1985110.domain.com` or `198.50.100`.

- Select **SQL Server Authentication** to authenticate with an MS SQL Server user. This authentication mode must be enabled in MS SQL Server. For more information, see: [Enabling the SQL Server Authentication mode](#).

##### d. To create the database instance, click **Create**.

2. Create the administrator of BigFix Inventory.

**i** **Tip:** Avoid using admin, administrator, root or a similar name for the administrative account. Such an account might be prone to hacker attacks and locked out if an attacker exceeds the specified number of failed login attempts. For more information, about the account lockout, see: [Configuring user account lockout \(on page mcccxxiii\)](#).



The image shows a user creation form with the following fields and controls:

- User Name\***: A text input field containing the value "john.doe".
- Password\***: A password input field with 10 black dots representing the masked password.
- Password Confirmation\***: A password input field with 10 black dots representing the masked confirmation password.
- Create**: A button located below the password confirmation field.

3. **Optional:** To automatically enable scans that collect data from the computers in your infrastructure, select **Enable default scan schedule for this data source**.

If you enable the default scan schedule, actions that are needed to collect data from the computers in your infrastructure are automatically started on the BigFix server. This option is advised for environments with up to a few thousand computers. For larger environments, finish the installation, divide the computers into groups, and then manually set up scan schedule for each group to avoid performance issues. For more information about the default and manual scan schedule, see: [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

4. Configure the connection to the BigFix database. The database stores information about the computers, and data that was discovered on these computers. Specify the host, port, database name, and credentials of the user that can access the BigFix database.

### Database for the IBM BigFix Server\*

Database Type\*

SQL Server ▼

Host\*

198.51.100.2

Database Name\*

BFEnterprise

Authentication

Windows Authentication

SQL Server Authentication

Save

5. Configure the connection to the BigFix server. The host name or IP address, and the API port number are automatically retrieved from the database. Specify only the administrative user that you created during the installation of BigFix.

### IBM BigFix Server\*

#### Authentication (Console Operator)

User Name\*

IEMAdmin

Password\*

●●●●●●●●

Disable automatic address lookup



**Note:** If you do not want to provide the Master Operator, you can create a dedicated BigFix user that fulfills the following requirements:

- Is assigned the **BigFix Inventory** site
- Is assigned computers that you are going to monitor, and the computer where the BigFix server is installed
- Has the following permissions: *Can use REST API, Can use Console, Custom Content, Can Create Actions*

The option is supported starting from BigFix 9.5.

6. **Optional:** If the BigFix and BigFix Inventory servers are in separated networks, the automatic address lookup might return incorrect address. To disable the lookup, select **Disable automatic address lookup**, and specify the address manually. Then, configure additional environment variables on the BigFix Inventory server. For more information, see [Configuring servers in separate networks \(on page dlxxxvi\)](#).
7. **Optional:** Configure the connection to the Web Reports database. Specify the database type, host name, database name, and credentials of the Web Reports database user.

98/

**Web Reports Database**

Database Type\*

Host\*

Database Name\*

**Authentication**

Windows Authentication

SQL Server Authentication

8. To create connections to the databases, click **Create**.

When the connections are created and configured, a new page opens and a message about the data import is displayed.

9. **Optional:** If your environment consists of more than 50 000 endpoints, complete steps to [enhance the application performance \(on page mcdxliv\)](#) before you run the import.
10. To run the initial import, click **Import Now**.

The import might take a few hours, depending on your hardware capacity.

If you enabled the [default scan schedule \(on page dcii\)](#), the collected data might not be displayed in BigFix Inventory after the initial import. Some time is required to finish scans that were initiated during the installation, and to upload scan results to the server. If the reports in BigFix Inventory do not contain any data, wait about an hour until the scans are completed. Then, start another import.

If you did not enable the default scan schedule, manually configure scans to collect data that is later on displayed on the reports. For more information, see [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

---

## REFERENCE

[Database creation logs and return codes \(on page mcccxi\)](#)

## Uninstalling on Windows

To remove BigFix Inventory from your infrastructure, stop the application-specific actions and analyses that are running on the computers and uninstall the scanner. Then, remove the VM Manager tool. Finally, uninstall the BigFix Inventory server. You can also remove the related database.

## Uninstalling the server on Windows in interactive mode

To uninstall the BigFix Inventory server on Windows, run the `uninstall.bat` file. Then, follow instructions in the installation wizard. The wizard does not uninstall the MS SQL Server nor the BigFix server. These components need to be removed separately.

1. Log in to the computer where the BigFix Inventory server is installed as the same user who performed the installation.
2. Go to the `C:\Program Files\BigFix Enterprise\BFI\Uninstall` directory and run the `uninstall.bat` file. Start the uninstallation with the **Run as administrator** option.
3. Follow instructions in the uninstallation wizard. When the uninstallation finishes, click **Done**.

The BigFix Inventory server is uninstalled but the database, user logins, and passwords are preserved. To remove them, [delete the BigFix Inventory database](#). You can also remove the [BigFix server](#).

---

### REFERENCE

[Removing the server manually \(on page mcdxxiii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Uninstalling the server on Windows in silent mode

To uninstall the BigFix Inventory server on Windows, edit parameters in the `uninstall_response.txt` file, and run the uninstallation command. The command does not uninstall the MS SQL Server nor the BigFix server. These components need to be removed separately.

1. Log in to the computer where the BigFix Inventory server is installed as the same user who performed the installation.
2. Go to the directory with the uninstallation response file, open the `uninstall_response.txt` file, and edit the uninstallation parameters. By default, the directory is `C:\Program Files\BigFix Enterprise\BFI\Uninstall`.
3. Start the command line and run the following command.

```
uninstall.bat -f C:\Program Files\BigFix Enterprise\BFI\Uninstall\uninstall_response.txt -i silent
```

The BigFix Inventory server is uninstalled but the database, user logins, and passwords are preserved. To remove them, [delete the BigFix Inventory database](#). You can also remove the [BigFix server](#).

---

### REFERENCE

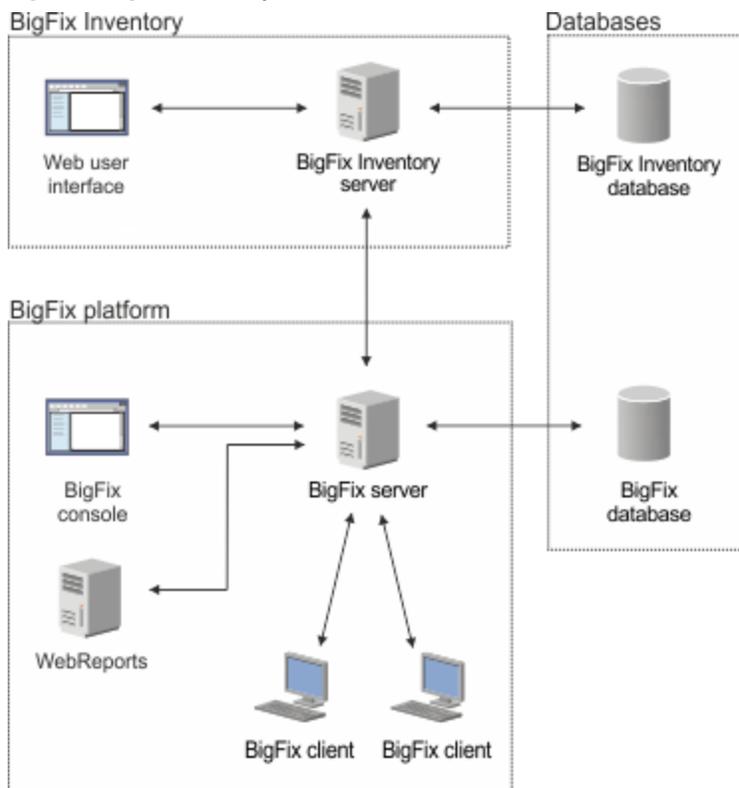
[Removing the server manually \(on page mcdxxiii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Installing on Linux

A complete deployment of BigFix Inventory on Linux requires the installation of three components: the BigFix platform, the BigFix Inventory server, and DB2 database. Additionally, a BigFix client must be installed on every computer from which you want to collect software inventory data. Depending on the environment size, you can install all components on a single computer, or distribute them among multiple computers.

Figure 5. BigFix Inventory infrastructure



## Step-by-step installation guide for Linux

Use the step-by-step installation guide to ensure that you complete all steps necessary to successfully install BigFix Inventory on Linux.

Table 139. Step-by-step guide for installing and configuring BigFix Inventory

Stage	Installation step
1.	<p><b>Plan the installation</b> to ensure that the computer on which you want to install BigFix Inventory fulfills the following requirements:</p> <ul style="list-style-type: none"> <li>• Runs on a <a href="#">Detailed System requirements (on page cdxxxii)</a></li> <li>• Fulfills the minimum <a href="#">hardware requirements (on page dx)</a></li> <li>• Has sufficient disk space</li> <li>• Has the <a href="#">required software (on page div)</a> installed</li> </ul>
2.	<p><b>Install the BigFix platform</b></p>

**Table 139. Step-by-step guide for installing and configuring BigFix Inventory (continued)**

Stage	Installation step
	<ul style="list-style-type: none"> <li>• Create the license authorization file (<a href="#">on page dxlix</a>)</li> <li>• Download the BigFix installer (<a href="#">on page dl</a>)</li> <li>• Install the BigFix server, console and the first client (<a href="#">on page dl</a>)</li> <li>• Install the BigFix client (<a href="#">on page dliv</a>) on every computer from which you want to collect software inventory data</li> </ul>
	<p> <b>Tip:</b> You can install the clients at this point or proceed with the installation of BigFix Inventory and install the clients later on.</p>
3	<p><b>Install BigFix Inventory</b></p> <ul style="list-style-type: none"> <li>• Install DB2 (<a href="#">on page dlvi</a>)</li> <li>• Enable the BigFix Inventory fixlet site (<a href="#">on page dlvii</a>)</li> <li>• Install the BigFix Inventory server (<a href="#">on page dlxii</a>)</li> <li>• Perform initial configuration (<a href="#">on page dlxvi</a>)</li> <li>• Verify the current application and catalog version (<a href="#">on page dlxxxviii</a>)</li> </ul>
4	<p><b>Create users and groups</b> to give users access to BigFix Inventory and to define computers for which they can see data.</p> <ul style="list-style-type: none"> <li>• Set up users (<a href="#">on page dxcv</a>)</li> <li>• Set up computer groups (<a href="#">on page dxcvi</a>)</li> </ul>
5	<p><b>Set up scans</b> to discover software and hardware inventory in your infrastructure.</p> <p> <b>Important:</b> The steps are not required if you enabled the default scan configuration during the installation.</p> <ul style="list-style-type: none"> <li>• Optional: Distribute scans for improved performance (<a href="#">on page dcvii</a>)</li> <li>• Activate the required analysis (<a href="#">on page dcvii</a>)</li> <li>• Install the scanner (<a href="#">on page dcviii</a>)</li> <li>• Initiate software scans (<a href="#">on page dcx</a>)</li> <li>• Schedule uploads of software scan results (<a href="#">on page dcxvii</a>)</li> <li>• Collect capacity data (<a href="#">on page dcxix</a>)</li> </ul>

## Installing the BigFix platform on Linux

The BigFix platform is the core of the BigFix Inventory infrastructure. It consists of a server that coordinates the flow of data to and from the monitored computers, an administrative console, and clients that collect data from the computers in your infrastructure. Before you can install BigFix Inventory, install all components of the BigFix platform.

 **Important:** Even if you set up entire environment on Linux, you need a Windows computer on which you can install the BigFix console.

---

## REFERENCE

[BigFix Inventory infrastructure \(on page cdxxx\)](#)

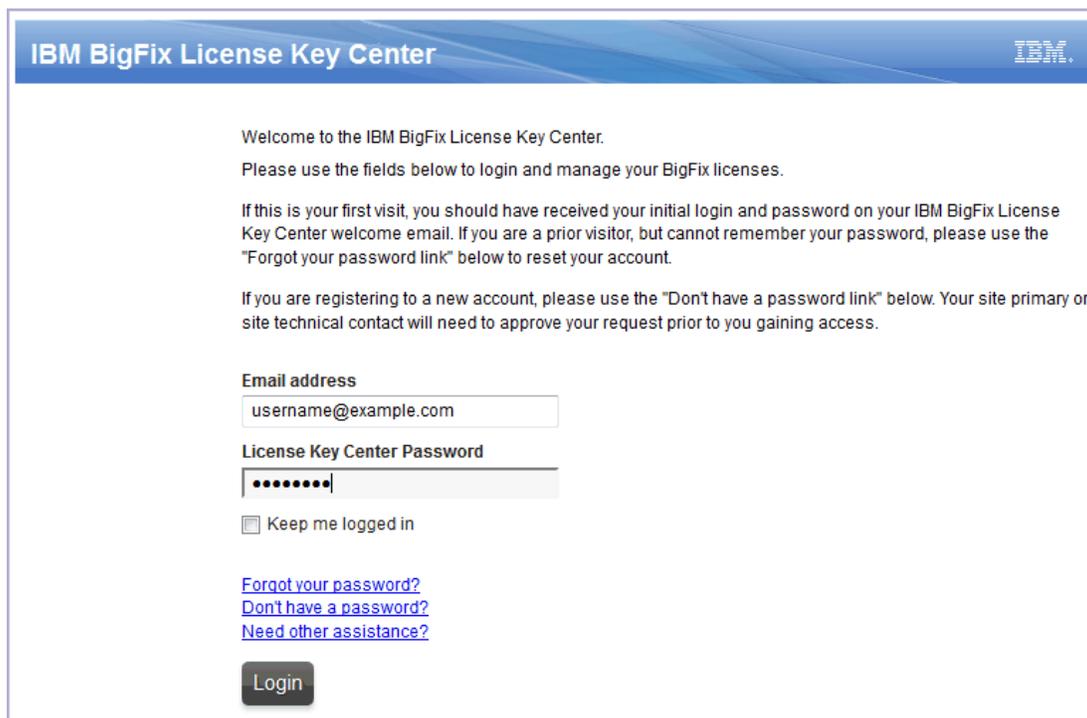
[Software requirements \(on page div\)](#)

[Hardware requirements \(on page dx\)](#)

## Creating the license authorization file

After you order BigFix Inventory from Passport Advantage, you receive a welcome email with information how to access the BigFix License Key Center. Go to the Key Center and create the license authorization file that contains deployment and licensing information. The file is needed during the installation of the BigFix platform.

1. Go to the [License Key Center](#).
2. Enter your email address and the password that you received in the welcome email.



The screenshot shows the IBM BigFix License Key Center login page. The page has a blue header with the text "IBM BigFix License Key Center" and the IBM logo. The main content area is white and contains the following text:

Welcome to the IBM BigFix License Key Center.  
Please use the fields below to login and manage your BigFix licenses.

If this is your first visit, you should have received your initial login and password on your IBM BigFix License Key Center welcome email. If you are a prior visitor, but cannot remember your password, please use the "Forgot your password link" below to reset your account.

If you are registering to a new account, please use the "Don't have a password link" below. Your site primary or site technical contact will need to approve your request prior to you gaining access.

**Email address**  
username@example.com

**License Key Center Password**  
••••••••

Keep me logged in

[Forgot your password?](#)  
[Don't have a password?](#)  
[Need other assistance?](#)

Login

3. For each product that you purchased, specify the allocated client quantity. If you leave 0, you cannot install the particular product.
4. To generate the license authorization file, click **Create Serial Number**.
5. To download the file, click **Download**.

The `LicenseAuthorization.BESLicenseAuthorization` file is downloaded to your computer. The file is needed during the installation of the BigFix platform.

Download the BigFix installer. For more information, see: [Downloading the BigFix installer for Linux \(on page dl\)](#).

## Downloading the BigFix installer for Linux

To obtain the BigFix installer for Linux, log in to Passport Advantage and download the required packages. If you are planning to install the BigFix platform and DB2 on a single computer, download the package that contains installers for both applications. If you are planning to install the components on separate computers, download the installers separately.

1. Log in to [Passport Advantage](#).
2. On the **Navigation help** tab, click **Software download & media access**.
3. In the lower part of the page, click **BigFix Inventory**.
4. In the window that opens, select your preferred operating system and language for the installation packages.
5. In the lower part of the page, select **Required**, and click **Download**.
6. In the window that opens, select the download location, the preferred download method, select **I agree to the terms and conditions**, and click **Download Now**.
7. On the page that opens, click the displayed links to download the BigFix packages.

Image	Description
<a href="#">BigFix_Platform_Install_V9.5_Lnx_DB2.tgz</a>	BigFix Platform Installer V9.5 for Linux and DB2 Multilingual
<a href="#">DB2_10.5.0.5_limited_Lnx_x86-64.tar.gz</a>	IBM DB2 Server V10.5.0.5 for Linux on AMD64 and Intel EM64T systems (x64) Multilingual

For information about part numbers of the installation packages, see: [BigFix 9.5.0 - Download Information](#).

Move the installer to the computer on which you want to install the BigFix platform and [start the installation \(on page dl\)](#).

## Installing BigFix on Linux

To install the BigFix platform on Linux, run the `install.sh` script and go through the installation of the BigFix server, DB2 database, and the first BigFix client. Then, install the BigFix console on a Windows computer.

The BigFix platform installed on Linux requires DB2 as a database. You can use an existing instance of DB2 or install it together with BigFix.

The following procedure shows the most common installation scenario for Linux. If it does not fit your environment, you need more information about each step, or other installation tasks, see: [Installing on Linux systems](#) in the BigFix documentation.

1. Go to the directory with the installation package, and extract the installation files.

```
tar xvf installation_package
```

2. From the extracted directory, go to `ServerInstaller_n.n.mnn.n-rhe6.x86_64`, and run the installation script.

```
./install.sh
```

3. To choose the production installation, enter 2.

```
Select the type of installation

[1] Evaluation: Request a free evaluation license from BigFix.
This license allows you to install a fully functional copy of the
BigFix on up to 1000 clients, for a period of 30 days.

[2] Production: Install using a production license or an authorization
for a production license.

Choose one of the options above or press Enter to accept the default value: [1]
```

4. To accept the license agreement, enter 1.

5. To install all BigFix components, enter 1.

```
Select the BigFix features you want to install:

[1] All Components (server, client, and WebReports)

[2] Server and client Only

[3] WebReports Only

Choose one of the options above or press <Enter> to accept the default value: [1]
```

6. To create a single or master database, enter 1.

```
Select the database replication:

[1] Single or master database

[2] Replicated database

Choose one of the options above or press <Enter> to accept the default value: [1]
```

7. To use a local instance of DB2, enter 1.

```
Select the database:

[1] Use a local database

[2] Use a remote database

Choose one of the options above or press <Enter> to accept the default value: [1]
```

8. Specify the installation location for BigFix.

```
Choose the server's root folder:

Specify the location for the server's root folder or
press <Enter> to accept the default value: /var/opt/BESServer
```

9. Specify the installation location for Web Reports.

```
Choose the WebReports server's root folder:

Specify the location for the WebReports server's root folder or
press <Enter> to accept the default value: /var/opt/BESWebReportsServer
```

10. Enter the port number for Web Reports.

```

Since version 9.5.2, freshly installed Web Reports
is automatically configured to use HTTPS.
Choose the WebReports server's port number:
Specify the port number or press <Enter> to accept the default value: 8083

```

11. The installer checks if DB2 is installed on the server. To install it automatically from the files that are bundled with BigFix, enter 1.

```

DB2 installation check
The installer does not detect if DB2 is installed on the system.
Specify which option corresponds to your installation:
[1] DB2 is not installed, install it.
[2] DB2 is installed, use the installed instance.
[3] Exit from the installation.
Choose one of the options above or press <Enter> to accept the default value: [1]

```

12. Default settings containing DB2 users and installation path are listed. To accept them and proceed with the installation, enter 1.

```

DB2 installation
DB2 will be installed using the following settings:
DB2 instance owner: db2inst1
DB2 fenced user: db2fenc1
DB2 administration server user: dasusr1
DB2 communication port: 50000
DB2 installation directory: /opt/ibm/db2/V10.5
If you want to use different value for these settings specify them
in the installation response file. Refer to the product documentation
for further details.
[1] Proceed to install DB2.
[2] Exit from the installation.
Choose one of the options above or press <Enter> to accept the default value: [1]

```

13. Specify a password for the DB2 administrative users.

```

DB2 administrative user password:
Specify the password for the DB2 administrative users:

```

14. Enter the user name and password for the initial administrative user of BigFix or press Enter to use the default `IEAdmin`. This user is required to log in to the BigFix console.

15. To run the installation using a license authorization file, enter 1.

```

Choose the type of setup that best suits your needs:
[1] I want to install with a BES license authorization file.
[2] I want to install with a production license that I already have.

```

```
[3] I want to install with an existing masthead.
Choose one of the options above or press <Enter> to accept the default value: [1]
```

16. If you are not using a proxy, enter 2.

```
Proxy usage
[1] Use the proxy to access the internet
[2] Do not use the proxy
Choose one of the options above or press <Enter> to accept the default value: [2]
```

17. Specify the location of your license authorization file.

```
License authorization location
Enter the location of the license authorization file that
you received from BigFix or press <Enter> to accept the default value:
./license/LicenseAuthorization.BESLicenseAuthorization
```

18. Specify the DNS name or IP address of the server on which you are performing the installation, or press Enter to accept the default value.
19. Specify the site admin private key password.
20. Specify the key size to encrypt the credentials.

```
Key size level
Provide the key size that you want to use:
[1] 'Min' level (2048 bits)
[2] 'Max' level (4096 bits)
Choose one of the options above or press <Enter> to accept the default value: [2]
```

21. Specify the `License` folder in which the license file is to be generated and saved.

```
Choose the license folder:
Specify a folder for your private key (license.pvk), the license certificate (license.crt),
and the site masthead (masthead.afxm) or press <Enter> to accept the default value: ./license
```

22. Submit the request to BigFix to obtain the license certificate:
- If your server can access the internet, enter 1. The request will be submitted automatically.
  - If your server cannot access the Internet, enter 2, and submit the request manually:
    - a. The `request.BESLicenseRequest` is generated and saved to a folder with your license files. Copy this request to a computer with internet access.
    - b. On the computer with internet access, go to [BES License Request Handler](#) and submit the request file.
    - c. The `license.crt` file is saved to your computer. Copy it back to the BigFix server.
    - d. Return to the installation and enter 1 to import the certificate and continue with the installation.
23. Specify the value of the deployment encoding (FXF encoding) that will be used for the content.
24. To accept the default masthead values, enter 1.

```

Advanced masthead parameters

The masthead will be created using the following defaults:

Server port number: 52311

Use of FIPS 140-2 compliant cryptography: Disabled

Gather interval: One Day

Initial action lock: Unlocked

Action lock controller: Console

Action lock exemptions: Disabled

Unicode filenames in archives: Enabled

The above default values are suitable for most of BigFix deployments.

[1] Use default values
[2] Use custom values

Choose one of the options above or press <Enter> to accept the default value: [1]

```

25. To run Web Reports as a root, enter 1.

```

Use root user for WebReports

If you specify true, WebReports service will run with root privileges.

[1] True
[2] False

Choose one of the options above or press <Enter> to accept the default value: [2]

```

26. When the installation is complete, install the BigFix console.

 **Important:** The BigFix console is supported only on Windows.

- a. Go to `/var/opt/BESInstallers`.
- b. Copy the `Console` folder to a Windows computer.
- c. On the Windows computer, run the `setup.exe` script, and follow instructions in the installation wizard.

27. If you want to install the BigFix Inventory server on a different computer, install the BigFix client on that computer.

You can proceed with the [installation of the BigFix client \(on page dliv\)](#) on every computer from which you want to collect software inventory data or with the [installation of the BigFix Inventory server \(on page dlxii\)](#). You can perform these tasks in any order.

## Installing the BigFix clients

Install the BigFix client on every computer in your network that you want to monitor, including the backup and recovery machines.

## Installation methods

Methods for installing the clients vary depending on the operating system. Even if you install the BigFix server on Linux™, you might need to install some of the clients on Windows™ if your network consists of such computers. For more information, see:

- [Installing clients on Windows™ computers](#)
- [Installing clients on Linux™ and UNIX™ computers](#)

If you are not sure which installation method to choose, install the client manually.



**Note:** There is a fixlet available to move the BESClient and create symbolic links. To know more about the fixlet, refer to <https://bigfix.me/fixlet/details/3637>. In case you face issues with the installation, follow the troubleshooting steps mentioned at [Troubleshooting and support \(on page mcccxxvii\)](#).

## Additional installation requirements

- If you are using HP Integrity VM, install the client on the virtual machines and their host operating systems.
- If you are using Solaris Containers/Zones or Logical Domains (LDOM), install the client in the global zone on the control domain and in other global zones. For more information, see: [Client installation on Oracle Solaris \(on page dcxx\)](#).

## Installation packages

The BigFix installation image available on the Passport Advantage® contains client installers. You can also download client installation packages from the [BigFix® support web page](#).



**Important:** Not all of the operating systems for which installation packages are provided as part of the BigFix installation image are supported by BigFix Inventory. For more information, see: [Detailed System requirements \(on page cdxxxii\)](#).

## Client vs scanner

The BigFix client is common for all BigFix products that are based on the BigFix platform, and is used to perform various tasks on the endpoints. It provides information about a set of computer properties like its host name or the IP address. It is also used to install the scanner on the computers, and enables scanner management through fixlets.

The scanner is an independent component that is used by BigFix Inventory. It collects information about the hardware, as well as the software that is installed on the computers in your infrastructure. The data is sent to the BigFix server. You can then import it to the BigFix Inventory server.

Apart from installing the BigFix client, install also the scanner on every computer that you want to monitor to ensure that all necessary data is collected. For more information, see: [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

## Installing BigFix Inventory on Linux

Before you start the installation of BigFix Inventory on Linux, ensure that DB2 is installed in your infrastructure. Then, enable a dedicated fixlet site in the BigFix console and download the BigFix Inventory installer. Next, run the installation in interactive or silent mode.

---

### REFERENCE

[BigFix Inventory infrastructure \(on page cdxxxi\)](#)

[Software requirements \(on page div\)](#)

[Hardware requirements \(on page dx\)](#)

## Installing DB2 for BigFix Inventory on Linux

BigFix Inventory that is installed on Linux requires DB2 database. You can install the database on the same computer as the BigFix Inventory server or on a separate one. You can also reuse the instance of DB2 that you installed for the BigFix platform. DB2 installation package is delivered together with BigFix Inventory.

The following scenario shows how to install DB2 that is delivered with BigFix Inventory. If it does not fit your environment, you need more information about each step or other installation options, see the documentation for [DB2 11.5](#).

1. Go to the directory with the installation package, and extract the installation files.

```
tar xvf installation_package
```

2. From the extracted directory, run the installation script.

```
./db2setup
```

3. In the navigation bar of the **DB2 Setup Launchpad**, click **Install a Product**.
4. Scroll down, and click **Install New** under DB2 Workgroup Server Edition.
5. Read and accept the license agreement. Click **Next**.
6. Select the installation type, and click **Next**.
7. Select **Install DB2 Server Edition on this computer and save my settings in a response file**, and click **Next**.
8. Specify the installation directory, and click **Next**.
9. Create a user for the DB2 Administration Server, and click **Next**.
10. Select **Create a DB2 instance**, and click **Next**.
11. Select **Single partition instance**, and click **Next**.
12. Create the DB2 instance owner. This user will be needed when you specify connection details between BigFix and BigFix Inventory. Then, click **Next**.
13. Create the fenced user, and click **Next**.
14. Set up the DB2 server to send notifications or select the second check box to omit this step. Then, click **Next**.
15. Review the settings, and click **Finish**. The installation is started.
16. When the installation is complete, add a license file to extend your license.

- a. From the directory with extracted installation files, go to `/db2/license`.
- b. Copy the `db2wse_o.lic` file to the home directory of the DB2 instance owner, by default `/home/db2inst1`.
- c. Open the terminal and switch the user to the DB2 instance owner.

```
su - db2inst1
```

- d. Add the license file to your installation.

```
db2licm -a db2wse_o.lic
```

The installation of DB2 is complete. The default location is `/opt/ibm/db2`.

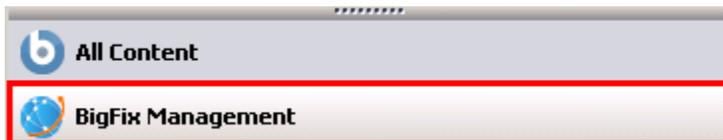
## Enabling the fixlet site

A fixlet site is a collection of fixlets, tasks, and analyses that are related to a particular BigFix application. To get access to the content that is specific to BigFix Inventory, enable the application fixlet site. The procedure differs depending on whether the computer where the BigFix server is installed has the Internet access or not.

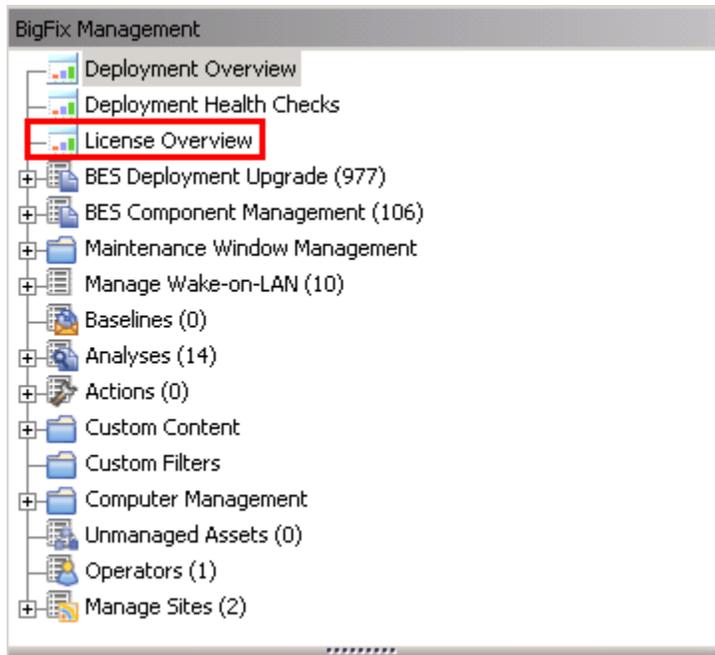
## Enabling the fixlet site with Internet access

If the BigFix server can access the Internet, enable the BigFix Inventory site from the BigFix console. Then, subscribe computers that you want to monitor to this site so that its content becomes applicable on these computers.

1. Log in to the BigFix console.
2. In the bottom-left corner of the console, click **BigFix Management**.



3. In the left navigation panel, click **License Overview**.



4. In the pane on the right, locate the entry called **Inventory**, and accept the license agreement.
5. From the list of available sites, enable the **BigFix Inventory** site.  
The content of the site is downloaded to the BigFix server.
6. Subscribe all computers that you want to monitor to the fixlet site so that its content becomes applicable to these computers.
  - a. In the bottom-left corner of the console, click **All Content**.
  - b. In the left navigation panel, expand **Sites > External Sites**, and open the **BigFix Inventory** site.
  - c. In the pane on the right, open the **Computer Subscriptions** tab, select computers that you want to monitor. If you want to monitor the entire infrastructure, select **All Computers**. Otherwise, specify appropriate filtering criteria.

 **Tip:** If the option is not active, click **Gather** to download the content of the fixlet site.



d. Click **Save Changes**.

You enabled the BigFix Inventory site and subscribed computers that you want to monitor to this site.

Download the BigFix Inventory installer to a selected computer and [start the installation \(on page dlxii\)](#).

## Enabling the fixlet site without Internet access

If the BigFix server cannot access the Internet, use the Airgap tool to enable the fixlet site. When the site is enabled and the content loaded, use the BES Download Cacher to download and cache the files on the BigFix server.

To complete the following procedure, you need two computers:

- Linux computer on which the BigFix server is installed
- Windows computer with Internet access

1. Log in to a Windows computer with Internet access and download the Airgap tool. The tool is available on the [BigFix Enterprise Suite Download Center](#) page.

**!** **Important:** Ensure that the version of the Airgap tool that you download corresponds with the version of your BigFix server.

2. Create a request file to obtain the list of fixlet sites to which you are entitled.

- Log in to the Linux computer where the BigFix server is installed.
- Go to the BigFix server installation directory, by default `/opt/BESServer/bin`, and run the following command to start the Airgap tool.

```
./Airgap.sh -remotedir /directory
```

Where *directory* is the directory in which the `airgap.tar` file is created.

c. Extract the `airgap.tar` file.

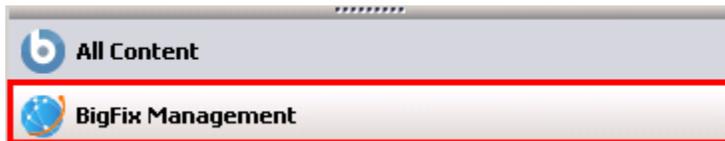
```
tar xvf airgap.tar
```

- d. Copy the extracted `AirgapRequest.xml` file to the Windows computer, and place it in the folder that contains the downloaded `BESAirgapTool.exe` file.
- e. On the Windows computer, run the `BESAirgapTool.exe` file. This action exchanges the request file for a response file.
- f. Copy the `AirgapResponse` file to the Linux computer, and place it in the `/opt/BESServer/bin` directory.
- g. Run the Airgap tool again on the Linux computer.

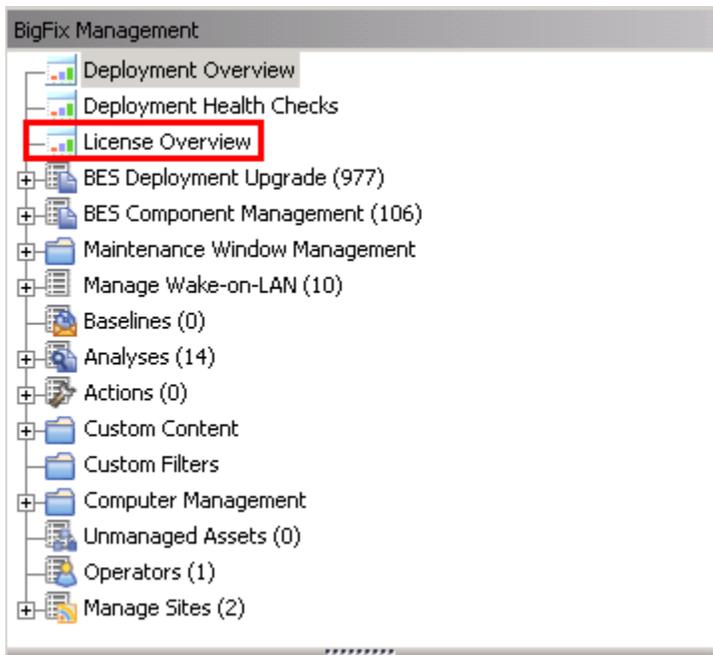
```
./Airgap.sh -run
```

### 3. Enable the BigFix Inventory site.

- a. Log in to the BigFix console.
- b. In the bottom-left corner of the console, click **BigFix Management**.



- c. In the left navigation panel, click **License Overview**.



- d. In the pane on the right, locate the entry called **Inventory**, and accept the license agreement.
- e. From the list of available sites, enable the **BigFix Inventory** site.

4. To create a request file to load the content into the site, repeat step 2 (on page dlix).
5. Subscribe all computers that you want to monitor to the BigFix Inventory fixlet site so that its content becomes applicable to these computers.
  - a. Log in to the BigFix console.
  - b. In the left navigation panel, click **Sites > External Sites > BigFix Inventory**.
  - c. In the pane on the right, open the **Computer Subscriptions** tab, and select computers that you want to monitor. If you want to monitor the entire infrastructure, select **All Computers**. Otherwise, specify appropriate filtering criteria. Click **Save Changes**.  
The **BigFix Inventory.efxm** file is created on the server.

6. Cache the content of the fixlet site on the BigFix server.

- a. On the computer where the BigFix server is installed, go to the `install_dir/BESServer/wwwrootbes/bfsites` directory. Copy the **BigFix Inventory.efxm** file to a Windows computer with Internet access, and place it in the `C:\BigFix` directory.
- b. In the `C:\BigFix` directory create a folder called `downloads`.
- c. Run the BES Download Cacher with the following command:

```
BESDownloadCacher.exe -m "C:\BigFix\BigFix Inventory.efxm"
-x C:\BigFix\downloads
```

The BES Download Cacher downloads approximately 1 GB of required files.

- d. **Optional:** The default cache size is enough if you use only the BigFix Inventory fixlet site. However, if you plan to run fixlets from other sites, such as **BES Support**, increase the cache size so that the BigFix server does not try to delete any files.
  - i. Log in to the BigFix console.
  - ii. In the left navigation panel, click **Computers** and right-click the computer on which the BigFix server is installed. Then, click **Edit Computer Settings**.
  - iii. Increase the value of the `_BESGather_Download_CacheLimitMB` setting. If the setting is not on the list, add it and specify the value in MB.



**Tip:** The size depends on each fixlet site, however you might need to increase it to at least a couple of gigabytes.

- e. Copy the contents of the `downloads` folder from the computer with Internet access to the following directory on the computer where the BigFix server is installed:

```
install_dir/BESServer/wwwrootbes/bfmirror/downloads/sha1
```

You enabled the BigFix Inventory fixlet site and loaded its content.

Download the BigFix Inventory installer to a selected computer and [start the installation \(on page dlxii\)](#).

## Installing the server on Linux

After you enable the fixlet site, download the BigFix Inventory installer, and proceed with the installation. You can install the server in interactive or silent mode.

## Installing the server on Linux in interactive mode

To install the BigFix Inventory server on Linux, download the application installer to a selected computer and run the `setup-server-linux-x86_64.sh` script. Then, follow instructions in the installation wizard.

- Ensure that the BigFix client is installed on the computer on which you want to install the BigFix Inventory server.
- Ensure that the computer meets the following requirements:
  - A graphical user interface is available
  - X server is configured
  - `DISPLAY` variable is set properly
- Start the installation as root. Otherwise, the server is not registered as a system service.
- The use of `sudo` is not supported.

### 1. Download the BigFix Inventory installer.

- a. Log in to the BigFix console.
- b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- c. In the upper right pane, select **Download BigFix Inventory**, and click **Take Action**.
- d. Select a computer to which you want to download the installer, and click **OK**.  
The installer is downloaded to the `/user/BFI_installer` directory on the selected computer. By default: `/root/BFI_installer`.

### 2. Log in as root to the computer where you downloaded the installer.

### 3. Go to the directory where the installer was downloaded, and extract the installation files.

```
tar xvf BFI-server-version-timestamp-linux-x86_64.tar.gz
```

### 4. To start the installation, run the `setup-server-linux-x86_64.sh` script.



**Tip:** If the installation is slow, check the following items:

- Check the performance and speed of the hard disk.
- Check whether the antivirus is scanning each file separately as it might slow down packaging. If this is the case, turn off the antivirus. If the antivirus cannot be turned off, expect the installation to be slower.

5. Select the language of the installation, and click **OK**. The installation wizard starts, and the welcome panel opens. Click **Next**.

If you cannot choose your language in the installation wizard, set the system locale to a chosen language. For more information, see: [Troubleshooting \(on page mcccclxv\)](#).

6. Read and accept the license agreement, and click **Next**.

7. Follow instructions in the wizard and provide the required installation parameters.

8. When the installation is complete, click **Done** to exit the wizard.



**Tip:** If you encounter problems during the installation, analyze the log file that is in the `$HOME \BFI9.2.16` directory.

The BigFix Inventory server is installed and the initial configuration opens in the browser. If you do not have a browser installed or want to complete the configuration from a different computer, go to: `https://host_name:port`, where `host_name` and `port` are the values that you specified during the installation.

[Complete the initial configuration \(on page dlxvi\)](#).

#### TASK

[Resuming a stopped or failed interactive installation \(on page dlxxxiv\)](#)

#### REFERENCE

[Installation and upgrade problems \(on page mcccclxii\)](#)

[Server installation and upgrade logs \(on page mcccxcii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Installing the server on Linux in silent mode

To install the BigFix Inventory server on Linux, download the application installer to a selected computer, edit parameters in the `install_response.txt` file, and run the installation command.

- Ensure that the BigFix client is installed on the computer on which you want to install the BigFix Inventory server.
- Start the installation as root to register the server as a system service and to be able to upgrade it later with a fixlet. Otherwise you can start the installation as non-root user.
- The use of `sudo` is not supported.

1. Download the BigFix Inventory installer.

- a. Log in to the BigFix console.
- b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- c. In the upper right pane, select **Download BigFix Inventory**, and click **Take Action**.

d. Select a computer to which you want to download the installer, and click **OK**.

The installer is downloaded to the `/user/BFI_installer` directory on the selected computer. By default: `/root/BFI_installer`.

2. Log in as root to the computer where you downloaded the installer.
3. Go to the directory where the installer was downloaded, and extract the installation files.

```
tar xvf installation_package
```

4. Read the license agreement in the `/user/BFI_installer/licenses/LA_language.txt` file.
5. Edit the `install_response.txt` response file and adjust it to your installation. Ensure that the **RSP\_LICENSE\_ACCEPTED** parameter is set to true. If you do not accept the license, the installation fails. For more information about installation parameters, see: [Server installation response file \(on page dlxv\)](#).
6. Change to the directory with installation files. To start the installation, run the following command.

```
setup-server-linux-x86_64.sh -f response_file_path -i silent
```

Where `response_file_path` is the absolute path to the response file that you are using. For example:

```
setup-server-linux-x86_64.sh -f /root/BFI_installer/install_response.txt -i silent
```

 **Tip:** Use the `-h` option to view help information about using the script, for example: `setup-server-linux-x86_64.sh -h`.

 **Tip:** If the installation is slow, check the following items:

- Check the performance and speed of the hard disk.
- Check whether the antivirus is scanning each file separately as it might slow down packaging. If this is the case, turn off the antivirus. If the antivirus cannot be turned off, expect the installation to be slower.

Access the BigFix Inventory user interface to [complete the initial configuration \(on page dlxvi\)](#). To access the user interface, go to: `https://host_name:port`, where `host_name` and `port` are the values that you specified during the installation.

---

## REFERENCE

[Installation and upgrade problems \(on page mcccclxii\)](#)

[Server installation and upgrade logs \(on page mcccxcii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Server installation response file

The `install_response` file specifies input parameters that are used during the installation of the BigFix Inventory server in silent mode.

**Table 140. Response file parameters**

Parameter key name	Description	Default
<b>RSP_LICENSE_ACCEPTED</b>	Accepts the license agreement.  The installation fails if you do not change the value of the parameter to <code>true</code> .	<code>false</code>
<b>RSP_DISABLE_PREREQ_WARNINGS</b>	Disables prerequisite checking warnings.  If the server does not have enough memory or processor cores, the silent installation fails. You can change this behavior by setting the value of this parameter to <code>true</code> . The installation can complete even if the requirements are not fulfilled, however insufficient resources might impact performance.	<code>false</code> (warnings are enabled)
<b>RSP_TLM_ROOT</b>	Specifies the installation location.  Specify an empty directory in which you want to install the server. If the directory does not exist, it is created.	<b>Windows</b> <code>C:\Program Files\BigFix Enterprise\BFI</code>  <b>Linux</b> <code>/opt/BFI</code>
<b>RSP_TLM_HTTPS_PORT</b>	Specifies the port that is used by the server.  If you do not specify the port number, a default value is used. If the selected port is already used by a different application, the installation fails.	9081
<b>RSP_DISABLE_COMMUNICATION_WARNINGS</b>	Disables communication warnings.  If any of the ports that you specified in the <b>RSP_TLM_HTTPS_PORT</b> is locked by another application, silent installation fails. To specify a port that is temporarily used but will be available later, set the <b>RSP_DISABLE_COMMUNICATION_WARNINGS</b> parameter to <code>true</code> .	<code>false</code>
<b>Windows</b> <b>RSP_USER_ACCOUNT</b>	Specifies the user account for running the application service.	<code>current</code>

**Table 140. Response file parameters (continued)**

Parameter key name	Description	Default
	<p>The User Account Control in Windows must be reduced or disabled. Otherwise, it might block the service from starting.</p> <p>If you leave the value <code>current</code>, the service runs under the <code>NT AUTHORITY\SYSTEM</code> user, which has all required rights. If you specify a different user, ensure that the following requirements are met:</p> <ul style="list-style-type: none"> <li>• The user has the <b>log on as a service</b> right and administrative privileges.</li> <li>• The user is entered as <code>domain\username</code>, <code>machine\username</code>, or <code>.\username</code> if it is a local account</li> </ul> <p> <b>Important:</b> To use Windows authentication to access the database, the service owner chosen here must be available both to BigFix Inventory and the relevant database server for which you use this authentication. For local databases, you can use <code>current</code>, but for remote ones it must be a domain user that is shared between the two servers.</p>	
<span style="background-color: #e91e63; color: white; padding: 2px;">Windows</span> <b>RSP_USER_ACCOUNT_PWD</b>	Specifies the password of the user account for running the application service.	

## Performing initial configuration on Linux

During the initial configuration, you create a BigFix Inventory database and the application administrator. You also set up a connection to the BigFix server and database. Optionally, you can configure a connection to the Web Reports database to give the Web Reports users access to BigFix Inventory.

- To reuse DB2 that you installed for BigFix with BigFix Inventory, increase the number of active databases to at least 3. To increase the number, log in as the DB2 instance owner, and run the following command. Then, restart the database server.

```
db2 update dbm cfg using NUMDB number_of_active_databases
```

## 1. Create the BigFix Inventory database.

- If the DB2 server is installed on the same computer as the BigFix Inventory server, perform the following steps.
  - a. Select **The application and the database are on the same computer**. The host name, port number, and the default name of the database are filled in automatically. If you want to specify a different name of the database, you can choose any name that meets the [DB2 naming requirements](#).
  - b. Provide credentials of the operating systems user that will be used for connecting to the database. The user can be an instance owner.

 **Tip:** Create a dedicated user for connecting to DB2. The user receives access required by BigFix Inventory automatically by the application script. It is not recommended to configure the authorities manually. To allow the application work, authorities, such as DBADM, DATAACCESS, and ACCESSCTRL are required.

- c. To create the database, click **Create**.

- If the DB2 server is installed on a different computer than the BigFix Inventory server, perform the following steps.
  - a. Clear **The application and the database are on the same computer** check box.
  - b. Provide the host name and port number of the computer where the DB2 server is installed, and specify the name for the application database. You can use the default name or choose any name that meets the [DB2 naming requirements](#).
  - c. Provide credentials of the operating systems user that will be used for connecting to the database. The user can be an instance owner.

 **Tip:** Create a dedicated user for connecting to DB2. The user receives access required by BigFix Inventory automatically by the application script. It is not recommended to configure the authorities manually. To allow the application work, authorities, such as DBADM, DATAACCESS, and ACCESSCTRL are required.

- d. To download a script that is used for creating the database, click **Download Script**.
- e. Move the script to the computer where the DB2 server is installed and run it. The script creates a database that can be accessed by the user that you specified in substep c.

 **Important:** The user who runs the script must have the `SYSADM` authority. You can use the DB2 instance owner.

- f. When the database is created, return to the computer on which you are configuring BigFix Inventory, and click **Create**.

## 2. Create the administrator of BigFix Inventory.

**i** **Tip:** Avoid using admin, administrator, root or a similar name for the administrative account. Such an account might be prone to hacker attacks and locked out if an attacker exceeds the specified number of failed login attempts. For more information, about the account lockout, see: [Configuring user account lockout \(on page mcccxxiii\)](#).



A screenshot of a user creation form. It contains three input fields: 'User Name\*' with the text 'john.doe', 'Password\*' with ten black dots, and 'Password Confirmation\*' with ten black dots. Below the fields is a 'Create' button.

3. **Optional:** To automatically enable scans that collect data from the computers in your infrastructure, select **Enable default scan schedule for this data source**.

If you enable the default scan schedule, actions that are needed to collect data from the computers in your infrastructure are automatically started on the BigFix server. This option is advised for environments with up to a few thousand computers. For larger environments, finish the installation, divide the computers into groups, and then manually set up scan schedule for each group to avoid performance issues. For more information about the default and manual scan schedule, see: [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

4. Configure the connection to the BigFix database. The database stores information about the computers and data that was discovered on these computers. Specify the host, port, database name, and credentials of the user that can access the BigFix database.

**Database for the IBM BigFix Server\***

Database Type\*  
 DB2

Host\*  
 198.51.100.2

Port\*  
 50000

Database Name\*  
 BFENT

**Authentication**

User Name\*  
 db2inst1

Password\*  
 ●●●●●●●●

Create

5. Configure the connection to the BigFix server. The host name or IP address, and the API port number are automatically retrieved from the database. Specify only the administrative user that you created during the installation of BigFix.

**IBM BigFix Server\***

**Authentication (Console Operator)**

User Name\*  
 IEMAdmin

Password\*  
 ●●●●●●●●

Disable automatic address lookup

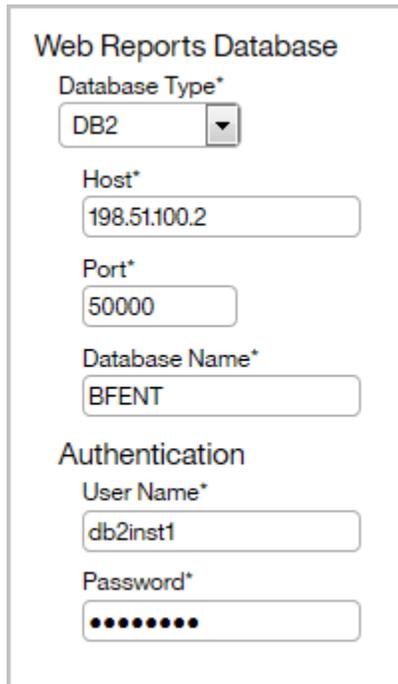


**Note:** If you do not want to provide the Master Operator, you can create a dedicated BigFix user that fulfills the following requirements:

- Is assigned the **BigFix Inventory** site
- Is assigned computers that you are going to monitor, and the computer where the BigFix server is installed
- Has the following permissions: *Can use REST API, Can use Console, Custom Content, Can Create Actions*

The option is supported starting from BigFix 9.5.

- Optional:** If the BigFix and BigFix Inventory servers are in separated networks, the automatic address lookup might return incorrect address. To disable the lookup, select **Disable automatic address lookup**, and specify the address manually. Then, configure additional environment variables on the BigFix Inventory server. For more information, see: [Configuring servers in separate networks \(on page dlxxxvi\)](#).
- Optional:** Configure the connection to the Web Reports database. Specify the database type, host name, database name, and credentials of the Web Reports database user.



The image shows a configuration form titled "Web Reports Database". It contains the following fields:

- Database Type\***: A dropdown menu with "DB2" selected.
- Host\***: A text input field containing "198.51.100.2".
- Port\***: A text input field containing "50000".
- Database Name\***: A text input field containing "BFENT".
- Authentication**: A section header.
- User Name\***: A text input field containing "db2inst1".
- Password\***: A text input field with 10 dots representing a masked password.

- To create connections to the databases, click **Create**.

When the connections are created and configured, a new page opens and a message about the data import is displayed.

- Optional:** If your environment consists of more than 50 000 endpoints, complete steps to [enhance the application performance \(on page mcdxliv\)](#) before you run the import.
- To run the initial import, click **Import Now**.

The import might take a few hours, depending on your hardware capacity.

If you enabled the [default scan schedule \(on page dcii\)](#), the collected data might not be displayed in BigFix Inventory after the initial import. Some time is required to finish scans that were initiated during the installation, and to upload scan results to the server. If the reports in BigFix Inventory do not contain any data, wait about an hour until the scans are completed. Then, start another import.

If you did not enable the default scan schedule, [manually configure scans \(on page dxcix\)](#) to collect data that is later on displayed on the reports.

---

## REFERENCE

[Database creation logs and return codes \(on page mcccxcxi\)](#)

## Uninstalling on Linux

To remove BigFix Inventory from your infrastructure, stop the application-specific actions and analyses that are running on the computers and uninstall the scanner. Then, remove the VM Manager tool. Finally, uninstall the BigFix Inventory server. You can also remove the related database.

### Uninstalling the server on Linux in interactive mode

To uninstall the BigFix Inventory server on Linux, run the `uninstall.sh` script file. Then, follow instructions in the installation wizard. The wizard does not uninstall DB2 nor the BigFix server. These components need to be removed separately.

1. Log in to the computer where the BigFix Inventory server is installed as root.
2. Go to the `/opt/BFI/Uninstall` directory, and run the `uninstall.sh` script.
3. Follow instructions in the uninstallation wizard. When the uninstallation finishes, click **Done**.

The BigFix Inventory server is uninstalled but the database, user logins, and passwords are preserved. To remove them, log in as the DB2 instance owner on the computer where the database is installed, and run the following command.

```
db2 deactivate db database_name
db2 drop db database_name
```

Where *database\_name* is the name of the BigFix Inventory database, by default `TEMADB`. You can also remove the [BigFix server](#).

---

## REFERENCE

[Removing the server manually \(on page mcdxxiii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Uninstalling the server on Linux in silent mode

To uninstall the BigFix Inventory server on Linux, edit parameters in the `uninstall_response.txt` file, and run the uninstallation command. The command does not uninstall DB2 nor the BigFix server. These components need to be removed separately.

1. Log in to the computer where the BigFix Inventory server is installed as root.
2. Go to the `/opt/BFI/Uninstall` directory, open the `uninstall_response.txt` file, and edit the uninstallation parameters.

3. Start the command line and run the following command.

```
uninstall.sh -f /opt/BFI/Uninstall/uninstall_response.txt -i silent
```

The BigFix Inventory server is uninstalled but the database, user logins, and passwords are preserved. To remove them, log in as the DB2 instance owner on the computer where the database is installed, and run the following command.

```
db2 deactivate db database_name  
db2 drop db database_name
```

Where *database\_name* is the name of the BigFix Inventory database, by default `TEMADB`. You can also remove the [BigFix server](#).

---

## REFERENCE

[Removing the server manually \(on page mcdxxiii\)](#)

[Server installation and uninstallation return codes \(on page mcccxciii\)](#)

## Configuring secure communication

To ensure secure communication, BigFix Inventory uses public key cryptography, which is based on algorithms that use two separate keys, a private key and a public key. This key pair is used to encrypt and decrypt communication

BigFix Inventory provides self-signed certificates by default but they are not intended for production environments. To improve security, you must create your own private key and a certificate signing request (CSR) that can be transformed into a certificate after it is signed by a certificate authority (CA). By signing your request, a CA approves your public key and certifies that the certificate can be trusted. You can have your own private CA, use the CA of your organization, or an internationally trusted CA, such as Entrust, VeriSign, etc.

The private key and the associated certificate are uploaded to BigFix Inventory. After enabling the encrypted communication, anyone who connects to your server receives a certificate that contains your public key. All successive communication that originates from the server is encrypted with your private key. After a user receives the communication, it is decrypted with the certificate that they obtained from the server. If the certificate can decrypt the communication, it is known for certain that the server is the originator of the message and that it is valid.

**10.0.8** Starting from BigFix Platform version 10.0.8, the validation of certificates is enabled by default of servers when downloading content from them using HTTPS.

Follow either of the below ways to generate your certificate:

- generate new self-signed certificate including the name of the server (Common Name in certificate). For more information, refer to [Step 3: Enabling secure communication \(on page dlxxvii\)](#) and [Regenerating self-signed certificates \(on page dlxxxi\)](#).
- generate a correct and signed certification by following this information provided in this topic

If you not have the signed certificate provided for BigFix Inventory server then `Catalog Download (Version: <Catalog Version>)` actions will fail while downloading with the following error:

```
HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL: certificate problem: self signed certificate
```

File	Status	Details
CIT_catalog_WINDOWS.xml.gz	Failed	[-] Download error: "HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL certificate problem: self signed certificate" Download requested on server: URL: https://10.134.146.37:9081/sam/catalogs/CIT_catalog_WINDOWS.xml.gz Hash: (sha256)67966780d5383a#65226d182419b82b7db42100b17cf91981898b5956cec81 Size: Next retry: 5 minutes. <a href="#">Retry now</a>

### Temporary Workaround

It is assumed that BigFix Inventory server is not configured to allow direct download. To accept the certificate as-is, set the `Computer Setting _BESRelay_Download_UntrustedSites` to 1 on top relay.

### Key pair requirements

Your key pair must meet the following requirements to be accepted by BigFix Inventory.

- Type: RSA or DSA.
- Format: PEM-encoded. Such an encoding is ensured if you create the key pair by using openssl. You can also create your keys by using other methods, for example Makecert on Windows. Such keys are DER-encoded and therefore not supported by BigFix Inventory. However, you can convert other formats to PEM, for example by using openssl.
- Private key format: PKCS#8 (used by openssl). The pvk format is not supported.

### Limitations

Key pair that is generated for BigFix Inventory can be used for Web Reports only if the private key is not password-protected.

### Procedure

Complete the following steps to create your key pair and to enable encrypted communication. If you already have a key pair or want to use the self-signed certificates, you can skip to enabling secure communication.

## Step 1: Creating private keys and certificates

To improve security, create your own private key and a certificate instead of using the self-signed ones that are available in BigFix Inventory by default. You can use openssl to create a private key and a certificate signing request (CSR) that can be transformed into a certificate after it is signed by a certificate authority (CA).



**Remember:** Use the latest OpenSSL version to create private keys and certificates.

This procedure is valid for all operating systems that support openssl.

If you are generating an encrypted private key in the `pkcs8` format, add the following line to the `installation_dir/jre/lib/security/java.security` file:

```
security.provider.10=org.bouncycastle.jce.provider.BouncyCastleProvider
```

Then, restart the BigFix Inventory server.

1. Open the command line.
2. Create a new private key.

```
openssl genrsa -des3 -out inventory.key -aes256 2048
```

For example, `openssl genrsa -des3 -out inventory.key -aes256 2048`

Where:

### **-des3**

Enables password for the private key. This is an optional parameter. You can also enable password for an existing private key by using the following command:

```
openssl rsa -des3 -in path_to_private_key.key -out key_name.key
```

### **key\_name**

File name for your new private key.

### **key\_strength**

Key strength, measured in bits. The maximum value that you can use for BigFix Inventory is 2048 bits.

3. Create a certificate signing request (CSR). The request is associated with your private key, and is later transformed into a certificate.

```
openssl req -new -key path_to_private_key.key -out csr_name.csr
```

For example, `openssl req -new -key private_key.key -out CSR.csr`

Where:

- **path\_to\_private\_key** - Path to your private key.
- **csr\_name** - File name for your certificate signing request (CSR).

After you run the command, you are asked to provide information that helps your users to identify your certificate and ensure that it can be trusted. The following excerpt from the command line is filled in with sample information. You must replace the data with actual information.

```
Country Name (2 letter code) [XX]: US
State or Province Name (full name) []: New York
Locality Name (eg, city) [Default City]: New York
Organization Name (eg, company) [Default Company Ltd]: HCL (eg, section) []: Software
Common Name (eg, your name or your server's hostname) []: inventory.bigfix.com
Email Address []: inventory@bigfix.com
```



**Note:** You must also add subject alternative name (SAN) in the certificate signing request (CSR). A subject alternative name (SAN) is a method to indicate the domain names and IP addresses that are secured by the certificate. SAN in CSR is provided depending on the openssl version.

SAN is a mandatory field in many web browsers, specially in Chrome since Chrome 58 deprecation (<https://developer.chrome.com/blog/chrome-58-deprecations/>) and in Firefox version 101 and above.

After completing these steps, two files are created, your private key (`.key`) and the certificate signing request (`.csr`).

Sign the request to transform it into the certificate. For information about how to create a private certificate authority (CA) to sign the request, see [Signing certificates \(on page dlxxv\)](#).

## Step 2: Signing certificates

Your certificate signing request (CSR) must be signed by a certificate authority (CA) to be transformed into a certificate that can be uploaded to BigFix Inventory. You can use the openssl cryptographic library to create a private CA and sign your request.

Using a private CA to sign your request is not the only way. You can also send the request to internationally trusted CAs, such as Entrust, VeriSign, and so on, or use the CA of your organization. The certificates of these CAs are often trusted by default and do not display any warnings in the browser. Warnings might be displayed if you use a private CA.

1. Create a private certificate authority (CA) and a certificate for it.
  - a. Create a private CA. This step creates a private key (`.key`) and a request (`.csr`) similar to those that you created in [Creating private keys and certificates \(on page dlxxiv\)](#).

```
openssl req -new -newkey rsa:key_strength -nodes
-out CA_csr_name.csr -keyout CA_key_name.key -sha256
```

For example, `openssl req -new -newkey rsa:2048 -nodes -out CA_CSR.csr -keyout CA_private_key.key -sha256`

Where:

**key\_strength**

Key strength, measured in bits. The maximum value that you can use for BigFix Inventory is 2048 bits.

**CA\_csr\_name**

File name for the certificate signing request (CSR). The certificate authority (CA) requires a separate request.

**CA\_key\_name**

File name for the private key. The certificate authority (CA) requires a separate private key.

- b. Create a certificate for your private CA. This step creates a certificate (.arm) that you can use to sign your CSR.

```
openssl x509 -signkey path_to_CA_key.key -days
number_of_days -req -in path_to_CA_csr.csr
-out CA_certificate_name.arm -sha256
```

For example, `openssl x509 -signkey CA_private_key.key -days 90 -req -in CA_CSR.csr -out CA_certificate.arm -sha256`

Where:

**key\_strength**

Key strength, measured in bits. The maximum value that you can use for BigFix Inventory is 2048 bits.

**path\_to\_CA\_csr**

File name for the certificate signing request (CSR) that you created for the certificate authority (CA).

**path\_to\_CA\_key**

File name for the private key that you created for the certificate authority (CA).

**number\_of\_days**

Number of days for the new certificate to be valid.

**CA\_certificate\_name**

File name for the certificate of your CA. This certificate is used to sign your CSR.

2. Use the CA certificate to sign the certificate signing request that you created in [Creating private keys and certificates \(on page dlxxiv\)](#).

```
openssl x509 -req -days number_of_days -in path_to_csr.csr -CA path_to_CA_certificate.arm
-CAkey path_to_CA_key.key -out new_certificate.arm -set_serial 01 -sha256
```

For example, `openssl x509 -req -days 90 -in CSR.csr -CA CA_certificate.arm -CAkey CA_private_key.key -out certificate.arm -set_serial 01 -sha256`

Where:

**number\_of\_days**

Number of days for the new certificate to be valid.

**path\_to\_csr**

Path to certificate signing request (CSR) that you want to sign.

**path\_to\_CA\_certificate**

Path to certificate that you created for the certificate authority (CA).

**path\_to\_CA\_key**

Path to the private key that you created for the certificate authority (CA).

**new\_certificate**

File name for the new certificate that is created from your certificate signing request (CSR). You upload this certificate together with your private key to BigFix Inventory.

You signed your certificate signing request and obtained a new certificate.

Enable encrypted communication in BigFix Inventory and upload your private key and the certificate. These files replace the self-signed certificate that is already available in BigFix Inventory, and thus ensure secure communication. For more information, see: [Step 3: Enabling secure communication \(on page dlxxvii\)](#).

### Step 3: Enabling secure communication

You can enable encrypted communication (HTTPS) to ensure secure communication between your server and all users that access it. You can base your communication on self-signed certificates that are provided by default in BigFix Inventory, but these certificates are not intended for production environments. To improve security, create your own private key and certificate, and upload them to BigFix Inventory.



**Note:**

- The use of HTTPS is enabled by default, but this configuration is based on temporary self-signed certificates that are not intended for production environments.
- Enabling or disabling the use of HTTPS changes the web address of your BigFix Inventory server. Ensure that you run a data import afterward to update the address in the Fixlets that use it to download files from the server.

## Procedure

1. Log in to BigFix Inventory.
2. In the top navigation bar, click **Management > Server Settings**.
3. Select **Use HTTPS**. The Certificate subsection opens.



**Important:** Starting from application update **10.0.8**, the use of HTTPS is selected by default.

4. Provide information about the certificate.
  - If you have a private key and a certificate:



**Note:** The certificate and the key must be PEM-encoded or enfolded in PKCS#12 KeyStore.

- a. Select **Import a PEM or PKCS#12 private key and certificate**.

In application updates earlier than **10.0.8**, select **Import a PEM encoded private key and certificate**.

- b. Click **Browse** to locate the file in the PEM or PKCS#12 format.
- c. If the private key and certificates are delivered in separated files, select **Private key is in a separate file** and locate the private key file.
- d. In the **Private key password** field, enter the password for the key. This field is required only if you set a password for your private key.
- e. Click **Save**.



**Note:** The certificate and the key must be PEM-encoded.

- If you want to generate a new self-signed certificate:



**Restriction:** A self-signed certificate contains a public key, information about the owner of the certificate, and the owner's signature. Because such a certificate is signed by its own private key, it does not provide means to verify the origin of the certificate through a trusted certificate authority.

- a. Select **Generate a self-signed certificate**.
- b. Specify the certificate subject common name. The common name must correspond to the DNS name of BigFix Inventory.



- c. In the **Expiration Date** field, enter the date when the certificate expires.
- d. Click **Save**.



**Note:** Most browsers display a warning message when a self-signed certificate is used.

- 5. Restart the server.

You enabled secure communication on your server. All outgoing communication is now encrypted with the private key that you provided.

---

#### Related information

[SP800-131 compliance \(on page mcclxxvi\)](#)

[Enabling SP800-131 compliance \(on page mcclxxvii\)](#)

## Configuring Cipher suites

This topic describes how to manually select Cipher Suites that should be accepted by BigFix Inventory server.

The list of vulnerable Cipher Suites is updated regularly. Accepted cipher suites are updated with new Java service packs so that vulnerable ciphers are not included. You can manually select the ciphers that should be enabled to address security risks before it is addressed by Java service pack or to comply with the security policy.

Below is the recommendation based on internal security scans.

To select the list of accepted cipher suites, modify the `installation_directory/wlp/usr/servers/server1/customization.xml` file, to make the file contents look like below:

```
<server>
<ssl id="defaultSSLConfig" enabledCiphers="TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
  TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
  TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384 TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
  TLS_DHE_RSA_WITH_AES_128_CBC_SHA256
  TLS_DHE_RSA_WITH_AES_256_CBC_SHA256 TLS_DHE_RSA_WITH_AES_128_GCM_SHA256
  TLS_DHE_RSA_WITH_AES_256_GCM_SHA384" />
</server>
```

Restart BigFix Inventory application after you make the changes.

## Structuring and formatting of private keys and certificates

### • Private key format

- PEM-encoded without password protection. Ensure that the private key (`private.key`) is enclosed between the following statements:

```
-----BEGIN PRIVATE KEY-----
<<base64 stringfrom private.key>>
-----END PRIVATE KEY-----
```

- PEM-encoded with password protection. Ensure that the private key (`private.key`) is enclosed between the following statements:

```
-----BEGIN ENCRYPTED PRIVATE KEY-----
<<base64 stringfrom private.key>>
-----END ENCRYPTED PRIVATE KEY-----
```

### • X509 certificate format

PEM-encoded. If you received the intermediate and root certificates as separate files, combine them into a single file. For example, if you have the primary certificate file (`certificate.crt`) and the intermediate certificate file (`ca_intermediate.crt`), combine them in the following order.

```
BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
```

If you received the root certificate (`ca_root.crt`) in addition to the intermediate certificate, combine them in the following order.

```
BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<root certificate: base64 stringfrom ca_root.crt>>
-----END CERTIFICATE-----
```

### • Single file (private key with certificates) format

PEM-encoded. This file can contain the private key and the primary certificate, or the private key and the chain of certificates combined in the following order:

- Private key and primary certificate.

```
-----BEGIN CERTIFICATE-----
<<primary certificate: certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN PRIVATE KEY-----
<<private key: base64 stringfrom private.key>>
-----END PRIVATE KEY-----
```

- Private key, primary certificate, and intermediate certificate.

```
BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
-----BEGIN PRIVATE KEY-----
<<private key: base64 stringfrom private.key>>
-----END PRIVATE KEY-----
```

- Private key, primary certificate, intermediate certificate, and root certificate.

```
BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<root certificate: base64 stringfrom ca_root.crt>>
-----END CERTIFICATE-----
-----BEGIN PRIVATE KEY-----
<<private key: base64 stringfrom private.key>>
-----END PRIVATE KEY-----
```

## Regenerating self-signed certificates

BigFix Inventory allows you to regenerate self-signed certificate by setting the Common Name using BigFix Inventory server.

This option is possible if the same DNS name is used to connect to the server by end users and from BigFix Platform server.

To create a self-signed certificate with multiple subjects, the certificate must be created manually.

**To regenerate self-signed certificates, follow these steps:**

1. BigFix Platform - Check the existing Catalog Download action and the URL used to connect to the BFI server. It depends on the network configuration on the BigFix Inventory server host.
2. BigFix Inventory - Follow the procedure mentioned in [Step 3: Enabling secure communication \(on page dlxxvii\)](#).

Ensure that the Common name is specified with the host name or IP address depending on the method you are connecting to the BigFix Inventory server.

3. BigFix Inventory - If the selected DNS Name is different from the one currently used in Catalog Download, adjust it to match the one you use in Certificate by enforcing using DNS Name is Catalog For more information on how to download, refer to [Configuring servers in separate networks \(on page dlxxxvi\)](#).
4. BigFix Inventory - In the **Certificate** section, follow **Management > Server Settings** and use the **Download Certificate** option to download the certificate.
5. BigFix Platform - On BigFix Platform server it is needed to make a copy of `ca-bundle.crt` from `<BES Server>\BESReportsServer\wwwroot\SiteData\<Host name> \Sites\BES Support to for example, C:\Program Files (x86)\BigFix Enterprise\BES Server\TrustedCertificates\ca-bundle.crt`.
6. BigFix Platform - Edit the file and add it at the end your certificate

```
BggqhkjOPQQDAwNoADB1AjAVXUI9/Lbu9zuxNuie9sRGKEkz0FhDKmMpzE2xtHqiuQ04pV1IKv3L
snNdo4gIxxwCMQDAqy0Obe0YottT6SXbVQjgUMzfRGEWgqtJsLKB7HOHeLRmSmIbEvoWTSVLY70e
N9k=
```

```
-----END CERTIFICATE-----
```

```
BFI Server bfi-demo
```

```
-----BEGIN CERTIFICATE-----
```

```
MIIC4DCCAcigAwIBAgIEY8/XCjANBgkqhkiG9w0BAQsFADAYMTAwLgYDVQQDDCdi
ZmktZGVtb20wHhcNMjMwMTI0
MTMwMzA2WhcNMzIxMTEzMDAwMDAwWjAyMTAwLgYDVQQDDCdiZmktZGVtb20wHhcNMjMwMTI0
dGVzdHFcLmJlcy5wcm9kLmhjbHBucC5jb20wggEiMA0GCSqGSIb3DQEBAQUAA4IB
DwAwggEKAAoIBAQC4q63ZgEUEi3qd5C6MCSsNU9wnDe8xhGAPQOH3s3k4Xd20Xk
/edd58ewRsNFocCVQ0jVd6U9JLrbExUDIKNKWCndqL5gxf8wKRSFQZmzmGMv6x
lmG+dJ3iIoVSSucVfoNfyBUQ+BUtQ9ZpZs3fCizCP8D9t1003z/RRHYnSp/8jTc0
nmYZkqTL4p7YLMj68k6VeMZ89Q0SW5wXyMJYXfKWORWqpfgpMR2uUd2L7rAMx9bt
8sRmtQNTabXbgjC9NRFPdS4XkvmD4fuy7KldLjg02iawH5LjNqdmXFbuSNUSB5iw
E29PmbRS2B/yVNoy4Zcxnhf63gg8g/cYLSUvAgMBAAEwDQYJKoZIhvcNAQELBQAD
ggEBAJQQsOV0oOis8pYZfm8WWCyirdp5WupoDChX3KIHF+OZ3UvzE1MMkCgI+xpY9
qBQQkjk9ioZ/MjN0IxraZ80VV9Fe1xZiFV4JQIs7BMqGdbwleMn1hKGQ53viD7VK
MeFfb1T3n2r9QimHigZvGWpC6yq2bZtLS7WG9cJmntKvzJZgoXuSRifGOMv0RW/
p+vDEg+izwljwPfhOsPNCAYaBaYxdlkSLsv7P2t7ciBJrp0fdTdpH25BpMtimPWE
CrbayzaHZxoMXPDMWlc7FsInJylFaUPVpEs0Rd/nTFWvY6DCUi1DNtCgi2IvOSLz
+IUyFqjLqRwSsVi2VnJXHE8z4P8=
```

```
-----END CERTIFICATE-----
```

- BigFix Platform - Set the `_BESRelay_Download_UntrustedSites` to 0 and set `_BESRelay_Download_CACertPath` to `C:\Program Files (x86)\BigFix Enterprise\BES Server\TrustedCertificates\ca-bundle.crt`.

## Troubleshooting

For the error messages:

```
HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL:
unable to obtain common name from peer certificate
```

The certificate used by BigFix Inventory is self-signed certificated preconfigured or regenerated without specifying the Common Name. Follow the steps mentioned [above \(on page dlxxxii\)](#).

```
HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL:
certificate subject name 'bfi.acme.com ' does not match target host name '10.XXX.YYY.ZZZ
```

It means that the Catalog Download action used DNS Name / IP Address that is different from the one specified as Common Name in the certificate. For more information, refer to, [step 3 \(on page dlxxxii\)](#).

## Installation-related tasks

If you encounter problems during the installation, you can check details related to the problem, fix it, and then resume the installation. If the BigFix and BigFix Inventory servers are in separated networks, you can disable the automatic address lookup to avoid problems with initial configuration. Learn how to check the current application and catalog version to make sure that your installation and initial configuration were successful.

### Resuming a stopped or failed interactive installation

You can rerun the interactive installation during the pre-installation and installation stages. You can also use a built-in function to diagnose problems during the installation of the BigFix Inventory server.

There are different ways to rerun the installation and the solution depends on the phase during which the problem occurred. If an error occurs during the pre-installation phase, you can restart the installation and no additional actions are required. If you encounter an error during the installation phase, you have two options:

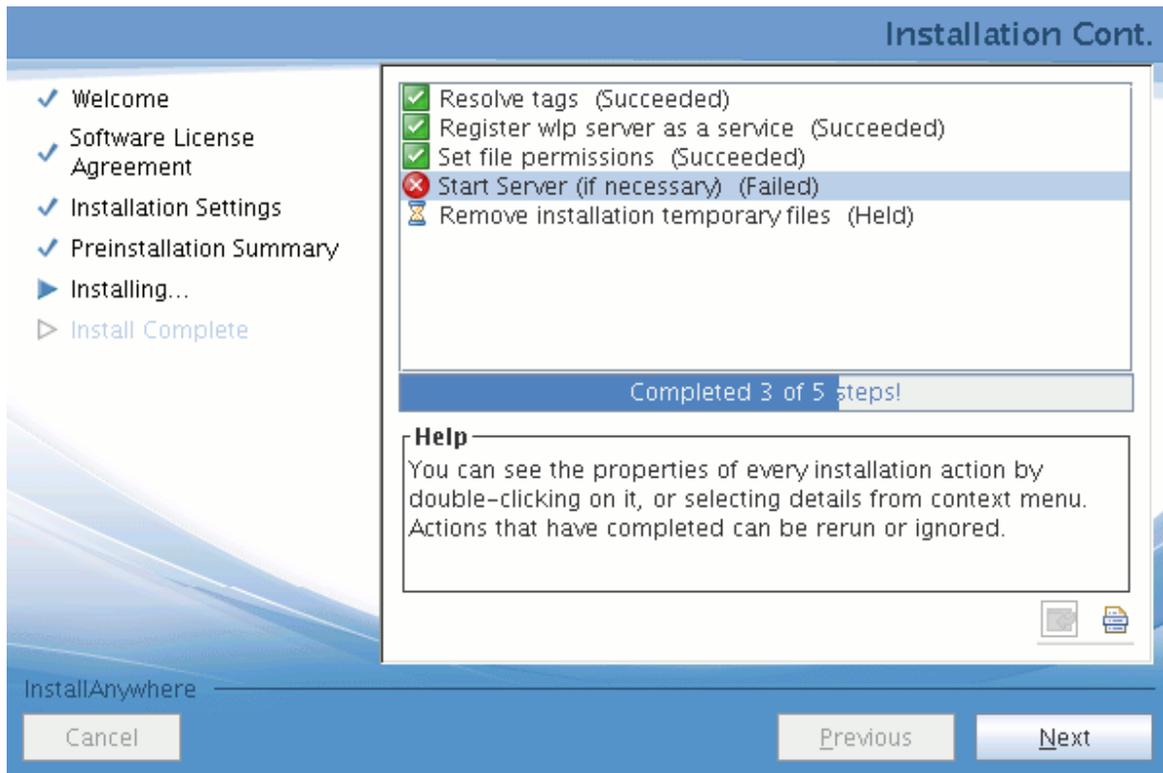
- You can remove the installation directory before you restart the installation
- You can use a built-in function to diagnose and fix the problem

Some configuration steps in the installation depend on other steps. If one of them fails, the execution of the dependent step is also held. If an error occurs, the installation wizard continues running steps that do not depend on the failed one. You can see the list of prerequisites for any step in the step properties dialog. To open the dialog, double-click the step, or right-click it and select **Details**.

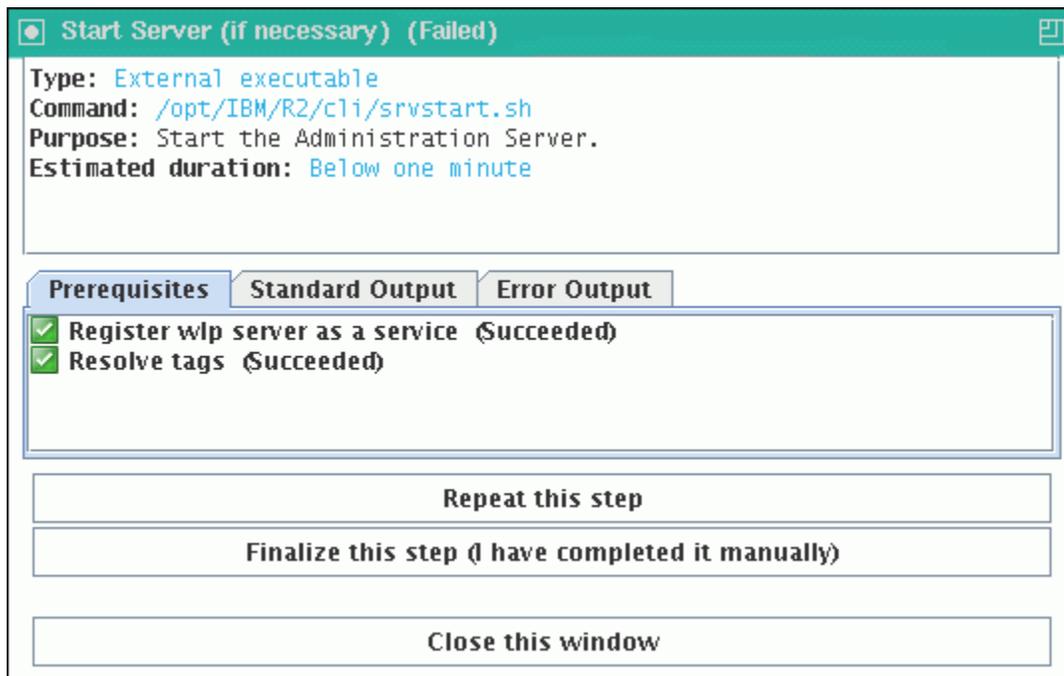
You can continue the installation and fix the problem at the end of the installation. You can also end the installation and resolve the problem later, at a convenient time. It is not necessary to specify any special options. It is enough to run the installation wizard again. It detects that the previous configuration attempt failed or was interrupted and starts automatically in resume mode.

If you exited the installation wizard, run it again. It automatically starts the configuration.

1. If you encounter a problem, double-click the line that contains the step name, or right-click it and select **Details**. The line is indicated by a red icon.



2. Review the most important information that is displayed in the top. If a dedicate log file exists, its location is shown.



3. Review the information that is shown on the **Standard Output** tab or, if applicable, on the **Dedicated Log** tab to determine the cause of the problem.



**Important:** To reduce the performance load on the computer, the function that captures the dedicated log file runs with the lowest possible priority. Thus, the **Dedicated Log** tab does not always present the most recent and detailed information. What is more, the end of the log file might not be shown. If a failure occurs, check either the dedicated log whose location can be found in the step description, or the `msg_server.log` file.

4. Fix the problem.
5. On the installation panel, right-click the line that shows the problem, then click **Set > Ready (rerun the step)**. The installer completes the step and the remaining dependent steps. If you run the failed step outside the installation wizard, mark the step as completed successfully.



**Note:** If you cannot diagnose the problem and rerun the step manually, uninstall the product and try to install it again.

6. Click **Next**. The **Post-installation Summary** opens with information about installed components.

## Configuring servers in separate networks

When BigFix and BigFix Inventory servers are installed in separate networks, automatic lookup of their IP addresses might not work correctly. It might happen, for example in networks that use network address translation (NAT). To ensure that IP addresses of the servers are correct and the communication between them works, change the default settings, and manually enter the IP addresses or domain names of the servers.

By default, the address of BigFix server is automatically retrieved from the database. In case of separate networks, the address might contain a local address of the server that cannot be recognized outside of its network. After you specify the IP address of BigFix server, you also need to specify the correct address of BigFix Inventory server to allow BigFix server to access the software catalog.

1. During the initial configuration of BigFix Inventory, while specifying the connection details of the BigFix server, select **Disable automatic address lookup**, and enter the host name of BigFix server. The address is always created based on the provided host name and port number.



**Note:** To access this panel after the installation, log in to BigFix Inventory, and click **Management > Data Sources**.

**IBM BigFix Server\***

**Authentication (Console Operator)**

User Name\*

Password\*

Disable automatic address lookup

Select this option to enter the host name manually, for example when the BigFix Server is in a separated network that uses network address translation (NAT).

Host\*

Server API Port\*



**Tip:** To check whether BigFix host is correct, access the following URL from network:

<http://hostname:port/UploadReplication>. Expected message: `Error: no query parameters specified.`

2. On the computer where BigFix Inventory server is installed, add an environment variable with new addresses that will be used by BigFix server to access the software catalog.

a. Go to one of the following directories, and create the `server.env` file.

- **Linux** `install_dir/wlp/usr/servers/server1`
- **Windows** `install_dir\wlp\usr\servers\server1`

b. Add one or more environment variables to the file:

- BigFix Inventory Server 10.0.13 or lower

**`SERVER_URL_CATALOG=https://DNS/IP address:port`**

A single environment variable which defines DNS or IP address of BigFix Inventory server that BigFix server uses to obtain the software catalog and deliver it to the clients. This catalog is then used during the catalog-based software scan.

When using BigFix Platform version 10.0.8 or higher, provided DNS/IP address must match the server DNS name provided in the SSL certificate. Otherwise such connection will be rejected. If the DNS name provided in the certificate does not match, the connection is rejected.

- BigFix Inventory Server 10.0.14 or higher

**BIGFIX\_SERVER\_URL\_FOR\_DATASOURCE\_ID\_datasource\_id=http://DNS/IP address:port**

Example: *BIGFIX\_SERVER\_URL\_FOR\_DATASOURCE\_ID\_3=http://correctbigfix.acme.org:52311*

One or more environment variables that define DNS or IP addresses of BigFix servers that are used to obtain the software catalog and deliver it to the clients. This catalog is then used during the catalog-based software scan.

*datasource\_id* is an id of the datasource for which the BigFix server DNS or IP address has to be masked in the catalog download action with a value of given environment variable.

Proper values of *datasource\_id* are presented in the first column of the **Management > Data Sources** panel.

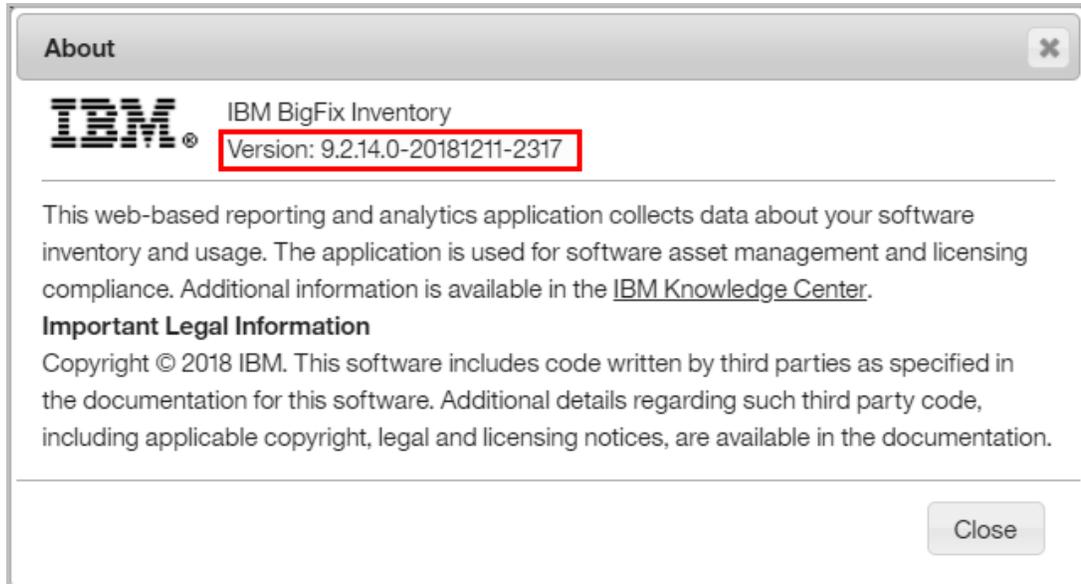
3. Restart the BigFix Inventory server.

## Verifying the current version of BigFix Inventory and the software catalog

Check the current version of BigFix Inventory and the software catalog to make sure that the installation was successful.

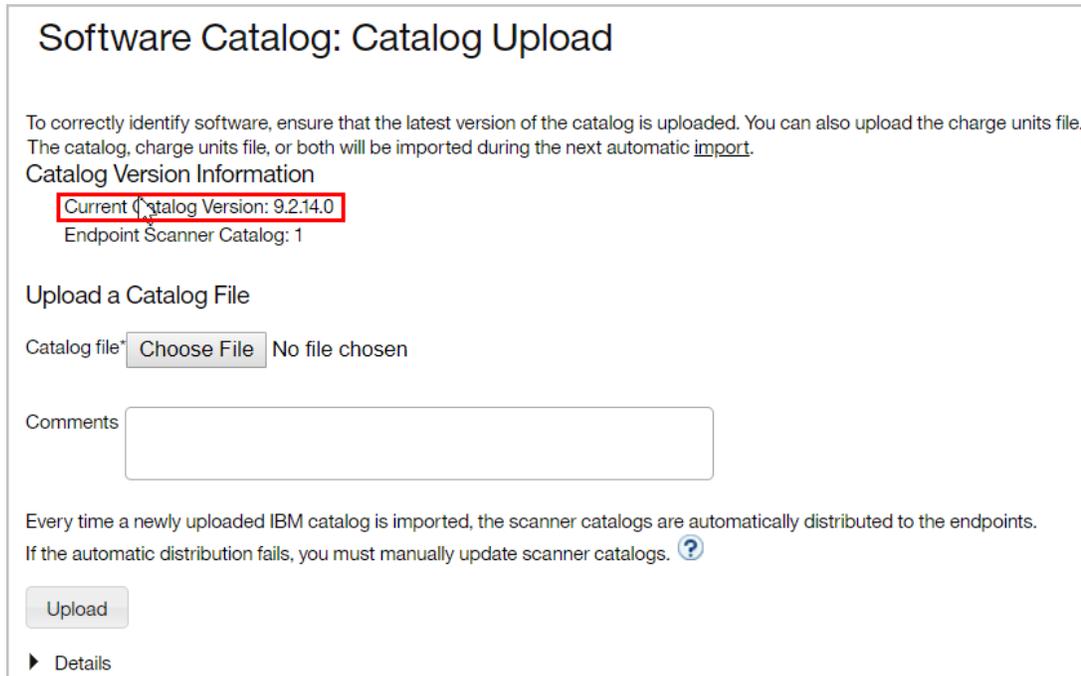
1. Log in to BigFix Inventory.
2. Check the current version of the BigFix Inventory server.

- a. Hover over the **Help** icon , and click **About**.
- b. Check the version number in the About window.



3. Check the version of the software catalog.

- a. Go to **Management > Catalog Upload**.
- b. Check the version of the catalog under Catalog Version Information and make sure it is the latest available.



# Configuring

After you install BigFix Inventory, configure the application. Create accounts for the users who need access to the application and set up scans to collect software and hardware inventory data from your environment.

## Creating users and groups

Each user who has access to BigFix Inventory must be assigned a role and a computer group. The role defines which reports and panels the user can view. The computer group narrows down the scope of these reports and panels to computers that meet certain criteria.

## Setting up roles

A role is a collection of permissions that correlates to a list of privileges. Each user is assigned a role according to the privileges the user needs to efficiently operate the application. BigFix Inventory comes with a set of predefined roles. However, you can also create custom roles according to your needs.



You must be an Administrator to perform this task.

The Administrator role is set by default and cannot be modified.

1. In the top navigation bar, click **Management > Roles**.
2. To add a role, click **New**.
3. Specify the name and permissions that you want the new role to have, and click **Create**.

You created a custom user role. You can now create users and assign them suitable roles.

---

Task

[Setting up users \(on page dxcv\)](#)

## Roles

You can create a set of roles in BigFix Inventory and assign each of them with different permissions. Then, you can assign those roles to particular users, thus making them responsible for different actions. By setting up correct roles, you can easily establish which user has access to particular functions in BigFix Inventory. The roles can be assigned by the Administrator.

### Pre-configured roles

BigFix Inventory has six preconfigured roles: Administrators, Auditors, Catalog Managers, Contract Managers, Software Asset Managers, and Infrastructure Administrators. Each of these roles has a different set of permissions that allow the users to perform various actions. The Administrator can edit or delete those roles, or create new ones and assign them permissions of your choice. The following table lists the preconfigured roles and their permissions.

**Table 141. Roles preconfigured in BigFix Inventory and their permissions***The table consists of seven columns and 24 rows.*

Permission	Administrator	Auditor	Catalog Manager	Contract Manager	Software	
					Asset Manager	Infrastructure Administrator
10.0.15 Uninstall Actions	Yes					
10.0.15 Manage Oracle Auditing Data	Yes					
Display Preview Panels	Yes					
Edit Server Configuration	Yes					
Manage Catalogs	Yes		Yes			
Manage Computer Groups	Yes					Yes
Manage Computer Proper- ties	Yes					
Manage Contracts	Yes			Yes		
Manage Data Sources	Yes					
Manage Directory Servers	Yes					
Manage Hardware Inven- tory	Yes					
Manage Imports	Yes				Yes	Yes
Manage Licenses	Yes		Yes		Yes	
Manage Package Proper- ties	Yes					Yes
Manage Part Numbers Up- loads	Yes		Yes		Yes	Yes
Manage Roles	Yes					
Manage Scan Configura- tions	Yes					Yes
Manage Software Classifi- cation	Yes				Yes	
Manage Support Data	Yes					
Manage Uploads	Yes		Yes		Yes	Yes

**Table 141. Roles preconfigured in BigFix Inventory and their permissions***The table consists of seven columns and 24 rows.***(continued)**

Permission	Administrator	Auditor	Catalog Manager	Contract Manager	Software	
					Asset Manager	Infrastructure Administrator
Manage Usage Properties	Yes					Yes
Manage User Provisioning	Yes					
Manage Users	Yes					
Manage VM Managers and Servers	Yes					Yes
View Audit Trail	Yes	Yes			Yes	
View Catalog Audit	Yes	Yes	Yes		Yes	
View Contracts	Yes	Yes		Yes	Yes	
View Endpoints	Yes	Yes	Yes	Yes	Yes	Yes
View Hardware Inventory	Yes	Yes			Yes	Yes
View License Metrics	Yes	Yes		Yes	Yes	
View Raw Data	Yes	Yes		Yes	Yes	Yes
View Shared Disks	Yes	Yes		Yes	Yes	
View Software Catalog and Signatures	Yes	Yes	Yes	Yes	Yes	
View User Details	Yes	Yes			Yes	

## Permissions

The following list describes permissions that are available in BigFix Inventory. Find out about each of them so that you can tailor the roles to your needs.



**Important:** Some of the permissions are specific only for the Administrator and cannot be assigned to other users. These permissions include:

- Display Preview Panels
- Edit Server Configuration
- Manage Computer Properties
- Manage Data Sources
- Manage Directory Servers



- Manage Roles
- Manage Support Data
- Manage User Provisioning
- Manage Users

**Table 142. Permissions**

Permission	Comments
<b>10.0.15</b> Manage Oracle Auditing Data	The user can generate, cancel and download Oracle auditing data. Note: in addition to this role, the user must be assigned All computers group access.
Display Preview Panels	The user can enable preview features.
Edit Server Configuration	The user can change settings of the BigFix Inventory server.
<b>9.2.14</b> Manage Catalogs	<p>The user can edit catalog servers, update the catalog as well as create, edit, and delete the content of the custom software catalog.</p> <p><b>9.2.11</b> The user can edit the end of support date for software components.</p> <p><b>9.2.14</b> The user can add and remove tags on the selected reports.</p>
Manage Computer Groups	The user can create, edit, and delete computer groups.
Manage Computer Properties	The user can specify additional computer properties that are to be gathered from the computers in the infrastructure.
Manage Contracts	<p>[The user can create, edit, and delete contracts.</p> <p><b>9.2.4</b> The user can set or edit the license threshold to be notified about excessive license consumption.</p> <p><b>9.2.9</b> The user can add, edit, and delete custom fields.] - <b>10.0.5</b> <small>This permission is deprecated since BigFix Inventory version 10.0.5.</small></p> <p><b>10.0.5</b> The user can manage new contracts and manage license metrics.</p>
Manage Data Sources	The user can add, edit, and delete BigFix servers that are used as data sources by BigFix Inventory.
Manage Directory Servers	The user can add, edit, and delete directory servers that are used for authentication of BigFix Inventory users.
Manage Hardware Inventory (previously: Manage PVU per Core)	The user can change the Oracle core factor or the PVU per core value that is assigned to a processor.

**Table 142. Permissions (continued)**

Permission	Comments
Manage Imports	The user can schedule imports of data, and run them manually.
<b>9.2.10</b> Manage Licenses	The user can add custom part numbers and new products to the software catalog, and assign additional license metrics to products.
Manage Package Properties	The user can create, edit, and delete application properties that are used to recognize software in your infrastructure.
<b>9.2.3</b> Manage Part Numbers Uploads	The user can manage uploads of the part numbers file.
Manage Roles	The user can add, edit, and delete roles that are available in BigFix Inventory.
Manage Scan Configurations	The user can schedule software scans.
Manage Software Classification	The user can reassign software instances between different products, include or exclude them in pricing calculations, and share them between more than one product.
<b>9.2.15</b> Manage Support Data	The user can access the Computer Support Data panel.
Manage Uploads	The user can manage uploads of the software catalog, and metric tables.
Manage Usage Properties	The user can create, edit, and delete application properties that gather information about the use of software in your infrastructure.
Manage User Provisioning	The user can integrate users from a directory server with BigFix Inventory.
Manage Users	The user can add, edit, and delete users that exist in BigFix Inventory.
Manage VM Managers and Servers	The user can create, edit, and delete VM managers.
<b>10.0.15</b> Uninstall Actions	The user can send automated uninstallation actions or notify logged users about such requests.
View Audit Trail	The user can view the Audit Trail report that contains the history of all actions performed by users.
View Catalog Audit	The user can view information about changes to the custom software catalog.
View Contracts	<p><b>9.2.3</b> The user can view contract usage data. - This permission is deprecated since BigFix Inventory version 10.0.5</p> <p><b>10.0.5</b> The user can view new contracts.</p>

**Table 142. Permissions (continued)**

Permission	Comments
View Endpoints	The user can view information about the installed software as well as scan, registry, and raw data from endpoints.
View Hardware Inventory	The user can view the details of the processors that are used by the software.
View License Metrics	<p>The user can view the list of all software products that are contained in the PVU License Usage reports, the license type and usage for each product, the history of license consumption over the specified time period, and the top license consuming products.</p> <p><b>9.2.9</b> The user can view values that are specified in custom fields.</p>
View Raw Data	<p>The user can view:</p> <ul style="list-style-type: none"> <li>• Metering Data report that contains information about the use of the software items</li> <li>• Unrecognized Files report that shows a ranking of the most frequently encountered files</li> <li>• Scanned File Data report that provides information about all files that are detected by the software inventory tool scanner</li> <li>• Package Data report that contains information about all installed packages</li> </ul>
<b>9.2.12</b> View Shared Disks	The user can view information about shared disks that are used in the infrastructure.
View Software Catalog and Signatures	The user can view the software catalog and signatures.
<b>9.2.13</b> View User Details	The user can view information about current software users and their details for the software that is installed on the computers in the infrastructure.

To know about how to update permissions, refer to [Hardening server installation directory \(on page dxxxiv\)](#).

## Setting up users

Create users to give access to BigFix Inventory. Assign each user with a role to determine permissions that the user has, and with a computer group to determine the computers to which the user has access.

 You must be an Administrator to perform this task.

If your company has a security policy for passwords and account management, the password authorization mechanism that is available in BigFix Inventory should be used only for the initial setup.

**9.2.7** Starting from application update 9.2.7, you can configure BigFix Inventory to ensure that user passwords fulfill a number of requirements. For more information, see: [Configuring security policy for user passwords \(on page mccccxiv\)](#). If you are using an earlier version of the application, or your password policy cannot be met by configuring the available password requirements, use LDAP or single sign-on. For more information, see: [Authenticating users with LDAP \(on page mcclxxviii\)](#) or [Configuring and enabling single sign-on \(SSO\) \(on page mcclxxxv\)](#).

1. In the top navigation bar, click **Management > Users**.
2. To add a user, click **New**.
3. Specify the name of the user and the role that you want to assign to that user.
4. Select the computer group to which the user is to have access and the authentication method. Then, click **Create**.

---

#### Task

[Setting up roles \(on page dxc\)](#)

## Setting up computer groups

Computer groups can be used to narrow down the scope of reports to computers that meet certain criteria or to share software discovered on one computer among all computers in the group, for example when a shared disk is mounted on multiple computers.

 You must have the Manage Computer Groups permission to create a reporting computer group. You must be an Administrator to create a software template group.



**Note:** Creating more than 20 computer groups may impact the data import performance.

Computer groups can be created in the BigFix console or in BigFix Inventory. The groups are not automatically copied between the applications. However, groups created in the BigFix console can be recreated in BigFix Inventory as described in step 4 ([on page dx cvii](#)) below.

Groups created in the BigFix console are used to manage the infrastructure, assign computers to fixlet sites, and run fixlets against selected computers. Groups created in BigFix Inventory have two types:

- **Reporting:** This type is used to narrow down the scope of reports to computers that meet certain criteria. Such a group can have subgroups and can be assigned to users. It can be also used to assign contracts as well as upload part numbers to a subset of computers.
- **Software template:** This type is used only to share software discovered on one computer among all computers in the group.

The following procedure describes how to create a computer group in BigFix Inventory. For information about creating computer groups in the BigFix console, see: [Computer groups](#).

## Replicated Computer Groups from BigFix Platform Server

In BigFix Inventory there are replicated BigFix Platform Computer Groups that are created by Master Operators. Computer Groups created by non-Master operators in their respective sites are not replicated by design.

1. In the top navigation bar, click **Management > Computer Groups**
2. To create computer group, click **New**.
3. Provide the name and description of the computer group.
4. Specify filters according to which computers are assigned to the group, and click **Create**.

You can also create a group that is based on a computer group in the BigFix console. Choose Data Source Groups, in set, and select the computer group that you want to recreate.

To view all the groups that are available in the BigFix console, ensure that you run a successful import of data.

 **Restriction:** The size of data returned by the specified filter cannot exceed 1 MB.

**10.0.5** BigFix Platform 10.0.4 allows you to create server based computer groups. For more information, see [Creating Server Based Computer Groups](#).

 **Tip:** Upgrade BigFix Inventory before you create server based computer groups. If you create a server based group in BigFix Platform before installing BigFix Inventory 10.0.5 or higher, you might need to enforce full synchronization of DataSource Group membership information. Execute the below query to reset the sequence in the BigFix Inventory database:

- MS SQL

```
update dbo.datasource_sequences set last_sequence=0x0 where
class_name='DatasourceGroupFixletResult'
```

- DB2

```
update dbo.datasource_sequences set last_sequence=cast('0' as BLOB) where
class_name='DatasourceGroupFixletResult'
```

Next import will extend duration of this step.

5. **9.2.8** Choose the type of the computer group.

- Choose **Reporting** to create a group used for limiting the scope of computers visible on reports.
  - a. Specify whether you want to calculate usage of license metrics for this computer group. If you are not interested in this information, you can disable these calculations to improve import performance, especially in larger environments.
    - **10.0.0** For version 10.0.0 and higher, select **Enable license usage calculations** to calculate usage of all license metrics that are supported by .
    - **9.2.5** For versions 9.2.5 to 9.2.17, select license metrics for which you want to calculate utilization in this computer group.

- b. **9.2.2** Specify the number of days for which the data is to be calculated. This number defines the default period for which the data that is show on the All IBM Metrics report is calculated and up-to-date.

For example, when you set the value to 30 days, and then display a report for the last 90 days, the report shows the following data:

- If you display the report for a newly created computer group, the report shows values for the last 30 days and is empty for the rest of the period.
- If you display the report for an existing group, the values might be outdated.

In both cases, recalculate the data.

- c. Optional: **9.2.3** To configure scans for this computer group, select **Create scan configuration**. Choose the scan frequency, requested start date, and types of software scans that you want to run on the computers in this group.

The option is available only if the definition of the group uses the Data Source Groups filter as the only condition based on which computers are assigned to this group. For more information about configuring scans from the BigFix Inventory user interface, see: [Changing scan configuration from the BigFix Inventory user interface \(on page dciii\)](#).

- Choose **Software Template** to create a group used for sharing software discovered on one computer among all computers in the group. Such a group can be used for example to ensure that software discovered on a shared disk is reported on all computers on which the disk is mounted. Then, select software templates that you want to share between computers in this group.



6. To save the computer group, click **Create**.

7. To make the computer group available in BigFix Inventory, wait for the scheduled import or run it manually.

After you create a computer group, and run the import, you can view reports narrowed down to the computers that belong to this group. To do this, go to **Reports > Computer Groups**, and select a computer group. Then, from the upper left corner, select the report that you want to view for this computer group.

## Setting up scans to discover software and hardware inventory

The scanner is an independent, well-defined component that is used by BigFix Inventory. It is installed and managed through the BigFix client, and it enables the software and capacity scans. Software and capacity scans collect data that is later on displayed on the BigFix Inventory reports. For environments with up to a few thousand computers, you can enable the default scan configuration. In this case, the analyses are activated and software and capacity scans as well as uploads of their results are scheduled automatically on the computers that are subscribed to the BigFix Inventory site. For larger environments, it is advisable to divide the computers into groups and manually configure a separate scan schedule for each group to avoid performance issues.

### Frequency of scans and uploads of data

By default, software and capacity scans are scheduled with a frequency that meets auditing requirements. If you want to change the default frequency, ensure that the new setup fulfills the minimal requirements and all considerations.

#### Frequency of scans

**Table 143. Frequency of scans**

Type of the scan	Default frequency	Minimal frequency	Comments
Capacity scan	Every 30 minutes	Every 30 minutes	<p>In case of subcapacity reporting, it is necessary to capture configuration of vCPU to count the maximum capacity of processor cores for each program concurrently. To ensure that dynamic changes of the vCPU configuration are captured, the capacity scan must run every 30 minutes. You can change the frequency of the scan only if you use BigFix Inventory for purposes other than subcapacity reporting.</p> <p>For information about scheduling the scan, see: <a href="#">Initiating the capacity scan on all computers (on page dcxix)</a>.</p>
Software scan	Once per week	Once per month	<p>You can adjust the frequency of the software scan to the dynamics with which software inventory changes in your environment. For information about scheduling the scan, see: <a href="#">Initiating software scans (on page dcx)</a>.</p>
Scan of VM managers	Every 30 minutes	Every 30 minutes	<p>In case of subcapacity reporting, it is necessary to capture mobility of VMs. To ensure that it is captured, data from VM managers must be collected every 30 minutes. You can change the frequen-</p>

**Table 143. Frequency of scans (continued)**

Type of the scan	Default frequency	Minimal frequency	Comments
			<p>cy of collecting data only if you use BigFix Inventory for purposes other than subcapacity reporting.</p> <p>For information about scheduling the scan, see: <a href="#">Adding VM managers for VMware, Hyper-V, KVM with RHV-M, Citrix Hypervisor and Nutanix (on page dcxxii)</a>.</p>
Shared disks scan	Once per week	Once per month	<p>For information about scheduling the scan, see: <a href="#">Discovering software on shared disks (on page dcxxx)</a>.</p>
Disconnected capacity scan	Every 30 minutes	Every 30 minutes	<p>In case of subcapacity reporting, it is necessary to capture configuration of vCPU to count the maximum capacity of processor cores for each program concurrently. To ensure that dynamic changes of the vCPU configuration are captured, the capacity scan must run every 30 minutes. You can change the frequency of the scan only if you use BigFix Inventory for purposes other than subcapacity reporting.</p> <p>The scan is triggered and scheduled automatically after you install the disconnected scanner. For more information, see:</p> <ul style="list-style-type: none"> <li>• IBM i: <a href="#">Installing the scanner and gathering initial data on IBM i systems (on page dcxciii)</a></li> <li>• Other platforms: <a href="#">Installing the scanner and gathering initial data (on page dclxii)</a></li> </ul>
Disconnected software scan	On demand	Once per month	<p>You can adjust the frequency of the software scan to the dynamics with which software inventory changes in your environment.</p> <p>For information about scheduling the scan, see:</p> <ul style="list-style-type: none"> <li>• IBM i: <a href="#">Running software scans and gathering scan results on IBM i systems (on page dcxciv)</a></li> <li>• Other platforms: <a href="#">Running software scans and gathering scan results (on page dclxiii)</a></li> </ul>
Detailed hardware scan	On demand		<p>This type of the scan is not required for auditing purposes. Running this scan once per week or less frequently is sufficient to collect detailed hardware inventory.</p>

**Table 143. Frequency of scans (continued)**

Type of the scan	Default frequency	Minimal frequency	Comments
			For information about scheduling the scan, see: <a href="#">Detailed hardware scan (on page dcxxix)</a> .

### Frequency of uploading scan results

Upload of data from the scanned computer to the BigFix server occurs according to a frequency that is specific to the type of the scan. The data is then uploaded from the BigFix sever to the BigFix Inventory server during the import. In case of the disconnected scans, the data is uploaded directly to the BigFix Inventory server. It is not stored on the BigFix server.

**Table 144. Frequency of uploading scan results**

#### Summary for complex table

Type of up-loaded results	Default frequency	Comments
Capacity scan	When results change in comparison to the results of the previous scan.	Upload of capacity scan results is scheduled automatically when you schedule the capacity scan.
Software scan	When results change in comparison to the results of the previous scan.	For information about scheduling the upload, see: <a href="#">Uploading software scan results (on page dcxvii)</a> .
VM managers data	Every 12 hours	Upload of results from VM managers is scheduled automatically when you configure connection to VM managers.
Disconnected capacity scan	On demand	Results of disconnected capacity and software scans are imported directly to the BigFix Inventory server. They should be imported immediately after new results of the software scan are available.  For more information, see: <ul style="list-style-type: none"> <li>• IBM i: <a href="#">Importing scan results from IBM i systems to BigFix Inventory (on page dcxcvi)</a></li> <li>• Other platforms: <a href="#">Importing scan results to BigFix Inventory (on page dclxv)</a></li> </ul>
Disconnected software scan	On demand	

**Table 144. Frequency of uploading scan results****Summary for complex table****(continued)**

Type of up-loaded results	Default frequency	Comments
Detailed hardware scan	Once per day	<p>Results of the deep hardware scan are gathered daily by the Detailed Hardware Information analysis.</p> <p>For more information, see: <a href="#">Detailed hardware scan (on page dcxxix)</a>.</p>

**Default scan configuration**

Default scan configuration is advised for environments with up to a few thousand computers. It ensures that the required analyses are activated and software and capacity scans as well as uploads of their results are scheduled automatically. These actions are necessary to collect data from the computers in your infrastructure and to display it on the BigFix Inventory reports. You can enable the default scan configuration during the configuration of BigFix Inventory connections to the databases or when adding another data source.

**What happens automatically**

When you enable default scan configuration, the following actions are automatically activated and scheduled on each computer that is subscribed to the BigFix Inventory site. The same configuration is also automatically applied to all computers that are subscribed to the BigFix Inventory site at a later time.

- The following analyses are activated:
  - Application Usage Statistics
  - Capacity Configuration for Linux on z Systems
  - Installed UNIX Packages
  - Installed Windows Applications
  - Scanner Information
  - Software Scan Status
  - VM Manager Information
- The scanner is installed.
- All [types of software scans \(on page dcxiv\)](#) and uploads of their results are scheduled.
- Capacity scans and uploads of their results are scheduled.

Additionally, when you enable the default scan configuration for the second and successive data sources that you add, the software catalog is distributed to the computers on condition that it was successfully uploaded and imported for the first data source.

## What to do next

- After you enable the configuration, run the import of data. The data that is collected from the computers in your infrastructure should be displayed on the BigFix Inventory reports. However, the newly set-up environment needs time to finish the scans and to upload their results to the server. If the reports do not contain any data after the first import, wait about an hour until the scans are completed. Then, run another import.

To change the default scan configuration, use the [Scan Configurations \(on page dciii\)](#) panel. Alternatively, you can change the scan configuration through the BigFix console by using the [Initiate Software Scan \(on page dcx\)](#) fixlet.

- [Add VM managers \(on page dcxxii\)](#) that are an important and mandatory addition to the capacity scan. These are the hosts that manage your virtual machines. BigFix Inventory can already evaluate the virtual capacity of your environment, but needs extra data about the physical one to accurately calculate your subcapacity consumption. This data can be collected only from VM managers.

## Changing scan configuration from the BigFix Inventory user interface

**9.2.3** Available from 9.2.3. The **Scan Configurations** panel allows for basic scan management directly from the BigFix Inventory user interface. Use the panel if you enabled the default scan configuration or as an alternative to scheduling scans from the BigFix console.

The panel is used for configuring the time, frequency, and types of software scans that are run on the endpoints. If you enabled the default scan configuration, all prerequisites are fulfilled and you can manage scans without any further setup. In other cases, ensure that the required analyses are activated, the scanner is installed on the endpoints, uploads of software scan results are scheduled, and capacity scans and uploads of their results are scheduled. You must complete these actions manually from the BigFix console before you can schedule scans from the BigFix Inventory user interface. For more information, see: [Manual scan configuration \(on page dcvi\)](#).

After the prerequisites mentioned above are fulfilled, divide the computers in your infrastructure into groups in the BigFix console. Then, based on these groups, create computer groups for which you want to schedule software scans in BigFix Inventory. A computer group that you create in BigFix Inventory must fulfill the following conditions to allow for scheduling scans through the **Scan Configurations** panel:

- It has the All Computers group as its parent. It is not a subgroup of another computer group.
- Definition of this group uses a single Data Source Groups filter as the only condition based on which computers are assigned to this group. Data source groups represent computer groups that were earlier created in the BigFix console.

**Definition**

Specify the report filter which matches all of the following conditions:

Data Source Groups

in set

Europe

✖

+

 You must be an Administrator or an Infrastructure Administrator to perform this task.

When you create scan configuration for a computer group in the BigFix Inventory user interface, the Initiate® Software Scan action is created and sent to the BigFix server. Each time you change scan configuration on the **Scan Configurations** panel, the related action is updated on the BigFix server. When you delete the scan configuration, the related action is by default removed from the BigFix server.

If you configure scans on the **Scan Configurations** panel and then change scan configuration in the BigFix console, information about the change is not reflected on the BigFix Inventory user interface. To avoid duplicated scans or unexpected scan behavior, avoid configuring scans in both places and choose your preferred method instead.

1. [Create computer groups and enable scans for these groups \(on page dx cvi\)](#).
2. To edit scan configuration, click **Management > Scan Configurations**, and select the computer group for which you want to change the scan settings.



**Note:** Each row represents the schedule and status of the software scan for a particular computer group. The row All computers from *Data source name* represents all computers that report to one BigFix server. The row is created automatically. You can edit or disable the scan schedule for this group.

Status	Name	Enabled	Start Date	Frequency	Catalog-...	File Syst...	Package ...	Software...	Applicati...	Resourc...
✓ Active	All compu...	Yes	02/25/201...	Every 7 days	Yes	Yes	Yes	Yes	Yes	Yes
✓ Active	Europe	Yes	02/25/201...	Every day	Yes	Yes	Yes	Yes	No	No

3. Choose the scan frequency and requested start date.

Due to any network latency, the time when the scan actually starts might be several minutes different from the requested start time. The requested start date represents the time and date when the action is started in accordance to the time zone of the BigFix server.

4. Choose the types of software scan to run.

For more information about each type of software scan, see: [Types of software scans \(on page dcxiv\)](#).

If the computer group for which you are configuring scans consists entirely of computers that run on Mac OS, run only the package data scan on these computers as other types of software scans are not applicable to Mac OS. If the group consists of computers that run on Mac OS and computers that run on other operating systems, select all types of scans that you want to run. Only the package data scan is run on the Mac OS computers. The remaining types of scans are skipped as not applicable.

### Edit Scan Configuration

Name Europe

Data Source Groups Datasource/Europe

Enabled

**Schedule**

Frequency Every day ▾

Requested Start Date 02/09/2016 12:35PM

**Scan Types**

- Catalog-based Scan
- File System Scan
- Package Data Scan
- Software Identification Tags Scan
- Application Usage Statistics Scan
- Resource Utilization Scan

5. To save the changes, click **Save and Start Scans**. Then, click **OK** to confirm that you want to restart the scan action that is running on the BigFix server.

**!** **Important:** When you change a single scan configuration, all scans that were configured from the BigFix Inventory user interface are restarted on the BigFix server.

Scan configuration for a computer group can have one of the following statuses:

- Active - The Initiate® Software Scan action was started on the BigFix server. The software scan runs according to the schedule defined on the **Scan Configurations** panel.
- Stopped - The Initiate® Software Scan action was stopped on the BigFix server. The software scan is not running. You can re-enable the scan on the **Scan Configurations** panel or configure the scan from the BigFix console.
- Server unavailable - The scan schedule cannot be displayed and set because the BigFix server or the Web Reports server is not responding. Follow the [troubleshooting steps \(on page mccccxxxi\)](#) to resolve the issue.

If you want to disable software scans for a particular computer group, open the scan configuration for this group and clear the **Enabled** check box.

## Manual scan configuration

Manual scan configuration is advised for environments with more than a few thousand computers. It requires that analyses are activated and software and capacity scans as well as uploads of their results are scheduled manually after the installation. These actions are necessary to collect data from the computers in your infrastructure and display in on the BigFix Inventory reports. Flexibility of the manual scan configuration allows for avoiding performance issues that might occur when you scan too many computers at the same time.

To manually configure scans, perform the following tasks:

1. Optional: Divide the computers into groups in the BigFix console.

In large environments, it is advisable to divide the computers into groups in the BigFix console and configure a separate scan schedule for each group. For a summary of good practices related to scan distribution, see: [Distribution of scans for improved performance \(on page dcvi\)](#). For more detailed information, see the [Tuning performance](#).

2. Set up scans to discover software and hardware discovery.
  - a. [Activate the analyses. \(on page dcvii\)](#)
  - b. [Install the scanner. \(on page dcviii\)](#)
  - c. [Initiate software scans. \(on page dcx\)](#)
  - d. [Upload software scan results. \(on page dcxvii\)](#)
  - e. [Collect capacity data. \(on page dcxix\)](#)

After you successfully schedule software and capacity scans, run the import of data. When the data is displayed on the BigFix Inventory reports, you can further customize the scans. For example, you can exclude directories from software scans or scan remote shared file systems. For more information, see: [Advanced scan configuration \(on page dcxxix\)](#).

## Distribution of scans for improved performance

Performance of importing data from the BigFix server to Bigfix Inventory depends on the number of scan files, usage analyses, and package analyses that are processed during a single import. By properly scheduling scans and distributing them over the computers in your infrastructure, you can reduce the length of the data import.

Use the following guidelines to improve the performance of the data import:

### **Divide computers into groups**

- After you install Bigfix Inventory, do not run the scans on all computers in your infrastructure. Divide the computers into groups in the BigFix console and start by gathering the default properties from a single computer group. For more information about creating computer groups in the BigFix console, see: [Computer groups](#).
- Consider creating computer groups that are based on stability. In a stable environment, scans can be run less frequently than once a week.

### Schedule scans to run at different time

- Schedule scans to run on different days for different computer groups.
- Avoid a situation in which multiple groups are scanned at the same day or the following day. It might cause that scans and data imports interfere.
- Reduce the frequency of scans. In most cases, it is sufficient to scan the infrastructure once a week, which is the default frequency. In large environments, you can disable the option to automatically run scans and initiate them only when necessary. The minimum scan frequency is once per month.

### Limit the amount of gathered data

- In the initial deployment phase, or if you do not need the information, disable the collection of software usage. For more information, see: [Disabling the collection of software usage \(on page dclxxxvii\)](#).
- Try to limit the number of computer properties that are gathered during scans.

For more information about distributing scans and other actions that you can undertake to improve the application performance, see: [Tuning performance \(on page mcdxxxvi\)](#).

## Activating the analyses

An analysis is a collection of property expressions that is used to view and summarize properties of computers in your infrastructure. Some of the analyses are required to discover installed software and must be activated all the time. Other analyses are used only in specific scenarios or for troubleshooting purposes and can be activated according to your needs.

If you enabled the default scan configuration, the required analyses are activated automatically and this configuration is not required.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Analyses**.
3. To activate an analysis, right-click it, and click **Activate**.

To ensure that the installed software is properly detected, activate the following analyses on all computers in your infrastructure:

- Installed UNIX Packages
- Installed Windows Applications
- Software Scan Status

To measure software usage, activate also the Application Usage Statistics analysis.

[Install the scanner \(on page dcviii\)](#) on the computers on which you want to detect the software.

## Installing the scanner

The scanner collects hardware information as well as information about files and packages that exist on the computers in your infrastructure. Install the scanner on every computer on which you want to detect software. If you enabled the default scan configuration, the scanner is installed automatically and this configuration is not required.

Before you install the scanner, note the following considerations.

- Ensure that the BigFix client is installed and running on the computers on which you want to detect software and that the computers are subscribed to the **BigFix Inventory** site.
- To install the scanner on a WPAR, you must install it on the LPAR first.
- **9.2.17** **AIX** Ensure that on AIX the `xlC.rte` library version 13.1.0.0 or higher is installed on the target computer.
- **Linux**
  - For scanner versions 9.2.17 and 10.0.0, ensure that `libnsl.so.1` on Red Hat Enterprise Linux 8.0 is installed on the target computer.
  - For scanner versions 2.8.0.3000 and below, ensure that `libstdc++.so.5` is installed on 32-bit Linux x86 computers.
- **UNIX** Ensure that the `libstdc++.so.6` library is installed on the target computer.
- **Mac OS X** Software discovery on Mac OS X does not require installing the scanner nor scheduling regular uploads of scan results. To enable the discovery, it is enough to [run the package data scan \(on page dcx\)](#).

The scanner can be used by multiple applications. By default, the scanner that is delivered with BigFix Inventory is installed in the single user mode. It means that if it is used by other applications, it must be run by root (UNIX) or SYSTEM (Windows). If any of the applications requires that the scanner is run by a different user, install it in the regular mode. For more information, see: [CIT deployed by LMT/BFI 9 by other IBM products](#).

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Install or Upgrade Scanner**.
4. **9.2.5** Select the installation directory. You can choose the default directory, or an alternative one. In the latter case, the scanner is installed in the same path as the BigFix client.



**Note:** The setting applies only to new installations, you cannot change the path if you are upgrading the existing scanner.

Use default installation directory:

**Windows:** `C:\Program Files\tivoli\cit`  
**UNIX:** `/opt/tivoli/cit`

Use an alternative installation directory:

**Windows:** `<BES Client>\CITBin`  
**UNIX:** `<BES Client>/CITBin`

With this setting, the scanner log files will be placed in the `logs` directory under the scanner installation directory.

5. Click **Take Action**.

6. Select the computers on which you want to install the scanner, and click **OK**.

Target Execution Users Messages Offer Post-Action Applicability Success Criteria Action Script

Target:

Select devices  
 Dynamically target by property  
 Enter device names

Applicable Computers (4)

Computer Na...	OS	CPU	Last Report Ti...	Loc
NC91281112...	Linux Red Hat ...	2400 MHz Xeon	2014-06-12 14:...	No
NC91431260...	Linux Red Hat ...	2400 MHz Xeon	2014-06-12 13:...	No
NC91431261...	Linux Red Hat ...	2400 MHz Xeon	2014-06-12 14:...	No
NC91431261...	Linux Red Hat ...	2400 MHz Xeon	2014-06-12 14:...	No

**i** **Tip:** To ensure that the action is applied on all computers that are added in the future, select **Dynamically target by property**.

You installed the scanner on the computers in your infrastructure. To view information about the installed scanner, for example its version, activate the Scanner Information analysis, and open the **Results** tab.

After you install the scanner, [schedule software scans \(on page dcx\)](#).

## Installing or Upgrading the scanner in a private mode

Private scanner installation mode allows to install BigFix Inventory private CIT instance that does not share any resources with global CIT installation made by other CIT exploiters.

The task installs CIT binaries in `<BES Client>\LMT\CIT\scanner` directory, but without registering the instance in CIT global files (`no cit.ini` or other global CIT configuration files).

In case when there is a global CIT with SUA exploiter already installed, the SUA exploiter will be uninstalled from the global CIT and upgraded to the private version.

The following custom CIT settings will be moved to the private mode:

dcx

- CIT trace log level
- maximum size of trace files
- maximum number of trace files



**Note:** The 'custom cache location' CIT setting is not moved to private mode.

Settings, such as 'list of the excluded directories', that are available at `<BES Client>\LMT\CIT` directory remain unchanged while moving to the private mode.

The installation requires at least 70 MB of free disk space on the drive where BigFix client is installed. The private installation mode is available currently for Windows platform only.

To check the version of the scanner that is currently installed on the endpoints, activate the analysis: Scanner Information. The scanner that is installed in the private mode would have exploiter 'BFI Private'.



**Note:** Automatic catalog propagation will not work automatically with the scanner installed in the private mode up to BigFix Inventory version 10.0.2.0.

To make it working you have to update the Catalog Download fixlet templates in the BFI server using 'Update Catalog Download fixlet templates on BFI server' fixlet.

#### **Limitation:**

The **Install or Upgrade Scanner** fixlet uses an executable that by default runs directly from the `/var` directory, a partition on the endpoint. If you choose to install the scanner in another location, specifically under the BESClient directory in `/var`, and then add the 'noexec' restriction after the scanner installation, it can cause issues with scanning fixlets as well. The fixlets will not work when `/var` is set with the noexec option. Therefore, ensure that `/var` directory is not set with the noexec option.

If `/var` is set to noexec, take one of the following actions:

- Remove the noexec mount option.
- Move `/var/opt/BESClient` to a different partition, which is not noexec, and create a symbolic link to it in its place.



**Note:** There is a fixlet available to move the BESClient and create symbolic links. To know more about the fixlet, refer to <https://bigfix.me/fixlet/details/3637>.

## Initiating software scans

During the software scans, the scanner collects information about files with particular extensions, package data, and software identification tags to evaluate whether particular software is installed on the computers in your infrastructure. It also gathers information about the running processes to measure software usage. By default,

software scans are scheduled to run regularly but you can specify the exact days and times of the scans, or modify their start and end dates.

Backups of software directories that are stored on the endpoints might be reported as separate software instances. It might result in false discoveries and incorrect license consumption. To avoid this problem, either [exclude the backups from scanning \(on page dclii\)](#) or compress them with a data compressor.

The scanner does not scan the following elements:

- Archived files such as ZIP or RAR files
- Paths that contain certain whitespace characters and other special characters. To avoid a situation in which software is not discovered, ensure that file paths in your infrastructure do not contain the unsupported characters. For more information, see: [Limitations \(on page ccclxvi\)](#).

If you enabled the default scan configuration, software scans are initiated by default and this configuration is not required.

Software scan is resource-consuming, and its duration depends on the number of files in the file system. To minimize the impact of the scan, schedule the software scan for the period that is least critical for your environment, for example, at night or during the weekend. Software scan needs to be run with frequency that is adjusted to the dynamics of the environment, but typically few times per each reporting period. For information about default and minimal scan frequency, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).

Additionally, to minimize the impact of the scan, you can set up a CPU threshold for the scan, and optimize the cache configuration. For more information, see: [Optimizing scanner cache configuration \(on page dclxxxiv\)](#).

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Initiate Software Scan**.  
If the task is not applicable, see: [Scan problems \(on page mcccclxxiv\)](#).
4. To ensure complete software discovery, select all types of scans under the **Software Discovery** section.

### Software Discovery

To guarantee complete software discovery, select all check boxes below. If you leave any of the check boxes deselected, some of the installed software might not be discovered.

Catalog-based scan

Discovers software based on scanner catalogs that are sent to endpoints and matched with the scanner findings.

File system scan.

Discovers software with additional row data based on file extensions and processes that were run on the computers. File system scan can retrieve information about checksums. To modify a set of collected file checksums, use [Configure File Checksums Collection \(MD5/SHA-256\)](#).

Package data scan

Discovers software based on information about Windows and UNIX packages that exist in the registry.

Software identification tags scan

Discovers software based on the existence of software identification tags that exist on the endpoints. This type of scan discovers the majority of IBM software.

Different types of scans search for different types of information to determine whether the software is installed or to measure its usage. Generally, all types of scans should be run regularly. However, you can choose to run different types of scans at different times or distribute the scan schedule over the computers in your environment to improve the performance of the import. For more information, see: [Types of software scans \(on page dcxiv\)](#).

#### Mac OS X

To discover software that is installed on Mac OS X, run the package data scan on Mac computers. To measure application usage, activate the Application Usage Statistics analysis and run the application usage statistics scan. Other types of software scan are not necessary and are ignored on Mac OS X.

5. To see license metric utilization on BigFix Inventory reports, select the relevant options under the **Additional Scan Capabilities** section.

### Additional Scan Capabilities

The following options collect additional information about software products.

Application usage statistics

Collects information about processes that are running on the endpoints and translates them into usage statistics.

Collect extended application usage statistics

By default, information about paths is collected only for Java processes. Use this option to collect information about paths of all processes. This option should be used only in advanced configuration where extended usage collection by matching paths setting is enabled in BigFix Inventory. If the data about process paths is large, the information is not collected in order to prevent performance degradation of the endpoint.

Resource utilization scan

Searches for software license metric tags that contain information about types of licenses that can be used by a product and their usage. NOTE: It is recommended to schedule the resource utilization scan to run daily. For more information, see the [product documentation](#).

User information

Collects information about users for specific software products to calculate usage of selected user-based licenses.

Store and show user names on reports

By default, the user names are obfuscated with SHA-1. Use this option if you want to show this data.



**Note:** The resource utilization scan collects information contained in `.slmtag` files. The license metric quantity for these products is based on the `.slmtag` data and is reported on All Metrics and All IBM Metrics panels. To ensure that the reported data is accurate and current, it is recommended to schedule the resource utilization scan to run daily. If you prefer to run the remaining scans at different times, run the Initiate Software Scan fixlet for resource utilization scan separately.

6. **Optional:** To enable scanning of shared disks in basic mode, select **Scan remote shared disks**. The basic mode is advised for environments where a single shared disk is mounted on a single computer or a few computers. However, this mode is only one of the available solutions. Before selecting this option, see: [Discovering software on shared disks \(on page dcxxx\)](#).
7. **Optional:** To limit the amount of processor resources that the scanner consumes, select **Initiate the software scan with CPU threshold**. Specify the consumption limit that is in the range 5 - 100. The higher value you specify, the higher is the consumption limit. For example, if you specify 75, scanner processes use the average of 75% of the processing power of the target computer.



**Important:** Setting the threshold does not guarantee that the CPU consumption is always below the specified value. It fluctuates around that value, sometimes exceeding it and sometimes dropping below it. Temporary peaks are expected.

Mac OS X

10.0.10

Starting from BigFix Inventory 10.0.10, CPU threshold is used to lower Initiate Software Scan process priority on Mac OS X. Without enabling the CPU threshold, the process is run at priority level 0.

In case of setting the value - priority level for Mac OS is calculated according to formula:  $20 - (\text{cpuThreshold} / 5)$ . This means that setting 50 will use priority level: 10, 25: 15, 20: 16.

**CPU threshold**

Initiate the software scan with CPU threshold

CPU threshold value:  (range 5-100)

8. To start the scan, click **Take Action**.
9. Select the computers on which you want to initiate the scans.  
Only local drives are scanned on the selected computers. For information about scanning shared disks, see: [Discovering software on shared disks \(on page dcxxx\)](#).

 **Tip:** To ensure that the action is applied on all computers that are added in the future, select **Dynamically target by property**.

10. **Optional:** By default, the scans are scheduled to run weekly. If you want to specify the dates and frequency of the scans, open the **Execution** tab. Specify the details, and click **OK**.  
For information about default and minimal scan frequency, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).

[Schedule uploads of software scans results \(on page dcxvii\)](#) to the BigFix server.

## Types of software scans

The scanner can search for different types of information to determine whether the software is installed or to measure its usage. Generally, all types of scans should be run regularly. However, you can choose to run different types of scans at different times or distribute the scan schedule over the computers in your environment to improve the performance of the import process.

### Software discovery

#### Catalog-based scan

In this type of scan, the BigFix server creates scanner catalogs that are sent to the endpoints. Based on those catalogs, the scanner discovers exact matches and sends its findings to the server. Scanner catalogs do not include signatures that can be found based on the list of file extensions nor entries that are irrelevant for a particular operating system.

#### File system scan

In this type of scan, the scanner uses a list of file extensions to check whether any files with those extensions exist on the endpoints. Then, it returns the findings to the BigFix server where the discovered files are compared with the software catalog. If a particular file matches an entry in the catalog, the software is discovered.

## Collecting executable files based on application usage

**9.2.8** **Linux** **Solaris** Starting from application update 9.2.8, the file system scan additionally reports files that are based on processes that have been run on the computers in your infrastructure, regardless of their extension. To view these files, you need to meet the following criteria:

- The BigFix server and client are in version 9.5.5 or higher.
- The operating system is Linux or Solaris.
- Application Usage Statistics analysis is activated.

The reported files, with supplementing information such as path and size, are available on the Scanned File Data report and can be used to create custom discovery and use signatures for software components. If the process has been active at least once since the feature was turned on and the associated file exists on the computer, this file is displayed on the report.

This feature is enabled by default. To stop collecting information about the files, run the **Disable Collecting Executable Files Based on Application Usage** fixlet. In case you need to reactivate this feature, run the **Enable Collecting Executable Files Based on Application Usage** fixlet.



**Note:** Checksums collection (MD5 and SHA-256) for these files is not supported.

### Outputs of the file system scan

The scan generates two outputs: full file system scan and delta file system scan. The former contains information about all files that were discovered on the endpoint. The latter contains information only about files that changed between the last two full file system scans. Both outputs are generated during every scan and uploaded to the BigFix server. However, only one of them is imported to BigFix Inventory.

Delta file system scan is imported to BigFix Inventory in the first place to improve the import performance. Full file system scan is imported instead of the delta scan in the following cases:

- The file system scan is run on the endpoint for the first time
- The BigFix client was reinstalled on the endpoint
- The delta file system scan is larger than one third of the full file system scan
- The endpoint does not meet the prerequisites for generating the delta scan. If any of the prerequisites are not met on an endpoint, check the `BES_Client\LMT\CIT\delta.log` file for more details.
  - **UNIX** `sed, diff, wc, tar, gzip, expr`
  - **Windows** VBScript interpreter

### Package data scan

In this type of scan, the scanner searches the system registry to gather information about Windows™ and UNIX™ packages that are installed on the endpoints. Then, it returns the findings to the server where

the discovered packages are compared with the software catalog. If a particular package matches an entry in the catalog, the software is discovered.

**10.0.12** During the package scan, the package installation path and installation date are collected for Windows endpoints (Windows uninstall registry and Windows MSI). The Package Data and Software Classification Details panels show the installation date and installation path for the Windows endpoints. The REST API that supports the functionality are `api/sam/raw_package_facts` and `/api/sam/unified/current/software`. For more information on the APIs, refer to [Retrieving raw package data \(on page mdcxxxii\)](#) and [Unified Software API to combine package data and software instance data \(on page mdcc\)](#).

### Software identification tags scan

In this type of scan, the scanner searches for software identification tags that are delivered with software products. Then, it returns the findings to the BigFix server where the tags are processed. Based on the information that they contain, the software is discovered.

## Additional scan capabilities

### Application usage statistics

In this type of scan, the scanner gathers information about processes that are running on the endpoints. Then, it returns the findings to the BigFix server where the data is translated into usage statistics.

The usage data is first collected when the BigFix client is installed on an endpoint, and an application usage statistics is enabled. The statistics are displayed on the Metering Data report. When the processes are matched against usage signatures from the software catalog, or custom usage signatures, the statistics are available on the Software Classification panel.

**9.2.11** Starting from application update 9.2.11, BigFix Inventory additionally collects application usage data in a new format.



**Remember:** By default, the usage scan is scheduled to run weekly to avoid performance issues. If you want to collect software usage on a daily basis, run the usage scan daily.

### Resource utilization scan

In this type of scan, the scanner searches for software license metric tags that contain information about types of licenses that can be used by a product and their usage. The scanner returns its findings to the BigFix server where the tags are processed. Based on the information that they contain, the maximum usage of license metrics over the last 30 days and its trend value are calculated. For more information, see: [Raw utilization of license metrics \(on page mclxix\)](#).

 **Tip:** The scan collects information about license metrics that are reported by products which implemented the ISO/IEC 19770-4:2017 standard. Because the volume of the collected data might be large, do not run this scan if you do not want to monitor these metrics.

### 9.2.13 User information

In this type of scan, the scanner collects information about users of the specific software products that help calculate the usage of some license-based products. The results are shown on the All Metrics and Software Users reports. For more information, see: [Available reports \(on page mlvi\)](#).

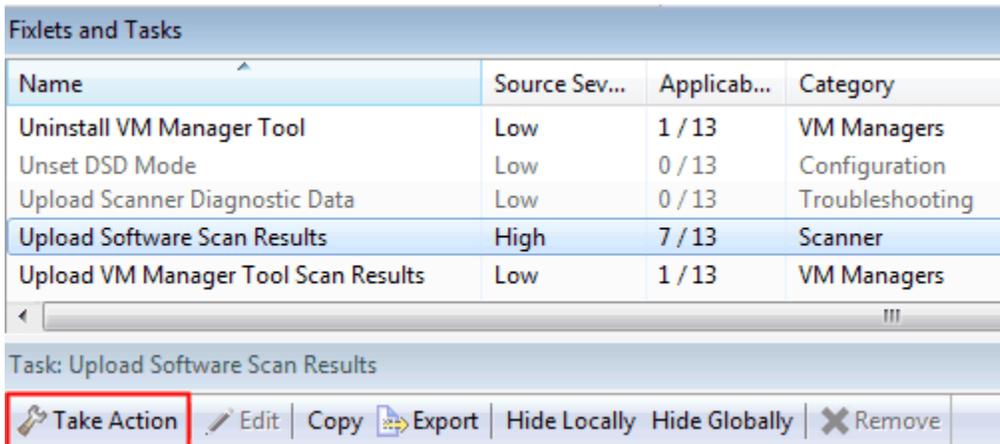
## Uploading software scan results

When the software scan finishes, its results must be uploaded from the computers in your infrastructure to the BigFix server. To ensure that software inventory data is up-to-date, software scans and uploads of their results should run on a similar schedule.

If you enabled the default scan configuration, uploads of software scan results are scheduled automatically and this configuration is not required.

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Upload Software Scan Results**, and then in the lower pane, click **Take Action**.

 **Note:** The size of a single compressed scan result cannot exceed 1 MB.



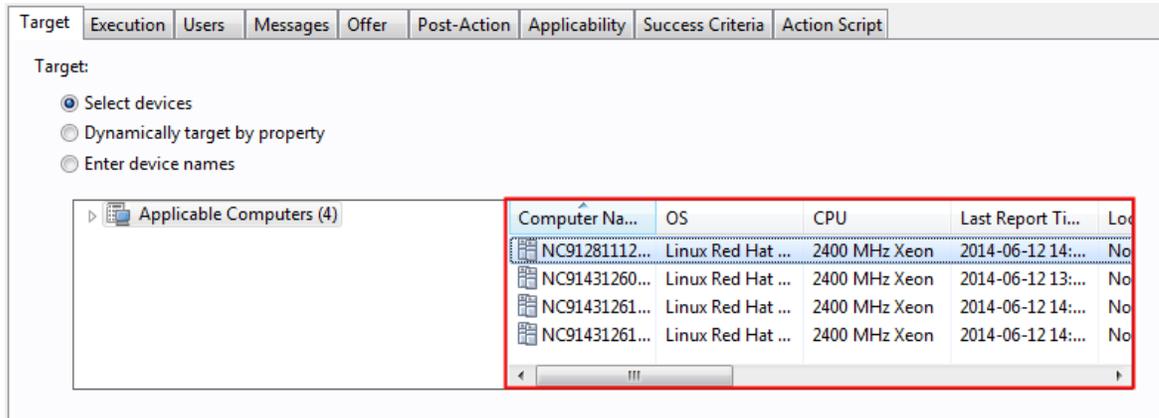
Fixlets and Tasks			
Name	Source Sev...	Applicab...	Category
Uninstall VM Manager Tool	Low	1 / 13	VM Managers
Unset DSD Mode	Low	0 / 13	Configuration
Upload Scanner Diagnostic Data	Low	0 / 13	Troubleshooting
<b>Upload Software Scan Results</b>	<b>High</b>	<b>7 / 13</b>	<b>Scanner</b>
Upload VM Manager Tool Scan Results	Low	1 / 13	VM Managers

Task: Upload Software Scan Results

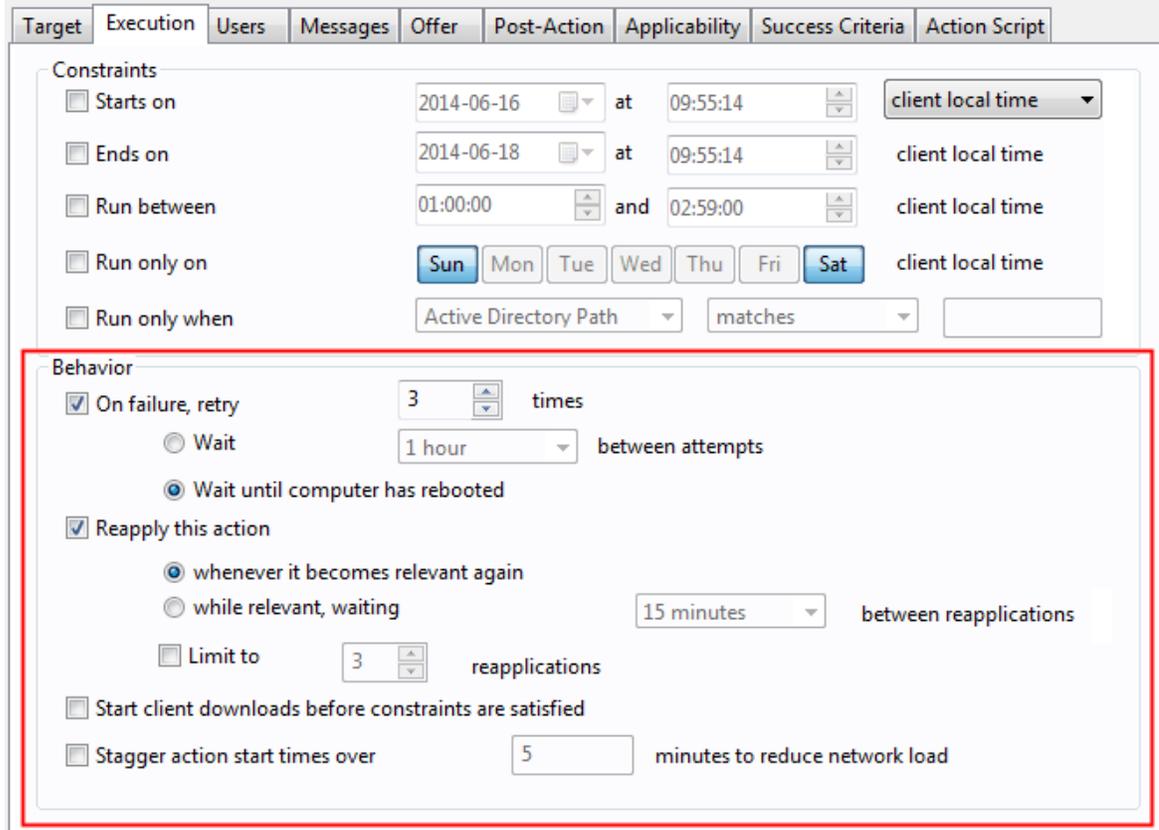
**Take Action** | Edit | Copy | Export | Hide Locally | Hide Globally | Remove

4. Select computers from which you want to upload software scan results.

 **Tip:** To ensure that the action is applied on all computers that are added in the future, select **Dynamically target by property**.



5. **Optional:** By default, software scan results are uploaded to the BigFix server whenever they are available on the target computer. If you want to specify the dates and frequency of the uploads, open the **Execution** tab. Specify the details, and click **OK**.



Schedule capacity scans and uploads (on page [dcxix](#)) of their results.

## Collecting the hardware information and capacity data

The hardware information and capacity data concern information about your processors, and the processor capacity that is assigned to each computer. You can review the information on the Hardware Inventory report. The hardware and capacity data is essential to calculate processor-based metrics, for example PVU.

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### Concept

[Discovering software in Docker containers \(on page dcxliv\)](#)

## Initiating the capacity scan on all computers

The capacity scan is the essential part of collecting capacity data and should run on all computers, including Oracle Logical Domains. The scan runs every 30 minutes, and collects data about the physical processor, system type (physical or virtual), guest operating system, and logical partitions.

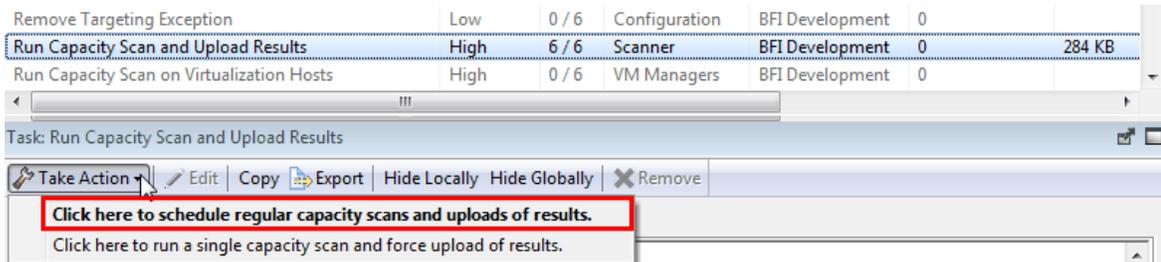
- **UNIX** You must have `tar` and `gzip` installed on each target computer.
- For KVM x86 hosts that are not controlled by RHV-M and PowerKVM hosts, do not use the **Run Capacity Scan and Upload Results** task to collect the capacity data. Instead, use the **Run Capacity Scan on Virtualization Hosts** task. For more information, see: [Collecting capacity data from virtualization hosts for Xen and KVM \(on page dcxxv\)](#).

The scan runs every 30 minutes. However, it runs very quickly and has minimal impact on the processor usage. Moreover, scan results are uploaded to the BigFix server only if they changed since the last scan. It ensures that no unnecessary network traffic is generated.

 **Restriction:** In case of subcapacity reporting, it is necessary to capture configuration of vCPU to count the maximum capacity of processor cores for each program concurrently. To ensure that dynamic changes of the vCPU configuration are captured, the capacity scan must run every 30 minutes. You can change the frequency of the scan only if you use BigFix Inventory for purposes other than subcapacity reporting.

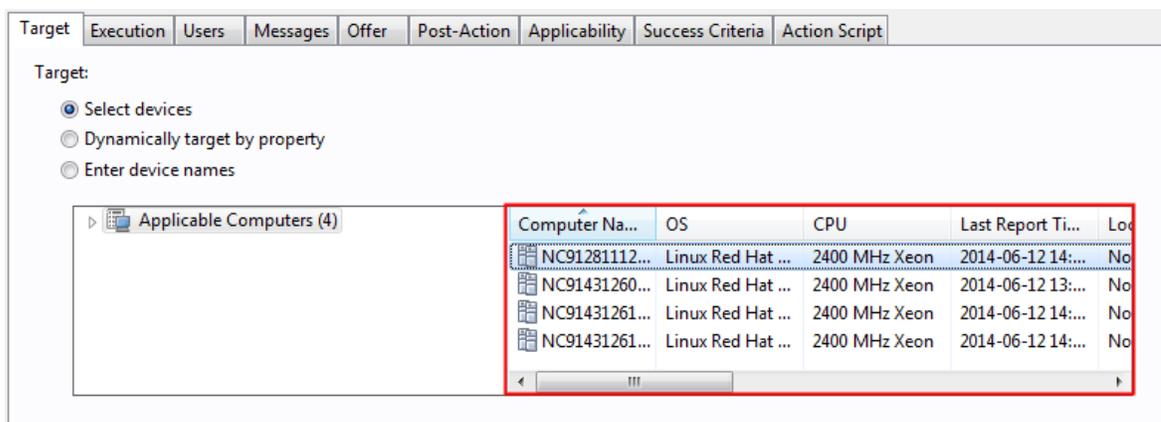
1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**, and select **Run Capacity Scan and Upload Results**.
3. In the lower pane, click **Take Action**, and choose **Click here to schedule regular capacity scans and uploads of results**.

 **Important:** Single capacity scan runs only once. Results of this scan are uploaded to the BigFix server regardless of whether they differ from the results of the previous scan. Use this option only when you need to force the upload of scan results, for example when the import of scan results failed. Otherwise, run the regular capacity scan.



4. Open the **Target** tab, and select computers that you want to scan.

**i** **Tip:** To ensure that the action is applied on all computers that are added in the future, select **Dynamically target by property**.



When the scan completes successfully, scan results are automatically uploaded to the BigFix server.

## Client installation on Oracle Solaris

To ensure that the capacity data is properly collected from computers that are running on the Oracle Solaris virtualization, install the BigFix client on all required operating systems, zones and domains. Then, set up capacity scans on each endpoint.

### Installation order

Install the BigFix client in the following order:

1. Global zone in the Control Domain (if it exists)
2. Global zones
3. Local zones and Kernel zones

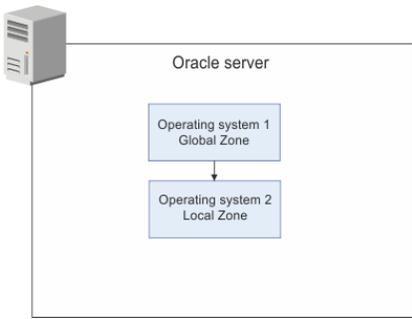
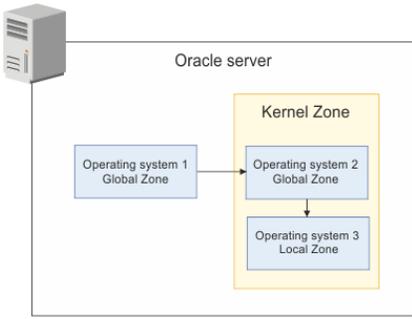
You might change the order and install the BigFix client on the computers in the local zone first. As a result, these computers have the No Host Scan Data status until you install the BigFix client on the computers in the global zone.

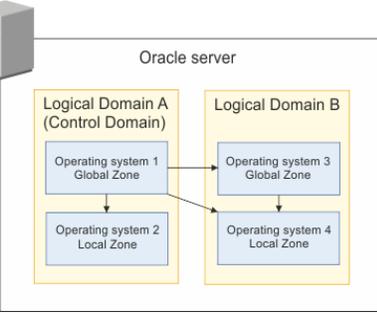
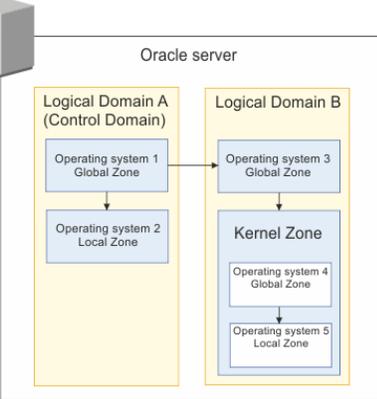
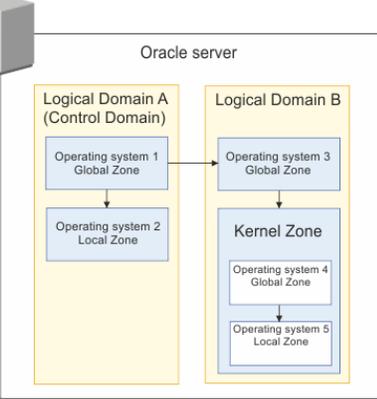
## Requirements

The `HOSTID` values on a local zone and its parent global zone must be the same to match the guest and host system. Otherwise, BigFix Inventory is unable to properly build information about the virtualization structure. As a result, guest operating systems have the No Host Scan Data status.

## Examples

The following examples of possible installation scenarios describe in what order you might install the BigFix client on computers in the global and local zones.

Scenario		Applicable for	
		Solaris x86	SPARC
<p>To discover an application that is installed on operating system 2 (local zone), install the client in the following order:</p> <ol style="list-style-type: none"> <li>1. Operating system 1 (global zone)</li> <li>2. Operating system 2 (local zone)</li> </ol>	 <p>The diagram shows an Oracle server icon on the left. A box labeled 'Oracle server' contains two sub-boxes: 'Operating system 1 Global Zone' at the top and 'Operating system 2 Local Zone' at the bottom, with a downward arrow between them.</p>	Yes	Yes
<p><b>9.2.14</b> To discover an application that is installed on operating system 3 (local zone), install the client in the following order:</p> <ol style="list-style-type: none"> <li>1. Operating system 1 (global zone)</li> <li>2. Operating system 2 (global zone in the Kernel Zone)</li> <li>3. Operating system 3 (local zone in the Kernel Zone)</li> </ol>	 <p>The diagram shows an Oracle server icon on the left. A box labeled 'Oracle server' contains three sub-boxes. 'Operating system 1 Global Zone' is on the left. An arrow points from it to 'Operating system 2 Global Zone' in the center. Below that is 'Operating system 3 Local Zone'. A yellow box labeled 'Kernel Zone' encloses 'Operating system 2 Global Zone' and 'Operating system 3 Local Zone', with a downward arrow between them.</p>	Yes	Yes

<p>To discover an application that is installed on operating system 4 (local zone on a Logical Domain that is not the Control Domain), install the client in the following order:</p> <ol style="list-style-type: none"> <li>1. Operating system 1 (global zone in the Control Domain)</li> <li>2. Operating system 3 (global zone of operating system 4 in the Logical Domain)</li> <li>3. Operating system 4</li> </ol>		Yes
<p>To discover an application that is installed on operating system 2, install the client in the following order:</p> <ol style="list-style-type: none"> <li>1. Operating system 1 (global zone in the Control Domain)</li> <li>2. Operating system 2</li> </ol>		Yes
<p><b>9.2.15</b> To discover an application that is installed on operating system 5 (local zone in the Kernel Zone), install the client in the following order:</p> <ol style="list-style-type: none"> <li>1. Operating system 1 (global zone in the Control Domain)</li> <li>2. Operating system 3 (global zone of operating system 4 in the Logical Domain)</li> <li>3. Operating system 4 (global zone of operating system 5 in the Kernel Zone)</li> <li>4. Operating system 5</li> </ol>		Yes

## Adding VM managers for VMware, Hyper-V, KVM with RHV-M, Citrix Hypervisor and Nutanix

After you configure the capacity scan, BigFix Inventory can evaluate capacity of virtual machines in your environment. However, to accurately calculate subcapacity consumption, it also needs data about physical hosts on which these VMs are running. The data can be collected only from VM managers. To ensure that the data is available to BigFix Inventory, configure connections to VM managers in your infrastructure.

-  You must have the Manage VM Managers and Servers permission to perform this task.
- The computer where the main instance of the VM Manager tool is installed must belong to the computer group to which you are assigned. Otherwise, the option to add VM managers is disabled.
- If the panel is blocked and displays a warning, see: [Troubleshooting: Enabling the VM Managers panel \(on page dcccxi\)](#).

**9.2.7** VM Manager Tool, starting from update 1.5.0.0, is enhanced to attempt to automatically fix the most common problems with the VM manager connection parameters. This feature is disabled by default. To enable this feature, go to **Management > Advanced Server Settings** and change the setting of `vmman_fix_parameters_enabled` parameter to `true`. While fixing connection problems the VM Manager Tool can connect using the HTTP protocol when the defined HTTPS connection is not available. This setting is enabled by default. To disable switching protocol from HTTPS to HTTP, go to **Management > Advanced Server Settings** and change the setting of `vmman_http_connection_allowed` parameter to `false`. For more information, see: [Advanced server settings \(on page dccc1\)](#).

1. In the top navigation bar, click **Management > VM Managers**.
2. To add a VM manager, click **New**.
3. Select the virtualization type and provide the required details.

- To add Microsoft Hyper-V:
  - a. Select one of the available communication interfaces: PowerShell or WinRM. For more information about these interfaces, see: [Microsoft Hyper-V \(on page dcclxx\)](#).



**Important:** WinRM is the preferred communication interface. Before you add the VM Manager, configure WinRM on the Hyper-V host. For more information, see: [Configuring WinRM on Hyper-V hosts \(on page dcclxxiv\)](#).

- b. Provide the URL of the VM manager in the following format: `https://ovirt-engine/api` to `https://{manager-host}/ovirt-engine/api`.
- c. To share credentials with other hosts in the same cluster, select **Share credentials with other hosts in the same cluster**.
- d. Provide the Administrator account credentials. Define the user as `user_name\domain` or `user_name@domain`. For example: `test\cluster.com` or `test@cluster.com`.

- To add KVM with RHV-M:
  - a. Provide the URL of the VM manager in the following format: `https://<RHV-M_IP_address>/ovirt-engine/api`.
  - b. Provide the account credentials. Define the user as `user_name@domain`, for example: `test@cluster.com`.

- **9.2.17** To add Nutanix:

- a. Provide the URL of the VM manager in the following format: `https://<NUTANIX_PRISM_ELEMENT_IP_ADDRESS>:9440/PrismGateway/services/rest/v2.0.`
  - b. Provide the account credentials. The account needs to have assigned at least *Viewer* role.
- **9.2.14** To add Oracle VM:
    - a. Provide the URL of the VM manger in the following format:
    - b. `https:///ovirt-engine/api` to `https://{manager-host}/ovirt-engine/api`
    - c. Provide the account credentials.
  - To add VMware ESX, ESXi or vCenter:
    - a. Provide the URL of the VM manager in the following format:
      - `https://<vCenter_IP_address>/sdk/vimService.wsdl`
    - b. Provide the account credentials. Define the user as `domain\user_name`, for example: `cluster.com\test`.
  - **9.2.12** To add Citrix Hypervisor (formerly XenServer):
    - a. Provide the URL of the VM manager in the following format: `https://Citrix_hypervisor.`
    - b. Provide the account credentials.

The following example shows a configured connection to VMware ESX, ESXi or vCenter.

**Create VM Manager**

VM Manager Type\* KVM RHV-M or Oracle Linux Virtualization Manager ▼

URL\* Enter the URL

URL Template `https://{manager-host}/ovirt-engine/api`

User Name\*

Password\*

Create



**Note:** "KVM RHV-M" VM Manager type has been renamed to "KVM RHV-M or Oracle Linux Virtualization". This change is only on the UI. As Oracle VM is approaching end of life, instead of the new version, Oracle moves to KVM and introduces Oracle Linux Virtualization Manager as manager. Oracle Linux Virtualization Manager works with previous versions of BigFix Inventory which supports KVM RHV-M.

4. Click **Create**. Connection to the VM manager is created and its status is Pending.
5. Select the VM manager, and click **Test Connection**.  
The test might take a few minutes. Refresh the panel. If the VM manager connection is properly configured, the connection test status changes to Successful.

You have created a VM manager. Its status remains Pending until the data is collected from the VM manager, uploaded to the BigFix server, and transferred to BigFix Inventory during the import of data.

The upload of data collected from VM managers is triggered shortly after you modify any VM manager, for example create a new connection or change the existing one. If you do not make any modifications, the data is uploaded according to the schedule, which is every 12 hours by default. For more information, [Capacity data flow \(on page dccxc\)](#).



**Note:** BigFix Inventory can count the cluster cores properly only if the data comes from a single VM manager connection for the whole cluster. This option is visible on **Management > VM Managers** panel.

- For VMware, the data should come from vCenter where VMs in the same cluster must belong to a single vCenter, otherwise the cluster core results will not be correct.
- For Hyper-V, the data should come from a single host within a cluster when `Share credentials with other hosts in the same cluster` option is enabled.

Cluster Cores are assigned based on the node layer and not the machines. Physical machines that host Hyper-V, share the same node layer as VMs they host. These machines have the same cluster name. As a result, **Hardware Inventory** report shows the same Cluster Name for Hyper-V hosts and the hosted VMs.

## Collecting capacity data from virtualization hosts for Xen and KVM

For Citrix, Xen and KVM, connection to the VM manager does not have to be defined in BigFix Inventory to collect capacity data. The data can be collected directly from virtualization hosts by using the Run Capacity Scan on Virtualization Hosts task.

This method is applicable on the following virtualizations:

- **9.2.7** Xen Hypervisor
- **9.2.6** Citrix Hypervisor (formerly XenServer)



**Important:** **9.2.12** Starting from application update 9.2.12, it is recommended to collect data from Citrix Hypervisor (formerly XenServer) by configuring connections to VM managers. For more information, see: [Adding VM managers in central mode \(on page dccxcv\)](#).

- PowerKVM
- KVM x86



**Tip:** If your KVM x86 hosts are controlled by RHV-M, you can configure the RHV-M as a VM manager in BigFix Inventory. It allows for collecting capacity data from all controlled hosts without the need of using the Run Capacity Scan on Virtualization Hosts task on each of them. For more information, see: [Adding VM managers in central mode \(on page dccxcv\)](#).

For information about supported versions of these virtualizations, see: [Detailed System requirements \(on page cdxxxii\)](#).

Ensure that virtualization hosts from which you want to collect capacity data meet the following prerequisites.

### KVM hosts

Ensure that the following prerequisites are met on the KVM hosts:

- The host runs on Linux x86 or Linux on Power
- Bash shell is available
- `libvirt-client` library is installed (virsh command is available)
- `libxml2` library is installed (xmllint command is available)

### Xen hosts

Ensure that the following prerequisites are met on the Xen hosts:

- The host runs on Linux x86
- Bash shell is available
- `xl` command is available
- `libxml2` library is installed (xmllint command is available)

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Run Capacity Scan on Virtualization Hosts**.
4. **Optional:** To collect information about host names of virtualization hosts, select **Collect host names of virtualization hosts**.

This option affects the format of information about virtualization hosts that is displayed in the Server ID column on the reports. If you select this option, the column contains information about the vendor, type and host name of the host as specified in the **managedServerTagTemplate** parameter. If you do not select this option, the column contains the serial number of the host instead of its name. For more information about the **managedServerTagTemplate** parameter, see: [Advanced server settings \(on page dcccc\)](#).

5. To start the scan, click **Take Action**.



**Important:** If you run this task on the host, you no longer need to run the **Run Capacity Scan and Upload Results** task on that host.

6. From the list of applicable computers, select the supported hosts.



**Important:** The list is filtered out to the computers that meet the prerequisites. However, not all of them are virtualization hosts.

7. **Optional:** By default, the capacity scan is scheduled to run every 30 minutes. However, in an environment with many KVM or Xen hosts, consider lowering the frequency of the scan. To specify the frequency of the scan, open the **Execution** tab, specify the details, and click **OK**.

For environments with multiple hosts, run the scan once per one to six hours.



**Restriction:** You can change the frequency you obtain the acceptance of the BigFix Compliance Team.

8. Schedule the upload of scan results to the BigFix server.
- In the upper right pane, select **Schedule VM Manager Tool Scan Results Upload**, specify the frequency, and click **Take Action**.
  - Select the hosts from which you collected the capacity data, and click **OK**.



**Tip:** To check the status of the capacity scan on the endpoints, activate the analysis Status of Capacity Scan on Virtualization Hosts. If the status is other than OK, check the return code to learn what is the cause of the problem and how to solve it. For more information, see: [Return codes of capacity scans on virtualization hosts \(on page mcdxi\)](#).

9. Wait for the scheduled import or run it manually to transfer the data to BigFix Inventory.



**Note:** When you run fixlet 'Run Capacity Scan on Virtualization Hosts', the discovered hosts, such as KVM, Xen, and Citrix are displayed on **Management > VM Managers** panel in BigFix Inventory UI.

#### Related information

[Return codes of capacity scans on virtualization hosts \(on page mcdxi\)](#)

## Removing capacity scan data from the host

During the capacity scan, some files and folders are generated on the virtualization host. If you no longer collect capacity data from a particular host, remove the files and folders that were created by the capacity scan.

- Stop the actions that were created by the **Run Capacity Scan on Virtualization Hosts** task on the specified endpoints. Otherwise, the scan continues running and the files are recreated.
  - In the navigation tree of the BigFix console, click **Sites > External Sites > BigFix Inventory > Actions**.
  - Select the actions, and in the lower pane, click **Stop**.
- In the navigation tree, go to **Fixlets and Tasks**.
- In the upper right pane, select **Remove Capacity Scan Data from Virtualization Hosts**, and click **Take Action**.
- Select the computers from which you want to remove the data that was generated during the capacity scan, and click **OK**.

## Identifying computers on public clouds

**10.0.3** For all computers that run on public clouds, you must additionally identify them as such. This is required to apply the correct PVU rates, which might differ between the public clouds. It is enough to run a Fixlet against these computers and specify the type of the public cloud.

For information about licensing rules that apply on public clouds, the list of supported public clouds, and existing limitations, see [IBM Software licensing rules on public clouds \(on page cdi\)](#).

### Procedure

1. In the navigation tree of the BigFix console, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
2. In the upper right pane, select **Identify Computers on Public Clouds**.
3. Choose the type of the public cloud and click **Take Action**.



**Note:** If you incorrectly identified a computer as running on a public cloud, choose **Remove existing identification**.

4. Select all computers that run on this type of cloud and click **OK**.



**Tip:** To check which computers are identified as running on public clouds, activate the **Identified Public Cloud Computers** analysis and open the **Results** tab.

A computer that runs on a public cloud is assigned the number of PVUs that is specified in the [IBM Eligible Public Cloud BYOSL policy](#). Information about the assigned number of PVUs is displayed on the Computers report after the next capacity scan and import of data. PVU consumption for the software that is installed on such a computer is properly calculated.

## Identifying disconnected computers as running on public clouds

**10.0.5** If a computer on which you use the disconnected scanner runs on a public cloud, identify it as public to ensure that PVU consumption is properly calculated for the software that is installed on that computer.

For information about licensing rules that apply on public clouds, the list of supported public clouds, and existing limitations, see: [IBM Software licensing rules on public clouds \(on page cdi\)](#).

### Procedure

1. Log in to the computer that runs on the public cloud.
2. Go to the directory in which the disconnected scanner is installed, and open the `setup_config.ini` file.
3. Set the value of the **PUBLIC\_CLOUD\_TYPE** parameter. For the list of available values, refer to the config file.



**Note:** Ensure the name of the public cloud is enclosed in quotation marks.

A computer that runs on a public cloud is assigned the number of PVUs that is specified in the [IBM Eligible Public Cloud BYOSL policy](#). Information about the assigned number of PVUs is displayed on the Computers report after the next capacity scan and import of data. PVU consumption for the software that is installed on such a computer is properly calculated.

## Advanced scan configuration

After you successfully schedule software and capacity scans and the scan data is displayed on the BigFix Inventory reports, you can further customize the scans. For example, you can exclude directories from software scans or scan remote shared file systems.

### Detailed hardware scan

**9.2.12** Available from 9.2.12. Detailed hardware scan collects hardware information related to memory, operating systems, storage, processors, partitions, network adapters, SMBIOS data, IP addresses and logical partition capacity data. The solution is supported on Windows, Linux x86-64 and x86-32, and AIX. It can be run also on other operating systems but the results might not be accurate.

In BigFix Inventory, there are two types of hardware scans: capacity scan and detailed hardware scan.

- Capacity scan collects the main information about the type and the capacity of processors in your infrastructure. BigFix Inventory uses this data to calculate software license usage for metrics that are based on processor capacity, such as PVU. BigFix Inventory displays the selected hardware attributes of scanned processors on the Hardware Inventory and Software Classification panels. You can also use API to retrieve the capacity details.
- Detailed hardware scan collects additional information about your hardware. The scan uses the same scanner technology as capacity scan. However, detailed hardware scan has a much broader spectrum and retrieves more hardware attributes. These details are not required to report license metrics. They can be used to monitor your hardware inventory or manage your assets. You can only retrieve the results of the detailed hardware scan through API.

For more information, see: [Software and hardware discovery \(on page ccclxxix\)](#).

### Collecting detailed hardware scan information

**9.2.12** Available from 9.2.12. **Linux** **Windows** You can collect the detailed hardware information by running the Collect Detailed Hardware Information task in the BigFix console. To retrieve the data use the relevant REST API.

#### Limitations

- Detailed hardware scan cannot be collected if you use the disconnected scan.
- The output of the detailed hardware scan cannot exceed 100 KB. This limit should be enough for most endpoints. However, if it is exceeded, the results will not be imported to BigFix Inventory server. Information about exceeding the limit of 100 KB is returned by the Detailed Hardware Information analysis.

## Considerations

- If a piece of information is not applicable to your system, or cannot be retrieved, the detailed hardware scan returns no value, or the value equals "-1".
- In case of virtual systems, such as, VMware, Hyper-V or KVM guests, the scanner might not be able to retrieve the accurate value of some physical machine attributes. The physical system information is emulated by the hypervisor and the scanner cannot access the host system properties directly. The level of similarity between the virtual devices and the actual hardware depends on the virtualization technology used.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Collect Detailed Hardware Information**, and then in the lower pane, click **Take Action**.
4. Select computers from which you want to collect the detailed hardware information.
5. **Optional:** By default, the scan repeats every week. However, you can customize the frequency of the scan according to your needs. Select **Execution** tab and modify the **Reapply this action** section.
6. Click **OK**.
7. To populate the scan results to BigFix, activate the Detailed Hardware Information analysis.
8. Wait for the scheduled import, or run it manually.
9. To retrieve the detailed hardware information, use the relevant REST API call. For more information, see: [REST API for retrieving detailed hardware information \(v2\) \(on page mdv\)](#).

The API call returns the detailed hardware information about the computers in your environment.

You can check the status and the date of the last scan in Detailed Hardware Information analysis.

## Discovering software on shared disks

BigFix Inventory allows you to scan the shared disk on designed endpoint and use the information across all of endpoints. The solution is fully-automated.

To discover software that is installed on shared disks, identify disks that exist in your infrastructure. Then, choose the method of scanning these disks that best suits your environment.

Software that is discovered on shared disks is reported on every computer on which the shared disk is mounted. It causes that license metric utilization that is calculated for the discovered software increases. When the software is reported on every computer on which the shared disk is mounted, it continues contributing to license metric utilization for the entire reporting period even if the shared disk is unmounted.

## Requirements

- Scanning shared disks might increase the number of scanned files per computer in your environment and it might affect the hardware requirements of your system. For more information, see: [Hardware requirements \(on page dx\)](#).
- Discovery of shared disks is supported on Linux, AIX, Solaris, and HP-UX. It is not supported on Windows.

- Types of discovered shared disks include UNIX Network File System (NFS) and Windows Common Internet File System (CIFS).
- Types of software scans that are run on shared disks include catalog-based scan, file system scan, and software identification tags scan.
- If you have systems with multiple interfaces, ensure that you configure them correctly. For more information, see: [Configuring servers in separate networks \(on page dlxxxvi\)](#).



### Warning:

1. BigFix Inventory scan is designed to scan only mounted drives and not invoke automounting of the shares. This is achieved by listing the mounts at the beginning and then scanning only designed and mounted.
  - Scan for designed share disk does not further check against the specific directories on the scanned shared. It assume that all the structure is local and can be accessed.
  - **10.0.6** Form version 10.0.6, the `*/.snapshot/*` directory is excluded by default for the newly set up endpoints. The snapshot directory is an example of directory that is not listed as a shared directory but gets triggered to mount as sub-shared.

The `exclude_path.txt` file include the exclusion rules. The exclusion list does not allow to scan directories matching `*/.snapshot/*`. The `*/.snapshot/*` exclusion rule is not added when `exclude_path.txt` exists. You can change the rules on server side as required.

Run the `1_Install_Scanner.bes` fixlet to include the `exclude_path.txt` file. For newly set-up endpoints, if the `exclude_path.txt` file is not present, the `1_Install_Scanner.bes` fixlet creates the same. For scanner initialization or upgrade, the existing `exclude_path.txt` file is used and the exclusion rule is not overwritten.

- Check if the exclusion list includes `*/.snapshot/*` directory on non-Windows endpoints. It is recommend to add the `*/.snapshot/*` directory on non-Windows endpoints when you apply share disk scan.
2. There is an option to automate the scan, see also [Optimized mode - Automatic scanning of remote shared disks \(on page dcxxxiii\)](#). Use this process to limit the scope of the scan and decide the endpoints that you want to scan. Scans access file systems and incorrect manual configuration might lead to overloading share disk if targeted incorrectly. It is recommended to use it when you are familiar with the process.

## Set up shared disk scan

A prerequisite for the shared disk scan is to collect information about available and mounted share disks. See [Step 1: Discovering remote shared disks \(on page dcxxxii\)](#).

**Table 145. Methods of scanning remote shared disks**

Scenario	Considerations	Visibility in BFI	Steps to follow
Extending current discovery to all mounted shared disks	This will scan every detected and mounted share disk once.	Each computer having the disk mounted is having extended list of software on Software Classification Only.	See: <a href="#">Optimized mode - Automatic scanning of remote shared disks (on page dcxxxiii)</a>
Extending current discovery to selected mounted shared disks	Requires manual effort to designate computer to do the scan per share, however, allows to control scanned shared disks.	Also visible on Software Classification Only however user is on control to which computers information is assigned.	See: <a href="#">Limiting scope of automated scan (on page dcxxxvi)</a>
Scanning selected individual disks directly on computer	Extends the scope of regular scan to include shares. Use the standard exclusions to restrict the share from scan.  Use only on limited number of endpoints / shares. Avoid scanning share on more than one computer.	Extend standard discovery with the facts found on the shared disk.	See: <a href="#">Manually Scanning Individual Disk (on page dcxxxiv)</a>

## Step 1: Discovering remote shared disks

To discover shared disks that are used in your infrastructure, run the Discover Remote Shared Disks task. Then, activate an analysis that gathers the retrieved information. After an import, the information is shown on the Shared Disks report. You can also retrieve it by using the `api/sam/v2/shared_disks` REST API.

1. Log in to the BigFix console.
2. Discover remote shared disks in your environment.
  - a. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - b. In the upper right pane, select **Discover Remote Shared Disks**, and then in the lower pane, click **Take Action**.

- c. Select computers on which you want to discover shared disks, and click **OK**.



**Tip:** Select all applicable computers to ensure that all shared disks are discovered.

3. Gather information about the discovered shared disks.
  - a. In the navigation tree, click **Analyses**.
  - b. Right-click **Shared Disk Information**, and click **Activate**.
4. Wait for the scheduled import or run it manually.

Information about shared disks is shown on the Shared Disks report. You can also retrieve it by using REST API. For more information, see: [Retrieval of shared disks \(v2\) \(on page mcdxcix\)](#).

To view information about software that is installed on the discovered shared disks, scan the disks. Choose scanning method that best fits your use of shared disks. Refer to the table, [Methods of scanning remote shared disks \(on page dcxxxii\)](#).

## Step 2a: Optimized mode - Automatic scanning of remote shared disks

**9.2.12**

Available from 9.2.12. To discover software that is installed on shared disks in your infrastructure, enable automatic scanning of shared disks. As a result, a single computer is designated to scan a specific shared disk and discover the installed software. The data is then automatically populated to all computers on which the same shared disk is mounted. Use this mode when a single shared disk is mounted on many computers.

- This method of scanning is advised for environments with a heavy use of shared disks in which a single shared disk is mounted on many computers. For information, see: [Discovering software on shared disks \(on page dcxxx\)](#).
- This method is not supported in environments in which multiple instances of BigFix Inventory use a single BigFix server as the data source.
- You must be an Administrator to perform this task.
- Ensure that the parameter **enable\_automatic\_task\_deployment** is set to true on the **Advanced Server Settings** panel. It is the default setting.

1. [Discover shared disks that exist in your infrastructure. \(on page dcxxxii\)](#)
2. Enable optimized scan of shared disks.

- a. Log in to BigFix Inventory and go to **Management > Advanced Server Settings**.
- b. Change the value of the **autoscan\_shared\_disks\_enable** parameter to true.



**Note:** If you disable this parameter, and then want to enable it back, you need to wait at least one day. Alternatively, you can log in to the BigFix console and remove the **LMT\_Autoscan\_Shared\_Disks** property from all computers on which you ran the scan of shared disks.

3. Wait for the scheduled import or run it manually.

During the import, a single computer is designated to scan a specific shared disk. An action that is called Optimized Shared Disks Scan Update Resources List is created on the BigFix server. Each action represents designation of a single computer. Additionally, the software scan is triggered on every designated computer.



**Important:** Because these actions are triggered during the first import after you enable the scanning, it might take a couple of consecutive imports to discover software that is installed on shared disks.

To see software that was discovered on shared disks, go to **Reports > Software Classification**. Hover over **Configure**, and click **Configure View**. Then, add the following filter: `From Software Template, equal to, yes`.

When you click the link in the Details column, you can see on which shared disk the software is installed.

## Advanced options

### Manually Scanning Individual Disk

To discover software that is installed on shared disks in your infrastructure, run the software scan with the **Scan remote shared disks** option enabled.

- This method of scanning is advised for environments in which a single shared disk is mounted on one or only few computers. For information, see: [Discovering software on shared disks \(on page dcxxx\)](#).
- If more computers are configured to scan a shared disk, performance of the disk might decrease drastically and the scanning might take a long time. It is recommended to schedule the clients to scan the shared disk at different times, for example to spread the scanning across many days of the week.
- If the shared disks to be scanned are large, scan timeout problems might occur.

The difference is that automatic mode scans all shared disks that exist in your environment. If you want to scan only selected shared disks, use manual scanning. For more information, see: [Discovering software on shared disks](#). If you already set up manual scanning (this method), you can switch to automatic scanning. For more information, see: [Switching to automatic scanning of shared disks](#).

1. [Discover shared disks that exist in your infrastructure. \(on page dcxxxii\)](#)
2. Exclude unsupported file systems from scanning.
  - a. In the navigation tree, click **Analyses**.
  - b. Click **Shared Disk Information**, and open the **Results** tab to recognize file systems that must be excluded from scanning.
  - c. In the navigation tree, click **Fixlets and Tasks** and select **Add Excluded Directories**. Specify directories or mount points of unsupported file systems, and click **Take Action**. For more information, see: [Adding excluded directories \(on page dclii\)](#).

 **Tip:** A mount point is a directory that is at the top of the file system hierarchy. You can verify whether a directory is a mount point by checking the output of the `mount` or `mountpoint` commands.

- d. Select computers on which you want to exclude the unsupported file systems and click **OK**.
3. Stop the current software scans.
    - a. In the navigation tree, click **Actions**.
    - b. In the upper right pane, select the **Initiate Software Scan** action.
    - c. In the lower pane, click **Stop**.
  4. [Initiate software scans \(on page dcx\)](#) with the option to scan remote shared disks selected. To effectively setup the scan you can create a manual group for computers and use this option.

 **Important:** Automounted remote disks will be scanned only if they are mounted during the scan.

Information about shared disks and the installed software is available on the following reports:

- Computers report (when you access it from the widget on the homepage) contains information about the type of file system, shared disk IP address, and mount point
- Scanned File Data report contains information about the file path
- Software Classification report contains information about the installation path

**9.2.6** Information about scanned files and directories in your file system is stored in the scanner cache folder. By knowing the hierarchy of files, the scanner can locate them quicker, which results in shorter scans. The amount of disk space that is needed for the cache depends on the number of files that are being scanned. If the current location of the cache folder cannot ensure sufficient disk space, you can change the location of the cache folder or optimize the cache. For more information, see: [Optimizing scanner cache configuration \(on page dclxxxiv\)](#).

## Switching to automatic scanning of shared disks

To switch from manual scanning of shared disks to automatic scanning, set up the automatic scans. Then, wait for automatic scans to finish successfully to ensure data consistency. Finally, remove computer groups that were created to report software that is discovered on the shared disks.

1. [Enable automatic scanning of shared disks. \(on page dcxxxiii\)](#)  
To ensure data consistency, wait for the results of the automatic scanning. To check the status of the scan, go to **Reports > Shared Disks**, and check the value in the Automatic Scan Status column. The value should be *OK* for every shared disk that was scanned by using the manual method.
2. In BigFix Inventory, remove computer groups that were created to report software that is discovered on shared disks.

- a. Go to **Management > Computer Groups**.
  - b. Select the computer group that you want to remove, and click **Delete**.
  - c. To confirm the removal, click **Delete**.
3. **Optional:** In the BigFix console, remove computer groups that contain computers on which a particular shared disk is mounted.
- a. In the navigation tree, go to **Computer Groups**.
  - b. Right-click the computer group that you want to remove, and click **Remove**.
  - c. To confirm the deletion, click **OK**.

## Limiting scope of automated scan

**9.2.8** Available from 9.2.8. To discover software that is installed on shared disks in your infrastructure, create computer groups that contain only computers on which the same disk is mounted. Then, scan one of the computers in that group to create a software template. Finally, share the template between all computers on which the disk is mounted.

- This method of scanning is advised for environments with a heavy use of shared disks in which a single shared disk is mounted on many computers.



**Important:** **9.2.12** Starting from application updated 9.2.12, this method can be automated.

Using the automated scanning is recommended as it is easier to set up and maintain. The difference is that automatic mode scans all shared disks that exist in your environment. If you want to scan only selected shared disks, use manual scanning. For more information, see: [Discovering software on shared disks \(on page dcxxx\)](#). If you already set up manual scanning, you can switch to automatic scanning. For more information, see: [Switching to automatic scanning of shared disks \(on page dcxxxv\)](#).

-  You must be an Administrator to perform this task.

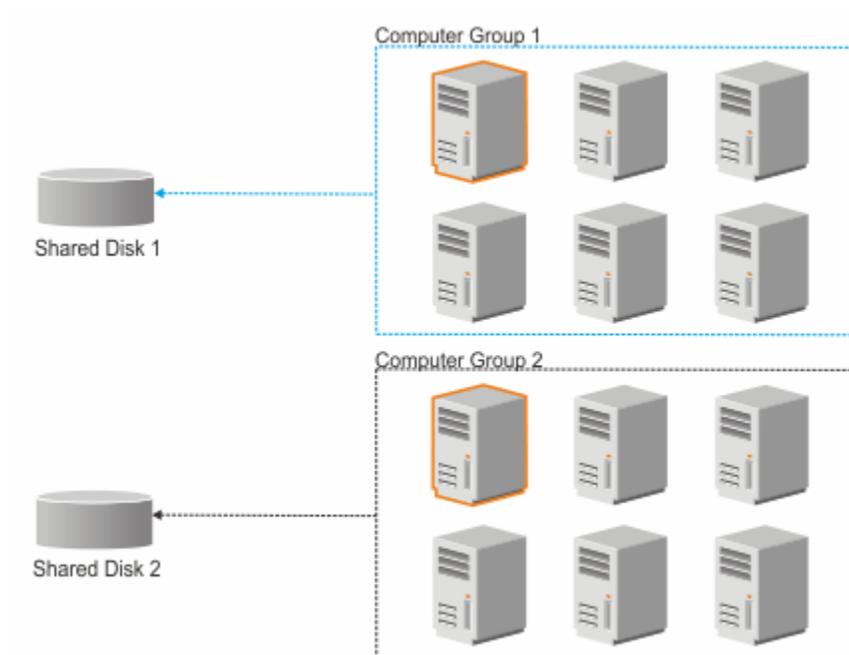
The choice of the scanned computer depends on whether some of the computer groups are overlapping and whether computers that access the same shared disk run on various operating systems.

### Scenario 1: Each computer has access to one shared disk

There are two shared disks, each mounted on six computers. To properly report the discovered software, create two computer groups in BigFix Inventory:

- Computer Group 1 that contains computers on which Shared Disk 1 is mounted
- Computer Group 2 that contains computers on which Shared Disk 2 is mounted

From each group, select one computer to be scanned. Scan results from the designated computer are propagated to the remaining computers in the computer group. Thus, software that is installed on Shared Disk 1 is reported on all computers in Computer Group 1 without the need to scan all computers in that group. The same happens for computers in Computer Group 2.

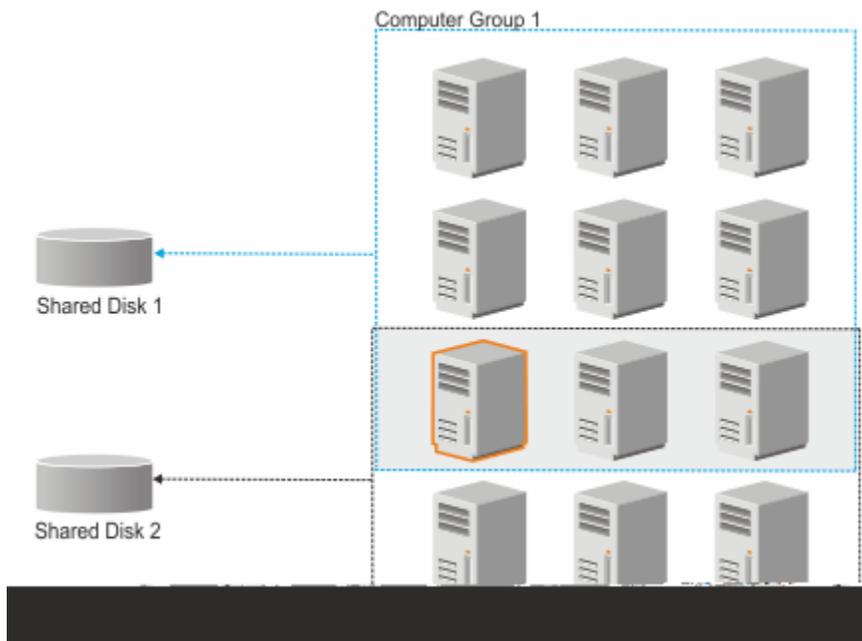


### Scenario 2: Some computers have access to two shared disks

There are two shared disks. Shared Disk 1 is mounted on nine computers. Shared Disk 2 is mounted on six computers. To properly report the discovered software, create two computer groups in BigFix Inventory:

- Computer Group 1 that contains computers on which Shared Disk 1 is mounted
- Computer Group 2 that contains computers on which Shared Disk 2 is mounted

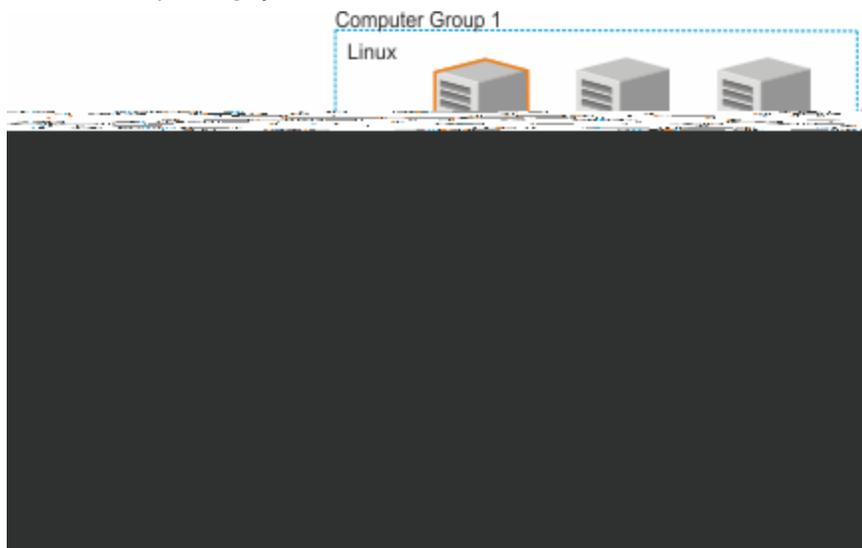
Three of the computers belong to both computer groups because they have both disks mounted. Select one of these computers to be scanned. This way, only one computer is scanned to discover software that is installed on both shared disks. Scan results from the designated computer are propagated to the rest of computers in both groups. Computers on which only one disk is mounted show software from that disk only. Computers on which both disks are mounted show software from both disks.



### Scenario 3: Computers have access to one shared disk but run on different operating systems

There is one shared disk that is mounted on nine computers. Three of the computers run on Linux, three on AIX, and three on Solaris. To properly report the discovered software, create one computer group in BigFix Inventory. From this group, designate three computers to be scanned, one for every operating system.

It is necessary because the software catalog that is propagated to each computer monitored by BigFix Inventory contains software signatures specific to the operating system on which that computer runs. Thus, scan results from the shared disk must be matched against software catalog for every operating system. Scan results from each designated computer are propagated to the rest of computers that run on the same operating system.



1. [Discover shared disks that exist in your infrastructure. \(on page dcxxxii\)](#)
2. Create a list of unique access points of the discovered shared disks. The information is needed to group computers on which the same shared disk is mounted.

- a. In the navigation tree, click **Analyses**.
- b. In the upper-right pane, right-click **Shared Disks Information**, and click **Activate**.
- c. Open the **Results** tab. The Computer Name column lists computers on which shared disks are mounted. The Remote Shared Disks column provides information about the type of the mounted shared disk, the access point, and the path under which the disk is mounted on a particular computer.

Computer Name	Remote Shared Disks
NC050232	network file system, 192.0.2.21:/file_server/shared, /mnt/nfs
nc053026	<multiple results>

- d. Create a list of unique access points.
  - If every computer has only one disk mounted, right-click the results of the analysis, and click **Copy Text**. Then, paste the list to a text editor, and edit the file so that it contains only information about access points. For example:

```
192.0.2.21:/file_server/shared
```

- If a computer has multiple disks mounted, double-click the computer, and scroll down to the **Shared Disk Information** section.

▼ Shared Disk Information	
Remote Shared Disks	network file system, 192.0.2.21:/file_server/shared, /mnt/nfs1
	network file system, 192.0.2.22:/file_server/shared, /mnt/nfs2
	network file system, 192.0.2.23:/file_server/shared, /mnt/nfs3

Copy the text, paste it to a text editor, and edit the file so that it contains only information about access points. For example:

```
192.0.2.21:/file_server/shared
192.0.2.22:/file_server/shared
192.0.2.23:/file_server/shared
```

3. Create a BigFix computer group that contains computers on which a particular shared disk is mounted. The group is used to easily designate one computer that can be scanned to create a software template.
  - a. To make grouping computers easier, create a computer property based on the information about the access point of the mounted shared disk.
    - i. In the top navigation, click **Tools > Manage Properties**.
    - ii. From the list of available properties, select **Remote Shared Disks**, and click **Make Custom Copy**. Then, click **OK**.

- b. Create a computer group that contains all computers on which the shared disk is mounted.
  - i. In the top navigation, click **Tools > Create New Automatic Computer Group**.
  - ii. Specify the name of the computer group. For example, Shared Disk 1.
  - iii. Specify the following conditions: `Remote Shared Disks, contains, <IP:shared_disk>`.

Include computers with the following property:

Remote Shared Disks	contains	192.0.2.21:/file_server/shared	-	+
---------------------	----------	--------------------------------	---	---

If a shared disk is mounted based on the IP address on some of the computers and based on the host name on other computers, BigFix Inventory does not unify addresses of access points. Thus, add the following condition to the definition of the computer group: `Remote Shared Disks, contains, <host_name:shared_disk>`. Alternatively, create two separate computer groups: one in which the access point based on the IP address and the other in which it is based on the host name.

Include computers with **any** of the following properties:

Remote Shared Disks	contains	192.0.2.21:/file_server/shared	-	+
Remote Shared Disks	contains	nc1920221:/file_server/shared	-	+

If the same shared disk is mounted on computers that run on different types of operating systems, create a computer group per each type. To create such a group, add the following condition to the definition of the computer group: `OS, contains, <operating_system>`, where `<operating_system>` can have the following values:

- linux
- aix
- hp-ux
- sunos

For more information, see scenario 3 in [Discovering software on shared disks \(on page dcxxx\)](#).

Include computers with **all** of the following properties:

Remote Shared Disks	contains	192.0.2.21:/file_server/shared	-	+
OS	contains	lin	-	+

4. From the computer group, choose one computer to be scanned. Information about software discovered on the shared disk that is mounted on this computer is used as a software template.

- a. In the navigation tree, click **Fixlets and Tasks**.
- b. In the upper right pane, select **Initiate Software Scan on Shared Disks**.
- c. **Optional:** If the computer has multiple shared disks mounted and you want to scan only some of them, specify URLs of the access points that you want to scan.  
You can enter each URL from a separate line or separate the URLs with a semicolon (;).

 **Tip:** Ensure that the URLs are exactly the same as the URLs returned by the Shared Disks Information analysis.

**Disks to scan**

To scan the shared disks, list access points of the disks that you want to scan. You can either enter each URL on a separate line, or separate the URLs with a semicolon (;).

192.0.2.21:/file\_server/shared

- d. **Optional:** To limit the amount of processor resources that the scan consumes, select **Initiate the software scan with CPU threshold**. Specify the consumption limit that is in the range 5 - 100. The higher value you specify, the higher is the consumption limit.  
For example, if you specify 75, scanner processes use the average of 75% of the processing power of the target computer.

 **Important:** Setting the threshold does not guarantee that the CPU consumption is always below the specified value. It fluctuates around that value, sometimes exceeding it and sometimes dropping below it. Temporary peaks are expected.

- e. To start the scan, click **Take Action**. Then, expand **Applicable Computers > By Group**, and select the group that you created in step 3 ([on page dcxxxix](#)). From the list of computers that belong to this group, select one computer to be scanned, and click **OK**.

 **Tip:** If one of the computers has many shared disks mounted, scan this computer. This way, only one computer is scanned to discover software that is installed on multiple shared disks.  
For more information, see scenario 2 in [Discovering software on shared disks \(on page dcxxx\)](#).

- f. To see the status of the scan, activate the **Status of Shared Disks Software Scan** analysis, and open the **Results** tab.

If any of the columns shows `<multiple results>`, it means that multiple shared disks are mounted on the scanned computer. To see the status of the scan for each shared disk, hover over the results in the column specific to the type of the scan. The number next to the status corresponds to the number of the shared disk in the Scanned Disks column. You can also double-click the computer, and scroll down to the **Status of Shared Disks Software Scan** section.

Computer Na...	Mounted Disks	Scanned Disks	Time of Last S...	Status of Catalog-based Scan
 nc053026	<multiple results>	<multiple resu...	<multiple resu...	<multiple results>

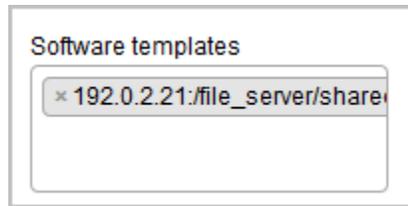
1: OK  
 2: OK  
 3: OK

After the scan finishes, a software template is created.

5. If you have not previously scheduled upload of scan results from the scanned computer, schedule it now. Ensure that the upload is scheduled only once per computer.
  - a. In the navigation tree, click **Fixlets and Tasks**.
  - b. In the upper right pane, select **Upload Software Scan Results**, and click **Take Action**.
  - c. Select the computer that is scanned to create the software template, and click **OK**.
6. To make the software templates available in BigFix Inventory, wait for the scheduled import or run it manually.
7. Create a computer group in BigFix Inventory. The group is used to report software that is discovered on the shared disk on all computers that belong to this computer group.
  - a. Log in to BigFix Inventory, and click **Management > Computer Groups**.
  - b. To create a computer group, click **New**.
  - c. Provide the name and description of the computer group.
 

i

**Tip:** To make it easier to correlate computer groups that are created in the BigFix console and in BigFix Inventory, use the same name in both cases.
  - d. Specify filters according to which computers are assigned to the group, and click **Create**. To create a group that is based on a computer group from the BigFix console, choose `Data Source Groups`, in `set`, and select the group that you created in step 3 (on page [dcxxxix](#)).
  - e. In the **Type** section, select **Software Template**.
  - f. Select the software template that you want to share among all computers that belong to this group. Then, click **Create**.



**!** **Important:** Ensure that you assign a software template to a group in which all computers have the shared disk mounted. Otherwise, software discovered on the shared disk is reported on computers that do not in fact have access to that software.

To see software that was discovered on shared disks, go to **Reports > Software Classification**. Hover over **Configure**, and click **Configure View**. Then, add the following filter: `From Software Template, equal to, yes`.

When you click the link in the Details column, you can see on which shared disk the software is installed.

## Changing the computer scanned to discover software on shared disks

**9.2.8** Available from 9.2.8. If you designated a computer to be scanned to create a software template for shared disks, and you want to designate a different computer, start by scanning the new computer. After the computer is scanned, and scan results are uploaded to BigFix Inventory, stop the scan on the computer that you initially designated. Thanks to this approach, you ensure continuity of software discovery on shared disks.

1. Select the computer that you want to scan to create the new software template.
  - a. Log in to the BigFix console.
  - b. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - c. In the upper right pane, select **Initiate Software Scan on Shared Disks**, and click **Take Action**.
  - d. Select the new computer that you want to scan, and click **OK**.

**i** **Tip:** If you have the computers grouped, expand **Applicable Computers > By Group**, and select a group. Then, from the list of computers that belong to this group, select one computer to be scanned.

2. After the scan finishes, wait for the scheduled import of data or run it manually.
3. Select the new software template for the computer group that uses the template created from the initially designated computer.
  - a. Log in to BigFix Inventory, and go to **Management > Computer Groups**.
  - b. Open the computer group that used the old software template.
  - c. Select the new software template that you want to share among all computers that belong to this group. Then, click **Create**.
4. Stop the shared disks scan that is running on the computer that you initially designated.

- a. Log in to the BigFix console.
- b. In the navigation tree, click **Actions**.
- c. Look for the action called **Initiate Software Scan on Shared Disks** that is running on the computer that you want to stop scanning.
- d. Right-click the action, and click **Stop Action**. Then, click **OK** to confirm.

## Discovering software in Docker containers

**9.2.5** Available from 9.2.5. Docker and Podman are platforms that allow automating the deployment of applications inside software containers. BigFix Inventory BigFix Inventory discovers software that is installed inside Docker containers. It also measures license metric utilization of the discovered BigFix products.

### Requirements

BigFix Inventory discovers software that is installed in Docker and Podman containers on conditions that:

- Only one Docker or Podman engine is deployed on the host computer.
- The container is running.
- Scans and uploads of their results are enabled on the host computer.
- Software that is installed in the container delivers software ID tags.
- To ensure proper discovery of software on containers, the content of a container cannot change throughout its lifecycle.
- The BigFix client or disconnected scanner must be installed on the host computer.
- The Docker container is deployed on one of the following platforms:
  - Red Hat Enterprise Linux 7 for x86
  - Red Hat Enterprise Linux 7 for BigFix 64-bit)
  - SUSE Linux 12 for x86
  - **9.2.10** Red Hat OpenShift container application platform
- The Podman container must be deployed on one of the following platforms:
  - Red Hat Enterprise Linux 8 for x86
  - Red Hat Enterprise Linux 9 for x86
- Discovery of a software that is installed in Podman containers relies on the compatibility of the podman command arguments with the syntax of the docker command arguments.
- docker commands need to be redirected to the podman command in one of the following ways:
  - install podman-docker Red Hat package.
  - configure the installation path for Podman engine using the computer setting. For more information, see:



**Note:** Using the docker command as an alias for Podman command might not work.

## Enabling software discovery in containers

Discovery of software that is installed in containers is enabled by default. In some Docker or Podman environments, you might need to perform additional steps to specify a non-default installation path, or to exclude directories from scanning. For more information, refer to [Configuring scans on Docker containers \(on page dcxlvii\)](#). For information about disabling software discovery in containers, refer to [Disabling scans on Docker containers \(on page dcxlix\)](#).

### Disconnected scanners

To enable discovery of software that is installed in containers, set the value of the **DOCKER\_SCAN\_ENABLED** parameter to true. For more information, see: [Configuration parameters of the disconnected scanner \(disconnected scenario\)](#).

## Viewing software

Software that is installed in Docker containers can be viewed on the Software Installations report. It is presented under the host computer. To learn why the software was discovered, click **Details**.

IBM SPSS Statistics Base was detected because the following condition was met:

**1** [Software identification tag found](#)

✔ Software identification tag `/var/opt/BESClient/LMT/CIT/docker/containers/0d4a4099ceb3/swidtags-python/2429/`

**2** `ibm.com_IBM_SPSS_Statistics_Base-24.0.0.swidtag` with following data:

Publisher Name: IBM  
 Name: IBM SPSS Statistics Base  
 Version: 24.0.0  
 Unique ID: `ibm.com-1f1bf9d5371243de8cd0971c93dfc274-24.0.0`  
 Tag Creator Name: IBM  
 Licensor Name: IBM  
 Tag Version: 0  
 Detected on: 06/28/2016 04:20 PM

The details include, among other, information about:

- 1** Container on which the software was detected.
- 2** Software ID tag that caused the detection.

## Measuring license metric utilization

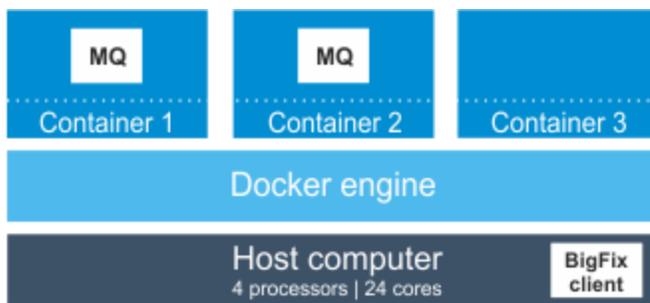
Apart from discovering software that is installed in Docker containers, BigFix Inventory also reports license metric utilization of the discovered BigFix products. When the Docker or Podman engine is deployed on a physical host, license metric utilization is calculated on the level of the host. When it is deployed on a virtual machine, utilization is calculated on the level of the virtual machine. For more details, see the following scenarios.

**!** **Important:** Docker or Podman are not a subcapacity eligible virtualization but it can be used in combination with a subcapacity eligible virtualization. The scenarios show how utilization of PVU and RVU MAPC is calculated. Utilization of other reported metrics is calculated in an analogical way.

### Scenario 1: Docker or Podman engine deployed on a physical server

When the Docker or Podman engine is deployed directly on a physical server, PVU and RVU MAPC utilization is measured on the level of the host computer.

**Example:** Three containers are deployed on a physical server that has four Intel Xeon 3400 processors, each with six cores. It gives 24 cores in total. IBM MQ is installed in two out of three containers. BigFix Inventory counts PVU and RVU MAPC utilization on the level of the host computer.



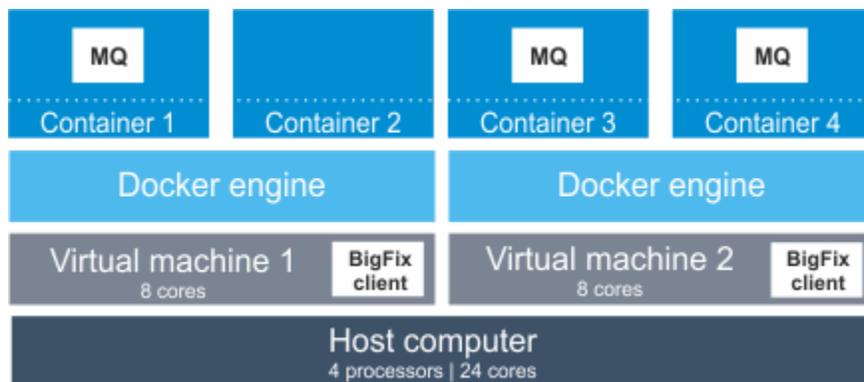
In this case, IBM MQ has access to 24 cores. According to the PVU table, when the server has four sockets, this processor model is assigned 100 PVUs per core. Thus, PVU utilization for IBM MQ equals 2400 PVUs. The value would be the same if another instance of IBM MQ was installed in the third container.

### Scenario 2: Docker or Podman engine deployed on a virtual machine

When the Docker or Podman engine is deployed on a virtual machine, PVU and RVU MAPC utilization is counted as the highest number of PVUs that are available for the virtual machine.

**Example:** Two virtual machines are installed on a physical server that has four Intel Xeon 3400 processors, each with six cores. It gives 24 cores in total. Each virtual machine is assigned eight cores and has two containers deployed. IBM MQ is installed:

- In one container on the first virtual machine
- In two containers on the second virtual machine



In this case, IBM MQ that is installed on each of the virtual machines has access to eight cores. In total, it has access to 16 cores out of 24 cores that are available on the physical computer. According to the PVU table, when the server has four sockets, this processor model is assigned 100 PVUs per core. Thus, PVU utilization for IBM MQ equals 1600 PVUs. If the Docker or Podman engine was deployed directly on the physical server, IBM MQ would have access to 24 cores and its PVU utilization would equal 2400 PVUs.

## Logs

To troubleshoot problems with discovery of software that is installed in Docker or Podman containers, see the [docker\\_scan.log](#) log. The log is stored in the BigFix client installation directory. By default, it is:

```
Linux   var/opt/BesClient/LMT/CIT/docker_scan.log
Windows C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT
\docker_scan.log
```

---

### Concept

[Collecting the hardware information and capacity data \(on page dcxix\)](#)

## Configuring scans on Docker containers

**9.2.5** Available from 9.2.5. Discovery of software that is installed in Docker or Podman containers is enabled by default. In some environments, you might need to perform additional steps to specify a non-default installation path, or to exclude directories from scanning.

For information about requirements and how software that is installed in containers is reported in BigFix Inventory, refer to [Discovering software in Docker containers \(on page dcxliv\)](#).

### Specifying a non-default installation path for engine



**Note:** To check whether the Docker is installed in the default installation path, run the following command.

```
$ docker version
```



If the result of the command is a Docker version, the Docker is installed in the default installation path. Any other outcome indicates that the Docker is installed in a non-default path.

If Docker or Podman is installed in a non-default path or Podman, add this path as a setting of the BigFix client, so that the software can be successfully discovered.

1. Check the engine installation.

- a. To check whether the Docker is installed in the default installation path, run the following command.

```
$ docker version
```

If the result of the command is a Docker version, the Docker is installed in the default installation path. Any other outcome indicates that the Docker is installed in a non-default path.

- b. To check whether the Podman is installed in the default installation path and that the docker command is correctly redirected to the podman command, run the following command.

```
$ docker version
```



**Note:** The command intentionally refers to the docker command instead of directly to the podman command to check the correctness of the redirection configuration.

If the result of the command is a Podman version, the Podman is installed in the default installation path and the podman command is correctly redirected. Any other outcome indicates that the Podman is installed in a non-default path or podman command is not correctly redirected.

2. Log in to the BigFix console, and click **Computer Management > Computers**.
3. Right-click on the computer that has the Docker or Podman installed, and click **Edit Computer Settings**.
4. Add a computer setting. Specify the name as `DOCKER_EXEC`, and provide an absolute path as the value, for example `/usr/bin/docker` or `/usr/bin/podman`.

### Specifying additional command options

By default, the scan runs the `docker` command without any options. If you want to use additional options provided by Docker or Podman, for example `-H` (daemon socket to connect to), add these options as a new setting of the BigFix client. Enter all options in one setting.

1. Log in to the BigFix console, and click **Computer Management > Computers**.
2. Right-click on the computer that has the Docker or Podman installed, and click **Edit Computer Settings**.
3. Add a computer setting. Specify the name as `DOCKER_OPTS`, and provide options as the value, for example `-H unix:///var/run/docker.sock`.

### Excluding directories from scans

The default Docker file system directory `/var/lib/docker` and the default Podman file system directory `/var/lib/containers` are excluded from scanning. If you change the engine file system directory to a custom directory, you need to manually exclude it from scanning because it might cause duplicated discoveries. For more information, see: [Excluding directories \(on page dcl\)](#).

## Disabling scans on Docker containers

**9.2.5** Available from 9.2.5. By default, BigFix Inventory scans all Docker containers that are deployed on computers where the BigFix client is installed. If you do not want to scan the containers but still want to monitor the host computer, change the value of the **DOCKER\_SCAN** parameter on the host computer.

You can disable software discovery on all containers that are deployed on a host computer. You cannot disable it on a subset of containers only.

1. Log in to the BigFix console, and click **Computers**.
2. Select the host computer on which Docker containers are deployed, and click **Edit Settings**.
3. Click **Add**. Specify **DOCKER\_SCAN** as the setting name, and `false` as the setting value. Then, click **OK**.



The screenshot shows a dialog box titled "Add Custom Setting". It has two input fields: "Setting Name:" with a dropdown menu showing "DOCKER\_SCAN", and "Setting Value:" with a text box containing "false". At the bottom, there are two buttons: "OK" and "Cancel".

Docker containers are no longer scanned. Scan results remain in the `<BES Client>/LMT/CIT/docker/containers` directory on the host computer but the directory itself is added to the list of excluded directories. Thus, the results are not transferred to BigFix Inventory.

**!** **Important:** The Docker file system directory `/var/lib/docker` might contain copies of software ID tags. When the Docker scan is enabled, the directory is excluded from scanning to avoid duplicated software discovery. When you disable the Docker scan, the directory is included back into regular scans.

If you want to re-enable the scans of Docker containers, change the value of the **DOCKER\_SCAN** parameter to true.

## Excluding directories from being scanned

Excluding some directories from scanning is useful if the directories are large and contain no information that is important to the software inventory. By excluding them, you can speed up the scanning process. Some directories are excluded from software scans by default. They must remain excluded to ensure accuracy of data. You can add or remove other directories from the list by using tasks in the BigFix console. You can also manually add them to the scanner files on particular endpoints.



**Tip:** **9.2.5** Check how long the software scan lasts on each computer. If the scan is very long, it might indicate that some of the directories on this computer can be excluded from scanning. For example, because they contain software installation images or other file repositories not related to IBM software.

To check the scan length, activate the Software Scan Status analysis, and see the Total Time column.

### Directories that are excluded by default

By default, the following directories are excluded from software scans. Ensure that you do not remove them from the list. It might lead to untested and unsupported results in BigFix Inventory.

#### AIX

```
/proc
*/tmp
*/eznim
*/unicore/lib/*
*/perl/lib/*
*/perl5/*
/usr/src/kernels/*
```



**Note:** Starting from scanner version 2.8.0.5000, the `/usr/lpp` directory is no longer excluded from software scans. It might cause that more software components are discovered by BigFix Inventory.

#### Solaris

```
/proc
*/tmp
*/eznim
*/unicore/lib/*
*/perl/lib/*
*/perl5/*
/usr/src/kernels/*
/var/spool/pkg
```

## UNIX

```

/proc
*/tmp
*/eznim
*/unicore/lib/*
*/perl/lib/*
*/perl5/*
/usr/src/kernels/*

```

## Windows

```

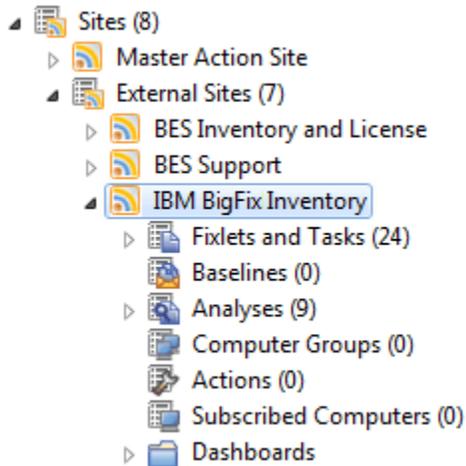
?:/System Volume Information
?:/$Recycle.Bin
?:/RECYCLER
?:/$WINDOWS.~BT/
?:/Windows/servicing/
%CSIDL_WINDOWS%/System32
%CSIDL_WINDOWS%/SysWOW64
%CSIDL_WINDOWS%/winsxs
%CSIDL_WINDOWS%/ServicePackFiles
%CSIDL_WINDOWS%/installer
%CSIDL_WINDOWS%/$NtUninstall
%CSIDL_WINDOWS%/$NtServicePackUninstall*$
%CSIDL_WINDOWS%/$hf_mig$
%CSIDL_WINDOWS%/servicing
*/Windows.old/
*/tmp
*/temp
*/cache/out-of-date
*/Temporary Internet Files
?:/ProgramData/Docker/windowsfilter/
?:/ProgramData/Package Cache
%CSIDL_WINDOWS%/SoftwareDistribution

```

Retrieving the list of directories that are excluded from being scanned

To retrieve the list of all directories that are currently excluded from scanning, activate a relevant analysis in the BigFix console.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory**, and then click **Analyses**.



3. Select the **Excluded Directories** analysis, right-click on it, and then click **Activate**. The analysis is activated and starts retrieving the list of directories.
4. To view the excluded directories, click the **Results** tab. Directories are divided according to endpoints. You can view the directories in three ways:
  - All directories printed on separate lines are listed in the **Excluded Directories** column. If an entry says `<multiple results>`, hover over it to view the complete list.
  - All directories printed on one line and separated with a semicolon (;) are listed in the **Excluded Directories (semicolon separated)** column.
  - You can also double-click on `<multiple results>` to view the summary. All directories are listed in the **Excluded Directories** entry.

Computer Name	Operating System	Excluded Directories	Excluded Directories (semicolon separated)
NC040203	Win2008R2 6.1.7600	<multiple results>	%CSIDL_WINDOWS%\\$NtServicePackUninst...
NC043019	Linux Red Hat Enterp...	<multiple results>	*/eznim;*/tmp;/proc
NC043024	Win2008R2 6.1.7600	<multiple results>	%CSIDL_WINDOWS%\\$NtServicePackUninst...
NC9128110031	Linux Red Hat Enterp...	<multiple results>	*/eznim;*/tmp;/proc;*/tomek
NC9143126242	Win2008 6.0.6002	<multiple results>	%CSIDL_WINDOWS%\\$NtServicePackUninst...

You retrieved the list of all directories that are excluded from scanning. Whenever you add or remove a directory from the list, you can use this analysis to verify if the operation succeeded.

## Excluding additional directories

You can exclude additional directories from being scanned by specifying them in the task and then running this task against the chosen endpoints. Excluding directories that do not contain any information relevant for software inventory can significantly speed up the scanning process.

Use ASCII characters to specify the names of directories that you want to exclude from scanning.

Some directories are excluded from being scanned by default. Ensure that you do not remove them from the list. It might lead to untested and unsupported results in BigFix Inventory. For the full list, see: [Directories that are excluded by default \(on page dcl\)](#)

### Using asterisks (\*) and question marks (?) to specify the additional directories that should be excluded

You can use the asterisk (\*) and question mark (?) wildcards to specify which directories to exclude from scanning. Remember about the following rules:

- Asterisks (\*) and question marks (?) should be used according to their regular rules of usage while specifying excluded directories. An asterisk (\*) might represent no characters, or a few consecutive characters. A question mark (?) represents a single character.
- The number of asterisks (\*) and question marks (?) in a single path is not limited.
- Asterisks (\*) and question marks (?) are the only wildcards that are supported. Other expressions, such as [a]\* or [a-z] are not supported, and should not be used to specify the excluded directories.

Examples of properly specified directories.

Example 1. `?:/System Volume Information`

The `System Volume Information` directory located on any partition is excluded. For example, `c:/System Volume Information` and `d:/System Volume Information`.

Example 2. `*/backup*`

Any directory on a file system that begins with `backup` is excluded. For example, `/tmp/backup` and `/home/user1/backup20170101`.

Example 3.

```
/tmp
/tmp/
/tmp/*
```

The `/tmp` directory is excluded.



**Note:** It is important to place the wildcards in the right position. The following path patterns specify different directories.

```
/tmp/*
```

Only the `/tmp` directory is excluded.

```
/tmp*
```



The `/tmp` directory, as well as any directory starting with the `tmp` string are excluded. For example, `/tmp1`, `/tmp123`, and `/tmpABC`.

`*/tmp`

Any `/tmp` directory on file system is excluded. For example, `/tmp`, `/var/tmp`, and `/home/user/test/tmp`.

#### Example 4. `*per*lib6*all`

Any directory path that contains the `per` string which is followed by a string that contains `lib6` and ends with `all`. For example, `/usr/opt/perl5/lib64/5.10.1/aix-thread-multi-64all` and `/usr/opt/perl5/lib64/site_perl/5.10.1/aix-thread-multi-64all`.

However, according to the rules, this example does not cover the following path: `/usr/opt/perl5/lib64/5.10.1/aix-thread-multi-64all2` as it does not end with the `all`.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory**, and then click **Fixlets and Tasks**.
3. Select the **Add Excluded Directories** task.
4. Specify which directories are to be excluded from scanning. If you specify a particular directory, it is excluded along with all its sub-directories. **Windows** Use only slashes (/) in the directory path.

**Excluded directories**

Use the following field to enter directories that you want to exclude from scanning. You can either enter each directory on a separate line, or separate them with a semicolon (;).

```
*/eznim
*/tmp
*/proc
?:/System Volume Information
?:/$Recycle.Bin
```

5. Click **Take Action** and select endpoints for which you want to apply the changes.

You added new entries to the list of directories that are excluded from scanning.

## Including the excluded directories back in scans

You can include a directory back in the software scan by specifying it in a task, and running this the task against the chosen endpoints.

Some directories are excluded from being scanned by default. Ensure that you do not remove them from the list. It might lead to untested and unsupported results in BigFix Inventory. For the full list, see: [Directories that are excluded by default \(on page dcl\)](#).

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory**, and then click **Fixlets and Tasks**.
3. Select the **Remove Excluded Directories** task.
4. Specify which directories are to be removed from the list of excluded directories.

**Excluded directories**

Use the following field to enter directories that you want to remove from the list of excluded directories. You can either enter each directory on a separate line, or separate them with a semicolon (;).

```
*/eznim
*/proc
?:/System Volume Information
```

5. Click **Take Action** and select endpoints for which you want to apply the changes.

You removed the entries from the list of directories that are excluded from scanning. Those directories are now scanned during the software scan.

## Manually excluding directories

After you install the scanner, you can specify which directories are to be excluded from scanning during the raw scan of the file system.

 **Important:** Use ASCII characters to specify the names of directories that you want to exclude from scanning.

You specify those directories by adding paths to the `exclude_path.txt` file that is in the `<BES Client>LMT/CIT` directory. Each path must be added on a separate line. For more information about modifying the file, see: [Excluding additional directories \(on page dclii\)](#)

The file already contains some entries depending on the operating system. You can remove the content of the file which means that no paths are excluded from the scan. However, if you delete the whole file, it will be recreated with the default content before the next software scan.

Unless you exclude specific paths, all the following drives are included in the scan:

- **UNIX** All local drives and other drives, such as floppy disk, CD-ROM, and DVD.



**Note:** Remote drives are not scanned.

- **Windows** All local drives.

Specify paths according to the following syntax:

```
drive:path
```

**!** **Important:** When you specify a path delimiter, you must use a forward slash (/) instead of a backslash (\). For example, `C:/Program Files`.

### drive

Specifies the drive. Asterisks (\*) and question marks (?) are supported. This variable is optional on UNIX.

### path

Specifies the path. Asterisks (\*) and question marks (?) are supported. This variable also supports the following CSIDL values on Windows:

```
%CSIDL_WINDOWS%
%CSIDL_PROGRAM_FILES%
%CSIDL_COMMON_DESKTOPDIRECTORY%
%CSIDL_COMMON_STARTMENU%
%CSIDL_COMMON_STARTMENU%
%CSIDL_COMMON_STARTUP%
%CSIDL_COMMON_PROGRAMS%
```

**!** **Important:** The above CSIDL values already have a drive specified. If you use them, omit the *drive* variable.

You can refer to the following examples when specifying your paths.

- Excludes the `System Volume Information` folder on any local drive:

```
?:/System Volume Information
```

- Excludes the `System32` folder on the local drive that is specified in the CSIDL value:

```
%CSIDL_WINDOWS%/System32
```

## Discovering software and hardware with disconnected scanner on Windows and UNIX

**9.2.7** Available from 9.2.7. You can discover software and hardware inventory by using disconnected scans that do not require direct connection between the scanned computers and the BigFix server. Scripts that are provided in the disconnected scanner package initiate software and capacity scans, and prepare scan results that you later on upload to BigFix Inventory.

### Disclaimer

**⊘** **Restriction:** If you use the disconnected scanner for IBM Virtualization Capacity, also referred to as subcapacity licensing, you must comply with the following rules:



- You must obtain the approval from IBM Compliance to use disconnected scans. To request for such an approval, contact your IBM Sales Representative who will instruct you on how to contact IBM Compliance.
- Disconnected scans can be applied when the BigFix client cannot be installed due to technical, legal, business, or security reasons, or in case of other valid justification.
- The disconnected scanner for IBM Virtual Capacity can be deployed only to supported and eligible operating systems.

**IBM i** The BigFix client is not available for IBM iSeries, and thus it is the only method of software and hardware discovery on these systems. Unlike on other operating systems, approval from IBM Compliance is not required to use disconnected scans on IBM i. For more information, see: [Discovering software and hardware on IBM i \(on page dclxxxviii\)](#).

Disconnected scans should be used with caution, especially when you use BigFix Inventory for subcapacity reporting. They require much more user control and manual maintenance including scanner and catalog updates, periodic transfer of data, and manual health checks to assure report correctness. The maintenance is customer responsibility because it is not automated as in case of the BigFix client.

### Disconnected scanner package

To collect the software and hardware inventory data, you need an endpoint package that consists of:

- Scanner
- Configuration files
- Scripts to run the scans and prepare the scan result package

The scripts initiate software and capacity scans, gather scan results, and adjust them to the format that is compatible with BigFix Inventory. If the scripts are not appropriate for your environment, you can edit and customize them, or create new scripts that better fit your needs.

### Scalability

You can collect data from up to 25000 disconnected endpoints on condition that the computer where the BigFix Inventory server is installed meets hardware requirements for very large environments. For more information about the requirements, see [Hardware requirements \(on page dx\)](#).

Additionally, to ensure good performance of importing the scan results, complete the following configuration.

- Run the software scan on weekly basis.
- Distribute the import of result packages over the week so that a subset of packages is imported every day. For example, import 5000 packages every day from Monday to Friday.

- Set up automatic removal of scan results from the disconnected data source directory after the results are successfully imported to BigFix Inventory. To automatically remove the packages, go to **Management > Advanced Server Settings** and set the value of the **delete\_successfully\_imported\_scans** parameter, to true.
- Configure the transaction logs size and increase the Java heap size. For more information, see: [Tuning performance in medium and large environments \(on page mcdxliv\)](#).
- **Linux** Change the **ulimit -n** value to 4096.

## Scan frequency

For information about default and minimal scan frequency as well as recommended frequency of importing scan results, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).

## Multiple environments

When you have multiple environments, for example test and production, ensure that the following requirements are met:

- Every computer reports only one of the environments.
- Results of the disconnected scan from one environment are not uploaded to BigFix Inventory that monitors the other environment.

## Limitations

- Resource utilization, and metering data are not supported. For more information, see: [Raw utilization of license metrics \(on page mclxix\)](#).
- Scanning remote shared file systems is not supported.
- Detailed hardware scan cannot be collected if you use the disconnected scan.
- The disconnected scanner always collects full scans, not delta scans.
- The directories that are excluded from software scans by default cannot be used as installation directories. To view the full list, see: [List of excluded directories \(on page dcl\)](#).
- **Solaris** The Package Data report does not provide any information in the **Description** column.
- The information provided in the Operating System column might be slightly different for the computers that are scanned by the disconnected scan, and the computers scanned by a regular scan.
- The disconnected scan does not include additional computer properties that are defined by the user. To collect these details, you need to define additional entries in the `computer.yml` file.

---

Concept

[Discovering software and hardware on IBM i \(on page dclxxxviii\)](#)

## Disconnected scanner requirements

**9.2.7** Available from 9.2.7. The list of disk space requirements, and the supported operating systems compatible with the disconnected scanner.

**Table 146. Disconnected scanner requirements**

Operating system	Supported versions	Required disk space
Windows	For information about supported versions, see: <a href="#">BigFix 9.5 - System Requirements</a> and choose BigFix Inventory 9.5 application update 9.2.16.	40 MB + disk space for the scanner cache
Linux		24 MB + disk space for the scanner cache
<b>9.2.8</b> Solaris		80 MB + disk space for the scanner cache.
<b>9.2.9</b> AIX		80 MB + disk space for the scanner cache.
<b>9.2.10</b> HP-UX		48 MB + disk space for the scanner cache.

## Adding a new data source for disconnected scans

**9.2.7** Available from 9.2.7. All scan results are imported to BigFix Inventory from a directory dedicated to disconnected scans. Add this directory as a data source to allow BigFix Inventory to check its content and import all packages that are stored within. The packages are imported during each data import.

All scan results must be manually transferred from all endpoints into the new directory that works as a data source. You can [automate this process by using NFS \(on page dxcix\)](#), or by other means that better suit your environment.

- On the computer where BigFix Inventory server is installed, create a directory with read and write access, for example:
  - **UNIX** `/disconnected`
  - **Windows** `C:\disconnected`
- Log in to BigFix Inventory, and in the top navigation bar click **Management > Data Sources**.
- Click **New**, and specify the following values:
  - Specify the name of this data source.
  - Specify the Database Type as **Disconnected**.
  - Specify the location of the directory that you created.



**Note:** The path is not validated. Ensure that you provide a correct one.

## Create Data Source

Name\*

## Database for the BigFix Server\*

Database Type\*

Location of disconnected scan results\*

Download catalog for:

[Windows](#) [AIX](#) [Linux](#) [Solaris](#) [HP-UX](#)

IBM i catalog is included in scanner package

**Create**

4. Download the catalog for the appropriate platform. It is needed for software discovery. You will copy it to your systems together with the scanner, and the configuration files.
5. Click **Create**.

[Prepare installation files for disconnected scans. \(on page dclx\)](#)

## Preparing installation files for disconnected scans

**9.2.7** Available from 9.2.7. After you add the disconnected data source, prepare the installation package and distribute it to the disconnected systems. The package should contain the scanner, software catalog and the configuration files that are used to initiate scans. You can download the catalog from the BigFix Inventory server.

Prepare the installation files for disconnected scans in a few easy steps. First, obtain the disconnected scanner package and include the software catalog in it. If needed, configure the scans by making modifications in the `setup_config.ini` file, and performing the optional optimization. Then, upload the disconnected scanner packages to endpoints.

1. To obtain the disconnected scanner package, follow one of the listed paths.
  - Go to the BigFix console and run **Download the Disconnected Scanner Package (version)** fixlet to download the disconnected scanner package.
  - The name of the disconnected scanner package follows the specific naming convention: `BFI-DisconnectedScanner-<platform>-<version>-<timestamp>`.

2. Download the software catalog.
  - a. Log in to BigFix Inventory, and go to **Management > Data Sources**.
  - b. Select your *disconnected* data source.
  - c. Download the catalog for the appropriate platform.
3. Prepare the content of the disconnected scanner directory.
  - a. Unpack the disconnected scanner package on the computer from which you intend to transfer the scanner to your endpoints.
  - b. Open the `config` directory in the unpacked package.
  - c. Place the catalog file `CIT_catalog_PLATFORM.xml` in the `config` directory.
4. Optional Perform optional configuration and optimization of the scanner.

You can configure the disconnected scan settings mainly by editing the `setup_config.ini` file that is located in the `config` directory of the unpacked package. If you upgrade the disconnected scanner, the `setup_config.ini` file is overwritten and you must configure the scheduled scans and output directory again.

- a. **9.2.17** To schedule regular software or hardware scans, edit the `setup_config.ini` file that is located in the `config` directory of the unpacked package.
  - For scheduling regular software scans configure the following parameters.
    - **SW\_SCAN\_SCHEDULE\_ENABLED** parameter enables regular software scans on the endpoint. To schedule regular software scans, set the parameter to TRUE.
    - **SW\_SCAN\_FREQUENCY** parameter allows you to configure the frequency of software scans. Set the parameter to WEEKLY or DAILY. The first software scan is initiated after you install the scanner. For more information, see: [Installing the scanner and gathering initial data \(on page dclxii\)](#). Subsequent scans will run on that time with the frequency you choose.
  - **10.0.0 Linux** The capacity scan runs regularly. However, if you want to collect the capacity data only once, set the **HW\_SCAN\_SCHEDULE\_ENABLED** parameter to FALSE. For more advanced configuration, you can edit the settings of cron on Unix, or Task Scheduler on Windows.
- b. **9.2.17** To configure the output directory for the disconnected scanner, edit the **PACKAGE\_OUTPUT\_DIR** parameter in the `setup_config.ini` file that is located in the `config` directory of the unpacked package.
  - **PACKAGE\_OUTPUT\_DIR** parameter allows you to configure the path where the scan results are stored. Provide a relative or absolute path. A base of the relative path is the installation directory of the disconnected scanner. The default path is `./output`.
- c. If any further modifications are required, customize the configuration files before distributing them to endpoints in your environment. Then, you do not need to configure each endpoint individually. You can change the default configuration; for example, limit the processor utilization, or specify the directories that need to be excluded from being scanned. For more information, see: [Troubleshooting the discovery by disconnected scanner \(on page dclxix\)](#).



**Note:** **Solaris** The `fs_config.xml` file contains the list of collected file extensions under the **FileMask** parameter. If it is required, you can narrow down this list by removing the unwanted extensions from the file. For other supported systems, the list of extensions is configured automatically based on the software catalog.

5. Upload the whole content of the disconnected scanner package to the endpoints. Do not change file names.



**Note:** After you install the scanner on endpoints, the scanner installation path cannot be changed. The installation path is a location where you upload the installation files. To change the installation path, back up the configuration files, scan results and logs. Then, uninstall the scanner, move the files to a different directory, and then install the scanner in a new location.



**Restriction:**

**Linux**

**HP-UX**

The installation path should not contain any white space characters.

**Solaris**

The installation path should be short, and should not contain any special characters or spaces.

**Windows**

The name of the directory where the installation files are copied cannot contain any special or national characters. Spaces are allowed. The entire path cannot exceed the total of 99 characters.

[Install the scanner and gather initial data. \(on page dclxii\)](#)

## Installing the scanner and gathering initial data

**9.2.7**

Available from 9.2.7. After you copied the installation files and the software catalog to the endpoints, start the installation and the initial scans.

- To perform this task, you must have the appropriate privileges.
  - **UNIX** root
  - **Windows** Administrative privileges with elevation
- If you use License Metric Tool or Tivoli® Asset Discovery for Distributed 7.x, remember that the installation of the disconnected scanner stops the 7.x agent. You need to restart the 7.x agent after the setup.

1. Go to the directory where you copied the installation files.
2. Run the setup file.

- **UNIX** `setup.sh`
- **Windows** `setup.bat`

It automatically performs the following steps:

- Activate appropriate version of the scanner for given processor type / bitness of the operating system from disconnected scanner package.
- Schedule using OS scheduler (crontab / Windows Scheduler) periodical capacity scans.
- **10.0.15** On Unix systems, it runs the initial capacity scan and creates the initial `computer.yml` file.

The initial capacity scan is needed to collect data about your system and to create the `computer.yml` file that will identify this system. The file is added to each package with scan results, and it helps to catalog and correctly display them in the user interface. It contains information about the operating system, such as the host name and a unique computer ID.



**Note:** **Linux** For older versions of Red Hat Linux on s390 mainframe, it can be required to manually provide machine type, processor type, shared pool capacity, and system active processors. The script will ask you to specify these parameters if the scanner cannot collect these details automatically.

**Solaris** For Solaris systems that run on SPARC, it is required to specify if the system is in Dynamic System Domains.

- Schedules regular capacity scans.

The capacity scan is scheduled to run every 30 minutes to gather current results for virtualized environments where the capacity can dynamically change depending on the allocated resources.

**UNIX** **Windows** If you want to collect the scan data only once, run the setup file with the `-noschedule` option.



**Note:** **10.0.0** The `-noschedule` option is not applicable on Linux systems. You can configure the `HW_SCAN_SCHEDULE_ENABLED` parameter to run a one-time capacity scan. For more information, see [Preparing installation files for disconnected scans \(on page dclx\)](#).

The scanner is set up now, and ready to run the software scan and gather results. During installation, the `endpoint_id.txt` file was created in the `config` directory. The file contains the host name and the time stamp of the first setup. The combination of these two elements becomes an endpoint identifier that can be modified by the user if needed. In case of scanner upgrade or re-installation, the existing endpoint identifier from the file will be used.

[Run the software scan and gather scan results. \(on page dclxiii\)](#)

## Running software scans and gathering scan results

**9.2.7** Available from 9.2.7. The script that is responsible for the software scan collects the results of the catalog-based, package data, and ISO tags scan, as well as retrieves results of the capacity scan and the `computer.yml` file. All these results are combined and compressed into a common `.zip` or `tag.gz` package that can be imported to BigFix Inventory.

- Make sure that you have the appropriate privileges to perform this task.
  - **UNIX** root
  - **Windows** Administrative privileges with elevation
- Each time you update the software catalog in BigFix Inventory, run an import of data or wait for the scheduled import. Next download the newest version of software catalog to an endpoint to run the software scan on it. For more information, see: [Downloading the software catalog \(on page dclx\)](#).

Additional information:

- The scan takes around 30 minutes. The exact time depends on the computer load, file system size, and the CPU threshold if you set it.
- For information about default and minimal scan frequency, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).
- By default, no limit is set on the processor usage during the scan. To limit processor usage, set the CPU threshold. For more information, see: [Optimizing the processor utilization \(on page dclxix\)](#).

1. Go to the directory where you uploaded the disconnected scan package.
2. Run the following script to initiate the scan:

- **UNIX** `run_sw_and_pack.sh`
- **Windows** `run_sw_and_pack.bat`

A compressed package with scan results was created in the output directory. It contains capacity scan results since the date when the last package was generated. The uncompressed scan results are deleted from their original location to ensure that they are not included in any future packages.

## Managing computer properties in the `computer.yml` file

**10.0.15** Starting from BigFix Inventory version 10.0.15, the `computer.yml` file is recreated during every capacity scan to ensure that changes in IP addresses or host names are captured.

Computer properties that are being updated in the `computer.yml` file while running `run_sw_and_pack.bat` or `run_sw_and_pack.sh` files are: Agent Version, Catalog Version, Computer Name, Operating System, DNS Name, IP Address (and Endpoint ID if the previously generated `config/endpoint_id.txt` file does not exist).

Below are different scenarios that explain how the script handles custom computer properties that you can add in the `computer.yml` file:

### 1. On Unix

To allow the custom computer properties to be included in the `computer.yml` file, add the properties manually to the `computer.yml` file. Custom computer properties are not affected by running the `run_sw_and_pack.sh` file. Other default computer properties are updated every time the script is run.

### 2. On Windows

To allow the custom computer properties to be included in the `computer.yml` file, add the properties manually to the `config/computer_custom_properties.yml` file. In the Windows Disconnected Scanner Package, an empty `config/computer_custom_properties.yml` file exists by default. The Disconnected Scanner does not consider the empty file when the `run_sw_and_pack.bat` script is run. If you add custom computer properties to the `config/computer_custom_properties.yml` file, all computer properties added to the file are added at the bottom of the `computer.yml` file while running the `run_sw_and_pack.bat` file.

The properties Endpoint ID, Agent Version, Catalog Version, Computer Name, Operating System, DNS Name, and IP Address are listed at the top of the `computer.yml` file, and these properties are updated every time the script is run. The custom properties from the `config/computer_custom_properties.yml` file are added at the bottom of the `computer.yml` file.

Sample content of the `computer_custom_properties.yml` file:

```
My property 1: XYZ1
My property 2: XYZ2
111.222.555.666
My property 3: XYZ3
```

Sample content of the `computer.yml` file, where custom properties from `computer_custom_properties.yml` are added at the bottom:

```
endpointID: XXXXXXXX-1111111111
Agent Version: windows 10.0.15.0-20231031-0839
Catalog Version: 2600000.0
Computer Name: XXXXXXXX
Operating System: Windows 10
DNS Name: XXXXXXXX
XXXXXXXX
IP Address: 111.111.1.11
22.222.222.222
My property 1: XYZ1
My property 2: XYZ2
111.222.555.666
My property 3: XYZ3
```

## Importing scan results to BigFix Inventory

**9.2.7** Available from 9.2.7. To import new scan results to BigFix Inventory, copy the package to the disconnected scans directory that you added as a data source.

- For information about recommended frequency of importing scan results, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).
  - If you upload a package with older results, the current ones are overwritten.
  - Discovered software is reported with the import time, not the package time stamp.
  - Import only one package per endpoint. Otherwise, capacity results might be skipped.
  - Processed packages are not removed from your disconnected scans directory. The ones already imported are skipped.
1. Go to the directory where you uploaded the disconnected scan package. Ensure that a result package was created in the `output` directory after the software scan.  
The package name uses the `<UTC_DATE>-<hostname>.<extension>` pattern. It contains the following files:
    - **UNIX** `capacity.tar.gz, catalog_scan.xml, computer.yml, isotag_scan.tar.gz, package_scan.xml, source.tar.gz, file_scan.xml`
    - **Windows** `capacity.zip, catalog_scan.xml, computer.yml, isotag_scan.zip, package_scan.xml, source.zip, file_scan.xml`
  2. Copy the package into the disconnected scans directory that you added as a data source in BigFix Inventory.
  3. Wait for the scheduled import or run it manually.

During the data import, BigFix Inventory checks the directory that you added as a data source and imports scan packages that meet the requirements. Scan results are processed and displayed on the reports in the user interface.

Files from processed packages are saved in the `installation_directory/wlp/usr/servers/server1/tmp/datasources/Datasource_ID` directory.

The processed packages are stored in the directory specified in the data source configuration. The packages are not automatically removed. It is recommended to create the audit snapshot once a quarter. Then, back up the packages in a different directory, and remove them from the directory specified in the data source configuration.

## Disconnected scanner maintenance and troubleshooting

**9.2.7** Available from 9.2.7. You can use the maintenance and troubleshooting tasks to monitor the scan progress, optimize the processor usage during the scan, understand and fix the most common issues, or learn more about the log files.

## Updating the scanner and the scripts

**9.2.7** Available from 9.2.7. Both the scanner and the scripts are updated on a regular basis to introduce improvements and new functions. To update the scanner, once again download all the required files, and copy them into the directory where the previous version is already located.

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Download the Disconnected Scanner Package (version)**.

4. To run the task, click **Take Action**. Choose the disconnected scanner package for the appropriate platform from the drop-down menu.
5. **Optional:** If you made any changes to the software scan configuration files `sw_config.xml`, `fs_config.xml`, or `isotag_config.xml`, make sure that you back up the files before you extract the package. These files are overwritten.
6. Extract the contents to the disconnected scanner directory.
7. **Optional:** If you recently updated the software catalog in BigFix Inventory, update it also on the system with the disconnected scanner.
  - a. To download the software catalog for disconnected scanner, log in to BigFix Inventory and navigate to **Management > Data Source**. Choose the disconnected data source, and download the catalog for the appropriate platform.
  - b. Place the catalog in the `config` directory of the disconnected scanner package that you downloaded through fixlet.



**Note:** The catalog is available for download after uploading the main software catalog and running a data import.

8. **Optional:** If you made any changes to the software scan configuration files: `sw_config.xml`, `fs_config.xml` or `isotag_config.xml`, modify the new file versions to reflect the changes. Look at the back up files that you created in step 5, and rewrite the changes to modify the new files. Do not copy the old back up files as they might differ between the versions.
9. Run the setup file.
  - `UNIX` `setup.sh`
  - `Windows` `setup.bat`

## Decommissioning computers with disconnected scanners

**9.2.7** Available from 9.2.7. When you decommission a computer that is no longer in use, you can mark it as decommissioned on the Computers report, so that it is not displayed in BigFix Inventory.



You must have the Manage Computer groups permissions to use this API.

1. In the top navigation bar, click **Reports > Computers**.
2. Click the computer name.
3. Click **Decommission computer**.

Decommission computer

Software on NC047118

3 Software Installations including IBM TCP/IP Connectivity Utilities for i, IBM i, and IBM HTTP Server for i

Computer Properties

DNS Name	Last Seen
NC047118	08/18/2016 05:34 PM
IP Address	Latest Scan Import
9.156.47.118	09/05/2016 01:24 PM
Operating System	
IBM i V7R3M0 PowerPC 64	

After you decommission the computer, this computer does not show up on the current reports. You can still manage the software on the Software Classification panel, but it is marked as uninstalled. The software is still displayed on the All Metrics report.

## Uninstalling the disconnected scanner

**9.2.7** Available from 9.2.7. If you no longer need the disconnected scanner to scan the computer, you can uninstall it from any endpoint.

1. Open the directory where the disconnected scanner is installed.
2. Create a back up of `endpoint_id.txt` file that is located in `config` directory. This file will be required to install disconnected scanner on the endpoint again in the future.
3. Run the following script.
  - **UNIX** `./uninstall.sh`
  - **Windows** `uninstall.bat`
4. Remove the whole directory where the disconnected scanner was installed.

The scanner is successfully uninstalled, the data is no longer collected and all software and hardware scans stop.

## Understanding the Deployment Health and Software Scan Health

**9.2.7** Available from 9.2.7. Deployment Health and Software Scan Health contain information about your clients and the scans that were initiated. You can view this information on the Deployment Health, and Software Scan Health widgets on the dashboard, or on the Computers report. Deployment Health excludes all the disconnected datasource endpoints. To properly understand values that are displayed for systems scanned with disconnected scans, see the explanation of particular columns on the Computers report.

**Table 147. Explanation of Deployment Health and Software Scan Health information for systems with disconnected scans**

Column Name	Description
Has Outdated Version	Always shows <code>No</code> .
Has Low Disk Space	Always shows <code>No</code> .
Is Out of Sync	Always shows <code>No</code> .
Has Missing Prerequisites	Always shows <code>No</code> .
Agent Version	Taken from the <b>Agent Version</b> property in the <code>computer.yml</code> file.
Catalog Scan Successful	Shows <code>Yes</code> if the imported package contains the <code>catalog_scan.xml</code> file.

**Table 147. Explanation of Deployment Health and Software Scan Health information for systems with disconnected scans**

(continued)

Column Name	Description
Software Tags Scan Successful	Shows <code>yes</code> if the imported package contains the <code>isotag_scan</code> package.
File System Scan Successful	Shows <code>yes</code> if the imported package contains the <code>file_scan.xml</code> file.
Package Scan Successful	Shows <code>yes</code> if the imported package contains the <code>package_scan.xml</code> file.
Catalog Version	Taken from the <b>Catalog Version</b> property in the <code>computer.yml</code> file.
Endpoint Scanner Catalog Version	Taken from the <b>Catalog Version</b> property in the <code>computer.yml</code> file. It displays only the second part of the whole catalog version, for example <code>1250110.1</code> .
Last Scan Attempt	Taken from the timestamp used in the final package name.
Scanning Shared Disks	Always shows <code>no</code> .
Mounted Shared Disks	Always shows <code>no</code> .

## Troubleshooting the discovery by disconnected scanner

**9.2.7** Available from 9.2.7. The troubleshooting section lists the most common issues you might encounter while discovering software and hardware inventory with the disconnected scanner. The main objective of troubleshooting is to determine why something does not work as expected and explain how to resolve the problem.

### Log files

Scanner log files are in the following directory:

**UNIX** `Installation directory/logs`

**Windows** `Installation directory\logs`

### Optimizing the processor utilization

By default, processor utilization is not limited during the scan. You can optimize it by setting up the CPU threshold. Setting the threshold might lengthen the time of the scan.



**Note:** Setting the threshold does not guarantee that the CPU consumption is always below the specified value. It fluctuates around that value, sometimes exceeding it and sometimes dropping below it. Temporary peaks are expected. Setting the threshold might lengthen the time of the scan.

1. Edit the configuration file or files that you downloaded with the scanner: `sw_config.xml`, `fs_config.xml`, `isotag_config.xml`.
2. Add new **cpuThreshold** attributes in the appropriate file.
  - For *FSScanner* add a corresponding parameter in the following files: `sw_config.xml`, `fs_config.xml`, `isotag_config.xml`
  - For *Signatures* add a corresponding parameter in the `sw_config.xml` file.

For example:

- `sw_config.xml`

```
<CIT>
<XSE version="1.0">
<Plugins>
<Plugin name="FSScanner">
(...)
<Attribute name="cpuThreshold" value="20:2:150:850"/>
<Attribute name="maxQueryTime" value="43200"/>
<Attribute name="interruptOnTimeout" value="true"/>
<Attribute name="assumeAutoFS" value="remote"/>
(...)
</Plugin>
</Plugins>
<Signatures>
<Attribute name="cpuThreshold" value="20:2:150:850"/>
(...)
</Signatures>
</XSE>
</CIT>
</IBM>
```

- `fs_config.xml` OR `isotag_config.xml`

```
<IBM>
<CIT>
<FSScan version="1.0">
(...)
<Provider value="provider_cache"/>
<AssumeAutoFS value="remote"/>
<CpuThreshold value="20:2:150:850"/>
</FSScan>
```

```
</CIT>
</IBM>
```

3. Specify one of the following values:

Desired utilization	Value
5%	10:2:50:950
10%	20:2:100:900
15%	20:2:150:850
20%	30:2:200:800
25%	30:2:250:750
50%	50:2:300:500

4. Save the file.

## Excluding directories from being scanned

You can exclude directories from being scanned. To do this, edit all configurations files: `sw_config.xml`, `fs_config.xml`, `isotag_config.xml`, and specify the directories as values of the `excludeDirectory` attributes.

- To exclude the `/tmp` directory:

```
in sw_config.xml: <Attribute name="excludeDirectory" value="/tmp/" />
```

```
in fs_config.xml and isotag_config.xml: <ExcludeDirectory value="/tmp/">
```

- To exclude all directories named `tmp`, for example `/tmp` and `/dir/tmp`:

```
in sw_config.xml: <Attribute name="excludeDirectory" value="*/tmp/" />
```

```
in fs_config.xml and isotag_config.xml: <ExcludeDirectory value="*/tmp/">
```

## Common problems

### The package is being skipped during the import despite meeting the requirements

Such a problem might occur if you are importing more than one package from an endpoint. BigFix Inventory always imports the latest package and omits all previous ones. The following message about skipping the package is related to irrelevant packages and can be ignored:

```
2015-11-05 09:35:22 WARN: Skipping file: package_scan.xml from: 201510101200-2inarow.zip.
The data was already processed.
2015-11-05 09:35:22 INFO: Skipping file: package_scan.xml.
Unsupported file in: 201510101200-2inarow.zip.
```

### The detected software is duplicated in BigFix Inventory after reinstalling disconnected scanner

If you uninstall the disconnected scanner and remove its directory from a computer, and then reinstall the disconnected scanner, the endpoint ID of this computer is changed. As a result, the software

inventory is duplicated in BigFix Inventory. To avoid duplication after you reinstall the disconnected scanner, perform the following actions.

1. Go to `config` directory, and substitute the `endpoint_id.txt` file with the backup file you created before uninstallation. For more information, see: [Uninstalling the disconnected scanner \(on page dclxviii\)](#). Changing the endpoint ID allows you to keep the historical data, and collect the new data for this endpoint.
2. Check the DNS and IP address of the endpoint.
3. Log in to BigFix Inventory.
4. Navigate to **Reports > Computers**.
5. To identify the duplicated computer, add the following columns to the report DNS Name, IP Address and Computer First Seen.
6. Compare the two computers with the same DNS Name and IP Address, and find the one that was first seen more recently.
7. Decommission this computer. For more information, see: [Decommissioning computers with disconnected scanners \(on page dclxvii\)](#).
8. Wait for the scheduled import or run it manually.

### The host name of an endpoint provided by the disconnected scanner is different than expected

The host name that is provided by the disconnected scanner and a regular scanner can be different. The regular scanner uses the host name that is provided by BigFix, while the disconnected scanner checks the host name by running the `hostname` command, or, if not available, through the scanner check.

### Installation of the scanner and the capacity scan are slow on AIX

It happens when the host name cannot be resolved. To solve the problem, add the host name to DNS or to the `/etc/hosts` file. The default configuration of the name resolver on AIX first looks for the host name in the DNS then in the `/etc/hosts` file. If you add the host name to the hosts file, you might also need to make changes in the `/etc/netsvc.conf` file and restart the system.

## Monitoring the import log

When you import a package with scan results to BigFix Inventory, the import log (**Management > Data Imports**) displays information and warning messages related to your package. If the package or its content does not meet the requirements, it might be skipped during the import, and the scan results will not be displayed in BigFix Inventory.

While monitoring the import log, you can expect the following messages:

```
info: Processing scan package: package from: directory.
info: Invalid file name. The scan package must match the pattern YYYYMMDDHHMM-*.zip. Skipping package:
package.
info: Invalid Catalog Version property in the computer.yml file: version. The property must match the pattern
<Number>.<Number>. The catalog might be reported as outdated.
warn: The disconnected scans location does not exist: directory.
warn: Invalid file name. The scan date must be later than year 2000. Skipping package: package.
```

```
warn: Skipping corrupted scan package: package. The following error occurred: error.
warn: Missing computer.yml file. Skipping package: package.
warn: Missing property: property in the computer.yml file. Skipping package: package.
warn: Invalid computer.yml file. Skipping package: package. The following error occurred: error.
warn: The value of the endpointID property in the computer.yml file is longer than 512 characters. Skipping
package: package.
warn: The value of the endpointID property in the computer.yml file is empty. Skipping package: package.
warn: Missing property: endpointID in the computer.yml file. Skipping package: package.
warn: Importing older scan package from: date for computer: computer_id. This computer already has data from:
date.
warn: The file is larger than 2097150 bytes. Skipping file: scan_file from: package for computer:
computer_id.
warn: The following error occurred when processing the package_scan.xml file: error.
warn: The insertion of the operating_system package data into the database failed on record content. The
following error occurred: error.
```

## Scheduling imports of data

BigFix clients report data to the BigFix server that stores the data in its file system or database. BigFix Inventory server connects to the BigFix server and its database, downloads the stored data, and processes it. This process is called an import or Extract, Transform, Load (ETL). By default, the import runs once a day at midnight. You can schedule it for a period that is most suitable for your environment considering its size and specification.



You must have the Manage Imports permission to perform this task.

The import of data is an Extract, Transform, Load (ETL) process.

- During the Extract stage, data is extracted from the BigFix server. It includes information about the infrastructure, installed clients, and detected software. ETL also checks whether a new software catalog is available, gathers information about the software scan and files that are present on the computers. It also collects data from VM managers.
- During the Transform stage, the extracted data is transformed to a single format that can be loaded to the BigFix Inventory database. This stage also involves matching scan data with the software catalog, calculating processor value units (PVUs), processing the capacity scan, and converting information that is contained in the XML files.
- During the Load stage, the data that was extracted and transformed is loaded into the BigFix Inventory database and can be used by BigFix Inventory.

1. In the navigation bar, click **Management > Data Imports**.
2. To schedule regular imports, select **Enabled**, specify the number of daily imports and their hours, and click **Save**.

### Import Settings

Enabled

Imports per day  *(times specified in UTC +05:30)*

Send failed data and catalog import notifications

Email\*

Separate multiple recipients with a comma.

Language\*

Information about data imports and their status is displayed in the import history.

Import History					
Status	Start Time	User Name	Duration	Download	
✓	12/04/2020 05:31 AM	Scheduled	00:09:07	↓	Start Time: 12/04/2020 05:31 AM Status: Successful Duration: 0:09:07  <b>Import Log</b> The last megabyte of data from the import log:
✓	12/03/2020 05:31 AM	Scheduled	00:07:52	↓	
✓	12/02/2020 05:30 AM	Scheduled	00:09:52	↓	
✓	12/01/2020 05:30 AM	Scheduled	00:08:23	↓	
✗	11/30/2020 01:38 PM	admin	00:00:00	↓	
✓	11/28/2020 08:53 AM	admin	00:36:57	↓	



**Note:** An error may appear during data import. Wait for few seconds or refresh the page to allow the application to get back to its previous state.

```
We're sorry, the application is not accessible. (503)
An import is finalizing. Refresh the page to see the new data.
```

**We're sorry, the application is not accessible. (503)**

An import is finalizing. Refresh the page to see the new data.

If you want to quickly discover recent changes to software inventory without having to wait for the complete data import, you can schedule imports of raw data. Such imports are much quicker but the imported data is not visible in the user interface. It can be retrieved only by using REST API. For more information, see: [Importing raw scan data \(on page dclxxv\)](#).

**9.2.11** If the imports of data are failing, you can enable partial imports. For more information, see: [Enabling partial imports \(on page dclxxvi\)](#).

## Importing raw scan data

**9.2.2** Available from 9.2.2. You can schedule an import of raw scan data. Such an import is much quicker, because it only imports raw scan results, and omits successive steps, such as aggregation and license calculations. The imported raw data, however, is not updated in the user interface, and can only be retrieved by using REST API. This type of import is used to quickly discover recent changes to software inventory without having to wait for the complete data import.

- The Raw Data Only import does not replace the complete data import, which must be run regularly to process and aggregate the data.
- The Raw Data Only import can be run only as a scheduled import. When you click **Import Now**, you always run a complete data import.
- To run the Raw Data Only import only once, use REST API. For more information, see: [Running data imports \(on page mdcxviii\)](#).

1. To enable this feature, go to <https://hostname:port/management/feature>, and select **Enable the Raw Data Only import mode**.
2. In the navigation bar, click **Management > Data Imports**.
3. To schedule regular imports, select **Enabled**, and specify the number of daily imports and their hours.
4. Select **Raw Data Only** next to each import that you want to use for importing raw scan results.

## Import Settings

Enabled

Imports per day  (times specified in UTC +01:00)

06:00AM  Raw Data Only

02:00PM  Raw Data Only

04:00PM  Raw Data Only

5. Click **Save**.

Information about completed data imports is displayed in the import history. Each entry has an icon that indicates the type of the import, either *Complete* or *Raw Data Only*.

Status	Type	Start Time	User Name	Duration	Download
✓		09/08/2015 07:3...	Administrator	1:27:29	
✓		09/08/2015 02:1...	Scheduled	0:00:22	

When the Raw Data Only import finishes, retrieve the imported raw data by using REST API. For more information, see [REST API for retrieving raw scan results \(on page mdcxvii\)](#).

## Enabling partial imports

**9.2.11** Available from 9.2.11. If the imports of data are failing, you can enable partial imports. Such imports process all steps and continue even if steps that are not crucial for the operation of BigFix Inventory fail. These imports allow for avoiding accumulation of scan data during the period when you troubleshoot the problem.

1. In the navigation bar, go to **Management > Advanced Server Settings**.
2. Change the value of the **enable\_partial\_imports** parameter to true.

Information about data imports and their status is displayed in the import history. Partial imports are indicated by a warning sign.

Import History					
Status	Start Time	User Name	Duration	Download	
	02/15/2018 10:16 AM	Administrator	00:05:47		
✓	02/15/2018 12:00 AM	Scheduled	00:01:50		
✓	02/14/2018 01:59 PM	Administrator	00:45:09		
	02/14/2018 11:43 AM	Administrator	00:00:00		

Partial imports might fail if any of the steps that are crucial for the operation of BigFix Inventory is disrupted, for example, if the database connection does not work. The imports that fail are displayed in red in the import history.

After the problem is solved, and imports complete successfully, disable partial imports.

## Notifications that are sent when imports of data and catalogs fail

BigFix Inventory sends notifications about failed data and catalog imports in the **To Do List**. It also sends you email notifications for failed imports if you chose to receive email notifications.

### To Do List

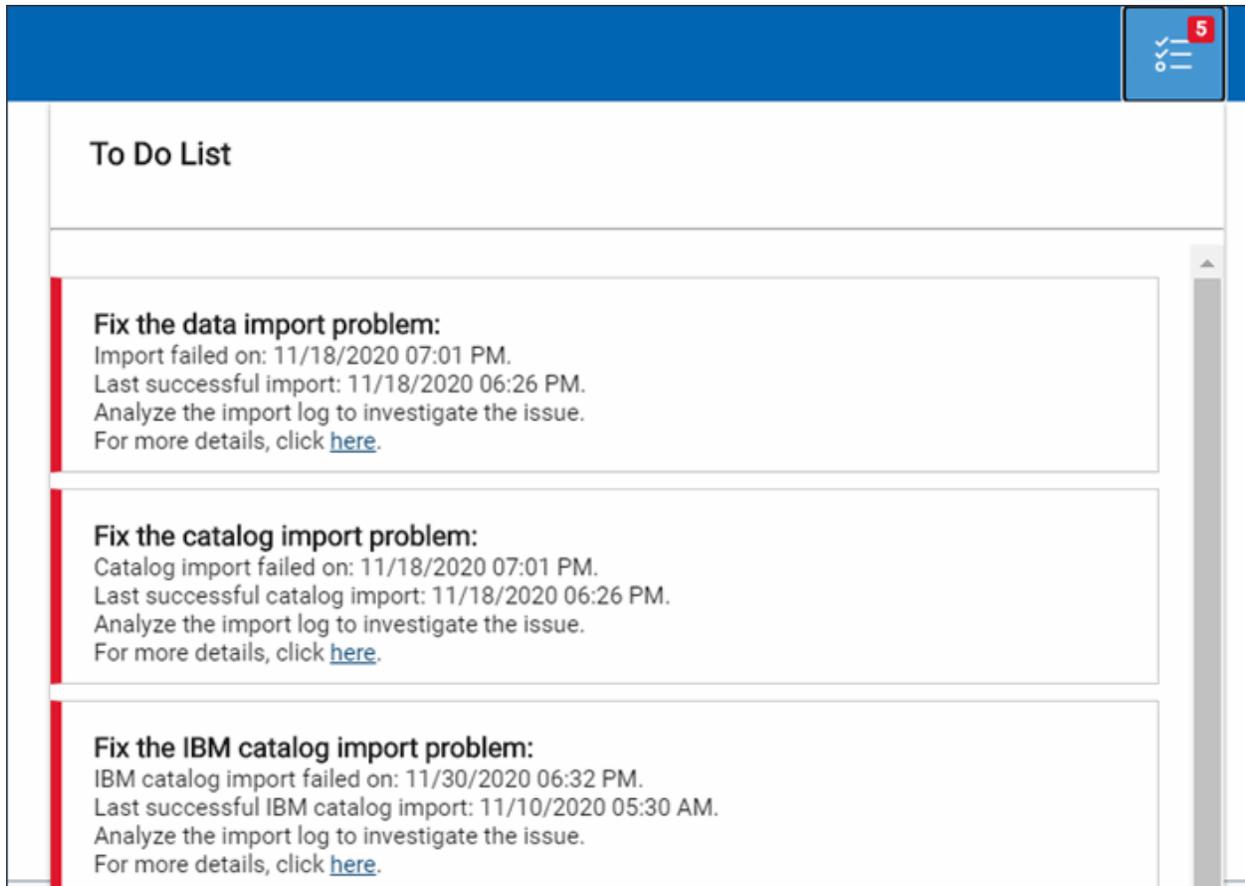
The **To Do List** shows notifications about the following events:

- **9.2.13 Failed import of data** shows the date and time when the data import failed and the date and time of the last successful import.
- **10.0.3 Failed catalog import** shows the date and time when the catalog import failed and the date and time of the last successful import.
- **10.0.3 Failed IBM catalog import** shows the date and time when the IBM catalog import failed and the date and time of the last successful catalog import.

The date and time show the start time of the import (the time when the import was initiated). The time shown in the **To Do List** is the user's local time. The notification also provides a link so that you can analyze the issue.

The **To Do List** does not show notifications for incomplete and interrupted imports. It also does not show notification about imports that are successfully generated but shows errors in the error log.

The **To Do List** notification is shown in the following format:



**To Do List**

**Fix the data import problem:**  
 Import failed on: 11/18/2020 07:01 PM.  
 Last successful import: 11/18/2020 06:26 PM.  
 Analyze the import log to investigate the issue.  
 For more details, click [here](#).

**Fix the catalog import problem:**  
 Catalog import failed on: 11/18/2020 07:01 PM.  
 Last successful catalog import: 11/18/2020 06:26 PM.  
 Analyze the import log to investigate the issue.  
 For more details, click [here](#).

**Fix the IBM catalog import problem:**  
 IBM catalog import failed on: 11/30/2020 06:32 PM.  
 Last successful IBM catalog import: 11/10/2020 05:30 AM.  
 Analyze the import log to investigate the issue.  
 For more details, click [here](#).

### 10.0.3 Email notifications

You can enable email notifications if you chose to receive such notifications. If you enable email notifications, the user receives emails for failed events, such as failed data import, failed catalog import, and failed IBM catalog import. The date and time included in the email is in UTC. The email notification option is disabled by default. Failed import email notification settings are available to all users who have access to data imports.



**Note:** You must have Manage Data Import permission to set up email notification. For information about how to configure a SMTP server or Mail Setting, refer to [Configuring the server to send mail notifications](#).

To set email notification, perform these steps:

1. Click **Management > Data Imports**.
2. Select **Send failed data and catalog import notifications** checkbox.
3. In the **Email** field, enter an email address.
4. In the **Language** field, select a language.

5. Click **Save** to save the configuration.

## Management: Data Imports

### Import Settings

Enabled

Imports per day  *(times specified in UTC +05:30)*

Send failed data and catalog import notifications

Email\*

Separate multiple recipients with a comma.

Language\*

The user receives email notifications in the following format:



**Note:**

If you do not receive email notifications for failed imports, check the import log and `mail_error.log`. The **To Do** list might not show notifications, but an email is sent to the user in some cases, as follows:

- The initial import failure
- When only the HCL charge units import fails, but other parts of HCL catalog import succeeded

## Creating capacity configuration for Linux on z Systems

To properly calculate subcapacity values for products that are installed on Linux on z Systems, create capacity configuration for such computers. First, run a fixlet that creates a file with manually entered capacity values and

places it on the target computer. Then, run regular software and capacity scans to discover the installed software and calculate its license metric utilization.



**Note:** Automatic capacity configuration is supported on Linux on z/KVM and on System z10 starting from model E64 (type 2097) mainframes with z/VM 6.3 and later that supports the Store Hypervisor Information (STHYI) instruction. If the automatic capacity configuration is supported, you do not have to perform any manual actions to calculate the capacity values.

The **Create Capacity Configuration for Linux on z Systems** fixlet is relevant on all computers where manual configuration is required. It is not relevant on computers where automatic capacity configuration is supported. If the fixlet is not relevant, you do not have to perform any manual actions to calculate the capacity values.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Create Capacity Configuration for Linux on z Systems** and specify the following values:
  - Machine Type
  - Processor Type
  - Shared Pool Capacity
  - System Active Processors
4. To run the task, click **Take Action**.
5. Select computers for which you want to create the capacity configuration, and click **OK**.

The fixlet is relevant only on computers on which creating the manual configuration is required.

You created capacity configuration that will be used to calculate subcapacity values. If you want to edit or delete the capacity configuration, use the **Edit Capacity Configuration for Linux on z Systems** or **Delete Capacity Configuration for Linux on z Systems** task.

To discover software that installed on the computers and calculate its license metric utilization, schedule regular software and capacity scans. For more information, see: [Initiating software scans \(on page dcx\)](#), and [Initiating the capacity scan on all computers \(on page dcxix\)](#).

## Setting the DSD mode on Solaris

If a computer runs the Solaris operating system and is in the DSD domain, set the DSD mode to ensure that metric utilization is correctly calculated for software that is installed on this computer. If you do not set the DSD mode, Solaris machines in DSD might not be properly identified and metric utilization might be underestimated.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Set DSD Mode** and then in the lower pane, click **Take Action**.
4. Select computers for which you want to set the DSD mode, and click **OK**.
5. **Optional:** If you want to remove the DSD mode, use the **Unset DSD Mode** task.

## Advanced Scanner Configuration Option

BigFix Inventory supports following configuration options for Scanner:

- [Configuring Scan Cache \(on page dclxxxi\)](#)
- [Changing Scanner Cache Folder \(on page dclxxxiii\)](#)
- [Configuring Scanner Query Timeout \(on page dclxxxiii\)](#)

The options are available as dedicated fixlets in BigFix Inventory site. To access the options, navigate to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**. You do not need to change the settings. The product is pre-configured with optimal settings.

### Configuring Scan Cache

This task allows you to configure file system scan cache. By default, the cache is enabled and is cleared after every scan. The cache is shared by different scan types. Disabling the cache impacts scan performance. The task is applicable only on computers where the scanner is installed.

To resolve issues with disk space, change the location of the cache folder to Fixlet Change Scanner Cache folder. To check the current scanner cache settings, activate the Scanner Information analysis.

### Available configuration options

#### File system cache settings

There are two options available:

1. Invalidate cache after 24 hours – cache is preserved after scan and can be used with next BigFix Inventory scan within 24 hours
2. Empty cache after every scan – cache is removed at the end of the scan

### 10.0.8 Use experimental CIT Scanner Cache3

From version 10.0.8, Cache 3, a new mechanism for caching information has been introduced. CIT Scanner Cache3 is optimized for lower CPU and memory footprint compared to default Cache2. It is recommended to use Cache3 on computers that experience scanning problems.

#### Cache 3 features

- Cache optimization is supported on Windows, Linux and AIX.
- Use CIT Scanner Cache3 if supported.
- Cache3 is not yet supported on shared disk. Cache2 is used for remote disk scan.

- Cache3 does not support the CPU threshold setting through Initiate Software Scan fixlet. The threshold is not considered and the scan uses 1 core without self-limiting its use.
- Status of Cache3 enablement can be checked through Scanner Information Analysis: Property: Cache Optimization: adjusted to report ENABLED when Cache3 in use and property Cache3 State: ENABLED / DISABLED. Enabled when cache3 is activated and CIT Scanner in version 9.2.26.0000 or higher.

### Cache 3 limitations

Functionalities not yet supported:

1. Wildcard values, such as (\*) (?) for "includeDirectory" are not supported.
2. \$local, \$remote and \$all media types are not supported and are not considered. These parameters are considered as local.
3. Short Windows file names are not supported.
4. UTF-8 encoding in file names is not supported.
5. Timeout setting is not supported.
6. File checksums and attributes other than file size are not cached.
7. Cache is not rebuilt when a scan configuration changes. For example, when the catalog or a list of exclude directories or extensionToCache values changes. Perform cache reset using wscanfs -reset for the cache to be rebuilt after subsequent scan.

### Changes

**10.0.8** The option to 'disable cache' is discontinued.

**10.0.8** The option to 'optimize the scanner cache' is discontinued.

To set the scanner optimization, either upgrade the scanner using fixlet provided in BigFix Inventory version 10.0.8 or manually change the Computer Setting CIT\_Scan\_Provider to `provider_cache2`.

#### **9.2.4** Optimize the scanner cache

Cache 2 was introduced in BigFix Inventory Scanner and from version **9.2.6** the option also optimizes remote shared file systems.

 **Important:** Starting from application update 9.2.6, new installations have the optimization enabled. Scanner cache settings is not changed until version 10.0.8.

### Storage of configuration of Cache

Handling of cache is controlled per endpoint using computer settings:

- **CIT\_Empty\_Cache\_After\_Scan** - when set to true then cache is removed at the end of scan. Otherwise is kept.
- **CIT\_Scan\_Provider** – overrides default in action for type of cache to be used. Recommended value:  
**provider\_cache2**

To enable cache optimization without upgrading the Scanner on a particular computer, perform these steps:

1. Log in to BigFix Console.
2. Navigate to **Computer Management > Computers** and select the computer.
3. Check the value of the **CIT\_Scan\_Provider** parameter.

**Result:**

- If the value is `provider_cache`, the optimization is not enabled.
- If the value is `provider_cache2`, the optimization is enabled.
- If the value is `provider_cache3 [10.0.8 CIT Scanner 9.2.26]`, the optimization is enabled.

When you enable the scan optimization (cache2), the cache that is created during the software scan includes only files that are relevant for the types of software scans that you are running. The size of the cache is reduced.

## Changing Scanner Cache Folder

**9.2.2** The scanner cache folder is used to store information about scanned files and directories in your file system. The scanner locates the cache folder using the file hierarchy which results in quick scans. The amount of disk space that is needed for the cache depends on the number of files that are being scanned. If the current cache folder does not have sufficient disk space, you can change the location of the cache folder or optimize the cache.

Change the default location of the scanner cache folder.

1. Log in to the BigFix console.
2. Navigate to, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Change Scanner Cache Folder**.
4. Provide an absolute path to the new cache folder, or restore the default folder, `scanner_install_dir/cache_data`.
5. Click **Take Action**.
6. Select computers on which you want to change the scanner cache folder.
7. Click **OK**.

After you change the cache folder or restore the default, all current cache is removed. A new cache is created after you run the software scan. To check the current cache folder, see the results of the Scanner Information analysis.

## Configuring Scanner Query Timeout

This task changes the default timeout for queries run by scanner used in the Initiate Software Scan task.

If scanner query timeout issue occurs, increase the default timeout value (43200 seconds - 12 hours). Timeout problems are indicated by the return code 29 that is logged in the result page of the Software Scan Status analysis. The problem occurs on a slow computer or when a low CPU threshold is set.

The change in settings does not limit total scan duration. It limit the execution time of one query, for example, evaluation of one signature in Catalog-based scan and complete file system scan.

Scan timeout is defined in seconds.

## Optimizing scanner cache configuration

The scanner cache folder is used to store information about scanned files and directories in your file system. By knowing the hierarchy of files, the scanner can locate them quicker, which results in shorter scans. The amount of disk space that is needed for the cache depends on the number of files that are being scanned. If the current location of the cache folder cannot ensure sufficient disk space, you can change the location of the cache folder or optimize the cache.

### 9.2.2 Change the default location of the scanner cache folder.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Change Scanner Cache Folder**.
4. Enter an absolute path to the new cache folder, or restore the default `scanner_install_dir/cache_data` folder.
5. Click **Take Action**, and select computers on which you want to change the scanner cache folder. Then, click **OK**.

After you change the cache folder or restore the default one, all current cache is removed. The new cache is created after you run the software scan. To check the current cache folder, see the results of the Scanner Information analysis.

**9.2.4 Optimize the scanner cache. This option is recommended for infrastructures with a large number of files that need to be scanned. Optimization of the cache allows for reducing its size and shortening the time of the scan. The option also optimizes remote shared file systems.**

 **Important:** Starting from application update 9.2.6, fresh installations have the optimization enabled. However, scanner cache settings are not changed if you are upgrading. To check whether scan optimization is enabled on a particular computer, perform [these \(on page dclxxxiii\)](#) steps.

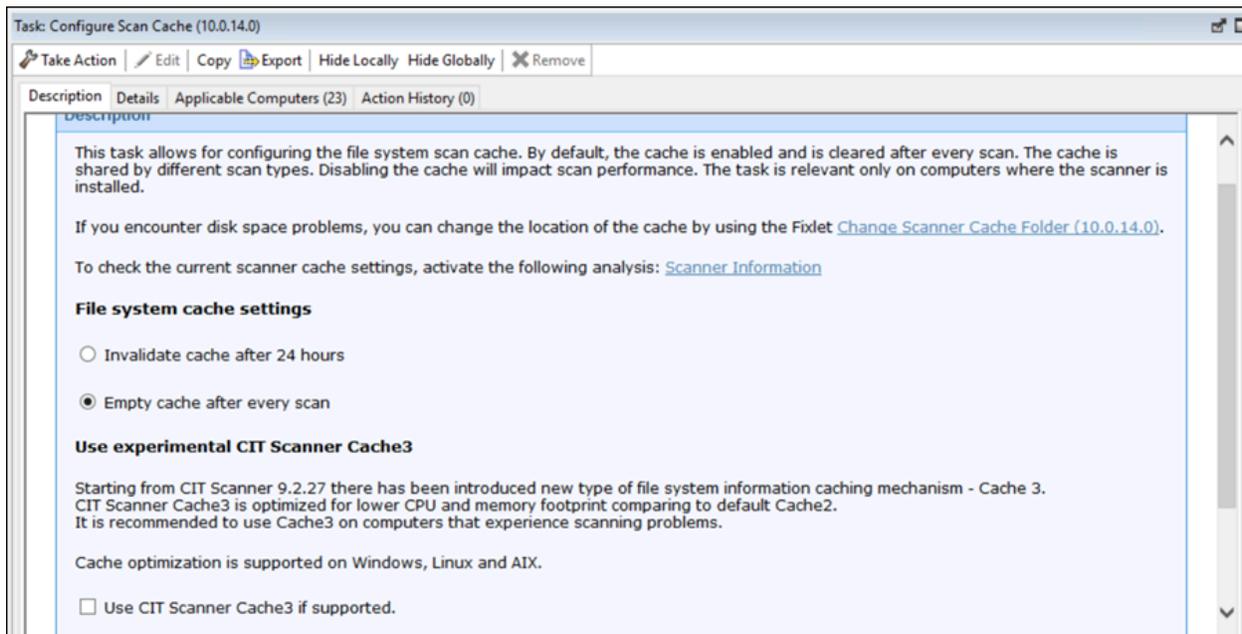
1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Configure Scan Cache**.

- To reduce the amount of disk space that is used by the cache, select **Use experimental CIT Scanner Cache3**.

Starting from CIT Scanner 9.2.27, a new file type, Cache 3 is introduced in the system information caching mechanism. CIT Scanner Cache3 is optimized for lower CPU and memory footprint comparing to default Cache2. Cache optimization is supported on Windows, Linux and AIX. It is recommended to use Cache3 (if supported) on computers that experience scanning problems.

- Click **Take Action**, and select computers on which you want to enable the optimization. Then, click **OK**.

When you enable the scan optimization, the cache that is created during the software scan includes only files that are relevant for the types of software scans that you are running. The size of the cache is reduced.



## Manually updating scanner catalogs

Scanner catalogs are used to discover software on the endpoints. They are automatically created and distributed to the endpoints after every import that contains the BigFix software catalog. If the automatic distribution fails or one of the Advanced Server Settings: **enable\_automatic\_task\_deployment** or **enable\_automatic\_catalog\_download** is set to false, endpoints on which the catalogs were not updated have the **Outdated Catalog** status on the **Scan Health** widget. You must manually update scanner catalogs on these endpoints.

## Procedure for BigFix Inventory Server 10.0.14 or higher

Before you update the scanner catalogs manually, try to determine why the automatic update failed. For more information, see [Troubleshooting scanner catalogs update \(on page mcdxxvi\)](#).

1. Log in to BigFix Inventory.
2. In the top navigation bar, click **Management > Data Sources**.
3. Select the Data Source to propagate the scanner catalog.
4. Click on button **Repeat Catalog Distribution**
5. Value in **Scanner Catalog Version** column will be changed to "Pending Upload". Action is executed in background. Time depends on network speed.
6. Refresh the page
7. Confirm value in **Scanner Catalog Version** is set to the version of the catalog.
8. Log in to the BigFix console.
9. In the navigation bar, click **Actions**.
10. In the upper-right pane, locate the **Scanner Catalog Distribution (Version version)** [version 10.0.15 or higher] / **Catalog Download (Version version)** action.  
The source of the action should be Master Operator Site.

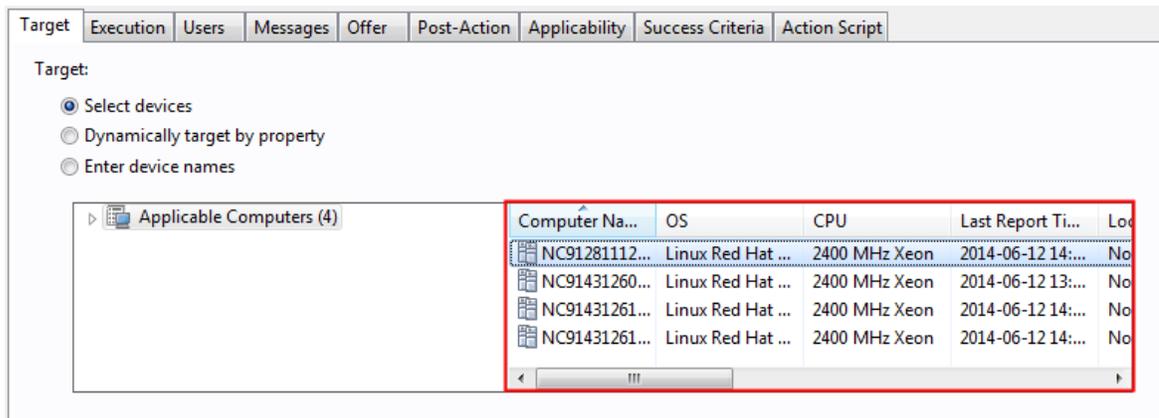
You imported the scanner catalogs to the endpoints in your infrastructure. To gather inventory data from the endpoint, you must now [initiate software scans \(on page dcx\)](#).

## Procedure for BigFix Inventory Server 10.0.13 or lower

- Before you update the scanner catalogs manually, try to determine why the automatic update failed. For more information, see [Server operation problems \(on page mcccxxxii\)](#).
- Ensure that the BigFix Inventory server is visible to your BigFix server.
- If Secure Socket Layer (SSL) is enabled in BigFix Inventory, all updates are also downloaded through SSL. The BigFix server must recognize SSL certificates of BigFix Inventory as valid.

1. Log in to BigFix Inventory.
2. [Import \(on page dcccxciv\)](#) the software catalog.
3. In the top navigation bar, click **Management > Catalog Upload**.
4. To download the fixlet file to your computer, click the question mark sign. Then, click **Catalog Download Fixlet**. Choose the location where you want to save the `catalog_download.bes` file, and click **Save**.
5. Copy the file to the computer where the BigFix console is installed.
6. Log in to the BigFix console.
7. To import the fixlet, click **File > Import**.
8. Open the directory where you store the `catalog_download.bes` file, select the file, and click **Open**. The file is imported.
9. In the left pane, click **Sites > Master Action Site > Fixlets and Tasks**. A list of available fixlets opens in the upper right pane.
10. To run the fixlet on the endpoints, select **Catalog Download (Version: version)**, and click **Take Action**.

11. Select the computers on which you want to run the fixlet, and click **OK**.



You imported the scanner catalogs to the endpoints in your infrastructure. To gather inventory data from the endpoint, you must now [initiate software scans \(on page dcx\)](#).

## Deprecated: Setting up additional analysis properties

Analysis properties are used to recognize software and gather information about its usage. Analysis properties are set by default in BigFix Inventory. You can also set up your own properties that you want to use to gather information from the endpoints.

**9.2.12** Starting from application update 9.2.12, adding usage properties becomes deprecated.

 You must have the Manage Usage and Package Properties permission to perform this task.

1. In the top navigation, click **Management > Usage Properties**.
2. To add an application usage property, click **New**.
3. Specify the name of the property. From the list of available properties, choose the data source property that you want to use to discover software that is installed in your infrastructure, its use or other properties, and click **Create**.

## Disabling the collection of software usage

Information about software usage is collected if you enabled the default scan configuration or manually activated the Application Usage Statistics analysis and ran the relevant scan. If you are in the initial deployment phase, or if you do not need information about software usage, you can disable the collection of this information to improve BigFix Inventory performance and shorten the import time.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Disable Application Usage Statistics**, and then in the lower pane, click **Take Action**.
4. Select computers from which you no longer want to collect information about software usage, and click **OK**.

## Discovering software and hardware on IBM i

**9.2.5** Available from 9.2.5. You can discover software and hardware inventory on IBM i systems by using disconnected scans that do not require direct connection between the scanned computers and BigFix server. Scripts that are provided in the disconnected scanner package initiate software and capacity scans, and prepare scan results that you later on upload to BigFix Inventory.

**!** **Important:** Because BigFix client is not available for IBM i, the disconnected scanner is the only method of software and hardware discovery on IBM i systems. Unlike on other operating systems, approval from IBM Compliance is not required to use disconnected scans on IBM i.

Disconnect Scanner for IBM i is provided by IBM and HCL redistributes the same with BigFix Inventory. The IBM i Disconnected Scanner includes an embedded IBM i Catalog. So, the option to update catalog using BigFix Inventory generated catalog for IBM i has been disabled since version 9.2.17.

You must periodically update the IBM i Disconnected Catalog to update any currency change. You can also use newer IBM i Disconnected Scanner package with older BigFix Inventory versions

Ignore any notification about outdated catalog for IBM i endpoint in BigFix Inventory version below 10.0.2. BFI Server automatically ignores the notification since BFI Server version 10.0.2.

### Disconnected scanner package

To collect the software and hardware inventory data, you need an endpoint package that consists of:

- Scanner
- Configuration files
- Scripts to run the scans and prepare the scan result package

The scripts initiate software and capacity scans, gather scan results, and adjust them to the format that is compatible with BigFix Inventory. If the scripts are not appropriate for your environment, you can edit and customize them, or create new scripts that better fit your needs. You can also use a manual procedure. However, it is not recommended for inexperienced users.

### Scalability

You can collect data from up to 25000 disconnected endpoints on condition that the computer where the BigFix Inventory server is installed meets hardware requirements for very large environments. For more information about the requirements, see [Hardware requirements \(on page dx\)](#).

Additionally, to ensure good performance of importing the scan results, complete the following configuration.

- Run the software scan on weekly basis.
- Distribute the import of result packages over the week so that a subset of packages is imported every day. For example, import 5000 packages every day from Monday to Friday.

- Set up automatic removal of scan results from the disconnected data source directory after the results are successfully imported to BigFix Inventory. To automatically remove the packages, go to **Management > Advanced Server Settings** and set the value of the `delete_successfully_imported_scans` parameter, to true.
- Configure the transaction logs size and increase the Java heap size. For more information, see: [Tuning performance in medium and large environments \(on page mcdxliv\)](#).

## Scan frequency

The disconnected scanner triggers the software and capacity scan. Each of these scans consists of a set of scripts and binaries that use up to 5 jobs. Thus, if you use the same queue, make sure that the job limit is set to 10 or more.

For information about default and minimal scan frequency as well as recommended frequency of importing scan results, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).

The disconnected scanner triggers the following scans:

- Capacity scan - The scan runs via the `BFI_HW` jobs that are scheduled during the installation as QSECOFR user on its default queue. The capacity scan runs every 30 minutes.
- Software scan - You can schedule the software scan to run according to your preference and use any specified queue. The recommended scan frequency is once a month.

A software scan scheduled / run on demand by end user using user/queue specified by end user. Recommended to be executed once a month.

## Multiple environments

When you have multiple environments, for example test and production, ensure that the following requirements are met:

- Every computer reports only one of the environments.
- Results of the disconnected scan from one environment are not uploaded to BigFix Inventory that monitors the other environment.

## Limitations

- Resource utilization, and metering data are not supported. For more information, see: [Raw utilization of license metrics \(on page mclxix\)](#).
- Scanning remote shared file systems is not supported.
- Detailed hardware scan cannot be collected if you use the disconnected scan.
- The disconnected scanner always collects full scans, not delta scans.
- The disconnected scan does not include additional computer properties that are defined by the user. To collect these details, you need to define additional entries in the `computer.yml` file.

## Concept

Discovering software and hardware with disconnected scanner on Windows and UNIX (*on page dclvi*)

## Disconnected scanner requirements for IBM i

**9.2.5** The list of disk space requirements, the supported IBM i version compatible with the disconnected scanner and other relevant requirements.

### Supported operating systems, versions and required disk space

**Table 148. Disconnected scanner requirements for IBM i systems**

Operating system	Supported versions	Required disk space in the installation directory
<b>9.2.5</b> IBM i	For information about supported versions, see: and <a href="#">BigFix Detailed System requirements</a> .	Scanner installation directories: <ul style="list-style-type: none"> <li>• <code>/etc/cit</code> - at least 20 MB. Also, provide disk space for the scanner cache.</li> <li>• <code>/cit</code> <ul style="list-style-type: none"> <li>◦ 50 MB for the script and installation media</li> <li>◦ 50 MB for capacity scan results for 90 days</li> </ul> </li> <li>• <code>/qsys.lib/qtivcit.lib/</code> - 200 MB</li> </ul>
<b>9.2.7</b> Windows		40 MB + disk space for the scanner cache
<b>9.2.7</b> Red Hat Linux		24 MB + disk space for the scanner cache
<b>9.2.8</b> Solaris		80 MB + disk space for the scanner cache
<b>9.2.9</b> AIX		80 MB + disk space for the scanner cache
<b>9.2.10</b> HP-UX		48 MB + disk space for the scanner cache

### Other requirements

Ensure that IBM i computers meet the following criteria.

- The disconnected scanner consumes up to 10 jobs. Ensure that the job limit is sufficient. The jar tool is available on the computer. To check whether the tool is available, type jar in the QSH.
- The QSH touch command provided by IBM is available (/QOpenSys/pkgs/bin/touch). The use of touch commands provided by other sources is not supported.
- JAVA\_HOME variable is set on the computer and exported to your process.

1. To set the JAVA\_HOME variable, run one of the following commands from the IBM i **Main Menu**.

- To add the variable to your current interactive job, run the following command.

```
ADDENVVAR ENVVAR(JAVA_HOME) VALUE('/QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit')
```

- To set the variable at the system level, run the following command.

```
ADDENVVAR ENVVAR(JAVA_HOME) VALUE('/QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit')
LEVEL(*SYS)
```

2. Export the JAVA\_HOME variable to your process

- To open a QSH session, run the STRQSH command.
- To export the variable to your process, run the following command.

```
export -s JAVA_HOME=/QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit
```

## Adding a new data source for disconnected scans

**9.2.5** Available from 9.2.5. All scan results are imported to BigFix Inventory from a directory dedicated to disconnected scans. You must add this directory as a data source to allow BigFix Inventory to check its content and import all packages that are stored within. The packages are imported during each data import.

All scan results must be manually transferred from all IBM i systems into the new directory that works as a data source. You can [automate this process by using NFS \(on page dcxcix\)](#), or by other means that better suit your environment.

1. On the computer where BigFix Inventory server is installed, create a directory with read and write access, for example: `/disconnected`.
2. Log in to BigFix Inventory, and in the top navigation bar click **Management > Data Sources**.
3. Click **New**, and specify the following values:
  - a. Specify the name of this data source.
  - b. Specify the Database Type as **Disconnected**.
  - c. Specify the location of the directory that you created.



**Note:** The path is not validated. Ensure that you provide a correct one.

## Create Data Source

Name\*

## Database for the BigFix Server\*

Database Type\*

Location of disconnected scan results\*

Download catalog for:

[Windows](#) [AIX](#) [Linux](#) [Solaris](#) [HP-UX](#)

IBM i catalog is included in scanner package

**Create**

4. Click **Create**.

[Prepare installation files for disconnected scans. \(on page dcxcii\)](#)

## Preparing installation files for disconnected scans for IBM i

**9.2.5** Available from 9.2.5. After you add the data source, prepare the installation package and distribute it to IBM i endpoints. The package should contain the disconnected scanner and configuration files used to initiate the scans. These files are downloaded from the BigFix console.

IBM i Disconnected Scanner is provided by IBM and HCL redistributes it with BigFix Inventory. The package includes an embedded Software Catalog. So, the option to update Software Catalog using BigFix Inventory generated catalog for IBM i has been disabled since BFI version 9.2.17.

You must periodically update the IBM i Disconnected Catalog to update any currency change. You can also use newer IBM i Disconnected Scanner package with older BigFix Inventory versions.

Ignore any notification about outdated catalog for IBM i endpoint in BigFix Inventory version below 10.0.2. BFI Server automatically ignores the notification since BFI Server version 10.0.2.0

**9.2.16** Starting from application update 9.2.16, each disconnected scanner package includes the software catalog. You no longer need to separately download the software catalog and place it in the disconnected scanner directory on IBM i computers.

1. Download the disconnected scanner.
  - a. Log in to the BigFix console.
  - b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - c. In the upper right pane, select **Download the Disconnected Scanner Package for IBMi (version)**.
  - d. To run the task, click **Take Action**.

The file is downloaded.

For versions before 9.2.16 file would be named: `LMT-DisconnectedScanner-ibm_i-<version>-<timestamp>.zip`

2. **Optional:** To customize the disconnected scanner, edit configuration files.

Configuration files include:

- `schedule_scans.sh` - Modify the file and replace the default user profile name QSECOFR with the name of the profile that will be used to run hardware scans. The minimal requirements for the user profile are the class set to \*USER and the special authority set to \*NONE. You can use the same user profile that is used to install the scanner and run the software scan. Then, set up the special authority to \*ALLOBJ.
  - `sw_config.xml` - The file contains a number of extra settings, such as the processor utilization and directories excluded from scanning. For more information, see: [Troubleshooting the discovery on IBM i \(on page dccii\)](#).
3. Upload the disconnected scanner package to IBM i computers. Place the files in `/cit` directory
    - a. Extract the `LMT-DisconnectedScanner-ibm_i-<version>-<timestamp>.zip` file to the `/cit` directory

[Install the scanner and gather initial data. \(on page dcxciii\)](#)

## Installing the scanner and gathering initial data on IBM i systems

**9.2.5** Available from 9.2.5. After you distribute the disconnected scanner package to the computers in your infrastructure, install the scanner and run the initial scans.

- You must have the \*ALLOBJ authority to perform this task.
- The `jar` tool must be available on the endpoint. To check whether the tool is available, type `jar` in the QSH.
- Set the `JAVA_HOME` variable on the computer on which you want to install the scanner and export it to your process.

1. To set the variable, run one of the following commands from the IBM i **Main Menu**.

- To add the variable to your current interactive job, run the following command:

```
ADDENVVAR ENVVAR(JAVA_HOME) VALUE(' /QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit')
```

- To set the variable at the system level, run the following command:

```
ADDENVVAR ENVVAR(JAVA_HOME) VALUE(' /QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit' )
LEVEL(*SYS)
```

2. Export the `JAVA_HOME` variable to your process.
  - a. Open a Qshell session by using the `STRQSH` command.
  - b. Export the variable to your process by using the following command.

```
export -s JAVA_HOME=/QOpenSys/QIBM/ProdData/JavaVM/jdk80/64bit
```

1. Open the QSH and go to the `/cit` directory where you copied the disconnected scanner package
2. Run the `setup_all.sh` file.

It automatically performs the following steps:

- Installs the scanner.
- Runs the initial capacity scan, and creates the `computer.yml` file.

The initial capacity scan is needed to collect data about your IBM i system, and to create the `computer.yml` file that will identify this system. The file is added to each package with scan results and it helps to catalog and correctly display them in the user interface. It contains information about the operating system, such as host name, and a unique computer ID.

- Schedules regular capacity scans.

The capacity scan is scheduled to run every 30 minutes to gather current results for virtualized environments where the capacity can dynamically change depending on the allocated resources.



**Note:** After you install the scanner, its installation path cannot be changed. The installation path is a location where you upload the installation files. To change the installation path, back up the configuration files, scan results and logs. Then, uninstall the scanner, move the files to a different directory, and then install the scanner in the new location.

3. Go to the `/cit` or `/cit/config` directory, and verify that the created `computer.yml` file contains the correct data. For more information about the contents of this file and instructions about how to change them, see: [Creating the `computer.yml` file \(on page dccvii\)](#).

The scanner is set up now, and ready to run the software scan and gather results.

[Run the software scan and gather scan results. \(on page dcxciv\)](#)

## Running software scans and gathering scan results on IBM i systems

**9.2.5** Available from 9.2.5. The script that is responsible for the software scan collects the results of the catalog-based, package data, and software ID tags scan as well as retrieves results of the capacity scan and the `computer.yml` file. All these results are combined and compressed into a common ZIP package that can be imported to BigFix Inventory.

- **IBM i** To perform this task, you must have \*ALLOBJ authority.
  - Each time you update the software catalog in BigFix Inventory, run an import of data or wait for the scheduled import. Next download the newest version of software catalog to an endpoint to run the software scan on it. For more information, see: [Preparing the disconnected scanner package. \(on page dcxciii\)](#).
  - The scan takes around 30 minutes. The exact time depends on the computer load, file system size, and the CPU threshold if you set it.
  - For information about default and minimal scan frequency, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).
  - By default, no limit is set on the processor usage during the scan. To limit processor usage, set the CPU threshold. For more information, see: [Optimizing the processor utilization \(on page dccii\)](#).
1. Go to the directory where you uploaded the disconnected scanner package.
  2. To initiate the software scan, and pack software and capacity scan results, run the following script:

- **IBM i** SBMJOB JOB(BFI\_PKG) CMD(QSH CMD('/cit/run\_sw\_and\_pack.sh'))

Starting from application update 10.0.2, which includes IBM i disconnected scanner package 9.2.20, you can run the software scan and pack scan results independently.

- To run the software scan without generating the package with scan result, run the following command:

- **IBM i** SBMJOB JOB(BFI\_PKG) CMD(QSH CMD('/cit/automation/run\_sw.sh'))

- To pack scan results, run the following command:

- **IBM i** SBMJOB JOB(BFI\_PKG) CMD(QSH CMD('/cit/automation/pack\_results.sh'))

The script packs results of the software scan and capacity scan generated since the last time the package with scan results was created. If no new scan results are available, the outcome is as follows.

- **IBM i** The script returns error code 5.

3. **IBM i** To monitor the progress of the scan, check the run\_sw\_and\_pack\_std.log file that is created during the scan in the directory where you installed the disconnected scanner, or monitor the scanner logs. For more information, see: [Monitoring the scan progress \(on page dccj\)](#)

A compressed package with scan results is created in the package output directory. The default directory are:

- **IBM i** /cit

Names of results packages use the following naming convention.

- **IBM i** <YYYYMMDDHHMM>-<endpoint\_ID>.zip



**Important:** Do not change names of results packages. Otherwise, they will not be imported to BigFix Inventory.

[Import the package to BigFix Inventory. \(on page dcxcvi\)](#) After it is successfully imported, delete it from the endpoint to save disk space.

## Importing scan results from IBM i systems to BigFix Inventory

**9.2.5** Available from 9.2.5. To import new scan results to BigFix Inventory, copy the package to the disconnected scans directory that you added as a data source.

- For information about recommended frequency of importing scan results, see: [Frequency of scans and uploads of data \(on page dxcix\)](#).
- If you upload a package with older results, the current ones are overwritten.
- Discovered software is reported with the import time, not the package time stamp.
- Import only one package per endpoint. Otherwise, capacity results might be skipped.
- Processed packages are not removed from your disconnected scans directory. The ones already imported are skipped.

1. Go to the package output directory. The default directory is `/cit`. Verify that a ZIP package was created after running the software scan.

The package name is based on the following pattern: `<YYYYMMDDHHMM>-<endpoint_ID>.zip`, for example `201510191213-6552CFF-5.zip`. It contains the following files:

```
capacity.zip
catalog_scan.xml
computer.yml
isotag_scan.zip
package_scan.xml
source.zip
```

2. Copy the ZIP package into the disconnected scans directory that you added as a data source in BigFix Inventory.
3. To save disk space, remove the ZIP package from the IBM i endpoint.
4. Repeat steps 1, 2 and 3 for all the IBM i endpoints in your infrastructure.
5. Wait for the scheduled import or run it manually.
6. **Optional:** If you want to save disk space on the computer where BigFix Inventory is installed, go to Advanced Server Setting panel and enable the `delete_successfully_imported_scans` parameter. For more information, see: [Advanced server settings \(on page dcccl\)](#).

During the data import, BigFix Inventory checks the directory that you added as a data source and imports scan packages that meet the requirements. Scan results are processed and displayed on the reports in the user interface.

Files from processed packages are saved in the `installation_directory/wlp/usr/servers/server1/tmp/datasources/Datasource_ID` directory.

The processed packages are stored in the directory specified in the data source configuration. The packages are not automatically removed. It is recommended to create the audit snapshot once a quarter. Then, back up the packages in a different directory, and remove them from the directory specified in the data source configuration.

## Disconnected scanner maintenance and troubleshooting

**9.2.5** **IBM i** Available from 9.2.5. You can use the maintenance and troubleshooting tasks related to the disconnected scanner to monitor the scan progress, optimize the processor usage during the scan, understand and fix the most common issues, or learn more about the log files.

## Updating the scanner and the scripts on IBM i systems

**9.2.5** Available from 9.2.5. Both the scanner and the scripts are updated on a regular basis to introduce improvements and new functions. To update the scanner, once again download all the required files, and copy them into the `/cit` directory in IFS on your IBM i system, or other directory where the previous version is already located.

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Download the Disconnected Scanner Package for IBMi (version)**.
4. To run the task, click **Take Action**.
5. **Optional:** If you made any changes to the scan configuration file `configure_scan.sh`, or the software scan configuration file `sw_config.xml` make sure that you back up the files before you extract the package. Otherwise, the files are overwritten.
6. Extract the contents to the disconnected scanner directory.
7. **Optional:** If you recently updated the software catalog in BigFix Inventory, update it also on the system with the disconnected scanner.
  - a. To download the software catalog for disconnected scanner, log in to BigFix Inventory and go to **Management > Data Source**. Choose the disconnected data source, and download the catalog for IBM i.
  - b. Place the catalog in the `config` directory of the disconnected scanner package that you downloaded through fixlet.



**Note:** The catalog is available for download after uploading the main software catalog and running a data import.

8. **Optional:** If you made any changes to the scan configuration file `configure_scan.sh`, or the software scan configuration file `sw_config.xml`, modify the new file versions to reflect the changes. Look at the back up files that you created in step 5, and rewrite the changes to modify the new files. Do not copy the old back up files as they might differ between the versions.
9. Run the `update.sh` script.

## Decommissioning computers with disconnected scanners

**9.2.5** Available from 9.2.5. When you decommission a computer that is no longer in use, you can mark it as decommissioned on the Computers report, so that it is not displayed in BigFix Inventory.

 You must have the Manage Computer groups permissions to use this API.

1. In the top navigation bar, click **Reports > Computers**.
2. Click the computer name.
3. Click **Decommission computer**.



After you decommission the computer, this computer does not show up on the current reports. You can still manage the software on the Software Classification panel, but it is marked as uninstalled. The software is still displayed on the All Metrics report.

## Uninstalling the disconnected scanner from IBM i systems

**9.2.5** If you no longer need the disconnected scanner to scan the IBM i system, you can uninstall it from any endpoint.

1. Open the directory where the disconnected scanner is installed.
2. **UNIX** **Windows** Create a backup of the `endpoint_id.txt` file that is located in the config directory. This file will be required if you want to install the disconnected scanner on the same computer in the future.
3. To uninstall the scanner, run the following script. The script uninstalls the scanner and cancels the scan schedule. It does not remove scanner files.

- a. **IBM i** **UNIX** `uninstall.sh`
- b. **Windows** `uninstall.bat`

4. Remove the directory where the disconnected scanner was installed.

The scanner is successfully uninstalled, and the data is no longer collected. Software and capacity scans no longer run.

## Understanding the Deployment Health and Software Scan Health for IBM i systems

**9.2.5** Available from 9.2.5. Deployment Health and Software Scan Health contain information about your clients and the scans that were initiated. You can view this information on the Deployment Health, and Software Scan Health widgets on the dashboard, or on the Computers report. Deployment Health excludes all the disconnected

datasource endpoints. To properly understand values that are displayed for IBM i systems, see the explanation of particular columns on the Computers report.

**Table 149. Explanation of Deployment Health and Software Scan Health information for IBM i systems**

Column Name	Description
Has Outdated Version	Always shows <i>No</i> .
Has Low Disk Space	Always shows <i>No</i> .
Is Out of Sync	Always shows <i>No</i> .
Has Missing Prerequisites	Always shows <i>No</i> .
Agent Version	Taken from the <b>Agent Version</b> property in the <code>computer.yml</code> file.
Catalog Scan Successful	Shows <i>Yes</i> if the imported package contains the <code>catalog_scan.xml</code> file.
Software Tags Scan Successful	Shows <i>Yes</i> if the imported package contains the <code>isotag_scan</code> package.
File System Scan Successful	Always shows <i>Yes</i> . IBM i endpoints do not run file system scan.
Package Scan Successful	Shows <i>Yes</i> if the imported package contains the <code>package_scan.xml</code> file.
Catalog Version	Taken from the <b>Catalog Version</b> property in the <code>computer.yml</code> file.
Endpoint Scanner Catalog Version	Taken from the <b>Catalog Version</b> property in the <code>computer.yml</code> file. It displays only the second part of the whole catalog version, for example 1250110.1.
Last Scan Attempt	Taken from the timestamp used in the final package name.
Scanning Shared Disks	Always shows <i>No</i> .
Mounted Shared Disks	Always shows <i>Yes</i> .

## Using NFS to automate the transfer of scan results

**9.2.5** Available from 9.2.5. You can use NFS to automate the transfer of scan results from your IBM i systems to the BigFix Inventory server. The results will be stored in a shared directory and imported by BigFix Inventory without any additional actions.

You can use NFS in several configurations:

- BigFix Inventory acts as an NFS server
- Each IBM i acts as an NFS server
- You use a separate NFS server

In this procedure, BigFix Inventory installed on Linux acts as an NFS server and shares a directory with an IBM i system that acts as an NFS client. The scan results saved into the shared directory on IBM i system are readily available to BigFix Inventory. The scenario can be adopted to be used in the Windows environment.

1. Configure the BigFix Inventory server to allow transfer by using NFS.

- Install the `nfs-utils` package.
- Configure the firewall to allow the NFS-related traffic from IBM i systems.
- Create a directory for the *disconnected scans* results, and change its ownership and rights.

```
mkdir /disconnected
chown nfsnobody:nfsnobody /disconnected
chmod 755 /disconnected
```

- Add this directory as a data source (on page [dcxci](#)).
- Edit `/etc/exports`, and add the directory to the list of shared directories. The following example shows a single IP address of an IBM i system, but you can specify a range of addresses.

```
/disconnected 172.16.0.31(rw, sync)
```

- Refresh the NFS configuration.

```
exportfs -a
```

2. On the IBM i system, create an output directory for scan results and mount the shared directory from the BigFix Inventory server.

This step connects these directories. Whenever you save files into `/bfi_server`, they will also be available in the `/disconnected` directory on the BigFix Inventory server.

```
MKDIR '/bfi_server'
ADDMFS TYPE(*NFS) MFS('IP_address_of_BFI_server:/disconnected') MNTOVRDIR('/bfi_server') OPTIONS(*DFT)
```

3. Open the default `/cit` directory, or other directory where you store the disconnected scan scripts, and modify the following property in the `configure_scan.sh` script to save all scan results into the new output directory.

```
PACKAGE_OUTPUT_DIR="/bfi_server"
```

4. Run the software scan (on page [dcxciv](#)) to collect new scan results. When the scan is complete, the package with scan results can be imported to BigFix Inventory by running a data import.

## Monitoring the scan progress

**9.2.5** Available from 9.2.5. In case of any problems with the software scan, you can check whether the scan was started or completed, and view some extra information about the scanned directories.

### Log files

The `run_hw.sh` and `run_sw_and_pack.sh` commands are the `_console.sh` wrappers, and they redirect the script output into the `run_hw_std.log` and `run_sw_and_pack_std.log` files. The default size limit of a single log file is 1024 bytes. The limit can be changed in the `configure_scan.sh` file. To change the size limit provide a new `LIMIT` value. If during the next scan the log files exceed the size limit, the existing files are renamed to `run_hw_std.log.1` and `run_sw_and_pack_std.log.1`. However, only up to two such files can exist per command. Therefore, if `run_hw_std.log.1` and `run_sw_and_pack_std.log.1` already exist, the oldest log files are removed.

### Checking the scanner version

To monitor the scan progress, you must have the scanner in version 2.8.0.0001, or higher. To check the current version, open the `/etc/cit/cit.ini` file.

```
CIT_Version = 2.8.0.0001
```

### Checking the initiated scans

Information about the started and completed scans is written in the `/etc/cit/logs/traceCIT.log` file.

```
16/07/04 15:18:36 E [main.C] seMain: 308 IMPORTANT: ---START--- Software scan started. CIT Version = '2.8.0.0001'
16/07/04 15:20:14 E [cache.C] 2800 IMPORTANT: File system access on '/' (drive: '/', type: 2, fs: 'os400fs')
16/07/04 15:22:02 E [cache.C] 2835 IMPORTANT: (OK) File system access on '/' (drive: '/', type: 2, fs: 'os400fs')
16/07/04 15:22:02 E [cache.C] 2800 IMPORTANT: File system access on '/QSYS.LIB' (drive: '/QSYS.LIB', type: 2, fs: 'qsysfs')
16/07/04 15:25:24 E [cache.C] 2835 IMPORTANT: (OK) File system access on '/QSYS.LIB' (drive: '/QSYS.LIB', type: 2, fs: 'qsysfs')
...
16/07/04 15:41:31 E [main.C] seMain: 483 IMPORTANT: ---STOP--- Software scan finished with return code=0
```

### Checking the scanned directories

You can check which directories are currently being scanned in the `/etc/cit/logs/traceCIT_scanned_dirs.log` file.

```
2016-07-04T15:20:14 '/'
2016-07-04T15:20:14 '/iso'
2016-07-04T15:20:14 '/maestro'
...
2016-07-04T15:25:23 '/QSYS.LIB/QAUTOMON.LIB'
```

If the scan is taking too long to complete or hangs on a particular directory, you can stop it by aborting the job that is running the scan. Then, [exclude the directory from scanning \(on page dccciii\)](#), and repeat the scan.

## Troubleshooting the discovery on IBM i

**9.2.5** Available from 9.2.5. The troubleshooting section lists the most common issues you might encounter while discovering software and hardware inventory with the disconnected scanner. The main objective of troubleshooting is to determine why something does not work as expected and explain how to resolve the problem.

### Log files

Scanner log files are in the following directories:

- `/Installation directory/logs/*`.
- `/etc/cit/logs/*`

The default installation directory is `/cit`.

### Transferring files from IBM i systems

The internal file structure of IBM i systems displayed when connecting over FTP is very complex. However, you can use one of the following commands to make it more UNIX-like. Issue one of these commands after connecting over FTP:

```
cd /  
site NAMEFMT 1
```



**Tip:** For more information, see [Using the FTP Subcommand: NAMEFMT](#).

Next, set the appropriate mode for transferring your files, either binary or text. Use the binary mode for transferring scan results, and text mode to obtain the scanner log files.

### Optimizing the processor utilization

By default, processor utilization is not limited during the scan. You can optimize it by setting up the CPU threshold.



**Note:** Setting the threshold does not guarantee that the CPU consumption is always below the specified value. It fluctuates around that value, sometimes exceeding it and sometimes dropping below it. Temporary peaks are expected. Setting the threshold might lengthen the time of the scan.

1. Edit the `sw_config.xml` file that you downloaded with the scanner.
2. Add two new `cpuThreshold` attributes, one for `FSScanner` and another for `Signatures`. For example:

```
<BigFix>  
<CIT>  
<XSE version="1.0">  
<Plugins>
```

```

<Plugin name="FSScanner">
  <Attribute name="cpuThreshold" value="20:2:150:850"/>
  (...)
  <Attribute name="interruptOnTimeout" value="true"/>
</Plugin>
</Plugins>
<Signatures>
  <Attribute name="cpuThreshold" value="20:2:150:850"/>
</Signatures>
</XSE>
</CIT>
</IBM>

```

3. Specify one of the following values:

Desired utilization	Value
5%	10:2:50:950
10%	20:2:100:900
15%	20:2:150:850
20%	30:2:200:800
25%	30:2:250:750
50%	50:2:300:500

4. Save the file.

### Excluding directories from being scanned

You can exclude directories from being scanned during the catalog-based and ISO tags scan. To do this, edit the `sw_config.xml` file. Specify the directories as values of the **excludeDirectory** attributes.

- To exclude the `/tmp` directory:

```
<Attribute name="excludeDirectory" value="/tmp"/>
```

- To exclude all directories named `tmp`, for example `/tmp` and `/dir/tmp`:

```
<Attribute name="excludeDirectory" value="*/tmp"/>
```

### Providing failing packages to BigFix Support

#### Import of a package is failing

If you see the following errors in the import log, provide the whole scan package.

```

2015-11-06 08:31:07 INFO: Processing scan package: 201511041200-9.128.0.223.zip from: /disconnected/.

2015-11-06 08:31:08 INFO: ETL from FileSystem - SAM::DisconnectedScan

(0x00000000563C63FF - 0x00000000563C6514): Failed

2015-11-06 08:31:08 ERROR: Sequel::UniqueConstraintViolation:

Java::ComIbmDb2JccAm::SqlIntegrityConstraintViolationException: One or more values in the INSERT statement,
UPDATE statement, or foreign key update caused by a DELETE statement are not valid because the primary key,
unique constraint or unique index identified by "1" constrains table "DBO.RAW_DATASOURCE_FILES" from having
duplicate values for the index key.. SQLCODE=-803, SQLSTATE=23505, DRIVER=3.64.104
    
```

### Import of a single file is failing

The import of a single file from the scan package is failing if the import log contains the following message:

```

2015-11-06 10:48:07 WARN: An error occurred parsing XML file 2 in file isotagsearch_0_375.zip.
Install path value was not found.
    
```

Such a file must be provided with its long path. To determine the path, complete the following steps:

1. Go to the BigFix Inventory installation directory.
2. Search for the failing file:

```
find -name "isotagsearch_0_375.zip"
```

Command output that must be provided to Support:

```

./wlp/usr/servers/server1/tmp/datasources/2/UploadManager/sha1/75/375/isotagsearch_0_375.
zip
    
```

## Common problems

### The package is being skipped during the import despite meeting the requirements

Such a problem might occur if you are importing more than one package from an endpoint. BigFix Inventory always imports the latest package and omits all previous ones. The following message about skipping the package is related to irrelevant packages and can be ignored:

```

2015-11-05 09:35:22 WARN: Skipping file: package_scan.xml from: 201510101200-2inarow.zip.
The data was already processed.

2015-11-05 09:35:22 INFO: Skipping file: package_scan.xml.

Unsupported file in: 201510101200-2inarow.zip.
    
```

### The import might fail if you use the same results of the capacity scan in different packages

This problem might occur if you reuse the capacity scan results for testing purposes. If more than one endpoint has the same scan results, the import fails and the following message is displayed:

```

ERROR: (ImportCapacity-Thread:3) doInsert com.ibm.db2.jcc.am.SqlIntegrityConstraintViolationException:

One or more values in the INSERT statement, UPDATE statement, or foreign key update caused
    
```

```
by a DELETE statement are not valid because the primary key, unique constraint or unique
index identified by "1" constrains table "ADM.LAST_IMPORTED_SCAN" from having duplicate values
for the index key.. SQLCODE=-803, SQLSTATE=23505, DRIVER=3.64.104
```

Ensure that you run the capacity scan for each of your endpoints and use appropriate results.

### The software or ISO tags scan fails and no results are created

Run the following command in QSH, and then repeat the scan.

```
export QIBM_MULTI_THREADED=Y
```

### The software is discovered and bundled, but there are no PVU calculations

The problem might be caused by an incorrect epoch, which points to the date in the future. The epoch is included in file names of the capacity scan results, for example `t1m_hw_201603021330_1456969683.xml`. Open the `capacity.zip` archive, and check whether the epochs are correct. You will have to convert the epoch into a normal date. On Linux, you can do it by running the `date -d @epoch` command.

### The host name of an endpoint provided by the disconnected scanner is different than expected

The host name that is provided by the disconnected scanner and a regular scanner can be different. The regular scanner uses the host name that is provided by BigFix, while the disconnected scanner checks the host name by running the `hostname` command, or, if not available, through the scanner check.

### Opening a support case

If none of the above solutions work for you, open a support case and provide the following files to BigFix Support:

- package with scan results
  - `/Installation directory/run_hw_std.log`
  - `/Installation directory/run_sw_and_pack_std.log`
- `/Installation directory/warning*.xml` file
- scanner logs from `/etc/cit/logs`
- the console output of a failed step in the debug mode, if possible. The example below generates the `/cit/failure.log` file with the output:

```
export QIBM_MULTI_THREADED=Y

/qsys.lib/qtivcit.lib/wscansw.pgm -s -c /cit/sw_config.xml -i /cit/CIT_catalog_I5OS.xml
-o /cit/catalog_scan_man.xml -e /cit/warning_man.xml -debug
>/cit/failure.log 2>&1
```

## Monitoring the import log

When you import a package with scan results to BigFix Inventory, the import log (**Management > Data Imports**) displays information and warning messages related to your package. If the package or its content does not meet the requirements, it might be skipped during the import, and the scan results will not be displayed in BigFix Inventory. While monitoring the import log, you can expect the following messages:

```

info: Processing scan package: package from: directory.
info: Invalid file name. The scan package must match the pattern YYYYMMDDHHMM-*.zip. Skipping
package: package.
info: Invalid Catalog Version property in the computer.yml file: version. The property must match the pattern
<Number>.<Number>. The catalog might be reported as outdated.
warn: The disconnected scans location does not exist: directory.
warn: Invalid file name. The scan date must be later than year 2000. Skipping package: package.
warn: Skipping corrupted scan package: package. The following error occurred: error.
warn: Missing computer.yml file. Skipping package: package.
warn: Missing property: property in the computer.yml file. Skipping package: package.
warn: Invalid computer.yml file. Skipping package: package. The following error occurred: error.
warn: The value of the endpointID property in the computer.yml file is longer than 512 characters. Skipping
package: package.
warn: The value of the endpointID property in the computer.yml file is empty. Skipping package: package.
warn: Missing property: endpointID in the computer.yml file. Skipping package: package.
warn: Importing older scan package from: date for computer: computer_id. This computer already has data
from: date.
warn: The file is larger than 2097150 bytes. Skipping file: scan_file from: package for
computer: computer_id.
warn: The following error occurred when processing the package_scan.xml file: error.
warn: The insertion of the operating_system package data into the database failed on record content. The
following error occurred: error.

```

## (Optional) Manually installing the scanner and running the scans on IBM i systems

**9.2.5** Available from 9.2.5. scripts that automate the scans are not appropriate for your environment, and you need to customize the execution of scans without changing the required scan frequency, refer to this appendix. The appendix describes how to run each scan, how to collect the results, and finally how to create the final package that can be uploaded to BigFix Inventory manually. The automated scripts, however, remain a recommended way of discovering on IBM i systems.

## (Optional) Manually installing the scanner

**9.2.5** Available from 9.2.5. If the automated scripts are not appropriate for your environment, you can manually install the scanner. You will also need to run the initial capacity scan, create the `computer.yml` file, and schedule regular capacity scans. These tasks are optional and can be completed with the automated scripts.

## Installing the scanner

**9.2.5** Available from 9.2.5. Install the scanner on each of your IBM i systems to be able to initiate the software and capacity scans.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

Install the scanner by running the following commands from QSH:

```
cd /cit
./install_scanner.sh
```

## Running the initial capacity scan

**9.2.5**

Available from 9.2.5. The initial capacity scan is needed only to gather detailed information about the scanned IBM i system. You will use this information to create the `computer.yml` file that describes your IBM i system, and is required for each import of new scan results. All subsequent capacity scans will be initiated from a script that schedules them to run automatically every 30 minutes.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

Go to `/cit`, and run the `run_hw.sh` script.

The results were saved in `/cit/output/hw_scan_all/last.xml`. You can now create the `computer.yml` file.

## Creating the `computer.yml` file

**9.2.5**

Available from 9.2.5. The `computer.yml` file contains information about the scanned IBM i system, and is used to catalog scan results and correctly display them in the user interface. Each package with scan results must contain this file, but you can reuse the file as long as it is unique for each IBM i system.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

1. Go to `/cit`, or `/cit/config`, and edit the `computer.yml.sample` file. The file contains the following values:

```
endpointID: 6552CFF:5
Agent Version: IBM_doc_v.1.0
Catalog Version: 1250110.0
Operating System: IBM i V7R1M0 PowerPC 64
DNS Name: NC198511
Computer Name: NC198511
IP Address: 198.51.100.0
```

2. Take the values from the results of the capacity scan that are in the `/cit/output/hw_scan_all/last.xml` file. The table provides some details on how to retrieve them.

Attribute	Description	Value
<b>endpoint-ID</b>	<p>Mandatory.</p> <p>Unique ID of the computer. It must contain the hardware serial number and LPAR ID in the <code>&lt;HWSerial&gt;:&lt;LparID&gt;</code> format, for example <code>6552CFF:5</code>.</p>	<p>In capacity results:</p> <pre>&lt;HWSerial&gt;6552CFF&lt;/HWSerial&gt; &lt;LparID&gt;5&lt;/LparID&gt;</pre>
<b>Agent Version</b>	<p>Optional.</p> <p>You can use this attribute to provide information that lets you differentiate between scan results. For example, if you used the manual procedure to gather them, you can call it <code>IBM_doc_v.1.0</code>, or choose other names for automated processes.</p>	-
<b>Catalog Version</b>	<p>Optional.</p> <p>Versions of the software catalog and its custom content, separated with a dot (.), for example <code>1250110.0</code>.</p>	To view these versions, in BigFix Inventory go to <b>Management &gt; Catalog Upload</b> .
<b>Operating System</b>	<p>Mandatory.</p> <p>Operating system of the computer. It must start with <code>IBM i</code>, but you can add more information, and have it displayed in the user interface.</p>	<p>In capacity results:</p> <pre>&lt;OSName&gt;IBM i&lt;/OSName&gt; &lt;OSVersion&gt;V7R1M0&lt;/OSVersion&gt; &lt;OSArch&gt;PowerPC&lt;/OSArch&gt; &lt;OSKernelMode&gt;64&lt;/OSKernelMode&gt;</pre>
<b>Computer Name</b>	<p>Mandatory.</p> <p>Name of the computer, used for identification. It can be an IP address, or any name or ID that lets you recognize the computer.</p>	<p>In capacity results:</p> <pre>&lt;Hostname&gt;NC046189&lt;/Hostname&gt;</pre>
<b>DNS Name</b>	<p>Optional.</p> <p>Domain name, used for identification. It can be the same as Computer Name.</p>	-
<b>IP Address</b>	<p>Optional. IP address of the computer, used for identification. For multiple IPs, place each address on a new line that starts with a space.</p>	<p>In capacity results:</p> <pre>&lt;Address IsKey="1"&gt;9.156.46.189&lt;/Address&gt;</pre> <p>Syntax for multiple IPs:</p>

Attribute	Description	Value
<b>vmman- agerPre- sent</b>	Specifies whether the disconnected VM Manager Tool is installed on the computer.	<pre>IP Address: 198.51.100.0 198.51.100.1 198.51.100.2</pre>

3. Save the file as `computer.yml` in the same directory.

### Scheduling regular capacity scans

**9.2.5** Available from 9.2.5. The capacity scan must be initiated every 30 minutes to gather current results for virtualized environments, in which capacity can dynamically change depending on allocated resources. After you run the script, the scan will be run with such a frequency automatically. The results do not have to be imported to BigFix Inventory with such a high frequency. You can import only those that are already available, and include the rest in the next imported package.

 **Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

Go to `/cit`, and run the `schedule_scans.sh` script.

After you run the script, the capacity scan will be initiated every 30 minutes, each time creating two output directories:

**hw\_scan\_all**

All capacity scan files and their signatures. They are required for audit purposes to prove that the capacity scan was initiated every 30 minutes.

**hw\_scan\_unique**

Unique capacity scan files that contain only changes to the capacity.

Additionally, 48 instances of the BFI-HW job that run the `run_hw.sh` script are created. Since the capacity scan must be run every 30 minutes, two jobs are created for each hour.

All capacity results will be automatically copied from their directories and included in the common package with all scan results after you run the software scan.

### (Optional) Manually running the scans and preparing the results

**9.2.5** Available from 9.2.5. After you install the scanner, you use the QSH to initiate the software and capacity scans. Each type of scan creates a different output that must be copied to the final package that is imported to BigFix Inventory.

Before you start the scans, create two directories that will make it easier to manage the scan results.

#### **/scans**

In this directory, you will store all scan results that you want to include in a single import to BigFix Inventory. After you copy the results to this directory, you must compress and rename it, so that it has the right format. Such a final package is then imported to BigFix Inventory.

#### **/source**

In this directory, you will store signatures of all scan results that you copied to the `/scans` directory. In the case of the ISO tags scan, also the original output file. These files are required for audit purposes to ensure that scan results were not altered.

All details regarding the final package are described later in this document.

## Running the capacity scan

**9.2.5** Available from 9.2.5. In the capacity scan, the scanner reports the system type and details about the physical processor. If applicable, it also collects information about the guest operating system and logical partitions. This data is required to calculate the PVU and RVU MAPC consumption.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

The capacity scan must be run every 30 minutes to collect current results.

1. In QSH, run the following command to initiate the capacity scan:

```
/qsys.lib/qtivcit.lib/wscanhw.pgm -nolock -s -c tlm_hw_config.xml -o tlm_hw_<DATE>_<SECONDS>.xml
```

Where:

**-s**

Creates a signature for the output file. The signature must be stored for audit purposes.

**-c tlm\_hw\_config.xml**

Path to the `tlm_hw_config.xml` configuration file that you downloaded with CIT.

**-o tlm\_hw\_<DATE>\_<SECONDS>.xml**

The output file.

**DATE** - Date in the YYYYMMDDHHMM format, for example 201511101248.

**SECONDS** - Number of seconds that passed since January 1st 1970, for example 1447177713.



**Tip:** You can retrieve the date and the number of seconds by running the `date +%Y%m%d%H%M-%s` command on Linux.

2. Compress the output file into a `capacity.zip` package. The package can contain more than one output file.
3. Copy the `capacity.zip` package to the common `/scans` directory, in which you store all scan results.

## Running the catalog-based scan

**9.2.5** Available from 9.2.5. In the catalog-based scan, the scanner creates scanner catalogs that are based on the catalog that you attach while initiating the scan. Based on these catalogs, the scanner discovers exact software matches.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

1. Download the software catalog for IBM i systems from your BigFix Inventory server:

`https://hostname:port/sam/catalogs/CIT_catalog_I5OS.xml.bz2`. The catalog is available after uploading the main software catalog and running a data import. Next, extract it and upload to a directory in IFS on your IBM i system.

2. In QSH, run the following command to reset cache:

```
/qsys.lib/qtivcit.lib/wscanfs.pgm -reset
```

3. Run the following command to initiate the catalog-based scan:

```
/qsys.lib/qtivcit.lib/wscansw.pgm -s -c sw_config.xml -i CIT_catalog_I5OS.xml -o catalog_scan.xml
```

Where:

**-s**

Creates a signature for the output file. The signature must be stored for audit purposes.

**-c sw\_config.xml**

Path to the `sw_config.xml` configuration file that you downloaded with the scanner.

**-i CIT\_catalog\_I5OS.xml**

Path to the software catalog for IBM i systems.

**-o catalog\_scan.xml**

The output file.

4. Copy the output `catalog_scan.xml` file to the `/scans` directory, in which you store all scan results.
5. Copy the corresponding signature to the `/source` directory.

## Running the ISO tags scan

**9.2.5** Available from 9.2.5. In software identification tags scan, the scanner searches for ISO tags that are delivered with software products. After you upload the final package with scan results to BigFix Inventory, the tags are processed. Based on the information that they contain, the software is discovered.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

The ISO tags scan requires the software catalog for ISO tags. You can find it in the downloaded `ibm_i_cit_and_configs.zip` package.

1. In QSH, run the following command to initiate the ISO tag scan:

```
/qsys.lib/qtivcit.lib/wscansw.pgm -s -c sw_config.xml -i i5_iso_catalog.xml -o iso_scan.xml
```

Where:

**-s**

Creates a signature for the output file. The signature must be stored for audit purposes.

**-c sw\_config.xml**

Path to the `sw_config.xml` configuration file that you downloaded with CIT.

**-i i5\_iso\_catalog.xml**

Path to the ISO software catalog for IBM i systems.

**-o iso\_scan.xml**

The output file. It contains paths to all scanned ISO tags.

2. The scan creates the `iso_scan.xml` output file. Back up this file, because you will need to store the original output and its signature for audit purposes.
3. The `iso_scan.xml` output file lists all scanned ISO tags. You must now gather and copy these tags to a separate directory and create a text file that lists all of them. Create such a directory, for example `/isotag_scan`, and then complete the following steps:

- a. Open the `iso_scan.xml` file. Each entry in this file contains a path to the scanned ISO tag file, for example:

```
<MatchedSignature guid="ISO-TAGS">
<Variable name="INSTALL_PATH" value="/iso-swid/IBM_Capital_Regulatory_Reporting_Add-on-License-4.9.0.swidtag"/>
<Variable name="IS_INSTALLED" value="true"/>
</MatchedSignature>
```

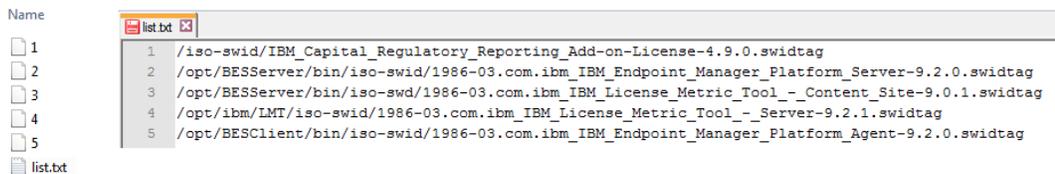
- b. Copy each path to a new file called `list.txt`. Place each path on a separate line, for example:

```
/iso-swid/IBM_Capital_Regulatory_Reporting_Add-on-License-4.9.0.swidtag
/iso-swid/1986-03.com.ibm_IBM_BigFix_Inventory_Server-9.2.1.swidtag
```

- c. Copy each of the scanned ISO tags to the `isotag_scan` directory. Rename the files so that they contain numeric values according to their order in the `list.txt` file.

For example, if the `/iso-swid/IBM_Capital_Regulatory_Reporting_Add-on-License-4.9.0.swidtag` file is written on the first line in the `list.txt` file, rename this ISO tag to 1.

The following image shows sample ISO tag files and their paths in the `list.txt` file.



4. Compress the `isotag_scan` directory into a `[zip|tar.gz|tgz]` package, and copy it to the `/scans` directory, in which you store all scan results.

**Warning:** The `list.txt` file must be the first file in the archive. You can achieve it by compressing only this file, and then adding the rest of files to the archive.

5. Copy the backup `iso_scan.xml` file and its signature to the `/source` directory.

## Running the package data scan

**9.2.5** Available from 9.2.5. In the package data scan, the scanner searches the system registry to gather information about packages that are installed on your endpoints. After you upload the final package with scan results to BigFix Inventory, the discovered packages are compared with the software catalog resulting in software discoveries.

**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

1. In QSH, run the following command to initiate the package data scan:

```
/qsys.lib/qtivcit.lib/wscanvdp.pgm -s -o package_scan.xml -c vpd_config.xml
```

Where:

**-s**

Creates a signature for the output file. The signature must be stored for audit purposes.

**-o package\_scan.xml**

The output file.

**-c vpd\_config.xml**

Path to the configuration file that you downloaded with the scanner.

2. Copy the output `package_scan.xml` file to the `/scans` directory, in which you store all scan results.
3. Copy the corresponding signature to the `/source` directory.

## Creating the final package

**9.2.5** Available from 9.2.5. Gather all scan results and compress them into a ZIP package that can be imported to BigFix Inventory.



**Note:** This task is optional, because it can be completed by an automated script. Use it only for advanced scenarios.

BigFix Inventory does not import single scan results, but rather a whole package that has the right file name and format. The package must contain the following files: `computer.yml`, `catalog_scan.xml`, `capacity.zip`, `isotag_scan.[zip|tar.gz|tgz]`, `package_scan.xml` and `source.zip`. It must be copied to your disconnected scans directory that you added as a data source.

### Considerations

- If you upload a package with older results, the current ones are overwritten.
  - Discovered software is reported with the import time, not the package timestamp.
  - Import only one package per endpoint. Otherwise, capacity results might be skipped.
  - Processed packages are not removed from your disconnected scans directory. The ones already imported are skipped.
1. Compress the `/source` directory, in which you store signatures, into the `source.zip` package, and copy it to the `/scans` directory.
  2. In the `/scans` directory, create a `computer.yml` file, and fill it in like in the following example:

```
endpointID: 6552CFF-5
Agent Version: IBM_doc_v.1.0
Catalog Version: 1250110.0
Operating System: IBM i V7R1M0 PowerPC 64
DNS Name: NC198511
Computer Name: NC198511
IP Address: 198.51.100.0
```

#### Where:

**endpointID** - (mandatory) Unique ID of your computer. It must contain the hardware serial number and LPAR ID in the `<HWSerial>-<LparID>` format, for example `6552CFF-5`. You can retrieve these values from the results of the capacity scan.

**Agent Version** - (optional) You can use this parameter to describe a way that you used to create the final package. For example, if you used the manual procedure, you can call it `IBM_doc_v.1.0`, or choose other names for automated processes. This information can be used for troubleshooting failing imports.

**Catalog Version** - (optional) Versions of the software catalog and its custom content, separated with a dot (.), for example 1250110.0. You can view the versions in BigFix Inventory by going to **Management > Catalog Upload**.

**Operating System** - (mandatory) Operating system of your computer. It must start with `IBM i`, but you can add more information, and have it displayed in the user interface. You can retrieve information about the name, version, and architecture from the results of the capacity scan.

**DNS Name** - (optional) Domain name, used for identification. It can be the same as Computer Name.

**Computer Name** - (mandatory) Name of your computer, used for identification.

**IP Address** - (optional) IP address of your computer, used for identification.

3. Compress the `/scans` directory into a ZIP package, and rename it to `<UTC_DATE>-<endpointID>.zip`, for example `201510191213-6552CFF-5.zip`, where:

**UTC\_DATE** - Date of scan in Coordinated Universal Time (UTC). It must have the following format: `YYYYMMDDHHMM`. The file name must start with this timestamp to ensure correct ordering.

**endpointID** - The same endpoint ID that you used in the `computer.yml` file. It is required to distinguish between various packages and computers.

4. Copy the ZIP package into your disconnected scans directory that you added as a data source in BigFix Inventory. The package is imported to BigFix Inventory after you run a data import.
5. Run a data import.

During the data import, BigFix Inventory checks the directory that you added as a data source and imports all scan packages that meet the requirements. Scan results are processed and displayed on reports in the user interface.

Files from processed packages are saved in `installation_directory/wlp/usr/servers/server1/tmp/datasources/Datasource_ID`.

## Performing optional configuration

You can perform optional configuration tasks to further customize the application.

### 10.0.8 Enabling HTTP Access Logging for BigFix Inventory

This task enables the server to log any incoming HTTP request. The task is limited when generic data on HTTP level, such as the remote IP, remote host, time, URL, method, status code, and response size are available.

To enable the access login, perform these steps:

1. Edit the `<BFI Install dir>\wlp\usr\servers\server1\customization.xml` and add following configuration:

```
<server>
  <httpEndpoint id='tema'>
    <accessLogging
      filepath="{server.output.dir}/logs/http_defaultEndpoint_access.log"
```

```

logFormat='%a %h %t "%r" URL: %U R-Meth: %m Q: %q Status Code: %s Response Size: %b
User: %{BFI-user-hash}o : %{_DSS_session}C' />
</httpEndpoint>
</server>

```

## 2. Restart BigFix Inventory Server

In `<BFI Install dir>\wlp\usr\servers\server1\logs\,http_defaultEndpoint_access.log` file is created. The file includes the logs for all HTTP calls made towards the application. By default, there are 2 logs each 20 MB. There is no option to set the location, number of files and the files size.

For more options of configuration, refer to the below topics:

- [HTTP access logging](#)
- [HTTP Access Logging \(httpAccessLogging\)](#)
- [HTTP transport channel custom properties](#)

## Data retention periods

**Table 150. Data retention periods**

Type of data	Period for which the data is retained	Changing the default period
Raw scan data: results of the file system scan, package data scan, and application usage statistics scan	7 days	To change the default period, change the value of the <b>raw_data_api_history_keep_days</b> parameter on the <b>Advanced Server Settings</b> panel. For more information, see: <a href="#">Advanced server settings (on page dccc1)</a> .
Raw utilization data that is displayed on the Resource Utilization report	90 days	To change the default period, go to the <b>Server Settings</b> panel and change the value in the <b>Retention Period</b> section. For more information, see: <a href="#">Configuring data retention period for raw utilization data (on page dcccvi)</a> .
Data that is needed to calculate utilization of license metrics that is displayed on the All Metrics report	Always	The period cannot be changed.
Data about an old complex signature that is substituted with a new complex signature	Until the software is detected based on the new signature	The period cannot be changed.

### Configuring data retention period for raw utilization data

By default, raw data about utilization of license metrics is stored in the BigFix Inventory database for 90 days. You can change the period depending on the period for which you want to generate reports of raw utilization data.

Retention period is set by default in fresh installations of BigFix Inventory. If you upgraded from Software Use Analysis, your original settings were preserved.

Raw utilization data is related to license metrics that are reported by products, which implemented the ISO/IEC 19770-4:2017 standard. By default, retention period for raw utilization data is set to 90 days. After that period, the data is removed from the BigFix Inventory database. Software items for which raw license utilization is not reported for a period longer than the specified one are no longer displayed on the Resource Utilization report.

1. In the top navigation bar, click **Management > Server Settings**.
2. Specify the period after which you want the data to be removed from the database. If you want to disable the data retention period, clear the check box. Then, click **Save**.

The screenshot shows a configuration panel with a checked checkbox labeled "Discard resource utilization data older than" followed by a question mark icon. Below this is a numeric input field containing "90" and a dropdown arrow, with the text "Days (minimum 30)" to its right.

The data that is older than the retention period is removed from the database during every import.

If the retention period was not configured or you shortened it considerably, removal of the large amounts of data might lengthen the first import after the change. During the consecutive imports, smaller amounts of data are removed and should not have considerable impact on the import time on condition that the import runs regularly.

## Setting up computer properties

You can specify computer properties that are to be gathered from the computers in your infrastructure. You can then use those properties to filter data on the Computers report and to assign computers to computer groups.



You must be an Administrator to perform this task.

9.2.5

IBM i

You cannot set up additional computer properties for IBM i computers.

1. To view the properties that are specified for the computers in your infrastructure, click **Management > Computer Properties**.
2. To add a property, click **New**.
3. In the **Create Computer Property** pane, specify the name of the property to be displayed in BigFix Inventory. Select the property from the **Data Source Property** list and click **Create**.



**Tip:** When you start typing in the property name, a list of possible values is displayed. It contains all properties whose names contain the letters that you entered in the specified order, regardless of whether the letters occur immediately one after another. For example, if you type `path`, the list might contain properties such as `Patches Applied - Solaris`, because letters `p`, `a`, `t`, `h` occur in this order in the property name.

New computer properties appear in the **Configure View** window under Computer section and you can select your preferred columns to be displayed in report.

While adding or updating properties, a property list for each data source is also available.

**Configure View**

Columns

Select All

Computer

- Internal Computer ID
- Computer Name
- Data Source Name
- First Seen
- Last Seen
- Image Name
- Image Digest
- Operating System
- DNS Name
- IP Address
- test OS
- CPU
- Free Space on System Drive
- imageID
- imageFQN
- BFI Capacity Scan - Serial Number value as-is
- a
- Max Archive Size exceeded
- VM MAN Tool Build Version
- Data Source Computer ID

Software

- Last Software Change
- Installed Software

Computer Health

To allow the computer property to be displayed, wait for the next scheduled import or run it manually. Each computer property requires a relevant analysis to be activated. After the import is complete, check the import log for warning messages that indicate that an analysis related to a particular property is not activated. If you find such a warning, activate the required analysis to have the computer property displayed.

Example warning message:

```
WARN: The analysis from 'VM Manager Information', which is associated with the computer property 'VM MAN Tool Build Version', is currently inactive and will not be imported. The data source name is 'Data Source'.
```

## Deprecated: Package and usage properties

In addition to computer properties, BigFix Inventory also uses package properties, UNIX package properties, and usage properties to retrieve data about your software and its usage. The data is originally gathered by analyses, and the properties are links between these analyses and BigFix Inventory. All properties are configured by default and do not require any action from you.

**9.2.12** Starting from application update 9.2.12, editing package and usage properties becomes deprecated.

## Package properties

Package properties retrieve data about software that is installed on the Windows operating systems. The data is gathered by the Installed Windows Applications analysis that retrieves the list of your software from the Windows Registry. The raw data collected by the analysis can also be viewed in the BigFix console by checking the analysis results.

To view the property in BigFix Inventory, go to the following URL: [https://<bfi\\_host>:<port>/management/sam/package\\_properties](https://<bfi_host>:<port>/management/sam/package_properties), and select the property. The property must be linked to the relevant Fixlet site that contains the analysis, otherwise the results will not be collected.

### Edit Package Property

Name\*

Windows Installed Packages

Link to Datasource

Data Source Property\*

*filter by property name...*

*Installed UNIX Packages*  
 Installed Windows Applications List  
*ActionSite*  
*Installed Windows Applications*  
 Installed Windows Applications List  
*IBM BigFix Inventory*  
*Installed Windows Applications*  
 Installed Windows Applications List  
*IBM License Reporting*  
*Installed Windows Applications*

Data retrieved from the analysis is displayed on the Package Data report. To access it, click **Reports > Package Data**.

## UNIX package properties

UNIX package properties retrieve data about software that is installed on the UNIX operating systems. The data is gathered by the UNIX Installed Packages analysis that retrieves the list of your software from the package management system. The raw data collected by the analysis can also be viewed in the BigFix console by checking the analysis results.

To view the property in BigFix Inventory, go to the following URL: [https://<bfi\\_host>:<port>/management/sam/unix\\_package\\_properties](https://<bfi_host>:<port>/management/sam/unix_package_properties), and select the property. The property must be linked to the relevant Fixlet site that contains the analysis, otherwise the results will not be collected.

### Edit UNIX Package Property

Name\*

Link to Datasource

Data Source Property\*

Installed Provisioning Profiles  
*MDM Beta*  
*Installed Profiles - Apple iOS*

---

Installed Provisioning Profiles  
*Mobile Device Management*  
*Installed Profiles - Apple iOS*

---

**Installed Unix Packages List**  
*IBM BigFix Inventory*  
*Installed UNIX Packages*

---

Installed Unix Packages List

Data retrieved from the analysis is displayed on the Package Data report. To access it, click **Reports > Package Data**.

### Usage properties

Usage properties retrieve data about the use of your software. The data is gathered by the Application Usage Statistics analysis.

To view the property in BigFix Inventory, go to the following URL: [https://<bfi\\_host>:<port>/management/sam/app\\_usage\\_properties](https://<bfi_host>:<port>/management/sam/app_usage_properties), and select the property. The property must be linked to the relevant Fixlet site that contains the analysis, otherwise the results will not be collected.

### Edit Application Usage Property

Name\*

Link to Datasource

Data Source Property\*

App Feedback  
*MDM Beta*  
*Apps - Android / Apple iOS*

---

App Feedback  
*Mobile Device Management*  
*Apps - Android / Apple iOS*

---

**Application Usage**  
*IBM Endpoint Manager for Software Use Analysis*  
*Application Usage Statistics*

---

Application Usage

Data retrieved from the analysis is displayed on the Metering Data report. To access it, click **Reports > Metering Data**.

### Setting the homepage

If you use a particular report or panel frequently, you can set it as BigFix Inventory homepage.

- To set a new homepage:
  1. Open the report or panel that you want to set as the homepage.
  2. Hover over the **User** icon , and click **Set as homepage**.
- To return to the default homepage:
  1. Hover over the **User** icon , and click **Profile**.
  2. Under the **Homepage** field, click **Clear**.

## Deprecated: Disabling subcapacity calculations

Subcapacity licenses are based on the number of processor value units (PVU) or resource value units (RVU) that can be used by the product not the number of all processor cores that are available on the physical server. Such a licensing scheme allows for reducing the cost of licenses for products that are eligible for PVU or RVU subcapacity. If no subcapacity products are installed in your environment, you can disable subcapacity calculations to improve the performance of the import.

 **Important:** 9.2.5 Starting from application update 9.2.5, the option to entirely disable subcapacity calculations is no longer available. You can disable PVU and RVU MAPC calculations, both full capacity and subcapacity, per computer group. For more information, see: [Setting up computer groups \(on page dx cvi\)](#).

To disable subcapacity calculations, go to <https://hostname:port/management/feature> and clear the **Subcapacity** checkbox. Then, click **Save**.

 **Tip:** You might restart the BigFix Inventory server to ensure that subcapacity calculations are disabled.

After you disable subcapacity calculations, subcapacity data is not uploaded to BigFix Inventory server during the import. Performance of the import is improved. Fixlets and tasks that are related to subcapacity configuration and VM managers remain available and relevant in the BigFix console. However, you do not have to run them. Additionally, the following elements of the BigFix Inventory user interface are hidden:

- Widgets:
  - IBM Capacity Data Completeness
  - IBM PVU Subcapacity
  - BigFix Software Classification
- Management panels:
  - BigFix Software Classifications
  - VM Managers
  - Metric Table Upload
  - Part Numbers Upload
- Reports:
  - IBM PVU Subcapacity
  - All Metrics

- Audit Trail
- Hardware Inventory

The following permissions are removed from the user roles:

- Manage Software Classification
- Manage VM Managers and Servers
- View Audit Trail
- View Hardware Inventory
- View License Metrics

## Classifying the BigFix client used by multiple BigFix products



**Note:** Refer to [Using BigFix Inventory to calculate license for BigFix products \(on page cmlxviii\)](#) for a complete step-by-step guidance on license counting process.

# Upgrading

A new version of BigFix Inventory is released periodically, typically at the end of each calendar quarter. Upgrade to the new version regularly to take full advantage of new features and application fixes.

## Upgrading BigFix Inventory

BigFix Inventory is currently offered in single maintenance stream. Upgrading to the entire environment includes upgrading the BigFix Inventory server, VM Manager tool, the scanner, and the database. For best results, update the server regularly to benefit from new capabilities and defect fixes. Once you finish the upgrade, you must restart all ongoing actions to enable the fixlets.



**Note:** It is recommended to upgrade BigFix Inventory frequently to make the new features and security fixes available. At least one upgrade per year is important.

Ensure that no files or directories in the BigFix Inventory installation directory are open in an external program. For example, ensure that no log files are open in a text editor. Also, ensure that no PDF reports are being generated during the server upgrade. Otherwise, the upgrade might fail with an error code 41.

For information about space requirements, see [Hardware requirements \(on page dx\)](#).



**Tip:** In large environments, first run the fixlet in a test environment before upgrading to check the component compatibility. To do so, back up your production database, restore it on the test server, and then upgrade. If the upgrade succeeds, upgrade the production server.



**Restriction:** You cannot upgrade between different operating systems.

BigFix Inventory server is maintained in a single maintenance stream. The next version after 10.0.16 release is 11.0.0. For BigFix Inventory server direct upgrade is supported from the last 8 server versions. The minimal version for direct upgrade path increases with every release. Depending on the version number, one or more upgrade steps are necessary.

### Steps to upgrade to the latest version

1. Upgrade through all interim versions using dedicated BigFix fixlet. See [Upgrading to the interim version \(on page dccxxiv\)](#) below.
2. Create a backup of the server. See [Backing up the server \(on page dccxxv\)](#).
3. Update the fixlet site. See [Updating the fixlet site \(on page dccxxvi\)](#).
4. Upgrade BigFix Inventory using fixlet: Upgrade to the latest version of BigFix Inventory.
5. Migrate the database schema. See [Updating the server database schema \(on page dccxxvii\)](#)
6. Upgrade all BigFix Inventory components, such as BigFix Inventory server, the database, VM Manager tool, scanner and actions. See [Upgrading the server in interactive mode \(on page](#)

[dccxxxv](#)), [Upgrading the server in silent mode \(on page dccxxvi\)](#), [Updating the server database schema \(on page dccxxvii\)](#), and [Upgrading the scanner, tools and actions \(on page dccxxviii\)](#).



**Note:** Ensure during upgrading actions to use **BigFix Inventory** site.

7. In case the schema migration fails, restore the server. See [Restoring the server after a failed upgrade \(on page dccxxxix\)](#).

**Result:** The BigFix Inventory server is upgraded to the latest version.



**Remember:** Run data import post upgrading the server.

### Steps to upgrade to an interim version



**Note:** Interim versions 10.x can be found in the **BigFix Inventory v10 (Deprecated)** site.

1. Create a backup of the server. See [Backing up the server \(on page dccxxxv\)](#).
2. Update the fixlet site. See [Updating the fixlet site \(on page dccxxvi\)](#).
3. Upgrade to relevant interim versions first BigFix Inventory using *Upgrade to the interim version X.Y.Z.V of BigFix Inventory* fixlets. Select a fixlet with the lowest version which is newer than currently installed BigFix Inventory.

#### 10.0.15

The fixlet description includes links that allow you to manually download BigFix Inventory.

4. Migrate the database schema. See [Updating the server database schema \(on page dccxxvii\)](#)
5. In case the schema migration fails, restore the server. See [Restoring the server after a failed upgrade \(on page dccxxxix\)](#).

**Result:** The BigFix Inventory server is upgraded to interim version. To upgrade the server to the latest version, perform the steps mentioned in the [Upgrade to the latest version \(on page dccxxiii\)](#) section.



**Remember:** Run data import post upgrading the server.

#### 11.0.0

### Steps before the upgrade (to upgrade BigFix Inventory to version 11.x for the first time)



**Restriction:** This is not applicable if BigFix Inventory server was already installed using the new *BigFix Inventory* site (BigFix Inventory v10.0.15.0-20240123-1827). In such case, only the standard upgrade procedure should be applied.

All active BigFix Inventory licenses have been extended to new sites during the date of release of version 11.0.0.0. Follow the upgrade steps described below:



**Remember:** It is recommended to update the Server Software Catalog to Catalog 20240508 published on 2024-05-22 if an older version is used.

*This is the last catalog available for the 10.x line.*

*Applying it before the upgrade will prevent accumulation of catalog changes to be processed in first Data Import after upgrade.*

Perform the following steps before upgrading:

1. Refresh the BigFix license. Follow the procedure for [extending the license entitlements](#).
2. Enable **BigFix Inventory** and **BigFix Inventory Discovery** sites.
3. Subscribe 'All Computers' to both the sites.
4. Activate the same set of analysis in **BigFix Inventory** site as configured in **BigFix Inventory v10 (Deprecated)** site.



**Remember:** Once you complete these steps, follow the standard upgrade procedure. Refer to [1 \(on page dccxxiii\)](#) and [2 \(on page dccxxiv\)](#).

### 11.0.0

#### Steps after the upgrade (upgrade required after the first upgrade to version 11.x)



**Restriction:** This is not applicable if BigFix Inventory server was already installed using the new *BigFix Inventory* site (BigFix Inventory v10.0.15.0-20240123-1827).

1. Review 'Computer Properties' for customizations using as a source properties of analysis from the **BigFix Inventory v10 (Deprecated)** and update them with reference to the analysis from the new **BigFix Inventory** site.
2. Deactivate and remove the **BigFix Inventory v10 (Deprecated)** site and remove it.
3. If BigFix license counting function is used, repeat the procedure described in Distributing the site mapping file.

## Upgrade considerations

New features and improvements may impact the existing capabilities. You need to take some additional steps or expect temporary longer duration of some processing.

Refer to the upgrade consideration when you upgrade from a specific version.

**Table 151. Upgrade considerations**

Version from which you are upgrading	Considerations
<p><b>11.0.0</b> Version 11.0.0 and above</p>	<ol style="list-style-type: none"> <li>1. The product is distributed using new sites.               <ol style="list-style-type: none"> <li>a. Refresh the license to get access to the new sites.</li> <li>b. New versions of scan actions will originate from the new site.</li> <li>c. The process to schedule the scan remains the same as before.</li> </ol> </li> <li>2. All BigFix Platform Agent-managed computers are visible. The site subscription no longer limits the computer visibility.</li> <li>3. The first data import after upgrading from version 10.x to version 11.x will result in re-importing the facts based on the analysis, such as Package Data, Application Usage, Detailed Hardware Scan, Computer Health, etc. This will extend the duration of data import, especially when DB2 database is used.</li> </ol> <p> <b>Note:</b> The direct upgrade to version 11.0.0.0 is supported from BigFix Inventory version 10.0.10.0 or newer.</p>
<p>Version 10.0.10 and above</p>	<p>Starting from BigFix Inventory version 10.0.10.0, direct upgrade is supported from the last 8 server versions. The minimal version for direct upgrade path increases with every release. Depending on the version number, one or more upgrade steps are necessary. For example, the minimal version for direct upgrade path to version 10.0.11.0 is 10.0.3.0. For versions up to 10.0.1.0 (inclusive), upgrade first to 10.0.2.0 then upgrade to 10.0.10.0 using <i>Upgrade to interim version</i> fixlet.</p>

For information on upgrade considerations for older versions, refer to the steps mentioned in the [BigFix Inventory v10 documentation](#).

## Updating the fixlet site

The content of the BigFix Inventory fixlet site can be periodically modified. New fixlets, tasks, and analyses can be added. The existing ones can be changed or might become obsolete due to functionality changes. If the BigFix server is installed on a computer with the Internet access, the BigFix Inventory fixlet site is updated automatically whenever the updates are available. However, if the server is installed on a computer without the Internet access, you must update the fixlet site manually. Start by checking whether the fixlet site that you are currently using is up-to-date. If a newer version of the fixlet site exists, download the site content by using the Airgap tool. Then, cache the files on the BigFix server by using the BES Download Cacher.



**Note:** The procedures in this section describe the extraction mode for upgrading the fixlet site. However, you can use non-extraction mode as an alternative. To explore the Airgap tool capabilities, see: [Using the Airgap tool](#).

## Checking the version of the fixlet site

Compare the current version of the fixlet site with the latest version that was published. If a newer version is available, updated the content of your fixlet site.

1. To check what is the latest version of the fixlet site, open the <http://sync.bigfix.com/cgi-bin/bfgather/bigfixinventory> site, and look for the `version` line.
2. To check what is the current version of the fixlet site that you are using, open the BigFix console and click the name of the fixlet site. The version of the site is displayed on the **Details** tab.

If a newer version of the fixlet site is available, update the content of your fixlet site.

## Updating the content of the fixlet site on Windows

If the BigFix server is installed on a Windows computer without the Internet access, use the Airgap tool to download the content of the fixlet site to a computer with the Internet access. Then, move the files to the Windows computer on which the BigFix server is installed. You can update the site content in extraction or non-extraction mode. The non-extraction mode is simpler but the procedure is available from BigFix 9.5.5. For earlier versions, use the extraction mode.

## Updating site content in non-extraction mode

The following procedure describes the simplest path. For all available options, see: [Using the Airgap tool in the non-extraction mode](#) in the BigFix documentation.

You need a Windows computer with the Internet access.

1. Obtain the serial number of your BigFix server and the e-mail address that is specified in the BigFix license. To obtain this information, go to the following URL: `https://<ip_address>:<port_number>/masthead/masthead.afxm`.

Where:

**<ip\_address>**

IP address of the BigFix server.

**<port\_number>**

Port that is used by the BigFix server. By default, it is 52311.

The information is listed in the following lines.

```
From: <mail_address>
X-Fixlet-Site-Serial-Number: <serial_number>
```

2. On a computer with the Internet access, gather site contents and create the Airgap response file.

- a. Go to the [Airgap tool](#) website and download the Airgap tool. Then, extract the files.
- b. Open the command line, go to the directory where you extracted the Airgap tool, and run the following command.

```
BESAirgapTool.exe -serial <serial_number> -email
    <mail_address> -createSiteList <site_list_file_name>
```

Where:

**<serial\_number>**

Serial number of your BigFix server.

**<mail\_address>**

E-mail address that is specified in the BigFix license.

**<site\_list\_file\_name>**

Name of the file to which you want to write the sites for your BigFix license.

- c. Open the `<site_list_file_name>` file and check whether the flag `A` is specified next to the **BigFix Inventory** site. The flag indicates that contents of the **BigFix Inventory** site is gathered and necessary files are downloaded. If a different flag is specified, change it to `A`.

```
N::BES Support::http://sync.bigfix.com/cgi-bin/bfgather/bessupport
A::BigFix Inventory::http://sync.bigfix.com/cgi-bin/bfgather/bigfixinventory
```

- d. Open the command line, go to the directory where you extracted the Airgap tool, and run the following command.

```
BESAirgapTool.exe -site <site_list_file_name> -download -cache <cache_name>
```

Where:

**<site\_list\_file\_name>**

Name of the file that contains the list of sites for your BigFix license.

**<cache\_name>**

Path to the folder where you want to store the downloaded files.

As a result, files are downloaded to the `<cache_name>` folder, and the `AirgapResponse` file is created.

3. Copy the `AirgapResponse`, and the `<cache_name>` folder to the Linux computer where the BigFix server is installed.

Place the files in the following locations.

- Place the `AirgapResponse` file in the folder with the `BESAirgapTool.exe` script.
  - Place the content of the `<cache_name>` folder in the BigFix server cache folder. By default, the cache folder is: `%PROGRAM FILES%\BigFix Enterprise\BES Server\wwwrootbes\bfmirror\downloads\shal`.
4. Open the command line, go to the directory where you placed the files and run the following command to import the content of the fixlet site to your BigFix server.

```
BESAirgapTool.exe
```

## Updating site content in extraction mode

The following procedure describes the simplest path. For all available options, see: [Using the Airgap tool in the extraction mode](#) in the BigFix documentation.

You need a Windows computer with the Internet access.

1. Open the directory where the BigFix server is installed and run the `BESAirgapTool.exe` file. When prompted, save the file to a new folder, for example `Airgap`. An airgap request file is created.
2. Copy all the created files to a Windows computer with the Internet access.
3. On the Windows computer with the Internet access, run the `BESAirgapTool.exe`. The airgap request file is changed into a response file.
4. Copy the `AirgapResponse` file to the BigFix server and place it in the directory that you created in step 1 ([on page dccxxix](#)).
5. Run `BESAirgapTool.exe`. The airgap response is loaded to the BigFix server.

[Cache the files \(on page dccxxxiii\)](#) and move them to the BigFix server.

## Updating the content of the fixlet site on Linux

If the BigFix server is installed on a Linux computer without the Internet access, use the Airgap tool to download the content of the fixlet site to a computer with the Internet access. Then, move the files to the Linux computer on which the BigFix server is installed. You can update the site content in extraction or non-extraction mode. The non-extraction mode is simpler but the procedure is available from BigFix 9.5.5. For earlier versions, use the extraction mode.

## Updating site content in non-extraction mode

The following procedure describes the simplest path. For all available options, see: [Using the Airgap tool in the non-extraction mode](#) in the BigFix documentation.

You need a Windows or Linux computer with the Internet access.

1. Obtain the serial number of your BigFix server and the e-mail address that is specified in the BigFix license. To obtain this information, go to the following URL: `https://<ip_address>:<port_number>/masthead/masthead.afxm`.

Where:

**<ip\_address>**

IP address of the BigFix server.

**<port\_number>**

Port that is used by the BigFix server. By default, it is 52311.

The information is listed in the following lines.

```
From: <mail_address>
X-Fixlet-Site-Serial-Number: <serial_number>
```

2. On a computer with the Internet access, gather site contents and create the Airgap response file. You can perform these steps on Windows or Linux, regardless of the operating system on which the BigFix server is installed.

- **Windows** To gather site contents and create the Airgap response file on a Windows computer with the Internet access, perform the following steps.
  - a. Go to the [BigFix Enterprise Suite Download Center](#) website, select most recent release and download the Airgap tool. Then, extract the files.
  - b. Open the command line, go to the directory where you extracted the Airgap tool, and run the following command.

```
BESAirgapTool.exe -serial <serial_number> -email
<mail_address> -createSiteList <site_list_file_name>
```

Where:

**<serial\_number>**

Serial number of your BigFix server.

**<mail\_address>**

E-mail address that is specified in the BigFix license.

**<site\_list\_file\_name>**

Name of the file to which you want to write the sites for your BigFix license.

- c. Open the `<site_list_file_name>` file and check whether the flag `A` is specified next to the **BigFix Inventory** site. The flag indicates that contents of the **BigFix Inventory** site is gathered and necessary files are downloaded. If a different flag is specified, change it to `A`.

```
N::BES Support::http://sync.bigfix.com/cgi-bin/bfgather/bessupport
A::BigFix Inventory::http://sync.bigfix.com/cgi-bin/bfgather/bigfixinventory
```

- d. Open the command line, go to the directory where you extracted the Airgap tool, and run the following command.

```
BESAirgapTool.exe -site <site_list_file_name> -download -cache <cache_name>
```

Where:

**<site\_list\_file\_name>**

Name of the file that contains the list of sites for your BigFix license.

**<cache\_name>**

Path to the folder where you want to store the downloaded files.

As a result, files are downloaded to the <cache\_name> folder, and the **AirgapResponse** file is created.

- **Linux** To gather site contents and create the Airgap response file on a Linux computer with the Internet access, perform the following steps.

- a. Go to the computer where the BigFix server is installed, open the terminal, and run the following command.

```
# cd /opt/BESServer/bin
# ./Airgap.sh -remotedir <folder_name>
```

Where: <folder\_name> is the folder that you will copy to the Linux computer with the Internet access.

- b. Move the <folder\_name> folder to the Linux computer with the Internet access.
- c. In the <folder\_name> folder, locate the **airgap.tar** compressed file, and decompress it.
- d. From the decompressed folder, delete the **AirgapRequest.xml** file.
- e. Open the terminal, go to the directory where you extracted the Airgap tool, and run the following command.

```
./Airgap.sh -serial <serial_number> -email
<mail_address> -createSiteList <site_list_file_name>
```

Where:

**<serial\_number>**

Serial number of your BigFix server.

**<mail\_address>**

E-mail address that you specified in the BigFix license.

**<site\_list\_file\_name>**

Name of the file to which you want to write the sites for your BigFix license.

- f. Open the `<site_list_file_name>` file and check whether the flag `A` is specified next to the **BigFix Inventory** site. The flag indicates that contents of the **BigFix Inventory** site is gathered and necessary files are downloaded. If a different flag is specified, change it to `A`.

```
N::BES Support::http://sync.bigfix.com/cgi-bin/bfgather/bessupport
A::BigFix Inventory::http://sync.bigfix.com/cgi-bin/bfgather/bigfixinventory
```

- g. Open the terminal, go to the directory where you extracted the Airgap tool, and run the following command.

```
./Airgap.sh -site <site_list_file_name> -download -cache <cache_name>
```

Where:

**<site\_list\_file\_name>**

Name of the file that contains the list of sites for your BigFix license.

**<cache\_name>**

Path to the folder where you want to store the downloaded files.

As a result, files are downloaded to the `<cache_name>` folder, and the `AirgapResponse` file is created.

3. Copy the `AirgapResponse`, and the `<cache_name>` folder to the Linux computer where the BigFix server is installed.

Place the files in the following locations.

- Place the `AirgapResponse` file in the folder with the `Airgap.sh` script.
  - Place the content of the `<cache_name>` folder in the BigFix server cache folder. By default, the cache folder is: `/var/opt/BESServer/wwwrootbes/bfmirror/downloads/sha1`.
4. Open the terminal, go to the directory where you placed the files and run the following command to import the content of the fixlet site to your BigFix server.

```
./Airgap.sh -run
```

## Updating site content in extraction mode

The following procedure describes the simplest path. For all available options, see: [Using the Airgap tool in the extraction mode](#) in the BigFix documentation.

You need a Windows computer with the Internet access.

1. Download the Airgap tool to the Windows computer with the Internet access. The tool is available on the [BigFix Enterprise Suite Download Center](#) page.
2. Open the command line and run the following command.
  - For BigFix version 9.5.5 and higher

```
cd /opt/BESServer/bin
./Airgap.sh -remotedir <directory>
```

Where:

**<directory>**

Directory where the `airgap.tar` file is going to be created.

- For BigFix versions up to 9.5.4

```
cd /opt/BESServer/bin
./Airgap.sh -run
```

The `airgap.tar` file is created in the current directory.

3. To extract the Airgap request file from the `airgap.tar` file, run the following command.

```
tar xvf airgap.tar
```

4. Copy the extracted `AirgapRequest.xml` file to the Windows computer and place it in the folder that contains the downloaded `BESAirgapTool.exe` file.
5. On the Windows computer, run the `BESAirgapTool.exe`. The Airgap request file is changed into the Airgap response file.
6. Copy the `AirgapResponse` file to the Linux computer where the BigFix server is installed and place it in the `/opt/BESServer/bin` directory.
7. Run the Airgap tool again to upload the `AirgapResponse` file to BigFix.

```
cd /opt/BESServer/bin
./Airgap.sh -run
```

Wait a few minutes for the BigFix console to refresh.

[Cache the files \(on page dccxxiii\)](#) and move them to the BigFix server.

## Caching the files

Typically, fixlets and tasks download files that they require from the Internet. In separated networks, the required files must first be cached on a Windows computer with the Internet access and then moved to the BigFix server.

You need a Windows computer with the Internet access.

You need to complete these steps only if you updated the site content in extraction mode. If you updated the site content in non-extraction mode, the steps are not required.

1. **Optional:** The default size of the BigFix server cache is enough if you use only the **BigFix Inventory** fixlet site. If you plan to run fixlets from other sites, such as **BES Support**, increase the cache size so that the BigFix server does not try to delete any files. To increase the cache size, perform the following steps.
  - a. Log in to the BigFix console.
  - b. In the navigation tree, click **Computers** and right-click the computer on which the BigFix server is installed. Then, click **Edit Computer Settings**.

- c. Increase the value of the `_BESGather_Download_CacheLimitMB` setting. If the setting is not on the list, add it and specify the value in MB.

The size depends on each fixlet site. You might need to increase it to at least a couple of gigabytes.

2. Copy the `BigFix Inventory.efxm` file from the BigFix server to the Windows computer with the Internet access.
  - a. Log in to the computer where the BigFix server is installed and go to the `install_dir\BES Server\wwwrootbes\bfsites` directory.
  - b. Copy the `BigFix Inventory.efxm` file and move it to the computer with the Internet access. Place the file in the `C:\BigFix` directory.
3. Use the BES Download Cacher to download the required files.
  - a. Download the BES Download Cacher to the computer with the Internet access. The tool is available on the [BigFix Enterprise Suite Download Center](#) page.
  - b. On the computer with the Internet access, go to the `C:\BigFix` directory, and create a folder that is called `downloads`.



**Tip:** Do not clean the contents of this folder. Next time, when you run the Download Cacher only the files that were changed since the last d will be updated. The process will last shorter than if you downloaded the entire content every time.

- c. Run the BES Download Cacher.

```
BESDownloadCacher.exe -m "C:\BigFix\BigFix Inventory.efxm"
-x C:\BigFix\downloads
```

4. Copy the contents of the `downloads` folder from the computer with the Internet access to the following directory on the BigFix server.

```
install_dir\BES Server\wwwrootbes\bfmirror\downloads\shal
```

The cached files are automatically delivered to the BigFix relays and clients every time you run a fixlet that requires those files. Use both the Airgap tool and the BES Download Cacher periodically to ensure that the content of your fixlet site is always up-to-date.

When you run a fixlet, an action is created to indicate the status of its execution. If an action started by a fixlet is running and a newer version of the fixlet is delivered, stop the current action. Then, run the new version of the fixlet. To do this, perform the following steps.

1. Log in to the BigFix console and go to Actions.
2. Look for actions started by fixlets that were updated, right-click each action, and click **Stop Action**.
3. Run the updated version of the fixlets.

## Backing up the server

Before you start the upgrade, back up the database, installation registry, and the server files to be able to restore the server if the upgrade fails.

1. Stop the BigFix Inventory server.

2. Back up the database.

**Linux** Back up the DB2 database ([on page dccclxxvii](#)).

**Windows** Back up the SQL Server database ([on page dccclxxxiii](#)).

3. Back up the installation registry.

**Linux** `/var/.com.zerog.registry.xml`

This file is hidden. To view it, run the `ls -la` command.

If you installed the server as a non-root user, the registry is in `$HOME/.com.zerog.registry.xml`.

**Windows** `C:\Program Files\Zero G Registry\.com.zerog.registry.xml`

This file is hidden. To view it, change the Folder Options in Control Panel to display hidden files, or type the complete path in the address bar of any open window.

4. Back up the installation directory. The default paths are:

For BigFix Inventory 10.x

**Linux** `/opt/BFI`

**Windows** `C:\Program Files\BigFix Enterprise\BFI`

For BigFix Inventory 9.x

**Linux** `/opt/ibm/BFI`

**Windows** `C:\Program Files\ibm\BFI`

5. If you did not start the BigFix Inventory server during the database backup, [start the server \(on page dccclvi\)](#) now.

You completed all steps that are required to restore the server after a failed upgrade. You can proceed to upgrading the server.

## Upgrading the server in interactive mode

To upgrade the server in interactive mode, start the installation of a newer version of BigFix Inventory on the same computer. In interactive mode, you upgrade the server through a wizard.

To see the automated procedure for upgrading the server to the newest version, see: [Upgrading BigFix Inventory \(on page dccxxiii\)](#).

[Create a back up \(on page dccxxv\)](#) of the database, installation registry, and the server files to be able to restore the server if the upgrade fails.

1. Download the latest installer and extract it.
  - a. Log in to the BigFix console and go to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - b. Select **Download BigFix Inventory**, and click **Take Action**.
  - c. Select the computer on which the BigFix Inventory server is installed, and click **OK**. When the download completes, extract the installer.

2. Run one of the installation files:

```
Linux setup-server-linux-x86_64.sh
```

```
Windows setup-server-windows-x86_64.bat
```

3. Follow the steps in the wizard.
4. When the upgrade is complete, click **Done**.



**Tip:** If the upgrade fails, check the upgrade logs. For more information, see: [Server installation and upgrade logs \(on page mcccxcii\)](#).

[Continue with the upgrade of the remaining components \(on page dccxxiii\)](#)

---

#### Related information

[Server installation and upgrade logs \(on page mcccxcii\)](#)

[Installation and upgrade problems \(on page mcccclxii\)](#)

[Restoring the server after a failed upgrade \(on page dccxxxix\)](#)

## Upgrading the server in silent mode

To upgrade the server in silent mode, start the installation of a newer version of BigFix Inventory on the same computer. Silent installation runs in the background.

To see the automated procedure for upgrading the server to the newest version, see: [Upgrading BigFix Inventory \(on page dccxxiii\)](#).

[Create a back up \(on page dccxxv\)](#) of the database, installation registry, and the server files to be able to restore the server if the upgrade fails.

1. Download the latest installer and extract it.
  - a. Log in to the BigFix console and go to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - b. Select **Download BigFix Inventory**, and click **Take Action**.
  - c. Select the computer on which the BigFix Inventory server is installed, and click **OK**. When the download completes, extract the installer.
2. Read the license agreement in the `license.txt` file. The file is in the `license/LA_language` directory.
3. Edit the `upgrade_response.txt` file.
4. In the response file, set the `RSP_LICENSE_ACCEPTED` parameter to `true`.
5. To start the upgrade, run one of the following commands:

```
Linux ./setup-server-linux-x86_64.sh -i silent -f /
response_file_path/upgrade_response.txt
```

```
Windows setup-server-windows-x86_64.bat -i silent -f
response_file_path\upgrade_response.txt
```

For `response_file_path`, enter the absolute path to the response file. For example:

```
setup-server-windows-x86_64.bat -i silent -f C:\images\SUA\upgrade_response.txt
```

 **Tip:** If the upgrade fails, check the upgrade logs. For more information, see: [Server installation and upgrade logs \(on page mcccxcii\)](#).

Continue with the upgrade of the remaining components (on page dccxxiii)

---

#### Related information

[Server installation and upgrade logs \(on page mcccxcii\)](#)

[Installation and upgrade problems \(on page mcccclxii\)](#)

[Restoring the server after a failed upgrade \(on page dccxxxix\)](#)

## Updating the server database schema

BigFix Inventory server database schema gets updated when upgrading from one version to another.

### 10.0.5 MS SQL only

1. Database user configured for BigFix Inventory must be the owner of the database. A non-owner cannot perform the database update. The following error message appears if a non-database owner tries to update the database:

```
User 'user_name' is not the owner of specified database. Current database owner is 'owner'. As
Database
```

```
Administrator use the following query to fix database ownership: ALTER AUTHORIZATION ON
DATABASE:::db_name
TO "user_name".
```

2. MS SQL database has a MS SQL agent created BigFix Inventory database index maintenance. Index maintenance is not supported for MS SQL Express edition. The following message appears for MS SQL Express edition:

```
MS SQL Express Edition is detected.
There will be not created BFI Index Maintenance Job as this edition does not support SQL Server Agent.
```

3. The user must have a system admin or has the access of "SQLAgentUserRole" for `msdb` database to manage SQL Server agent jobs. Without access, the user cannot manage the BigFix Inventory index maintenance job. Instead of the index maintenance job being created or updated, the following warning appears:

```
WARNING - The database user user_name does not have sysadmin nor SQLAgentUserRole for msdb database to
manage SQL Server Agent jobs. BFI Index Maintenance Job will not be created/updated, warnings will be
printed in logs.
```

The database upgrade is not blocked, but the index maintenance job is not created. The `tema.log` file includes the failure as a warning for migration scripts running during the job creation attempt.

Follow the below steps to update the database schema:

1. After you upgrade the server, go to BigFix Inventory and click on **Schema Update** to complete the upgrade.

For the MS SQL database, the user who is configured in this database must have the `db_owner` role assigned. Log in to BigFix Inventory, and click **Update Schema**.

 **Important:** The time taken to complete the upgrade depends on the size of the environment. It may vary from 2 minutes to 2 hours.

2. To ensure that all changes are processed, run an import. In BigFix Inventory, click **Management > Data Imports**, and click **Import Now**.

 **Important:** The time taken by the first import may take longer as it includes the new software catalog and might require additional computation to prepare existing data for the new version.

## Upgrading the scanner, tools and actions

Upgrade BigFix Inventory scanner, tools, and actions as part of server upgrade process.

1. Upgrade the VM Manager tool to the latest version.
  - a. In the BigFix console, go to **Fixlets and Tasks**.
  - b. Select **Update VM Manager Tool** to version number, and click **Take Action**.
  - c. Select the computer on which the VM Manager Tool is installed, and click **OK**.
2. Update the BigFix Inventory scanner on an operating system that is supported. New Scanner releases contains security fixes, fixes of problems that appear in your environment, or new features that you want to use, upgrade the scanner to the latest version. For information about changes introduced in each version of the scanner, see the [Release notes](#).

To update the scanner, perform the following steps:

- a. In the BigFix console, go to **Fixlets and Tasks**.
  - b. Select **Install or Update Scanner**, and click **Take Action**.
  - c. Select all relevant computers, and click **OK**.
3. It is recommended to restart actions like **Initiate Software Scan** and **Upload Software Scan Results** to benefit from improvements and new features. For other fixlets and list of updated actions, refer to [Release notes](#). You can also check **Source Release Date** to see updated action.

To restart the actions, perform the following steps:

- a. In the BigFix console, go to **Actions**.
  - b. Look for actions started by the fixlets that were updated, right-click each action, and click **Stop Action**.
  - c. Run the updated version of the fixlets.

## Restoring the server after a failed upgrade

After a failed upgrade, you can restore the server to its original state by restoring the database, installation registry, and the server files from backups.

If you did not back up the installation directory and the registry, you can install the new server and restore only the database. You can keep the data that is already in your database and avoid running the initial import.

1. [Stop the server \(on page dcccxlviij\)](#).
2. Restore the database from a backup.

**Linux** [Restore the DB2 database \(on page dcccclxxx\)](#).

**Windows** [Restore the SQL Server database \(on page dcccclxxxiv\)](#).

3. Replace the installation registry with the backup registry. Copy the `.com.zerog.registry.xml` backup file to one of the following directories:

**Linux** `/var/`

**Windows** `C:\Program Files\Zero G Registry\`

If you installed the server as a non-root user, copy the backup file to `$HOME/`.

4. Replace the installation directory with the backup directory.
5. [Start the server.](#)

## Migrating BigFix Inventory

Migration can be limited to a scenario of moving BigFix inventory database from one server to another or migrating the whole BigFix deployment from one type of operating system to another.

In the below table, you can find summary of possible migration scenarios with reference to the procedure:

Migration scenario	What to do?	History preserved	Details
Migrate BFI database to different server	Backup and restore database.  Reconfigure BigFix Inventory database connection.	Yes	<a href="#">Migrate BigFix Inventory database to different server (on page dcccxxxvii)</a>
Migrate BFI Server to different server	Install BigFix Inventory on new host and point to the existing database.	Yes	<a href="#">Reinstalling BigFix Inventory with an existing database (on page dcccxxxvii)</a>
Migration of VM Manager Tool	Move configuration files and regenerate <code>VMM_ID</code> for each configuration.	Yes	<a href="#">Backing up and restoring the VM Manager tool (on page dcccxlvi)</a>
Migration of BigFix Platform Server or database to different host	Edit the Data Source to set new connection details.	Yes	<a href="#">Editing a data source (on page dcccxciii)</a>
Migration of BigFix Inventory between different server operating systems	Side-by-side migration  <i>Migration process is manual, and it is recommended to get assistance from HCL services.</i>	No	<a href="#">Side-by-Side migration (on page dcccxi)</a>  <a href="#">Tutorial: Migrating software assignments between two BigFix Inventory servers (on page mcccxlvi)</a>
Migration of BigFix Platform between different server operating systems	Side-by-side migration  <i>Migration process is manual, and it is recommended to get assistance from HCL services.</i>	No	<a href="#">Side-by-Side migration (on page dcccxi)</a>  <a href="#">Tutorial: Migrating software assignments between two BigFix Inventory servers (on page mcccxlvi)</a>

Migration scenario	What to do?	History preserved	Details
Migrate from IBM License Metric Tool to BigFix Inventory	Side-by-side migration Migration process is manual, and it is recommended to get assistance from HCL services.	No	<i>It is recommended to get assistance from HCL services.</i>

### Additional remarks

- Moving BigFix Platform Agent between BigFix Platform Servers is recognized as a removed device on source and new on destination. The same will be observed in BigFix Inventory when both Platform servers are visible in a single BigFix Inventory. Any classification will be lost. Can be migrated following the [Tutorial: Migrating software assignments between two BigFix Inventory servers \(on page mcccxlvi\)](#) and using computer\_id as the reference for source / target computers.

### Side-by-Side migration

Side-by-Side migration is a method to set up new BigFix Inventory instance and replicate end user configuration / software classification. Currently, this is the only supported method when Computer ID on BigFix or database type is changed. It is also useful in migrating to a new environment and start again.

### Changed Computer ID or Database Type Migration Plan – High Level

In this scenario, it is recommended to keep the existing installation for historical reporting and to set up a new BigFix Inventory Server and migrate the data from the old system to the new one.

Additional actions to be taken:

1. Preserve the existing computer ID on BigFix Client side as a Computer Property or in a file which is not impacted by re-installation of the BigFix Agent or assignment of a new computer ID.
2. Switch the legacy BigFix Inventory instance to a read-only mode.
  - a. Disable BigFix Inventory imports after ensuring a final successful import.
  - b. Ensure that end users understand the change in functions from active usage to historical reporting usage - announce to use BigFix Inventory only for read-only purposes.
3. Execute the last 3rd party synchronization and disable jobs on legacy instance.
4. Secure BigFix Inventory instance for historical reporting and export the data for migration.
5. Create migration reconciliation process by which you can evaluate historical versus migrated BigFix Inventory completeness.
6. Build a new BigFix Platform environment and set up a new BigFix Inventory instance.
  - a. Migrate BigFix Inventory settings and Custom Rules.
  - b. Run the first BigFix Inventory import (needed to generate endpoint catalog).
  - c. Migrate the BigFix Inventory Custom Catalog.

- d. Execute the following SQL query on both Inventory databases, the legacy one and the new one, to see and compare versions of the catalog custom content:

```
select value from dbo.system_globals where name='catalog_custom_content_version'
```

- e. If the version from the new Inventory database is lower than the old one then update the version in the new database to the value old+1.

Example:

- Old value: '--- 12'
- New value: '--- 13'

```
update dbo.system_globals set value='--- 13' where
name='catalog_custom_content_version'
```

- f. Run the second BigFix Inventory import.
- g. Set up the BigFix Inventory scans (use at least 1 week scan distribution).
- h. Set up custom analysis.
7. Migrate the computers/devices to the new BigFix Platform.
- a. Deploy BigFix Inventory Scanner if it is missing.
  - b. Apply endpoint adjustments, for example, exclusions.
  - c. Migrate computer/device specific information to new BigFix Inventory instance once the first scan has been executed and deployed.
8. Deploy / check BigFix Inventory VM Manager instances.
9. Review the completeness of migration as per documented migration reconciliation process.
10. Make sure the majority of computers reporting data in BigFix Inventory.
11. Reactivate 3rd party integrations.

## Unchanged Computer ID and Database Type Migration Plan – High Level

In this scenario, it is assumed that both Platform and Inventory is still in sync and only BigFix Inventory is moved to new host – server, database or both.

It is recommended to keep the existing installation for historical reporting purposes until setup of new BigFix Inventory Server and switch is complete.

Additional actions to be taken:

1. Switch the legacy BigFix Inventory instance to read-only mode.
  - a. Disable BigFix Inventory imports after the final import is successful.
  - b. Ensure that end users understand the change in functions from active use to historical reporting use - announce to use BigFix Inventory only for read-only purposes.
2. Execute last 3rd party synchronization and disable jobs on legacy instance.
3. Secure BigFix Inventory instance for historical reporting.
4. Perform BigFix Inventory database backup.

5. Build a new BigFix Inventory environment and setup new BigFix Inventory instance.
  - a. Restore BigFix Inventory database from the backup.
  - b. During initial configuration of BigFix Inventory, enter the connection details to the restored database.
  - c. Migrate BigFix Inventory settings stored in file system, Server Certificate, SSO settings, `jvm.options` or `server.xml` customizations.
  - d. Run the first BigFix Inventory import (needed to generate endpoint catalog and push it to the endpoints from the new server).
6. Review the new instance.
7. Reactivate 3rd party integrations against new BigFix Inventory instance.
8. Remove the old BigFix Inventory instance.

# Catalog Overview

This section provides information about catalog updates available with every release.

Catalogs are signatures created manually to discover software installed on your devices. The signatures help in managing the software licenses by identifying and differentiating between the software licenses installed in your environment. Catalog discovery also ensures that the software installed in your environment is compliant, the latest, and accurate.

The different types of signatures are file signatures, registry signatures, package signatures, and template-based signatures.

To create signatures, BigFix Inventory runs the scanner to collect data from endpoints, and the collected data is matched against the catalog signatures. The identified software is then reported under the [Software Classification reports \(on page mlx\)](#).

Signatures created as part of BigFix Inventory are integrated with the existing catalog, and the latest catalog is generated.

Regular updates to the catalog are necessary to include new software products and versions. The **Server Software Catalog Update (version)** fixlet ensures that the BigFix Inventory system remains up-to-date and accurate in identifying and managing software assets. For more information on the fixlet, refer to [Server Software Catalog Update \(version\) \(on page cccxciii\)](#).

The Catalog provided by HCL contains signatures for a range of software from various vendors, such as Microsoft, Oracle, and many more. It also includes license information for IBM products and template signatures.

## What's new in this Catalog release

BigFix Inventory provides new features and enhancements that facilitate your work with the application. For more information, follow [BigFix Forum - Inventory \(Release Announcements\)](#).



**Notice:** Starting in July 2024, Catalog updates are available from a new BigFix Inventory Discovery site, and BigFix Inventory server version 11.x is required for this and all subsequent catalog releases. It is recommended to update to the latest versions, as every update may bring important security updates.

Below are the version numbers for the current release:

### Products and published sites

BigFix Inventory Server version 11.0.0.0: BigFix Inventory site version 2

BigFix Inventory Catalog version 20240612: BigFix Inventory Discovery site version 2

Starting with BigFix Inventory version 10.0.13, the BigFix Inventory team initiated catalog-related improvements to be ready for more frequent and server-independent updates. All changes up to version 10.0.16 are summarized in a dedicated BigFix [forum post](#).

## 20240612 Catalog update 20240612

### Features available in the current release

- A new BigFix Inventory Discovery site for catalog updates
- Reduced catalog package size as backward compatible files were removed
- Refined the main catalog content for streamlined processing and removal of orphan records
- Integrated new definitions to reduce noise and enhance out-of-the-box discovery capabilities.
- A new format of changelist that includes additions, removals, and modifications. The first changelist includes all changes between the 20240306 catalog and this release, and it will grow bigger with each update.
- Discovery of 250+ new software versions with the use of standard and template signatures, including software manufacturers such as Adobe, Micro Focus, Microsoft, Oracle, VMware, etc.
- The ideas implemented are [BFINV-I-270](#) and [BFINV-I-355](#). GUIDs are added to the new change list.
- End-of-support information has been refreshed for Oracle software.

To view the complete list of new features and defects that were fixed in this application update, refer to the [Catalog release notes](#).

To ensure a seamless transition without disrupting existing BigFix Inventory, deployments there is change to the distribution method and compatibility definitions of the catalog.

Upgrading the BigFix Inventory server to version 11 is required to activate the catalog import option. Previous versions of the BigFix Inventory server will ignore new catalogs during import time. For more information, refer to [Upgrading BigFix Inventory \(on page dcccxi\)](#).

Contact support if specific discovery gaps are noticed in reports before and after catalog updates.

## Catalog End-of-Support data schedule

Learn about the catalog end-of-support data schedule about the publishers.

The table shows the end of support dates for the operating systems, application server platforms, and databases utilized by the BigFix Inventory server.

### 20240612 EOS updates for Catalog release 20240612

Publisher	EOS - initial release version	EOS - updated release version	Source of information
Microsoft	10.0.4.0	10.0.4.0 10.0.9.0	Microsoft official site

<b>Publisher</b>	<b>EOS - intial release ver- sion</b>	<b>EOS - updated release version</b>	<b>Source of information</b>
		10.0.12.0 10.0.14.0 10.0.16.0	
Oracle	10.0.10.0	10.0.13.0 10.0.15.1 11.0.0.0 (Catalog version 20240612)	Oracle official site
Adobe	10.0.10.0	10.0.13.0 10.0.15.2	Adobe official site
VMWare	10.0.10.0	10.0.15.1	VMware official site
Micro Fo- cus	10.0.13.0	10.0.15.2	Micro Focus official site
Red Hat	10.0.10.0	10.0.15.0	Red Hat official site
Veritas	10.0.15.2	10.0.15.2	Veritas official site
Broadcom	10.0.16.2	10.0.16.2	Broadcom official site
SAP	10.0.16.2	10.0.16.2	SAP official site
BMC	10.0.16.2	10.0.16.2	BMC official site
SAS	10.0.15.1	10.0.15.1	SAS official site

## Software Data Harvesting

We are introducing a BigFix Inventory Catalog Enhancement program. The purpose of this program is to provide BigFix Inventory clients with better discovery capabilities adjusted to software installed on their Windows endpoints.

The Software Data Harvesting Tool for BigFix Inventory is part of this program. It collects installed software data from selected by client subset of their Windows endpoints which then can be sent to BigFix Inventory for analysis and inclusion in the BigFix Inventory Software catalog. This will greatly improve client's experience with BigFix Inventory.

At this moment, the Software Data Harvesting Tool for BigFix Inventory is supported on Windows only.

The tool consists of one VBScript file. A user can run the script using a fixlet or as a standalone tool if BigFix client is not installed on the endpoint. Harvested data is placed inside a compressed file. The user can review the harvested data before uploading it to the HCL servers.

This document provides information about the tool, its requirement, design and the output received using the tool.

## Deliverable

Only the program/script is deliverable.

## Supported Operating Systems and prerequisites

### Operating system - Windows (all versions)

Harvesting tool runs on all versions of Microsoft Windows. The tool supports all operating system versions that are supported by Microsoft (including extended support).

### Prerequisites

This script is a standalone script/program. There is no dependency on any external program for running this program.

Standalone version:

#### Display help

- `cscript /nologo HarvestingTool.vbs /?`

Run all scanners by passing no arguments.

- `cscript /nologo HarvestingTool.vbs [optional comma-separated set of scanners to run]`

Run selected scanners by passing arguments:

- `cscript /nologo HarvestingTool.vbs [comma-separated set of scanners to run]`

For example, `cscript /nologo HarvestingTool.vbs UninstallRegistryScanner, ExecutablesScanner`



**Note:** It is recommended to run the script as an Administrator to be able to access to all the files.

## Endpoints

The maximum number of endpoints is 10,000. It is recommended to run the script as an Administrator to be able to access to all the files.

## Scope of the Harvesting tool

The scope of this tool is limited to collecting data from:

- Windows start menu, desktop shortcuts, pinned applications
- Task Manager
- Windows services
- Uninstall registry (both 32-bit and 64-bit)

- Executables pointed by the above data or found in the same folders
- License or readme files found in the same folders

The tool does not collect personal data or usage statistics of the applications or users.

## Data collected by the Harvester tool

Harvester Tool will collect software data from target computers. The following information is collected.

1. all information provided in the uninstall registry
2. all services and the executables they point to
3. all shortcuts on the desktop of all users and executables they point to
4. all pinned applications and executables they point to
5. all running tasks in the Task Manager and executables they point to
6. all programs listed in the start menu of:
  - Everyone
  - All the individual users
  - (Local and Roaming data)
7. Information is collected from both 32-bit and 64-bit executables

**Following data is collected from the start menu programs, desktop shortcuts, pinned applications, services and task manager:**

### Shortcuts

- Shortcut file name
- Path to the shortcut
- Description
- Executable name
- Executable path

### Windows service information

- Service Name
- Display Name
- Description
- Executable name
- Executable

### Path Processes list

- Executable name
- Executable path

### From UninstallRegistry

- DisplayName
- DisplayIcon
- DisplayVersion
- InstallDate
- MSIInstallLocation
- InstallLocation
- InstallSource
- ModifyPath
- Publisher
- UninstallString
- RegistryLocation

Executable files (information about executables should be taken from processes, executables pointed by shortcuts, Uninstall Registry Install Location and Windows services

- FileName
- FolderPath
- Type
- FileSize
- DateModified
- FileVersion
- ProductVersion
- FileDescription
- ProductName
- CompanyName
- LegalCopyright

**Note:**

1. Readme Files (readme.txt/readme.html/readme.htm/readme/info/Info.txt - case insensitive) present in the target path
2. License Files (license.txt/license.html/License - case insensitive)
3. If a Readme file or License file is larger than 10kB, the file is truncated and only the first 10kb is used by the harvester tool.
4. If a target directory includes executables from other application, those executables are also scanned for collecting data.

## Data not collected by the Harvesting tool

1. Shortcuts which do not point to an application's executable file is ignored.
2. User information, such as username, session details are not collected. In the paths containing username, username is replaced by `User_<number>`.

**Example:** `C:\Users\User_1\AppData\Local\Lenovo`

3. Hardware information or network information is not collected.

## Collecting supplementary data

The Help menu in BigFix Inventory UI has an option, Supplementary Data Collection, which allows you to collect all data harvested by the tool (using the fixlet) on endpoints and create a single compressed file with results.

Figure 6. Help menu to access the Supplementary Data Collection option

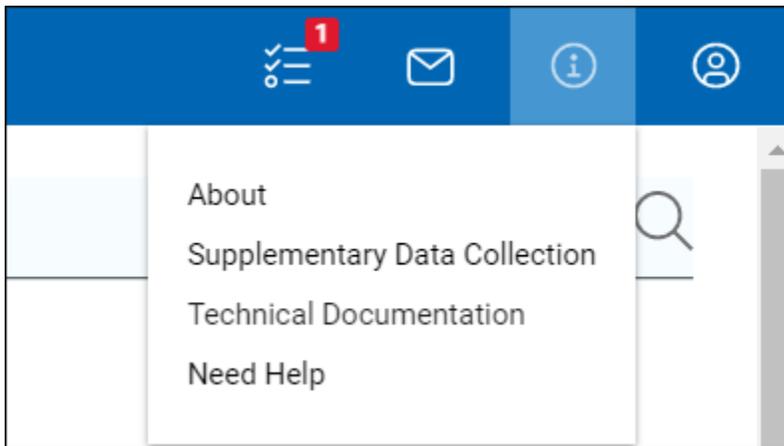
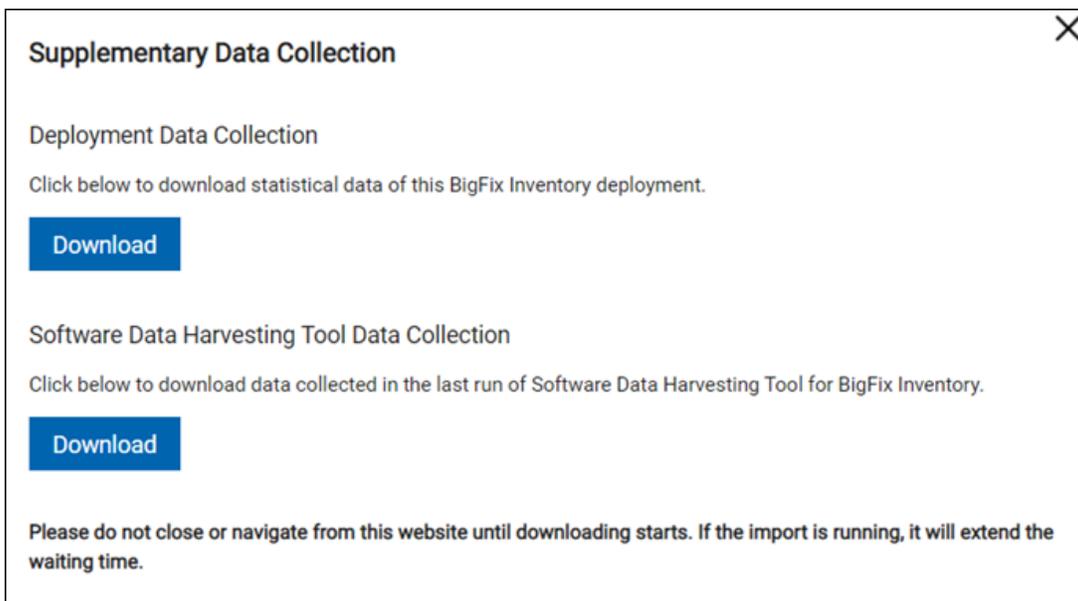


Figure 7. 'Supplementary Data Collection' option



## 'Supplementary Data Collection' features

Software Data Harvesting Tool Data Collection has the following features:

- queries all currently configured non-disconnected datasources for uploaded scan files matching Harvesting tool package name (directly BigFix database)
- downloads the packages only for computers which are present (imported) in BigFix Inventory
- creates a single compressed file containing all downloaded packages and status.txt file and serves it as an attachment

The sum of sizes of downloaded files does not exceed **allHarvestedDataFilesSizeLimit** megabytes (hidden advanced server settings, 512 MB by default). The action is accessible for BigFix Inventory administrators and only one data collection can run at the same time. If the same user or another user tries to download while collection is still running, the below error message, "The request is still in progress or it has been initiated by another user. Wait until it is complete." appears. Closing the "Software Data Harvesting Tool Data Collection" dialog box cancels any running collection triggered by the current user. Invalid datasources/files are skipped and maximum files are collected (until the limit or all if the limit is 0). If any of statistics from **status.txt** is non-zero, a warning, `Some files could not be retrieved. check tema.log for details.` appears.

### Package content

The package is generated in `HarvestedData_<timestamp>.zip` format.

### Software Data Harvesting Tool Data Collection summary

- Number of datasources with connectivity problems
- Number of datasources skipped because of file size limit
- Number of datasources with other errors
- Number of files skipped in the last datasource because of file size limit.
- Number of files which could not be downloaded
- Number of files with invalid paths
- Number of computers that did not match with BigFix Inventory database



**Note:** Computer IDs in file names are from BigFix Inventory database and the IDs are appended to the original harvested data package names from endpoints.

If any of statistics from **status.txt** is non-zero, the `"Some files could not be retrieved. Check tema.log for details."` warning appears.

## Downloading Harvesting tool results in BigFix Inventory

The Software Data Harvesting Tool results for a selected computer can be downloaded along with the Computer Support Data. Before collecting harvested data in BigFix Inventory, ensure that "Run Software Data Harvesting Tool" has been completed on the endpoints on which it has been run.

To download data, perform the steps:

1. Log in to BigFix Inventory and go to **Reports > Computers**.
2. Select the name of the computer from which you want to collect the Harvesting Tool results, and then click **Computer > Support Data**.
3. Basic Support Data includes the `HarvestedData_<timestamp>.zip` package that is placed at `sha1_files` directory.
4. To review Harvester logs, request supplementary data. It includes the complete `<BigFix Client>\LMT\HARVESTER_TOOL` directory. For more information, see [Collecting logs for troubleshooting purposes](#).



**Note:** It is recommended to run "Supplementary Data Collection" option under Help menu (collecting all packages) by default.

---

Related information

[Supplementary Data Collection \(on page dccl\)](#)

## Architectural design

The Harvesting tool consists of the following parts:

1. Deployment
2. Data Harvesting
3. Uploading the data

### Deployment

Harvesting tool is run by BigFix endpoint. Endpoint is executed as a fixlet to run the Harvesting tool.

The program is an Action Script embedded inside a fixlet. This fixlet is available on BigFix inventory site. An update to the fixlet is automatically downloaded by the BigFix server and is available to the endpoints.

### Data harvesting

Harvesting program is written in VBscript in combination with relevance to get information from the sources mentioned under [Scope of the Harvesting tool \(on page dccxlvii\)](#).

All harvested data is saved at `<BigFix client folder>\LMT\HARVESTER` when run from fixlet and in standalone script folder, when run with the script.

Given below are the different scanners:

#### **Main**

This module calls other sub-module scanners in a sequence and ensures that each step has been run.

### Scanners

1. Registry scanner for data from uninstall registry
2. Process scanner for data from windows task manager
3. Shortcut scanner for data from desktop shortcuts and pinned applications and start menu
4. Windows services scanner for data from windows services
5. Executable scanner for data from all executables that includes information pointed from point 1 to 5, and readme/license files found for the executables
6. Uploader compresses the JSON files and error logs, and uses BigFix Archive Manager to upload the compressed file on BigFix server and then clean up the output files and logs.



### Note:

- The output JSON is generated at `C:\<parent folder of client>\ BESData\Harvester\` and the logs are collected at `C:\<parent folder of client>\ BESData\Harvester\Logs`.
- When the harvester is run, the execution starts from the beginning, after deleting the contents of `C:\<parent folder of client>\ BESData\Harvester\`.
- The program is deployed on the endpoints by embedding it in a fixlet. The Harvesting tool can be run as a standalone program also.
- When harvester is run independently and manually without any parameters, the execution starts from the beginning. The output is timestamped in a compressed file.

## Uploading the results

User has an option to preview the harvested data before it is sent to the server and then decide whether the data should be uploaded. The harvested data that is being uploaded to the server is cleaned to make it GDPR (General Data Protection Regulation) compliant.

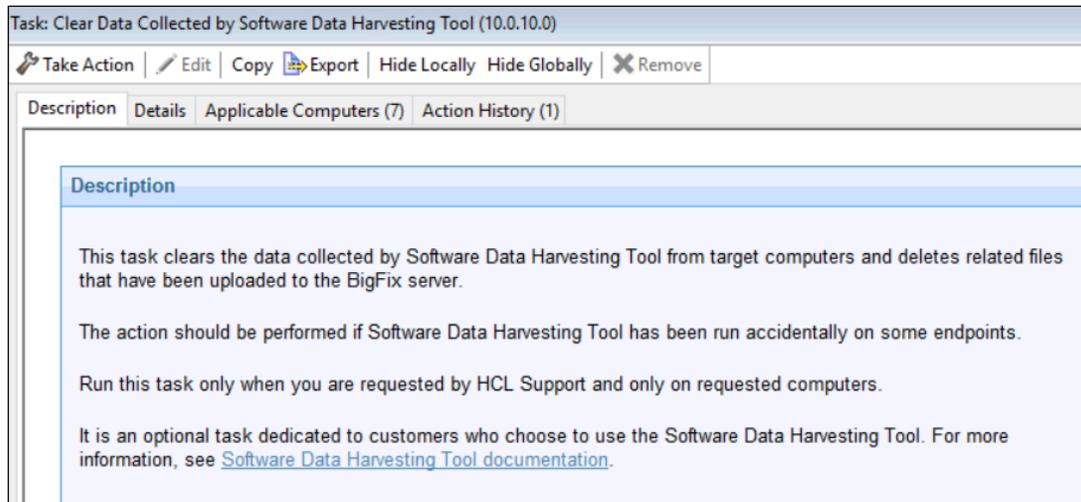
BigFix Archive Manager is used to upload the output compressed file to the server.

All files copied or created are deleted from the computer after the compressed file has been successfully uploaded to FTP server. This also applies to old Harvesting data.

## Fixlet to run Software Data Harvesting Tool

BigFix Inventory provides a 'Run Software Data Harvesting Tool' fixlet that runs the Harvesting tool on Windows endpoints. To run the fixlet, the license agreement must be accepted.

Figure 8. Fixlet to run the Harvesting tool



The fixlet places the harvesting tool VB script at `<BigFix Client>\LMT\HARVESTER_TOOL`.

#### Features of the fixlet:

- The Harvester tool produces a compressed package (`HarvestedData_<timestamp>.zip`).
- File `HarvestedData_<timestamp>.zip` is uploaded to the BigFix Server through `_BESClient_ArchiveManager_FileSet-harvester` at the end of fixlet.
- The fixlet sets timeout for wait command that runs the Harvester tool VB script. The timeout is set to 30 minutes by default. The timeout can be changed by setting the property `HARVESTER_Wait_Timeout_Override`.



**Note:** You can change the timeout setting. See also, [Timeout setting \(on page dccliv\)](#).

- The following logs can be checked to verify the Harvesting Tool run:
  - `<BES Client>\LMT\HARVESTER_TOOL\HarvestingTool.log`
  - `<BES Client>\LMT\HARVESTER_TOOL\harvestingCmdOutput.log`
- At the beginning of the fixlet it is checked if the VB script can be run on the system. The log is found at `<BES Client>\LMT\HARVESTER_TOOL\cscrip.log`.

## Timeout setting

The timeout can be changed by setting the property **HARVESTER\_Wait\_Timeout\_Override** in computer settings in BigFix Console.

To change the settings, perform these steps:

1. Log in to BigFix Console.
2. In **Management > Computers**, select a computer.
3. Right click on the computer and select **Edit Computer Settings**.

4. In the window, click **Add** and in the dialog, enter the setting name, HARVESTER\_Wait\_Timeout\_Override. Enter the value of time in seconds.
5. Click **OK**. New setting appears on the Custom Settings list.
6. Click **OK** on the bottom of Computer Settings window to save the properties on endpoint.

## Adding property to multiple computers at once

You can also add property to multiple computers at once. To add properties, perform these steps:

1. Log in to BigFix Console.
2. In **Management > Computers**, select multiple computers and right click on one of them.
3. In the menu choose, **Edit Computer Settings**. A new window appears.
4. Select **Custom Setting**.
5. Enter HARVESTER\_Wait\_Timeout\_Override as setting name and keep the value of time in seconds.
6. Click **OK** to save setting on endpoints.

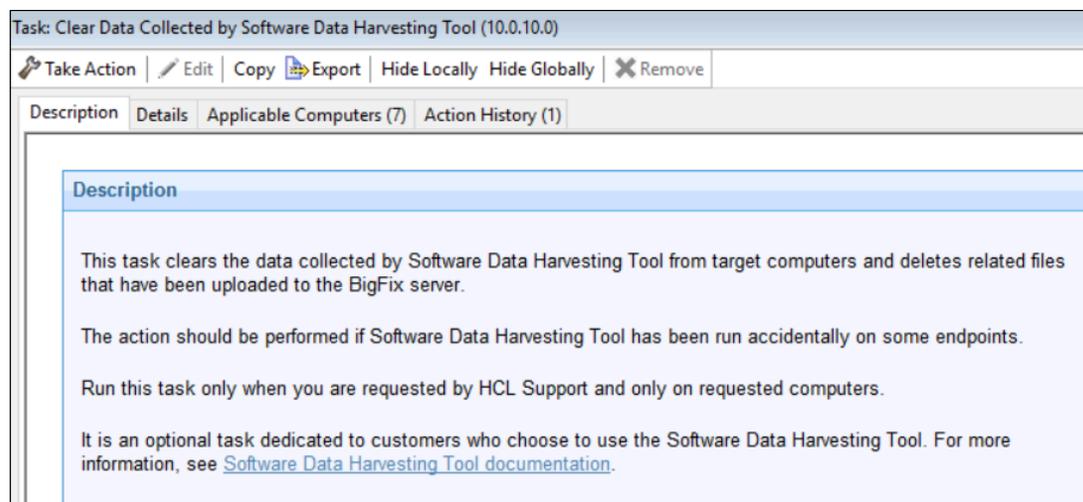
For more information about editing computer settings see, [Edit Settings for Computer](#).

## Fixlet to clear data collected by Software Data Harvesting tool

**10.0.10** In version 10.0.10, BigFix Inventory provides a fixlet to clear the data collected by Software Data Harvesting tool.

Using this fixlet, you can clear data of Software Data Harvesting tool on the target computers that have been uploaded to the BigFix server. You must run this fixlet when you are requested by HCL support and on the requested computers.

Figure 9. Clear data fixlet



## Output

Data collected from all sources is stored in a JSON file named `harvested_data.json`

dcclvi

Readme files and license files related to the executables are copied to new files. Path of the application executables is appended to the filenames of the copied files.

C\_Users\_XXXX\_eclipse\_java-2021-06\_eclipse\_readme\_readme\_eclipse.html

All the files are compressed together. Output filenames must be unique to avoid conflicts, so the name will include timestamp.

## Standalone version standalone output

```
cscript //nologo HarvestingTool.vbs
Starting ServicesScanner at 1/17/2022 4:57:53 PM
Completed ServicesScanner at 1/17/2022 4:57:53 PM. Total time: 0s.
Starting UninstallRegistryScanner at 1/17/2022 4:57:53 PM
Completed UninstallRegistryScanner at 1/17/2022 4:57:54 PM. Total time: 1s.
Starting ProcessScanner at 1/17/2022 4:57:54 PM
Completed ProcessScanner at 1/17/2022 4:57:54 PM. Total time: 0s.
Starting ShortcutsScanner at 1/17/2022 4:57:54 PM
Completed ShortcutsScanner at 1/17/2022 4:57:54 PM. Total time: 0s.
Starting ExecutablesScanner at 1/17/2022 4:57:54 PM
Completed ExecutablesScanner at 1/17/2022 4:57:57 PM. Total time: 3s.
Preparing zip package with results: HarvestedData_20220117165753.zip
Package created successfully.
```

## Output file types

- **HarvestingTool.log** - Detailed log information for troubleshooting that is overwritten each time the tool is run.
- **HarvestedData\_<timestamp>.zip** - Packed result of harvesting. It includes the following:
  - **harvested\_data.json** - Harvested data in JSON format (each executed scanner is one entry).
  - **license\_and\_readme.zip** - Zipped license and readme files collected according to the executable scanner rules. It includes the following:
    - **list.txt** - A text file with the original paths of the collected license and readme files.
    - **1, 2, 3,** - Content of the license and readme files (where line 1 of **list.txt** is file 1 and so on.)
  - **user\_names\_mapping\_<timestamp>.csv** - Help file for troubleshooting. It includes mapping of the original usernames to anonymous strings. For example, path "**C:\Users\Administrator**" may be replaced in all paths with "**C:\Users\_User\_1**" text. This feature is configurable. The value of variable `preserve_user_mapping` decides if the **user\_mapping** file is created. The default value is "False". So the file is not created. Also, if the Harvesting Tool is run with `preserve_user_mapping` value set to "False", any **user\_mapping** file from the previous runs of the tool will also be removed from the system.

The `license_and_readme` folder, `harvested_data.json` file, and `license_and_readme.zip` file are in the same folder. These are temporary files from the last execution of the tool which can be used in troubleshooting.



**Note:** Files with timestamps are not removed by the VBScript. In a standalone version, the timestamp should be manually removed, if needed.

## Sample JSON output format

Below is a sample JSON output:

```
"ServicesScanner": [
  {
    "Service Name": "AJRouter",
    "Service Executable": "C:\\Windows\\system32\\svchost.exe -k LocalServiceNetworkRestricted -p",
    "Display Name": "@C:\\Windows\\system32\\AJRouter.dll,-2",
    "Description": "@C:\\Windows\\system32\\AJRouter.dll,-1"
  }
],
"ProcessScanner": [
  {
    "Executable Path": "C:\\Windows\\System32\\ApplicationFrameHost.exe",
    "Executable Name": "A: ApplicationFrameHost.exe"
  }
],
"ExecutablesScanner": [
  {
    "FileName": "svchost.exe",
    "FolderPath": "C:\\Windows\\System32",
    "Type": "Application",
    "FileSize": "51696",
    "DateModified": "2018-09-15T00:12:24.000",
    "FileVersion": "10.0.17763.1",
    "ProductVersion": "10.0.17763.1",
    "FileDescription": "Host Process for Windows Services",
    "ProductName": "Microsoft® Windows® Operating System",
    "CompanyName": "Microsoft Corporation",
    "LegalCopyright": "© Microsoft Corporation. All rights reserved."
  }
],
"UninstallRegistryScanner": [
  {
    "DisplayName": "Mozilla Firefox (x64 pl)",
    "DisplayIcon": "C:\\Program Files\\Mozilla Firefox\\firefox.exe,0",
    "DisplayVersion": "94.0.2",
    "InstallLocation": "C:\\Program Files\\Mozilla Firefox",
```

```
"InstallSource": "iofonianoafs",  
"Publisher": "Mozilla",  
"UninstallString": "C:\\Program Files\\Mozilla Firefox\\uninstall\\helper.exe",  
"RegistryLocation": "HKEY_LOCAL_MACHINE\\SOFTWARE\\Microsoft\\Windows\\CurrentVersion\\Uninstall\\Mozilla  
Firefox 94.0.2 (x64 pl)",  
"RegistryName": "Mozilla Firefox 94.0.2 (x64)"  
}]
```

# Managing the infrastructure

After you complete the initial configuration of BigFix Inventory, learn how to manage components of its infrastructure: VM managers, server, database, and data sources.

## Computer statuses

Computer statuses provide information about the condition of the computers that are monitored by BigFix Inventory. To properly discover the installed software and measure its license metric utilization, ensure that computers in your environment work correctly.

### OK

There are no problems with the computer. No actions are required.

### No Scan Data

Results of the capacity scan are missing. To solve the problem, schedule the capacity scan, and upload its results. For more information, see: [Initiating the capacity scan on all computers \(on page dcxix\)](#).

### No Host Scan Data

The BigFix client is not installed on the host operating system. Depending on the virtualization technology, perform the following actions:

- For HP Integrity VM, install the BigFix client on the host computer and wait until it uploads the capacity scan results or upload them manually. For more information, see: [Initiating the capacity scan on all computers \(on page dcxix\)](#).
- For Solaris Container/Zones or Logical Domains (LDOM), install the BigFix client in the following zones:
  - Global zone on the control domain
  - Global zones of all local zones in which software is installed

Wait until the client uploads the capacity scan results or upload them manually. For more information, see: [Client installation on Oracle Solaris \(on page dcxx\)](#).

- For other virtualization technologies, refer to [Virtualization Capacity License Counting Rules](#) for more information.

### Outdated VM Manager Data

Connection to the VM manager is configured, but hardware inventory data that was retrieved from the computer is older than 3 days. License metric utilization is not affected yet. If you do not resolve the issue within 30 days, the computer status changes to *No VM Manager Data* and default IBM PVU counting is applied to the computer. As a result, license metric utilization that is reported can be higher. For more information, see: [Default PVU counting on x86 processors \(on page dcclxii\)](#).



**Note:** The period after which hardware inventory data is considered outdated is configured by the **vmManagerDetachmentNotificationPeriod** parameter. The period after which the computer status changes to *No VM Manager Data* is configured by the **vmManagerDetachmentPeriod**. For more information, see: [Advanced server settings \(on page dccc\)](#).

To solve the problem, perform the following actions:

- Ensure that the VM manager is connected.
- Ensure that all parameters of the VM manager connection are correctly configured.



**Important:** When you troubleshoot the VM manager connection, ensure that the following conditions are fulfilled:

- You have sufficient rights to collect information about the complete virtualization topology including virtual machines, hosts, clusters, and relations among them.
  - The UUIDs of virtual machines and hosts are valid and in scope of the particular virtualization technology.
  - Information about the number of processors, total number of cores, and processor description is available.
- If the problem persists on KVM although the VM manager connection is correctly configured, go to **Reports > Hardware Inventory**, and check the value in the **Server ID** column. If the value has the `TLM_VM_UUID_of_the_VM` format, check whether the UUID is correctly set on the virtual machine. If two or more virtual machines have the same UUID, manually set unique UUIDs for these machines. Note that virtual machines can operate on different hosts.
  - Ensure that each cluster in your infrastructure has a unique name. In the VMware environment, it is not possible to create two clusters with the same name in the same data center. However, vCenter can manage several data centers at the same time. As a result, one vCenter can control clusters that have the same name but are in different data centers. If multiple clusters share a name, rename them to keep each name unique.
  - Ensure that the value of the **vmManagerDetachmentPeriod** parameter is higher than the frequency with which data is retrieved from VM managers. The interval between consecutive retrievals of data is set by the **vmm\_polling\_time\_interval** parameter and is 30 minutes by default. If the idle time after which a computer that is managed by a VM manager is considered detached is lower, change the value of the **vmManagerDetachmentPeriod** parameter.



### **No VM Manager Data**

Hardware inventory data that was retrieved from the computer is older than a specific period or has never been retrieved. Default PVU counting is applied to the computer. As a result, reported license metric utilization can be higher than actual. For more information, see: [Default PVU counting on x86 processors \(on page dcclxii\)](#).

Impact of the peak of metric utilization on the reports depends on why the status appeared. The status can appear in the following situations:

- The VM manager is not specified for the computer and hardware inventory data has never been retrieved. If you configure the VM manager within a specific period, the peak of metric utilization is ignored and does not influence the reports. The period is:
  - 1 day for version up to 9.2.9.
  - 30 days for version 9.2.10 and higher. The period can be configured by the **vmManagerDetachmentPeriod** parameter.
- The VM manager is specified for the computer but the retrieved hardware inventory data is older than a specific period. The period can be configured by the **vmManagerDetachmentPeriod** parameter and is by default:
  - 7 days for version up to 9.2.9
  - 30 days for version 9.2.10 and higher

The peak of metric utilization is not removed from the reports that are generated for the period when the computer had the *No VM Manager Data* status even after you resolve the issue.

To solve the problem, perform the same actions as in case of the [Outdated VM Manager Data \(on page dcclix\)](#) status.

## Managing VM managers

VM managers are pieces of software that create, manage, and monitor virtual machines. You configure connections to VM managers so that BigFix Inventory can gather data that is required to calculate utilization of license metrics in virtual environments.

### Collecting information from VM managers

Resources that are available to virtual machines are dynamically allocated based on current needs. When a virtual machine is not performing processor-intensive tasks, processor cores that are allocated to that machine are assigned to other virtual machines that need them to handle their workload. Because of these dynamics, BigFix Inventory cannot scan virtual machines to collect information about processor type and the number of available cores.

To collect this information, BigFix Inventory needs access to VM managers, which control resources that are available to virtual machines. With such access, BigFix Inventory can check the number of cores on the physical computer that hosts the virtual machines and see the allocation and usage of these resources.

You must define connections to VM managers for the following x86 virtualization types:

- [VMware vSphere \(on page dcclxviii\)](#)
- [Microsoft Hyper-V \(on page dcclxx\)](#)
- [Kernel-based Virtual Machine \(on page dcclxxxvi\)](#) except for the hosts that are not controlled by RHV-M and the PowerKVM hosts that delivers capacity data with the Run Capacity Scan on Virtualization Hosts fixlet.
- [<deprecated> Oracle VM Server for x86 \(on page dcclxxxix\)](#)

### Lack of information from VM managers

You should configure connections to VM managers within 24 hours, after you run the first successful hardware scan on new virtual machines. Otherwise BigFix Inventory is not able to retrieve information about the virtualization

hierarchy and physical processors. Thus, it is not able to properly calculate subcapacity values. In such a case, BigFix Inventory applies default PVU counting on virtual machines which causes that PVU utilization might be over-counted. For more information, see: [Default PVU counting on x86 processors \(on page dcclxii\)](#).

IBM accepts audit reports that contain PVU values calculated based on the default PVU counting instead of considering the client to be ineligible for subcapacity or liable for full capacity.

When you configure connections to VM managers later on, the reported PVU values are lower than or equal to the values that were reported when the connections were missing. However, peaks that resulted from missing connections remain on the reports that are generated for the period when the peaks occurred.

## VM Manager tool

To collect data from VM managers, BigFix Inventory uses the VM Manager tool. The tool connects to VM managers and gathers data about their capacity, focusing on processors, their type, and usage. The data is then imported to BigFix Inventory and utilization of license metrics is calculated. In order to avoid any performance issues it is recommended to keep the number of VM Manager Tool connections below 10 for a single VM Manager Tool.

## Approaches to manage VM managers in BigFix Inventory

You can choose between two approaches to manage VM managers: basic (central - below 10 managed VM Manager Tool connections) or advanced (distributed - above 10 managed VM Manager Tool connections). You can also combine these two approaches. The choice depends on the specifics of your environment.

## Default PVU counting on x86 processors

To properly calculate PVU subcapacity, BigFix Inventory requires information about the number of processor cores that are available to virtual machines and on the physical computers that host these machines. If the information is not available, license metric utilization cannot be properly calculated and reported results might be over-counted for x86 processors.

When hypervisor data is not available, reported results might be over-counted due to the following reasons.

- **The applied PVU rate might be higher than the actual rate**

PVU rate that is applied to a processor depends on the model and type of the processor as well as the number of processors that can be installed on a physical host (the number of sockets). When hypervisor data is not available, BigFix Inventory cannot properly identify the PVU rate for a processor. It applies the PVU rate for the configuration with the highest number of sockets that is possible for the particular processor.



**Important:** **9.2.11** Starting from application update 9.2.11, BigFix Inventory always applies 120 PVUs per core when the PVU rate for a processor cannot be properly identified. In earlier versions of BigFix Inventory, the number of applied PVUs was specified in the PVU table.

- **The number of processor cores that are taken into account might be higher than the actual number of available cores**

If CPU is over-committed to virtual machines and the total virtual capacity exceeds the physical capacity, virtual capacity must be capped to physical capacity according to the pricing rules. When hypervisor data is not available, BigFix Inventory cannot limit virtualization capacity to physical capacity.

IBM accepts audit reports that contain PVU values calculated based on the default PVU counting instead of considering the client to be ineligible for subcapacity or liable for full capacity.

For more information about the results of applying default PVU counting, see: [Scenario: Capacity in virtual environments with no VM managers defined \(on page cmxxxiii\)](#).

**i** **Tip:** If the hypervisor data is missing from a virtual machine and default PVU counting is applied, ID of the server on which the machine runs begins with `TLM_VM`.

## Supported virtualization types

BigFix Inventory requires that connections to VM managers are defined for the following virtualization types: Kernel-based Virtual Machine, Microsoft Hyper-V, VMware vSphere, and Xen.

**Table 152. Supported virtualization types and versions**

Virtualization Type		Comments	Versions
<p><b>10.0.14</b> Oracle Cloud VMware Solution</p>		<ul style="list-style-type: none"> <li>• Oracle Cloud VMware Solution is supported the same way as an on-prem VMware infrastructure installation.</li> <li>• To collect data, configure connection to the vCenter Server that is specific to your instance of the Oracle Cloud VMware Solution (not to the Oracle Cloud portal).</li> </ul>	
<p>Kernel-based Virtual Machine</p>	<p>Managed by RHV-M</p>	<ul style="list-style-type: none"> <li>• BigFix Inventory supports instances that use HTTP Basic Authentication and version 3 REST API.</li> </ul>	<p>For information about supported versions, go to <a href="#">Detailed System requirements (on page cdxxxii)</a> and click Supported Hypervisors.</p>

Table 152. Supported virtualization types and versions (continued)

Virtualization Type		Comments	Versions
		<ul style="list-style-type: none"> <li>You must use VM Manager tool in version 1.6.0.1 or higher.</li> <li>Starting from VM Manager tool update 9.2.17, BigFix Inventory supports instances that use version 4 API and OAuth2 Authentication.</li> </ul>	
	Not managed by RHV-M	<ul style="list-style-type: none"> <li>Capacity data from x86 KVM hosts that are not controlled by RHV-M is collected directly from the host by using the Run Capacity Scan on Virtualization Hosts fixlet. For more information, see: <a href="#">Collecting capacity data from virtualization hosts for Xen and KVM (on page dcxxv)</a></li> </ul>	
<b>9.2.17</b>	Nutanix AVH	Managed by Nutanix Prism Element	<ul style="list-style-type: none"> <li><b>9.2.17</b> Support for Linux guests on AHV 5.11+ on IBM Power CS appliances, managed by Nutanix Prism Element. BigFix Inventory supports Prism API version 2. AIX guest is not currently supported.</li> <li><b>10.0.0</b> Support for Linux and Windows guests on AHV 5.11+</li> </ul>

Table 152. Supported virtualization types and versions (continued)

Virtualization Type	Comments	Versions
	<p>on x86 appliances, managed by Nutanix Prism Element</p>	
Microsoft Hyper-V	<ul style="list-style-type: none"> <li>If you are going to use WinRM communication interface, configure WinRM on all hosts. For more information, see: <a href="#">Configuring WinRM (on page dcclxxiv)</a>.</li> </ul>	
<b>10.0.10</b> Azure VMware Solution	<ul style="list-style-type: none"> <li>Azure VMware is supported as an on-premise VMware infrastructure installation. To collect data, you must configure connection to the VMware SDK API that is specific to your instance of the Azure VMware on the VM Managers panel.</li> </ul>	
<b>10.0.9</b> VMware Cloud on AWS	<ul style="list-style-type: none"> <li>VMware Cloud on AWS is supported the same way as an on-prem VMware infrastructure installation.</li> <li>To collect data, configure connection to the vCenter Server that is specific to your instance of the VMware Cloud on AWS (not to the AWS portal) on the VM Managers panel.</li> </ul>	

**Table 152. Supported virtualization types and versions (continued)**

Virtualization Type	Comments	Versions
	<ul style="list-style-type: none"> <li>• If the VM Manager Tool is installed on a virtual machine on VMware Cloud on the AWS infrastructure, ensure that you complete the following steps.               <ul style="list-style-type: none"> <li>◦ Enable communication between the VM where the VM Manager Tool is installed and the vCenter Server by using the TCP port 443. To allow for this communication, configure the Management Gateway firewall. In the default configuration, such communication is denied.</li> <li>◦ If the vCenter Server URL points to an external IP, modify the hosts file on the VM where the VM Manager Tool is installed and add an entry that points to the private address of the vCenter Server.</li> </ul> </li> </ul>	

**Table 152. Supported virtualization types and versions (continued)**

Virtualization Type		Comments	Versions
VMware vSphere	ESXi	<ul style="list-style-type: none"> <li>You must have at least read-only rights to all VMs. For more information, see: <a href="#">Verifying permissions (on page dcclxx)</a>.</li> </ul>	
	vCenter	<ul style="list-style-type: none"> <li>You must have at least read-only rights to all VMs. For more information, see: <a href="#">Verifying permissions (on page dcclxx)</a>.</li> <li>BigFix Inventory supports configuration with one single sign-on domain, one single sign-on site, and vCenter Server with Platform Services Controller on the same machine (Embedded Deployment Model).</li> <li>BigFix Inventory supports vCenter Server installation on a Windows computer and as a vCenter Server Appliance.</li> <li><b>9.2.15</b> BigFix Inventory supports the configuration with external Platform Services Controller (PSC) with one PSC on a different machine. In case of a com-</li> </ul>	

**Table 152. Supported virtualization types and versions (continued)**

Virtualization Type		Comments	Versions
		plex environment with multiple PSCs, contact HCL Support.	
9.2.12	Citrix Hypervisor (formerly XenServer)	<ul style="list-style-type: none"> <li>XenServer Tools must be installed on all VMs.</li> </ul>	

## VMware vSphere

VMware vSphere is one of the virtualization technologies supported by BigFix Inventory.

### Purpose

This solution consists of two products: a VMware ESX (or ESXi) hypervisor and a VMware vCenter server. Both of these components provide the API that can be used to extract information concerning virtual machines in your infrastructure. The section below shows the differences between these two varieties.

### ESX or ESXi

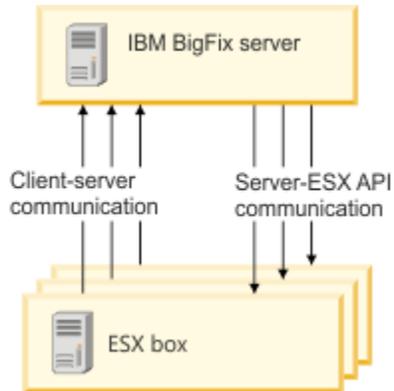
It is an operating system that hosts virtual machines. It is enough to connect to a specific ESX if you do not use any software deployed in a clustered environment. However, if an ESX is controlled by a vCenter, it is recommended to connect a given VM manager to it via the vCenter. This is because BigFix Inventory needs data from every ESX box (every box that hosts a virtual machine where the CIT scanner is installed). If you choose a connection via ESX, you have to define all the ESX boxes separately in the **VM Managers** panel. If you have a vCenter deployed, you can manage all the ESX boxes via this server (it saves time and decreases the network load).



**Note:** Changing the Universally Unique Identifier (UUID) on ESX virtual machines may lead to overcharging because when the identifier is changed, BigFix Inventory recognizes it as a brand new virtual machine.

### Supported versions:

For a full list of supported versions, see: [Supported virtualization types \(on page dcclxiii\)](#).

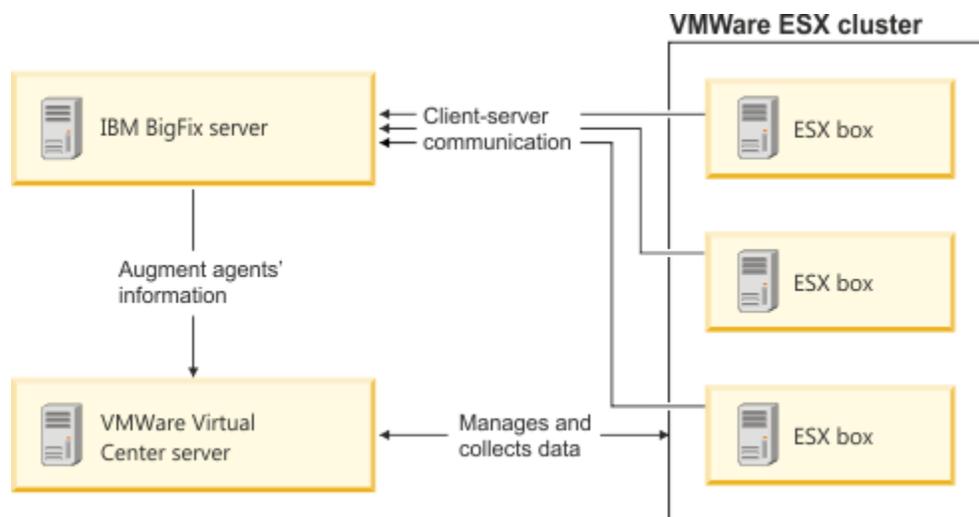


## vCenter

It is used for managing computer systems on which virtual machines are installed. You have to use it if your software is installed in a clustered environment. Instead of connecting to each ESX box separately, you connect to all ESX boxes via a vCenter, whose main role is to retrieve data from them. Therefore, it is beneficial to you to connect to ESX boxes through a vCenter even if you do not have a clustered environment because in this way you can reduce the network traffic.

### Supported versions:

For a full list of supported versions, see: [Supported virtualization types \(on page dcclxiii\)](#).



## The default URL for ESX or ESXi, and vCenter

The default URL that is to be used (it may vary in your environment if the administrator of the ESX box, or vCenter has changed the configuration of the API, for example, if the HTTP protocol is used instead of the HTTPS one):

- For ESX or ESXi: `https://ESX_IP_address/sdk/vimService.wsdl`
- For vCenter: `https://vCenter_IP_address/sdk/vimService.wsdl`

Make sure that the vSphere Web Services SDK is set up and verify if the given URL is valid. Paste the URL into the Web browser and make sure that it can be accessed. If not, check the setup of the URL in vCenter settings. To do this, go to **vCenter Server Settings > Advanced Settings** and see the setting of **VirtualCenter.VimApiUrl**. If the URL cannot be reached, consult your VMware administrator.

## Supported topologies

BigFix Inventory supports configuration with one single sign-on domain, one single sign-on site, and vCenter Server with Platform Services Controller on the same machine (Embedded Deployment Model). To set up other topologies, including external Platform Services or multiple single sign-on sites, you must connect to each ESX box separately.

## Verifying permissions for VMware communication

Users must have sufficient privileges to collect all the data from the VM managers for VMware. The user must have at least read-only rights to all VMs on which the agents are running.

You can verify whether users have sufficient privileges in the VMware Infrastructure Client. The user must have the correct access privileges for VMs on which the endpoints are running, and for the hosts of the VMs. If a user has insufficient privileges, agents return a No VM Manager Data status.

**10.0.15** To collect the data required for an Oracle audit from the VMware VM manager (vCenter or ESXi), the user account in the vCenter or ESXi must have read permission for all elements in the virtualization hierarchy. For more information on configuring VM Managers for collecting Oracle auditing data, refer to [Configuring VM Managers \(on page cmii\)](#).

This procedure describes how to enable read-only rights for all elements in a virtual topology. Read-access is required only to the VMs on which the endpoints are running and to hosts of these VMs. However, the easiest way to set access permissions is to configure read-only access for all elements in a virtual topology.

1. To extend the privileges for the user, log in to VMware Infrastructure Client with a user that has administrator rights.
2. Right-click on the left bar and choose **Hosts and Clusters**.
3. Go to **Permissions** tab, right-click anywhere in the section, and then click **Add Permission**.
4. In the **Assign Permissions** panel, click **Add**, choose the user, and then click **OK**.
5. Choose Read-Only as an Assigned Role.
6. Select the **Propagate to Child Objects** check box, and click **OK**.

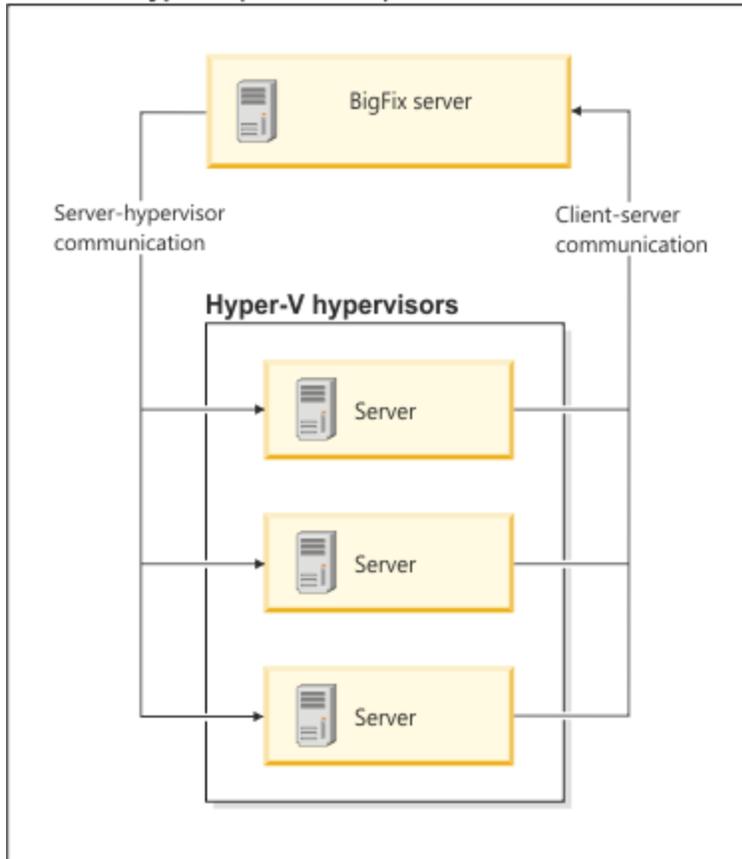
## Microsoft™ Hyper-V

Microsoft™ Hyper-V is one of the virtualization technologies that are supported by BigFix Inventory. It is the successor of Microsoft™ Virtual Server.

## Purpose

To retrieve information about the measures and virtualization structure of virtual machines, define the Hyper-V hypervisors as VM managers on the BigFix Inventory server. They are able to expose required data via the WS-MAN protocol.

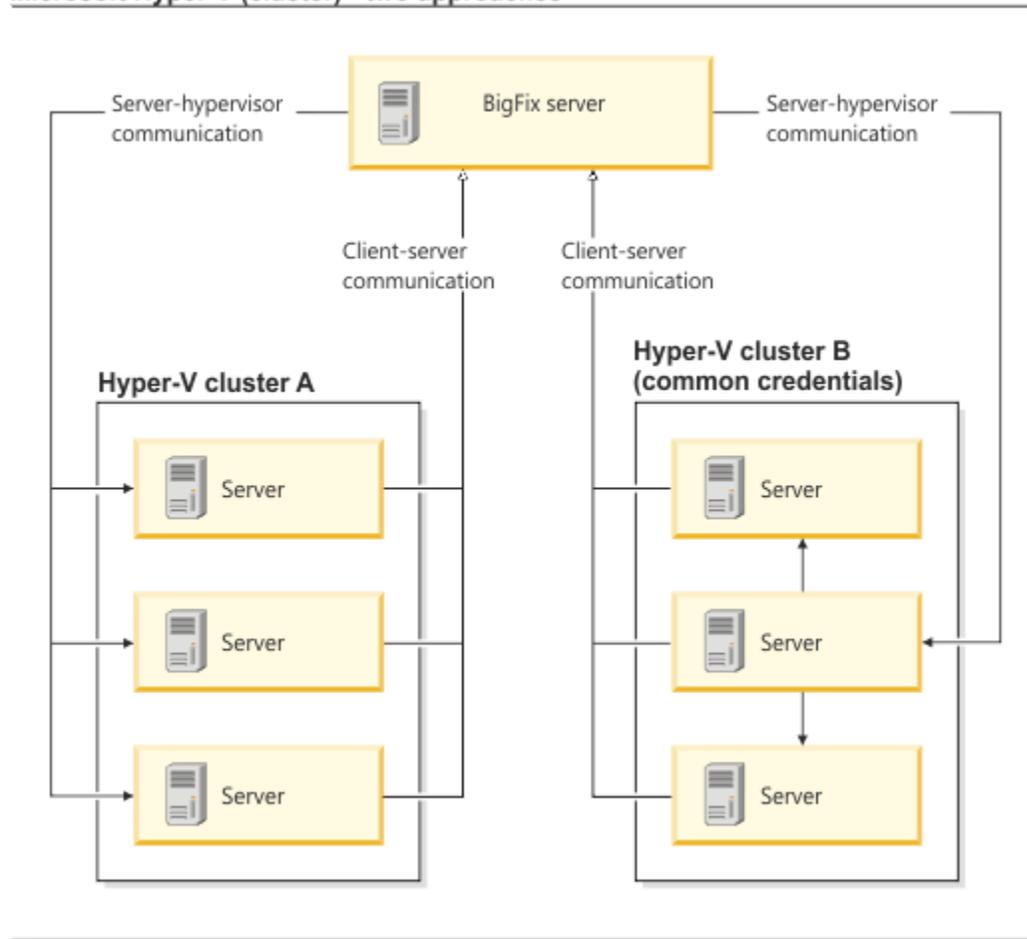
### Microsoft Hyper-V (standalone)



In the case of clusters, two approaches exist:

1. Define all Hyper-V servers that are a part of the cluster in the **VM Managers** panel. If any servers are missing, they are in the *Incomplete definition* status.
2. If all members of the cluster have at least one common set of credentials that has privileges to access the WS-MAN interface (for example, the domain user), define one computer system from the cluster as a VM manager. Then, select the option to share credentials. The BigFix Inventory server uses the credentials to connect to the Hyper-V that you defined in the user interface. Then, it extracts addresses of the remaining cluster members and connects to them by using the same credentials.

## Microsoft Hyper-V (cluster) - two approaches



### Communication interface

You can choose to use PowerShell or WinRM as the communication interface for Hyper-V. For both communication interfaces, make sure that you provide the user name in one of the following formats:

- *user\_name@domain*, for example: `test@cluster.com`
- *user\_name\domain*, for example: `test\cluster.com`

**9.2.16** Starting from application update 9.2.16, you can also provide the administrator user name in one of the following formats:

- *domain@user\_name*, for example: `cluster.com@test`
- *domain\user\_name*, for example: `cluster.com\test`



**Note:** Make sure that you upgrade the VM Manager Tool to version 9.2.16, not only the BigFix Inventory server.

If the target server is not in a domain, specify its host name as the domain. For example:

- `test\hostname` OR `test@hostname`
- **9.2.16** `hostname\test` OR `hostname@test`

## PowerShell

PowerShell is a framework for managing the automation and configuration of tasks and can use the RPC protocol. In order for BigFix Inventory to use PowerShell for retrieving the information from VM managers, the VM Manager Tool must be installed on a Windows™ computer. The computer must also meet the following requirements:

- Microsoft™ RPC communication with Microsoft™ Hyper-V must be allowed by Windows firewall
- ICMP Echo Reply must be allowed by Windows firewall
- Microsoft™ PowerShell 2.0 or higher must be installed
- Microsoft™ .NET Framework 3.5 or higher must be installed

 **Important:** If you are using .NET Framework 4.0 or higher, use PowerShell version 3.0 or higher.

The use of PowerShell depends on the operating system of your BigFix server, because the main VM Manager Tool is installed along with the server:

**Windows** You configure a Hyper-V VM manager in the BigFix Inventory UI and choose PowerShell as the communication interface.

**Linux** You use advanced VM management to install additional VM Manager Tool on any Windows computer, and then specify a Hyper-V VM manager in a configuration file. Such a VM manager is not visible in the UI, but is managed through the VM Manager Tool command line. For more information, see [Advanced VM management \(on page dcccxiv\)](#).

```
vmm_url=https://hyper-v/wsman
vmm_type=MICROSOFT_HYPER_V
vmm_communication_interface=POWERSHELL
```

## WinRM

Windows Remote Management (WinRM) is the Microsoft implementation of the WS-Management protocol. It uses Simple Object Access Protocol (SOAP) over HTTP and HTTPS. In order for BigFix Inventory to use WinRM for retrieving the information from VM managers:

- You must configure Windows™ Remote Management Service (WinRM) for all members of the Microsoft™ Hyper-V cluster. For more information, see: [Configuring WinRM on Hyper-V hosts \(on page dcclxxiv\)](#).
- The default URL that is to be used is "https://<HYPER-V\_IP\_address>:<port>/wsman", where <port> is the port of the listener that was created for the WinRM service. The default value for

the HTTP listeners is 5985 and for HTTPS listeners is 5986 (WinRM 2.0). To verify all the defined WinRM listeners, use the `winrm enumerate winrm/config/listener` command.

WinRM communication interface uses NTLM authentication in order to access data on virtual machines. As a result, in VM Manager Tool logs you can notice the following messages:

```
2022-01-01 00:00:00 : (vmmconf_xxxx.properties)
com.ibm.license.mgmt.vmmanger.hyperv.net.HttpConnector::initializeNTLM::Response Code
is: 401
```

The response code 401 is expected to be returned as part of NTLM protocol client-server message exchange. For information about NTLM protocol, see the [tech community article](#).

## Supported versions

For a full list of supported versions, see: [Supported virtualization types \(on page dcclxiii\)](#).

## Configuring WinRM on Hyper-V hosts

Configure Windows™ Remote Management to allow the BigFix Inventory server to gather data about virtualization topology of virtual machines installed in your infrastructure.

- To retrieve the data that is required to properly calculate PVU, you must be logged in as a local administrator on the Hyper-V host. It is necessary because the Windows Management Instrumentation call that accesses MsCluster namespace requires an administrative account.
- Hardcoded and select-only statements are run over WinRM. The obtained data is stored in a database schema. BigFix Inventory does not modify the Hyper-V settings and does not affect it any other way.

The WinRM service is an implementation of WS-Management specification that enables cooperation between hardware and operating systems that come from different vendors. The BigFix Inventory server connects to this service defined as a VM manager and collects data regarding virtualization hierarchy. Therefore, you must perform the following procedure on each Hyper-V host in your infrastructure, including those that are part of a cluster, to ensure the WinRM service is running and configured to enable communication with the server.

1. **Defining HTTP and HTTPS listeners.** By default, communication with the WinRM service is disabled because there are no listeners defined. To check whether there are any listeners that are currently defined, type the following command: `winrm enumerate winrm/config/listener`. If there is no output returned, there are no listeners defined.

- a. To define a default HTTP listener, type:

```
winrm quickconfig
```

The command starts the WinRM service and sets it to start automatically with the system start. It also creates an HTTP listener on the default port (accepting requests from any IP), it defines Internet Connection Firewall exceptions for the service, and it opens the HTTP port. Depending on the

version of the WinRM service, the default HTTP port might be 80 or 5985. For more information, see [Installation and Configuration for Windows™ Remote Management](#).

- b. To define a listener for secure connection (HTTPS), you must have a valid certificate on the Hyper-V host with a CN that matches the host name that you are using to connect to Hyper-V. You must also create a listener with the CertificateThumbprint of that certificate. For more information, see the Microsoft documentation: <http://support.microsoft.com/kb/2019527>.. You might be able to create a self-signed certificate for testing purposes, however, you should consult your certificate administrator.



**Note:** If an appropriate certificate was not found on the machine, the above command will not work and the following output will be returned *“The certificate must have a CN matching the host name, be appropriate for Server Authentication, and not be expired, revoked, or self-signed.”* If there is a need to use a self-signed certificate, you can manually generate it and create the listener by starting the following command:

```
winrm create winrm/config/listener?Address=*&Transport=HTTPS
@{Hostname="<the name of your server>";CertificateThumbprint="<certificate thumbprint>"}
```

In this case you have to configure the firewall settings manually.

2. **Enabling WinRM *Negotiate* authentication scheme.** The WinRM service offers several authentication schemes to be used to authenticate the client side. The BigFix Inventory server uses *Negotiate* authentication scheme, which is enabled by default.

- a. To check the current setting of this property, type:

```
winrm get winrm/config/service/auth
```

- b. To set the required value of this property, enter:

```
winrm set winrm/config/service/auth @{Negotiate="true"}
```

3. **Setting WinRM *AllowUnencrypted* property.** The server requires the property to be set to "true".

- a. To check the current settings, type:

```
winrm get winrm/config/service
```

- b. To set the required value of this property, type:

```
winrm set winrm/config/service @{AllowUnencrypted="true"}
```



**Note:** Setting this value to "true" does not mean that the sensitive data, such as user names or passwords, will be passed in an unencrypted form over the network. Only the content of the SOAP messages will be sent as a plain text. If this cannot be accepted because of security



reasons, define the HTTPS listener and use the secured transport (HTTPS) while defining a VM manager in the BigFix Inventory server so that the TLS protocol will be used to encrypt all the network traffic.

**4. Verifying the listener.** After you define the HTTP or HTTPS listener, verify that you can remotely connect to the Hyper-V server.

a. On the Hyper-V server, determine the port on which the Windows Remote Management client for the HTTP or HTTPS transport listens. Type the following command in the Windows command line:

```
winrm enumerate winrm/config/listener
```

- If the port number is listed in the `Port` line, the listener was properly created.
- If you receive an error or there is no information for the transport, the listener was not created properly. Go back to step one, and define the listener again.

b. To verify the listener, type:

```
winrm enumerate winrm/config/listener /r:<transport>://  
<Hyper-V_server_name>:<port>/wsman /u:<user_id> /p:<password> /a:Negotiate
```

Where

**<transport>**

Is either HTTP or HTTPS.

**<Hyper-V\_server\_name>**

Is the host name of the Hyper-V server. If you are using HTTPS, the host name must match the CN in the certificate.

**<port>**

Is the port number that you obtained in the previous step.

**<user\_id>**

Is the user ID that is used to connect to the Hyper-V server.

**<password>**

Is the password that is used to connect to the Hyper-V server.

For example:

```
winrm enumerate winrm/config/listener /r:https://  
myhyperv.ibm.com:5986/wsman /u:administrator /p:abc /a:Negotiate
```

**5. Verifying whether the Virtual System Management service is running.** To verify that the service that provides Hyper-V management is running, go to **Administrator Tools > Services** on the Hyper-V server. Look for the service called Hyper-V Virtual Machine Management

- If the service exists, but is not running, start the service.
- If the service does not exist, the Hyper-V host was not configured properly.

6. **Verifying the MsCluster resource.** If the server is clustered, verify that you can access the MsCluster namespace. On the Hyper-V server, type the following command into the Windows command line:

```
winrm enumerate wmi/root/MsCluster/*
-dialect:"http://schemas.microsoft.com/wbem/wsman/1/WQL"
-filter:"SELECT PrivateProperties, Type FROM MsCluster_Resource WHERE Type='Network Name' AND Flags='1'"
```

If this command fails, refer to Microsoft documentation about WMI for MsCluster.

7. **Verifying remote connectivity and the server certificate.** To verify remote connectivity and the server certificate, type the following command into the Windows command line:

 **Restriction:** Enter the following command on the Windows command line of the BigFix Inventory server. If the server is not installed on a computer that runs on a Windows operating system, use a computer that is not the Hyper-V host and runs on Windows 2008 or higher.

```
winrm set winrm/config/client @{TrustedHosts="<Hyper-V_server_name>"}
winrm get winrm/config/client /r:<transport>://
<Hyper-V_server_name>:<port>/wsman /u:<user_id> /p:<password> /a:Negotiate
```

Where

**<transport>**

Is either HTTP or HTTPS.

**<Hyper-V\_server\_name>**

Is the host name of the Hyper-V server. If you are using HTTPS, the host name must match the CN in the certificate.

**<port>**

Is the port number on which the Windows Remote Management client for the HTTP or HTTPS transport listens.

**<user\_id>**

Is the user ID that is used to connect to the Hyper-V server.

**<password>**

Is the password that is used to connect to the Hyper-V server.

For example:

```
winrm set winrm/config/client @{TrustedHosts="myhyperv.ibm.com"}
winrm get winrm/config/client /r:https://
myhyperv.ibm.com:5986/wsman /u:administrator /p:abc /a:Negotiate
```

The following error is often returned when a self-signed certificate is used is:

```
WSManFault
Message = The server certificate on the destination computer (myhyperv.ibm.com:5986)
has the following errors: The SSL certificate is signed by an unknown certificate authority.
```

If you receive this error, export the self-signed certificate from the Hyper-V host, and import it on the BigFix Inventory host. For other errors, refer to Microsoft documentation for the returned error code.

 **Tip:** For more information about Hyper-V configuration, see the following document: [Hyper-V connection fails CODVM0005E \(on page mcccixviii\)](#).

## Troubleshooting Hyper-V connection issues

Troubleshoot, and understand the connection issues between Microsoft Hyper-V and BigFix Inventory. Analyze the listed solutions to resolve connection problems.

### Glossary

The connection between BigFix Inventory and Hyper-V is established through the Windows Management Instrumentation (WMI) queries. These queries use either PowerShell over the DCE-RPC mechanism, or WinRM that uses SOAP, or XML over HTTP protocol. The BigFix Inventory client communicates with the Hyper-V host through the VM Manager interface, VM Manager Tool. The following list describes the basic components of the virtual environment:

#### Server

The Hyper-V host where the WinRM service is located.

#### Client

BigFix Inventory host that can be either a Windows or Unix computer.

The client authentication on both Windows and Unix systems uses the same authentication sequence: NTLM, NTLMV2, or HTTP Basic. The Windows domain members undergo Kerberos network authentication when you use PowerShell as the communication interface.

## Troubleshooting multiple Hyper-V VM Manager Connections

When there are many Hyper-V VM Manager connections that are configured with WinRM interface, VM Manager tool might not be able to correctly establish the connections simultaneously in multiple threads. In this case, you must set the `vmm_thread_pool_size` parameter to 1 to lower the number of connection threads. Additionally consider adding more VM Manager Tools to distribute the load between them.

### **Windows** Manual Hyper-V troubleshooting

If the `hyperv_precheck.wsf` script was not able to diagnose the Hyper-V issues with satisfactory results, proceed with the manual troubleshooting.

1. Verify whether the WinRM service is running. Run the following command in command prompt.

```
sc query WinRM
```

The query results should include the following information.

```
SERVICE_NAME: WinRM
STATE        : 4  RUNNING
```



**Note:** The Windows User Account Control (UAC) can affect user access to the WinRM service. If you use the **Negotiate** authentication scheme, only the Administrator account can access the service. To allow all accounts to access the service, set the following registry value.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\
LocalAccountTokenFilterPolicy to '1'
```

2. Verify the WinRM configuration properties by using command prompt.
  - a. Run the following commands on the Hyper-V server:

- `winrm get winrm/config/service`
- `winrm enumerate winrm/config/listener`

- b. Run the following commands on the client:

- `winrm get winrm/config/client`



**Note:** If Hyper-V and BigFix Inventory are installed on the same host, you can use a single command to retrieve the required information: `winrm get winrm/config`.

3. Set up a simple test case by changing some of the WinRM settings.
  - a. On the BigFix Inventory server, add an asterisk to the **Trustedhosts** list.

```
winrm set winrm/config/client @{TrustedHosts="*"}
```

`TrustedHosts="*" forces the client to abandon authentication of the remote end. However, the remote end still requires the client authentication. Typically, TrustedHost is set on the client to the Hyper-V server name.`

- b. Allow basic authentication and unencrypted traffic on a Hyper-V server.

```
winrm set winrm/config/service/auth @{Basic="true"}
winrm set winrm/config/service @{AllowUnencrypted="true"}
```

`Basic="true"` enables HTTP Basic authentication through user and password in clear text.  
`AllowUnencrypted= true` allows the transfer of the unencrypted data through HTTP between the server and the client.

- c. Check the WinRM configuration setup.

```
'winrm get winrm/config/client':
Client:
```

```
NetworkDelaysms = 5000
URLPrefix = wsman
AllowUnencrypted = true
Auth
    Basic = true
    Digest = true
    Kerberos = true
    Negotiate = true
    Certificate = true
    CredSSP = false
DefaultPorts
    HTTP = 5985
    HTTPS = 5986
TrustedHosts = *
```

'winrm get winrm/config/service' on the Hyper-V server:

Service:

```
RootSDDL = O:NSG:BAD:P(A;;GA;;;BA)(A;;GA;;;S-1-5-21-3273298017-2363932476
-3643925056-1633)S:P(AU;FA;GA;;;WD)(AU;SA;GWGX;;;WD)
MaxConcurrentOperations = 4294967295
MaxConcurrentOperationsPerUser = 15
EnumerationTimeoutms = 600000
MaxConnections = 15
MaxPacketRetrievalTimeSeconds = 120
AllowUnencrypted = true
Auth
    Basic = true
    Kerberos = true
    Negotiate = true
    Certificate = true
    CredSSP = false
    CbtHardeningLevel = Relaxed
DefaultPorts
    HTTP = 5985
    HTTPS = 5986
IPv4Filter = *
IPv6Filter = *
EnableCompatibilityHttpListener = true
EnableCompatibilityHttpsListener = true
CertificateThumbprint
```

If the previous change to `Basic = true` resolved the authentication issue, apparently the client and the server are not able to negotiate the authentication protocol. The Basic authentication scheme is not recommended, unless WinRM is set up with HTTPS. It might cause security exposure by sending a user name, a password and the message body in clear text. Microsoft uses three protocols during the **Negotiate** scheme: Kerberos, NTLMV2, and NTLM. Usually, the client and the server choose the best authentication mechanisms they agree upon. BigFix Inventory does not allow the Kerberos protocol. To check whether the client and the server allow the NTLMV2 or NTLM protocol, use the following registry query.

```
reg query HKEY_LOCAL_MACHINE\System\CurrentControlSet\control\LSA\MSV1_0
```

The following parameters under this registry key control the authentication schema behavior:

- **NtlmMinClientSec**
- **NtlmMinServerSec**

The parameters can be modified through the appropriate Group Policy: **Computer Configuration > Windows Settings > Local Policies > Security Options:LAN Manager authentication level**

4. To manually identify the appropriate authentication mechanism for WinRM service on the remote host, use the following commands:

- Run the command from Windows PowerShell.

```
Test-WSMan -ComputerName http://<Hyper-V_server_name>:<port>  
-Auth <authentication_scheme> -Cred <user_id>
```

Where:

**<Hyper-V\_server\_name>**

Is the host name of the Hyper-V server. If you are using HTTPS, the host name must match the CN in the certificate.

**<port>**

Is the port number on which the Windows Remote Management client for the HTTP or HTTPS transport listens.

**<authentication\_scheme>**

Is the authentication scheme: Basic or Negotiate

**<user\_id>**

Is the user ID to Windows PowerShell.

- Run the command from the command prompt.

```
winrm identify -r:http://<Hyper-V_server_name>:<port>  
-auth <authentication_scheme> -u:<user_id> -p:<password>
```

Where:

- **<Hyper-V\_server\_name>**

Is the host name of the Hyper-V server. If you are using HTTPS, the host name must match the CN in the certificate.

**<port>**

Is the port number on which the Windows Remote Management client for the HTTP or HTTPS transport listens.

**<authentication\_scheme>**

Is the authentication scheme: Basic or Negotiate.

**<user\_id>**

Is the user ID to WinRM.

**<password>**

Is the password to WinRM.

## Event tracing

If BigFix Inventory cannot connect to the Hyper-V host, use the custom Windows Event Tracing. When the settings of the Client and the server are conflicting, the Security event log generates the following error message: `Unknown user name or bad password`. You cannot determine that the actual issue is the unsupported authentication protocols. The Windows event tracing obtains the diagnostic data about the WMI and WinRM queries.

1. To start Event Tracing on the Hyper-V server, use the following commands:

- `logman.exe start winrmtrace -p Microsoft-Windows-Winrm -o winrmtrace.etl -ets`
- `logman.exe start wmitrace -p Microsoft-Windows-WMI-Activity -o wmitrace.etl -ets`

2. Run the VM Manager connection test.

- **Windows** `vmman.bat -testconnection`
- **Linux** `vmman.sh -testconnection`

The formatted WinRM Event Trace Log file, `winrmtrace.etl`, contains the information about the user authentication issue.

```
<Task>User authentication </Task>
<Message>Sending HTTP 401 response to the client and disconnect the connection after
sending the response</Message>
```

Additionally, the file consists of the SOAP, or XML queries that are sent from the Client and provide essential data that is useful during troubleshooting the Hyper-V problems.

## Troubleshooting Hyper-V connection status with Wireshark



**Note:** **UNIX** To analyze the network traffic stream on Unix with no GUI environment, use `tcpdump`. To dump all the traffic to the external file use `tcpdump -vvv -XX -w tcpdump.out`. The `tcpdump.out` file can be viewed with Wireshark.

## Successful connection test between BigFix Inventory and Hyper-V with PowerShell interface.

Parameters:

- **Windows** `vmman.bat -testconnection`
- **Linux** `vmman.sh -testconnection`

```
vmm_communication_interface=POWERSHELL
```

PowerShell uses the NTLM authentication protocol.

Protocol	Length	Info	port src	port dst
DCERPC	174	Bind: call_id: 3, Fragment: Single, 1 context items: ISystemActivator V0.0 (32bit NDR), NTLMSSP_NEGOTIATE	51370	135
DCERPC	330	Bind_ack: call_id: 3, Fragment: Single, max_xmit: 5840 max_recv: 5840, 1 results: Acceptance, NTLMSSP_CHALLENGE	135	51370
DCERPC	300	AUTH3: call_id: 3, Fragment: Single, NTLMSSP_AUTH, User: ADMINIB-K14GP2L\ala	51370	135
ISystemActivator	870	RemoteCreateInstance request	51370	135
TCP	54	135 → 51370 [ACK] Seq=277 Ack=1183 Win=65024 Len=0	135	51370
TCP	1434	[TCP segment of a reassembled PDU]	135	51370
ISystemActivator	58	RemoteCreateInstance response	135	51370

It does not connect to the WinRM ports: 5985 and 80, but it uses a DCE-RPC mechanism to connect to the Endpoint Mapper service via port 135.

1. Select the `RemoteCreateInstance` response entry.
2. To check whether the authentication finished successfully, expand the parameters, and check the value of `HResult`. If authentication was success, `HResult` is marked as `S_OK`.

PowerShell v2 by default uses NTLMv1 for negotiation. To update NTLM, use the following registry setting:

```
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\LSA\LMCompatibilityLevel
```

For more information, see: [How to enable NTLM 2 authentication](#).

## Unsuccessful connection test between BigFix Inventory and Hyper-V with NTLM interface.

Parameters:

- `vmm_communication_interface=NTLM`
- `vmm_url=http://.../wsman`
- The default port:

Protocol	Length	Info	port src	port dst
TCP	66	52905 → 80 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=4 SACK_PERM=1	52905	80
TCP	54	80 → 52905 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0	80	52905

The connection test failed, and the `config_file.log` file contains the following error messages:

```
(...)com.ibm.license.mgmt.vmmanager.hyperv.net.HttpConnector::send::
```

```
An error occurred while trying to send request to http://.../wsman
```

```
(...)com.ibm.license.mgmt.vmmanager.hyperv.net.HttpConnector::send:java.net.
```

```
ConnectException: Connection refused: connect
```

While the errors from the `trace.log` and `config_file.log` files do not provide enough details, the Wireshark capture proves that the issue is related to TCP. Use the following command to check for listener on port 80.

```
winrm enumerate winrm/config/listener
```

If no listeners are detected, run the following command to set up listeners.

```
winrm set winrm/config/service @{EnableCompatibilityHttpListener="true"}
```



**Note:** The setup of listeners on port 80 can collide with the other HTTP services on this computer. To avoid the issues, specify a dedicated WinRM port, such as 5985 or 5986, on the `vmm_url` connection string.

### Unsuccessful connection test between BigFix Inventory and Hyper-V with NTLM interface. HTTP Error 401.

1. The connection test failed, and the `config_file.log` contains the following error messages.

```
(...)com.ibm.license.mgmt.vmmanger.hyperv.net.HttpConnector::retrieve::  
Response Code is: 401
```

```
(...)com.ibm.license.mgmt.vmmanger.hyperv.net.HttpConnector::retrieve::  
The following response code was returned while connecting to VM Manager  
http://.../wsman: responseCode = 401
```

The following Wireshark capture lists the NTLM negotiation.

Protocol	Length	Info	port src	port dst
HTTP	399	POST /wsman HTTP/1.1 , NTLMSSP_NEGOTIATE	54461	80
HTTP	468	HTTP/1.1 401 , NTLMSSP_CHALLENGE	80	54461
HTTP	767	POST /wsman HTTP/1.1 , NTLMSSP_AUTH, User: \ala	54461	80
HTTP	158	HTTP/1.1 200	80	54461
TCP	279	[TCP segment of a reassembled PDU]	54461	80

The first four rows show the successful NTLM negotiation. The fourth row ends the so-called four-way NTLM handshake. The last line detects `HTTP Error 401: Unauthorized`, and expands into the following HTTP response.

The `WWW-Authenticate: Negotiate` response indicates that the server is ready to use the NTLM, NTLMV2, or HTTP Basic authentication scheme. However, the server already successfully responded to the negotiation sequence. Ensure that the WinRM **AllowUnencrypted = true**.



**Note:** VM Managers do not provide the HTTP body encryption. WinRM accepts only the HTTP body that is encrypted with **Negotiate**, or Kerberos protocol.

2. The Wireshark capture shows the unsuccessful NTLM negotiation handshake.

Protocol	Length	Info	port src	port dst
HTTP	399	POST /wsman HTTP/1.1 , NTLMSSP_NEGOTIATE	55445	80
HTTP	468	HTTP/1.1 401 , NTLMSSP_CHALLENGE	80	55445
HTTP	767	POST /wsman HTTP/1.1 , NTLMSSP_AUTH, User: \ala	55445	80
HTTP	206	HTTP/1.1 401	80	55445

The four-way NTLM handshake ends with a 401 error. The most common reason behind this error is the lack of sufficient access rights. To check whether the accounts assigned to the Administrators group are allowed to access WinRM, configure the following Windows registry entry.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\LocalAccountTokenFilterPolicy
```

### Unsuccessful connection test between BigFix Inventory and Hyper-V caused by the bug related to `vmm_login` domain prefix interpretation.

When you add a VM Manager to BigFix Inventory, make sure that you provide the administrator user name in one of the following formats:

- `user_name@domain`, for example: `test@cluster.com`
- `user_name\domain`, for example: `test\cluster.com`

#### 9.2.16

Starting from application update 9.2.16, you can also provide the administrator user name in one of the following formats:

- `domain@user_name`, for example: `cluster.com@test`
- `domain\user_name`, for example: `cluster.com\test`



**Note:** Make sure that you upgrade the VM Manager Tool to version 9.2.16, not only the BigFix Inventory server.

If you do not follow this pattern, and provide the user name in the incorrect format, an error is generated during the VM Manager authentication.

Protocol	Length	Info	port src	port dst
HTTP	407	POST /wsman HTTP/1.1 , NTLMSSP_NEGOTIATE	55878	80
HTTP	468	HTTP/1.1 401 , NTLMSSP_CHALLENGE	80	55878
HTTP	799	POST /wsman HTTP/1.1 , NTLMSSP_AUTH, User: ala\NC9143126002	55878	80
HTTP	206	HTTP/1.1 401	80	55878

```
[truncated]Authorization: Negotiate T1RMTVNTUAAI
NTLM Secure Service Provider
  -NTLMSSP identifier: NTLMSSP
  -NTLM Message Type: NTLMSSP_AUTH (0x00000003)
  -Lan Manager Response: 8fa95512dff721edd3c8a1
  -NTLM Response: 0605a955cb3cc106b028874a67c97
  -Domain name: ala
  -User name: NC9143126002
  -Host name: ADMINIB-K14GP2L
```

When the error occurs, the user name is assigned to the incorrect field.

## Kernel-based Virtual Machine

Kernel-based Virtual Machine is one of the virtualization technologies supported by BigFix Inventory.

### Purpose

Kernel-based Virtual Machine (KVM) is a full virtualization solution for Linux<sup>®</sup>. In the KVM architecture, each guest (virtual machine) is implemented as a regular Linux process. After you install KVM, you can run multiple guests, with each of them running a different operating system image. Each of these virtual machines has private, virtualized hardware, which includes memory, storage, graphics adapter, and a network card. This allows KVM to benefit from all the features of the Linux kernel.

### Collecting capacity data

Capacity data is collected from virtual machines that are managed by KVM hosts in two ways:

- Capacity data from x86 KVM hosts that are controlled by RHV-M is collected by the VM Manager Tool.
- Capacity data from x86 KVM hosts that are not controlled by RHV-M and from PowerKVM hosts is collected directly from the host by using the **Run Capacity Scan on Virtualization Hosts** fixlet. For more information, see: [Collecting capacity data directly from KVM hosts \(on page dcxxv\)](#).

### Red Hat Virtualization Manager (RHV-M)

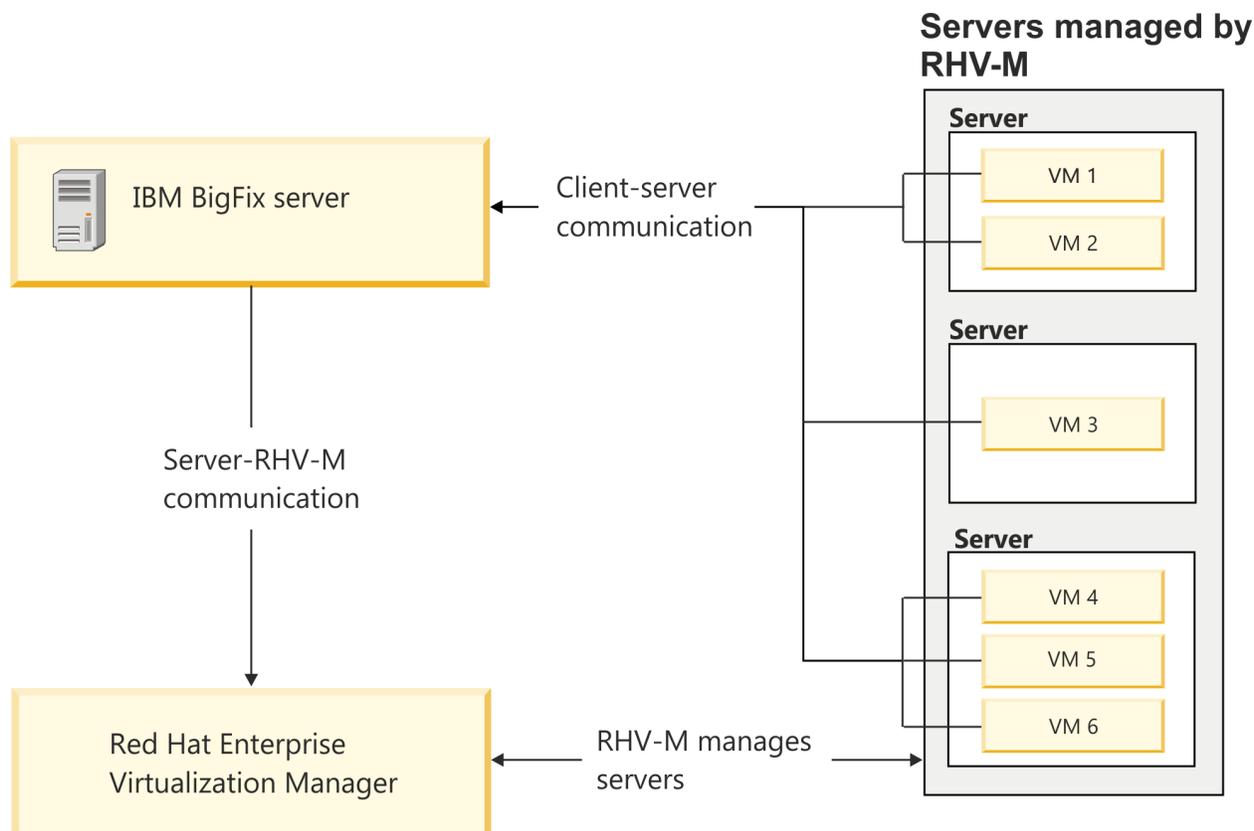
Red Hat Virtualization (RHV, previously known as Red Hat Enterprise Virtualization) is an enterprise virtualization product based on the KVM hypervisor. RHV-M is a service running on a Red Hat Enterprise Linux server that provides interfaces for controlling the virtualization platform. It manages provisioning, connection protocols, user sessions logins and logoffs, virtual desktop pools, virtual machine images, and the high availability and clustering systems. RHV-M provides the REST API that is used by BigFix Inventory to collect information about the whole infrastructure that is managed by RHV-M.

The default URL that is to be used:

```
https://<RHV-M_IP_address>/ovirt-engine/api
```

### Supported versions:

For a full list of supported versions, see: [Supported virtualization types \(on page dcclxiii\)](#).



## Nutanix

Available from 9.2.17. Nutanix is one of the virtualization technologies supported by BigFix Inventory.

### Purpose

Nutanix solutions are built on the hyperconverged infrastructure (HCI) technology. Nutanix Acropolis is a foundation of Nutanix Enterprise Cloud platform that provides built-in virtualization, storage services, networking and cross-hypervisor application mobility. Nutanix supports all of the leading hypervisors, including virtualization solutions from VMware, Microsoft, Citrix, and the native Nutanix hypervisor, AHV (Acropolis Hypervisor) which is a native virtualization solution that supports IBM Power and x86 based hosts depending on version.

### Prism

Nutanix Prism is a management pane that provides unified interface for Nutanix clusters. It is used to monitor and manage entities across Nutanix clusters through a web console. It allows to run a mixed environment, or easily switch hypervisors to meet changing needs. BigFix Inventory supports Nutanix Prism Element.

The default URL is:

```
https://<NUTANIX_PRISM_ELEMENT_IP_ADDRESS>:9440/PrismGateway/services/rest/v2.0
```

## Required permission

The account used for the connection must have at least the Viewer role.

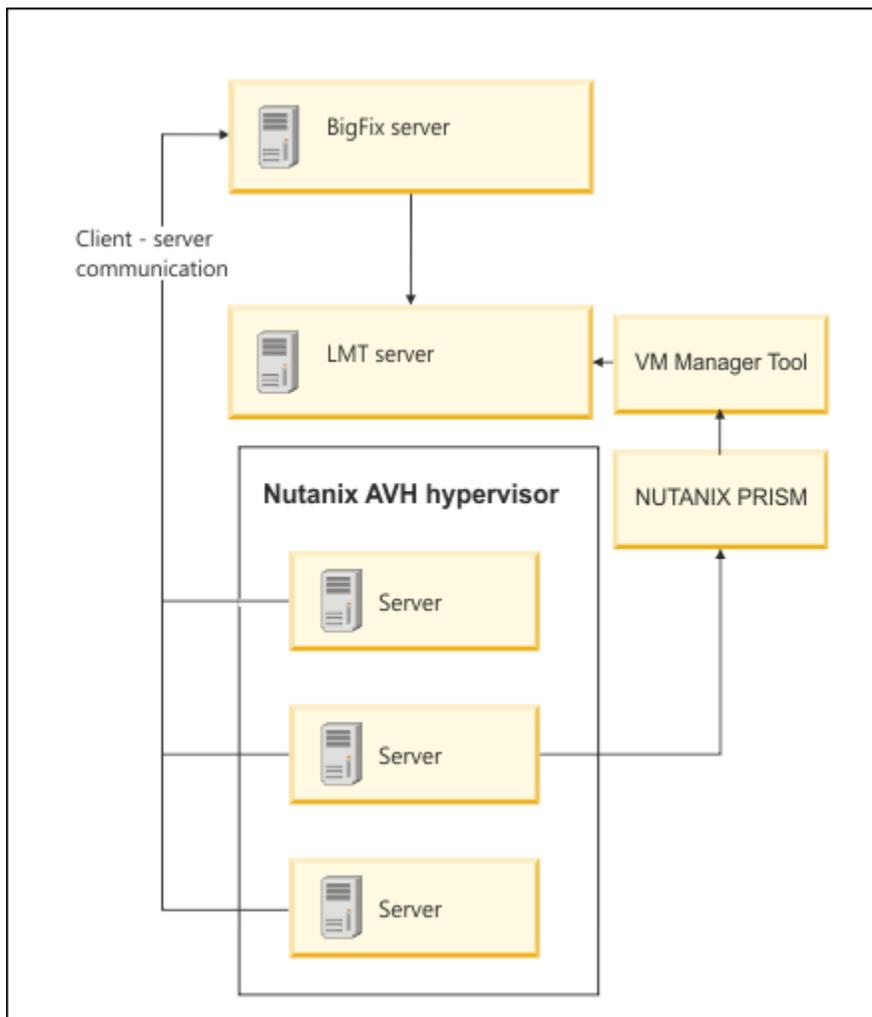
## Supported versions

### Nutanix Acropolis 5.10

- **9.2.17** BigFix Inventory supports Prism API version 2. Support for Linux guests on AHV 5.11+ on IBM Power CS appliances.
- **10.0.0** Support for Linux and Windows guests on AHV 5.11+ on x86 appliances.

### Supported technologies:

For a full list of supported versions, see: [Supported virtualization types \(on page dcclxiii\)](#).



## 10.0.10 <deprecated> Oracle VM Server for x86

9.2.14 Available from 9.2.14. Oracle VM Server for x86 is one of the virtualization technologies supported by BigFix Inventory.



**Notice:** Support for Oracle VM Server for x86 is discontinued by the vendor and Oracle VM Server for x86 is no longer considered as subcap eligible by IBM. For more information, see [Oracle lifetime support policy](#) and [IBM schedule of removing items from the list of subcapacity eligible technologies](#).

### Purpose

Oracle VM Server for x86 is a full virtualization solution that manages the Oracle VM environment. BigFix Inventory supports the Oracle VM Servers for x86 which are managed by Oracle VM Managers. BigFix Inventory connects to Oracle VM Manager and collects the software and capacity data. The solution does not support the direct connection to the Oracle VM Server for x86.



**Important:** The Oracle VM Manager to which BigFix Inventory connects can manage both Oracle VM Servers for x86 and SPARC. However, this solution does not retrieve the data from SPARC Servers. Oracle VM Server for SPARC is supported by BigFix Inventory on different terms. For more information, see: [Client installation on Oracle Solaris \(on page dcxx\)](#).

### Oracle VM Manager

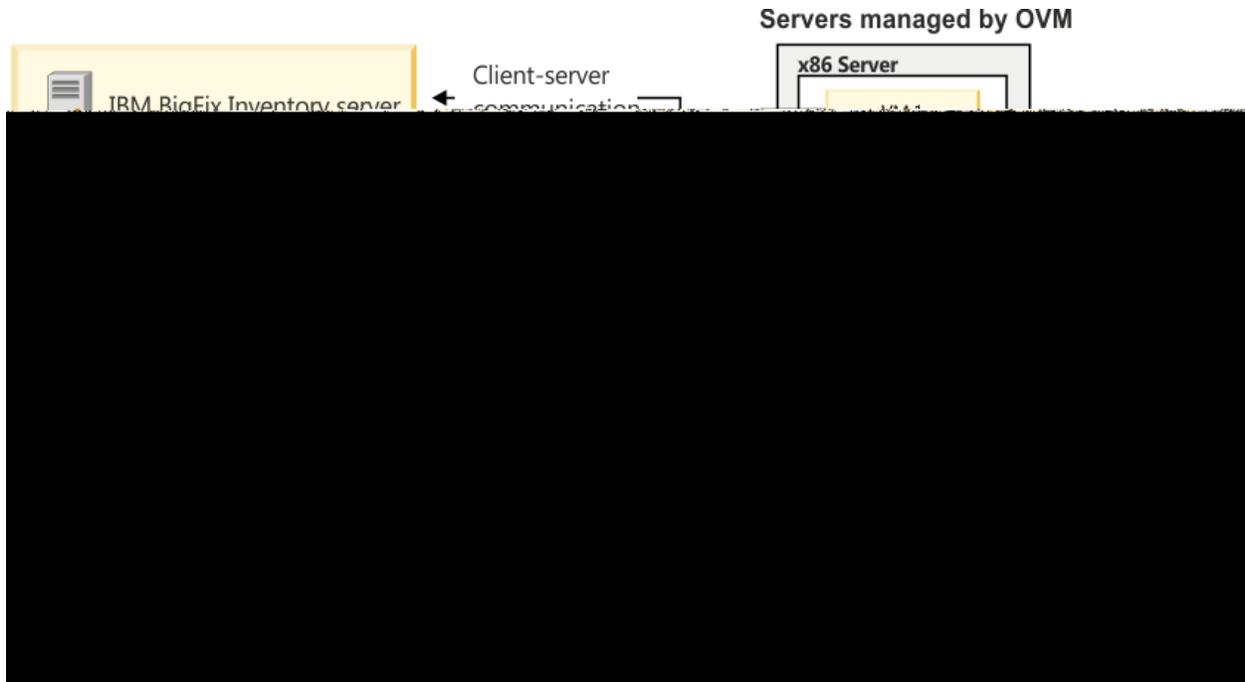
Oracle VM Manager provides interfaces for controlling the virtualization platform. It manages provisioning, connection protocols, user sessions logins and logoffs, virtual desktop pools, virtual machine images, and the high availability and clustering systems. Oracle VM Manager provides the REST API that is used by BigFix Inventory to collect information about the infrastructure that is managed by Oracle VM Manager.

The default URL that is to be used:

```
https://<OVM-Manager_IP_address>:7002/ovm/core/wsapi/rest
```

### Supported versions:

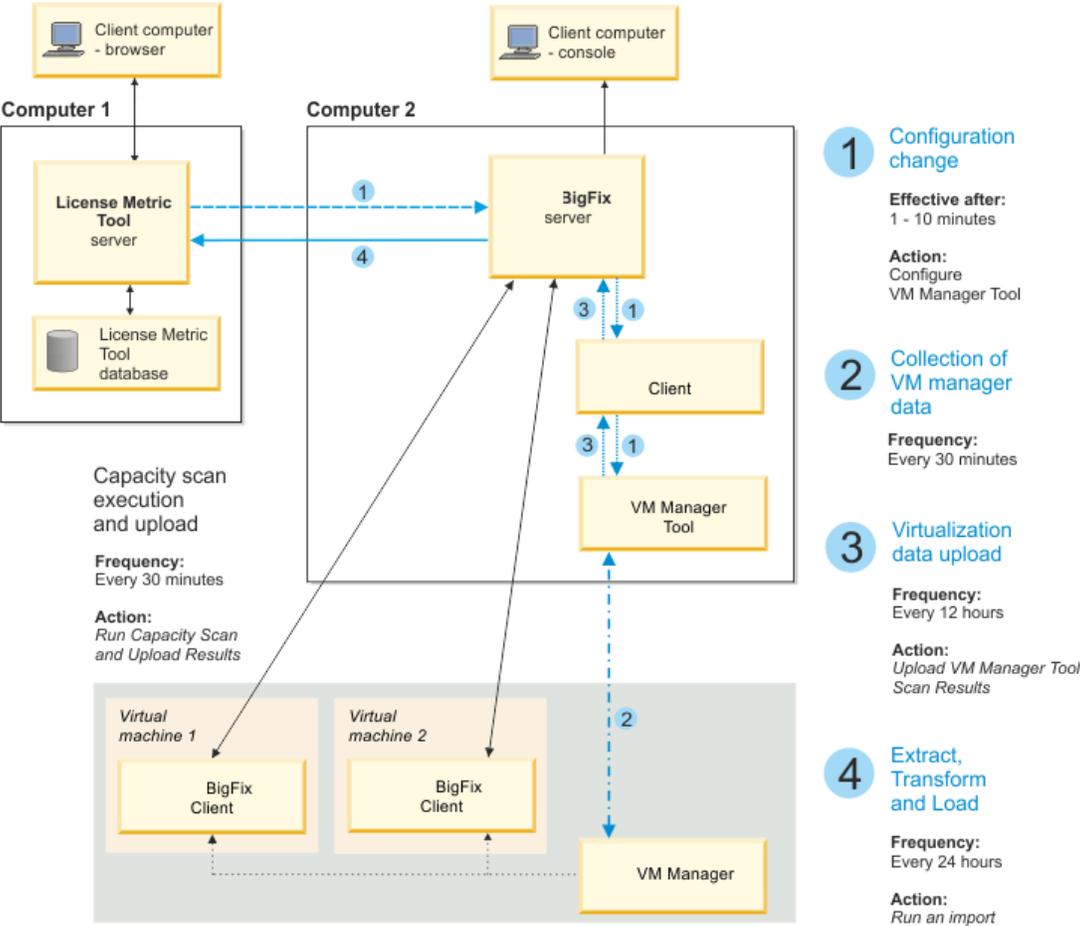
For a full list of supported versions, see: [Supported virtualization types \(on page dcclxiii\)](#).



## Flow of capacity data from VM managers

To understand how capacity data is gathered in virtual environments, see what data flows between virtual machines, VM Manager tool, and the BigFix Inventory server, and how frequently it is transferred.

The following diagram shows the flow of data between virtual machines, VM Manager tool, and the BigFix Inventory server in case of centralized VM management where the VM Manager tool is installed on the same computer as the BigFix server.



It might happen that the **VM Managers** panel does not display up-to-date information about your virtual systems. The delay might be caused by the fact that the data about your virtual environment and the configuration data goes through many infrastructure elements and depends on various scheduled tasks. As a result, the time that is needed for the complete virtualization data to reach BigFix Inventory and be displayed in the interface might last up to two days depending on your specific configurations.

**Table 153. Frequency of steps of collecting capacity data**

Number	Step	Frequency	Comments
1.	Changes in configuration of the VM Manager tool and VM manager connections are sent to the endpoints.	After every change of configuration	
2.	VM manager data is collected from VM managers by the VM Manager tool.	Every 30 minutes	<p><b>Restriction:</b> In case of subcapacity reporting, it is necessary to capture mobility of VMs. To ensure that it is captured, data from VM managers</p>

**Table 153. Frequency of steps of collecting capacity data (continued)**

Number	Step	Frequency	Comments
			 must be collected every 30 minutes. You can change the frequency of collecting data only if you use BigFix Inventory for purposes other than subcapacity reporting.
3.	VM manager data is uploaded from the VM Manager tool to the BigFix server.	Every 12 hours	
4.	The current infrastructure data from the clients and the VM Manager tool is imported from the BigFix server to the BigFix Inventory server.	Every 24 hours	

## Basic VM management (central)

Use basic VM management if the BigFix server can connect to VM managers in your infrastructure. It is the default method of configuring connections to VM managers through the BigFix Inventory user interface.

Data about the capacity of VM managers is needed to calculate consumption of license metrics in the virtual environment. In basic VM management, the data is collected by the main instance of the VM Manager tool that is by default installed on the BigFix server. You must only ensure that it can connect to your VM managers. If some of your VM managers are in separated networks with no connection from the BigFix server, manage these VM managers through advanced VM management. For more information, see: [Advanced VM management \(distributed\) \(on page dcccxiv\)](#).

## Understanding the VM Managers panel

Before you start adding VM Managers, see the details of the **VM Managers** panel to understand the available options and columns.

To open the **VM Managers** panel, click **Management > VM Managers**. Starting from application update 9.2.4, the panel lists not only VM managers that are managed in the central mode, but also those from the distributed mode. However, options such as editing, deleting, or testing connection are applicable only for VM managers that are managed in the central mode. For information how to perform these tasks for VM managers that are managed in the distributed mode, see: [Advanced VM management \(distributed\) \(on page dcccxiv\)](#).

The number of VM managers that are shown on the panel depends on your computer group assignment. You can see only VM managers from which data is collected by the VM Manager tool that belongs to the computer group to which you are assigned.

Management: VM Managers

Operation Status	Connection Test Status	Type	URL	Data Import Time	Data Collection Time	Computer ID of VM Man...	Deployment Type
Inactive	Not Tested	Nutanix	https://9.53.168.50:9440/PrismG...	02/27/2020 01:01 AM	11/14/2019 05:45 AM	11448319	Central
Inactive	Not Tested	VMware ESX, ESXI or ...	https://10.23.133.2/sdk/vimServi...	02/27/2020 01:01 AM	11/14/2019 02:15 AM	11448319	Central
Inactive	Not Tested	VMware ESX, ESXI or ...	https://virtualcenter/sdk	02/27/2020 01:01 AM	11/14/2019 12:45 PM	11448319	Central
Pending	Not Tested	VMware ESX, ESXI or ...	https://198.51.100/sdk/vimService...	<no data>	<no data>	11448319	Central

### 1 New

Click this button to add a VM manager. Use this option to add VM managers to which the BigFix server can connect. If the VM manager is in a separated network to which the BigFix server cannot connect, create the VM manager configuration file. For more information, see: [Advanced VM management \(distributed\)](#) (on page [dcccxiv](#)).

**!** **Important:** The button is disabled when the computer where the main instance of the VM Manager tool is installed does not belong to the computer group to which you are assigned.

### 2 Delete

Click this button to delete the selected VM manager. The option is applicable only to VM managers that are managed in the central mode. If the selected VM manager is managed in the distributed mode, the button is disabled. To delete such a VM manager, remove its configuration file from the computer that is listed in the **Computer ID of VM Manager Tool** column.

**!** **Important:** When you delete a configuration file of a VM manager that is managed in the distributed mode, the VM manager is removed from the BigFix Inventory user interface after the maximum visibility period is exceeded. The period is set by the **maxVMMManagerVisibility** parameter and is set to 90 days by default.

### 3 Test Connection

Click this button to test the connection to the selected VM manager. The option is applicable only to VM managers that are managed in the central mode. If the selected VM manager is managed in the distributed mode, the button is disabled. The status of the connection test is shown in the **Connection Test Status** column.

### 4 9.2.12 Resume

Click this button to resume a connection to a VM manager that is in the *Invalid credentials - suspended* status. When the number of failed login attempts is exceeded, connection to the VM manager is

suspended to prevent the account from locking. After you correct the underlying issue, you can resume the connection.

#### **5** More information

A link to a documentation topic that describes how to manage VM managers.

#### **6** Operation Status

The status of the VM manager that reflects its condition. The status changes when connection or configuration problems occur. For more information, see: [VM manager statuses \(on page dcccxcviii\)](#).

#### **7** Connection Test Status

The status of the connection test. The initial value is `Not Tested` and it changes to `Testing`, `Successful`, or `Failed` after you click **Test Connection**. The latter two statuses are always followed by a time stamp. For more information, see: [Connection test statuses \(on page dcccxi\)](#).

The option is applicable only to VM managers that are managed in the central mode. If the selected VM manager is managed in the distributed mode, the connection status is `Not Applicable`.

#### **8** Type

Type of the VM manager.

#### **9** URL

Web address of the VM manager. Each virtualization type uses a different address format. The template is always provided when you add VM managers. For more information, see: [Supported virtualization types \(on page dcclxiii\)](#).

#### **10** Data Import Time

Date and time when the capacity data was imported from the BigFix server to BigFix Inventory.

**10.0.16** Column is hidden by default.

#### **11** Data Collection Time

Date and time when the capacity data was collected from the VM manager by VM Manager tool. The time that is shown in this column might differ from the time in the Data Import Time column because the collected data might still need to be uploaded to the BigFix server and then imported to BigFix Inventory.

**10.0.16** The 'Data Collection Time' column has been extended with an icon showing issues with VM Manager tool results transfer.

Possible indicators:

Case	Example Values	Meaning
Data Collection Time and Data Import Time are equal with minute precision.	2021-09-24 03:06:12.427 v.s. 2021-09-24 03:06:00.000	No icon. Desired state.
Data Collection Time is before Data Import Time.	2021-02-17 04:49:05.810 2021-09-06 00:01:00.000	Warning: Data has been received too late, and its value will be used in calculations starting from Data Import Time.
Data Collection Time if after Data Import Time.	2021-02-17 04:49:05.810 2021-01-06 00:12:00.000	Error: Issue with processing the VM Manager Tool result. Check Data Import logs.

## 12 9.2.4 Computer ID of VM Manager tool

Identifier of the computer on which the VM Manager tool that collects data from the particular VM manager is installed. Click the link to display the details of the computer, for example its IP address. You can use the information to learn which computer to access to change the configuration file of the VM Manager tool in the distributed mode.

## 13 9.2.4 Deployment Type

Indicates whether the VM manager is deployed in the central or distributed mode. If the deployment type is central, you can edit the VM manager on the BigFix Inventory user interface.

If the deployment type is distributed, you can view information about the VM manager on the BigFix Inventory user interface, but you cannot edit nor delete it. To change the settings of such a VM manager, edit its configuration file. The file is on the computer that is listed in the Computer ID of VM Manager tool column. For more information, see: [VM manager configuration parameters \(on page dcccxxii\)](#).

### Deprecated: User Name

In earlier versions, this column shows the user name that is used to connect to the VM manager.

## Adding VM managers in central mode

Configure connections to VM managers in your infrastructure to ensure that the VM Manager tool can gather data that is needed to calculate consumption of license metrics in your virtual environment. To configure a connection to VM managers through the BigFix Inventory user interface, open the **VM Managers** panel, and specify details of VM managers, such as the web address, virtualization type, and credentials.

-  You must have the Manage VM Managers and Servers permission to perform this task.
- The computer where the main instance of the VM Manager tool is installed must belong to the computer group to which you are assigned. Otherwise, the option to add VM managers is disabled.
- If the panel is blocked and displays a warning, see: [Troubleshooting: Enabling the VM Managers panel \(on page dcccxi\)](#).

**9.2.7** VM Manager Tool, starting from update 1.5.0.0, is enhanced to attempt to automatically fix the most common problems with the VM manager connection parameters. This feature is disabled by default. To enable this feature, go to **Management > Advanced Server Settings** and change the setting of `vmman_fix_parameters_enabled` parameter to `true`. While fixing connection problems the VM Manager Tool can connect using the HTTP protocol when the defined HTTPS connection is not available. This setting is enabled by default. To disable switching protocol from HTTPS to HTTP, go to **Management > Advanced Server Settings** and change the setting of `vmman_http_connection_allowed` parameter to `false`. For more information, see: [Advanced server settings \(on page dccc1\)](#).

1. In the top navigation bar, click **Management > VM Managers**.
2. To add a VM manager, click **New**.
3. Select the virtualization type and provide the required details.

- To add Microsoft Hyper-V:

- a. Select one of the available communication interfaces: PowerShell or WinRM. For more information about these interfaces, see: [Microsoft Hyper-V \(on page dcllxx\)](#).



**Important:** WinRM is the preferred communication interface. Before you add the VM Manager, configure WinRM on the Hyper-V host. For more information, see: [Configuring WinRM on Hyper-V hosts \(on page dclxxiv\)](#).

- b. Provide the URL of the VM manager in the following format: `https://ovirt-engine/api` to `https://{manager-host}/ovirt-engine/api`.
- c. To share credentials with other hosts in the same cluster, select **Share credentials with other hosts in the same cluster**.
- d. Provide the Administrator account credentials. Define the user as `user_name\domain` or `user_name@domain`. For example: `test\cluster.com` or `test@cluster.com`.

- To add KVM with RHV-M:

- a. Provide the URL of the VM manager in the following format: `https://<RHV-M_IP_address>/ovirt-engine/api`.
- b. Provide the account credentials. Define the user as `user_name@domain`, for example: `test@cluster.com`.

- **9.2.17** To add Nutanix:

- a. Provide the URL of the VM manager in the following format: `https://<NUTANIX_PRISM_ELEMENT_IP_ADDRESS>:9440/PrismGateway/services/rest/v2.0.`
  - b. Provide the account credentials. The account needs to have assigned at least *Viewer* role.
- **9.2.14** To add Oracle VM:
    - a. Provide the URL of the VM manger in the following format:
    - b. `https:///ovirt-engine/api` to `https://{manager-host}/ovirt-engine/api`
    - c. Provide the account credentials.
  - To add VMware ESX, ESXi or vCenter:
    - a. Provide the URL of the VM manager in the following format:
      - `https://<vCenter_IP_address>/sdk/vimService.wsdl`
    - b. Provide the account credentials. Define the user as `domain\user_name`, for example: `cluster.com\test`.
  - **9.2.12** To add Citrix Hypervisor (formerly XenServer):
    - a. Provide the URL of the VM manager in the following format: `https://Citrix_hypervisor`.
    - b. Provide the account credentials.

The following example shows a configured connection to VMware ESX, ESXi or vCenter.

**Create VM Manager**

VM Manager Type\* KVM RHV-M or Oracle Linux Virtualization Manager ▼

URL\* Enter the URL

URL Template `https://{manager-host}/ovirt-engine/api`

User Name\*

Password\*

Create



**Note:** "KVM RHV-M" VM Manager type has been renamed to "KVM RHV-M or Oracle Linux Virtualization". This change is only on the UI. As Oracle VM is approaching end of life, instead of the new version, Oracle moves to KVM and introduces Oracle Linux Virtualization Manager as manager. Oracle Linux Virtualization Manager works with previous versions of BigFix Inventory which supports KVM RHV-M.

4. Click **Create**. Connection to the VM manager is created and its status is Pending.
5. Select the VM manager, and click **Test Connection**.  
The test might take a few minutes. Refresh the panel. If the VM manager connection is properly configured, the connection test status changes to Successful.

You have created a VM manager. Its status remains Pending until the data is collected from the VM manager, uploaded to the BigFix server, and transferred to BigFix Inventory during the import of data.

The upload of data collected from VM managers is triggered shortly after you modify any VM manager, for example create a new connection or change the existing one. If you do not make any modifications, the data is uploaded according to the schedule, which is every 12 hours by default. For more information, [Capacity data flow \(on page dcccxc\)](#).



**Note:** BigFix Inventory can count the cluster cores properly only if the data comes from a single VM manager connection for the whole cluster. This option is visible on **Management > VM Managers** panel.

- For VMware, the data should come from vCenter where VMs in the same cluster must belong to a single vCenter, otherwise the cluster core results will not be correct.
- For Hyper-V, the data should come from a single host within a cluster when `Share credentials with other hosts in the same cluster` option is enabled.

Cluster Cores are assigned based on the node layer and not the machines. Physical machines that host Hyper-V, share the same node layer as VMs they host. These machines have the same cluster name. As a result, **Hardware Inventory** report shows the same Cluster Name for Hyper-V hosts and the hosted VMs.

## VM manager statuses

After you add a VM manager, see the explanation of its status to ensure that the VM manager works properly.

### VM manager statuses

The statuses apply to VM managers that are managed both in central and distributed mode.



#### **Outdated VM Manager Data or No VM Manager Data**

If the scan result file was imported without errors, but some computers still have the *Outdated VM Manager Data* or *No VM Manager Data* status, perform the following steps.

#### **Action**

- To determine the cause of the problem, check whether the VM Manager tool collects valid and complete results. For more information, see: [Troubleshooting Outdated VM Manager Data \(on page dcccvi\)](#).



#### **Connection failed**

Connection to the VM manager failed and the data was not retrieved.

#### **Action:**

- To determine the cause of the problem, open the VM Manager tool log files that are in the *BES Client\LMT\VMMAN\logs* directory, and look for the following exception.

```
VM Manager is not able to communicate with ESX 4.x due to:
javax.net.ssl.SSLHandshakeException: java.security.cert.CertificateException:
Certificates does not conform to algorithm constraints
```

For more information, see: [RQMCopyUtility error: SSL\\_TLS SSLContext not available. Certificate does not conform to algorithm constraints.](#)



**Note:** ESX 4 is no longer supported by VMware. For more information, see: [End of Availability and End of Support Life for ESX 4.x and VMware Management Assistant.](#)

- In order to debug log in process modify the following file.
  - **Linux** *BES Client\LMT\VMMAN\vmman.sh*
  - **Windows** *BES Client\LMT\VMMAN\vmman.bat*

Update the Properties Definitions section by adding the debug dump option to **VMM\_PROPERTIES\_DEFS** parameter. Insert the following line:

- **Linux** `VMM_PROPERTIES_DEFS="--`  
`Dcom.sun.xml.internal.ws.transport.http.client.HttpTransportPipe.dump=true`  
`-Dhttps.protocols=TLSv1.2,TLSv1.1,TLSv1 -Dcom.ibm.jsse2.disableSSLv3=false`  
`-Dcom.ibm.tools.attach.enable=no`
- **Windows** `SET VMM_PROPERTIES_DEFS=%VMM_PROPERTIES_DEFS%`  
`-Dcom.sun.xml.internal.ws.transport.http.client.HttpTransportPipe.dump=true`

Run the following VMMAN tool command:

- **Linux** `vmman.sh -testconnection > vmman.out 2>&1`
- **Windows** `vmman.bat -testconnection > vmman.out 2>&1`

Verify the command output by checking credentials and VM manager response.



#### Data partially collected

Data was collected only from some of the hosts.

**Action:**

- If the problem occurs on Hyper-V, it indicates that some of the host in the cluster have connectivity issues. To identify the problematic hosts, open the VM Manager tool log files that are in the `BES Client\LMT\VMMAN\logs` directory and search for the following entries:

- `Processing of the host: <HOST_UUID> ip: <HOST_IP_ADDRESS> from hyper-v cluster was skipped because of invalid connection status (<STATUS>).`
- `A communication error occurred when processing one of the Hyper-V hosts in the cluster. Host name: <HOSTNAME>. Skip and continue.`

Fix connectivity issues for the identified hosts. If the problem persists, contact HCL support.

- If the problem occurs on Citrix Hypervisor (formerly XenServer), it indicates that XenTools are not installed on some of the virtual machines. To identify the problematic virtual machines, open the VM Manager tool log files that are in the `BES Client\LMT\VMMAN\logs` directory and search for the following entries:

- `It was not possible to retrieve the number of cores assigned to XEN VM with UUID: <VM_UUID>. Most likely the XenServer Tools are not installed on this particular VM. Skipping VM and continue.`

Install XenTools on the identified virtual machines.



### Duplicated address

The address of the VM manager is duplicated. The first VM manager with this address remains active and the status is displayed for the remaining ones.

**Action:** Delete duplicated VM managers to ensure that data is gathered only once. The duplicated addresses might occur only within a particular VM manager type.



### Hard timeout - suspended

Connection to the VM manager failed and no further attempts are made. The status indicates that either the provided URL or configuration is incorrect, or that there are problems with the network.

**Action:** Check the connection between VM managers and the VM Manager tool. Also, correct the URL and the credentials, and save the changes. Ensure that the `vmm_communication_locked` property is set to `false` in the corresponding `vmmconf_*.properties` file.



### Inactive

Data from the VM manager was not retrieved for a period longer than the maximum VM manager inactivity. The status indicates that either the provided URL or configuration is incorrect.

**Action:** Correct the URL and the credentials, and save the changes.



### Invalid credentials - attempting

Connection to the VM manager failed because the credentials are incorrect or the password expired. More attempts are made until the limit of failed login attempts is exceeded. Then, the status changes to **Invalid credentials - suspended** to prevent the account from locking.

**Action:** Edit the VM manager and correct the credentials.

### **Invalid credentials - suspended**

Connection to the VM manager is suspended because of the below reasons:

1. The number of failed login attempts was exceeded. The status is used to prevent the account from locking if invalid credentials were provided.

**Action:**

- Ensure that the VM manager credentials are correct. Then, click **Resume**.
  - Go to `vmmconf_*.properties` file and make sure that the `vmm_communication_locked` parameter is set to `false`.
  - By default, VM Manager tool is installed on the same computer as the BigFix server. Check the connection between VM Manager tool and VM manager. Make sure that the firewall, proxy and NAT settings are correct.
2. Windows™ Remote Management (WinRM) not configured properly with BigFix Inventory to gather data about installed machines.

**Action:** The user must have administrative access to the WinRM framework to get data from Hyper-V managed hosts. For more information, refer to [Configuring WinRM on Hyper-V hosts \(on page dcclxxiv\)](#).

### 9.2.5 **No data (previously Insufficient rights)**

No data was collected from the VM manager. The most common reason is that there is no data or that the user that is defined for this VM manager does not have sufficient rights.

**Action:** If you run the **Run Capacity Scan on Virtualization Hosts** fixlet, ensure that the virtualization hosts from which you want to collect capacity data have at least one virtual machine that is correctly defined and running.

Make sure that the user has read access to these virtual machines that are managed by this VM manager and their host.

### **OK**

Data is collected from the VM manager and processed according to the schedule. No issues were detected.

### **OK - duplicated UUIDs discarded**

Each virtual machine must have a unique UUID. When a UUID identifies more than one VM, the duplicate VMs are discarded from the results. The problem is most often caused by one of the following reasons:

- For VMware:
  - Virtual machines were deployed from catalog templates in vCloud Director. By default, such machines are assigned the same BIOS UUID. For more information, see: [BIOS UUIDs in vCloud Director are not unique when virtual machines are deployed from catalog templates](#).
  - Virtual machines were cloned without changing their UUIDs. For more information, see: [Changing or keeping a UUID for a moved virtual machine](#).
- For Hyper-V:
  - Virtual machines were deployed by importing an exported Hyper-V guest that already exists, without changing the BIOS UUID.
  - Virtual machines were deployed using a template.

**Action:** Open the VM Manager tool log files that are in the `BES Client\LMT\VMMAN\logs` directory and identify discarded virtual machines. Then, refer to the documentation for your virtualization type to learn how to assign unique UUIDs to each virtual machine. For information about VMware, see: [Editing a virtual machine with a duplicate UUID.bios](#).

After the duplicates are corrected, the VM manager status changes to **OK**.

### Pending

The status is applicable only to VM managers that are managed in the central mode. It is displayed after a VM manager is created or after its definition is modified. It indicates that changes are still being propagated to the VM Manager tool. The status changes to **OK** when the following steps are completed:

1. VM Manager tool gathers data from VM managers.
2. The data is uploaded to the BigFix server.
3. The data is transferred to BigFix Inventory with a data import.

If a problem occurs during any of these steps, the status changes to indicate the problem.

**Action:** Wait until the VM Manager tool completes the steps that are required to upload the data. For more information about each step, see: [Capacity data flow \(on page dccxc\)](#).

If the status of the VM manager remains **Pending** for a longer period of time, it might indicate that the Schedule VM Manager Tool Scan Results Upload task was not scheduled or was stopped. To check whether it is the case, perform the following steps.

1. Log in to the BigFix console, and go to **Actions**.
2. Look for the Schedule VM Manager Tool Scan Results Upload action and check its status.
3. If the action does not exist, or its status is Stopped or Expired, start the action.

- a. Go to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- b. In the upper right pane, select **Schedule VM Manager Tool Scan Results Upload**, and click **Take Action**.
- c. Select the computer on which the BigFix server is installed, and click **OK**.

After you schedule the action, wait for the collected data to be uploaded to the BigFix server and then imported to BigFix Inventory. The status of the VM manager should change to **OK** after the import.

#### **Unknown problem**

The problem does not fall into any other category. Check the [VM Manager tool log \(on page dcccxxvii\)](#) to determine the cause.

**Action:** If you are not able to determine the cause of the problem from the VM Manager tool log, contact HCL Support.

### **Connection test statuses**

The following statuses are displayed in the **Connection Test Status** column after you select a VM manager and click **Test Connection**. The statuses are applicable only to VM managers that are managed in central mode. If the VM manager is managed in the distributed mode, the connection test status is `Not Applicable`.

#### **Not Tested**

The connection test was never started. Select a VM manager and click **Test Connection**.

#### **Testing**

The connection is being tested. It might take a few minutes until the status changes. Refresh the panel.

#### **Successful**

The connection to a VM manager was established. The VM manager is configured correctly.

#### **Failed**

The connection to a VM manager could not be established. Check the VM Manager tool log files that are in the `BES Client\LMT\VMMAN\logs` to determine the cause.

## Troubleshooting the Outdated VM Manager Data and No VM Manager Data statuses

Understand why the VM Manager data cannot be retrieved by BigFix Inventory and then troubleshoot the issues. Apply the listed solutions for computers that have the *Outdated VM Manager Data* or *No VM Manager Data* status.

### **Background**

Basic virtual environment is configured with one central VM Manager Tool that is installed on one of the following:

- same computer as the BigFix Inventory server in case of new installations of BigFix Inventory application update 10.0.4 and higher.
- same computer as the BigFix server in case of application update 10.0.3 and lower, or environments that were upgraded to application update 10.0.4 or higher.

You can use a more complex environment, with many instances of VM Manager Tool. Each tool must be connected with all hypervisors that is configured for this VM Manager. Results from each hypervisor must reach BigFix Inventory.

## Reasons behind the data retrieval failure

VM Manager data cannot be retrieved by BigFix Inventory due to one of the following reasons:

- The hypervisor connection is not defined.
- VM Manager Tool cannot connect to the hypervisor to collect the data.
- VM Manager Tool does not generate results, or does not properly communicate them to BigFix Inventory.
- VM Manager Tool collects invalid or incomplete results.

## Before you begin troubleshooting

Collect the following information:

- The number of VM Manager Tools that are installed in your environment.
- The number of hypervisors to be connected.
- Valid credentials with sufficient rights to log in to hypervisors.

**9.2.12** Starting from application update 9.2.12, you do not need to go to the computer where VM Manager tool is installed, to get the data that are needed for troubleshooting purposes. When cannot retrieve VM manager data from a computer, go to the **Computer Support Data** panel and download the logs from the related computer to investigate the issue. For more information about how to download the log package, see: [Collecting logs for troubleshooting purposes \(on page mcccxxviii\)](#).

## Troubleshooting

### Identify if the computer runs on a public cloud and then additionally identify it as running on a public cloud

For detailed information, refer to [Identifying computers on public clouds \(on page dcxxviii\)](#).

### Check whether all VM Managers are defined in BigFix Inventory

1. Log in to BigFix Inventory.
2. Go to **Management > VM Managers**, and check whether all the VM Manager connections are defined. If not, see: [Adding VM Managers in central mode \(on page dcccxcv\)](#) or [Adding VM Managers in distributed mode \(on page dcccxcviii\)](#).



**Note:** Make sure that the VM Manager URL is in the correct format. The format differs between technologies, and versions.

### Check whether the status of all VM Manager connections shows as OK

If any of the VM Manager connections is in status other than  OK, refer to: [VM manager statuses \(on page dcccxcviii\)](#).

### Check whether VM Manager Tool is properly configured.

1. The VM Manager Tool is installed at:

**UNIX** `BESClient/LMT/VMMAN`

**Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN`

- a. To ensure that the tool was installed successfully, log in to the BigFix console.
  - b. In the navigation panel, click **Actions** and select **Install VM Manager Tool**.
  - c. Open to the **Computers** tab, and check whether the status is set to *Completed*. If the installation failed, check which line of the action script caused the failure. Double-click the listed computer, and analyze the **View Action Info** to find the relevant line. If you cannot find the **Install VM Manager Tool** action, see: [Troubleshooting: Enabling the VM Managers panel \(on page dcccxi\)](#).
2. Run the following command and check whether the VM Manager Tool is working:

**UNIX** `BESClient/LMT/VMMAN/vmman.sh -run`

**Windows** `BESClient\LMT\VMMAN\vmman.bat -run`

3. Test the connection to VM Managers by running the following command.

**UNIX** `BESClient/LMT/VMMAN/vmman.sh -testconnection`

**Windows** `BESClient\LMT\VMMAN\vmman.bat -testconnection`

4. Check the statuses of the VM Managers by running the following command.

**UNIX** `BESClient/LMT/VMMAN/vmman.sh -status`

```
Windows BESClient\LMT\VMMAN\vmman.bat -status
```

For more information, see: [Running VM Manager tool \(on page dcccxx\)](#) and [VM Manager tool command-line options \(on page dcccxxv\)](#).

**In case of the central and distributed VM Manager Tool, check whether VM Manager Tool results are generated and properly communicated to the BigFix Inventory server**

1. Check whether the files with scan results are packed for upload.
  - a. Go to **Computer Support Data** panel and collect the logs from the computer that you need to investigate. For more information about how to download the log package, see: [Collecting logs for troubleshooting purposes \(on page mcccxxxviii\)](#).
  - b. Go to the following directory.
    - **UNIX** \sha1\_files  
 \logcollector\_0\_computer\_id\_logCollectorAgent.tar  
 \computer\_id\_logCollectorAgent\var\opt\BESClient\LMT\VMMAN  
 \computer\_id
    - **Windows** \sha1\_files  
 \logcollector\_0\_computer\_id\_logCollectorAgent\Program  
 Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN  
 \computer\_id\_vmman.zip
2. If the result files are not packed for upload, check whether the upload is scheduled.
  - a. Log in to the BigFix console.
  - b. Click **Actions** in the navigation tree, and select **Schedule VM Manager Tool Scan Results Upload**.
  - c. Check the details and make sure that the state is marked as Open. If not, see: [Uploading collected data \(on page dcccxxvii\)](#).
  - d. If the action failed, check which line of the action script caused failure. Go to the **Computer** tab, double-click the listed computer, and analyze the **View Action Info** to find the relevant line. You can also try [forcing the upload of collected data \(on page dcccxxxix\)](#).
3. Check whether the scan results exist in the BES server sha1 directory in the log package that you downloaded from the affected computer.
  - **UNIX** /sha1/vmman\_scan\_\*\_computer\_id\*\_vmman.tar.gz
  - **Windows** \sha1\vmman\_scan\_\*\_computer\_id\*\_vmman.zip

If the **Schedule VM Manager Tool Scan Results Upload** action was completed successfully, but the files are still not uploaded, go to the log package that was downloaded from this computer and in the sha1 directory check the `Index.txt` file. If the file contains the following error  
 MaxArchiveSize: Exceeded, see: [Configuring VM manager for subcapacity reporting \(on page dcccxliv\)](#).



**Note:** **9.2.14** Starting from application update 9.2.14, you can check whether the value of `_BESClient_ArchiveManager_MaxArchiveSize` parameter is exceeded on the **Computer Support Data** panel. For more information, see: [Checking whether the maximum archive size is exceeded \(on page mcccxxvii\)](#).

4. Check whether file with scan results is available in the BigFix database, go to the log package that was downloaded from Computer Support Data panel and check whether the `BIGFIX_Uploads` and `BIGFIX_uploads_availability` files contain the data. If you cannot find the results, restart the **FillDB** service on the BigFix server.

- **UNIX** Run the following command: `/etc/init.d/besfilldb restart`.
- **Windows** Find the **FillDB** service on the list of services, and restart it.

It takes several minutes for the database to update after the restart.

- If the issue occurs more than once, upgrade the BigFix server. For more information, see: [Software/Hardware data may not appear in the ILMT/BFI UI after successful ETL import because of the BigFix FillDB APAR IV83671](#).

5. Check whether you can find the result data in `DatasourceFile` in the log package that was collected from this computer.
  - If the result file exists in the BigFix database, but it is not found in `DatasourceFile` file, contact the IBM® support.
6. Check whether you can find the results in `adm.last_imported_scan` file in the [log package \(on page mcccxxviii\)](#) from this computer.
  - If the results data exists in all databases (listed in point 5 and 6), but cannot be found in `adm.last_imported_scan` file, it means that the import of data fails.
    - Check the BigFix Inventory import logs, which are located in the following directory and troubleshoot the issue.

`Installation_directory/wlp/usr/servers/server1/logs/imports`

You can find also the last import log attached to the log package from this computer.

#### Check whether the VM Manager Tool collects valid and complete results.

Continue with this solution if the result file was imported without errors, and at least one of your VM Manager connection shows *Outdated VM Manager Data* or *No VM Manager Data* status, perform the following steps:

1. Collect UUIDs of the affected computers.
  - a. To troubleshoot for *Outdated VM Manager Data* status, perform the following steps.
    - i. Log in to BigFix Inventory, **Computer Support Data** panel, and collect logs from the affected computer.
    - ii. Open a file that matches the following pattern and has the highest timestamp.

```

UNIX /shal_files/
cit_capacity_*_<computer_ID>_t1m_hw.tar.gz/
<computer_ID>_t1m_hw.tar/t1m_hw_<date_time>_<timestamp>.xml

Windows \shal_files\cit_capacity_*_<computer_ID>_t1m_hw.zip
\t1m_hw_<date_time>_<timestamp>.xml
    
```

iii. Get the UUID of the computer.

```

<?xml version="1.0" encoding="UTF-8"?>
  <Hardware>
    (...)
    <ComponentID version="1">
      <Manufacturer>VMware, Inc.</Manufacturer>
      <Product>VMware Virtual Platform</Product>
      <Version>None</Version>
      <SerialNumber>VMware-12 34 56 78 12 34 12 34-12 34 12 34 56 78
90 12</SerialNumber>
      <Type></Type>
      <UUID>12345678-1234-1234-1234-123456789012</UUID>
    </ComponentID>
    (...)
    <VirtualMachineGuest version="1">
      <UUID>VMware-12 34 56 78 12 34 12 34-12 34 12 34 56 78 90
12</UUID>
      <HypervisorType>VMware</HypervisorType>
    </VirtualMachineGuest>
    (...)
  </Hardware>
    
```

iv. Remove any prefixes or spaces in the obtained UUID. Ensure that the UUID conforms to the following pattern: xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx. For example, 12345678-1234-1234-1234-123456789012.

b. To troubleshoot for *No VM Manager Data* status, perform the following steps:

- i. Log in to BigFix Inventory.
- ii. Log in to BigFix Inventory, and view the Capacity Scan Health widget. It shows the number of endpoints with the No VM Manager Data status.
- iii. Click the **No VM Manager Data** to see the list of computers with no VM Manager data on the Hardware Inventory report.

Status	Computer Name	IP Address	Partition Cores	Server ID	Server Cores	Processor Brand String
No VM Manager Data	NC040221	9.157.40.221, 192.168.122.1	2	TLM_VM_4234d9ad-3f60-b5a8-a264-34473e35ea	2	Intel(R) Xeon(R) CPU X7560 @ 2.27GHz
No VM Manager Data	NC040221	9.178.111.123	2	TLM_VM_4234d9ad-3f60-b5a8-a264-34473e35ea	2	Intel(R) Xeon(R) CPU X7560 @ 2.27GHz

- iv. Export the report to CSV file to view the information about the server ID.
  - v. Open the CSV file and choose one of the obtained UUIDs. Remove the `TLM_VM_` prefix from the UUID.
2. Obtain files with VM Manager Tool scan results.
    - a. Go to the VM Manager Tool installation directory and run the following command:

```

UNIX /sha1_files/
logcollector_*_<computer_id>_logCollectorAgent.tar.gz/
<computer_id>_logCollectorAgent.tar/var/opt/
BESClient/LMT/VMMAN/debugData.zip Windows \sha1_files
\logcollector_*_<computer_id>_logCollectorAgent.zip\Program Files
(x86)\BigFix Enterprise\BES Client\LMT\VMMAN\debugData.zip

```

- b. Go to the `debugData.zip` file generated in the VM Manager Tool installation directory.
3. Check whether the UUID that you obtained in step 1 exists in the file with scan results that is located in the upload subdirectory of the `debugData.zip` package.

The UUID you obtained in step 1 can differ from the UUID that is returned by the VM Manager Tool. Both values consist of 32 identical characters. However, the first 16 characters are arranged in different order. Only the final 16 characters are the same. For example, the value in the Server ID column can be `TLM_VM_12345678-1234-1234-1234-123456789012`, but the value that is retrieved by the VM Manager Tool is `78563412-3412-3412-1234-123456789012`.

This issue was fixed in application update 9.2.3. To solve the problem, upgrade BigFix Inventory to the latest version. After the upgrade, upload the new capacity data to produce new scan results. To do that, run a single capacity scan and force upload of its results. For more information, see: [Initiating the capacity scan on all computers \(on page dcxix\)](#). The capacity data is updated in up to two days, when the capacity scans and the VM manager data are imported.

4. If the UUID of the affected computer does not exist in the scan results files, check the following possible causes:
  - a. The UUID is duplicate.

- i. To verify whether the UUID is duplicated, search all `trace.log` and `config_file.log` files for the following information.

```

Duplicates of UUIDs are found on VM Manager,
URL: https://srvvcspr01/sdk/vimService.wsdl.
Discarded UUIDs for guests: 4227e866-7121-d731-235a-343077d7ee93.

```

The `trace.log` and `config_file.log` files are stored in the following location:

```

UNIX /sha1_files/
logcollector_*_<computer_id>_logCollectorAgent.tar.gz/
<computer_id>_logCollectorAgent.tar/var/opt/BESClient/LMT/
VMMAN/logs

```

```
Windows \sha1_files
\logcollector_*_<computer_id>_logCollectorAgent.zip\Program
Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\logs
```



**Note:** **10.0.5** To improve readability of logs, the config file in config directory is used to record all communication with a hypervisor. Each config file has a separate log and a separate name, such as `<config_name.log>`. For example, config file, `vmmconf_8762375104473669393.properties` has a log file named `vmmconf_8762375104473669393.log`. To avoid the confusion with log file names, only one log file is created per config file. Also, for every hypervisor, the config file has one log file.

- ii. If some UUIDs are duplicated, go to the virtual machine that has the duplicated UUID, and change it so that it becomes unique.
  - b. The user who is connecting with the VM manager on VMware does not have a permission to collect data about the virtual machine. Check the VM manager settings, and permissions. For more information, see: [Verifying permissions for VMware communication \(on page dclcx\)](#).
  - c. The VM manager is not valid for the virtual machine.
5. If the UUID of the affected computer exists in the scan results file, but the computer still has the *Outdated VM Manager Data* or *No VM Manager Data* status, perform the following steps.
- a. Check whether debug data is collected for the affected computer.
    - For local or disconnected VM Manager Tool, go to the VM Manager Tool installation directory and run the following command:
      - **UNIX** `./vmman.sh -retrievedebugdata`
      - **Windows** `vmman.bat -retrievedebugdata`
    - Then, go to the `debugData.zip` file generated in the VM Manager Tool installation directory.
    - For central or distributed VM Manager Tool, open the log package, and go to the `debugData.zip` file that is stored in the following location.
      - **UNIX** `/sha1_files/  
logcollector_*_<computer_id>_logCollectorAgent.tar.gz/  
<computer_id>_logCollectorAgent.tar/var/opt/BESClient/LMT/VMMAN/  
debugData.zip`
      - **Windows** `\sha1_files  
\logcollector_*_<computer_id>_logCollectorAgent.zip\Program Files  
(x86)\BigFix Enterprise\BES Client\LMT\VMMAN\debugData.zip`
  - b. Go to the `debug/<VM_manager_connection_ID>` subdirectory of the `debugData.zip` file.

- c. Check whether the `login.xml` file is correct, and error-free. The `login.xml` file can contain the authentication error but the VM manager connection test was successful, the user login, or password probably contains one of the following characters: `$` or `\`.

```
<faultcode>ServerFaultCode</faultcode>
<faultstring>Cannot complete login due to an incorrect user name
or password.</faultstring>
<detail>
<InvalidLoginFault xmlns="urn:vim25" xsi:type="InvalidLogin"/>
```

To solve the problem, upgrade the VM Manager Tool to the latest version. For more information, see: [Checking the VM Manager tool version \(on page dcccxi\)](#) and [Updating VM Manager Tool \(on page dcccxi\)](#).



**Note:** After you upgrade the VM Manager Tool, download fresh log package and check the debug data.

- d. Open the `retrieveProperties.xml` file. The file contains information about all virtual machines, including VMs with duplicated UUIDs, and the `<HostCpuPackage>` data. If the `<HostCpuPackage>` tag is not in the file, the user that connects to the VM manager is underprivileged. Ensure that the user has sufficient permissions. For more information, see: [Verifying permissions for VMware communication \(on page dclxx\)](#) and [How to set the correct permissions for LMT - VMware communication](#).

## Troubleshooting: Enabling the VM Managers panel

If the VM Managers panel is disabled and you cannot add VM managers, complete additional steps to enable the panel. This issue often occurs if your BigFix server does not have Web Reports configured, or if the automatic installation of the VM Manager Tool failed. It can also occur when the BigFix user that is used to connect to the BigFix console does not have sufficient rights.

The issue can be recognized by a disabled panel and a message similar to the following example:

```
Before you can configure VM managers, you must install and run the BigFix services,
including Web Reports. For more information, see the product documentation.
```

### Required permissions

Before you perform the following steps, ensure that the BigFix user that is used to connect to the BigFix console is a Master Operator. If you do not want to use the Master Operator, you can create a dedicated user that fulfills the following requirements:

- Is assigned the **BigFix Inventory** site
- Is assigned computers that you are going to monitor, and the computer where the BigFix server is installed
- Has the following permissions: *Can use REST API, Can use Console, Custom Content, Can Create Actions*

The option is supported starting from BigFix 9.5.

## Installing Web Reports

The Web Reports component is typically installed together with the BigFix server. You might have chosen, however, to omit this component during the installation. To install it, complete one of the following steps depending on the operating system of the computer, where BigFix is installed.

- For Windows systems, see [Installing Web Reports](#).
- For Linux systems, start the installation of BigFix. Choose the Production installation and when prompted for the installation of components, choose Web Reports only.

```
Select the BigFix Features you want to install:
[1] All Components (Server, Client, and WebReports)
[2] Server and Client Only
[3] WebReports Only
Choose one of the options above or press <Enter> to accept the default: [1]
```

You installed Web Reports on the BigFix server.

[Install VM Manager Tool \(on page dcccxi\)](#).

## (Optional) Installing VM Manager Tool

If the automatic installation of VM Manager Tool failed, you can install it manually on the BigFix server.

- [Review software requirements and other considerations \(on page dcccxxvii\)](#)
- Install an BigFix client on the target computer.
- Install and start Web Reports on the BigFix server.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Install VM Manager Tool version number**, and then click **Take Action**.
4. Select the BigFix server as target computer and click **OK**.

[Schedule the upload of collected data \(on page dcccxi\)](#).

## (Optional) Uploading collected data

The uploading of collected data is scheduled automatically. You can use this procedure if the automatic installation of VM Manager Tool failed.

1. Log in to BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Schedule VM Manager Tool Scan Results Upload**.

Fixlets and Tasks			
Name	Source Sev...	Applicab...	Category
Upload Scanner Diagnostic Data	Low	0 / 5	Troubleshooting
Install Additional VM Manager Tool	Low	2 / 5	VM Managers
Install VM Manager Tool	Low	1 / 5	VM Managers
<b>Schedule VM Manager Tool Scan Results Upload</b>	<b>Low</b>	<b>2 / 5</b>	<b>VM Managers</b>
Uninstall VM Manager Tool	Low	2 / 5	VM Managers
Update VM Manager Tool	Low	0 / 5	VM Managers

4. In Description, enter the upload frequency in hours.

**Description**

This task schedules regular uploads of capacity data collected by VM Manager Tool or by the following task: [Run Capacity Scan on Virtualization Hosts](#). The data is uploaded to IBM BigFix and can be transferred to IBM BigFix Inventory by running a data import.

Upload data every  hours.

5. Select the BigFix server as the target computer and click **OK**.

Target   Execution   Users   Messages   Offer   Post-Action   Applicability   Success Criteria   Action Script

Target:

Select devices  
 Dynamically target by property  
 Enter device names

Computer Name	OS	CPU	Last Report Ti...
NC9143126012	Linux Red Hat ...	2400 MHz Xeon	2014-06-03 10:...



**Note:** All options in the Execution tab are disabled. The frequency can be specified only in the Description field.

You scheduled to upload capacity data from VM Manager Tool to BigFix. The data is transferred to BigFix Inventory with each data import. If no modifications are made to VM managers, the data is uploaded according to the schedule. If you modify a VM manager, the upload is triggered shortly afterward.

[Add VM managers \(on page dcccxcv\)](#) in the user interface.

## Advanced configuration of basic VM management

When you use the basic VM management, you can perform advanced configuration on the Advanced Server Settings panel. However, it is not usually needed.

The basic VM management does not usually require reconfiguring. However, you can change the configuration parameters on the Advanced Server Settings panel. For more information, see: [Advanced server settings \(on page dccc\)](#). Any customization can significantly impact the server and its performance. Thus, ensure that every configuration is carefully considered and needed.

## Advanced VM management (distributed)

Use advanced VM management if the BigFix server cannot connect to some of the VM managers because they are in separated networks. This approach requires that you install an additional VM Manager Tool, and configure VM managers through the command line.

You can use advanced VM management as an extension of the basic configuration. VM managers to which the BigFix server can connect can still be managed in the BigFix Inventory user interface. Additional VM Manager Tool would manage only VM managers for which such a connection cannot be established. You can connect to such VM managers by creating configuration files and managing the connections in the VM Manager tool command line.

Although VM managers are managed through the command line, their capacity data is uploaded to BigFix Inventory and updated on reports in the same way as for the basic configuration. In contradiction to the main VM Manager tool, additional instances can be installed on any computer that can connect to separated VM managers, and you can deploy as many of them as you need. VM managers configured in the command line are visible on the [VM Managers panel \(on page dccxcii\)](#) in the BigFix Inventory user interface. However, their configuration cannot be changed through that panel. It can be change only through the VM manager configuration files.

The advanced VM management also gives you the following benefits:

- Balancing the network traffic by distributing it between multiple VM Manager Tools
- Collecting capacity data only for selected virtual machines (UUID-based filtering)

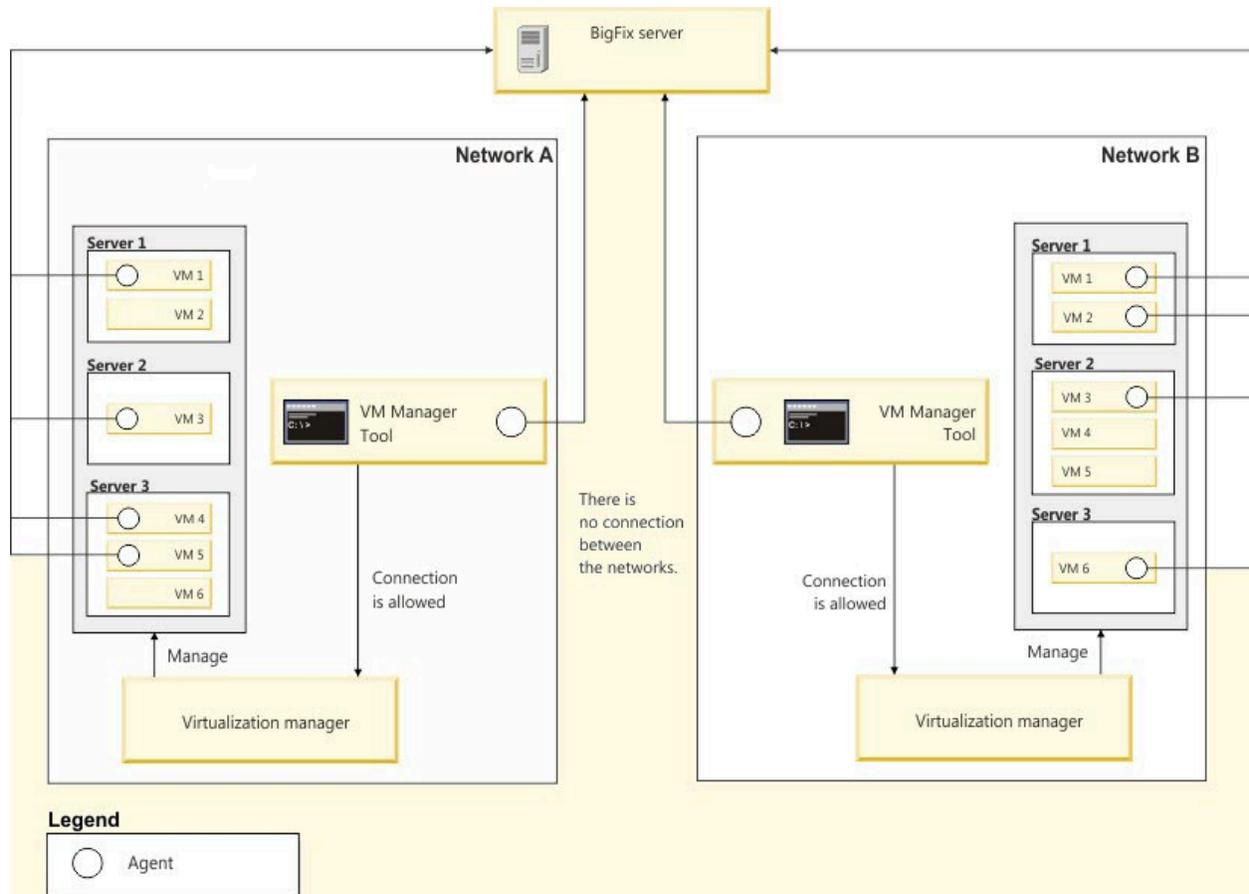
## Deployment scenarios

Before you proceed to advanced VM management, review the available scenarios for which you can use the additional instance of VM Manager Tool. The main purpose is to transfer the capacity data from VM managers that are in separated networks, but you can also balance the network traffic, or filter your virtual machines based on their UUIDs.

### **Scenario 1: A VM manager is in a separated network and cannot connect to BigFix**

Without a direct connection to BigFix, data about capacity of VM Managers cannot be collected, which conflicts with license compliance. If you have a separated network in your environment, you can use VM Manager tool that serves as a connector between VM Managers and the server. The tool can be installed on any computer that can connect to VM Managers. It gathers data about their capacity and then uploads it to the server.

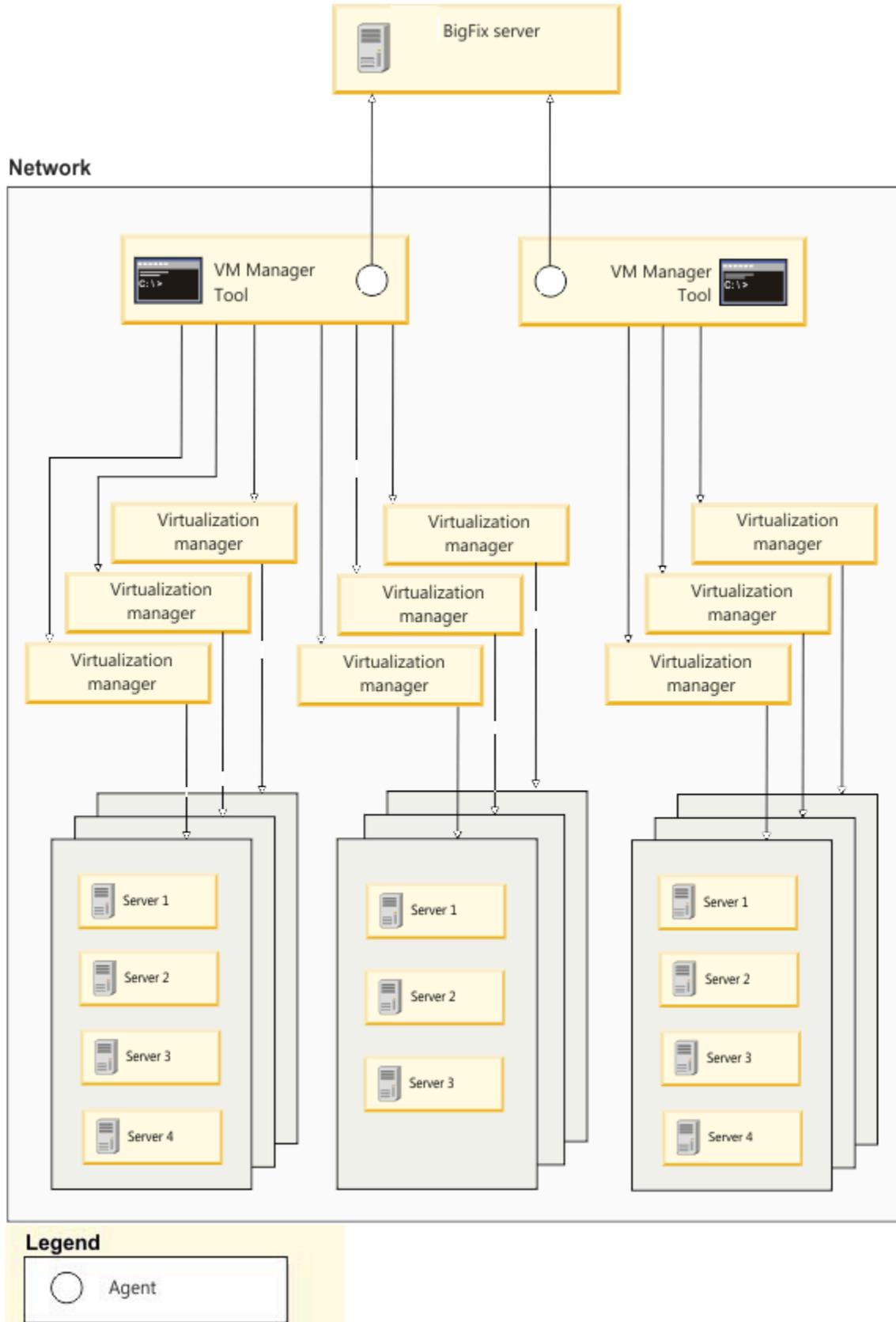
The following image shows two separated networks, each represented by a different VM Manager tool.



## Scenario 2: You want to balance the network traffic coming from multiple VM Managers

You can balance the network traffic by distributing it between multiple VM Manager Tools. Successful load balancing optimizes resource use, maximizes throughput, minimizes response time, and avoids overload.

The following image shows two VM Manager Tools connected to the BigFix server. Each of them is responsible for gathering capacity data from different VM Managers.



### Scenario 3: UUID-based virtual machine filtering

The purpose of filtering based on universally unique identifier (UUID) is to select only those virtual machines whose capacity and topology data is to be included in a final report. The VM manager has the function of matching UUIDs of selected guests. To stay compliant, all the necessary virtual machines units must be included in the report. When you enable UUID-based filtering all of the non-selected guests, empty hosts and clusters are removed.

#### Installing additional VM Manager tool

To connect to VM managers that are in separated networks, you must first install additional VM Manager Tool. You can install it on any computer that can connect to the separated networks.

- [Review software requirements and other considerations \(on page dcccxxvii\)](#)
  - Install an BigFix client on the target computer.
1. Log in to the BigFix console.
  2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  3. Select **Install Additional VM Manager Tool (OPTIONAL) version number** and click **Take Action**.
  4. Select the target computer and click **OK**. The target computer must be able to connect to separated VM managers.

You installed additional instance of VM Manager Tool. You can use its command-line interface to manage VM managers that are in separated networks.

[Schedule the upload of collected data \(on page dcccxvii\)](#).

#### Uploading collected data

After you install additional VM Manager Tool, schedule the regular uploads of collected data. This action is required so that the capacity data that is collected by VM Manager Tool is uploaded to the BigFix server.

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Schedule VM Manager Tool Scan Results Upload**.

Fixlets and Tasks			
Name	Source Sev...	Applicab...	Category
Upload Scanner Diagnostic Data	Low	0 / 5	Troubleshooting
Install Additional VM Manager Tool	Low	2 / 5	VM Managers
Install VM Manager Tool	Low	1 / 5	VM Managers
<b>Schedule VM Manager Tool Scan Results Upload</b>	<b>Low</b>	<b>2 / 5</b>	<b>VM Managers</b>
Uninstall VM Manager Tool	Low	2 / 5	VM Managers
Update VM Manager Tool	Low	0 / 5	VM Managers

4. In Description, enter the upload frequency in hours.

**Description**

This task schedules regular uploads of capacity data collected by VM Manager Tool or by the following task: [Run Capacity Scan on Virtualization Hosts](#). The data is uploaded to IBM BigFix and can be transferred to IBM BigFix Inventory by running a data import.

Upload data every  hours.

5. Click **Take Action**.

6. Select the target computer and click **OK**. The computer must have VM Manager Tool installed.

Target   Execution   Users   Messages   Offer   Post-Action   Applicability   Success Criteria   Action Script

Target:

Select devices  
 Dynamically target by property  
 Enter device names

Computer Name	OS	CPU	Last Report Ti...
NC9143126012	Linux Red Hat ...	2400 MHz Xeon	2014-06-03 10:...



**Note:** All options in the Execution tab are disabled. The frequency can be specified only in the Description field.

You scheduled the upload of capacity data from VM Manager Tool to BigFix. The data is transferred to BigFix Inventory with each data import. If no modifications are made to VM managers, the data is uploaded according to the schedule. If you modify a VM manager, the upload is triggered shortly afterward.

[Configure VM managers \(on page dcccxviii\)](#).

## Adding VM managers in distributed mode

In advanced VM management, you add VM managers by creating configuration files, where you specify web address, type, and credentials that are required to access a VM manager. Each VM manager uses a separate configuration file.

VM managers for which configuration files are created are displayed in the BigFix Inventory user interface. However, they can be managed only in the VM Manager tool command-line interface.

**9.2.7** VM Manager Tool, starting from update 1.5.0.0, is enhanced to attempt to automatically fix the most common problems with the VM manager connection parameters. This feature is disabled by default. To enable this feature, go to the `BES Client\LMT\VMMAN\config` directory, open the `vmmmainconf.properties` file and change the setting of the `vmm_fix_parameters_enabled` parameter to `true`. While fixing connection problems the VM Manager Tool can connect using the HTTP protocol when the defined HTTPS connection is not available. This setting is enabled by default. To disable switching protocol from HTTPS to HTTP, go to the `BES Client\LMT\VMMAN\config` directory, open the `vmmmainconf.properties` file and change the setting of the

`vmm_http_connection_allowed` parameter to `false`. For more information, see: [VM Manager Tool settings \(on page dcccxxviii\)](#).

1. Go to the `BES Client\BFI\VMAN\config` directory.
2. Copy the `vmmconf_template.properties` file and rename it to `vmmconf_name.properties`. This file now represents a new VM manager.

**!** **Attention:** Each time you create a VM manager configuration file, use the `vmmconf_template.properties` file as a template. Do not copy and edit configuration files that you previously created for a different VM manager. After you load the configuration file for the first time, an ID is generated for a VM manager. Each ID must be unique. When you copy and edit an existing configuration file, the ID is duplicated.

3. Edit the file and specify the following parameters:

#### **vmm\_url**

Specify the web address of the VM manager. You can specify either a full URL or only the host name or IP address.

For example, `vmm_url=http://192.0.2.0/wsman`.

**!** **Important:** The default URL differs depending on the virtualization type.

- vCenter
  - `https://<vCenter_IP_address>/sdk/vimService.wsdl`
- RHV-M
  - `https://<RHV-M_IP_address>/ovirt-engine/api`
- Hyper-V
  - `https://<Hyper-V_IP_address>/wsman`
- **9.2.12** Citrix Hypervisor (formerly XenServer)
  - `https://<Citrix-hypervisor>`
- **9.2.17** Nutanix
  - `https://<NUTANIX_PRISM_ELEMENT_IP_ADDRESS>:9440/PrismGateway/services/rest/v2.0`

#### **vmm\_type**

Specify the type of the VM manager. The possible values are `VMWARE_V_SPHERE`, `MICROSOFT_HYPER_V`, `KVM_RHV_M`, `XEN_MANAGER`, `ORACLE_VM` Or `NUTANIX`.

For example, `vmm_type=MICROSOFT_HYPER_V`.

#### **vmm\_login**

Specify the user name that is used to access the VM manager.

For example, `vmm_login=administrator\cluster.com`.



**Important:** VM managers use different definitions of users:

- For Microsoft Hyper-V, you must use the Administrator account. The user is defined as `user_name\domain` or `user_name@domain`. For example: `test\cluster.com` OR `test@cluster.com`.
- For VMware, the user is defined as `domain\user_name`, for example: `cluster.com\test`.
- For RHV-M, the user is defined as `user_name@domain`, for example: `test@cluster.com`.
- **9.2.12** For Citrix Hypervisor (formerly XenServer), the user is defined as `user_name`, for example `root`.
- **9.2.14** For Oracle VM Server for x86, the user is defined as `user_name`, for example: `test`.
- **9.2.17** For Nutanix, the user is defined as `user_name`, for example: `test`.

#### **vmm\_password**

Specify the password that is used to access the VM manager. The password is encrypted and saved when you load the configuration files.

For more information about optional parameters, see [Configuration parameters \(on page dcccxxii\)](#).

4. Save the configuration file. To establish the connection, you must run the VM Manager Tool and load the configuration file.

[Run the VM Manager Tool \(on page dcccxx\)](#).

## Running VM Manager tool

After creating configuration files for your VM managers, you must run the VM Manager tool to load the configuration, test connections, and check the status of VM managers.

For a complete list of commands that can be used in VM Manager tool, see [VM Manager Tool command-line options \(on page dcccxxv\)](#).

1. Open the command-line interface and go to `BES Client\LMT\VMAN`.
2. **Optional:** VM Manager Tool is started automatically after installation, however you can use the following commands to start it, if needed.

**Linux** `./vmman.sh -run`

**Windows** `vmman.bat -run`

3. Load the new or updated configuration files to update the connection parameters in VM Manager Tool. During this step, the passwords provided in the files are encrypted. You must repeat this step after modifying or creating a configuration file.

**Linux** `./vmman.sh -reloadconfig`

**Windows** `vmman.bat -reloadconfig`

4. Test connections to VM managers.

**Linux** `./vmman.sh -testconnection`

**Windows** `vmman.bat -testconnection`

5. Check the status of VM managers.

**Linux** `./vmman.sh -status`

**Windows** `vmman.bat -status`

 **Tip:** For more information about the available statuses, see [VM manager statuses \(on page dcccxcviii\)](#).

```
c:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\UMMAN>vmman.bat -status
Virtual manager file: vmmconf_1.properties
Status: OK
URL: http://-.-.-.-.203/usman
User name: administrator@cluster.com
Last successful scan date: 2013-12-18 14:58:10 CET
Last scan attempt date: 2013-12-18 14:58:10 CET
```

If the VM managers report the **OK** status, they are working properly, and the capacity data is being collected. The upload of collected data is triggered shortly after making any modifications to VM managers, such as adding a new connection or changing the existing one. If no modifications are made, the data is uploaded according to the schedule. For more information, see [Capacity data flow \(on page dcccxc\)](#).

**9.2.4** Starting from application update 9.2.4, VM managers from the distributed mode are also visible in the user interface after the data about them is imported to the BigFix Inventory server. However, they can be modified only through configuration files.

## Additional configuration

Additional configuration tasks are intended to give you more control over VM Manager Tool. You can use them to customize the VM Manager Tool, or to enable filtering of virtual machines based on their UUIDs. All of these tasks are optional.

## VM manager configuration parameters

In advanced VM management, connection to each VM manager is created based on the information provided in the configuration files. Apart from specifying mandatory parameters, such as web address, virtualization type, user name, and password, you can also use additional ones to disable VM managers, set the number of login attempts, or allow Hyper-V to share credentials with hosts in the same cluster.

**!** **Important:** The following settings cannot be changed for the main instance of VM Manager Tool that is installed on the BigFix server. Any changes are overwritten during the next action performed on VM managers. To configure VM managers on the main instance of VM Manager Tool, see: [Adding VM managers in central mode \(on page dcccxcv\)](#).

**Table 154. VM manager configuration parameters**

*The table describes global configuration parameters. For each parameter, there are 2 levels. The first level consists of four columns and provides the unit as well as the default, minimum, and maximum values of the parameter. The second level is common for all four columns and provides a description of the parameter.*

Parameter	Unit	Default	Minimum	Maximum
<b>vmm_url</b>	Web address (URL)			
<p>Specifies the web address of the VM manager. You can provide either a full URL, a partial URL, or only a host name or IP address. In the second case, the full address of the VM manager is built based on the selected type of the VM manager and protocol (if specified). HTTPS protocol is used by default.</p> <p>If you specify only the addresses, the defaults are used:</p> <ul style="list-style-type: none"> <li>• <code>https://virtualcenter/sdk</code> for <code>VMWARE_V_SPHERE</code></li> <li>• <code>https://hyper-v/wsman</code> for <code>MICROSOFT_HYPER_V</code></li> <li>• <code>https://rhv-m:8443/api</code> for <code>KVM_RHV_M</code></li> <li>• <b>9.2.12</b> <code>https://Citrix-hypervisor</code> for <code>XEN_MANAGER</code></li> <li>• <b>9.2.14</b> <code>https://ovm-m:7002/ovm/core/wsapi/rest</code> for <code>ORA-</code></li> </ul> <p><code>CLE_VM</code></p> <p>If you do not specify the complete URL but only a protocol, or a port, or a <code>context</code> path, the URL is built based on the following defaults:</p>				

**Table 154. VM manager configuration parameters**

The table describes global configuration parameters. For each parameter, there are 2 levels. The first level consists of four columns and provides the unit as well as the default, minimum, and maximum values of the parameter. The second level is common for all four columns and provides a description of the parameter.

(continued)

Parameter	Unit	Default	Minimum	Maximum
				<b>Description</b>
				<ul style="list-style-type: none"> <li>• <code>VMWARE_V_SPHERE</code> - default protocol <code>https</code>, port <code>443</code> (for <code>https</code>) or <code>80</code> (for <code>http</code>), context path - <code>sdk</code></li> <li>• <code>KVM_RHV_M</code> - default protocol <code>https</code>, port <code>8443</code> (for <code>https</code>) or <code>8080</code> (for <code>http</code>), context path - <code>api</code></li> <li>• <code>MICROSOFT_HYPER_V</code> - default protocol <code>https</code>, port <code>443</code> (for <code>https</code>) or <code>80</code> (for <code>http</code>), context path - <code>wsman</code></li> <li>• <b>9.2.12</b> <code>XEN_MANAGER</code> - default protocol <code>https</code>, port <code>443</code> (for <code>https</code>) or <code>80</code> (for <code>http</code>), context path - <code>&lt;empty&gt;</code></li> <li>• <b>9.2.14</b> <code>ORACLE_VM</code> - default protocol <code>https</code>, port <code>7002</code> (for <code>https</code>) or <code>80</code> (for <code>http</code>), context path - <code>/ovm/core/wsapi/rest</code></li> </ul>
				<p>If the URL contains the name of a VM manager, the name is resolved to an IP address. However, the full URL, including a port number, is used by the server to identify the VM manager.</p> <p>Each VM manager must have a different web address, that is, only one entry is allowed for a particular URL. If two or more configuration files duplicate the URL address, only the first file is treated as valid. The remaining files are ignored.</p>
<b>vmm_type</b>				<p>Characters</p> <p>Specifies the type of VM manager. The possible values are:</p> <ul style="list-style-type: none"> <li>• <code>VMWARE_V_SPHERE</code></li> <li>• <code>MICROSOFT_HYPER_V</code></li> <li>• <code>KVM_RHV_M</code></li> <li>• <b>9.2.12</b> <code>XEN_MANAGER</code></li> <li>• <b>9.2.14</b> <code>ORACLE_VM</code></li> </ul>
<b>vmm_communication_interface</b>	Characters			<p><b>POWERSHELL</b></p> <p>Specifies the communication interface that is used for communication with Microsoft™ Hyper-V. This option is supported only when the VM Manager Tool is installed on Windows. On Linux, the value of this parameter is ignored and the NTLM communication is always used. The possible values are:</p>

**Table 154. VM manager configuration parameters**

The table describes global configuration parameters. For each parameter, there are 2 levels. The first level consists of four columns and provides the unit as well as the default, minimum, and maximum values of the parameter. The second level is common for all four columns and provides a description of the parameter.

(continued)

Parameter	Unit	Default	Minimum	Maximum	Description
<b>vmm_login</b>	Characters				<ul style="list-style-type: none"> <li>• NTLM</li> <li>• POWERSHELL</li> </ul> <p>Specifies the user name that is used to access the VM manager.</p> <p> <b>Important:</b> For Microsoft™ Hyper-V, you must use the Administrator account.</p>
<b>vmm_password</b>	Characters				<p>Specifies the password that is used to access the VM manager. A password that is entered in plain text is immediately encrypted and saved while the configuration files are loaded.</p> <p> <b>Important:</b> For Microsoft™ Hyper-V, you must use the Administrator account.</p>
<b>vmm_communication_locked</b>	True/false	False			<p>Indicates whether the connection to the VM manager is locked. The possible values are:</p> <p><b>true</b></p> <p>Disables the connection to the VM manager but keeps the configuration file. If the number of failed logging attempts that is specified in the <b>vmm_max_subsequent_login_failures</b> parameter is exceeded, the value of the <b>vmm_communication_locked</b> parameter is automatically set to true.</p> <p><b>false</b></p> <p>Unlocks communication with the VM manager and resets the count of the subsequent failed logging attempts.</p>
<b>vmm_get_cluster_info_with_shared_credentials</b>	True/false	False			<p>Indicates whether the same credentials can be used to connect to every host in the same cluster. You can use this parameter only for Microsoft™ Hyper-V. The possible values are:</p>



Option	Description	Example
<b>10.0.8</b> <code>-convertkeystore</code>	Converts the keystore format from JCEKS to PKCS12. Use this option if you manually upgraded the VM Manager Tool from a version earlier than 10.0.8.	<b>Linux</b> <code>./vmman.sh -convertkeystore</code> <b>Windows</b> <code>vmman.bat -convertkeystore</code>
 <b>Notice:</b> Applicable till version 10.0.8.		
<code>-help</code>	Displays the help screen. It is the default option when no other option is specified.	
<code>-install</code>	Installs VM Manager tool as a system service.  <b>Important:</b> You must have the administrative or root privileges to use this option.	<b>Linux</b> <code>./vmman.sh -install</code> <b>Windows</b> <code>vmman.bat -install</code>
	<b>Windows</b> The installation logs are in the directory: <code>BES Client\LMT\VMMAN\logs\install</code> .	
<code>-passwd passwordString</code> <code>-config file_path</code>	Encrypts a password for the VM manager from a configuration file that is specified in the <b>config</b> parameter.	<b>Linux</b> <code>./vmman.sh -passwd newPassword -config ./config/vmmconf_1.properties</code> <b>Windows</b> <code>vmman.bat -passwd newPassword -config config\vmmconf_1.properties</code>
<b>9.2.9</b> <code>-regenerateencryptionkey</code>	Overwrites the default key that is used to encrypt passwords to VM managers. Run the command to increase security of storing the passwords. For more information, see: <a href="#">Improving security of storing VM manager passwords (on page mcccix)</a> .	<b>Linux</b> <code>./vmman.sh -regenerateencryptionkey</code> <b>Windows</b> <code>vmman.bat -regenerateencryptionkey</code>
<code>-reloadconfig</code>	Reloads all configuration files and updates the parameters in the memory of VM Manager tool. You can use this option only if VM Manager tool runs as a system service.	<b>Linux</b> <code>./vmman.sh -reloadconfig</code> <b>Windows</b> <code>vmman.bat -reloadconfig</code>
	 <b>Tip:</b> Use this option each time a new VM manager connection is defined to load the newly created configuration.	
<code>-remove</code>	Removes VM Manager tool from the service registry.	<b>Linux</b> <code>./vmman.sh -remove</code>

Option	Description	Example
	<p> <b>Important:</b> You must have the administrative or root privileges to use this option.</p>	<p><b>Windows</b> <code>vmman.bat -remove</code></p>
	<p><b>Windows</b> The removal logs are in the directory: <code>BES Client\LMT\VMAN\logs\install</code>.</p>	
<code>-retrievedebugdata</code>	<p>Collects debug information from all defined VM managers and stores it in the <code>debugData.zip</code> file that is in the main the VM Manager tool directory. The collected information includes:</p>	<p><b>Linux</b> <code>./vmman.sh -retrievedebugdata</code></p> <p><b>Windows</b> <code>vmman.bat -retrievedebugdata</code></p>
	<ul style="list-style-type: none"> <li>• Configuration files</li> <li>• Log files</li> <li>• Network communication log files</li> <li>• Data collected from VM managers</li> <li>• Status of all VM managers</li> </ul>	
<code>-run</code>	<p>Starts the VM Manager tool in service mode. In this mode, data is collected for all defined VM managers repeatedly at the interval that is set in the <code>vmm_polling_time_interval</code> (on page <a href="#">dcccxxviii</a>) parameter. To use this option, you must install VM Manager tool as a system service.</p>	<p><b>Linux</b> <code>./vmman.sh -run</code></p> <p><b>Windows</b> <code>vmman.bat -run</code></p>
	<p> <b>Important:</b> <b>Windows</b> You must have the administrative privileges to use this option.</p>	
<code>-runonce [ -config file_path ]</code>	<p>Collects data from all defined VM managers once and exits the VM Manager tool. To collect data from a particular VM manager, use the <code>-config file_path</code> option, where <code>file_path</code> is a full or relative path to the configuration file of the VM manager that you want to collect data from.</p>	<p><b>Linux</b> <code>./vmman.sh -runonce -config ./config/vmmconf_1.properties</code></p> <p><b>Windows</b> <code>vmman.bat -runonce -config config\vmconf_1.properties</code></p>
<code>-status [ -config file_path ]</code>	<p>Displays the operation status for all VM managers. If the file path is specified, the operation status for the particular VM manager is displayed.</p>	<p><b>Linux</b> <code>./vmman.sh -status -config ./config/vmmconf_1.properties</code></p> <p><b>Windows</b> <code>vmman.bat -status -config config\vmconf_1.properties</code></p>

Option	Description	Example
	To see the information about all the operation statuses, refer to the topic <a href="#">VM Manager tool statuses (on page dcccxxviii)</a> .	
<code>-stop</code>	Stops VM Manager tool that was started as a system service.	<div style="background-color: #e91e63; color: white; padding: 2px; display: inline-block;">Linux</div> <code>./vmman.sh -stop</code> <div style="background-color: #e91e63; color: white; padding: 2px; display: inline-block;">Windows</div> <code>vmman.bat -stop</code>
<code>-testconnection [ -config file_path ]</code>	Tests connections to all defined VM managers. To collect data from a particular VM manager, use the <code>-config file_path</code> option, where <code>file_path</code> is a full or relative path to the configuration file of the VM manager that you want to collect data from.	<div style="background-color: #e91e63; color: white; padding: 2px; display: inline-block;">Linux</div> <code>./vmman.sh -testconnection -config ./config/vmmconf_1.properties</code> <div style="background-color: #e91e63; color: white; padding: 2px; display: inline-block;">Windows</div> <code>vmman.bat -testconnection -config config\vmmanconf_1.properties</code>

## VM Manager Tool settings

You can configure settings of VM Manager Tool by editing the `vmmmainconf.properties` file that is stored in the `BES Client\LMT\VMMAN\config` directory.



**Important:** The following settings cannot be changed for the main instance of VM Manager Tool that is installed on the BigFix server. Any changes are overwritten during the next action performed on VM managers. To configure VM managers on the main instance of VM Manager Tool, see: [Adding VM managers in central mode \(on page dcccxcv\)](#).

**Table 155. Global configuration parameters**

Parameter	Unit	Default	Minimum	Maximum
<code>check_vm_managers_uniqueness</code>	Boolean (true/false)	True		
Distinguishes unique VM managers from duplicates.				
<code>uuid_filtering_enabled</code>	Boolean (true/false)	False		
Enables UUID filtering.				
<b>9.2.2</b> <code>vmm_collecting_hostnames_enabled</code>	Boolean (true/false)	False		
Specifies whether host names should be collected and saved in the log files. Available for VMware.				

**Table 155. Global configuration parameters (continued)**

Parameter	Unit	Default	Minimum	Maximum
<p>You can enable this parameter to solve problems with duplicated UUIDs. In the case of found duplicates, the host names are written in the log files.</p> <p><b>9.2.3</b> <b>vmm_collecting_host_serials_enabled</b></p> <p>Boolean (true/false) False</p> <p>Specifies whether serial numbers of VM manager hosts are collected for VM managers from which data is collected by the VM Manager tool. Available for Hyper-V, VMware 5.0 and higher, and Oracle VM Server for x86.</p> <p>To display information about serial numbers in the Server ID column on the reports, adjust the Server ID template that is specified by the <b>managedServerTagTemplate</b> parameter. For more information, see: <a href="#">Advanced server settings (on page dccc)</a>.</p>				
<p><b>vmm_connection_timeout</b></p> <p>Seconds 90 10 3600 (1 hour)</p> <p>Specifies the time after which the connection with a VM manager is ended.</p>				
<p><b>vmm_data_transfer_period</b></p> <p>Minutes 720 0 10080</p> <p>Determines how often the scan data is transferred to the agent to be uploaded to the server if subsequent scans have the same results.</p>				
<p><b>9.2.7</b> <b>vmm_fix_parameters_enabled</b></p> <p>Boolean (true/false) False</p> <p>Attempts to fix the most common problems with VM manager connection parameters, such as adding default URL suffix, correcting the user name format, and testing the WinRM and PowerShell protocols for Hyper-V VM managers.</p>				
<p><b>9.2.7</b> <b>vmm_http_connection_allowed</b></p> <p>Boolean (true/false) True</p> <p>Allows the VM manager to connect by using the HTTP protocol when the defined HTTPS connection is not available.</p>				

Table 155. Global configuration parameters (continued)

Parameter	Unit	Default	Minimum	Maximum
<b>9.2.9</b> <code>vmm_keystore_password_do_not_change_it</code>  Contains the encrypted password to the VM Manager tool keystore. The parameter is specified only if you changed the default password by using the <code>regeneratekeystorepassword</code> command. For more information, see: <a href="#">Improving security of storing VM manager passwords (on page mcccix)</a> .   <b>Important:</b> Do not change the value of this parameter.				
<b>vmm_max_subsequent_login_failures</b>  Specifies the maximum number of failed login attempts in to the VM manager. The default value of <b>vmm_max_subsequent_login_failures</b> should be set as 0 to avoid connection timeout. This scenario is applicable when using PowerShell framework. When the value is set as 0, the VM manager tool attempts connecting to the VM manager for unlimited times (irrespective of the framework used).  The value when set to 3, the VM Manager tools attempts for 3 times and then it stops attempting. To resolve this, try the following options: <ul style="list-style-type: none"> <li>• change the username and/or password</li> <li>• change the hypervisor address</li> <li>• restart VM manager tool</li> <li>• edit configuration in the file</li> </ul> The status of VM Manager changes as per the value you set. For example, when the value is set as 3, the status changes to 'Invalid credentials - suspended' and when the value is set as 0, the status changes to 'Invalid credentials - attempting'. For more information on statuses, refer to <a href="#">VM manager statuses (on page dccxcviii)</a> .	Number	3	0	100
<b>vmm_polling_time_interval</b>	Minutes	30	30	10080 (1 week)

Table 155. Global configuration parameters (continued)

Parameter	Unit	Default	Minimum	Maximum
<p>Specifies the interval between the consecutive retrievals of data from VM managers.</p> <p> <b>Restriction:</b> In case of subcapacity reporting, it is necessary to capture mobility of VMs. To ensure that it is captured, data from VM managers must be collected every 30 minutes. You can change the frequency of collecting data only if you use BigFix Inventory for purposes other than subcapacity reporting.</p>				
<p><b>9.2.8</b> <code>vmm_rmi_protocol</code></p>	String	TLSv1.2		
<p>Specifies the protocol that is used for internal communication through the port that is specified in the <code>vmm_rmi_ssl_port</code> parameter when you run the <code>reloadconfig</code> or <code>stop</code> commands.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• SSL</li> <li>• SSLv3</li> <li>• TLSv1</li> <li>• TLSv1.1</li> <li>• TLSv1.2</li> <li>• TLS 1.3</li> </ul>				
<p><code>vmm_rmi_ssl_port</code></p>	Number	25001		
<p>Specifies the port that is used for internal communication when you run the <code>reloadconfig</code> or <code>stop</code> commands.</p>				
<p><b>9.2.7</b> <code>vmm_slm_tags_file_size_limit</code></p>	Bytes	10240	10240	1048576
<p>The maximum size of each <code>.slmtag</code> file that is used to collect VMware license metric utilization.</p>				
<p><b>9.2.7</b> <code>vmm_slm_tags_files_per_software</code></p>	Number	10	1	100

**Table 155. Global configuration parameters (continued)**

Parameter	Unit	Default	Minimum	Maximum
The maximum number of <code>.slmtag</code> files that are stored on the computer for each license key under VMware instance.				
<b>9.2.7</b> <code>vmm_slm_tags_enabled</code>	Boolean (true/false)	False		
Enables collection of license metric utilization for VMware VM managers. If set to true, <code>.slmtag</code> files are created locally and collected by the resource utilization scan.				
<code>vmm_thread_pool_size</code>	Number	10	1	50
Specifies the number of threads in thread pool that is used for connections to VM managers.				
<b>9.2.4</b> <code>vmm_transfer_credentials_to_server</code>	Boolean (true/false)	True		
Specifies whether VM manager credentials are transferred to the server. The option is enabled by default. If you disable the option, the credentials are not transferred and thus they are not displayed on the VM Managers panel when you edit the VM manager.				
<b>9.2.4</b> <code>vmm_trust_all_vm_managers_certificates</code>	Boolean (true/false)	True		
Specifies whether SSL certificates from all defined VM managers are trusted. If the option is disabled, certificates that are trusted must be placed in the truststore on the computer where the VM Manager Tool is installed. For more information, see: <a href="#">Configuring VM Manager tool to accept trusted VM manager certificates (on page mcccxxiv)</a> .				

## UUID-based virtual machine filtering

The purpose of filtering based on universally unique identifier (UUID) is to collect the capacity data only for chosen virtual machines. The remaining ones are omitted and not updated in BigFix Inventory.

### Enabling UUID-based virtual machine filtering

The `uuid_filtering_enabled` parameter is set by default to false. You must set it to true before you can select virtual machines to be included in a final report.



**Note:** To change this parameter for basic (central) VM management, log in to BigFix Inventory, go to **Management > Advanced Server Settings**, and change the `vmman_uuid_filtering_enabled` value to true.

1. Go to the computer where you installed an additional instance of VM Manager Tool.
2. Go to `BES Client\LMT\VMMAN\config`.
3. Open the `vmmmainconf.properties` file.
4. Set the `uuid_filtering_enabled` property to true.

You enabled filtering of virtual machines based on their UUIDs. If you want to later reverse the changes, set the property to false.

## Selecting virtual machines for UUID-based filtering

You can select virtual machines for whom the capacity data is to be collected by putting their UUIDs in the `vmmfilterconf.properties` file.

1. Obtain the list of virtual machines UUIDs by running the `select distinct uuid from ADM.VIRTUAL_VM_UUID` SQL query. For more information, see [Obtaining the list of virtual machine UUIDs \(on page dcccxxiii\)](#).
2. In the `BES Client\LMT\VMMAN\config` directory, open the `vmmfilterconf.properties` file.
3. Add the UUIDs of chosen virtual machines
 

During filter matching, the VM manager removes any white space characters and hyphens (-). All letters are also converted to uppercase.

All of these entries are valid:

- `5030a6eb-485a-35b5-0fa0-a8bc4a459c9d`
- `564da050-7b20-8754-b578-e8437da8653e`
- `564D1E0d4C0CE65B8A54203D7E032D2B`

Run the following command to load the list of UUIDs that you configured:

- **Linux** `./vmman.sh -reloadconfig`
- **Windows** `vmman.bat -reloadconfig`

## Obtaining the list of virtual machine UUIDs

You can use the list of virtual machine UUIDs that are currently connected to the BigFix Inventory server to select those for whom the capacity data is to be collected.

You can find all of the virtual machine UUIDs that are currently connected to the BigFix Inventory server in the `ADM.VIRTUAL_VM_UUID` table in the TEMADB database. You can extract the complete list of UUIDs and then remove the chosen UUIDs to omit certain virtual machines.

The following procedure explains how to retrieve the list of UUIDs from the DB2 database. If you are using MS SQL, use a method of retrieving information from database tables that is suitable for this database.

1. Log in to the database server as `db2inst1` or other user with `DBADM` rights.
2. To obtain the list of virtual machines UUIDs, enter the following commands in the system command-line interface:

```
db2 connect to TEMADB
db2 "select distinct uuid from ADM.VIRTUAL_VM_UUID" >uuids.txt
```



**Note:** `TEMDB` is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccxi\)](#).

The list is now stored in the `uuids.txt` file.

Remove the unnecessary UUIDs from the `uuids.txt` file and copy the remaining UUIDs to the `vmmfilterconf.properties` file.

## Collecting capacity data from virtualization hosts for Xen and KVM

For Citrix, Xen and KVM, connection to the VM manager does not have to be defined in BigFix Inventory to collect capacity data. The data can be collected directly from virtualization hosts by using the Run Capacity Scan on Virtualization Hosts task.

This method is applicable on the following virtualizations:

- **9.2.7** Xen Hypervisor
- **9.2.6** Citrix Hypervisor (formerly XenServer)



**Important:** **9.2.12** Starting from application update 9.2.12, it is recommended to collect data from Citrix Hypervisor (formerly XenServer) by configuring connections to VM managers. For more information, see: [Adding VM managers in central mode \(on page dccxcv\)](#).

- PowerKVM
- KVM x86



**Tip:** If your KVM x86 hosts are controlled by RHV-M, you can configure the RHV-M as a VM manager in BigFix Inventory. It allows for collecting capacity data from all controlled hosts without the need of using the Run Capacity Scan on Virtualization Hosts task on each of them. For more information, see: [Adding VM managers in central mode \(on page dccxcv\)](#).

For information about supported versions of these virtualizations, see: [Detailed System requirements \(on page cdxxxii\)](#).

Ensure that virtualization hosts from which you want to collect capacity data meet the following prerequisites.

### KVM hosts

Ensure that the following prerequisites are met on the KVM hosts:

- The host runs on Linux x86 or Linux on Power
- Bash shell is available
- `libvirt-client` library is installed (virsh command is available)
- `libxml2` library is installed (xmllint command is available)

### Xen hosts

Ensure that the following prerequisites are met on the Xen hosts:

- The host runs on Linux x86
- Bash shell is available
- `xl` command is available
- `libxml2` library is installed (xmllint command is available)

1. Log in to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Run Capacity Scan on Virtualization Hosts**.
4. **Optional:** To collect information about host names of virtualization hosts, select **Collect host names of virtualization hosts**.

This option affects the format of information about virtualization hosts that is displayed in the Server ID column on the reports. If you select this option, the column contains information about the vendor, type and host name of the host as specified in the `managedServerTagTemplate` parameter. If you do not select this option, the column contains the serial number of the host instead of its name. For more information about the `managedServerTagTemplate` parameter, see: [Advanced server settings \(on page dccc\)](#).

5. To start the scan, click **Take Action**.

 **Important:** If you run this task on the host, you no longer need to run the **Run Capacity Scan and Upload Results** task on that host.

6. From the list of applicable computers, select the supported hosts.

 **Important:** The list is filtered out to the computers that meet the prerequisites. However, not all of them are virtualization hosts.

7. **Optional:** By default, the capacity scan is scheduled to run every 30 minutes. However, in an environment with many KVM or Xen hosts, consider lowering the frequency of the scan. To specify the frequency of the scan, open the **Execution** tab, specify the details, and click **OK**.

For environments with multiple hosts, run the scan once per one to six hours.



**Restriction:** You can change the frequency you obtain the acceptance of the BigFix Compliance Team.

8. Schedule the upload of scan results to the BigFix server.
  - a. In the upper right pane, select **Schedule VM Manager Tool Scan Results Upload**, specify the frequency, and click **Take Action**.
  - b. Select the hosts from which you collected the capacity data, and click **OK**.



**Tip:** To check the status of the capacity scan on the endpoints, activate the analysis Status of Capacity Scan on Virtualization Hosts. If the status is other than OK, check the return code to learn what is the cause of the problem and how to solve it. For more information, see: [Return codes of capacity scans on virtualization hosts \(on page mcdxi\)](#).

9. Wait for the scheduled import or run it manually to transfer the data to BigFix Inventory.



**Note:** When you run fixlet 'Run Capacity Scan on Virtualization Hosts', the discovered hosts, such as KVM, Xen, and Citrix are displayed on **Management > VM Managers** panel in BigFix Inventory UI.

---

#### Related information

[Return codes of capacity scans on virtualization hosts \(on page mcdxi\)](#)

## Removing capacity scan data from the host

During the capacity scan, some files and folders are generated on the virtualization host. If you no longer collect capacity data from a particular host, remove the files and folders that were created by the capacity scan.

1. Stop the actions that were created by the **Run Capacity Scan on Virtualization Hosts** task on the specified endpoints. Otherwise, the scan continues running and the files are recreated.
  - a. In the navigation tree of the BigFix console, click **Sites > External Sites > BigFix Inventory > Actions**.
  - b. Select the actions, and in the lower pane, click **Stop**.
2. In the navigation tree, go to **Fixlets and Tasks**.
3. In the upper right pane, select **Remove Capacity Scan Data from Virtualization Hosts**, and click **Take Action**.
4. Select the computers from which you want to remove the data that was generated during the capacity scan, and click **OK**.

## Maintenance tasks

You can perform additional maintenance and troubleshooting tasks on VM Manager Tool. These tasks are not limited to a specific approach to VM management, but can be applied to any instance of VM Manager Tool.

## VM Manager tool installation requirements

The computer on which you install the VM Manager tool must meet all software and hardware requirements.

**!** **Important:** Central VM Manager tool must be installed on a `BESRootServer`. By default BigFix Inventory assumes one `BESRootServer` per datasource. In case of Distributed Server Architecture (DSA) with multiple `BESRootServers` per datasource the VM Manager tool must be installed on the `BESRootServer` with the lowest ID, even if the root server is not the primary root server of the datasource.

## Supported operating systems

The VM Manager tool can be installed on any 64-bit version of Windows or Linux that is supported by the BigFix client or the disconnected scanner. For the list of supported operating systems, see: [Detailed System requirements \(on page cdxxxii\)](#).

## Software prerequisites

**Linux** The following libraries must be available on the computer:

- `unzip` in any version
- `glibc library` version 2.7 or higher

## Required free disk space

The VM Manager tool requires 300 MB of disk space.

## Log files

You can gather the log files to determine the problems that are related to the VM Manager tool. You can also change the log settings.

VM Manager tool log files are stored at:

- Trace log files: `BES Client\LMT\VMMAN\logs`
- Installation log files: `BES Client\LMT\VMMAN\logs\install`

You can also gather the complete set of logs by running the `-retrievedebugdata (on page dcccxxvii)` command in VM Manager tool.

## Log settings

You can change the log settings by editing the following files:

- `log4j.properties` for application update 10.0.2 and lower
- `log4j2.xml` for application update 10.0.3 and higher

The following parameters are the most useful:

#### For versions below 10.0.3

**log4j.appender.mylogger.maxFileSize** specifies the maximum size of a log file

Default value = 1000 KB

**log4j.appender.mylogger.MaxBackupIndex** specifies the maximum number of log files

Default value = 10

**log4j.rootLogger** specifies the logging level

Default value = INFO. You can change it to DEBUG to enable debug logging.

#### For versions 10.0.3 and 10.0.4

**SizeBasedTriggeringPolicy** specifies the maximum size of a log file

Default value = 1 MB

**DefaultRolloverStrategy** specifies the maximum number of log files

Default value = 10

**Root level** specifies the logging level

Default value = INFO. You can change it to DEBUG to enable debug logging.

#### **10.0.5** For versions 10.0.5 and higher

**SizeBasedTriggeringPolicy** specifies the maximum size of a log file

Default value = 1 MB

**DefaultRolloverStrategy** specifies the maximum number of log files

Default value = 2 (number of files for the main `trace.log` and for every hypervisor log)

**Root level** specifies the logging level

Default value = INFO. You can change it to DEBUG to enable debug logging.

## Changing the upload schedule

Capacity data collected by VM Manager Tool is uploaded to the BigFix server every 12 hours. You can change this schedule by removing the default schedule and creating a new one.

1. Stop and remove the default schedule.
  - a. In the navigation tree of the BigFix console, click **Actions**.
  - b. Locate the action **Schedule VM Manager Tool Scan Results Upload**.
  - c. Right-click the action and select **Stop Action**. The schedule is stopped.
  - d. Again, right-click the action and select **Delete Action**. The schedule is removed.
2. Create a new schedule.
  - a. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - b. Select **Schedule VM Manager Tool Scan Results Upload**.
  - c. In Description, enter the new frequency in hours.

**Description**

This task schedules regular uploads of capacity data collected by VM Manager Tool or by the following task: [Run Capacity Scan on Virtualization Hosts](#). The data is uploaded to IBM BigFix and can be transferred to IBM BigFix Inventory by running a data import.

Upload data every  hours.

- d. Click **Take Action**.
- e. Select the target computer that has VM Manager Tool installed and click **OK**. The action is started under new schedule.

Target   Execution   Users   Messages   Offer   Post-Action   Applicability   Success Criteria   Action Script

Target:

Select devices  
 Dynamically target by property  
 Enter device names

Applicable Computers (1)

Computer Name	OS	CPU	Last Report Ti...
NC9143126012	Linux Red Hat ...	2400 MHz Xeon	2014-06-03 10:...



**Note:** All options in the Execution tab are disabled. The frequency can be specified only in the Description field.

You set up the new schedule. The data collected by VM Manager Tool is now uploaded to BigFix with the frequency that you specified.

## Forcing the upload of collected data

You can force the collected data to be immediately uploaded to the BigFix server. The data is uploaded once and no schedule is set.

1. Log in to BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Force VM Manager Tool Scan Results Upload**, and then click **Take Action**.

Name	Source Sev...	Applicab...	Category
Upload Software Scan Results	High	5 / 5	Scanner
Edit Scanner Trace Settings	Low	5 / 5	Troubleshooting
<b>Force VM Manager Tool Scan Results Upload</b>	Low	2 / 5	Troubleshooting
Gather Environment Information	Low	1 / 5	Troubleshooting
Initiate Scanner Diagnostic Tool	Low	5 / 5	Troubleshooting
Upload Scanner Diagnostic Data	Low	0 / 5	Troubleshooting

Task: Force VM Manager Tool Scan Results Upload

4. Select the target computer and click **OK**.

You uploaded the collected data to the BigFix server.

Run a data import in BigFix Inventory to update the data in the user interface.

## Checking the VM Manager tool version

Activate the **VM Manager Information** analysis to retrieve data about the installed version of VM Manager tool. You can use the analysis to quickly confirm the successful installation of the tool.

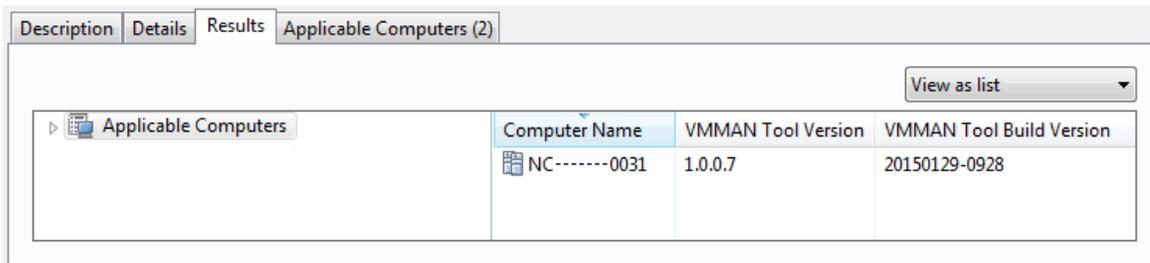
The **VM Manager Information** analysis returns information for two properties, `VMMAN_Tool_Version`, which specifies the installed version of the VM Manager tool, and `Build_Version`, which shows the details of the build.

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Analyses**.
3. Select **VM Manager Information** and click **Activate**.

Analyses	
Status	Name
Not Activated	Installed Windows Applications
Not Activated	Scanner Information
Not Activated	Scanner Trace Settings
Not Activated	<b>VM Manager Information</b>
Activated Globally	Software Scan Status

Analysis: VM Manager Information

- After you activate the analysis, open the **Results** tab. The information about the version and the build is available next to the name of the applicable computer.



## Updating VM Manager Tool

You can update VM Manager Tool to the newest version.

The **Update VM Manager Tool to version *version number*** task can be activated only if there are any older versions of VM Manager Tool.

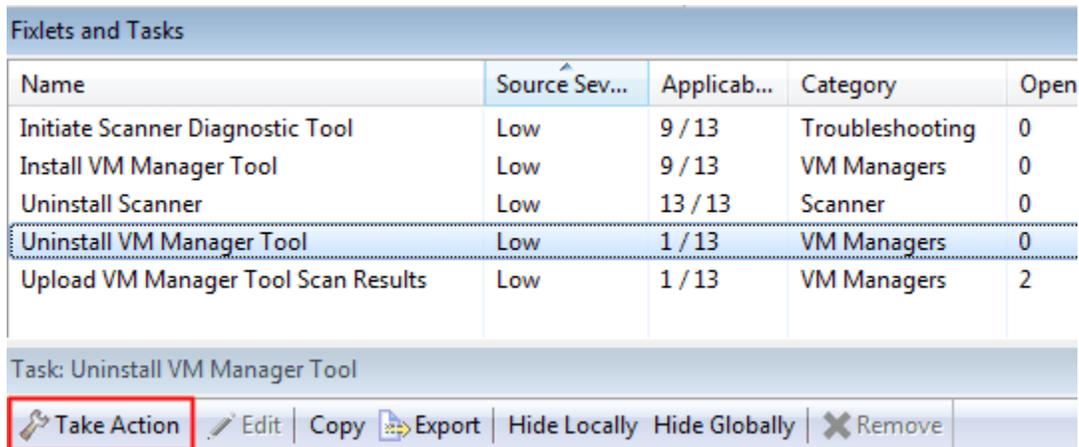
- Log in to BigFix console.
- In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- Select **Update VM Manager Tool to version *version number*** and click **Take Action**.
- Select the target computer and click **OK**.

You updated VM Manager Tool to the newest version.

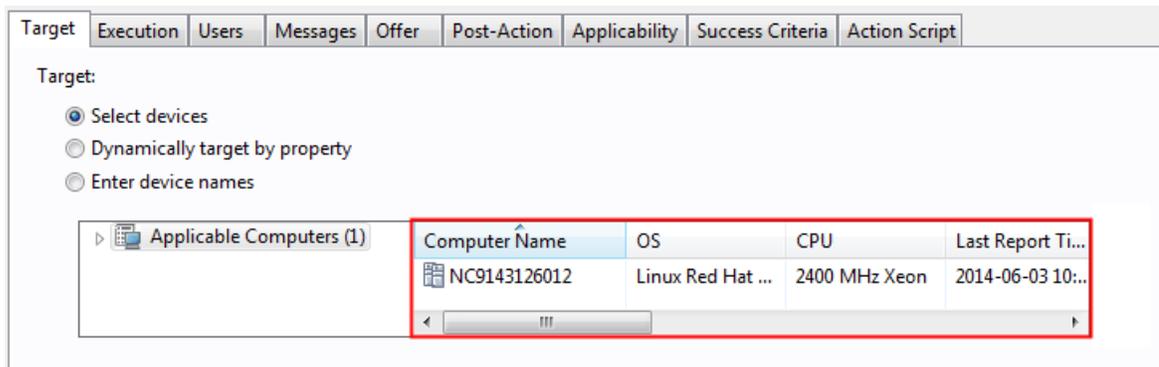
## Uninstalling VM Manager tool

Follow the procedure to uninstall the VM Manager tool from the endpoints and to delete all the related settings and folders. Uninstallation of the VM Manager tool is also required if you want to reinstall the tool.

- Log in to the BigFix console.
- In the navigation tree, click **Sites > External > BigFix Inventory > Fixlets and Tasks**.
- Select **Uninstall VM Manager Tool** and click **Take Action**.



4. Select the target computer and click **OK**.



You uninstalled VM Manager Tool.

## Backing up and restoring the VM Manager tool

To avoid losing configuration of VM manager connections due to corruption of VM Manager tool files, back up the `/LMT/VMMAN/config/` and `/LMT/VMMAN/keydb/` directories. If the VM Manager tool files are corrupted, reinstall the VM Manager tool and restore the two directories from the backup location.

This procedure can be also used to migrate all or selected configurations to the new VM Manager Tool instance.

**!** **Important:** When restoring VM Manager configuration on different Computer or Computer ID has been changed there is needed to let VM Manager Tool regenerate `vmm_id` property value by setting it to empty value in each `vmmconf_*.properties` VM Manager Tool connection configuration file. On BigFix Inventory `vmm_id` is linked with `computer_id` and data coming from different computer with the same `vmm_id` will be rejected.

- Back up the VM Manager tool and copy the following directories to a backup location:
  - Config: `<client_install_dir>/LMT/VMMAN/config/`
  - Keydb: `<client_install_dir>/LMT/VMMAN/keydb/`
- If you are migrating configurations to the new VM Manager Tool remove them from the instance and reload config.
- Reinstall the VM Manager tool and copy the backed-up directories to the VM Manager tool installation directory.
  - Log in to the BigFix console.
  - In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - To uninstall the existing VM Manager tool, select **Uninstall VM Manager Tool**, and click **Take Action**. Then, select the computer on which the VM Manager tool is installed, and click **OK**.
  - To install a new VM Manager tool, select **Install VM Manager Tool version number**, and click **Take Action**. Then, select the computer on which you want to install the VM Manager tool, and click **OK**.
- Restore the `/LMT/VMMAN/config/` and `/LMT/VMMAN/keydb/` directories from the backup location.

- a. If you are restoring the configuration files on new computer or computer id has been changed, edit it configuration file and set the **vmm\_id** to empty value.
  - b. If the keystore is not restored set again the **vmm\_password** for each configuration file.
5. Reload the configuration:
- **Linux** `./vmman.sh -reloadconfig`
  - **Windows** `vmman.bat -reloadconfig`
6. Test connections to confirm that all configurations are correct. Ensure that you can connect to the URL and credentials is correct.

## Best practices for configuring VM managers

Apply the best practices when configuring VM managers to ensure that your infrastructure works efficiently.

### Optimal configuration strategies

Follow the optimal configuration strategies to collect all data from your VM managers.

#### Pooling interval

Pooling interval is a period during which VM Manager tool is allowed to connect to all configured VM managers, and collect and upload the data from these VM managers. If pooling interval is exceeded, the VM Manager tool times out and the next data collection cycle is delayed. If you want to count and report subcapacity, it is necessary to capture mobility of virtual machines. Therefore, data from VM managers must be collected every 30 minutes or more frequently. You can change the frequency of data collection only if you use BigFix Inventory for purposes other than subcapacity reporting. To specify the pooling interval, set the value of the **vmm\_polling\_time\_interval** parameter on the **Advanced Server Settings** panel or in the configuration file for VM Manager. For more information, see: [Advanced server settings \(on page dccccl\)](#) and [VM Manager Tool settings \(on page dcccxxviii\)](#).

#### Number of virtual machines

The number of virtual machines that reside on VM managers directly relates to the amount of data that needs to be gathered. If you configure multiple connections from one VM Manager tool to VM managers that host vast number of virtual machines, problems might occur. If it takes too long to collect data from all configured connections, VM Manager tool times out as it exceeds the pooling interval time. **\_BESClient\_ArchiveManager\_MaxArchiveSize** parameter limits the total size of files that are uploaded to the BigFix Inventory server. The limit might be exceeded by data that is collected from all configured connections and as a result, the data is not uploaded. For more information about the **\_BESClient\_ArchiveManager\_MaxArchiveSize** parameter, see: [Configuring VM manager for subcapacity reporting \(on page dcccxliv\)](#)

#### VM managers and network performance

Performance of VM Manager tool depends on the network typology of your environment as well as the hardware specifications and the load of hypervisors. If network connection is slow or the hypervisors take long time to respond and provide the requested data, performance of VM Manager tool can be significantly impacted.

## Configuring VM manager for subcapacity reporting

If you use BigFix Inventory for subcapacity reporting purposes, perform additional configuration tasks to balance the workload of your VM Manager tool.

Make sure that you define enough VM Manager tool connections. Every VM Manager tool should handle the workload and complete its tasks within the time that is determined by the pooling interval.

1. Set the value of **\_BESClient\_ArchiveManager\_MaxArchiveSize** to at least 50 MB on the endpoint where the VM Manager tool is installed. In this way, you eliminate the risk of reaching the maximum size of files that can be uploaded to the BigFix server during the configuration.
  - a. Log in to the BigFix console.
  - b. In the left navigation panel and, select **Computers**. Right-click the name of the appropriate computer, and click **Edit Computer Settings**.
  - c. Edit the value of the **\_BESClient\_ArchiveManager\_MaxArchiveSize** parameter to increase the maximum archive size.



**Note:** **9.2.14** Starting from application update 9.2.14, you can check on the **Computer Support Data** panel whether the value of **\_BESClient\_ArchiveManager\_MaxArchiveSize** is exceeded. For more information, see: [Troubleshooting problems with computers \(on page mcccxxxvii\)](#).

2. Set the value of pooling interval to 30 minutes or less. It is a mandatory setting if you use BigFix Inventory to count subcapacity.
  - For the central VM Manager tool, go to **Management > Advanced Server Settings** and set the value of **vmm\_polling\_time\_interval** parameter.
  - For distributed VM Manager tool, go to the following directory and set the value of the **vmm\_polling\_time\_interval** parameter in the `vmmmainconf.properties` file.
    - **UNIX** `BESClient/LMT/VMMAN/config/`
    - **Windows** `BESClient\LMT\VMMAN\config`
3. To check whether you defined enough VM Manager tool connections, perform the following steps.

- a. Stop the VM Manager tool service.
  - i. Go to the following directory
    - **UNIX** `BESClient/LMT/VMMAN`
    - **Windows** `BESClient\LMT\VMMAN`
  - ii. Run the following command.

```
./vmmman -stop
```

- b. Define the VM manager connection. For more information, see: [Adding VM managers for VMware, Hyper-V, KVM with RHV-M, Citrix Hypervisor and Nutanix \(on page dcxxii\)](#).
- c. Clear the following directory

- **UNIX** `BESClient/LMT/VMMAN/logs`
- **Windows** `BESClient\LMT\VMMAN\logs`

d. Check whether all connections are correctly defined and gather the data. Go to the following directory and run the command: `./vmman -runonce`.

e. To make sure that the results of the command `./vmman -runonce` are correct, check whether you see the following message for every defined connection.

```
CODSV0001I: [ vmmconf_<number>.properties ] Data was successfully retrieved
from the VM manager at https://<URL>
```

f. Go to the following directory.

- **UNIX** `BESClient/LMT/VMMAN/logs`
- **Windows** `BESClient\LMT\VMMAN\logs`

Check the `trace.log` file to see how long it took to complete the `./vmman -runonce` command.

g. Note the time between log messages, for example:

```
2018-07-25 11:35:38 : (main) com.ibm.license.mgmt.datacollector.Runner:
:initialiseLogger::Logger initialised successfully.
...
2018-07-25 11:37:49 : (main) com.ibm.license.mgmt.datacollector.Runner::runCollector
(Configuration)::Finished 'run once' command.
```

- If the time between log messages stays under 20 minutes, it means that you defined enough VM Manager tool connections and that every VM Manager tool completes its tasks within the acceptable time. You can define more connections if needed.
- If the time between log messages goes above 20 minutes, distribute connections to another VM Manager tool so that every VM Manager tool completes its tasks within that time.
  - To limit the amount of data collected by a single connection, set users with limited access to a subset of computers and split the load between multiple VM Manager tool connections.

 **Tip:** Even though the pooling interval is 30 minutes, keep the time between log messages under 20 minutes. You need to leave some breathing room for VM migrations, higher network traffic or higher hypervisor workload periods.

h. Run the `./vmman -run` command to start the VM Manager tool service.

i. Check the size of the data set that was collected from this VM Manager tool and whether it exceeds the `_BESClient_ArchiveManager_MaxArchiveSize` value.

4. After you complete the configuration of VM Manager tool connections, results are stored in the following directory. To send the results to the BigFix server, run the **Schedule VM Manager Tool Scan Results Upload** task.

- **UNIX** `BESClient/LMT/VMMAN/upload`
- **Windows** `BESClient\LMT\VMMAN\upload`

You can run **Force VM Manager Tool Scan Results Upload** to upload the result files to the BigFix server faster.

5. When the task completes, the result file or files are stored in the following directory. Result file names follow the specific naming convention: `1323215_<number>_vmman.tar.gz`.

- **UNIX** `BESClient/LMT/VMMAN/`
- **Windows** `BESClient\LMT\VMMAN\`

- Your VM manager configuration is complete. If at any point your previously configured VM Manager tool stops collecting data, go to the following directory.

- **UNIX** `BESClient/LMT/VMMAN/logs`
- **Windows** `BESClient\LMT\VMMAN\logs`

Check if the log file contains the following message.

```
"[WARNING] Data collection from some defined vm managers did not finish within defined pooling interval 30. Please consider increasing the vmm_polling_time_interval setting in vmmmainconf.properties file or divide your vm manager connections to more VM Manager Tools."
```

If that happens, you need to configure new VM Manager tool and split the workload.

- You can check whether **\_BESClient\_ArchiveManager\_MaxArchiveSize** is exceeded by checking the **Software Scan Status** analysis. The **Is archive size exceeded?** column provides the information for computers with VM Manager tool installed.

## Administering the server

Perform administering tasks on your server to configure advanced settings, or restart its services.

### Starting the server

You can start the BigFix Inventory server by running the `srvstart.bat` or `srvstart.sh` script.

#### **Linux** Starting the server on Linux

To start the server, run the `srvstart.sh` script.

Only the user who installed BigFix Inventory or has root privileges can perform this task.

1. **Optional:** Check if your DB2® instance is running.
  - a. Log on to the computer where DB2® is installed. You must be a DB2® instance owner.
  - b. Type `db2start` at the command line.

2. Go to the BigFix Inventory installation directory.
3. Open the `cli` directory.
4. Run `srvstart.sh`.

## Windows Starting the server on Windows

To start the server, run the `srvstart.bat` script.

1. **Optional:** Check if your SQL Server instance is running.
  - a. Log on to the computer where the SQL Server® is installed. You must have administrative privileges or be an SQL Server service owner.
  - b. Start the SQL Server instance. For more information, see: [Start, Stop, Pause, Resume, Restart SQL Server Services](#).
2. Go to the BigFix Inventory installation directory.
3. Open the `cli` directory.
4. Run `srvstart.bat`.

## Stopping the server

You can stop the BigFix Inventory server by running the `srvstop.bat` or `srvstop.sh` script.

## Linux Stopping the server on Linux

To stop the server, run the `srvstop.sh` script.

Only the user who installed BigFix Inventory or has root privileges can perform this task.

1. Go to the BigFix Inventory installation directory.
2. Open the `cli` directory.
3. Run `srvstop.sh`.
4. **Optional:** After stopping the server, check if the DB2® instance is stopped:
  - a. Log on to the computer where DB2® is installed. You must be a DB2® instance owner.
  - b. Type `db2stop` at the command line. The DB2® instance stops.

## Windows Stopping the server on Windows

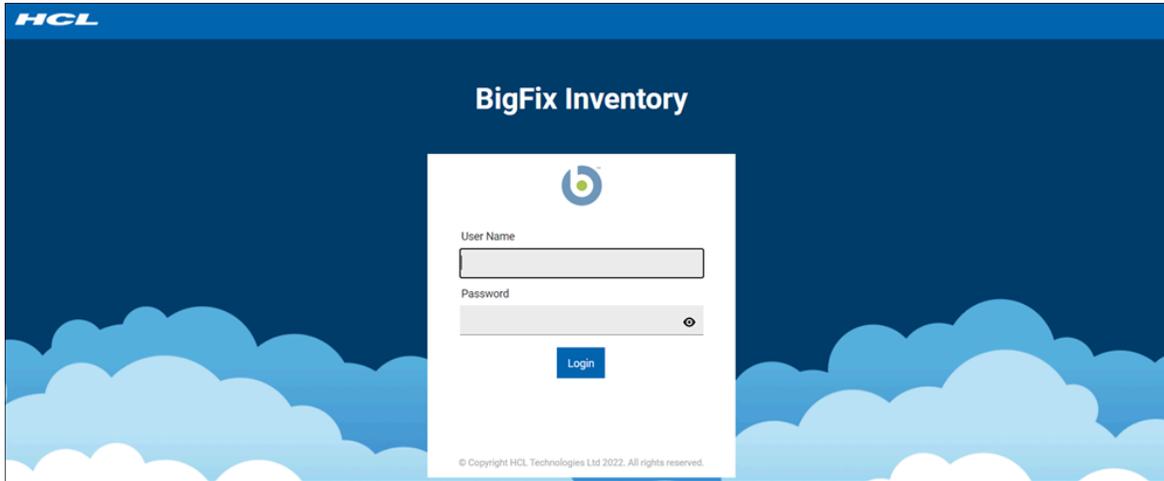
To stop the server, run the `srvstop.bat` file.

1. Go to the BigFix Inventory installation directory.
2. Open the `cli` directory.
3. Run `srvstop.bat`.

## Customizing the login page

You can enter a custom message that will appear on the login page to differentiate between multiple instances of BigFix Inventory, or to provide extra information related to this instance. The custom message is commonly used to notify other users about specific conditions related to the instance, such as important configuration changes.

1. Log in to BigFix Inventory, and go to **Management > Session Settings**.
2. In the **Custom Message on Login Page** field, enter your message. After you click **Save**, the message will be displayed on the login page for all users of BigFix Inventory.



## Setting session timeout

The session timeout specifies the period of user inactivity after which the session ends, and the user is required to log in again. Before it happens, you are notified that the session is about to end.

1. In BigFix Inventory, click **Management > Session Settings**.
2. Enter the timeout value in seconds. By default, it is set to 3600 seconds.
3. Click **Save**.

## SSO access blocked message

You can enter a custom message that will appear on the login page when an existing SSO user is not yet added to BigFix Inventory. The custom message can include internal point of contacts that the user must contact to get the SSO access enabled.

1. Log in to BigFix Inventory.
2. Go to **Management > Session Settings**.
3. In the **Custom Message on SSO Access Blocked Page** field, enter your message.
4. Click **Save**. The message is saved and will appear when SSO access is blocked

## Management: Session Settings

Session Settings

Session Timeout  Seconds

Custom Message on Login Page

HTML is not allowed. Use Markdown for formatting.

Custom Message on SSO Access Blocked Page

HTML is not allowed. Use Markdown for formatting.

## Configuring advanced server settings

**9.2.3** Available from 9.2.3. You can change advanced settings of the BigFix Inventory server, for example settings related to the configuration of the central VM Manager tool, on the **Advanced Server Settings** panel.



You must be an Administrator to perform this task.



**Important:** Configuration of advanced server settings is intended for users with in-depth knowledge of BigFix Inventory. If you are not sure about the impact of a particular parameter on your environment, do not change the parameter.

The following procedure describes how to change advanced server settings on the user interface. This option is available starting from version 9.2.3. For earlier versions, you can change the settings by using REST API calls. For more information, see: [REST API for changing advanced server settings \(on page mdccxiii\)](#).

1. To open the panel, go to **Management > Advanced Server Settings**. If the panel is not available in the menu, go to the following URL: `https://hostname:port/management/sam/control_values`.
2. Click a parameter that you want to change and provide its new value.  
For more information about each parameter, see: [Advanced server settings \(on page dccccl\)](#).



**Restriction:** You cannot change advanced server settings when the import is in progress.

3. To save the changes, click **Save**.

## Advanced server settings

**9.2.3** Available from 9.2.3. Review to the list of parameters that you can use to configure the BigFix Inventory server. You can change the parameters on the **Advanced Server Settings** panel or through REST API.

To open the panel, go to **Management > Advanced Server Settings**. If the panel is not available in the menu, go to the following URL: [https://hostname:port/management/sam/control\\_values](https://hostname:port/management/sam/control_values). For information how to change the settings through REST API, see: [Configuring advanced server settings \(on page dcccxlx\)](#).

**Table 156. Server settings**

Name & Parameter	Type	Default	Minimum	Maximum
Description				
<p><b>10.0.15</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Oracle auditing data files path</li> <li>• <b>Parameter:</b> <code>oracleAuditingFilePath</code></li> </ul>	String	./data/sam/oracle		
<p>Specifies the folder where files generated and downloaded during Oracle auditing data are stored. The content of this folder is cleaned when you generate Oracle auditing data.</p> <p>The default value indicates that the files are created in the <code>&lt;install_dir&gt;/wlp/usr/servers/server1/data/sam/oracle</code> folder.</p> <p>Once you change the <code>oracleAuditingFilePath</code> setting, delete the files from their previous locations. After you change the value of the parameter, restart the BigFix Inventory server for the change to take effect.</p> <p> <b>Note:</b> Do not change the <code>oracleAuditingFilePath</code> setting while the Oracle audit generation is in progress.</p> <p><b>10.0.16</b> From version 10.0.16, the setting is available by default.</p>				
<p><b>10.0.16</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Oracle Auditing Manually Uploaded Files Path</li> <li>• <b>Parameter:</b> <code>oracleAuditingManuallyUploadedFilePath</code></li> </ul>	String	./data/sam/oracle-Auditing-ManuallyUploaded		
<p>Specifies the folder where files with manually collected data for Oracle auditing are stored. The default value is <code>./data/sam/oracleAuditingManuallyUploaded</code> and it indicates that the files are created in the <code>install_dir/wlp/usr/servers/server1/data/sam/oracleAuditingManuallyUploaded</code> folder.</p>				

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
	<b>Description</b>			
	Once you change this setting, delete the files from their previous locations. Backup the content of this folder before you reinstall or upgrade BigFix Inventory. Do not change this setting while the Oracle audit generation is in progress. This folder cannot be a subfolder of oracleAuditingFilesPath.			
<p><b>10.0.14</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Re-synchronize datasource computer groups</li> <li>• <b>Parameter:</b> <code>resynchronize_datasource_computer_groups_once</code></li> </ul>	Boolean	False		
	Removes existing information about datasource computer groups from database and imports it from scratch, instead of doing incremental import. Such an import should be run only when there is inconsistent data about datasource computer groups. The option is disabled by default. When you enable the option, the import runs once and returns to the normal operation mode.			
<p><b>10.0.14</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of deleted records to remove from persistent tables</li> <li>• <b>Parameter:</b> <code>pruner_max_records</code></li> </ul>	Integer	1 000 000	0 (disabled)	1 000 000 000
	Specifies the maximum number of deleted records to be removed from persistent tables during single data import. Removing deleted records from persistent tables allows to recover from deleted data accumulation.			
<p><b>10.0.14</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of CSV/PDF relation elements to select</li> <li>• <b>Parameter:</b> <code>csvReportRelationElementsLimit</code></li> </ul>	Integer	100	0	2000
	This parameter specifies the number of values in multivalued fields for CSV/PDF export. The default value is 100. Put 0 to disable the limit.			
	This parameter limits the number of multivalued elements. In case of CVEs, it limits the number of elements shown in CSV/PDF export. By limiting the number of elements, you can limit the number of characters in a cell.			
<p><b>10.0.11</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum Historical Data Lifetime</li> <li>• <b>Parameter:</b> <code>maximum_data_lifetime</code></li> </ul>	Integer	0 (disabled)	0	3650
	This parameter control the period of time for which you can retain the historical data about detected computers and software. The default value is unlimited (value set to 0). When the range is set between 1-3650, the deleted records are retained for defined number of days before they are permanently deleted. Data deletion is done during Data Import. The amount of data that can be deleted is limited to 10,000			

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
	<b>Description</b>			
	computers and an additional 50,000 software instances per data import to distribute the deletion of the larger sets over several imports.  Using the parameter permanently deletes the data.			
<p><b>10.0.10</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Delete unused tags automatically</li> <li>• <b>Parameter:</b> <code>delete_unused_tags_automatically</code></li> </ul>	Boolean	False		
	When the value is set to true, the parameter automatically deletes all unused saved tags from the database during data import. Once the parameter is enabled, the inactive tags do not appear when you try to add or delete a tag from an instance or a component.			
<p><b>10.0.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Delete action after stopping in BigFix</li> <li>• <b>Parameter:</b> <code>delete_stopped_actions</code></li> </ul>	Enum	Delete 'add & delete shared disk' actions (1)		
	Control the behavior of handling issued actions after stopping them by BigFix Inventory.  Possible values:			
	<ul style="list-style-type: none"> <li>• Keep stopped actions (0)</li> <li>• Delete add &amp; delete shared disk actions (1) – current default</li> <li>• Delete all (2)</li> </ul>			
<p><b>10.0.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Provide feedback email</li> <li>• <b>Parameter:</b> <code>provide_feedback_email</code></li> </ul>	String	<a href="mailto:talk2sam@h-cl.com">talk2sam@h-cl.com</a>		
	Allows you to provide your preferred email address in the sending feedback option. The email address should be within internal point of contact.			
<p> <b>Notice:</b> <b>10.0.9</b> This parameter has been removed.</p> <p><b>10.0.6</b></p>	Boolean	False		
	Allows you to enable and disable the deprecated reports. When you set the value to true:			

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Deprecated Contracts Management enabled</li> <li>• <b>Parameter:</b> <code>deprecated_contracts_mgmt_enabled</code></li> </ul>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>• it shows Contract Management reports, such as Software Installations, Software Exploration, Contracts Usage Data and Management Contracts.</li> <li>• it enables related import steps and calculations.</li> <li>• ETL steps are executed.</li> </ul> <p>The parameter is disabled by default. You need to run data import after you change the value to true.</p>			
<p><b>10.0.5</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> <code>new_contracts_max_computer_groups</code></li> <li>• <b>Parameter:</b> <code>new_contracts_max_computer_groups</code></li> </ul>	Integer	20	0	1000000
<p><b>10.0.5</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> <code>new_contracts_selected_computer_groups</code></li> <li>• <b>Parameter:</b> <code>new_contracts_selected_computer_groups</code></li> </ul>	<p>Defines maximum number of Computer Groups that can be used for new contracts management. Groups are selected according to their creation time (using the ID), in ascending order, unless 'new_contracts_selected_computer_groups' parameter is defined. Run data import after this value is changed.</p> <p> <b>Note:</b> This parameter is hidden by default.</p>			
<p><b>10.0.5</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Catalog distribution - use the Skip Lock flag</li> <li>• <b>Parameter:</b> <code>catalog_download_task_skip_lock</code></li> </ul>	Boolean	False		
<p><b>10.0.4</b></p>	<p>Enable the flag to skip locked endpoints in Catalog download fixlet. Helps is excluding locked endpoints when automatically pushing the catalog. When the value is set to false, catalog download includes the locked endpoints. When activated, 'Skipped Locked Constraint' is added to the Catalog download fixlet.</p> <p>The flag applies to actions that are executed in automated way.</p>			

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Allow end user to modify hidden parameters</li> <li>• <b>Parameter:</b> <code>show_hidden_values</code></li> </ul>	<b>Description</b>			
<p><b>10.0.2</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Enable audit trail for user management</li> <li>• <b>Parameter:</b> <code>user_mgmt_audit_trail_enabled</code></li> </ul>	Boolean	False		
<p><b>10.0.1</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of custom rules</li> <li>• <b>Parameter:</b> <code>customRuleLimit</code></li> </ul>	Number	10	0	100
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Account lockout: enable account lockout</li> <li>• <b>Parameter:</b> <code>user_lockout_enabled</code></li> </ul>	Boolean (true/false)	True		
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Account lockout: lockout period</li> <li>• <b>Parameter:</b> <code>user_lockout_length</code></li> </ul>	Minutes	5	1	60
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Account lockout: login attempts period</li> <li>• <b>Parameter:</b> <code>user_retry_time_period</code></li> </ul>	Minutes	5	1	60
<p><b>9.2.8</b></p>	Integer	10	2	128

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
<b>Description</b>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Account lockout: maximal number of failed login attempts</li> <li>• <b>Parameter:</b> <code>user_max_login_retries</code></li> </ul>	<p>Specifies the maximum number of failed login attempts after which the user account is locked.</p>			
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Automatically decommission inactive computers</li> <li>• <b>Parameter:</b> <code>decommission_inactive_computers</code></li> </ul>	Boolean	False		
<p>Enables the option to automatically remove inactive computers from BigFix Inventory after the period defined in the <a href="#">max_data_visibility_for_inactive_computers</a> (on page <a href="#">dccclxiii</a>) parameter. This option is disabled by default.</p>				
<p><b>9.2.17</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Automatically delete the scan results after the successful import from the disconnected data source</li> <li>• <b>Parameter:</b> <code>delete_successfully_imported_scans</code></li> </ul>	Boolean	False		
<p>Enables the option to automatically remove the scan results after they are successfully imported from the disconnected data source. After you set this option to true, automatic removal is applied after each subsequent import of data. You can manually remove any remaining files, such as older scan results or files that are skipped. The option is useful especially when you handle many scan results packages. The removal does not affect the report data and the scan results are included in the reports.</p>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> CSV report separator</li> <li>• <b>Parameter:</b> <code>csvReportSeparator</code></li> </ul>	Character	Comma (,)		
<p>Specifies the character that is used as a value separator during the creation of CSV files.</p>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Calculate metric consumption for incomplete computers</li> <li>• <b>Parameter:</b> <code>calculateLicenseUsageForIncompleteComputers</code></li> </ul>	Boolean (true/false)	True		
<p>Specifies how PVU consumption on x86 virtual machines that have incomplete data is counted. If set to true, PVU consumption is counted based on the number of PVUs on the host. In this case, the reported PVU consumption might be higher than the real value, but configuration of VM managers is not required. If set to false, the reported PVU consumption is 0, and VM managers must be configured.</p>				
<p><b>9.2.10</b></p>	Boolean (true/false)	True		

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Calculating usage per computer</li> <li>• <b>Parameter:</b> <code>calculate_during_import/product_usage</code></li> </ul> <p>Previously: <code>on_demand_sam/product_usage</code></p>	<p><b>Description</b></p> <p>Specifies when the values that are displayed on the Usage per Computer report are calculated. By default, usage per computer is calculated during every import. If you change the setting to false, the usage is calculated on demand. To update the report on demand, open it and click <b>Calculate</b>.</p> <p>After you change the value of the parameter, restart the BigFix Inventory server for the change to take effect.</p>			
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Catalog distribution waiting time</li> <li>• <b>Parameter:</b> <code>catalog_download_task_stagger_interval</code></li> </ul>	Minutes	0	0	10080 (1 week)
<p>Specifies the maximum time for which the distribution of the software catalog to the endpoints is postponed to reduce network traffic.</p> <p>The distribution of the catalog to each endpoint is postponed for a random amount of time that is within the specified waiting time. For example, if you set the waiting time to 1 week, the first computer can download the catalog after an hour since the import of the catalog, the second computer after a day, and the third computer after a week. The amount of time is randomly chosen by each computer.</p>				
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Collect VMware license metric utilization</li> <li>• <b>Parameter:</b> <code>vmman_slm_tags_enabled</code></li> </ul>	Boolean (true/false)	False		
<p>Enables collection of VMware license metric utilization. The option is disabled by default. The setting applies only to the central VM.</p>				
<p><b>9.2.10</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Computer approaching detachment from VM manager</li> <li>• <b>Parameter:</b> <code>vmManagerDetachmentNotificationPeriod</code></li> </ul>	Days	3	1	90
<p>Specifies the maximum idle time after which data from the VM manager is considered to be outdated. After that time, the computer status changes to <i>Outdated VM Manager Data</i>. The value should be lower than the value of the <code>vmManagerDetachmentPeriod</code> (on page <a href="#">dccclvi</a>) parameter.</p>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Computer detachment from VM manager</li> <li>• <b>Parameter:</b></li> </ul>	Days	<p><b>9.2.10</b> 30</p> <p>Previously: 7</p>	1	90

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>◦ <b>9.2.8</b> <b>vmManagerDetachmentPeriod</b></li> <li>◦ Previously: <b>computerVmManagerDetachmentPeriod</b></li> </ul>	<p><b>Description</b></p> <p>Specifies the maximum idle time after which a guest computer or a host computer is considered to be detached from the VM manager. After that time, the computer status changes to <i>No VM Manager Data</i>. The data that is sent by an agent is not augmented by the data that is retrieved from the VM manager.</p> <p><b>9.2.8</b> Starting from application updated 9.2.8, if the host is a part of a cluster, it is also disconnected from that cluster.</p> <p>The value of this parameter should be greater than the value of the <b>vmManagerDetachmentNotificationPeriod</b> (on page <i>dcccclvi</i>) parameter.</p>			
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Deploy tasks automatically</li> <li>• <b>Parameter:</b> <b>enable_automatic_task_deployment</b></li> </ul>	Boolean (true/false)	True		
<p>Specifies whether tasks initiated by the BigFix Inventory server are automatically deployed to the BigFix server. The tasks include:</p> <ul style="list-style-type: none"> <li>• Import of the new software catalog to the BigFix server.</li> <li>• Configuration of scan frequency and schedule on the Scan Configurations panel.</li> <li>• Automatic configuration of the fixlet site on the BigFix server that is added as a new data source.</li> <li>• Installation and configuration of the main VM Manager tool on the BigFix server that is added as a new data source.</li> </ul> <p>The option is enabled by default which is the recommended setting.</p> <p> <b>Warning:</b> If you disable the automatic deployment of tasks, you need to perform a number of manual tasks to ensure that the data needed by BigFix Inventory is collected and that proper values are displayed on the reports.</p>				
<p><b>9.2.11</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Display data from partial imports</li> <li>• <b>Parameter:</b> <b>allow_partial_data_view</b></li> </ul>	Boolean (true/false)	False		
<p> <b>Important:</b> Use this parameter only when you are requested by HCL Support.</p>				

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
	<b>Description</b>			
	Enables displaying data from the last import regardless of whether the import was successful or partial. It might cause inconsistency or lack of results on some reports. By default, the parameter is disabled and only data from successful imports is displayed. To enable this parameter, first enable the <a href="#">enable partial imports (on page dccclix)</a> parameter.			
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Download software catalog automatically</li> <li>• <b>Parameter:</b> <code>enable_automatic_catalog_download</code></li> </ul>	Boolean (true/false)	True		
	Specifies whether the new software catalog is automatically distributed to the endpoints. If you disable this option, you must distribute the catalog manually. For more information, see: <a href="#">Manually updating scanner catalogs (on page dclxxxv)</a> .			
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Enable debug level logging during data imports</li> <li>• <b>Parameter:</b> <code>debug_logging_for_imports</code></li> </ul>	Boolean (true/false)	False		
	Specifies whether import logs contain debug level information. When the parameter is set to false, the default logging level is used.			
<p>Removed since <b>10.0.4</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Enable information about files and packages that cause software detection</li> <li>• <b>Parameter:</b> <code>enable_caused_detection_data</code></li> </ul>	Boolean (true/false)	False		
	Enables the data that specifies whether a file or a package contained enough information to cause detection of the related software. After enabling the data, you can display the Cause Detection column on the Scanned File Data and Package Data reports. This option is disabled by default.			
	 <b>Note:</b> The <code>enable_caused_detection_data</code> parameter is removed since BigFix Inventory version 10.0.4. You must re-create your saved reports in case you had used the Caused Detection column.			
<p><b>9.2.11</b></p>	Boolean (true/false)	False		

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
Description				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Enable partial imports of data</li> <li>• <b>Parameter:</b> <code>enable_partial_imports</code></li> </ul>	Enables skipping certain steps during the import of data. The import continues even if these steps fail. When the import finishes, it is marked as partial because only data from successfully completed steps is processed.			
<p><b>9.2.10</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Enabled schema next feature</li> <li>• <b>Parameter:</b> <code>schema_next</code></li> </ul>	Boolean (true/false)	False		
Optimizes the process of importing data from BigFix. The option is available for BigFix 9.5.5 and higher. If you upgraded the BigFix server from earlier versions, run at least one import of data before you enable the optimization to ensure data consistency.				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Location of temporary application files</li> <li>• <b>Parameter:</b> <code>tempPathForGeneratedFiles</code></li> </ul>	Path	Period (.)		
Specifies the path to the folder where temporary application files, such as the CSV reports during generation, are stored. The default value indicates that the files are created in the following location: <ul style="list-style-type: none"> <li>• <b>Linux</b> <code>install_dir/wlp/usr/servers/server1</code></li> <li>• <b>Windows</b> <code>install_dir\wlp\usr\servers\server1</code></li> </ul>				
<p><b>9.2.12</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Location of CVE files upload</li> <li>• <b>Parameter:</b> <code>tempPathForCVEFiles</code></li> </ul>	Path	<code>../../../../cve_data</code>		
Specifies the path to the folder where temporary CVE files should be stored for an upload. The default value indicates that the files are stored in the <code>cve_data</code> folder that is in the installation directory of the BigFix Inventory server.				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum VM manager inactivity</li> <li>• <b>Parameter:</b> <code>maxVMManagerInactivity</code></li> </ul>	Days	3	1	90
Specifies the maximum time after which a VM manager is considered inactive if the server receives no new data from this VM manager. After that time, the status of the VM manager changes to <i>Inactive</i> .				
<p><b>9.2.4</b></p>	Days	90	1	2147483647

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum VM manager visibility</li> <li>• <b>Parameter:</b> <code>maxVMManagerVisibility</code></li> </ul>	<p><b>Description</b></p> <p>Specifies the number of days after which a VM manager is removed from the <b>VM Managers</b> panel if no data is collected from that VM manager.</p> <p>VM manager is also filtered by using the <code>api/sam/vmmanagers</code> API.</p>			
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of VMware .slmtag files</li> <li>• <b>Parameter:</b> <code>vmman_slm_tags_files_per_software</code></li> </ul>	Number	10	1	10
<p>The maximum number of <code>.slmtag</code> files that are stored on the computer for each license key under VMware instance.</p>				
<p><b>9.2.2</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of aggregation threads</li> <li>• <b>Parameter:</b> <code>maxAggregationThreads</code></li> </ul>	Number	2	1	64
<p>Specifies the maximum number of threads that can be run during the aggregation. If you increase their number, performance of aggregation improves. However, memory usage and database locking increase. You should provide two processor cores on the database server for each thread.</p> <p><b>10.0.5</b> Aggregation algorithm now uses <b>use all logical CPUs by default</b> parameter. This number can be controlled using <code>maxAggregationThreads</code>. The default value of <code>maxAggregationThreads</code> has now changed to 64 (max). Number of threads can not be higher than number of logical CPUs on the system, regardless of the setting.</p> <p>MS SQL must have the <b>VIEW SERVER STATE</b> permission enabled. BigFix Inventory uses MS SQL to access <code>temadb</code>. Without this permission, the aggregation runs single threaded and does not apply the <code>maxAggregationThreads</code> parameter.</p>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of import threads</li> <li>• <b>Parameter:</b> <code>numberOfImportThreads</code></li> </ul>	Number	0	0	32
<p>Specifies the maximum number of threads that are used to process capacity scan data and VM manager scan data during the import of data from the BigFix server.</p> <p>If the database user configured for BigFix Inventory can not execute the below queries:</p>				

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
	<p><b>Description</b></p> <p><b>DB2</b></p> <pre>SELECT min(value) FROM SYSIBMADM.ENV_SYS_RESOURCES where upper(name) in ('CPU_TOTAL', 'CPU_ONLINE', 'CPU_CONFIGURED')</pre> <p><b>MS SQL</b></p> <pre>SELECT cpu_count FROM sys.dm_os_sys_info</pre> <ul style="list-style-type: none"> <li>• There is a warning message in <code>tema.log</code>.</li> <li>• <b>10.0.10</b> Starting from version 10.0.10, there is information in the Data Import logs about the actual value.</li> <li>• The number of threads is set to 1.</li> </ul> <p>When the configuration is set to 0, number of threads is automatically counted as double of cores reported by above queries, but not more than 32.</p> <p> <b>Tip:</b> In environments with over 10,000 endpoints that are running on high-performance machines, it can be beneficial to increase the number of threads to speed up the import.</p>			
<ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of processed license metric files</li> <li>• <b>Parameter:</b> <code>maximumNumberOfLicenseUseMetricFilesToProcessPerImport</code></li> </ul>	Number	-1	-1	2147483647
<p><b>9.2.2</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of re-aggregation threads</li> <li>• <b>Parameter:</b> <code>maxReaggregationThreads</code></li> </ul>	Number	4	1	64
	<p>Specifies the maximum number of threads that can be run during re-aggregation. If you increase their number, performance of re-aggregation improves. However, memory usage and database locking increase. You should provide two processor cores on the database server for each thread.</p>			

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
	<b>Description</b>			
	<p><b>10.0.5</b> Reaggregation algorithm now uses <b>use all logical CPUs by default</b> parameter. This number can be controlled using <b>maxReaggregationThreads</b>. The default value of <b>maxReaggregationThreads</b> has now changed to 64. Number of threads can not be higher than number of logical CPUs on the system, regardless of the setting.</p> <p>MS SQL must have the <b>VIEW SERVER STATE</b> permission enabled. BigFix Inventory uses MS SQL to access <b>temadb</b>. Without this permission, the aggregation runs single threaded and does not apply the <b>maxReaggregationThreads</b> parameter.</p>			
<p><b>9.2.4</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of rows exported to PDF</li> <li>• <b>Parameter:</b> pdfReportRowLimit</li> </ul>	Number	100 000	0	2147483647
	<p>Specifies the maximum number of rows that can be exported to a PDF file. If the number of rows in the report is larger than the specified limit, appropriate information is provided in the generated PDF file.</p>			
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of rows in REST API for raw scan results</li> <li>• <b>Parameter:</b> raw_data_api_default_limit</li> </ul> <p>(removed since BigFix Inventory version 10.0.2)</p>	Number	100 000	0	2147483647
	<p>Specifies the maximum number of rows to be retrieved in a single request when using REST API for retrieving raw scan results. This parameter applies only if the REST API <b>limit</b> parameter, which always takes precedence, is omitted in the request. The default value is 100 000. 0 indicates that all rows are retrieved.</p>			
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of rows to select on the Software Classification report</li> <li>• <b>Parameter:</b> selectAllLimit</li> </ul>	Number	250000	0	500000
	<p>Specifies the maximum number of rows that can be selected at once on the Software Classification report.</p>			
<p><b>9.2.7</b></p>	Bytes	10240	10240	1048676
	<p>The maximum size of each <b>.slmtag</b> file that is used to collect VMware license metric utilization.</p>			

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
<b>Description</b>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum size of VMware .slmtag files</li> <li>• <b>Parameter:</b> <code>vmman_slm_tags_file_size_limit</code></li> </ul>				
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum visibility of data for inactive computers</li> <li>• <b>Parameter:</b> <code>max_data_visibility_for_inactive_computers</code></li> </ul>	Days	90	1	1000
<p>Specifies the number of days after which the data from the inactive computer no longer influences metric calculation and is not visible in BigFix Inventory. To enable this feature change the <a href="#">decommission_inactive_computers</a> (on page <a href="#">dcccclv</a>) parameter to true.</p>				
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Number of days to count Microsoft Windows Server metrics after VM migration</li> <li>• <b>Parameter:</b> <code>historical_period_for_microsoft_metrics</code></li> </ul>	Days	90	0	180
<p>Specifies the number of days for which data from a VM contributes to metric calculation of Microsoft Windows Server after the VM is moved to a different host. Run an import after you change the value of this parameter to recalculate the data.</p>				
<p><b>9.2.10</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Number of days to keep the removed raw scan results</li> <li>• <b>Parameter:</b> <code>raw_data_api_history_keep_days</code></li> </ul>	Days	7	-1	30
<p>Specifies the number of days after which historical raw scan data is removed from the database. The data was used to discover software but cannot be used for this purpose again. It is not displayed on any reports. It can only be retrieved by using REST API. The data is no longer needed and can be safely removed from the database without any impact on the reports.</p> <p>Set the value of the parameter to 0 to remove the data after every successful import. You can set it to -1 to never remove the data. However, such a setting is not recommended as it can generate lots of unnecessary data that impacts application performance.</p>				
<p><b>9.2.10</b></p>	Days	0	-1	2147483647
<p>Specifies the number of days after which internal data that is used by the application is removed from the database. The data is not displayed on any reports and can be safely removed from the database.</p>				

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> (Currently not used) Number of days to keep internal application data</li> <li>• <b>Parameter:</b> <code>pruning_days_to_keep</code></li> </ul>	<b>Description</b>			
<p>Set the value of the parameter to 0 to remove the data after every successful import. You can set it to -1 to never remove the data. However, such a setting is not recommended as it can generate lots of unnecessary data that impacts application performance.</p>				
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Optimize migration from 7.x for large environments</li> <li>• <b>Parameter:</b> <code>new_migration_mode_enabled</code></li> </ul>	Boolean (true/false)	True		
<p>Specifies whether the migration from version 7.x to 9.x is optimized for large environments.</p>				
<p><b>9.2.12</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Optimized shared disks scan: CPU threshold</li> <li>• <b>Parameter:</b> <code>autoscan_shared_disks_cpu_threshold</code></li> </ul>	Integer	0	0	100
<p>Limits the amount of processor resources that the scanner consumes during the optimized scan of shared disks. By default, the option is set to 0 which means that the limit is disabled.</p>				
<p><b>9.2.12</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Optimized shared disks scan: enable</li> <li>• <b>Parameter:</b> <code>autoscan_shared_disks_enable</code></li> </ul>	Boolean (true/false)	False		
<p>Enables optimized scan of shared disks. When the option is enabled, scanning of shared disks is automated. As a result, the following actions are performed automatically:</p> <ul style="list-style-type: none"> <li>• Computers are designated to scan shared disks that exist in your infrastructure</li> <li>• Software scans are scheduled on the designated computers</li> <li>• New computers are designated if problems occur with scanning the initially designated computers</li> </ul> <p>The option is disabled by default. For more information, see: <a href="#">Discovering software on shared disks (on page dcxxx)</a>.</p>				
<p><b>9.2.12</b></p>	Days	14	1	365
<p>Specifies the maximum time after which a computer that is designated to scan a shared disk and which already provided scan results is</p>				

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Optimized shared disks scan: maximum inactivity time</li> <li>• <b>Parameter:</b> <code>max_inactivity_of_designated_shared_disk_scanner</code></li> </ul>	<b>Description</b> considered inactive. After that time, a new computer is automatically designated to scan the shared disk.			
<p><b>9.2.12</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Optimized shared disks scan: maximum waiting time</li> <li>• <b>Parameter:</b> <code>max_waiting_for_share_disk_scan_for_new_designated_endpoint</code></li> </ul>	Days	7	1	90
Specifies the maximum time to wait for the first results of the shared disk scan performed by a newly designated computer. If no results are collected for this period, a new computer is automatically designated to scan the shared disk.				
<p><b>9.2.12</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Optimized shared disks scan: scan interval</li> <li>• <b>Parameter:</b> <code>autoscan_shared_disks_scan_interval_days</code></li> </ul>	Days	7	1	30
Specifies the frequency of the optimized software scan on shared disks.				
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Preserve Initiate Software Scan actions on the BigFix server</li> <li>• <b>Parameter:</b> <code>scanConfig_preserve_InitiateScanAction</code></li> </ul>	Boolean (true/false)	False		
Specifies whether Initiate Software Scan actions that are created on the BigFix server are preserved when the scan configuration is deleted on the <b>Scan Configurations</b> panel. If you set the value of this parameter to true, the actions are stopped but are not removed from the BigFix server.				
<p><b>9.2.13</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Remove information about current software users during next import</li> <li>• <b>Parameter:</b> <code>remove_user_information</code></li> </ul>	Boolean(true/false)	False		
Specifies whether information about current software users is removed during the next import. Historical aggregation data for Registered User metric will also be removed from the All Metrics report. This option is disabled by default.				

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<p><b>9.2.4</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Re-synchronize datasources after database restoration</li> <li>• <b>Parameter:</b> <code>resynchronize_data-sources_once</code></li> </ul>	Boolean (true/false)	False		
<p><b>9.2.11</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Re-synchronize Scan Data</li> <li>• <b>Parameter:</b> <code>resync_imports</code></li> </ul>	Integer	0	0	60
<p>Enables an import that retrieves all software scan data from the restored BigFix database. Such an import is time-consuming and should be run only when problems with incomplete data occur after the database is restored. When you enable the option, the import runs once and returns to the normal operation mode.</p> <p>Defines the number of consecutive imports during which scan data is re-synchronized. By default, the option is set to 0 which means that <b>resync_import</b> is disabled, and scan data is not re-synchronized. It is recommended to re-synchronize the data during 7 to 14 imports to optimize the load on the BigFix server. To define the scope of the re-synchronized data, change the value of the <b>resync_mode</b> (<a href="#">on page dcclxvii</a>) parameter.</p> <p>Resynchronization is needed if you want to display detailed file version for software components that were discovered before you upgraded BigFix Inventory to version 9.2.11.</p> <p> <b>Note:</b> This parameter is not used for regular tasks and actions. It is used only to import changes when there is a new feature or patch available. With subsequent <code>&lt;resync_imports&gt;</code> import, the scanned data is resynchronised as per the scope defined in <b>resync_mode</b>. During the process, each import <code>1/&lt;resync_imports&gt;</code> of the compute is extended with regular updates coming from the endpoint itself.</p> <p>Set the DB2 compatibility vector to MYS to allow the re-sync functionality work properly.</p> <ul style="list-style-type: none"> <li>• Use <code>db2set   grep 'DB2_COMPATIBILITY_VECTOR'</code> command to check if the value is correctly set. The command should return <code>DB2_COMPATIBILITY_VECOTR=MYS</code>.</li> <li>• If the value is not correctly set, use <code>db2set DB2_COMPATIBILITY_VECTOR=MYS</code> command to set the value.</li> </ul>				

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<p><b>9.2.11</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Re-synchronize Scan Data Mode</li> <li>• <b>Parameter:</b> <code>resync_mode</code></li> </ul>	Enum	File Scan Only (0)	All Scans (1)	Catalog Scan Only (2)
<p> <b>Notice:</b> <b>10.0.9</b> The parameter has been removed. <b>10.0.12</b> The parameter has been restored.</p> <p><b>9.2.9</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Recompute unrecognized scan data aggregates</li> <li>• <b>Parameter:</b> <code>recompute_unrecognized_scan_data</code></li> </ul> <p> <b>Note:</b> Unrecognized Files report is provided for backward compatibility and is not recommended as a source of information about candidates for signatures.</p>	Enum	Never (0)		

**Description**

Defines the scope of scan data that is re-synchronized.

Possible values:

- File Scan Only (0) - Only results of the file system scan are re-synchronized.
- All Scans (1) - Results of the file system scan, catalog-based scan, and software identification tags scan are re-synchronized.
- Catalog Scan Only (2) - Results of the CIT scans are re-synchronized.

Specifies how often unrecognized scan data is calculated. The data allows for determining the most effective ways of improving signature coverage, but slows down imports, particularly in larger deployments. The aggregated data is visible on the Unrecognized Files report.

Possible values:

- Never (0) - Scan data aggregates are not calculated.
- Next Import Only (1) - Scan data aggregates are calculated only during the next import. Then, the value of the parameter changes to Never (0).
- Every Import (2) - Scan data aggregates are calculated during every import.

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Reporting Missing Scan status</li> <li>Previously: Software scan interval</li> <li>• <b>Parameter:</b> scanHealthLastScanAttempt</li> </ul>	Days	30	1	365
<p>Specifies the number of days from the last software scan after which the computer is reported on the Software Scan Health widget as missing software scan.</p>				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Scan files import waiting time</li> <li>• <b>Parameter:</b> scanFilesDownloadImportTimeout</li> </ul>	Seconds	10	1	600
<p>Specifies the maximum number of seconds to wait for a file with scan results to be read from the BigFix server during import.</p>				
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Server ID template for managed hosts</li> <li>• <b>Parameter:</b> managedServerTagTemplate</li> </ul>	String	%VENDOR %TYPE %HOSTNAME		<p>Specifies the format of information about VM manager hosts that is displayed in the Server ID column on the reports. The parameter affects hosts from which data is collected by the VM Manager tool or by the Run Capacity Scan on Virtualization Hosts fixlet.</p> <p>By default, the column contains information about the vendor, type and host name of the VM manager host. For example: IBM NC123456.IBM.COM. You can choose any combination of the following characteristics of a VM manager host to be displayed on the reports:</p> <ul style="list-style-type: none"> <li>• Host name (REST API value: %HOSTNAME)</li> </ul> <p> <b>Important:</b> To display this information for hosts from which data is collected by the Run Capacity Scan on Virtualization Hosts fixlet, you must first enable the collection of host names. To do this, select the <b>Collect host names of virtualization hosts</b> check box in the fixlet. Otherwise, a serial number is displayed instead of the host name for such VM manager hosts.</p> <ul style="list-style-type: none"> <li>• Identifier (REST API value: %ID)</li> <li>• Model (REST API value: %MODEL)</li> </ul>

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
	Description			
	<ul style="list-style-type: none"> <li>Serial number (REST API value: <code>%SERIAL_NUMBER</code>)</li> </ul> <p> <b>Important:</b> To display this information for hosts from which data is collected by the VM Manager tool, you must first enable the collection of serial numbers. To do this, set the value of the <code>vmman_collecting_host_serials_enabled</code> (on page <a href="#">dcclxxiv</a>) parameter to true.</p> <ul style="list-style-type: none"> <li>Type (REST API value: <code>%TYPE</code>)</li> <li>Vendor (REST API value: <code>%VENDOR</code>)</li> </ul> <p> <b>Note:</b> Information is displayed in the new format after the next import.</p>			
	<p>To change the format of information through REST API, list the characteristics of the VM manager host that you want to display in the <b>value</b> parameter. The value must be URL-encoded. For example:</p> <pre>PUT http://localhost:9081/api/sam/configs?token=7adc3efb175e2bc0f4484bdd2efca54a8fa&amp;name=managedServerTagTemplate&amp;value=%25VENDOR%20%25TYPE%20%25SERIAL_NUMBER</pre>			
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li><b>Name:</b> Server ID template for un-managed hosts</li> <li><b>Parameter:</b> <code>standaloneServerTagTemplate</code></li> </ul>	String	<code>%VENDOR %TYPE</code> <code>%SERIAL_NUMBER</code>		
	<p>Specifies the format of information about the host that is displayed in the Server ID column on the reports. The parameter affects hosts that are not affected by the <code>managedServerTagTemplate</code> (on page <a href="#">dcclxviii</a>) parameter.</p> <p>By default, the column contains information about the vendor, type and serial number of the host. For example: IBM Corp. 7946 99B7166. You can choose any combination of the following characteristics of a host to be displayed on the reports:</p> <ul style="list-style-type: none"> <li>Identifier (REST API value: <code>%ID</code>)</li> <li>Model (REST API value: <code>%MODEL</code>)</li> <li>Serial number (REST API value: <code>%SERIAL_NUMBER</code>)</li> </ul>			

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
	<b>Description</b>			
	<ul style="list-style-type: none"> <li>• Type (REST API value: %TYPE)</li> <li>• Vendor (REST API value: %VENDOR)</li> </ul> <p> <b>Note:</b> Information is displayed in the new format after the next import.</p> <p>To change the format of information via REST API, list the characteristics of the host that you want to display in the <b>value</b> parameter. The value must be URL-encoded. For example:</p> <pre> PUT http://localhost:9081/api/sam/configs? token=7adc3efb175e2bc0f4484bdd2efca54a8fa &amp;name=standaloneServerTagTemplate&amp;value =%25VENDOR%20%25MODEL%20%25SERIAL_NUMBER                     </pre>			
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Size limit of Scan File to process</li> <li>• <b>Parameter:</b> scanFileSizeLimit</li> </ul>	MB	20	0	100
	<p>Specifies the maximum size of the scan file that can be processed by BigFix Inventory. Files that exceed the limit are rejected. When you set the parameter to 0, the limit is disabled and all files are process regardless of their size.</p>			
<ul style="list-style-type: none"> <li>• <b>Name:</b> Sort bundling options alphabetically</li> <li>• <b>Parameter:</b> blockUiBundlingComputations</li> </ul>	Boolean (true/false)	False		
	<p>Specifies whether bundling options that are displayed when you reassign a software component are sorted by confidence or alphabetically. By default, the options are sorted by confidence. If you set the value of the parameter to true, the options are sorted alphabetically and thus are displayed more quickly on the user interface.</p>			
<p><b>9.2.8</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Split SQL query for inserting software facts</li> <li>• <b>Parameter:</b> split_ms_merge</li> </ul>	Boolean (true/false)	False		
	<p> <b>Important:</b> Use this parameter only when you are requested by HCL Support.</p> <p>Splits the SQL query that is used for inserting software facts into multiple queries to reduce usage of TEMPDB in a large-scale environment.</p>			

Table 156. Server settings (continued)

Name & Parameter	Type	Default	Minimum	Maximum
Description				
	Splitting the query lengthens the import. The parameter is applicable only on Windows.			
<ul style="list-style-type: none"> <li>• <b>Name:</b> Store hardware data for VM manager nodes</li> <li>• <b>Parameter:</b> <code>storeHwDataForAllVM-ManagerNodes</code></li> </ul>	Boolean (true/false)	False		
Specifies whether information about nodes and clusters that is retrieved from VM managers is stored in the database, regardless of whether an agent is running on any virtual machine on such nodes or clusters.				
<p>9.2.7</p> <ul style="list-style-type: none"> <li>• <b>Name:</b> The default value of the <b>Automatically confirm the affected components</b> check box on the Software Classification panel</li> <li>• <b>Parameter:</b> <code>automaticConfirm</code></li> </ul>	Boolean (true/false)	True		
Specifies the default value of the <b>Automatically confirm the affected components</b> check box on the Software Classification. If the parameter is set to true, the check box is selected by default and components affected by an action are confirmed. Otherwise, affected component are not confirmed.				
<p>9.2.13</p> <ul style="list-style-type: none"> <li>• <b>Name:</b> To Do: Show that VM manager connection is missing</li> <li>• <b>Parameter:</b> <code>todo_display_vm_managers_need</code></li> </ul>	Boolean (true/false)	True		
Specifies whether the <b>To Do List</b> shows information about missing connections to VM managers. By default, the parameter is set to true which means that the item is displayed.				
<p>9.2.7</p> <ul style="list-style-type: none"> <li>• <b>Name:</b> User password: maximal number of characters</li> <li>• <b>Parameter:</b> <code>user_password_max_length</code></li> </ul>	Integer	0	0	1024
Specifies the maximum length of the user password. By default, the parameter is set to 0 which means that the requirement is disabled.				
<p>9.2.7</p>	Number	0	0	32
Specifies the maximum number of the same characters that can be used in a row in the user password. By default, the parameter is set to 0 which means that the requirement is disabled.				

**Table 156. Server settings (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> User password: maximal number of the same characters in a row</li> <li>• <b>Parameter:</b> <code>user_password_max_of_identical_characters_in_row</code></li> </ul>	<b>Description</b>			
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> User password: minimal number of characters</li> <li>• <b>Parameter:</b> <code>user_password_min_length</code></li> </ul>	Number	8	0	128
<p>Specifies the minimum length of the user password. Set the value to 0 to disable the requirement.</p>				
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> User password: regular expression</li> <li>• <b>Parameter:</b> <code>user_password_regular_expression</code></li> </ul>	Regular Expression	<code>^(?=.*[a-z])(?=.*[A-Z])(?=.*\d).+\$</code>		
<p>Specifies the regular expression that must be matched by the user password. By default, the password must contain at least one uppercase character, one lowercase character, and one digit. Set the value to an empty string to disable this requirement.</p>				
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> User password: required special characters</li> <li>• <b>Parameter:</b> <code>user_password_special_characters</code></li> </ul>	String		0	
<p>Specifies the list of special characters from which at least one must be used in the user password. By default, no special characters are required.</p> <p> <b>Note:</b> Provide the characters one after another without any separators. For example: <code>?!&amp;%</code>. If you add a space, it is also treated as a special character.</p>				
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Validate VM manager data</li> <li>• <b>Parameter:</b> <code>validateVMMangersData</code></li> </ul>	Boolean (true/false)	True		
<p>Specifies whether the XML schema of files with VM manager data is validated by the BigFix Inventory server.</p>				

## Settings of the main VM Manager tool

The following parameters can be configured from the server only if you are using [basic VM management \(on page dcccxcii\)](#). If you are using [advanced VM management \(on page dcccxiv\)](#), you must edit the `vmmmainconf.properties` configuration file to change the parameters. For more information about changing the settings of an additional VM Manager tool, see: [VM Manager Tool settings \(on page dcccxxviii\)](#).

**Table 157. Settings of the main VM Manager tool**

Name & Parameter	Type	Default	Minimum	Maximum
Description				
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Allow VM manager HTTP connection fallback</li> <li>• <b>Parameter:</b> <code>vmman_http_connection_allowed</code></li> </ul>	Boolean (true/false)	True		
Allows the VM manager to connect by using the HTTP protocol when the defined HTTPS connection is not available.				
<p><b>9.2.7</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Attempt to fix VM manager connection parameters</li> <li>• <b>Parameter:</b> <code>vmman_fix_parameters_enabled</code></li> </ul>	Boolean (true/false)	False		
Attempts to fix the most common problems with VM manager connection parameters, such as adding default URL suffix, correcting the user name format, and testing the WinRM and Power-Shell protocols for Hyper-V VM managers.				
<ul style="list-style-type: none"> <li>• <b>Name:</b> Check VM managers for uniqueness</li> <li>• <b>Parameter:</b> <code>vmman_check_uniqueness_enabled</code></li> </ul>	Boolean (true/false)	False		
Specifies whether unique VM managers are distinguished from duplicates.				
<p><b>9.2.3</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Collect serial numbers of VM manager hosts</li> <li>• <b>Parameter:</b> <code>vmman_collecting_host_serials_enabled</code></li> </ul>	Boolean (true/false)	False		
<p>Specifies whether serial numbers of VM manager hosts are collected for VM managers from which data is collected by the VM Manager tool. Available for Hyper-V and VMware 5.0 and higher.</p> <p>To display information about serial numbers in the Server ID column on the reports, adjust the Server ID template that is specified by the <a href="#">managedServerTagTemplate (on page dcccclxviii)</a> parameter.</p>				

**Table 157. Settings of the main VM Manager tool (continued)**

Name & Parameter	Type	Default	Minimum	Maximum
	Description			
<p><b>9.2.2</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Collect virtual machines host names</li> <li>• <b>Parameter:</b> <code>vmman_collecting_host_names_enabled</code></li> </ul>	Boolean (true/false)	False		
	<p>Specifies whether host names of virtual machines are collected by the VM Manager tool and saved in its log files. Available for VMware only.</p> <p>You can enable this parameter to solve problems with duplicated UUIDs. If duplicates are found, the host names are written in the log files.</p>			
<ul style="list-style-type: none"> <li>• <b>Name:</b> Filter VM manager UUIDs</li> <li>• <b>Parameter:</b> <code>vmman_uuid_filtering_enabled</code></li> </ul>	Boolean (true/false)	False		
	<p>Enables UUID filtering of VM managers. For more information, see: <a href="#">UUID-based virtual machine filtering (on page dccccxxii)</a>.</p>			
<ul style="list-style-type: none"> <li>• <b>Name:</b> Maximum number of subsequent login failures</li> <li>• <b>Parameter:</b> <code>vmman_max_subsequent_login_failures</code></li> </ul>	Number	3	0	100
	<p>Specifies the maximum number of failed attempts of logging in to the VM manager.</p>			
<p><b>9.2.4</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Transfer VM manager credentials</li> <li>• <b>Parameter:</b> <code>vmman_transfer_credentials_to_server</code></li> </ul>	Boolean (true/false)	True		
	<p>Specifies whether VM manager credentials are transferred to the server. The option is enabled by default. If you disable the option, the credentials are not transferred and thus they are not displayed on the VM Managers panel when you edit the VM manager.</p>			
<p><b>9.2.4</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Trust SSL certificates from all defined VM managers</li> <li>• <b>Parameter:</b> <code>vmman_trust_all_vm_managers_certificates</code></li> </ul>	Boolean (true/false)	True		
	<p>Specifies whether SSL certificates from all defined VM managers are trusted. If the option is disabled, certificates that are trusted must be placed in the truststore on the computer where the VM Manager Tool is installed. For more information, see: <a href="#">Configuring VM Manager tool to accept trusted VM manager certificates (on page mccccxiv)</a>.</p>			

Table 157. Settings of the main VM Manager tool (continued)

Name & Parameter	Type	Default	Minimum	Maximum
	Description			
<ul style="list-style-type: none"> <li>• <b>Name:</b> VM manager connection timeout</li> <li>• <b>Parameter:</b> <code>vmman_connection_time_out</code></li> </ul>	Seconds	90	10	3600 (1 hour)
Specifies the time after which the connection with a VM manager is ended.				
<ul style="list-style-type: none"> <li>• <b>Name:</b> VM manager data transfer period</li> <li>• <b>Parameter:</b> <code>vmman_transfer_period</code></li> </ul>	Minutes	720	30	10080 (1 week)
Determines how often scan data is transferred to the agent to be uploaded to the server if subsequent scans have the same results.				
<ul style="list-style-type: none"> <li>• <b>Name:</b> VM manager pooling interval</li> <li>• <b>Parameter:</b> <code>vmman_pooling_time_interval</code></li> </ul>	Minutes	30	30	10080 (1 week)
Specifies the interval between the consecutive retrievals of data from VM managers.				
 <b>Restriction:</b> In case of subcapacity reporting, it is necessary to capture mobility of VMs. To ensure that it is captured, data from VM managers must be collected every 30 minutes. You can change the frequency of collecting data only if you use BigFix Inventory for purposes other than subcapacity reporting.				
<ul style="list-style-type: none"> <li>• <b>Name:</b> VM manager thread pool size</li> <li>• <b>Parameter:</b> <code>vmman_thread_pool_size</code></li> </ul>	Number	10	1	50
Specifies the number of threads in the thread pool that is used for connections to VM managers.				

## Environment variables server settings

BigFix Inventory has few environment variables that can be used to adjust behaviour of the BigFix Inventory server.

### Setting up the environment variables

To ensure that the environment variables are set to expected values, it is recommended to set them up by using WebSphere `server.env` that is loaded when starting the BigFix Inventory server. Follow the procedure below:

1. On the computer where the BigFix Inventory server is installed, go to one of the following directories, and create or modify the `server.env` file.

- **Linux** `install_dir/wlp/usr/servers/server1/server.env`
- **Windows** `install_dir\wlp\usr\servers\server1\server.env`

2. Add the required settings from the table below:

```
LOG_MEMORY=true
```

3. Restart the BigFix Inventory server.

### Environment variable settings

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Log memory consumption information during Data Import and in <code>tema.log</code> with every log message</li> <li>• <b>Parameter:</b> <code>LOG_MEMORY</code></li> </ul>	boolean	false		
	<p><b>Description</b></p> <p>Adds information to each log iabout the memory used currently:</p> <pre>2024-03-05 14:09:10 (+0:00:00.000) INFO: Memory Used,663MB,Memory Diff,1588kB,Memory Committed,1024MB, 2024-03-05 14:09:10 (+0:00:00.000) INFO: BFI version: 10.0.16.0-20240305-0112</pre> <p>Avoid using in the production environment. Recommended for debugging</p>			
<p><b>10.0.14</b></p> <ul style="list-style-type: none"> <li>• <b>Name:</b> Custom URL prefix to be used in Scanner Catalog Distribution fixlet to the BigFix Platform Server</li> <li>• <b>Parameter:</b> <code>BIGFIX_SERVER_URL_FOR_DATASOURCE_ID_&lt;datasource_id&gt;</code></li> </ul>	URL	N/A		
	<p><b>Example:</b> <code>BIGFIX_SERVER_URL_FOR_DATASOURCE_ID_3=http://correctbigfix.acme.org:52311</code></p> <p>The DNS name of BigFix Platform server in some specific network configuration might be different when accessing it from BigFix Inventory server and on BigFix Platform itself. As from BigFix Inventory server 10.0.14, the Scanner Catalog is hosted on BigFix Platform server, there might be need to correct the used URL included in "Scanner Distribution" fixlet. This setting allows to adjust the protocol, DNS name of the server as well as port. The value is included as-is in the created fixlet. The setting is per Data Source.</p> <p>Proper values of <code>datasource_id</code> are available in the first column of the <b>Management &gt; Datasources</b> panel.</p>			
<p><b>10.0.16</b></p>	boolean	false		
	<p><b>Example:</b> <code>HTTPS_BIGFIX_SERVER_URL_FOR_DATASOURCE_ID_3=true</code></p>			

Name & Parameter	Type	Default	Minimum	Maximum
<ul style="list-style-type: none"> <li>• <b>Name:</b> Enforce HTTPS for file fetch from BigFix Platform Servers</li> <li>• <b>Parameter:</b> <code>HTTPS_BIGFIX_SERVER_URL_FOR_DATASOURCE_ID_&lt;datasource_id&gt;</code></li> </ul>	<p><b>Description</b></p> <p>Apart from encrypting files, this parameter allows you to enforce using HTTPS protocol by BigFix when transferring files from BigFix Platform server to BigFix Inventory server.</p> <p>Proper values of <code>datasource_id</code> are available in the first column of the <b>Management &gt; Datasources</b> panel .</p>			

## Administering the database

Perform administering tasks on your database to keep it in good condition, protect your data, or configure additional settings.

### Backing up and restoring the database

Perform regular backups of the data that is stored in the database, and restore it when needed to prevent data loss.

To maintain data consistency during data recovery, it is recommended to perform backup at least once per week. When you plan regular backups, you must consider the dynamics of your environment, for example, infrastructure changes and software installations. It is a good practice to back up the database before you update the software catalog, upgrade the server, or introduce significant changes to the middleware or the operating system. The number of backups that you keep depends on the storage space available. It is recommended to ensure that the backup that you store allows the restoration of your environment to the last functional state. Thus, if you introduce several consecutive changes in the application, the database, or the operating system, ensure that you perform backup after each of those change.

Consider the start time and duration of the import when you plan the backup schedule to avoid performance impact on the data import.

### Backing up the DB2® database

You should back up the database on a regular basis to protect your data. Each backup is the copy of the entire database that can be restored in the case of corruption or malfunction.

- Users

To perform the backup, log in as the database instance owner.

- Space requirements

Ensure that enough storage space is available in the target directory. The backup file size depends on the number of computers that report to BigFix Inventory, and the amount of historical data that is stored in the database. Therefore, you cannot estimate the exact size of the backup file.

The backup file size can reach:

- 2GB or more in the environments that consist of less than 100 computers.
- 50GB for 30000 computers.
- 75GB for 100000 computers.

You can use compression to significantly reduce the backup size.

---

## Related information

[DB2 data recovery](#)

## Creating offline backups

You should back up the database on a regular basis to protect your data. Each backup is the copy of the entire database that can be restored in the case of corruption or malfunction. Choose offline backups if you can afford to deactivate the database during each backup.

During an offline backup, the entire database is copied to a file. Since the database must be deactivated during each backup (no active transactions), the backup file contains all transactions performed on the database so far. Therefore, the backup file is not dependent on transaction logs, and the database can use the default circular logging, in which transaction logs are overwritten with new transactions, which saves the disk space. To restore the database, you only need the backup file.

1. Stop the BigFix Inventory server.
2. Terminate the connections and deactivate the database.



**Note:** `TEMADB` is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

```
db2 terminate
db2 deactivate db TEMADB
```

```
DB20000I  The TERMINATE command completed successfully.
DB20000I  The DEACTIVATE DATABASE command completed successfully.
```

3. Make a full offline backup. The entire database is copied to a backup file in the specified location.

```
db2 backup database TEMADB to <location>
```

```
Backup successful. The timestamp for this backup image is : xxxxxxxxxxxxxx
```

4. Verify that the backup file was correctly created.

```
db2ckbkp <backup file>
```

```
Image Verification Complete - successful.
```

5. Activate the database and restart the BigFix Inventory server to restore its connection to the database.

```
db2 activate db TEMADB
/etc/init.d/BFIserver restart
```

6. If DB2 is shared with the BigFix server, restart the BigFix server to restore its connection to the database.

For more information, see: [Starting and stopping the BigFix server](#).

## Creating online backups

Choose online backups if you back up your database frequently and cannot afford to deactivate it for each backup. Online backups allow you to maintain all connections to the database, but they require more disk space to store the history of transaction logs.

During an online backup, the entire database is copied to a file, but it might not contain transactions that were being performed on the database while the backup was being created. Therefore, the backup file must always be complemented with transaction logs to restore the database to the consistent state. Transaction logs are backed up automatically after enabling archive logging, and must always be stored in a safe location together with the backup file. After you restore the database from the backup file, you add the archive logs, and the database is complete. Enabling the archive logging for the first time requires that you deactivate the database.

1. Set up archive logging.



**Note:** TEMADB is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

- a. Check the status of archive logging in your database. If the first archive method contains a value other than OFF, you can omit the following steps and make an online backup.

```
db2 get db cfg for TEMADB | grep LOGARCHMETH
```

```
First log archive method          (LOGARCHMETH1) = OFF
Second log archive method         (LOGARCHMETH2) = OFF
```

- b. Create a backup directory that will be used to store archive logs and online backups, and give it proper permissions.

```
mkdir /var/online_backup
chown db2inst1:db2iadml /var/online_backup
```

- c. Update the database configuration to enable archive logging and point to the new directory.

```
db2 update database configuration for TEMADB using LOGARCHMETH1 'disk:/var/online_backup'
```

```
DB20000I  The UPDATE DATABASE CONFIGURATION command completed successfully.
```

The status of archive logging settings also changed to a specific path:

```
First log archive method                (LOGARCHMETH1) = DISK:/var/online_backup/
```

d. Terminate the connections and deactivate the database.

```
db2 force application all
db2 deactivate db TEMADB
```

e. Make a full offline backup.

```
db2 backup database TEMADB to <location>
```

Creating an offline backup is a requirement after enabling the archive logging. Although you will not need to create offline backups later, it is a good practice to create them before major changes to the database. The archive logs can be applied in the same way both to offline and online backups to restore them to the most recent state. You can store this offline backup in a safe location as an extra precaution.

f. Activate the database and restart the BigFix Inventory server to restore its connection to the database.

```
db2 activate db TEMADB
/etc/init.d/BFIserver restart
```

g. If DB2 is shared with the BigFix server, restart the BigFix server to restore its connection to the database.

For more information, see: [Starting and stopping the BigFix server](#).

2. Make an online backup.

```
db2 backup database TEMADB online to /var/online_backup/ compress include logs
```

```
Backup successful. The timestamp for this backup image is : xxxxxxxxxxxxxx
```

Whenever you create an online backup, all archive logs created up to this point are no longer needed. To restore a complete database, you need a backup file and subsequent archive logs.

3. Verify that the backup file was correctly created.

```
db2ckbkp <online backup file>
```

```
Image Verification Complete - successful.
```

## Restoring the DB2® database

If your database has been corrupted or you want to revert some changes, you can restore it to its previous state from one of the backup files. Depending on the backup procedure that you chose, use either offline or online backup files. In the latter case, you must also restore the archive logs to make the database consistent.

## Restoring database from offline backup files

An offline backup file is the copy of the entire database and all transactions performed on it at the time when the backup was created. To restore the database, you only need this backup file.

1. Terminate the connections and deactivate the database.



**Note:** `TEMADB` is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

```
db2 terminate
db2 deactivate db TEMADB
```

2. Restore the database from the offline backup file.

```
db2 restore db TEMADB from <location> taken at <timestamp> replace existing
```

3. [Upload the software catalog \(on page cmxciv\)](#) to avoid problems with the data import. At this point, there might be some discrepancies between the server and the contents of the database, which will be resolved after the upload.

## Restoring database from online backup files

An online backup file is also the copy of the entire database, but it might not include transactions that were being performed on the database while the backup was being created. Therefore, the backup file must be complemented with archive logs that contain the latest transactions. By choosing the right archive logs, you can either restore the database to the most recent state, or to one of the previous states.

### Restoring to the most recent state

To restore the database to the most recent state, use one of your online backup files (preferably, the most recent one), and then apply to it all subsequent archive logs. If you store all archive logs in one directory, the correct ones will be applied automatically.

1. Terminate the connections and deactivate the database.



**Note:** `TEMADB` is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

```
db2 terminate
db2 deactivate db TEMADB
```

2. Restore the database from the online backup file.

```
db2 restore database TEMADB from <location> taken at <timestamp> replace existing
```

3. Restore all archive logs that were saved after the backup file was created.

```
db2 rollforward db TEMADB to end of logs and stop log path (/var/archive_logs)
```

4. Activate the database and restart the BigFix Inventory server to restore its connection to the database.

```
db2 activate db TEMADB
/etc/init.d/BFIserver restart
```

5. [Upload the software catalog \(on page cmxciv\)](#) to avoid problems with the data import. At this point, there might be some discrepancies between the server and the contents of the database, which will be resolved after the upload.

## Restoring to one of the previous states

You can also restore the database to one of the previous states to avoid all subsequent transactions that might have corrupted it. In such a case, you do not apply all archive logs that you store, but only those that are bundled in the backup file. These bundled logs include only transactions from the exact state when the backup was created. You can extract them from the backup file.

1. Terminate the connections and deactivate the database.



**Note:** TEMADB is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

```
db2 terminate
db2 deactivate db TEMADB
```

2. Extract the transaction logs from the online backup file. This step is required, because you will not be able to activate the database unless some logs are applied to it.

```
db2 restore database TEMADB logs from <online backup file> LOGTARGET /var/extracted_logs/
```



**Note:** Ensure that the location for the extracted log files is different from the one in which you store all other archive logs.

3. Restore the database from the online backup file.

```
db2 restore database TEMADB from <location> taken at <timestamp> replace existing
```

4. Apply the extracted archive logs.

```
db2 rollforward database TEMADB to end of logs overflow log path (/var/extracted_logs/)
```

5. Activate the database and restart the BigFix Inventory server to restore its connection to the database.

```
db2 activate db TEMADB
/etc/init.d/BFIServer restart
```

6. [Upload the software catalog \(on page cmxciv\)](#) to avoid problems with the data import. At this point, there might be some discrepancies between the server and the contents of the database, which will be resolved after the upload.

## Backing up the SQL Server database

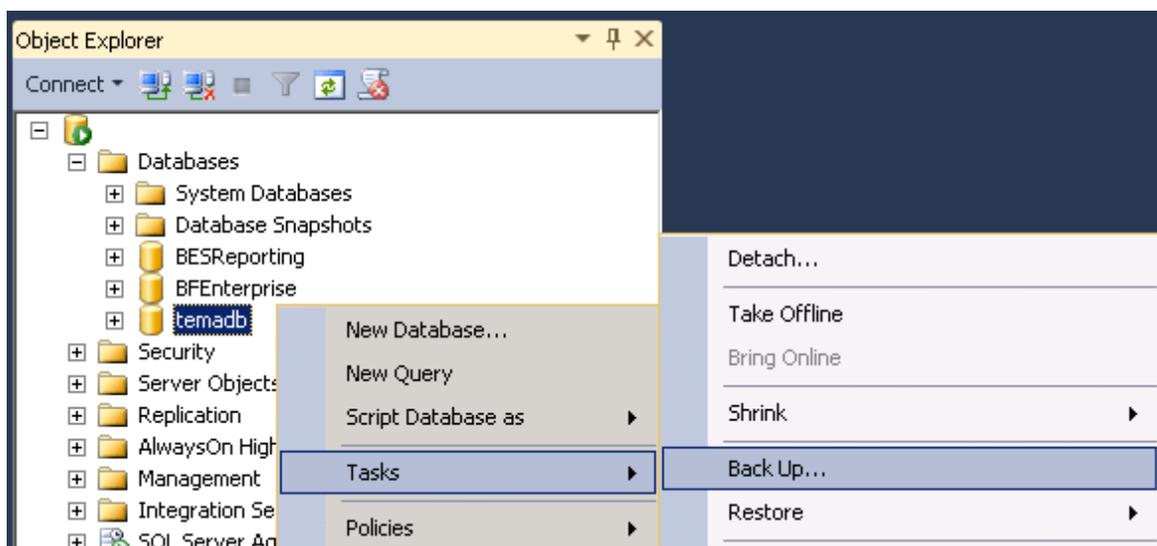
You can make a copy of your database by saving it to a backup file. If you want, you can then move the backup to another computer and restore it in a different BigFix Inventory instance.

- You can back up and restore the database only within one version of BigFix Inventory.
- BigFix Inventory and Microsoft™ SQL Server Management Studio must be installed.
- Ensure that enough storage space is available in the target directory. The backup file size depends on the number of computers that report to BigFix Inventory, and the amount of historical data that is stored in the database. Therefore, you cannot estimate the exact size of the backup file. In small environments the backup file size starts at 1GB, and for 30000 computers the file reaches 40 GB. You can use compression to significantly reduce the backup file size.

1. Log in to the computer that hosts the database that you want to back up.
2. Open Microsoft™ SQL Server Management Studio.
3. In the left navigation bar, expand **Databases**.
4. Right-click on the database that you want to back up and then click **Tasks > Back Up**.



**Note:** TEMADB is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mccc1xii\)](#).



5. Review the details of the backup and then click **OK** to create the backup.

6. Click **OK**.

If the database was backed up successfully, you can find the **bak** file in the location that you specified in step 5.

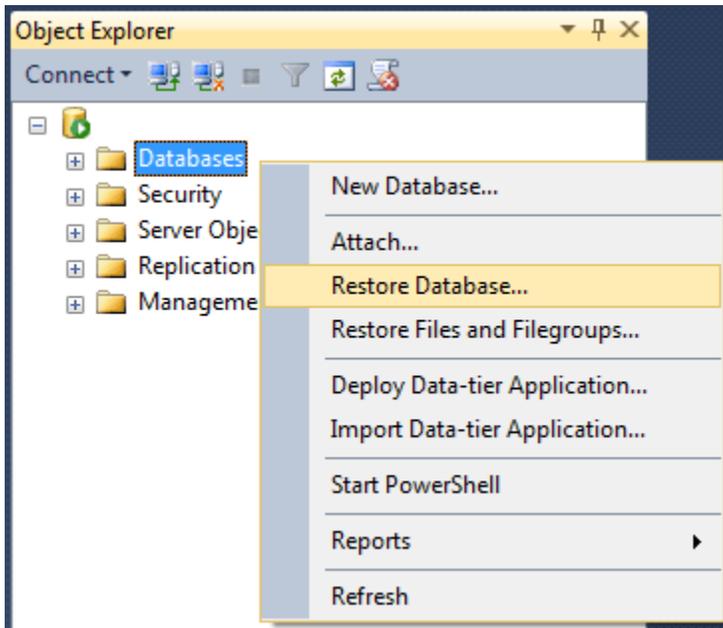
If you want to move the database to a different BigFix Inventory instance, copy the backup file to the target computer and then [restore the database \(on page dcclxxxiv\)](#).

## Restoring the SQL Server database

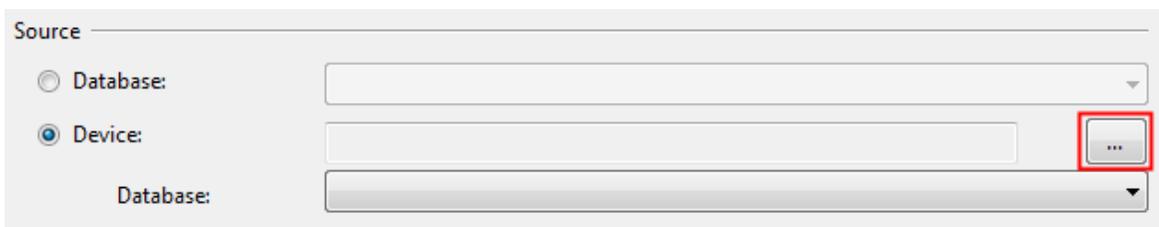
If you encounter any problems with your database or if you want to move it between different instances of BigFix Inventory, you can use a backup file to restore the database.

- You can back up and restore the database only within one version of BigFix Inventory.
- Ensure that you are logged in to Microsoft™ SQL Server Management Studio as the user who created the **temadb** database. If you log in as a different user, the restoring will fail.
- BigFix Inventory and Microsoft™ SQL Server Management Studio must be installed.
- Stop the `BFIserver` service. Open the command prompt and run `net stop BFIserver`.

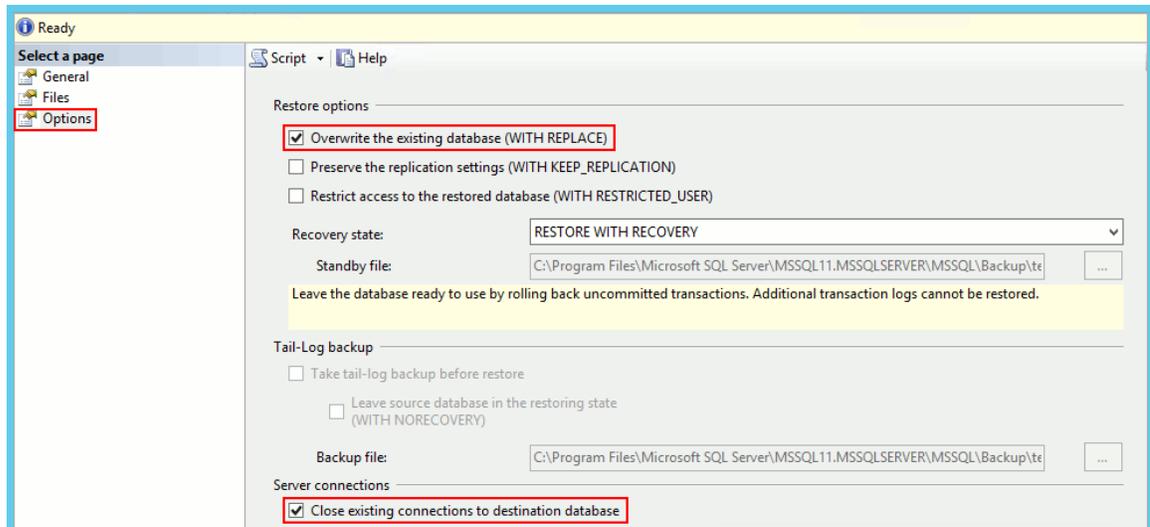
1. Log in to the computer on which you want to restore the database.
2. Open Microsoft™ SQL Server Management Studio.
3. In the left navigation bar, right-click on **Databases** and then click **Restore Database**.



4. In the **Source** section, select **Device** and click the button with three dots.



5. In the pop up window that opens, click **Add** and browse for your backup file. Click **OK**.
6. In the left navigation menu, click Options.
7. In the pane on the right select **Overwrite the existing database (WITH REPLACE)** and **Close existing connections to destination database**.



8. Click **OK**.

Upload the software catalog (on page [cmxciv](#)) to avoid problems with the data import. At this point, there might be some discrepancies between the server and the contents of the database, which will be resolved after the upload.

## Creating a new database

To create a new database without reinstalling BigFix Inventory, you must modify the configuration file that stores information about the database. After you do so, you will be able to complete the initial configuration again, and create a new database.

1. Stop the BigFix Inventory server (on page [dcccclvii](#)).
2. Delete the current database.



**Note:** `TEMADB` is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

DB2:

- a. Log in as the DB2 instance owner, which by default is `db2inst1`.
- b. Run the following command to check the details of the existing database.

```
db2 list db directory
```

- c. Run the following commands to close the existing connections, deactivate the database, and delete it.

```
db2 deactivate db TEMADB
db2 drop db TEMADB
```

SQL Server:

- a. Log in to SQL Server Management Studio.
  - b. In the navigation tree, expand **Databases**.
  - c. Right-click on the *TEMADB* database, and then click **Delete**.
3. Go to *installation\_dir/wlp/usr/servers/server1/config/*, and rename the *database.yml* file to *database.yml.bak*. This step resets the initial configuration and allows you to create a new database. You will also have to create a new administrative user and specify connections to the BigFix platform.
  4. [Start the BigFix Inventory server \(on page dcccxlvi\)](#).
  5. Go to <https://hostname:port/setup/database> to perform the initial configuration and create a new database. For more information, see: [Performing initial configuration on Windows \(on page dxli\)](#) or [Performing initial configuration on Linux \(on page dlxvi\)](#).
  6. After the configuration is completed, [upload the software catalog \(on page cmxciv\)](#) to avoid problems with the data import. At this point, there might be some discrepancies between the server and the contents of the database, which will be resolved after the upload.

## Reinstalling BigFix Inventory with an existing database

You can reinstall BigFix Inventory and connect it to an existing database. This allows you to preserve all the data collected so far and avoid changing configuration settings.

1. Back up the following files from the BigFix Inventory installation directory.
 

```
installation_dir/wlp/usr/servers/server1/logs/imports/
installation_dir/wlp/usr/servers/server1/data/sam/
```
2. Uninstall the BigFix Inventory server. For more information, see: [Uninstalling on Windows \(on page dxlv\)](#) or [Uninstalling on Linux \(on page dlxxi\)](#).
3. Install the BigFix Inventory server. For more information, see: [Installing the server on Windows \(on page dxviii\)](#) or [Installing the server on Linux \(on page dlxii\)](#).
4. Before you complete the initial configuration, copy the files that you backed up in step 1 into the new installation directory.
5. Perform the initial configuration and point to the existing database instance. It is enough to specify the right host name and leave the same database name. BigFix Inventory will connect to your existing database. For more information, see: [Performing initial configuration on Windows \(on page dxli\)](#) or [Performing initial configuration on Linux \(on page dlxvi\)](#).
6. [Upload the software catalog \(on page cmxciv\)](#) to avoid problems with the data import. At this point, there might be some discrepancies between the server and the contents of the database, which will be resolved after the upload.

## Moving the BigFix Inventory database

To move the BigFix Inventory database to a different computer, back up the database, move it to the target computer, and point to that computer in the *server.xml* and *database.yml* files.

1. Stop the BigFix Inventory server.
2. Back up the BigFix Inventory database.
  - [Backing up the DB2 database \(on page dcccclxxvii\)](#).
  - [Backing up the SQL Server database \(on page dcccclxxxiii\)](#).
3. Move the database to the target computer and make it operational.
4. Back up the following files from the installation directory of the BigFix Inventory server.
  - `installation_directory/wlp/usr/servers/server1/server.xml`
  - `installation_directory/wlp/usr/servers/server1/config/database.yml`
5. Update the database location in the `server.xml` file. Provide the IP address or domain name of the computer on which the database is located.
  - DB2 database

```
<properties.db2.jcc
password="{aes}xxxxXXXxxxxXXXxxxxXXXxxxxXXXxxxxXXX"
user="db2inst1"
serverName="localhost"
databaseName="temadb" />
```

- MSSQL database

```
<properties.microsoft.sqlserver
password="{aes}xxxxXXXxxxxXXXxxxxXXXxxxxXXXxxxxXXX"
user="sa"
serverName="localhost"
databaseName="temadb" />
```

6. Update the database location in the `database.yml` file. Provide the IP address or domain name of the computer on which the database is located.

```
host: localhost
database: temadb
database_type: mssql
windows_authenticated: true
```



**Tip:** Follow the instruction mentioned [here \(on page mcccclxxxv\)](#) while editing the `database.yml` file.

7. Start the BigFix Inventory server (on page dcccclxvii).

## Updating the database password

You can update the database user password when needed, for example if the password is changed and users cannot log in to BigFix Inventory.

Before you can run the security utility you must set the JAVA\_HOME environment variable, for example,

- **Windows** `set JAVA_HOME=<BFI_INSTALL_DIR>/jre/jre`
- **UNIX** `export JAVA_HOME=<BFI_INSTALL_DIR>/jre/jre`



**Important:** Create a backup of **server.xml** and **database.yml** files before you make any change.

For information about changing the DB2 database password, see: [Maintaining passwords on servers](#). For information about changing the SQL Server password, see the [SQL Server Login Password Expiration](#).

1. Log in to the computer where BigFix Inventory is installed.
2. Run the following command and enter the new password for the database user.

```
<BFI_INSTALL_DIR>/wlp/bin/securityUtility encode
```

The password is returned as an encrypted string. Save it to use in the next steps.



**Note:** If you use AES encryption, add the following parameter to the command above: `--encoding=aes`.

```
<BFI_INSTALL_DIR>/wlp/bin/securityUtility encode --encoding=aes
```

3. Edit the following configuration files, and enter the new encrypted password.

- `BFI_INSTALL_DIR/wlp/usr/servers/server1/server.xml`

Search the database entry "**properties.db2.jcc**" for **DB2** and "**properties.microsoft.sqlserver**" for **SQL Server** and then change the password for the database entry.

Copy the new encrypted password to the **password** attribute, for example:

- In case of 'xor' encoding : `password="{xor}fgspGzAWPTApFzk="`
- In case of 'aes' encoding : `password="{aes}fgspGzAWPTApFzk="`

- `BFI_INSTALL_DIR/wlp/usr/servers/server1/config/database.yml`

Copy the new encrypted password to the **encrypted\_password** parameter.



**Tip:** Follow the instruction mentioned [here \(on page mccc1xxxv\)](#) while editing the database.yml file.

4. If you use the same user for the BigFix database, you must also enter the new password in the following locations.
  - Update the database password in the BigFix server. For more information, see: [Changing the database password](#).
  - In BigFix Inventory, go to **Management > Data Sources**. Enter the unencrypted password for the database user and click **Save**.
5. Restart BigFix Inventory server.

- a. [Stop the BigFix Inventory server. \(on page dcccxlvi\)](#)
- b. [Start the BigFix Inventory server. \(on page dcccxlvi\)](#)

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#### Related information

[Starting the server \(on page dcccxlvi\)](#)

## Removing inactive computers

When you decommission a computer in your infrastructure, it continues to report to BigFix Inventory. The data is still collected from this computer, and displayed on the metric reports. To ensure that all infrastructure changes are reflected in BigFix Inventory, you should remove each decommissioned computer from BigFix. If you cannot remove this computer from BigFix for a valid reason, you can use an alternative solution, and decommission the computer in BigFix Inventory.

### Removing inactive computers from BigFix

When you decommission a computer in your infrastructure, you need to remove this computer from BigFix to reflect the change in the BigFix Inventory reports.

The computer that is decommissioned in your infrastructure continues to report to BigFix Inventory. The software is listed in the metric reports, and included in license calculation. To make sure that the components that are installed on this computer are not counted, remove the computer from BigFix.

1. Remove the decommissioned computers from the database.
  - Log in to BigFix console. To remove the computers manually, follow the [Removing Computers from the database](#) instruction.
  - To automatically detect, and remove the inactive computers from the database, use the BigFix Administration Tool. For more information, see: [Removing computers with BES Computer Remover](#) and [BES Computer Remover utility](#).
2. Run a data import.

The computer that you removed from the database is no longer listed in the Computers report. The metric reports that are generated for the period before the removal, still list the software that was installed on the computer. The reports that collect the data for the period after the computer was removed, do not include the software that was installed on the computer.

### Automatically decommissioning inactive computers

**9.2.8** Available from 9.2.8. When infrastructure management policy does not allow the deletion of decommissioned BigFix clients in BigFix, you can enable automatic decommissioning of inactive computers directly in BigFix Inventory. By decommissioning the inactive computers you ensure that they do not have negative impact on metric calculation.

 **Important:** To ensure consistency between the BigFix platform and the BigFix applications, it is recommended to manage the entire infrastructure in BigFix. Decommissioning computers in BigFix Inventory is an alternative solution allowed only when decommissioning in BigFix is not possible.

If a computer stops reporting to BigFix, it is considered inactive. Configure BigFix Inventory to automatically decommission computers that are inactive for a specified period.

 **Note:** This solution is not supported on the computers with disconnected scanner. For more information, see: [Decommissioning computers with disconnected scanners \(on page dclxvii\)](#).

1. Log in to BigFix Inventory.
2. Go to **Management > Advanced Server Settings**.
3. To enable the feature, set the `decommission_inactive_computers` parameter to `true`, and click **Save**.
4. To set the inactivity period after which the computers are automatically decommissioned, configure the value of `max_data_visibility_for_inactive_computers` parameter to the required number of days, and click **Save**. By default, the inactivity period is set to 90 days.

The reports display only the data for the period before the date when the computer was decommissioned.

 **Note:** When a decommissioned computer reactivates and starts reporting back to BigFix, the report data is updated.

To disable automatic decommissioning of inactive computers, go to **Advanced Server Settings**, select the `decommission_inactive_computers` parameter, and set it to `False`.

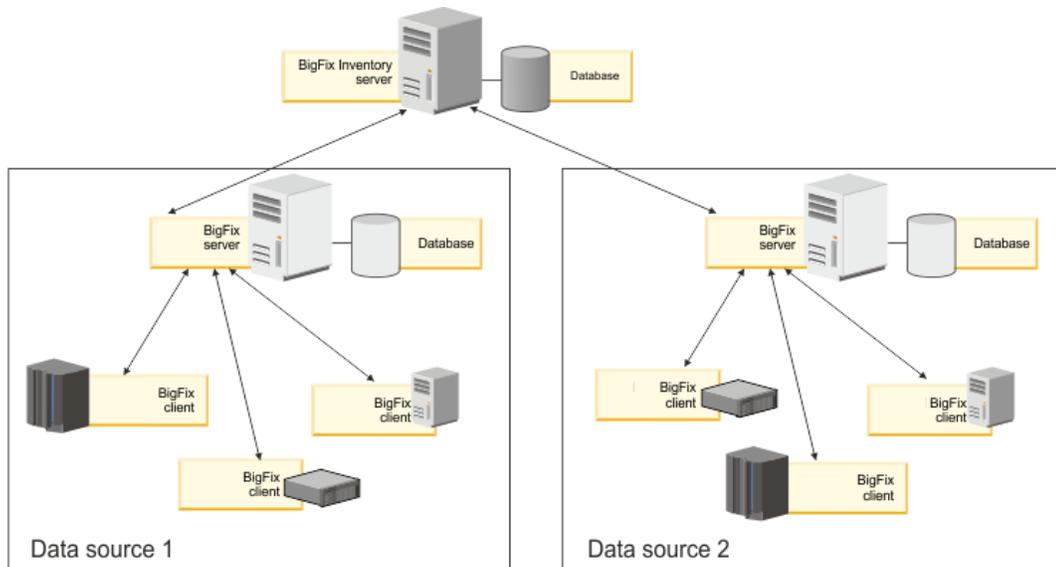
## Managing data sources

Computers in an organization can be divided into organizational units, and can be monitored by multiple BigFix infrastructures. Each infrastructure is referred to as a data source. Data from multiple data sources can be imported to one instance of BigFix Inventory.

### Definition of a data source

A *data source* can be viewed as a BigFix server and the clients that report to that server. Thus, a data source is the infrastructure from which BigFix Inventory imports the scan data. Organizations can define multiple data sources that mirror various types of organizational units such as departments or countries in which the organizations have their branches.

A *disconnected data source* is specific for environments that are monitored by disconnected scanners. It can be defined as a directory on the BigFix Inventory server that provides the scan data during the import. The disconnected data source cannot be the only data source that is set up in BigFix Inventory.



### Hardware requirements

Sum up the number of the BigFix clients that report to BigFix Inventory from all data sources, and ensure that the computer where BigFix Inventory is installed meets the hardware requirements specific to the environment size. You can designate a physical server or virtual machine that is capable of handling large data imports (ETL) and has the capability to process a large amount of data. For more information, see:

- BigFix Inventory [hardware requirements \(on page dx\)](#).
- [Tuning performance \(on page mcdxxxvi\)](#)

### Import of data from multiple data sources

During the import of data to BigFix Inventory, connectivity to all data sources is checked. If any of the data sources is not reachable, the entire import fails. Ensure that all data sources are reachable during the import.

### Adding a data source

To collect data from multiple BigFix infrastructures and report it to a single instance of BigFix Inventory, add multiple data sources to BigFix Inventory.

1. In the top navigation bar, click **Management > Data Sources**, and then click **New**.
2. Provide a unique name for the data source.
3. To automatically enable scans that collect data from the computers in your infrastructure, select **Enable default scan schedule for this data source**.

If you enable the default scan schedule, actions that are needed to collect data from the computers in your infrastructure are automatically started on the BigFix server. This option is advised for environments with up to a few thousand computers. For larger environments, divide the computers into groups, and then manually

set up scan schedule for each group to avoid performance issues. For more information about the default and manual scan schedule, see: [Setting up scans to discover software and hardware inventory \(on page dxcix\)](#).

4. Select the database type.
  - If you choose DB2, specify the host, port, database name, and credentials of the user that can access the BigFix server database. See [Installation accounts \(on page dxii\)](#).
  - If you choose SQL Server, specify the host, database name, and credentials of the user that can access the BigFix server database. See [Installation accounts \(on page dxii\)](#).
  - If you choose Disconnected data source, see: [Adding a disconnected data source. \(on page dcxci\)](#)
5. Provide credentials of the Console Operator that you created while installing BigFix (by default, *IEMAdmin*).
6. **Optional:** If the BigFix and BigFix Inventory servers are in separated networks, the automatic address lookup might return incorrect address. To disable the lookup, select **Disable automatic address lookup**, and specify the address manually. Then, configure additional environment variables on the BigFix Inventory server. For more information, see [Configuring servers in separate networks \(on page dlxxxvi\)](#).
7. **Optional:** You can additionally configure connection between your BigFix Inventory data source and the Web Reports database to allow the Web Reports users to access BigFix Inventory. Specify the database type, host name, database name, and credentials of the Web Reports database user. For more information, see: [Integrating users with Web Reports \(on page mcclxxxiii\)](#).
8. Click **Create**.

## Editing a data source

If you move the BigFix database to a different computer, or change credentials of the Console Operator that is used for connecting with BigFix, edit the parameters to maintain data source connectivity.

1. In the top navigation bar, click **Management > Data Sources**.
2. Click the data source that you want to edit, and change connection parameters.
  - To edit connection parameters to the BigFix database, edit fields in the first column.
  - To edit credentials of the Console Operator that is used for connecting with BigFix, edit fields in the second column.
  - To edit connection parameters to the Web Reports database, edit fields in the last column.
3. During editing, passwords for the BigFix database, Console Operator, and the Web Reports database are cleared. Re-enter the passwords, and click **Save**.

## Deleting a data source

If you no longer want to import data from a particular BigFix infrastructure to BigFix Inventory, remove this data source.

1. In the top navigation bar, click **Management > Data Sources**.
2. Click the data source that you want to delete, and click **Delete**.
3. Run the data import to refresh the reports.

Data for computers that reported to this data source is deleted from BigFix Inventory.



**Note:** It is mandatory to run the data import before you continue to use BigFix Inventory.

## Lowering user permissions for BigFix Platform database access

The permission of database users may be lowered to allow them to access the BigFix Platform database. Users with lower permission than those with permission to configure **BigFix Inventory** Data Source can perform data imports. It might be required due to security policies for database accounts. See [Installation accounts \(on page dxii\)](#).

## Importing software scan data

The inventory results are stored on your BigFix server. To import software scan data, the software catalog and other settings that changed since the last update, you must extract the data from BigFix server and load it into BigFix Inventory.



You must have the Manage Imports permission to perform this task.

The import of data is an Extract, Transform, Load (ETL) process.

- During the Extract stage, data is extracted from the BigFix server. It includes information about the infrastructure, installed clients, and detected software. ETL also checks whether a new software catalog is available, gathers information about the software scan and files that are present on the computers. It also collects data from VM managers.
- During the Transform stage, the extracted data is transformed to a single format that can be loaded to the BigFix Inventory database. This stage also involves matching scan data with the software catalog, calculating processor value units (PVUs), processing the capacity scan, and converting information that is contained in the XML files.
- During the Load stage, the data that was extracted and transformed is loaded into the BigFix Inventory database and can be used by BigFix Inventory.

1. In the navigation bar, click **Management > Data Imports**.
2. To schedule regular imports, select **Enabled**, specify the number of daily imports and their hours, and click **Save**.

### Import Settings

Enabled

Imports per day  *(times specified in UTC +05:30)*

Send failed data and catalog import notifications

Email\*

Separate multiple recipients with a comma.

Language\*

Information about data imports and their status is displayed in the import history.

Import History					
Status	Start Time	User Name	Duration	Download	
✓	12/04/2020 05:31 AM	Scheduled	00:09:07	↓	Start Time: 12/04/2020 05:31 AM Status: Successful Duration: 0:09:07  <b>Import Log</b> The last megabyte of data from the import log:
✓	12/03/2020 05:31 AM	Scheduled	00:07:52	↓	
✓	12/02/2020 05:30 AM	Scheduled	00:09:52	↓	
✓	12/01/2020 05:30 AM	Scheduled	00:08:23	↓	
✗	11/30/2020 01:38 PM	admin	00:00:00	↓	
✓	11/28/2020 08:53 AM	admin	00:36:57	↓	



**Note:** An error may appear during data import. Wait for few seconds or refresh the page to allow the application to get back to its previous state.

```
We're sorry, the application is not accessible. (503)
An import is finalizing. Refresh the page to see the new data.
```

**We're sorry, the application is not accessible. (503)**

An import is finalizing. Refresh the page to see the new data.

If you want to quickly discover recent changes to software inventory without having to wait for the complete data import, you can schedule imports of raw data. Such imports are much quicker but the imported data is not visible in the user interface. It can be retrieved only by using REST API. For more information, see: [Importing raw scan data \(on page dclxxv\)](#).

**9.2.11** If the imports of data are failing, you can enable partial imports. For more information, see: [Enabling partial imports \(on page dclxxvi\)](#).

## Importing raw scan data

**9.2.2** Available from 9.2.2. You can schedule an import of raw scan data. Such an import is much quicker, because it only imports raw scan results, and omits successive steps, such as aggregation and license calculations. The imported raw data, however, is not updated in the user interface, and can only be retrieved by using REST API. This type of import is used to quickly discover recent changes to software inventory without having to wait for the complete data import.

- The Raw Data Only import does not replace the complete data import, which must be run regularly to process and aggregate the data.
- The Raw Data Only import can be run only as a scheduled import. When you click **Import Now**, you always run a complete data import.
- To run the Raw Data Only import only once, use REST API. For more information, see: [Running data imports \(on page mdcxviii\)](#).

1. To enable this feature, go to <https://hostname:port/management/feature>, and select **Enable the Raw Data Only import mode**.
2. In the navigation bar, click **Management > Data Imports**.
3. To schedule regular imports, select **Enabled**, and specify the number of daily imports and their hours.
4. Select **Raw Data Only** next to each import that you want to use for importing raw scan results.

## Import Settings

Enabled

Imports per day  (times specified in UTC +01:00)

06:00AM  Raw Data Only

02:00PM  Raw Data Only

04:00PM  Raw Data Only

5. Click **Save**.

Information about completed data imports is displayed in the import history. Each entry has an icon that indicates the type of the import, either *Complete* or *Raw Data Only*.

Status	Type	Start Time	User Name	Duration	Download
✓		09/08/2015 07:3...	Administrator	1:27:29	
✓		09/08/2015 02:1...	Scheduled	0:00:22	

When the Raw Data Only import finishes, retrieve the imported raw data by using REST API. For more information, see [REST API for retrieving raw scan results \(on page mdcxvii\)](#).

# Software inventory and license utilization

You can classify the discovered software so that reports in BigFix Inventory reflect your entitlements and properly show utilization of license metrics by particular products.

Software components that are installed in your infrastructure are discovered in two ways:

- By software scans that correlate data collected from the computers with the content of the software catalog
- By dedicated fixlets that discover details about specific enterprise applications, and need to be run separately

After the components are discovered, they are assigned to products based on a number of bundling rules. If the initial assignment is not correct, you should adjust it by reassigning components to correct products and metrics, or by excluding products from license calculations. After you complete the classification, you obtain a report that shows what products are installed in your infrastructure, and what is their license metric utilization.

## Disclaimer – Discovery of BigFix Inventory components

Software components packaged and covered by BigFix Inventory license are not discovered separately as they do not require classification. Security updates are guarded by BigFix Inventory development process, which includes security scans for vulnerabilities and customer feedback. During each release, BigFix Inventory addresses a number of vulnerabilities, and related security articles are published on the support page. For security issues not listed in the support pages, information is shared on demand.

## View the license utilization

To see the list of detected components in your infrastructure and usage information on each computer, refer to Software Installation reports. Use view details about software usage statistics and usage of specific software on the listed instances, use Software Summary report. See also, [Available Reports \(on page mlvi\)](#).

This section provides you information about the following:

### [Vendor-specific reports \(on page cmvii\)](#)

Provides vendors of BigFix Inventory customers with a quick access to important statistics across the infrastructure through predefined vendor-specific reports.

### [Reports \(on page mlvi\)](#)

Provides detailed information about the computers in your infrastructure and the software items that are installed on these computers.

### [Reported license metrics \(on page cmxii\)](#)

Lists the supported license metric types and their covered software titles. BigFix Inventory allows you to reuse the metric type for calculating licenses for other software products.

### [Enterprise application inventory \(on page mcxii\)](#)

Lists additional features to detect details of deployment for specific software. It is an extension of standard detection methods to get information about a specific software.

**Software classification (on page cmxliv)**

Provides report for working with software inventory and its assignment to the licenses (products).

**License metrics (on page mcxlii)**

Provides report for license utilization.

**Software catalogs (on page cmxciii)**

Describes the methods to extend provided software catalog with custom entries.

**10.0.15 Collecting Oracle Measurements Data**

Starting from version 10.0.15, BigFix Inventory extends its capability to collect Oracle Java SE measurements data. Since version 10.0.16, BigFix Inventory also collects Oracle Database options and measurements data.

- Hardware Inventory from Operating Systems
- Hardware Inventory from VMware vCenter and VMware ESXi
- Software Inventory for Oracle Java
- **10.0.16** Software Inventory for Oracle Database



**Note:** Sufficient disk space is required to download and process the data. There is an option to change the default working folder. Refer to [Oracle auditing data files path \(on page dccc\)](#) parameter for more information on working folder.

BigFix Inventory produces the Oracle Auditing ZIP package (later called the Oracle ZIP package). You can send the generated package to Oracle.



**Remember:** BigFix Inventory Server and BigFix Endpoints do not send or receive any data from or to Oracle.

From version 10.0.16, the following database versions are supported for automated collection of Oracle Database Inventory Data:

- 11.2
- 12.1
- 12.2
- 18c
- 19c
- 21c

Refer to the sections below for more information on the process and details of collecting the data.

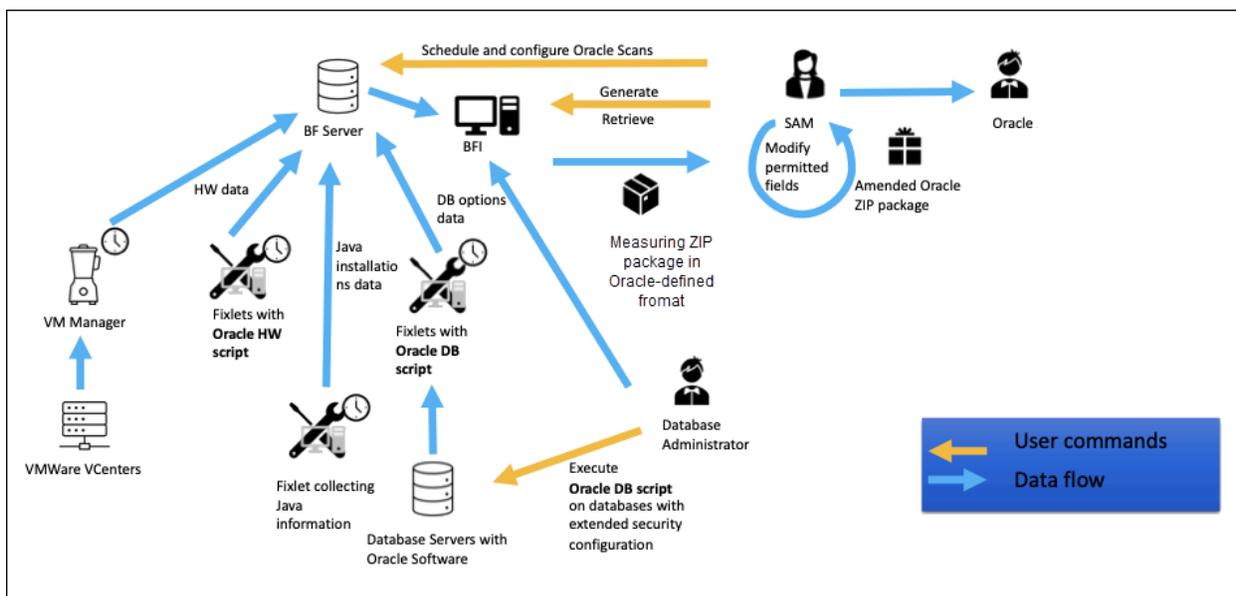
**Collecting the data**

The section provides information on how to perform different tasks to collect data from Oracle.

Below are the steps to collect the Oracle Measurements data:

- Schedule and configure Oracle Scans (on page [cmi](#)).
- Configure VM Managers (on page [cmii](#)).
- Manually collect data from the database (on page [cmii](#)).
- Downloading Oracle ZIP package (on page [cmiv](#)).
- Reviewing Oracle ZIP package (on page [cmv](#)).
- **11.0.0.0** Mask sensitive information in the Oracle ZIP package (on page [cmvi](#)).
- Sending Oracle ZIP package to Oracle if required (on page [cmi](#)).

The below diagram explains the process of collecting data about the hardware, the Java configuration, and the database from the environment, then review the data and deliver the same to Oracle. It also shows the process of manually collecting the database information.



**Note:**

- Oracle Measurements data is collected by BigFix endpoints, and the collection of this data by BigFix Inventory Disconnected Scanners is not supported.
- The Oracle ZIP package is generated for the entire environment, and data separation by computer group is not supported. This functionality is available in the application for users with [Manage Oracle Auditing Data \(on page \[dxciii\]\(#\)\)](#) permission and access to the 'All computers' group.
- To mask sensitive information, contact BigFix Inventory Support.
- Collect Oracle data with the script downloaded from the same version of the fixlet and the BigFix Inventory server. Different versions may be incompatible.

## Schedule Oracle Data collection scans

You can run fixlets to schedule Oracle measurement scans. Use Get Oracle Hardware Auditing Data to collect hardware information for all endpoints with any Oracle software. This task embeds Oracle Measurements script that gathers information such as, operating system, processor, and computer name. By default, Get Oracle Hardware Auditing Data runs only once for the applicable endpoint. Once you perform the task, Oracle Measurements data related to hardware is collected from the endpoints and uploaded to the BigFix server. The data transfer to BigFix Inventory server is triggered only on user demand, not during data imports.

The following are the supported operating systems for versions that are supported by BigFix Inventory as BigFix endpoints:

- Windows (WMI is required)
- Linux
- AIX
- Solaris

To collect Oracle hardware information, run [Collect Detailed Hardware Information fixlet \(on page ccclxxxviii\)](#) for all endpoints with any Oracle database to gather more data required to generate the package. The task by default runs once a week. The data is transferred to BigFix Inventory during the next data import.

To collect Oracle database usage information, run Get Oracle Database Auditing Data fixlet for all endpoints with any Oracle database where the data can be collected automatically. This task embeds Oracle Measurements script that gathers required information, such as database instance information, database edition, features and options. You can run the Get Oracle Database Auditing Data fixlet only once for a selected endpoint. This fixlet is relevant in BigFix Console on all endpoints which has a running process with the name 'oracle' or 'oracle.exe'.

When the fixlet is executed, the endpoint:

- searches all running instances of the Oracle database.
- switches to the database instance owner OS accounts (on Unix platform).
- connects to every discovered oracle database without password by executing the sqlplus / as SYSDBA command.
- identifies all Oracle database containers and switches to them, if applicable.
- executes an Oracle Measurements SQL script that collects Oracle database inventory data.



**Note:** You must collect Oracle data with the same version of the fixlet and the BigFix Inventory server. Different versions may be incompatible. The OS version must be supported by BigFix Inventory as the BigFix endpoint.

**10.0.16** If the endpoint is not able to collect the Oracle database inventory data automatically, you can manually collect it. For more information, refer to [Manually collecting data from the database \(on page cmii\)](#).

## Configuring VM Managers

To configure the VM Manager tool, run the [Configure Collection of Oracle Auditing Data in VM Manager Tool \(on page ccc/xxxiii\)](#) task with the 'Collect Oracle auditing data in VM Manager Tool' option enabled to collect additional data required by Oracle.

Oracle data related to virtualization is collected by the VM Manager tool and uploaded to the BigFix server during the capacity data transfer. The data transfer to BigFix Inventory server is triggered only on user demand, not during data imports.

Once you run the above task, check the results of the 'Oracle Auditing Data Collection Settings' analysis to see if the Oracle Auditing option is enabled and if the minimal VM Manager Tool version is installed. After collecting all Oracle data in BigFix Inventory and verifying results, additional data collection might be disabled. To change the setting, run 'Configure Collection of Oracle Auditing Data in VM Manager Tool' with 'Collect Oracle auditing data in VM Manager Tool' option unselected.



**Note:** Use the latest versions of BigFix Inventory components, tasks and fixlets, including all installed VM Manager tools and related fixlets. For Oracle Measurements, use all installed VM Manager tools with at least one VM Manager of VMware ESX, ESXi or vCenter type must have 'Collection of Oracle Auditing Data' enabled (which is disabled by default).

See also, [Verifying permissions for VMware communication \(on page dccl/xx\)](#).

Perform the below steps to change the setting:

- Run the [Update VM Manager Tool to version xxx \(on page ccc/xciv\)](#) fixlet if the VM Manager tool version is below 10.0.14.0. Use 'VM Manager Information' analysis to check the current version.
- Run the 'Schedule VM Manager Scan Results Upload' task with version at least 10.0.14.0. If an older version is listed, stop the process and start with the new version from BigFix Inventory version 10.

### 10.0.16 Manually collect data from the database

BigFix Endpoints collects the data from the Oracle database automatically without manual intervention by using the 'Get Oracle Database Auditing Data' fixlet. However, in some cases, it is not possible. Below are a few examples when manually collecting database data is not possible:

- Oracle Database account `SYSDBA` is disabled or has restricted access to the database (for example, when Oracle Database Vault feature is in use.)
- On Unix systems, it is disabled to connect locally by a database instance owner to a Oracle database as `SYSDBA` without a password.
- On Windows system, the option to connect locally by a System Admin account to an Oracle database as `SYSDBA` without a password is disabled.
- The database would like to collect the Oracle Database Inventory data is below version 11.2.



**Note:** Make sure that you collect the Oracle data with the script downloaded from the same version of the fixlet and the BigFix Inventory server. Different versions may be incompatible.

In such situations, to manually collect the database data, you can execute the Oracle Measurements SQL script (later called Oracle script) on every applicable database instance and container. To do so, perform the below steps:

1. Download the Oracle script by clicking a link in fixlet 'Get Oracle Database Auditing Data' in the BigFix console.
2. Log in on a computer that has SQL Plus installed and configured for the Oracle database client. You can choose either of the following:
  - a. Log in to every computer on which Oracle databases are installed and connect to every Oracle database instance locally using the SQL Plus database client.
  - b. Use the SQL Plus client to connect remotely to each Oracle database and database container.
3. Use encoding AMERICAN\_AMERICA.AL32UTF8 in SQL Plus by setting the NLS\_LANG variable to AMERICAN\_AMERICA.AL32UTF8 before starting SQL Plus.
  - a. **UNIX** On Unix, use the following command in your shell command:
 

```
NLS_LANG=AMERICAN_AMERICA.AL32UTF8; export NLS_LANG
```
  - b. **Windows** On Windows, use the following command in your cmd command:
 

```
NLS_LANG=AMERICAN_AMERICA.UTF8
```
4. Provide credentials and connection details to the SQL Plus client to log in to Oracle database.
  - a. If a `SYSDBA` account cannot be used (for example, due to database object access restrictions imposed by Oracle Database Vault feature), make sure that you use credentials for a database user that has the appropriate permissions for accessing the database objects. Information about the required permissions is described in the Oracle Script.
5. Execute the SQL script on every database instance and database container.
6. Create an archive that contains all CSV files produced by the Oracle Script. BigFix supports both `ZIP` and `tar gzip` formats. The file should have the \*.zip name extension for ZIP format and \*.tar.gz or \*.tgz for 'tar gzip' format. One archive file can contain files collected from multiple databases and computers.
7. Upload all archived files on BigFix Inventory server into a folder whose location is defined by `oracleAuditingManuallyUploadedFilePath` (on page [dccc!](#)) setting. The default folder location for Windows and Linux is `<installation_dir>/wlp/usr/servers/server1/data/sam/oracleAuditingManuallyUploaded`.

Below are sample instructions on how to manually collect the database data using a local connection to user `SYSDBA`.

If you would use a different database account or collect the data remotely, refer to [Collecting the data](#) (on page [dcccxcix](#)) or contact your Database Administrator.

- Log in to the computer where Oracle Database is installed.
- Switch to an appropriate user:

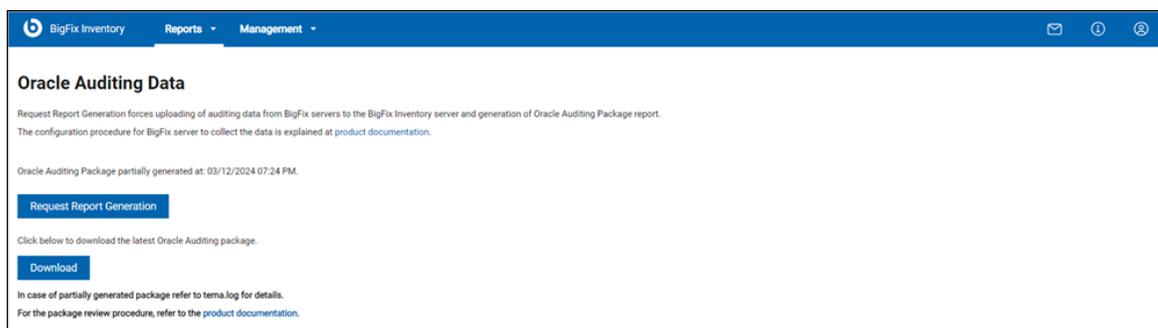
- **UNIX** On Unix, switch to a user who is the owner of an Oracle Database instance.
  - **Windows** On Windows, switch to a user who has permissions to connect to an Oracle Database user as `SYSDBA` without a password.
- Copy the `HCL_db_usage_tracking_queries.sql` SQL script on that computer.
  - Execute the `NLS_LANG=AMERICAN_AMERICA.AL32UTF8; export NLS_LANG` command in your shell session.
  - Log in to the Oracle database using the `sqlplus / as SYSDBA` command. You may change this command to provide the credentials as needed.
  - In the SQL Plus command line, execute the script using the `@./BFI_db_usage_tracking_queries.sql` command.
  - If the database is containerized:
    - Switch to every container using the `ALTER SESSION SET CONTAINER=<<container name>>` command.
    - Execute the auditing script using the `@./BFI_db_usage_tracking_queries.sql` command on each container.

In your database configuration, if the connection without a password is disabled or `SYSDBA` user has limited access to the data (for example, when the Database Vault feature is enabled), you need to modify parameters for starting the SQL Plus tool.

## Downloading Oracle ZIP package

The **Oracle Auditing Data** panel under **Reports > Oracle Auditing Data** shows the collected data that you can download as a single package, is available under Reports/Business Applications menu section.

**!** **Important:** You must have the [Manage Oracle Auditing Data \(on page dxciij\)](#) permission and access to the **All Computers** group to download and access the Oracle ZIP package.



To download Oracle ZIP package data, perform the below steps:

**!** **Important:** You must run a successful data import to download complete and current data. It is recommended not to generate Oracle ZIP package while data import is in progress.

1. To gather Oracle data uploaded to BigFix servers (collected by VM Manager tools, Oracle database scans and Oracle hardware scans), together with an Oracle-specific Java discovery report, click **Request Report Generation** button. Confirm your response in the confirmation box that appears.  
BigFix Inventory does not store previously generated Oracle data reports. A request to generate such a report overwrites the old data.
2. Wait until the generation is finished. The operation may take some time depending on environment (number of endpoints, size of VM Manager data, number of Oracle database instances, count of Oracle Java installations). The status of the task is automatically refreshed once the task is complete, the status changes to *successful*, *partially successful*, or *failed*.
3. To download the generated package, click **Download** button. The button is enabled if the generation task was successful or partially successful.
4. To cancel the generation, click **Cancel** button. Wait until cancellation is finished.
5. To change the folder where downloaded Oracle data is stored, update [oracleAuditingFilesPath](#) (on page [dcccc](#)) setting and restart the BigFix Inventory server.

**Result:** The package is downloaded. Review the package and fill in missing information as required by Oracle.

## Reviewing Oracle ZIP package

After downloading the Oracle ZIP package, review and amend the data as required. Decompress the package and perform the following actions for the data located in the following folders of Oracle ZIP package:

### In the CPUQ folder

Check if there are files for all computers and VMs on which you have installed Oracle Java or Oracle databases. If some computers are missing, make sure that you schedule Get Oracle Hardware Auditing Data on all applicable BigFix endpoints, or deploy new BigFix endpoints and run the fixlet, if necessary. Run data import in BigFix Inventory to collect new computers information.

### In VMware folder

Check if there are files and data for all your vCenter/vCloud servers and VMs. If some data is missing, ensure that VM Managers are configured properly in BigFix Inventory and are in 'OK' state. Also, make sure that BigFix endpoints are in 'OK' state in [Hardware Inventory report](#) (on page [mlxxii](#)). Ensure that you enabled Oracle data collection for the related VM Manager Tools using [Configure Collection of Oracle Auditing Data in VM Manager Tool](#) (on page [ccclxxxiii](#)) fixlet.

### In JAVA folder

Review the Java inventory report for correctness. If some Oracle Java installations are missing, ensure that you deploy BigFix endpoints on all these computers, executed [Initiate Software Scan](#) (on page [ccclxxxiv](#)) and [Upload Software Scan Results](#) (on page [ccclxxxv](#)) fixlets, and that BigFix Inventory data import was successful. Fill in Java licensing information as required by Oracle.

### 10.0.16 In DB folder

Review the database inventory report for accuracy. If some Oracle database installations are missing, ensure that you deployed BigFix endpoints on all these computers, that BigFix Inventory data import was successful, and that you executed the Get Oracle Database Auditing Data fixlet or collected and uploaded the data manually. If the hardware information is incomplete, ensure you run the capacity scan and [Collect Detailed Hardware Information \(on page ccclxxxviii\)](#), followed by a consecutive successful data import.

Fill in database licensing information as required by Oracle.

Section Oracle ZIP package details contains detailed information about files and folders and the values that may need an update. Section [Troubleshooting Oracle data issues \(on page mcccxxx\)](#) provides guidelines in case of a problem with the package.

## Mask sensitive information in the Oracle ZIP package

The ZIP package contains a significant amount of potentially sensitive information gathered across all the nodes where Oracle software is installed. That information includes:

- User names
- Host names, machine IDs, and IP addresses

Oracle requires that all the masked items are traceable that means, for example, that each time the specific host name is masked, the same key is used, so across all the appearances of the specific key, we can track that it refers to one specific host name. This data anonymization will also be non-reversible.

The BigFix Inventory server includes a tool that meets the above requirements.



**Note:** Due to the complexity of the data gathered, the mechanism can miss important pieces. It is strongly advised to review the masked package before sending it outside. If the gap is beyond a manual fix, contact BigFix support.

To run the tool, a user requires root access to the BFI Server filesystem. Scripts are located as:

```
Windows Windows:\Program Files\BigFix Enterprise\BFI\wlp\bin\
```

```
Linux Linux: /opt/BFI/wlp/bin/
```

Example usage:

```
bfiUtility.bat maskOracleAuditingData --inputFile="INPUT_PATH" --outputFile="OUTPUT_PATH"
```

Instead of **INPUT\_PATH**, put the full path of the file to be processed. The file will not be changed during the processing. Instead of **OUTPUT\_PATH**, put the full path of the output file. The file will be overwritten.

## Sending Oracle ZIP package to Oracle if required

BigFix Inventory does not upload or download any data from Oracle. If Oracle requests the data, contact your Oracle representative for information on how to send the Oracle ZIP package to Oracle.

### Considerations on Oracle Java Software data collection

While discovering Oracle Java installations, BigFix Inventory relies on information in the 'release' file that is part of Oracle Java. BigFix Inventory does not execute Oracle Java main executable (`java.exe` or `java`) to get information about Oracle Java detailed version information. Instead, the java version is collected from the contents of the 'release' file. This is done because running java executables in your environment may pose a security risk and should be done in a controlled way taking into consideration the specifics of your environment.

In some specific cases, the release file may not contain detailed Oracle Java Detailed Version information. In such cases, this information is collected only by executing the main java executable ('`java.exe -version`' or '`java -version`' commands). Therefore, Oracle might ask you to run that command on some Oracle Java installations, and you may use BigFix function (create a fixlet) to run that command for some of your Oracle Java installations, depending on the specifics of your environment.

## Vendor-specific predefined reports available in dashboard Inventory Reports

**10.0.2** Vendor-specific predefined reports available in dashboard Inventory Reports provide software discovery and licensing information for specific software vendors of BigFix Inventory customers. These reports help Software Asset Managers manage software for their vendors and prepare for contract negotiations and license audits. To view the reports, click on a vendor in the vendor-specific dashboard.

**10.0.16** The new dashboard is also called Inventory Reports.

These reports available through BigFix Inventory dashboard shows reports for the below vendors:

- Adobe
- HCL
- IBM
- Microsoft
- Oracle
- SAP
- VMware

Below mentioned are some of the dedicated reports for specific software:

- Adobe Cloud Software
- Microsoft Office 365
- **10.0.12** Microsoft SQL Server Inventory

- **10.0.12** Microsoft SQL Server Contracts
- **10.0.12** Microsoft Windows Server Inventory
- **10.0.12** Microsoft Windows Server Contracts
- Oracle Database
- Oracle Java
- Oracle Weblogic
- SAP ERP

**Note:**

- Contract reports - Contract reports are used for easier contract management.
- Inventory reports - Inventory reports help in contract management, license optimization and give insight into the environment.

**10.0.12 Default columns in vendor-specific reports**

Following are the default columns in vendor-specific reports:

- Name
- Base Name
- Your Next Scheduled Export

You can select other columns from the **Configure** option.

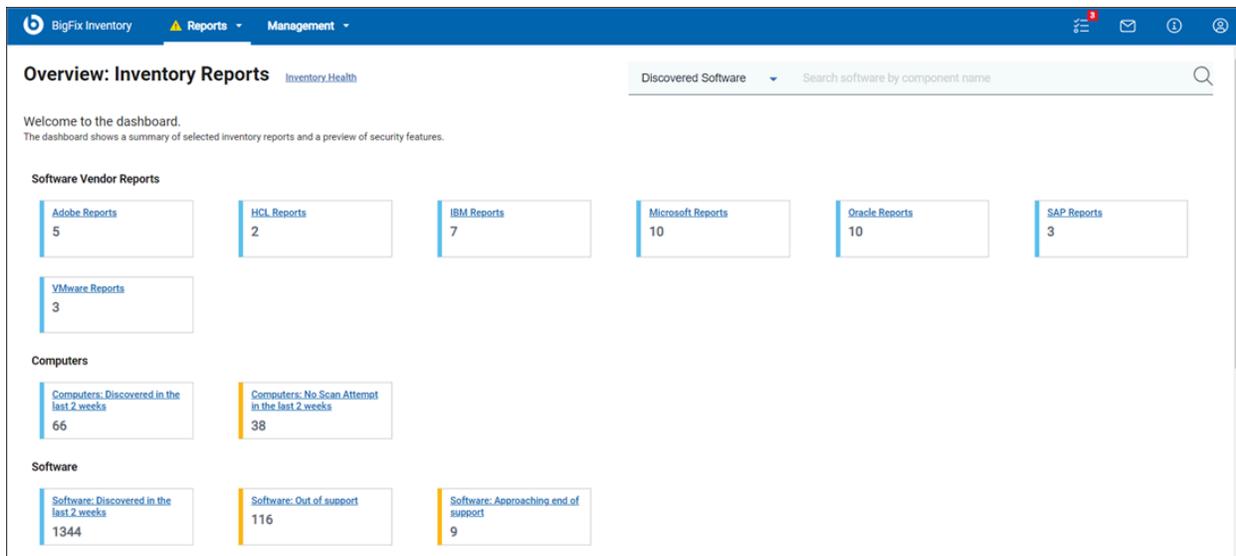


**Note:** BigFix Inventory provides reports and data for other vendors as well. Such information can be accessed under generic reports. See also, [Reports \(on page mlvi\)](#).

For more information on predefined vendor-specific reports, refer to [List of vendor-specific predefined reports \(Inventory Reports\) \(on page cmviii\)](#)

## List of vendor-specific predefined reports (Inventory Reports)

**10.0.2** Vendor-specific predefined reports, also known as Inventory Reports are ready-to-use reports that show the inventory and license utilization details of a selected vendor or product. The reports are shown within widgets and each widget includes a summarized dataset for the vendors.



## Prerequisites to access reports

Access to vendor-specific reports is based on the access rules. For more information on access rules, see [Roles and permissions](#).

## List of available vendor-specific reports

### • Adobe Reports

- Adobe Cloud Software Inventory
- Adobe Cloud Software Measured License
- Adobe Cloud Software Users
- Adobe Inventory Summary
- Adobe Measured License

These reports help you understand discovery and license utilization of Adobe products, such as Adobe CC suite and Adobe DC, including Adobe CC suite user-based license utilization.

### • HCL Reports

- HCL Inventory
- HCL Summary

These reports help you understand discovery and license utilization of HCL products.

### • IBM Reports

- IBM PVU Sub-capacity
- IBM FlexPoints and Cloud Paks
- All IBM Metrics
- IBM Software Only
- First Detected Last Week - IBM Software
- IBM Software - Pending Classification

These reports help you understand discovery and license utilization of IBM products and provide information about IBM approved audits. You can also use the IBM PVU and RVU MAPC consumption under full and subcapacity licensing terms to understand current license consumption and predict the future license requirements.

#### • Microsoft Reports

- Microsoft Office Usage per Computer
- Microsoft Measured License
- Microsoft SQL Server Inventory
- **10.0.12** Microsoft SQL Server Contracts
- Microsoft SQL Server Measured License



**Note:** **10.0.12** This report has been replaced by **Microsoft SQL Server Contracts**.

- Microsoft Office 365 Inventory
- Microsoft Office 365 Measured License
- Microsoft Office 365 Software Users
- **10.0.12** Microsoft Windows Server Inventory
- **10.0.12** Microsoft Windows Server Contracts

These reports help you understand discovery and license utilization of Microsoft products, such as Microsoft SQL server processor core licensing and Microsoft Office 365 user-based licensing. The reports allow discovery of Microsoft products through which you can manually gather CAL licensing information.

- Microsoft Windows Server Inventory - This report shows data for all Windows Server programs in all groups.
- Microsoft SQL Server Contracts - This report shows all the existing contracts with Microsoft SQL Server for all groups. The columns shown remain same as shown in All Contracts. You can filter the report by product and Microsoft SQL Server Virtual Cores and Microsoft SQL Server Physical Cores' metrics.

In future it will be filtered by product name.

**Note:** This report is created in exchange for Microsoft SQL Server Measured License (All Metrics).

- Microsoft Windows Server Contracts - This report shows all the existing contracts with Microsoft Windows Server for all groups. You can filter the report by product name (Software Product Name) and publisher name.

#### • Oracle Reports

- Oracle Measured License
- Oracle Database
- Oracle Database Measured License
- Oracle Java Measured Inventory
- Oracle Java Inventory

- Oracle Database Inventory
- Oracle WebLogic Inventory

These reports help you understand discovery and license utilization of Oracle products, such as Oracle Processor licensing for Oracle Database, Oracle Java and Oracle WebLogic products.

#### • SAP Reports

- SAP Inventory
- SAP Measured Licenses
- SAP Inventory Summary

These reports help you understand discovery and license utilization of SAP products, such as SAP R/3 and SAP S4/HANA.

#### • VMware Reports

- VMware Inventory
- VMware Measured License
- VMware Inventory Summary

These reports help you understand discovery and license utilization of VMware products, such as processor-based VMware licensing.

## Report types

All vendor-specific predefined reports follow a naming convention according to their features and purpose. You may follow the naming convention to create reports. The reports are listed according to their naming convention.

- Reports name ending with **Inventory** provide details about the inventory of a software with supporting discovery data to help [Software Asset Management \(SAM\)](#) understand of title license utilization. For more information on inventory reports, refer to [Software Classification \(on page mlx\)](#).
- Reports name ending with **Measured License** provide information about license measured by BigFix Inventory. For more information on measured license reports, refer to [All Metrics \(on page mlxv\)](#).
- Reports name ending with **Summary** provide discovery summary for a specific software vendor. For more information on software summary reports, refer to [Software Summary \(on page mlvii\)](#).

For some software titles, BigFix Inventory provides additional reports specific to them:

- **Oracle Java Usage per Computer** to help SAMs to discover computers that have installed Oracle Java instances that are never used. This data helps to optimize license by uninstalling Java instances that have not been used.
- **Microsoft Office 365 Software Users** and **Adobe Cloud Software Users** provide information about users who use this software.
- **Oracle Databases** provide additional discovery details about Oracle database product.



**Note:** IBM-specific reports follow the same naming convention as in IBM License Metric Tool.

For more information about how to use the functions of predefined reports and for the complete list of the reports, refer to [Available reports](#). For more information about different vendor reports, see also [Reported license metrics](#)

## Reported license metrics

BigFix Inventory reports utilization for a number of license metrics for IBM and non-IBM products. It also shows products that are assigned any BigFix metric even if calculating utilization is not yet supported for this metric. It gives you an overview of all IBM metrics for which you should have licenses.

### Metrics for which utilization is calculated

License metric utilization is calculated for products that are assigned to one of the metrics that are listed in the following table. Their utilization is shown on the All Metrics report. For more information, see: [License metric utilization \(on page mcxlii\)](#).

For every of these metrics, BigFix Inventory calculates the so-called high-water mark. For more information, see: [High-water mark \(on page cccxciv\)](#).

To learn about custom metric requirements of all the All Metrics panel, refer to the conditions mentioned [here \(on page mcxlv\)](#).

**Table 158. Metrics for which utilization is calculated**

Vendor	Product	Metric	Description
IBM	<ul style="list-style-type: none"> <li>IBM products that are sold as part of FlexPoint bundles</li> </ul>	<b>9.2.13</b> FlexPoint	PVU and RVU software that is assigned to a FlexPoint bundle, must be licensed based on subcapacity rules. For more information, see: <a href="#">IBM FlexPoints (on page cmxvi)</a> .
		<b>9.2.7</b> Install Instances	A unit of measure that is based on the number of installed instances regardless of whether the instances are installed on one or many computers. For example, when three instances of a product are installed on one computer, the metric quantity is 3.
	Processor Value Unit (PVU)	For more information, see: <a href="#">IBM Processor value unit (PVU) (on page cmxxx)</a> .	

Table 158. Metrics for which utilization is calculated (continued)

Vendor	Product	Metric	Description
		Resource Value Unit (RVU MAPC)	For more information, see: <a href="#">IBM Resource value unit (RVU MAPC) (on page cmxxxix)</a> .
		<b>9.2.11</b> Virtual Processor Core (VPC)	For more information, see: <a href="#">IBM Virtual processor core (VPC) (on page cmxli)</a> .
	Selected IBM Products	Other IBM metrics	For more information, see: Other IBM metrics.
SAP	<ul style="list-style-type: none"> <li>SAP-ABAP based products</li> </ul>	Engines, Users	<p>For more information, see: <a href="#">Discovering and measuring SAP (on page mcxxviii)</a> and <a href="#">Raw utilization of license metrics (on page mclxix)</a>.</p> <p> <b>Note:</b> Information about SAP metrics is shown only on the Resource Utilization report.</p>
Oracle	<ul style="list-style-type: none"> <li>All discoverable versions of Oracle Database (Enterprise Edition)</li> </ul>	<b>9.2.8</b> Oracle Processor Core	For more information, see: <a href="#">Oracle Processor Core (on page cmxxvi)</a> .
		Oracle Concurrent Sessions, Oracle User Sessions	For more information, see: <a href="#">Extended discovery of Oracle Database (on page mcxiii)</a> and <a href="#">Raw utilization of license metrics (on page mclxix)</a> .
	<ul style="list-style-type: none"> <li>Programs discovered by BigFix Inventory and based on the Instal Seats metric</li> </ul>	<b>9.2.5</b> Install Seats	A unit of measure that is based on the number of computers on which the software is installed. For example, when three instances of a product are installed on one computer, the metric quantity is 1.

**Table 158. Metrics for which utilization is calculated (continued)**

Vendor	Product	Metric	Description
Microsoft	<ul style="list-style-type: none"> <li>• Windows Server 2016 Datacenter</li> <li>• Windows Server 2019 Datacenter</li> <li>• Windows Server 2022 Datacenter</li> </ul>	Microsoft Windows Server Physical Processor Core (default metric for the products)	<p>These metrics are used for Microsoft Processor Core licenses. For more information, refer to <a href="#">Managing Microsoft Processor Core licenses (on page mclxxiii)</a>.</p> <p> <b>Note:</b> It is recommended to use these metrics with BigFix Inventory version 10.0.14.</p>
	<ul style="list-style-type: none"> <li>• Windows Server 2016 Standard</li> <li>• Windows Server 2019 Standard</li> <li>• Windows Server 2022 Standard</li> </ul>	Microsoft Windows Server Standard Physical Processor Core (default metric for the products)	
	<ul style="list-style-type: none"> <li>• Microsoft SQL Server Standard Edition</li> <li>• Microsoft SQL Server Enterprise Edition</li> </ul>	Microsoft SQL Server Physical Processor Cores (default metric for the products)	
	<ul style="list-style-type: none"> <li>• Windows Server 2008 R2 Datacenter</li> </ul>	<b>9.2.8</b> Microsoft Single Physical Processor	For more information, see: <a href="#">Microsoft Single and Dual Physical Processor (on page cmxix)</a> .
	<ul style="list-style-type: none"> <li>• Windows Server 2012 Datacenter</li> <li>• Windows Server 2012 R2 Datacenter</li> </ul>	<b>9.2.8</b> Microsoft Dual Physical Processor	
	<ul style="list-style-type: none"> <li>• Microsoft SQL Server Standard Edition</li> <li>• Microsoft SQL Server Enterprise Edition</li> </ul>	<b>10.0.11</b> Microsoft SQL Server Physical Processor Core	For more information, see <a href="#">10.0.12 Managing Microsoft Processor Core licenses (on page mclxxiii)</a> .

Table 158. Metrics for which utilization is calculated (continued)

Vendor	Product	Metric	Description
	<ul style="list-style-type: none"> <li>Microsoft SQL Server Standard Edition</li> <li>Microsoft SQL Server Enterprise Edition</li> </ul>	<p><b>10.0.12</b></p> <p>Microsoft SQL Server Virtual Processor Core</p>	<p>For more information, see <a href="#">10.0.12 Managing Microsoft Processor Core licenses (on page mclxxiii)</a>.</p>
	<ul style="list-style-type: none"> <li>Microsoft SQL Server 2012, 2014, and 2016 (Standard and Enterprise)</li> </ul>	<p>&lt;deprecat- ed&gt; <b>9.2.7</b> Mi- crosoft Physical Core with SA</p>	<p>For more information, see: &lt;deprecat- ed&gt; <a href="#">Microsoft Physical Core with SA (on page cmxx)</a>.</p> <p> <b>Notice:</b> The metric has been deprecated.</p>
	<ul style="list-style-type: none"> <li>Microsoft SQL Server 2012, 2014, and 2016 (Standard and Enterprise).</li> </ul>	<p>&lt;deprecat- ed&gt; <b>9.2.7</b> Mi- crosoft Virtual Core with SA</p>	<p>For more information, see: &lt;deprecat- ed&gt; <a href="#">Microsoft Virtual Core with SA (on page cmxxiv)</a>.</p> <p> <b>Notice:</b> The metric has been deprecated.</p>
	<ul style="list-style-type: none"> <li>Microsoft Office 365</li> </ul>	<p><b>9.2.13</b> Regis- tered User</p>	<p>For more information, see: <a href="#">Registered User (on page cmxxxvi)</a>.</p>
	<ul style="list-style-type: none"> <li>Programs discovered by BigFix Inventory and based on the Instal Seats metric</li> </ul>	<p><b>9.2.5</b> Install Seats</p>	<p>A unit of measure that is based on the number of computers on which the software is installed. For example, when three instances of a product are installed on one computer, the metric quantity is 1.</p>
VMware	<ul style="list-style-type: none"> <li>vSphere</li> <li>vCenter</li> </ul>	<p><b>9.2.7</b> VMware sockets</p>	<p>For more information, see: <a href="#">Measuring license metric utilization of VMware products (on page mcxxiv)</a> and <a href="#">Raw utilization of license metrics (on page mclxix)</a>.</p> <p> <b>Note:</b> Information about VMware metrics is shown only</p>

**Table 158. Metrics for which utilization is calculated (continued)**

Vendor	Product	Metric	Description
			 on the Resource Utilization report.
	<ul style="list-style-type: none"> <li>• Programs discovered by BigFix Inventory and based on the Instal Seats metric</li> </ul>	<b>9.2.5</b> Install Seats	A unit of measure that is based on the number of computers on which the software is installed. For example, when three instances of a product are installed on one computer, the metric quantity is 1.
Adobe	<ul style="list-style-type: none"> <li>• Adobe Illustrator CC</li> <li>• Adobe PhotoShop CC</li> <li>• Adobe InDesign CC</li> <li>• Adobe Premiere Pro CC</li> <li>• Adobe After Effects CC</li> <li>• Adobe Dreamweaver CC</li> <li>• Adobe Muse CC</li> </ul>	<b>9.2.13</b> Registered User	For more information, see: <a href="#">Registered User (on page cmxxxvi)</a> .
	<ul style="list-style-type: none"> <li>• Programs discovered by BigFix Inventory and based on the Instal Seats metric</li> </ul>	<b>9.2.5</b> Install Seats	A unit of measure that is based on the number of computers on which the software is installed. For example, when three instances of a product are installed on one computer, the metric quantity is 1.
Other	<ul style="list-style-type: none"> <li>• Non-IBM products that use this metric.</li> <li>• Non-IBM products that are discovered by SWID tags and for which the software catalog does not define license details.</li> </ul>	<b>9.2.5</b> Install Seats	A unit of measure that is based on the number of computers on which the software is installed. For example, when three instances of a product are installed on one computer, the metric quantity is 1.

## IBM FlexPoints

**9.2.13** Available from 9.2.13. IBM FlexPoint is a license metric unit that can be used to determine the cost of IBM products that are purchased as part of FlexPoint bundles. Each product from a bundle is licensed based on a different license metric but all metrics are converted into FlexPoints. The conversion is based on the specific

calculations. PVU and RVU software that is assigned to a FlexPoint bundle, must be licensed based on subcapacity rules. Products that are currently available as part of FlexPoint bundles are products from the IBM Cloud and IBM Analytics brands.

## Predicting the number of required IBM FlexPoints

To predict the number of FlexPoints that are required to license products in your environment, you can use [IBM FlexPoint Calculator](#). For each product that you are planning to deploy as part of a FlexPoint bundle, specify the number of license metric units. The numbers are then converted into FlexPoints and summed up.

### Example

The following example describes how the number of FlexPoints that are used in your environment is counted by BigFix Inventory BigFix Inventory. The calculations are based on sample values and should be treated only as an example.

You purchased the IBM Cloud DevOps offering and you deployed three products from this offering: UrbanCode Deploy Server Agent, Rational Test Workbench, and Rational Test Virtualization Server. Each of the products is licensed based on a different license metric as presented in [Table 159: IBM FlexPoints needed to license products deployed as part of the IBM Cloud DevOps offering \(on page cmxvii\)](#). To calculate the number of IBM FlexPoints that are used by these products, BigFix Inventory multiplies the number of license metric units that each product uses by the number of IBM FlexPoints that are assigned per metric unit for that product. Results for each product are then summed up to obtain the number of IBM FlexPoints used by the entire IBM FlexPoint bundle.

**Table 159. IBM FlexPoints needed to license products deployed as part of the IBM Cloud DevOps offering**

*The table consists of four columns and five rows. In the fifth row, the first three columns are joined.*

Product	Used license metrics	IBM FlexPoints per license metric unit	Calculations
UrbanCode Deploy Server Agent	2 Virtual Servers	129,800	2 x 129,800 = 259,600
Rational Test Workbench	50 Authorized Users	15,950	50 x 15,950 = 797,500
Rational Test Virtualization Server	210 PVUs	2,893	210 x 2,893 = 607,530
<b>Total FlexPoints Used</b>			<b>1,664,630</b>

## Reading metric utilization

### Information about IBM FlexPoint bundles

You can view information about IBM FlexPoint bundles on the IBM FlexPoints and IBM Cloud Paks report. The report lists the IBM FlexPoint bundles based on the decisions that you make during software classification. The metric

quantity represents the license metric utilization for an entire bundle over the specified period of time expressed in IBM FlexPoints.

Product Name	Metric	Metric Quantity	Metric Quantity History	
			12/04/2019	03/03/2020
Cloud DevOps - Perpetual	FlexPoints	136,400 		

### Information about the products that contribute to IBM FlexPoint bundles

To view the detailed report with license metric utilization for individual products that are parts of a bundle, go to the Cloud Pak or FlexPoint Bundle report, and click the FlexPoint bundle name in the Product Name column. The detailed information include the peak date of the entire FlexPoint bundle and the number of FlexPoints used by each individual product. Additionally, you can check the number of original metric units by which the products are licensed that are used over the reporting period.



**Note:** **9.2.16** You can change the metric quantity for the products that contribute to the bundle. Once you set the declared metric quantity for a product that is a part of a FlexPoint bundle, the number of the FlexPoints for the entire bundle is automatically adjusted. For more information, see: [Setting and removing the declared metric quantity \(on page cmxxxviii\)](#).

Product Name	Metric	Metric Quantity	Peak Date	Bundle Metric Contri...	Metric Quantity History	
					12/04/2019	03/03/2020
<a href="#">IBM Rational ClearCase</a>	Floating User	20 	03/03/2020	136,400		
<a href="#">IBM Rational ClearQuest</a>	Authorized User	1 	03/03/2020	2,673		

### Information about FlexPoints in audit snapshot

**9.2.16**

When you generate the audit snapshot, information about FlexPoint bundles and the number of FlexPoints that they use is contained in the `flexpoints.csv` file. The file additionally contains information about the software products within the bundle and the number of FlexPoints used by them.

**Table 160. A fragment of the `flexpoints.csv` file**

Row No.	Publisher	Product Name	FlexPoint or Cloud Pak Bundle	Metric	Metric Quantity	Peak Date	Bundle Metric Contribution	Imported Part Numbers	Recalculation Needed
1	IBM	Cloud DevOps - Perpetual	None	FlexPoint	139,073	06/14/2019			No

Table 160. A fragment of the `flexpoints.csv` file (continued)

Row No.	Publisher	Product Name	FlexPoint or Cloud Pak Bundle	Metric	Metric Quantity	Peak Date	Bundle Metric Contribution	Imported Part Numbers	Recalculation Needed
2	IBM	IBM Rational ClearCase	Cloud DevOps - Perpetual	Floating User	20	06/14/2019	136,400		No
3	IBM	IBM Rational ClearQuest	Cloud DevOps - Perpetual	Authorized User	1	06/14/2019	2,673		No

Related information

[High-water mark \(on page cccxciv\)](#)

## Microsoft Single and Dual Physical Processor

**9.2.8** Available from 9.2.8. Microsoft Single Physical Processor and Dual Physical Processor metrics are used to determine the licensing cost of Microsoft products. They are based on the number of active physical processors that are deployed on the host where the software is installed. When the software is installed on multiple hosts, all active processors from all hosts contribute to metric utilization.

Microsoft Single Physical Processor metric covers one physical processor. Microsoft Dual Physical Processor license covers up to two physical processors. BigFix Inventory reports the number of processors, not licenses. Thus, the number of processors is rounded up to an even number.

By default, calculation of both metrics takes into account data from the last 90 days because Microsoft licensing rules do not allow for license migration more often than once per 90 days. To change the period for which data is calculated, go to **Management > Advanced Server Settings** and change the value of the `historical_period_for_microsoft_metrics` parameter according to your needs.

### Supported software

- Reporting of the Microsoft Single Physical Processor metric is supported for Windows Server 2008 R2 Datacenter.
- Reporting of the Microsoft Dual Physical Processor metric is supported for Windows Server 2012 Datacenter or Windows Server 2012 R2 Datacenter.

## Requirements

VM managers should be defined for all virtual machines in your environment. If a VM manager is not defined for a particular host, the number of processors on the host is counted as 0. As a result, license utilization might be underestimated. If a component of a product with any of the two metrics is detected on a host for which a VM manager is not defined, a warning sign (🚩) is displayed on the All Metrics report. It indicates calculation inaccuracy.



**Note:** The warning is displayed only on the user interface. It is not displayed in the CSV or PDF version of the All Metrics report.

## Limitations

When a computer on which the software was discovered is deleted, report columns related to server capacity show `<no data>` in the user interface. Information about computers that contributed to the metric peak value is available in the audit snapshot regardless of whether these computers were removed.

## Examples

### Example 1: Software is deployed on two physical computers

Microsoft Windows Server 2012 Datacenter is installed on 2 physical computers, each with 4 processors. Metric utilization equals 8.

### Example 2: Software is deployed on a virtual machine that was migrated between hosts

Microsoft Windows Server 2012 Datacenter is installed on a virtual machine that runs on a host with 2 processors. Within a period of 90 days from the software discovery, the virtual machine is migrated to another host that also has 2 processors. The number of processors from the two hosts is added. Metric utilization equals 4.

**Table 161. Utilization of the Dual Physical Processor metric for a virtual machine that was migrated**

	Host 1	Host 2
Physical processors	2	2
Metric utilization	4	

Related information

[High-water mark \(on page cccxciv\)](#)

## <deprecated> Microsoft Physical Core with SA

**9.2.6** Available from 9.2.6. The Microsoft Physical Core with SA metric is used to determine the licensing cost of Microsoft products. It is based on the number of physical cores that are deployed on the host where the software

is installed. When the software is installed on multiple hosts, all cores from all hosts contribute to metric utilization. Because this license type is based on physical cores, the same number of cores is assigned regardless of whether the software is installed on a physical host or on a virtual machine.

 **Notice:** The metric has been deprecated.

Depending on the processor type, Microsoft requires that an appropriate core factor is applied to calculate the number of required licenses. The number of cores that is reported by BigFix Inventory represents the actual number of physical cores without any core factor applied. The minimal number of licensable cores is four per physical processor. It means that each processor on a host with one or two cores is assigned four cores.

## Supported software

Reporting of the metric is supported for Microsoft SQL Server 2012, 2014, and 2016 (Standard and Enterprise).

## Requirements

To report the number of physical cores for the discovered Microsoft software, the licensed software must have Software Assurance.

Additionally, VM managers should be defined for all virtual machines in your environment. If a VM manager is not defined for a particular host, the number of cores on the host is counted as 0. As a result, license utilization might be underestimated. If a component of a product with the Microsoft Physical Core with SA metric is detected on a host for which a VM manager is not defined, a warning sign (⚠️) is displayed on the All Metrics report. It indicates calculation inaccuracy.

 **Note:** The warning is displayed only on the user interface. It is not displayed in the CSV or PDF version of the All Metrics report.

## Limitations

When a computer on which the software was discovered is deleted, report columns related to server capacity show `<no data>` in the user interface. Information about computers that contributed to the metric peak value is available in the audit snapshot regardless of whether these computers were removed.

## Examples

The following examples describe how the number of required licenses is calculated. They are based on sample data.

### Example 1: Software is deployed on a physical server

Microsoft SQL Server 2014 Enterprise is installed on a physical computer with four dual-core processors. According to the licensing terms, each dual-core processor is assigned four cores which gives 16 cores in total. Metric utilization for Microsoft SQL Server is 16.

**Table 162. Metric utilization for software in a physical environment**

	Host 1
Physical processors on the host	4
Physical cores on the host	8
Core licenses needed	16

**Example 2: Software is deployed on two virtual machines**

Microsoft SQL Server 2014 Enterprise is installed on two virtual machines that run on a host with 10-core processor. The cores are shared by the virtual machines. The number of virtual cores that are assigned to a virtual machine is ignored and BigFix Inventory reports the total number of physical cores on the host. Metric utilization for Microsoft SQL Server is 10.

**Table 163. Metric utilization for software in a virtual environment**

	Virtual Machine 1	Virtual Machine 2
Virtual cores	8	16
Physical cores on the host	10	10
Physical processors on the host	1	
Core licenses needed	10	

**Example 3: Software is deployed on two virtual machines that were migrated between hosts**

Microsoft SQL Server 2014 Enterprise is installed on two virtual machines that run on a host with 10-core processor. Both virtual machines are migrated on the same day to a host with a 12-core processor. Metric utilization is checked once per day at midnight (GMT). Taking advantage of License Mobility, all licenses from Host 1 are reassigned to Host 2. Metric utilization for Microsoft SQL Server is 10 for the period before the migration, and 12 starting from the day of the migration.

**Example 4: Software instance uses a different license metric**

Two instances of Microsoft SQL Server 2014 Enterprise are discovered. The first instance uses the Microsoft Physical Core with SA metric. The second instance uses a different metric, for example Microsoft Virtual Core with SA. To ensure that only the first instance contributes to the calculation of the Microsoft Physical Core with SA metric, reassign the second instance to the proper metric. If the metric is not available in the software catalog, exclude the instance from pricing calculations. For more information, see: [Assigning components to products \(on page cmlxxix\)](#), and [Excluding and suppressing software instances \(on page cmlxxxi\)](#).

**Example 5: Two software instances use the same metric and are installed on the same server**

Microsoft SQL Server 2012 Enterprise and Microsoft SQL Server 2014 Enterprise are discovered on one server. Both instances use the Microsoft Physical Core with SA metric. Metric utilization is counted once for this server regardless of the number of installed instances.

## Reading metric utilization

The first level of the All Metrics report shows a product and its metric quantity, which is the highest number of metric units that the product used during the specified period. The warning sign (⚠️) indicates that the VM manager is not defined for at least one of the hosts on which the product is installed.

Publisher	Product Name	Metric	Metric Quantity	Metric Quantity History		
				11/16/2016	-	02/14/2017
Microsoft	Microsoft SQL Server Enterprise E...	Microsoft Physical Core with SA	44			

When you click the product name, the second level of the report shows all instances of product components that contributed to the metric quantity, including historical instances that are no longer installed. The value in the Server Cores column shows the number of physical cores on the host. For hosts without VM managers defined, the column shows the number of virtual cores. Thus, it is skipped in the calculation of the overall metric quantity.

Component Name	Version	Product Name	Metric	Excluded	Comput...	Status	Server ID	Server C...	Server A...	Details
Microsoft Windows Server 2...	6.1	Microsoft SQL Server Enterpr...	Microsoft P...	No	NC040202	OK	IBM NC14...	12		2 <a href="#">DETAILS &gt;</a>
Java Support	5.2	Microsoft SQL Server Enterpr...	Microsoft P...	No	NC0472...	OK	IBM 9117 ...	32		4 <a href="#">DETAILS &gt;</a>
Microsoft SQL Server 2012 f...	2012.0	Microsoft SQL Server Enterpr...	Microsoft P...	No	NC9143...	No VM ...	TLM_VM_...	1		1 <a href="#">DETAILS &gt;</a>

The fact that the value is skipped is reflected in the Core Metric column in the `microsoft_physical_core_with_sa.csv` file which is a part of the audit snapshot. Additionally, information about incomplete virtualization technology is provided in the Comment column.

**Table 164. A fragment of the `microsoft_physical_core_with_sa.csv` file**

Publisher	Product Name	Metric Quantity	Server Cores	Core Metric	Comment
Microsoft	Microsoft SQL Server Enterprise Edition	44	12	12	
Microsoft	Microsoft SQL Server Enterprise Edition	44	32	32	
Microsoft	Microsoft SQL Server Enterprise Edition	44	0	0	Incomplete virtualization hierarchy

Related information

[High-water mark \(on page cccxciv\)](#)

## <deprecated> Microsoft Virtual Core with SA

**9.2.7** Available from 9.2.7. The Microsoft Virtual Core with SA metric is used to determine the licensing cost of Microsoft products that have Software Assurance. It is based on the number of virtual cores that are available to the product. When the product is installed on multiple virtual machines, virtual cores from all machines contribute to metric utilization.



**Notice:** The metric has been deprecated.

The number of virtual cores can be greater than the number of physical cores that are available on the hosts. The minimal number of licensable cores is four. It means that when a virtual machine is assigned one or two cores, four cores are reported. If the number of cores is not a multiple of 2, it is rounded up.

### Supported software

Reporting of the metric is supported for Microsoft SQL Server 2012, 2014, and 2016 (Standard and Enterprise).

### Requirements

To report the number of virtual cores for the discovered Microsoft software, the licensed software must have Software Assurance.

### Limitations

Reporting of the metric has the following limitations:

- By default, the supported products are assigned to the Microsoft Physical Core with SA metric. To calculate utilization of the virtual core based metric, reassign the products to this metric. For more information, see: [Assigning components to products \(on page cm/xxix\)](#).
- BigFix Inventory does not recognize when a virtual machine is migrated to a server farm located in a time zone that is more than four hours apart from the current time zone. Instead of reporting two instances of a product that is installed on such a virtual machine, BigFix Inventory reports one instance.
- When a computer on which the software was discovered is deleted, report columns related to server capacity show <no data> in the user interface. Information about computers that contributed to the metric peak value is available in the audit snapshot regardless of whether these computers were removed.

### Examples

The following examples describe how the number of required licenses is calculated. They are based on sample data.

#### **Example 1: Software is deployed on one virtual machine**

Microsoft SQL Server 2014 Enterprise is installed on a virtual machine that is assigned two virtual cores. According to the licensing terms, the minimal number of licensable cores is four. Metric utilization for Microsoft SQL Server is 4.

**Table 165. Metric utilization for software on one virtual machine**

	Virtual machine 1
Virtual cores	2
Core licenses needed	4

**Example 2: Software is deployed on two virtual machines**

Microsoft SQL Server 2014 Enterprise is installed on two virtual machines that run on the same physical host. The host has 10 cores. The first virtual machine is assigned 8 cores. The second virtual machine is assigned 16 cores. Metric utilization is the sum of virtual cores that are available to Microsoft SQL Server and equals 24.

**Table 166. Metric utilization for software on two virtual machines****Summary for complex table**

	Virtual Machine 1	Virtual Machine 2
Virtual cores	8	16
Physical cores on the host	10	
Core licenses needed	24	

**Example 3: Software is deployed on a virtual machine that was assigned additional cores**

Microsoft SQL Server 2014 Enterprise is installed on a virtual machine that is assigned 10 cores. The virtual machine is assigned two additional cores. Metric utilization for Microsoft SQL Server is 10 until the day when additional cores were added. Starting from the next day, metric utilization is 12.

**Example 4: Software instance uses a different license metric**

Two instances of Microsoft SQL Server 2014 Enterprise are discovered. The first instance uses the Microsoft Virtual Core with SA metric. The second instance uses the Microsoft Physical Core with SA metric. To ensure that the first instance contributes to the calculation of the virtual core based metric, reassign this instance to the proper metric. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).

**Example 5: Two software instances use the same metric and are installed on the same virtual machine**

Microsoft SQL Server 2012 Enterprise and Microsoft SQL Server 2014 Enterprise are discovered on one virtual machine. Both instances use the Microsoft Virtual Core with SA metric. Metric utilization is counted once for this virtual machine regardless of the number of installed instances.

**Reading metric utilization**

The first level of the All Metrics report shows a product and its metric quantity, which is the highest number of metric units that the product used during the specified period.

Publisher	Product Name	Metric	Metric Quantity	Metric Quantity History		
				11/15/2016	-	02/13/2017
Microsoft	<a href="#">Microsoft SQL Server Enterprise E...</a>	Microsoft Virtual Core with SA	16			
Microsoft	<a href="#">Microsoft SQL Server Standard Edi...</a>	Microsoft Virtual Core with SA	4			

When you click the product name, the second level of the report shows all instances of product components that contributed to the metric quantity, including historical instances that are no longer installed. The values in the Logical Processors column show the number of virtual cores that are reported on the computers where the component is installed. Because the minimal number of licensable cores is four, virtual machines with one and two cores are counted as having four cores. This requirement is not reflected in the Logical Processor column because the column shows the actual number of processor cores.

Component Name	Version	Product Name	Metric	Excluded	Comput...	Server ID	Logical Pr...	Details
Microsoft Windows Server 2008 R2 Ent...	6.1	Microsoft SQL Server Enterprise Edition	Microsoft Virtu...	No	NC040202	IBM NC142...	2	<a href="#">DETAILS &gt;</a>
Microsoft SQL Server 2012 for Microsof...	2012.0	Microsoft SQL Server Enterprise Edition	Microsoft Virtu...	No	NC9143...	TLM_VM_4...	1	<a href="#">DETAILS &gt;</a>
Java Support	5.2	Microsoft SQL Server Enterprise Edition	Microsoft Virtu...	No	NC0472...	IBM 9117 0...	8	<a href="#">DETAILS &gt;</a>

The requirement is reflected in the Core Metric column in the `microsoft_virtual_core_with_sa.csv` file which is a part of the audit snapshot.

**Table 167. A fragment of the `microsoft_virtual_core_with_sa.csv` file**

Publisher	Product Name	Metric Quantity	Logical Processors	Core Metric
Microsoft	Microsoft SQL Server Enterprise Edition	16	2	4
Microsoft	Microsoft SQL Server Enterprise Edition	16	1	4
Microsoft	Microsoft SQL Server Enterprise Edition	16	8	8

Related information

[High-water mark \(on page cccxciv\)](#)

## Oracle Processor Core

**9.2.8** Available from 9.2.8. Oracle Processor Core metric is used to determine the licensing cost of Oracle products. It is based on the number of physical cores that are deployed on the host where the software is installed multiplied by an appropriate processor core factor. When the software is installed on multiple hosts, all cores that require applying the same core factor are added. Then, the factor is applied to calculate metric utilization.

By default, the 0.5 factor is applied to all servers. If the number of cores multiplied by the core factor is not an integer, it is rounded up at the core factor level. If a processor requires a different core factor, the value can be adjusted [through the user interface \(on page cmxxviii\)](#) or [by using REST API \(on page cmxxix\)](#).

## Supported software

Reporting of the metric is supported for all discoverable versions of Oracle Database (Enterprise Edition).

## Requirements

VM managers should be defined for all virtual machines in your environment. If a VM manager is not defined for a particular host, the number of cores is counted at the level of the virtual machine. As a result, license utilization might be incorrectly calculated. If a component of a product with the Oracle Processor Core metric is detected on a host for which a VM manager is not defined, a warning sign (🚩) is displayed on the All Metrics report. It indicates calculation inaccuracy.



**Note:** The warning is displayed only on the user interface. It is not displayed in the CSV or PDF version of the All Metrics report.

In case of VMware, if a virtual machine is a cluster, metric utilization is counted on the basis of the number of cores in a cluster, not the physical server. To obtain correct count of cluster cores, go to **Management > Advanced Server Settings** and set the value of the `storeHwDataForAllVMMManagerNodes` parameter to true. Otherwise, only hosts on which the BigFix client is installed are included in the cluster core count.

## Limitations

Only active sockets are taken into account during the calculations.

## Examples

### Example 1: Software is installed on multiple servers that require various core factors

Oracle Database Enterprise Edition is installed on the following six servers:

- One server with two cores that require applying the 0.75 core factor
- Four servers with one core each that requires applying the 0.75 core factor
- One server with one core that requires applying the 0.5 factor

All cores that require the same core factor are added and the factor is applied. Then, the values obtained at each core factor level are rounded up and added. Metric utilization equals 6.

**Table 168. Utilization of the Oracle Processor Core metric on multiple servers that require various core factors**

**Summary for complex table**

	<b>Cores that require the 0.75 factor</b>	<b>Cores that require the 0.5 factor</b>
Actual number of cores	$(1 \times 2 \text{ cores} + 4 \times 1 \text{ core}) = 6$	$1 \times 1 \text{ core} = 1$
Number of cores after applying the core factor	$(1 \times 2 \text{ cores} + 4 \times 1 \text{ core}) \times 0.75 = 4,5$	$1 \times 1 \text{ core} \times 0.5 = 0.5$
Number of cores after rounding up	5	1
Total	6	

Related information

[High-water mark \(on page cccxciv\)](#)

## Changing the Oracle core factor

By default, all servers are assigned the 0.5 factor. If the processor that is deployed on a server requires applying a different core factor, you can change it through the user interface or, to perform the operation on multiple servers, by using REST API.

### Changing the Oracle core factor through the user interface

**9.2.8** Available from 9.2.8. To change the Oracle core factor through the user interface, open the Hardware Inventory report, and edit the value in the Oracle Core Factor column.

 You must have the Manage Hardware Inventory permissions to perform this task.

1. Log in to BigFix Inventory, and go to **Reports > Hardware Inventory**.
2. To adjust the report view, hover over the **Manage Report View** icon , and click **Configure View**.
  - a. **Optional:** To narrow the report to a server for which you want to change the core factor, specify appropriate filters.  
For example: `Computer Name, contains,` and specify the name of the server.

### Configure View

**Filters**

Specify the report filter which matches all of the following conditions:

Computer Name	▼	contains	▼	BFIDemoLinux		
---------------	---	----------	---	--------------	--	--

- b. To add a column in which you can edit the core factor, select **Oracle Core Factor**. Then, click **Submit**.
3. To change the Oracle core factor, click the pencil icon ( ) in the **Oracle Core Factor** column, and click **Change Oracle Core Factor**.
4. Specify the new core factor, and click **Change**.

### Change Oracle Core Factor

Change the Oracle Core Factor for the processor that was identified on server VMware, Inc. VMware-42 28 f0 c1 6b 49 44 03-ca 98 1f eb 79 f4 0b 0b.

**The value will be changed for the server and all virtual machines that are hosted on that server. After you change the value, open the All IBM Metrics report, and click Recalculate to reflect the changes on the reports.**

New Oracle Core Factor\*

Change

5. To update utilization of the Oracle Processor Core metric, go to **Reports > All Metrics**, and click **Recalculate**.

The core factor value is updated for the selected server. Metric utilization is updated for products that are installed on that server.

## Changing the Oracle core factor through REST API

**9.2.8** Available from 9.2.8. To change the Oracle core factor through REST API, retrieve the list of servers that exist in your infrastructure. Then, choose IDs of the servers for which you want to change the core factor and update the value.

You must have the Manage Hardware Inventory permissions to use this API.

## 1. Retrieve information about servers that exist in your infrastructure and the Oracle core factor that is assigned to every server.

- If you retrieve the information through a web browser plug-in, use the following request:

```
GET https://hostname:port/sam/processors.json?columns[]=server_id
&columns[]=server_name&columns[]=oracle_core_factor
&token=cble554922312e0e4aa44a1ef2b9a426117efe39
Accept: application/json
Accept-Language: en-US
```

- If you retrieve the information by using cURL, run the following command:

```
curl --insecure -H "Content-type: application/json; charset=UTF-8"
-X GET "https://hostname:port/sam/processors?columns%5B%5D=server_id
&columns%5B%5D=server_name&columns%5B%5D=oracle_core_factor
&token=cble554922312e0e4aa44a1ef2b9a426117efe39" -o out.json
```

The request returns the list of server IDs and names together with core factors that are currently assigned to each server.

```
{
  "total":3,
  "rows":
    [{
      "server_id":1,
      "server_name":"TLM_VM_42362841-6b4e-ea26-9755-07b28dc0fd41",
      "oracle_core_factor":"0.5"
    },
    {
      "server_id":2,
      "server_name":"Oracle Corporation SPARC-Enterprise-T5220 2225894042",
      "oracle_core_factor":"0.5"
    },
    {
      "server_id":3,
      "server_name":"Microsoft Azure VMware-42 3b f0 3c fb d5 4c 97-4f bd ca 3f 83 3a 91 46",
      "oracle_core_factor":"0.5"
    }
  ]
}
```

## 2. Update the core factor that is assigned to a selected server.

- If you update the information through a web browser plug-in, use the following request:

```
POST api/v1/servers?token=cble554922312e0e4aa44a1ef2b9a426117efe39
{
```

```
"oracle_core_factors":
[
  {
    "server_id": 1,
    "oracle_core_factor": 1.0
  }
]
}]}
```

- If you update the information by using cURL, run the following command:

```
curl --insecure -H "Content-type: application/json; charset=UTF-8"
-X PUT https://hostname:port/api/v1/servers?token=cb1e554922312e0e4aa44a1ef2b9a426117efe39
-d '{"oracle_core_factors":[{"server_id": 1,"oracle_core_factor": 1.4}]}'
```

3. To update utilization of the Oracle Processor Core metric, log in to BigFix Inventory and go to **Reports > All Metrics**. Then, click **Recalculate**.

## IBM Processor value unit (PVU)

A Processor Value Unit (PVU) is a unit of measurement that is used to determine the licensing cost of IBM middleware products. It is based on the type of processor that is deployed on the server where the software is installed. For each product, you must acquire the appropriate number of PVUs that is defined for the specific processor on which the software is installed.

The number of required PVUs is based on the processor technology and the number of processors that are available to the software product. For PVU-based licensing, IBM defines a processor as a processor core on a chip. For example, a dual-core processor chip has two processor cores. PVUs are assigned per core, not per processor. The number of PVUs that are assigned to a processor core is defined in the PVU table format. For more information, refer to [Processor Value Unit \[PVU\] licensing for Distributed Software](#).

### Processor value unit license types

PVU licensing can be full capacity or subcapacity. Full capacity licensing is based on the overall number of processor cores on the physical server on which the product is installed. Subcapacity licensing is available only in virtualized environments. It is counted as the highest number of PVUs that are available for the VM on which the product is installed, not the total PVU count on the physical server. You acquire licenses for the lower value: subcapacity or full capacity.

Subcapacity licensing can significantly reduce the licensing cost, especially with a move to a newer processor core technology. However, virtual machines or partitions that restrict the available processor capacity must be created by using eligible virtualization technologies. For more information about subcapacity licensing requirements, see: [Passport Advantage® Virtualization Capacity \(Subcapacity\) Licensing](#).

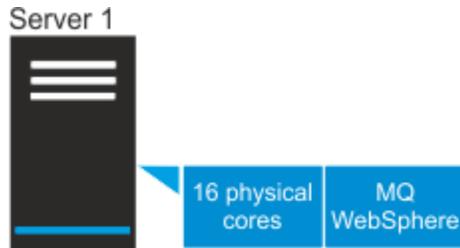
For information about rules of subcapacity counting on each virtualization type, see: [IBM Virtualization Capacity License Counting Rules](#).

## Scenarios

The following scenarios describe how the cost of software license is calculated. The calculations are based on sample values and should be treated as examples.

### Scenario 1: Full capacity on a physical server

IBM MQ software is installed on a server that has two Intel Xeon 3400 processors, each processor with eight cores which gives 16 cores in total.



Because the environment is not virtualized, subcapacity license does not apply. Full capacity license is counted as the highest number of PVUs on the server where the software is installed. According to the PVU table, when the server has two sockets, this processor model is assigned 70 PVUs per core. The following table shows how the cost of full capacity license is calculated for IBM MQ software that is installed on this server.

**Table 169. Cos of full capacity license for IBM MQ software**

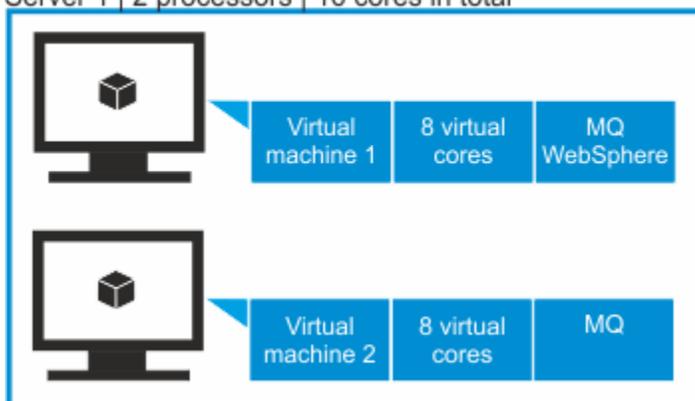
*The table consists of two columns and five rows.*

Description	Full capacity
Cores to license	16
PVU per core	70
Software cost per PVU	\$50
<b>License cost</b>	<b>16 * 70 * \$50 = \$56,000</b>

### Scenario 2: Subcapacity on two virtual machines

Two virtual machines are deployed on a server that has two Intel Xeon 3400 processors, each processor with eight cores which gives 16 cores in total. Each VM is assigned eight virtual cores. WebSphere software is installed only on the first virtual machine and has access to eight cores. IBM MQ software is installed on both virtual machines and thus has access to 16 cores.

Server 1 | 2 processors | 16 cores in total



According to the PVU table, when the server has two sockets, this processor model is assigned 70 PVUs per core. The following table shows how the cost of full capacity license and subcapacity license is calculated for IBM MQ software and WebSphere software that is installed on this server.

**Table 170. Cost of full capacity and subcapacity license for IBM MQ software and WebSphere software**

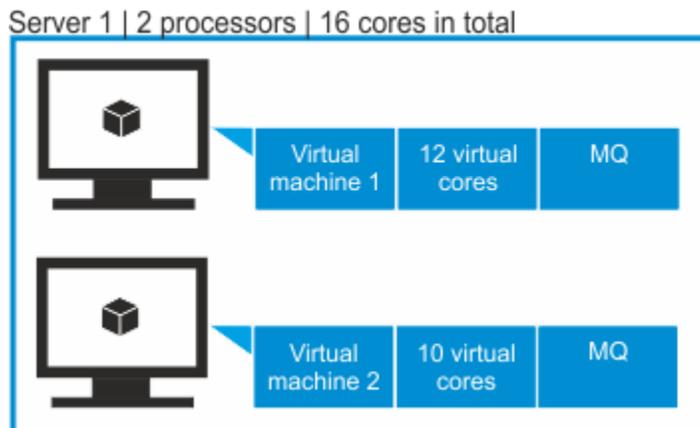
*The table consists of two columns and five rows.*

Description	IBM MQ software		WebSphere software	
	Full capacity	Subcapacity	Full capacity	Subcapacity
Cores to license	16	16	16	8
PVU per core	70	70	70	70
Software cost per PVU	\$50	\$50	\$30	\$30
<b>License cost</b>	<b>16 * 70 * \$50 = \$56,000</b>	<b>16 * 70 * \$50 = \$56,000</b>	<b>16 * 70 * \$30 = \$33,600</b>	<b>8 * 70 * \$30 = \$16,800</b>

### Scenario 3: Capacity in a virtual environment where connection to the VM manager is not configured

**!** **Important:** In this scenario, default PVU counting is applied due to the lack of connection to the VM manager. IBM accepts audit reports that contain PVU values calculated based on the default PVU counting instead of considering the client to be ineligible for subcapacity or liable for full capacity. For more information, see: [Default PVU counting on x86 processors \(on page dcclxii\)](#) and [Managing VM managers \(on page dcclxi\)](#).

Two virtual machines are deployed on a server that has two Intel Xeon 3400 processors, each with eight cores which gives 16 cores in total. The first VM is assigned 12 virtual cores. The second VM is assigned 10 virtual cores. IBM MQ software is installed on both VMs.



If a virtual machine manager is not defined, BigFix Inventory does not have access to information about the number of sockets and physical cores on the server on which the VMs are deployed. It has access only to information about the processor model and the number of virtual cores that each VM is assigned. The sum of virtual cores to which IBM MQ software has access is greater than the number of physical cores that are available on the server.

**i** **Tip:** If the hypervisor data is missing from a virtual machine and default PVU counting is applied, ID of the server on which the machine runs begins with `TLM_VM`.

The number of PVUs per core that is assigned to a processor depends on the number of sockets on the host. Because BigFix Inventory does not have access to this information, it assigns the highest PVU per core value that is defined for the particular processor in the PVU table. According to the PVU table, when the server has two sockets, this processor model is assigned 70 PVUs per core. However, due to the lack of information about the number of sockets, software is charged 120 PVUs per core. It is the highest number of PVUs that is defined in the PVU table for this type of processor.

The following table shows the cost of license for the IBM MQ software depending on whether the VM manager is defined.

**Table 171. Cost of license for IBM MQ software depending on whether the VM manager is defined**

*The table consists of two columns and five rows.*

Description	Capacity for IBM MQ software when the VM manager is defined		Capacity for IBM MQ software when VM manager is not defined
	Full capacity	Subcapacity	
Cores to license	16	22 capped to 16	22
PVU per core	70	70	120
Software cost per PVU	\$50	\$50	\$50

**Table 171. Cost of license for IBM MQ software depending on whether the VM manager is defined**

*The table consists of two columns and five rows.*

(continued)

Description	Capacity for IBM MQ software when the VM manager is defined		Capacity for IBM MQ software when VM manager is not defined
	Full capacity	Subcapacity	
License cost	$16 * 70 * \$50 = \$56,000$	$16 * 70 * \$50 = \$56,000$	$22 * 120 * \$50 = \$132,000$

Related information

[High-water mark \(on page cccxciv\)](#)

## IBM Processor value unit table

A processor value unit table contains information about the conversion ratio that is used for available processor types.

The processor value unit table supports processor-based pricing models in which charges differ according to the type of processor on which the licensed product is installed and running. In the table, a number of units is assigned to each processor type for which this type of pricing model is available. It is necessary to ensure that the table is updated to reflect the ratios for all processors in use.

If a processor cannot be properly identified by an agent, it is shown in the processor table as OTHER. This case can occur because it is a new processor type and its discovery is not yet supported. In this situation, upload the newest processor value unit table.

Related information

[Uploading an IBM PVU table \(on page cmxxxv\)](#)

## Uploading an IBM PVU table

The PVU table supports processor-based pricing models in which charges differ according to the type of processor on which the licensed product is installed and running. In the table, a number of units are assigned to each processor type on which this type of pricing model is available. BigFix continues to update the PVU table to include new processor types and models. To ensure that the processors are properly detected and charged, upload a new version of the PVU table whenever it is available.

 You must have the Manage Uploads permission to perform this task.

**9.2.6** A new PVU table is uploaded to BigFix Inventory during the upgrade. Use this procedure when a new table is published between application updates.

The PVU table file is authenticated with SHA-256 to comply with the FIPS (Federal Information Processing Standards) security standards. Previous versions of PVU tables that are signed with SHA1 are not supported.

1. In the top navigation bar, click **Management > Metric Table Upload**.
2. To download PVU table, use **Download PVU table** fixlet.



**Note:** 'Download PVU table' fixlet is available since 10.0.4.

3. To upload PVU table, click **Choose File**, select the file that you downloaded, and click **Upload**.

A new entry is created in the **Upload and Import History** table. The status of the PVU table is Pending.

4. Wait for the scheduled import or run it manually.

For BigFix Inventory to be compliant with Subcapacity, you must upgrade the server.

---

#### Related information

[IBM Processor value unit table \(on page cmxxxv\)](#)

## Registered User

**9.2.13** Available from 9.2.13. Registered User is a license metric unit that can be used to determine the licensing cost of Microsoft Office 365 and a number of Adobe Creative Cloud products.

A product can be licensed based on the number of registered users. Then, one product that is installed on multiple computers or servers can be used by a number of registered users. Only the number of registered users is taken into account when calculating license metric utilization.

Note that the Registered User metric differs from the Authorized User metric. Authorized User has a broader spectrum and relates to all users who are authorized to use a product. Registered User is more accurate and pertains only to those users who registered.

## Supported Software

**Windows** Reporting of the Registered User metric is supported for the following software that is installed on Windows computers:

- Microsoft Office 365
- **9.2.14** Adobe Creative Cloud (CC) applications on Windows computers.
  - Adobe Illustrator CC
  - Adobe PhotoShop CC

- Adobe InDesign CC
- Adobe Premiere Pro CC
- Adobe After Effects CC
- Adobe Dreamweaver CC
- Adobe Muse CC

## Limitations

- BigFix Inventory extracts users only of those Office 365 components in which the user logs in to Microsoft. If an Office 365 component is deployed but the user does not log in to Microsoft, the user is not reported. Due to this fact, users are reported only when they are logged in to at least one of the following components: Access, Excel, PowerPoint, Publisher, Word.
- Because BigFix Inventory extracts only users that log in to Microsoft, users are reported only for components that provide the option to log in to Microsoft. For example, users of Skype are reported only if they use another component of Office 365 and log in to Microsoft.
- If the software scan runs during a time when the user of Office 365 is not logged in to Windows, information about the user is not captured. If the user was reported in the past and Office 365 is still deployed on the scanned computer, the user is counted. If the user was reported in the past but Office 365 is no longer deployed nor activated, the user is not counted.
- Utilization of the Registered User metric is calculated only for products that are installed on Windows. Product instances that are installed on computers with other operating systems, on mobile devices, or are available online are not taken into account. Thus, the reported license metric utilization might differ from the number provided by the software manufacturer.
- BigFix Inventory incorrectly reports users of Office 365 that is installed in the Shared Client Activation (SCA) mode.
- To display the information about software users of Adobe CC applications on the Software Users report, you must have Adobe Creative Cloud Desktop App installed on all relevant computers. Otherwise, BigFix Inventory measures and reports only the usage of these components that is based on the Windows processes.

## Examples

Publisher	Product Name	Metric	Metric Quantity	Metric Quantity History	
				07/30/2018	08/09/2018
Microsoft	Microsoft Office 365	Registered User	7		

Related information

[High-water mark \(on page cccxciv\)](#)

## Setting and removing the declared metric quantity

**9.2.16** Available from 9.2.16. On the All Metrics report, you can manually declare the metric quantity for selected license types for which BigFix Inventory does not calculate the utilization. You can also use this option to customize the metric quantity if needed. The declared value takes precedence over the value that is measured by the application.

 You must have the Manage License and the Manage Software Classification permissions to set the license metric quantity.

You can check which of your license metric quantities can be customized. Look at the pencil icon  in the **Metric Quantity** column. If the icon is active, you can declare the custom metric quantity for the product.

By default, you set the declared value from the reporting start date onwards. However when you explicitly provide also the end date for the report, then the declared metric quantity is set only until this date. Using this mechanism, you can declare metric quantities for any period of time by defining the appropriate time range for the report.

1. In the top navigation bar, click **Reports > All Metrics**.
2. **Optional:** To change the period for which you want to set the declared metric quantity, hover over **Configure**, click **Configure View**, and select the time range. If you specify a period from a date to a date, the license metric quantity is set only for this particular period of time.
3. To set the metric quantity, click the pencil icon  in the Metric Quantity column.

 **Note:** In case of FlexPoint bundles, you can set the license metric quantities for particular products that contribute to the bundle but not for the bundle itself. Click on the name of the bundle to see the detailed report that lists the products within bundle.

4. Specify the metric quantity and click **Set**. The value is set only for the computer group to which you are assigned and is not inherited by its subgroups.

### Set Metric Quantity ✕

Set the declared metric quantity. The value that you provide takes precedence over the value that was measured by the application. You can remove the declared value to restore the initial one at any time.

Time range: from 06/02/2019 ?

Product: IBM Virtual Desktop

Metric: Concurrent User

Computer group: All Computers

Metric quantity ?

10

⬇

Set



**Note:** If you want to set a metric quantity for a subgroup of your computer group, go to **Reports > Computer Groups** and open the subgroup. In the upper left corner, select All IBM Metrics and set the license metric quantity for a particular product.

The metric quantity for the product is set.

The declared metric quantity is independent of your software inventory or bundling and you should make sure that it is kept up-to-date. If you reassign software to another product or FlexPoint bundle, the declared metric quantity remains unchanged. If, as a result of reassignment, a product is left with no components, it is still visible on the All Metrics report with the declared metric quantity.

## Removing the declared metric quantity

You can remove the declared value to restore the value that is measured by the application.

1. Open the **All Metrics** report.
2. To remove the declared metric quantity, click the pencil icon () in the **Metric Quantity** column.
3. Clear the text field to remove the declared metric quantity for the specified period of time.
4. Click **Set**.

## IBM Resource value unit (RVU MAPC)

IBM Resource value unit (RVU MAPC) is a license metric unit that is based on the number of activated processor cores that are available to the product. An activated processor core is a core that is managed or used by a product, regardless of whether the capacity of the processor core can be limited through virtualization technologies.

## Resource value unit license types

IBM RVU MAPC licensing can be full capacity or subcapacity. Full capacity licensing is counted as the highest number of RVUs in the physical environment that are managed or used by the product.

Subcapacity licensing is available only in virtualized environments. It is counted as the highest number of RVUs that are available to the VM on which the product is installed, not the total RVU count on the physical server.

## Resource value unit tier table

The RVU tier table provides factors that are specific to the number of activated processor cores. The greater the number of activated processors, the lower is the factor and thus the fewer RVUs are required per processor core.

**Table 172. The RVU tier table for activated processor cores**

Tier	Activated processor cores	Factor
1	0 - 2,500	1.00
2	2,501 - 10,000	0.80
3	10,001 - 50,000	0.60
4	50,001 - 150,000	0.40
5	Above 150,001	0.20

### Example

A product has access to 45,000 activated processor cores. The number is divided into tiers based on the RVU tier table. The number of cores that fall into each tier is multiplied by the factor that is applicable for that tier. The values are summed up to obtain the total number of required RVUs. The following table shows how the number of required RVUs is obtained for this product.

**Table 173. Activated processor cores divided into quantity tiers**

Tier	Number of managed cores in the tier	Calculations
1	2,500	$2,500 \times 1.00 = 2,500$
2	7,500	$7,500 \times 0.80 = 6,000$
3	35,000	$35,000 \times 0.60 = 21,000$
<b>Total</b>	<b>45,000</b>	<b>29,500</b>

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Related information

[High-water mark \(on page cccxciv\)](#)

## IBM Virtual processor core (VPC)

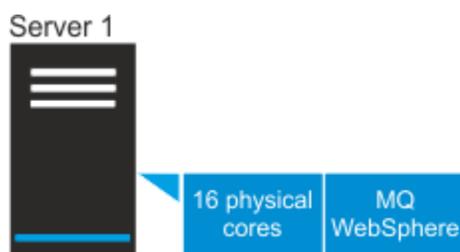
**9.2.11** Available from 9.2.11. IBM virtual processor core (VPC) is a unit of measurement that is used to determine the licensing cost of BigFix products. It is based on the number of virtual cores (vCPUs) that are available to the product. A vCPU is a virtual core that is assigned to a virtual machine or a physical processor core if the server is not partitioned for virtual machines.

### Scenarios

The following scenarios describe how the number of vCPUs is counted under different circumstances. The calculations are based on sample values and should be treated as examples.

#### Scenario 1: VPC on a physical server

IBM MQ software is installed on a server that has two processors. Each processor has 8 physical cores which gives 16 cores in total. The number of vCPUs to license is 16.

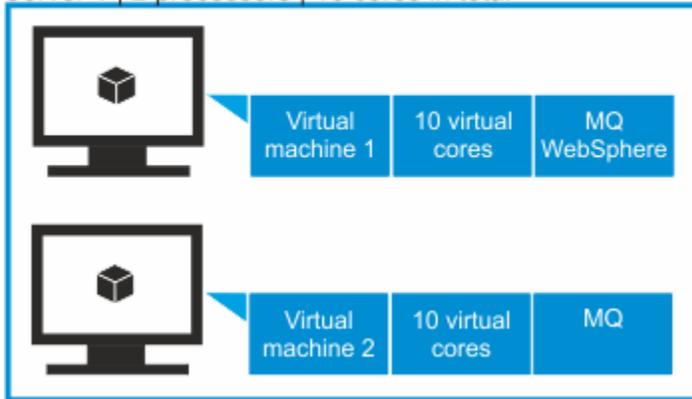


#### Scenario 2: VPC on two virtual machines

Two VMs are deployed on a server that has two processors. Each processor has 8 physical cores which gives 16 cores in total. Each VM is assigned 10 vCPUs.

WebSphere software is installed only on the first VM and has access to 10 vCPUs. The number of vCPUs to license is 10. IBM MQ software is installed on both VMs and thus has access to 20 vCPUs. Because the number of physical cores is lower than the number of vCPUs that are assigned to the VMs, the number of vCPUs to license is capped to 16.

Server 1 | 2 processors | 16 cores in total

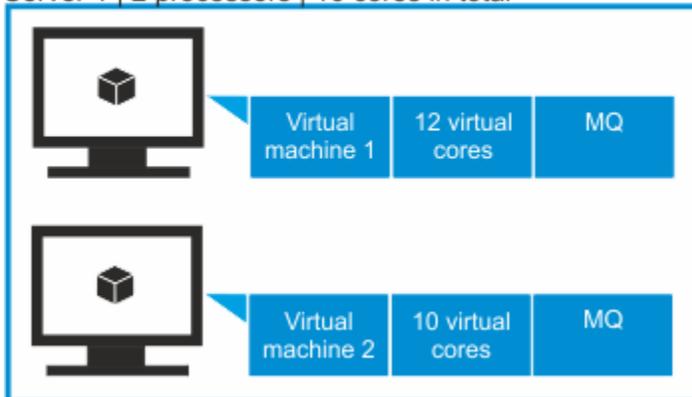


### Scenario 3: VPC in a virtual environment where the VM manager is not defined

**!** **Important:** This scenario is not supported. It is provided to explain the consequences of not defining the VM manager that controls resources that are available to virtual machines. VM managers must be defined to properly report VPC consumption.

Two VMs are deployed on a server that has two processors. Each processor has 8 cores which gives 16 physical cores in total. The first VM is assigned 12 vCPUs. The second VM is assigned 10 vCPUs. It gives 22 vCPUs in total. IBM MQ software is installed on both VMs.

Server 1 | 2 processors | 16 cores in total



If a connection to the VM manager is not defined, BigFix Inventory does not have access to information about the number of sockets and physical cores on the server on which the VMs are deployed. It has access only to information about the number of vCPUs that each VM is assigned. The sum of vCPUs to which IBM MQ software has access is greater than the number of physical cores that are available on the server.

If a connection to the VM manager is not defined, the number of vCPUs to license is 22. If the connection is defined, 22 vCPUs are capped to 16 physical cores and thus the number of vCPUs to license is 16.

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Related information

[High-water mark \(on page cccxciv\)](#)

### 10.0.9 Fixed PVU and VPC values for instances running in the warm standby mode

The licensing model of some IBM products, such as DB2, defines that product instances that run in the warm standby mode consume a fixed number of PVUs or VPCs. To report metric utilization by such product instances, assign them with the PVU Warm Standby or VPC Warm Standby metric.

**10.0.16** Starting from application update 10.0.16, PVU Warm Standby and VPC Warm Standby metric calculation has been modified. If there are multiple instances of a product on single computer, the fixed PVU or VPC will count only once.

### Fixed values

License Metric Tool reports the following fixed number of metric units per product instance:

- 100 PVUs if the product is assigned the PVU Warm Standby metric.
- 1 VPC if the product is assigned the VPC Warm Standby metric.



**Note:** The values are not configurable.

### Calculating and reporting the utilization

Before you start, read the license agreement for your product. If the agreement states that product instances that run in the warm standby mode consume 100 PVUs or 1 VPC per instance, assign the instances with the PVU Warm Standby or VPC Warm Standby metric on the Software Classification report. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).

#### PVU subcapacity and VPC

Utilization of the PVU Warm Standby or VPC Warm Standby metric is reported separately from the utilization of the PVU subcapacity or VPC metric for the product. To obtain the final utilization of the license metric, add the two values that are reported on the All Metrics report or in the audit snapshot. For example, *IBM DB2 Enterprise Server Edition Processor Value Unit* consumes the following number of PVUs.

- 1200 PVUs under the subcapacity license.
- 300 PVUs by instances that run in the warm standby mode.

The overall utilization of PVU by this product is 1500.

Publisher	Product Name	Metric	Metric Quantity	Metric Quantity History
IBM	IBM COBOL for AIX	Concurrent User	10,000	02/22/2022 - 05/23/2022
IBM	IBM InfoSphere DataStage and QualityStage Designer	Concurrent User	<n/a>	<n/a>
IBM	IBM Rational Software Architect Designer	Authorized User Single Install	<n/a>	<n/a>
IBM	IBM DB2 Advanced Enterprise Server Edition Authorized User	Authorized User Single Install	<n/a>	<n/a>

### PVU full capacity

If you report PVU full capacity instead of the PVU subcapacity for a product, assign all product instances, including the ones that run in the warm standby mode, to the PVU license metric. Do not assign any product instances to the PVU Warm Standby metric.

### Flex Point offerings and Cloud Paks

If the product is further assigned to a Flex Point offering or a Cloud Pak, manual calculation is not needed. The two values are automatically summed up while License Metric Tool calculates the overall metric utilization for the FlexPoint offering or a Cloud Pak. For example, *IBM DB2 Enterprise Server Edition Processor Value Unit* consumes the following number of PVUs.

- 1200 PVUs under the subcapacity license.
- 300 PVUs by instances that run in the warm standby mode.

The product is assigned to *IBM Db2 Advanced Edition Extension for IBM Cloud Pak for Data*. The Cloud Pak is licensed for the number of consumed VPCs. License Metric Tool applies proper ratio to the PVU values that are reported for *IBM DB2 Enterprise Server Edition Processor Value Unit* and calculates utilization of VPC by the Cloud Pak.

### Adding the PVU Warm Standby or VPC Warm Standby metric to a product

The software catalog contains a number of products for which the license agreement states that product instances that run in the warm standby mode consume 100 PVUs or 1 VPC per instance. If the license agreement for your product states the same, but the option to assign the PVU Warm Standby or VPC Warm Standby metric is not available, add the metric on the Products & Metrics report. For more information, see: [Assigning an additional metric to a product \(on page m\)](#).

### Other uses

If the license agreement for your product states that the product uses 100 PVUs or 1 VPC per instance in a scenario other than the warm standby mode, for example the hot standby mode, you can assign the product with the PVU Warm Standby or VPC Warm Standby metric.

## Software classification

After new components are discovered, they are assigned to products based on bundling rules. If the initial assignment does not reflect your entitlements, work with the software inventory until it matches the entitlements. To make metric calculation accurate, assign each component to a product, exclude, or suppress the instances that

should not be included in the calculation, and confirm your actions. After you confirm the actions, the classification is complete, and the metric calculation is accurate.

#### Click a selected step to view detailed instructions

##### Step 1: Assign

Assign components to products from catalog, or create custom relations.

##### Step 2: Tailor

Exclude products, or suppress components to remove them from metric calculation.

##### Step 3: Confirm

Confirm your actions and flag the items as completed.



## Bundling Assistant

Bundling assistant assigns instances of discovered components to products based on five bundling rules: bundling tags, part numbers, partition collocation, infrastructure collocation, and stand-alone product discovery. Results of this assignment are shown on the Software Classification panel.

### Bundling assistance process

After a component is discovered, it undergoes the process of bundling assistance. During the process, bundling rules are applied to discover possible component-product relations. Each relation is evaluated and assigned an internal score. The component is assigned to the product with the highest score.

If the discovered component belongs to the product and license metric assigned during bundling assistance, you can confirm the assignment. Otherwise, assign the component to a different product or license metric so that the relation reflects your entitlement, and confirm it. If the assignment is not confirmed, it might be automatically changed. It might happen when a new software catalog is uploaded or when a different product is suggested as the best bundling option based on the new results of bundling assistance.



**Important:** Instances that are a part of an excluded product cannot be bundled again automatically. Instances can be bundled with excluded products only if they are associated with the excluded products based on the software catalog or the stand-alone product discovery. Any new instance that is assigned to the excluded product is also excluded.

### Bundling rules

The following table lists rules that are used during the process of bundling assistance.

**Table 174. Bundling rules**

Rule	Description
<a href="#">Custom bundling</a>	This rule assigns a component to the product and license metric based on the custom bundling that was defined manually.

**Table 174. Bundling rules (continued)**

Rule	Description
<b>9.2.5</b> Bundling tags ( <a href="#">on page cmxlvi</a> )	This rule assigns a component to the product and license metric that are represented by the part number listed in the bundling tag. The tag is placed on the computer where the component is installed which allows for assigning the specific instance of the component to the right product and license metric.
<a href="#">Part numbers (on page cml)/Setting entitlements (on page cmlxxviii)</a>	This rule uses part numbers that you upload to BigFix Inventory to narrow down the list of products and license metrics to which a component can be assigned to the ones that you purchased. The rule instructs bundling algorithm to prefer products selected manually by end user through <b>Set Entitlement</b> function or by Upload of Part numbers that is uploaded when suggesting bundling option.
<a href="#">Partition collocation (on page cmlv)</a>	This rule discovers components that are installed on the same partition and are related to the same product in the software catalog.
<a href="#">Infrastructure collocation (on page cmlvi)</a>	This rule discovers components that are installed in the same infrastructure and are related to the same product in the software catalog. The search does not include the computer on which the component is installed.
<a href="#">Stand-alone product discovery (on page cmlvii)</a>	This rule identifies components that have more than one default component to product relation and chooses the closest one using string-based distance metric.

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#### Related information

[Main background application tasks \(on page cccxcvii\)](#)

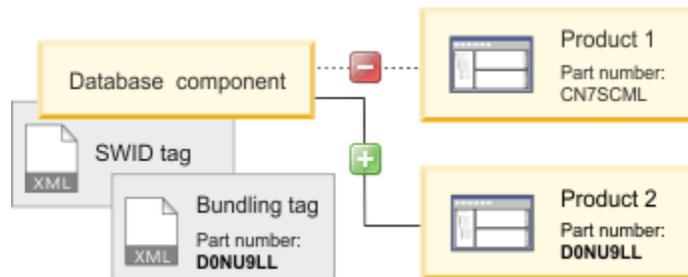
## Bundling tags

**9.2.5** Available from 9.2.5. Bundling tag is a type of the ISO/IEC 19770-2 supplemental tag. It allows for unambiguously assigning a component to a product and license metric based on the part number that is specified in the tag. When a bundling tag is available, it takes precedence over other bundling rules. Thus, you can create bundling tags to facilitate the process of software classification.

### Example

A bundling tag was manually created for the database component. The tag contains a part number that represents the product and license metric to which the component should be assigned. The part number is correlated with the information from the software catalog. It is established that the part number represents Product 2.

The database component can be assigned to two products. Based on the part number from the bundling tag, the database component is assigned to Product 2. The assignment needs to be manually confirmed.



## Details

- Bundling tags can be created only for IBM products.
- Bundling tags can be created only for products that are discovered by [SWID tags \(on page cdxvii\)](#).
- The bundling tag must be placed in the same directory as the SWID tag.
- The bundling tag can contain only one part number.
- `PersistentId` in the bundling tag and SWID tag must be the same.

## Supported schemas

BigFix Inventory supports bundling tags in the 19770-2:2014-CD1 and 19770-2:2015 schemas.

## Example of a bundling tag in the 19770-2:2015 schema

```
<?xml version="1.0" encoding="UTF-8"?>
<SoftwareIdentity
name="IBM DB2 Enterprise Server Edition"
tagId="ibm.com-b3414ccd1e364aa6b82f4e1c3adecdf6-D0NU9LL"
version="10.5.0"
versionScheme="multipartnumeric"
supplemental="true"
xmlns="http://standards.iso.org/iso/19770/-2/2015/schema.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://standards.iso.org/iso/19770/-2/2015-current/schema.xsd">
  <Meta productId="PN:D0NU9LL" />
  <Link rel="parent" href="swidpath://SoftwareIdentity
[Meta/@persistentId='b3414ccd1e364aa6b82f4e1c3adecdf6']" />
  <Entity name="BigFix" regid="ibm.com" role="licensor publisher" />
  <Entity name="customer" regid="customer.com" role="tagCreator"/>
</SoftwareIdentity>
```

---

## Related information

[Support for ISO/IEC 19770-2 \(on page cdxvii\)](#)

## Manually creating bundling tags

**9.2.5** Available from 9.2.5. You can facilitate the process of software classification by manually creating bundling tags. When a bundling tag is placed on the computer where a component is installed, the component is automatically assigned to the product that is specified in the bundling tag.

Creating bundling tags is most effective when your company uses a process of packaging software installers. In this case, you can add a bundling tag to the packaged installer, and automatically place it on the computers during the installation.

1. Find the SWID tag that is used to discover the component.
  - a. In the top navigation bar, go to **Reports > Software Installations**.
  - b. Find the component, and click the link in the **Details** column. Information about the SWID tag and its location is displayed at the bottom of the page.

2. Go to the computer where the component is installed and open the SWID tag.

To create a bundling tag, you need the following information from the SWID tag.

- name
- version
- persistentId

BigFix Inventory supports SWID tags in the 19770-2:2014-CD1 and 19770-2:2015 schemas. The information necessary to create the bundling tag is available in SWID tags in both schemas. The following example shows SWID tag in the 19770-2:2014-CD1 schema.

```
<?xml version="1.0" encoding="UTF-8"?>
<SoftwareIdentity name="IBM Control Desk"
  uniqueId="0ecd37302a7648a5aca7a26aec76731d-7.6.0"
  version="7.6.0"
  versionScheme="multipartnumeric"
  xmlns="http://standards.iso.org/iso/19770/-2/2014-CD1/schema.xsd"
  xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://standards.iso.org/iso/19770/-2/2014-CD1/schema.xsd
  swid.xsd">
  <Meta persistentId="0ecd37302a7648a5aca7a26aec76731d"/>
  <Meta taxonomyCode="SSWT9A"/>
  <Meta taggingProcess="4-1-20150603"/>
```

```
<Entity name="IBM" regid="regid.1986-03.com.ibm" role="licensor publisher tagCreator"/>
</SoftwareIdentity>
```

### 3. Open a text editor and create a bundling tag according to the following template.

```
<?xml version="1.0" encoding="UTF-8"?>
<SoftwareIdentity name="IBM Control Desk"
  uniqueId="0ecd37302a7648a5aca7a26aec76731d-7.6.0"
  version="7.6.0"
  versionScheme="multipartnumeric"
  xmlns="http://standards.iso.org/iso/19770/-2/2014-CD1/schema.xsd"
  xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://standards.iso.org/iso/19770/-2/2014-CD1/schema.xsd
  swid.xsd">
  <Meta persistentId="0ecd37302a7648a5aca7a26aec76731d"/>
  <Meta taxonomyCode="SSWT9A"/>
  <Meta taggingProcess="4-1-20150603"/>
  <Entity name="IBM" regid="regid.1986-03.com.ibm" role="licensor publisher tagCreator"/>
</SoftwareIdentity>
```

#### Where:

- `COMPONENT_NAME` is the name of the component as specified in the SWID tag
- `PERSISTENT_ID` is the persistent ID of the component as specified in the SWID tag
- `VERSION` is the version of the component as specified in the SWID tag
- `PART_NUMBER` is the part number that represents the product to which the component is to be assigned and its license metric
- `CUSTOMER` is the name of your organization
- `CUSTOMER.COM` is the registration identifier of your organization in the URI format. For more information, see: [Uniform Resource Identifier \(URI\): Generic Syntax](#).

A bundling tag that is created based on the SWID tag presented in step 2 looks as follows.

```
<?xml version="1.0" encoding="UTF-8"?>
<SoftwareIdentity name="BigFix Control Desk"
  tagId="ibm.com-0ecd37302a7648a5aca7a26aec76731d-D0LKPLL"
  version="7.6.0"
  versionScheme="multipartnumeric"
  supplemental="true"
  xmlns="http://standards.iso.org/iso/19770/-2/2015/schema.xsd"
  xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://standards.iso.org/iso/19770/-2/2015-current/schema.xsd
  swid.xsd">
```

```

<Meta productId="PN:D0LKPLL" />
<Link rel="parent "
href="swidpath://SoftwareIdentity[Meta/@persistentId='0ecd37302a7648a5aca7a26aec76731d']" />
<Entity name="IBM" regid="ibm.com" role="licensor softwareCreator" />
<Entity name="MyCompany" regid="mycompany.com" role="tagCreator"/>
</SoftwareIdentity>

```

4. Save the bundling tag. Name it according to the following template:

```
<Tag_Creator_Regid>-<Component_Name>-<Part_Number>.swidtag
```

For example, `mycompany.com-IBM_Control_Desk-D0LKPLL.swidtag`.

5. Place the bundling tag in the same location as the SWID tag.  
Place the bundling tag on all computers on which the component is to be assigned to the product specified in the bundling tag.
6. Wait for the next software scan and import of data.
7. Confirm the assignment of the components.



**Note:** You can easily assign all components that are bundled based on the bundling tag when you use the Software Classification panel.

- a. In the top navigation bar, go to **Reports > Software Classification**.

To filter out the report to components that were bundled by using bundling tags, hover over **Configure**, and click **Configure View**. Then, specify the following filter: `Bundling Tag Used, equal to, Yes`.

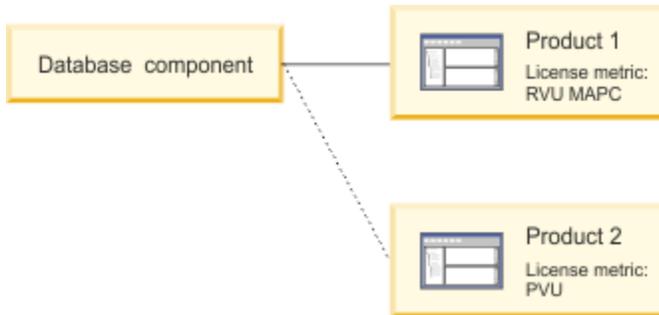
- b. Press `CTRL + A` to select all components.
- c. To confirm the assignment, hover over **Confirm**, and click **Confirm**.

## Part numbers

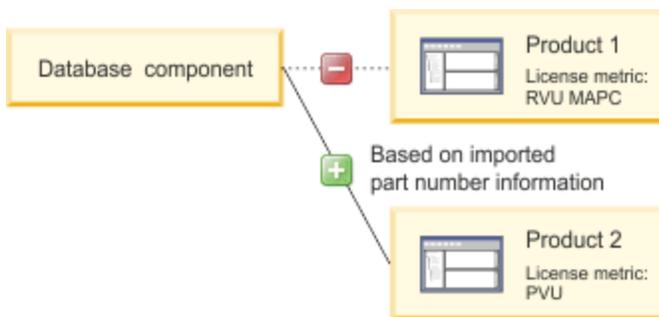
Part numbers represent software products that you purchased and license metrics that these products use. Part numbers are used to increase the accuracy of bundling assistant by narrowing down the number of possible products to which a discovered component can be assigned.

### Example

Bundling assistant assigns a database component to one of the products that were discovered in your infrastructure. However, the database component can also be potentially assigned to another product.



Before you confirm the assignment of the database component or change it manually, you can import the part numbers file to BigFix Inventory. Based on the file, and the component-product relations that are defined in the software catalog, the initial assignment of the database component is more accurate.



## Types of part numbers

There are three types of part numbers:

- Catalog part numbers - Catalog part numbers are provided by BigFix Inventory together with the IBM software catalog and cover only IBM products. Each part number represents a product and a license metric that the product uses.
- Custom part numbers - **9.2.7** Custom part numbers are user-defined part numbers that are not included in the software catalog by default. They might be assigned to non-IBM products, or IBM products with custom deals, or any additional software you wish to add to the software catalog.
- Uploaded part numbers - Uploaded part numbers are part numbers of products that you purchased. You can download the uploaded part numbers list from the Passport Advantage website or create it manually, and upload the file on the **Part Numbers Upload** panel. Part numbers that represents products that you purchased and their license metrics are matched against the part numbers that are provided with the software catalog to improve the results of bundling assistance.

BigFix Inventory considers part numbers that start with the following letters:

- D - part numbers that represent License Entitlements
- E - part numbers that represent Support and Subscription

## Limitations

Following are the limitations with which part numbers can improve bundling assistance:

- Part numbers influence the assignment of only those components whose assignment is not confirmed.
- Part numbers that were purchased before 2010 are not contained in the software catalog.
- Part numbers that represent products that have limited availability are not contained in the software catalog.
- Part numbers that represent products that are available only outside of the United States are not included in the catalog.



**Note:** **9.2.7** You can add a custom part number to the software catalog for any existing product-license metric pair. This solution allows you to customize the software catalog, and ensure that non-IBM products or IBM products that were purchased before year 2010, or are specific to your business and geographical location, are additionally considered during bundling assistance. For more information, see: [Adding custom part numbers \(on page cmlii\)](#).

## Adding custom part numbers

**9.2.7** Available from 9.2.7. Add custom part numbers to the software catalog to improve the results of bundling assistant of software components.



You must have the View Software Catalog and Signatures and Manage Licenses permissions to perform this task.

You can add custom part numbers to any product-license metric pair existing in the software catalog. After adding custom part numbers to the catalog, make sure to include these custom part numbers in the part numbers file that is uploaded to BigFix Inventory. After the next data import, the custom part numbers are matched against the uploaded part numbers and used for bundling assistant. For more information, see: [Uploading part numbers \(on page cmliv\)](#).

1. Log in to BigFix Inventory, and go to **Reports > Products & Metrics**.
2. Select the product for which you want to add a custom part number.
3. Hover over the **Edit**, and click **Edit Part Number**.
4. Provide a custom part number, or part numbers in the **Custom Part Number** field. Separate each number with a comma. The custom part number can contain letters, numbers and an underscore (\_). Other characters are not allowed. Each part number needs to be unique. Thus, you cannot add a duplicate of an existing catalog part number.
5. Click **OK**.

The specified custom part numbers are added to the software catalog, and displayed in the **Catalog Part Numbers** column.

To remove custom part numbers, select the product, hover over the **Edit**, and click **Edit Part Number**. Then, remove custom part numbers from the list, and click **OK**.

## Preparing the part numbers file

The part numbers file can be used to increase the accuracy of bundling assistant by narrowing the number of possible products to which a discovered component can be assigned. You can download the file from Passport Advantage® or create it manually.

If you added custom part numbers to the software catalog, make sure that they are included in the part numbers file. Otherwise, the custom part numbers are not matched against the uploaded part numbers and are not used during bundling assistance.

 **Restriction:** BigFix Inventory supports only CR LF and LF end of line characters. While editing the part number file do not use CR end of line characters specific for Mac systems.

### Downloading the file with part numbers from Passport Advantage®

1. Download the part numbers file from Passport Advantage.
  - a. Log in to [Passport Advantage®](#).
  - b. From the menu on the top, select **Reporting > Order history**.
  - c. If applicable, select the relevant site or sites.
  - d. In the **Type of order** section, select **All**.
  - e. Specify the Sales order date and **Sort by**. Then, click **Submit detail report**. Your report is ready.
  - f. To save the file, click **Download report** and then select **Comma delimited**. Ensure that the file is in the CSV or ZIP format.

 **Important:** If you are not able to download part numbers, you might not have the required permissions on [Passport Advantage](#).

2. If you do not have custom part numbers, create a CSV file that contains a single column without a header. This file can only contain Passport Advantage part numbers, not your custom part numbers. List each part number in a new line. Do not use quotation marks (" ") to define part numbers.

Example:

```
D07UMLL
D08UMLL
D09UMLL
```

3. If you have custom part numbers that are not available on Passport Advantage, add them to the downloaded file. Ensure that the edited file meets the following requirements:
  - a. The file contains two mandatory columns: `Part number` and `Order type`. Only the rows that contain the `Licenses` element in the `Order type` column are imported. The list of part numbers can include Passport Advantage® part numbers, as well as your custom part numbers. You can add any other columns to the file, however, these columns are ignored during upload. Use a comma as a field separator and quotation marks (" ") as a text delimiter.
  - b. Part numbers that should be imported to BigFix Inventory must have the value "Licenses" in the `Order type` column. Rows with other values are skipped.

### Example

```
"Part number", "Order type"  
"D07UMLL", "Licenses"  
"D08UMLL", "Licenses"  
"Custom part number", "Licenses"
```

After you prepare the file, [upload the part numbers \(on page cmliv\)](#).

## Uploading part numbers

Upload and import part numbers to increase the accuracy of bundling assistance of software components.



You must have the Manage Entitlements and Part Numbers Uploads permission to perform this task.

If you added custom part numbers to the software catalog, make sure that they are included in the part number file. Otherwise, the custom part numbers will not be matched against the uploaded part numbers and used during bundling assistance.

1. [Prepare the part numbers file. \(on page cmliv\)](#)
2. In the top navigation bar, click **Management > Part Numbers Upload**.
3. **9.2.2** Choose the computer group for which you want to upload the part numbers.



**Note:** The part numbers are taken into account only for the software that is installed on the computers that belong to this group. They are also visible only to the user who is assigned to this computer group. For example, if you upload part numbers for a subgroup of the All Computers group, the part numbers are visible only to the user who is assigned to the subgroup and are not visible to the user who is assigned to the All Computers group.

4. Click **Browse** and choose the part numbers file to upload. You can upload a CSV or a ZIP file.
5. **Optional:** If you want to overwrite the existing part numbers, select **Overwrite existing part numbers**. Otherwise, the new part numbers are added to the existing ones.  
The option is enabled only if you previously imported a part numbers file for the computer group that you selected in step 3.
6. Click **Upload**.  
When you upload the file, a new entry is created in the Upload History table. The status is Pending until you run the import.



**Important:** If more than one entry has the Pending status, only the latest part numbers file is imported.

7. Wait for the scheduled import or run it manually.

The part numbers were imported to BigFix Inventory.

If the part numbers are not matched with products after you upload the part number file and run import, see: [Catalog problems. \(on page mccccxlv\)](#)

- **Removing the imported part numbers from BigFix Inventory server**

If you want to remove the part numbers from the server, go to **Management > Part Numbers Upload**, click **Remove All Part Numbers** and then run the import. You can remove the part numbers only if you previously imported the part numbers file to the server.

- **Checking what part numbers are currently imported to BigFix Inventory**

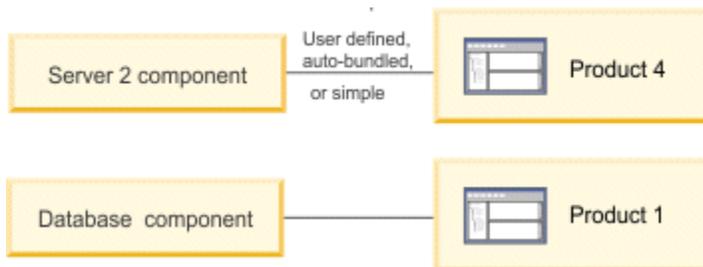
You can check what part numbers are currently imported to BigFix Inventory. To do it, go to **Reports > Products & Metrics** and configure the report view to display the **Imported Part Numbers** column. You can also narrow down the report to only see the products that are linked with the imported part numbers by setting the following filter: `Imported Part Numbers, is not empty.`

## Partition collocation

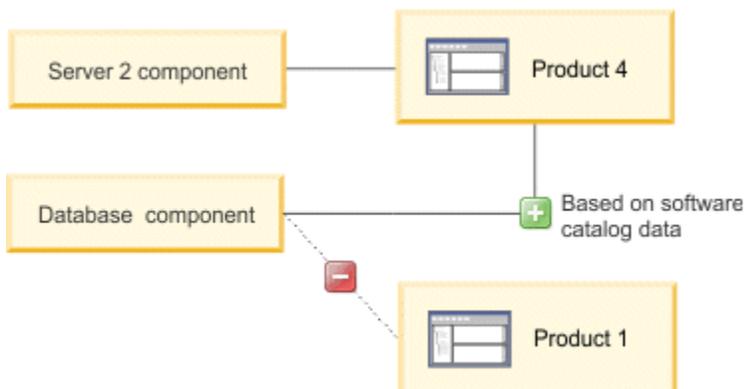
Partition collocation is a rule that discovers component instances that are on the same partition and are related to a product in the software catalog. If any of the discovered component instances has a confirmed, or one-to-one relation to the product, the other instances are automatically bundled with the same product.

### Example

The assignment of the Server 2 component to Product 4 is simple, or manually confirmed. The database component is assigned to Product 1. Both components are on the same partition.



Based on the software catalog data, the database component is automatically reassigned to Product 4.



### 9.2.6 Components that are not evaluated

Some components are not evaluated as part of the partition collocation rule and do not affect other components that are installed on the same partition. The components include:

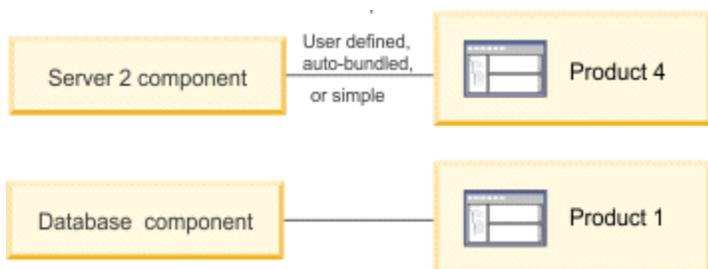
- Tivoli Monitoring for Databases - *<name>* Agent
- Tivoli Monitoring - *<name>* Agent

### Infrastructure collocation

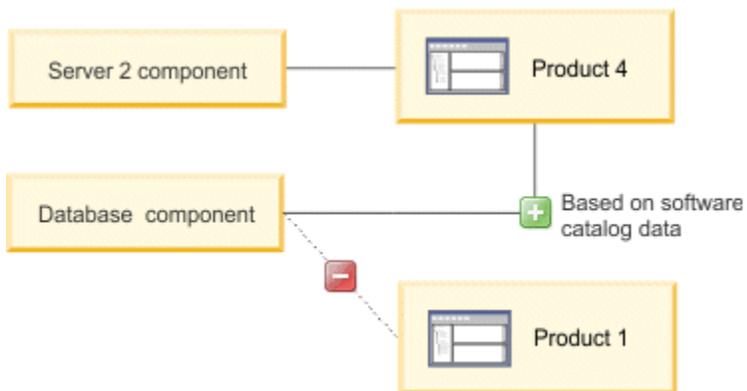
Infrastructure collocation is a rule that discovers component instances that are installed in the same infrastructure and that are related to a specific product in the software catalog. The search does not include the agent on which the product is installed. If any of the discovered component instances has a confirmed, or one-to-one relationship with the product, the other instances are automatically bundled with the same product.

### Example

The assignment of the Server 2 component to Product 4 is simple, or manually confirmed. The database component is assigned to Product 1. Both components are in the same infrastructure.



Based on the software catalog data, the database component is automatically reassigned to Product 4.



### 9.2.6 Components that are not evaluated

Some components are not evaluated as part of the infrastructure collocation rule and do not affect other components that are installed in the same infrastructure. The components include:

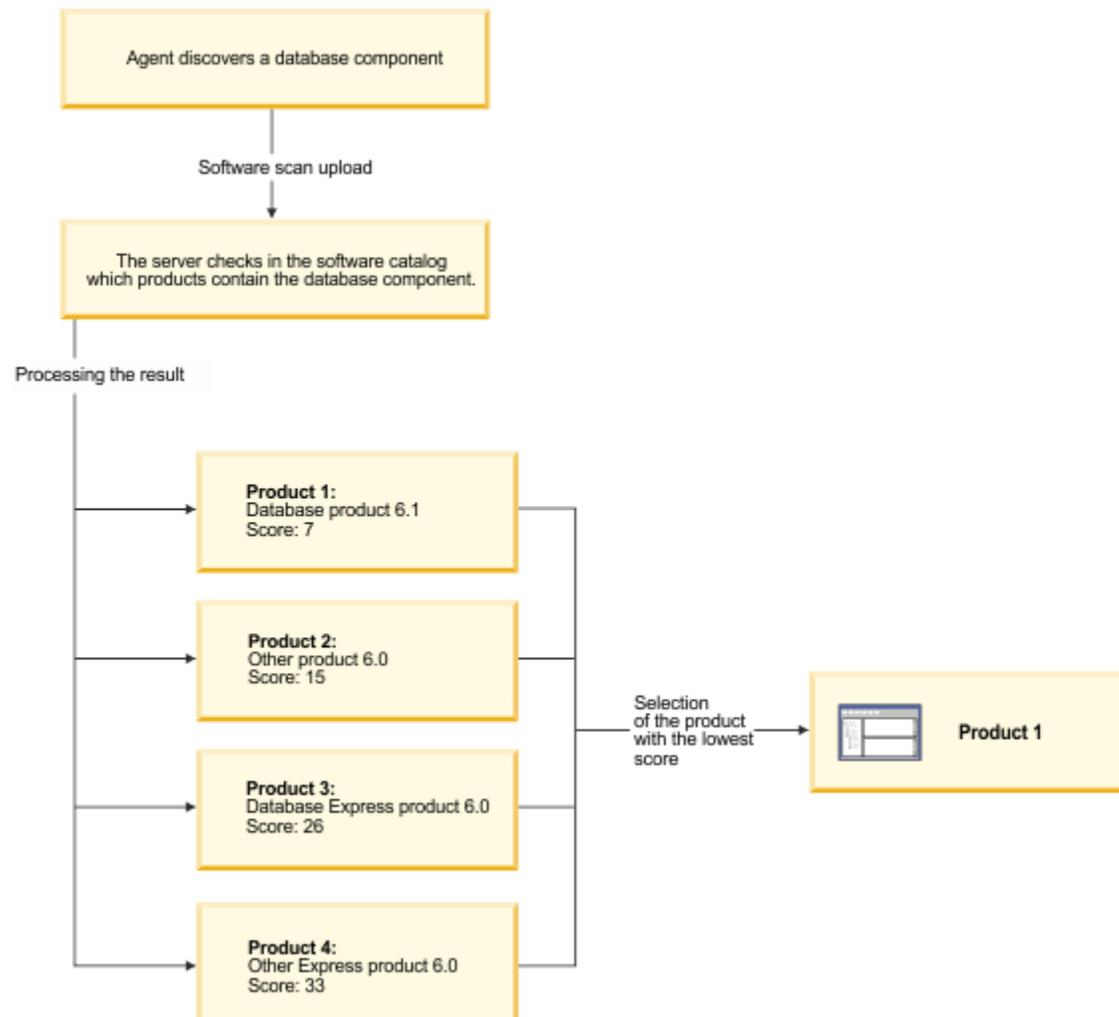
- Tivoli Monitoring for Databases - *<name>* Agent
- Tivoli Monitoring - *<name>* Agent

## Stand-alone product discovery

Stand-alone product discovery is a rule that identifies components that have more than one default component to product relation. For each relation, it compares the name of the component with the name of the product and calculates the Levenshtein distance. During the calculation, production components are assigned to production products, and non-production components such as trial, demonstration, limited, or express versions are assigned to non-production products. The algorithm does not favor shorter names, but names that have more letters in common. Based on the calculations, the product-component relation with the shortest distance (represented by the lowest score) is selected. If a few relations have the same score, they are ordered alphabetically.

### Example

The agent discovers the database component and the server checks which products contain this component in the software catalog. The database component is assigned to the product whose name produces a match with the lowest score, in this case, Product 1.



## Software Classification panel

**9.2.7** Available from 9.2.7. Software Classification panel provides an overview of your software inventory and the relations between the discovered software components and licensable products. It provides a flat structure with software installations broken into single components, which makes it easier to view your software assets and manage relations between them.



**Note:** The Software Classification panel replaced the IBM Software Classification report and is the only integrated place to manage the discovered software components and their relations with licensed products.

## Permissions



You must have the **Manage Software Classification** permission to view the panel and classify software. To view some additional columns related to computers on which the components are installed, you also need the **View Endpoints** permission.

## Panel overview

Before you start working with the discovered components, see the details of the Software Classification panel to understand the available options and columns.

Publisher N...	Component Name	Compo...	Compo...	Product Name	Metric	Cloud Pak ...	Entitled	Computer Name	Installation Path	Details
Microsoft	Windows Server 2019 Standard	10.0	10.0.17...	Windows Server 2019 Standard	Microsoft ...	None	No	BLMYCLDTW2...	C:\Windows	DETAIL...
Microsoft	Windows Server 2019 Standard	10.0	10.0.17...	Windows Server 2019 Standard	Microsoft ...	None	No	BLMYCLDTW2...	C:\Windows	DETAIL...
Microsoft	Windows Server 2022 Standard	10.0	10.0.20...	Windows Server 2022 Standard	Microsoft ...	None	No	NJMYCLDTW2...	C:\Windows	DETAIL...
Google	Google Chrome	118.0	118.0.5...	Google Chrome	Install Seats	None	No	BLMYCLDTW2...	C:\Program Files\Google\Chrome\Application	DETAIL...
Microsoft	Microsoft SQL Server Management Studio	18.9	15.0.18...	Microsoft SQL Server Management Studio	Install Seats	None	No	BLMYCLDTW2...	<no data>	DETAIL...
Microsoft	Microsoft SQL Server Management Studio	18.9	15.0.18...	Microsoft SQL Server Management Studio	Install Seats	None	No	BLMYCLDTW2...	<no data>	DETAIL...
Microsoft	Microsoft SQL Server 2012 Native Client	2012.0	11.4.74...	Microsoft SQL Server 2012 Native Client	Install Seats	None	No	BLMYCLDTW2...	<no data>	DETAIL...
Microsoft	Microsoft SQL Server 2012 Native Client	2012.0	11.4.74...	Microsoft SQL Server 2012 Native Client	Install Seats	None	No	BLMYCLDTW2...	<no data>	DETAIL...
Microsoft	Microsoft SQL Server 2012 Native Client	2012.0	11.4.74...	Microsoft SQL Server 2012 Native Client	Install Seats	None	No	NJMYCLDTW2...	<no data>	DETAIL...
Free Softwa...	Gzip	1.5	1.5-10.e...	Gzip	Install Seats	None	No	bfdevosawellin7	/usr/bin	DETAIL...
BED.HAT	Logical Volume Manager	2.2	2.02.17...	Logical Volume Manager	Install Seats	None	No	bfdevosawellin7	/usr/sbin	DETAIL...

The Software Classification report is one of the most crucial reports in BigFix Inventory. You can view your software assets and manage relations between them. The software classification is reflect on the All IBM Metrics report and thus, ensures the currency and accuracy of the audit snapshot.

## Menu

The menu consists of a set of options that allow you to properly classify your software inventory.

- [Assigning components to products \(on page cmlxxix\)](#)
- [Assigning products to FlexPoint bundles \(on page cmlxxxvi\)](#)
- [Assigning products to Cloud Paks \(on page cmlxxxiv\)](#)
- [Excluding and suppressing software instances \(on page cmlxxxj\)](#)

- [Confirming assignment of software components \(on page cmlxxxii\)](#)
- [Adding and removing tags \(on page mciv\)](#)
- [Managing the uninstallation of software \(on page cmlxii\)](#)

Apart from the options that are available in the menu, you can also create custom rules to automatize the software classification process. For more information, see: [Creating and managing custom rules \(on page cmlxxxiii\)](#)

### Report columns

The list of the default columns is limited. However, you can customize the report view and add or remove the columns according to your needs by using the **Configure View** option, under the **Configure** menu.

For more information about the columns, see: [Report columns \(on page mlxxvi\)](#)

### Default columns

- **Component Name** shows components that were discovered on your computers.
- **Component Detailed Version** shows the version of the software component that is installed on the computer. For more information, refer to [Component Detailed Version \(on page mlxxix\)](#).
- **Version** shows version of the component.
- **Product Name** shows products under which the components are licensed based on the software catalog.
- **Metric** shows license metric that is assigned to the product.
- **Computer Name** shows the computer where a component was discovered.
- **Installation Path** shows details about an installation path of products.

**10.0.12** If the installation path is provided by any matched detection except package (file, a software identification tag or an extended signature), then package path is not taken into account as instance installation path. If the installation path is not provided by any matched detection except package, then the package installation path is shown as the instance installation path.



**Note:** Before BigFix Inventory version 10.0.2, installation path was available only for IBM products. From version 10.0.2 and higher, installation path is available for all products.

- **Details** shows details, such as publisher, component, installation path, and signatures. **10.0.2** Starting from version 10.0.2, the details view shows only matched detection. It does not show signatures that does not match. If a product has been installed in different locations, the details view shows only the relevant path of the selected row. It also includes a link with a complete list of signatures.

**10.0.12** The **Details** panel includes **Package Installation Path** and **Package Installation Date** details for matched Windows package data.

### Additional columns not enabled by default

- **Always Not Charged** indicates whether a component is always not charged.
- **Bundling Tag Used** shows whether the product assignment is based on a bundling tag.
- **Charged** indicates whether the component is charged, or not charged based on its license.
- **Comment** shows a comment that was entered while excluding, or suppressing the software instance from pricing calculations.
- **Component Tags** are defined on the Software Components panel. These tags are common for all discovered instances of the same component.
- **Computer Deletion Date** shows the date and time when the computer stopped being discovered, for example because the computer was removed from the infrastructure, the data source was removed, or the BigFix client was uninstalled.
- **Confirmed** indicates whether the software classification was manually confirmed.
- **Discovery End** indicates when the component instance was reported for the last time. If the component is still detected, the column shows `<n/a>`.
- **Discovery Start** indicates when the component instance was reported for the first time.
- **9.2.12 End of Support** indicates the date when the software component reaches EOS (End of Support). For information about how to change the date, see: [Changing end of support date \(on page mlili\)](#). **10.0.4** The EOS date of Microsoft products, such as Microsoft SQL Server, Microsoft Excel, Windows OS, and Visual Studio has been updated. The EOS of non-IBM components has also been updated. The updated EOS of the Microsoft products have been merged with the non-IBM components.
- **9.2.13 Vulnerability Risk (Preview)** shows Common Vulnerabilities and Exposures (CVEs) that were matched with the particular software component through its detailed version. The column can contain multiple values that are displayed after expanding. For more information about CVEs, see: [Preview: Checking Common Vulnerabilities and Exposures \(CVEs\) \(on page mccxx\)](#).
- **Excluded** indicates whether the product on a particular computer is currently excluded from pricing calculations.
- **9.2.13 FlexPoint Bundle** shows the FlexPoint bundle to which the product is assigned.
- **IBM-provided Bundling Option** indicates whether the product has the selected component listed as a bundling option in the software catalog provided by IBM.
- **Imported Part Numbers** shows the part numbers that you imported to BigFix Inventory.
- **Instance Tags** are discovered for individual instances of a software. These tags are independent from component tags in catalog. Discovered tags are set by using the dedicated option.
- **One to One** indicates whether the product to which the component is currently assigned is the only bundling option that is available in the software catalog.
- **Present** indicates whether the component instance is currently installed.
- **Shared** indicates whether a component instance is shared between multiple products.
- **Suppressed** indicates whether the component is currently suppressed from the inventory. For more information on suppression, see [Excluding and suppressing software instances \(on page cmlxxi\)](#).



**Note:** **10.0.2** **10.0.4** With improvements for ISO SWID tags processing in versions 10.0.2 and 10.0.4, BigFix Inventory is capable to read information from most ISO SWID tags released by vendors. This includes the ability to recover from issues within the tag itself.



Reporting of software through ISO SWID tags is not normalized and the reports are shown as usual. Currently, the following ISO SWID tags were identified that results in duplicate discovery of existing software catalog entries with below names:

- with the publisher defined as: Adobe Systems Incorporated
- with the publisher defined as: Microsoft Corporation
- with the component name of: Red Hat Enterprise Linux

**10.0.4** Starting from version 10.0.4, predefined custom rules have been created to suppress the duplicate discovery of software which have been already discovered once. **10.0.9** With version 10.0.9, the issue of not marking already discovered software have been addressed. In future releases, there might be added capability to reject ISO SWID tags overlapping with catalog content.

- **10.0.5** **Product Publisher Name** indicates the name of the publisher of a product that a software instance is assigned to. The column is empty if no product assigned.
- **10.0.15** **Uninstall Supported** identifies software instances for which minimum criteria for automatic uninstallation are met.

## Customization

### Sorting

You can adjust the view by sorting the displayed data by as many columns as you need. To sort the data by multiple columns, hold **SHIFT**, and click the columns. The column you choose first takes precedence in sorting. Other columns are sorted in the order of the selection. In this way, if the data in a single column is the same (for example, BigFix Platform Agent), you can choose another column to further sort it by (for example, by version and product name).

<i>Component Name</i>	<i>Compo...</i>	<i>Product Name</i>	<i>Metric</i>
Windows Media Player	12.0	Microsoft Windows Media Player	Install Seats
Windows Media Player	12.0	Microsoft Windows Media Player	Install Seats
Windows App Certification Kit	10.0	Windows App Certification Kit	Install Seats
WinSCP	5.15	WinSCP	Install Seats
WinSCP	5.17	WinSCP	Install Seats
VMware Tools	10.2	VMware Tools	Install Seats
VMware Tools	10.2	VMware Tools	Install Seats

To clear a sorted column, hold **CTRL** or **CMD** on Mac, and click on this column. To clear all, click any of the columns.

### Multiselect

To simplify your actions, you can select multiple items at once. To select multiple components:

- Hold **CTRL**, or **COMMAND** on Mac, to add another item to the current selection.
- Hold **SHIFT** and select two items to extend the selection to all items in between (any previous selection is canceled).
- Select all instances by using **CTRL + A**, or **COMMAND + A** on Mac.



**Restriction:** You can select up to 250 000 components at once.

## Limitations

Currently, the Software Classification panel has the following limitations:

- When you exclude, or suppress instances, the notification informs you whether the action was successful or not. However, the notification does not provide the number of instances affected, or any further details.
- When you exclude multiple products or products on multiple computers, the exclusion window lists these items separately. The order does not reflect the relation between the computer and the product. The lists are limited to display up to three items.
- When you reassign the component to the different release of the same product, and this component is currently assigned to the excluded release of the product, the exclusion flag is not cleared.
- If you created and saved a custom report filtered by *Exclusion Status* in the versions before 9.2.6, the report is not replicated when you upgrade to the newest version of BigFix Inventory.
- <Before **10.0.2**> Installation path is provided only for IBM products.
- When you reach the limit of unique custom rules, and create an additional rule without applying a different filter, or refreshing the Software Classification panel view, the additional rule is added.
- When you sort components by metric, components with the same metrics are grouped together, but metrics are not sorted alphabetically.
- Going to the first and last row by using the **HOME** and **END** keys is not supported.

### **10.0.15** Uninstall Software

Starting from BigFix Inventory version 10.0.15, you can uninstall Windows software based on certain scenarios, which are explained in this topic.



**Note:** You can still follow the process of getting the software uninstalled by the support team.

The Software Classification panel includes a **Manage** menu, which has two options: **Uninstall with BigFix** and **Notify Users to Uninstall**. You can request software uninstallation or send a notification to uninstall the software using these options.

<input type="checkbox"/>	Publisher Name	Component Name	Uninstall Supported	Instance Tags	Version	Computer Name	Installation Path
<input checked="" type="checkbox"/>	Microsoft	Microsoft SQL Server 2012 Native Client	Yes	uninstall_requested		7462.6 N.JMYCLDTW215161	<no data>
<input type="checkbox"/>	Microsoft	Microsoft Visual Studio Code	Yes		1.84.2	N.JMYCLDTW215161	C:\Program Files\Microsoft VS Code\
<input type="checkbox"/>	The Git Development--	Git	Yes		2.43.0	N.JMYCLDTW215161	C:\Program Files\Git\

The two options, or scenarios, for uninstalling software are explained below:

### Uninstall with BigFix

Use this option to allow BigFix Inventory to send an uninstall request to BigFix Platform. If the software is not eligible for uninstallation, a warning message appears.

Example of an unsupported operating system: Uninstallation Action is not available for this entry ('OS').

Once the request is sent, BigFix server receives an action to uninstall the software. The server console shows the action with the software name, software version, timestamp, and computer ID. The time allowed to take action on the request is 7 days. If the uninstallation is not done, the notification expires. The **Instance Tags** column shows the status of the uninstallation.

BigFix Inventory connects with BigFix Platform every minute to check the status of the uninstallation.

### Notify user to uninstall

Use this option to allow BigFix Inventory send a server notification to the user to uninstall the software. A notification along with the source of notification appears. BigFix Inventory connects with BigFix Platform every 3 minutes to check the status of the uninstallation. The **Instance Tags** column shows the status of the uninstallation.

### Rules for uninstallation

The **Uninstall Supported** column shows if uninstallation of software is allowed based on the uninstallation rules. To prevent losing data, you must check if uninstallation is supported for the software. Below are the rules based on which uninstallation is allowed:

**The Uninstall Supported column shows the outcome, and if the following scenarios are met:**

- The software that you want to uninstall must be a Windows package.
- The detection of the software is based on packages (Apps and Features / Windows uninstallation registry).
- The software is detected by regular endpoints and not by disconnected scanners.
- Some groups of software publishers are excluded, such as IBM, HCL, Adobe, AutoDesk, and Corel.
- Some Microsoft subcomponents are excluded, such as Microsoft Office, Microsoft SQL Server Windows, Microsoft Edge, Machine Learning Server, and Microsoft SQL Server Reporting Services.

**The following additional validations are checked before the uninstall action is sent:**

The error codes are also mentioned along with the rules. The error codes are visible in the error messages; for example, `Uninstallation Action is not available for this entry ('OS')`.

- The software must be detected by a regular endpoint and not by disconnected scanners.

Error code: 'DISCONNECTED'

- The software must be detected on the Windows operating system.

Error code: 'OS'

- The software must be installed and available on the computer.

Error code: 'Not present'

- The software must have been seen in the last 3 days.

Error code: 'Last seen over 3 days ago'

- One package key and package name must be available.

Error code: 'No package' or 'Too many packages' or 'No package key' or 'No package name'

**To uninstall using the Action Script, the following criteria are met:**

- PowerShell registry path is valid.
- The BES Client version is not older than 9.5.11.
- An uninstallation registry entry exists for the selected software.
- MSI-based installation or QuietUninstallString key is available.

**Rules for showing notifications to uninstall the software**

The following are the rules to show notification for uninstalling the software:

The error codes are also mentioned along with the rules. The error codes are visible in the error messages; for example, `Notify User to Uninstall Action is not available for this entry ('OS')`.

- The software must be detected by a regular endpoint and not by disconnected scanners.

Error code: 'DISCONNECTED'

- The software must be detected on Windows operating system.

Error code: 'OS'

- The software must be installed and available on the computer.

Error code: 'Not present'

- The software must have been seen in the last 3 days.

Error code: 'Last seen over 3 days ago'

## Supported installation models

The two supported installation models are MSI-based (Microsoft Software Installer-based) and QuietUninstallString.

## Software uninstallation logs

The uninstallation log file includes details about the Uninstallation.

Successful:

```
Started POST "/sam/uninstall_softwares/send_uninstall_action"

Processing by SAM::SoftwareUninstallsController#send_uninstall_action as */*

Parameters: {"prodInvId"=>"10018", "_import_id"=>"10004"}

Send uninstall action for prodinv id 10018 and data
{:computer_id=>3, :component_id=>73015, :remote_id=>551641069, :datasource_id=>1, :end_time=>9999-12-31
23:59:59 UTC, :os_name=>"WINDOWS", :database_type=>"mssql", :last_seen=>2023-11-20
22:54:29 UTC, :description=>"{CD95F661-A5C4-44F5-A6AA-ECDD91C24151}", :name=>"WinZip
28.0", :version=>"28.0.15640", :vendor=>"Corel Corporation"}

Saved uninstallation action id 9998 for prodinv id 10018

The uninstall action for prodinv id 10018 successfully sent

Successful uninstallation for action 9998 and prodinv id 10018
```

Unsuccessful:

```
Started POST "/sam/uninstall_softwares/send_uninstall_action"

Processing by SAM::SoftwareUninstallsController#send_uninstall_action as */*

Parameters: {"prodInvId"=>"8", "_import_id"=>"10004"}

Send uninstall action for prodinv id 8 and data
{:computer_id=>4, :component_id=>63626, :remote_id=>1623105004, :datasource_id=>1, :end_time=>9999-12-31
23:59:59 UTC, :os_name=>"WINDOWS", :database_type=>"mssql", :last_seen=>2023-11-20 22:53:56
UTC, :description=>"{9D93D367-A2CC-4378-BD63-79EF3FE76C78}", :name=>"Microsoft SQL Server 2012 Native
Client", :version=>"11.4.7462.6", :vendor=>"Microsoft Corporation"}
```

```

Saved uninstallation action id 9999 for prodinv id 8

The uninstall action for prodinv id 8 successfully sent

Uninstallation failed for action 9999 and prodinv id 8. Exit code exit_code: 9

The periodic task updating BigFix server action statuses is stopping the action with id: 9999 from the BigFix
server.

```

## Exit code from action

The exit codes are visible for a given action in BigFix console and BigFix Inventory `tema.log` under Software uninstallation logs.

The table below shows the exit codes with their descriptions:

Code	Description
0	successful uninstallation
1	unsupported operating system. Only Windows operating systems are supported
2	PowerShell path not found in Windows registry
3	missing PackageManagement - PowerShell module
4	BES Client version is lower than 9.5.11
9	uninstallation failed
10	software not found in Windows registry. Probably already uninstalled
11	unsupported uninstallation type. Only MSI-based installers or those with QuietUninstallString registry parameter.
12	unsupported software. BigFix components cannot be uninstalled.

## Additional information

- New "Uninstall Actions" permission is available by default only for the administrators.
- Up to 20 active (running) actions per datasource are allowed in total, combining both uninstallation and notifications.
- One action is applicable to one software per computer.
- Software is marked as *uninstall\_not\_successful* or *notification\_not\_successful* if its uninstall actions were manually stopped or removed from BigFix server.
- The timeout for uninstallation is 4 hours.

- The timeout for action is 7 days.
- Action expires when a timeout of 1 day reaches all timezones.
- These types of software installations are not supported:
  - software installed for a given user on the same Windows / computer
  - software installed from Microsoft Store / Windows Store
  - software available as Windows features / Optional features

### Example of the 'Notify user to uninstall' scenario

The below image shows an example of a notification that is sent to the user requesting them to uninstall software:

**BigFix Action Requests**

**WinZip 28.0 28.0.15640 uninstallation required**

 Important! WinZip 28.0 28.0.15640 on this system is not approved and should be removed.

UNINSTALL it manually and click Take Action to CONFIRM REMOVAL.  
This request has been initiated by Software Asset Manager with BigFix Inventory.

You must take this action within 5 days.

Title	Deadline
WinZip 28.0 28.0.15640 uninstallation required	5 days from now

Click Snooze to be reminded again:

### Benefits and limitations of the Software Classification panel

**9.2.7** Available from 9.2.7. The Software Classification panel replaced the BigFix Software Classification panel. It displays all your software installations and provides a streamline software management, and classification.

#### Benefits

Main benefits of the Software Classification panel:

- Provides improved filtering capabilities, multiple filters can be applied to all available columns.
- Allows for flexible ordering and sorting of data by any column.
- Allows for selecting multiple components and assigning them to a product in one go.
- Provides extended search capabilities when you assign components to products. The list of target products can be searched by product name, version, metric, or by other attributes.
- Shows components that are discovered with software ID tags.
- Shows components that were installed in the past but are no longer detected, for example because they were uninstalled or the computer on which they were installed was decommissioned.

## Limitations

Currently, the Software Classification panel has the following limitations:

- When you exclude, or suppress instances, the notification informs you whether the action was successful or not. However, the notification does not provide the number of instances affected, or any further details.
- When you exclude multiple products or products on multiple computers, the exclusion window lists these items separately. The order does not reflect the relation between the computer and the product. The lists are limited to display up to three items.
- When you reassign the component to the different release of the same product, and this component is currently assigned to the excluded release of the product, the exclusion flag is not cleared.
- If you created and saved a custom report filtered by *Exclusion Status* in the versions before 9.2.6, the report is not replicated when you upgrade to the newest version of BigFix Inventory.
- <Before **10.0.2** > Installation path is provided only for IBM products.
- When you reach the limit of unique custom rules, and create an additional rule without applying a different filter, or refreshing the Software Classification panel view, the additional rule is added.
- When you sort components by metric, components with the same metrics are grouped together, but metrics are not sorted alphabetically.
- Going to the first and last row by using the `HOME` and `END` keys is not supported.

## Using BigFix Inventory to calculate license for BigFix products

BigFix Inventory can calculate licenses for products from BigFix portfolio, BigFix endpoints are correctly classified to appropriate products and metrics. To automate that process, a few fixlets are introduced into BES Support site. This document provides you information on how to use these fixlets. The document also describes some additional steps to be followed in BigFix Inventory. For more information, see also [Activating the license counting process \(hcltechsw.com\)](http://hcltechsw.com).

**Prerequisite:** Before performing any step, check the prerequisites at [Prerequisites \(hcltechsw.com\)](http://hcltechsw.com).

Most of the process is executed by generating components in BigFix Inventory. Components are generated using tags that are put on the endpoints by using **Generate BigFix license tags** fixlet. After the components are generated, a user must manually assign a product with correct metric to it.

Tags are generated by **Generate BigFix license tags** fixlet according to the following table:

OS type	OS name example	Default metric
Supported UNIX	Solaris, HP-UP, AIX	RVU
Supported LINUX	SLES, RHEL, Debian, Ubuntu, Cent OS	RVU
Supported Microsoft Windows Server	Windows 2008, Windows 2012	RVU
Supported Microsoft Windows non-Server	Windows 7, Windows 8, Windows 10	ClientDevice

For example, on Windows 10 the default metric for all BigFix products is ClientDevice.

Based on the license agreement between the customer and HCL, the actual licensing may differ from the default table. For example, a customer can use the ClientDevice licensing for servers instead of the default RVU if they have such agreement.

In that situation, it is possible to override the default metrics by using the **Categorize RVU/MVS/ClientDevice** clients fixlet.

The following topics explain the process of license counting. [Step 1 \(on page cmlxix\)](#) is optional and it explains how to override default metrics. Start from step 1, if you want to override default metrics. Else, begin with [step 2 \(on page cmlxxi\)](#).

## Running the "Categorize RVU/MVS/ClientDevice clients" fixlets (Optional)

If you want to override default metric mapping to BigFix products, run the fixlet. For more details, refer to [Categorizing the clients \(hcltechsw.com\)](#).

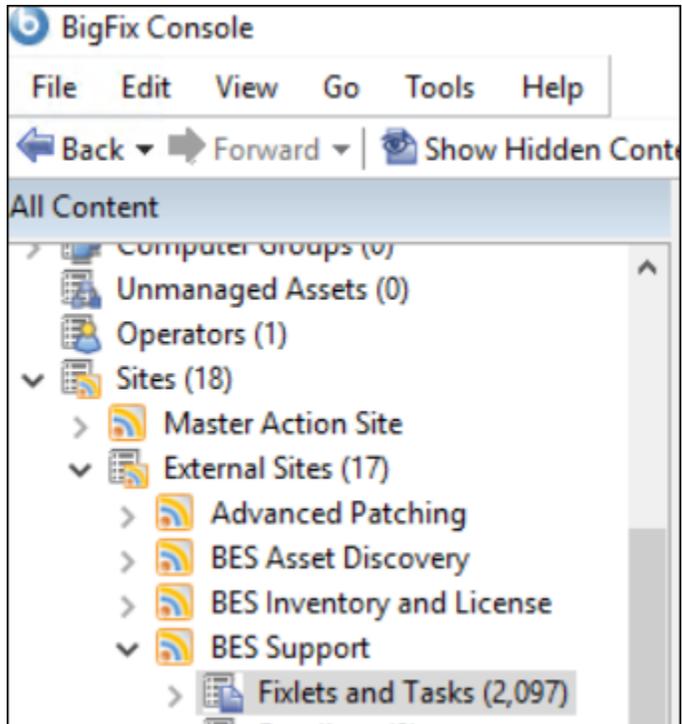


**Note:** This task is optional.

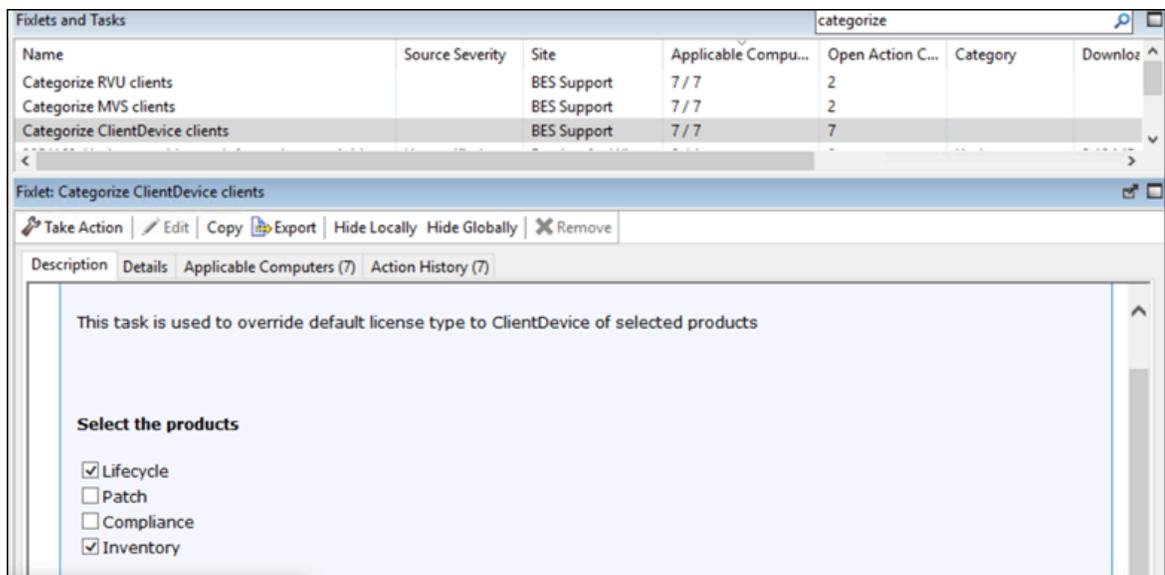
## Using the fixlet

To use the fixlet, perform the below steps:

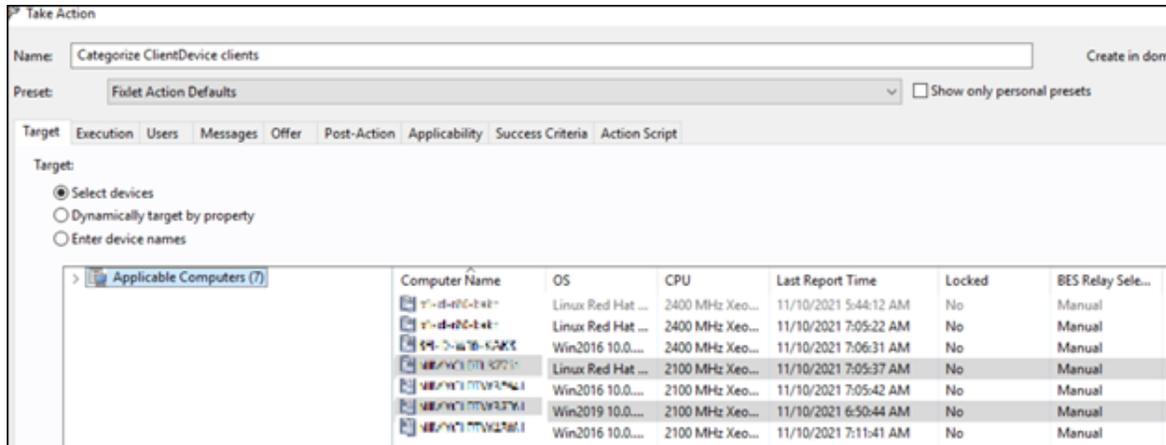
1. In the BigFix console, go to **Sites > External Sites > BES Support > Fixlets and Tasks**.



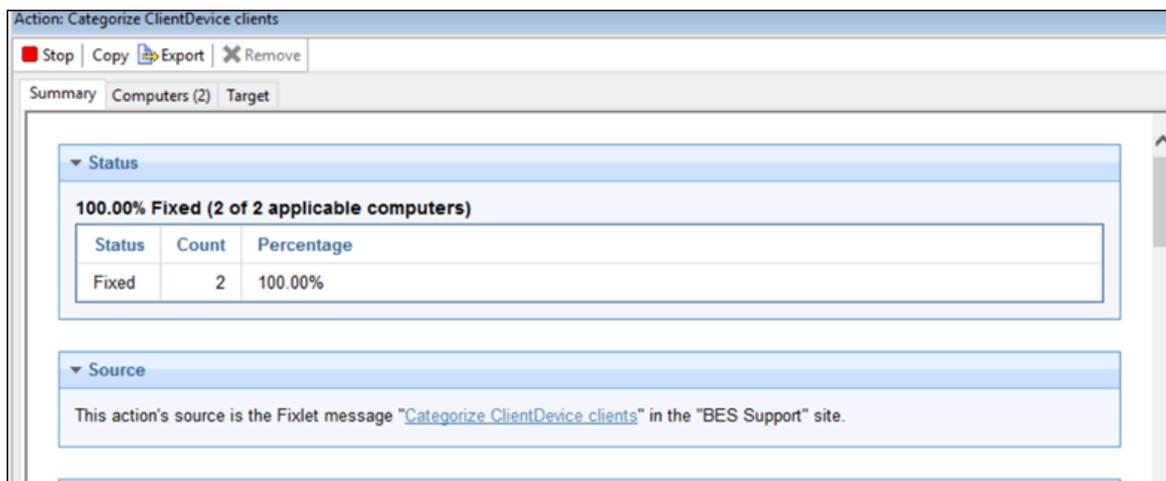
2. Search "Categorize" fixlet by using the keyword 'categorize'. A total of 3 fixlets matching the keyword, appears.
3. Select the fixlet according to your BigFix license entitlements.



4. Select the products for which you want to override the default product. The default metric for the endpoints and products that you select is overridden by **ClientDevice**. The default metric for the ones you do not select remains same.
5. Click on **Take Action** and select the endpoints.



**Example:** Linux and one Windows machine



6. Click **OK**. The fixlet starts running.



**Note:** The Categorize fixlet only overrides the default metric used during **Generate BigFix license tags** fixlet. The fixlet does not change anything else.

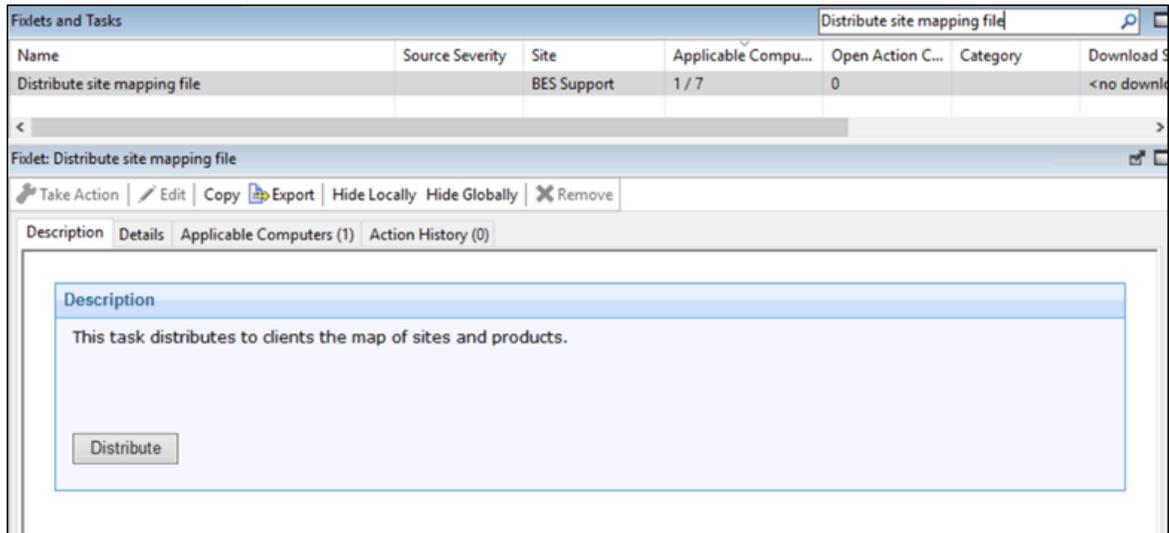
## Running the "Distribute site mapping" file fixlet (Mandatory)

**Distribute site mapping** file fixlet is used to update the licensed products and their related sites on the client. It is mandatory to run **Distribute site mapping** fixlet before using **Generate BigFix license tags** fixlet. For more details, refer to [Distributing the site mapping file \(hcltechsw.com\)](http://hcltechsw.com).

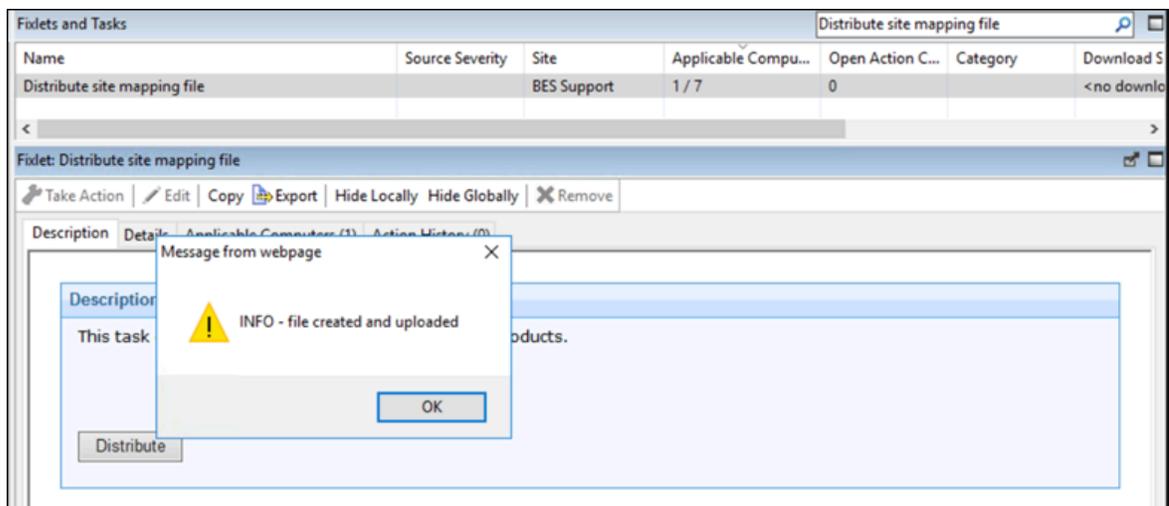
## Using the fixlet

To use the fixlet, perform the below steps:

1. Select the fixlet at **Sites > External Sites > BES Support > Fixlets and Tasks**.



2. Click on **Distribute**. Once the action is complete, a message `INFO: file created and uploaded` appears.



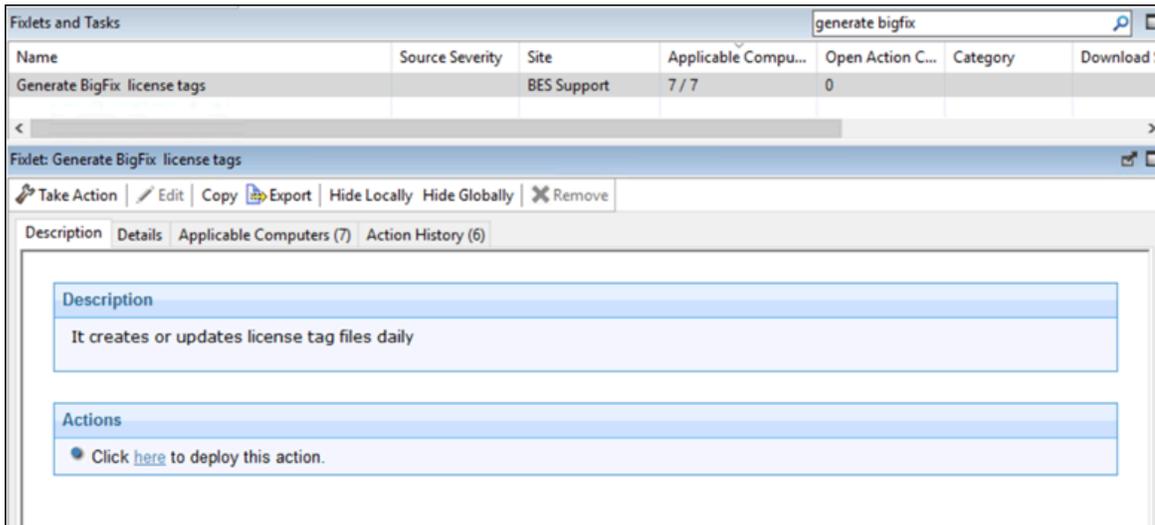
## Generate BigFix license tags (Mandatory)

After running the **Distribute site mapping file** fixlet you can run **Generate BigFix license tags** to update the license tag of the product for each site to which the clients are subscribed. The tags are put and stored on the chosen endpoints. For more information, refer to [Generating the license tags \(hcltechsw.com\)](http://hcltechsw.com).

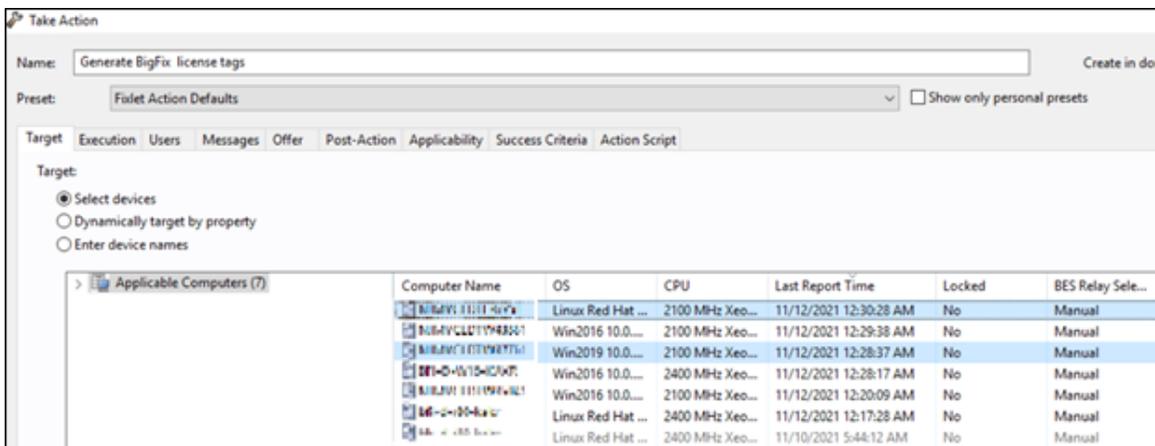
### Using the fixlet:

To use the fixlet, perform the below steps:

1. In BigFix Console, go to **Sites > External Sites > BES Support > Support > Fixlets and Tasks**.



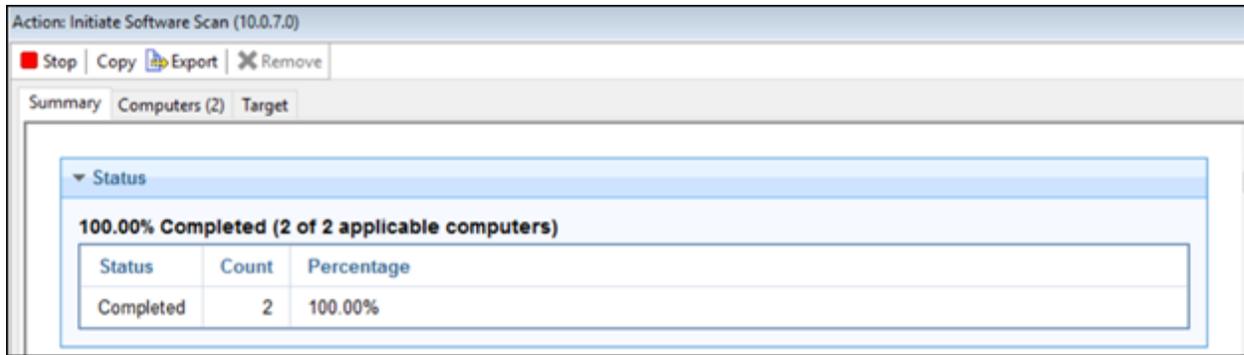
2. Click **Take action** and select the endpoints you want to run it on.



**Result:** The SWID tags are put on the endpoint in the BigFix folder.

Initiate software scan fixlet (Mandatory)

After running all the previous fixlets (Categorize fixlet is optional), wait until the next software scan or use the **Initiate Software Scan** fixlet on the endpoints you have chosen during previous steps.



After the scan finishes, import the scanner results to BigFix Inventory. To import the results, wait until the next scheduled import finishes (depending on your import settings) or manually import the results through the BigFix Inventory WebUI in the **Management > Data Import > Import Now**.

Manual assignment in the BigFix Inventory WebUI (Mandatory for products other than BigFix Inventory)

In the previous steps you have generated new tags on the endpoints. After the scan and import new components were generated, you must manually assign correct products to them.

### Assigning the products

To assign products to components, perform the below steps:

1. Go to **Reports > Software Classification**.

**!** **Important:** For license calculation to work correctly, select IBM products with the latest version while assigning products.

The screenshot shows the 'Software Classification' page in the BigFix Inventory web interface. It features a table with columns for Publisher Name, Component Name, Version, Product Name, Metric, FlexPoint, Entitled, Computer Name, and Installation Path. The table lists various components like '7-Zip', 'BigFix Compliance ClientDevice', 'BigFix Compliance RVU', 'BigFix Inventory Server', 'BigFix Lifecycle ClientDevice', 'BigFix Lifecycle ClientDevice', 'BigFix Patch ClientDevice', 'BigFix Patch RVU', and 'BigFix Platform Agent'. The 'BigFix Platform Agent' entries are highlighted in blue, indicating they are selected.

Publisher N.	Component Name	Compo...	Compo...	Product Name	Metric	FlexPoint o.	Entitled	Computer Name	Installation Path	Details
ispz.Pandoz	7-Zip	19.00	19.0.0.0	7-Zip	Install Seats	None	No	...	C:\Program Files\7-Zip	DETAIL...
HCL	BigFix Compliance ClientDevice	10.0	10.0.0	<not set>	<N/A>	<N/A>	<N/A>	...	C:\Program Files (x86)\BigFix Enterprise\BES Client...	DETAIL...
HCL	BigFix Compliance RVU	10.0	10.0.0	<not set>	<N/A>	<N/A>	<N/A>	...	/opt/BESClient/bin/swidtag	DETAIL...
HCL	BigFix Inventory Server	10.0	10.0.7.0	<not set>	<N/A>	<N/A>	<N/A>	...	C:\Program Files\BigFix Enterprise\BF\iso-swid	DETAIL...
HCL	BigFix Lifecycle ClientDevice	10.0	10.0.0	<not set>	<N/A>	<N/A>	<N/A>	...	C:\Program Files (x86)\BigFix Enterprise\BES Client...	DETAIL...
HCL	BigFix Lifecycle ClientDevice	10.0	10.0.0	<not set>	<N/A>	<N/A>	<N/A>	...	/opt/BESClient/bin/swidtag	DETAIL...
HCL	BigFix Patch ClientDevice	10.0	10.0.0	<not set>	<N/A>	<N/A>	<N/A>	...	C:\Program Files (x86)\BigFix Enterprise\BES Client...	DETAIL...
HCL	BigFix Patch RVU	10.0	10.0.0	<not set>	<N/A>	<N/A>	<N/A>	...	/opt/BESClient/bin/swidtag	DETAIL...
HCL	BigFix Platform Agent	10.0	10.0.4.32	IBM BigFix Inventory	Client Device	None	No	...	C:\Program Files (x86)\BigFix Enterprise\BES Client...	DETAIL...
HCL	BigFix Platform Agent	10.0	10.0.4.32	IBM BigFix Inventory	Client Device	None	No	...	/opt/BESClient/bin/swidtag	DETAIL...

New components are created on the selected endpoints and the existing component (BigFix Platform Agent) got BigFix Inventory assigned to it with the default or overridden metric.

For BigFix Inventory, no further step is required. For other BigFix products, you must manually assign products.

- To assign products to other BigFix products, go to **Configure > Configure View** and use a right filter to select the product. For example, for Lifecycle, use component name as 'BigFix Lifecycle ClientDevice'. ClientDevice is the metric name here. You can use RVU or MVS accordingly.

### Configure View

Filters

Specify the report filter which matches all of the following conditions:

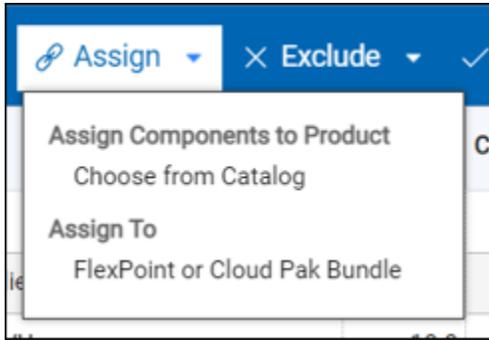
Present	equal to	Yes	🗑️
Suppressed	equal to	No	🗑️
Product Name	is empty		🗑️
Component Name	contains	BigFix Lifecycle ClientDev	🗑️ +

- After applying specific filters, choose all the rows by checking the checkbox at the top left. All the rows get highlighted.

● Current Installations

<input checked="" type="checkbox"/>	Publisher N...	Component Name
<input checked="" type="checkbox"/>	<a href="#">HCL</a>	BigFix Lifecycle ClientDevice
<input checked="" type="checkbox"/>	<a href="#">HCL</a>	BigFix Lifecycle ClientDevice

- Select **Assign > Choose from Catalog**.



5. Deselect the “List products for which the component is listed as a bundling option” and enter the product name.

**Assign Component to a Product**

Selected components: BigFix Lifecycle ClientDevice 10.0  
 Selected computers: NJMYCLDTW37761

**Warning:** This component is not listed as a bundling option of any product in the software catalog. To create a custom bundling, clear the check box, and select a product.

List products for which the component is listed as a bundling option.

19 rows

Product Name	Entitled	Product Version	Metric	Charged	IBM-provided ...
BigFix Lifecycle					
IBM BigFix Lifecycle	No	9.5	Client Device	<no data>	<no data>
IBM BigFix Lifecycle	No	9.5	RVU MAPC	<no data>	<no data>
IBM BigFix Lifecycle	No	9.5	Managed Virt...	<no data>	<no data>
IBM BigFix Lifecycle	No	9.2	Client Device	<no data>	<no data>
IBM BigFix Lifecycle	No	9.2	RVU MAPC	<no data>	<no data>
IBM BigFix Lifecycle	No	9.2	Managed Virt...	<no data>	<no data>
IBM BigFix Lifecycle	No	9.1	Client Device	<no data>	<no data>
IBM BigFix Lifecycle	No	9.1	RVU MAPC	<no data>	<no data>

Automatically confirm the affected components  
 Share component ?

**Assign** **Cancel**

6. From the list, select **IBM BigFix Lifecycle with the latest version (9.5) and correct metric**. In this example, we use ClientDevice, so we assign the Client Device metric.

7. Select the **Automatically confirm the affected component** checkbox and click **Assign**.

On the next page, choose if the component is charged or not.

8. Click **Assign**.

✕

## Create Custom Bundling Option

The new bundling option will be visible for all users and computer groups. It can be chosen during automated bundling for all unconfirmed assignments in your environment.

Do you want this component to be charged when it is bundled with this product?  
Choose its type:

Charged  
 Not charged

Assign
Cancel

All selected components should have a correct product assigned to it.

Publisher N.	Component Name	Compo...	Compo...	Product Name	Metric	FixPoint o...	Entitled	Computer Name	Installation Path	Details
HCL	BigFix Lifecycle ClientDevice	10.0	10.0.0	IBM BigFix Lifecycle	Client Device	None	No		/opt/BESClient/bin/swidtag	DETAIL
HCL	BigFix Lifecycle ClientDevice	10.0	10.0.0	IBM BigFix Lifecycle	Client Device	None	No		C:\Program Files (x86)\BigFix Enterprise\BES Client...	DETAIL

You have to repeat the manual assignment for every new unique component. If you also have Compliance and Patch then you should also assign IBM BigFix Compliance to BigFix Compliance and IBM BigFix Patch to BigFix Patch.

When you use the **Generate BigFix license** tags fixlet on other endpoints they will be already assigned automatically. It is not required to do the manually assign them again. It only works if you have previously assigned a product to a component with the same name that you are generating, for example, if you have assigned IBM BigFix Compliance to BigFix Compliance RVU then whenever you generate BigFix Compliance RVU on other endpoints it will be automatically assigned but if you generate BigFix Patch and there was no previous assignment of IBM BigFix Patch to BigFix Patch then you must assign it manually.

**Result:** The licensing process has been done and now you can view the results in the **Reports > All IBM Metrics**.

## Setting entitlements

**10.0.2** It is recommended to first import IBM owned part numbers to improve bundling accuracy. Starting from BigFix Inventory 10.0.2, you can manually mark products as entitled through Product & Metrics panel. You can also clear entitlements of previous entitled products.

You must have following permissions to set and clear entitlements:

- View Software Catalog and Signatures
  - Manage Entitlements and Part Numbers Uploads
1. If you have a list of part numbers that you own, [prepare part number files \(on page cmlii\)](#) and [import the part numbers \(on page cmliv\)](#). After you upload the file, products with part numbers are marked as your software entitlements. For more information about the relation between changes that you make to part numbers and software entitlements, see: [Part numbers \(on page cml\)](#).
  2. To manually declare a product entitlement, perform these steps:
    - a. In the top navigation bar, click **Reports > Products & Metrics**.
    - b. Select a product for which you purchased a license.
    - c. Hover over **Entitle** and click **Set Entitlement**.

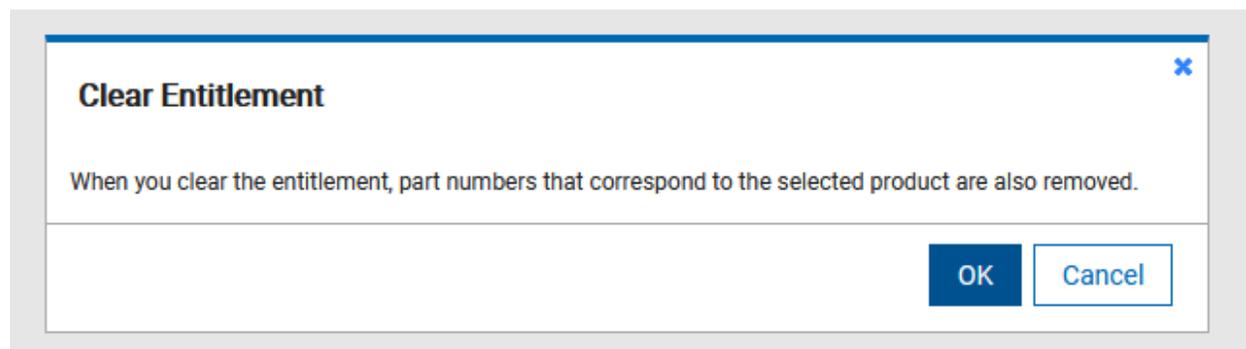
Information about products for which you are entitled is visible on the Products & Metrics report. When a component that is a part of a product for which you are entitled is discovered, it is automatically assigned to this product.



**Note:** Software entitlements can be set for the primary computer group of the user. Entitlements can not be set for child computer groups. For example, a user with full permissions and access to “All Computers” group will be able to set entitlement to the 'All Computers' computer group.

You can clear entitlements for a particular product.

To remove the entitlement, select a product, hover over **Entitle**, and click **Clear Entitlement**. Then, click **OK** to confirm. The product is no longer marked as your software entitlement. If you imported part numbers for this product, they are also removed to maintain consistency.





**Note:** Clearing entitlement also removes its imported Part Numbers.

## Assigning components to products

9.2.7

Available from 9.2.7. After new components are discovered, they are associated with products based on bundling rules. As a result, most components are automatically assigned to products. Correct assignment of software components reduces the cost of software ownership and ensures audit readiness. Compare the automatically created bundles with information in your license agreement, confirm the accurate assignments, or reassign the components to right products.



You must have the Manage Software Classification permission to view the Software Classification panel and classify software. To view some additional columns related to computers on which the components are installed, you also need the View Endpoints permission.

Assign components to products based on the following scenarios:

- Assign a single component to a single product.
- Assign multiple components to a single product. To properly use this option, set filters that limit the displayed components, select them, and assign to the product.
- Assign a single component more than once to share this component between multiple products. Each assignment associates the component with one selected product. To view all shared components, apply the following filter: `Shared, equal to, Yes`.

You can automate your software classification process by creating a set of custom rules that will automatically classify your newly discovered software. For more information, see: [Creating and managing custom rules \(on page cmlxxiii\)](#).

1. Log in to BigFix Inventory, and go to **Reports > Software Classification**.
2. Select a component or components that you want to assign.
3. Hover over the **Assign** icon  and click **Choose from Catalog**.



**Tip:** To narrow the list of displayed products, you can sort the data by columns or use the search bar that is available at the top of each column. After you type the search phrase, press `Enter`.

4. Select the product to which you want to assign the component and the license metric that is suitable for your pricing calculations model.
  - If you want to assign the component to a product according to a relation that is defined in the software catalog, simply select the product from the list.
  - If the product is not detected and the value of the Product Name column is `<not set>`, see: [Catalog Problems: The `<not set>` value appears under the Product Name on Software Classification panel \(on page mcccxlii\)](#).

- If none of the products that is listed by default matches your license agreement, create a custom relation known as *custom bundling*. You create a custom bundling in the following situations.
  - The component was obtained as part of a product that is not listed as an existing relation.
  - **9.2.12** The type of the relation that is listed in your license agreement is not available by default. For example, when the existing relation between the component and the product is charged, but your license agreement states that the component is not charged.

To create a custom bundling, perform the following steps.

- a. Clear the **List products for which the component is listed as a bundling option** check box to view all products that exist in the catalog, and select the appropriate product.
- b. Specify whether you want the relation between the component and the product to be charged or not charged. If you specify the relation as not charged, the component does not contribute to the license metric utilization of the product to which it is assigned.

Creating a custom bundling impacts using [bundling assistant](#). It increases the chance for newly discovered components to get automatically bundled according to custom bundling definition.



**Note:** **10.0.11** Starting from version 10.0.11, you can assign components to products coming from template signatures, having product version \*.

5. **Optional:** To extend the current component assignment with the selected product instead of reassigning the component, select **Share component**. The component will be shared between the product to which it is currently assigned and the selected product.

If you share the same component between multiple products, each assignment is listed as a separate instance on the report.



**Note:** To stop sharing the component between multiple products, select all instances of the component and assign them to a common product, but leave the **Share component** check box cleared.

6. **Optional:** If you do not want the assignment to be automatically confirmed, clear the **Automatically confirm the affected components** check box.



**Note:** To change the default setting of the check box, go to **Management > Advanced Server Settings**, and change the value of the **automaticConfirm** parameter according to your preferences.

7. To change the assignment, click **Assign**.

The component is reassigned to the specified product and metric. The change is reflected on the report.

To ensure that metric utilization reflects the change of the component assignment, go to **Reports > All Metrics**, and click **Recalculate**.

## Excluding and suppressing software instances

**9.2.7** Available from 9.2.7. If a software instance should not contribute to license metric utilization, you can exclude it on the product level or suppress it on the component level. Exclusion applies to all components that are assigned to a product and are installed on the selected computer. Use it if license information specifies that the product should not contribute to metric utilization under specific circumstances. Suppression applies to a single component that is installed on the selected computer. Use it when a component is improperly discovered.

 You must have the Manage Software Classification permission to view the Software Classification panel and classify software. To view some additional columns related to computers on which the components are installed, you also need the View Endpoints permission.

### Exclusion

Exclude a product when it is installed on a non-production, test, or back up computer and license information specifies that the product should not contribute to license metric utilization under these circumstances. When you exclude the product, all components that are assigned to this product and are installed on the selected computer are excluded from metric utilization.

Excluded products and their components are still displayed on the Software Classification report. They are also listed in the audit snapshot, together with exclusion comments.

### Suppression

Suppress a component when it is improperly discovered. For example, when some files were not removed from the computer after the component was uninstalled. Suppression applies only to the selected component on the selected computer. A suppressed component is no longer assigned to any product, and thus does not contribute to metric utilization.

By default, suppressed components are not displayed on the Software Classification report. You can show them by removing one of the default report filters. Suppressed components are not included in the audit snapshot in order not to obscure the view. However, the components and suppression comments are included in the Audit Trail.

1. In the top navigation bar, click **Reports > Software Classification**.
2. **Optional:** To filter down the report, hover over **Configure**, and click **Configure View**. Then, specify appropriate filters.
3. Select one or more rows and hover over the **Exclude** .
  - To exclude the product on the selected computer, click **Exclude Product from Metric Calculation**.
  - To suppress the selected component on the selected computer, click **Suppress Component from Inventory**.
4. Provide an obligatory comment.

If a comment was provided for any selected item before, it is overwritten. Exclusion comment applies to all components that are assigned to the excluded product on the selected computer. Suppression comment applies to the suppressed component on the selected computer.

- To automatically confirm the action, select **Automatically confirm the affected components**.



**Note:** To change the default setting of the check box, go to **Management > Advanced Server Settings**, and change the value of the **automaticConfirm** parameter according to your preferences.

- To complete the action, click **Exclude > Suppress**.

The action completes even if any of the selected items has already been excluded or suppressed.

Excluded products and the suppressed components do not contribute to license metric utilization. You can include them back to the calculations by using the **Clear Exclusion**, or **Clear Suppression** option. The instances that you include back in the calculation are marked as unconfirmed.

To review exclusion and suppression actions for IBM components and products, go to **Reports > Audit Trail**.

## Confirming assignment of software components

**9.2.7**

Available from 9.2.7. When the assignment of a component to the product is correct, you can confirm it. The task is optional. However, components whose assignment is not confirmed can be automatically reassigned to different products. It might happen when a new software catalog is uploaded or when a different product is suggested as the best bundling option based on the new results of bundling assistant. To avoid such a situation, it is recommended to confirm the assignment of all components.



You must have the Manage Software Classification permission to view the Software Classification panel and classify software. To view some additional columns related to computers on which the components are installed, you also need the View Endpoints permission.

- In the top navigation bar, click **Reports > Software Classification**.
- Confirm all components that are marked as One to One.

If a component relates to a single product in the software catalog, the relation is marked as One to One.

Previously, all IBM components that had a single bundling option in the software catalog were automatically confirmed. Now, you can easily filter the report to review these components, and confirm them. It ensures that you are fully in charge of the software classification process.

- Hover over **Configure**  and click **Configure View**. Then, add the following filters to the filters that are already defined in this report, and click **Submit**.

- Publisher Name, equal to, IBM
- IBM-provided Bundling Option, equal to, Yes
- One to One, equal to, Yes
- Confirmed, equal to, No

- b. Press **CTRL + A**, or **CMD + A** on Mac, to select all the filtered components.
  - c. Hover over **Confirm**, and click **Confirm**.
3. Confirm all assignments that are correct.
  - a. Select a component or components that you want to confirm.
  - b. Hover over **Confirm**, and click **Confirm**.

## Creating and managing custom rules

**9.2.7** Available from 9.2.7. You can create custom rules to automate the process of software classification.

The rules automatically perform the action that is defined by the rule criteria. For example, when you create a custom rule while assigning a component to a product, the rule is applied whenever the exact same component is discovered in the future.



You must have the Manage Imports and Manage Software Classification permissions to perform this task.

Custom rules can be applied to:

- A single computer when they are created for this computer
- A computer group when they are created for this computer group
- Computer group to which the user is assigned. The user cannot choose a computer group, and is limited to the group or groups to which the user belongs. The rule is always applied to the current user group. When user's computer group changes, the rule scope is revised.



**Restriction:** The number of unique custom rules you can create is currently limited to 100.

**9.2.16**

Starting from application update 9.2.16, you can create a custom rule for suppressing components.

1. Log in to BigFix Inventory, and go to **Reports > Software Classification**.
2. Filter the panel so that it shows only instances for which you want to create a custom rule.



**Tip:** Specify the exact version of the component to avoid inconsistency.

3. A custom rule can be created only when you select all instances that are currently displayed. To select all filtered instances, press **CTRL + A**, or **CMD + A** on Mac.
4. [Assign a component \(on page cmlxxix\)](#) to a product, or [exclude a product or suppress a component \(on page cmlxxxi\)](#) from software calculations.
5. Before you confirm the assignment, exclusion, or suppression select the **Create a custom rule** check box.



**Restriction:** You cannot create a custom rule and share the component at the same time. Perform these actions separately.

6. Click **Assign**, **Exclude**, or **Suppress**.

The custom rule was created. To view your custom rules, navigate to **Management > Custom Rules**. The rules are added to the panel in the order of creation, and are applied from the top during import.

## Deleting custom rules

All custom rules that you create are displayed, and can be deleted on the Custom Rules panel. Any user who has the Manage Imports and Manage Software Classification permissions can add, and delete any rules, including the rules created by other users. When you delete a user, the rules created by that user are not automatically removed.



You must have the Manage Imports and Manage Software Classification permissions to perform this task.

1. Go to **Management > Custom Rules**.
2. Select a custom rule that you want to delete, and click **Delete**.

The rule is deleted and no longer applied. The software classification based on the rule remains unchanged.

## Assigning products to Cloud Paks

**10.0.1** Available from 10.0.1 When you purchase a product as part of a Cloud Pak, assign instances of this product to the proper Cloud Pak to improve software tracking and calculate utilization of license metrics by Cloud Pak bundles.



You must have the Manage Software Classification permission to view the Software Classification panel and classify software. To view some additional columns related to computers on which the components are installed, you also need the View Endpoints permission.

Classification of non-containerized products to Cloud Paks is a two-step process. First, you classify components that are discovered by License Metric Tool to products with proper license metrics. Then, you assign products to Cloud Paks. The process needs to be two-stage because a single component can belong to different product flavors that have different conversion options. For example, the component WebSphere Application Server can be a part of two products: WebSphere Application Server or WebSphere Application Server Network Deployment.

When these products are a part of Cloud Pak for Applications, their conversion ratios differ and are as follows.

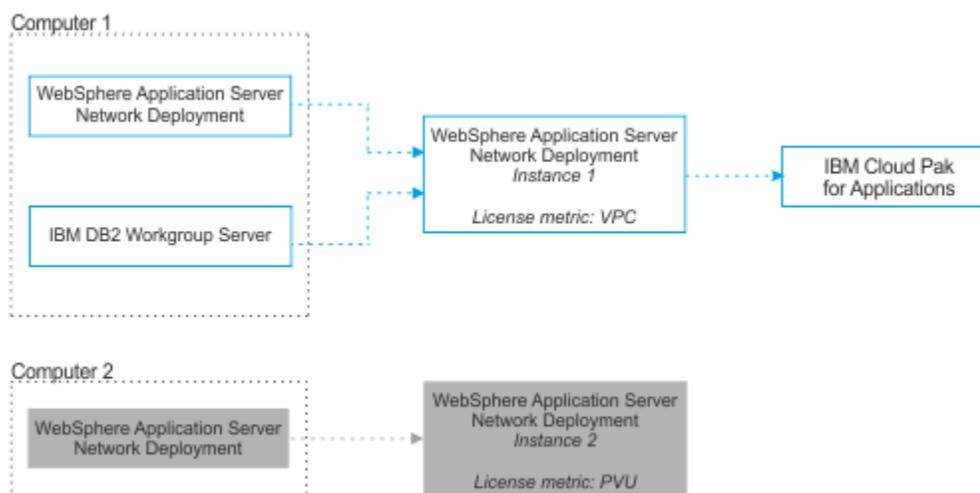
- 4VPCs/ 1VPC for WebSphere Application Server
- 1VPC/ 1VPC for WebSphere Application Server Network Deployment

The following table shows how license metric quantity differs after applying the conversion option depending on how the component WebSphere Application Server is classified.

**Table 175. Difference in license metric quantity resulting from component classification**

Discovered component	Product to which the component is assigned	License metric	License metric quantity	Conversion option	License metric quantity after conversion
WebSphere Application Server	WebSphere Application Server	VPC	100	4VPCs/ 1VPC	25
WebSphere Application Server	WebSphere Application Server Network Deployment	VPC	100	1VPC/ 1VPC	100

Another reason for two-stage classification is that only some product instances might be installed as part of a Cloud Pak. In the following example, the discovered components are assigned to two instances of WebSphere Application Server Network Deployment. Only the first instance was purchased as part of Cloud Pak for Applications. Thus, only this instance is assigned to the Cloud Pak.

**Table 176. Classification of components to products, and products to Cloud Paks**

Discovered component	Product to which the component is assigned	Product Instance	License metric	Cloud Pak
WebSphere Application Server Network Deployment	WebSphere Application Server Network Deployment	Instance 1	VPC	IBM Cloud Pak for Applications
IBM DB2 Workgroup Server	WebSphere Application Server Network Deployment	Instance 1	VPC	IBM Cloud Pak for Applications

**Table 176. Classification of components to products, and products to Cloud Paks (continued)**

Discovered component	Product to which the component is assigned	Product Instance	License metric	Cloud Pak
WebSphere Application Server Network Deployment	WebSphere Application Server Network Deployment	Instance 2	PVU	None

1. In the top navigation bar, click **Reports > Software Classification**.
2. Select the product instance that you want to assign to a Cloud Pak. Ensure that this instance is assigned the license metric that is defined in the license agreement.

For example, to classify IBM WebSphere Application Server Network Deployment as part of the IBM Cloud Pak for Applications, ensure that WebSphere Application Server is assigned the Virtual Processor Core (VPC) license metric as stated in the License Information document.

If the instance of the product that you want to assign to a Cloud Pak, reports a different license metric than specified in the license agreement, perform the following steps:

- For license metrics for which License Metric Tool calculates utilization automatically, reassign the components to the product with the proper metric. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).
  - For license metrics for which License Metric Tool does not calculate utilization automatically, declare the metric quantity. For more information, see: [Setting and removing the declared metric quantity \(on page cmxxxviii\)](#).
3. Hover over **Assign**, and click **FlexPoint or Cloud Pak Bundle**.
  4. Select the bundle to which you want to assign the product, and click **Assign**.

Information about the Cloud Pak to which the product is assigned is displayed in the FlexPoint or Cloud Pak Bundle column.

To view utilization of license metrics by the Cloud Pak, go to **Reports > FlexPoints and Cloud Paks**, and click **Recalculate** to refresh the data on the report. The report shows information only about non-containerized products that are a part of the Cloud Pak. For information about viewing the overall utilization of the license metric by the Cloud Pak, see: [Licensing of non-containerized Cloud Pak programs \(on page cdii\)](#).

## Assigning products to FlexPoint bundles

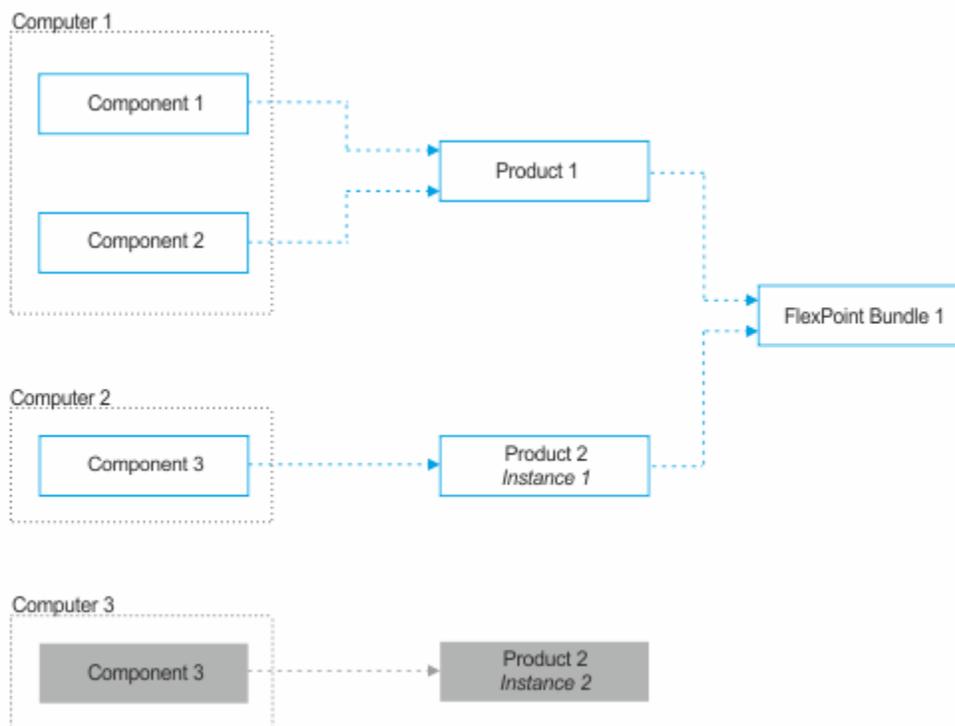
**9.2.13** Available from 9.2.13. When you purchase a product as part of a FlexPoint bundle, assign instances of this product to that bundle for improved tracking and to calculate utilization of FlexPoints.

- You must have the Manage Software Classification permission to view the Software Classification panel and classify software. To view some additional columns related to computers on which the components are installed, you also need the View Endpoints permission.
- Ensure that components that were discovered in your environment are assigned to software products in accordance with your license agreement. For more information, see: [Assigning components to products \(on page cmlxxxix\)](#).

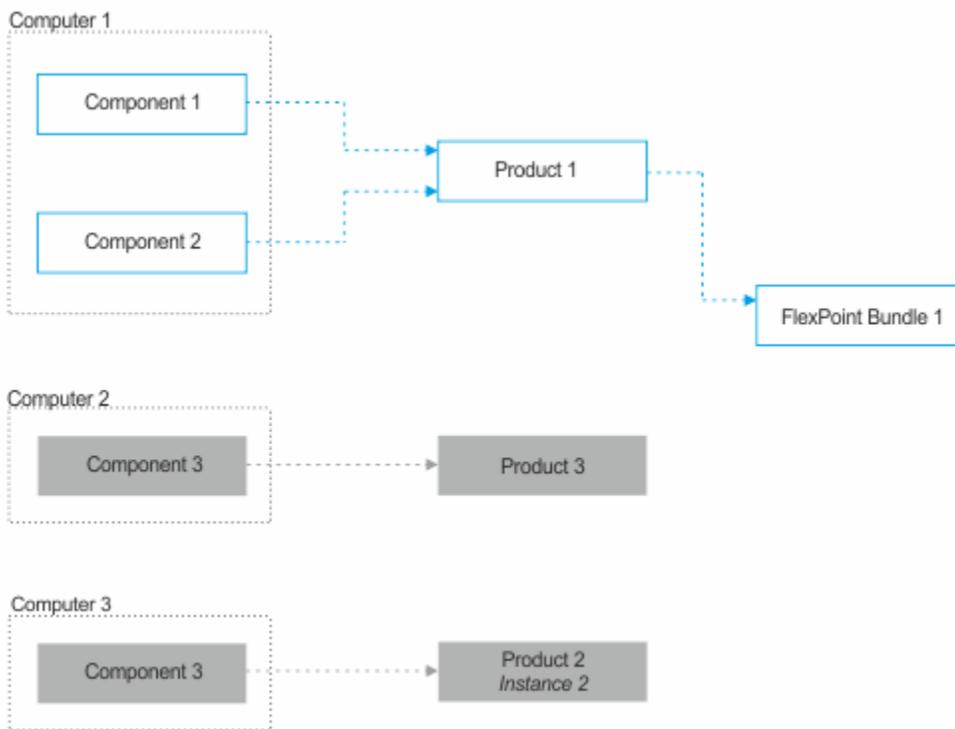
To properly classify the installed software, start by assigning the discovered components to products in accordance with your license agreement. In this example, the discovered components are assigned as follows.

- Component 1 and Component 2 installed on Computer 1 are assigned to Product 1.
- Component 3 installed on Computer 2 is assigned to the first instance of Product 2.
- Component 3 installed on Computer 3 is assigned to the second instance of Product 2.

Then, assign proper product instances to FlexPoint bundles. In this example, Product 1 and the first instance of Product 2 are a part of FlexPoint bundle 1. The second instance of Product 2 is licensed under a different license metric and thus is not assigned to any FlexPoint bundle.



If a component is assigned to a product that is a part of a FlexPoint bundle, and you reassign such a component, the component instance is no longer assigned to any FlexPoint bundle. In this example, Component 3 that is installed on Computer 2 is reassigned from the first instance of Product 2 to Product 3. As a result, the reassigned component is no longer a part of any FlexPoint bundle. The same applies to a situation in which you suppress a component that is assigned to a product that is a part of a FlexPoint bundle.



1. In the top navigation bar, click **Reports > Software Classification**.
2. Select the product instance that you want to assign to a FlexPoint bundle. Ensure that this instance is assigned the license metric that is defined in the license agreement.
3. Hover over Assign, and click FlexPoint or Cloud Pak Bundle.
4. Select the bundle to which you want to assign the product, and click Assign.

Only the product instance that is installed on the particular computer and its components are assigned to the FlexPoint bundle.



**Note:** If you previously assigned a product to a FlexPoint bundle and later on want to remove the product from that bundle, choose **None**.

Information about the FlexPoint bundle to which the product is assigned is displayed in the FlexPoint or Cloud Pak Bundle column.

To view utilization of FlexPoints, go to **Reports > IBM FlexPoints and IBM Cloud Paks**, and click **Recalculate** to refresh the data on the report.

## Setting the number of metric units convertible to FlexPoints

**9.2.13** Available from 9.2.13. When a software product is assigned to a FlexPoint bundle, BigFix Inventory converts the number of metric units that the product used to FlexPoints. If the product uses a license metric whose

utilization is not calculated by BigFix Inventory, you can manually set the number of metric units to be converted into FlexPoints.

 You must have the View License Metrics permission to view the IBM FlexPoints report, and Manage Software Classification permission to set the number of metric units to be converted into FlexPoints.

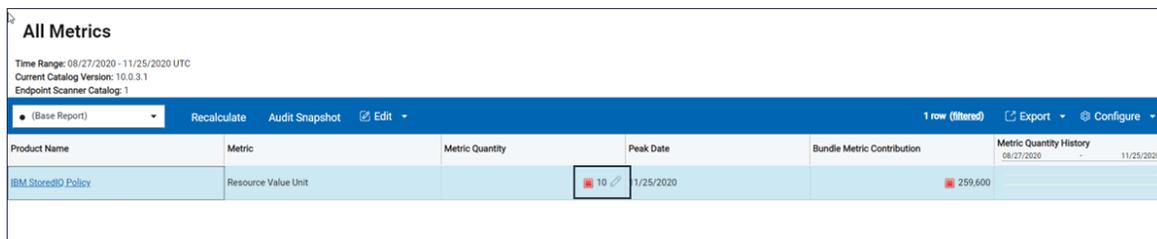
You can manually set the number of metric units convertible to FlexPoints only for metrics whose utilization is not calculated by BigFix Inventory. For the list of metrics whose utilization is calculated in BigFix Inventory, see: [Table 158: Metrics for which utilization is calculated \(on page cmxii\)](#).

1. Log in to BigFix Inventory, and go to **Reports > IBM FlexPoints and IBM Cloud Paks**.
2. To display the list of products that are assigned to a FlexPoint bundle, click the name of that bundle.



Product Name	Metric	Metric Quantity	Metric Quantity History
<a href="#">Unified Governance &amp; Integration</a>	FlexPoints	0 	08/27/2020 - 11/25/2020

3. Click on the product for which you want to specify the number of license metrics.
4. Click on the pencil icon  under the **Metric Quantity** column. A **Set Metric Quantity** dialog box appears.



Product Name	Metric	Metric Quantity	Peak Date	Bundle Metric Contribution	Metric Quantity History
<a href="#">IBM Storero Policy</a>	Resource Value Unit	10 	1/25/2020	259,600	08/27/2020 - 11/25/2020

5. Enter the metric quantity value and click **Set**.

### Set Metric Quantity ✕

Set the declared metric quantity. The value that you provide takes precedence over the value that was measured by the application. You can remove the declared value to restore the initial one at any time.

Time range: from 11/24/2020 ?

Product: IBM StoredIQ Policy

FlexPoint or Cloud Pak Bundle: Unified Governance & Integration

Metric: Resource Value Unit

Computer group: All Computers

Metric quantity: ?

Set

To refresh the data that is displayed on the report, click **Recalculate**. Metric units that you specified are converted into FlexPoints.

**All Metrics**

Time Range: 08/27/2020 - 11/25/2020 UTC  
Current Catalog Version: 10.0.3.1  
Endpoint Scanner Catalog: 1

IBM FlexPoints and IBM Clou...
Recalculate
Audit Snapshot
Edit
1 row (filtered) Export Configure

Product Name	Metric	Metric Quantity	Metric Quantity History
Unified Governance & Integration	FlexPoints		08/27/2020 - 11/25/2020

## Viewing history of installed components

**9.2.7** Available from 9.2.7. You can view information about components that were installed in your infrastructure during a specific period and their assignment. You can use this information to view details of components that contributed to the overall license utilization for a specific period. You can also reassign and exclude uninstalled components if their original assignment was incorrect and impacted the license metric utilization.

 You must have the View Endpoints and Manage Software Classification permissions to perform this task.

1. In the top navigation bar, click **Reports > Software Classification**.
2. To show components that were discovered during a particular period, hover over **Configure**, and click **Configure View**. Then, perform the following steps.
  - a. Remove the current filter.
  - b. Specify discovery start on or before the last day of the period for which you want to display the data, and discovery end on or after the first day of that period.

For example, to display all components that were discovered between 1 September and 30 September, use the following filters:

- `Discovery Start`, on or before, and choose 30 September.
- `Discovery End`, on or after, and choose 1 September.

c. Click **Submit**.

The report shows components that were discovered during the specified period, including uninstalled components, and components that were installed on computers that are no longer discovered. Details of the computer on which the component was discovered, computer health, scan results, and hardware inventory represent the current state of the infrastructure, not historical data from the specified period. If a computer is no longer discovered, the data is not available.

Publisher ...	Component Name	Version	Product Name	Computer Na...	Installation Path	Details
IBM	IBM DB2 Workgroup Server Edition OEM Limite...	10.5	IBM BigFix Inventory	 NC91431271	/opt/ibm/db2/10.5/properties/version	<no data>
IBM	IBM DB2 Workgroup Server Edition OEM Limite...	10.5	IBM BigFix Inventory	NC9143127057	/opt/ibm/db2/10.5/properties/version	<no data>
IBM	IBM SDK 5.0 for Linux IA32, Java Technology	5.0	IBM SDK 5.0 for Linux IA32, Java Technology	NC9143127057	/opt/IBM/itsamp/sam/java/docs	<no data>
IBM	IBM SDK 5.0 for Linux IA32, Java Technology	5.0	IBM SDK 5.0 for Linux IA32, Java Technology	 NC91431270	/opt/IBM/itsamp/sam/java/docs	<no data>

If a computer is no longer discovered, it has the  icon displayed next to its name. It happens in the following situations:

- The computer was removed from the infrastructure. For more information, see [Removing inactive computers \(on page dcccxc\)](#).
- The BigFix client was uninstalled from that computer
- The data source to which the computer belonged was removed

You can reassign components or exclude them from pricing calculations to obtain the correct reports for the specified period.

## Monitoring and reporting software usage

BigFix Inventory collects listing of running processes and associate this data with detected software using usage signatures or by matching path.

BigFix Inventory collects information about the running processes with their statistics: First Used, Last Used, Total Run Time, Total Runs, Average Runs per Day, and Average Run Time. Based on that information, reports software usage for software instances that are discovered and are having usage signatures or are Java based application (from **9.2.15**)

**10.0.10** Starting with BigFix Inventory version 10.0.10, the amount of data transferred from endpoint to server is reduced by limiting the data exchange to last 30 days. BigFix Inventory combines incoming updates with existing data and because of server side optimization, the already stored data is not processed again in the database. This process of handling data collection leverages in reducing the load on the network and BigFix Platform.

Monitoring and reporting of software usage is enabled by default if during the initial configuration you choose the default scan settings. For more information, see: [Default scan configuration \(on page dcii\)](#).

Otherwise, follow the instruction at [Manual scan configuration \(on page dcvi\)](#) to enable the collecting of software usage statistics by ensuring *Application usage statistics* checkbox is selected in *Additional Scan Capabilities* section of *Initiate Software Scan* action.

### How usage reporting works?

There are two method of linking Metering Data/process with the detected Software Component release:

1. Using usage signature without splitting statistics per Component Instance
2. **9.2.15** Starting from application update 9.2.15, based on path for processes named; `java`, `java.exe`, `javaw.exe`, `jp2launcher.exe` with splitting statistics per Component Instance.

It is possible to distinguish between usage of BigFix and Oracle Java that is installed on a single computer.

Starting from Software catalog 9.2.15 usage signatures for Java based application are not longer included as path based matching is used and no signature is needed.

### Checklist for Configuration BigFix Inventory for collecting usage data

1. Log in to the BigFix console.
2. Ensure that the **Application Usage Statistics** analysis from **Sites > External Sites > BigFix Inventory** is activated. To activate right-click the analysis, and click **Activate**. For more information, see [Activating the analyses \(on page dcvii\)](#).
3. Ensure that the **Initiate Software Scan** action have *Application usage statistics* checkbox selected in *Additional Scan Capabilities* section. For more information, see: [Initiating software scans \(on page dcx\)](#).
4. Review the properties: *Status of Scan for Application Usage Statistics* and *Time of Last Successful Scan for Application Usage Statistics* in the **Software Scan Status** analysis from **Sites > External Sites > BigFix Inventory** is activated. To activate right-click the analysis, and click **Activate**. For more information, see [Activating the analyses \(on page dcvii\)](#).

### Software usage report

The results of the analysis are reflected on the following reports:

- Metering Data shows the raw aggregated information about processes running on given computer with statistical information like: First Used, Last Used, Total Run Time, Total Runs, Average Runs per Day, Average Run Time.
- Software Classification / Software Installation panel lists the discovered software components with the details about usage statistics.

 **Important:** In case of signature based usage reporting statistics are not Component Instance specific, but each record contains the same data.

- Usage per Computer panel provides an overview of the software usage statistics that are aggregated for all instances on product level and presented in the report for each computer.

 **Important:** In case of signature based usage reporting statistics and multiple Component Instance presented values are multiplied by number of instances.

For more information about the reports, see: [Available reports \(on page mlvi\)](#).

 **Tip:** To view information about usage on the reports, configure the report view to display the columns that collect software usage statistics. To do that, hover over the **Manage Report View** icon , select **Configure View** and choose the applicable columns.

If you are in the initial deployment phase, or if you do not need information about software usage, you can disable the collection of this information to improve the BigFix Inventory performance and shorten the import time. For more information, see: [Disabling the collection of software usage \(on page dclxxxvii\)](#).

## Server Software Catalog

To correctly identify components of software products in your infrastructure, ensure that your server software catalog is always up-to-date. Periodically import a new server software catalog that contains the most recent software products. Also, manually add products that are installed in your infrastructure but do not have corresponding entries in the catalog.

The server software catalog is made of:

- Catalog provided by BigFix that contains out of the box product, component and signatures for variety of software vendors.
- Custom catalog that contains signatures created manually to discover products that are not contained in the catalog provided by BigFix.

These two catalogs are fully independent. If you create a custom signature to discover a product and then a signature for that product is delivered in the BigFix catalog, the two signatures are not merged. If the same product is discovered by both signatures, the number of discovered instances might be higher than the number of instances that are installed. In such case, delete the custom signature. For more information, see: [Catalog problems \(on page mcccxliv\)](#).

## Updating server software catalog

The server software catalog is automatically updated during every upgrade of BigFix Inventory. BigFix Inventory Server Software Catalog is refreshed more often than server and you can benefit from the newly connected by updating the server software catalog.

- The **Server Software Catalog Update** task updates the data in the following directories:
  - **Linux** `/opt/BFI/wlp/usr/servers/server1/data/sam/catalog/BFI`
  - **Windows** `C:\Program Files\BigFix Enterprise\BFI\wlp\usr\servers\server1\data\sam\catalog\BFI`

### Automatic Server Catalog Update (recommended)

1. Log in to the BigFix console.
2. In the navigation bar, click **External Sites > BigFix Inventory Discovery > Fixlets and Tasks**.
3. In the upper-right pane, select **Server Software Catalog Update**, and then click **Take Action**. The action is applicable only on the computer on which the BigFix Inventory server is installed. Select the computer, and click **OK**.



**Note:** Software catalogs from BigFix Inventory Discovery site requires BigFix Inventory server version 11.0.0.0 or newer, and **Server Software Catalog Update** fixlet is moved to the new fixlet site, BigFix Inventory Discovery.

If the task is not applicable on that computer, see: [Catalog problems \(on page mccccxlii\)](#).

4. Wait for the scheduled import of data or run it manually.

### Manual Server Catalog Update

1. Download the server software catalog
  - a. Log in to the BigFix console.
  - b. In the navigation bar, click **External Sites > BigFix Inventory Discovery > Fixlets and Tasks**.
  - c. In the upper-right pane, select **Server Software Catalog Update**.
  - d. Use the link in on Description panel to download the server software catalog to the computer from which you access the BigFix Inventory web user interface.
2. Upload the server software catalog to BigFix Inventory.
  - a. Log in to BigFix Inventory.
  - b. In the navigation bar, click **Management > Server Software Catalog Update**.
  - c. **10.0.15** (version 10.0.15 only) Expand "Advanced" section.
  - d. Click **Browse** and select the software catalog file.
  - e. To upload the file, click **Upload**. The software catalog file and the charge unit data are listed in the **Upload and Import History** table. Their status is **Pending**.
  - f. Wait for the scheduled import of data or run it manually.

During the import, scanner software catalogs that are used for software discovery are created and automatically distributed to the computers in your infrastructure.

By default, catalog is propagated in automated fashion. If you have disabled this function follow the procedure mentioned in [Manually updating scanner catalogs \(on page dclxxxv\)](#). Allow one or two days for the Catalog distribution. Distribution time depends on distance to the endpoint and it's availability to process new actions. If you use the disconnected scanner, refer to [distribute the downloaded software catalog \(on page dclxvi\)](#) for each computer.

## Checking product components and their signatures in the software catalog

You can browse the software catalog to check what components belong to a particular product and what signatures cause that these components are detected.

1. In the navigation bar, click **Reports > Products & Metrics**.
2. Select a product. To narrow down the report, filter it by a product name or a part number.
3. Drill down through the version name and release name to the component level.



**Note:** If the Component Version column contains an asterisk (\*), the listed software component is detected regardless of its version. The reported version of each instance of the component is based on the generic signature that pulls the component version from the file or package that caused detection.

4. To check the signature that allows the discovery of a given component click **Signatures**.

## Expanding the custom software catalog

To ensure that all software items that are installed in your infrastructure are discovered, create custom signatures. You can create them from scratch or directly from the Package Data and Scanned File Data reports. You can also create extended signatures to discover software that is not detected by using file or package signatures.

The custom catalog is fully independent from the catalog that is provided by IBM. If you create a custom signature to discover a product and then a signature for that product is delivered in the BigFix catalog, the two signatures are not merged. If the same product is discovered by both signatures, the number of discovered instances might be higher than the number of instances that are installed. In such case, delete the custom signature. For more information, see: [Catalog problems \(on page mcccxliv\)](#).

Before you create custom signatures, check the [signature community](#). It is a place where you can find custom signatures that are created by members of the community. You can download such signatures and import them to BigFix Inventory. After you create your custom signatures, consider contributing the community.

## Catalog customization process

The process of adding custom signatures to the software catalog requires careful planning and consideration. It starts with identifying products that you expect to discover but are not reported or are missing from the software

catalog. To correctly identify components of software products in your infrastructure, ensure that your software catalog is always up-to-date. Next, you should organize your work to ensure that the most important products are given the highest priority. Then, you determine what files or packages can be used to detect the software and report its usage. Finally, you can create the signatures.

Periodically import a new HCL catalog that contains the most recent signatures. Also, manually add components that are installed in your infrastructure but do not have corresponding entries in the catalog.



**Note:** BigFix Inventory is intended for software inventory and license management. It is suggested that you extend the software catalog for those purposes only.

## Process input

The input to the catalog customization process is a list of software products that you want to be discovered. The list can be based on the general knowledge of your environment and the procurement data. As the discovery, monitoring, and license management of every software product require extra effort, target products on the basis of license expenses. Focus on a few selected products and adopt an iterative approach instead of trying to work on all products simultaneously.

## Required skills

A set of skills that are helpful during the creation of the custom catalog content includes:

- General knowledge of the software products that are used in your company, their architecture, and licensing models
- General knowledge of the operating systems on which the software is installed

## There are two types of the software catalog

- **Catalog provided by HCL** that contains signatures for a range of software from various vendors, such as Microsoft or Oracle. It also includes license information for IBM products and template signatures.
- **Custom catalog maintained by an end user** that contains signatures created manually to discover software for software items not contained in the catalog provided by HCL.

See also, [Template signature support for catalog management \(on page cmxcix\)](#)

## Step 1: Prioritize the work

Before you start adding custom signatures to the software catalog, prioritize your work. Start with products that are critical from the business perspective. Then, iteratively continue with the remaining products until all software that is used in your company is discovered.

To optimize your work on the custom catalog content, adopt an iterative approach. Start by grouping all software products that are used in your company into software families and focus on one software family per iteration. Analyze and create software signatures for all products that belong to the family on which you are working. If a software family is too extensive, split it into smaller groups, for example based on editions or distributions. The

iterative approach allows for continuously extending the catalog content and verifying its correctness at the same time. Thus, you can gain more benefits in less time.

## Step 2: Analyze your software

Extend the software catalog only with information that is related to products that are used in your company but are not reported or do not exist in the catalog. Consult the product administrators and available documentation to gather information that is related to the product architecture and licensing model.

To gather basic information about a software product, work with the administrator who is responsible for its installation and has the knowledge of its architecture and licensing model. Try to establish a reference installation. Investigate the architecture of the product to obtain the following details:

- Separately installable pieces (components) that constitute the product and are important for discovery or licensing purposes
- Version number of each component
- Ways to check whether the component is installed
- Platforms on which the component can be installed
- Licensing model

If the product administrator is unable to provide the information necessary for creating the licensing model, consult the available documentation. It can be found on the installation media, in the product installation path, license agreements, installation instructions, or online resources.

## Step 3: Review information about files and packages

To identify candidates for software signatures, review information about files and packages that exist on the computer where a particular software product is installed.

### **Candidates for file and package signatures**

Most efficient signatures are file-based signatures with constant size that is different for each release or signatures that are based on package data where a wildcard (\*) can be used. In both cases, the file and package data should be removed during the product uninstallation or changed during the product upgrade or downgrade.

When you are looking for candidates for such signatures, always check:

- Whether any product documentation describes methods for determining the product edition and release based on files or package data
- Whether the product name and version can be unambiguously determined, for example, by the file name
- Whether there are any component-specific files:
  - Executable files whose version, part of version, or size is specific to the particular release
  - Files whose name or its part is specific to the particular release
  - Files whose content defines the product name and version

- Other files with constant size, for example, a graphic that contains the product release number
- Libraries with version or constant size
- Whether there are application-specific packages

Do not create signatures that are based on:

- Shared or external libraries
- Files that can be used by another product
- File names that are commonly used, for example, `readme.txt`

## Available reports

Use one of the following reports to identify candidates for signatures.

### Package Data

The report provides information about the packages that are installed on the computers in your infrastructure. To find a package that can be used as a signature, filter the report to the data from the computer on which the particular software product is installed.

### Scanned File Data

The report provides information about files that were detected on the computers in your infrastructure. The files with any file extensions can be used to create software signatures.



**Note:** To find a file or a package that can be used as a signature, filter the report to the data from the computer on which the particular software product is installed. To further narrow down the results, specify the whole or part of the path to the directory where the software is installed. Then, look at the following columns.

- **Recognized** - the column shows whether the package data and/or file was recognized as part of an existing signature.
- Removed since **10.0.4**: **Caused Detection** - the column shows whether the file contained enough information to cause detection of the related software. The **Caused Detection** column is removed since BigFix Inventory version 10.0.4. You must re-create your saved reports in case you had used the Caused Detection column.

If the value in both columns is No, the file is not used for software detection and you can use it to create a new software signature.

## Step 4: Create component signatures

Use the following guidelines to avoid common mistakes and to create the most accurate signatures that better recognize software.

To obtain the best results, try to create signatures that meet the following requirements:

- The signature is based on the main executable file of the software.
- The signature combines the main executable file of the software with package data if it is available.
- The signature discovers only one release. If it discovers release 7.2, it cannot be valid for releases 7.1 or 7.3.
- The signature is generic and discovers a particular release and all its mod-releases and fix packs. To ensure that the signature is generic:
  - Use a wildcard (\*) in the package version, for example: 7.2.\*

If you use a dot (.) in the package version, the dot is also matched with a dash (-). For example, if you specify the package version as 4.9.3.1\*, version 4.9.3-1.e11 is also matched.

If you specify a version without the wildcard, the signature also matches a package that contains a comma in the version number. For example, if the package version is **11.10.1,REV=2005.01.21.15.53**, signatures that have the following package version specified match it:

- 11.10.1
- 11.10.1,REV=2005.01.21.15.53

Signatures that have the following package version specified do not match it:

- 11.10
- 11.10.1,REV=2005.02.14.12.32
- Specify the version of the file limited to the release number. For example, 11.10. Avoid using a complete file version such as 10.11.2 or file size. These values are likely to change with every patch.
- If a signature combines a file and package data and neither of them has a version, accept a file with any size.

 **Tip:** If you are unable to cover all fix packs and mod-releases, combine separate conditions for each of them.

Version of the software that is provided in the package and in the file might sometimes be inaccurate and might not match the version that is displayed in BigFix Inventory. If such a discrepancy occurs, ensure that the proper version is defined in the software catalog. Consider creating more specific rules for handling issues that are related to software versioning.

### 10.0.9 Template signature to support catalog management

Starting with version 10.0.9, BigFix Inventory provides two new signature types added in the catalog customization panel.

The signature types are:

- **Package Template signature** – This signature includes one package with auto-detectable version and optional files.
- **File Template signature** – This signature includes one file with auto-detectable version and optional packages

### Auto-detectable version

In Package Template and File Template signatures, the component versions are reported automatically. The feature is called auto-detectable, where the version signifies that each time a signature is matched, a component with the version contained in the package/file is detected in BigFix Inventory. A new component is created if it does not exist. The related software product version also includes this number.

### Use case

These signatures are generic and, if correctly defined, works with current and future versions of a given software. You don't need to create separate signatures each time a new version of the software is released. The right component version is detected and reported automatically.

### Case-sensitivity of Template signatures and signature rules based on package

The below table lists the template signature package names and their case sensitiveness in Windows and UNIX environments:

Signature packages	Case sensitive on Windows	Case sensitive on UNIX
Template Package Name	Yes	Yes
Template file name	No	NA
Template vendor	No	No
Template version	NA	NA
Package signature name	Yes	Yes
Package signature vendor	Yes	Yes
Package signature version	NA	NA
File signature name	Yes	NA
File signature vendor	No	NA
File signature version	NA	NA
CIT package name	Yes	Yes
CIT package vendor	Yes	Yes
CIT package version	NA	NA
CIT file name	Yes	Yes
CIT file vendor	NA	NA
CIT file version	NA	NA

Figure 10. Catalog Customizations panel

## Creating signatures

You can use the built-in functionality to extend your custom catalog with the software products that are installed in your infrastructure but are not present in the HCL® catalog.



You must have the Manage Catalogs permission to perform this task.

1. In the top navigation bar, click **Management > Catalog Customization**, and then click **New**.
2. In the **Create Catalog Entry** window, enter the following details:
  - For Package or File signature and Extended signature, provide publisher name, product name, and release number.
  - For Package Template signature and File Template signature, provide publisher name and product name. You can not provide release number for template signatures.

Figure 11. Create Catalog Entry

3. Decide whether the product should be detected with a package or File signature, Package Template or File Template signature, or an Extended signature.

- For a Package or File signature, select a condition or conditions that must be fulfilled for the software item to be discovered.
  - To create an installation package signature, select the first condition, and specify the name of the package, its version, and vendor.
  - To create a file signature, select the second condition, and specify the name of the file and its size or version. If neither the file size nor the version is relevant, select **Any size or version**.

 **Tip:** If you select one condition and specify multiple files or installation packages, detection of any of them causes that the software item is discovered. If you select both conditions, at least one file and one installation package must be detected for the software item to be discovered.

 **Important:**

- If you add a rule with common executable files or other popular file types, it is enough to run the data import once and software inventory is available in the web user interface after the import. The popular file extension list includes the following file types:

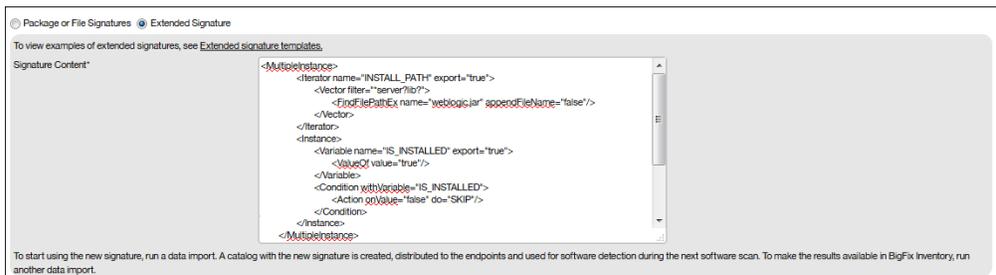
`*.exe, *.sys, *.com, *.ear, *.ocx, *.sh, *.bin, *.pl, *.ear, *.SH,  
*.BIN, *.PL, and *.EAR.`

- If you add a rule with non-standard file extensions, wait until all the steps in the catalog data flow complete or perform those steps yourself. For more information, see: [Software discovery process after customizing the catalog \(on page mliv\)](#).
  - File rules for both common executable files and non-standard extensions are only supported on Windows™ endpoints if version is specified.
- Choose an extended signature to use various data elements such as file names, registry keys, CPU architectures, or specified strings to discover software that otherwise might not be discovered with file or package signatures.
    - a. Open an XML editor or text editor that has support for the XML language, for example Notepad ++, and create the extended signature in the XML format. The signature length must not exceed 4000 characters.

 **Note:** The supported version of the XML signature schema is 2.7.

- b. In the XML editor, select and copy the elements of the extended XML signature file.

- c. In the **Signature Content** text area, paste the contents of the extended signature that you created in step a.



**Note:** When you correct the rules, the existing detection method is applicable for Extended Signature until scan is complete with new Catalog pushed to the endpoint. To remove the detection, delete signature and add a new signature.

- **10.0.9** Choose Package Template signature to select package with auto-detectable version and optional files .
- **10.0.9** Choose File Template signature to select one file with auto-detectable version and optional packages .

### Additional information and restrictions related to Package Template signature and File Template signature

- Package Template signature and File Template signature, when created, are assigned to components with '\*' release number, and the components are assigned to software product releases with the same names and also '\*' number.
- Only one (template) signature is allowed for a given template component (version '\*'). However, it is possible to have non-template signatures for the same component name, but they must use regular, non-'\*' component version.
- Files defined in a File Template signature must have **.exe** extension (in BigFix Inventory, it is possible to collect version information only from such files).
- Files defined in Package template signature may have any extension. However, if the extension is not one of the "standard" extensions that are collected by BigFix Inventory, this file will be matched only if it is listed on Scanned File Data. This is different comparing to regular signatures which create CIT rule in such case.
- Create and Delete actions on template components are listed on Catalog Audit panel (signature modifications are displayed in details of "Creation" for the related template components). Creation and deletion of components derived from templates are not tracked on Catalog Audit.
- It is possible to use both a template and a derived product as regular products, such as use both to bundle to them. Install Seats is the default assigned metric and other metrics may be added as well.

- Contracts for the software products created from custom templates can be created in advance before any version is discovered.
- You must use unique name for software release and component in Catalog Customizations panel. You can not rename the template. If you want to assign a different name, you must delete the existing template and create a new template with the new name. Also, you can not assign a product from one template to a different publisher.
- Deleting a template signature implies deleting the related template component. While deleting these entries, all derived signatures, components and discovery results are also deleted.
- It is possible to modify (change definitions of rules inside) a template signature. In this case the related custom template component, the custom template signature, and all derived signatures, components and discovery results are deleted and recreated based on the new definition during the next data import.
- You can view components, products, signatures derived from templates but you can not manage them. You can delete them by deleting the related template.

4. To save the catalog entry, click **Submit**.

You added a software signature to your custom catalog, and it can now be used to detect software or its usage. Although you added a new signature, the custom content version of the software catalog does not have to change. The version is updated only for non-template signatures that are based on non-standard file extensions. For more information, see [Software discovery process \(on page mliv\)](#).

You can edit and delete a custom catalog entry on the **Catalog Customization** panel.

To edit a custom catalog entry, select it, edit a chosen element and confirm the change by clicking **Save**. When you edit the name of a publisher, product, version or release you cannot change it to a name that already exists in the custom catalog.

To delete a custom entry, select it and click **Delete**. You can delete an entire hierarchy, that is a publisher, software product, version, release, component, and signature simultaneously. However, you cannot delete multiple entries, for example multiple publishers, at the same time.

## Extended signature templates

### 9.2.2

Available from 9.2.2. Extended signatures are flexible signatures that are used for software recognition. They consist of a number of exported variables and the declaration of the operations that are required to assign a value to these variables. Update BigFix Server and Software Catalog to allow the Extended Signature capability to report the detailed versions of installed software.

## Operands and operators

Every extended signature can be viewed as a set of processing instructions that are used by software scans to detect if a software item is installed on the target computer system. These processing expressions consist of two types of components: *operands* and *operators*. Operands are the objects that are manipulated, and the operators as the

symbols that represent specific actions. Operands and operators can be either scalar (consisting of only one value) or vector (consisting of multiple values).

The schema version that is supported by BigFix Inventory is 2.7.

## Variables interpret by the BigFix Inventory

Following variables are interpret by BigFix Inventory:

- IS\_INSTALLED - mandatory

When the software is detected, the condition should be set to true. When the software is not detected, the condition should be set to false.

- INSTALL\_PATH - optional

Value is listed in installation path.

- **10.0.0** DETAILED\_VER

Use DETAILED\_VER variable to search for the detailed version. The information is reported in Component Detailed Version column. Value is listed in **Component Detailed Version** column. The Component Release is referred from catalog entry.

## Extended signature templates

The following section provides extended signature templates to help you create a new extended signature and lists the necessary operators and operands that explain the values that they have. The table lists the templates of extended signatures as they are created in BigFix Inventory.



**Note:** To prevent the XML validation from failing, ensure that the following XML element is present in the extended signature that you are creating. Otherwise, the XML validation fails.

```
<Variable name="IS_INSTALLED">
...
</Variable>
```

Identification or detection of	Sample template
<b>10.0.0</b> Re- porting Detailed Version using the value fetched from the registry	<p>The following template checks existence of 4.0 value registry key and reports the key as Detailed Version.</p> <pre>&lt;Variable name="DETAILED_VER"&gt;   &lt;RegKeyValue entry="Installed Version" key="HKEY_LOCAL_MACHINE\Software\Microsoft\SMS\Client\Client Components\Component Name\Installation Properties" section="64or32"/&gt; &lt;/Variable&gt; &lt;Variable name="IS_INSTALLED"&gt;</pre>

**Identification  
or detection of**

**Sample template**

```
<Compare relation="eq" type="string">
<StringSlice inputString="$(DETAILED_VER)" startIndex="0" endIndex="3"/>
<ValueOf value="4.0"/>
</Compare>
</Variable>
```

**A file name**

The following template checks the identification or detection of a file name.

```
<Variable name="IS_INSTALLED" export="true">
<Compare type="string" relation="ne">
<VectorToScalar>
<FindFilePathEx name="A_FILENAME.EXE"/>
</VectorToScalar>
<ValueOf value="" />
</Compare>
</Variable>
```

The size of the file need not be provided.

**Existence of a num-  
ber of Windows™  
registry keys**

The following template checks the identification or detection of the existence of a number of Windows™ registry keys.

The number of keys to be provided depends on the application.

```
<Variable name="IS_INSTALLED">
<And>
<RegKeyValueEqual key="KEY NAME A" entry="ENTRY NAME" value="VALUE" section="64or32"/>
<RegKeyValueEqual key="KEY NAME B" entry="ENTRY NAME" value="VALUE" section="64or32"/>
<RegKeyValueEqual key="KEY NAME N" entry="ENTRY NAME" value="VALUE" section="64or32"/>
</And>
</Variable>
```

**Existence of at  
least one of the  
registry keys**

The following template checks the identification or detection of the existence of at least one of the registry keys.

```
<Variable name="IS_INSTALLED" export="true">
<Or>
<RegKeyValueEqual key="KEY NAME A" entry="ENTRY NAME" value="VALUE" section="64or32"/>
<RegKeyValueEqual key="KEY NAME B" entry="ENTRY NAME" value="VALUE" section="64or32"/>
<RegKeyValueEqual key="KEY NAME N" entry="ENTRY NAME" value="VALUE" section="64or32"/>
</Or>
</Variable>
```

### Identification or detection of

### Sample template

File that is in a particular directory that is defined by a filter

The following template checks the identification or detection of the file that is in a particular directory that is defined by a filter.



**Note:** Use "?" as the single-character wildcard and "\*" to denote multiple characters.



**Restriction:** Replace the forward or backslashes in the file path with the "?" wildcard.

```
<Variable name="IS_INSTALLED" export="true">
  <Compare type="string" relation="ne">
    <VectorToScalar>
      <Vector filter="?opt?symantec*">
        <FindFilePathEx name="FILENAME" />
      </Vector>
    </VectorToScalar>
    <ValueOf value="" />
  </Compare>
</Variable>
```

Key name, key entry, and its value for a registry key

The following template checks the identification or detection of the key name, key entry, and its value for a registry key.

```
<Variable name="IS_INSTALLED" export="true">
  <RegKeyValueEqual key="KEY NAME" entry="ENTRY NAME" value="VALUE" section="64or32" />
</Variable>
```

CPU architecture

The following template checks the identification or detection of CPU architecture.

```
<Variable name="IS_INSTALLED" export="true">
  <Compare relation="eq" type="string">
    <ValueOf value="$(B_PROCESSOR_ARCH)" />
    <ValueOf value="ARCHITECTURE_CODE" />
  </Compare>
</Variable>
```

Where **ARCHITECTURE\_CODES**:

- AIX, IBM i, and Linux PPC: **PPC**
- Linux x86, Mac OS X, and Solaris x86: **IX86**
- Linux on System z: **S390**
- HP-UX Itanium: **ITANIUM**

### Identification or detection of

### Sample template

- HP-UX PA-RISC: **PA-RISC**
- Solaris SPARC: **SPARC**

File contents and  
matching specified  
strings

The following template checks the identification or detection of the file contents and matching specified strings.



**Note:** The scanner reads only text files. It cannot read binary files and archives, such as `.jar`, `.ear`, and `.zip`.

```
<MultipleInstance>
  <Iterator name="file_list" export="false">
    <FindFilePathEx name="MYFILE.txt" />
  </Iterator>
  <Instance>
    <Variable name="file_read" export="false">
      <ReadFile path="$(file_list)MYFILE.txt" />
    </Variable>
    <Variable name="IS_INSTALLED">
      <Compare type="string" relation="ne">
        <VectorToScalar>
          <Vector filter="*MYAPP_version=MYAPP-1.3*">
            <ValueOf value="$(file_read)" />
          </Vector>
        </VectorToScalar>
        <ValueOf value="" />
      </Compare>
    </Variable>
    <Condition withVariable="IS_INSTALLED">
      <Action onValue="false" do="SKIP" />
    </Condition>
  </Instance>
</MultipleInstance>
```

The name of the file to be detected is `MYFILE.txt` and the string value is `MYAPP_version=MYAPP-1.3`.

Existence of two  
files in a particu-  
lar directory where  
`someprog.jar`  
file has a particular  
size

The following template checks the identification or detection of the existence of two files in a particular directory where `someprog.jar` file has a particular size.

```
<MultipleInstance>
  <Iterator name="INSTALL_PATH">
    <Vector filter="*SOMEPROG.ear?SOMEPROG.war?">
      <FindFilePathEx name="essbase.jar" />
    </Vector>
```

## Identification or detection of

## Sample template

```

</Iterator>

<Instance>

  <Variable name="IS_INSTALLED">

    <FileInfoCompare absolutePath="$(INSTALL_PATH)someprog.jar" field="size" value="649432" relation="eq" />

  </Variable>

  <Condition withVariable="IS_INSTALLED">

    <Action onValue="false" do="SKIP"/>

  </Condition>

</Instance>

</MultipleInstance>

```

Matching BFI Pack-  
age Data report on  
endpoint side

It is possible to match data listed on BFI Package Data report on endpoint side using `PackageInfoMatch` operand.  
Below is an example for the same. The below example can be combined with other examples mentioned on this page.

```

<Variable name="IS_INSTALLED" export="true">

  <PackageInfoMatch vendor="RStudio*" name="rstudio-server" version="1.1.*"/></Variable>

```

The existence of a  
particular file

The following template checks the identification or detection of the existence of a particular file.

```

<MultipleInstance>

  <Iterator name="INSTALL_PATH">

    <FindFilePathEx name="SWTAG_NAME.swtag" />

  </Iterator>

  <Instance>

    <Variable name="IS_INSTALLED">

      <Compare type="string" relation="ne">

        <ValueOf value="$(INSTALL_PATH)" />

        <ValueOf value="" />

      </Compare>

    </Variable>

    <Condition withVariable="IS_INSTALLED">

      <Action onValue="false" do="SKIP"/>

    </Condition>

  </Instance>

</MultipleInstance>

```

File type with only  
a part of the name  
given

The following template checks the identification or detection of the file type with only a part of the name given.

```

<MultipleInstance>

  <Iterator name="INSTALL_PATH">

    <FindFilePathEx name="*.FILETYPE" appendFileName="true"/>

```

**Identification  
or detection of**

**Sample template**

```

</Iterator>

<Instance>

  <Variable name="IS_INSTALLED">

    <Compare type="string" relation="ne">

      <ValueOf value="\$(INSTALL_PATH)" />

      <ValueOf value="" />

    </Compare>

  </Variable>

  <Condition withVariable="IS_INSTALLED">

    <Action onValue="false" do="SKIP"/>

  </Condition>

</Instance>

</MultipleInstance>

```

The existence of a specific file, another file does not exist

The following template checks the identification or detection of the existence of a specific file, another file does not exist.

```

<MultipleInstance>

  <Iterator name="INSTALL_PATH">

    <FindFilePathEx name="file1"/>

  </Iterator>

  <Instance>

    <Variable name="IS_INSTALLED">

      <And>

        <FileExists absolutePath="\$(INSTALL_PATH)file1"/>

        <Not>

          <Compare type="string" relation="ne">

            <VectorToScalar>

              <FindFilePathEx name="file2"/>

            </VectorToScalar>

            <ValueOf value="" />

          </Compare>

        </Not>

      </And>

    </Variable>

    <Condition withVariable="IS_INSTALLED">

      <Action onValue="false" do="SKIP"/>

    </Condition>

  </Instance>

</MultipleInstance>

```

**Identification  
or detection of**

**Sample template**

Software items  
when the registry  
key identifies the

The following template checks the identification or detection of the Software items when the registry key identifies the product, Windows™ systems.

product, Windows™  
systems

Compares a part of the key string. To address this case, two signatures must be created, one for 32-bit and one for 64-bit architecture.

```
<MultipleInstance>
  <Iterator name="reg">
    <Vector filter="*000000FF1CE}" ignoreCase="false">
      <RegKeyList root="HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall\*" section="32"
subkeys="false" />    </Vector>
    </Iterator>
    <Instance>
      <Variable name="IS_INSTALLED">
        <And>
          <Compare relation="eq" type="string">
            <Clip endIndex="76" inputString="$(reg)" startIndex="74" />
            <ValueOf value="140" />
          </Compare>
          <Compare relation="eq" type="string">
            <Clip endIndex="84" inputString="$(reg)" startIndex="81" />
            <ValueOf value="0018" />
          </Compare>
        </And>
      </Variable>
      <Condition withVariable="IS_INSTALLED">
        <Action do="SKIP" onValue="false" />
      </Condition>
    </Instance>
  </MultipleInstance>
```

```
<MultipleInstance>
  <Iterator name="reg">
    <Vector filter="*000000FF1CE}" ignoreCase="false">
      <RegKeyList root="HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall\*" section="64"
subkeys="false" />
    </Vector>
  </Iterator>
  <Instance>
    <Variable name="IS_INSTALLED">
```

## Identification or detection of

## Sample template

```
<And>
  <Compare relation="eq" type="string">
    <Clip endIndex="76" inputString="$(reg)" startIndex="74"/>
    <ValueOf value="140"/>
  </Compare>
  <Compare relation="eq" type="string">
    <Clip endIndex="84" inputString="$(reg)" startIndex="81"/>
    <ValueOf value="0018"/>
  </Compare>
</And>
</Variable>
<Condition withVariable="IS_INSTALLED">
  <Action do="SKIP" onValue="false"/>
</Condition>
</Instance>
</MultipleInstance>
```

Registry keys,  
where edition and  
version are stored

The following template checks the identification or detection of the registry keys, where edition and version are stored.

This signature matches a specific version range.

```
<Variable name="IS_INSTALLED">
  <And>
    <RegKeyValueContains entry="Edition" key="HKEY_LOCAL_MACHINE\SOFTWARE\Vendor\SoftwareName\Data"
value="Enterprise" section="64or32"/>
    <RegKeyVersionCompare key="HKEY_LOCAL_MACHINE\SOFTWARE\Vendor\SoftwareName\CurrVer" entry="Version"
relation="ge" value="3.00.00.00" section="64or32"/>
    <RegKeyVersionCompare key="HKEY_LOCAL_MACHINE\SOFTWARE\Vendor\SoftwareName\CurrVer" entry="Version"
relation="le" value="3.9999.9999.9999" section="64or32"/>
  </And>
</Variable>
```

Software instances  
by identifying their  
registry keys.

The following template checks the identification or detection of the software instances by identifying their registry keys.

Instance name is reflected by the asterisk character in registry path: `HKEY_LOCAL_MACHINE\SOFTWARE\ Microsoft\SoftwareName\*\Info\CurrVer`

This signature matches a specific edition and version range. To address this case, two signatures must be created, one for 32-bit and one for 64-bit architecture.

```
<MultipleInstance>
  <Iterator export="false" name="rg">
```

**Identification  
or detection of**

**Sample template**

```

<Vector>
  <RegKeyList root="HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\SoftwareName\*" section="64" subkeys="false"/>
</Vector>
</Iterator>
<Instance>
  <Variable export="false" name="vr">
    <RegKeyValue entry="Version" key="$(rg)\Info\CurrVer" mustExists="true" section="64"/>
  </Variable>
  <Variable name="IS_INSTALLED">
    <And>
      <RegKeyValueContains entry="Edition" key="$(rg)\Data" section="64" value="Enterprise"/>
      <Contains inputString="$(vr)" position="start" searchedString="3."/>
    </And>
  </Variable>
  <Condition withVariable="IS_INSTALLED">
    <Action do="SKIP" onValue="false"/>
  </Condition>
</Instance>
</MultipleInstance>

```

```

<MultipleInstance>
  <Iterator export="false" name="rg">
    <Vector>
      <RegKeyList root="HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\SoftwareName\*" section="32" subkeys="false"/>
    </Vector>
  </Iterator>
  <Instance>
    <Variable export="false" name="vr">
      <RegKeyValue entry="Version" key="$(rg)\Info\CurrVer" mustExists="true" section="32"/>
    </Variable>
    <Variable name="IS_INSTALLED">
      <And>
        <RegKeyValueContains entry="Edition" key="$(rg)\Data" section="32" value="Enterprise"/>
        <Contains inputString="$(vr)" position="start" searchedString="3."/>
      </And>
    </Variable>
    <Condition withVariable="IS_INSTALLED">
      <Action do="SKIP" onValue="false"/>
    </Condition>
  </Instance>
</MultipleInstance>

```

**Identification  
or detection of**
**Sample template**

```
</Instance>
</MultipleInstance>
```

Uninstall registry  
keys, Windows™  
systems

The following template checks the identification or detection of the uninstall registry keys, Windows™ systems.

This signature iterates through all keys and tries to match specific patterns in DisplayName and DisplayVersion values. To address this case, two signatures must be created, one for the 32-bit and one for the 64-bit architecture.

```
<MultipleInstance>
  <Iterator name="reg" export="true">
    <RegKeyList root="HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\*"
section="32" subkeys="false" />    </Iterator>
  <Instance>
    <Variable name="valueName" export="true">
      <RegKeyValue entry="DisplayName" key="$(reg)" section="32" />
    </Variable>
    <Variable name="valueVersion" export="true">
      <RegKeyValue entry="DisplayVersion" key="$(reg)" section="32" />
    </Variable>
    <Variable name="IS_INSTALLED">
      <And>
        <Contains inputString="$(valueName)" searchedString="TestProduct" position="start" />
        <Contains inputString="$(valueVersion)" searchedString="12.0" position="start" />
      </And>
    </Variable>
    <Condition withVariable="IS_INSTALLED">
      <Action onValue="false" do="SKIP" />
    </Condition>
  </Instance>
</MultipleInstance>
```

```
<MultipleInstance>
  <Iterator name="reg" export="true">
    <RegKeyList root="HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\*"
section="64" subkeys="false" />
  </Iterator>
  <Instance>
    <Variable name="valueName" export="true">
      <RegKeyValue entry="DisplayName" key="$(reg)" section="64" />
    </Variable>
```

## Identification or detection of

### Sample template

```
<Variable name="valueVersion" export="true">
  <RegKeyValue entry="DisplayVersion" key="$(reg)" section="64" />
</Variable>
<Variable name="IS_INSTALLED">
  <And>
    <Contains inputString="$(valueName)" searchedString="TestProduct" position="start"/>
    <Contains inputString="$(valueVersion)" searchedString="12.0" position="start"/>
  </And>
</Variable>
<Condition withVariable="IS_INSTALLED">
  <Action onValue="false" do="SKIP"/>
</Condition>
</Instance>
</MultipleInstance>
```

## Extended signature operators

### 9.2.2

Available from 9.2.2. The scan operations during which extended XML signature definitions are used are performed based on the processing instructions that are contained in the signature catalog. In computer languages, expressions consist of two types of components: operands and operators. Operands are the objects that are manipulated and operators are the symbols that represent specific actions. Operands and operators can be either scalar or vector.

The following definitions apply to operators and operands in the context of the signature catalog:

#### scalar operand

Returns a value in string format. An operand cannot have children. For example, the **RegKeyValue** scalar operand returns the value of the specified registry key.

#### scalar operator

Performs an operation on other operators and operands and returns results in string format. An operator can have children. For example, the **AND** operator, returns true or false as a result.

#### vector operand

Returns results as a set of strings. An operand cannot have children. For example, the **FindFilePathEx** operand, returns a set of file paths.

#### vector operator

Performs an operation on other operators and operands and returns results as a set of strings. An operator can have children. For example, the **Vector** operator, returns a set of strings that contain the results of all its children.

## Contents

- [The structure of the signature catalog \(on page mxvi\)](#)
- [Core expressions \(on page mxviii\)](#)
- [File system expressions \(on page mxxiv\)](#)
- [Native registry expressions \(on page mxxvii\)](#)
- [Registry operands \(on page mxxxiv\)](#)
- [Windows™ registry expressions \(on page mxxxvi\)](#)

## The structure of the signature catalog

Table 177. The structure of the signature catalog

Operands and operators	Function and supported attributes
<b>Action</b>	<p>Specifies the action to be performed depending on the result of the <b>Condition</b> element.</p> <p><b>Attributes:</b></p> <p><b>onValue</b></p> <p>The value that causes the action to be performed. This attribute is required.</p> <p><b>do</b></p> <p>Specifies the operation to be performed. This attribute is required. The supported value is <i>SKIP</i>, which interrupts the signature or the iterator instance evaluation and prevents it from being returned in the output.</p>
<b>Condition</b>	<p>Verifies if the specified condition is met. It contains one or more <b>Action</b> elements, which specify the action to be performed depending on the result of the <b>Condition</b> element.</p> <p><b>Attributes:</b></p> <p><b>withVariable</b></p> <p>Specifies the name of the variable whose condition is to be verified. This attribute is required.</p>
<b>MultipleInstance</b>	<p>Groups information to identify a software product that might be installed in several instances on the same workstation. It contains 1 <b>Iterator</b> and 1 <b>Instance</b> element.</p> <p><b>Attributes:</b></p> <p>None</p> <p><b>Multiple instance - iterator on INSTALL_PATH</b></p>

```

<MultipleInstance>
  <Iterator name="INSTALL_PATH">
    <FindFilePathEx name=" " />
  </Iterator>

```

Table 177. The structure of the signature catalog (continued)

Operands and operators	Function and supported attributes
	<pre> &lt;Instance&gt;   &lt;Variable name="IS_INSTALLED"&gt;&lt;!-- RULE --&gt;   &lt;/Variable&gt;   &lt;Condition withVariable="IS_INSTALLED"&gt;     &lt;Action onValue="false" do="SKIP"/&gt;   &lt;/Condition&gt; &lt;/Instance&gt; &lt;/MultipleInstance&gt; </pre>
	<p><b>Multiple instance - iterator on a vector with calculation (options) of INSTALL PATH later on</b></p> <pre> &lt;MultipleInstance&gt;   &lt;Iterator name="ITER_VAR"&gt;   &lt;/Iterator&gt;   &lt;Instance&gt;     &lt;Variable name="IS_INSTALLED"&gt;&lt;!-- RULE --&gt; &lt;/Variable&gt;     &lt;Variable name="INSTALL_PATH"&gt;&lt;!-- RULE --&gt; &lt;/Variable&gt;     &lt;Condition withVariable="IS_INSTALLED"&gt;       &lt;Action onValue="false" do="SKIP"/&gt;     &lt;/Condition&gt;   &lt;/Instance&gt; &lt;/MultipleInstance&gt; </pre>
<p><b>Variable</b></p> <p>Is a container for a single value that is expressed as a string whose return value is given by the result of a set of operators and operands.</p> <p><b>Attributes:</b></p> <p><b>name</b></p> <p>Specifies the name of the variable. It is unique in the containing signature scope. This attribute is required.</p> <p><b>export</b></p> <p>Specifies if the output of the variable is to be exported. Supported values are <i>true</i> and <i>false</i>. The default value is <i>true</i>. This attribute is optional.</p>	

## Core expressions

### Operands and operators

### Function and supported attributes

#### And

Performs a logical AND operation between the results of all its children. If one of the operations returns false, the whole operation is set to false without performing further evaluation on the remaining children. At least one child is required.

#### Properties:

- Result type: scalar [*true* | *false*]
- Expression type: operator

#### Example:

```
<And>
...scalar operators and operands returning a Boolean value
</And>
```

#### Clip

Returns a substring that is a range of consecutive characters from a string, starting with the character whose index is specified as **startIndex** and ending with the character whose index is specified as **endIndex**.

#### Properties:

- Result type: scalar
- Expression type: operand

#### Example:

For example: the substring 234 is returned when:

```
<Clip inputString="123456789" startIndex="1" endIndex="3"/>
```

#### Attributes:

##### inputString

Specifies the string to be cropped.

##### startIndex

Specifies the index of the character in the input string that the substring should start with.

An index of 0 refers to the first character of the input string.

##### endIndex

Specifies the index of the character in the input string that the substring should end with. An

index of 0 refers to the last character of the input string.



**Note:** It is recommended to use the new operator **StringSlice** whose range is wider than that of **Clip** because **StringSlice** supports negative indexes in Python syntax.

## Operands and operators

## Function and supported attributes

### Compare

Compares two expressions based on the value of the relation attribute. The result is *true* if the expression is satisfied, *false* if the expression is not satisfied.

#### Properties:

- Result type: scalar
- Expression type: operator

#### Example:

```
<Compare relation="relation" type="type" >
  <Expression 1/>
  <Expression 2/>
</Compare>
```

#### Attributes:

##### relation

Specifies the relation to be evaluated. The supported values are as follows:

- *eq* - equal to
- *ne* - not equal to
- *gt* - greater than
- *ge* - greater than or equal to
- *lt* - less than
- *le* - less than or equal to

##### type

Specifies the format of the expressions to be compared. The supported values are as follows:

- *version* - Compares two versions. The version is expressed by no more than four numbers that are separated by periods or commas.
- *integer* - Compares two integers.
- *string* - Compares two strings.
- *cistring* - Compares two case-insensitive strings.
- *boolean* - The comparison is to be performed between two Boolean values.
- *hex* - Compares two unsigned 4-byte hexadecimal integers. The 0x prefix is optional.

### Concat

Returns a concatenation of the expressions.

#### Properties:

**Operands and operators**

**Function and supported attributes**

- Result type: scalar
- Expression type: operator

**Example:**

```
<Concat [separator="separator"] [ifEmpty="{add|skip}"] >
  <Expression 1/>
  <Expression 2/>
  ...
</Concat>
```

**Attributes:**

**separator**

Specifies the separator to insert between two expressions. This attribute is optional. The default value is an empty string.

**ifEmpty**

Specifies if the separator must be added if the expression to concatenate is empty. This attribute is optional. Supported values are as follows:

**skip**

If the string is empty, the separator is not added. This is the default value.

**add**

If the string is empty, the separator is added.

**Contains**

Checks if the string contains a string.

**Properties:**

- Result type: scalar `[[true|false]]`
- Expression type: operand

**Example:**

```
<Contains inputString="example_string" searchedString=
"example_string_to_search" position = ["start" | "end" |
"contains"]/>
```

**Attributes:**

**inputString**

Specifies string to search in.

**searchedString**

Specifies string to search.

## Operands and operators

## Function and supported attributes

### position

Specifies where to search.

### start

Checks if the searched string is at the beginning.

### end

Checks if searched string is at the end.

### contains

Checks if searched string is somewhere in the original string.

## FileInfoCompare

Returns the information that is specified in the **field** attribute.

### Properties:

- Result type: scalar [{true|false}]
- Expression type: operand

### Example:

```
<FileInfoCompare
  absolutePath="absolute_path"
  field="field"
  value="value"
  relation="relation"
  [mustExist="{true|false}"]
/>
```

### Attributes:

#### absolutePath

Specifies the absolute path to the file to evaluate.

#### field

Compares two files by one of the values that are supported, which are as follows:

- *size*
- *inode* (UNIX™ only)
- *atime* - the date the file was accessed in UNIX™ time stamp format.
- *ctime* - the date the file was created in UNIX™ time stamp format.
- *mtime* - the date the file was modified in UNIX™ time stamp format.

#### relation

Specifies the relation to be evaluated.

Operands and operators	Function and supported attributes
<b>FileExists</b>	<p><b>value</b></p> <p>Specifies the value to compare with.</p> <p><b>mustExist</b></p> <p>Indicates that the specified file must exist. This attribute is optional. The default value is <i>false</i>. If this attribute is set to <i>true</i> and the specified file does not exist, the current signature is not evaluated.</p> <p>Returns a Boolean value that indicates if the specified file exists.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar [<i>true</i>   <i>false</i>]</li> <li>• Expression type: operand</li> </ul> <p><b>Example:</b></p> <pre style="background-color: #f0f0f0;">&lt;FileExists absolutePath="absolute_path" /&gt;</pre>
<b>Not</b>	<p>Performs a logical NOT operation on the result of its one child. Only one child is allowed.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar [<i>true</i>   <i>false</i>]</li> <li>• Expression type: operator</li> </ul> <p><b>Example:</b></p> <pre style="background-color: #f0f0f0;">&lt;Not&gt; ... a single scalar operator or operand returning a Boolean value &lt;/Not&gt;</pre>
<b>PathExists</b>	<p>Returns a Boolean value that indicates if the specified path exists.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar</li> <li>• Expression type: operand</li> </ul> <p><b>Example:</b></p> <pre style="background-color: #f0f0f0;">&lt;PathExists absolutePath="absolute_path" /&gt;</pre>

Operands and operators	Function and supported attributes
Or	<p><b>Attributes:</b></p> <p><b>absolutePath</b></p> <p>Specifies the absolute path to be searched.</p> <p>Performs a logical OR operation between the results of all its children. If one of the operations returns "true", the whole operation is set to "true" without performing further evaluation on the remaining children. At least one child is required.</p>
Substring	<p>Searches through a string that contains multiple lines of text and returns the lines of a string that contain the search text.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: vector</li> <li>• Expression type: operand</li> </ul> <p><b>Example:</b></p> <pre>&lt;Substring inputString="input_string_to_search" searchedString="string_to_search_for" /&gt;</pre>
Vector	<p><b>Attributes:</b></p> <p><b>inputString</b></p> <p>Input string that contains multiple lines.</p> <p><b>searchedString</b></p> <p>The string that is searched for.</p> <p>Returns a vector that contains the union of all its children, duplicates are included. If you specify a filter, the result contains only the strings that match the pattern.</p> <ul style="list-style-type: none"> <li>• filter: Specifies the filter criteria to be applied to the search. The asterisk (*) and question mark (?) wildcards are supported.</li> </ul>
VectorAt	<p>Returns the vector element for the specified position.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar</li> <li>• Expression type: operator</li> </ul> <p><b>Example:</b></p>

Operands and operators	Function and supported attributes
VectorToScalar	<pre style="background-color: #f0f0f0;"> &lt;VectorAt index="index_number"&gt; ... any number of scalar/vector operator/operand &lt;/VectorAt&gt;</pre> <p><b>Attributes:</b></p> <p><b>index</b></p> <p>Specifies the wanted vector position. The first vector element has position "1".</p> <p>Converts a vector to its scalar representation. You must convert a vector to scalar because only scalars can be compared.</p>

## File system expressions

Operands and operators	Function and supported attributes
<b>FindFilePathEx</b>	<p>Searches for the specified file in the specified locations. The result is a vector of all the paths where at least one entry that matches the specified file is found.</p> <p>The operand searches either the cache or the file system depending on the settings that are defined for the file system scanner. To have the operand search the file system, set the <b>maxDataAge</b> attribute to zero in the configuration file. An extra filter can be set to refine the file search. Such a filter can contain a file system scanner query, which is applied to the found file. If the filter returns a true condition, the directory for the file is returned, otherwise it is not returned.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: vector</li> <li>• Expression type: operand</li> </ul> <p><b>Example:</b></p> <pre style="background-color: #f0f0f0;"> &lt; FindFilePathEx name="file_name" [filter="query_filter" ] [recursive="{true false}"] [appendFileName="{true false}"]/&gt;</pre> <p><b>Attributes:</b></p> <p><b>name</b></p> <p>Specifies the file mask to be searched. This attribute is required.</p> <p><b>appendFileName</b></p> <p>Specifies if the results contain the file name. This attribute is optional. The supported values are as follows:</p>

## Operands and operators

## Function and supported attributes

- *true*
- *false*

### filter

Specifies a file system query.

## FileInfoMatch

Searches for a file with the specified name and attributes in the specified locations. The result is *true* if at least one matching file is found.

### Properties:

- Result type: scalar
- Expression type: operand

### Example:

```
<FileInfoMatch
  [rootPath="root_path"]
  [recursive="{true|false}"]
  name="file_name"
  field="field"
  values="values"
/>
```

### Attributes:

#### rootPath

Specifies the path where the search is to be performed. The default value is *.*. Wildcards (\*) (?) are supported. The path is indicated according to the following syntax:

```
media_type::]drive:path
```

where

#### *media\_type*

Specifies the media type and can assume the following values:

#### **\$local**

Includes local disks. This is the default value.

#### **\$remote**

Includes remote disks

#### **\$other**

## Operands and operators

### Function and supported attributes

On Windows™ systems, includes other disk types, such as CDROM, DVD. On UNIX™ systems, this value is not supported and is expressed with the `$local` value.

#### **\$all**

Includes all disks that are listed above.

If the `media_type` variable is not specified, the `$local` value is assumed, therefore, if you want to scan disks other than local, specify a value for the `media_type` variable.

#### **drive**

Specifies the drives to be excluded. You can indicate one or more specific drives or you can use the `$local`, `$remote`, `$other`, and `$all` values. In this case, all drives in the specified category are excluded from the search. This variable is optional on UNIX™ operating systems.

#### **path**

Specifies the path to be excluded. Wildcards (\*) and (?) are supported.

This attribute is optional.

#### **recursive**

Specifies if the search is to be performed in the specified path and in all its subdirectories. Supported values are `true` and `false`. The default value is `true`. This attribute is optional.

#### **name**

Specifies the file name to be searched. This attribute is required. Wildcards (\*) and (?) are supported.

#### **field**

Compares two files by one of the values that are supported, which are as follows:

- `size`
- `inode` (UNIX™ only)
- `atime` - the date the file was accessed in UNIX™ time stamp format.
- `ctime` - the date the file was created in UNIX™ time stamp format.
- `mtime` - the date the file was modified in UNIX™ time stamp format.

#### **values**

Specifies one or more values for the attribute that is specified in the **field** attribute. If more than one value is specified, the items are concatenated by using the Unicode control character "Private Use 1" with ASCII code 0x0091.

#### **date**

Operands and operators	Function and supported attributes
<b>ReadFile</b>	<p>Returns the creation, access, and modification dates of the file.</p> <p>Returns in string form the text from a file on the system.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar</li> <li>• Expression type: operand</li> </ul> <p><b>Example:</b></p> <pre>&lt;ReadFile path="path_to_file" [trim="{true false}"] [fileType="{native utf8}"] /&gt;</pre> <p><b>Attributes:</b></p> <p><b>Path</b></p> <p>Specifies the path to the file.</p> <p><b>trim</b></p> <p>Indicates if new line special characters must be removed from the content of the file. The default is <i>false</i>.</p> <p><b>fileType</b></p> <p>Indicates the type of file. The default is <i>native</i>.</p>

## Native registry expressions

Operands and operators	Function and supported attributes
<b>AixProductInfo</b>	<p>Returns any information about the supported AIX® operating systems.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar</li> <li>• Expression type: operand</li> </ul> <p><b>Example:</b></p> <pre>&lt;AixProductInfo code="product_code" field="{name version vendor description installDir}" [mustExist="{true false}*" ] /&gt;</pre> <p><b>Attributes:</b></p> <p><b>code</b></p> <p>Specifies the product code that uniquely identifies an AIX® ODM package. The product code can be retrieved only by using the <b>AixProductList</b> operand. For more information about this operand, see <a href="#">AixProductList</a> (on page mxxviii).</p>

**Operands and  
operators**

**Function and supported attributes**

**field**

Specifies the information to be retrieved. Supported values are as follows:

- *name*
- *version* - The version is expressed by no more than four numbers that are separated by periods or commas.
- *vendor*
- *description*
- *installDir*

**mustExist**

Specifies whether to stop the operand evaluation if the specified file does not exist. Supported values are *true* and *false*. The default value is *false*. This attribute is optional. If this attribute is set to *true* and the specified file does not exist, the current signature is not evaluated. If the attribute is *false* and the specified file does not exist, the return value is an empty string.

**AixProductList**

Returns the set of AIX® ODM package codes. The codes that are returned can be used with the **AixProductExists** and **AixProductInfo** operands.

**Properties:**

- Result type: vector
- Expression type: operand

**Example:**

```
<AixProductList [filter="filter_expression"]
  [type="type"] />
```

**Attributes:**

**type**

Applies a filter based on the product type. This attribute is optional. Supported values are as follows:

***any***

Returns both products and any subproducts. This is the default value.

***product***

Returns only products.

**filter**

## Operands and operators

### Function and supported attributes

Specifies the filter criteria to be applied to the search. The asterisk (\*) and question mark (?) wildcards are supported. This attribute is optional.

#### HpProductInfo

Returns the requested information, if available.

##### Properties:

- Result type: scalar
- Expression type: operand

##### Example:

```
<HpProductInfo code="product_code" field="{name|version|
vendor|installDir}"/>
```

##### Attributes:

###### code

Specifies the product and subproduct code that uniquely identifies an HP-UX package. The product and subproduct code can be retrieved only by using the **HpProductList** operand. For more information about this operand, see [HpProductList \(on page mxxix\)](#). This attribute is optional.

###### field

Specifies the information to be retrieved. Supported values are as follows:

- *name*
- *version* - The version is expressed by no more than four numbers that are separated by periods or commas.
- *vendor*
- *installDir*

#### HpProductList

Returns the set of HP-UX package codes. The codes that are returned can be used with the HpProductExists and HpProductInfo operands.

##### Properties:

- Result type: vector
- Expression type: operand

##### Example:

```
<HpProductList [filter="filter_expression"]
[type="type"] />
```

##### Attributes:

Operands and operators	Function and supported attributes
	<p><b>type</b></p> <p>Applies a filter based on the product type. This attribute is optional. Supported values are as follows:</p> <p><b>any</b></p> <p>Returns both products and any subproducts. This is the default value.</p> <p><b>product</b></p> <p>Returns only products.</p> <p><b>subproduct</b></p> <p>Returns only subproducts.</p> <p><b>filter</b></p> <p>Specifies the filter criteria to be applied to the search. The asterisk (*) and question mark (?) wildcards are supported. This attribute is optional.</p>
<b>RpmProductExists</b>	<p>Indicates if the specified package is installed.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"> <li>• Result type: scalar [true   false]</li> <li>• Expression type: operand</li> <li>• Operating system: supported on Linux™ and AIX</li> </ul> <p><b>Example:</b></p> <pre>&lt;RpmProductExists code="product_code" /&gt;</pre> <p><b>Attributes:</b></p> <p><b>code</b></p> <p>Specifies the product code that uniquely identifies an RPM package. The product code can be retrieved by using the <b>RPMProductList</b> operand. For more information about this operand, see <a href="#">RpmProductList (on page mxxx)</a>.</p> <p>The product code can also be listed with the <code>rpm -qa</code> command. The command returns all available codes that identify RPM packages. The codes can either define the package architecture or not; for example: <code>kernel-2.6.32-358.el6.x86_64</code> or <code>kernel-2.6.32-358.el6</code>.</p>
<b>RpmProductList</b>	<p>Returns the set of RPM package codes. The codes that are returned can be used with the <b>RpmProductExists</b> and <b>RpmProductInfo</b> operands.</p> <p><b>Properties:</b></p>

## Operands and operators

### Function and supported attributes

- Result type: vector
- Expression type: operand
- Operating system: supported on Linux™ and AIX

#### Example:

```
<RpmProductList [filter="filter_expression"]
[type="type"] />
```

#### Attributes:

##### filter

Specifies the filter criteria to be applied to the search. The asterisk (\*) and question mark (?) wildcards are supported. This attribute is optional.

##### type

Applies a filter based on the product type. This attribute is optional. Supported values are as follows:

##### *any*

Returns both products and any subproducts. This is the default value.

##### *product*

Returns only products.

## SunProductInfo

Returns the requested information, if available.

#### Properties:

- Result type: scalar
- Expression type: operand
- Operating system: supported Oracle Solaris operating environments

#### Example:

```
<SunProductInfo code="product_code" field="{name|version|displayVersion|vendor|installDir}"/>
```

#### Attributes:

##### code

Specifies the product code that uniquely identifies an Oracle Solaris package. The product code can be retrieved only by using the **SunProductList** operand. For more information about this operand, see [SunProductList \(on page mxxxii\)](#).

##### field

Specifies the information to be retrieved. Supported values are as follows:

##### *name*

Operands and operators	Function and supported attributes
	Returns the name of the product.
	<b>version</b>
	Returns the product version and revision number, for example 3.7.2101.
	<b>displayVersion</b>
	Returns the product version and revision number, for example 3.7.2101, REV=0.98.08.26.
	<b>vendor</b>
	Returns the name of the vendor.
	<b>installDir</b>
	Returns the topmost installation directories.
<b>SunProductList</b>	Returns the set of Sun Solaris package codes. The codes that are returned can be used with the <b>SunProductExists</b> and operands.
<b>Properties:</b>	<ul style="list-style-type: none"> <li>• Result type: vector</li> <li>• Expression type: operand</li> <li>• Operating system: supported Sun Solaris operating environments</li> </ul>
<b>Example:</b>	<pre>&lt;SunProductList [filter="filter_expression"] [ type="type" ] /&gt;</pre>
<b>Attributes:</b>	<b>type</b>
Applies a filter based on the product type. This attribute is optional. Supported values are as follows:	<b>any</b>
Returns both products and any subproducts. This is the default value.	<b>product</b>
Returns only products.	<b>filter</b>
Specifies the filter criteria to be applied to the search. The asterisk (*) and question mark (?) wildcards are supported. This attribute is optional.	<b>Win32ProgramInfo</b>
Returns the requested information, if available.	

## Operands and operators

### Function and supported attributes

#### Properties:

- Result type: scalar
- Expression type: operand
- Operating systems: all supported Windows™ operating systems

#### Example:

```
<Win32ProgramInfo code="product_code"
field="{name|description|version|vendor|installDir|uninstData}"/>
```

#### Attributes:

##### code

Specifies the product code that uniquely identifies a Win32 program. The program code can be retrieved only by using the **Win32ProgramList** operand. For more information about this operand, see [Win32ProgramList \(on page mxxxiii\)](#).

##### field

Specifies the information to be retrieved. Supported values are as follows:

##### *name*

Returns the patch name.

##### *description*

Returns the patch description.

##### *version*

Returns the product version. The version is expressed by no more than four numbers that are separated by periods or commas.

##### *vendor*

Returns the product vendor.

##### *installDir*

Returns the product installation directory.

##### *uninstData*

Returns the product uninstallation command.

## Win32ProgramList

Returns the set of packages installed. The codes that are returned can be used with the **Win32ProgramExists** and **Win32ProgramInfo** operands.

#### Properties:

Operands and operators	Function and supported attributes
	<ul style="list-style-type: none"> <li>• Result type: vector</li> <li>• Expression type: operand</li> <li>• Operating systems: all supported Windows™ operating systems</li> </ul>
<b>Example:</b>	<pre>&lt;Win32ProgramList [filter="filter_expression"] [type="type"] /&gt;</pre>
<b>Attributes:</b>	<p><b>type</b> Applies a filter based on the product type. This attribute is optional. Supported values are as follows:</p> <p><b>any</b> Returns both products and any subproducts. This is the default value.</p> <p><b>product</b> Returns only products.</p> <p><b>filter</b> Specifies the filter criteria to be applied to the search. The asterisk (*) and question mark (?) wildcards are supported. This attribute is optional.</p>

## Registry operands

Operands and operators	Function and supported attributes
<b>PackageInfoEqual</b>	Returns true if an item with the same name, version, and vendor exists in the specified registry.
<b>Properties:</b>	<ul style="list-style-type: none"> <li>• Result type: scalar [true   false]</li> <li>• Expression type: operand</li> </ul>
<b>Example:</b>	<pre>&lt;PackageInfoEqual   provider="{any   ismp   os}"   code="product_code"   value="name_version_vendor" /&gt;</pre>
<b>Attributes:</b>	<p><b>provider</b> Specifies the installation database to be searched. Supported values are as follows:</p>

**Operands and operators****Function and supported attributes****any**

Specifies that the search is performed on the operating system installation database and then on the ISMP installation database.

**OS**

Specifies that the search is performed on the operating system installation database.

**ismp**

Specifies that the search is performed on the ISMP installation database.

**code**

Specifies the product code that uniquely identifies the product.

**value**

Comprises the concatenation of the name, version, and vendor strings for the product. Separate each string with a blank space; empty strings can be omitted.

**PackageInfoMatch**

Returns true if an item with the same name, version, and vendor exists in any registry.

**Properties:**

- Result type: scalar [true | false]
- Expression type: operand
- Operating systems: all supported operating systems

**Example:**

```
<PackageInfoMatch
  vendor="product vendor"
  name="product name"
  version="product version"
/>
```

**Attributes:****vendor**

Specifies the product vendor.

**name**

Specifies the name of the product.

**version**

Specifies the product version number.

The wildcard (\*) is supported.

## Windows™ registry expressions

---

### Operands and operators

### Function and supported attributes

#### RegKeyExists

Indicates whether the specified key exists.

##### Properties:

- Result type: scalar [true | false]
- Expression type: operand

##### Example:

```
<RegKeyExists key="key" [section="{32|64|32or64|64or32}"]/>
```

##### Attributes:

###### key

Specifies the full registry key name in `registry_key\registry_subkey` format.

###### section

Specifies the attribute that indicates which section of the registry the search is to be performed on. This is the parameter introduced to make sure that the scanner functions correctly on 64-bit systems. Its values are:

###### 32

The search is only performed on the 32-bit part of the registry.

###### 64

The search is only performed on the 64-bit part of the registry.

###### 32or64

The search is performed on the 32-bit part first, then on the 64-bit part of the registry.

###### 64or32

The search is performed on the 64-bit part first, then on the 32-bit part of the registry.

Default value is 32.

#### RegKeyList

Searches the Windows™ registry under the key that is specified in the root attribute, and returns a list of keys that are in the registry under the root key. If the **subKeys** attribute is set to *false*, only the values in the root key are returned.

##### Properties:

- Result type: vector
- Expression type: operand

##### Example:

## Operands and operators

## Function and supported attributes

```
<RegKeyList
  root="root_key"
  [section="{32|64|32or64|64or32}"]
  [subKeys="{true|false}"]/>
```

**Attributes:****root**

Specifies the full registry key name in `registry_key\registry_subkey` format.

**section**

Specifies the attribute that indicates which section of the registry the search is to be performed on. (This is the parameter introduced to make sure that the scanner runs correctly under 64-bit systems. Its values are:

**32**

The search is only performed on the 32-bit part of the registry.

**64**

The search is only performed on the 32-bit part of the registry.

**32or64**

The search is performed on the 32-bit part first, then on the 64-bit part of the registry.

**64or32**

The search is performed on the 64-bit part first, then on the 32-bit part of the registry.

Default value is 32.

**subKeys**

Specifies if **subkeys** must be returned. The default value is *false*.

**RegKeyValue**

Returns the current value for the specified registry key. When the registry key is a `REG_DWORD` entry, the key attribute returns a decimal value.

**Properties:**

- Result type: scalar
- Expression type: operand

**Example:**

```
<RegKeyValue entry="entry" key="key"
  [section="{32|64|32or64|64or32}"]
  [mustExist="{true|false}"]/>
```

---

**Operands and operators****Function and supported attributes****Attributes:****key**

Specifies the full registry key name in `registry_key\registry_subkey` format.

**entry**

Specifies the name of the value that is contained in the key. To retrieve the value of registry entries that are named "(Default)", you must specify a null value for the entry attribute, for example `entry=""`.

**section**

Specifies the attribute that indicates which section of the registry the search is to be performed on. This is the parameter introduced to make sure that the scanner runs correctly on 64-bit systems. Its values are:

**32**

The search is only performed on the 32-bit part of the registry.

**64**

The search is only performed on the 32-bit part of the registry.

**32or64**

The search is performed on the 32-bit part first, then on the 64-bit part of the registry.

**64or32**

The search is performed on the 64-bit part first, then on the 32-bit part of the registry.

Default value is 32.

**mustExist**

Specifies whether to stop the operand evaluation if the specified key does not exist. Supported values are *true* and *false*. The default value is *false*. This attribute is optional. If this attribute is set to *true* and the specified key does not exist, the current signature is not evaluated. If this attribute is set to *false* and the specified key does not exist, an empty string is returned.

**RegKeyValueContains**

Specifies whether the specified registry key contains the specified value.

**Properties:**

- Result type: scalar [true | false]
- Expression type: operand

**Example:**

---

**Operands and operators****Function and supported attributes**

```
<RegKeyValueContains  
  entry="entry"  
  key="key"  
  value="value"  
  [section="{32|64|32or64|64or32}"]  
  [mustExist="{true|false}"]/>
```

**Attributes:****key**

Specifies the full registry key name in `registry_key\registry_subkey` format.

**entry**

Specifies the name of the value that is contained in the key.

**value**

Specifies the value that must be contained in the entry.

**section**

Specifies the attribute indicating which section of the registry the search should be performed on. This is the parameter introduced to make sure that the scanner runs correctly on 64-bit systems. Its values are:

**32**

The search is only performed on the 32-bit part of the registry.

**64**

The search is only performed on the 32-bit part of the registry.

**32or64**

The search is performed on the 32-bit part first, then on the 64-bit part of the registry.

**64or32**

The search is performed on the 64-bit part first, then on the 32-bit part of the registry.

Default value is 32.

**mustExist**

Specifies whether to stop the operand evaluation if the specified key does not exist. Supported values are *true* and *false*. The default value is *false*. This attribute is optional. If this attribute is set to *true* and the specified key does not exist, the current signature is not evaluated. If this attribute is set to *false* and the specified key does not exist, an empty string is returned.

---

Operands and operators	Function and supported attributes
<b>RegKeyValueEqual</b>	<p>Indicates if the specified registry key value is equal to the specified key.</p> <p><b>key</b></p> <p>Specifies the full registry key name in <code>registry_key/registry_subkey</code> format.</p> <p><b>entry</b></p> <p>Specifies the name of the value that is contained in the key.</p> <p><b>value</b></p> <p>Specifies the value to be compared. When the registry key that is specified in the entry attribute is a REG-DWORD entry, enter a decimal value in the value attribute.</p>
<b>RegKeyVersionCompare</b>	<p>Compares the specified registry key value with the specified version based on the value of the <b>relation</b> attribute.</p> <p><b>Properties:</b></p> <ul style="list-style-type: none"><li>• Result type: scalar [<i>true</i>   <i>false</i>]</li><li>• Expression type: operand</li></ul> <p><b>Example:</b></p> <pre>&lt;RegKeyVersionCompare   key="key"   entry="entry"   relation="relation"   value="value"   [section="{32 64 32or64 64or32}"]   [mustExist="{true false}"]/&gt;</pre>
	<p><b>Attributes:</b></p> <p><b>key</b></p> <p>Specifies the full registry key name in <code>registry_key\registry_subkey</code> format.</p> <p><b>entry</b></p> <p>Specifies the name of the value that is contained in the key.</p> <p><b>relation</b></p> <p>Specifies the relation to be evaluated. Supported values are as follows:</p> <ul style="list-style-type: none"><li>• <i>eq</i> - equal to</li><li>• <i>ne</i> - not equal to</li><li>• <i>gt</i> - greater than</li><li>• <i>ge</i> - greater than or equal to</li><li>• <i>lt</i> - less than</li><li>• <i>le</i> - less than or equal to</li></ul>

---

**Operands and operators****Function and supported attributes****value**

Specifies the version to be compared.



**Note:** When the registry key that is specified in the entry attribute is a **REG\_DWORD** entry, enter a decimal value in the value attribute. The supported value is **version**. The version is expressed by up to four numbers that are separated by periods or commas.



**Note:** When the registry key that is specified in the entry attribute is a **REG\_BINARY** entry in the value field, enter a string that looks exactly like the "data" field when you are viewing the field in the registry editor. This string must be of a series of two-digit numbers that are separated by spaces, for example, "01 01 " "10 11 10".

**section**

Specifies the attribute that indicates which section of the registry the search is to be performed on. This is the parameter introduced to make sure that the scanner runs correctly on 64-bit systems. Its values are:

**32**

The search is only performed on the 32-bit part of the registry.

**64**

The search is only performed on the 64-bit part of the registry.

**32or64**

The search is performed on the 32-bit part first, then on the 64-bit part of the registry.

**64or32**

The search is performed on the 64-bit part first, then on the 32-bit part of the registry.

The default value is 32.

**mustExist**

Specifies whether to stop the operand evaluation if the specified key does not exist. Supported values are *true* and *false*. The default value is *false*. This attribute is optional. If this attribute is set to *true* and the specified key does not exist, the current signature is not evaluated.

---

## Testing extended signatures

You can test signatures on endpoints and verify if they discover any software. There are two methods to test signatures.

[Using a fixlet in BigFix Console \(on page mxlii\)](#)

[Testing manually on the endpoint \(on page mxliv\)](#)

## Testing using BigFix Console

The 'Test CIT Signature fixlet' allows you test custom signatures on selected endpoints, to discover if there is any match. For creating custom signatures refer to [Extended signature templates \(on page miv\)](#).

Prepare a valid CIT signature in the XML format, like the signatures shown in the templates.



**Important:** This task is relevant if both 'Initiate Software Scan' and the 'Upload the Scan Results' fixlets complete at least once on selected endpoint. Software scan cannot be running when you want to perform CIT signature test.

To run the fixlet, perform these steps:

1. Log in to the BigFix console.
2. Go to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Test CIT Signature**.
4. In the 'Enter a single valid CIT signature' field, paste the signature. Enter only one signature.

Fixlet validates if the XML structure is correct, but it does not check the validity of the signature. If XML structure is incorrect, the fixlet will show an error with information about the problem and the line where it is located. The signature should not include <signature> and <xml> tags.

Only local drives are scanned on the selected computers. For information about scanning shared disks, see: [Discovering software on shared disks \(on page dcxxx\)](#).

5. To enable scanning of shared disks in basic mode, select 'Scan remote shared disks'. The basic mode is advised for environments where a single shared disk is mounted on a single computer or a few computers.

This action uses the same CPU threshold, included and excluded directories as 'Initiate Software Scan' fixlet that is executed on this endpoint.

6. To start the scan, click **Take Action**.
7. Select the computers on which you want to initiate the scans and click **OK** to proceed.

Starting the action sends signature to the endpoint, where it creates custom catalog and performs software scan. Fixlet runs until results are ready, unless the time of execution exceeds 15 minutes. You can edit the timeout settings. See also, [Timeout setting \(on page mxliii\)](#).

When fixlet completes, scan results are available on the endpoint at `BESClient/LMT/cit_signature_test` folder and compressed archive is available on BES Server in location: `BES Server \UploadManagerData\BufferDir \shal\<last 2 digits of computer id>\<computer id>\signatureTest_<computer_id>`.

Result files:

- Scan results are available in `<computer_id>_cit.xml` file, where a list of matches is found. If there are no matches, there is no data between `<MatchedSignatures></MatchedSignatures>` tags.
- `<computer_id>_citlog.log` contains logging information from the scan
- `<computer_id>_citlog.xml` contains signature warnings, if there is anything wrong with the signature, a warning appears
- `<computer_id>_catalog.xml` contains tested signature
- `catalog_scan_status.info` contains information if scan was successful, 1 for yes, 0 for no
- `last_catalog_scan_success.info` contains date of the last successful scan
- `cit_test_sw_config.xml` contains configuration for the scanner
- `runcit_sw.bat / runcit_sw.sh`
- `set_shared_disk_scan.sh`

## Timeout setting

The timeout can be changed by setting the timeout property in computer settings in BigFix Console. This setting is supported in BESClient version 9.5.11 and above. The purpose of the setting is to configure the time (in seconds) exceeding which, long-running shell or scripting commands executed by BigFix Inventory fixlets are terminated. It prevents a situation where a process hangs and consumes system resources.

If timeout is exceeded, an error is reported in BESClient log, similar to:

```
Command failed (Thread execution failed due to timeout, process was terminated.) wait
"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\CIT\deltarun.bat" (action:577086755)
```

If a specific endpoint requires more time for a command completion (timeout is reached with the default value), for example machine performance is low or there is much data to process, then the value can be adjusted, accordingly.



**Note:** Timeout properties:

- For BigFix Inventory: **BFI\_Wait\_Timeout\_Override**
  - default value: 300
  - used in capacity scans, software scans, detailed hardware scan, enterprise applications discovery
- For CIT Signatures: **CITTEST\_Wait\_Timeout\_Override**
  - default value: 900
  - used in CIT signatures troubleshooting fixlets

To change the settings, perform these steps:

1. Log in to BigFix Console.
2. In **Management > Computers**, select a computer.
3. Right click on the computer and select **Edit Computer Settings**. **Edit Settings for Computer <computer\_name>** window appears.

4. Click **Add. Add Custom Setting** dialog box appears.
5. In the **Setting Name** field, enter the timeout property as setting name.
6. In the **Setting Value** field, enter the value of time in seconds.
7. Click **OK**. New setting appears on the Custom Settings list.
8. Click **OK** on the bottom of **Computer Settings** window to send modified properties to the endpoint.

**Result:** After the action status changes to "Completed", the settings are saved on the computer.

## Adding property to multiple computers at once

You can also add property to multiple computers at once. To add properties, perform these steps:

1. Log in to BigFix Console.
2. In **Management > Computers**, select multiple computers and right click on one of them.
3. In the menu choose, **Edit Computer Settings**. A new window appears.
4. Select **Custom Setting**.
5. In the **Name** field, enter the timeout property as setting name.
6. In the **Value** field, enter the value of time in seconds.
7. Click **OK** on the bottom of **Computer Settings** window to send modified properties to the endpoints

**Result:** After the action status changes to "Completed", the settings are saved on the computers.

For more information about editing computer settings see, [Edit Settings for Computer](#).

## Testing manually

**9.2.2** Available from 9.2.2. You can test the extended signatures that you create by using a BigFix client that is installed on the platform for which a signature is defined.

1. Prepare a test catalog file that contains only the signature that you want to verify and the name the file `extended_signature_test.xml`.

The following example shows a test catalog file. It consists of three main parts: the header, the body and the footer. The body, which is in bold, is formatted basing on the available signature templates. For the full list, see: [Extended signature templates \(on page miv\)](#).

```
<?xml version="1.0" encoding="UTF-8"?>
<Signatures>
  <Signature guid="EXTENDED SIGNATURE TEST" name="EXTENDED SIGNATURE TEST" type="OtherSignature">
    <!-- SIGANTURE BODY START -->
    <Variable name="IS_INSTALLED" export="true">
      <RegKeyExists key="HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\" section="64or32"/>
    </Variable>
    <!-- SIGANTURE BODY END -->
  </Signature>
</Signatures>
```

2. Add a scanner location to the environment variables by running the following command:

o **AIX**

```
LIBPATH="/opt/tivoli/cit/bin:$LIBPATH"
export LIBPATH
```

o **HP-UX**

```
SHLIB_PATH="/opt/tivoli/cit/bin:$SHLIB_PATH"
export SHLIB_PATH
```

o **Linux** **Solaris**

```
LD_LIBRARY_PATH="/opt/tivoli/cit/bin:$LD_LIBRARY_PATH"
export LD_LIBRARY_PATH
```

o **Windows**

```
set Path=C:\Program Files\Tivoli\cit\bin;%Path%
```

3. Reset the file system scanner by running the following command:

o **UNIX**

```
/opt/tivoli/cit/bin/wscanfs -reset
```

o **Windows**

```
"C:\Program Files\Tivoli\cit\bin\wscanfs.exe" -reset
```

4. Run a scan by using the test catalog file.

o **UNIX**

```
/opt/tivoli/cit/bin/wscansw -i extended_signature_test.xml -o output.xml -e
warning.xml
```

o **Windows**

```
"C:\Program Files\Tivoli\cit\bin\wscansw.exe" -i extended_signature_test.xml -o
output.xml -e warning.xml
```

5. Review the `output.xml` and `warning.xml` files.

- a. In `output.xml`, ensure that the **MatchedSignature** element is returned for every matching instance. If no instance is found, there are no **MatchedSignature** elements in the file.

```
<?xml version="1.0" encoding="UTF-8"?>
    <MatchedSignatures>
        <MatchedSignature guid="EXTENDED SIGNATURE TEST" name="EXTENDED
SIGNATURE TEST" type="OtherSignature">
            <Variable name="IS_INSTALLED" value="true"/>
        </MatchedSignature>
    </MatchedSignatures>
```

- b. Ensure that there are no error messages in the `warning.xml` file.

## Creating signatures from package data

You can use package data to expand your custom catalog. You can add signatures for software products that are installed in your infrastructure but are not present in the HCL® catalog.



You must have the View Raw Data, View Endpoints and Manage Catalogs permissions to perform this task.

- **9.2.11** For versions 9.2.11 and higher

1. Log in to BigFix Inventory, and go to **Reports > Package Summary**.
2. Set up the relevant filters, and identify the packages that you want to create signatures for.
3. Check one or more packages. You can select up to twenty packages at a time.
4. Hover over the **Signature** icon  and click **Add Signature**.



**Note:** You cannot create a signature on a Package Data report, if you already added either a file or an extended signature for the component with the same details. If you create a package signature for a component that is a part of a basic catalog, the component and the detection will be duplicated.

- For versions before 9.2.11

1. Log in to BigFix Inventory, and go to **Reports > Package Data**.
2. To filter the report data, hover over the **Manage Report View** icon , and click **Configure View**. Then, specify the appropriate filtering options.



**Note:** To find a file or a package that can be used as a signature, filter the report to the data from the computer on which the particular software product is installed. To further narrow down the results, specify the whole or part of the path to the directory where the software is installed. Then, look at the following columns.

- **Recognized** - the column shows whether the package data and/or file was recognized as part of an existing signature.
- Removed since **10.0.4**: **Caused Detection** - the column shows whether the file contained enough information to cause detection of the related software. The **Caused Detection** column is removed since BigFix Inventory version 10.0.4. You must re-create your saved reports in case you had used the Caused Detection column.

If the value in both columns is No, the file is not used for software detection and you can use it to create a new software signature.

3. In the **Name** column, look for the location where the missing software title is installed. Click the arrow on the right from the **Name** of the file that you want to use as a signature, and click **Create Signature**.

Computer Name	Last Seen	Name	Version
NC046213	about 4 hours ago	IBM 32-bit SDK for Java 2, v5.0	5.0
NC046213	about 4 hours ago	IBM 32-bit SDK for Java 2, v5.0	5.0
VMW009128109094	about 4 hours ago	IBM 64-bit Runtime	
VMW009128109094	about 4 hours ago	IBM 64-bit Runtime Environment for 6	

4. In the **Create Catalog Entry** window, provide the publisher name, product name, and release number.

Create Catalog Entry

Package or File Signatures
  Extended Signature
  Package Template Signature
  File Template Signature

Publisher Name\*

Product Name\*

Release\*  The release should use the following format: number.text. For example: 6.3a.

A component will be created based on the release information. It represents a discoverable software item that is displayed on reports.

Report release when the following conditions are fulfilled. If you select both conditions, at least one file and one installation package must be detected for the software item to be discovered.

The following installation package is found:

Name* <input type="text"/>	Version <input type="text"/>	Vendor <input type="text"/>	<input type="button" value="Remove"/> <input type="button" value="Add"/>
----------------------------	------------------------------	-----------------------------	--

The following file is found:

Name* <input type="text"/>	With <input type="text" value="Any size or version"/>	<input type="button" value="Remove"/> <input type="button" value="Add"/>
----------------------------	---	--

If you select both conditions, at least one installation package and one file must be detected to report the release.

**10.0.9** To create a template signature with auto-detectable version of the package, you may choose the Package Template signature type and copy data from the Package or File Signatures tab to the template type. For more details, see [Creating signatures \(on page mi\)](#).

**i** **Tip:** The most efficient signatures are file-based signatures with a constant size that is different for each release, or signatures that are based on registry entries where a wildcard (\*) can be used. You can use a wildcard in the **Name** and **Version** fields for a package. A wildcard represents any string and can be combined with other characters. You can use an asterisk '\*' character not combined with other characters in the **Vendor** field for a package (meaning any vendor). For example, you can use IBM \* SDK for Java™, 5.\*, \* for the name, version, and vendor fields.

**!** **Note:** **10.0.4** A detailed package version that is discovered is shown in the 'Component Detailed Version' column in the Software Classification report and 'component\_detailed\_version' column in REST API.

5. To save the catalog entry, click **Submit**.

**!** **Important:** If you create an entry that exists in the software catalog an informational message is displayed, and both signatures are saved in the catalog.

You added a software signature to your custom catalog, and it can now be used to detect software. When you create signatures from package data, the custom content version of the software catalog remains the same, because the signatures are matched on the server side, and no new catalog needs to be created.

You can view the audit trail of the changes on the **Catalog Audit** report.

You can edit the details of the signature and delete a custom catalog entry on the **Catalog Customization** panel.

---

#### Related information

[Software discovery process after customizing the catalog \(on page mliv\)](#)

## Creating signatures from scanned file data

You can use scanned file data to expand your custom catalog. You can add signatures for software products that are installed in your infrastructure but are not present in the HCL catalog. You identify the file name, or another item of information that can be used to identify the software and add the signature.

 You must have the View Endpoints and Manage Catalogs permissions to perform this task.

1. Log in to BigFix Inventory.
2. In the top navigation bar, click **Reports > Scanned File Data**.
3. To filter the report data, hover over the **Manage Report View** icon , and click **Configure View**. Then, specify the appropriate filtering options.
  - a. **Optional:** Select the **Recognized** checkbox to add these two columns to the view of scan data.



**Note:** To find a file or a package that can be used as a signature, filter the report to the data from the computer on which the particular software product is installed. To further narrow down the results, specify the whole or part of the path to the directory where the software is installed. Then, look at the following columns.

- **Recognized** - the column shows whether the package data and/or file was recognized as part of an existing signature.
- Removed since **10.0.4**: **Caused Detection** - the column shows whether the file contained enough information to cause detection of the related software. The **Caused Detection** column is removed since BigFix Inventory version 10.0.4. You must re-create your saved reports in case you had used the Caused Detection column.

If the value in both columns is No, the file is not used for software detection and you can use it to create a new software signature.

4. **Optional:** In the **File Path** column, look for the location where the missing software title is installed.
5. Click the arrow on the right from the **File Name** that you want to use as a signature, and click **Create Signature**.

Computer Name	Last Seen	File Path	File Name	Size
VMW009128109094	about 5 hours ago	C:\airgap	BESAirgapTool.exe	
VMW009128109094	about 5 hours ago	C:\cygwin\bin	a2p.exe	<a href="#">Create Signature</a>
VMW009128109094	about 5 hours ago	C:\cygwin\bin	addffinfo.exe	

6. In the **Create Catalog Entry** window, provide the publisher name, product name, and release number. Further select the component that is found.

**9.2.11** Starting from application update 9.2.11, the Scanned File Data report provides full versions of discovered files. However, best practices of creating software signatures recommend that file version that is specified in the signature is limited to the release number, for example, 9.0. When you specify a more detailed version of the file such as 9.0.7, the signature does not detect all patches or mod-releases of the software component. When you create a signature from the scanned file data, the pre-filled version of the file is limited to the release number according to the best practices.

**10.0.9** To create a template signature with auto-detectable version of the file, you may choose the File Template Signature type and copy data from the Package or File Signatures tab to the template type. For more information, see [Creating signatures \(on page mi\)](#).

Create Catalog Entry

Package or File Signatures
  Extended Signature
  Package Template Signature
  File Template Signature

Publisher Name\*

Product Name\*

Release\* 
The release should use the following format: number.text. For example: 6.3a.

A component will be created based on the release information. It represents a discoverable software item that is displayed on reports.

Report release when the following conditions are fulfilled. If you select both conditions, at least one file and one installation package must be detected for the software item to be discovered.

The following installation package is found:

Name\*  Version  Vendor  [Remove](#) [Add](#)

The following file is found:

Name\*  With  [Remove](#) [Add](#)

If you select both conditions, at least one installation package and one file must be detected to report the release.

[Submit](#)

7. To save the catalog entry, click **Submit**.

**!** **Important:** If you create an entry that exists in the software catalog, an information message is displayed, and both signatures are saved in the catalog.

8. To make the signatures available for software detection, click **Reports > Import Now**, or wait for a scheduled import.

You added a software signature to your custom catalog, and it can now be used to detect software or its usage. When you create signatures from scanned file data, the custom content version of the software catalog remains the same, because the signatures are matched on the server side, and no new catalog needs to be created.

You can view the audit trail of the changes on the **Catalog Audit** report.

You can edit the details of the signature and delete a custom catalog entry on the **Catalog Customization** panel.

---

#### Related information

[Software discovery process after customizing the catalog \(on page mliv\)](#)

## Adding a new product to software catalog

The software catalog consists of a list of standard software products. Use the Add Product feature to define a custom product with the accompanying information, such as a publisher name, license metric and release.

 You must have the View Software Catalog and Signatures and Manage Licenses permissions to perform this task.

You can add a custom product to the software catalog to ensure it contains all your business applications. You can later use the new product during software classification.

1. Log in to **Products & Metrics**, and go to **Reports > Products & Metrics**.
2. Hover over the **Add** icon , and select **Add Product**.
3. Provide the publisher name. If the publisher already exists in the software catalog, you can search for it, and select it from the drop-down list.
4. Provide the product name. The product name must be unique for the publisher that you provided in step 3.
5. Select a metric from the list. To search for a metric, type the metric name in the search bar.
6. Provide the release of the product. By default, this field is set to 1.0.
7. Click **OK**. You will be notified about product creation.
8. Wait for the scheduled import of data, or run it manually. You cannot add new products during the import.

Thus, if you plan to create more than one product, first create all products and then run the import of data.

A new line is added on the Products & Metrics report. You can now use the newly created product to classify your software. The newly created product is available on all reports after the import of data is successfully completed.

To assign components to the new product, go to **Reports > Software Classification**, select the components, and reassign them. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).

To delete the catalog entry that you create for the product, see: [Deleting custom catalog entries](#).

## Assigning an additional metric to a product

**9.2.8** Available from 9.2.8. The pricing calculations are based on the relation between a product and a metric. The software catalog consists of an inventory of standard relations. To define a custom relation, assign one of available metrics to an existing product.

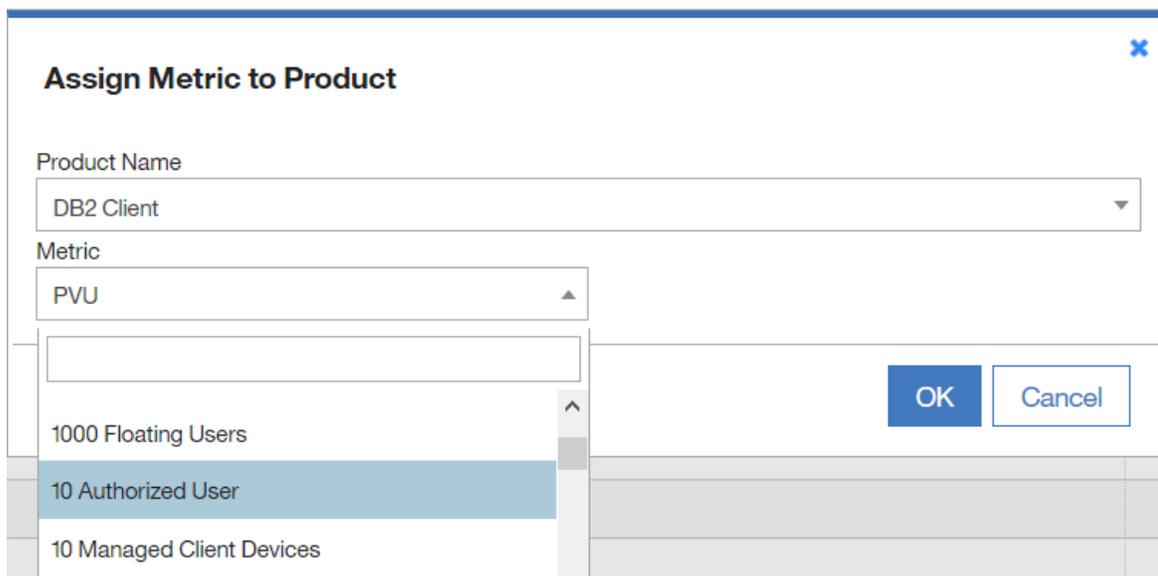
 You must have the View Software Catalog and Signatures and Manage Licenses permissions to perform this task.

You can assign one of available metrics to a product from the software catalog, and thus, define a custom relation. You cannot duplicate an existing relation. You can only assign a metric that is not yet assigned to a certain product. The custom relation can be used while classifying your software inventory. It allows you to make your pricing calculations accurate and tailor-made.



**Note:** If you use BigFix Inventory version 9.2.8 or higher, go to Software Catalog report to define a custom relation. Starting from application update 9.2.14, the Software Catalog report is renamed to Products & Metrics report.

1. In the top navigation bar, click **Reports > Products & Metrics**.
2. Select a product for which you want to assign a metric. You can select any product from the software catalog.
3. Hover over the **Add** icon , and select **Assign Metric to Product**.
4. Select a metric from the list. To search for a metric, type the metric name in the search bar.



**Assign Metric to Product**

Product Name  
DB2 Client

Metric  
PVU

1000 Floating Users

**10 Authorized User**

10 Managed Client Devices

OK Cancel

5. Click **OK** to confirm.

After you confirm the assignment of a new metric to a product, a new line is added on the Products & Metrics report. You can now use the newly created custom relation to classify your software.

To assign components to the product with the new metric, go to **Reports > Software Classification**, select the components, and reassign them. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).

### 10.0.5 Managing license metrics through the UI

BigFix Inventory allows you to add, modify, and delete metrics through the UI (user interface). You can also perform the same using the REST API, `api/sam/v2/metrics` as described under [10.0.4 REST API for managing license metrics \(on page mdccxxv\)](#).

 **Note:** You must have the Manage Contracts permission to perform this task.

## Using the interface

With the new capabilities, you can perform the following tasks:

### Add Metric

Click this option to create a new custom metric. Select the [code name \(on page mdccxxxv\)](#) and the [display name \(on page mdccxxxv\)](#) and click **OK**. The metric is added.

### Modify Metric

Click this option to modify a display name of a custom metric. Select the [code name: display name \(on page mdccxxxv\)](#) and the [display name \(on page mdccxxxv\)](#) and click **OK**. The metric is modified.

 **Note:** You cannot modify a non-custom metric. Only custom metrics are listed.

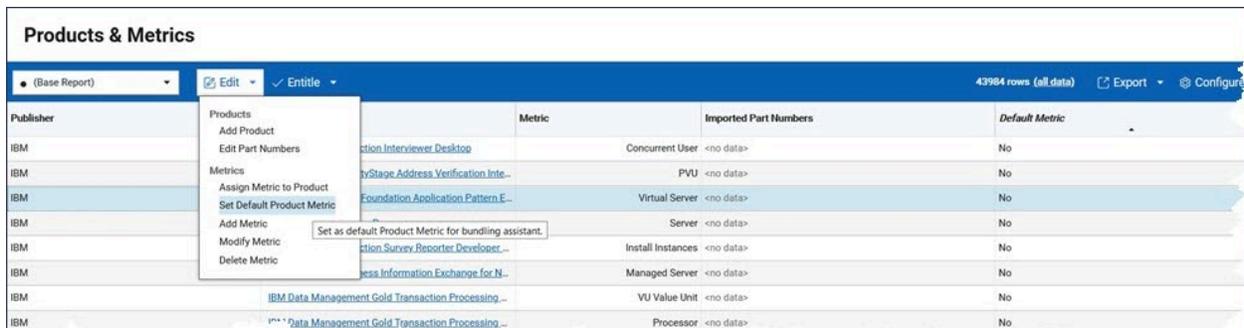
### Delete Metric

Click this option to delete a custom metric. Select the [code name: display name \(on page mdccxxxv\)](#) and the [display name \(on page mdccxxxv\)](#) and click **OK**. The metric is modified.

 **Note:** You cannot delete a custom or non-custom metric that is assigned to a contract. Metrics that are assigned to contracts are not listed in the **Delete Metric** list.

### Set default product metric

Click this option to set default product metric for bundling assistant. You can set only one default product metric for a product. When the action is applied, the newly discovered components are assigned the new default metric if there is a default bundling assignment between the product and component. It is also possible to set the new product metric assignment as default while creating the new assignment.



Publisher	Metric	Imported Part Numbers	Default Metric
IBM	Concurrent User	<no data>	No
IBM	PVU	<no data>	No
IBM	Virtual Server	<no data>	No
IBM	Server	<no data>	No
IBM	Install Instances	<no data>	No
IBM	Managed Server	<no data>	No
IBM	VU Value Unit	<no data>	No
IBM	Processor	<no data>	No

 **Note:** You can manage license metrics through the UI with a few restrictions, such as follows:



- All three options are disabled while the data import is running to ensure data consistency.
- Each code name and display name must be unique among all metrics. If an incorrect value is specified, an error message is displayed.
- Each code name is uniquely identified and cannot be altered after you the metric. Display names are presented as text on other UI panels to identify the metric.
- After you modify metrics, reload the page to refresh metric the names list, which is available in the filter criteria.
- After you delete a metric that is used in filters in a custom report, these filtering criteria must be manually adjusted. After you modify a display name, you do not have to adjust the associated report.

## Changing end of support date

**9.2.11**

Available from 9.2.11. Set or change the end of support date for your software components to have a comprehensive overview of your software inventory.



You must be an Administrator or you must have the Manage Catalogs permission to perform this task.



You must have the View Software Catalog and Signatures permission to perform this task.

BigFix Inventory Server is provided with pre-populated end of supports dates for selected vendors. For the available EOS dates, refer to the [BigFix Inventory Release Notes](#).

It is possible to change the existing date or define the missing dates using this procedure.

Perform the below steps to change the end of support date:

1. In the top navigation bar, click **Reports > Software Components**.
2. Select one or more components for which you want to set the end of support date. You can select up to a 100 rows at a time.
3. Hover over **Edit**, and click **Change End of Support**.
4. Choose the end of support date, and click **Change**.
5. **Optional:** To clear the end of support date, remove the date, and click **Change**.

You set the end of support date for the selected components.

**9.2.12**

Starting from application update 9.2.12, end of support date is also displayed on the Software Classification report.

**10.0.15**

From BigFix Inventory version 10.0.15, an additional file that includes a list of custom End of Support data that failed to be migrated in the Software Catalog update process is available. The additional file provides information about the lost data, the timestamp when it was lost and the Software Catalog version in which the data was lost.

If the custom end of support date fails to be restored, the log is appended in `lost_custom_lifecycle_data.csv` file located at `<BFI_install_dir>\wlp\usr\servers\server1\data\sam` path.

The data is stored in the following format:

```
"lifecycle_migration_date","catalog_version","lost_lifecycle_details"
"2023-11-06 11:50:11 UTC","10.0.15.0","Adobe:Acrobat Reader:6.0:2023-11-30"
"2023-11-06 12:50:11 UTC","10.0.15.1","Adobe:Adobe Acrobat Capture:5.0:2024-05-11"
```

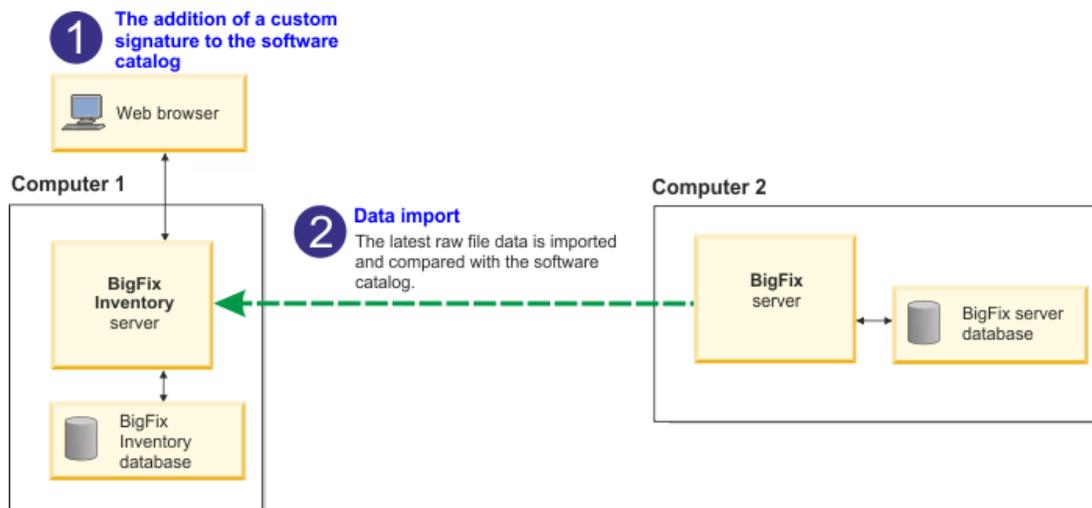
You can use end of support dates to filter and sort the report. You can also create a saved report view that is filtered by the specified information, and enable notifications that are triggered when specific criteria are met.

## Software discovery process after customizing the catalog

Software matching your catalog customizations can be identified in one of the below ways depending on the custom signature.

### Case 1: Common executable files or other popular file types

If you create a custom template signature based on any file or package data, or a custom signature of Package or File type, which is based on package data or file data, such as common executable files, then you need to run a data import to pull the latest scan data from the BigFix server. The new data is compared with the latest catalog and the updated software inventory is displayed in the web user interface.

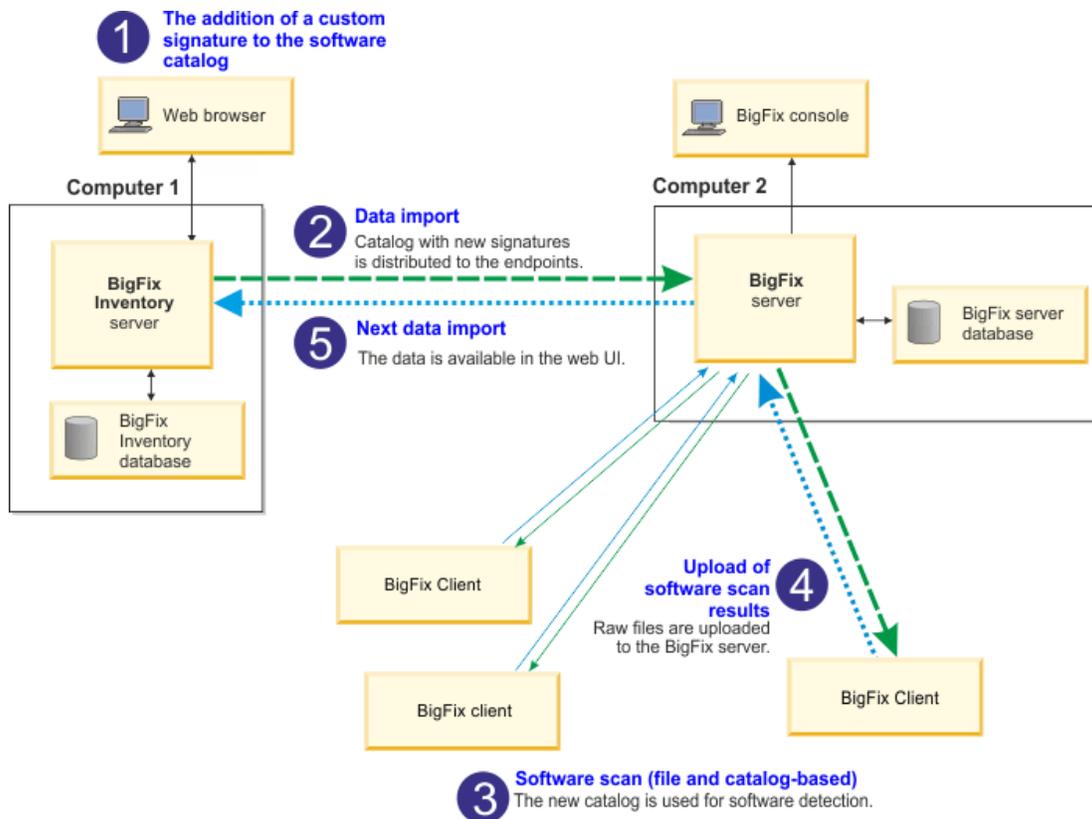


The popular file extension list includes the following file types: `*.exe`, `*.sys`, `*.com`, `*.ear`, `*.ocx`, `*.sh`, `*.bin`, `*.pl`, `*.ear`, `*.SH`, `*.BIN`, `*.PL`, and `*.EAR`.

When you create signatures based on these file types, the custom content version of the software catalog remains the same, because no new catalog is created. The data is pulled from your endpoints and matched against the signatures on the server side. The same happens with template signatures including any file extension so such signature will work only if this file is listed on Scanned File Data panel.

## Case 2: Non-standard file types

If you added new software signatures to the software catalog and those signatures are based on files other than common executable files, you must either wait until all the following steps in the catalog data flow complete or perform those steps yourself.



When you create signatures based on non-standard file types, the custom content version of the software catalog changes, because the new catalog is created and distributed to your endpoints. The catalog with the new signatures is matched against the data on your endpoints.



**Note:** The above scenario does not apply to template signatures. For more information, see [Scanned File Data \(on page mlxiii\)](#).

## Exporting and importing custom signatures

You can export custom signatures to an XML file and import them to a different instance of BigFix Inventory to augment your software catalog. It is useful if you maintain separate instances of BigFix Inventory for test and production sites. In such case, you can reuse the custom catalog content instead of creating the new one. You can also import signatures that are published on the signature community or export your custom signatures and contribute them to the community.



You must have the Manage Catalogs permission to perform this task.

The [signature community](#) is a place where you can find custom signatures that are created by members of the community. You can download such signatures and import them to BigFix Inventory. You can also export your custom signatures and contribute them to the community for other members to download.

1. Export custom signatures to an XML format.
  - a. In the top navigation bar, click **Management > Catalog Customizations**.
  - b. Click **Export Mode**.
    - To export only a selection of signatures, check the appropriate check boxes and click **Export Selected**. You can select individual signatures, or all signatures for a publisher. Each signature is exported to a separate XML file, and compressed. When you select multiple signatures, all XML files are compressed into one ZIP file.
    - To export the entire custom catalog, click **Export All**. You export all signatures, regardless of your selection, or filters, in a form of one ZIP file that contains individual XML files.
2. Import custom signatures in an XML format to the other instance of BigFix Inventory.
  - a. In the top navigation bar, click **Management > Catalog Customizations**.
  - b. Click **Import** to open the **Import Signatures** window.
  - c. Browse to the location of the file that you want to import.
  - d. Select the file and click **Import**. You can either import a single XML file or a ZIP package that contains one or more XML files.
  - e. Click **Done**.

The imported signatures are available on the **Catalog Customizations** panel. They are now used by software scans to discover software in your environment.

## Reports

Reports provide detailed information about the computers in your infrastructure and the software items that are installed on these computers. By viewing the reports regularly, you can check whether actual installations reflect the software inventory information and ensure that the capacity values are assigned to products correctly. You can decide what type of information you want to display by choosing the appropriate type of report. You can also customize the type and amount of information that is displayed in a report and save the report settings to reuse them.

### Available reports

Reports are the primary source of information about computers in your infrastructure and software that is installed on these computers.

The inventory data is collected from all computers in your infrastructure. When you decommission a computer, it continues to report to BigFix Inventory. For report accuracy, ensure that all infrastructure changes are reflected in BigFix Inventory. For more information, see: [Removing inactive computers \(on page dcccxc\)](#).



**Note:** The data that is displayed on the reports is limited to the computer group to which the user belongs.

## General

Report	Description
Saved Reports	<p>This option allows you to save your preferred vendor-specific reports. The reports provide the following information:</p> <ul style="list-style-type: none"> <li>• The base report from which the saved report was created.</li> <li>• The user who created it. The reports that are delivered with BigFix Inventory are marked as SYSTEM. Other reports are created by individual users.</li> <li>• Whether the report is private or not.</li> <li>• Whether the report is default or not.</li> <li>• Whether the report is a global default report.</li> <li>• Next export schedule which states the date and time when the saved report will be sent to your specified recipients.</li> </ul> <p>The reports help all BigFix Inventory users to access BigFix Inventory data related to a specific vendor.</p> <p>Following report options are available to be saved:</p> <ul style="list-style-type: none"> <li>• Adobe reports</li> <li>• HCL reports</li> <li>• IBM reports</li> <li>• Microsoft reports</li> <li>• Oracle reports</li> <li>• SAP reports</li> <li>• VMware reports</li> </ul> <p>For more information, see: <a href="#">Creating saved report views (on page mcvii)</a>.</p>

## Software Inventory

Report	Description
<b>10.0.1</b> Software Summary	<p> Required permission: View Endpoints</p> <p>The report provides an overview of software inventory in your environment. Each row in the report represents a set of software instances that are grouped by the columns, such as component name, component version, product name, the count of usage by a particular vendor. You can limit the instances in the groups by using the report filters. By default, you can see only the instances that are currently installed and not suppressed instances of the infrastructure.</p>

Report	Description
	<p>To change the way how the data is displayed, select different report columns. For example, you can filter the group by selecting a publisher. In the column <b>Count</b> you get the number of software instances only from the selected publisher.</p> <p> <b>Note:</b> You cannot filter the report by selecting columns that aggregate the values, for example: <b>Count, Used</b> and <b>Unused</b>.</p> <p><b>Drill down</b></p> <p>You can drill down the Software Summary report to view the Software Classification panel with the detailed information about all software instances from the related group, including component name, component version, and installation path.</p> <p><b>Summary of the usage statistics</b></p> <p>This report also provides software usage statistics that contain details about the usage of specific software on the listed instances. You can check how many instances of a product within the group were used and how many were not. You can see an overview of software usage statistics from the last month, the last quarter, and the last year. You can track the number of software instances within the group where software usage is monitored and where it is not.</p> <p><b>Limitations</b></p> <ul style="list-style-type: none"> <li>You might experience performance issues on SQL Server, especially when you select Product Name column or usage related columns, for example <b>Used</b>, for grouping.</li> </ul>
<p> <b>Notice:</b> <b>10.0.9</b> This report has been removed.</p> <p>Inventory Exploration (deprecated)</p>	<p> <b>Important:</b> Starting from application updated <b>10.0.1</b>, this report becomes deprecated. It is planned to be removed from BigFix Inventory in the coming releases. Instead of this report, use the Software Summary report.</p> <p> Required permission: View Endpoints</p> <p>The report provides information about software items that are installed in your infrastructure. The items are structured into hierarchies that consist of the publisher, software titles, their versions, releases, and components. You can drill down through the hierarchy to gather detailed information about software usage including its time and frequency.</p> <p>For each product, its version and release, you can also view information about contracts to which this product is assigned. The report shows the number of software instances that are covered by contracts and the cost of acquisition and maintenance of the licenses for that product.</p>

Report	Description
	<p>You can use the report to efficiently manage your software inventory by monitoring the cost of software licenses and the use of the particular software products.</p>
<p>Software Installations</p>	<p> Required permission: View Endpoints</p> <p><b>9.2.15</b> The Software Installations report has been changed. The old report is based on the old data model that does not take shared disks and multiple component instances into account. Now, it is deprecated, moved to the bottom of the <b>Reports</b> menu, and will be entirely removed in the future. The old report is substituted with a new report view that is based on the new data model and consistent with other reports. Thanks to the new data model, the report criteria are extended to cover additional component instances and the reported number of installed software might be affected. The new report is based on the Software Classification panel. For more information, see: <a href="#">Software Classification (on page mix)</a>.</p> <p>The report provides information about computers in your infrastructure and software items that are installed on these computers. You can see a detailed report for a single software item, when you click the link in the <b>Details</b> column. The <b>Details</b> page shows information, such as publisher, component, installation path, and signatures. It includes a link with a complete list of signatures. The details view now shows only matched detection. It does not show signatures that does not match. The signatures are shown with below icons:</p> <ul style="list-style-type: none"> <li>•  - The signature matched the software item, or the software ID tag was discovered on the computer and caused software detection.</li> <li>•  - The signature did not match the software item.</li> </ul> <p>If a product has been installed in different locations, the details view shows only the relevant path of the selected row.</p> <p>If the software was erroneously detected, you can use this information to examine how the signature or the software ID tag was evaluated. You can also view the installation path of software that was discovered by a file-based signature. If software was discovered by a complex signature, you can view the hierarchical structure of the signature.</p> <p>In this view, you can also see information about software usage. When a usage signature exists and matches a process listed on the Metering Data report, statistics about usage time and frequency are shown. If the information cannot be gathered for the particular software, one of the following messages is displayed:</p>

Report	Description
	<ul style="list-style-type: none"> <li>• Usage data is not supported - Usage data cannot be gathered because the usage signature for this software item does not exist.</li> <li>• Usage data was not found - At least one usage signature exists for the particular software, but the usage data was not gathered. Thus, report columns with statistics about usage time and frequency show 0. Usage data might not be found because the software was never used and thus has no usage information. It might also happen because the option to run the Application Usage Statistics scan was cleared in the <b>Initiate Software Scan</b> fixlet.</li> </ul>
Software Classification	<p> Required permission: View Endpoints or Manage Software Classification</p> <p>The report types help software asset managers and inventory administrators to export vendor-specific license metrics. The vendor-specific report provides an overview of software inventory and the relations between the discovered software components and licensable products. It provides a flat structure with software installations broken into single components, which makes it easier to view your software assets and manage relations between them. The Software Classification panel allows streamline management of your software inventory. To make your metric calculation accurate, assign each component to a product, exclude, or suppress the instances that should not be included in the calculation, and confirm your actions. After you classify all your components, and confirm all actions, software classification is complete.</p> <p>The reports show only present instances in the infrastructure. It does not show the suppressed instances.</p> <p><b>9.2.15</b> Starting from application update 9.2.15, BigFix Inventory collects detailed information about the usage of Java processes on each instance separately. The usage statistics for each instance is available on Software Classification report.</p> <p>The report provides the following predefined views:</p> <ul style="list-style-type: none"> <li>• <b>IBM Software Only</b> that shows only IBM software that is currently installed.</li> <li>• <b>First Detected Last Week - IBM Software Only</b> shows the IBM software that was detected within the last week and is currently installed. It helps you to review the recently installed software and make an appropriate action, such as changing the component assignment.</li> <li>• <b>Software Installations</b> shows all components that are installed in your environment.</li> <li>• <b>Current Installations</b> shows software that is currently installed in your environment and its classification.</li> <li>• <b>9.2.13 Software: Out of support</b> shows installations for which support already ended. Starting from application 9.2.14, the report additionally shows the installations of old software components that do not have the end of support date set but were created more than 6 years ago..</li> </ul>

Report	Description
	<ul style="list-style-type: none"> <li>• <b>9.2.13 Software: Approaching end of support</b> shows software installations for which support ends within the next three months. Starting from application update 9.2.14, the report additionally shows installations of the components that do not have the end of support set but were created between 5 years 9 months and 6 years ago. These installations will be reported as out of support within the next three months.</li> <li>• <b>9.2.14 Software: Discovered in the last 2 weeks</b> shows new software installations that were discovered within the last two weeks.</li> <li>• <b>9.2.14 IBM Software - Pending Classification</b> shows the IBM software components that are not yet classified.</li> <li>• <b>9.2.13 Security Data: Vulnerable software</b> shows software installations for which at least one CVE was matched.</li> <li>• <b>9.2.13 Security Data: Vulnerable software discovered in the last 2 weeks</b> shows software installations that were discovered within the last two weeks and for which at least one CVE was matched.</li> <li>• <b>9.2.14 Software Blocklist</b> shows the discovered software components that are marked with a <code>blocklist</code> or <code>blacklist</code> tag that represents unwanted software. For more information, see: <a href="#">Adding and removing tags (on page mciv)</a>.</li> </ul> <p>Predefined view for the following reports is also included:</p> <ul style="list-style-type: none"> <li>• Oracle Java Inventory</li> <li>• Oracle Database Inventory</li> <li>• Oracle WebLogic Inventory</li> <li>• Microsoft SQL Server Inventory</li> <li>• <b>10.0.12</b> Microsoft Windows Server Inventory</li> <li>• Microsoft Office 365 Inventory</li> <li>• Adobe Cloud Software Inventory</li> <li>• SAP Inventory</li> <li>• VMware Inventory</li> <li>• HCL Inventory</li> </ul>
<b>9.2.10</b> Us- age per Computer	 Required permission: View License Metrics <p>The report provides information about the frequency and time of using software products that are installed on the computers in your infrastructure. For every product, you can see what the frequency and the total time of its use per computer was as well as when it was used for the first and last time. You can also see what the average run time of each product and the average number of its runs per day is.</p>

Report	Description
	<p>By default, the report is calculated after every import. To change this behavior so that the report is calculated on demand, go to <b>Management &gt; Advanced Server Settings</b>, and change the value of the <b>calculate_during_import/product_usage</b> parameter.</p> <p>After you change the parameter, the report must be refreshed on demand. To refresh the report, open it, and click <b>Calculate</b>. The data is calculated immediately, unless the import is in progress. In this case, the report is calculated after the import completes. If new data arrives, information about the need of recalculating the data is displayed on the report.</p> <p><b>9.2.15</b> Starting from application update 9.2.15, BigFix Inventory collects detailed information about the usage of Java processes on each instance separately. The aggregated usage for all instances of the same product is available on Usage per Computer report.</p> <p>The Oracle Java Usage per Computer report is available for Oracle Java Runtime Environment, JDK and SDK software.</p>
<p><b>9.2.11</b> Package Summary</p>	<p> Required permission: View Raw Data</p> <p>The report lists and counts the packages that are installed on the computers in your infrastructure. The report is calculated on demand only. You can find out what is the name of every package, its version, vendor, description, and type. You can use this information to create custom software signatures. For more information, see: <a href="#">Creating signatures from package data (on page mxlv)</a>.</p> <p>To refresh the report, open it, and click <b>Calculate</b>. The data is calculated immediately, unless the import is in progress. In this case, the report is calculated after the import completes. If new data arrives, information that the report is not updated is displayed.</p> <p>The report might not be up to date it in the following situations:</p> <ul style="list-style-type: none"> <li>• The import of data was completed, and the new package data might be available.</li> <li>• A new package signature was created, and it might influence the Package Data report.</li> <li>• Package signatures were changed or deleted on the Catalog Customizations panel.</li> </ul> <p><b>10.0.5</b> Click the link for 'Number of packages' to view and suppress packages as required. Use 'Suppress packages from Inventory' option to suppress selected packages.</p>
<p>Package Data</p>	<p> Required permission: View Raw Data</p> <p>The report provides information about packages that are installed on each computer in your infrastructure. The information is retrieved from the Windows registry and UNIX RPM database. You can find out what is the name of every package, its version, vendor, description, and type.</p>

Report	Description
	<p>You can use this information to create custom software signatures. For more information, see: <a href="#">Creating signatures from package data (on page mxlv)</a>.</p> <p><b>10.0.5</b> Use 'Suppress packages from Inventory' option to suppress selected packages. The suppression is applied to all computers that uses the same package which means they have the same properties, such as vendor, name, version and type. Suppressing the packages creates an automatic rule for newly discovered packages to be suppressed. The maximum number of packages allowed for suppression at once is 20.</p> <p><b>10.0.12</b> The report shows installation path and installation date for Windows endpoints retrieved from Windows uninstall registry and Windows MSI.</p> <p><b>10.0.12</b> Package installation date and installation path are not considered in suppression rules. For more information, refer to <a href="#">Package data limitations (on page ccclxix)</a>.</p>
Scanned File Data	<p> Required permission: View Raw Data</p> <p>The report provides information about files that were found on the computers in your infrastructure. You can find out what is the location, size, and version of each file. The files that are displayed on the report are detected basing on the discovery of particular file extensions, or the processes that run on the computers in your environment. You can use this information to create custom software signatures. For more information, see: <a href="#">Creating signatures from scanned file data (on page mxlviii)</a>.</p> <p>The report provides the following predefined views:</p> <ul style="list-style-type: none"> <li>• <b>9.2.14</b> Malware Threats (Preview) lists files that are found in the environment by BigFix Inventory and classified as malware threats.</li> <li>• <b>9.2.14</b> Malware Threats - Recent (Preview) lists files that are found in the environment BigFix Inventory within the last two weeks and classified as malware threats.</li> </ul> <p>The tool and the fixlets related to getting file reputation are not available anymore as this preview feature has been withdrawn. However, the historical data is still displayed, and the predefined views are still available.</p>
<p> <b>Notice:</b></p> <p><b>10.0.9</b></p> <p>The report has been re-</p>	<p> Required permission: View Raw Data</p> <p>The report provides a ranking of 1000 files that are most encountered in your computer infrastructure but do not produce matches for any signature. The ranking is separate for each computer group. It is based on the number of computers on which the files were detected, the number of copies of a file, and the alphabetical order. The files are listed by name with no regard to</p>

Report	Description
<p>  moved.  <b>10.0.12</b> </p> <p>The report has been re-stored.</p> <p>Unrecognized Files</p>	<p>their size or version. You can use this report to investigate unrecognized files that can be used to create custom signatures.</p> <p>Because aggregation of unrecognized scan data slows down imports, particularly in large deployments, it is disabled by default. To enable it, perform the following steps:</p> <ul style="list-style-type: none"> <li>• For versions up to 9.2.8, go to <b>Management &gt; Scanned File Data</b>, and choose the frequency of the aggregation.</li> <li>• Starting from version 9.2.9, go to <b>Management &gt; Advanced Server Settings</b>, and change the value of the <b>recompute_unrecognized_scan_data</b> parameter to specify frequency of the aggregation.</li> </ul> <p>  <b>Note:</b> The report is provided for backward compatibility and is not recommended as a source of information about candidates for signatures.         </p>
<p>Metering Data</p>	<p>  Required permission: View Raw Data         </p> <p>The report provides information about processes that run on the computers in your infrastructure. You can track when the process was used for the first and the last time as well as what is the frequency and the total time of its usage. You can also view the average run time of each process and its average number runs per day. This report provides aggregated usage statistics from all instances that are discovered on each endpoint based on given binary file. In this report you cannot track individual installations on one endpoint.</p> <p> <b>9.2.15</b> Starting from application update 9.2.15, BigFix Inventory collects detailed information about the usage of Java processes and provides the aggregated usage statistics on Metering Data report.         </p>
<p>  <b>Notice:</b>  <b>10.0.9</b> This report has been removed.         </p> <p>Software Installation (Deprecated)</p>	<p>This report includes all installed softwares.</p>

## Business Applications

Report	Description
Oracle Databases	<p> Required permission: View Endpoints</p> <p>The report provides information about the edition (Standard or Enterprise), options, and Management Packs (including Oracle Real Application Cluster, RAC) of Oracle Databases that are deployed in your environment. When you combine this information with the collected hardware inventory data, you can use it to calculate the demand for Oracle Database licenses.</p> <p>A prerequisite to see data on this report is to use the feature of extended Oracle discovery. For more information, see: <a href="#">Extended discovery of Oracle Database (on page mcxiii)</a>.</p> <p> <b>Note:</b> <b>10.0.14</b> The 'Version' column is renamed to 'Release'. A new 'Detailed Version' column is available which shows the version details along with patch-level information.</p>

## License Metrics

Report	Description
All Metrics	<p> Required permission: View License Metrics</p> <p>The report provides information about the utilization of license metrics for products that are installed on the computers in your infrastructure. For every product, you can see the maximum metric utilization and its history over the specified period. You can also specify a metric threshold to verify whether metric utilization is above or below your expectations. You can create a snapshot of the report and store it for audit purposes. For more information, see: <a href="#">License metric utilization (on page mcxlii)</a>.</p> <p> <b>Important:</b> If the report does not show products with a particular license metric, calculation of this metric might be disabled for the computer group to which you are assigned. For information about enabling the calculations, see: <a href="#">Setting up computer groups (on page dxcvi)</a>.</p> <p><b>10.0.11</b> Metric quantities for new metric such as, <b>Microsoft SQL Server Physical Cores</b> are not shown on All Metrics panel. For such metrics, the Metric Quantity column shows 'Calculated for Contract'. Use the <b>Go to All Contracts</b> link on the menu bar of the panel to navigate to the <b>All Contracts</b> panel and where you can create a contract and see the contract's metric quantity.</p> <p><b>10.0.12</b> BigFix Inventory version 10.0.12 includes improvements in the Recalculation feature. For more information, refer to <a href="#">10.0.11 Recalculating contracts (on page mclxxxv)</a>.</p>

Report	Description
	<p><b>10.0.12</b> The panel includes an additional <b>Recalculation Pending</b> column which shows the status of recalculation (applicable to all metrics), and an <b>Is Incomplete</b> column which indicates if a metric quantity is not calculated correctly.</p> <p><b>9.2.16</b> Starting from application update 9.2.16, the report provides information about the top level of metric utilization, which means that stand-alone products and FlexPoint Bundles are displayed. You can also see products that contribute to a FlexPoint bundle by applying the appropriate report filter.</p> <p><b>10.0.1</b> Starting from application update 10.0.1, the report provides also information about Cloud Paks. You can also see products that contribute to a Cloud Pak by applying the appropriate report filter.</p> <p><b>9.2.4</b> The report provides the following predefined views:</p> <ul style="list-style-type: none"> <li>• IBM PVU Subcapacity that shows only products that are licensed for PVU subcapacity.</li> <li>• <b>10.0.16</b> IBM Subcapacity that shows metrics that are eligible for subcapacity licensing, such as PVU, VPC, and RVU MAPC.</li> <li>• <b>10.0.1</b> IBM Flex Points and IBM Cloud Paks that shows information about Cloud Pak or FlexPoint Bundle.</li> <li>• All IBM Metrics that shows only IBM products.</li> <li>• <b>9.2.5</b> Install Seats Metric that shows only products that are licensed based on the number of computers on which the product is installed.</li> <li>• Metric Thresholds that includes a column in which you can specify a metric threshold. The threshold indicates the maximum number of metric units that a product can use within a computer group. It is then used to calculate whether metric utilization is above or below your expectations. For more information, see: <a href="#">Setting license metric threshold (on page mcxlvii)</a>.</li> <li>• Exceeded Thresholds that shows only products for which metric utilization is above the specified threshold.</li> <li>• <b>9.2.7</b> Microsoft Measured License (previously Microsoft Metrics) that shows Microsoft products for which metrics are calculated in BigFix Inventory.</li> <li>• <b>9.2.8</b> Oracle Measured License (previously Oracle Metrics) that shows Oracle products for which metrics are calculated in BigFix Inventory.</li> <li>• Oracle Java Measured License that shows Oracle Java Runtime Environment, JDK and SDK products.</li> <li>• Oracle Database Measured License that shows Oracle databases.</li> <li>• Oracle WebLogic Measured License that shows Oracle WebLogic software.</li> <li>• Microsoft SQL Server Measured License that shows Microsoft SQL server products for all editions.</li> </ul>

Report	Description
	<p>  <b>Note:</b> <b>10.0.12</b> This report has been replaced by <b>Microsoft SQL Server Contracts</b>.         </p> <ul style="list-style-type: none"> <li>• Microsoft Office 365 Measured License that shows Microsoft Office 365 products.</li> <li>• Adobe Measured License that shows all Adobe products,</li> <li>• Adobe Cloud Software Measured License that shows products from Adobe Cloud Software family.</li> <li>• SAP Measured License that shows all SAP products.</li> <li>• VMware Measured License that shows all VMware products.</li> </ul>
Audit Trail	<p>  Required permission: View Audit Trail         </p> <p>           The report provides information about actions that have influence on the information that is displayed on other reports. You can view details of each action, its type, date, and the user who performed it.         </p> <p>  <b>Important:</b> Audit trail shows actions that are performed only within the computer group to which the user who views the report has access.         </p> <p>           The actions that are shown on the report include:         </p> <ul style="list-style-type: none"> <li>• Modifications to the IBM software classification: confirming and changing the default classification, sharing an instance between products, including an instance in and excluding it from pricing calculations</li> </ul> <p>  <b>Note:</b> Audit trail does not contain information about software classification when either component, product or both are non-IBM.         </p> <ul style="list-style-type: none"> <li>• Uploads: successful or failed upload of the software catalog, charge unit data, and PVU table</li> <li>• Imports: successful or failed import of the software catalog, charge unit data, and PVU table</li> <li>• VM managers: adding, modifying, and deleting VM managers</li> <li>• Updates to the scan configuration on the Scan Configurations panel</li> <li>• Changes of server parameters and advanced server settings</li> <li>• Changes of the PVU per core value</li> <li>• Creation and deletion of user (does not work if user is signed in through LDAP/SSO)</li> <li>• Modification in user role and user computer group (does not work if user is signed in through LDAP/SSO)</li> </ul>

Report	Description
<b>9.2.1</b> Re-source Utilization	 Required permission: View License Metrics  <p>The report provides information about the utilization of license metrics for products that deliver .slmtags. The report shows the maximum metric utilization and its trend value over the last 30 days. For every product, you can see the type and subtype of license metrics that a product uses as well as the first and last time when each metric was reported. You can also see the path to the .slmtag file from which the data was retrieved.</p> <p>The report shows only products that deliver resource utilization data. It does not show products for which metric utilization is calculated and shown on the All Metrics report. For more information, see: <a href="#">Raw utilization of license metrics (on page mclxix)</a>.</p>

## Users

Report	Description
<b>9.2.13</b> Software Users	 Required permission: View User Details  <p><b>Scope of the report</b></p> <ul style="list-style-type: none"> <li>• <b>9.2.13</b> Microsoft Office 365</li> <li>• <b>9.2.14</b> <b>Windows</b> The following Adobe Creative Cloud (CC) applications that are installed on Windows computers.             <ul style="list-style-type: none"> <li>◦ Adobe Illustrator CC</li> <li>◦ Adobe PhotoShop CC</li> <li>◦ Adobe InDesign CC</li> <li>◦ Adobe Premiere Pro CC</li> <li>◦ Adobe After Effects CC</li> <li>◦ Adobe Dreamweaver CC</li> <li>◦ Adobe Muse CC</li> </ul> </li> </ul> <p><b>Overview</b></p> <p>The report provides information about the current users of software and their details. Users are matched with the instance of the product to which they are registered with the given ID. By clicking the product name, you are redirected to the Software Classification panel.</p> <p>The report shows a list of users who use or registered Microsoft Office 365 and a set of Adobe CC components on the computers in your environment. They have a unique user ID, that might be an e-mail address, or an alternative user ID, which is an identifier that is specific to the software.</p>

Report	Description
	<p><b>User details</b></p> <p>The user information that is collected might include the personal data. By default, the user personal data, such as an e-mail address, is obfuscated with SHA-1 and is not shown on the report or stored in the database. If you would like to collect and display it, select the <b>Store and show user names on reports</b> when initiating software scans. For more information, see: <a href="#">Initiating software scans (on page dcx)</a>.</p> <p>If you no longer need to view information about software users on the Software Users report, go to <b>Management &gt; Advanced Server Settings</b>, and change the value of the <b>remove_user_information</b> parameter to True. After the next import of data, the user information is removed and the report is emptied. To repopulate the report, run the Initiate Software Scan fixlet. Removing user information also removes all historical data related to the Registered User metric on the All Metrics report.</p> <p> <b>Important:</b> BigFix Inventory is GDPR compliant. By default, BigFix Inventory does not collect any personal data about the users. Gathering personal data is optional and should be enabled consciously. Personal data is stored and used by BigFix Inventory only. It is not passed or used outside BigFix Inventory.</p> <p>Following reports options are available:</p> <ul style="list-style-type: none"> <li>• Adobe Users</li> <li>• Microsoft Office Users</li> <li>• Microsoft Office 365 Software Users</li> <li>• Adobe Cloud Software Users</li> </ul>

## Infrastructure

Report	Description
Computers	<p> Required permission: Manage Computer Groups</p> <p>The report provides information about computer groups that are defined in your infrastructure. The information includes the ID of the computer group, its name, and description. You can find out how many computers and subgroups are in the computer group, and what software items are installed in that group.</p> <p><b>9.2.8</b> The report shows two types of computer groups: reporting and software template. Both types are visible to all entitled users. However, only an Administrator can create software template groups and modify software templates of existing groups of this type. For more information, see: <a href="#">Setting up computer groups (on page dxcvi)</a></p>

Report	Description
	<ul style="list-style-type: none"> <li>• The time when the computer last connected to BigFix</li> <li>• The version of the client that is installed on the computer</li> <li>• The version of the catalog that is available on the computer</li> <li>• The time when the last attempt to run the scan was done</li> <li>• Whether each type of the software scan was successful</li> <li>• Whether the computer misses scan results</li> <li>• Whether it is running out of disk space</li> <li>• Whether it misses some prerequisites</li> </ul> <p>When you click a link in the Name column, detailed information about a particular computer is displayed. You can now view reports narrowed down to this computer. To do this, select the report from the upper left corner.</p> <p><b>9.2.5</b> <b>IBM i</b> You can decommission computers that are imported from the <a href="#">disconnected data source (on page dclxxxviii)</a> to remove them from the report. For more information, see: <a href="#">Decommissioning computers with disconnected scanners (on page dcxcviii)</a>.</p> <p>The report provides the following predefined views:</p> <ul style="list-style-type: none"> <li>• <b>9.2.4</b> <b>Outdated Agents</b> shows computers on which the BigFix client is not updated to the latest available version.</li> </ul> <p><b>!</b> <b>Important:</b> For some operating systems, support is withdrawn with newer versions of the BigFix client and only earlier versions are supported. Such a computer is reported as having an outdated version of the client even though a newer version is not available.</p> <ul style="list-style-type: none"> <li>• <b>9.2.14</b> <b>Computers</b> lists all computers in your infrastructure.</li> <li>• <b>9.2.14</b> <b>Computers: Discovered in the last 2 weeks</b> shows the computers that were added to BigFix Inventory within the last two weeks.</li> <li>• <b>9.2.14</b> <b>Computers without Scan (Preview)</b> shows computers that are visible in BigFix Inventory for more than a week, and on which the scan was not initiated.</li> <li>• <b>9.2.14</b> <b>Computers: No Scan Attempt in the last 2 weeks</b> shows computers with scan that is older than two weeks.</li> </ul>
Computer Groups	<p> Required permission: Manage Computer Groups</p> <p>In BigFix Inventory version 10, the report provides information about computers that are defined in your infrastructure. The information includes the following:</p>

Report	Description
	<ul style="list-style-type: none"> <li>• DNS name of the computer</li> <li>• OS on which the computer is running</li> <li>• Number of computers BigFix Inventory is monitoring</li> <li>• Number of software items installed on each computer</li> </ul> <p>When you click a link in the <b>Name</b> column, detailed information about a particular computer group is displayed. You can now view the reports narrowed down to the computers. To do this, select the report from the upper left corner to view the following details:</p> <ul style="list-style-type: none"> <li>• The time when the computer last connected to BigFix</li> <li>• The version of the client that is installed on the computer</li> <li>• The version of the catalog that is available on the computer</li> <li>• The time when the last attempt to run the scan was done</li> <li>• Whether each type of the software scan was successful</li> <li>• Whether the computer misses scan results</li> <li>• Whether it is running out of disk space</li> <li>• Whether it misses some prerequisites</li> </ul> <p><b>9.2.8</b> The report shows two types of computer groups: reporting and software template. Both types are visible to all entitled users. However, only an Administrator can create software template groups and modify software templates of existing groups of this type. For more information, see: <a href="#">Setting up computer groups (on page dxcvi)</a>.</p> <p> <b>Notice:</b> <b>10.0.9</b> These columns have been removed:</p> <ul style="list-style-type: none"> <li>• Contracts (Deprecated)</li> <li>• Total Acquisition Cost (Deprecated)</li> <li>• Total Maintenance Cost (Deprecated)</li> </ul>
<p><b>11.0.0</b> Containers</p>	<p> View endpoints</p> <p>The Containers report is added to show container images with information about the pod, image, resources, annotations, and labels. For more information, see <a href="#">Software discovery in containers (on page mccxxii)</a>.</p> <p> <b>Note:</b> The report is available if you have subscribed to the Containers solution.</p>
<p><b>9.2.12</b> Shared Disks</p>	<p> Required permission: View Shared Disks</p>

Report	Description
	<p>The report provides information about shared disks that are used in your infrastructure. For each shared disk, you can view information about its type, the exported directory, and the number of computers on which the disk is mounted. You can drill down the report to view detailed information about the shared directory or the computers on which the disk is mounted. If you use automatic scanning of shared disks, the report also shows the status of the scan and the computer that is designated to scan the shared disk.</p> <p>To view information on the report, discover shared disks in your infrastructure. For more information, see: <a href="#">Discovering software on shared disks (on page dcxxx)</a>.</p>
Hardware Inventory	<p> Required permission: View Hardware Inventory</p> <p>The report provides information about the state of BigFix clients in your infrastructure. For every computer on which a client is installed, you can view processor details, and the number of PVUs assigned to each core.</p> <p>If the PVU per core value that is assigned to a processor in your environment is incorrect, you can manually change it on the Hardware Inventory report to ensure that subcapacity licenses are properly calculated. For more information, see: <a href="#">Changing the PVU per core value (on page mcdxxiv)</a>.</p>
<p><b>9.2.3</b> Current State Values (deprecated)</p>	<p><b>9.2.12</b> Starting from application update 9.2.12, the report is deprecated.</p> <p> Required permission: Edit Server Configuration</p> <p>The report provides information that is intended to help the HCL Support team troubleshoot problems with BigFix Inventory. When you open a support case, generate a CSV or PDF version of this report and provide it to the HCL Support team.</p>

## Catalog

Report	Description
Software Components	<p>This report shows the software components per publisher type. You can view details, such as the version, component tags, vulnerabilities, signatures, etc.</p>
Signatures	<p> Required permission: View Software Catalog and Signatures</p> <p>The report provides information about signatures that are available in the software catalog. You can find out what signature is used to detect each software item that exists in the catalog.</p>

Report	Description
Catalog Audit	 Required permission: View Catalog Audit  The report provides information about modifications that were made to the content of your custom software catalog. For each modification, you can see detailed information about the current status of the software entity, as well as its status before and after modification.

## Contracts

Report	Description
Products & Metrics	 Required permission to view data: View Software Catalog and Signatures   Required permission to manage data: Manage Software Catalog and Signatures  The report provides information about the content of the software catalog including software products and their publishers, part numbers that represent the products, and license metrics that the product uses.  <div style="background-color: #0056b3; color: white; padding: 2px;">9.2.11</div> When you drill down to the component level, you can also view the date when the software component reaches end of support.  <b>Actions:</b> You can perform the following actions: <ul style="list-style-type: none"> <li>• Add products. See also, <a href="#">add product</a></li> <li>• Edit part numbers. See also, <a href="#">edit part numbers</a></li> <li>• Assign metric to a product. See also, <a href="#">manage products and metrics (on page mli)</a></li> <li>• Set default product metric. See also, <a href="#">manage products and metrics (on page mli)</a></li> <li>• Add, modify, and delete metrics. See also, <a href="#">manage products and metrics (on page mli)</a></li> <li>• Set and clear entitlement or do both. See also, <a href="#">manage entitlement</a></li> </ul>
<div style="background-color: #0056b3; color: white; padding: 2px;">10.0.5</div> All Contracts	 Required permission: Manage Contracts  This report shows all contracts that are related to product and metrics. The same can be viewed through the predefined dashboard. Contracts can be defined for products and any metric in the <i>All Contracts</i> report. By using this report, you can add, modify, and assign custom metrics to products that are used in new contract definitions and software bundles. You can view information such as contract types, current measured value, deltas, thresholds, next entitlement dates, and so on.  <div style="background-color: #0056b3; color: white; padding: 2px;">10.0.11</div> With BigFix Inventory version 10.0.11, All Contracts panel uses a new data model that improves usability and performance.

Report	Description
	<p>Following are the changes in the All Contracts panel:</p> <ul style="list-style-type: none"> <li>All Contracts panel has a link to the product under the <b>Products</b> column, which on clicking redirects to the new <b>Product Metrics per Contract</b> panel. For more information, refer to <a href="#">10.0.11 Using the Product Metrics per Contract panel (on page mclxxxiii)</a>.</li> </ul> <p> <b>Note:</b> The link is disabled when there is no metric or product assigned to the contract.</p> <ul style="list-style-type: none"> <li>All Contracts panel also has an option to recalculate metric values if there is a change in the contract definition. For more information, refer to <a href="#">10.0.11 Recalculating contracts (on page mclxxxv)</a>.</li> <li>A new metric <b>Microsoft SQL Server Physical Processor Cores</b> is added for the per core physical licensing model. The new metric is calculated as per the given current day and follows the latest Microsoft SQL Server product terms.</li> <li>The <b>Current Measured Value</b> column shows &lt;n/a&gt; if a metric is not calculated by Big-Fix Inventory or if there are no products added to the Contract. In other cases, the column shows the value.</li> </ul> <p><b>10.0.12</b> BigFix Inventory version 10.0.12 includes improvements in the Recalculation feature. For more information, refer to <a href="#">10.0.11 Recalculating contracts (on page mclxxxv)</a>.</p> <p><b>10.0.12</b> The panel includes an additional <b>Recalculation Pending</b> column which shows the status of recalculation (applicable to all metrics), and an <b>Is Incomplete</b> column which indicates if a metric quantity is not calculated correctly. A "Data Import or Recalculation is in progress. New recalculation request can be started when current one is finished." message appears when once a recalculation is in progress.</p> <p><b>Actions:</b> You can perform the following actions:</p> <ul style="list-style-type: none"> <li>Add, modify, and delete contracts - See also, <a href="#">Add, modify, and delete contracts in the All Contracts report (on page mclxxx)</a></li> <li>Add, modify, and delete metrics - See also, <a href="#">manage products and metrics (on page mli)</a></li> </ul> <p>Different report types available are:</p> <ul style="list-style-type: none"> <li>Contracts: All</li> <li>Contracts: License Utilization Exceeded</li> <li>Contracts: License Ended</li> <li>Contracts License Ends in 30 Days</li> </ul>

Report	Description
	<ul style="list-style-type: none"> <li>• Contracts: License Ends in 90 Days</li> <li>• Contracts: Threshold Exceeded</li> <li>• Contracts: Support Ended</li> <li>• Contracts: Support Ends in 30 Days</li> <li>• Contracts: Support Ends in 90 Days</li> </ul> <p> <b>Note:</b> The Current Contract Value, Current Measured Value and Next Entitlement Value are calculated based on UTC time zone.</p>
<p><b>10.0.5</b> Product Metrics per Group</p>	<p> Required permission to view data on Product Metrics per Group panel: View Contracts or Manage Contracts</p> <p> Required permission to update 'Current Measure Value': Manage Licenses or Manage Software Classification</p> <p>Product Metric per Group shows contract data and more reporting capability. With the report, you can view metric calculations per product among computer groups. You can modify the measured metric value for specific products when automated metric calculation is not supported or a data adjustment is required (data from other source or custom calculation). By drilling down in the report, you can view a product link to get metric calculation details as input for further analysis.</p> <p>For optimal performance, this report is displayed for first 20 computer groups . Computer groups are selected in the order they were created (computer ID). It excludes the computer groups that have metrics disabled. However, you can select the computer groups that use the <b>new_contracts_max_computer_groups</b> and <b>new_contracts_selected_computer_groups</b> hidden parameters from the <a href="#">Advanced Server (on page dcccliii)</a> settings.</p> <p><b>10.0.11</b> A <b>Go to All Contracts</b> link have been added on the heading of the panel to allow you to navigate to All Contracts report panel.</p> <p><b>Actions:</b> You can modify the measured metric value for specific products when automated metric calculation is not supported or a data adjustment is required (data from other source or custom calculation). See also, <a href="#">Setting and removing metric quantity</a>.</p>
<p> <b>Notice:</b></p> <p><b>10.0.9</b></p> <p>This report has</p>	<p> Required permission: View Contracts</p> <p>The report provides information about contracts that you created for the software items. You can see the relationship between the number of software products that you are entitled to use and the actual number of software instances that are used. You can use the report to eliminate unused licenses and track computers that use unlicensed instances of a software product.</p>

Report	Description
 been re- moved.  Contract Usage Data (deprecated)	 <b>Note:</b> This report is related to previous deprecated contracts functionality.

## Report columns

This glossary provides a brief description of every column that can be found in the reports that are available in BigFix Inventory.

[A \(on page mlxxvi\)](#) [B \(on page mlxxvii\)](#) [C \(on page mlxxvii\)](#) [D \(on page mlxxxiii\)](#) [E \(on page mlxxxv\)](#) [F \(on page mlxxxv\)](#) [G \(on page mlxxxvii\)](#) [H \(on page mlxxxvii\)](#) [I \(on page mlxxxvii\)](#) [L \(on page mlxxxix\)](#) [M \(on page mlxxxix\)](#) [N \(on page mxci\)](#) [O \(on page mxci\)](#) [P \(on page mxci\)](#) [R \(on page mxci\)](#) [S \(on page mxci\)](#) [T \(on page mc\)](#) [U \(on page mci\)](#) [V \(on page mciii\)](#) [W \(on page mciii\)](#) [Y \(on page mciv\)](#)



**Note:** When the value of the column cannot be populated because there is no data, one of the following values is displayed.

- `<no data>` when the data does not exist.
- `<not set>` when the value is not yet set. You can set it using the dedicated option.

If the `<not set>` value appears under the Product Name column, see: [The <not set> value appears under the Product Name on Software Classification panel \(on page mcccciv\)](#).

- `<n/a>` when the data is not relevant for the particular report line.
- The cell is empty when the value does not exist and cannot be populated.

## A

### Action

Indicates whether the upload of the part numbers file overwrote the previously uploaded part numbers or added part numbers to the existing ones.

### Acquisition Cost

Overall cost of purchasing the license for the software product. It is the value that you specify while creating the contract.

### Agent Version

Version of the BigFix agent that is deployed on the computer.

### Always Not Charged

Indicates whether a component is always not charged.

**Alternative User ID**

An identifier of a user who currently uses or registered a software program. It is a number or a string specific to this software program.

**Authentication Method**

Method of authentication that is used to log in to BigFix Inventory.

**Automatic Scan Status**

Indicates whether the shared disk is scanned by using the automatic version of the optimized scanning mode. For more information, see: [Step 2a: Optimized mode - Automatic scanning of remote shared disks \(on page dcxxxiii\)](#). The column can have one of the following values:

- Disabled
- OK
- Pending

When you hover over the Pending status, you can see more details why the action is pending.

**Average Runs per Day**

Average number of times a process or software item is started per day. See also [Monitoring and reporting software usage \(on page cmxci\)](#)

**Average Run Time**

Average amount of time during which a process or software was used. It is calculated by dividing the total run time by the number of total runs. The average run time is the same as the total run time when the total number of runs equals one. See also [Monitoring and reporting software usage \(on page cmxci\)](#)

**B****Brand**

Brand of the processor that was matched in the PVU table. If the brand is "Other", the processor is not listed in the PVU table. For details of the processor read from the computer operating system, see: [Processor Brand String \(on page mxciiii\)](#).

**Bundle Metric Contribution**

Indicates the number of license metric units that the particular product contributes to the overall metric quantity of the Cloud Pak or FlexPoint Bundle to which that product is assigned.

**Bundling Tag Used**

Indicates whether the product assignment is based on a bundling tag.

**C****Catalog-based Scan**

Indicates whether the catalog-based scan is a part of the scan schedule configured directly from BigFix Inventory.

**Catalog Format**

Format of the software catalog.

**Catalog Part Numbers**

Part numbers that represent the product that are listed in the software catalog.

**Catalog-provided**

- On the Products & Metrics report, it indicates whether the product and metric relation is provided in the software catalog. If the column value is `NO`, the relation comes from the SWID tag, or is defined by a user.
- On the Package Data report, it indicates whether the component from the particular vendor and in the specific version already exists in the software catalog.

**Catalog Provider**

Name of the catalog content originator.

**Catalog Scan Results Missing**

Indicates whether the catalog scan results are missing. The scan might be missing because the computer or a relay is offline, there is a network outage, or the last scan attempt was more than 30 days ago.

**Catalog Scan Successful**

Indicates whether the catalog scan was successful. The scan might be unsuccessful because the computer is out of space, it is misconfigured, or the scan was stopped.

**Catalog Version**

Version of the software catalog that is available on the computer. If different versions of the catalog are available on various computers, [update the catalog \(on page mcdxxvi\)](#).

**Caused Detection: Removed since 10.0.4**

Indicates whether a file or a package contained enough information to cause detection of the related software. This column is not available by default. The data that is required to populate this column uses many resources, and the time to load and filter the reports will be extended, especially for huge environments.

To enable this column on the Scanned File Data and Package Data reports, go to **Management > Advanced Server Settings** and change the value of `enable_caused_detection_data` parameter to true. To display the column on the Scanned File Data or Package Data reports hover over the **Manage Report View** icon , and click **Configure View**. Select the appropriate check box.

In versions earlier than 9.2.9, the Caused Detection column can be enabled only on the Scanned File Data Report. To display it, enable the aggregation of unrecognized scan data. Go to **Management > Unrecognized Scan Data** and choose whether you want to aggregate the data after every import or after the next import only. Next, configure the report view.



**Note:** The **Caused Detection** column and **enable\_caused\_detection\_data** parameter is removed since BigFix Inventory version 10.0.4. You must re-create your saved reports in case you had used the Caused Detection column.

### Changed PVU per Core Value

Specifies whether the number of processor value units for a specific server was manually changed.

### Charged

Indicates whether the relation between the component and the product is charged based on the license terms. If the relation is charged, the component contributes to the license metric utilization of the product to which it is assigned.

### Children

Number of nested computer groups.

### Cluster Cores

The total number of processor cores available within the cluster of host computer systems.

### Cluster Name

Name of the cluster to which a particular host computer system belongs.

### Comment

Extra technical information. Possible values on the server level include: Incomplete virtualization hierarchy and All instances are excluded. Possible values on the software instance level include reasons for excluding the instance from pricing calculations, and suppressing the product from the inventory.

### Comments

Additional information that was specified during the upload of the PVU table, part numbers file, or the software catalog.

### Component Creation

Date and time when the component was created.

### Component Definition Source

Specifies the entity that provided the component definition. From application update 9.2.9, this column replaced the [Software Catalog column \(on page mxcviii\)](#).

### Component Detailed Version

Detailed version of the software component that is installed on the computer. This information is provided for components that are discovered by the following means:

- Software identification (SWID) tags. Supplemental SWID tags are not supported. Thus, if the fix pack version is embedded in the supplemental tag, it is not shown.
- **9.2.11** Windows files in which the file version attribute is set and which is used as a software signature.
- **10.0.0** Extended Signature reporting detailed version.
- **10.0.4** A package in which the version attribute is set and which is used as a software signature.

For components that are discovered with other detection methods the values in **Component Detailed Version** and **Component Version** columns are duplicated.

Starting from application update 9.2.11, the column presents the highest reported version of the component. Versions are sorted in numerical order. If the version consists of digits and letters, it is sorted in numerical order and then the alphabetical order. Precision of sorting is up to four places per position, and up to four positions. The type of the discovery mean takes precedence over the sorting.

For versions below 10.0.4, the precedence of the version information displayed is:

- SWID tags
- Windows file version
- Extended signature

For versions 10.0.4 and above, the precedence of the version information displayed is:

- Extended Signature
- SWID tags
- The package with version attribute
- Windows file version

For 10.0.4 and above, the version information which contains patch level (with two dots) takes precedence over the above order. For example, if both file and package versions with patch level are available for a given software instance, package version is shown. If package version contains only release level (for example, "1.2"), but file version contains patch level ("for example, 1.2.3"), file version is shown.

### **Component Modification**

Date and time when the component was modified.

### **Component Name**

Product component that was discovered on the computer.

### **Component Tags**

Tags defined on the Software Components panel. These tags are common for all discovered instances of the same component.

**Component Version**

Version of the software component that is installed on the computer.

**Computer Count**

Number of computers on which the software is installed or the shared disk is mounted.

**Computer Deletion Date**

The date and time when the computer stopped being discovered, for example because it was removed from the infrastructure, the data source was removed, or the BigFix client was uninstalled.

**Computer First Seen**

Date and time when the information about the computer was imported from BigFix for the first time.

**Computer Group**

An organized list of computers through which users can get dedicated reporting or perform common operations in bulk. This feature simplifies the maintenance of customer environments, and it can be used to represent, for instance, a department or region.

- Computer group to which the user has access.
- On the Part Numbers Panel, the column indicates the computer group for which the part numbers were uploaded.

**Computer Group Name**

Computer Group for which the metric was calculated.

**Computer ID of VM Manager Tool**

Identifier of the computer on which the VM Manager Tool that collects data from the particular VM manager is installed.

**Computer Last Seen**

Date and time when the agent connected to the BigFix server the last time.

**Computer Name**

Host name of the computer on which the data specific to the report was discovered. For VMware products displayed on the Resource Utilization report, the name of the computer where VM Manager Tool is installed.

**Computer Type**

Type of the computer: physical, virtual, or public cloud.

**Computers**

Number of computers.

**Confidence**

Reliability of the signature that is defined in the software catalog. The lowest confidence equals 0, the highest confidence equals 3.

**Confirmed**

Indicates whether the software classification was manually confirmed.

**Connection Test Status**

Indicates whether connection to the VM manager was tested and what was the result of the test.

**Contact Information**

The column is not used.

**Content**

Content of the software catalog. Possible values are: catalog XML file, or charge unit data.

**Contracts**

The Contracts report type includes 'products and metrics', 'all contracts', and 'product metrics per group' reports. See also, [contract management \(on page mclxxviii\)](#).

**Copies**

Number of copies of the unrecognized file that are discovered on the computers in your infrastructure.

**Cost Delta**

Difference between the cost of purchasing the license for the particular software product, and the cost of used or unused instances of that product. If the cost delta is a positive number that is displayed in green, the number of product instances that are used does not exceed the license entitlement. The number indicates that you have some spare licenses that you can distribute in your enterprise or that you can reduce the license-related cost by not extending the excessive licenses. If the cost delta is a negative number that is displayed in red, the number of software product instances that are used exceeds the license entitlement. You must purchase licenses for more instances of the software product.

**Cost per Seat**

Cost of the license for an instance of the software product.

**Count**

The number of software instances in the group that is filtered based on the selected columns.

**CPU Core Full Capacity**

Total count of physical processor cores of the server on which the product is installed.

**CPU Core Subcapacity**

Number of processor cores that are used by a software product.

**CPU Core Subcapacity Limit**

Total count of physical cores of the server on which the product is installed. It is counted at the time when the subcapacity is maximum which means when the number of cores that are used by the product is the highest.

**Created By**

Name of the user that created the custom rule.

**Criteria**

Definition of the custom rule.

**Current Measured Value**

The maximum value of the license metric over the default aggregation period for given computer group. Period may vary for computer groups and the value can be changed in Computer Group settings. The declared quantity takes precedence over the measured quantity.

**Current Status**

Details of the signature after modification.

**Current Value**

Value that is currently set for the server parameter.

**D****Database Host**

Host of the computer on which the BigFix Inventory database exists.

**Database Name**

Name of the BigFix Inventory database.

**Database Type**

Type of the BigFix Inventory database. Possible values are: DB2, disconnected, SQL Server.

**Database User Name**

Name of the user that is used to connect to the BigFix Inventory database.

**Data Collection Time**

Date and time when data was collected from the VM manager.

**Data Import Time**

Date and time when data from the VM manager was imported to BigFix Inventory.

**Data Source Computer ID**

An identifier of a computer as defined in BigFix.

**Data Source Name**

Name of the BigFix server from which the data is uploaded to BigFix Inventory.

**Date**

Date and time when the software catalog was published.

**Default Report**

Indicates whether the saved report view is set as the default view for a particular report.

**Default PVU Value**

Indicates whether a default number of processor value units is assigned to the computer. The default number is assigned when the processor is not listed in the PVU table. The default value is 100 PVUs per core.

**Deployment Type**

Type of the VM Manager Tool deployment, either central or distributed.

**Designated Computer**

Provides information about the computer that is designated to scan the particular share disk.

**Description**

Additional description of an item.

**Details**

On the Audit Trail, it is information about the type and date of action that influences data on other reports as well as the user who performed the action. On other reports, it is a link to detailed information about the software product.

**Detailed Version**

The column shows the version details along with patch-level information.

**Discovery**

Indicates whether the signature is used for software discovery.

**Discovery End**

Date and time when the component instance was reported for the last time. If the component is still detected, the column shows `<n/a>`.

**Discovery Start**

Date and time when the component was first detected by BigFix Inventory. The Discovery Start date might be later than the [First Used \(on page mlxxxvi\)](#) date.

**DNS Name**

Name of the computer that is specified in the Domain Name System.

**Download**

Link to downloading the data import log.

**Duration**

Duration of the data import.

## E

**Edition**

Edition of the Oracle Database.

**Enabled**

Indicates whether the scan that was configured directly from BigFix Inventory is enabled.

**End of Support**

Date when the software component reaches end of support.

**Endpoint Scanner Catalog Version**

Version of the custom software catalog that is available on the computer.

**Entitled Computers**

Number of computers that are entitled to use the software.

**Entitlement End**

Date of the end of entitlement for the product that was provided during the creation of the contract.

**Entitlement Start**

Date of the start of entitlement for the product that was provided during the creation of the contract.

**Excluded**

Indicates whether the product on a computer is currently excluded from the pricing calculations.

**Exported Directory**

Exported directory of the shared disk.

## F

**Feature**

Feature of the Oracle Database.

**File Name**

Name of the file that is used by the signature to discover the software.

**File Path**

Directory in which the file is located.

**File System Scan Results Missing**

Indicates whether the file system scan results are missing. Scan results might be missing because the computer or a relay is offline, there is a network outage, or the last scan attempt was more than 30 days ago.

### **File System Scan Successful**

Indicates whether the file system scan was successful. The scan might be unsuccessful because the computer is out of space, it is misconfigured, or the scan was stopped.

### **File Version**

Version of the file.

 Starting from application update 9.2.11, the column returns the full version of the file, not only version limited to the release number. If you upgrade from earlier versions of BigFix Inventory, reupload results of the file system scan to show the full version. Otherwise, it is shown only for newly discovered or updated files. To reupload the result, run the Force Re-upload of Software Scan Results fixlet.

### **First Detected**

Date and time when the software component was detected by the scanner for the first time.

### **First Measured**

Date and time when the license metric was first measured.

### **First Used**

Date and time when the information about the process was first collected by the BigFix client. The First Used date might be prior to the [Discovery Start \(on page mlxxxiv\)](#) date. See also: [Monitoring and reporting software usage \(on page cmxci\)](#)

### **FlexPoint Bundle**

FlexPoint bundle to which the product and its components are assigned. For more information, see: [Assigning products to FlexPoint bundles \(on page cmlxxxvi\)](#).

### **FlexPoints**

Total utilization of FlexPoints by the FlexPoint bundle.

### **Cloud Pak or FlexPoint Bundle**

Cloud Pak or FlexPoint Bundle to which the product and its components are assigned. For more information, see:

- [Assigning products to FlexPoint bundles \(on page cmlxxxvi\)](#)
- [Assigning products to Cloud Paks \(on page cmlxxxiv\)](#)

### **FlexPoints per Metric Unit**

The factor by which the number of metric units is multiplied to obtain the number of FlexPoints that the products uses.

**FlexPoint Quantity**

Indicates the number of FlexPoints to which the product and related metric are assigned as a part of a FlexPoint bundle.

**From Software Template**

Indicates whether the software was discovered on a particular computer or was generated from a software template. In the latter case, the software is installed on a shared disk that is mounted on the particular computer. For more information, see: [Discovering software on shared disks \(on page dcxxx\)](#).

**Frequency**

Frequency of the scan that was configured directly from BigFix Inventory.

**From Software Template**

Indicates whether the software was discovered on a particular computer or was generated from a software template. In the latter case, the software is installed on a shared disk that is mounted on the particular computer. For more information, see: [Discovering software on shared disks \(on page dcxxx\)](#).

**G****Global Default Report**

Indicates whether the saved report view is set as a default view of the particular report for all users.

**H****Has Low Disk Space**

Indicates whether the computer has less than 100 MB of free disk space.

**Has Missing Prerequisites**

Indicates whether any scanner prerequisites are missing on the computer.

**Has Outdated Version**

Indicates whether the latest version of the BigFix agent is installed on the computer. For some operating systems, no newer version of the agent is available.

**Has Usage**

Indicates whether a usage signature exists for the particular software.

**I****IBM-provided Bundling Option**

Indicates whether the product has the selected component listed as a bundling option in the software catalog provided by IBM.

**ID**

Identifier of a computer group.

**Imported At**

Date and time when the PVU table, part numbers file, or the software catalog was imported to BigFix Inventory.

**Imported Part Numbers**

Part numbers that you imported to BigFix Inventory. They represent IBM products that you purchased.

**Install Path**

Installation path of the Oracle Database.

**Installed Software**

Number of software items that are installed on the computer.

**Instance**

Identifier of the software instance. For VMware products displayed on the Resource Utilization report, it specifies the license key, machine type and the host name.

**Instance Tags**

Tags for individually discovered instances of a software. These tags are independent from component tags in catalog. Discovery tags are set by using the dedicated option.

**Instances Covered by Contracts**

Number of software items by a particular vendor for which contracts are defined.

**Internal Computer ID**

Identifier of a computer as defined in BigFix Inventory.

**Internal Version**

- On the Catalog Upload panel, the column indicates the internal version of the software catalog.
- On the Part Numbers Upload panel, the column indicates the internal version of the PVU table.

**IP Address**

IP address of the computer.

**Is Capped**

Indicates whether the partition is capped, that is whether its access to processor resources is limited. Available only for AIX. For other operating systems, the column shows *no data*.

**Is Out of Sync**

Indicates whether the time that is set on the computer is at least an hour from the time that is set on the BigFix Inventory server.

## L

**Last Login**

Date and time when the user last logged in to BigFix Inventory.

**Last Scan Attempt**

Date and time when the last scan was initiated.

**Last Used**

Date and time when the software item was last used or a process was last run. See also: [Monitoring and reporting software usage \(on page cmxci\)](#)

**Last Software Change**

Date and time when the software on a particular computer last changed and the change triggered a software scan that was imported to .

**Licensed Computers**

Number of computers that are entitled to use the software and have this software installed.

**License Delta**

Difference between the number of software product instances that you are entitled to under a particular license and the actual number of software instances that are used. If the license delta is a positive number that is displayed in green, the number of product instances that are used does not exceed the license entitlement. If the license delta is a negative number that is displayed in red, the number of product instances that are used exceeds the license entitlement.

**Logical Processors**

Number of processor cores that are assigned to the partition on which the BigFix agent is installed. The number takes into account hyper-threading on the x86 architecture.

**LPAR Entitlement**

Number of processor cores that are assigned to the logical partition. Available only for AIX. For other operating systems, the column shows *no data*.

## M

**Maintenance End**

Date of the end of maintenance of the software that was provided during the creation of the contract.

**Maintenance Start**

Date of the start of maintenance of the software that was provided during the creation of the contract.

**Maximal Trend Value**

Maximum value of the license metric utilization over the last 30 days.

**Maximal Trend Value History**

Graphic representation of the history of license metric utilization over the last 30 days.

**Maximum Value**

Maximum value that the parameter accepts.

**MD5**

MD5 checksum calculated for a file. Checksums work as fingerprints of files, and can be compared to checksums of known virus signatures to recognize whether files were altered or tampered with. They are used to ensure file integrity and safety in advanced security scenarios.

**Metric**

Type of the metric used by the software item, for example Install Seats and PVU.

**Metric Quantity**

The highest number of metric units that the product used over the specified period.

**Metric Quantity History**

Graphic representation of the history of metric consumption over the specified time period. If you set the license threshold, the graph also includes a line that represents the threshold. For more information, see: [Setting license metric threshold \(on page mcx/vi\)](#).

**Metric Subtype**

Subtype of the license metric. For VMware products displayed on the Resource Utilization report, metric subtype indicates if the count refers to the metric utilization or overall license capacity.

**Metric Type**

Type of the license metric.

**Metric Units Convertible to FlexPoints**

The number of metric units that are converted into FlexPoints. The number of convertible metric units can be lower than the overall number of units that are used by the product. It happens when some instance of the product are not a part of the FlexPoint bundle.

**Minimum Value**

Minimum value that the parameter accepts.

**Model**

Model of the processor.

**Modification Date**

Date and time when the item was modified.

**Modification Type**

Type of the modification.

**Modified By**

User who modified the item.

**Modified Software**

Software item that was modified.

**Mounted Shared Disks**

List of directories of all shared disks that are mounted on the computer. To see the data, run the Discover Remote Shared Disks task on the computer.

**N****Name**

Name of an item. It depends on the report on which the column is displayed.

**Normalized Component Name**

The component name that is suggested after the analysis of package details and current content of software catalog.

**Normalized Component Vendor**

The vendor that is suggested after the analysis of package details and current content of software catalog.

**Normalized Component Version**

The component version that is based on what is embedded in package details and rounded up to two decimal places.

**Number of Packages**

Number of specific packages that are identified in your environment.

**O****One to One**

Indicates whether the product to which the component is currently assigned is the only bundling option that is available in the software catalog.

**Operating System**

Operating system of the computer on which the BigFix agent is installed.

**Operation Status**

Status of the connection to the VM manager.

**P****Package Data Scan**

Indicates whether the package data scan is a part of the scan schedule configured directly from BigFix Inventory.

**Package Scan Successful**

Indicates whether the latest package scan was successful. The scan might be unsuccessful because the computer is out of disk space, it is misconfigured, or the scan was stopped.

**Parameter Name**

Name of the server parameter.

**Parent Hostname**

Hostname of the parent computer, if available. The value is null if the parent computer is not available.

**Parent Name**

Name of the server parameter.

**Parent Organization**

Organization that owns the content of the catalog.

**Partition Cores**

Specifies the number of processor cores that are assigned to the partition on which the BigFix agent is installed.

On the All Metrics report, when you click a product that is licensed under the PVU subcapacity or RVU MAPC subcapacity, and you drill down to information about a single computer, the column shows the number of partition cores measured when the peak of the metric value occurred. When you sum up partition cores from VMs running on a single server, the value might not be equal to the number of cores that contribute to metric utilization on the server level. It is in line with subcapacity pricing rules. For more information, see: [Virtualization Capacity License Counting Rules](#).

**Partition ID**

ID of the partition. For the VM running in a virtualization type that requires VM manager connection, the column shows the attribute commonly referred to in BigFix Inventory as VM UUID (universally unique identifier of a VM). For a partition (LPAR or WPAR) running on a Power system, the column shows the Partition ID. For a guest running on an IBM Z (z/VM guest, z/KVM guest or z/CX guest), it shows the guest name. For a VM running on a Microsoft Hyper-V, VMware ESXi, KVM, Citrix Hypervisor and Nutanix AVH managed by Nutanix PRISM it shows VM SMBios System Serial Number. For a Solaris zone, it shows the zone name. For a physical machine or computer running in a public cloud, it shows *n/a*.

**Partition Virtual Processors**

Number of virtual processors that are assigned to the partition on which the BigFix agent is installed. The value is used in further calculations when the endpoint works in the uncapped mode. Available only for AIX. For other operating systems, the column shows *no data*.

**Path**

Installation path of the software that was discovered on the computer or where the `.slmtag` file was discovered.

**Permissions**

Permissions that are assigned to the particular role. Permissions define which reports and panels the user who is assigned a particular role can view or edit. For more information, see: [Roles \(on page dxc\)](#).

**Peak Date**

Indicates the date of license metric peak value for the reporting period.

**Physical Shared Pool Cores**

Number of processors that work in the shared mode.

**Platform Name**

Name of the platform on which the software is discovered by means of the particular signature.

**Predefined End of Support**

Indicates whether the end of support date was provided by IBM or was specified manually by a user.

**Present**

Indicates whether the component instance is currently installed.

**Private**

Indicates whether the saved report view can be used only by its creator or by other users as well.

**Process Name**

Name of the process on which the calculation of software usage is based. See also: [Monitoring and reporting software usage \(on page cmxci\)](#)

**Processor**

Details of the processor.

**Processor Brand String**

Full specification of the processor including its brand, model and speed as read from the computer operating system.

**Product Definition Source**

Specifies the entity that provided the product definition. From application update 9.2.9, this column replaced the [Software Catalog column \(on page mxcviii\)](#).

**Product Name**

Name of the product with link to calculation details. See also, [All Metrics \(on page mlxv\)](#)

**Product Publisher Name**

Name of the publisher of a product that a software instance is assigned to. The column is empty if no product assigned.

**Product Version**

Version of the software product. **10.0.11** In case it is template-derived software, the product version is '\*'.

**Provider**

Provider of the software catalog.

**Publisher**

Name of the company that published the software item.

**Publisher Definition Source**

Specifies the entity that provided the publisher definition. From application update 9.2.9, this column replaced the [Software Catalog column \(on page mxcviii\)](#).

**Publisher Name**

Name of the company that published the software item.

**10.0.12** Search parameter to filter All Contracts report. The parameter is not be visible as columns on the report.

**Purchase Order**

A set of information about purchased software.

**PVU per Core**

Number of processor value units that are assigned to a processor core on a computer system. By default, the value is taken from the PVU table. It can also be manually set on the Hardware Inventory report. For more information, see: [Changing the PVU per core value \(on page mcdxxiv\)](#). See also: [Changed PVU per Core Value \(on page \)](#).

**PVU Full Capacity**

Number of processor value units that are used by a product that is installed on the server.

**PVU Subcapacity**

Number of processor value units that are used by a product that is installed on the server partition.

**PVU Subcapacity Limit**

Total count of processor value units for the server on which the product is deployed, counted at the time when subcapacity is maximum. Maximum subcapacity is when the number of cores that are used by the product is the highest.

## R

**Rank**

The position of a file in the ranking of 1000 files that are most commonly encountered in your computer infrastructure but do not produce matches for any signature.

### Recognized

Indicates whether the package data or file was recognized as part of an existing signature. **10.0.4**

Recognized column is the primary option as **Cause Detection** column has been removed since BigFix Inventory version 10.0.4.

### Release

Release of the software product.

### Release Definition Source

Specifies the entity that provided the release definition. From application update 9.2.9, this column replaced the [Software Catalog column \(on page mxcviii\)](#).

### Resource Utilization Scan

Indicates whether the resource utilization scan is a part of the scan schedule configured directly from BigFix Inventory.

### Reported Since

Date and time when the package or file was discovered for the first time.

### Reputation

Indicates whether the file is a malware threat. Possible values:

- <n/a> is when SHA-256 checksum is not collected.
- <no data> is when the Tool for Reporting File Reputation is not installed.
- <No threat> is when the file is not classified as a security threat.
- <No reputation> is when the classification was done but the type of reputation is unknown.
- <Threat> is when the file is classified as a security threat. This value is a link which directs you to IBM X-Force Exchange website that contains details about the hash reputation. To see the information you must log in using your IBMid.

### Reputation Details

Indicates the type of a threat. Possible values:

- Trojan
- Downloader
- Spyware
- Backdoor
- Rootkit
- Ransomware
- Bot
- Adware

- Worm
- Unwanted
- Virus
- Miner

**Reputation Import**

The date when the reputation was updated in BigFix Inventory.

**Reputation Update**

The date when the reputation was updated in the reputation data source.

**Roles**

Roles that the user is assigned.

## S

**Scanning Shared Disks**

Indicates whether shared disks were scanned during the last software scan.

**Server Active Sockets**

Number of physical processor chips that are mounted on the server.

**Server Cores**

Number of processor cores that are used by the server.

**Server ID**

Identifier of the server. The format of the identifier is specified by the **managedServerTagTemplate** parameter for hosts from which data is collected by the VM Manager Tool or by the Run Capacity Scan on Virtualization Hosts fixlet or by the **standaloneServerTagTemplate** parameter for the remaining hosts. For more information about the parameters, see: [Advanced server settings \(on page dccc1\)](#).

**Server Model**

Model of the server.

**Server Name**

A unique system in the enterprise. For a physical machine, it is the hardware manufacturer, type, and a machine serial number. For a virtual machine, it is the manufacturer and host name. For a virtual machine with an incomplete definition, it is a UUID that is prefixed with `TLM_VM_`.

A unique system in the enterprise.

- If the computer is a physical machine, the Server Name column shows the hardware manufacturer, type, and a machine serial number.
- If the computer is a virtual machine, the Server Name column shows the manufacturer and host name of the physical host.

- If the computer is a virtual machine for which a VM manager is not configured, the Server Name column shows a UUID assigned by prefixed with `TLM_VM_`.
- **10.0.0** The serial number of the physical host with zCX (System Z Container Extensions) is followed by the `for zCX` suffix. For example, for CEC with z/VM guest and zCX hypervisor, the serial numbers will be `123456` and `123456 for zCX` respectively. The distinction is related to the different pricing rules established for zCX. For more information, see [Virtualization Capacity License Counting Rules](#).

### Server Serial Number

Serial number of the server.

### Server Type

Type of the server.

### Server User Name

Name of the user that is used to connect to the BigFix server.

### Server Vendor

Vendor of the server.

### SHA-256

SHA-256 checksum calculated for a file. Checksums work as fingerprints of files, and can be compared to checksums of known virus signatures to recognize whether files were altered or tampered with. They are used to ensure file integrity and safety in advanced security scenarios.

### Shared

Indicates whether a component instance is shared between multiple products.

### Shared Disk Type

Type of the shared disk.

### Shared Mode

Indicates whether the logical partition works in the shared mode. Available only for AIX. For other operating systems, the column shows *no data*.

### Shared Pool ID

Identifier of the shared processor pool.

### SID

Unique name of the Oracle Database instance.

### Signature Creation

Date and time when the signature was created.

### Signature Definition Source

Specifies the entity that provided the signature. From application update 9.2.9, this column replaced the [Software Catalog column \(on page mxcviii\)](#).

**Signature ID**

Identifier of the signature.

**Signature Modification**

Date and time when the signature was last modified.

**Size**

Size of the file in bytes.

**Software Catalog**

Software catalog that contains the signature for the software item. Starting from application update 9.2.9, the Software Catalog column is substituted with the following columns:

- [Component Definition Source \(on page mlxxix\)](#)
- [Product Definition Source \(on page mxccii\)](#)
- [Publisher Definition Source \(on page mxcciv\)](#)
- [Release Definition Source \(on page mxccv\)](#)
- [Signature Definition Source \(on page mxccvii\)](#)
- [Version Definition Source \(on page mcccii\)](#)

**Software Component**

Name of the software component.

**Software Contracts**

A set of information about a software license for a product, the product type, cost, amount of purchased license metrics, and the entitlement period. When a contract is assigned to a computer group, it indicates which computers the license is distributed to.

**Software ID**

Identifier of the software to which the modification applies.

**Software Identification Tags Scan**

Indicates whether the software identification tags scan is a part of the scan schedule configured directly from BigFix Inventory.

**Software Level**

Specifies the version, release, and modification number of a software item.

**Software License**

A legal instrument governing the use or redistribution of software.

**Software Name**

Name of the software product.

**Software Product**

Name of the software product.

**10.0.12 Software Product Name**

Search parameter to filter All Contracts report. The parameter is not be visible as columns on the report.

**Software Release**

Release of the software product.

**Software Tags Scan Successful**

Indicates whether the last software tags scan was successful.

**Software Version**

Version of the software product.

**Start Date**

Date and time when the scan that was configured directly from BigFix Inventory was run for the first time.

**Start Time**

Date and time when the import of data started.

**Status**

- On the Data Imports panel, the column indicates whether the import succeeded or failed. For more information, see: [Import logs \(on page mcdxii\)](#).
- On the Hardware Inventory report, the column indicates whether data from a hypervisor is available.
- On the Metric Table Upload panel, the column indicates whether the uploaded PVU table was already imported to BigFix Inventory or is still pending.
- On the Part Numbers Upload panel, the column indicates whether the uploaded part numbers file was already imported to BigFix Inventory or is still pending.
- On the Scan Configurations panel, the column indicates the status of the scan that was configured directly in BigFix Inventory .
- On the Software Catalog panel, the column indicates whether the software catalog was already imported to BigFix Inventory or is still pending.

**System Model**

Name of the hardware system or virtualization technology that is discovered by the agent.

**Suppressed**

Indicates whether the component is currently suppressed from the inventory.

## T

**Threshold**

The maximum number of metric units that a product is entitled to use within a computer group. The value is set manually and is used to calculate the metric threshold delta.

**Threshold Delta**

It is calculated by subtracting the metric quantity from the threshold. If license utilization is lower than or equal to the threshold, the delta is displayed in green. Otherwise, it is displayed in red.

**Time Range From**

Start time of calculation period for given computer group.

**Time Range To**

End time of calculation period for given computer group.

**Top-level Directory**

Indicates whether the shared disk is a top-level directory in the shared disk structure.

**Total Acquisition Cost**

On the Computer Groups report, it is the total cost of purchasing licenses for software items in the computer group. On the Inventory Exploration report, it is the cost of purchasing licenses for software items by a particular vendor.

**Total Components**

Number of components of software products that are listed in the catalog.

**Total Licenses**

Number of licenses for the particular software product that are available. If the product is licensed per computer, the number of computers that are entitled to use the product is provided. If an unlimited number of products can be deployed under the particular license, the column includes the abbreviation ELA (Enterprise Licensing Agreement). Higher-level users can define a contract that applies to a broad group. If lower-level users view a contract usage report that is defined in such a way, they see the larger total number of licenses for the product. However, when the lower-level users view the list of instances, they see only those instances of the product for which they have permissions.

For example, a global administrator defines a contract for 5000 instances of Lotus Notes, out of which 3500 instances are used. A lower-level user has an infrastructure that consists of 100 computers. The user is entitled to 100 instances of Lotus Notes, but only 70 instances of the product are used. If the global administrator makes the contract viewable to the lower-level user, the user sees that 3500 instances of Lotus Notes out of 5000 available instances are used. However, when lower-level users view the list of instances that are pertinent to their computer group, they see only the numbers that reflect the use of licenses in their computer group. The report shows 70 used instances of Lotus Notes out of 100 instances available under the particular license.

**Total Maintenance Cost**

On the Computer Groups report, it is the cost of maintaining all software items in the computer group.  
On the Inventory Exploration report, it is the cost of maintaining software items by a particular vendor.

**Total Publishers**

Number of software publishers that are listed in the catalog.

**Total Releases**

Number of releases of software products that are listed in the catalog.

**Total Runs**

Number of times a software item or process was started. See also: [Monitoring and reporting software usage \(on page cmxci\)](#)

**Total Run Time**

Indicates how long the software item or process was running. See also: [Monitoring and reporting software usage \(on page cmxci\)](#)

**Total Signatures**

Number of signatures that are listed in the catalog.

**Total Software Products**

Number of software products that are listed in the catalog.

**Total Versions**

Number of versions of software products that are listed in the catalog.

**Type**

- On the Computer Groups report, the column indicates whether the type of the group is Reporting or Software Template. For more information, see: [Setting up computer groups \(on page dx cvi\)](#).
- On the Metric Custom Fields panel, the column indicates the type of the custom field. For example, boolean or string.
- On the Inventory Exploration report, it indicates whether the displayed item is a publisher, software product, version, release, or component.
- On the Package Data report, it is the type of the package management system.
- On the VM Managers panel, the column indicates the type of the VM manager.
- On other reports, it is the type of the processor according to number of cores.

**U****Unique User ID**

An identifier of a user who currently uses or registered a software program. It is a specific ID that is assigned to one user only, and can either be an e-mail, first name, last name, initials or a random string.

**10.0.15 Uninstall Supported**

Identifies software instances for which minimum criteria for automatic uninstallation are met.

**Unknown Use**

Number of software instances for which use is not monitored. These instances are grouped based on the columns defined or selected by the user in the report view.

**Unused**

Number of software instances that were not used and that are grouped based on the columns defined or selected by the user in the report view.

**Unused in the Last Month**

Number of software instances that were not used within the last month and that are grouped based on the columns defined or selected by the user in the report view.

**Unused in the Last Quarter**

Number of software instances that were not used within the last three months and that are grouped based on the columns defined or selected by the user in the report view.

**Unused in the Last Week**

Number of software instances that were not used within the last seven days and that are grouped based on the columns defined or selected by the user in the report view.

**Unused in the Last Year**

Number of software instances that were not used within the last year and that are grouped based on the columns defined or selected by the user in the report view.

**Uploaded At**

Date and time when part numbers file, the PVU table, or the software catalog was uploaded to BigFix Inventory.

**Uploaded By**

User who uploaded the part number file, PVU table, or the software catalog. The value SYSTEM means that the PVU table, or the software catalog was automatically provided with BigFix Inventory.

**URL**

URL to the VM manager.

**Used**

Number of software instances that were used and that are grouped based on the columns defined or selected by the user in the report view.

**Used in the Last Month**

Number of software instances that were used within the last month and that are grouped based on the columns defined or selected by the user in the report view.

**Used in the Last Quarter**

Number of software instances that were used within the last three months and that are grouped based on the columns defined or selected by the user in the report view.

**Used in the Last Week**

Number of software instances that were used within the last seven days and that are grouped based on the columns defined or selected by the user in the report view.

**Used in the Last Year**

Number of software instances that were used within the last year and that are grouped based on the columns defined or selected by the user in the report view.

**User Group Name**

Specifies the source of the information related to software users.

**User Name**

- Name of the user who created the custom report view.
- On the Users panel, it is the name of the user.
- On the Data Imports panel, it is the name of the user who ran the import.

## V

**Value Type**

Type of the parameter value. For example, boolean or string.

**Vendor**

Vendor of the processor or of the software that is installed on the computer.

**Version**

Version of an item. It depends on the report on which the column is displayed.

**Version Definition Source**

Specifies the entity that provided the version definition. From application update 9.2.9, this column replaced the [Software Catalog column \(on page \*mxcviii\*\)](#).

**Virtual Shared Pool Cores**

Number of active processor cores in the virtual shared pool.

**Vulnerability Risk (Preview)**

Lists Common Vulnerabilities and Exposures matched with a given software component. The column can contain multiple values that are displayed after expanding.

## W

**Website**

Website of the software publisher.

Y

### Your Next Scheduled Export

Date and time when the saved report will be sent to the recipients that you specified in the schedule.

The column does not contain sending dates scheduled by other users.

## Adding and removing tags

**9.2.14** Available from 9.2.14. BigFix Inventory allows you to tag certain elements on the reports. You can tag software components, and whole report rows and thus mark them to meet your individual business needs.

 To perform this task on the Software Components report, you must have the View Software Catalog and Signatures and Manage Catalogs permissions.

 To perform this task on the Software Classification panel, you must have the View Endpoints and Manage Software Classification permissions.

Tagging software components, and whole report rows might be used to differentiate the specific kind of software components, or the discovered software. It can help you group items according to their importance, specificity, type or use. You can tag the following report elements:

- Software components on the Software Components report.
- Individually discovered instances of software on the Software Classification panel.

### Adding tags

1. In the top navigation bar, click **Reports** and choose the relevant report.
2. Select one or more rows for which you want to add tags



**Note:** On the Software Components report, you can select up to a 100 rows at a time.

3. Hover over **Edit**, and click **Add Tags**.
4. List tags that you want to add for the selected components. You can select an existing tag or add a new one.
5. Click **Add Tags**.

The tags are visible on a relevant report.

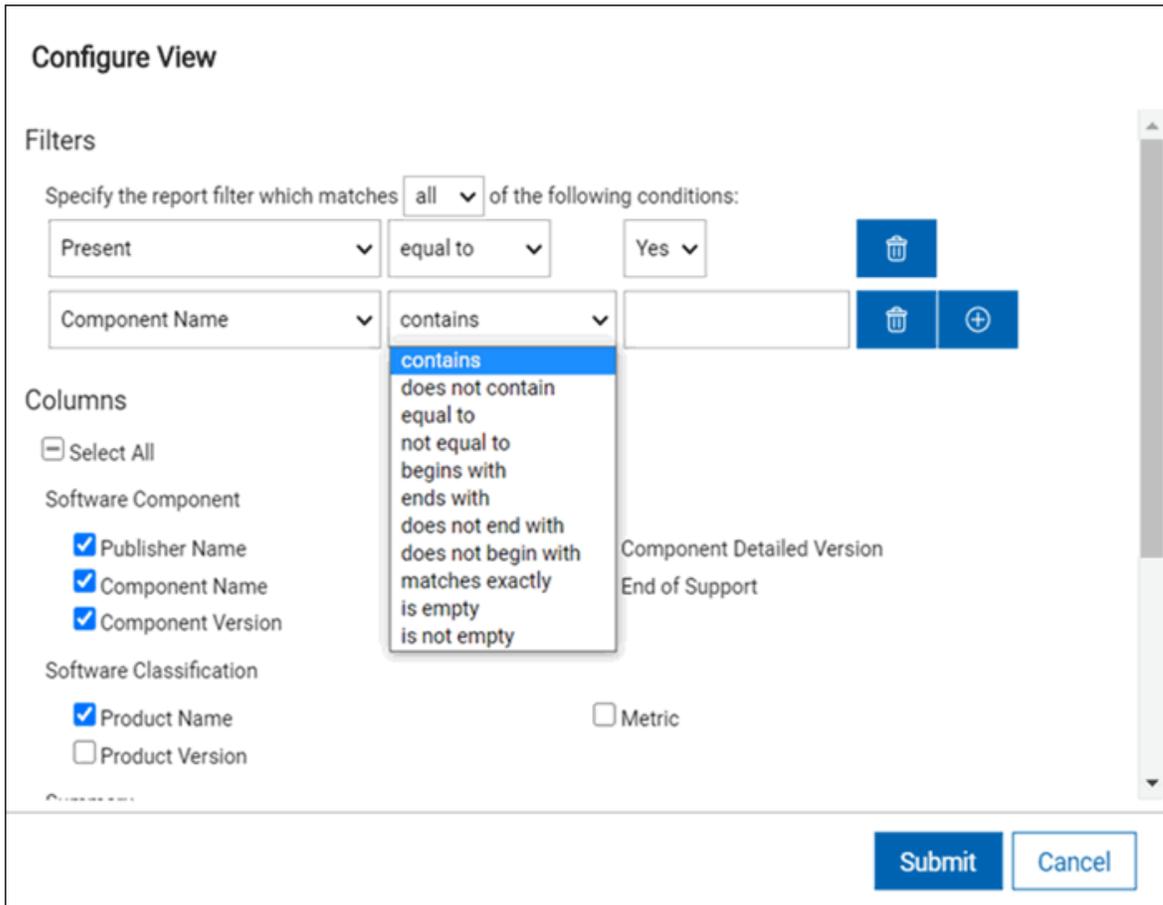
To remove tags, hover over **Edit**, and click **Remove Tags**. Select the tags and confirm by clicking **Remove Tags**.

## Applying report filters

The type and amount of information that is displayed on the reports is set by default. You can apply filters to narrow down the scope of the report to information that meets specific criteria.

1. In the top navigation bar, click **Reports** and open the report that you want to view.
2. To view the filtering options, in the upper right corner, hover over the **Configure** icon , and click **Configure View**.
3. **Optional:** If you want to add multiple filters, choose **all** or **any** to specify whether the items must match all filtering criteria or any of them.
4. Select the column by which you want to filter the report and the filter operator. Then, enter the value that you want to use as the filter.

Filter operators are available depending on the type of column by which you filter the report. All filter operators are enabled by default. Deselect the operators as required.



**Configure View**

**Filters**

Specify the report filter which matches  of the following conditions:

<input type="text" value="Present"/>	<input type="text" value="equal to"/>	<input type="text" value="Yes"/>	
<input type="text" value="Component Name"/>	<input type="text" value="contains"/>	<input type="text" value=""/>	 

**Columns**

Select All

Software Component

- Publisher Name
- Component Name
- Component Version

Software Classification

- Product Name
- Product Version

Metric

Component Detailed Version  
End of Support

does not contain  
equal to  
not equal to  
begins with  
ends with  
does not end with  
does not begin with  
matches exactly  
is empty  
is not empty

**Submit** **Cancel**

-  **Restriction:** When you use the **IP Address** operator and choose the **ends with** operator, no computers are displayed even if some computers match the criteria. To work around this issue, you can choose other relations, such as **contains** or **begins with**.

5. **Optional:** Below "Specify the report filter which matches all of the following conditions:", click on . Dropdown lists with the configurable parameters for the primary column name of the report appears.

- In the dropdown list, select **All of...** to group the configuration that apply to all selected parameters. Select further rows and dropdowns as required.
- In the dropdown list, select **Any of...** to group the configuration that apply to any of the selected parameters. Select further rows and dropdowns as required.

**Configure View**

Filters

Specify the report filter which matches **all** of the following conditions:

Computer Name contains

Data Source Groups  
 Shared Disks  
**Scan Data**  
 Computer  
 File Path  
 File Name  
 Size  
 File Version  
 First Detected  
 MD5  
 SHA-256  
 Recognized  
**File Reputation (Preview)**  
 Reputation  
 Reputation Details  
 Reputation Update  
 Reputation Import

test OS  
 CPU  
 Free Space on System Drive  
 imageID  
 imageFQN  
 BFI Capacity Scan - Serial Number value as-is  
 Internal Computer ID  
 Data Source Computer ID

**All of...**  
**Any of...**

**Submit** **Cancel**

6. **Optional:** To add another filter, click on the plus icon.

**i** **Tip:** To delete a filter, click on the trash icon.

7. Click **Submit**.

## Exporting reports to a file

If you need a hard copy of a report that is generated in BigFix Inventory you can export the report to a **CSV** or **PDF** file. You can also use the **CSV** file to create charts and statistics that are based on the information from the report.

1. In the top navigation bar, click **Reports** and select the report that you want to view.
2. Optional: You can customize the report before export. To specify the required filters and columns, hover over **Configure**, and click **Configure View**. To display all columns on the report, select the **Select All** check box in the Columns section.

3. To export the report to a file, hover over **Export**, and click **PDF** or **CSV**.



**Note:** If your reports are not displayed correctly, see: [User interface problems \(on page mcccclxxxvi\)](#).

#### 9.2.15

Starting from application update 9.2.15, the file name consists of the predefined or custom report name, the default report name, and the time stamp. For example: `My_Custom_Report-software-classification-20190215085933.csv`.

## Creating saved report views

Saved report views are derived from base reports and provide quick access to information that you use frequently. Some saved report views are delivered with BigFix Inventory and are available for you immediately. You can also specify filters and parameters of any report and create your own saved report views.

Three types of saved reports are available.

Type	Description	Can be sent to specified recipients	Can be set as a default view	Can be modified
<b>9.2.4</b> Predefined	Reports that are delivered with BigFix Inventory.	Yes	Yes	
My Reports	Reports that you created.	Yes	Yes	Yes
Other Reports	Reports that were created by other users and marked as public.	Yes		

1. In the top navigation bar, click **Reports** and choose the report for which you want to create a custom view.
2. To customize the report view, hover over the **Configure** and click **Configure View**. Add or remove columns and apply filters, then click **Submit**. Resize and sort the report columns by clicking and dragging.
3. To save the report, hover over **Configure** icon , and click **Save As**. Specify the name of the report. You can also choose one of the following options:
  - If you do not want other users of BigFix Inventory to view your custom report, select **Private**.



**Note:** The Administrator can view and delete reports that are marked as private.

- If you want the custom report to be your default view for the particular report, select **Set as default**.



**Tip:** If the Administrator set a customized view as global default for a particular report, you can overwrite this setting by creating your default view. Your settings take precedence over the global settings.

- If you want the custom view to be the default report view for all users of BigFix Inventory, select **Set as global default**. You must be an Administrator to perform this task.

All types of saved reports can be accessed from the **Saved Reports** panel or from a dropdown list on the base report from which the saved report was created.

## Deleting saved report views

To delete a saved report view, select the report from the list of all saved reports, and click **Delete**.

1. To open the list of all saved reports, click **Reports > Saved Reports**.
2. Select the report that you want to delete.
3. In the upper left corner, click **Delete**.

## Changing the default report view

To change the default view that you set for a particular report, you must first clear the settings and then set the new custom view.

1. To open the list of all saved reports, click **Reports > Saved Reports**.
2. Open the report for which you want to edit or change the default customized view.
3. Clear the **Set as default** or **Set as global default** check box, and click **Save**.
4. Open the report for which you want to change the default view and customize it according to your needs.
5. Hover over the **Configure View** icon , and click **Save As**. Specify the report name, and select **Set as default** or **Set as global default**. Click **Create**.

## Scheduling report notifications

You can configure report notifications to be sent to a list of recipients regularly or when a specific number of items appears on a report. For example, when the number of computers that have not reported to BigFix Inventory within the last seven days exceeds five. Thanks to the automatic notifications, you are always up-to-date with changes in your environment.

## Configuring the server to send mail notifications

To be able to schedule report notifications, you must first configure the BigFix Inventory server to send mail notifications.



You must be an Administrator to perform this task.

1. Log in to BigFix Inventory.
2. In the top navigation bar, click **Management > Mail Settings**.
3. Specify the SMTP server to which you want to have the email notifications sent.



**Important:** The SMTP port must be open for communication with BigFix Inventory.

4. Choose the port through which you want to have the email notifications sent.
5. **Optional:** To have the email encrypted, select **Use STARTTLS**.

6. Specify the domain through which you access the BigFix server.
7. Choose the authentication method.
8. In the **From address** field, specify the address that is displayed as the sender of the email.
9. **Optional:** To check whether you correctly configured mail settings, click **Send Test Email**.
10. To save the configuration, click **Save**.

You can now schedule report notifications to be sent automatically.

## Scheduling report emails

You can schedule reports to be emailed to the specified recipients. This option is especially useful if a person does not work with BigFix Inventory, or is not familiar with the application, yet must have access to the reports.

Ensure that the BigFix Inventory server is configured to send mail notifications.

1. Open the report that you want to email, hover over **Export**, and click **Schedule Export**.

### **Important:**

Reports that you want to email must be saved before they can be sent. You can either save the report without changing its default view or create a customized view. You can set only one schedule per a saved report. If you try to set a next schedule, it replaces the previous one. For more information, see: [Creating saved report views \(on page mcvii\)](#).

2. Select the file format and adjust the page settings.
3. In the **Email** field, enter a comma-separated list of email addresses to which you want to send the notifications.
4. Select the language of the report.
5. Select at least one option for emailing the report:

- **Email on a regular basis**

The report is emailed according to a daily, weekly, or monthly schedule.



**Note:** The start time for each report must differ by at least 5 minutes.

- **9.2.3 Email if the number of rows exceeds**

The report is emailed only if a specific number of rows is exceeded. You can customize a report to show only products for which PVU exceeds a particular value. You will be notified whenever the specified number of items appears on the report. This option is an additional notification and does not affect the regular schedule.



**Note:** Reports based on conditions are emailed during data imports.

## Schedule Export ✕

Report Subscription

Format\*

Page Size

Orientation

Portrait  
 Landscape

Email\*   
Separate multiple recipients with a comma.

Language\*

Email on a regular basis:

Start Time

Frequency

Every  day(s)

Email if the number of rows exceeds:

**Save**

6. Click **Save**.

**9.2.15** Starting from application update 9.2.15, report file names, including report files that are scheduled to be emailed, follow a new naming convention. The file name consists of the predefined or custom report name, the default report name, and the time stamp. For example: `My_Custom_Report-software-classification-20190215085933.csv`.

Additionally, the email subject contains the name of the predefined or custom report. For example: Scheduled Report 'My Custom Report' from BigFix Inventory.

To disable the export schedule, clear the **Report Subscription** check box and click **Save**.

## Difference between Web Reports and BigFix Inventory software discovery results

This topic explains the reason behind the difference between Web Reports and BigFix Inventory software discovery results.

Web Reports (BES Inventory and License) and BigFix Inventory use different methods to discover software. The time of capturing the details might be different too. This results in the difference between discovery results shared by Web Reports and BigFix Inventory.

The Web Reports (BES Inventory and License) runs number of analyses included in BES Inventory and License site, which create a list of:

- Install / Uninstall programs
- Services
- Package registry
- Basic hardware information

BigFix Inventory performs a complete file system scan, complete registry scan, and complete hardware scan, including virtualization capacity. BigFix Inventory uses BigFix Inventory Software Catalog which contains thousands of software discovery signatures, component definitions and their relations to software products, and a number of product bundling information and licensing data.

BigFix Inventory is dedicated solution for Software Asset Management, whereas Web Reports (BES Inventory and License) is a demonstration of BigFix Platform capabilities and it includes set of analysis using BigFix inspectors to gather data from your environment. BigFix Inventory discovers software based on defined signatures, even if the signatures does not appear in the install registry (the reason the software only copied and not correctly installed). BigFix Inventory supports industry standard ISO tags as well.

Below table shows the results for BES Inventory and License site analysis “Application Information (Windows)” – property “Installed Applications – Windows” and BigFix Inventory

Parameter	Installed Applications – Windows	Mapping to BigFix Inventory
Source of data	Several Keys of Windows Registry including: <b>HKEY_USERS</b> hive	Majority of entries will overlap with Package Scan available through Package Data. Due to different source there will be differences.  <b>HKEY_USERS are not included in Package Data listing to work in-line with BFI Scanner (CIT).</b>
Optimized For	Actuals Only	Software Installation Tracking
Execution Time	<b>Daily</b>  Evaluated once a day and reported to server	<b>Weekly</b>  Gather according to set up of <i>Initiate Software Scan</i> action and then refreshed daily. So, data might appear next day in BigFix Platform. After re-

Parameter	Installed Applications – Windows	Mapping to BigFix Inventory
	Scan & Transfer: 2022-03-11 01:00 PM	<p>vealing in BigFix Platform it is picked up by BigFix Inventory Data Import.</p> <ul style="list-style-type: none"> <li>• Scan: 2022-03-11 01:00 PM</li> <li>• Transfer: 2022-03-12 10:00 AM</li> <li>• Data Import: 2022-03-12 11:00 PM</li> <li>• Available to user in BFI: 2022-03-13 06:00 AM</li> </ul>

## Enterprise applications inventory

Software components are discovered during software scans. The scans correlate data that is collected from the computers with the content of the software catalog, and thus determine whether a component is installed. However, software scans do not discover details of some enterprise applications, for example licensable options of Oracle Database or editions of Microsoft Exchange. The details are discovered by dedicated fixlets. If you are interested in discovering additional details of enterprise applications, run the dedicated fixlets apart from scheduling software scans. Otherwise, running the fixlets is not required.

Software identification tag files for enterprise applications are stored in the following directories:

- `BESClient/LMT/ORACLE`
- `BESClient/LMT/SAP`
- `BESClient/LMT/MS/exchange`

The software identification tag path that is provided in BigFix Inventory shows the product installation path, and the tag name.

### 9.2.9

Starting from application update 9.2.9, the software identification tag path and installation path are shown separately on condition that the paths are different and the tag contains information about the installation path. Paths to software identification tags discovered before version 9.2.9 might also be updated after the upgrade on condition that sufficient data is available.

## Discovering Microsoft SQL Server Edition

It is important to discover an edition of Microsoft SQL Server for measuring the license utilization. When components of SQL Server are installed on Windows, the installer of SQL Server does not put information about edition of this product in the Windows Uninstallation Registry. **Initiate Software Scan** fixlet collects the edition information from Windows Server configuration stored in Windows Registry. This edition information is added into Windows Package information available in BigFix Inventory and used by signatures for Microsoft SQL Server components.

## Extended discovery of Oracle Database

You can retrieve granular information about the edition (Standard or Enterprise), options, Management Packs (including Oracle Real Application Cluster, RAC), and user concurrent sessions of Oracle Databases that are deployed in your environment. When you combine this information with the collected hardware inventory data, you can use it to calculate the demand for Oracle Database licenses. The functionality is supported for Oracle Database versions 11.2, 12.1, 18.3, 19.0, and 21.0

**10.0.15** Starting from version 10.15.0, BigFix Inventory supports the feature of collecting audit information for Oracle Java. For more information, refer to Collecting Oracle Measurements Data.

**11.0.0.0** Starting with version 11.0.0, BigFix Inventory introduces a new way of constructing Oracle Database inventory reports. It does not require external scripts, is more accurate and faster. This solution is based on Oracle Measurements and employs **Get Oracle Database Measurements** task.

**Table 178. Discovered versions and editions of Oracle Database**

Oracle Database version	Edition	Supported operating systems	Offering type
<b>10.0.11</b> 21c	Oracle Database Standard Edition and Oracle Database Enterprise Edition	Oracle Database is discovered on the following operating systems. <ul style="list-style-type: none"> <li>• AIX</li> <li>• Linux</li> <li>• Windows</li> <li>• Solaris</li> </ul>	On-premises
<b>10.0.11</b> 19c			
<b>9.2.15</b> 18c			
12c			
11g			



**Note:** BigFix Inventory supports Oracle Database Standard Edition and Oracle Database Enterprise Edition. Other editions for example, Oracle Database Cloud Service Enterprise Edition - Extreme Performance are not supported.

## Coverage of Oracle licensable options

Check which options can be discovered for a particular version of Oracle Database. The options are discovered by the official Oracle SQL auditing script.



**Table 179. Coverage of Oracle licensable options (continued)**

Licensable Options for the Enterprise Edition of Oracle Database	10.0.11	10.0.11	9.2.15	11g		11g	Oracle SQL script coverage
	21c	19c	18c	12c R1	R2	R1	
Oracle Provisioning and Patch Automation Pack					Yes	Yes	Yes
Transparent Gateways							
Oracle Cloud Management Pack for Oracle Database							
Oracle Data Masking Pack for Oracle and Non-Oracle Databases	Yes	Yes		Yes			Yes
Oracle Database Lifecycle Management Pack for Oracle Database	Yes	Yes					
In-Memory Database Cache							
Oracle TimesTen Application-Tier Database Cache	Yes	Yes		Yes			

## Discovering usage of Oracle Database features

To retrieve detailed information about Oracle Database editions, options, and management packs that are used in your infrastructure, either **Get Oracle Features** fixlet or **11.0.0.0** **Get Oracle Database Measurements** fixlet can be used. When the information is imported to BigFix Inventory, it is displayed on the Oracle Databases report.

There are two options on how to gather the data:

- **11.0.0.0** For Linux, AIX, and Solaris endpoints, the **Get Oracle Database Measurements** fixlet provides accurate information.
- Distribute the Oracle reporting script to the relevant endpoints and run the **Get Oracle Features** fixlet. **Get Oracle Features** fixlet will be marked as deprecated in the next release.

The rest of the section refers to the **Get Oracle Features** functionality.

The discovery of Oracle Database editions, options, and management packs is based on the use of one of the Oracle scripts: `options_packs_usage_statistics.sql` or `ReviewLite.sql`. The `options_packs_usage_statistics.sql` script should be used by default. Both scripts retrieve information about the usage of Oracle features.

The task establishes an Oracle database connection as an Oracle instance owner. This username is configured as 'oracle'. To check the name of the instance owner user, run the following command:

```
ps -ef | grep 'ora_pmon_'
```

Ensure that this user has the Oracle `SYSDBA` privilege.



**Note:** BigFix Inventory supports `ReviewLite.sql` 17.1 and higher. Certification was performed on version 17.1 and 17.2.

The `ReviewLite.sql` script is used mostly in case of an audit, review, or contract renewal. It additionally gathers data that might be required by the Oracle License Management Services (LMS) and uploads it to the BigFix server. The `ReviewLite.sql` script produces the `options.csv` file which might contain data that is not entirely accurate and require confirmation from Oracle LMS. Based on the `options.csv` file, BigFix Inventory might detect usage or potential usage of Oracle features.

When **Get Oracle Database Measurements** is used in fixlet baseline, it would have preselected instance owner home and `ReviewLite.sql` script.

**The following examples show the potential usage of Oracle features :**

- Potential use of Tuning Pack or Real Application Testing might be reported based on the data from SQL Tuning Sets. If they are contained in the results, the Tuning Pack or Real Application Testing license is required.
- Potential use of Diagnostic Pack might be reported based on `control_management_pack_access` data if the value of `control_management_pack_access` is `DIAGNOSTIC` OR `DIAGNOSTIC+TUNING`.

1. Choose the type of the Oracle script that you want to use to discover features of the used Oracle databases, and download it.

You can choose `options_packs_usage_statistics.sql` or `ReviewLite.sql`.

- If you choose `options_packs_usage_statistics.sql`, download the script from the [Oracle support website](#). If the script is not available under this link, refer to Oracle documentation specific to your version of the database for more information:
  - [Oracle Database 12c](#)
  - [Oracle Database 11g](#)



**Important:** To download the script, you must have a valid Oracle account. For any concerns, contact Oracle support.

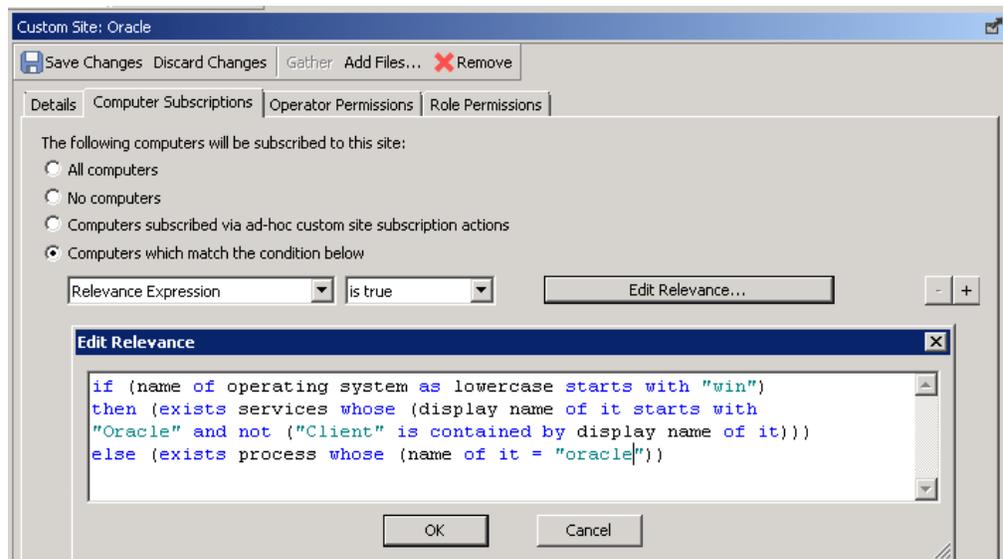
- If you choose `ReviewLite.sql`, you must have a valid Oracle account. It is recommended that you contact [Oracle License Management Services](#) to ensure good cooperation.
2. Propagate the downloaded script to all computers on which you want to discover usage of Oracle features. You can propagate the script in one of the following ways.

- Use the method of propagating files that is typical in your enterprise. Place the script in the following directory: `<BES Client>\LMT`.
- Add the script to the Master Action Site and send it to all computers in your enterprise.
  - a. In the top navigation bar of the BigFix console, click **Tools > Add Files to Site**.
  - b. From the drop-down list, choose **Master Action Site**.
  - c. Click **Browse** and go to the directory in which the script is located.
  - d. Select the script and click **Open**.
  - e. Select **Send to clients** and click **Add files**. The script is sent to all computers that are subscribed to the Master Action site.
- Create a custom site to which you subscribe computers on which you want to discover the used features. Then, add the script to this site and send it to the subscribed computers.
  - a. In the top navigation bar of the BigFix console, click **Tools > Create Custom Site**. Provide the name of the custom site that begins with "Oracle", and click **OK**.
  - b. Open the **Computer Subscriptions** tab, and subscribe computers on which you want to discover usage of Oracle features. For example, you can choose **Computers which match the condition below**, select **Relevance Expression, is true**, and provide the following relevance expression.

```

if (name of operating system as lowercase starts with "win")
then (exists services whose (display name of it starts with
"Oracle" and not ("Client" is contained by display name of it)))
else (exists process whose (name of it = "oracle"))

```



- c. In the top navigation bar of the BigFix console, click **Tools > Add Files to Site**.
- d. From the dropdown list, choose the custom site that you created.
- e. Click **Browse** and go to the directory in which the script is located.

- f. Select the script and click **Open**.
  - g. Select **Send to clients** and click **Add files**. The script is sent to all computers that are subscribed to the custom site.
3. To retrieve information about features of the used Oracle databases, log in to the BigFix console, and go to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**. Then, click **Get Oracle Features**.
  4. Choose the type of the Oracle script that you downloaded in step 1 ([on page mcxvi](#)).

If you choose `ReviewLite.sql`, read and accept the license agreement related to the Oracle script.

You can find the license terms in the script or you can print them to the console by running the following script on the Oracle database.

```
sqlplus <user_name>/<password> @ReviewLite.sql
```

When you print the license terms, you are asked whether you accept them. You can ignore this question as you confirm that you accept the terms by selecting **Accept License Agreement** in the **Get Oracle Features** task. By selecting this option, you also agree that BigFix will accept the script license on your behalf on all computers on which you run the **Get Oracle Features** task.

1. Choose the Oracle script that you want to use to discover the used Oracle features.
  - options\_packs\_usage\_statistics.sql  
This script should be used by default. You can download it from the [Oracle support website](#).
  - ReviewLite.sql  
This script is used mostly in case of an audit, review, or contract renewal. To obtain the script, contact the [Oracle License Management Services](#).

Read and accept the license agreement related to the script. To view the license, run the following script on the Oracle database:sqlplus <user\_name>/<password> @ReviewLite.sql

Accept License Agreement  
*When you accept the license agreement, you indicate that you read and accept the license agreement related to the Oracle script. You also agree that BigFix will accept the script license on your behalf on all endpoints on which you run this task.*

5. **Optional:** To enable debug logging, select **Debug mode**.

The information is logged in the `script_trace.txt` file. By default, the file is in the following location.

- **UNIX** `/var/opt/BESClient/LMT/ORACLE`
  - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\ORACLE`
6. **Optional:** On Unix endpoints, you can change the folder in which the temporary script used by the fixlet is created. By default, it is Oracle instance owner's default folder. In case there is a security policy in place which forbids keeping executable scripts in this folder, you can select a subfolder of `/tmp` folder.
  7. To run the task, click **Take Action**. On the **Target** tab, select computers from which you want to retrieve the information, and click **OK**.
  8. Ensure that software identification tags scan and upload of its results are scheduled. For more information, see: [Initiating software scans \(on page dcx\)](#) and [Uploading software scan results \(on page dcxvii\)](#).
  9. To make the data available in BigFix Inventory, wait for the scheduled import of data or run it manually.

Information about the used features is available on the Oracle Databases report. It is also included on the Software Installations report.

Additionally, raw output of the script is sent to the to BigFix server. It can be found in the following

directory: `<BigFix Enterprise>\BES Server\UploadManagerData\BufferDir  
 \shal\<last_2digits_of_computer_ID>\<computer_ID>\oracleresults_0_<computer_ID>(.zip/.tar.gz).`

**10.0.11** Starting from version 10.0.11, pluggable databases (CDB/PDB) can be distinguished. The below image shows the detected licensable options grouped by the database, on which they were detected. The image also shows the *theta* database instance, which has CDB root named `CDB$ROOT` and pluggable database `THETAPDB`. Databases without multitenancy are not renamed, such as *beta* database. Databases prior to version 12 are named after the name of the instance.



**Note:** **10.0.14** The 'Version' column is renamed to 'Release'. A new 'Detailed Version' column is available which shows the version details along with patch-level information.

Computer Name	Name	Release	Edition	Feature	SID	Install Path
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	11.2	Oracle Database - Enterprise Edition	<no data>	orclx11	/home/oracle/AIXdb/oracle/product/11.2...
BFIDEVWINKUNA1	Oracle Database	11.2	Oracle Database - Enterprise Edition	<no data>	orclx11	/home/oracle/AIXdb/oracle/product/11.2...
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Real Application ...	ODPUAT2	/a002/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Tuning Pack	OIPUAT2	/a001/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Real Application ...	OIPUAT2	/a001/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Diagnostics Pack	OIPUAT2	/a001/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Tuning Pack	OUPUAT2	/a001/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Real Application ...	OUPUAT2	/a001/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Partitioning	OUPUAT2	/a001/OBIA/ora/12.1.0.2
BFIdvAgalIn75.testoa.bes.oco	Oracle Database	12.1	Oracle Database - Enterprise Edition	Oracle Database Licensable Option - Diagnostics Pack	OUPUAT2	/a001/OBIA/ora/12.1.0.2

## Metering the number of Oracle Database concurrent sessions

To retrieve detailed information about the number of Oracle Database concurrent user sessions that run on the computers in your environment, use the Get Oracle Concurrent Sessions Number fixlet. When the data is imported to BigFix Inventory, it is displayed in the Resource Utilization report.

The task establishes Oracle database connection as the `LocalSystem` user on Windows, or as the database instance owner on Linux, AIX or Solaris. Ensure that this user has the Oracle `SYSDBA` privilege.

BigFix Inventory supports metering of Named User Plus license consumption. Run this task to retrieve information about the current number of concurrent sessions, and the high water mark value of concurrent sessions for Oracle Databases that are installed on the computers in your infrastructure. These values are individually retrieved for each database instance with the following SQL query.

```
SELECT sessions_highwater, sessions_current FROM v$license;
```

The database instance must be running when the task is executed. Otherwise, the values of high water mark, and current number of sessions equal 0 in the report. After you run this task, the data is collected on a daily basis by default, to preserve the high water mark value that is reset after each database instance restart.

For more information about the Oracle licenses, see: [Oracle Database Licensing](#).

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Get Oracle Concurrent Sessions Number**.
4. **Optional:** To enable debug logging, select the **Debug mode** check box.  
The information is logged in the `script_trace_sessions.txt` file that is, by default, in the following location.

**UNIX** `/var/opt/BESClient/LMT/ORACLE`

**Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\ORACLE`

5. **Optional:** On Unix endpoints, you can change the folder in which the temporary script used by the fixlet is created. By default, it is Oracle instance owner's default folder. In case there is a security policy in place which forbids keeping executable scripts in this folder, you can select a subfolder of `/tmp` folder.
6. To run the task, click **Take Action**. On the **Target** tab, select computers from which you want to retrieve the information, and click **OK**.
7. Ensure that the software scans are enabled, and run automatically. If not, [run the software scan \(on page dcx\)](#) manually. Select the **Resource Utilization Scan**.
8. Ensure that the scan results are automatically uploaded. If not, [upload the results \(on page dcxvii\)](#) to the BigFix server manually.
9. To make the data available in BigFix Inventory, wait for the scheduled import of data, or run it manually.

The retrieved data about the Oracle database concurrent sessions is listed in the Resource Utilization report. To view the data, log in to BigFix Inventory, and go to **Reports > Resource Utilization**.

Retention period for historical data is configured for 90 days.

Computer Name	Software Name	Metric Type	First Measured	Last Measured	Maximal Trend Value	Maximal Trend Value History 2016-10-17 - 2016-11-15
NC040211	Oracle Database - Standard Edition	SESSION_CURRENT	11/04/2016 01:00 AM	11/14/2016 04:29 PM	3	
NC040211	Oracle Database - Standard Edition	SESSION_HIGHWATERMARK	11/04/2016 01:00 AM	11/14/2016 04:29 PM	8	

## 10.0.11 Handling common situations with extended oracle discovery

BigFix Inventory version 10.0.11 offers improvements related to serviceability.

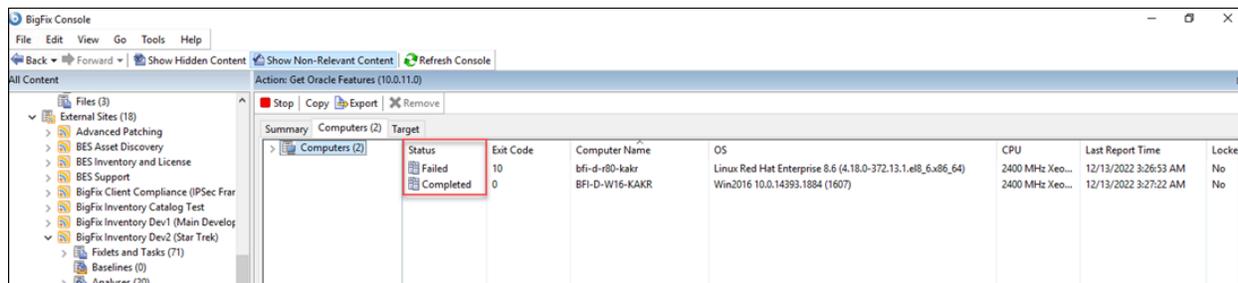
Fixlet execution ends up with an exit code in the 'Computers' tab for each endpoint on which it was executed. Each exit code represents a common probable situation.

The topic provides information about how you can handle those common situation:

- check the exit code
- check analysis results
- check logs on a machine or get them from Computer Support Data
- contact support (HCL or Oracle as per the need)

## Get Oracle Feature Fixlet results

When you activate the Get Oracle Feature fixlet, two types of results are received; Failed or Completed. The below image shows both the scenarios where some of the scan is complete and some have failed. The details, such as Exit code, computer name that were scanned, the operating systems, the CPU, last report time, etc, are also displayed.



## Exit codes

The Extended Oracle Discovery feature in BigFix Inventory exit codes which provide feedback about issues occurred when you run the scan for databases.

The below table lists the exit codes and their descriptions:

Exit code	Description
0 - Everything went fine	Configuration Management Pack
1 - Generic error	This is a generic error, which means there was some issue/problem which caused the program to exit.
2 - Misuse of Shell Built-in command	<p>Could be caused by incompatibility with older systems. Command options differ between operating systems.</p> <p>This error could be shown especially on older systems attempting to use the command option, which simply does not exist, but on a newer system.</p>
5 - Get Oracle Database Measurements	The generation of Oracle database inventory failed.
10 - Database querying problem	<p>Oracle Database error codes start with ORA- prefix, this code shows what happened. Refer to the Oracle website to view the list of error codes.</p> <p>The error could be thrown when the syntax of SQL queries changes, and the query could be incompatible with a newer database engine.</p> <p>Additionally, Oracle Database views change from release to release.</p> <p>Oracle databases could be in 4 states: started, mounted, open, and restricted.</p> <p>Only in an open state, all database views are available to query.</p>

Exit code	Description
	<p>When the auditing script tries to read these views, but the database is not open output files will have many errors:</p> <p>ORA-01219: database not open: queries allowed on fixed tables/views only</p> <p>Because of the inability to interpret data properly in that situation, the fixlet will exit with an error.</p>
11 - Cannot find output from database listing query	This could be shown on the windows operating system due to file permissions, fixlet is not able to save output files properly.
20 - SQL Plus failed at connecting to the database	<p>There might be a problem with the authorization or a direct problem with <code>sqlplus</code> command execution.</p> <p>Handling on the usage of <code>sqlplus</code> in this situation fails faster when a problem occurs.</p> <p>Database admin, for example, can forbid access for the service user which we are trying to use, this will appear as an authorization problem.</p>
30 - Cannot map a user to a system username	<p>On UNIX operating systems during the database recognition step, fixlet tries to use the security privileges user which started the database. This user is the service user used to access the Oracle database. For example, when the database process is executed in a container.</p> <p>On Solaris with Zones probably scan is executed in Global Zone, which will not be able to proceed when Oracle Database will be executed in Local Zones.</p> <p>BigFix Agent should be installed in the same Zone in which the Oracle Database process is executed.</p>
127 - A command couldn't be found	<p>On some command execution, the operating system checks PATH to find the binary, but it fails.</p> <p>For example, when a user has changed the PATH environment variable, there is nothing to point to.</p>

### Oracle Features Health Check fixlet results

To check whether the task completed successfully or to troubleshoot a problem, go to **Analyses**, right-click **Oracle Features Health Check**, and then click **Activate**. The analysis provides information about the type and version of Oracle script that was initiated through the Get Oracle Features fixlet. It also provides information about the time of

last execution of the fixlet, and its status: Success, Failure or Partial Success. If the status is Partial Success, the script was run successfully only on some Oracle instances on a given computer.

ID	Status	Name	Site	Applicable Computer Count	Activated By	Time Activated
2001	Activated Globally	Oracle Feature Health Check	BigFix Inventory Dev2 (Star Trek)	2	admin	11/22/2022 12:09:02 AM
5	Not Activated	Installed Windows Applications	BigFix Inventory Dev2 (Star Trek)	12		
7	Not Activated	Scanner Trace Settings	BigFix Inventory Dev2 (Star Trek)	24		
10	Not Activated	Application Usage Statistics	BigFix Inventory Dev2 (Star Trek)	24		
13	Not Activated	Environment Information	BigFix Inventory Dev2 (Star Trek)	4		
19	Not Activated	Scanner Information	BigFix Inventory Dev2 (Star Trek)	24		
22	Not Activated	Shared Disk Information	BigFix Inventory Dev2 (Star Trek)	0		
23	Not Activated	Status of Shared Disks Software Scan	BigFix Inventory Dev2 (Star Trek)	0		
32	Not Activated	Installed UNIX Packages	BigFix Inventory Dev2 (Star Trek)	12		
39	Not Activated	Detailed Hardware Information	BigFix Inventory Dev2 (Star Trek)	24		
55	Not Activated	Software Scan Status	BigFix Inventory Dev2 (Star Trek)	24		
56	Not Activated	File Checksums Collection Settings (MDS/SHA-256)	BigFix Inventory Dev2 (Star Trek)	24		
57	Not Activated	Additional Properties of Windows Executables Collection Settings	BigFix Inventory Dev2 (Star Trek)	12		
60	Not Activated	(Deprecated) LMT/TADAD 7.x Agent Mapping	BigFix Inventory Dev2 (Star Trek)	24		

Description	Details	Results	Applicable Computers (2)
Oracle Feature Health Check	Oracle Output ...	Oracle Files	Oracle Script
	Oracle Output ...	Oracle Files	Oracle Script
	Oracle Output ...	Oracle Files	Oracle Script

Computer Name	BigFix Client F...	Oracle Output ...	Oracle Files	Oracle Script	Oracle Script V...	Last Oracle Script exec...	Last Oracle Script successful ...	Status of Oracle Sc...	Oracle Sc...
bfi-d-850-kakr	/var/opt/BESClient/Program Fil...	True	<multiple resu...	Review.Lite.sql	No information	2022-11-24 13:08:48 UTC	2022-11-24 13:10:49 UTC	Success	True
BFI-D-W16-KAKR	C:\Program Fil...	True	<multiple resu...	Review.Lite.sql	No information	2022-11-24 17:05:27UTC	2022-11-24 17:06:18UTC	Success	True

## Obtain Get Oracle Feature Fixlet logs

You can obtain the fixlet logs in the below location:

- **UNIX** `/var/opt/BESClient/LMT/ORACLE`

The fixlets logs are available in the `oracle.log` file. When debug mode is enabled more detailed information is saved in same file.

- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\ORACLE`

The fixlets logs are available in the `oracle.log` file. When debug mode is enabled, the debug pieces of information are saved in `script_trace.txt`.

For more information on obtaining logs, refer to [Collecting logs for troubleshooting purposes \(on page mccccxxviii\)](#).

## Discovering Microsoft Exchange edition

**9.2.6** Available from 9.2.6. To retrieve detailed information about Microsoft Exchange servers that are installed in your infrastructure, run the **Get Microsoft Exchange Edition** fixlet. The data is collected, imported to BigFix Inventory, and displayed in the Software Installations report.

The discovery of Microsoft Exchange edition is only applicable to the computers with the Microsoft Exchange server installed. The server does not need to be running during this task.

The following Microsoft Exchange versions are supported: 2007 (only 64bit version), 2010, 2013, 2016. The Microsoft Exchange edition is obtained through the cmdlet `Get-ExchangeServer` from Exchange Management Shell. For more information, see: [Exchange Server Updates: build numbers and release dates](#).

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.

3. In the upper right pane, select **Get Microsoft Exchange Edition**.
4. To run the task, click **Take Action**. On the **Target** tab, select computers from which you want to retrieve the information, and click **OK**.
5. Ensure that the software scans are enabled, and run automatically. If not, [run the software scan \(on page dcx\)](#) manually. Select the **Software identification tags scan**.
6. Ensure that the scan results are automatically uploaded. If not, [upload the results \(on page dcxvii\)](#) to the BigFix server manually.
7. To make the data available in BigFix Inventory, wait for the scheduled import of data, or run it manually.

The discovered Microsoft Exchange editions are listed on the Software Installations report. To view the data, log in to BigFix Inventory, and go to **Reports > Software Installations**.



**Notice:** After you activate the Get Microsoft Exchange Edition fixlet, the Microsoft Exchange instances are duplicated on the Software Installations report. The reason behind the duplication is the dual detection. The Microsoft Exchange is included in the software catalog, and thus, detected as a standard installation. During the edition discovery, a separate line is added to the report that provides information about the Microsoft Exchange edition.

You can filter the report to remove the redundant lines.

## Measuring license metric utilization of VMware products

**9.2.7** Available from 9.2.7. BigFix Inventory allows you to retrieve granular information about license metric utilization of VMware vCenter and vSphere in your infrastructure. The resource utilization data is collected by the VM Manager Tool and displayed on the Resource Utilization report.

### Enabling metric calculation of VMware products (basic VM management)

**9.2.7** Available from 9.2.7. You can calculate license metric utilization of the VMware products: vCenter and vSphere in standard environments where the VM managers are centralized and configured through user interface. Use basic (central) VM management to enable data retrieval.

To collect granular information about the license metric utilization of VMware vCenter and vSphere

- Update the VM Manager tool to the newest version. Metric calculation of VMware products is supported starting from version 1.5.0.0.
- Ensure you have BigFix Inventory version 9.2.1 or higher.
- Ensure that the user defined for the VMware connection has Global.Licenses permission.



**Note:** The API for retrieving the license data is available starting from vSphere API 4.0. The resource utilization is collected only for the VMware installations that are defined as VM managers for BigFix Inventory.

When you enable license metric calculation of VMware vCenter and vSphere, the .slmtag files are created locally on the machine running VM Manager tool and collected by the resource utilization scan.

1. Log in to BigFix Inventory.
2. Go to **Management > Advanced Server Settings**.
3. Set the **vmman\_slm\_tags\_enabled** parameter to `true`, and click **Save**.
4. **Optional:** To specify the maximum size of each VMware .slmtag file, configure the **vmman\_slm\_tags\_file\_size\_limit** parameter value, and click **Save**.
5. **Optional:** To specify the maximum number of VMware .slmtag files that are stored on the computer for each license key under VMware instance, configure the **vmman\_slm\_tags\_files\_per\_software** parameter value, and click **Save**.
6. The data will be available in BigFix Inventory after the next resource utilization scan and data import.

To view license metric utilization, log in to BigFix Inventory and navigate to **Reports > Resource Utilization**.

The following columns are specific to the VMware vCenter and vSphere license metric utilization data:

- **Computer Name** always shows a name of the computer where the VM Manager tool is installed.
- **Software Name** shows the name and the version of the software with additional information about license.
- **Metric Subtype** indicates if the count refers to the license metric utilization or overall license capacity. The column shows one of two values. USED refers to the license metric utilization of the specified license on a particular machine. CAPACITY reflects the limit agreed in this license. The number is specified in **Maximal Trend Value** column.

Computer Name	Software Name	Metric Type	Metric Subtype	Instance	Maximal Trend Value
NC9143126163	VMware vSphere 6 Enterprise Plus (unlimited cores per CPU)	SOCKET	USED	P142Q-08L40-H8041-013RP-CHPQ1?VirtualCenter_198.51.100.0	12
NC9143126163	VMware vSphere 6 Enterprise Plus (unlimited cores per CPU)	SOCKET	CAPACITY	P142Q-08L40-H8041-013RP-CHPQ1?VirtualCenter_198.51.100.0	999,999



**Note:** The maximal trend value for unlimited licenses is always set to 999,999.

- **Instance** shows the instance identifier that consists of:
  - License key, for example: *P142Q-08L40-H8041-013RP-CHPQ1*
  - Machine type: virtual center or ESX box.

Virtual center refers to the entire vSphere infrastructure for which VM manager connection is defined. The number of used licenses for virtual center shows the license metric utilization for all the boxes within this center. Virtual center can consist of more than one ESX, or ESXi box. VM manager can connect directly to the ESX, or ESXi box. Then, the displayed license metric utilization is calculated for each individual box.

License utilization is reported for the VMware connection that is defined in BigFix Inventory. Thus, if you define the virtual center connection, the .slmtag files are generated for this center, not individual ESX, or ESXi boxes.



**Note:** One license key can be shared between different virtual centers. Therefore, license metric utilization might not represent the entire license consumption.

- Host name, for example: *198.51.100.0*

To enable the **Instance** column, hover over the **Settings** icon  and click **Configure View**.

To disable the license metric calculation of the VMware products, change the **vmman\_slm\_tags\_enabled** parameter value to false. The collected data will no longer be retrieved, however, the historical data will still be displayed on the **Resource Utilization** report.

## Enabling metric calculation of VMware products (advanced VM management)

**9.2.7**

Available from 9.2.7. You can calculate license metric utilization of the VMware products: vCenter and vSphere in complex environments where the VM managers are distributed across separated networks. Use advanced (distributed) VM management to enable data retrieval.

To collect granular information about the license metric utilization of VMware vCenter and vSphere

- Update the VM Manager tool to the newest version. Metric calculation of VMware products is supported starting from version 1.5.0.0.
- Ensure you have BigFix Inventory version 9.2.1 or higher.
- Ensure that the user defined for the VMware connection has Global.Licenses permission.



**Note:** The API for retrieving the license data is available starting from vSphere API 4.0. The resource utilization is collected only for the VMware installations that are defined as VM managers for BigFix Inventory.

When you enable the license metric calculation of VMware vCenter and vSphere, the .slmtag files are created locally on the machine running VM Manager tool and collected by the resource utilization scan.

1. On the computer where VM Manager tool is installed, go to the `BES Client\LMT\VMMAN\config` directory.
2. Open and edit the `vmmmainconf.properties` file.
3. Set the `vmm_slm_tags_enabled` parameter to `true`.

```
vmm_slm_tags_enabled=true
```

If the parameter does not appear in the properties file yet, add the line above to this file. For more information, see: [VM Manager Tool settings \(on page dcccxxviii\)](#).

4. **Optional:** To specify the maximum size of each VMware .slmtag file, configure the `vmm_slm_tags_file_size_limit` parameter value.
5. **Optional:** To specify the maximum number of VMware .slmtag files that are stored on the computer for each license key under VMware instance, configure the `vmm_slm_tags_files_per_software` parameter value.
6. Save the file.

7. Go to `BES Client\LMT\VMMAN`.
8. Run the following command in the command-line interface.

- **Linux** `./vmman.sh -reloadconfig`
- **Windows** `vmman.bat -reloadconfig`

For more information, see: [VM Manager tool command-line options \(on page dcccxxv\)](#).

9. The data will be available in BigFix Inventory after the next resource utilization scan and data import.

To view license metric utilization, log in to BigFix Inventory and navigate to **Reports > Resource Utilization**.

The following columns are specific to the VMware vCenter and vSphere license metric utilization data:

- **Computer Name** always shows a name of the computer where the VM Manager tool is installed.
- **Software Name** shows the name and the version of the software with additional information about license.
- **Metric Subtype** indicates if the count refers to the license metric utilization or overall license capacity. The column shows one of two values. USED refers to the license metric utilization of the specified license on a particular machine. CAPACITY reflects the limit agreed in this license. The number is specified in **Maximal Trend Value** column.

Computer Name	Software Name	Metric Type	Metric Subtype	Instance	Maximal Trend Value
NC9143126163	VMware vSphere 6 Enterprise Plus (unlimited cores per CPU)	SOCKET	USED	/P142Q-08L40-H8041-013RP-CHPQ1?VirtualCenter_198.51.100.0	12
NC9143126163	VMware vSphere 6 Enterprise Plus (unlimited cores per CPU)	SOCKET	CAPACITY	/P142Q-08L40-H8041-013RP-CHPQ1?VirtualCenter_198.51.100.0	999,999



**Note:** The maximal trend value for unlimited licenses is always set to 999,999.

- **Instance** shows the instance identifier that consists of:
  - License key, for example: `P142Q-08L40-H8041-013RP-CHPQ1`
  - Machine type: virtual center or ESX box.

Virtual center refers to the entire vSphere infrastructure for which VM manager connection is defined. The number of used licenses for virtual center shows the license metric utilization for all the boxes within this center. Virtual center can consist of more than one ESX, or ESXi box. VM manager can connect directly to the ESX, or ESXi box. Then, the displayed license metric utilization is calculated for each individual box.

License utilization is reported for the VMware connection that is defined in BigFix Inventory. Thus, if you define the virtual center connection, the `.slmtag` files are generated for this center, not individual ESX, or ESXi boxes.



**Note:** One license key can be shared between different virtual centers. Therefore, license metric utilization might not represent the entire license consumption.

- Host name, for example: `198.51.100.0`

To enable the **Instance** column, hover over the **Settings** icon  and click **Configure View**.

To disable the license metric calculation of the VMware products, change the **vmm\_slm\_tags\_enabled** parameter value to false. The collected data will no longer be retrieved, however, the historical data will still be displayed on the **Resource Utilization** report.

## Discovering and measuring SAP

You can discover components of SAP Business Suite that are installed on Linux and AIX computers in your infrastructure. You can also collect license metric utilization data from SAP landscapes and integrate it with your other resources on the Resource Utilization report. Discovery and measuring are two separate processes that do not impact each other.

### Discovering

BigFix Inventory discovers components of SAP Business Suite that are installed on Linux and AIX computers. These components are listed on the Software Classification report, and can be assigned to appropriate products. It allows you to manage SAP products that are installed in your environment.

### Measuring

The dedicated SAP Metric Data Collector collects information about the license metric utilization of SAP ABAP-based products. The data is available on the Resource Utilization report. The report shows the maximum metric utilization and its trend value over the last 30 days.

## Discovering SAP components

**9.2.7** Available from 9.2.7. To discover SAP components on Linux and AIX computers in your infrastructure, run the **Get SAP Components** fixlet. The data is collected, imported to BigFix Inventory, and displayed on the Software Classification panel.

The discovery of SAP components is supported on Linux and AIX systems.

BigFix Inventory discovers SAP Business Suite components that are based on SAP NetWeaver 7.x; for example, the application server, cross-application components and applications. For more information about SAP component hierarchy, see: [Software Components in SAP ERP](#).

If multiple instances of SAP are installed on the same computer, all of these instances are discovered. The task is relevant only to the computers where SAP is installed.

1. Log in to BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Get SAP Components**.
4. **Optional:** Select the **Retrieve information about SAP subcomponents** check box to additionally discover SAP sub-components.
5. To run the task, click **Take Action**. On the **Target** tab, select computers from which you want to retrieve the information, and click **OK**.

6. Ensure that the software scans are enabled, and run automatically. If not, [run the software scan \(on page dcx\)](#) manually. Select the **Software identification tags scan**.
7. Ensure that the scan results are automatically uploaded. If not, [upload the results \(on page dcxvii\)](#) to the BigFix server manually.
8. To make the data available in BigFix Inventory, wait for the scheduled import of data, or run it manually.

The discovered SAP components are listed on the Software Classification panel. To view the data, log in to BigFix Inventory, and go to **Reports > Software Classification**. The component name is extended with a short description. You can classify these components by manually assigning them to appropriate products.



In case of any inconsistencies or issues, log in to BigFix console, select **Actions**, and choose **Get SAP Components** from the list. Check the exit code:

- 0 - Completed. Action successful.
- 1 - Failed. Action failed.
- 2 - Completed. Action partially completed. Some SAP instances did not return any data.

For more information, see the following log file that is located on the computer where SAP is installed:

```
/var/opt/BESClient/LMT/SAP/discover_sap.log
```

## Measuring and collecting the license metric utilization of SAP

**9.2.9** Available from 9.2.9. BigFix Inventory allows you to retrieve granular information about license metric utilization of SAP ABAP-based products. The utilization data is collected by the SAP Metric Data Collector and displayed on the Resource Utilization report. SAP Metric Data Collector retrieves the license utilization data available in License Administration Workbench in SAP.

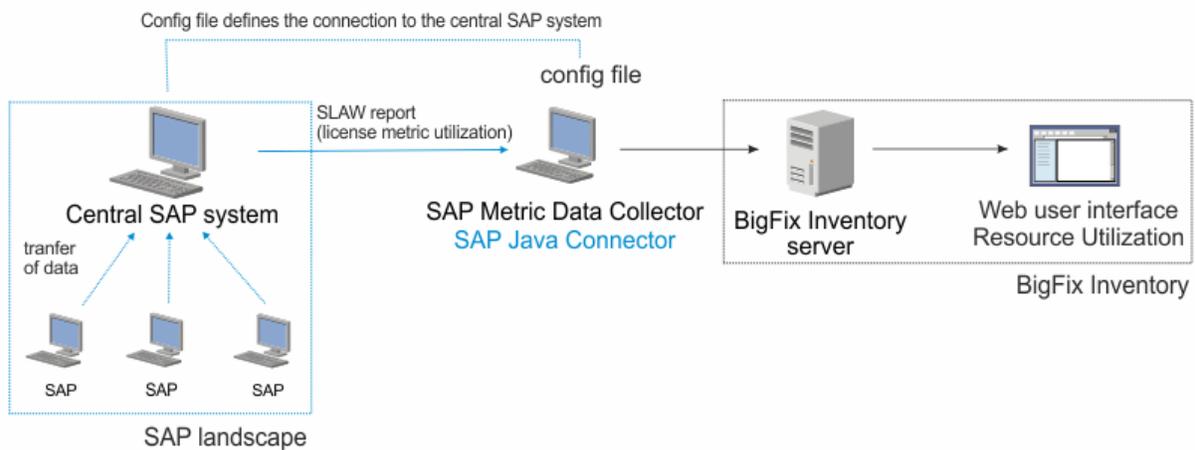
### Collecting utilization of SAP license metrics

**9.2.9** Available from 9.2.9. Thanks to SAP Metric Data Collector, you can view the license metric utilization of SAP ABAP-based products in BigFix Inventory. In this scenario, the utilization data is retrieved from the central SAP system, uploaded into BigFix Inventory, and displayed on the Resource Utilization report.

- You can install SAP Metric Data Collector on any computer, not necessarily the computer where the BigFix Inventory server or SAP is installed. However, the computer must meet the following requirements:
  - Runs on Windows x86 (64-bit) or Red Hat Linux x86 (64-bit). Linux version requires the unzip executable.
  - Has at least 250 MB of free disk space.
  - Can connect through RFC to the central SAP system that consolidates utilization data in SAP License Administration Workbench (LAW).
- Ensure that the SAP landscape meets the following criteria:
  - The licensing data that is consolidated in the central SAP system is up-to-date.
  - A user account with permissions to run end-to-end functions of LAW or LAW 2.0 exists on the central SAP system.
  - License utilization data can be processed with either LAW or LAW 2.0.

The SAP ABAP-based products use the licensing model that consists of two types of licenses: software packages and named users.

Each SAP system measures utilization of SAP license metrics. The measurements from all SAP systems in the landscape are transferred to the central SAP and combined into one LAW report. To collect the report, SAP Metric Data Collector establishes an RFC connection with the SAP License Administration Workbench (LAW) that is located on the central SAP system. Information about license metric utilization from the report is displayed in BigFix Inventory on the Resource Utilization report.



### 9.2.12 Support for License Administration Workbench 2.0

LAW 2.0 allows you to manually declare engine usage information. SAP Metric Data Collector retrieves these self-declared details as well.

LAW 2.0 allows the creation and storage of multiple consolidations. SAP Metric Data Collector uses the current consolidation if it is in the Consolidated status. If no current consolidation is applicable, the tool retrieves the completed consolidation that has been modified last. The completed consolidation must be in Sent to SAP or Closed status.

SAP Metric Data Collector supports LAW and LAW 2.0. If both versions are installed on the central SAP system, SAP Metric Data Collector determines which instance of LAW to use by checking the target of RFC actions in LAW 2.0 settings.

1. Install SAP Metric Data Collector.
  - a. Log in to the BigFix console.
  - b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - c. In the upper right pane, select **Install SAP Metric Data Collector**, and click **Take Action**.
  - d. Select the computer on which you want to install SAP Metric Data Collector, and click **OK**.
2. Download the 64-bit version of the SAP Java Connector from <http://support.sap.com/en/product/connectors.html>. Unpack it to the following directory on the computer where you installed SAP Metric Data Collector:

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/lib/sapjco3`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\lib\sapjco3`

The following files, which are included in the package, are required to collect SAP utilization:

- **Linux** `sapjco3.jar, libsapjco3.so`
- **Windows** `sapjco3.jar, sapjco3.dll`

Make sure that these files are located directly in the `sapjco3` directory.



**Note:** Log in to <http://support.sap.com/en/product/connectors.html> with your SAP S User ID and password.

3. If you use LAW 2.0, install the ABAP plug-in that is delivered with SAP Metric Data Collector on a central SAP system.
  - a. Copy the following file from the SAP Metric Data Collector installation directory:
    - **Linux** `/var/opt/BESClient/LMT/SAPTOOL/trans/cofiles/K900041.BF1`
    - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\trans\cofiles\K900041.BF1`
  - b. Paste the file to the `trans/cofiles` directory in the directory where SAP is installed on the central SAP system.
  - c. Copy the following file from the SAP Metric Data Collector installation directory:
    - **Linux** `/var/opt/BESClient/LMT/SAPTOOL/trans/data/R900041.BF1`
    - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\trans\data\R900041.BF1`

- d. Paste the file to the `trans/data` directory in the directory where SAP is installed on the central SAP system.
  - e. Run the `STMS` SAP t-code on the central SAP system and import the incoming transport request. Select the Ignore Invalid Component Version option if needed. After the import, check the transport logs to ensure that it was successful.
4. Manually configure SAP Metric Data Collector. Use the `template.sapsystem` file to create the `<host_name>.sapsystem` file that defines the central SAP system in the landscape.



**Important:** You must not remove the `template.sapsystem` file from the `config` directory.

- a. Open the `template.sapsystem` file that is located in the following directory.
    - **Linux** `/var/opt/BESClient/LMT/SAPTOOL/config`
    - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config`
  - b. Save the file as `<host_name>.sapsystem` in the `config` directory. Do not overwrite the template.
  - c. Specify all parameters, and save the file. For more information, see: [SAP Metric Data Collector configuration parameters \(on page mcxxxviii\)](#).
5. To complete the configuration of SAP Metric Data Collector, edit the `saptool_config.properties` file that is located in the following directory:
- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/config`
  - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config`
- a. Specify the **landscape\_name** parameter. The landscape name is displayed on the Resource Utilization report in the Instance column.
  - b. To collect data without triggering measurements, set the value of the **skip\_measurements** parameter to true and save the file. If you want to automate the measurements, see: [Measuring and collecting utilization of SAP license metrics \(on page mcxxxiv\)](#).
- For more information about configuration, see: [SAP Metric Data Collector configuration parameters \(on page mcxxxviii\)](#).
6. **Optional:** To test the connection to SAP and the correctness of data provided in the configuration file, run the following script with the **-testconnection** parameter.
- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/saptool.sh -testconnection`
  - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\saptool.bat -testconnection`

Apart from testing the connection, the **-testconnection** parameter encrypts the password of the SAP user account. If you do not run the connection test, the password will be encrypted when you run SAP Metric Data Collector.

To verify whether the connection test was successful, check the return code in the `trace.log` file that is located in the following directory:

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/logs`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\logs`

The return code that is provided in the log file can differ from the code in SAP Metric Data Collector Information analysis. The analysis does not provide a return code for the connection test. For more information and the meaning of the return codes, see: [Troubleshooting SAP Metric Data Collector \(on page mcx\)](#).

#### 7. Initiate the collection of SAP metric data.

- a. Log in to the BigFix console.
- b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- c. In the upper right pane, select **Initiate Collection of SAP Metric Data**, and click **Take Action**.
- d. Select the computer on which SAP Metric Data Collector is installed, and click **OK**.

 **Tip:** By default, the Initiate Collection of SAP Metric Data fixlet is scheduled to run every 30 days. The fixlet starts the collection of the utilization data, which can still be in progress after the fixlet is completed.

To schedule the fixlet to run periodically, select it, click **Take Action** and go to the **Execute** tab. Select the **Reapply this action** check box, and specify the frequency.

To check the status of SAP metric data collection at any point, activate the SAP Metric Data Collector Information analysis.

8. Ensure that the software scans are enabled, and run automatically. If not, [run the software scan \(on page dcx\)](#) manually. Select the **Resource utilization scan**.
9. Ensure that the scan results are automatically uploaded. If not, [upload the results \(on page dcxvii\)](#) to the BigFix server manually.
10. To make the data available in BigFix Inventory, wait for the scheduled import of data, or run it manually.

License metric utilization data is displayed on the Resource Utilization report. The report shows the following metrics:

- Named users metric
- Other metrics that are related to the software packages license

On the SAP audit report, metrics are reported for a specified period, or not. BigFix Inventory reports these metrics as follows.

- If a metric is reported by SAP for a specified period, BigFix Inventory reports this metric for that period.
- If a metric is not reported by SAP for a specified period, BigFix Inventory reports this metric for the period since the previous collection of SAP metric data.
- If a metric is not reported by SAP for a specified period and you collect the SAP metric data for the first time, BigFix Inventory reports this metric for the last 30 days.

Computer Na...	Software Name	Metric Type	Metric Subtype	First Measured	Last Measured	Maximal Trend Value	Maximal Trend Value History 2017-06-26 - 2017-07-25
nc9143126222...	SAP - (0100) mySAP Human Resources	(0100) Master records PD Organizational Mgmt	<no data>	07/20/2017 09:52 AM	07/21/2017 09:47 AM	3,796	
nc9143126222...	SAP - (0100) mySAP Human Resources	(0170) Master records PA Benefits	<no data>	07/20/2017 09:52 AM	07/21/2017 09:47 AM	1,505	
nc9143126222...	SAP - (8010) SAP EHS: Product and Reach Compliance	(8010) SRC: Created Tasks	<no data>	07/20/2017 09:52 AM	07/24/2017 05:53 PM	1,144	
nc9143126222...	SAP - (3110) Information Lifecycle Management	(3111) ILM - Database Size in TB	<no data>	07/20/2017 09:52 AM	07/24/2017 05:53 PM	192	

### Related information

[Changing the default secret key and password to the SAP Metric Data Collector keystore \(on page mcccxx\)](#)

## Measuring and collecting utilization of SAP license metrics

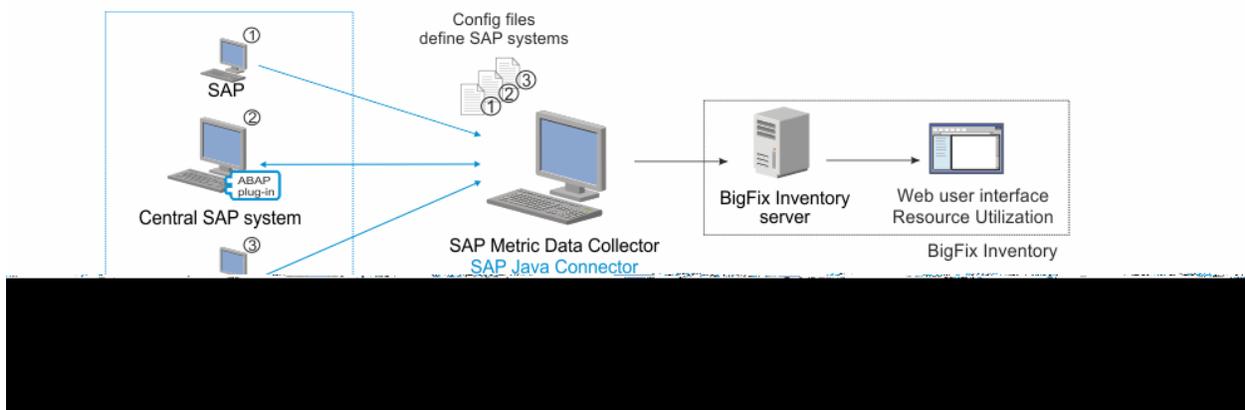
**9.2.10** Available from 9.2.10. Thanks to SAP Metric Data Collector and the installation of ABAP plug-in, you can automatically measure the license metric utilization of SAP ABAP-based products, and then view the data on the Resource Utilization report in BigFix Inventory. In this scenario, SAP Metric Data Collector connects to each SAP system in the landscape and initiates measurements. Then, the tool manages the consolidation of data and integrates the results with BigFix Inventory.

- You can install SAP Metric Data Collector on any computer, not necessarily the computer where the BigFix Inventory server or SAP is installed. However, the computer must meet the following requirements:
  - Runs on Windows x86 (64-bit) or Red Hat Linux x86 (64-bit). Linux version requires the unzip executable.
  - Has at least 250 MB of free disk space.
  - Can connect through RFC to all SAP systems to collect the data required for calculating the license metric utilization.
- You should install the HCL-provided ABAP plug-in only on the central SAP system.
- Ensure that the SAP landscape meets the following criteria:
  - Configuration of Clients, Price Lists and User Types in System Measurement dialog, which can be accessed via `USMM` transaction code (t-code), is up-to-date on all the SAP systems.
  - A dedicated user account with permissions to run `USMM` transaction exists on each SAP system.

- A user account with permissions to run `USMM` transaction and end-to-end functions of License Administration Workbench (LAW) exists on the central SAP system.
- License utilization data must be processed with LAW. If you use LAW 2.0, see: [Collecting utilization of SAP license metrics \(on page mcxxix\)](#).

The SAP ABAP-based products use the licensing model that consists of two types of licenses: software packages and named users. BigFix Inventory uses a native SAP functionality for determining utilization of these license metrics called System Measurement and License Administration Workbench.

SAP Metric Data Collector connects to all SAP systems in the landscape through RFC, automatically initiates measurements, and retrieves the results. Next, SAP Metric Data Collector uses the ABAP plug-in to upload the results onto the central SAP system, and manage automatic user grouping and data consolidation in License Administration Workbench to produce a LAW report. SAP Metric Data Collector gathers the report data, and transfers it to BigFix Inventory. Information about license metric utilization from the report is displayed in BigFix Inventory on the Resource Utilization report .



1. Install SAP Metric Data Collector.
  - a. Log in to the BigFix console.
  - b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - c. In the upper right pane, select **Install SAP Metric Data Collector**, and click **Take Action**.
  - d. Select the computer on which you want to install SAP Metric Data Collector, and click **OK**.
2. Download the 64-bit version of the SAP Java Connector from <http://service.sap.com/connectors>. Unpack it to the following directory on the computer where you installed SAP Metric Data Collector:
  - **Linux** `/var/opt/BESClient/LMT/SAPTOOL/lib/sapjco3`
  - **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\lib\sapjco3`

The following files, which are included in the package, are required to collect the SAP utilization data:

- **Linux** `sapjco3.jar, libsapjco3.so`
- **Windows** `sapjco3.jar, sapjco3.dll`

Make sure that these files are located directly in the `sapjco3` directory.



**Note:** Log in to <http://service.sap.com/connectors> with your SAP S User ID and password. You must comply with the license terms of the SAP Connectors.

3. Install the ABAP plug-in that is delivered with SAP Metric Data Collector on a central SAP system.
  - a. Copy the following file from the SAP Metric Data Collector installation directory:
    - **Linux** /var/opt/BESClient/LMT/SAPTOOL/trans/cofiles/K900041.BF1
    - **Windows** C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\trans\cofiles\K900041.BF1
  - b. Paste the file to the `trans/cofiles` directory in the directory where SAP is installed on the central SAP system.
  - c. Copy the following file from the SAP Metric Data Collector installation directory:
    - **Linux** /var/opt/BESClient/LMT/SAPTOOL/trans/data/R900041.BF1
    - **Windows** C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\trans\data\R900041.BF1
  - d. Paste the file to the `trans/data` directory in the directory where SAP is installed on the central SAP system.
  - e. Run the `STMS` SAP t-code on the central SAP system and import the incoming transport request. Select the Ignore Invalid Component Version option if needed. After the import, check the transport logs to ensure that it was successful.
4. Define the connection to each SAP system in the landscape by configuring a set of parameters. Use the `template.sapsystem` file to create the `<host_name>.sapsystem` file with all the required information for each SAP system in the landscape.



**Important:** You must not remove the `template.sapsystem` file from the `config` directory.

- a. Open the `template.sapsystem` file that is located in the following directory:
  - **Linux** /var/opt/BESClient/LMT/SAPTOOL/config
  - **Windows** C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config
- b. Save the file as `<host_name>.sapsystem` in the `config` directory. Do not overwrite the template.
- c. Specify all parameters, and save. For more information, see: [SAP Metric Data Collector configuration parameters \(on page mcxxxviii\)](#).
- d. Create a separate file for each SAP system in the landscape.

5. To complete the configuration of SAP Metric Data Collector, edit the `saptool_config.properties` file that is located in the following directory:

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/config`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config`

- a. Specify the **landscape\_name** parameter and save the file. The landscape name is displayed on the Resource Utilization report in the Instance column.
- b. Ensure that the value of the **skip\_measurements** parameter is set to false.

6. **Optional:** To test the connection to SAP and the correctness of data provided in the configuration file, run the following script with the **-testconnection** parameter.

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/saptool.sh -testconnection`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\saptool.bat -testconnection`

Apart from testing the connection, the **-testconnection** parameter encrypts the password of the SAP user account. If you do not run the connection test, the password will be encrypted when you run SAP Metric Data Collector.

To verify whether the connection test was successful, check the return code in the `trace.log` file that is located in the following directory:

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/logs`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\logs`

The return code that is provided in the log file can differ from the code in the SAP Metric Data Collector Information analysis. The analysis does not provide a return code for the connection test. For more information and the meaning of the return codes, see: [Troubleshooting SAP Metric Data Collector \(on page mxxl\)](#).

7. Initiate the measurement and collection of SAP metric data.

- a. Log in to the BigFix console.
- b. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
- c. In the upper right pane, select **Initiate Collection of SAP Metric Data**, and click **Take Action**.
- d. Select the computer on which SAP Metric Data Collector is installed, and click **OK**.



**Tip:** By default, the Initiate Collection of SAP Metric Data fixlet is scheduled to run every 30 days. The fixlet starts the collection of the utilization data, which can still be in progress after the fixlet is completed.



To schedule the fixlet to run periodically, select it, click **Take Action** and go to the **Execute** tab. Select the **Reapply this action** check box, and specify the frequency.

To check the status of SAP metric data collection at any point, activate the SAP Metric Data Collector Information analysis.

8. Ensure that the software scans are enabled, and run automatically. If not, [run the software scan \(on page dcx\)](#) manually. Select the **Resource utilization scan**.
9. Ensure that the scan results are automatically uploaded. If not, [upload the results \(on page dcxvii\)](#) to the BigFix server manually.
10. To make the data available in BigFix Inventory, wait for the scheduled import of data, or run it manually.

License metric utilization data is displayed on the Resource Utilization report. The report shows the following metrics:

- Named users metric
- Other metrics that are related to the software packages license

On the SAP audit report, metrics are reported for a specified period, or not. BigFix Inventory reports these metrics as follows.

- If a metric is reported by SAP for a specified period, BigFix Inventory reports this metric for that period.
- If a metric is not reported by SAP for a specified period, BigFix Inventory reports this metric for the period since the previous collection of SAP metric data.
- If a metric is not reported by SAP for a specified period and you collect the SAP metric data for the first time, BigFix Inventory reports this metric for the last 30 days.

Computer Na...	Software Name	Metric Type	Metric Subtype	First Measured	Last Measured	Maximal Trend Value	Maximal Trend Value History 2017-06-26 - 2017-07-25
nc9143126222...	SAP - (0100) mySAP Human Resources	(0100) Master records PD Organizational Mgmt	<no data>	07/20/2017 09:52 AM	07/21/2017 09:47 AM	3,796	
nc9143126222...	SAP - (0100) mySAP Human Resources	(0170) Master records PA Benefits	<no data>	07/20/2017 09:52 AM	07/21/2017 09:47 AM	1,505	
nc9143126222...	SAP - (8010) SAP EHS: Product and Reach Compliance	(8010) SRC: Created Tasks	<no data>	07/20/2017 09:52 AM	07/24/2017 05:53 PM	1,144	
nc9143126222...	SAP - (3110) Information Lifecycle Management	(3111) ILM - Database Size in TB	<no data>	07/20/2017 09:52 AM	07/24/2017 05:53 PM	192	

#### Related information

[Changing the default secret key and password to the SAP Metric Data Collector keystore \(on page mcccxx\)](#)

## SAP Metric Data Collector configuration parameters

The configuration files contain important information that SAP Metric Data Collector requires to connect to the SAP systems from which the tool collects the license metric utilization data.

The configuration files are located in the following directory:

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/config`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config`

## List of main configuration parameters that define SAP systems

The following parameters define the SAP systems in your environment. They are configured based on the `template.sapsystem` file. Do not overwrite the template file. Save the configuration in a new file named `<host_name>.sapsystem`.

**Table 180. List of main configuration parameters**

Parameter	Description
<code>jco.client.ashost</code>	Hostname or IP address of the SAP system.
<code>jco.client.user</code>	SAP user account name.
<code>jco.client.passwd</code>	SAP user account password.
<code>jco.client.client</code>	SAP client number.
<code>jco.client.sysnr</code>	SAP system number.
<code>jco.client.lang</code>	Connection language; for example: EN or DE.
<code>is_law</code>	Confirm whether this is the central SAP system with consolidated LAW data. Only one system in the landscape must have this parameter set to true.

## Other parameters

Other parameters that are required to collect SAP utilization data should be configured in a separate configuration file `saptool_config.properties`. After you set up the value of these parameters, overwrite the file by saving.

**Table 181. List of other parameters**

Parameter	Description
<code>landscape_name</code>	A custom name of the SAP landscape that is used to distinguish the SAP landscape in BigFix Inventory. The landscape name is displayed on the Resource Utilization report in a Instance column.
<code>skip_measurements</code>	By default, this parameter is set to false. If you only need to collect SAP utilization data, without triggering measurements, set the value of the parameter to true and save the file. If you use the automated procedure, do not change the default setting of the parameter.

**Table 181. List of other parameters (continued)**

Parameter	Description
	 <b>Note:</b> The <code>skip_measurements</code> parameter is relevant only if you use LAW. In case of LAW 2.0 measurements and consolidation are always skipped.

## Troubleshooting SAP Metric Data Collector

**9.2.9** Available from 9.2.9. If you encounter problems with measuring utilization of SAP license metrics by using SAP Metric Data Collector, check the log and the return code to determine the possible cause.

### Log file

The `trace.log` file is located in the following directory.

- **Linux** `/var/opt/BESClient/LMT/SAPTOOL/logs`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\logs`

### Return codes

If the **Initiate SAP Metric Data Collector** task fails, an error code that indicates why the scan failed is returned. The return code is included in the log file.

You can also check the status and the return code in the BigFix console. Go to **Sites > External Sites > BigFix Inventory > Analyses**, and activate the **SAP Metric Data Collector Information** analysis. The analysis does not provide a return code for the connection test.

**Table 182. SAP Metric Data Collector return codes**

Return code	Possible cause and solutions
0	No errors.
1	An unknown error occurred. Contact BigFix Support.
2	Writing in to the <code>trace.log</code> file could not be initiated. Ensure that the file is not used by other processes and that it is not opened in any program, for example a text editor.
3	Encryption module could not be initiated. Ensure that the keystore and keystore password are correctly configured. For more information, see: <a href="#">Changing the default secret key and password to the SAP Metric Data Collector keystore (on page mccccx)</a> .
4	The specified command-line parameters are incorrect. Run the <code>saptool.bat</code> or <code>sap-tool.sh</code> script with the <code>-h</code> parameter to see the list of supported command-line parameters.

**Table 182. SAP Metric Data Collector return codes (continued)**

Return code	Possible cause and solutions
5	Configuration settings are invalid or missing. Ensure that all required parameters are specified and correct. For more information, see: <a href="#">SAP Metric Data Collector configuration parameters (on page mcxxxviii)</a> .
6	Connection to SAP failed. Ensure that connection to SAP is possible and that all required parameters are specified and correct. For more information, see: <a href="#">SAP Metric Data Collector configuration parameters (on page mcxxxviii)</a> .
7	The SAP Metric Data Collector process was interrupted. Run SAP Metric Data Collector again.
8	Generating <code>.slmtag</code> files failed. Ensure that files in the <code>slmtags</code> subdirectory are not locked by other processes.
9	Measuring utilization data in SAP exceeded the time limit.
10	Grouping SAP users in License Administration Workbench (LAW) failed because SAP user grouping mode is not set to automatic. Set the mode to automatic, and run SAP Metric Data Collector again.
11	The data collected from SAP is incomplete. Ensure that the consolidated results are available in LAW or LAW 2.0, and then run the SAP Metric Data Collector again. The measurement results can be retrieved and consolidated automatically in LAW when the <b>skip_measurements</b> parameter is set to false. If the problem persists, contact BigFix Support.
12	The status of the SAP Metric Data Collector completion could not be stored on disk. Ensure that the <code>saptool.status</code> file is not used by other processes and that it is not opened in any program, for example a text editor.
13	The configuration file could not be updated with the encrypted password. Ensure that none of the configuration files in the <code>config</code> subdirectory is used by other processes and that it is not opened in any program, for example a text editor.
14	The SAP Metric Data Collector configuration that you initiated is not supported. Contact BigFix Support.
15	SAP Java Connector is corrupted or missing. Download the SAP Java Connector again. For more information, see: <a href="#">Collecting utilization of SAP license metrics (on page mcxxix)</a> .
16	Currently not used.
17	SAP Metric Data Collector was run with the <code>-encode</code> parameter by using a method other than the command line. Run the tool through the command line to encode keystore password. For more information see: <a href="#">Changing the default secret key and password to the SAP Metric Data Collector keystore (on page mcccxx)</a> .

**Table 182. SAP Metric Data Collector return codes (continued)**

Return code	Possible cause and solutions
18	SAP Metric Data Collector tried to decrypt the stored password by using a key other than the one that was used to encrypt it. The encryption key was changed. Re-enter the password in plain text. The password will be encrypted the next time the tool is run. For more information see: <a href="#">Changing the default secret key and password to the SAP Metric Data Collector key-store (on page mccccxx)</a> and <a href="#">Collecting utilization of SAP license metrics (on page mcxxix)</a> .
19	SAP Metric Data Collector tried to encrypt the stored password by using a key other than AES or the key was stronger than the Java JCE jurisdiction policy allows. The encryption key was changed. Change the encryption key to AES with correct length. For more information see: <a href="#">Changing the default secret key and password to the SAP Metric Data Collector key-store (on page mccccxx)</a> .
20	A given SAP system could not find the requested function module.
21	A function module on a given SAP system failed. Please review <code>trace.log</code> file.
22	An error occurred when cleaning the last measurement data from the central SAP system.
23	The ABAP plug-in is not installed on the central SAP system in the landscape. For information about the installation of the code, see: <a href="#">Installing the ABAP plug-in on a central SAP system. (on page mcxxxvi)</a>
24	SAP Metric Data Collector could not find the consolidated SAP utilization data.

## Assigning components to active BigFix products <deprecated>



**Notice:** Refer to [Using BigFix Inventory to calculate license for BigFix products \(on page cmlxviii\)](#) for a complete step-by-step guidance on license counting process.

## License metrics

BigFix Inventory provides two types of information about license metrics utilization: aggregated utilization and raw utilization. The former shows utilization of the assigned license metric by all instances of a particular product within the reporting period. However, it is limited to a subset of license metrics. The latter shows data that is collected from `.slmtag` files. It shows raw utilization of all license metrics that can be used by a particular product. The data is not aggregated and requires further processing.

### License metric utilization

The primary source of information about license metric utilization is the All Metrics report. For every product, you can specify a metric threshold to verify whether metric utilization is above or below your expectations. You can also create a snapshot of the report, and store it for audit purposes.

## Report overview

Publisher	Product Name	Metric	FlexPoint or Cloud Pak Bundle	Metric Quantity	Threshold	Threshold Delta	Imported Part Numbers	Metric Quantity History
IBM	IBM COBOL for AIX	Concurrent User	None	<n/a>	<not set>	<no data>	<no data>	<n/a>
IBM	IBM Rational Software Archi...	Authorized User Single Install	None	<n/a>	<not set>	<no data>	<no data>	<n/a>
IBM	IBM COBOL for AIX	Authorized User	None	<n/a>	<not set>	<no data>	<no data>	<n/a>
IBM	IBM SPSS Statistics Base	Authorized User	None	<n/a>	<not set>	<no data>	<no data>	<n/a>
IBM	IBM Cognos Enterprise User	Authorized User	None	3,000	1,000	-2,000	DGNZCCL	
IBM	IBM ILOG CPLEX Optimizati...	Authorized User	None	<n/a>	<not set>	<no data>	<no data>	<n/a>
IBM	IBM Rational Functional Tes...	Authorized User	None	<n/a>	<not set>	<no data>	<no data>	<n/a>

### 1 9.2.4 Predefined report views

Predefined report views give you quick access to filtered information. You can schedule these reports to be sent and set them as default views. However, you cannot modify them.

### 2 9.2.9 Thresholds and Custom Fields

Custom fields allow you to extend information that is related to software products by adding details pertinent to your organization. You can then use the information to filter and sort the reports as well as group products based on flexible criteria. A value that is specified in a custom field applies to the selected product with the particular license metric. It also applies only within the computer group to which you are assigned. For more information, see: [Adding custom information to license metric reports \(on page mcxlix\)](#).

The menu can also be used to set license metric thresholds in the same way as in the [Threshold \(on page mcxlv\)](#) column.

### 3 Product Name

Name of the licensed product. When you click the link for a product that uses the PVU or RVU MAPC metric, the next level of the report shows servers on which the product was installed when the metric quantity was the highest.

When you click the link for any other product, the next level shows all instances of product components, including historical instances that are no longer installed. To view the list of component instances that were installed when the metric quantity was the highest, generate the audit snapshot.

### 4 Metric

License metric that is assigned to the product. The metrics fall into three categories:

- Metrics for which utilization is calculated, including:
  - **9.2.7** Install Instances
  - Processor Value Unit (PVU)
  - Resource Value Unit (RVU MAPC)
  - **9.2.11** Virtual Processor Core (VPC)
- **9.2.7** Metrics for which calculating utilization is not yet supported.
- **9.2.7** Metric is unknown

For more information about the license metrics, see: [Reported license metrics \(on page cmxii\)](#).

 **Tip:** If you want to display only products for which metric utilization is calculated, hover over the **Manage Report View** icon , and click **Configure View**. Then, set the following filter: `Metric Quantity, greater than or equal to, 0`.

## **5** **10.0.1** Cloud Pak or FlexPoint Bundle

Cloud Pak or FlexPoint Bundle to which the product and its components are assigned. For more information, see:

- [Assigning products to FlexPoint bundles \(on page cmlxxxvi\)](#)
- [Assigning products to Cloud Paks \(on page cmlxxxiv\)](#)

## **6** Metric Quantity

The highest number of metric units that the product used during the specified period. The value `<n/a>` indicates that the quantity is not calculated for this metric.

The following icons indicate that further actions are required to ensure that the metric quantity is up-to-date:

- Red square () indicates that the metric quantity for the product needs to be updated because an action that influences the value was performed. For example, a component was assigned to this product. To update the metric quantity, click **Recalculate**. The progress of recalculation is displayed below the top menu bar.
- Exclamation mark () indicates that metric quantity might not be calculated correctly because inventory data from at least one VM manager is not reported properly. To solve the problem, ensure that all VM managers are configured. For more information, see: [Adding VM managers in central mode \(on page dccxcv\)](#) or [Adding VM managers in distributed mode \(on page dcccxcviii\)](#).

If you create a custom signature for IBM software, you must assign a correct IBM license metric to this product on Products & Metrics panel and then bundle the component instances to this product and IBM metric. Software from custom catalog content is assigned to Install Seats metric by default. IBM

metrics is calculated automatically for IBM software and non-IBM metrics is calculated for non-IBM software.

## 7 9.2.4 Threshold

The maximum number of metric units that the product can use within the computer group. The value is set manually. For more information, see: [Setting license metric threshold \(on page mcxlvj\)](#).

## 8 9.2.4 Threshold Delta

The difference between the threshold and the metric quantity. It indicates whether the metric utilization is above or below the manually set threshold. The following values indicate that the delta cannot be calculated:

- The value `<no data>` indicates that the threshold is not set.
- The value `<n/a>` indicates that the threshold was set for a product for which metric quantity is not calculated.

## 9 Imported Part Numbers

Part numbers that represents products that you purchased. For more information, see: [Part numbers \(on page cmj\)](#).

## 10 Metric Quantity History

History of changes in the metric utilization over the specified period. The history is not available for products for which metric quantity is not calculated.



**Note:** A product with a metric is displayed on **All Metrics** panel if all of the following conditions are met:

- There are component instances bundled to the product and the metric, discovered in the selected reporting period, and not suppressed.
- The relation between the component instances and the product and the metric is charged.
- If the metric is one of IBM metrics, such as PVU, RVU, VPC, and Install Instances, the product's vendor must be IBM. For example, metric calculation for these metrics will be applicable only for IBM products.
- Recalculation is not pending, which means that the **Recalculate** button is disabled.
- The given computer group has metric calculations enabled.

To bundle components to a product and metric, make sure that the metric and product are related (Products & Metrics panel). To check if the proposed relation between a component instance bundled to a product and a metric is charged, check the "Charged" column under the "Software Classification" panel. Metric quantity is not available if the metric is not automatically calculated by BigFix Inventory. In that a case, products with the metric are listed under the "All Metrics" panel with quantity as "`<n/a>`". You can manually update the quantity.

## Setting license metric threshold

**9.2.4** Available from 9.2.4. You can set a threshold to indicate the maximum number of metric units that a product can use within a computer group. The threshold is then used to calculate whether metric utilization is above or below your expectations.

 You must have the View License Metrics permission to view the threshold and the Manage Contracts permission to change it.

1. In the top navigation bar, click **Reports > All Metrics**. From the list of predefined reports, choose Metric Thresholds.
2. **Optional:** To filter down the report to the product for which you want to set the threshold, hover over **Configure**, and click **Configure View**. Then, specify appropriate filters. For example, choose Product Name, contains and specify the name of the product. Then, click **Submit**.
3. To set the threshold, click the pencil icon  in the **Threshold** column, and click **Set Threshold**.

All Metrics					
Time Range: 08/27/2020 - 11/25/2020 UTC Current Catalog Version: 10.0.3.1 Endpoint Scanner Catalog: 1					
All IBM Metrics		Recalculate	Audit Snapshot	Edit	37 rows (filtered) Export Configure
Product Name	FlexPoint or Cloud Pak	Threshold and Custom Fields	Metric	Metric Quantity	Metric Quantity History
IBM Rational Software Architect Designer	None	Set Value Clear Value	Authorized User Single Install	<n/a>	<n/a>
IBM Cognos Enterprise User	None		Authorized User	<n/a>	<n/a>
IBM ILOG CPLEX Optimization Studio Developer Edition	None		Authorized User	<n/a>	<n/a>
IBM Rational Functional Tester	None		Authorized User	<n/a>	<n/a>
IBM StoredIO Policy	None		Resource Value Unit	<n/a>	<n/a>
IBM Watson Explorer Enterprise Edition	None		Resource Value Unit	<n/a>	<n/a>
IBM Analytics Accelerator Framework for Wireless CSP	None		Resource Value Unit	<n/a>	<n/a>
IBM Maximo for Life Sciences Add On (FCT)	None		Unknown	<n/a>	<n/a>
IBM Data Replication	None		PVU Full Capacity	2,480	

4. Specify the threshold and click **Set**. The value is set only for the computer group to which you are assigned and is not inherited by its subgroups.

### Set Metric Quantity ✕

Set the declared metric quantity. The value that you provide takes precedence over the value that was measured by the application. You can remove the declared value to restore the initial one at any time.

Time range: from 11/24/2020 ?

Product: IBM StoredIQ Policy

FlexPoint or Cloud Pak Bundle: Unified Governance & Integration

Metric: Resource Value Unit

Computer group: All Computers

Metric quantity: ?

↕

Set

**i** **Tip:** If you want to set a threshold for a subgroup of your computer group, go to **Reports > Computer Groups** and open the subgroup. In the upper left corner, select All Metrics. Then, from the list of predefined reports, choose Metric Thresholds and set the threshold value for a particular product.

When you set the threshold, its delta is automatically calculated by subtracting the metric quantity from the threshold. If the utilization is lower than or equal to the threshold, the delta is displayed in green. Otherwise, it is displayed in red. Additionally, a line that represents the threshold is displayed on the metric quantity history graph.

All Metrics				
Time Range: 11/20/2020 - 11/25/2020 UTC		Recalculation Completed: 11/26/2020 01:02 PM		
Current Catalog Version: 10.0.3.1				
Endpoint Scanner Catalog: 1				
All IBM Metrics	Recalculate <span>?</span>	Audit Snapshot	Edit	1 / 37 rows (filtered) Export Configure
Product Name	FlexPoint or Cloud Pak Bundle	Metric	Metric Quantity	Metric Quantity History
<a href="#">IBM Rational Software Architect Designer</a>	None	Authorized User Single Install	<n/a> <span>✎</span>	<n/a>
<a href="#">IBM Cognos Enterprise User</a>	None	Authorized User	3,000 <span>✎</span>	
<a href="#">IBM ILOG CPLEX Optimization Studio Developer Edition</a>	None	Authorized User	<n/a> <span>✎</span>	<n/a>
<a href="#">IBM Rational Functional Tester</a>	None	Authorized User	<n/a> <span>✎</span>	<n/a>
<a href="#">IBM StoredIQ Policy</a>	None	Resource Value Unit	<n/a> <span>✎</span>	<n/a>
<a href="#">IBM Watson Explorer Enterprise Edition</a>	None	Resource Value Unit	<n/a> <span>✎</span>	<n/a>

If you want to remove the threshold, click the pencil icon and click **Clear Threshold**. Then, click **Clear**.

From the list of predefined reports, you can choose the Exceeded Thresholds report and schedule emails to be sent whenever a product appears on that report. It will ensure that you are automatically notified when metric utilization for any product exceeds the threshold. For more information, see: [Scheduling report emails \(on page mcix\)](#).

## Setting and removing the declared metric quantity

**9.2.16** Available from 9.2.16. On the All Metrics report, you can manually declare the metric quantity for selected license types for which BigFix Inventory does not calculate the utilization. You can also use this option to customize the metric quantity if needed. The declared value takes precedence over the value that is measured by the application.

 You must have the Manage License and the Manage Software Classification permissions to set the license metric quantity.

You can check which of your license metric quantities can be customized. Look at the pencil icon  in the **Metric Quantity** column. If the icon is active, you can declare the custom metric quantity for the product.

By default, you set the declared value from the reporting start date onwards. However when you explicitly provide also the end date for the report, then the declared metric quantity is set only until this date. Using this mechanism, you can declare metric quantities for any period of time by defining the appropriate time range for the report.

1. In the top navigation bar, click **Reports > All Metrics**.
2. **Optional:** To change the period for which you want to set the declared metric quantity, hover over **Configure**, click **Configure View**, and select the time range. If you specify a period from a date to a date, the license metric quantity is set only for this particular period of time.
3. To set the metric quantity, click the pencil icon  in the Metric Quantity column.

 **Note:** In case of FlexPoint bundles, you can set the license metric quantities for particular products that contribute to the bundle but not for the bundle itself. Click on the name of the bundle to see the detailed report that lists the products within bundle.

4. Specify the metric quantity and click **Set**. The value is set only for the computer group to which you are assigned and is not inherited by its subgroups.

### Set Metric Quantity ✕

Set the declared metric quantity. The value that you provide takes precedence over the value that was measured by the application. You can remove the declared value to restore the initial one at any time.

Time range: from 06/02/2019 ?

Product: IBM Virtual Desktop

Metric: Concurrent User

Computer group: All Computers

Metric quantity ?

10

Set



**Note:** If you want to set a metric quantity for a subgroup of your computer group, go to **Reports > Computer Groups** and open the subgroup. In the upper left corner, select All IBM Metrics and set the license metric quantity for a particular product.

The metric quantity for the product is set.

The declared metric quantity is independent of your software inventory or bundling and you should make sure that it is kept up-to-date. If you reassign software to another product or FlexPoint bundle, the declared metric quantity remains unchanged. If, as a result of reassignment, a product is left with no components, it is still visible on the All Metrics report with the declared metric quantity.

## Removing the declared metric quantity

You can remove the declared value to restore the value that is measured by the application.

1. Open the **All Metrics** report.
2. To remove the declared metric quantity, click the pencil icon ( ) in the **Metric Quantity** column.
3. Clear the text field to remove the declared metric quantity for the specified period of time.
4. Click **Set**.

## Adding custom information to license metric reports

**9.2.9** Available from 9.2.9. You can extend information that is related to software products by adding custom fields on the All Metrics report and its derivatives. You can then use the information to group products based on flexible criteria such as contract name, placement, allocation, date, or other.



You must have the Manage Contracts permission to add and edit custom fields, and the View License Metrics permission to view them.

1. To add a custom field that is displayed on the All Metrics report and its derivatives, perform the following steps.

- a. In the top navigation bar, click **Management > Metric Custom Fields**.
- b. To add a custom field, click **New**.
- c. Provide the name of the field.  
For example, Needs Renewal.
- d. Choose the type of data to be entered in the field.  
For example, **Boolean**.

**Create Metric Custom Field**

Name\*

Type\*



**Note:** After you create a custom field, you can edit only its name. You cannot change the type of data that is required in that field.

- e. Click **Create**.
2. To specify the value of a custom field, perform the following steps.
- a. In the top navigation bar, click **Reports > All Metrics**.
  - b. Select the row for which you want to specify the value. The value applies only to the selected product with the particular license metric. It is also set only for the computer group to which you are assigned and is not inherited by its subgroups.



**Tip:** If you want to set the value for a subgroup of your computer group, go to **Reports > Computer Groups** and open the subgroup. Then, set the value for a particular product within the selected subgroup.

- c. Hover over the **Edit** and click **Set Value**.
- d. Specify the value, and click **OK**.



## Set Value

Set the metric threshold to indicate the maximum number of metric units that the product is entitled to use. Specify a value of the custom field to extend information about the software product. Metric custom fields must be added on the [Metric Custom Fields](#) panel first.

Product: IBM Virtual Desktop  
Metric: Concurrent User  
Computer group: All Computers

Threshold   
Needs Renewal

OK

Cancel

### Tip:

- If the type of the custom field is Boolean, the check box that is displayed on the reports has three possible values.

- Not set
- Yes
- No

3. To display the custom field on the All Metrics report, perform the following steps.

- Hover over the **Configure** icon , and click **Configure View**.
- Select the custom field, and click **Submit**.

You created a custom field that can be used to provide specific information about a product with a particular license metric.

Publisher	Product Name	Metric	Metric Quantity	Needs Renewal	Metric Quantity History
					11/29/2019 - 02/27/2020
IBM	IBM InfoSphere QualityS...	PVU Subcapacity	1,100 	Yes	<input type="text"/>
IBM	IBM Business Process ...	PVU Subcapacity	1,100 	Yes	<input type="text"/>
IBM	IBM Rational Performan...	PVU Subcapacity	1,380 	No	<input type="text"/>
IBM	IBM SPSS Data Collecti...	PVU Subcapacity	1,100 	<not set>	<input type="text"/>

If you want to remove a value in the custom field, select a specific row, and hover over **Edit**. Then, click **Clear Value**. If you want to remove a custom field, go to **Management > Metric Custom Fields**, select the field that you want to remove, and click **Delete**.

You can use values in the custom fields to filter and sort the reports. You can also create saved report views that are filtered by the specified information, and enable notifications that are triggered when specific criteria are met.



**Note:** New contracts are defined in [All contracts \(on page mlxxiii\)](#) and the above custom fields are used for other purpose.

## Creating snapshots of license metric utilization for auditing purposes

Create the snapshot of the report, and store it as a record of license metric utilization in your enterprise over a particular period. You can create the snapshot with any frequency that is suitable for your purposes. However, it is a good practice to create the snapshot every quarter. You can also regenerate the snapshot at any time as the historical data is always editable.



You must have the following permissions to perform this task:

- View License Metric to open the report.
- View Audit Trail if you want the snapshot to contain the audit trail file.

To ensure completeness and accuracy of data that is contained in the audit snapshot, ensure that:

- Software scan data is collected from the entire environment. To verify whether there are any problems, check the [Software Scan Health widget \(on page ccclxxi\)](#) on the **Overview** panel.
- Capacity data is collected from the entire environment. To verify whether there are any problems, check the [Capacity Scan Health widget \(on page ccclxxi\)](#) on the **Overview** panel.
- Imports of data are successful. To check the import history, go to **Management > Data Imports**.
- Software is correctly classified. For more information, see: [Software classification \(on page cmxliv\)](#).

1. Log in to BigFix Inventory, and go to **Reports > All Metrics**.
2. **Optional:** To configure the period for which you want to create the snapshot, hover over the **Configure** icon , and click **Configure View**. Then, select the time range.
  - If you specify a period from a particular date until the last successful import, the reports contain entries from that date starting at 00:00:00.
  - If you specify a period from a date to a date, the reports contain entries from the first date starting at 00:00:00 to the second date ending at 23:59:59.
3. **Optional:** To limit the number of products that are included in the snapshot, specify the name of the product in the **Filters** section.

### Configure View

**Time Range**

90 days before the last successful import  
 11/29/2019 to the last successful import  
 11/29/2019 to 02/27/2020

**Filters**

Specify the report filter which matches all of the following conditions:

FlexPoint or Cloud Pak Bundle in set × None

Product Name equal to DB2 +

4. To create the snapshot, in the top navigation bar, click **Audit Snapshot**.

### Audit Snapshot Report Collection

Report generated at: 01/24/2024 12:35 PM

Before you generate the Audit Snapshot, you can optionally add a comment or attach any file. They will be included in the generated package.

Provide your comment here

Select a file that you want to attach

Browse

Request Report Generation

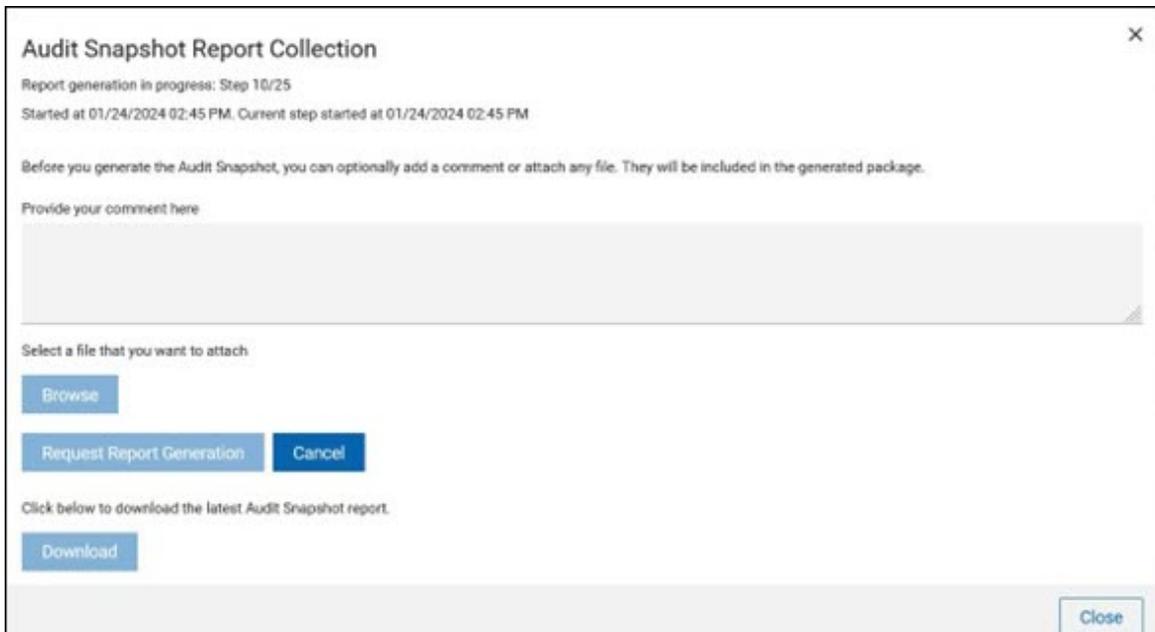
Click below to download the latest Audit Snapshot report.

Download

Close

5. **Optional:** In the **Provide your comment here** field, enter your comments.
6. **Optional:** Click **Browse** and select the file that you want to attach to the snapshot.
7. Click **Request Report Generation** to generate a report.
- The status bar at the top of the window shows the current state of the report generation with the time when the last report was generated. If the report generation is in progress, you can see the live status of the progress.
8. Once the report generation is in progress, you may choose to perform these:

- Click **Cancel** to cancel the report generation.
- Click **Close** or click the close icon to close the Audit Snapshot window and come back to it later while report generation is done in the background.



9. When the report generation is complete, click **Download** to download the report.

The `audit_snapshot_date_time.zip` file is downloaded to your computer. The date that is provided as part of the file name is expressed in the GMT time zone. For information about the content of the file, see: [Content of the audit snapshot \(on page mcliv\)](#).

### Content of the audit snapshot

Audit snapshot is a record of license metric utilization in your enterprise over a period of time. It is generated on the All Metrics/All IBM Metrics report and its derivatives. It is downloaded to your computer as the `audit_snapshot_date_time.zip` file that contains a number of other files.

**!** **Important:** If you use the audit snapshot for integration of BigFix Inventory with external tools, base the integration on column names, not their order. The order of columns might change if new columns are added.

**Table 183. General files**

File	Content
<code>audit_at- tachmen- t.exten- sion</code>	Optional. A file that was attached during the creation of the snapshot. The file is listed in the <code>checksums.txt</code> file.

Table 183. General files (continued)

File	Content
<code>audit_comment.txt</code>	Optional. Comments that were added during the creation of the snapshot. The file is listed in the <code>checksums.txt</code> file.
<b>9.2.12</b> <code>audit_snapshot_summary.csv</code>	Summary of all software products that were installed in your environment during the period for which the snapshot is generated and which are charged. The file contains information about: <ul style="list-style-type: none"> <li>• License metric that is used by the product.</li> <li>• The highest number of metric units that the product used during the specified period.</li> <li>• Part numbers that represents products that you purchased.</li> <li>• The need to perform recalculation to update the metric quantity for the product.</li> </ul>
<code>audit_trails.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Software classification actions</li> <li>• Uploads and imports of the PVU table, software catalog, and charge units</li> <li>• Changes to the VM managers</li> </ul> <p>The file is not generated if the user who generates the snapshot does not have the permission to view audit trails. It is also not generated when the snapshot contains only products that use license metrics other than PVU and RVU MAPC. For example, when the snapshot contains only products that use the Install Seats metric.</p>
<code>bundling_definitions.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Software limited to the vendor that was specified on the user interface</li> <li>• <b>9.2.7</b> License metric that each product uses</li> <li>• Details of computers on which the software is installed</li> </ul>
<code>checksums.txt</code>	Checksums that are used to verify whether any files from the audit snapshot were tampered with. <p><b>Linux</b> To verify the report files on Linux, run the following command:</p> <pre>sha256sum -c pvu_sub_capacity.csv</pre> <p><b>Windows</b> To verify the report files on Windows, run the following command:</p> <pre>CertUtil -hashfile pvu_sub_capacity.csv SHA256</pre>
<code>data_condition.txt</code>	Information about: <ul style="list-style-type: none"> <li>• <b>9.2.9</b> Version of BigFix Inventory in which the snapshot was generated</li> <li>• Author of the snapshot</li> </ul>

**Table 183. General files (continued)**

File	Content
	<ul style="list-style-type: none"> <li>• Date of the snapshot</li> <li>• Period that is covered by the snapshot</li> <li>• Version of the PVU table</li> <li>• Version of the software catalog</li> <li>• Status of aggregation and recalculation</li> <li>• Filters that are used on the reports</li> <li>• Attached file (optional)</li> <li>• <b>10.0.5</b> Date when BigFix Inventory was installed</li> </ul>
<code>part_numbers.csv</code>	Part numbers that are listed in the software catalog for software products included in any of the CSV report files.
<code>pub_key.pem</code>	Public key file that can be used to verify the <code>signature.rsa</code> file against the <code>checksums.txt</code> file.
<code>signature.rsa</code>	<p>A digital signature that can be used to verify whether the <code>checksums.txt</code> file was tampered with. To verify the file, you can use OpenSSL.</p> <p><b>Linux</b> To verify the <code>checksums.txt</code> file on Linux, run the following command:</p> <pre>openssl dgst -sha256 -verify pub_key.pem -signature signature.rsa checksums.txt</pre> <p><b>Windows</b> To verify the <code>checksums.txt</code> file on Windows, run the following command:</p> <pre>openssl -sha256 -verify pub_key.pem -signature file signature.rsa checksums.txt</pre>

The following files are included in each audit snapshot unless you filter the report to show only a specific metric type, for example PVU subcapacity. In this case, files with other metrics are not included.

**Table 184. Files with license metric utilization**

File	Content
<b>10.0.2</b> <code>cloud_paks.csv</code>	<p>Information about:</p> <ul style="list-style-type: none"> <li>• Cloud Paks</li> <li>• Software products that are installed as part of Cloud Paks</li> </ul>
<b>9.2.16</b> <code>flexpoints.csv</code>	Information about:

Table 184. Files with license metric utilization (continued)

File	Content
	<ul style="list-style-type: none"> <li>• Software licensed per number of FlexPoints</li> <li>• Details of software products that are licensed under the Flex Point bundles</li> </ul>
<b>9.2.7</b> <code>install_instances.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Software licensed per number of installed instances</li> <li>• <b>9.2.13</b> FlexPoint offerings to which products and their components are bundled</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.5</b> <code>install_seats.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Software licensed per number of computers on which it is installed</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.8</b> <code>microsoft_dual_physical_processor.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Microsoft software that is licensed for the number of active physical processors</li> <li>• Utilization of the metric</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.8</b> <code>microsoft_single_physical_processor.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Microsoft software that is licensed for the number of active physical processors</li> <li>• Utilization of the metric</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.7</b> <code>microsoft_physical_core_with_sa.csv</code>	Information about:

**Table 184. Files with license metric utilization (continued)**

File	Content
	<ul style="list-style-type: none"> <li>• Microsoft software that has Software Assurance and is licensed for the number of physical cores</li> <li>• Utilization of the metric</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.7</b> <code>microsoft_virtual_-core_with_sa.csv</code>	<p>Information about:</p> <ul style="list-style-type: none"> <li>• Microsoft software that has Software Assurance and is licensed for the number of virtual cores</li> <li>• Utilization of the metric</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.8</b> <code>oracle_processor_-core.csv</code>	<p>Information about:</p> <ul style="list-style-type: none"> <li>• Oracle software that is licensed for the number of physical cores</li> <li>• Utilization of the metric</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<code>pvu_full_capacity.csv</code>	<p>Information about:</p> <ul style="list-style-type: none"> <li>• PVU software and its PVU utilization under full capacity license</li> <li>• <b>9.2.13</b> FlexPoint offerings to which products and their components are bundled</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<code>pvu_sub_capacity.csv</code>	<p>Information about:</p> <ul style="list-style-type: none"> <li>• PVU software and its PVU utilization under subcapacity license</li> <li>• <b>9.2.13</b> FlexPoint offerings to which products and their components are bundled</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>

Table 184. Files with license metric utilization (continued)

File	Content
<b>9.2.13</b> <code>registered_user.csv</code>	Information about: <ul style="list-style-type: none"> <li>• Software that is licensed for the number of registered users</li> <li>• Utilization of the metric</li> <li>• Details of users who used or registered the software when the metric quantity was the highest</li> </ul>
<code>rvu_full_capacity.csv</code>	Information about: <ul style="list-style-type: none"> <li>• RVU software and its RVU MAPC utilization under full capacity license</li> <li>• <b>9.2.13</b> FlexPoint offerings to which products and their components are bundled</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<code>rvu_sub_capacity.csv</code>	Information about: <ul style="list-style-type: none"> <li>• RVU software and its RVU MAPC utilization under subcapacity license</li> <li>• <b>9.2.13</b> FlexPoint offerings to which products and their components are bundled</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>
<b>9.2.11</b> <code>vpc_capacity.csv</code>	Information about: <ul style="list-style-type: none"> <li>• VPC software and its VPC utilization</li> <li>• <b>9.2.13</b> FlexPoint offerings to which products and their components are bundled</li> <li>• Details of computers on which the software was installed when the metric quantity was the highest</li> </ul>

## Files for integration with IBM Cloud Platform Common Services

Table 185.

File	Content
<p><b>10.0.2</b> <code>products_daily_&lt;start_date&gt;&lt;end_date&gt;&lt;server_FQDN&gt;.csv</code></p> <ul style="list-style-type: none"> <li>• <b>start_date</b> is the time range selected on the <a href="#">All Metrics reports (on page mlxv)</a>.</li> <li>• <b>end_date</b> time range selected on the All Metrics report.</li> <li>• <b>server_FQDN</b> is the fully qualified domain name of the BigFix Inventory server on which the snapshot was generated.</li> </ul>	<p>The file contains daily values of license metric utilization for products that were visible on the All Metrics report when the audit snapshot was generated. It provides a separate entry for every unique license offering (product and license metric record from the All Metrics report) for each day during the reporting period. The purpose of this file is to allow for consolidating data from BigFix Inventory about IBM software in <b>IBM Cloud Platform Common Services</b>.</p>

### Snapshot columns

This glossary provides a brief description of every column that can be found in the audit snapshot generated in BigFix Inventory.

[B \(on page mclx\)](#) [C \(on page mclx\)](#) [D \(on page mclxii\)](#) [E \(on page mclxii\)](#) [F \(on page mclxii\)](#) [I \(on page mclxii\)](#) [L \(on page mclxiii\)](#) [M \(on page mclxiii\)](#) [O \(on page mclxiv\)](#) [P \(on page mclxiv\)](#) [R \(on page mclxvi\)](#) [S \(on page mclxvi\)](#) [U \(on page mclxvi\)](#) [V \(on page mclxvii\)](#)

### B

#### Bundle Metric Contribution (previously FlexPoint Quantity)

Indicates the number of license metric units that the particular product contributes to the overall metric quantity of the Cloud Pak or FlexPoint Bundle to which that product is assigned.

### C

#### Changed PVU per Core

Specifies whether the number of processor value units assigned to a single core was manually changed for the server that is listed in the Server Name column. If the value is `Yes`, you can check the comment that was provided as the reason of the change. It is listed in the `audit_trails.csv` file, and has the following format.

```
Modification Type: PVU per core value changed
Details: The PVU per core value was changed to 70 on server server_name. The provided
reason: reason.
```

#### 9.2.12 Charged

Indicates whether the relation between the component and the product is charged based on the license terms. If the relation is charged, the component contributes to the license metric utilization of the product to which it is assigned.

**Cluster Cores**

Total number of processor cores that were available within the cluster of servers when the snapshot was generated. The information is available in the `oracle_processor_core.csv` file.

**Cluster Name**

Name of the cluster to which the server listed in the Computer column belonged when the snapshot was generated. The information is available in the `oracle_processor_core.csv` file.

**Comment**

Extra technical information. Possible values include:

- Incomplete virtualization hierarchy
- All instances are excluded

**Component**

Software component that was discovered on the computer that is listed in the Computer column.

**Computer**

Host name of the endpoint on which the BigFix client is installed.

**Computer Deleted**

Specifies whether the computer that is listed in the Computer column existed in the environment when the snapshot was generated.

**10.0.10****Computer First Seen**

- BigFix Inventory Server: Date and time when information about the computer was imported for the first time.
- Disconnected: Date and time of generating the disconnected scanner package that was imported to the License Metric Tool server for the first time.

**9.2.11****Computer Last Seen**

Date and time when the BigFix client connected to the BigFix server the last time.

**Computer Type**

Type of the computer. Possible values include:

- Physical
- Virtual
- Public cloud

**Current Server Name**

Name of the server on which the computer that is listed in the Computer column resided when the snapshot was generated. Capacity of that server does not influence utilization of license metric. The server whose capacity influences metric utilization is listed in the Server Name column.

## D

**Details**

Information about the type and date of action that is listed in the `audit_trails.csv` file as well as the user who performed the action.

**Discovery End**

Date and time when the component instance stopped being detected. If the component is still detected, the column is empty.

**Discovery Start**

Date and time when the component was first detected by BigFix Inventory.

## E

**Exclusion Comment**

Comment that was provided as the reason for excluding the product instance from pricing calculations on the computer that is listed in the Computer column.

## F

**9.2.13 FlexPoint Bundle**

FlexPoint bundle to which the product and its components are assigned.

**Cloud Pak or FlexPoint Bundle (previously FlexPoint Bundle)**

Cloud Pak or FlexPoint Bundle to which the product and its components are assigned.

## I

**Imported Part Numbers**

Part number that was imported to BigFix Inventory. It represents the product that is listed in the Product Name column and the license metric that is assigned to the product. License metric is the same for all products that are listed in a single `csv` file. For example, all products in the `pvu_sub_capacity.csv` file are assigned the PVU subcapacity metric.

**IP Address**

IP address of the computer that is listed in the Computer column.

**Is Imported**

Specifies whether a part number that is listed in the Part Number column was also imported to BigFix Inventory by a user.

## L

### Last Seen

Date and time when the BigFix client connected to the BigFix server the last time.

**9.2.11** Starting from application update 9.2.11, the name of the column is changed to Computer Last Seen.

### License Use For Cluster

Total number of licenses needed for a cluster, based on number of processor cores, that were available within the cluster of servers when the snapshot was generated and multiplied by Oracle Core Factor.

The information is available in the `oracle_processor_core.csv` file.

### **9.2.13** License Use For Endpoint

Number of unique users who used the software on a specified computer within the period for which the snapshot was generated. License Use for Endpoint is measured at the metric peak value time.

### License Use For Server

Total number of licenses needed for a server, based on number of processor cores, that were available on the server that is listed in the Server Name column when the snapshot was generated and multiplied by Oracle Core Factor. The information is available in the `oracle_processor_core.csv` file.

### Logical Processors

Number of processor cores that were assigned to the computer that is listed in the Computer column when the peak of metric value occurred. When hyper-threading is used on the x86 architecture, each core is counted as two logical processors. The information is available in the `microsoft_virtual_core_with_sa.csv` file.

## M

### Metric

Type of software license metric that is used by the product.

### Metric Peak Value Time

Date and time when utilization of the license metric was the highest during the period for which the snapshot was generated.

### Metric Quantity

The highest number of metric units that the product used within the period for which the snapshot was generated. Metric quantity is measured at the metric peak value time. It represents metric utilization in the entire environment.

### Modification Date

Date and time when the modification that is listed in the `audit_trails.csv` file was performed.

**Modification Type**

Type of modification.

**Modified By**

User who modified the item.

O

**Oracle Core Factor**

Factor that is applied to the server on which Oracle products are installed.

**OS**

Operating system of the computer that is listed in the Computer column.

P

**Part Number**

Part number that represents the product and its license metric as listed in the software catalog.

**Partition Cores**

Number of partition cores that were assigned to the computer that is listed in the Computer column when the peak of metric value occurred.

**Path**

Installation path of the software that was discovered on the computer or the path where the `.swidtag` file was discovered.

**10.0.1 Peak Date**

Date when the product used the highest number of metric units within the period for which the snapshot was generated.

**Physical Server CPU Core Full Capacity**

Number of physical cores that were available on the server that is listed in the Server Name column when peak of metric value occurred. The information is available in the `pvu_full_capacity.csv` and `rvu_full_capacity.csv` files.

**Physical Server CPU Core Subcapacity**

Number of physical cores that were available to the product that is listed in the Product Name column when peak of metric value occurred. The information is available in the `pvu_sub_capacity.csv` file.

**Physical Server CPU Core Subcapacity Limit**

Number of physical cores that were available on the server that is listed in the Server Name column when peak of metric value occurred. The information is available in the following files:

- `pvu_sub_capacity.csv`
- `rvu_sub_capacity.csv`
- `9.2.11 vpc_capacity.csv`

### Physical Server PVU Full Capacity

Number of cores (Physical Server CPU Core Full Capacity column) multiplied by the number of PVUs assigned to the processor core (PVU per Core column). It represents PVU full capacity for the server that is listed in the Server Name column. The information is available in the `pvu_full_capacity.csv` file.

### Physical Server PVU Subcapacity

Number of cores (Physical Server CPU Core Subcapacity column) multiplied by the number of PVUs assigned to the processor core (PVU per Core column). It represents PVU subcapacity for the product that is listed in the Product Name column. The information is available in the `pvu_sub_capacity.csv` file.

### Physical Server PVU Subcapacity Limit

Number of cores (Physical Server CPU Core Subcapacity Limit column) multiplied by the number of PVUs assigned to the processor core (PVU per Core column). It represents PVU full capacity for the server that is listed in the Server Name column. The information is available in the `pvu_sub_capacity.csv` file.

### Processor

Name of the processor normalized to the name that is listed in the PVU table. If the discovered processor was not matched with any processor from the PVU table, the value is `Unknown processor`.

### Processor Brand String

Full specification of the processor including its brand, model and speed as read from the operating system of the computer that is listed in the Computer column.

### Processor Metric

Number of processors that contributed to calculating license metric utilization. The information is available in the `microsoft_single_physical_processor.csv` and `microsoft_dual_physical_processor.csv` files.

### Product Name

Name of the software product.

### Product Release

Release of the software product.

### Publisher

Name of the company that published the software product.

### PVU per Core

Number of processor value units that are assigned to a processor core on a server that is listed in the Server Name column. By default, the value is taken from the PVU table but it can also be set manually. If it was set manually, the value in the column Changed PVU per Core is `yes`.

## R

### Recalculation Needed

Specifies whether recalculation was needed when the snapshot was generated. If the value is `yes`, metric quantity for the product might not be correct. It happens because actions that influence metric quantity were performed but the value was not recalculated. For example, a component was reassigned to a different product. A correct snapshot contains only entries for which the value in the Recalculation Needed column is `no`.

## S

### Server Active Sockets

Number of physical processor chips that are mounted on the server that is listed in the Server Name column. The number also includes empty sockets without processors.

### Server Cores

Number of processor cores that were available on the server that is listed in the Server Name column when peak of metric value occurred. The information is available in the `microsoft_physical_core_with_sa.csv` and `oracle_processor_core.csv` files.

### Server Name

A unique system in the enterprise. The value depends on what type of computer is listed in the Computer column.

- If the computer is a physical machine, the Server Name column shows the hardware manufacturer, type, and a machine serial number.
- If the computer is a virtual machine, the Server Name column shows the manufacturer and host name of the physical host.
- If the computer is a virtual machine for which a VM manager is not configured, the Server Name column shows a UUID assigned by BigFix Inventory prefixed with `TLM_VM_`. A correct snapshot should not contain any entries with such a value unless you have the permission of the IBM Compliance Team.

If multiple virtual machines are running on the same physical server, the same server name is listed multiple times.

## U

### Unconfirmed Product Instance

Specifies whether the assignment of the component to the product was confirmed. Confirming the assignment is optional and does not impact metric utilization.

V

### Virtualization Layer ID

Internal ID of the virtualization layer on which the software component is installed. The information is used by the HCL Support for troubleshooting purposes.

## Understanding CSV files with metric utilization

Due to differences in the structure of the user interface reports and CSV reports, information about metric utilization is available differently in each type of report. Learn more about these differences to understand how to correlate the information between user interface reports and CSV reports.

### Multilevel versus flat report structure

The All Metrics report and IBM Subcapacity report consists of the following levels for PVU and RVU MAPC products:

1. First level - a list of all products.

Product Name	Metric	Metric Quantit...	Metric Quantity History
IBM MQ	PVU Full Capacity	1360	03/18/2016 - 06/17/2016
IBM MQ	PVU Subcapacity	810	03/18/2016 - 06/17/2016



**Note:** **10.0.16** The term, IBM Subcapacity applies to PVU, RVU MAPC, and VPC metrics. From BigFix Inventory version 10.0.16 a new report BM Subcapacity is available.

2. Second level - when you click a product name, you go to information about the physical server on which the product is installed.

Server Name	Processor	CPU Core Subcapacit...	CPU Core Subcapacit...	PVU Subcapacity Lim...	PVU Subcapacity	Comment
X.XXX.XX.242	Intel(R) Xeon(R) Multi-c...	8	6	800	600	
X.XXX.XX.217	Intel(R) Xeon(R) Multi-c...	8	3	560	210	

3. Third level - when you click the server name, you go to the list of virtual machines that run on this server and have the product installed.

Computer Name	Operating System	IP Address	Product Version	Component Name	Path	Last Seen	Comment
Computer 1	Linux Red Hat Ente...	X.XXX.XX.151	7.5	IBM WebSphere M...	/util/MQ/	06/15/2016	
Computer 2	Win10 10.0.10240	X.XXX.XX.153	7.5	IBM WebSphere M...	C:\Util\CompleteS...	06/15/2016	
Computer 3	Win10 10.0.10240	X.XXX.XX.154	7.5	IBM WebSphere M...	C:\Util\CompleteS...	06/16/2016	

The audit snapshot is not multilevel. However, it must present the same information that the report that is available in the user interface. Below is an excerpt from the audit snapshot that corresponds to the report presented on the screen captures above. Some columns are hidden in the snapshot to simplify it.

**Table 186. Excerpt of the audit snapshot**

D	E	F	H	K	M	N	O	P	S
Product Name	Metric Quantity	Metric Peak Value Time	Server Name	PVU Per Core	Physical Server CPU Core Subcapacity Limit	Physical Server CPU Core Subcapacity	Physical Server PVU Subcapacity Limit	Physical Server PVU Subcapacity	Computer
IBM MQ	810	2016-06-01 00:00:00.000	X.XXX.XX.217	70	8	3	560	210	Computer 1
IBM MQ	810	2016-06-01 00:00:00.000	X.XXX.XX.217	70	8	3	560	210	Computer 2
IBM MQ	810	2016-06-01 00:00:00.000	X.XXX.XX.217	70	8	3	560	210	Computer 3

When values in column O (Physical Server PVU Subcapacity Limit) are added, PVU consumption equals 1680 PVUs, which is greater than the value that is presented on the user interface. These values should not be added because they all refer to a single server (X.XXX.XX.217) on which the three VMs run, not an individual VM that is listed in column S (Computer). The value in column M is repeated due to the flat structure of the CSV report.

If you want to relate the values from the CSV report to the user interface report, the relation is as follows:

- Column O in the CSV report relates to the PVU Subcapacity Limit column on the second level of the report
- Column N in the CSV report relates to the CPU Core Subcapacity column on the second level of the report

Server Name	Processor	CPU Core Subcapacity Limit	CPU Core Subcapacity	PVU Subcapacity Limit	PVU Subcapacity	Comment
X.XXX.XX.242	Intel(R) Xeon(R) Multi-c...	8	6	800	600	
X.XXX.XX.217	Intel(R) Xeon(R) Multi-c...	8	3	560	210	

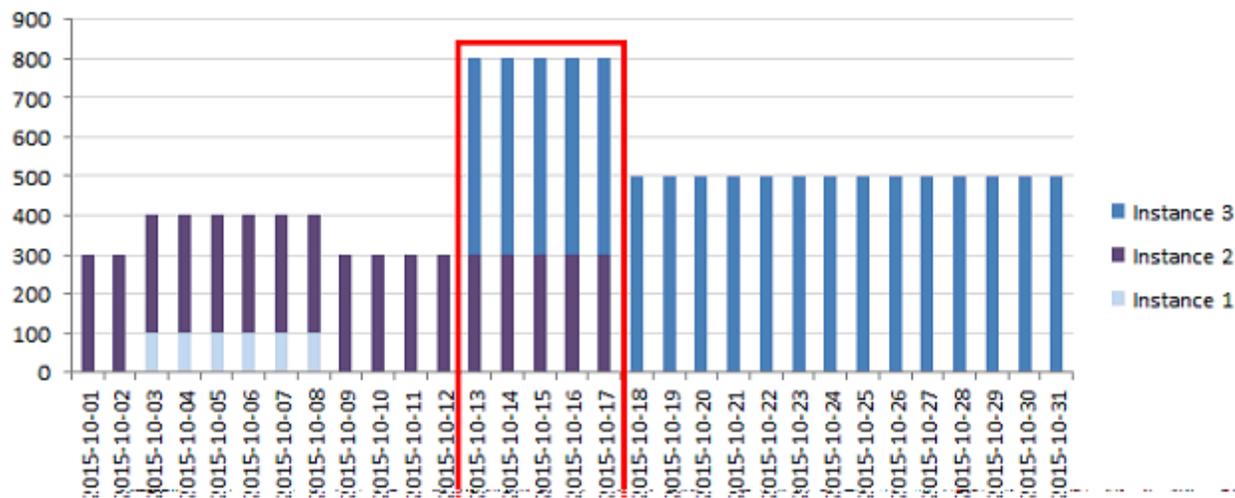
PVU and RVU MAPC subcapacity license terms specify license consumption only on the physical server level. The values cannot be calculated and presented on the virtual machine or LPAR level, and such data is not provided by BigFix Inventory. For more information, see: [Virtualization Capacity License Counting Rules](#).

### CSV reports contain only software instances discovered during the license peak value time

CSV reports list only software instances that were discovered during the license peak value time. If an instance was installed in your environment during the reporting period but was not discovered during the license peak value time, the instance is not listed in the CSV reports.

For example, three instances of DB2 are installed. The reporting period is set to one month and DB2 license utilization is as follows:

- Instance 1 uses the maximum of 100 PVUs
- Instance 2 uses the maximum of 300 PVUs
- Instance 3 uses the maximum of 500 PVUs



The license peak value occurs when the sum of PVU values for all instances is the highest and equals 800 PVUs (300 PVUs for instance 2 + 500 PVUs for instance 3). The peak occurs during the period that is marked with a red square. It is the license peak value time. The peak usage for instance 1 is outside of the peak value time. It means that this instance was installed in the environment during the current reporting period but was not discovered during the license peak value time. This instance is not listed in the CSV report.

## Raw utilization of license metrics

Available from 9.2.1. Raw data about utilization of license metrics is collected for products that deliver .slmtag files and is shown on the Resource Utilization report. The data that is shown on the report is not aggregated. It means that if a product can use five license metrics, five rows are shown on the report for that product. What is more, all metrics that are available for a product are displayed, not only metrics that are defined by your license agreement.

To collect raw utilization data, run the resource utilization scan. The scan is scheduled automatically if you enabled the default scan configuration. Otherwise, enable it manually. For more information, see: [Initiating software scans \(on page dcx\)](#).

For the list of IBM products that deliver .slmtag files, see: [Resource Utilization Measurement Community](#).

Resource Utilization  Send Feedback

Retention period for historical data is configured for 90 days.

(Base Report) Export History 0 rows (all data)

Computer Name	Software Name	Metric Type	Metric Subtype	First Measured	Last Measured	Maximal Trend ...	Maximal Trend Value History
NC042222	IBM ILOG CPLE...	FLOATING_USER	<no data>	03/17/2015 02:0...	03/17/2015 02:2...	0	
VMW009128109...	IBM MobileFirst ...	CLIENT_DEVICE	Inactive Devices	06/01/2015 10:5...	06/30/2015 02:5...	27	
NC042222	IBM Endpoint Ma...	MANAGED_VIRT...	HOURL	03/08/2015 12:1...	03/08/2015 05:0...	0	
VMW009128109...	IBM MobileFirst ...	CLIENT_DEVICE	Inactive Devices	06/03/2015 06:5...	06/28/2015 06:5...	97	

2015-06-03 - 2015-07-02

### 1 Retention period setting

To reduce the amount of resource utilization data, set the retention period after which the data is removed from the database. For more information, see: [Configuring data retention period for raw utilization data \(on page dccxvi\)](#).

### 2 Export History

History provides initially processed data about the average and maximum utilization of each license metric for each product for a specified period. It is different from export to CSV or PDF that includes only data that is visible on the user interface.

### 3 Metric Type and Metric Subtype

The type and subtype of license metrics that a product uses. The report does not show products that use the PVU, RVU MAPC or Install Seats metric. To view these products, open the All Metrics report.

### 4 First Measured and Last Measured

The first and last time when each metric was reported.

### 5 Maximal Trend Value

The maximum utilization of each license metric over the last 30 days. If a particular product is unused, no resource utilization data is available, or the data is older than 30 days, the value is 0.

### 6 Maximal Trend Value History

Trend value of the maximum utilization over the last 30 days. When the graph shows 0 for a specific period, it means that there is no data, or there was no license utilization during this period. To recognize which is the case, click **Export History** to save the report to a file. Then, open the file, and check if the entries that show 0 in the user interface also show 0 in the file. If they do, it means that the license utilization during this period equals 0. If there are no such entries, the data from this period was not reported.

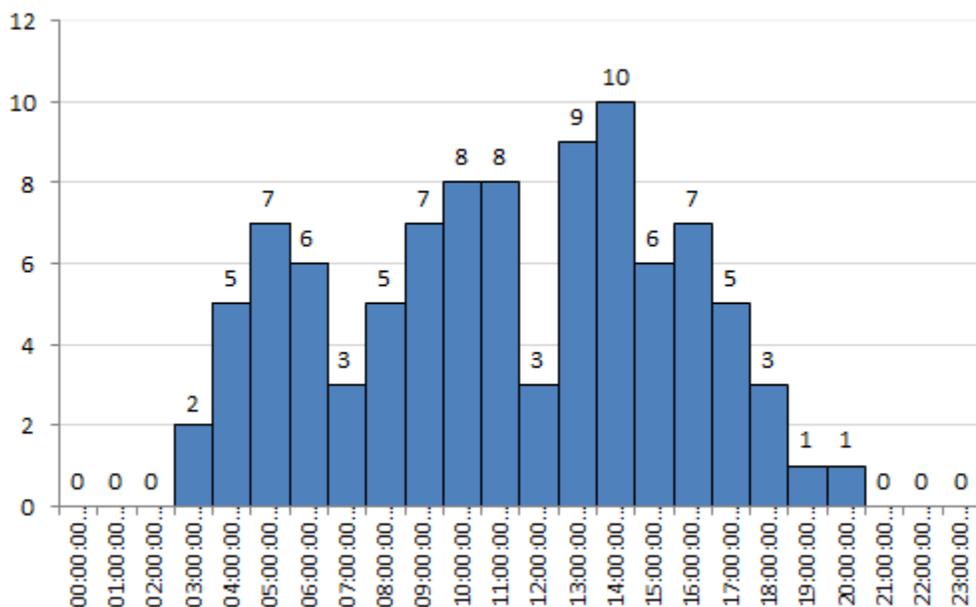
## Aggregating the data

If you want to aggregate the data according to your license agreement, export the history of license metric utilization and aggregate it outside of BigFix Inventory. Apply all necessary filters on the Resource Utilization report, and click **Export History**. The `csvhistory.zip` file is downloaded to your computer. It contains the `export_history.csv` file that provides initially processed data about the average and maximum utilization of each license metric for each product.

## Example

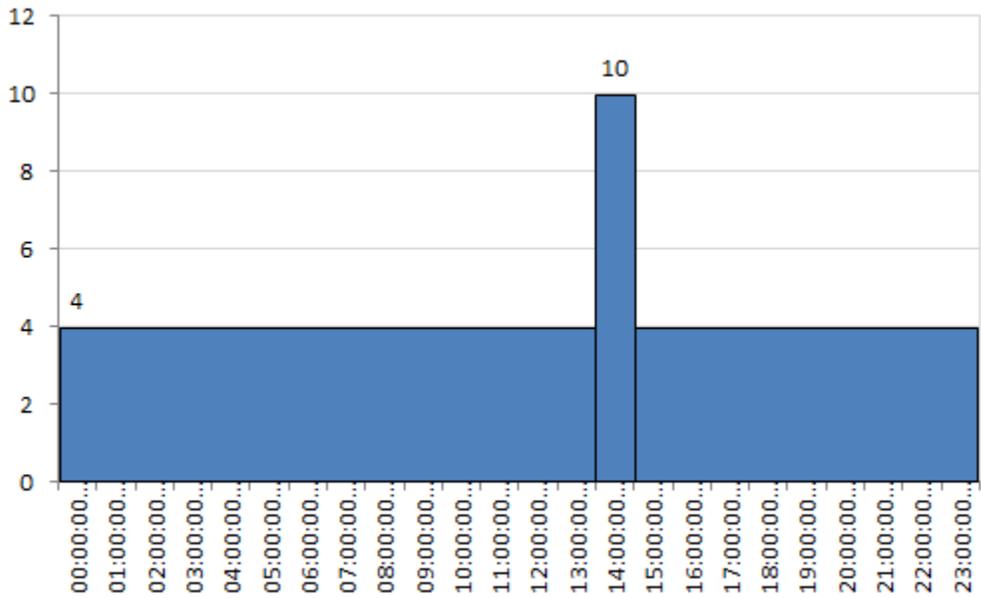
IBM Product is an application that is licensed based on the number of users who simultaneously log in to that application per hour. [Figure 12: License metric utilization data retrieved from the .slmtag file for BigFix Product \(on page mclxxi\)](#) is a visualization of the license metric utilization that is retrieved from the .slmtag file specific for BigFix Product.

Figure 12. License metric utilization data retrieved from the .slmtag file for BigFix Product



The data undergoes initial processing during which the average daily utilization of the license metric is calculated. Information about the maximum utilization, including its value and time, is preserved. [Figure 13: License metric utilization data for BigFix Product after initial processing \(on page mclxxii\)](#) is a visualization of the license metric utilization data for BigFix Product after initial processing. It shows that on average, four users were simultaneously logged in to the application. The maximum utilization occurred between 2:00 PM and 3:00 PM when 10 users were simultaneously logged in to BigFix Product.

Figure 13. License metric utilization data for BigFix Product after initial processing



The `export_history.csv` file contains license metric utilization data after initial processing. It does not contain all data that was collected from the endpoints in your infrastructure. [Table 187: A fragment of the `export\_history.csv` file \(on page mclxxii\)](#) shows a fragment of the `export_history.csv` file that corresponds to the data that is presented in [Figure 13: License metric utilization data for BigFix Product after initial processing \(on page mclxxii\)](#). The first row corresponds to the average license metric utilization before the peak. The second row corresponds to the peak value. The third row corresponds to the average utilization after the peak value.

**Table 187. A fragment of the `export_history.csv` file**

*A simple table with 4 rows and 7 columns.*

Computer Name	Software Name	Metric Type	Metric Subtype	Start Time (UTC 0)	End Time (UTC 0)	Value
VMW00912	IBM Product	CONCURRENT_-USER		2015-06-20 00:00:00.0	2015-06-20 14:00:00.0	4
VMW00912	IBM Product	CONCURRENT_-USER		2015-06-20 14:00:00.0	2015-06-20 15:00:00.0	10
VMW00912	IBM Product	CONCURRENT_-USER		2015-06-20 15:00:00.0	2015-06-21 00:00:00.0	4

### Disabling collection of raw utilization data

Available from 9.2.1. Raw utilization data is collected by default. However, you can disable the option if you are not interested in this data.

 You must be an Administrator to perform this task.

1. Stop all actions that were created by the **Initiate Software Scan** task.
  - a. Log in to the BigFix console.
  - b. In the left navigation tree, click **Actions**.
  - c. Select all open actions that were created by the **Initiate Software Scan** task, right-click them, and click **Stop Action**.  
The status of the actions changes to *Stopped*.
2. [Run the software scan \(on page dcx\)](#). Clear the **Resource utilization** check box.
3. Log in to BigFix Inventory, go to <https://hostname:port/management/feature>, and clear the **Measure resource utilization** check box. Then, click **Save**.

Raw utilization data is no longer collected from the computers in your infrastructure. The Resource Utilization report is hidden from the BigFix Inventory menu.

## 10.0.12 Managing Microsoft Processor Core licenses

With version 10.0.12, BigFix Inventory supports new metrics for the per core physical licensing model. The calculation is done for both physical and virtual metric values.

### Supported metric

The below table shows the metric supported for Microsoft Processor Core licenses:

Metric	Parameters
Microsoft Windows Server Physical Processor Core (default metric for the products)	<ul style="list-style-type: none"> <li>• Windows Server 2016 Datacenter</li> <li>• Windows Server 2019 Datacenter</li> <li>• Windows Server 2022 Datacenter</li> </ul>
Microsoft Windows Server Virtual Processor Core	<ul style="list-style-type: none"> <li>• Windows Server 2016 Datacenter</li> <li>• Windows Server 2019 Datacenter</li> <li>• Windows Server 2022 Datacenter</li> </ul>
Microsoft Windows Server Standard Physical Processor Core (default metric for the products)	<ul style="list-style-type: none"> <li>• Windows Server 2016 Standard</li> <li>• Windows Server 2019 Standard</li> <li>• Windows Server 2022 Standard</li> </ul>

Metric	Parameters
<b>10.0.11</b> Microsoft SQL Server Physical Processor Cores (default metric for the products)	<ul style="list-style-type: none"> <li>• Microsoft SQL Server Standard Edition</li> <li>• Microsoft SQL Server Enterprise Edition</li> </ul>
Microsoft SQL Server Virtual Processor Cores	<ul style="list-style-type: none"> <li>• Microsoft SQL Server Standard Edition</li> <li>• Microsoft SQL Server Enterprise Edition</li> </ul>

**Note:**

1. The new discovered Microsoft products will have their default metric assigned according to the above table.
2. Products discovered with confirmed bundling, or defined default custom bundling, or with default custom metric, will not be reassigned to new default metric after upgrading BigFix Inventory server.

**Metric calculation**

The metric calculation rules are explained below:

- Metric value is calculated only for the products that are part of the Contract.
- The calculated value is visible on "All Contracts" and "Product Metrics per Contract" panels.

**Calculate Physical metric value for a product**

The rules to calculate the physical metric value are explained below:

- Metric value for a product = sum of calculated values for each physical server (with licensed product installed or with the VM with a licensed product)
- Metric value for a server = number of server cores (minimum number of cores per physical processor and per physical computer applies)

For Windows Standard, there can be maximum two VMs with licensed product on a physical server. For each VMs exceeding the limit, metric value for a product is increased by server metric value.

**Calculation parameters: The below tables shows default calculation parameters for Physical metric value for a product**

Metric	Parameters
Windows Server Microsoft Physical Processor Core	<ul style="list-style-type: none"> <li>• min_microsoft_cores_per_processor = 8</li> <li>• min_microsoft_cores_per_physical_computer = 16</li> <li>• max_vms_with_product = 0</li> <li>• roundup_value = 1</li> </ul>
Windows Server Standard Microsoft Physical Processor Core	<ul style="list-style-type: none"> <li>• min_microsoft_cores_per_processor = 8</li> <li>• min_microsoft_cores_per_physical_computer = 16</li> <li>• max_vms_with_product = 2</li> <li>• roundup_value = 1</li> </ul>
Microsoft SQL Server Physical Processor Cores	<ul style="list-style-type: none"> <li>• min_microsoft_cores_per_processor = 4</li> <li>• min_microsoft_cores_per_physical_computer = 0</li> <li>• max_vms_with_product = 0</li> <li>• roundup_value = 1</li> </ul>

**Calculate Virtual metric value for a product:**

- Metric value for a product = sum of calculated values for each virtual machine and each physical machine with licensed product installed.
- Metric value for a virtual machine = number of virtual cores, minimum number of cores per virtual machine applies.
- Metric value for a physical machine = number of physical cores, minimum number of cores per physical processor and per physical computer applies.

**Calculation parameters: The below tables shows default calculation parameters for Virtual metric value for a product**

Metric	Parameters
Windows Server Microsoft Virtual Processor Core	<ul style="list-style-type: none"> <li>• min_microsoft_virtual_cores_per_vm = 8</li> <li>• min_microsoft_cores_per_processor = 8</li> <li>• min_microsoft_cores_per_physical_computer = 16</li> <li>• roundup_value = 1</li> </ul>

Metric	Parameters
Microsoft SQL Server Virtual Processor Cores	<ul style="list-style-type: none"> <li>• min_microsoft_virtual_cores_per_vm = 4</li> <li>• min_microsoft_cores_per_processor = 4</li> <li>• roundup_value = 1</li> </ul>

### Additional SQL Server considerations

- You will have to manually manage a situation when there are VMs on a server with SQL Server Standard and you will classify them to be calculated per Physical Processor Core. This is required by Microsoft license terms for SQL Server Standard and BigFix Inventory does not handle this situation automatically. Normally customer should reassign such instances to Virtual Processor Core metric.
- If a mixture of MS SQL / Windows Server editions is running on a hardware computer, license utilization will be calculated independently for each product (as defined in Software Catalog) and the license calculation mechanism will not try to choose automatically a higher edition **to optimize license cost**. A customer will need to classify Microsoft software accordingly.
- A customer will have to manually manage the situation when the Windows Server Standard virtualization host is used for other purposes than virtualization. In such cases, manual metric calculation will be required according to Microsoft license terms.

### Examples

Below is an example of **physical core** metric calculation. On the Software Classification screenshot there is software and capacity data that was used for calculation examples. An appropriate contract including given Software Product and Metric has to exist.

Software Classification							
MS Physical	Assign	Exclude	Confirm	Edit	11 rows (filtered)	Export	Configure
Publisher N.	Component Name	Metric	Computer Name	Server Serial Number	Computer..	Server Cores	Server Active Sockets
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	BF1W22-CHINA	TLM_VM_42288bcc-994c-7855-9...	Virtual	2	1
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40009	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40008	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40007	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40006	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40005	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40004	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40003	Server UUID: 423302a0-114c-383...	Virtual	64	32
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40002	99B716640002	Physical	8	1
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40001	99B716640001	Physical	8	1
Microsoft	Windows Server 2022 Standard	Microsoft Windows Server Standard Physical Proc...	ID_40000	99B716640000	Physical	8	1

Below are the calculation examples based on the formula and default calculation parameters in reference to data from above screenshot.

```

Max(Server Cores, Server Active Sockets x 8 (min cores per processor), 16 (min cores per physical computer))
1 - Max (2, 8 x 1, 16) = 16
2 - Max (64, 8 x 32, 16) * ceil( 7 / 2) = 256 * 4 = 1024
3 - Max (8, 8 x 1, 16) * 3 = 48
Total: 16 + 1024 + 48 = 1088

```

The result is present on All Contracts panel.

All Contracts			
demo Recalculate 100% (filtered) Export Configure			
Contract Name	Metric	Computer Group N...	Current Measured ...
Contract 04	Microsoft Windows Server Standard Physical Processor...	All Computers	1,088

Below is an example of **virtual core** metric calculation. On the Software Classification screenshot there is software and capacity data that was used for calculation examples. An appropriate contract including given Software Product and Metric has to exist.

Software Classification									
MS Virtual Assign Exclude Confirm Edit 10 rows (filtered) Export Configure									
<input type="checkbox"/>	Publisher Name	Component Name	Metric	Computer Name	Computer Type	Server Serial Number	Server Cores	Server Active S...	Logical Proce...
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40009	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40008	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40007	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40006	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40005	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40004	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40003	Virtual	Server UUID: 423302a0-114c-3831-...	64	32	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40002	Physical	998716640002	8	1	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40001	Physical	998716640001	8	1	4
<input type="checkbox"/>	Microsoft	Windows Server 2022 Datacenter	Microsoft Windows Serv...	ID_40000	Physical	998716640000	8	1	4

Below are the calculation examples based on the formula and default calculation parameters in reference to data from above screenshot.

```

Max(Logical Processors, 8 (min cores per virtual computer))
1 - Max (4, 8) * 7 = 56
Max(Server Cores, Server Active Sockets x 8 (min cores per processor), 16 (min cores per physical computer))
2 - Max (8, 8 x 1, 16) * 3 = 48
Total: 56 + 48 = 104

```

The result is present on All Contracts panel.

All Contracts			
demo			
Recalculate 1 row (All rows) Export Configure			
Contract N...	Metric	Computer Group...	Current Measured Val...
Contract 03	Microsoft Windows Server Virtual Processor Cores	All Computers	104

## 10.0.5 Contracts management

The contracts management group shows all contract-related reports in one place. This allows you to easily manage all your contracts.

Reports	Management	
General	Business Applications	Infrastructure
Overview	Oracle Databases	Computers
Saved Reports		Computer Groups
	License Metrics	Shared Disks
Software Inventory	IBM PVU Subcapacity	Hardware Inventory
Software Summary	All IBM Metrics	
Software Installations	All Metrics	Catalog
Software Classification	IBM FlexPoints and IBM Cloud Paks	Software Components
🕒 Usage per Computer	Audit Trail	Signatures
🕒 Package Summary	Resource Utilization	Catalog Audit
Package Data		
Scanned File Data	Users	Contracts
Metering Data	Software Users	Products & Metrics
		All Contracts
		Product Metrics per Group
Last successful complete import at 12/13/2022 04:30 AM		

### Advantages over old contracts

In previous BigFix Inventory versions, contracts supported only Seats and ELA metrics. Views of contract data is available only for software instances and not for current products and metrics. To improve product function, with contract management in BigFix Inventory version 10.0.5, you can define contracts according to all metrics. This ability helps you track contracts.



**Note:** IBM Flexpoint bundles are not available for contracts as license usage is covered by IBM License Service Reporter. See also, [Tracking license usage in multicluster environment with License Service Reporter](#).

The purposes of improved contracts management are as follows:

- Managing contracts from one report
- Using contract metric calculation for products presented by computer groups
- Managing contracts that are not limited to predefined metrics
- Using the current measured metric value or software instances to drill down and view contract details

## Deprecation

**10.0.9** Starting from version 10.0.9, the old contracts and other deprecated features are removed, and migration is not possible. The customer must upgrade the deprecated contracts before the upgrade. The custom saved reports that relate to the deprecated report will not work as well. The customer must redefine the deprecated reports before the upgrade. See also, [Migrating contracts \(on page mclxxxvi\)](#).

## Actions

With the contracts management feature, you can perform the following actions:

- Search for specific contract to complete outstanding actions
- Use predefined reports from dashboard to access [saved reports \(on page mclxxxii\)](#).
- Define custom reports or email notification to access the contract status

The reports are categorized into the following types:

- [Product and Metrics \(on page mlxxiii\)](#)
- [All Contracts \(on page mlxxiii\)](#)
- [Product Metrics per Group \(on page mlxxv\)](#)

Refer to the respective report type to know more about the actions you can perform on individual report type.

## Contract fields and values

*The following table includes the fields and their values*

Field name	Description	Importance
Name	Contract name. Two or more contracts can have the same name only if their types are different.	Mandatory
Contract ID	Unique identifier of a contract.	Mandatory
Metric	Metric value of the contract.	Optional

Field name	Description	Importance
Software Product	Any number of software products. If any metric is selected, it must be assigned to the selected software products.	Optional
Type	Type of the contract.	Mandatory
Computer Group	Computer group that the contract belongs to.	Mandatory
Threshold	Threshold for the contract measured value.	Optional
Purchase Orders	<p>Any number of purchase orders assigned to the contract. Each purchase order consists of the following values:</p> <ul style="list-style-type: none"> <li>• Purchase Number - Identifier of the purchase order. All purchase orders in the contract must have different purchase numbers. Mandatory.</li> <li>• Document Link - Link to a document related to the purchase order. Optional.</li> <li>• Vendor - Optional.</li> <li>• Value - Value of the purchase order. Can be set to non-negative number or ELA. To change the value type use the "Convert to ELA" / "Convert to number" button. Mandatory.</li> <li>• Entitlement Start - Entitlement start date of the purchase order. Mandatory.</li> <li>• Entitlement End - Entitlement end date of the purchase order. If not specified, the purchase order is considered to have no entitlement end date. Optional.</li> </ul> <p>Based on the provided purchase order values, Current Contract Value, Next Entitlement Change Date, Next Entitlement Value and Entitlement End Date values are calculated. When a contract has no purchase orders, the values show '&lt;no data&gt;'.</p>	Optional



**Note:** The Current Contract Value, Current Measured Value and Next Entitlement Value are calculated based on UTC time zone.

### Add, modify, and delete contracts in the All Contracts report

With *All Contracts* report, you can add, modify, and delete contracts.



### Add contracts

1. Open the *All Contracts* reports.
2. Click **Edit** and select **Add Contract**. A **New Contract** window appears.
3. Enter the field values and click **Save**.

**Result:** A new contract is created.

**New Contract**

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

**Purchase Orders**

+ New

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
----------------	-----------------	---------------	--------	-------	-------------------	-----------------

### Modify contracts

1. Open the *All Contracts* reports.
2. Select a contract, click **Edit**, and select **Modify Contract**. An **Edit Contract** window appears.
3. Update the field values.
4. Click **Save**.

**Result:** The contract is updated.

### Delete contracts

1. Go to *All Contracts* reports.
2. Select a contract, and click on **Edit** and select **Delete Contract**. A confirmation dialog box appears.
3. Click **Delete Contract**.

**Result:** The report is updated.

### Apply filters in the contracts

**10.0.12** From BigFix Inventory version 10.0.12, you can filter the contracts by Publisher Name and/or Software Product Name. For example, you can use this functionality to filter out all Microsoft specific contracts.



**Note:** The Publisher Name and Software Product Name parameters are available only as an option in the report filter, it's not available as report column.



**Restriction:** The add and edit contract window has the following constraints:

- The date format is always in MM/DD/YYYY format.
- The **Select Year** and **Select Month** labels in the date selector widget are not translated. They are always in English.
- Software products with names containing non-ASCII characters cannot be assigned to a contract (applicable to BigFix Inventory versions before 10.0.7).

### Import contracts

Import contracts using the UI and the API. For more information, see also [Importing contracts \(on page mclxxxviii\)](#).

**10.0.11** From version 10.0.11, the **All Contracts** panel includes more options, such as Recalculation of metrics and a link to access the **Product Metrics per Contract** report. For more information, refer to [Using the Product Metrics per Contract panel \(on page mclxxxiii\)](#) and [Recalculating contracts \(on page mclxxxv\)](#).

### Saved reports

The following contracts reports are included in the **Saved reports** list:

- Contracts: All
- Contracts: License Utilization Exceeded
- Contracts: License Ended
- Contracts License Ends in 30 Days
- Contracts: License Ends in 90 Days
- Contracts: Threshold Exceeded

- Contracts: Support Ended
- Contracts: Support Ends in 30 Days
- Contracts: Support Ends in 90 Days

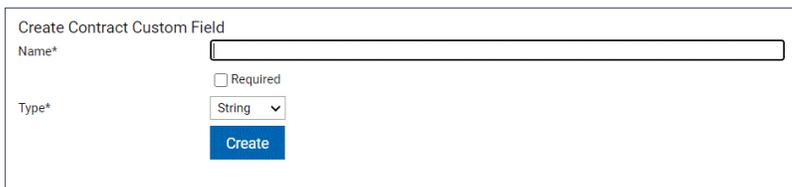
You can access saved reports from the predefined reports dashboard. For more information, see [saved reports \(on page mlvii\)](#).

## Creating contract custom fields

You can customize your contracts by creating custom fields that store your preferred information about the software licenses in your environment. Select an appropriate name for each custom field to reflect its purpose. After you create a custom field, it is available in the **Create Contract** pane, among other fields that are required to create a contract.

 You must have the Manage Contracts permission to perform this task.

1. In the top navigation bar, click **Management > Contract Custom Fields**.
2. To create a custom field for a contract, in the upper left corner of the **Contract Custom Fields** window, click **New**.
3. In the **Create Contract Custom Field** pane, enter the name of the field, specify whether the field is required for a contract, and choose the type of the requested input.



4. To save the custom field, click **Create**.
5. To make the custom field available for the reports, click **Reports > Import Now**.

You created a custom field for a contract. You can now create a contract or edit the existing ones to add the values for the new fields.

### 10.0.11 Using the Product Metrics per Contract panel

Starting from version 10.0.11, the **All Contracts** panel provides an option to navigate to the **Product Metrics per Contract** panel.

The **Product Metrics per Contract** panel includes the following features:

- The panel shows the current metric values for each product that is assigned to a particular Contract.
- The panel includes an additional **Recalculation Pending** column which shows the status of recalculation (applicable to all metrics), and an **Is Incomplete** column which indicates if a metric quantity is not calculated correctly.

The metric can be incorrectly calculated because of the hardware inventory data from at least one computer is not complete (applicable only to Oracle Processor Core, Microsoft Physical Core with SA, Microsoft Single Physical Processor, Microsoft Dual Physical Processor, and new Microsoft Processor Cores metrics, introduced in BigFix Inventory versions 10.0.11.0 and 10.0.12.0).



**Note:** In BigFix Inventory version 10.0.11.0, **Is Incomplete** column is applicable only to Microsoft SQL Server Physical Processor Cores metric.

The below tables shows status of the calculation completeness:

Status	Microsoft SQL Server Physical Processor Cores	Microsoft SQL Server Virtual Processor Cores	Microsoft Windows Server Physical Processor Core	Microsoft Windows Server Virtual Processor Core	Microsoft Windows Server Standard Physical Processor Core
OK	Complete	Complete	Complete	Complete	Complete
No Scan Data	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete
No Host Scan Data	Incomplete	Complete	Incomplete	Complete	Incomplete
No VM Manager Data	Incomplete	Complete	Incomplete	Complete	Incomplete
Outdated VM Manager Data	Incomplete	Complete	Incomplete	Complete	Incomplete
Not applicable	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete

For more information, refer to [10.0.12 Managing Microsoft Processor Core licenses \(on page mclxxiii\)](#).

- Depending on the type of a given metric, clicking on a selected product name redirects you to the corresponding Software Classification, Software Users or All Metrics reports. These reports list all the software instances used for the calculation of this metric. The link is disabled when calculation is disabled for the computer group assigned to the contract, the calculation is not up-to-date, or the metric quantity equals 0.

- The **Product Metrics per Contract** panel does not provide the option to set a metric value for metrics that are not calculated. To set a metric value for not calculated metrics, go to **All Metrics** reports and further set the value. See also, [Setting and removing the declared metric quantity \(on page cmxxxviii\)](#).



**Note:** Product name link does not redirect to the target page if the local date and time of your computer is different from the current date and time in UTC. If the problem occurs, change the local date and time to UTC in your computer to open the link.

### 10.0.11 Recalculating contracts

From version 10.0.11, you can recalculate contracts using the **Recalculate** option in the **All Contracts** reports panel.

The recalculation can be done in the following scenarios:

- Contract has been changed
- Contract has been added or imported
- Product list or computer group have been modified in a Contract

**10.0.12** From version 10.0.12, All Contracts panel shows the progress of recalculation. It indicates if the recalculation is started, in progress or completed.

Following are the different considerations under recalculation:

- The utilized metric values for contracts, shown under **Current Measured Value** column are calculated during data import or on demand, for example, during recalculation.
- The metric values for contracts are stored in a separate database table (comparing to reusing aggregation tables from All Metrics panel) which is synchronized with data from All Metrics. So, the same rules apply (high watermark from the last x days for a given computer group, 90 by default).
- After recalculation/reaggregation, the metric values are the same comparing to the previous release, with one change: in case there are no discovered software instances for a given contract's product, metric and computer group and the metric is aggregable in BigFix Inventory, the value will be 0 instead of n/a.
- The limitation of the number of computer groups used in contracts is no longer applicable.
- Recalculation can be performed for all Computer Groups accessible by the current user. In addition, recalculation will be done only for Computer Groups which are used in Contract definitions accessible by current user.
- Recalculation button is active if there is an accessible contract that requires recalculation. The current filters applied to All Contracts does not affect the status of the button. Recalculation button will not be active if there is already Recalculation or Data Import in progress.
- New metrics are not recalculated from All Metrics panel, as they are not shown in the All Metrics panel.

**Examples:**

- When two users are assigned to different computer groups and the computer groups do not have parent-child relation , any update in the relation of the contacts for one user does not activate **Recalculate** button on All Contracts for the other user.
- When two users are assigned to the same computer group , any update in the relation of the contacts for one user activates **Recalculate** button on All Contracts panel for the other user.
- When two users are assigned to different computer groups and these groups have parent-child relation , any update in the relation of the contract for a user with the child computer group also enables recalculation for the other user.

## 10.0.6 Migrating contracts



**Attention:** 10.0.9 Deprecated contracts have been removed. As a result, the functionality to migrate contracts have also been removed. You must migrate the deprecated contracts to the equivalent before upgrading the BigFix Inventory server to 10.0.9. Once the server is upgraded, the deprecated features, such as deprecated contracts and saved reports on deprecated panels, will be deleted and will not be retrievable. The custom saved reports defined on removed panels must be redefined. Before upgrading the server, make sure to back up your data.

### Perform migration

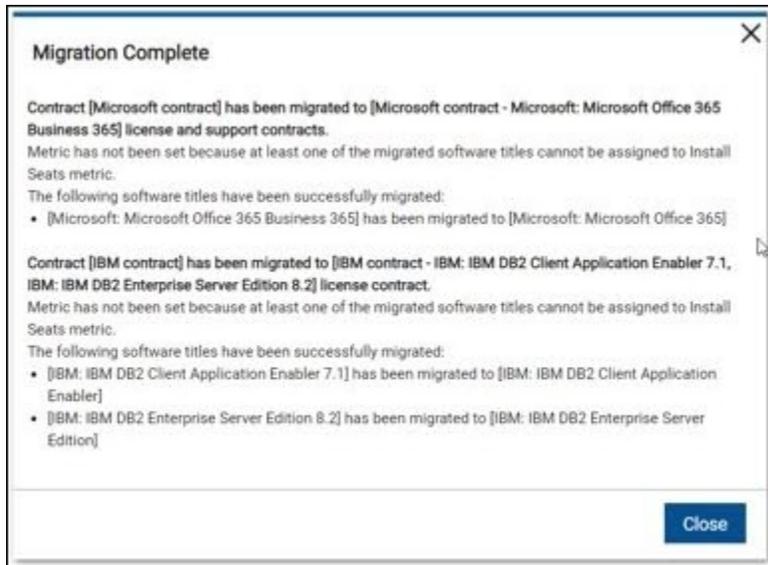
To migrate deprecated contracts, perform these steps:

1. Go to **Management > Contracts (Deprecated)**. Contracts (Deprecated) panel is visible when **deprecated\_contracts\_mgmt\_enabled** parameter is enabled. See also, [Parameter to enable deprecated contracts \(on page dcccliii\)](#).
2. Select the contract and click **Migrate**.
3. In the **Confirm Migration** dialog box, click **Migrate**.

**Result:** Migration complete.

Name	Seats	Computer Group	Acquisition Cost	Maintenance Cost	Entitlement Start	Entitlement End	Maintenance Start	Maintenance End
0 rows (all data)								

At the end of migration, a detailed report of the migration is displayed.



## Migration features

- For each deprecated contract a new contract of license type is created.
- If Maintenance Start date is set in a deprecated contract, a new contract of support type is created during migration.
- Contract ID is generated and suffixed with “\_MIGRATED”
- New contract names include the names of software assigned to the deprecated contract.
- Each new contract includes one purchase order with the same value as the deprecated contract and the same start and end dates - entitlement dates for license contract, maintenance dates for support contract. The purchase number is set to “MIGRATED”
- Install Seats metric is assigned to the new contracts if all products assigned to the contract are assigned to the Install Seats metric. Otherwise, metric is not set.
- If a software title version or release is assigned to a deprecated contract, a software title product related to the version or release will be assigned to a new contract.
- Migrated report contains details, such as migrated contracts, not-migrated contracts, custom fields which could not be migrated (but other elements of the contract were migrated)
- Migration report is saved in logs.
- Migration does not modify deprecated contracts.

## Prerequisites

- Migration can be run only by a user with an Administrator role.
- Software components cannot be migrated as they cannot be assigned to new contracts (new contracts support Software products only).
- A deprecated contract cannot be migrated:
  - if a new contract with the same name and type already exists
  - if it is assigned to a deleted computer group

- A custom field value cannot be migrated if the value mismatches their type. Such a situation can happen when a user changes type of already used custom field. **10.0.6** Since version 10.0.6, the ability to change custom field type is no longer available.
- Even if some contracts could not be migrated, other contracts are migrated

## **10.0.6** Importing contracts using CSV files

BigFix Inventory allows you to import contract data through API and Web UI.

### **Import contract features**

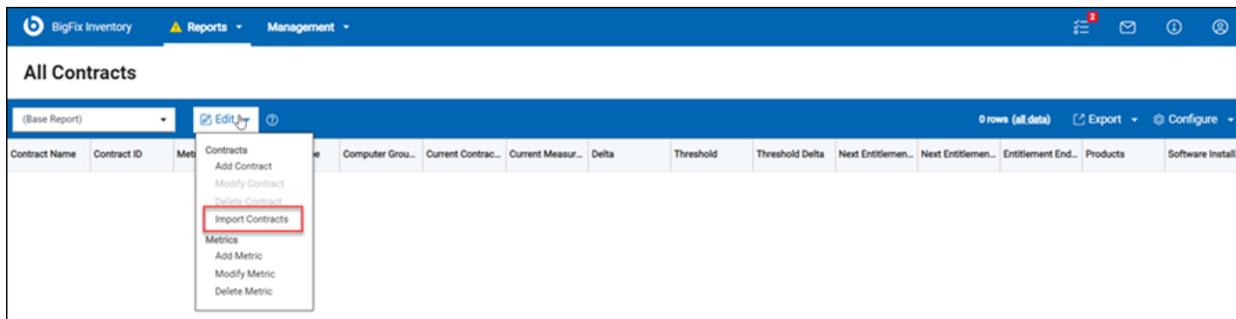
BigFix Inventory import contracts have the following features:

- Allows you to create and modify contract details with data provided in a CSV file.
- Contracts are identified using the contract ID.
- Multiple software products can be added to a contract – one software product per CSV row. You can not delete a software product.
- Software products, metrics and their relations specified in the CSV file must exist prior to the import.
- Purchase orders are identified by Purchase Order Number.
- Multiple purchase orders can be added to a contract or modified – one purchase order per CSV row. You can not delete a purchase order.
- Custom field columns are prefixed with CUSTOM\_, for example, "CUSTOM\_My custom field". The custom field column header is case sensitive.
- CSV separator can be modified in the Advanced Server Settings with the "CSV report separator" ([csvReportSeparator \(on page dccclv\)](#)) property. Comma (',') is default separator.
- In case an import fails, import report appears with errors details.
- CSV files must be encoded as UTF-8 (without BOM) format.
- Only ASCII characters in contracts data are fully supported in BigFix Inventory version 10.0.6. The issue is not applicable since version 10.0.7. From BigFix Inventory 10.0.7, softwares which contains non-ASCII characters are accepted in contracts REST API, as well as in the search field on UI, and contract fields like contract name in REST API can contain non-ASCII characters.

### **Import through WebUI**

To import using the WebUI, perform the following steps:

1. Click **Reports > All Contracts**. All Contracts page appears.
2. Click **Edit** and then select **Import Contracts** from the dropdown. Import contracts from CSV file dialog box appears.
3. Select a CSV file and click **Import**.



## Import through API

### Example API request:

```
curl -H "Content-Type: multipart/form-data" \
-X POST \
-F upload[contracts]=@c:\contracts.csv \
https://localhost:9081/api/sam/v2/contracts/import?token=1234567890abcdef1234567890abcdef123456
```

## CSV file format

Contracts can be imported from a CSV file. The following table lists the column names available in the CSV file:

Column name	Description	Importance
Contract ID	Contract ID allows you to identify a contract. The purpose of this field is to identify main properties, such as type and metric of a contract. If a contract with specified ID already exists in BigFix Inventory, it is updated with the values from CSV file. If it does not exist, a new contract is created.	Mandatory
Name	Contract name	Mandatory
Metric ID	Metric ID  For metric ID names, see also <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .	Optional
Metric Code Name	If Metric ID column is present, the Metric Code Name value is ignored.  For metric ID names, see also <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .	Optional

Column name	Description	Importance
Type ID	Number representing contract type, such as 1 - License, 2 - Support, 3 - Service, 4 - Hardware, and 5 - Other.	Required
Computer Group ID	Identifier of the computer group. When provided, Computer Group Name value is ignored.	Optional
Computer Group Name	When both Computer Group ID and Computer Group Name are not provided, then "All computers" group will be assigned. If no matching computer group is found, the CSV row is rejected. When there is more than one computer group with provided name, the CSV row is rejected.   <b>Note:</b> Case sensitive	Optional
Threshold	Threshold value   <b>Note:</b> Positive integer	Optional
Publisher Name	Publisher name is required only when Software Product Name is specified. The publisher must exist in BigFix Inventory before import.	Optional
Product Name	Name of the product.  The product must exist in BigFix Inventory before import.	Optional
Purchase Order Number	Purchase order number	Optional
Purchase Order Document Link	Document link of the purchase order.  If specified, requires Purchase Order Number to be present.	Optional
Purchase Order Vendor	Vendor of the purchase order.	Optional

Column name	Description	Importance
	If specified, requires Purchase Order Number to be present.	
Purchase Order Value	Purchase order value. Value is always a positive integer (including 0). ELA value can be set by specifying ELA or -1. If specified, requires Purchase Order Number to be present.	Optional. Required if Purchase Order Number value is provided
Purchase Order Entitlement Start	Entitlement start date of the purchase order. The allowed format is "YYYY-MM-DD", for example "2019-01-31". If specified, requires Purchase Order Number to be present	Optional. Required if Purchase Order Number value is provided.
Purchase Order Entitlement End	Entitlement end date of the purchase order. This value is optional. Allowed format is "YYYY-MM-DD", for example, "9999-12-31" or "Never". If specified, requires Purchase Order Number to be present.	Optional
Custom fields	Any number of optional columns representing contract custom fields. The fields must be already present in Big-Fix Inventory. When provided custom field is not found (does not exist), CSV import fails. Column names for custom fields are prefixed with "CUSTOM_", such as "CUSTOM_My Custom Field". Provided value type must match the type of the custom field. If the custom field is required, then the value must be provided.	

#### Assumptions, limitations and restrictions of the CSV imports:

- First row of the CSV file (header) contains field names.
- Unused, optional columns can be omitted.
- Import of the CSV adds new Software Products to a contract and does not remove existing entries.

- Import of the CSV adds new or updates existing Purchase Order entries (matching on Purchase Order Number value) and does not remove existing entries.
- In case multiple Software Products and/or Purchase Order need to be added, they need to be specified in separate rows (repeating the contract specific fields, like. name and computer group).
- Column names and values need to be separated by a character specified in BigFix Inventory Advanced Server Settings with the "CSV report separator" (csvReportSeparator) property. Comma (",") is default separator.
- If column header or value contains a separator character, it needs to be enclosed in quotes.
- CSV rows are processed in the order they are defined in the file. If one contract is defined in multiple rows, all values except Publisher Name, Product Name and Purchase Order fields should be repeated in every column. Otherwise, contract values updated by one row may be later modified by further rows. Subsequent imports of the same CSV file will produce the same outcome.
- Purchase Order Document Link, Purchase Order Vendor, Purchase Order Value, Purchase Order Entitlement Start and Purchase Order Entitlement End columns can be present in the CSV file only when Purchase Order Number column is present.
- A failure of importing a single contract row fails whole import. Already imported rows are rolled back.

### Known issues

- Custom fields for error messages are identified using the ID. The ID is retrieved using contracts API. To view the list of all custom fields, view the [Contracts API \(on page mdccxliii\)](#).

### CSV Example with multiple contracts

```
Contract ID, Name, Type ID, Threshold, Metric Code Name, Computer Group ID, Computer Group Name, Purchase
Order Number, Purchase Order Value, Purchase Order Entitlement Start, Purchase Order Entitlement End,
Product Name, Publisher Name, CUSTOM_contact person
CO1, Contract 1, 3, 100, INTERNAL_INSTALL, 0, All Computers, PO1, 5000, 2021-08-03, 2030-05-20, Software 1,
Publisher 1, Name
CO2, Contract 2, 2, 350, CLIENT, 0, All Computers, PO2, 2, 2019-05-21, 2025-06-21, Software 2, Publisher 2,
Tom
```

### CSV Example with multiple Purchase Orders and software products assigned to two contracts

```
Contract ID, Name, Metric Code Name, Type ID, Computer Group ID, Threshold, Publisher Name, Product Name,
Purchase Order Number, Purchase Order Document Link, Purchase Order Vendor, Purchase Order Value, Purchase
Order Entitlement Start, Purchase Order Entitlement End
Contract 1, My contract 1, TICKETS,3,2,12, Publisher A, Sample Product A, PU001, www.test.com, My Vendor
A,125,2019-03-03,2044-07-11
Contract 1, My contract 1, TICKETS,3,2,12, Publisher A, Sample Product B, PU002,www.test2.com, My Vendor
B,ELA,2020-03-03,
Contract 1, My contract 1, TICKETS,3,2,12, Publisher B, Sample Product C
```

```
Contract 2, My contract 2, CLIENT,1,0,70, Publisher A, Sample Product B, PU003,www.test3.com, My Vendor
C,200,2018-01-01,2021-12-28
Contract 2, My contract 2, CLIENT,1,0,70,,, PU004, www.test4.com, My Vendor D, 100,2020-01-01, 2021-03-28
```

## Hands-on tutorial for contract management

This section details out the concept of contracts, the various tasks you can perform using contracts and the prerequisites you need to perform those tasks.

### Definitions used in contracts operation

This topic lists important definitions that are used in contract management.

#### **Computer group**

An organized list of computers through which users can get dedicated reporting or perform common operations in bulk. This feature simplifies the maintenance of customer environments, and it can be used to represent, for instance, a department or region.

#### **Software License**

A legal instrument governing the use or redistribution of software.

#### **Metric**

A measurement unit that defines usage of software license, for example, installed seats, and PVU.

#### **Software Contract**

A set of information about a software license for a product or products, its type, cost, amount of purchased license metrics, and the entitlement period. When a contract is assigned to a computer group, it indicates which computers the license is distributed to.

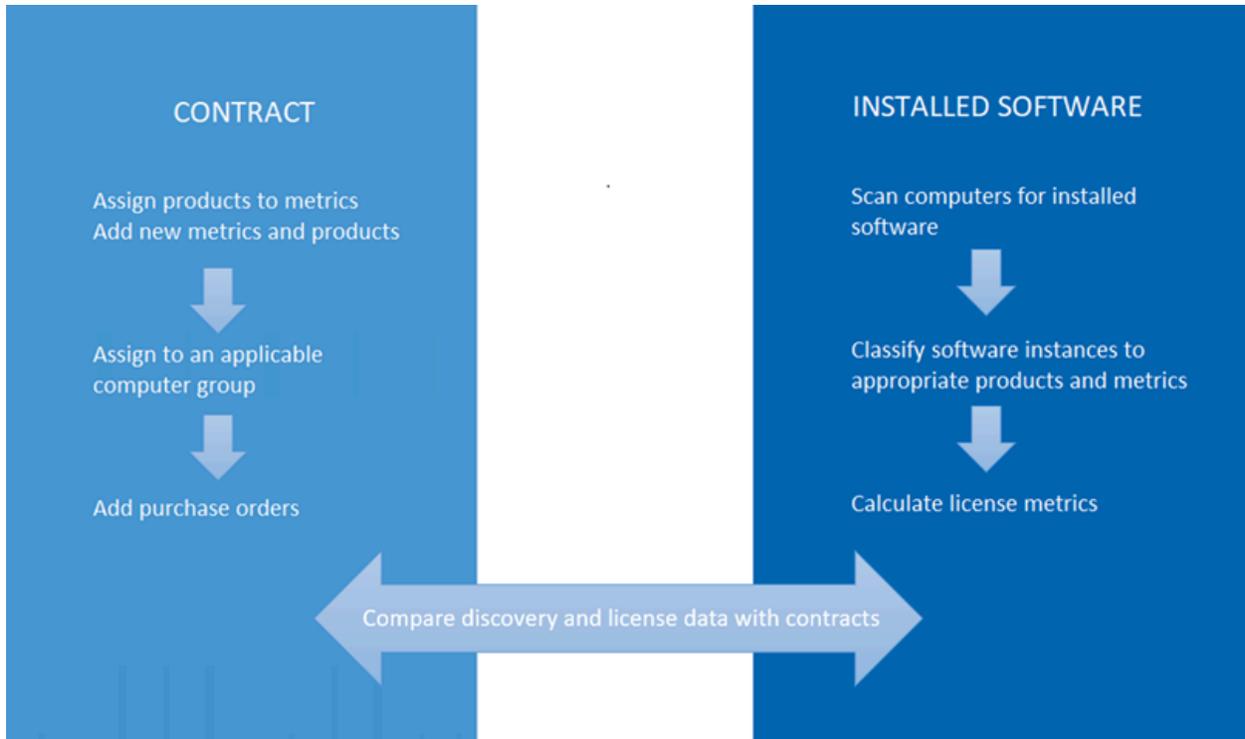
#### **Purchase order**

A set of information about purchased software.

## Contracts overview

BigFix Inventory **Contract Management** feature enables organizations to increase visibility into their software license consumption and to keep licenses compliant. It helps to avoid overusing licenses (a situation where the software license goes beyond the terms agreed in the contract with the supplier). It also helps to optimize software cost by identifying underused licenses.

The diagram below provides an overview of the entire contract management in BigFix Inventory.



**Note:** In future release, features such as, All Metrics Threshold, Threshold Delta, Metric Custom Fields (panel and added fields), and the related API will be deprecated.

## Prerequisites

To access contracts, you must have permission to manage contracts.



Required permission: Manage Contracts

## Contract features

This topic describes the panels needed to manage contracts.

### All Contracts

On 'All Contracts' panel you can add and modify contracts. You can also view the comparison with the discovered software and calculated license metrics. To allow BigFix Inventory provide data for the comparison, classify the discovered components under appropriate license metrics.

Reports ▾		Management ▾	
General	Business Applications	Infrastructure	
Overview	Oracle Databases	Computers	
Saved Reports		Computer Groups	
	License Metrics	Shared Disks	
Software Inventory	IBM PVU Subcapacity	Hardware Inventory	
Software Summary	All IBM Metrics		
Inventory Exploration (Deprecated)	All Metrics	Catalog	
Software Installations	IBM FlexPoints and IBM Cloud Paks	Software Components	
Software Classification	Audit Trail	Signatures	
🕒 Usage per Computer	Resource Utilization	Catalog Audit	
🕒 Package Summary			
Package Data	Users	Contracts	
Scanned File Data	Software Users	Products & Metrics	
Unrecognized Files		All Contracts	
Metering Data		Product Metrics per Group	
Software Installations (Deprecated)		Contract Usage Data (Deprecated)	
Last successful complete import at 07/04/2022 02:08 PM			

## Products and Metrics

On 'Products and Metrics' you can view the list of software products (licenses) and associated license metrics that you can manage in contracts. You can add new products and new metrics as well as assign existing metrics to products in 'Products and Metrics' panel as required.

Reports ▾		Management ▾	
General	Business Applications	Infrastructure	
Overview	Oracle Databases	Computers	
Saved Reports		Computer Groups	
	License Metrics	Shared Disks	
Software Inventory	IBM PVU Subcapacity	Hardware Inventory	
Software Summary	All IBM Metrics		
Inventory Exploration (Deprecated)	All Metrics	Catalog	
Software Installations	IBM FlexPoints and IBM Cloud Paks	Software Components	
Software Classification	Audit Trail	Signatures	
🕒 Usage per Computer	Resource Utilization	Catalog Audit	
🕒 Package Summary			
Package Data	Users	Contracts	
Scanned File Data	Software Users	Products & Metrics	
Unrecognized Files		All Contracts	
Metering Data		Product Metrics per Group	
Software Installations (Deprecated)		Contract Usage Data (Deprecated)	
Last successful complete import at 07/04/2022 02:08 PM			

### Software Classification

On 'Software Classification' panel you can classify discovered components to applicable products and metrics. It allows BigFix Inventory to calculate license metrics for products, compare Software Inventory and calculate license metrics with your contracts.

Reports	Management	
General	Business Applications	Infrastructure
Overview	Oracle Databases	Computers
Saved Reports		Computer Groups
	License Metrics	Shared Disks
Software Inventory	IBM PVU Subcapacity	Hardware Inventory
Software Summary	All IBM Metrics	
Inventory Exploration (Deprecated)	All Metrics	Catalog
Software Installations	IBM FlexPoints and IBM Cloud Paks	Software Components
Software Classification	Audit Trail	Signatures
🕒 Usage per Computer	Resource Utilization	Catalog Audit
🕒 Package Summary		
Package Data	Users	Contracts
Scanned File Data	Software Users	Products & Metrics
Unrecognized Files		All Contracts
Metering Data		Product Metrics per Group
Software Installations (Deprecated)		Contract Usage Data (Deprecated)
Last successful complete import at 07/04/2022 02:08 PM		

This document focusses on key aspects of contract management in BigFix Inventory and how to handle real-life scenarios.

For more information about contract reports, see [All contracts \(on page mlxxiii\)](#).

## Considerations before creating a contract

When using contracts in BigFix Inventory, you can set multiple attributes of the contract.

Following are the key attributes:

- Contract type
- Assign one or more software products (licenses) to a contract
- Add applicable Purchase Orders
- Assign the contract to applicable computers

Before creating a contract in BigFix Inventory you should know the answer to the following questions about your license entitlement:

- Do you have separate agreements for support and license?
- What license metric does it cover? Do I need to add a new license metric to BigFix Inventory?
- What product versions does it cover? Is it limited to given version or release? Or maybe it covers any version of given software can be used with this license.

- What software products does it cover? Is it a special software bundle?
- How are these products represented in BigFix Inventory product definitions?

After having answers to these questions, you can create a contract.

## Managing product and metric definitions in BigFix Inventory

In BigFix Inventory, a product definition and associated metrics represents what you can purchase. You can assign one or more license metric to one product definition. Together, the product definition and associated metric represent what you can purchase (license).

On 'Products & Metrics' panel you can browse available product definitions and associated metrics, create new product definitions, create new metrics, and associate metrics to product definitions.

1. Use filters to search through product definitions. On 'Products & Metrics' panel you can browse available product definitions and associated metrics, create new product definitions, create new metrics, and associate metrics to product definitions.

**Products & Metrics**

(Base Report) Edit Entitle

Publisher	Product
Red Gate Software Ltd.	.NET
Fraunhofer IIS	.mp3
New Publisher	.mp3
AppDynamics	.NET
Microsoft	.NET
Software Verification Ltd.	.NET
Teradata	.NET
Microsoft	.NET
Microsoft	.NET
Red Gate Software Ltd.	.NET
Gigabyte	@BIO
Palisade Corporation	@Ris
Palisade Corporation	@Ris
Logik software + consulting GmbH	[Logi
MidStream Inc	007

**Configure View**

Filters

Specify the report filter which matches all of the following conditions:

- Publisher equal to microsoft
- Product Name contains windows server

Columns

Select All

Publisher

- Publisher

Products & Metrics

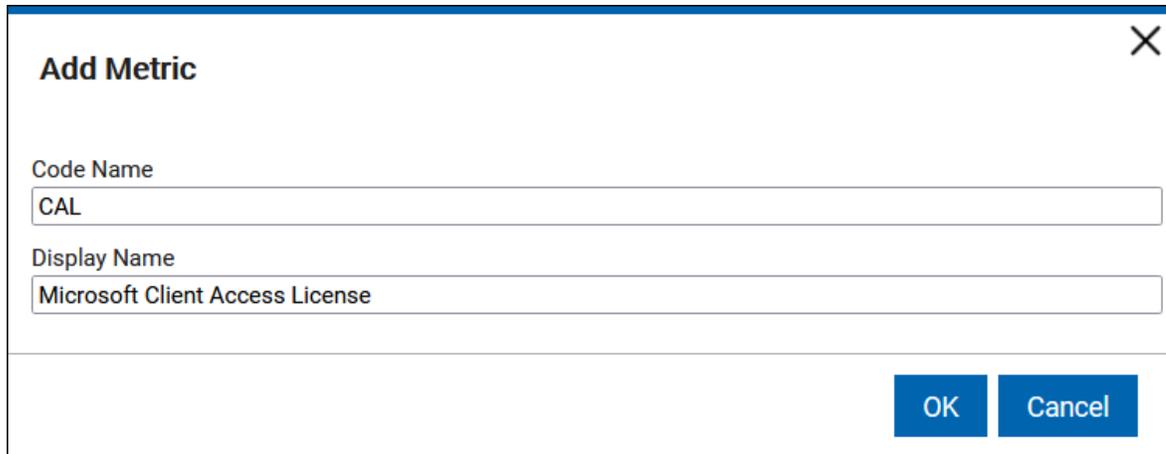
- Product Name
- Metric
- Catalog-provided
- Catalog Part Numbers
- Imported Part Numbers
- Entitled
- Default Metric

Options

- Autosize Columns

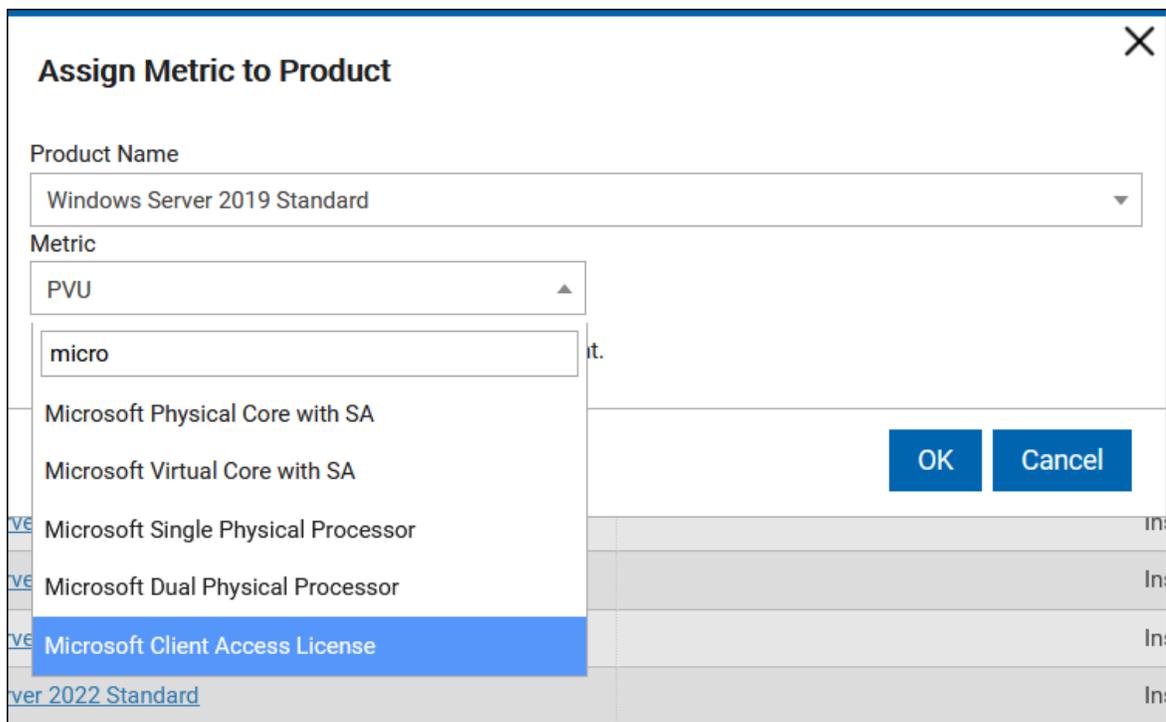
Submit Cancel

2. Add a new license metric.



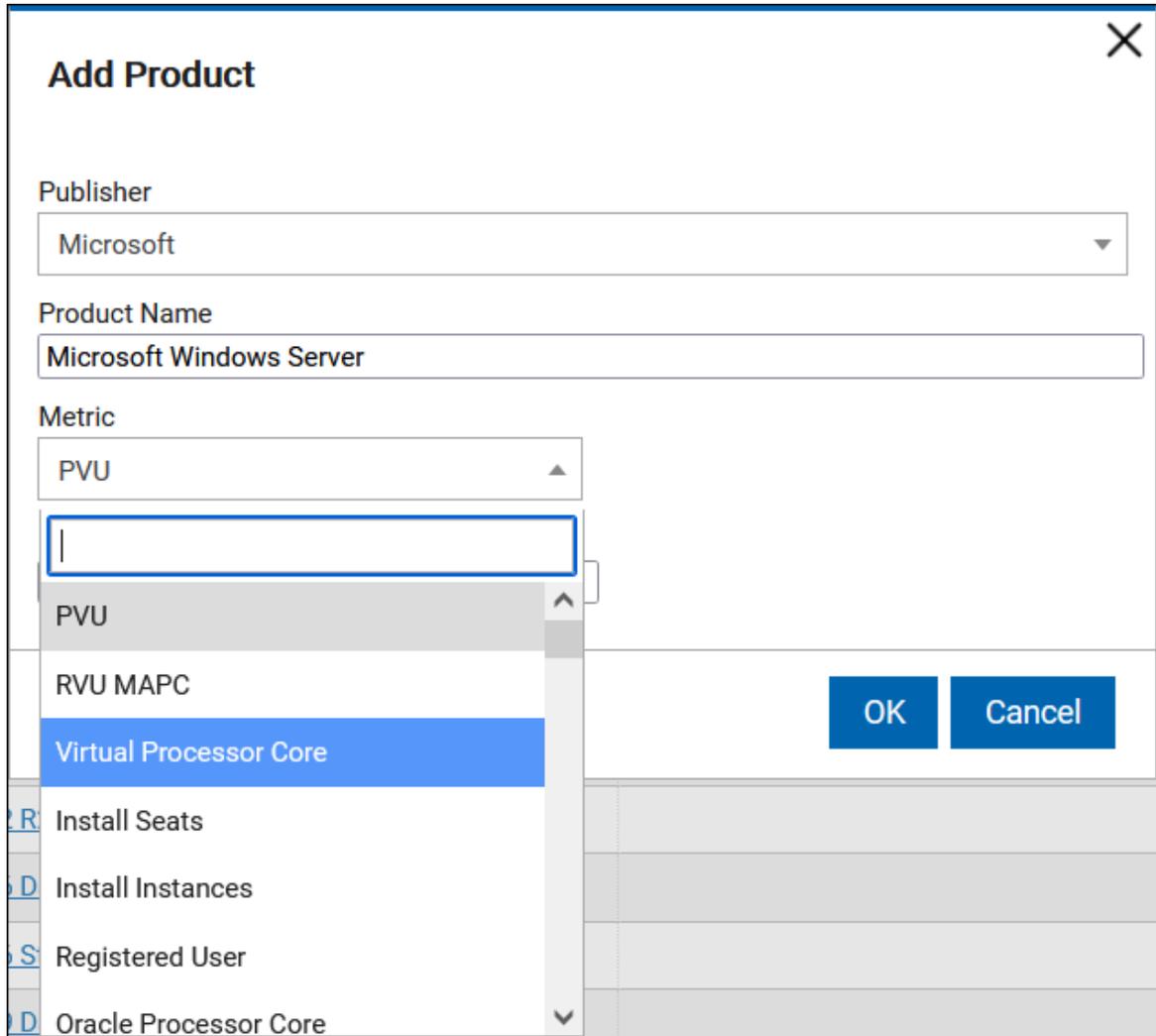
The 'Add Metric' dialog box features a title bar with a close button (X) in the top right corner. It contains two text input fields: 'Code Name' with the value 'CAL' and 'Display Name' with the value 'Microsoft Client Access License'. At the bottom right, there are two blue buttons labeled 'OK' and 'Cancel'.

3. Assign a metric to a product.



The 'Assign Metric to Product' dialog box has a title bar with a close button (X) in the top right corner. It contains a 'Product Name' dropdown menu set to 'Windows Server 2019 Standard' and a 'Metric' dropdown menu set to 'PVU'. The 'Metric' dropdown is open, showing a list of options: 'micro', 'Microsoft Physical Core with SA', 'Microsoft Virtual Core with SA', 'Microsoft Single Physical Processor', 'Microsoft Dual Physical Processor', and 'Microsoft Client Access License'. The 'Microsoft Client Access License' option is highlighted in blue. At the bottom right, there are two blue buttons labeled 'OK' and 'Cancel'.

4. Add a new product definition.



**Add Product**

Publisher  
Microsoft

Product Name  
Microsoft Windows Server

Metric  
PVU

PVU  
RVU MAPC  
Virtual Processor Core  
Install Seats  
Install Instances  
Registered User  
Oracle Processor Core

OK Cancel

## Choosing contract type

You can manage contracts for a software product individually. This is useful if there are different agreements and purchase order with a software vendor for software licenses as well as support. If both software licenses and support have one agreement, and you do not want to manage them individually, you can create one contract that represents both software and support.

To choose contracts, follow the below path:

- **Reports > All Contracts > Edit > Add new contract**

**There are four types of contracts:**

- **License** - This is the default type of a contract. Select contract type as 'License' if the time period mentioned in the license and support agreements is the same, select contract type as 'License'.
- **Support** - Select contract type as 'Support' if the time period mentioned in the license and support agreements is not the same. In such case, create separate contracts for license and support.
- **Service** - Select contract type as 'Service' to manage contracts for purchased professional services if they have different period or metric for license and support.
- **Hardware** - Select contract type as 'Hardware' to manage your contract for Hardware.

### New Contract

Name *	<input type="text"/>
Contract ID *	<input type="text" value="C029"/>
Metric	<input type="text" value="Select metric"/>
Software Product	<input type="text" value="Enter a software product"/>
Type *	<input type="text" value="Select contract type"/>
Computer Group *	<input type="text" value="License"/>
Contact Person	<input type="text"/>
Department	<input type="text" value="Service"/>
Next Renewal Date	<input type="text" value="Hardware"/>

## Assigning products to contracts

In BigFix Inventory, generally all versions of a software product are grouped into one product definition, as in most cases licenses are not bound to a particular software product version. However, for some products the most commonly sold licenses are for a particular software version. In these cases, BigFix Inventory defines product definitions differently for applicable software versions (for example, Microsoft Windows Server).

Follow the below scenarios while assigning products to a contract:

- [Product definition follows your license agreement \(on page mccii\)](#)
- [Product definition covers all versions, but license agreement covers a specific version or subset of product versions \(on page mccii\)](#)
- [License agreement covers multiple product definitions \(on page mcciv\)](#)

The following subsections describe these scenarios in more details.

### Product definition follows your license agreement

If you purchase a license for Total Commander and this license allows you to install any version of Total Commander. In BigFix Inventory Software catalog there is one product definition for Total Commander regardless of its version. In such situation during creation of a contract you need to assign the existing product definition to the contract.

**New Contract**

Name \* Total commander

Contract ID \* C01

Metric Install Seats ▼

Software Product C. Ghisler Co.: Total Commander ×  
Enter a software product

### Product definition covers all versions, but license agreement covers a specific version or subset of product versions

In case, you purchased a license for Microsoft SQL Server Enterprise Edition without Software Assurance and this license allows you to install only Microsoft SQL Server 2019 Enterprise Edition. BigFix Inventory contains one product definition that groups all versions of Microsoft SQL Server.

In such case you need to create a product definition in 'Products & Metrics' for Microsoft SQL Server 2019 Enterprise Edition and assign to it an applicable license metric.

## Products & Metrics

(Base Report) ✎ Edit ✓ Entitle

Publisher	Product Name	Met
Red Gate Software Ltd.		
Fraunhofer IIS		
AppDynamics		
Microsoft		
Software Verification Ltd.		
Teradata		
Microsoft		
Microsoft		
Red Gate Software Ltd.		
Gigabyte		
Palisade Corporation		
Palisade Corporation		

### Add Product

**Publisher**

**Product Name**

**Metric**

**Release**

OK Cancel

Once the product is created, you need to add this product to a contract.

## New Contract

**Name \***

**Contract ID \***

**Metric**

**Software Product**

**Type \***

Classify all discovered components of Microsoft SQL Server 2019 Enterprise Edition to the newly created product and assigned metric (note that you can use Custom Rules for that job to automate action) and add this product to your contract in BigFix Inventory.

### Assign Component to a Product ✕

Selected components: Microsoft SQL Server Analysis Services for Microsoft SQL Server 2019 Enterprise Edition 2019.0, Microsoft SQL Server Integration Services for Microsoft SQL Server 2019 Enterprise Edition 2019.0, Microsoft SQL Machine Learning Services for Microsoft SQL Server 2019 Enterprise Edition 2019.0, ... (8)  
 Selected computers: BFI-DEMO-WIN-117, BFI-DEMO-WIN-207

List products for which the component is listed as a bundling option.

2 rows

Product Name	Entitled	Product Version	Metric	Charged	IBM-provided ...
sql server 2019					
Microsoft SQL Server 2019 on Linux	No	15.0	Install Seats	<no data>	<no data>
Microsoft SQL Server 2019 Enterprise Edition	No	1.0	Microsoft Phy...	<no data>	<no data>

Automatically confirm the affected components  
 Create a custom rule ?  
 Share component ?

Assign
Cancel

## License agreement covers multiple product definitions

In case, you purchase a license for Microsoft Windows Server Standard Edition with Software Assurance that allows you to install any version of this product. In BigFix Inventory each version of Microsoft Windows Server Enterprise Edition has a separate product definition.

In such case you need to create a contract in BigFix Inventory and add to it all products for different versions of Microsoft Windows Server Standard Edition. Note that when you browse through product definitions in 'Products & Metrics' you can observe that Windows Server Standard has the metric 'Unknown' assigned by default. You should assign to it an appropriate license metric according to your license agreement.

## Products & Metrics

(Base Report) Edit Entitle

Publisher	Product Name	Metric
Red Gate Software Ltd.	<a href="#">.NET Reflector</a>	
Fraunhofer IIS		
AppDynamics		
Microsoft		
Software Verification Ltd.		
Teradata		
Microsoft		
Microsoft		
Red Gate Software Ltd.		
Gigabyte		

### Assign Metric to Product

Product Name

Metric

Set as default Product Metric for bundling assistant.

OK Cancel

After assigning an appropriate metric to a product you can add these products to a contract. Classify the discovered component to appropriate products and license metric, if necessary.

## New Contract

Name \*

Contract ID \*

Metric

Software Product

Microsoft: Windows Server 2016 Standard ×

Microsoft: Windows Server 2019 Standard ×

Type \*

## Assigning a contract to applicable computers

If you purchase a license for an organization that is part of your company (for example, HR), you can create a computer group that represents this organization and assign this group to your contract. You can find more information about computer groups at [Setting up computer groups](#).



**Note:** In order to enable calculating license metrics for this group, this group must have license calculation enabled.

### Management: Computer Groups

+ New  Delete

All Computers

#### Create Computer Group

Parent  
All Computers ▼

Name\*  
HR

Description  
HR

Definition  
Specify the report filter which matches all ▼ of the following conditions:

Computer Name ▼ begins with ▼ HR  

Type  
Reporting ▼ 

**License usage calculations**

To enable license usage calculations for this computer group, select the check box below. Selecting this check box might significantly increase import time and you should only consider it if you need dedicated license reporting for this computer group.

Enable license usage calculations

Aggregate last 90   days

Once the computer group is created, you can add it to a contract.

## New Contract

Name *	Windows Server Datacenter
Contract ID *	CO1
Metric	Select metric ▼
Software Product	<div style="border: 1px solid #ccc; padding: 5px;"> <div style="background-color: #007bff; color: white; padding: 2px 5px; display: inline-block; border-radius: 10px;">Microsoft: Microsoft Windows Server 2019 Datacenter ×</div>  <div style="background-color: #007bff; color: white; padding: 2px 5px; display: inline-block; border-radius: 10px;">Microsoft: Microsoft Windows Server 2016 Datacenter ×</div>  <input type="text" value="Enter a software product"/> </div>
Type *	Select contract type ▼
Computer Group *	HR ▼



**Note:** By default, metrics are calculated for 90 days and on 'All Metrics' panel you can see a maximum value of a metric in that period and this maximum value is used to compare contract with the calculated metrics. If you like to use a shorter period, you can create a Computer Group and configure it to lower number of aggregated days to, for example, one day. The shorter period may be useful if you like to see more current value of a license metric than the maximum value for last 90 days in the contracts.

## Managing contracts with metrics that are not calculated by BigFix Inventory

BigFix Inventory does not calculate license for every type of license metric, including the custom metrics. For a list of calculated license metrics, see [Reported license metrics \(on page cmxii\)](#).

You can create contracts for these metrics and manage their values. For instance, you have a license contract for Windows Server 2016 Standard and you want to create a contract for Microsoft Windows Server 2016 Standard with Microsoft Client Access License (CAL) metric.

You can create such contracts as described in this document. There are some additional considerations for classifying the discovered components and you will find instructions below.

1. Before you start, you need to create a new license metric.

**All Contracts**

(Base Report) Edit ?

Contract Name	Contract ID	Metric	Contract Type	Computer Grou...	Current Contra...	Current Measu...	Delta
Windows Server...	C01						

**Add Metric** [X]

Code Name

Display Name

OK Cancel

2. Assign this metric to a product.

**Products & Metrics**

(Base Report) Edit Entitle

Publisher	Product Name	Metric
Microsoft		

**Assign Metric to Product** [X]

Product Name

Metric

Set as default Product Metric for bundling assistant.

OK Cancel

3. Add a contract with this product and metric.

### New Contract

Name \* Microsoft Windows Server 2016 Standard CAL

Contract ID \* CO2

Metric Microsoft Client Access ▾

Software Product  
 Microsoft: Microsoft Windows Server 2016 Standard ×  
 Enter a software product

Type \* License ▾

Computer Group \* HR ▾

4. After adding the contract, classify all instance components that are part of this product to this metric. It is similar to what was described in the previous scenarios.

If you measure CAL license for this product you can enter its value in 'Product Metrics per Group'.

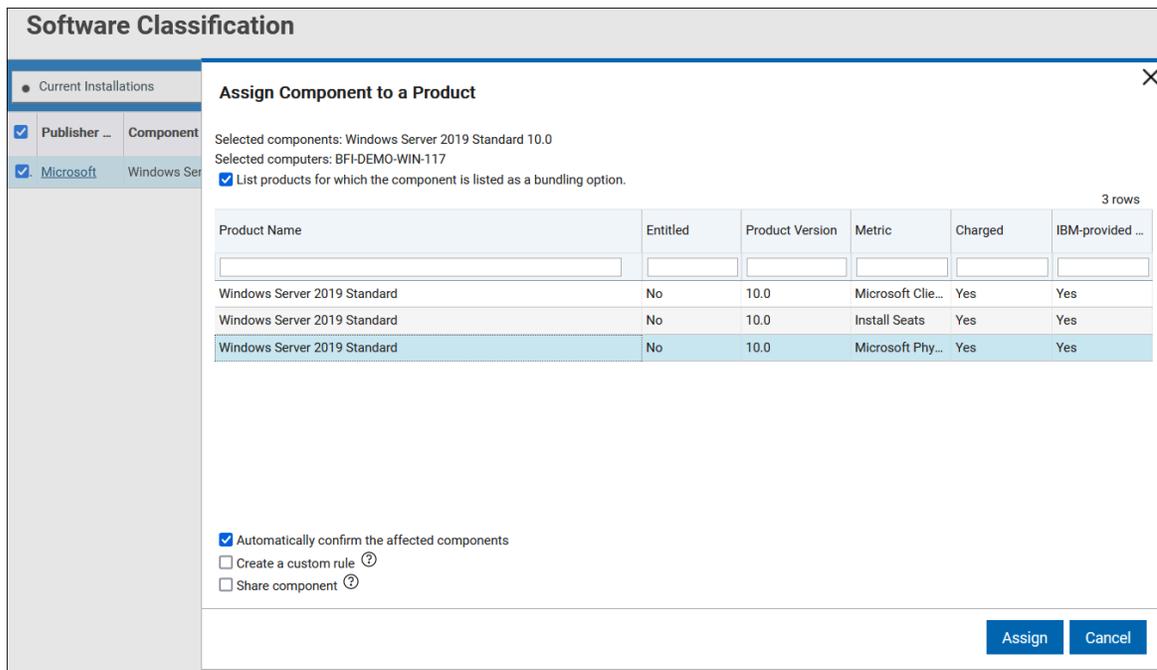
5. After that the value of metric is defined, delta and threshold is visible on 'All contracts' report.

All Contracts										
● (Base Report) Edit ⓘ										
Contract Name	Contract ID	Metric	Contract Type	Computer Grou...	Current Contra...	Current Measu...	Delta	Threshold	Threshold Delta	
Microsoft Wind...	CO2	Microsoft Client Access License	License	All Computers	600	521	79	550	29	

## Managing products that are licensed to more than one metric

Some software titles require entitlements for two or more license metrics. For example, Microsoft Windows Server, which requires you to purchase CPU Cores license as well as CAL license. In this case, you need to create two contracts for Microsoft Windows Server; one for CPU Cores and one for CALs. In order to enable BigFix Inventory to compare these contracts with license metrics, you need to classify the discovered components accordingly.

1. Classify component to the first metric.



2. Classify the same component to the second metric and choose 'Share components' option.

**Result:** On the 'Software Classification' panel, you can see two rows for every component instance; one for 'Microsoft Physical Processor Core with SA' metric and another for 'CAL' metric.

**Software Classification**

● Current Installations [Assign] [Exclude] [Confirm] [Edit]

<input type="checkbox"/>	Publisher ...	Component Name	Compo...	Compo...	Product Name	Metric	FlexPoint ...	Entitled
<input type="checkbox"/>	Microsoft	Windows Server 2019 Standard	10.0	10.0	Windows Server 2019 Standard	Microsoft Physical Cor...	None	No
<input type="checkbox"/>	Microsoft	Windows Server 2019 Standard	10.0	10.0	Windows Server 2019 Standard	Microsoft Client Acces...	None	No

Changing default license usage reporting period

By default, metrics are calculated for 90 days and on 'All Metrics' panel you can see a maximum value of a metric in that period and this maximum value is used to compare contracts with the calculated metrics. If you would like to use a shorter period, you can change configuration of computer group in BigFix Inventory to lower number of aggregated days to, for example, to one day. Note, that if you have IBM software and you would like to get IBM Subcapacity reports in BigFix Inventory, it is not advisable to decrease the reporting period below 90 days. In such cases you need to setup different reporting period as described in document section 'Achieving different reporting periods'

## Management: Computer Groups

+ New  Delete

All Computers

### Edit Computer Group

Type  
Reporting  

This computer group contains all computers that are monitored by the application. It cannot be deleted.

---

#### License usage calculations

To enable license usage calculations for this computer group, select the check box below. Selecting this check box might significantly increase import time and you should only consider it if you need dedicated license reporting for this computer group.

Enable license usage calculations

Aggregate last  days



### Using different license usage reporting periods

In some cases, you may want to have two different usage license reporting periods. For example, you may have IBM software, which generally requires 90-day reporting period and reports like 'All metrics' as well as 'Contracts' should follow that period. However, for other publishers you may want to have a shorter reporting period to see more current maximum value of license metrics. In such case you should have two computer groups, one for reporting of IBM licenses, second for other reporting of other publishers.

To achieve that you need to keep the default licensing reporting in one computer group and use it for IBM license reporting

## Management: Computer Groups

+ New  Delete

All Computers

### Edit Computer Group

Type  
Reporting  

This computer group contains all computers that are monitored by the application. It cannot be deleted.

---

#### License usage calculations

To enable license usage calculations for this computer group, select the check box below. Selecting this check box might significantly increase import time and you should only consider it if you need dedicated license reporting for this computer group.

Enable license usage calculations

Aggregate last   days



Next you need to create a computer group with a different reporting period, for example 1 day and use it in your contracts as on a figure below.

## Management: Computer Groups

+ New Delete

All Computers

- HR

Name\*  
HR

Description

Definition  
Specify the report filter which matches **all** of the following conditions:

Computer Name **begins with** hr

Type  
Reporting

**License usage calculations**

To enable license usage calculations for this computer group, select the check box below. Selecting this check box might significantly increase import time and you should only consider it if you need dedicated license reporting for this computer group.

Enable license usage calculations

Aggregate last  days

### Managing purchase orders

In your contracts you can manage purchase orders. To each contract, you can add one or more applicable purchase orders, their license metric value as well as when entitlement starts and optionally when it ends.

### New Contract

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

#### Purchase Orders

+ New
🗑 Delete
🔄 Convert to ELA

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	P01234	<a href="https://exaple">https://exaple</a>	part ...	10	📅 04/15/2022	📅 Never

## Managing multiple purchase orders in a contract

If you add multiple purchase orders to a contract, BigFix Inventory calculates the current contract value taking into consideration purchase orders validity periods. It also provides you with information about the next date when a contract value is going to be changed together with contract value at this date.

## New Contract

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

### Purchase Orders

+ New
🗑 Delete
↻ Convert to ELA

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	P01234	<a href="https://example">https://example</a>	part ...	10	04/15/2022	04/14/2023
All Computers	P01235	<a href="tps://example">tps://example</a>	artner	5	05/01/2022	04/30/2023

## Managing Enterprise License Agreement (ELA) purchase orders

If you sign an Enterprise License Agreement (ELA) contract that allows you to use a particular product without usage limit, you can also manage it in BigFix Inventory.

1. Create a contract and add a Purchase Order to it.

### New Contract

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

#### Purchase Orders

+ New  Delete  Convert to ELA

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	P012345	<a href="#">example.com</a>	icrosoft		<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="Never"/>

2. Click 'Covert to ELA' to convert the Purchase Order as well as contract into ELA.

### New Contract

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

#### Purchase Orders

+ New  Delete  Convert to number

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	P012345	<a href="#">/example.com</a>	crosoft	ELA	05/01/2022	Never



**Note:** For contracts with ELA, contract delta data is not available

### All Contracts

(Base Report)   1 row (all data)

Contract Name	Contract ID	Metric	Contract Type	Computer Gro...	Current Contra...	Current Measu...	Delta	Threshold	Threshold Delta	Next Entitleme...	Next Entitleme...	Entitlement En...	Products
Microsoft SQL Server ELA	004	Microsoft Phys...	License	All Computers	ELA	64	<n/a>	<not set>	<n/a>	Never	<n/a>	Never	1

## Managing purchase orders that cover multiple metrics or products

One purchase order may cover entitlements for different license metrics for the same product, multiple products or both license and support entitlements. In such case, add this purchase order to multiple applicable contracts.

For example, you have a purchase order for Microsoft Windows Server 2016 Datacenter and it covers 16 CPU Cores and 100 CALs. In that case, you need to assign this purchase order to two contracts.

1. First, add this purchase order to Microsoft Core license contract.

### Edit Contract

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

#### Purchase Orders

[+ New](#) [Delete](#) [Convert to ELA](#)

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	PO1234 <a href="#">✎</a>	<a href="https://exaple">https://exaple</a> <a href="#">✎</a>	Busi ... <a href="#">✎</a>	16 <a href="#">✎</a>	<input type="text" value="04/15/2022"/>	<input type="text" value="Never"/>

## 2. Add this purchase order to Microsoft CAL license contract.

### New Contract

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

**Purchase Orders**

+ New   Delete   Convert to ELA

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	PO1234	tps://example	partner	100	04/15/2022	Never

Save   Cancel

**Result:** After you complete the process, on the 'All Contracts' reports, you can see two contracts with their values corresponding to their purchase orders.

All Contracts					
● (Base Report)   Edit   ?					
Contract Name	Contract ID	Metric	Contract Type	Computer Gr...	Current Contract Value
Windows Server 2016 Datacenter CPU	C016	Virtual Processor Core	License	All Computers	16
Windows Server 2016 Datacenter CAL	C017	Microsoft Client Access License	License	All Computers	100

Managing email notifications for contracts that passed through the threshold value

You can specify the threshold metric value in a contract, that is a 'warning' point of license usage when you may need to take an action like acquiring additional license entitlements to keep license compliance.

## All Contracts

(Base Report) Edit ?

Contract Name	Contract ID	Metric	Contract Type	Computer Gr...	Current Contract Value
Windows Server 2016 Datacenter CPU	C016	Virtual Processor Core	License	All Computers	16
Windows Server 2016 Datacenter CAL	C017	Microsoft Client Access License	License	All Computers	100

## Edit Contract

Threshold

Current Contract Value

Next Entitlement Change Date

Next Entitlement Value

Entitlement End Date

### Purchase Orders

+ New Delete Convert to ELA

Computer Group	Purchase Number	Document Link	Vendor	Value	Entitlement Start	Entitlement End
All Computers	P012345	<a href="https://exa...">https://exa ...</a>		32	05/01/2022	Never

You can set up an email notification when license consumption has passed the compliance. To set up the notification, define a filter on 'Contracts' panel to show contacts whose threshold delta is below zero.

### Configure View

**Filters**

Specify the report filter which matches **all** of the following conditions:

Threshold Delta less than 0  

**Columns**

Select All

Contract

<input checked="" type="checkbox"/> Contract Name	<input checked="" type="checkbox"/> Threshold
<input checked="" type="checkbox"/> Contract ID	<input checked="" type="checkbox"/> Threshold Delta
<input checked="" type="checkbox"/> Metric	<input checked="" type="checkbox"/> Next Entitlement Change Date
<input checked="" type="checkbox"/> Contract Type	<input checked="" type="checkbox"/> Next Entitlement Value
<input checked="" type="checkbox"/> Computer Group Name	<input checked="" type="checkbox"/> Entitlement End Date
<input checked="" type="checkbox"/> Current Contract Value	<input checked="" type="checkbox"/> Products
<input checked="" type="checkbox"/> Current Measured Value	<input checked="" type="checkbox"/> Software Installations
<input checked="" type="checkbox"/> Delta	

**Options**

Autosize Columns

**Submit** **Cancel**

Save the report with a custom name.

### Save Report As

Name\*

Private

Set as default

Set as global default

**Create**

Select **Export > Schedule reports** to schedule the saved report to be sent by email.

## Schedule Export ✕

Report Subscription

Format\*  ▼

Page Size  ▼

Orientation

Portrait  
 Landscape

Email\*

Separate multiple recipients with a comma.

Language\*  ▼

Email on a regular basis:

Start Time

Frequency  ▼

Every  day(s)

Email if the number of rows exceeds:

### 10.0.7 Software discovery in containers

BigFix Inventory supports discovery of software in container images through standard discovery methods that includes catalog signatures, template signatures, installation registry and ISO SWID tags to cover traditional model of software deployment.

In addition, the application provides information about software running in containers, the container instances with basic properties and their current status. This information allows to determine the software deployment across container resources that are allocated.

A new plugin framework is available to communicate with the Kubernetes APIs of on-premise and public cloud containers, to determine software usage of container instances.

Collection of container details is with the use of two configurations:

- Kubernetes-based solutions that are compatible with standard Kubernetes API v1.18 or newer. For details, see notes.
- Generic Kubernetes API available in case own access method is preferred.



**Note:** Examples of compatible solutions verified in test lab environment are:

- Vanilla (unmodified) Kubernetes v1.18, v1.21, v1.23, and v1.24
- Google Cloud v1.20
- RedHat OpenShift Container Platform v4.9

For information on how to verify BigFix Inventory Containers solution with your Kubernetes cluster, refer to the section “Kubernetes Cluster Test Procedure” in the [detailed containers document \(on page mccxxiii\)](#).

### 11.0.0

In version 11.0.0, the Containers report is added to show container images with information about the pod, image, resources, annotations, and labels.

For managing IBM software in Containers, refer to the IBM strategy and solution [FAQ](#). BigFix Inventory is certified for IBM Virtualization Capacity License reporting on physical machines, virtual machines on-premise and in the cloud. For IBM Certified Containers the only approved licensing counting is through IBM License Service. For feedback or questions regarding this capability, contact IBM.

Currently, BigFix Inventory Software Discovery in Containers is limited to software discovery only without license management capability but provides visibility to a large set of vendor software in Kubernetes compatible environments including Red Hat OpenShift.

As BigFix Inventory feature improves, support for a wide variety of license management within containers will be added, beyond IBM/Red Hat container license management, such as Microsoft, Adobe, SAP, HP, BMC, CA, Citrix, Corel Symantec, TIBCO, and VMware.

HCL looks forward to continue partnership with IBM/Red Hat to address their container license management as a leading software vendor.



**Note:** The *detailed containers document* is available as PDF accessible through link “Discovering software inventory with BigFix Inventory Container Solution” on “Download the BigFix Inventory Container Solution Packages (version)” fixlet.

### 10.0.8 Software data harvesting tool

BigFix Inventory provides a Software Data Harvesting Tool for BigFix Inventory which is part of BigFix Inventory Catalog Enhancement Program. The purpose of this program is to provide users with better discovery capabilities for the software installed on their Windows endpoints.



**Note:** The detailed document is available as PDF accessible through "Run Software Data Harvesting Tool" fixlet.

# Managing security threats

Learn how to use BigFix Inventory to manage security threats in your environment. You can view whether any of the installed components is prone to any Common Vulnerability and Exposure (CVE).

## Collecting file checksums

**9.2.3** Available from 9.2.3. Checksums are long strings that describe the content of files and act as their fingerprints. You can enable the calculation of checksums for files on your computers to check their integrity and to ensure that they were not altered or tampered with.

In general, checksums are used to ensure safe transmission of files between devices, or across the Internet. In the latter case, after downloading a file, you can calculate its checksum and then compare it to the original checksum that was published together with the download. If both checksums match, you know that your download is exactly the same as the published source file, and that it is secure. Otherwise, there was some data loss or alteration, which means that the file was corrupted, either by accident or intentionally.

In BigFix Inventory, checksums are calculated during the file system scan and are created for each file that is discovered by the scan. In other words, apart from collecting usual information about files, such as their version or size, the scanner also collects information about their checksums. The checksums can then be viewed in the user interface or retrieved by using REST API, and compared to the checksums of known virus signatures or malware to ensure that none of such files is present in your environment. If any of the collected checksums finds a match in the database of corrupted checksums, there is a high probability that the file associated with this checksum is not secure, and presents a potential security breach.

Checksums in BigFix Inventory can be calculated by using two hash functions; MD5 and SHA-256. You may use any of the function, depending on the database of the corrupted checksums that you own. You can also compare with the checksums collected by the scan.

## Enabling the collection of checksums

**9.2.3** Available from 9.2.3. You enable the collection of checksums by running a fixlet that changes the configuration of the software scan for BigFix Inventory. When you select checksums and run the fixlet against a chosen endpoint, this endpoint is given new properties that represent either MD5, SHA-256, or both. Based on these properties, the software scan can recognize which checksums must be collected from an endpoint. If you choose just one type of checksum and want to add another one later, you need to run the fixlet again.

- Upgrade the BigFix Inventory server to version 9.2.3, or higher.
- If you upgraded from previous versions, stop all *Initiate Software Scan* actions, and rerun the software scan against your endpoints. The software scan was changed to collect checksums, and must be started from the updated fixlet.
- Divide your environment into scan groups to distribute the load of the imported data:

- If the extended data import (three times longer) is acceptable, enable the collection of file hashes for all scan groups, and collect the data according to schedule.
- If the extended data import does not meet your expectations, rearrange your scan groups into smaller ones with fewer endpoints to lower the amount of data included in a single data import. After the first import is completed for all scan groups, you can go back to the previous setup.

It is important that you enable checksums for a small group of endpoints. After data from the first group is imported to BigFix Inventory, proceed to the next group. Because of the checksums, each file is detected as changed. By default, BigFix Inventory imports the delta file system scan, so only data that changed since the last scan. However, when it detects too many changes, it always chooses the full file system scan over the delta file system scan. Importing so many results might overload your data import. In such a case, you must recover from accumulated scans. This applies not only to enabling the checksums for the first time, but also to each change, such as adding a new type of checksum to be collected, or removing it.

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. In the upper right pane, select **Configure File Checksums Collection (MD5/SHA-256)**.
4. Select the types of checksums that you want to collect, either MD5, SHA-256, or both.

**Description**

**Collected File Checksums**

MD5 checksum

SHA-256 checksum

 **Important:** Always select all checksums that you want to collect, especially if you are running the fixlet for the next time. New properties always overwrite the previous ones.

5. Click **Take Action**.
6. Select the computers from which you want to collect checksums, and click **OK**.
7. **Optional:** In the navigation bar, go to **Analyses**, select **File Checksums Collection Settings (MD5/SHA-256)**, and click **Activate**. The analysis shows which checksums are collected from your endpoints.

Computer Name	Minimal Scanner version installed	MD5 checksum calculation enabled	SHA-256 checksum calculation enabled
 NC007143	True	True	True
 NC126312	False	False	False

Checksums are displayed in BigFix Inventory after the next software scan finishes and its results are imported from BigFix during the import of data.

In an environment with 60 000 endpoints divided into 6 scan groups (each with 10 000 endpoints), where each scan group is scanned on a different day, the file hashes will be collected in 6 days. The initial import for each scan group after enabling the collection might be three times longer. Next imports will take about 10% longer.

### Impact of file hashes on the BigFix Inventory database size

For both DB2 and SQL Server databases, the collection of file hashes (MD5 and SHA-256) is expected to result in a 20% growth of the disk space consumption.

### Impact of file hashes on the BigFix client

File hashes are calculated during the software scan and the results are gathered on the endpoint. The size of scan results will increase by about 5%. For an average endpoint with 30 matched and 800 unmatched raw data files, an additional 0.5 MB of disk space might be consumed.

You can [view the checksums in the user interface \(on page mccxxvii\)](#) or [retrieve them by using REST API \(on page mccxxviii\)](#).

## Viewing checksums in the user interface

**9.2.3** Available from 9.2.3. To view checksums in the user interface, you must enable columns that show this data. It can be useful to verify checksums of single files. For bigger amounts of files, use REST API that can retrieve all collected checksums at once.

1. Log in to BigFix Inventory.
2. Go to **Reports > Scanned File Data**.
3. Hover over the **Manage Report View** icon , and click **Configure View**.
4. Select the **MD5** or **SHA-256** check box, and then click **OK**.

Checksums for each file are shown in the appropriate columns.

File Name	MD5	SHA-256
a04.sys	5ab92f5cff64054f2c5e64f45fc092f8	ce6b20ee7f7797e102f68d15099e...
a05.sys	10e5a5c00e2bed3ca40df5afd32fa...	f0af17449a83681de22db7ce1667...
a06.sys	b843ae5ec31fa7ac864b34985675...	86d5bc08c2eba828a8e3588e25a...
a07.sys	764f368a99e0c7c22c9ad735ec76...	364aba675151243a1e105cee426...

## Retrieving checksums through REST API

**9.2.3** Available from 9.2.3. To retrieve information about checksums, you can use REST API that is generally used to retrieve raw scanned file data. This API retrieves information about scanned files, such as name, size, version, path, and so on. It can also return the values of the MD5 and SHA-256 columns, which show the checksums.

### Before you begin

This topic is only an excerpt from the REST API call, intended to show specific examples that can be used to retrieve the MD5 and SHA-256 checksums. For more information, see [REST API for retrieving raw scanned file data \(on page mdcxxiii\)](#).

### Sample columns

The following response body shows default columns that can be retrieved by using this REST API. You can use the names of the shown columns while creating your REST API requests. If you do not specify any columns in the request, all of them are returned.

```
{
  "scan_file_id": 3,
  "computer_id": 5,
  "path": "C:\BES\BESAirgapTool",
  "name": "BESAirgapTool.exe",
  "full_path_sha1": "9eb46086883dcb6d2aefa2d6fd40bf8e736621b",
  "size": 92174,
  "version": null,
  "md5": "8cb2289800b34ef1a5f472f7177348e2",
  "sha256": "99e0c7c22c9ad735ec766914f0af17449a83681de22db7ce16672f16f37131bec0022371d4ace5d1854301e0",
  "valid_from": "2015-07-31T07:03:21Z"
  "valid_to": "9999-12-31T23:59:59Z"
}
```

## Examples

### Example 1: Retrieving information only about name, computer name, path, MD5, and SHA-256 columns.

Request:

```
https://hostname:port/api/sam/raw_file_facts?token=token
&columns[]=name&columns[]=computer.name&columns[]=path&columns[]=md5&columns[]=sha256
```

Output:

```
{
  "path": "C:\BES\BESAirgapTool",
  "name": "BESAirgapTool.exe",
  "md5": "8cb2289800b34ef1a5f472f7177348e2",
```

```

"sha256" :
"99e0c7c22c9ad735ec766914f0af17449a83681de22db7ce16672f16f37131bec0022371d4ace5d1854301e0",
"computer":{
  "name": "NC581058"}
}

```

### Example 2: Retrieving information about files with a specific MD5 checksum.

This example can be used to quickly find a corrupted checksum.

Request:

```

https://hostname:port/api/sam/raw_file_facts?token=token
&criteria={"and":[{"md5","=", "8CB2289800B34EF1A5F472F7177348E2"}]}

```

Output:

```

{
  "scan_file_id": "6",
  "computer_id": "3",
  "path": "C:\Files",
  "name": "arch.exe",
  "full_path_shal": "9eb46086883dcbb6d2aefa2d6fd40bf8e736621b",
  "size": 2032,
  "version": null,
  "md5": "8cb2289800b34ef1a5f472f7177348e2",
  "sha256": null,
  "valid_from": "2015-12-10T11:37:14Z",
  "valid_to": "9999-12-31T23:59:59Z"
}

```

### Example 3: Retrieving information about name, computer name, path, and MD5 columns for all **word.exe** files that have a different MD5 checksum than the specified one.

This example can be used if you know that a file should have a specific checksum. You can therefore retrieve all files with other, corrupted checksums.

Request:

```

https://hostname:port/api/sam/raw_file_facts?token=token
&columns[]=name&columns[]=computer.name&columns[]=path&columns[]=md5
&criteria={"and":[{"md5","!=", "8CB2289800B34EF1A5F472F7177348E2"}, {"name","=", "word.exe"}]}

```

Output:

```
{
  "path": "C:\\Programs",
  "name": "word.exe",
  "md5": "6cb1465800b34ef1a5f376f717743t6",
  "computer": {
    "name": "NC581058"
  }
}
```

## Preview: Checking Common Vulnerabilities and Exposures (CVEs)

**9.2.12** Available from 9.2.12. The software catalog contains information about Common Vulnerabilities and Exposures (CVEs). Browse the software catalog to check for any potential threats. Checking CVE in BigFix Inventory is a preview feature.

Common Vulnerabilities and Exposures (CVE) is a list of known security threats that are assigned identification numbers. BigFix Inventory uses CVE that is provided by the National Vulnerability Database at <https://nvd.nist.gov/> to help you identify potential threats in your environment.

### Order of CVEs

Potential threats are displayed in the Vulnerability Risk (Preview) column. If matched, CVEs are sorted in descending order by the base score, and then the CVE identifier. They are not ordered by severity. The base score and severity are assigned according to the Common Vulnerability Scoring System (CVSS). When CVSS v3.0 is available, it takes precedence over CVSS v2.0.

### CVE details

When you click the View Details icon  next to the CVE identification number, you are presented with the details of the relevant CVEs such as their names, severity and CVSS. If there are more CVEs matched with a particular component, you can view them on the detailed list. You can export the report view to CSV or PDF for additional processing. The exported report contains a full list of names of relevant CVEs.

### Limitations

- CVE description might not always represent accurate information about the vulnerable versions. As a result, despite upgrading the patch and referring to the BigFix Inventory detailed component version, CVE might be listed. Refer to the latest CVE description in National Vulnerability database.

**Example:** [CVE-2015-1728](#), Windows Media Player and all 12.x versions are affected. There is no fix available for 12.x versions. Hence, 12.x is listed under the CVE in BigFix Inventory.

- For best results, update the NVD feed. To learn about updating the CVE, refer to [Updating information about Common Vulnerabilities and Exposures \(CVE\) \(on page mccxxxii\)](#).

- BigFix Inventory provides Component Detailed Version (patch/fix pack level) reporting for selected software components. In such case, the NVD feed provides correct information about versions related to the issue, but CVE still lists the versions in BigFix Inventory as generic discovery.
- CVEs that are listed in the National Vulnerability Database might impact software that is installed only on a particular operating system. BigFix Inventory does not take this fact into account while matching CVEs to components.
- If the name of a component or its publisher is different in BigFix Inventory and in the National Vulnerability Database, CVEs might not be matched in BigFix Inventory.
- If the detailed version of the component is significantly different from its version, CVEs might not be matched in BigFix Inventory.
- **9.2.14** The following aliases were added to improve the CPE generation and vulnerability matching:
  - RedHat alias for the Red Hat publisher.
  - Apache alias for the Apache Software Foundation publisher.

Log in to BigFix Inventory and open one of the following reports.

- **9.2.13** Go to **Reports > Software Classification**. To display the Vulnerability Risk (Preview) column, click the **Manage Report View** icon , click **Configure View**, and select the Vulnerability Risk (Preview) column to display it on the report.

CVEs on this report are matched with the particular software component through its detailed version.

<input type="checkbox"/>	Publisher...	Component Name	Component Ver...	Vulnerability Risk (Preview)	Product Name	Metric	Computer Name	Installation Path	Details
<input checked="" type="checkbox"/>	Microsoft	Microsoft .Net Framework	1.0	CVE-2002-0369,...	Microsoft .NET Framework	Install Seats	NC9174039229	<See details>	<a href="#">DETAILS &gt;</a>
				<b>CVE Name</b>					
				<b>CVSS</b>					
				<b>CVSS Version</b>					
				<b>Severity</b>					
				CVE-2002-0369,...	Microsoft .NET Framework	Install Seats	NC9174039028	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2002-0369,...	Microsoft .NET Framework	Install Seats	NC9174039030	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2015-6108	Microsoft .NET Framework	Install Seats	NC9174038048	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2002-0369,...	Microsoft .NET Framework	Install Seats	NC9174039029	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2015-6108,...	Microsoft .NET Framework	Install Seats	NC9174039028	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2015-6108,...	Microsoft .NET Framework	Install Seats	NC9174039229	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2015-6108,...	Microsoft .NET Framework	Install Seats	NC9174039030	<See details>	<a href="#">DETAILS &gt;</a>
				CVE-2015-6108,...	Microsoft .NET Framework	Install Seats	NC9174038048	<See details>	<a href="#">DETAILS &gt;</a>
<input type="checkbox"/>	Microsoft	Microsoft .NET Framework	2.0	CVE-2015-6108,...	Microsoft .NET Framework	Install Seats	NC9174038048	<See details>	<a href="#">DETAILS &gt;</a>

- Go to **Reports > Software Components**. Common Vulnerabilities and Exposures are displayed in the Vulnerability Risk (Preview) column.

The report lists components in a particular version. However, CVEs that are matched relate to versions and their patches.

● (Base Report) 1 / 3650 rows (filtered)						
<input type="checkbox"/>	Publisher Name	Component Name	Component Version	End of Support	Vulnerability Risk (Preview)	Total Signatures
<input checked="" type="checkbox"/>	Microsoft	Access 2000 for Micros...	2000.0	<not set>	CVE-2007-0065,...	Signatures: 1
<input type="checkbox"/>	Microsoft	Access 2000 for Micros...	2000.0		CVE-2007-0065,...	Signatures: 1
<input type="checkbox"/>	Microsoft	Access 2000 for Micros...	2000.0		CVE-2007-0065,...	Signatures: 1
<input type="checkbox"/>	Microsoft	AccessChk	6.1			Signatures: 1
<input type="checkbox"/>	Microsoft	AccessChk	6.2			Signatures: 1
<input type="checkbox"/>	Microsoft	AccessChk	6.0			Signatures: 1
<input type="checkbox"/>	Microsoft	Account Lockout Status	1.0			Signatures: 1
<input type="checkbox"/>	Microsoft	Active Accessibility Eve...	4.2			Signatures: 1
<input type="checkbox"/>	Microsoft	Active Accessibility Obj...	7.2			Signatures: 1

CVE Name	CVSS	CVSS Version	Severity
CVE-2007-0065	10.0	2.0	High
CVE-2003-0347	10.0	2.0	High
CVE-2000-0854	10.0	2.0	High
CVE-2000-0788	10.0	2.0	High
CVE-2016-7182	9.8	3.0	Critical
CVE-2015-6108	9.3	2.0	High
CVE-2015-6107	9.3	2.0	High
CVE-2015-6106	9.3	2.0	High
CVE-2015-2510	9.3	2.0	High
CVE-2015-2464	9.3	2.0	High



**Note:** 9.2.13 You can filter and sort both reports by CVE names.

- To show components for which any vulnerability was matched, specify the following filter:

Vulnerability Risk (Preview), is not empty.

- To show components for which a specific vulnerability was matched, specify the following filter:

Vulnerability: CVE Name, contains, and provide the name of the CVE.

For better performance, combine these two filters whenever you want to search for components for which a specific vulnerability was matched.

## Updating information about Common Vulnerabilities and Exposures (CVE)

**9.2.12** Available from 9.2.12. Common Vulnerabilities and Exposures (CVE) list is integrated with the software catalog and updated with each upgrade of BigFix Inventory. Use this procedure if you require more frequent updates.

- You must have access to the computer where the BigFix Inventory server is installed with permissions to paste files into the installation directory of BigFix Inventory.
- To perform the described actions, you must have the following tools installed:
  - GNU Wget
  - unzip tool
  - sha256sum

CVE contains a list of known security threats that are assigned identification numbers. Thanks to the import of CVE to BigFix Inventory, you can browse your software inventory and identify potential threats in your environment.

Information about CVE is automatically updated during every upgrade of BigFix Inventory. Use this procedure if you require to update CVE between the subsequent releases of BigFix Inventory.



**Note:** The procedure describes how to update CVE files with a semi-automated method. Alternatively, you can perform each step manually.

1. To download the **zip** CVE files, including **json** files and the relevant **meta** files from the [National Vulnerability Database](#), run the following command.

```
wget --secure-protocol=auto -r -A nvdCVE-1.0-20*.meta,nvdCVE-1.0-20*.json.zip
https://nvd.nist.gov/vuln/data-feeds
```

The files are downloaded to the following location: [nvd.nist.gov/feeds/json/cve/1.0](https://nvd.nist.gov/feeds/json/cve/1.0).



**Important:** Do not change names of the downloaded files.

2. **Optional:** Ensure that you downloaded the appropriate files.

- a. To unpack the packages that contain **json** files, run the following command.

```
unzip '*.zip'
```

- b. To generate SHA-256 for each **json** file, run the following command.

```
sha256sum file_name.json
```

- c. Compare SHA-256 from each **json** file with SHA-256 from the relevant **meta** file.

Both values should be the same.

3. Copy all **zip** CVE files to the following directory on the computer where the BigFix Inventory server is installed:

- **Linux** `installation_directory/cve_data`
- **Windows** `installation_directory\cve_data`

4. Wait for the scheduled import of data or run it manually.

The list of common vulnerabilities and exposures is populated to BigFix Inventory. To check information about CVE, go to **Reports > Software Components**. The vulnerabilities are listed in the Vulnerability Risk (Preview) column for each relevant component.

● (Base Report)				1 / 3650 rows (filtered)			
<input type="checkbox"/>	Publisher Name	Component Name	Component Version	End of Support	Vulnerability Risk (Preview)	Total Signatures	
<input checked="" type="checkbox"/>	Microsoft	Access 2000 for Micros...	2000.0	<not set>	CVE-2007-0065,...	Signatures: 1	
<input type="checkbox"/>	Microsoft	Access 2000 for Micros...	2000.0		CVE-2007-0065,...	Signatures: 1	
<input type="checkbox"/>	Microsoft	Access 2000 for Micros...	2000.0		CVE-2007-0065,...	Signatures: 1	
<input type="checkbox"/>	Microsoft	AccessChk	6.1			Signatures: 1	
<input type="checkbox"/>	Microsoft	AccessChk	6.2			Signatures: 1	
<input type="checkbox"/>	Microsoft	AccessChk	6.0			Signatures: 1	
<input type="checkbox"/>	Microsoft	Account Lockout Status	1.0			Signatures: 1	
<input type="checkbox"/>	Microsoft	Active Accessibility Eve...	4.2			Signatures: 1	
<input type="checkbox"/>	Microsoft	Active Accessibility Obj...	7.2			Signatures: 1	

CVE Name	CVSS	CVSS Version	Severity
CVE-2007-0065	10.0	2.0	High
CVE-2003-0347	10.0	2.0	High
CVE-2000-0854	10.0	2.0	High
CVE-2000-0788	10.0	2.0	High
CVE-2016-7182	9.8	3.0	Critical
CVE-2015-6108	9.3	2.0	High
CVE-2015-6107	9.3	2.0	High
CVE-2015-6106	9.3	2.0	High
CVE-2015-2510	9.3	2.0	High
CVE-2015-2464	9.3	2.0	High

# Tutorials

Tutorials help you understand how to use BigFix Inventory. They consist of modules that focus on broad goals. Modules consist of tasks that show how to configure specific settings step-by-step.

## Tutorial: Reporting subcapacity usage per computer group

**9.2.2** Available from 9.2.2. In this tutorial, you will learn how to create computer groups that allow for managing software and generating audit snapshots for a subset of computers. You can use such groups to report PVU consumption for BigFix software installed in multiple BigFix subcapacity regions or to manage software per organizational business unit.

Managing software per computer group can be used in the following scenarios:

- You have BigFix software that is installed in multiple BigFix subcapacity regions. For more information, see: [BigFix subcapacity regions \(on page cdxxiv\)](#).
- You want to separately manage software that is installed in each business unit in your organization. For more information, see: [Organizational business units \(on page cdxxix\)](#).

### Learning objectives

After you complete the lessons in this tutorial, you will know how to perform the following tasks:

- Divide the computers in your infrastructure into BigFix computer groups.
- Define the scope of audit snapshots by creating computer groups in BigFix Inventory.
- Import part numbers and manage software per computer group.
- Generate audit snapshots per computer group.

### Time required

This module should take 45 minutes to complete. If you explore other concepts related to this tutorial, it can take longer to complete.

### Audience

- Customers who have BigFix software installed in multiple BigFix subcapacity regions.
- Customers who want to manage software per organizational business unit.

### Prerequisites

- Install the scanner on all computers that you want to monitor. For more information, see: [Installing the scanner \(on page dcviii\)](#).
- Configure VM managers that control virtual machines in your environment. For more information, see: [Managing VM managers \(on page dcclxi\)](#).

### Conventions used in this tutorial

This tutorial is based on the example of creating computer groups that reflect BigFix subcapacity regions.

### Lessons in this tutorial

The tutorial contains the following lessons:

1. [Lesson 1 \(Optional\): Creating computer groups in the BigFix console \(on page mccxxv\)](#)
2. [Lesson 2: Creating computer groups that define the scope of reports \(on page mccxxvi\)](#)
3. [Lesson 3: Managing software and generating audit snapshots per computer group \(on page mccxxviii\)](#)

## Lesson 1 (Optional): Creating computer groups in the BigFix console

**9.2.2** Available from 9.2.2. You can divide the computers in your infrastructure into BigFix groups. They are used to manage the infrastructure, and run Fixlets against selected computers. They are not automatically copied to BigFix Inventory. However, they can be used as the basis for creating computer groups that define the scope of reports in BigFix Inventory.



**Important:** This lesson is optional. If you do not want to create separate scan schedules for each computer group, skip this lesson and proceed to the next one.

1. Log in to the BigFix console.
2. Create a computer group that contains all computers that are located in the first BigFix subcapacity region: North and South America.
  - a. In the top navigation bar, click **Tools > Create New Automatic Computer Group**.
  - b. Provide the name of the computer group.  
For example, Americas.
  - c. Select the site and domain in which you want to create the computer group.
  - d. Specify criteria that must be met by the computers that belong to this group.  
For example, add all computers whose DNS name contains `.us`.

- e. To save the group, click **Create**.
3. Create computer groups for the remaining BigFix subcapacity regions in which you have computers.
  4. For every computer group, schedule scans and uploads of scan results.  
For more information, see: [Initiating software scans \(on page dcx\)](#) and [Uploading software scan results \(on page dcxvii\)](#).

You created computer groups in the BigFix console. To generate audit snapshots for a subset of computers, create analogical computer groups in BigFix Inventory.

## Lesson 2: Creating computer groups that define the scope of reports

**9.2.2** Available from 9.2.2. To manage software and generate audit snapshots for subsets of computers, divide the computers in your infrastructure into groups in BigFix Inventory.

If you created computer groups in the BigFix console, run an import to ensure that information about these groups is available in BigFix Inventory.

1. Log in to BigFix Inventory.
2. Create a computer group that contains all computers that are in the first BigFix subcapacity region: North and South America.
  - a. In the top navigation bar, click **Management > Computer Groups**.
  - b. To create a computer group, click **New**.
  - c. Provide the name of the computer group.  
Americas.
  - d. **Optional:** Provide a description of the computer group.
  - e. Specify criteria that must be met by the computers that belong to this group.  
To reuse the computer group that you created in the BigFix console, select **Data Source Groups, in set**, and select the proper BigFix computer group. In this case, select Americas.

**Create Computer Group**

Parent

Name\*

Description

Definition  
 Specify the report filter which matches  of the following conditions:

Type

**License usage calculations**

To enable license usage calculations for this computer group, select the check box below. Selecting this check box might significantly increase import time and you should only consider it if you need dedicated license reporting for this computer group.

Enable license usage calculations

Aggregate last  days

**Scan configuration**

Create scan configuration

- f. **9.2.8** From the Type section, select **Reporting**.
- g. Select **Enable license usage calculations** to calculate utilization in this computer group.
- h. Specify the number of days for which the data is to be calculated. This number defines the default period for which the data that is show on the All Metrics report is calculated and up-to-date. This number defines the default period for which the data that is show on the **All Metrics** report is calculated and up-to-date.

Aggregate last    days

For example, when you set the value to 30 days, and then display a report for the last 90 days, the report shows the following data:

- If you display the report for a newly created computer group, the report shows values for the last 30 days and is empty for the rest of the period.
- If you display the report for an existing group, the values might be outdated.

In both cases, recalculate the data.

- i. To save the group, click **Create**.
3. Create computer groups for the remaining BigFix subcapacity regions in which you have computers.
  4. **Optional:** If you do not need a collective snapshot for all computers, but separate audit snapshots for each computer group, open the All Computers group, and clear **PVU and RVU MAPC**. Then, click **Save**.

 **Important:** Perform this step if you are creating computer groups to report PVU usage for BigFix software that is installed in multiple IBM subcapacity regions. If you choose to calculate subcapacity data for the All Computers group, see: [BigFix subcapacity regions \(on page cdxxiv\)](#) to understand what is the difference between reports generated for each region separately and the report generated for the All Computers group.

Do not perform this step if you are creating computer groups to manage software that is installed in multiple business units. When you do not calculate subcapacity data for the All Computers group, you will not be able to generate audit snapshots for the entire environment.

5. To make the computer groups available in BigFix Inventory, wait for the scheduled import or run it manually.
6. **Optional:** If software in each computer group is managed by a separate person, create dedicated users, each with access to one computer group.

User Name	Roles	Authentication Method	Computer Group
admin	Administrators	Password	All Computers
americas_sam	Software Asset Managers, Infrastructure ...	Password	Americas
australia_sam	Software Asset Managers, Infrastructure ...	Password	Australia
europa_sam	Software Asset Managers, Infrastructure ...	Password	Europe and Africa

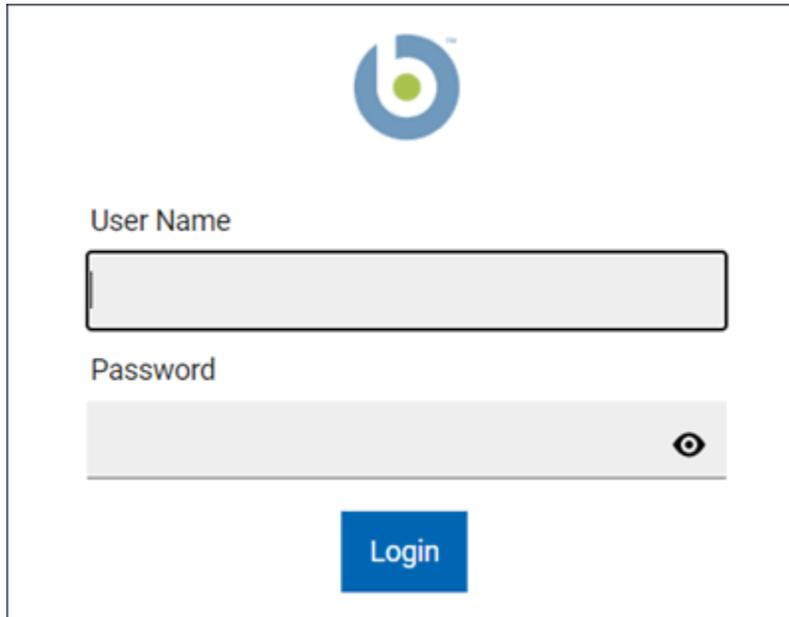
You created computer groups for which you can manage software and generate audit snapshots and dedicated users who can access these groups.

## Lesson 3: Managing software and generating audit snapshots per computer group

**9.2.2** Available from 9.2.2. After you create computer groups in BigFix Inventory, you can manage software and generate audit snapshot separately for each computer group.

1. Log in to BigFix Inventory.

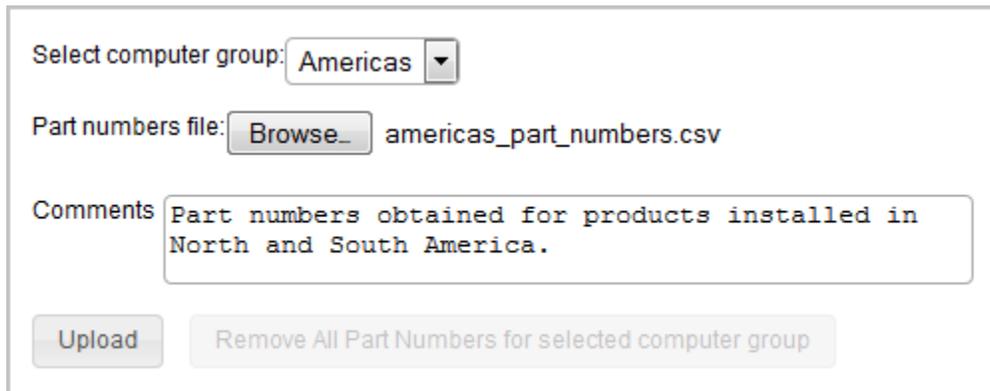
- If software in all computer groups is managed by one person, log in as the user that has access to all computer groups, for example the Administrator.
- If software in each group is managed by a different person, log in as the user with access only to the computer group that represents the first BigFix subcapacity region.



The image shows the BigFix Inventory login interface. At the top center is the BigFix logo, a blue circle with a white 'b' and a green dot. Below the logo are two input fields: 'User Name' and 'Password'. The 'User Name' field is a simple text box. The 'Password' field is a text box with a small eye icon on the right side to toggle visibility. Below the password field is a blue button labeled 'Login'.

2. If you have a file with part numbers related to the software that is installed in this region, upload the file.

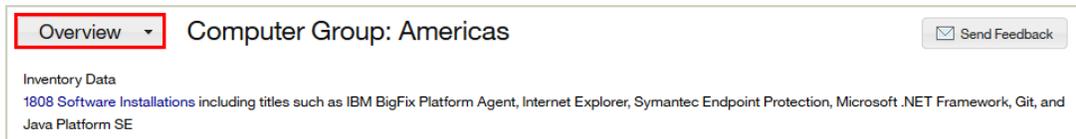
- Click **Management > Part Numbers Upload**.
- Select the computer group for which you want to upload the part numbers. In this case, select Americas.
- Browse for the file with part numbers and provide a comment to the uploaded file. Then, click **Upload**.



The image shows the 'Part Numbers Upload' form. It has a dropdown menu for 'Select computer group' with 'Americas' selected. Below that is a 'Part numbers file' section with a 'Browse...' button and the filename 'americas\_part\_numbers.csv'. There is a 'Comments' text area containing the text 'Part numbers obtained for products installed in North and South America.'. At the bottom, there are two buttons: 'Upload' and 'Remove All Part Numbers for selected computer group'.

- To make the part numbers available in BigFix Inventory, wait for the scheduled import or run it manually.

3. To bundle the software, click **Reports > Software Classification**. The panel contains software from all computer groups to which the user that you used to log in has access. Assign each component to a product, exclude, or suppress the instances that should not be included in the metric calculation, and confirm your actions. For more information, see: [Software classification \(on page cmxliv\)](#).
4. When you finish bundling the software, generate the audit snapshot for this region.
  - If you logged in as a user with access to multiple computer groups, open the Computer Groups report, and click the computer group that represents the first BigFix subcapacity region. Then, in the upper left corner, select All IBM Metrics or IBM PVU Subcapacity.



The report that opens contains information only about software that is installed on the computers in North and South America. Click **Audit Snapshot**. Provide a comment to the generated snapshot and upload any related files. Then, click **Generate**.

- If you logged in as a user with access only to the computer group that represents the first BigFix subcapacity region, open the All IBM Metrics or IBM PVU Subcapacity report, and click **Audit Snapshot**. Provide a comment to the generated snapshot and upload any related files. Then, click **Generate**

You generated the audit snapshot with information about PVU consumption in the first BigFix subcapacity region: North and South America.

Bundle software and generate audit snapshots for the remaining regions in which you have BigFix software installed. For every product, sum up the PVU values from all regions. The value that you obtain is the overall PVU usage for the particular product. This value might be different from the value that you obtain when you generate a single audit snapshot for the All Computers group. For more information, see: [BigFix subcapacity regions \(on page cdxxiv\)](#).

## Tutorial: Managing software in the service provider environment

**9.2.2**

Available from 9.2.2. In this tutorial, you will learn how to create computer groups that allow a service provider to manage software and generate audit snapshots per customer.

A service provider is a company that provides other organizations with access to software installed on machines that are owned and maintained by the service provider. There are three typical scenarios that are used in the service provider environment.

- Software that is installed on one virtual machine is used by one customer
- Some of the software that is installed on a virtual machine is used by the service provider
- Software that is installed on one virtual machine is used by many customers

For more information about the first two scenarios, see: [Service providers \(on page cdxxii\)](#). The last scenario is not supported by BigFix Inventory.

## Learning objectives

After you complete the lessons in this tutorial, you will know how to perform the following tasks:

- Ensure that each customer can run scans and perform other actions in the BigFix console only on the computers on which the software that he uses is installed.
- Define the scope of audit snapshots by creating computer groups in BigFix Inventory.
- Import part numbers and manage software per computer group.
- Filter out software that is not used by the customer from reports.
- Generate audit snapshots per computer group.

## Time required

This module should take 60 minutes to complete. If you explore other concepts related to this tutorial, it can take longer to complete.

## Audience

Service providers who need to manage software and provide separate subcapacity reports for each customer.

## Data visibility

Some of the items in BigFix Inventory are visible globally to all users. Other items are visible only for the user who has access to a particular computer group. If you grant your customers access to BigFix Inventory, review which items are visible globally and which are visible per computer group. For more information, see: [Service providers \(on page cdxxii\)](#).

## Prerequisites

- Install the scanner on all computers that you want to monitor. For more information, see: [Installing the scanner \(on page dcviii\)](#).
- Configure VM managers that control virtual machines in your environment. For more information, see: [Managing VM managers \(on page dcclxi\)](#).

 **Tip:** If each customer should be allowed to view information about all VM managers in the infrastructure, use [basic VM management \(central\) \(on page dccxcii\)](#). If each customer should be allowed to only view information about VM managers that control the virtual machines that he uses, use [advanced VM management \(distributed\) \(on page dcccxiv\)](#).

## Conventions used in this tutorial

The tutorial is based on the example of a service provider whose customers are Bank ABC and IT Company.

## Lessons in this tutorial

The tutorial contains the following lessons:

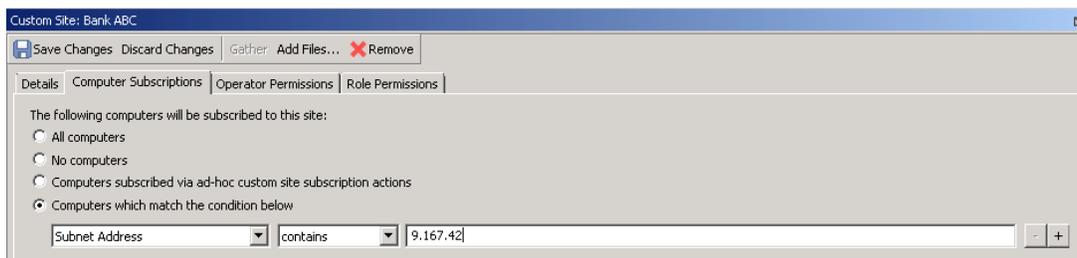
1. [Lesson 1 \(Optional\): Creating a site, a computer group, and an operator dedicated to each customer \(on page mccxlii\)](#)
2. [Lesson 2: Creating computer groups to manage software per customer \(on page mccxlv\)](#)
3. Lesson 3: Managing software and generating audit snapshots per customer

## Lesson 1 (Optional): Creating a site, a computer group, and an operator dedicated to each customer

**9.2.2** Available from 9.2.2. If you grant your customers access to the BigFix console to allow them to run scans and perform other actions on computers, create a site, a computer group, and an operator that is dedicated to each customer. Then, provide the customer with credentials for the dedicated operator. This way, you ensure that each customer has access only to computers on which the software that he uses is installed.

**!** **Important:** This lesson is optional. If you do not grant you customers access to the BigFix console, you can skip this entire lesson and move to the next one. You can also create only computer groups to facilitate infrastructure and scan management as described in step 3. However, it is also optional.

1. Log in to the BigFix console.
2. Create a custom site that is dedicated to Bank ABC.
  - a. In the top navigation bar, click **Tools > Create Custom Site**.
  - b. Provide the name of the custom site. For example, Bank ABC. Then, click **OK**.
  - c. **Optional:** On the **Details** tab, provide the description of the site.
  - d. On the **Computer Subscriptions** tab, select **Computers which match the condition below**. Specify the condition that must be met by the computers that belong to this group. For example, choose all computers whose subnet address contains a particular string.



- e. Click **Save Changes**.
3. Create a computer group that contains the same computers as the site that you created in the previous step.
  - a. In the top navigation bar, click **Tools > Create New Automatic Computer Group**.
  - b. Provide the name of the computer group. For example, Bank ABC.

- c. From the **Create in site** drop-down list, select the site that you created in the previous step. In this case, select Bank ABC.
- d. Specify criteria that must be met by the computers that belong to this group. Choose the same criteria that you specified when you were creating the custom site.

**Create Automatic Computer Group**

Group name:

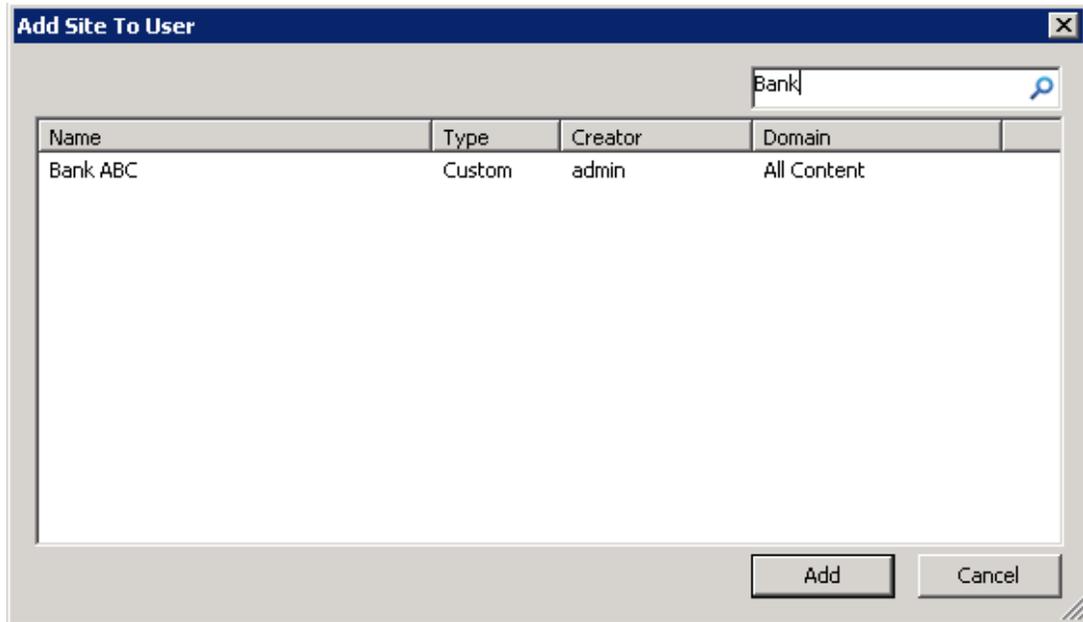
Create in site:  ▼

Create in domain:  ▼

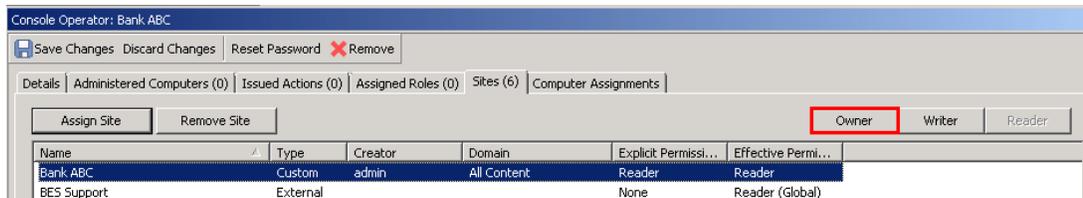
Include computers with the following property:

▼  ▼  - +

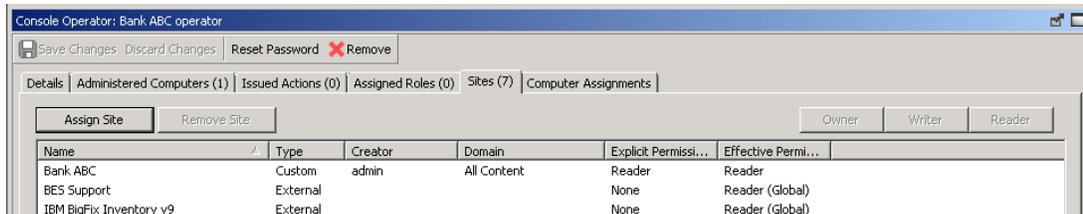
- e. Click **Create**.
4. Create a BigFix operator that is dedicated to Bank ABC. The operator has access only to computers on which the software that is used by this customer is installed.
    - a. In the top navigation bar, click **Tools > Create Operator**.
    - b. Provide the user name.  
For example, Bank ABC.
    - c. Provide a password and confirm it. Then, click **OK**.
    - d. On the **Sites** tab, click **Assign Site**, and choose the custom site that is dedicated to this customer. In this case, choose Bank ABC. Then, click **Add**.



- e. To make operator the owner of the site, select the site and click **Owner**.

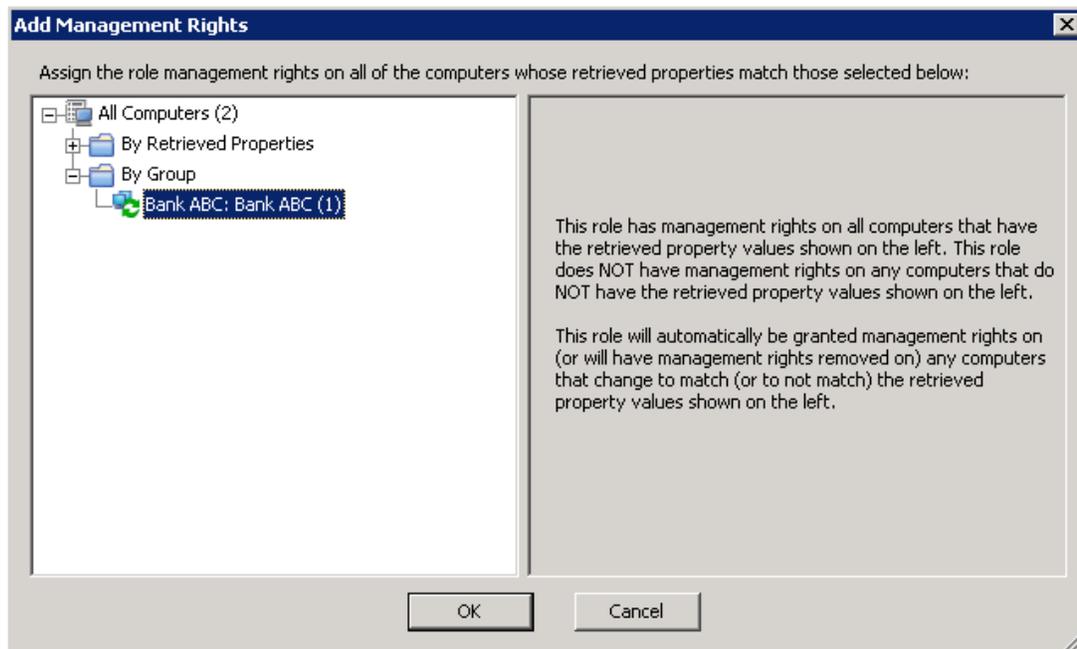


- f. Ensure that the customer does not have access to the sites dedicated to other customers. To remove access to a site, select the site and click **Remove Site**. Each customer should have access to his dedicated site, the BES Support site, and the BigFix Inventory site.



**i** **Tip:** If you cannot remove a site from the list of sites to which an operator has access, the site might have the read permission granted globally. To change the setting, open the site, go to the **Operator Permissions** tab, and clear the **Grant read permission globally** check box. Then, click **Save Changes**.

- g. On the **Computer Assignments** tab, click **Add**. Expand the By Group section, and select the computer group that is dedicated to Bank ABC. Then, click **OK**.



h. Click **Save Changes**.

You created a site, a computer group, and an operator dedicated to Bank ABC. You can now provide the customer with operator credentials. The customer can perform actions only against computers on which the software that he uses is installed.

Create sites, computer groups, and operators for the remaining customers.

## Lesson 2: Creating computer groups to manage software per customer

**9.2.2** Available from 9.2.2. To manage software and generate audit snapshots for each customer separately, create computer groups that represent the customers in BigFix Inventory.

If you created computer groups in the BigFix console, run an import to ensure that information about these groups is available in BigFix Inventory.

1. Log in to BigFix Inventory.
2. Create a computer group that contains all computers on which software that is used by Bank ABC is installed.
  - a. In the top navigation bar, click **Management > Computer Groups**.
  - b. To create a computer group, click **New**.
  - c. Provide the name of the computer group.  
For example, Bank ABC.
  - d. **Optional:** Provide a description of the computer group.
  - e. Specify criteria that must be met by the computers that belong to this group.

If you created computer groups in the BigFix console, select **Data Source Groups, in set**, and select the proper BigFix computer group. In this case, select Bank ABC.

**Create Computer Group**

Parent  
All Computers ▼

Name\*

Description

Definition  
Specify the report filter which matches **all** ▼ of the following conditions:

Type  
Reporting ▼

**License usage calculations**

To enable license usage calculations for this computer group, select the check box below. Selecting this check box might significantly increase import time and you should only consider it if you need dedicated license reporting for this computer group.

Enable license usage calculations

Aggregate last  days

**Scan configuration**

Create scan configuration

 **Restriction:** The size of data returned by the specified filter cannot exceed 1 MB.

- f. **9.2.8** From the Type section, select **Reporting**.
- g. Select license metrics for which you want to calculate utilization in this computer group.
- h. Specify the number of days for which the data is to be calculated.  
This number defines the default period for which the data that is show on the **All Metrics** report is calculated and up-to-date.

Aggregate last    days

For example, when you set the value to 30 days, and then display a report for the last 90 days, the report shows the following data:

- If you display the report for a newly created computer group, the report shows values for the last 30 days and is empty for the rest of the period.
- If you display the report for an existing group, the values might be outdated.

In both cases, recalculate the data.

- i. To save the group, click **Create**.
3. Create computer groups for the remaining customers.
  4. **Optional:** If you do not need a collective snapshot for all computers, but separate audit snapshots for each computer group, open the All Computers group, and clear **PVU and RVU MAPC**. Then, click **Save**.
  5. To make the computer groups available in BigFix Inventory, wait for the scheduled import or run it manually.
  6. **Optional:** If you give customers access to BigFix Inventory or when each customer account is managed by a separate person, create dedicated BigFix Inventory users, each with access to one computer group.
    - a. To create a user, go to **Management > Users**, and click **New**.
    - b. Select the role or roles that you want to assign to the user.



**Restriction:** To ensure that each user has access to information only about computers that he uses, do not assign the user with the Administrator role. By default, this role has access to the All Computers group. Thus, a user who is assigned this role can view information about all computers in the infrastructure.

- c. Select the computer group to which you want the customer to have access.
- d. Choose the authentication method. If you choose Password, provide the password and confirm it.
- e. Click **Create**.

User Name	Roles	Authentication Method	Computer Group
admin	Administrators	Password	All Computers
Bank ABC	Software Asset Managers, Infrastructure ...	Password	Bank ABC
IT Company	Software Asset Managers, Infrastructure ...	Password	IT Company

You created computer groups, each dedicated to one customer, and users who can access these groups. You can manage software and generate audit snapshots for each customer separately. You can also provide your customers with credentials to their dedicated users and allow them to manage software and generate snapshots on their own.

# Tutorial: Migrating software assignments between two BigFix Inventory servers

**9.2.14** Available from 9.2.14 This tutorial teaches you how to migrate the software assignments when you setting up new BigFix deployment including fresh BigFix Platform and BigFix Inventory setup.

## Learning objectives

In this tutorial you learn how to perform the following tasks:

- Retrieving information about the software assignments for the computer that is moved to the new BigFix server.
- Changing the Data Source Computer ID, performing test, and migrating the software assignments of the computer which is connected to the new BigFix server.

## Time required

20 minutes. If you explore other concepts that are related to this tutorial, it might take longer to complete.

## The order of lessons

This tutorial contains two lessons. Complete them in order.

Lessons in this tutorial

1. [Lesson 1: Retrieving information about software assignments for a specified computer \(on page mccxlvi\)](#)
2. [Lesson 2: Performing tests and migrating the assignments \(on page mccli\)](#)

## Lesson 1: Retrieving information about software assignments for a specified computer

**9.2.14** Available from 9.2.14 This lesson shows you how to use the REST API request to retrieve software assignments of a computer that is moved to the new BigFix server.

 You must have the View Endpoints and View Hardware Inventory permissions to perform this task.

This tutorial is based on the old and new Data Source Computer ID of the computer that is migrated to the new BigFix server. This information is crucial for the REST API requests. To migrate software assignments for multiple computers, start with preparing a list of old and new Data Source Computer IDs for all affected computers. Then, for best results, migrate the software assignments for each computer in your environment separately. The number of software instances per single API request should not exceed 150.

When migrating focus on the software for which you have make adjustments in classification. Start from IBM software first and confirm with BigFix Inventory user if they have make any adjustments (suppression, custom bundling) for other vendor software.

In case of other vendors

1. Move the computer to the new BigFix Inventory server.
2. [Add a new data source to BigFix Inventory](#) [BigFix Inventory \(on page dcccxcj\)](#).
3. [Upload software scan results \(on page dcxvii\)](#) from the computer that is connected to the new BigFix server.
4. Collect a pair of old and new Data Source Computer IDs for the computer.
  - a. Log in to BigFix Inventory
  - b. Go to **Reports > Computers**.
  - c. Hover over **Configure**, and click **Configure View**. Select **Data Source Name** and **Data Source Computer ID** from the list of columns, and click **Submit**.
  - d. Sort the report by **Computer Name** by clicking on the column header. By looking at the Computer Name and the Data Source Name prepare a pair of old and new Data Source Computer IDs of the computer. The following example is used in this tutorial.

- Data Source Computer ID that is assigned to the old data source on the report: **9596634**
- Data Source Computer ID that is assigned to the newly created data source on the report: **778906**



**Tip:** If you plan to migrate software assignments for multiple computers, start with preparing a list of old and new Data Source Computer IDs for all affected computers to save you time and effort.

5. To retrieve information about software assignments related to this computer, run the following API query:

```
https://hostname:port/api/sam/v2/software_instances?limit=150&

columns[]=product_name&columns[]=component_name&columns[]=discovery_path&columns[]=is_charged&

columns[]=is_confirmed&columns[]=computer_bigfix_id&columns[]=discoverable_guid&columns[]=product_release_guid&

columns[]=metric_id&token=user_token&criteria={"and":[{"is_present","=","1"},
{"computer_bigfix_id","=","9596634"}]}
```

The **computer\_bigfix\_id** is the same as the old Data Source Computer ID. In the example, the old Data Source Computer ID is **9596634**.

The following example shows the results of the query for this computer.

```
{
  "total": 2,
  "rows": [
    {
      "product_name": "BigFix Inventory",
      "component_name": "BigFix Inventory Server",
      "is_charged": 0,
```

```

    "is_confirmed": 1,
    "computer_bigfix_id": 9596634,
    "discoverable_guid": "cdf19da9-a9de-4ee9-ab41-ff09fa6eda92",
    "product_release_guid": "1ecbbb8d-1d1e-4beb-a40f-cb9b9b9462fb",
    "metric_id": -13103
  },
  {
    "product_name": "IBM DB2 Enterprise Server Edition Unlicensed Product Base",
    "component_name": "IBM DB2 Enterprise Server Edition Unlicensed Product Base",
    "is_charged": 1,
    "is_confirmed": 0,
    "computer_bigfix_id": 9596634,
    "discoverable_guid": "57628995-cf33-4335-984d-d2c8abde750e",
    "product_release_guid": "befa759d-0473-47bd-ae60-f1e16c13e8cc",
    "metric_id": 1
  }
]
}

```

6. Copy the results of the query to the `Body` of the request, and change the value of the `computer_bigfix_id` to the new Data Source Computer ID.

The following example shows the modifications that are required to migrate software assignments to the computer on the new server. The new Data Source Computer ID is **778906**.

```

{
  "total": 2,
  "rows": [
    {
      "product_name": "BigFix Inventory",
      "component_name": "BigFix Inventory Server",
      "is_charged": 0,
      "is_confirmed": 1,
      "computer_bigfix_id": 778906,
      "discoverable_guid": "cdf19da9-a9de-4ee9-ab41-ff09fa6eda92",
      "product_release_guid": "1ecbbb8d-1d1e-4beb-a40f-cb9b9b9462fb",
      "metric_id": -13103
    },
    {
      "product_name": "IBM DB2 Enterprise Server Edition Unlicensed Product Base",
      "component_name": "IBM DB2 Enterprise Server Edition Unlicensed Product Base",
      "is_charged": 1,
      "is_confirmed": 0,
      "computer_bigfix_id": 778906,
    }
  ]
}

```

```

    "discoverable_guid": "57628995-cf33-4335-984d-d2c8abde750e",
    "product_release_guid": "befa759d-0473-47bd-ae60-f1e16c13e8cc",
    "metric_id": 1
  }
]
}

```

## Lesson 2: Performing tests and migrating the assignments

**9.2.14** Available from 9.2.14 This lesson shows you how to run a test and complete the migration of software assignments for a computer that is moved to the new BigFix Inventory server.

 You must have the View Endpoints and View Hardware Inventory permissions to perform this task.

The **PUT** request needs to be made using a dedicated API tool, such as Postman or cURL.

1. Use the `Body` of the request that you prepared in [Step 6 at the end of Lesson 1 \(on page mccl\)](#). To run a test and simulate the migration, use the following **PUT** request.

```
https://hostname:port/api/sam/v2/software_instances?token=user_token&simulate=true&verbose=true
```

2. Check the results of the test.

The following sample shows the example of test results.

```

{
  "details": {
    "valid_instances": {
      "Bundled": {
        "1": "instance_ids: 314"
      }
    },
    "invalid_instances": {},
    "unmodified_instances": {
      "1": "Bundling 'IBM DB2 Enterprise Server Edition Unlicensed Product Base
10.5' to 'BigFix DB2 Enterprise Server Edition Unlicensed Product Base 10.5' on '9589066'"
    }
  },
  "summary": {
    "valid_instances": {
      "Bundled": 1
    },
    "invalid_instances": {},
    "unmodified_instances": 1
  }
}

```

mccli

```
}  
}
```

3. If the test is successful, migrate the software assignments with the following **PUT** request.

```
https://hostname:port/api/sam/v2/software_instances?token=user_token
```

The results of the API request should include a summary of changes that were made. The following example shows the sample of the results:

```
{  
  
    "valid_instances": {  
        "Bundled": 1  
    },  
    "invalid_instances": {},  
    "unmodified_instances": 1  
}
```

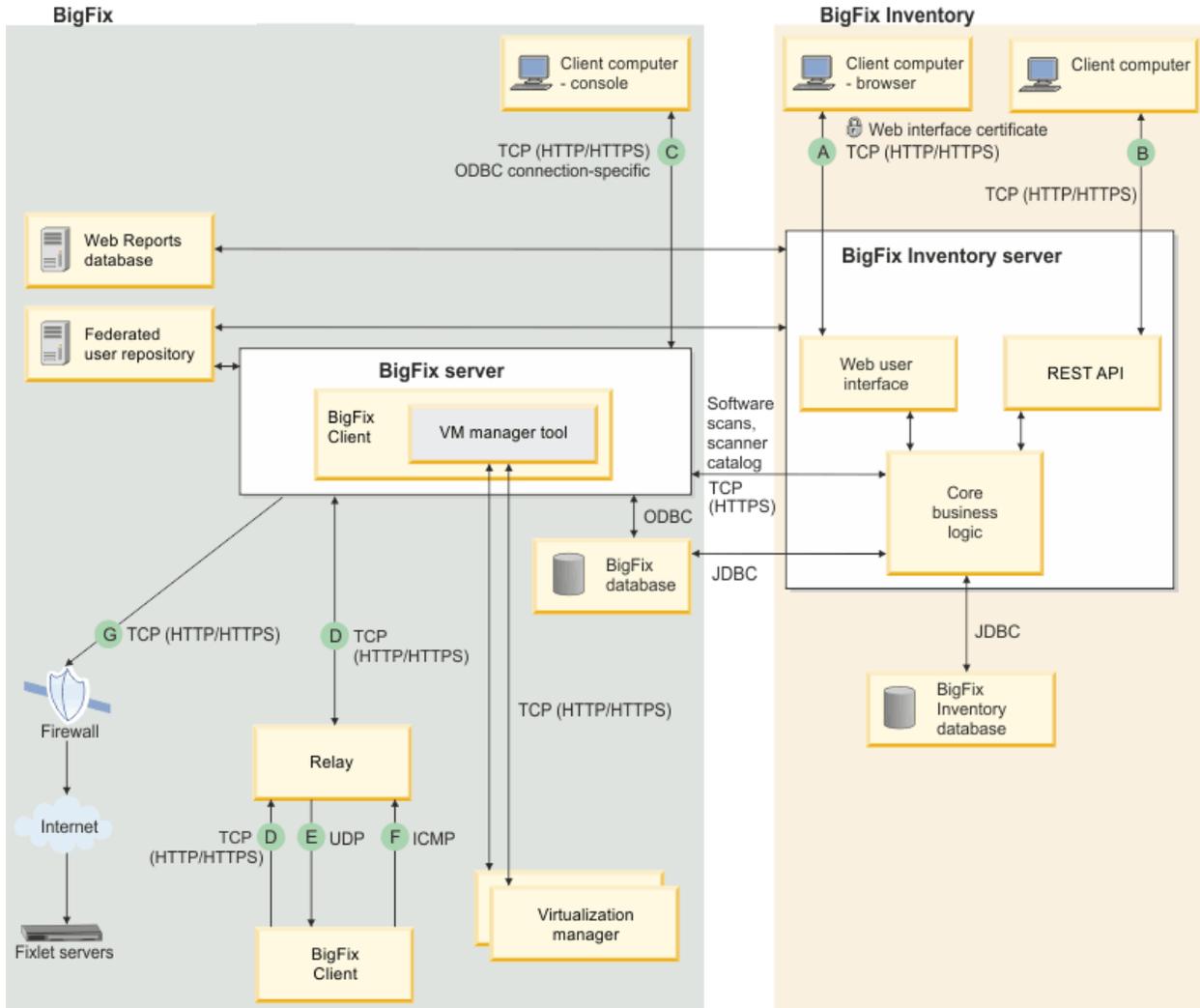
After migrating the software assignments with the API request, the data is updated in BigFix Inventory and reflected on Software Classification panel. After the next import of data, the license metric information is recalculated according to the changes.

# Security

Configure different security features to adequately protect business assets and resources in the data model when using BigFix Inventory.

## Flow of data

There are several different interactions that occur between the components of the BigFix Inventory infrastructure and between the user and tool.



## BigFix Inventory domain

*This table describes the flow of data for the BigFix Inventory domain. There are four columns and two rows. Each row is divided in to two rows from column three.*

### Inter- ac- tion

	Type	Connection	Description
A	Web browser data traffic	Port	By default, the web browser connects to the BigFix Inventory server using port 9081 (HTTPS). You can disable the SSL/TLS connection tunneling.
		Origination	The web browser connects to the BigFix Inventory server.
B	REST API data traffic	Port	By default, the web browser connects to the BigFix Inventory server using port 9081 (HTTPS). You can disable secure connection.
		Origination	A client that uses REST API connections.

## BigFix domain

*This table describes the flow of data for the BigFix domain.*

### Inter- ac- tion

	Type	Connection	Description
C	BigFix Console data traffic	Port	Consoles connect to root server using HTTPS 52311 for all interactions
		Origination	The BigFix console connects to the RootServer service.
		Network controls:	There is a "refresh rate" for each BigFix console user (default 15 seconds)
D	Gather, post, download	Port	Port 52311 is configurable by the BigFix administrator at installation time.
		Origination	The BigFix client initiates the request to the BigFix relay or server.
		Network controls:	<ul style="list-style-type: none"> <li>• Configurable bandwidth throttling to BigFix relay or clients</li> <li>• Configurable gather interval. The default is 1 per day per fixlet site.</li> <li>• Configurable minimum time to wait between posts. The default is 15 seconds.</li> </ul>

Inter- ac- tion	Type	Connection	Description
			<ul style="list-style-type: none"> <li>• Configurable temporal distribution (spread out downloads over time) per action</li> <li>• The ability to set "policy" to prevent computers from downloading files if they are not pointed at the proper BigFix relay</li> </ul>
E	UDP "new information" message	Port	Port 52311 is configurable by the BigFix administrator at installation time.
		Origination	The UDP messages are sent from the BigFix clients' immediate "parent", which can be either a BigFix relay or server.
		Network controls:	<ul style="list-style-type: none"> <li>• Configurable limit of the number of UDP messages sent at one time from a BigFix relay</li> <li>• Configurable limit of the amount of time to wait after sending UDP messages from a BigFix relay</li> </ul>
F	Relay selection	Port	The ICMP protocol does not use a port.
		Origination	Each BigFix client sends progressive "rounds" of ICMP packets to each relay with increasing TTLs until a BigFix relay responds. For example, in a network of 2 relays, one 1 hop away and one 2 hops away, the BigFix client sends an ICMP message to both with TTL 1 and receives 2 "time exceeded" messages from the local router. The BigFix client then sends an ICMP message to both relays with TTL 2 and receives one "time exceeded" message and one reply message. The BigFix client then chooses the relay that is one hop away.
		Network controls	<ul style="list-style-type: none"> <li>• Relay auto-selection can be disabled.</li> <li>• Configurable interval for when the BigFix clients perform auto-selection</li> <li>• Configurable limit on the maximum number of ICMP packets to send out in a time interval</li> <li>• Configurable limit on the maximum number of "rounds" to send out during relay auto-selection</li> </ul>
G	New data download from external BigFix fixlet servers	Port	80 (typically); possibly 21, 443
		Origination	The BigFix server connects to the BigFix fixlet servers

## Inter- ac- tion

Type	Connection	Description
	Network controls	There is a configurable interval that the BigFix server checks for new fixlet messages.

The following database protocols are used:

- ODBC
- JDBC

## Security configuration scenarios

Check what security options need to be enabled on the BigFix server and the BigFix Inventory server to achieve each of the supported security scenarios.

### TLS 1.2 protocol

To use TLS 1.2 protocol, perform the following configuration:

- [Enable HTTPS \(on page dlxxii\)](#) in BigFix Inventory

BigFix Inventory supports only TLS 1.2 protocol for HTTPS inbound communications till version 10.0.12.

Since BigFix Inventory 10.0.13, it is possible to enforce TLS 1.3 protocol for inbound communication by adding the `<ssl id="defaultSSLConfig" sslProtocol="TLSv1.3"/>` line to the `installation_directory/wlp/usr/servers/server1/customization.xml` file.

You can enforce TLS 1.3 on BigFix Platform version 11. It is supported with BigFix Inventory version 10.0.9 and higher.

### FIPS 140-2

To achieve compliance with the FIPS 140-2 standard, perform the following configuration:

- [Enable enhanced security and SHA-256 downloads](#) on the BigFix server
- [Enable HTTPS \(on page dlxxii\)](#) in BigFix Inventory
- [Enable FIPS 140-2 \(on page mcclxxv\)](#) in BigFix Inventory

For more information about the standard, see: [Federal Information Processing Standard 140-2 \(on page mcclxxv\)](#).

### SP800-131

To achieve compliance with SP800-131 standard, perform the following configuration:

- [Enable HTTPS \(on page dlxxii\)](#) in BigFix Inventory
- [Enable SP800-131 compliance \(on page mcclxxvii\)](#) in BigFix Inventory

For more information about the standard, see: [SP800-131 compliance \(on page mcclxxvi\)](#).

## Configuring database connection encryption

You can encrypt the connection between BigFix Inventory server and the BigFix Inventory database. Encryption is established between BigFix Inventory server and the database engine using a JDBC driver. You can encrypt the connection while upgrading the server.

You must obtain a public certificate and then export it to use it.

This encryption is applied to encrypt the connection between BigFix Inventory and DB server. To apply the encryption, you must select the **Encrypt Database Connection** checkbox on the 'Create and Configure the application database' window.

**To configure the encryption, you must perform the below tasks:**

- enable encryption on the database
- export the public certificate
- add certificate to trustStore
- stop the service
- edit configuration and restart service

Refer to the below topics to learn about enabling the encryption:

- [Enabling database connection encryption for MS SQL for BigFix Inventory \(on page mcclvii\)](#)
- [Enabling database connection encryption for DB2 for BigFix Inventory \(on page mcclx\)](#)

### 10.0.13 Enabling database connection encryption for MS SQL for BigFix Inventory

Configure the MS SQL Server with BigFix Inventory database to apply SSL-based encryption.

MS SQL database must be configured to enable the connection encryption. For more information on configuring SQL Server Database engine for encrypting connections, refer to <https://learn.microsoft.com/en-us/sql/database-engine/configure-windows/configure-sql-server-encryption?view=sql-server-ver16>.

Export the public certificate in the `.CER Base-64` encoded `X.509` format using **Certmgr** (Manage Computer Certificates).

Perform the below steps to enable the encryption for MS SQL database:

1. Run the **Certmgr** tool on Windows system hosting MS SQL database.
2. In the left panel of the program, go to **Personal > Certificates**.
3. In the right panel, right click on the database server certificate and go to **All Tasks > Export**.
4. Click **Next** in the window that appears.
5. Choose **No, do not export the private key** and click **Next**.
6. Choose **Base-64 encoded X.509 (.CER)** format and click **Next**.
7. Select the path name and file name to save the certificate.

8. Review specified settings and click on **Finish**.
9. Certificate is exported to the specified location.

Once you export the certificate, enable the connection encryption by performing below steps:

1. Copy the MS SQL server certificate to BigFix Inventory machine.
2. Open command line and use the command, `cd <BFI_INSTALL_DIR>\jre\jre\bin`.
3. Create a `<keystore_extension>` type TrustStore and import the public certificate into it using the command, `keytool -importcert -file <.cer file> -keystore <BFI_INSTALL_DIR>\wlp\usr\servers\server1\resources\security\key_bfi_db.<keystore_extension> -alias "bfi_db_cert" -storetype <type>`. Provide a TrustStore password of your choice for this TrustStore and enter **Yes** to trust the certificate.



**Note:** The `<type>` and `<keystore_extension>` parameters that apply to the above commands specifies the following:

`<type>`

Starting from version 10.0.8.0, the type of the certificate is **PKCS12**. For earlier versions, it is **JCEKS**.

`<keystore_extension>`

Starting from version 10.0.8.0, the name of the keystore file is **.p12**. For earlier versions, it is **.jceks**.

4. Stop BigFix Inventory service.
5. Update the existing attributes and add missing attributes in the `server.xml` file.



**Important:** Create a backup of `server.xml` and `database.yml` files before you make any change.



**Tip:** Follow the instruction mentioned [here \(on page mccc/xxxv\)](#) while editing the `database.yml` file.

For the database, use the same server name as provided in the certificate. Update the value in the `serverName` attribute.

```
<dataSource id='DatabaseConnection' jndiName='jdbc/ilmtDatabaseConnection'>
  <jdbcDriver libraryRef='DatabaseLib' />
  <properties.microsoft.sqlserver
    databaseName='<your BFI database name>'
    lockTimeout='180000'
    encrypt='true'
    serverName='<host name - the same that certificate is issued to>'
    trustServerCertificate='false'
```



```

trustStore='<BFI_INSTALL_DIR>/wlp/usr/servers/server1/resources/security/key_bfi_db.<keystore
_extension>'

trustStorePassword='<your TrustStore password encrypted in in 'aes' encoding>'

user='<your BFI database user>'

password='<your encrypted BFI database password>' />

</dataSource>

```



**Note:** Encrypting the password in 'aes' encoding. Refer to [Updating the database password](#) for more information. If you choose to encrypt the database connection while upgrading the BigFix Inventory server, you must define the password encryption attribute in the data source. If you use Windows authentication for BigFix Inventory database, instead of user and password parameters, it will be `integratedSecurity="true"`.

6. Update the existing attributes and add missing attributes in the `database.yml` file.



**Important:** For the database, use the same hostname as provided in the certificate. Update the value in the host name attribute.

```

---
production:

  host: <host name - the same that certificate is issued to>
  database: <your BFI database name>
  username: <your BFI database user>
  database_type: mssql
  windows_authenticated: false
  port: '50000'
  encrypted_password:host: "<your encrypted BFI database password>"
  encrypt: true
  trustServerCertificate: false
  trustStore:
<<BFI_INSTALL_DIR>/wlp/usr/servers/server1/resources/security/key_bfi_db.<keystore_extension>
  trustStorePassword: "<your Truststore password encrypted in in 'aes' encoding>"

```



**Note:** If you use Windows authentication for BigFix Inventory database, username and encrypted\_password parameters will be missing and `windows_authenticated` will be set to true.

7. Start BigFix Inventory service.

8. Monitor `tema.log` to make sure that the connection is established.

If the application does not start, review the `tema.log` from the top. In case of configuration issues, WebSphere creates a FFDC log.

```
[3/10/21 11:28:03:118 UTC] 00000026 com.ibm.ws.recoverylog.spi.RecoveryDirectorImpl I CWRLS0010I:
Performing recovery processing for local WebSphere server (server1).
[3/10/21 11:28:03:180 UTC] 00000026 com.ibm.ws.recoverylog.spi.RecoveryDirectorImpl I CWRLS0012I:
All persistent services have been directed to perform recovery processing for this WebSphere server
(server1).
[3/10/21 11:28:03:180 UTC] 00000041 com.ibm.tx.jta.impl.RecoveryManager I WTRN0135I: Transaction
service recovering no transactions.
[3/10/21 11:28:03:352 UTC] 00000026 com.ibm.ws.logging.internal.impl.IncidentImpl I FFDC1015I:
An FFDC Incident has been created: "com.microsoft.sqlserver.jdbc.SQLServerException: The driver
could not establish a secure connection to SQL Server by using Secure Sockets Layer (SSL)
encryption. Error: "PKIX path validation failed: java.security.cert.CertPathValidatorException:
signature check failed". ClientConnectionId:a89039f3-b6ce-4de6-8d10-8c205c44243e
com.ibm.ws.rsadapter.impl.MicrosoftSQLServerHelper 1298" at ffdc_21.03.10_11.28.03.0.log
[3/10/21 11:28:03:477 UTC] 00000026 com.ibm.ws.logging.internal.impl.IncidentImpl I FFDC1015I:
An FFDC Incident has been created: "com.ibm.ws.rsadapter.exceptions.DataStoreAdapterException:
DSRA8100E: Unable to get a PooledConnection from the DataSource. with SQL State : 08S01 SQL
Code : 0 com.ibm.ejs.j2c.poolmanager.FreePool.createManagedConnectionWithMCWrapper 199" at
ffdc_21.03.10_11.28.03.1.log
[3/10/21 11:28:03:524 UTC] 00000026 com.ibm.ws.logging.internal.impl.IncidentImpl I FFDC1015I:
An FFDC Incident has been created: "javax.resource.spi.ResourceAllocationException: DSRA8100E:
Unable to get a PooledConnection from the DataSource. with SQL State : 08S01 SQL Code : 0
com.ibm.ws.rsadapter.jdbc.WSJdbcDataSource.getConnection 299" at ffdc_21.03.10_11.28.03.2.log
[3/10/21 11:28:03:524 UTC] 00000026 SystemOut O [JAVA] [ERROR] [ILMTCore] (Default Executor-thread-3)
com.ibm.ilmt.common.dao.util.DBDefaultPoolerManager::init:Unable to initialize datasource
jdbc/ilmtDatabaseConnection
```

## Enabling database connection encryption for DB2 for BigFix Inventory

Configure the DB2 database to apply SSL based encryption.

- DB2 database is configured to enable the connection encryption. For information on IBM TLS configuration process for DB2, refer to <https://www.ibm.com/docs/en/db2/11.5?topic=transit-tls-configuration-db2>.
- The extracted public trust certificate should be available in 64-bit encoded `.CER` format. #It can be done by using the command, `gsk8capicmd_64 -cert -extract -db "<Server Keystore .kdb file>" -pw "<Server Keystore password>" -label "<label name>" -target "<.cer file name>" -format ascii.`

Once you export the certificate, enable the connection encryption.

Perform the below steps to enable the encryption for DB2:

1. Create `<keystore_extension>` type TrustStore and import the public certificate into it:
  - Go to BigFix Inventory java directory, `BFI_INSTALL_DIR>/jre/jre/bin`
  - Import the certificate into the TrustStore using the command, `./keytool -importcert -file <.cer file location> -keystore <BFI_INSTALL_DIR>/wlp/usr/servers/server1/resources/security/key_bfi_db.<keystore_extension> -alias "bfi_db_cert"`
  - Provide a password for this TrustStore.
  - Enter **Yes** to trust the certificate.
2. Stop BigFix Inventory service.
3. Update the existing attributes and add missing attributes in the `server.xml` file.

 **Important:** For the database, use the same server name as provided in the certificate. Update the value in the `serverName` attribute.

```
<dataSource id='DatabaseConnection' jndiName='jdbc/ilmtDatabaseConnection'>
<jdbcDriver libraryRef='DatabaseLib'/>
<properties.db2.jcc databaseName='temadb' driverType='4'
enableExtendedIndicators='2' password='<password encrypted in in 'aes' encoding>'
portNumber='<TLS port number>' serverName='<host name - the same that certificate is issued to>'
user='db2inst1' sslConnection='true'
sslTrustStoreLocation='<BFI_INSTALL_DIR>/wlp/usr/servers/server1/resources/security/key_bfi_db.<keysto
re_extension>'
sslTrustStorePassword='<password encrypted in in 'aes' encoding>'/>
</dataSource>
```

 **Note:** Encrypting the password in 'aes' encoding. Refer to [Updating the database password](#) for more information. If you choose to encrypt the database connection while upgrading the BigFix Inventory server, you must define the password encryption attribute in the data source.

4. Update the existing attributes and add missing attributes in the `database.yml` file.

 **Tip:** Follow the instruction mentioned [here \(on page mcclxxxv\)](#) while editing the `database.yml` file.

 **Important:** For the database, use the same hostname as provided in the certificate. Update the value in the `host name` attribute.

```
host: <host name - the same that certificate is issued to>
database: temadb
username: db2inst1
database_type: db2
port: '<TLS port number>'
```

```

encrypted_password: "<password encrypted in in 'aes' encoding>"
sslConnection: true
sslTrustStoreLocation:
  '<BFI_INSTALL_DIR>/wlp/usr/servers/server1/resources/security/key_bfi_db.<keystore_extension>'
sslTrustStorePassword: "<password encrypted in in 'aes' encoding>"

```

5. Start BigFix Inventory service.

6. Monitor `tema.log` to make sure that the connection is established.

If the application does not start, review the `tema.log` from the top. In case of configuration issues, the log shows error messages that helps in troubleshooting. For example:

```

[3/11/21 14:43:42:658 UTC] 0000002a SystemOut
O 2021-03-11 14:43:42 ERROR: Cannot connect to the database:
  Java::ComIbmDb2JccAm::DisconnectNonTransientConnectionException: [jcc]
[t4][2043][11550][4.28.11] Exception java.io.FileNotFoundException: Error opening socket to server
  ***/** on port 51,001 with message: ***<keystore_extension> (No such file or directory).
ERRORCODE=-4499, SQLSTATE=08001.
The next try for 60 seconds.

[3/11/21 17:02:45:608 UTC] 0000002b SystemOut
O 2021-03-11 17:02:45 ERROR: Cannot connect to the database:
  Java::ComIbmDb2JccAm::DisconnectNonTransientConnectionException: [jcc]
[t4][2043][11550][4.28.11] Exception java.io.IOException: Error opening socket to server ***/** on
  port 51,001 with message:
Keystore was tampered with, or password was incorrect. ERRORCODE=-4499, SQLSTATE=08001.
The next try for 60 seconds.

```



**Note:** The `<type>` and `<keystore_extension>` parameters that apply to the above commands specifies the following:

`<type>`

Starting from version 10.0.8.0, the type of the certificate is **PKCS12**. For earlier versions, it is **JCEKS**.

`<keystore_extension>`

Starting from version 10.0.8.0, the name of the keystore file is **.p12**. For earlier versions, it is **.jceks**.

## Keystores

Keystores and truststores are repositories that contain cryptographic artifacts like certificates and private keys that are used for cryptographic protocols such as TLS. BigFix Inventory uses below keystore and truststore files

to enhance its security. They are located in `<Installation_directory>/wlp/usr/servers/server1/resources/security` directory.

#### **key\_server.p12**

This keystore stores BigFix Inventory server certificate. It is managed by BigFix Inventory server. If you want to configure the server certificate, refer to the instructions provided in [Configuring secure communication \(on page dlxxii\)](#).

#### **keys\_bf\_db.p12**

This truststore stores BigFix Platform database certificates. To add new certificate to this truststore, refer to the instructions provided in Enabling the database connection encryption for Data Source.

#### **key\_bfi\_db.p12**

This truststore stores BigFix Inventory database certificate. To add new certificate to this truststore, refer to the instructions provided in [Enabling database connection encryption for MS SQL for BigFix Inventory \(on page mcclvii\)](#) or [Enabling database connection encryption for DB2 for BigFix Inventory \(on page mcclx\)](#) depending on your database type.

#### **keys\_ilmt.p12**

This keystore stores keys for reports signing, PVU table signatures validation, database passwords and token encryptions. It is manager by BigFix Inventory server.

#### **keys\_vmmdc.p12**

This keystore stores keys for VM Manager password management. It is managed by BigFix Inventory server.

You can also define your own keystore, such as a SSO keystore. For more information, refer to [Configuring SSO keystore passwords and encryption \(on page mcccxx\)](#).

To change the keystore password, refer to the instructions provided in [Configuring cryptographic keystore password and encryption \(on page mcccxxv\)](#).

There are more keystore files specific to other BigFix Inventory tools, such as:

- VM Manager tool keystore: [Improving security of storing VM manager passwords \(on page mcccxxix\)](#)
- SAP Metric Data Collector keystore: [Changing the default secret key and password to the SAP Metric Data Collector keystore \(on page mcccxx\)](#)
- BigFix Inventory Container Solution keystores: For more information on Container solution, refer to [Software discovery in containers \(on page mcccxxii\)](#).

## Configuring secure communication

To ensure secure communication, BigFix Inventory uses public key cryptography, which is based on algorithms that use two separate keys, a private key and a public key. This key pair is used to encrypt and decrypt communication

BigFix Inventory provides self-signed certificates by default but they are not intended for production environments. To improve security, you must create your own private key and a certificate signing request (CSR) that can be transformed into a certificate after it is signed by a certificate authority (CA). By signing your request, a CA approves your public key and certifies that the certificate can be trusted. You can have your own private CA, use the CA of your organization, or an internationally trusted CA, such as Entrust, VeriSign, etc.

The private key and the associated certificate are uploaded to BigFix Inventory. After enabling the encrypted communication, anyone who connects to your server receives a certificate that contains your public key. All successive communication that originates from the server is encrypted with your private key. After a user receives the communication, it is decrypted with the certificate that they obtained from the server. If the certificate can decrypt the communication, it is known for certain that the server is the originator of the message and that it is valid.

**10.0.8** Starting from BigFix Platform version 10.0.8, the validation of certificates is enabled by default of servers when downloading content from them using HTTPS.

Follow either of the below ways to generate your certificate:

- generate new self-signed certificate including the name of the server (Common Name in certificate). For more information, refer to [Step 3: Enabling secure communication \(on page dlxxvii\)](#) and [Regenerating self-signed certificates \(on page dlxxxi\)](#).
- generate a correct and signed certification by following this information provided in this topic

If you not have the signed certificate provided for BigFix Inventory server then `Catalog Download (Version: <Catalog Version>)` actions will fail while downloading with the following error:

```
HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL: certificate problem: self signed certificate
```

File	Status	Details
CIT_catalog_WINDOWS.xml.gz	Failed	[-] Download error: "HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL certificate problem: self signed certificate" Download requested on server: URL: https://10.134.146.37:9081/sam/catalogs/CIT_catalog_WINDOWS.xml.gz Hash: (sha256)67966780fd5383a#6226d182419b82b7db42100b17cf91981898b5956cec81 Size: Next retry: 5 minutes. <a href="#">Retry now</a>

### Temporary Workaround

It is assumed that BigFix Inventory server is not configured to allow direct download. To accept the certificate as-is, set the `Computer Setting _BESRelay_Download_UntrustedSites` to 1 on top relay.

### Key pair requirements

Your key pair must meet the following requirements to be accepted by BigFix Inventory.

- Type: RSA or DSA.
- Format: PEM-encoded. Such an encoding is ensured if you create the key pair by using openssl. You can also create your keys by using other methods, for example Makecert on Windows. Such keys are DER-encoded and therefore not supported by BigFix Inventory. However, you can convert other formats to PEM, for example by using openssl.
- Private key format: PKCS#8 (used by openssl). The pvk format is not supported.

## Limitations

Key pair that is generated for BigFix Inventory can be used for Web Reports only if the private key is not password-protected.

## Procedure

Complete the following steps to create your key pair and to enable encrypted communication. If you already have a key pair or want to use the self-signed certificates, you can skip to enabling secure communication.

## Step 1: Creating private keys and certificates

To improve security, create your own private key and a certificate instead of using the self-signed ones that are available in BigFix Inventory by default. You can use openssl to create a private key and a certificate signing request (CSR) that can be transformed into a certificate after it is signed by a certificate authority (CA).



**Remember:** Use the latest OpenSSL version to create private keys and certificates.

This procedure is valid for all operating systems that support openssl.

If you are generating an encrypted private key in the `pkcs8` format, add the following line to the `installation_dir/jre/lib/security/java.security` file:

```
security.provider.10=org.bouncycastle.jce.provider.BouncyCastleProvider
```

Then, restart the BigFix Inventory server.

1. Open the command line.
2. Create a new private key.

```
openssl genrsa -des3 -out inventory.key -aes256 2048
```

For example, `openssl genrsa -des3 -out inventory.key -aes256 2048`

Where:

### **-des3**

Enables password for the private key. This is an optional parameter. You can also enable password for an existing private key by using the following command:

```
openssl rsa -des3 -in path_to_private_key.key -out key_name.key
```

**key\_name**

File name for your new private key.

**key\_strength**

Key strength, measured in bits. The maximum value that you can use for BigFix Inventory is 2048 bits.

3. Create a certificate signing request (CSR). The request is associated with your private key, and is later transformed into a certificate.

```
openssl req -new -key path_to_private_key.key -out csr_name.csr
```

For example, `openssl req -new -key private_key.key -out CSR.csr`

Where:

- **path\_to\_private\_key** - Path to your private key.
- **csr\_name** - File name for your certificate signing request (CSR).

After you run the command, you are asked to provide information that helps your users to identify your certificate and ensure that it can be trusted. The following excerpt from the command line is filled in with sample information. You must replace the data with actual information.

```
Country Name (2 letter code) [XX]: US
State or Province Name (full name) []: New York
Locality Name (eg, city) [Default City]: New York
Organization Name (eg, company) [Default Company Ltd]: HCL (eg, section) []: Software
Common Name (eg, your name or your server's hostname) []: inventory.bigfix.com
Email Address []: inventory@bigfix.com
```



**Note:** You must also add subject alternative name (SAN) in the certificate signing request (CSR). A subject alternative name (SAN) is a method to indicate the domain names and IP addresses that are secured by the certificate. SAN in CSR is provided depending on the openssl version.

SAN is a mandatory field in many web browsers, specially in Chrome since Chrome 58 deprecation (<https://developer.chrome.com/blog/chrome-58-deprecations/>) and in Firefox version 101 and above.

After completing these steps, two files are created, your private key (`.key`) and the certificate signing request (`.csr`).

Sign the request to transform it into the certificate. For information about how to create a private certificate authority (CA) to sign the request, see [Signing certificates \(on page dlxxv\)](#).

## Step 2: Signing certificates

Your certificate signing request (CSR) must be signed by a certificate authority (CA) to be transformed into a certificate that can be uploaded to BigFix Inventory. You can use the openssl cryptographic library to create a private CA and sign your request.

Using a private CA to sign your request is not the only way. You can also send the request to internationally trusted CAs, such as Entrust, VeriSign, and so on, or use the CA of your organization. The certificates of these CAs are often trusted by default and do not display any warnings in the browser. Warnings might be displayed if you use a private CA.

### 1. Create a private certificate authority (CA) and a certificate for it.

- a. Create a private CA. This step creates a private key (`.key`) and a request (`.csr`) similar to those that you created in [Creating private keys and certificates \(on page dlxxiv\)](#).

```
openssl req -new -newkey rsa:key_strength -nodes
-out CA_csr_name.csr -keyout CA_key_name.key -sha256
```

For example, `openssl req -new -newkey rsa:2048 -nodes -out CA_CSR.csr -keyout CA_private_key.key -sha256`

Where:

#### **key\_strength**

Key strength, measured in bits. The maximum value that you can use for BigFix Inventory is 2048 bits.

#### **CA\_csr\_name**

File name for the certificate signing request (CSR). The certificate authority (CA) requires a separate request.

#### **CA\_key\_name**

File name for the private key. The certificate authority (CA) requires a separate private key.

- b. Create a certificate for your private CA. This step creates a certificate (`.arm`) that you can use to sign your CSR.

```
openssl x509 -signkey path_to_CA_key.key -days
number_of_days -req -in path_to_CA_csr.csr
-out CA_certificate_name.arm -sha256
```

For example, `openssl x509 -signkey CA_private_key.key -days 90 -req -in CA_CSR.csr -out CA_certificate.arm -sha256`

Where:

#### **key\_strength**

Key strength, measured in bits. The maximum value that you can use for BigFix Inventory is 2048 bits.

**path\_to\_CA\_csr**

File name for the certificate signing request (CSR) that you created for the certificate authority (CA).

**path\_to\_CA\_key**

File name for the private key that you created for the certificate authority (CA).

**number\_of\_days**

Number of days for the new certificate to be valid.

**CA\_certificate\_name**

File name for the certificate of your CA. This certificate is used to sign your CSR.

2. Use the CA certificate to sign the certificate signing request that you created in [Creating private keys and certificates \(on page dlxxiv\)](#).

```
openssl x509 -req -days number_of_days -in path_to_csr.csr -CA path_to_CA_certificate.arm
-CAkey path_to_CA_key.key -out new_certificate.arm -set_serial 01 -sha256
```

For example, `openssl x509 -req -days 90 -in CSR.csr -CA CA_certificate.arm -CAkey CA_private_key.key -out certificate.arm -set_serial 01 -sha256`

Where:

**number\_of\_days**

Number of days for the new certificate to be valid.

**path\_to\_csr**

Path to certificate signing request (CSR) that you want to sign.

**path\_to\_CA\_certificate**

Path to certificate that you created for the certificate authority (CA).

**path\_to\_CA\_key**

Path to the private key that you created for the certificate authority (CA).

**new\_certificate**

File name for the new certificate that is created from your certificate signing request (CSR). You upload this certificate together with your private key to BigFix Inventory.

You signed your certificate signing request and obtained a new certificate.

Enable encrypted communication in BigFix Inventory and upload your private key and the certificate. These files replace the self-signed certificate that is already available in BigFix Inventory, and thus ensure secure communication. For more information, see: [Step 3: Enabling secure communication \(on page dlxxvii\)](#).

### Step 3: Enabling secure communication

You can enable encrypted communication (HTTPS) to ensure secure communication between your server and all users that access it. You can base your communication on self-signed certificates that are provided by default in BigFix Inventory, but these certificates are not intended for production environments. To improve security, create your own private key and certificate, and upload them to BigFix Inventory.



#### Note:

- The use of HTTPS is enabled by default, but this configuration is based on temporary self-signed certificates that are not intended for production environments.
- Enabling or disabling the use of HTTPS changes the web address of your BigFix Inventory server. Ensure that you run a data import afterward to update the address in the Fixlets that use it to download files from the server.

#### Procedure

1. Log in to BigFix Inventory.
2. In the top navigation bar, click **Management > Server Settings**.
3. Select **Use HTTPS**. The Certificate subsection opens.



**Important:** Starting from application update **10.0.8**, the use of HTTPS is selected by default.

4. Provide information about the certificate.
  - If you have a private key and a certificate:



**Note:** The certificate and the key must be PEM-encoded or enfolded in PKCS#12 KeyStore.

- a. Select **Import a PEM or PKCS#12 private key and certificate**.

In application updates earlier than **10.0.8**, select **Import a PEM encoded private key and certificate**.

- b. Click **Browse** to locate the file in the PEM or PKCS#12 format.
- c. If the private key and certificates are delivered in separated files, select **Private key is in a separate file** and locate the private key file.

- d. In the **Private key password** field, enter the password for the key. This field is required only if you set a password for your private key.
- e. Click **Save**.



**Note:** The certificate and the key must be PEM-encoded.

- If you want to generate a new self-signed certificate:



**Restriction:** A self-signed certificate contains a public key, information about the owner of the certificate, and the owner's signature. Because such a certificate is signed by its own private key, it does not provide means to verify the origin of the certificate through a trusted certificate authority.

- a. Select **Generate a self-signed certificate**.
- b. Specify the certificate subject common name. The common name must correspond to the DNS name of BigFix Inventory.
- c. In the **Expiration Date** field, enter the date when the certificate expires.
- d. Click **Save**.



**Note:** Most browsers display a warning message when a self-signed certificate is used.

5. Restart the server.

You enabled secure communication on your server. All outgoing communication is now encrypted with the private key that you provided.

---

#### Related information

[SP800-131 compliance \(on page mcclxxvi\)](#)

[Enabling SP800-131 compliance \(on page mcclxxvii\)](#)

## Configuring Cipher suites

This topic describes how to manually select Cipher Suites that should be accepted by BigFix Inventory server.

The list of vulnerable Cipher Suites is updated regularly. Accepted cipher suites are updated with new Java service packs so that vulnerable ciphers are not included. You can manually select the ciphers that should be enabled to address security risks before it is addressed by Java service pack or to comply with the security policy.

Below is the recommendation based on internal security scans.

To select the list of accepted cipher suites, modify the `installation_directory/wlp/usr/servers/server1/customization.xml` file, to make the file contents look like below:

```

<server>
<ssl id="defaultSSLConfig" enabledCiphers="TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
  TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
  TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384 TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
  TLS_DHE_RSA_WITH_AES_128_CBC_SHA256
  TLS_DHE_RSA_WITH_AES_256_CBC_SHA256 TLS_DHE_RSA_WITH_AES_128_GCM_SHA256
  TLS_DHE_RSA_WITH_AES_256_GCM_SHA384"/>
</server>

```

Restart BigFix Inventory application after you make the changes.

## Structuring and formatting of private keys and certificates

### • Private key format

- PEM-encoded without password protection. Ensure that the private key (`private.key`) is enclosed between the following statements:

```

-----BEGIN PRIVATE KEY-----
<<base64 stringfrom private.key>>
-----END PRIVATE KEY-----

```

- PEM-encoded with password protection. Ensure that the private key (`private.key`) is enclosed between the following statements:

```

-----BEGIN ENCRYPTED PRIVATE KEY-----
<<base64 stringfrom private.key>>
-----END ENCRYPTED PRIVATE KEY-----

```

### • X509 certificate format

PEM-encoded. If you received the intermediate and root certificates as separate files, combine them into a single file. For example, if you have the primary certificate file (`certificate.crt`) and the intermediate certificate file (`ca_intermediate.crt`), combine them in the following order.

```

BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----

```

If you received the root certificate (`ca_root.crt`) in addition to the intermediate certificate, combine them in the following order.

```

BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<root certificate: base64 stringfrom ca_root.crt>>
-----END CERTIFICATE-----

```

### • Single file (private key with certificates) format

PEM-encoded. This file can contain the private key and the primary certificate, or the private key and the chain of certificates combined in the following order:

- Private key and primary certificate.

```

-----BEGIN CERTIFICATE-----
<<primary certificate: certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN PRIVATE KEY-----
<<private key: base64 stringfrom private.key>>
-----END PRIVATE KEY-----

```

- Private key, primary certificate, and intermediate certificate.

```

BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
-----BEGIN PRIVATE KEY-----
<<private key: base64 stringfrom private.key>>
-----END PRIVATE KEY-----

```

- Private key, primary certificate, intermediate certificate, and root certificate.

```

BEGIN CERTIFICATE-----
<<primary certificate: base64 stringfrom certificate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<intermediate certificate: base64 stringfrom ca_intermediate.crt>>
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
<<root certificate: base64 stringfrom ca_root.crt>>

```

```

-----END CERTIFICATE-----
-----BEGIN PRIVATE KEY-----
<<private key: base64 stringfrom private.key>>
-----END PRIVATE KEY-----

```

## Regenerating self-signed certificates

BigFix Inventory allows you to regenerate self-signed certificate by setting the Common Name using BigFix Inventory server.

This option is possible if the same DNS name is used to connect to the server by end users and from BigFix Platform server.

To create a self-signed certificate with multiple subjects, the certificate must be created manually.

### To regenerate self-signed certificates, follow these steps:

1. BigFix Platform - Check the existing Catalog Download action and the URL used to connect to the BFI server. It depends on the network configuration on the BigFix Inventory server host.
2. BigFix Inventory - Follow the procedure mentioned in [Step 3: Enabling secure communication \(on page dlxxvii\)](#).

Ensure that the Common name is specified with the host name or IP address depending on the method you are connecting to the BigFix Inventory server.

3. BigFix Inventory - If the selected DNS Name is different from the one currently used in Catalog Download, adjust it to match the one you use in Certificate by enforcing using DNS Name is Catalog For more information on how to download, refer to [Configuring servers in separate networks \(on page dlxxxvi\)](#).
4. BigFix Inventory - In the **Certificate** section, follow **Management > Server Settings** and use the **Download Certificate** option to download the certificate.
5. BigFix Platform - On BigFix Platform server it is needed to make a copy of `ca-bundle.crt` from `<BES Server>\BESReportsServer\wwwroot\SiteData\<Host name> \Sites\BES Support to for example, C:\Program Files (x86)\BigFix Enterprise\BES Server\TrustedCertificates\ca-bundle.crt`.
6. BigFix Platform - Edit the file and add it at the end your certificate

```

BggqhkjOPQDDAwNoADB1AjAVXUI9/Lbu9zuxNuie9sRGKEkz0FhDKmMpzE2xtHqiuQ04pV1IKv3L
snNdo4gIxxwCMQDAqy0Obe0YottT6SXbVQjgUMzfRGEWgqtJsLKB7HOHeLRmSmIbEvoWTSVLY70e
N9k=
-----END CERTIFICATE-----

BFI Server bfi-demo
=====

-----BEGIN CERTIFICATE-----
MIIC4DCCAcigAwIBAgIEY8/XCjANBgkqhkiG9w0BAQsFADAYMTAwLgYDVQQDDCdi
ZmktZGVtb3V13aW4udGVzdHFnLmJlcy5wcm9kLmhjbHBucC5jb20wHhcNMjMwMTI0
MTMwMzA2WhcNMzZMTEzMDAwMDAwWjAyMTAwLgYDVQQDDCdiZmktZGVtb3V13aW4u
dGVzdHFnLmJlcy5wcm9kLmhjbHBucC5jb20wggEiMA0GCSqGSIb3DQEBAQUAA4IB
DwAwggEKAAoIBAQC4q63ZgEUEi3qd5C6MCSsNU9wnDe8xhihGAPQOH3s3k4Xd20Xk
/edd58ewRsNFocCVQ0jVd6U9JLrbExUDIKNKWCndqL5gxf8wKRSFQZmzmGMv6x
lmG+dJ3iIoVSSucVfoNfyBUQ+BUtQ9ZpZs3fCizCP8D9t1003z/RRHYnSp/8jTc0
nmYZkqTL4p7YLMj68k6VeMZ89Q0SW5wXyMJYXfKWORWqpfgpMR2uUd2L7rAMx9bt
8sRmtQNTabXbgjC9NRFPdS4XkvmD4fuy7KldLjg02iawH5LjNqdmXFbuSNUSB5iw
E29PmbRS2B/yVNoy4Zcxnhf63gg8g/cYLSUvAgMBAAEwDQYJKoZIhvcNAQELBQAD
ggEBAJQQsOV0oOi8pYZfm8WWCyirdp5WupoDChX3KIHF+OZ3UvzE1MMkCgI+xpY9
qBQQkjk9ioZ/MjN0IxraZ80VV9Fe1xZiFV4JQIs7BMqGdbwleMn1hKGQ53viD7VK
MeFfb1T3n2r9QimHigZvGWpC6yq2bZtLS7WG9cJmntKvzJZgoXuSRifGOMv0RW/
p+vDEg+izwljwPfhOsPNCAYaBaYxdlkSLsv7P2t7ciBJrp0fdTdpH25BpMtimPWE
CrbayzaHZxoMXPDMWLC7FsInJylFaUPVpEs0Rd/nTFWvY6DCU11DNtCgi2IvOSLz
+IUyFqjLqRwSsVi2VnJXHE8z4P8=
-----END CERTIFICATE-----

```

7. BigFix Platform - Set the `_BESRelay_Download_UntrustedSites` to 0 and set `_BESRelay_Download_CACertPath` to `C:\Program Files (x86)\BigFix Enterprise\BES Server\TrustedCertificates\ca-bundle.crt`.

## Troubleshooting

For the error messages:

```

HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL:
unable to obtain common name from peer certificate

```

The certificate used by BigFix Inventory is self-signed certificated preconfigured or regenerated without specifying the Common Name. Follow the steps mentioned [above \(on page mcclxxiii\)](#).

```

HTTP Error 60: SSL peer certificate or SSH remote key was not OK: SSL:
certificate subject name 'bfi.acme.com ' does not match target host name '10.XXX.YYY.ZZZ

```

It means that the Catalog Download action used DNS Name / IP Address that is different from the one specified as Common Name in the certificate. For more information, refer to, [step 3 \(on page mcclxxiii\)](#).

# Assuring compliance with federal encryption standards

You can configure BigFix Inventory to be compliant with the Federal Information Processing Standard requirements that are related to encryption.

## Federal Information Processing Standard 140-2

Federal Information Processing Standards (FIPS) are standards and guidelines that are issued by the National Institute of Standards and Technology (NIST) for federal government computer systems.

Government agencies and financial institutions use Federal Information Processing Standard (FIPS) to ensure that the products conform to specified security requirements. For more information about these standards, see the [NIST website](#).

FIPS 140-2 is the standard that defines the security requirements for cryptographic modules that are used within a system that handles sensitive but unclassified information. Compliance with the FIPS 140-2 standard has two aspects that affect BigFix Inventory: the algorithms that are used to manage sensitive data must be FIPS-approved and a FIPS-approved implementation must be used when data is transmitted with the SSL/TLS.

BigFix Inventory uses the FIPS 140-2 approved cryptographic providers for cryptography:

- IBMJCEFIPS (certificate 376)
- IBMJSSEFIPS (certificate 409)
- IBM Crypto for C (ICC) (certificate 384)

The certificates are listed on the [NIST web site](#).

## Configuring the server to achieve FIPS compliance

You can assure compliance with the FIPS 140-2 standard by modifying the configuration properties for the underlying application server.



**Important:** After upgrading **BigFix Inventory server version 10.0.4 or higher with FIPS function enabled**, ensure that `java.security` files contains **RSAPSS, RSASSA-PSS** listed in the `jdk.tls.disabledAlgorithms`.

1. Edit your `java.security` file that is in the following directory:
  - `<installation_dir>/wlp/usr/servers/server1/` (BigFix Inventory version 10.0.8 or higher)
  - `<installation_dir>/jre/jre/lib/security/` (BigFix Inventory version 10.0.7 or lower)

- a. Put the `com.ibm.crypto.fips.provider.IBMJCEFIPS` before the IBMJCE in the provider list. Ensure that the list is correctly numbered.
  - b. Add the **RSAPSS, RSASSA-PSS** algorithm, to the `jdk.tls.disabledAlgorithms` list (BigFix Inventory version 10.0.4 or higher)
 

**Example:** `jdk.tls.disabledAlgorithms=SSLv3, TLSv1, TLSv1.1, RC4, DES, MD5withRSA, DH keySize < 1024, DESede, EC keySize < 224, 3DES_EDE_CBC, anon, NULL, DES_CBC, RSAPSS, RSASSA-PSS`
2. Add the **-Dcom.ibm.jsse2.usefipsprovider=true** property to the `jvm.options` file. The property allows the Java™ Secure Socket Extension (JSSE2) provider to run in FIPS 140-2 mode.



**Note:** Your certificates must have a key that is at least 1024 bits in length and can be signed with a DSA or RSA signature algorithm. You can use the IBM keytool utility to generate a compatible key pair.

3. To use the TLS protocol, [configure secure communication \(on page dlxxii\)](#).

A number of ciphers are supported by FIPS 140-2. The default HTTPS configuration automatically enables the FIPS 140-2 compliant ciphers when JSSE is running in FIPS mode. You can enable specific ciphers by listing them in the `enabledCiphers` attribute of the SSL service configuration element in the `server.xml` file.

## SP800-131 compliance

SP800-131 requires longer key lengths and stronger cryptography. The specification also provides a transition configuration to enable users to move to a strict enforcement of SP800-131.

The transition configuration also enables users to run with a mixture of settings from both FIPS140-2 and SP800-131. SP800-131 can be run in two modes, transition and strict. The transition mode is offered to give you a setting to move your environment to SP800-131 strict mode. In transition mode, it is optional to use the SP800-131 required certificates and to set the protocol to SP800-131.

The following requirements must be fulfilled to allow for the strict enforcement of SP800-131:

- The use of the TLS version 1.2 protocol for the Secure Sockets Layer (SSL) context.
- Certificates must have a minimum length of 2048 bytes. An Elliptic Curve (EC) certificate requires a minimum size of 244-bit curves.
- Certificates must be signed with a signature algorithm of SHA256, SHA384, or SHA512. Valid signature algorithms include:
  - SHA256 with RSA
  - SHA384 with RSA
  - SHA512 with RSA
  - SHA256 with ECDSA
  - SHA384 with ECDSA
  - SHA512 with ECDSA
- SP800-131 approved cipher suites.

For more information about the SP800-131 standard, see the [web site](#) run by National Institute of Standards and Technology.

---

#### Related information

[Step 3: Enabling secure communication \(on page dlxxvii\)](#)

[Enabling SP800-131 compliance \(on page mcclxxvii\)](#)

## Enabling SP800-131 compliance

You can set up a BigFix Inventory profile to meet the SP800-131 requirement that is originated by the National Institute of Standards and Technology (NIST).

You can configure BigFix Inventory to run in SP800-131 strict or transition mode.

- To configure the product to run in *strict mode*:

1. Ensure that your server certificates meet the criteria for SP800-131.

For more information about SP800-131, see the [National Institute of Standards and Technology Special Publication 800-131A](#).

2. Enable the Java Secure Socket Extension (JSSE) to run in SP800-131 strict mode: set the system property **com.ibm.jsse2.sp800-131** to *strict*. The property must be set in the `jvm.options` file, which is in the `installation_dir/wlp/usr/servers/server1` directory.

Example:

```
-Dcom.ibm.jsse2.sp800-131=strict
```



**Note:** If your server certificates do not meet the criteria for SP800-131 or if the TLS version 1.2 protocol is not used, then after you restart the server you are not able to connect to BigFix Inventory. In this event, you can remove the **com.ibm.jsse2.sp800-131** property from the `jvm.options` file, or set the property to *transition*.

- To configure the product to run in *transition mode*, enable JSSE to run in SP800-131 transition mode by setting the system property **com.ibm.jsse2.sp800-131** to *transition*. The property must be set in the `jvm.options` file, which is in the `installation_dir/wlp/usr/servers/server1` directory.

Example:

```
-Dcom.ibm.jsse2.sp800-131=transition
```

---

### Related information

[SP800-131 compliance \(on page mcclxxvi\)](#)

[Step 3: Enabling secure communication \(on page dlxxvii\)](#)

## Authenticating users with LDAP

BigFix Inventory supports authentication through a Lightweight Directory Access Protocol (LDAP) server. To use this feature, you must configure the BigFix Inventory server.

### Configuring connection to a directory server

To use LDAP for authentication of BigFix Inventory users, you must first configure a connection to your directory server.

-  You must have the Manage Directory Servers permission to perform this task.
1. In the top navigation bar, click **Management > Directory Servers**.
  2. To create an LDAP connection, click **New**.
  3. Enter a name for the new directory service.
  4. In the LDAP server list, select the type of your LDAP server. If your LDAP server values are different from the defaults, select **Other** and enter the values of filters and attributes of your LDAP server. If you select Microsoft Active Directory **Global Catalog**, the Search Base field is disabled.

 **Important:** The default values might need to be modified in particular for openLDAP servers due to various implementations of openLDAP.

5. Type the name of Search Base. This parameter defines the location in the directory from which the LDAP search begins.
6. If your directory server uses Secure Socket Layer protocol, select the **SSL** check box.
7. If your server requires authentication, clear **Anonymous bind** and provide a name and a password for the user whose credentials are to be used for connecting to the directory server.

 **Tip:** If you selected Microsoft Active Directory, provide the user name as Active Directory login name or User Principal Name, for example `username@domain.com`. Do not specify the user name in the following way: `DOMAIN/username`.

8. In the **Host** text field, provide the host name or IP address of your primary LDAP server.
9. Accept the default port value or provide a new one.
10. **Optional:** To add a backup server:
  - a. Click **add backup server**.
  - b. Provide its host name or IP address and the port number.

11. To verify whether all of the provided entries are valid, click **Test Connection**.  
A confirmation pop-up window opens.
12. Click **Create**. A confirmation message is displayed in the middle of the page.

You configured a connection to your LDAP server.

---

#### Related information

[User provisioning \(on page mcccxxxii\)](#)

## Editing a directory server configuration

1. On the **Directory Servers** page, click the name of the directory server whose configuration you want to modify.
2. In the lower area of the window, enter the new parameters.
3. Click **Save**.

## Deleting a directory server configuration

1. On the **Directory Servers** page, click the name of the directory server whose configuration you want to delete.
2. In the upper left area of the window, click **Delete**.

## Configuring a directory server with load balancer or multiple domain controllers

If your LDAP server uses load balancer or multiple domain controllers that dynamically change the list of hosts, and the connection between LDAP and the BigFix Inventory server is secure, perform advanced configuration of the BigFix Inventory server. The LDAP server can be already configured in BigFix Inventory.

The `<install_dir>` is the directory where the BigFix Inventory server is installed. By default, it is the following path.

Linux	/opt/BFI
Windows	C:\Program Files\BigFix Enterprise\BFI

Substitute `<install_dir>` in the procedure with the directory where the BigFix Inventory server is installed in your environment.

- **9.2.9** For application update 9.2.9 or higher, perform the following steps to permanently configure the directory server.
  1. Contact your LDAP server administrator to obtain a public certificate from the certificate authority (CA) that issues server certificates for LDAP. The certificate file should be in the PEM format, and should contain one or more certificates (full chain of trust).  
For example:

```
-----BEGIN CERTIFICATE-----
MI IHZ jCCBk6gAwIBAgISKESJLWXAAAACtanBgkqhkiG9w0BAQUFADBnMRMwEQYK
```

```

CRWmyVBwPWQBUNdIlPKJRQwpeYKCZImiZPyLGQBGRYEQ354jTEgGG7GA1UEAiU5
.
.
.
MTAzMzQxWjBZMRMwEQYKCZImiZPjVGVQBGARYDbmV0MRkwFwYKCZImiZPyLGQBGRYJ
bnNyb290ZGV2MScwJQYDVQQDEx5DaXRXAEludGVybmFsIERldm1jZSBBDQSAwMyBM
-----END CERTIFICATE-----

```

2. To create a custom truststore and import the public certificate for the LDAP server to that truststore, run the following command.

```

<install_dir>/jre/jre/bin/keytool -import -file <path_to_certificate> -alias ldapCA
-keystore <install_dir>/wlp/usr/servers/server1/resources/security/ldap_truststore
-storepass <password>

```

Where:

**-file**

Is the path to the public certificate of the LDAP server.

**-storepass**

Is the password that you want to set for the truststore.

3. After you run the command, confirm it by typing `yes` in the following line.

```
Trust this certificate? [no]: yes
```

4. To encode the truststore password, perform the following steps.

- a. Set the `JAVA_HOME` variable.

- **Linux** `export JAVA_HOME=<install_dir>/jre/jre`
- **Windows** `set JAVA_HOME=<install_dir>/jre/jre`

- b. Run the following command.

```
<install_dir>/wlp/bin/securityUtility encode --encoding=aes
```

- c. When prompted, enter and re-enter the password that you specified in step 2 (on page mcclxxx).
- d. Save the encoded password. You will need it to complete this procedure.

5. Back up the `server.xml` file before you make any changes. Then, provide information about the location of the truststore and its password in the `server.xml` file.

- a. Open the `server.xml` file that is in the `<install_dir>/wlp/usr/servers/server1` directory.
- b. Locate the `keyStore` entry that has the `defaultKeyStore` identifier.

```
<keyStore id='defaultKeyStore'>
```

- c. Paste the following lines after that entry. In the **password** parameter, provide the encoded password from step 3 (on page mcclxxx).

```
<keyStore id='ldapCustom'
location='<install_dir>/wlp/usr/servers/server1/resources/security/ldap_truststore'
password='{aes}xxxxXXXxxxxXXXxxxxXXXxxxx' />
```

- For versions older than application update 9.2.9, perform the following steps to configure the directory server. This solution must be applied after each application upgrade, as the certificates that you add according to this procedure are not preserved.



**Note:** Before you begin, contact the HCL Support for the password that is required during configuration.

1. Contact your LDAP server administrator, and obtain the public certificate from certificate authority (CA) that issues the server certificates for LDAP. The certificate file should be in the PEM format, and should contain one or more certificates.

For example:

```
-----BEGIN CERTIFICATE-----
      MI IHZ jCCBk6gAwIBAqISKESJLWXAAAACTANBgkqhkiG9w0BAQUFADBNMRMwEQYK
      CRWmyVBwPWQBUNDi1PKJRQwpeYKZImiZPyLGQBGRYEQ354jTEgGG7GA1UEAiU5
      .
      .
      .
      MTAzMzQxWjBZMRMwEQYKZImiZPJVGQBGRYDmV0MRkwFwYKZImiZPyLGQBGRYJ
      bnNyb290ZGV2MScwJQYDVQQDEx5DaXRXAEludGVybmFsIERldm1jZSBDSAwMyBM
      -----END CERTIFICATE-----
```

2. Copy the certificate file to the following directory: `<install_dir>/jre/jre/lib/security/`.
3. Run the following command:

```
<install_dir>/jre/jre/bin/keytool -import -trustcacerts -file <certificate_file_name>
-alias certAliasName -keystore cacerts -storepass <password>
```

Where `<password>` is the password that was provided by the BigFix Support.

## Linking users to directories

To complete an authentication process through LDAP, you must create a user that would link to the created directory.



You must have the Manage Users permission to perform this task.

1. In the top navigation bar, click **Management > Users**.
2. To create a user, click **New**.
3. In the **User Name** field, type the name of an existing user of an LDAP server.

 **Tip:** The login format depends on the configuration of your environment. It can be, for example, an e-mail address, or a user ID, and it might need to be followed by a domain name.

4. From the list, select a **Computer Group** to which the user would be assigned.
5. From the **Authentication Method** list, select the name of an LDAP directory.
6. Click **Create**.
7. To delete the created user, click its name. Then, in the upper left of the window click **Delete**.

 **Note:** The deleted user cannot be re-created.

To confirm authentication, log in to the BigFix Inventory server with the credentials of the LDAP user that you created in BigFix Inventory.

## User provisioning

After configuring a Directory Server, you can integrate its users with BigFix Inventory using the LDAP protocol. With user provisioning, you can integrate whole groups of users instead of linking each of them separately. The user provisioning works for users of specific LDAP groups and not for the users of the nested groups and sub-groups.

[Configure a Directory Server \(on page mcclxxviii\)](#).

1. Log in to BigFix Inventory.
2. In the top navigation bar, click **Management > User Provisioning**.
3. Click **New** to create a new user provisioning rule.
4. In **Group Names**, start typing the name of a group of users from your Directory Server and then choose one of the auto-filled results.
5. In **Roles**, select the roles that will be assigned to the new users.
6. In **Computer Group**, select the computer group to which the new users will be assigned.
7. Click **Create**.

You integrated your Directory Server users with BigFix Inventory. Each user is created in BigFix Inventory after you log in to the application with that user. The user is assigned a role that is defined in user provisioning. However, the role can be changed later on.

 **Important:** If you want to log in with Active Directory users, the user name must be followed by a domain name, for example `username@domain.com`.

---

Related information

[Configuring connection to a directory server \(on page mclxxviii\)](#)

## Integrating users with Web Reports

You can use the Web Reports component to allow your local Web Reports users to access BigFix Inventory.

Install the Web Reports component. The component is typically installed together with your BigFix server but you can also add it to your environment at any time. To do so, start the installation of BigFix and choose to install only Web Reports.

You can use the same credentials for the user as specified in Web Reports. To achieve this create an entry for user in BigFix Inventory using the username as in Web Reports and choose Web Reports as authentication method. Whenever you change the credentials in Web Reports, they will also be valid in BigFix Inventory with no additional configuration.

Role of the user is managed in BigFix Inventory.

Only local Web Reports users are supported.

1. Connect your BigFix Inventory server to the Web Reports database.
  - a. Log in to BigFix Inventory.
  - b. In the navigation bar, click **Management > Data Sources**.

- c. Click on your data source and fill in the connection parameters for the Web Reports database. The required information will differ depending on the type of the database that you use. For more information, see the following examples.

#### Web Reports Database

Database Type\*

SQL Server ▼

Host\*

9.128.109.94

Database Name\*

BESREPORTING

Authentication

- Windows Authentication  
 SQL Server Authentication

User Name\*

sa

Password

••••••••

#### Web Reports Database

Database Type\*

DB2 ▼

Host\*

9.128.110.31

Port\*

50000

Database Name\*

BESREPOR

Authentication

User Name

db2inst1

Password\*

••••••••

2. Each of your Web Reports users must be manually added to BigFix Inventory. After you complete this action, the users will be linked with their equivalents in Web Reports:
  - a. In BigFix Inventory, click **Management > Users**.
  - b. Click **New** to create a new user.
  - c. Enter the user name that corresponds with a Web Reports user name.
  - d. Select the appropriate roles.  
The roles are not integrated between the applications and must be selected manually for each user.
  - e. In the Authentication Method, choose **Web Reports**.
  - f. Click **Create**.
  - g. Repeat this action for each of your Web Reports users.

The created user is linked with its equivalent in Web Reports. You can now use it to log in to BigFix Inventory by using the same password that is specified in Web Reports. Whenever you change this password in Web Reports, it will also be valid for logging in to BigFix Inventory.

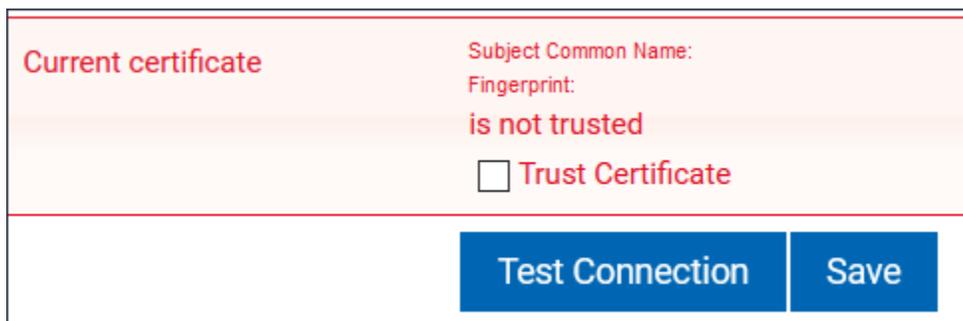
## Troubleshooting LDAP connectivity issues

Troubleshoot the LDAP connectivity issues.

1. Log in to BigFix Inventory as a non-LDAP user.
2. Click **Management > Directory Services**, select the directory server and then click **Test Connection**.

If a "connect error" message is displayed, or if an error message states that the current certificate is not trusted but the displayed **subject common name** and **fingerprint** fields are empty, complete these steps:

Figure 14. LDAP connectivity error



- a. Go to `<INSTALL_DIR>/wlp/usr/servers/server1/logs` and review the `tema.log` file for additional information.
- b. Go to `<INSTALL_DIR>/wlp/usr/servers/server1` and review the `jvm.options` file. Ensure that the following line exists to the `jvm.options` file and restart BigFix Inventory:

```
-Dcom.ibm.jsse2.overrideDefaultCSName=true
```

This line is added by default in BigFix Inventory version 10.0.5 or newer.



**Note:** Backup the files before you modify the files.

3. If the issue persists, add the following lines to the `jvm.options` file and restart BigFix Inventory:

```
-Dcom.unboundid.util.SSLUtil.defaultSSLProtocol=TLSV1.2
-Dcom.unboundid.util.SSLUtil.enabledSSLProtocols=TLSV1.2
```

4. Accept the current certificate and save the certificate only if the displayed **subject common name** and **fingerprint** fields are not empty and contain valid values.

The LDAP connectivity issue is resolved.

## Configuring and enabling single sign-on (SSO)

Available from 9.2.1. You can now use the two-factor authentication and use SSO to log on to BigFix Inventory and maintain login consistency with other applications in the enterprise. You can configure BigFix Inventory to use two-

factor authentication with single sign-on based either on the exchange of Security Assertion Markup Language (SAML 2.0) token and Microsoft™ Active Directory Federation Services as Identity Provider or you can use the IBM Lightweight Third-Party Authentication (LTPA) technology and IBM Security Access Manager for Web as the authentication service.

To enable debug logging for single sign-on in BigFix Inventory, edit the `web.xml` file and change the value of `config.sso.debug` to `true`.

```
<context-param>
  <param-name>config.sso.debug</param-name>
  <param-value>true</param-value>
</context-param>
```

The solution described in this section is based on the assumption that the connection with BigFix Inventory is established via the BigFix Inventory host name. For complex scenarios, you need to manually configure SAML provider in the `server.xml` file and perform additional configuration of the authentication service.

## Session timeout configuration when logged in through SSO

You can set the session timeout for BigFix Inventory. Refer to the steps mentioned at [Session timeout](#).



**Note:** The time that you set must be greater than the current SSO time. If you set a time lower than current SSO time, BigFix Inventory times out sooner and does not redirect you to the SSO login page. It gives an error message.

## Option 1: Configuring single sign-on based on Security Assertion Markup Language token

You can configure single sign-on based on a Security Access Markup Language (SAML 2.0) token and an external Identity Provider server.

The following entities participate in the exchange of authentication data:

### Application User

A person who uses several applications in one domain and wants to single sign-on to these applications.

### Service Provider

The application that requests the authentication service. In this case, it is BigFix Inventory.

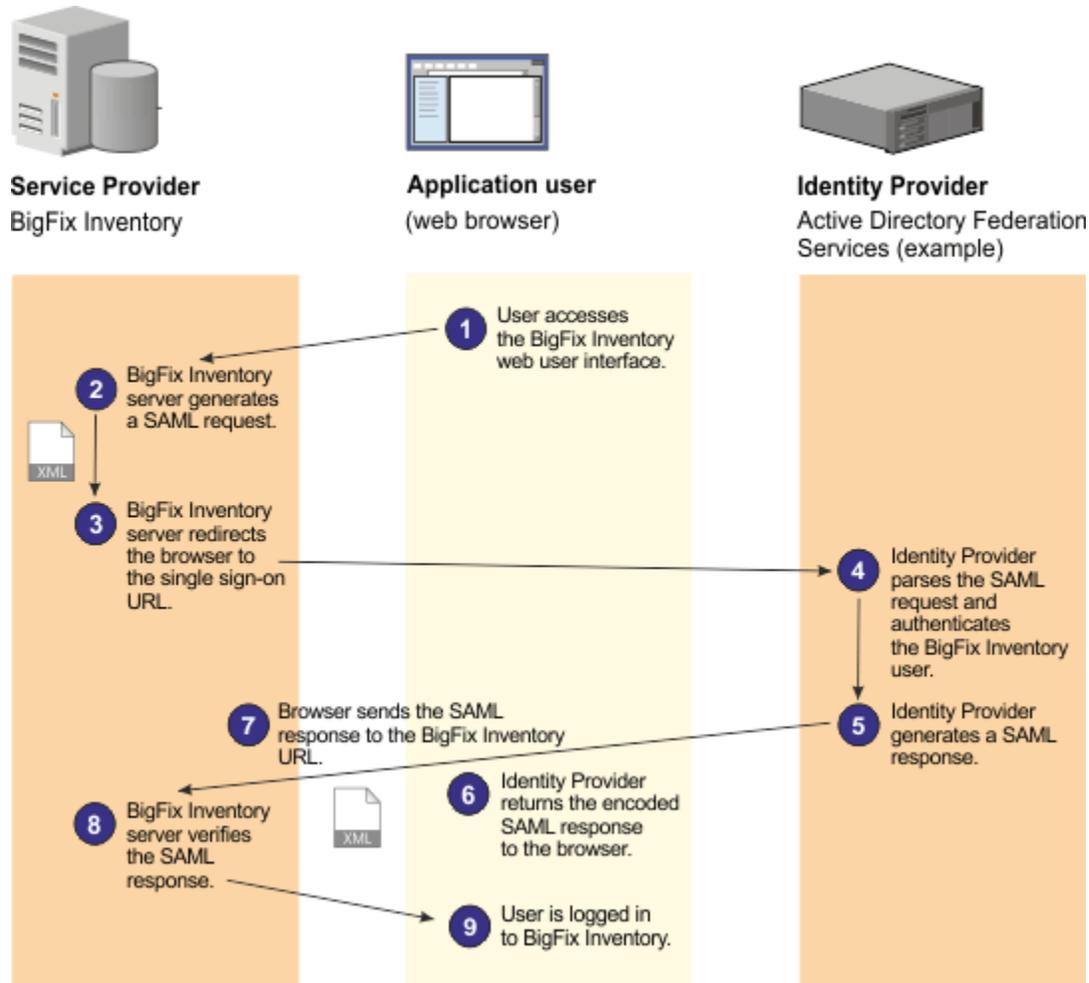
### Identity Provider

The service that authenticates the application users. BigFix Inventory supports only Active Directory Federation Services.

A web user authenticates to a SAML Identity Provider, which produces a SAML assertion. A SAML assertion is an XML-formatted token that is used to transfer user identity and attribute information from the Identity Provider of

a user to a trusted Service Provider as part of a single sign-on request. The Service Provider consumes the SAML assertion to establish a security context for the web user.

The following diagram shows steps that are performed during a typical single sign-on based on the exchange of the SAML token.



## Procedure

The following scenario presents a typical workflow of configuring BigFix Inventory to work with Active Directory Federation Services. However, you might want to use other software products for enabling single sign-on in your infrastructure.

---

### Related information

[SAML 2.0 Web Browser Single-Sign-On](#)

[Configuring SAML Web Browser SSO in the Liberty profile](#)

## Step 1: Configuring single sign-on settings in BigFix Inventory

As the first step, configure single sign-on settings in BigFix Inventory.

### Gather the necessary information

Before you start the configuration, gather the following information:

- URL to the login page of the Identity Provider. It is the URL to which an unauthenticated request is redirected. After the request is authenticated by the Identity Provider, the user is redirected to BigFix Inventory.

For example:

- ADFS: `https://<ADFS_hostname>/adfs/ls/IdPInitiatedSignOn.aspx?LoginToRP=https://<BFI_host_name>:9081/ibm/saml20/defaultSP`
- ENTRA ID: `https://launcher.myapps.microsoft.com/api/signin/<APPLICATION ID / GUID>?tenantId=<TENANT ID / GUID>`

- URL of the Trusted Issuer. It is the URL to the certificate issuer of the Identity Provider that is needed to establish a trust relationship.

For example:

- ADFS: `http://<ADFS_host_name>/adfs/services/trust`
- ENTRA ID: `https://sts.windows.net/<TENANT ID / GUID>/`

- Public certificate of the Identity Provider in the `key_name.cer` format.

### Enable SSL

Ensure that SSL is enabled in BigFix Inventory and in the Identity Provider.

### Backup files

Before you start configuring single sign-on, back up the following files:

- `server.xml`
  - Linux** `bfi_install_dir/wlp/usr/servers/server1`
  - Windows** `bfi_install_dir\wlp\usr\servers\server1`
- `web.xml`
  - Linux** `bfi_install_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
  - Windows** `bfi_install_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`



**Note:** If you set up the session timeout for Single Sign-On, remember that it should be longer than the session timeout that is set up for BigFix Inventory. Otherwise, change the settings in BigFix Inventory. For more information, see [Setting session timeout \(on page dcccxlvi\)](#).

## Create users

Create [BigFix Inventory users \(on page dxvcv\)](#) for users to use the single sign-on. During the user creation, select **Single Sign-on** as the authentication method. Ensure that all user names are fully-qualified names that contain the full domain name, for example: `user@domain.example`. Also, ensure that at least one user is an administrator.

**Linux** If the BigFix Inventory server is installed on Linux, and users in the Identity Provider use the camel-case naming convention, create users following the same convention in BigFix Inventory. Otherwise, the users can not generate the audit snapshots.



**Note:** User token is not available after a single sign-on user is created. If you need the token, for example, to run REST API calls, ask the BigFix Inventory administrator to provide it for you.

1. Log in to BigFix Inventory, and click **Management > Single Sign-On Settings**.
2. Select **SAML** as the single sign-on method.

The Instance ID field is automatically filled with the `defaultSP` value. It is the identifier of the BigFix Inventory service. Together with the BigFix Inventory URL, it forms the overall Service Provider ID:

`https://BFI_host_name:BFI_port/ibm/saml20/defaultSP.`

Based on this value, the SAML Assertion Consumer Service URL is built:

`https://BFI_host_name:BFI_port/ibm/saml20/defaultSP/acs.` The URL should be used for the configuration of the Identity Provider.

3. Specify the URL to the login page of the Identity Provider that you will use to single-sign-on to BigFix Inventory. For example:

- **ADFS:** `https://<ADFS_hostname>/adfs/ls/IdPInitiatedSignOn.aspx?LoginToRP=https://<BFI_host_name:9081/ibm/saml20/defaultSP`
- **ENTRA ID:** `https://launcher.myapps.microsoft.com/api/signin/<APPLICATION ID / GUID>?tenantId=<TENANT ID / GUID>`



**Important:** Ensure that the URL that you specify is correct. The address is not validated. If you make a typo in the URL, you might need to manually [revert the SSO configuration \(on page mccxcv\)](#).

4. Provide the public certificate of the Identity Provider. Click **Browse** to locate the `key_name.cer` certificate that you created.
5. Provide the URL of the certificate issuer of the Identity Provider. It is the issuer name of the Identity Provider as it appears in the SAML assertion.

For example:

- **ADFS:** `http://<ADFS_host_name>/adfs/services/trust`
- **ENTRA ID:** `https://sts.windows.net/<TENANT ID / GUID>/`



**Important:** Ensure that the URL that you specify is correct. The address is not validated. If you make a typo in the URL, you might need to manually [revert the SSO configuration \(on page mccxcv\)](#).

6. Click **Save**.
7. **Optional:** To use a custom certificate for the SSO setup, see: [Using a CA-signed \(custom\) certificate for SSO based on SAML \(on page mccxc\)](#). Otherwise, continue to the next step.
8. Click the **Download Service Provider Metadata** link, and save the `spMetadata.xml` file.



**Note:** When the SAML single sign-on entry is created, only the **Delete** button, and the **Download SP Metadata** link are enabled. If the download link is not displayed, restart the BigFix Inventory server.

Based on the `spMetadata.xml` file, configure Identity Provider for single sign-on.

## Using BigFix Inventory SSL certificate for SSO based on SAML

By default, a self-signed certificate is used during the SSO configuration. However, you can reuse the BigFix Inventory server SSL certificate.

1. Navigate to the path `install_dir\wlp\usr\servers\server1\server.xml`.
2. Remove only `keyAlias="samlsp"` and `keyStoreRef="SPKeyStore"` from `server.xml`.
3. Open BigFix Inventory in a web browser.
4. Get the information about the certificate.
  - a. Click on the **Not secure** label on the URL to display the window.
  - b. Select the **Certificate is not valid** option above.
  - c. Click on the **Details** tab.
  - d. Export the certificate in base 64 encoded format.
5. Add the exported certificate to the Active Directory Federation Certificate (ADFS).
  - a. Navigate to ADFS management.
  - b. Proceed to **Active Directory Management Service > Relaying Party Trust**.
  - c. Right-click on the available relying party and select **Properties**.
  - d. Navigate to the **encryption option**.
  - e. Remove the existing certificate.
  - f. Click on **Browse**, and in the dropdown menu, select **All Files**.
  - g. Upload the downloaded certificate.
6. Restart the BigFix Inventory server.

## Using a CA-signed (custom) certificate for SSO based on SAML

By default, a self-signed certificate is used during the SSO configuration. However, you can use a custom certificate generated for the BigFix Inventory server to increase security of the configuration.

1. Log in to the computer where Active Directory Federation Services are installed.
2. Generate a certificate for the BigFix Inventory sever signed by a trusted CA.

**!** **Important:** Ensure that you remember the certificate label that is used during certificate generation as it is needed in further steps.

3. Export the certificate into a `.pfx` file. For example, `custom_cert.pfx`.
4. Copy the `custom_cert.pfx` file to the computer where the BigFix Inventory server is installed and place it in the following location: `install_dir\wlp\usr\servers\server1\resources\security`.
5. To delete the existing self-signed certificate and private key provided by HCL, run the following commands.

```
install_dir\jre\jre\bin\ikeycmd -cert -delete -label cert_label -db
install_dir\wlp\usr\servers\server1\resources\security\<keystore_name> -pw sso_password -type <type>
```

Where:

#### ***cert\_label***

Is the label of the custom certificate generated for the BigFix Inventory server in step 2 ([on page mcccxi](#)). If you do not know the certificate label, run the following command:

```
install_dir\jre\jre\bin\ikeycmd -cert -list -db custom_cert.pfx -pw custom_cert_password
-type pkcs12
```

#### ***sso\_password***

Is the password to the SSO keystore. For the default keystore password contact the HCL Support. Otherwise, provide the password that you configured.

6. To import the custom certificate, run the following commands.

```
install_dir\jre\jre\bin\ikeycmd -cert -import -file custom_cert.pfx -pw custom_cert_password -type
pkcs12 -target
install_dir\wlp\usr\servers\server1\resources\security\<keystore_name> -target_pw sso_password
-target_type <type> -label cert_label -new_label samlsp
```

Where:

#### ***custom\_cert\_password***

Is the password to the custom certificate generated in step 2 ([on page mcccxi](#)).

#### ***sso\_password***

Is the password to the SSO keystore.

#### ***cert\_label***

Is the label of the custom certificate generated in step 2 ([on page mcccxi](#)).

7. In BigFix Inventory go to **Management > Single Sign-On Settings**. Click **Download Service Provider Metadata**, and save the `spMetadata.xml` file.

Based on the `spMetadata.xml` file, configure Identity Provider for single sign-on.



**Note:** The `<type>` and `<keystore_name>` parameters that apply to the above commands specifies the following:

`<type>`

Starting from version 10.0.8.0, the type of the certificate is **PKCS12**. For earlier versions, it is **JCEKS**.

`<keystore_name>`

Starting from version 10.0.8.0, the name of the keystore file is **SPKeyStore.p12**. For earlier versions, it is **SPKeyStore.jceks**.

## Step 1: Configuring single sign-on settings in BigFix Inventory

As the first step, configure single sign-on settings in BigFix Inventory.

### Gather the necessary information

Before you start the configuration, gather the following information:

- URL to the login page of the Identity Provider. It is the URL to which an unauthenticated request is redirected. After the request is authenticated by the Identity Provider, the user is redirected to BigFix Inventory.

For example:

- **ADFS:** `https://<ADFS_hostname>/adfs/ls/IdPInitiatedSignOn.aspx?LoginToRP=https://<BFI_host_name>:9081/ibm/saml20/defaultSP`
- **ENTRA ID:** `https://launcher.myapps.microsoft.com/api/signin/<APPLICATION ID / GUID>?tenantId=<TENANT ID / GUID>`

- URL of the Trusted Issuer. It is the URL to the certificate issuer of the Identity Provider that is needed to establish a trust relationship.

For example:

- **ADFS:** `http://<ADFS_host_name>/adfs/services/trust`
- **ENTRA ID:** `https://sts.windows.net/<TENANT ID / GUID>/`

- Public certificate of the Identity Provider in the `key_name.cer` format.

### Enable SSL

Ensure that SSL is enabled in BigFix Inventory and in the Identity Provider.

### Backup files

Before you start configuring single sign-on, back up the following files:

- `server.xml`
  - Linux** `bfi_install_dir/wlp/usr/servers/server1`
  - Windows** `bfi_install_dir\wlp\usr\servers\server1`
- `web.xml`
  - Linux** `bfi_install_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
  - Windows** `bfi_install_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`



**Note:** If you set up the session timeout for Single Sign-On, remember that it should be longer than the session timeout that is set up for BigFix Inventory. Otherwise, change the settings in BigFix Inventory. For more information, see [Setting session timeout \(on page dcccxlviij\)](#).

## Create users

Create [BigFix Inventory users \(on page dxcv\)](#) for users to use the single sign-on. During the user creation, select **Single Sign-on** as the authentication method. Ensure that all user names are fully-qualified names that contain the full domain name, for example: `user@domain.example`. Also, ensure that at least one user is an administrator.

**Linux** If the BigFix Inventory server is installed on Linux, and users in the Identity Provider use the camel-case naming convention, create users following the same convention in BigFix Inventory. Otherwise, the users can not generate the audit snapshots.



**Note:** User token is not available after a single sign-on user is created. If you need the token, for example, to run REST API calls, ask the BigFix Inventory administrator to provide it for you.

1. Log in to BigFix Inventory, and click **Management > Single Sign-On Settings**.
2. Select **SAML** as the single sign-on method.

The Instance ID field is automatically filled with the `defaultSP` value. It is the identifier of the BigFix Inventory service. Together with the BigFix Inventory URL, it forms the overall Service Provider ID:

`https://BFI_host_name:BFI_port/ibm/saml20/defaultSP.`

Based on this value, the SAML Assertion Consumer Service URL is built:

`https://BFI_host_name:BFI_port/ibm/saml20/defaultSP/acs.` The URL should be used for the configuration of the Identity Provider.

3. Specify the URL to the login page of the Identity Provider that you will use to single-sign-on to BigFix Inventory. For example:

- ADFS: `https://<ADFS_hostname>/adfs/ls/IdPInitiatedSignOn.aspx?LoginToRP=https://<BFI_host_name:9081/ibm/saml20/defaultSP>`
- ENTRA ID: `https://launcher.myapps.microsoft.com/api/signin/<APPLICATION ID / GUID>?tenantId=<TENANT ID / GUID>`

 **Important:** Ensure that the URL that you specify is correct. The address is not validated. If you make a typo in the URL, you might need to manually [revert the SSO configuration \(on page mcccxcv\)](#).

4. Provide the public certificate of the Identity Provider. Click **Browse** to locate the `key_name.cer` certificate that you created.
5. Provide the URL of the certificate issuer of the Identity Provider. It is the issuer name of the Identity Provider as it appears in the SAML assertion.

For example:

- ADFS: `http://<ADFS_host_name>/adfs/services/trust`
- ENTRA ID: `https://sts.windows.net/<TENANT ID / GUID>/`

 **Important:** Ensure that the URL that you specify is correct. The address is not validated. If you make a typo in the URL, you might need to manually [revert the SSO configuration \(on page mcccxcv\)](#).

6. Click **Save**.
7. **Optional:** To use a custom certificate for the SSO setup, see: [Using a CA-signed \(custom\) certificate for SSO based on SAML \(on page mcccxc\)](#). Otherwise, continue to the next step.
8. Click the **Download Service Provider Metadata** link, and save the `spMetadata.xml` file.

 **Note:** When the SAML single sign-on entry is created, only the **Delete** button, and the **Download SP Metadata** link are enabled. If the download link is not displayed, restart the BigFix Inventory server.

Based on the `spMetadata.xml` file, configure Identity Provider for single sign-on.

### Step 3: Enabling the SAML single sign-on

As the final step, enable single sign-on in the BigFix Inventory web user interface.

 **Important:** Before enabling single sign-on, create a dedicated administrative user. For more information, see: [Creating single sign-on users \(on page mcccvi\)](#).

1. Log in to BigFix Inventory, and click **Management > Single Sign-on Settings**. Then, click **Enable**.
2. [Stop the BigFix Inventory server \(on page dcccxlvi\)](#).
3. [Start the BigFix Inventory server \(on page dcccxlvi\)](#). The BigFix Inventory web user interface opens and you are redirected to the login page of the Identity Provider.

4. Provide the user name and password and click sign-in.



**Note:** All user names must be fully-qualified names that contain the full domain name. For example: `user@domain.example`.

## Reverting disabled SSO configuration for SAML

You can revert to the default SAML SSO configuration with single sign-on disabled if there are problems with logging in to the application.

To revert to the disabled SAML SSO configuration, follow the automated procedure below.

1. Stop the BigFix Inventory server (on page [dcccxlvi](#)).
2. Restore the `web.xml` file from the `web.xml.timestamp.backup` file. The backup file was created automatically in the following location:
  - **UNIX** `bfi_install_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
  - **Windows** `bfi_install_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`
3. Start the BigFix Inventory server (on page [dcccxlv](#)).

## Reverting disabled SSO configuration for SAML manually

It is recommended to use the automated solution to revert to the disabled SAML SSO configuration. However, if the automated solution is not successful, follow the steps below to revert the default SAML SSO configuration manually.

1. Stop the BigFix Inventory server (on page [dcccxlvi](#)).
2. Make changes in the `server.xml` file that is in the following directory.
  - **UNIX** `bfi_install_dir/wlp/usr/servers/server1`
  - **Windows** `bfi_install_dir\wlp\usr\servers\server1`
  - a. Remove the `<application-bnd>` element that is inside of the `<application>` element.

```
<application autoStart='true' location="tema.war" context-root="/" name="tema" type="war">
  <classloader commonLibraryRef='tema,DatabaseLib' delegation='parentLast' />
  <application-bnd>
    <security-role id="TemaSSOAuthenticated" name="TemaSSOAuthenticated">
      <special-subject type="ALL_AUTHENTICATED_USERS" />
    </security-role>
  </application-bnd>
</application>
```

- b. Remove the `<feature>samlWeb-2.0</feature>` element that is inside the `<featureManager>` element.
  - c. Remove the `<samlWebSso20>` element if it exists.
3. Make changes in the `web.xml` file that is in the following directory.

- **UNIX** `bfi_install_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
- **Windows** `bfi_install_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`

a. Set the value of the `<config.sso.enabled>` parameter to *false*.

```
<context-param>
  <param-name>config.sso.enabled</param-name>
  <param-value>false</param-value>
</context-param>
```

b. Remove the `<security-constraint>` element.

```
<security-constraint>
  <display-name>TemaSSOAuthenticated</display-name>
  <web-resource-collection>
    <web-resource-name>index</web-resource-name>
    <url-pattern>/</url-pattern>
    <url-pattern>/session/*</url-pattern>
    <url-pattern>/management/*</url-pattern>
    <url-pattern>/scm/*</url-pattern>
    <url-pattern>/sam/*</url-pattern>
    <url-pattern>/setup/*</url-pattern>
    <url-pattern>/internal/*</url-pattern>
    <url-pattern>/wait_for_import</url-pattern>
    <url-pattern>/import_finalizing</url-pattern>
    <url-pattern>/import_status</url-pattern>
    <url-pattern>/missing_computer_group</url-pattern>
    <url-pattern>/account/*</url-pattern>
    <url-pattern>/autocomplete/*</url-pattern>
    <url-pattern>/pagestates/*</url-pattern>
    <url-pattern>/reports/*</url-pattern>
    <url-pattern>/test/*</url-pattern>
    <url-pattern>/help/*</url-pattern>
  </web-resource-collection>
  <auth-constraint>
    <role-name>TemaSSOAuthenticated</role-name>
  </auth-constraint>
  <user-data-constraint>
    <transport-guarantee>CONFIDENTIAL</transport-guarantee>
  </user-data-constraint>
</security-constraint>
```

4. Start the BigFix Inventory server (on page [dcccxlvi](#)).

## Option 2: Configuring single sign-on based on IBM Lightweight Third-Party Authentication

You can configure single sign-on based on IBM Lightweight Third-Party Authentication(LTPA)with © IBM Security Access Manager for Web.

Back up the following files before you start configuring single sign-on:

- `server.xml`
  - **UNIX** `installation_dir/wlp/usr/servers/server1`
  - **Windows** `installation_dir\wlp\usr\servers\server1`
- `web.xml`
  - **UNIX** `installation_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
  - **Windows** `installation_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`

The following scenario presents a typical workflow for configuring BigFix Inventory to work with BigFix® Security Access Manager. However, you might want to use other software products for enabling single sign-on in your infrastructure.

1. [Configure the connection to your directory server \(on page mcclxxviii\).](#)
2. [Create the users \(on page dxcv\)](#) that will be authenticated with the single sign-on server. You must create at least one user that has the Administrator role.



**Important:** Ensure that you select **Single Sign-on** from the **Authenticated method** drop-down list.

3. [Export the LDAP server SSL certificate \(on page mcccxcviii\)](#) embedded in BigFix® IBM Security Access Manager for Web.
4. [Configure LTPA single sign-on \(on page mcccxcviii\)](#) in BigFix Inventory web user interface.
5. [Import the LTPA keys \(on page mcccxcix\)](#) into BigFix® Security Access Manager for Web.
6. [Import the BigFix Inventory server certificate \(on page mccc\)](#) into BigFix® Security Access Manager for Web.
7. [Configure a Virtual Junction \(on page mccc\)](#) in BigFix® IBM Security Access Manager for Web.
8. [Enable single sign-on \(on page mcccvi\)](#) in BigFix Inventory.
9. [Optional: Update the WebUI shortcut \(Windows only\) \(on page mcccvi\)](#)
10. [Optional: Reverting SSO configuration for LTPA \(on page mcccvi\)](#).

You can revert to the default LTPA SSO configuration with single sign-on disabled if there are problems with logging in to the application.

---

### Related information

[Configuring LTPA on the Liberty profile](#)

[Customizing SSO configuration using LTPA cookies for the Liberty profile](#)

## Step 1: Exporting the LDAP server SSL certificate embedded in BigFix Security Access Manager

You must export the certificate from the LDAP server embedded in IBM Security Access Manager (ISAM) to be able to configure the single sign-on in the BigFix Inventory web user interface.

1. Log on to the ISAM web user interface.
2. **Manage System Settings > Secure Settings > SSL Certificates.**
3. Select **embedded\_ldap\_keys**, click the **Manage** drop-down list and then click **Edit SSL Certificate Database.**
4. Open the **Personal Certificates** tab. Select **server**, click the **Manage** drop-down list and then click **Export.** A pop-up window opens with the server certificate details.
5. Click **OK** and save the file in a directory on your computer.

You exported the LDAP server SSL certificate. You can use it in the next step while configuring LTPA single sign-on.

## Step 2: Configuring LTPA single sign-on

You can use the **Single Sign-On Settings** pane to configure IBM Lightweight Third-Party Authentication (LTPA) settings in BigFix Inventory.



**Note:** If you set up the session timeout for Single Sign-On, remember that it should be longer than the session timeout that is set up for BigFix Inventory. Otherwise, change the settings in BigFix Inventory. For more information, see [Setting session timeout \(on page dcccxlviij\)](#).

1. In the BigFix Inventory web UI, click **Management > Single Sign-On Settings.**
2. Select **LTPA** as the single sign-on method.
3. From the **Directory Server** drop-down list select the LDAP server that you want to be used for authenticating users.
4. Click **Browse** and select your certificate file.

Method*	<input type="radio"/> SAML <input checked="" type="radio"/> LTPA
Instance ID*	ISAMLdapRegistry
Directory Server*	ISAM embedded LDAP ▼
Directory Server SSL Certificate	<input type="button" value="Browse..."/> server.cer
<input type="button" value="Save"/>	

5. Click **Save.**
6. [Stop the BigFix Inventory server \(on page dcccxlviij\)](#).
7. [Start the BigFix Inventory server \(on page dcccxlvi\)](#).

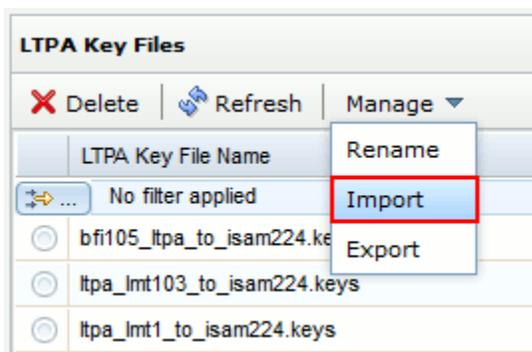
### Step 3: Importing LTPA keys into BigFix® Security Access Manager

You must import the LTPA keys into IBM® Security Access Manager to add BigFix Inventory to the trusted list.

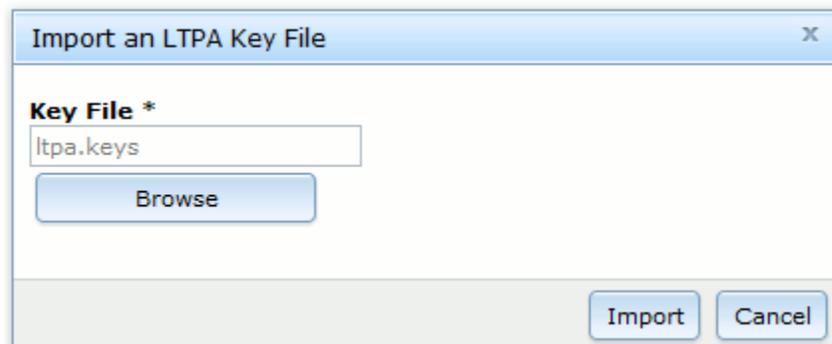
1. In the BigFix Inventory web user interface, click **Management > Single Sign-On Settings**.
2. Click **Download LTPA keys** and save the files in a directory on your computer.
3. Log on to the Security Access Manager web user interface.
4. Click **Secure Web Settings > Global Keys > LTPA Keys**.



5. Click **Manage > Import**



6. Click **Browse** and select the file to be imported.
7. Click **Import**.



A message about one not deployed change is displayed. The LTPA keys are displayed together with other keys.

**LTPA Key Files**

There is currently one undeployed change. [Click here to review the changes or apply them to the system.](#)

Delete Refresh Manage

LTPA Key File Name

No filter applied

<input type="radio"/>	bfi105_ltpa_to_isam224.keys
<input type="radio"/>	<b>ltpa.keys</b>
<input type="radio"/>	ltpa_lmt103_to_isam224.keys
<input type="radio"/>	ltpa_lmt1_to_isam224.keys

- Click the link **Click here to review the changes or apply them to the system.**

You just imported the LTPA keys into IBM® Security Access Manager for Web.

It is also advisable to rename the imported key file. To rename the file that you imported:

- Click the **Manage** drop-down list and then click **Rename**.
- In the pop-up window that opens, provide the new name for your LTPA keys file and click **Save**.
- On the **LTPA Key Files** pane, click the link **Click here to review the changes or apply them to the system.**
- In the **Deploy Pending Changes** pop-up window, click **Deploy**.

## Step 4: Importing the BigFix Inventory server certificate into IBM® Security Access Manager

Import the BigFix Inventory server certificate into BigFix® Security Access Manager for Web to establish trusted server-to-server communication.

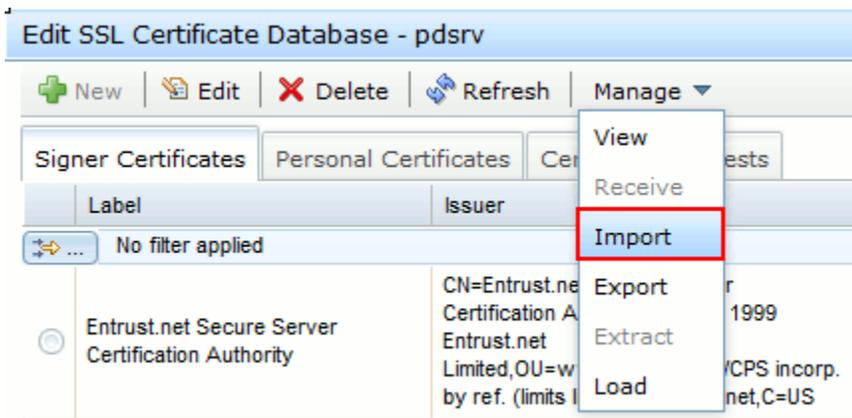
- In the BigFix Inventory web UI, click **Management > Server Settings**.
- Click **Download Certificate** and save the file in a directory on your computer.
- Log on to the Security Access Manager web user interface.
- Click **Manage System Settings > Secure Settings > SSL Certificates**.
- Select **pdsrv** and then, from the **Manage** drop-down list, select **Edit SSL Certificate Database**.

**SSL Certificates**

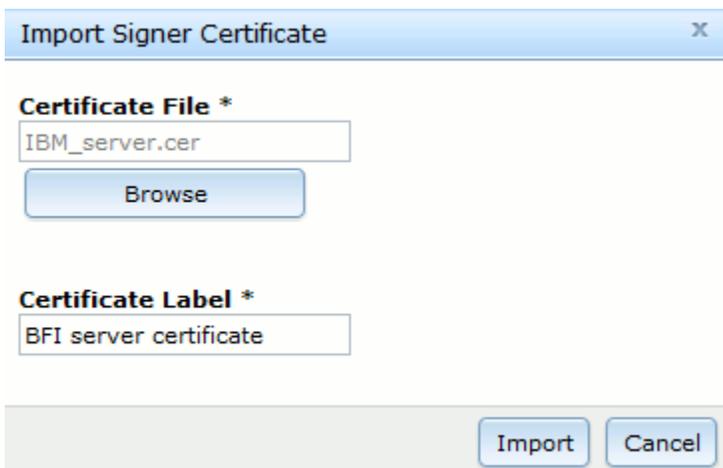
New Delete Refresh Replicate with Cluster Manage

Certificate Database Name	Last Modified	Description	Manage
lmi_trust_store	Sep 8, 2015 2:27:56 PM	Certificate tr	<b>Edit SSL Certificate Database</b>
embedded_idap_keys	Sep 8, 2015 2:28:37 PM	Key store fo	Describe
<b>pdsrv</b>	Sep 19, 2015 11:04:35 AM	This file cont	Rename
rt_profile_keys	Sep 8, 2015 2:28:13 PM	Default key and trust store for the ISAM for mobile services. Do NOT delete.	Import
			Export

6. From the **Manage** drop-down list, select **Import**. A new window opens.



7. Click **Browse** to select the certificate file and provide the certificate label.



8. Click **Import**.
9. Click **Close** to close the **Edit SSL certificate database - pdsrv** pop-up window.  
A message about an undeployed change is displayed.
10. Click the link **Click here to review the changes or apply them to the system**.
11. In the **Deploy Pending Changes** pop-up window, click **Deploy**.  
A message about the successful deployment is displayed.

Restart the default instance of the proxy server for the changes to take effect.

1. Click **Secure Web Settings** and then **Reverse Proxy**.
2. In the navigation bar, click **Restart**.

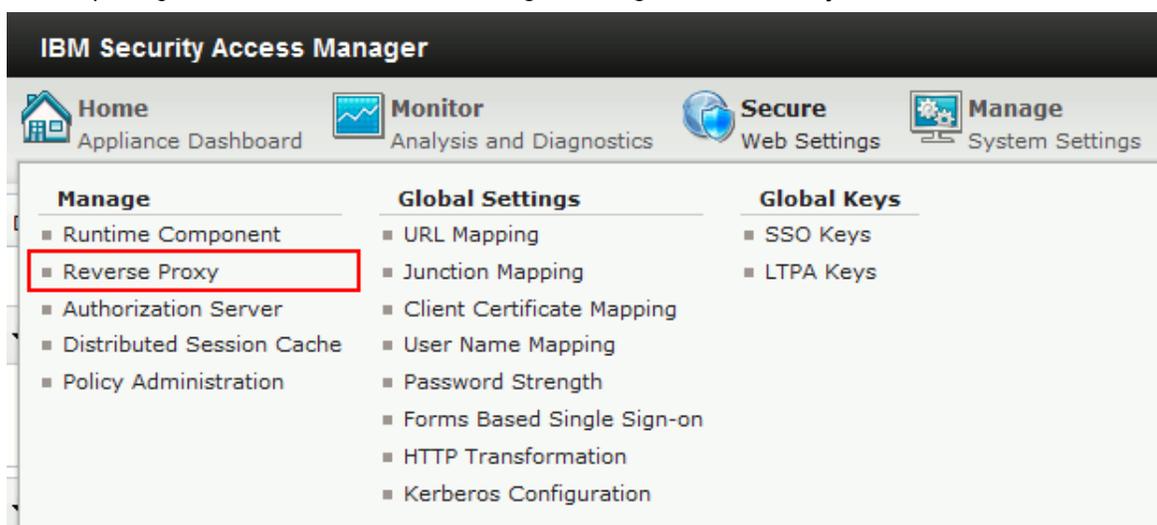
## Step 5: Configuring a virtual junction

A virtual host junction is a mount point for specific content that is located on the WebSEAL server.

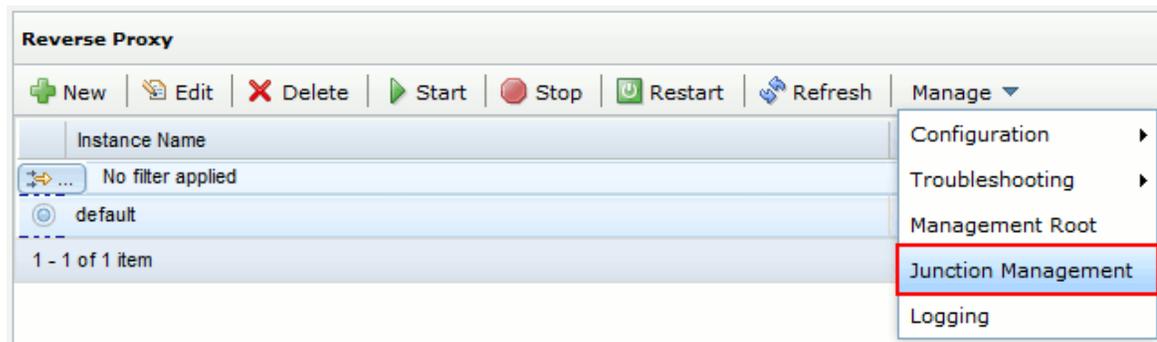
Ensure that the HTTPS port of the reverse proxy in BigFix Security Access Manager for web is set to 9081, which is the port number used by BigFix Inventory server. If the port is not set to this value, REST API might not work. To configure this port for the proxy server:

1. In the IBM Security Access Manager user interface, click **Secure Web Settings** and then, under **Manage** click **Reverse Proxy**.
2. Select the **default** proxy and click **Edit**.
3. In the **Reverse Proxy Basic Configuration - default** window, on the **Server** tab, provide 9081 as the value of the **HTTPS Port** and click **Save**.

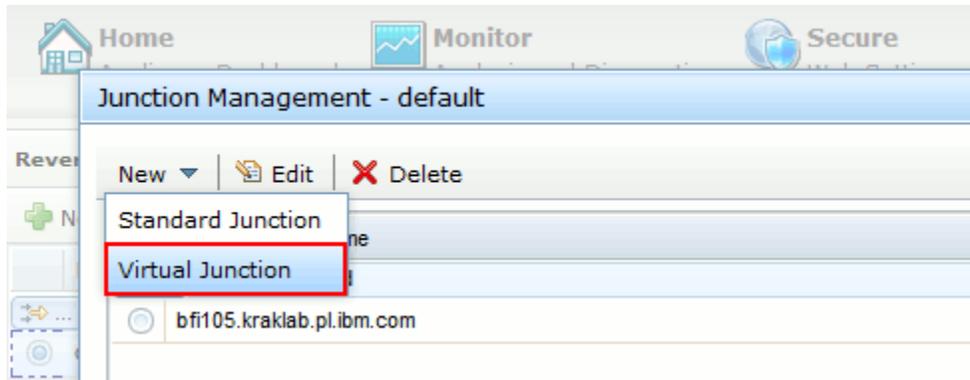
1. Log on to BigFix® Security Access Manager.
2. In the top navigation bar, click **Secure Web Settings > Manage > Reverse Proxy**.



3. Select the instance and then, from the drop-down list on the right of the Reverse Proxy bar, select **Manage > Junction Management**. A new pane opens.



4. From the drop-down list in the upper-left corner of the pane, click **New > Virtual Junction**.



5. On the new pane, specify the junction label, Virtual Host, Virtual Host Port, and SSL as the Junction Type, and click **Save**.

**Create a Virtual Junction**

**Junction** Servers Basic Authentication Identity SSO and LTPA

**Creation of a junction for an initial server**

<p><b>Junction Label</b> MyAppServer</p> <p><input type="checkbox"/> <b>Stateful Junction</b></p> <p><b>DSC Environment</b> </p> <p><b>Virtual Host Label</b> </p> <p><b>Virtual Host</b> NC142222.kraklab.pl.ibm.com</p> <p><b>Virtual Host Port</b> 9081</p>	<p><b>Junction Type</b></p> <p><input type="radio"/> TCP</p> <p><input checked="" type="radio"/> SSL</p> <p><input type="radio"/> TCP Proxy</p> <p><input type="radio"/> SSL Proxy</p>
--	--

6. Configure a backend server for this junction: Click the **Servers** tab and then click **New**.

Create a Virtual Junction

Junction **Servers** Basic Authentication Identity SSO and LTPA

**Target Backend Servers. At least one server is required to create a**

**New** Edit Delete

Hostname

No filter applied

7. Specify the IP address or host name of the BigFix Inventory server and click **Save**.

Add TCP or SSL Servers

**Hostname \***  
9.158.142.222

**TCP or SSL Port \***  
9081

**Local Address**

**Query Contents**

**UUID of the Server**

**Distinguished Name(DN)**

**Windows File System Support**

**Treat URL as case insensitive**

8. Click the **Identity** tab and select all the items under **HTTP Header Identity Information**.

Create a Virtual Junction

Junction Servers Basic Authentication **Identity** SSO and LTPA General

**Supply identity information in HTTP headers**

**HTTP Basic Authentication Header**  
Filter

**GSO Resource or Group**

**HTTP Header Identity Information**

- IV-USER
- IV-USER-L
- IV-GROUPS
- IV-CREDS

**HTTP Header Encoding**  
None

Include session cookie

Insert client IP address

Enable TFIM SSO

9. Click the **SSO and LTPA** tab and select the following entries.

- **Enable LTPA cookie support**
- **Use Version 2 Cookies**

From the **LTPA Keyfile** drop-down list, select the file that you into IBM Security Access Manager and in the next field provide the LTPA keyfile password.

Create a Virtual Junction

Junction Servers Basic Authentication Identity **SSO and LTPA** General

**WebSphere single signon (LTPA) junctions**

**Enable LTPA cookie Support**

**Use Version 2 Cookies**

**LTPA Keyfile**  
ltpa.keys

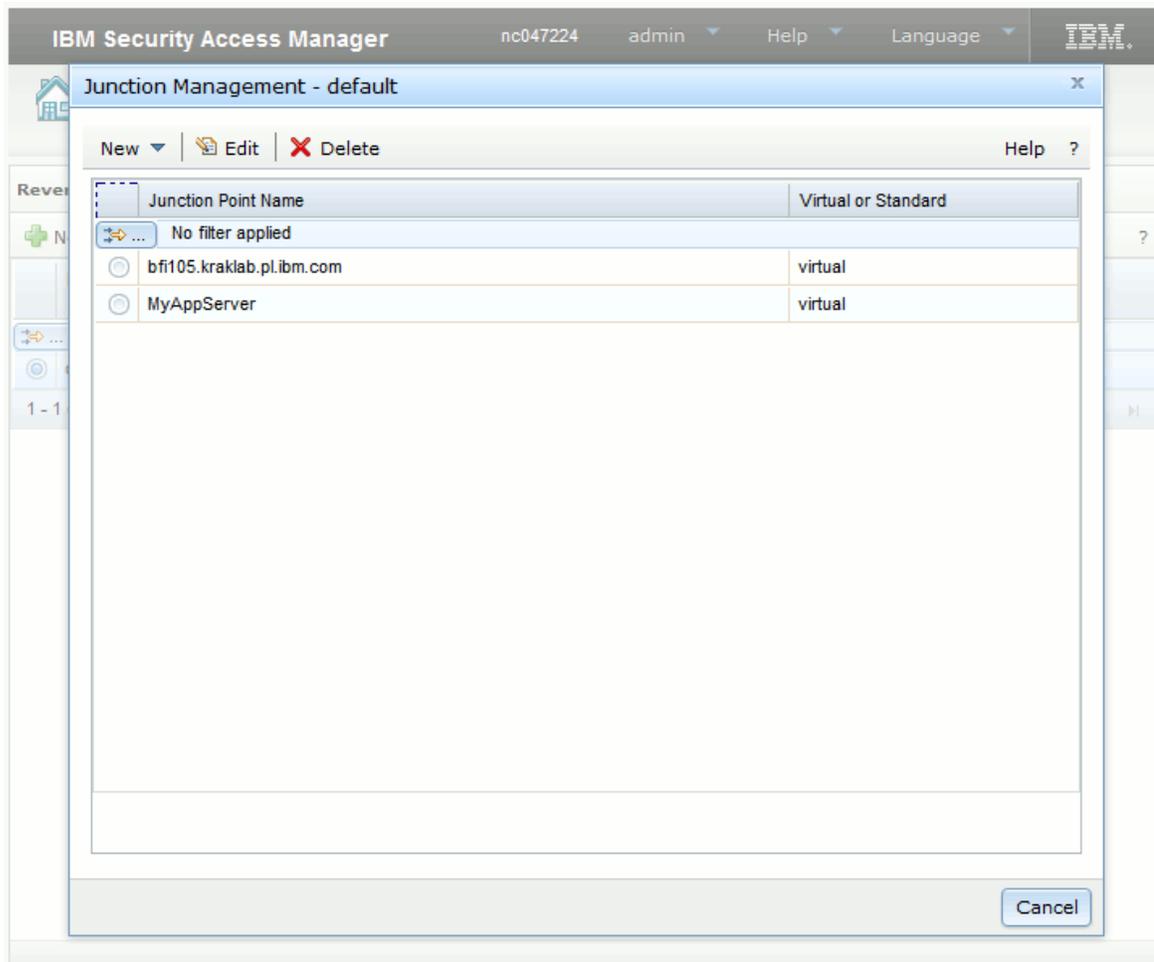
**LTPA Keyfile Password**  
•••••

10. Click the **General** tab and leave all the default configuration unchanged.

The screenshot shows a web-based configuration wizard titled "Create a Virtual Junction". At the top, there is a blue header bar with the title. Below the header, there are six tabs: "Junction", "Servers", "Basic Authentication", "Identity", "SSO and LTPA", and "General". The "General" tab is currently selected and highlighted. Below the tabs, the section is titled "General Junction Options". There are three input fields, each with a dropdown arrow on the right side. The first field is labeled "FSSO Configuration File". The second field is labeled "Percentage Value for Hard Limit of Worker Threads". The third field is labeled "Percentage Value for Soft Limit of Worker Threads". At the bottom of the section, there is a checkbox labeled "Include authorization rules decision information".

11. Click **Save** to save the configuration and exit the wizard.

12. Click **Cancel** to exit the **Junction Management - default** pane.



## Step 6: Enabling the LTPA single sign-on

As the final step, enable single sign-on in BigFix Inventory web user interface.

**!** **Important:** Before enabling single sign-on, create a dedicated administrative user. For more information, see: [Creating single sign-on users \(on page mcccvi\)](#).

1. Open the BigFix Inventory web user interface.
2. Go to **Management > Single Sign-on Settings** and click **Enable**.
3. [Stop the BigFix Inventory server \(on page dcccxlvi\)](#).
4. [Start the BigFix Inventory server \(on page dcccxlvi\)](#).
5. Access your BigFix Inventory server using the virtual host that you created in step [Step 5: Configuring a virtual junction \(on page mccc\)](#). Example: `https://virtual_host/sam`.



**Note:** Once LTPA single sign-on is enabled, you will not be able to access the BigFix Inventory web user interface using the URL `https://host_name:9081`.

6. Log in with the directory user that you created in the step [Setting up users \(on page dxcv\)](#).

## Optional: Updating the WebUI shortcut

You might need to edit the WebUI shortcut if you installed or upgraded to BigFix Inventory 9.2.1 and you also enabled single sign-on using LTPA. This URL is defined in the WebUI file that is in the following location: `C:\Program Files\BigFix Enterprise\BFI\admin\resources\WebUI`.

1. Open the WebUI file in a text editor, for example Notepad++, and change the URL from `https://localhost:port-number` to `https://virtual-junction-host-name:port-number`.
2. Clear the cache in your web browser.
3. End all your browser processes.
4. Restart the system on which your browser is installed.

## Optional: Reverting disabled SSO configuration for LTPA

You can revert to the default LTPA SSO configuration with single sign-on disabled if there are problems with logging in to the application.

1. [Stop the BigFix Inventory server \(on page dcccxlvi\)](#).
2. Restore the `web.xml` file from the `web.xml.timestamp.backup` file. The backup file was created automatically in the following location:
  - **UNIX** `bfi_installation_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
  - **Windows** `bfi_installation_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`
3. [Start the BigFix Inventory server \(on page dcccxlv\)](#).

## Creating single sign-on users

To complete an authentication process through single sign-on, you must create users that can later log in to BigFix Inventory.



You must have the Manage Users permission to perform this task.

1. In the top navigation bar, click **Management > Users**.
2. To create a user, click **New**.
3. In the **User Name** field, type the name of an existing single sign-on user.



**Tip:** The login format depends on the configuration of your environment. It can be, for example, an e-mail address, or a user ID, and it might need to be followed by a domain name.

4. From the list, select a **Computer Group** to which the user would be assigned.
5. From the **Authentication Method** list, select **Single Sign-On**.
6. Click **Create**.
7. To delete the created user, click its name. Then, in the upper left of the window click **Delete**.

To confirm authentication, log in to the BigFix Inventory server with the credentials of the single sign-on user that you created in BigFix Inventory.

## Logging out of the BigFix Inventory server

To log out of the BigFix Inventory user interface, simply clear your browser history and restart the browser.

1. Clear the browser history. The steps might vary depending on the web browser that you are using.
2. Restart the web browser.

## Disabling the single sign-on configuration

You can disable the SSO configuration on the **Single Sign-on Settings** pane.

1. Log on to the BigFix Inventory web user interface.
2. In the top navigation bar, click **Management > Single Sign-On Settings**.
3. Click **Disable**.
4. Restart the BigFix Inventory server.
  - a. [Stop the server \(on page dcccxlvi\)](#).
  - b. [Start the server \(on page dcccxlvi\)](#).

You can now log in to the BigFix Inventory web user interface with the credentials that you used before you enabled single sign-on.

To know about reverting disabled SSO, refer to [Reverting disabled SSO configuration for SAML \(on page mcccxcv\)](#) and [Optional: Reverting disabled SSO configuration for LTPA \(on page mcccviii\)](#).

## Deleting the single sign-on configuration

You can delete the SSO configuration on the **Single Sign-on Settings** pane.



**Important:** Do not delete the single sign-on configuration while it is enabled. You must first [disable the single sign-on configuration \(on page mcccix\)](#) before you delete it.

1. Log on to the BigFix Inventory web user interface.
2. In the top navigation bar, click **Management > Single Sign-On Settings**.
3. Click **Delete**. A pop-up window appears.
4. Click **Delete** to confirm.

The `server.xml` file is backed up to `server.xml.timestamp.backup` in the following location. You can restore this file to undo these changes.

- **UNIX** `bfi_installation_dir/wlp/usr/servers/server1`
- **Windows** `bfi_installation_dir\wlp\usr\servers\server1`

## Modifying port in BigFix Inventory that has single sign-on enabled

Modifying the port number on the **Server Settings** pane in BigFix Inventory while single sign-on is enabled invalidates the single sign-on configuration. To properly modify the port, you must repeat the single sign-on configuration steps.

1. [Disable the single sign-on configuration \(on page mcccxcv\)](#).
2. Provide the new port value on the **Server Settings** page:
  - a. In the BigFix Inventory web user interface, click **Management > Server Settings**.
  - b. Provide the new port value in the **Port** field, and click **Save**.
3. Re-create the single sign-on configuration with the new port value. For more information, see either [Configuring SSO based on SAML token \(on page mcclxxxvi\)](#) or [Configuring SSO based on LTPA \(on page mcccxcvii\)](#).

## Configuring SSO keystore passwords and encryption

Configure unique passwords to the SSO keystores, and encrypt them with the AES encryption algorithm.

**9.2.9** Starting from application update 9.2.9, for all fresh configurations of single sign-on in BigFix Inventory, SSO keystore passwords use AES as a default encryption method. The password encryption schema remains unchanged if the single sign-on was enabled before an upgrade to version 9.2.9.

Both SAML and LTPA SSO types require two separate keystores: Service Provider and Identity Provider. You can set up either identical or different passwords for these keystores. To configure new passwords for your SSO keystores, or change encryption method from XOR to AES, use the appropriate variables and complete the following procedure.

### <SP\_keystore\_name>

Service Provider keystore name is either **SPKeyStore** for SAML SSO, or **LdapSSLTrustStore** for LTPA SSO.

### <IP\_keystore\_name>

Identity Provider keystore name is either **SPKeyStore** for SAML SSO, or **LdapSSLTrustStore** for LTPA SSO.

### <alias>

Is either **samlsp** for SAML SSO, or **default** for LTPA SSO.

1. [Stop the BigFix Inventory server. \(on page dcccxlvi\)](#)
2. **Optional:** If you want to configure a custom SSO keystore password, follow the instructions below. If you only want to change password encryption method from XOR to AES, continue with step 3.

- a. To change the key password for the Service Provider keystore, run the following command.

```
Linux <Installation_directory>/jre/bin/keytool -keypasswd
-keystore <Installation_directory>/wlp/usr/servers/server1/resources/
security/<SP_keystore_name>.<keystore_extension> -storetype <type> -alias <alias>
```

```
Windows <Installation_directory>\jre\bin\keytool -keypasswd -keystore
<Installation_directory>\wlp\usr\servers\server1\resources\security
\<SP_keystore_name>.<keystore_extension> -storetype <type> -alias <alias>
```

When prompted, provide the SSO keystore password. For the default keystore password contact the BigFix Support.

```
Enter keystore password:
Enter key password for <alias>:
New key password for <alias>:
Re-enter new key password for <alias>:
Password change successful for alias <alias>
```

- b. To change the Service Provider keystore password, run the following command.

```
Linux <Installation_directory>/jre/jre/bin/keytool -storepasswd
-keystore <Installation_directory>/wlp/usr/servers/server1/resources/
security/<SP_keystore_name>.<keystore_extension> -storetype <type>
```

```
Windows <Installation_directory>\jre\jre\bin\keytool.exe -storepasswd
-keystore <Installation_directory>\wlp\usr\servers\server1\resources\security
\<SP_keystore_name>.<keystore_extension> -storetype <type>
```

Set up the new keystore password. The password must match the password that you set up for the key (step a).

```
Enter keystore password:
New keystore password:
Re-enter new keystore password:
```

- c. To change the Identity Provider keystore password, run the following command.

```
Linux <Installation_directory>/jre/jre/bin/keytool -storepasswd
-keystore <Installation_directory>/wlp/usr/servers/server1/resources/
security/<IP_keystore_name>.<keystore_extension> -storetype <type>
```





For more information, see:

- [The limits to protection through password encryption](#)
- [Keytool overview](#)
- [securityUtility command manual](#)

## Configuring security policy for user passwords

**9.2.7** Available from 9.2.7. If your company has a security policy for user passwords, or you want to improve the application security, you can configure BigFix Inventory to require that user passwords fulfill the policy requirements.

Starting from application update 9.2.7, user passwords must fulfill the following default requirements:

- Must be at least 8 characters long
- Must contain at least one lowercase character, one uppercase character, and one digit

If you upgraded from an earlier version and a user password does not fulfill these requirements, it remains valid until the user changes it. The new password must fulfill the default requirements. Similarly, if you introduce a password policy, existing passwords that do not meet the requirements remain valid until the next time they are changed.

1. Go to **Management > Advanced Server Settings**.

2. Define requirements for user passwords.

- To specify the minimal length of the password, set the **user\_password\_min\_length** parameter. For example:

```
user_password_min_length = 8
```

- To specify the maximal length of the password, set the **user\_password\_max\_length** parameter. For example:

```
user_password_max_length = 16
```

- To set a limit on the number of the same characters that can be used in a row, set the **user\_password\_max\_of\_identical\_characters\_in\_row** parameter. For example:

```
user_password_max_of_identical_characters_in_row = 3
```

- To specify that at least one special character must be used, provide the list of acceptable characters in the **user\_password\_special\_characters** parameter. For example:

```
user_password_special_characters = ?!%&
```

- To specify other requirements such as the need to use at least one uppercase character, create a regular expression that defines the requirement, and provide it in the **user\_password\_regular\_expression** parameter. For example:





**Note:** The list can consist of more than one entry, if Single Sign On is configured for the product. The underlined element is an alias for the listed entry, and it is required to complete next steps.

- b. Ensure that you change the password for all the listed entries. Run the following command, and specify the alias at the end of the command line.

```
Linux Installation_directory/jre/jre/bin/keytool -keypasswd -keystore <inst_dir>/wlp/usr/servers/server1/resources/security/<keystore_name> -storetype <type> -alias default
```

```
Windows Installation_directory\jre\jre\bin\keytool.exe -keypasswd -keystore <inst_dir>\wlp\usr\servers\server1\resources\security\<keystore_name> -storetype <type> -alias default
```

Set up a single password for all the listed entries. For more than one entry, ensure the passwords are identical.

```
Enter keystore password:
Enter key password for <default>:
New key password for <default>:
Re-enter new key password for <default>:
Password change successful for alias <default>
```

- c. To change the keystore password, run the following command.

```
Linux Installation_directory/jre/jre/bin/keytool -storepasswd -keystore <inst_dir>/wlp/usr/servers/server1/resources/security/<keystore_name> -storetype <type>
```

```
Windows Installation_directory\jre\jre\bin\keytool.exe -storepasswd -keystore <inst_dir>\wlp\usr\servers\server1\resources\security\<keystore_name> -storetype <type>
```

Set up the new keystore password. The password must match the password that you set up for the listed entries (step b).

```
Enter keystore password:
New keystore password:
Re-enter new keystore password:
```

3. To encrypt your keystore password with AES, run the following command.

- a. Set the `JAVA_HOME` variable.

```
Linux export JAVA_HOME=Installation_directory/jre/jre
```

```
Windows set JAVA_HOME=Installation_directory\jre\jre
```





## Improving security of storing VM manager passwords

**9.2.9** Available from 9.2.9. To improve security of storing passwords to VM managers, you can overwrite the default key that is used to encrypt the passwords or change the default password to the VM Manager tool keystore. These two procedures are independent. You can change the encryption key, the keystore password or both, depending on your needs.

- **To overwrite the default key that is used to encrypt passwords to VM managers, perform the following steps.**

1. Go to the VM Manager tool directory.

2. Stop VM Manager tool by using the following command.

- **Linux** `./vmman.sh -stop`
- **Windows** `vmman.bat -stop`

3. Back up the `config` and `keydb` directories.

- **Linux** `/var/opt/BESClient/LMT/VMMAN/config//var/opt/BESClient/LMT/VMMAN/keydb/`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\config\C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\keydb`

If an error occurs during the regeneration of the key, restore these directories to their current locations.

4. Run the following command.

- **Linux** `./vmman.sh -regenerateencryptionkey`
- **Windows** `vmman.bat -regenerateencryptionkey`

5. Start VM Manager tool by using the following command.

- **Linux** `./vmman.sh -run`
- **Windows** `vmman.bat -run`

- **To change the default password to the VM Manager tool keystore, perform the following steps.**

1. Go to the VM Manager tool directory.

2. Stop VM Manager tool by using the following command.

- **Linux** `./vmman.sh -stop`
- **Windows** `vmman.bat -stop`

3. Back up the `config` and `keydb` directories.

- **Linux** `/var/opt/BESClient/LMT/VMMAN/config//var/opt/BESClient/LMT/VMMAN/keydb/`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\config\C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\keydb`  
`C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\keydb`

If an error occurs during changing the keystore password, restore these directories to their current locations.

4. Create a `txt` file, for example `keystore_password.txt`. Provide the new keystore password in the `customPassword` parameter.

```
customPassword=<new_password>
```

5. To change the password, run the following command.

- **Linux** `./vmman.sh -changepassword -file /var/opt/BESClient/LMT/VMMAN/config/keystore_password.txt`
- **Windows** `vmman.bat -changepassword -file "C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\config\keystore_password.txt"`

Where `-file` is the path to the `txt` file in which you specified the new keystore password.

After you run the command, the password is encrypted and saved in the `vmmmainconf.properties` under the `vmm_keystore_password_do_not_change_it` parameter.

6. After the new password is set, remove the `txt` file in which you specified the password.
7. Start VM Manager tool by using the following command.

- **Linux** `./vmman.sh -run`
- **Windows** `vmman.bat -run`

## Changing the default secret key and password to the SAP Metric Data Collector keystore

**9.2.9** Available from 9.2.9. To improve security of encrypting the password to the SAP Metric Data Collector, you can change the default secret key or the default password to the SAP Metric Data Collector keystore. These two procedures are independent. You can change the secret key, the keystore password or both depending on your needs.

Contact BigFix Support to obtain the current password to the SAP Metric Data Collector keystore.

- To substitute the default secret key with a custom one, perform the following steps.



**Important:** To run each of the following commands, provide the current password for the SAP Metric Data Collector keystore. You can obtain the default password from BigFix Support. If you already changed it, use the custom password that you set up.

1. To remove the default secret key, run the following command.

- **Linux** `"/var/opt/BESClient/LMT/SAPTOOL/java/jre/bin/keytool" -delete -keystore "/var/opt/BESClient/LMT/SAPTOOL/keydb/<keystore_name>" -storetype <type> -alias bigfixsaptoolcustomkey`
- **Windows** `"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\java\jre\bin\keytool.exe" -delete -keystore "C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\keydb\<keystore_name>" -storetype <type> -alias bigfixsaptoolcustomkey`

2. To create a custom secret key, run the following command.



**Important:** During the creation of the new secret key, you are asked to provide its password. Specify the same password as the password for the SAP Metric Data Collector keystore. If you did not change the keystore password, provide the one that you obtained from BigFix Support. Otherwise, provide your custom password for the SAP Metric Data Collector keystore.

- **Linux** `"/var/opt/BESClient/LMT/SAPTOOL/java/jre/bin/keytool" -genseckey -keystore "/var/opt/BESClient/LMT/SAPTOOL/keydb/<keystore_name>" -storetype <type> -keyalg AES -keysize 128 -alias bigfixsaptoolcustomkey`
- **Windows** `"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\java\jre\bin\keytool.exe" -genseckey -keystore "C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\keydb\<keystore_name>" -storetype <type> -keyalg AES -keysize 128 -alias bigfixsaptoolcustomkey`

where:

**-keyalg**

Is the algorithm used to encrypt the secret key. Only AES is supported.

**-keysize**

Is the size of the secret key. The default size is 128 bits. To use a longer key, set up Java JCE unlimited jurisdiction policy. For more information, see: [IBM SDK Policy files](#).

- To change the default password to the SAP Metric Data Collector keystore, perform the following steps.



**Important:** To run each of the following commands, provide the current password for the SAP Metric Data Collector keystore that you obtained from HCL Support.

1. To change the password to the keystore, run the following command.

Password to each key in the keystore must be the same as the password to the keystore. Thus, the **-all** parameter is used in the command.

- **Linux** `"/var/opt/BESClient/LMT/SAPTOOL/java/jre/bin/keytool" -storepasswd -all -keystore "/var/opt/BESClient/LMT/SAPTOOL/keydb/<keystore_name>" -storetype <type>`
- **Windows** `"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\java\jre\bin\keytool.exe" -storepasswd -all -keystore "C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\keydb\<keystore_name>" -storetype <type>`

2. When prompted, provide the new keystore password.

3. To encode the password, run the following command.

- **Linux** `"/var/opt/BESClient/LMT/SAPTOOL/saptool.sh" -encode`
- **Windows** `"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\saptool.bat" -encode`

The password is encoded and displayed in the command line.

4. Copy the encoded password to a file, and save it in a text format.

For example:

- **Linux** `"/var/opt/BESClient/LMT/SAPTOOL/config/custom_access_code.txt"`
- **Windows** `"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config\custom_access_code.txt"`



**Note:** It is recommended to save the `custom_access_code.txt` in the `config` directory. This directory remains unchanged after the SAP Metric Data Collector update.

5. Open the `saptool_config.properties` file that is in the following location.

- **Linux** `"/var/opt/BESClient/LMT/SAPTOOL/config/"`
- **Windows** `"C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\SAPTOOL\config\"`

Provide the path to the file with the encoded password in the **configuration\_key\_init\_path** parameter.

For example:

- **Linux** `configuration_key_init_path=/var/opt/BESClient/LMT/SAPTOOL/config/custom_access_code.txt`
- **Windows** `configuration_key_init_path=C:\\Program Files (x86)\\BigFix Enterprise\\BES Client\\LMT\\SAPTOOL\\config\\custom_access_code.txt`



**Tip:** Provide the path in one line and without quotation marks. To use a backslash, provide it twice (\\).



**Note:** The **<type>** and **<keystore\_name>** parameters that apply to the above commands specifies the following:

**<type>**

Starting from version 10.0.8.0, the type of the certificate is **PKCS12**. For earlier versions, it is **JCEKS**.

**<keystore\_name>**

Starting from version 10.0.8.0, the name of the keystore file is **keys.p12**. For earlier versions, it is **keys.jceks**.

Related information

[Collecting utilization of SAP license metrics \(on page mcxxix\)](#)

[Measuring and collecting utilization of SAP license metrics \(on page mcxxxiv\)](#)

## Configuring user account lockout

**9.2.8** Available from 9.2.8. By default, user account is locked for 5 minutes after the user attempts to log in to BigFix Inventory more than 10 times within 5 minutes. You can change the default settings or disable the user account lockout.

The lockout mechanism is enabled by default. To disable it, set the value of the **user\_lockout\_enabled** parameter to false.

1. Go to **Management > Advanced Server Settings**.
2. Specify conditions under which the user account is locked.
  - To specify the maximal number of failed login attempts, set the value of the **user\_max\_login\_retries** parameter. For example:

```
user_max_login_retries = 5
```

- To specifies the period during which the user can try to log in to the application, set the value of the **user\_retry\_time\_period**. For example:

```
user_retry_time_period = 10
```

When the maximal number of failed login attempts is exceeded within this period, the account is locked.

- To specify the period for which a user cannot log in to the application after the account is locked, set the value of the **user\_lockout\_length**. For example:

```
user_lockout_length = 10
```

 **Tip:** To learn more about each parameter, see: [Advanced server settings \(on page dcccl\)](#).

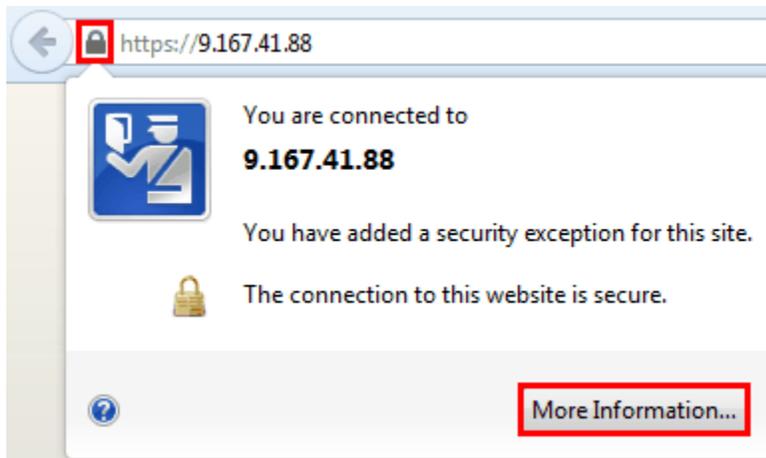
## Configuring VM Manager tool to accept trusted VM manager certificates

By default, the VM Manager tool accepts all VM manager certificates regardless of whether they are trusted or not. You can change the default behavior to ensure that only trusted certificates are accepted by the VM Manager tool.

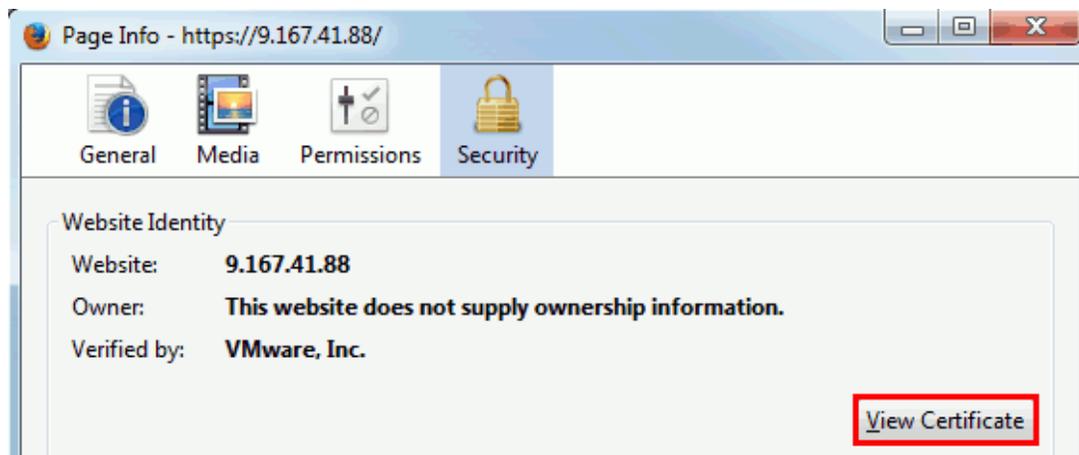
1. Extract the VM manager certificate to a file.

The following steps are provided as an example and show how to extract a VMware certificate in Firefox. The steps that you need to perform might differ depending on the virtualization type and the web browser that you are using. If you encounter problems with extracting VM manager certificates, refer to the documentation of the virtualization that you are using.

- a. Type the VM manager address in the web browser.
- b. Click the lock sign and click **More Information**.



- c. Open the **Security** tab and click **View Certificate**.



- d. Open the **Details** tab and click **Export**.
  - e. Save the file in the DER format.
2. Log in to the computer where the VM Manager tool is installed and copy the VM manager certificate to that computer.
  3. To define the certificate as trusted, open the command-line interface and run the following command.

```
vmman.bat -addcertificate -alias unique_alias -file vm_manager_certificate
```

Where:

**-alias**

Unique alias that will be associated with the VM manager certificate.

**-file**

Path to the VM manager certificate that you extracted.

**!** **Important:** Both switches are required.

4. Change the VM Manager tool settings to accept only trusted certificates.
  - If you are using [basic VM management \(on page dcccxi\)](#), log in to BigFix Inventory and go to **Management > Advanced Server Settings**. Then, set the value of the **vmmman\_trust\_all\_vm\_managers\_certificates** parameter to false.
  - If you are using [advanced VM management \(on page dcccxiv\)](#), open the `<BES Client>\LMT\VMMAN\config\vmmainconf.properties` file on the computer where the VM Manager tool is installed. Then, change the value of the **vmm\_trust\_all\_vm\_managers\_certificates** parameter to false.

The VM Manager tool accepts only trusted VM manager certificates. If a certificate of a VM manager that is defined in BigFix Inventory is not trusted, the status of the VM manager changes to *Connection failed*.

## Relays

Relays lighten both upstream and downstream burdens on the server. Rather than communicating directly with a server, clients can instead be instructed to communicate with designated relays, considerably reducing both server load and client and server network traffic.

Relays work by:

- Relieving downstream traffic.
- Reducing upstream traffic.
- Reducing congestion on low-bandwidth connections.
- Reducing the load on the server.

Relays are an absolute requirement for any network with slow links or more than a few thousand clients. For more information about Relays, see [BigFix documentation](#).

# Troubleshooting and support

Learn about solutions to common problems that might arise when you use BigFix Inventory BigFix Inventory and how to find logs and trace files that help you troubleshoot those problems.

## Troubleshooting a problem

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and explain how to resolve the problem.

The first step in the troubleshooting process is to describe the problem completely. Problem descriptions help you and the BigFix Support person know where to start to find the cause of the problem. This step includes asking yourself basic questions:

- What are the symptoms of the problem?
- Where does the problem occur?
- When does the problem occur?
- Under which conditions does the problem occur?
- Can the problem be reproduced?

The answers to these questions typically lead to a good description of the problem, and that is the best way to start down the path of problem resolution.

### **What are the symptoms of the problem?**

When starting to describe a problem, the most obvious question is "What is the problem?" This might seem like a straightforward question; however, you can break it down into several more-focused questions that create a more descriptive picture of the problem. These questions can include:

- Who, or what, is reporting the problem?
- What are the error codes and messages?
- How does the system fail? For example, is it a loop, hang, crash, performance degradation, or incorrect result?
- What is the business impact of the problem?

### **Where does the problem occur?**

Determining where the problem originates is not always easy, but it is one of the most important steps in resolving a problem. Many layers of technology can exist between the reporting and failing components. Networks, disks, and drivers are only a few of the components to consider when you are investigating problems.

The following questions help you to focus on where the problem occurs to isolate the problem layer:

- Is the problem specific to one platform or operating system, or is it common across multiple platforms or operating systems?
- Is the current environment and configuration supported?

Remember that if one layer reports the problem, the problem does not necessarily originate in that layer. Part of identifying where a problem originates is understanding the environment in which it exists. Take some time to completely describe the problem environment, including the operating system and version, all corresponding software and versions, and hardware information. Confirm that you are running within an environment that is a supported configuration; many problems can be traced back to incompatible levels of software that are not intended to run together or have not been fully tested together.

### **When does the problem occur?**

Develop a detailed timeline of events leading up to a failure, especially for those cases that are one-time occurrences. You can most easily do this by working backward: Start at the time an error was reported (as precisely as possible, even down to the millisecond), and work backward through the available logs and information. Typically, you need to look only as far as the first suspicious event that you find in a diagnostic log; however, this is not always easy to do and takes practice. Knowing when to stop looking is especially difficult when multiple layers of technology are involved, and when each has its own diagnostic information.

To develop a detailed timeline of events, answer these questions:

- Does the problem happen only at a certain time of day or night?
- How often does the problem happen?
- What sequence of events leads up to the time that the problem is reported?
- Does the problem happen after an environment change, such as upgrading or installing software or hardware?

Responding to questions like this helps to provide you with a frame of reference in which to investigate the problem.

### **Under which conditions does the problem occur?**

Knowing which systems and applications are running at the time that a problem occurs is an important part of troubleshooting. These questions about your environment can help you to identify the root cause of the problem:

- Does the problem always occur when the same task is being performed?
- Does a certain sequence of events need to occur for the problem to surface?
- Do any other applications fail at the same time?

Answering these types of questions can help you explain the environment in which the problem occurs and correlate any dependencies. Remember that just because multiple problems might have occurred around the same time, the problems are not necessarily related.

### **Can the problem be reproduced?**

From a troubleshooting standpoint, the *ideal* problem is one that can be reproduced. Typically, problems that can be reproduced have a larger set of tools or procedures at your disposal to help you investigate. Consequently, problems that you can reproduce are often easier to debug and solve. However, problems that you can reproduce can have a disadvantage: If the problem is of significant business impact, you do not want it to recur. If possible, re-create the

problem in a test or development environment, which typically offers you more flexibility and control during your investigation.

- Can the problem be re-created on a test system?
- Are multiple users or applications encountering the same type of problem?
- Can the problem be re-created by running a single command, a set of commands, a particular application, or a stand-alone application?

## Duplicate UUIDs problem

BigFix Inventory requires unique virtual machine UUID (Universally Unique Identifier) numbers to calculate the capacity for all virtual machines and to detect virtualization hierarchy. If there are computers with duplicated UUIDs, a message is displayed in the To Do list. The import log also shows a warning about duplicate UUIDs.

### Possible root causes

1. The duplication occurs when incorrect or duplicate UUIDs are assigned to some virtual machines. The problem occurs most frequently on VMware and is usually caused by one of the following reasons:
  - Virtual machines are deployed from catalog templates in vCloud Director. By default, such machines are assigned the same BIOS UUID. For more information, see: [BIOS UUIDs in vCloud Director are not unique when virtual machines are deployed from catalog templates](#).
  - Virtual machines were cloned without changing their UUIDs. For more information, see: [Changing or keeping a UUID for a moved virtual machine](#).

Duplicates might cause incorrect PVU, RVU, MPAC values because BigFix Inventory cannot create a valid virtualization hierarchy. In duplication, the devices have mixed information and it leads to an incorrect representation of cores and calculation of metrics.

**Action:** See the documentation for your virtualization type to learn how to assign unique UUIDs to each virtual machine. For information about VMware, see: [Editing a virtual machine with a duplicate UUID.bios](#).

After you fix the issue, wait for the next capacity and VM manager scans and BigFix Inventory data import.

2. Duplicates come from machines where BigFix client is reinstalled or reset (Data Source Computer ID is different but host names and IP addresses are the same) but the old computers which are no longer valid have not been removed from BigFix console. In such case, software discovery is reported for each of such computers.

**Action:** Remove the computers which are no longer valid from BigFix console. Wait for the next data import in BigFix Inventory.

After the duplicates are corrected, the related notification is no longer included in the To Do list.

## 10.0.6 Interrupting software scan

BigFix Inventory scans run in the background. Fixlets, such as Initiate Software Scan and Initiate Software Scan on Shared Disks trigger the scan to run in the background.

With version 10.0.6, a fixlet '114 Interrupt BigFix Inventory Software Scans' is provided in the troubleshooting category to kill the running processes:

- wscansw, wscanfs
- runcit\_sw.bat/sh
- start\_scan.sh (shared disk scan)

After executing the fixlet, Software Scan Status for Catalog, File, ISO tag and SLM Tag scan is set to 2:Interrupted. Each execution is tracked in `LMT/CIT/end_scanner.log`.

### Steps to interrupt the scan in progress

To stop all running scans, perform the below recommended steps:

1. Stop any instance of the Initiate Software Scan and Initiate Software Scan on Share Disks.
2. Target the fixlet '114 Interrupt BigFix Inventory Software Scans' on the machines which are in scope.
3. Set the desired time range of operation. Use the UTC time and ensure that the time is in future.
  - a. The start of action BigFix Client depends on multiple factors, such as evaluation cycle. So, do not end action too soon.
  - b. Action is relevant only when processes, wscansw/wscanfs/runcit\_sw/start\_scan.sh are found.
4. It is possible to completely remove the relevance and let the action be executed.

## Troubleshooting software discovery

Problems with software discovery usually fall into one of three categories. The most common category is when the software is discovered but the components are assigned to an incorrect product. In this case, it is enough to reassign the component. The remaining categories include false-positive discovery, or no discovery due to the lack of the signature on the computer.

### 10.0.15 Troubleshooting Oracle data issues

This section provides information troubleshooting different issues faced during collecting Oracle data.

#### Get Oracle Database Data fixlet fails

If there are issues, the 'Get Oracle Database Auditing Data' fixlet fails and exit codes are displayed. For more information on the exit codes, refer to the [table \(on page mcccxxii\)](#).

#### Oracle database instance is missing in the package

If the Oracle database instance is missing in the package:

- make sure that you execute the 'Get Oracle Database Auditing Data' fixlet on all computers where Oracle Databases are installed.
- verify if the missing databases are running and are available for collecting the inventory data (for example, databases are not in the mounted state, database containers are opened).
- check if the Oracle database inventory data is collected manually for some databases.

### **Hardware information for Oracle databases is missing or incorrect**

If the hardware information for Oracle databases is missing or incorrect:

- make sure that the capacity scan and VM Manager scan have been run and the computer status is OK.
- make sure that the detailed hardware scan and data import have been run.

### **Preserving datasource ID**

Preserve the datasource ID when reinstalling/resetting the BESClient. It is recommended to avoid duplicacy with computers. For more information, refer to [Preserving bundling when the BigFix client is reinstalled or reverted from a snapshot \(on page mcdxxx\)](#).

Oracle software or hardware information is inconsistent or missing in case there are other endpoints with the same hostname

BigFix Inventory takes Oracle software and hardware information from the most recent endpoint (with the latest Last Seen time) with a given hostname. It is necessary to avoid duplication of the data in the Oracle package. In case of duplicated hostnames (for example when datasource computer ID changed due to BigFix client reinstallation) make sure that you run all necessary scans on the new endpoint.

### **Java installation is missing in the Java report**

The Java SDK/JDK/JRE software instance must be listed in 'Software Installations' report in BigFix Inventory, and marked as present and not suppressed, and the publisher name must be *Oracle*. Custom signatures are not supported. Computers of type 'Container' are not supported. For more information, refer to [Troubleshooting software discovery \(on page mcccxxx\)](#).

### **Hardware scan is missing for an endpoint**

The Oracle hardware scan must be successfully run on the machine and the endpoint must be listed in 'Computers' report.

### **VMware report file is missing for a vCenter**

The connection to the vCenter must be in 'OK' state in 'VM Managers' report in BigFix Inventory. If not, follow the troubleshooting steps from the documentation. If yes, check 'Oracle Auditing Data Collection Settings' analysis results for the related VM Manager Tool. The option must be enabled in the setting.

Collecting the data in VM Manager Tool and uploading it to BigFix may take up to 24 hours. If the VMware report is missing, run 'Force VM Manager Tool Scan Results Upload' fixlet to trigger immediate data upload.

See also, [Verifying permissions for VMware communication \(on page dcclxx\)](#).

### Oracle ZIP package status is partially complete or failed

Check the dedicated logs in 'log' subfolder of the package and `t_ema.log` file to get details of the issue. You might need to extend the log level to DEBUG. You might search with the phrase "The Oracle Auditing Package will be in INCOMPLETE state" to find the logs with the reason behind the partially completed package.

### Other problem with generating or downloading Oracle ZIP package

The generation or downloading Oracle ZIP package must be triggered by a user with [Manage Oracle Auditing Data \(on page dxciii\)](#) permission and **All computers** group access. Check `t_ema.log` for details of an error. You might need to extend the log level to DEBUG. Verify that BigFix servers and databases are available (for all non-disconnected data sources defined in BigFix Inventory).



**Note:** The generation might take time depending on the size of collected data and network connection between BigFix servers and BigFix Inventory.

### Exit codes when Get Oracle Database Auditing Data fixlet is run

The below table lists the exit codes and their descriptions:

Exit code	Description
0 - Everything went fine	Successfully collected the Oracle data.
1 - Generic error	This is a generic error, which means there was some issue or problem that caused the program to exit.
2 - Misuse of Shell Built-in command	This error is because of incompatibility with older systems. Command options differ between operating systems.  This error is seen especially on older systems attempting to use the command option, which does not exist, but on a newer system.
10 - Database querying problem	Oracle Database error codes start with ORA- prefix, this code shows what happened. Refer to the Oracle website to view the list of error codes.  The error could be thrown when the syntax of SQL queries changes, and the query could be incompatible with a newer database engine.  The Oracle Database views also change from release to release.

Exit code	Description
	<p>Oracle databases could be in 4 states: started, mounted, open, and restricted.</p> <p>Only in an open state, all database views are available to query.</p>
11 - Cannot find output from database listing query	This is seen on the windows operating system due to file permissions, fixlet is not able to save output files properly.
20 - SQL Plus failed at connecting to the database	<p>There might be a problem with the authorization or a direct problem with <code>sqlplus</code> command execution.</p> <p>Handling on the usage of <code>sqlplus</code> in this situation fails faster when a problem occurs.</p> <p>Database admin, for example, can forbid access for the service user which we are trying to use, this will appear as an authorization problem.</p>
30 - Cannot map a user to a system username	<p>On UNIX operating systems during the database recognition step, fixlet tries to use the security privileges user which started the database. This user is the service user used to access the Oracle database. For example, when the database process is executed in a container.</p> <p>On Solaris with Zones probably scan is executed in Global Zone, which will not be able to proceed when Oracle Database will be executed in Local Zones.</p> <p>BigFix Agent should be installed in the same Zone in which the Oracle Database process is executed.</p>
127 - A command couldn't be found	<p>On some command execution, the operating system checks PATH to find the binary, but it fails.</p> <p>For example, when a user has changed the PATH environment variable, there is nothing to point to.</p>
40 - Data not collected	Data not collected from the database(s). There might be no running instance of Oracle database found.

## Incorrect software is displayed on reports due to incorrect bundling

Bundling assistant assigns discovered software components to products based on bundling rules. The rules assess the probability with which a component is part of a particular product. Because bundling assistance takes into account all products that are available in the software catalog, not only products that you purchased, it might happen that the component is assigned to a product that you do not have. As a result, the product that you have is not

displayed on the reports, and some other product is displayed instead. To solve the problem, reassign the discovered component to the correct product.

1. Identify what components are used to discover the product that is not shown on the reports.  
For example, check unconfirmed components that are installed on the computer where the product should be discovered. Such components are likely to be used to discover the product.

- a. Log in to BigFix Inventory, and go to **Reports > Software Classification**.

- b. Hover over **Configure**, and click **Configure View**. Then, filter the report to narrow down the list of instances to the unconfirmed components that are installed on a particular computer. Set up the following filters.

- Confirm equal to No
- Computer Name contains Computer Name

2. If any of the components was assigned to an incorrect product, reassign it to the correct one.

For example, if the component IBM WebSphere Application Server was assigned to the product IBM Rational Software Architect, but the product that you have is IBM WebSphere Application Server Network Deployment, reassign the component to IBM WebSphere Application Server Network Deployment.

- a. Hover over the **Assign** icon , and click **Choose from Catalog**.
- b. Select the product to which you want to reassign this component instance, and click **Assign**. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).

After you reassign the component, the correct product is displayed on the reports.

## Software that you do not have is discovered due to false-positive discovery

It might happen that an older version of the software is discovered after the upgrade or the software signature is not removed from the computer during the uninstallation. False-positive discovery can also be caused by backups of software directories or installation media that are stored on the endpoints and are reported as separate software instances.

1. [Update the software catalog \(on page cmxciv\)](#) to the latest version.
2. Check what signature caused software detection.

- a. In the top navigation bar, go to **Reports > Software Installations**.
- b. Find the software that was discovered, and click the link in the **Details** column. Information about the signature or software ID tag that caused the detection and its location is displayed at the bottom of the page.

```

The signature was last modified at 04/02/2012 11:33 AM
A computer has:
✔ A signature that uses: File Signature
"<MultipleInstance><Iterator name='INSTALL_PATH'><FindFilePathEx name='IBM_DB2_Advanced_Enterprise_Server_Edition_-_CPU_Option.10.1.0.swtag'></Iterator><Instance><Variable name='IS_INSTALLED'
export='true'><FileExists absolutePath='${INSTALL_PATH}IBM_DB2_Advanced_Enterprise_Server_Edition_-_CPU_Option.10.1.0.swtag'></Variable><Condition withVariable='IS_INSTALLED'><Action do='SKIP'
onValue='false' /></Condition></Instance></MultipleInstance>"
✔ Discovered matches:
Installation Path: /opt/ibm/db2/V10.1/properties/version

```

Check whether the signature or software ID tag that caused the detection was discovered in a backup directory or a directory that contains installation media. If yes, compress the directory, delete it, or exclude from software scans.

Otherwise, open a PMR and file it against the product that was discovered and provide the following information:

- Exact name of the product that was installed, including its release
- Signature or software ID tag that caused the discovery

## Software that you have is not discovered

It might happen that software that is installed is not discovered because the signature or the software ID tag does not exist on the computer where the software is installed.

1. [Update the software catalog \(on page cmxciv\)](#) to the latest version.
2. Check what signature or software ID tag is used to discover the software.

- a. On the **Software Catalog** widget, click **Software Components**.

### Software Catalog

[9,614 Publishers](#)  
[39,978 Software Products](#)  
[55,879 Software Versions](#)  
[74,555 Software Releases](#)  
[63,750 Software Components](#)  
[91,282 Signatures](#)

Provider: IBM  
 Version: 06/12/2017   
 Last edited at: 06/17/2017 05:01 AM

#### Catalog Search

All ▼

- b. To filter out the report, hover over **Configure**, and click **Configure View**. Then, specify appropriate filters. For example, `Name, contains, DB2`

**Filters**

Specify the report filter which matches all ▼ of the following conditions:

Component Name ▼ contains ▼

- c. To view signatures that are used to discover this component, click the link in the **Name** column.

Component Name	Component Version	Total Signatures
<a href="#">DB2 Connect Enterprise Edition</a>	8.1	<a href="#">3 Signatures</a>
<a href="#">DB2 Connect Enterprise Edition</a>	9.1	<a href="#">4 Signatures</a>
<a href="#">DB2 Connect Enterprise Edition</a>	7.1	<a href="#">4 Signatures</a>

3. Check whether any of the signatures or the software ID tag exists on the computer where the software was not discovered.

- If the number of signatures is 0, the software is discovered by a software ID tag. Check whether `.swidtag` file is in the installation directory of the software that was not discovered.
- If the number of signatures is greater than 0, check whether any of discovery signatures exists on the computer.

▶ DB2 Connect Enterprise Edition 9.1

**Signatures**  
4 Signatures

**Software Installations**  
0 Software Installations on 0 Computers

▼ Component Signatures

Signature: 0f45c176-a724-43ab-85d9-7dbc56f66459

**Definition**  
A computer running Windows has:  
File Name: DB2SYSCS.EXE  
Platform WINDOWS Discovery No Usage Yes

Signature: 46f267a6-0e62-41f6-9392-c57171647f0c

**Definition**  
A computer running UNIX has:  
A signature that uses: File Signature  
File name: db2consrv91\_ee.sys  
File size: 50

```
<MultipleInstance><Iterator name="INSTALL_PATH" export="true"><FindFilePathEx name="db2consrv91_ee.sys"/></Iterator><Instance><Variable name="IS_INSTALLED" export="true"><FileInfoCompare absolutePath="$((INSTALL_PATH))db2consrv91_ee.sys" field="size" value="50" relation="eq"/></Variable><Condition withVariable="IS_INSTALLED"><Action do="SKIP" onValue="false"/></Condition></Instance></MultipleInstance>
```

Platform UNIX Discovery Yes Usage No

Signature: 6905d49b-8890-4210-a907-bb3cbc57dae4

**Definition**  
A computer running Windows has:  
File Name: DB2CONSV91\_EE.SYS File Size: 50  
Platform WINDOWS Discovery Yes Usage No

If none of the signatures nor the software ID tag exists on the computer, open a PMR and file it against the product that was not discovered. If a signature or the software ID tag exists on the computer but the software is not discovered, open a PMR and file it against BigFix Inventory. In both cases provide the following information:

- Exact name of the product that was not discovered, including its release
- Part number of the product that was not discovered
- Platform on which the product was not discovered

## Troubleshooting problems with computers

When you encounter problems with scan results not being uploaded from a particular computer or you need to collect all logs from that computer, use the **Computer Support Data** panel. The panel is available in BigFix Inventory and is used to perform some troubleshooting actions without the need of using the BigFix console.

### Checking whether the maximum archive size is exceeded

You can check whether the maximum archive size is exceeded through the Computer Support Data panel.

 You must be an Administrator or have the Manage Support Data and View Endpoints permissions to perform this task.

1. Log in to BigFix Inventory, and go to **Reports > Computers**.
2. Select the name of the affected computer and then click **Computer Support Data**.



3. Check the information in the **Computer refresh** section to verify whether the maximum archive size is exceeded.  
If it is, follow the documentation to resolve the problem. For more information, see: [Configuring VM manager for subcapacity reporting \(on page dcccxliv\)](#).

## Refreshing scan data on a computer

If software scan, capacity scan, or VM Manager tool scan finishes successfully on a particular computer but its results are not uploaded to the BigFix server, force the upload of the data. You can do it directly from BigFix Inventory without the need of accessing the BigFix console and running a separate fixlet for each type of scan.

 You must be an Administrator or have the Manage Support Data and View Endpoints permissions to perform this task.

1. Log in to BigFix Inventory, and go to **Reports > Computers**
2. Select the name of the computer from which you want to force the upload of scan results, and then click **Computer Support Data**.



3. Click **Request Data Refresh**.

Refresh of data forces upload of scan results from the BigFix client to the BigFix server.

### Computer refresh

Refresh of data forces upload of scan results from the BigFix client to the BigFix server.  
New data awaits importing - [please run an import](#).

Hardware scan results - file(s) updated at: 2018-05-18 09:04:02 UTC  
Software scan results - file(s) updated at: 2018-05-30 08:46:18 UTC  
VM Manager Tool results - data not refreshed yet.

Request Data Refresh

4. When the data is refreshed, run an import to make the data available in BigFix Inventory.

## Collecting logs for troubleshooting purposes

If you are asked by BigFix Support to provide data for troubleshooting problems with computers in your infrastructure, go to the details of the computer. Open the Computer Support Data panel, download the log package, and provide it

to BigFix Support. The package contains log files that are needed for troubleshooting purposes such as BigFix client logs, scanner logs, scan configuration logs, VM manager configuration files, and files generated during scans.

 You must be an Administrator or have the Manage Support Data and View Endpoints permissions to perform this task.

If you want to collect the logs, follow the steps that are described below. The steps might be different for particular version. Choose the path suitable for your version.

- **9.2.11** For version 9.2.11 and higher, perform the following steps.

1. Log in to BigFix Inventory, and go to **Reports > Computers**.
2. Select the name of the computer from which you want to collect the logs, and then click **Computer Support Data**.



3. Download the logs.
  - If you are requested to provide only basic support data, click **Download**.
  - If you are requested to provide basic and supplementary data, click **Refresh Supplementary Data**. Then, refresh the page to see when the data is collected. When the supplementary data is available, click **Download**.

Log collector

Basic data is available. Supplementary data available from: 2018-03-08 09:35:14 UTC

[Download](#) [Refresh Supplementary Data](#)

4. **Optional:** By default, the size of downloaded packages is limited to 20 MB. If you are not able to download the log package, change the value of the **\_BESRelay\_UploadManager\_CompressedFileMaxSize** parameter. It is a one-time setup. To change the value, perform the following steps.
  - a. Log in to the BigFix console.
  - b. In the left navigation tree, click **Computers**.
  - c. Right-click the following computer, and click **Edit Computer Settings**.
    - BigFix relay with which the computer that cannot send the logs is communicating.
    - If there is no relay, computer on which the BigFix server is installed.
  - d. Set the value of the **\_BESRelay\_UploadManager\_CompressedFileMaxSize** parameter to 100000000 (100 MB). If the parameter is not listed, click **Add** to add it.

```
_BESRelay_UploadManager_CompressedFileMaxSize=100000000
```

5. Provide the log package to BigFix Support.

- **9.2.8** For versions 9.2.8 to 9.2.10, perform the following steps.

1. Run a fixlet that creates a log package on the selected computer. The fixlet is available starting from site version 99.
  - a. Log in to the BigFix console.
  - b. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - c. Select **Collect Logs from Endpoints**, and click **Take Action**.
  - d. Choose the computer for which you need to provide the troubleshooting data, and click **OK**.
2. Download the log package.
  - a. Log in to BigFix Inventory.
  - b. In the navigation bar, click **Reports > Computers**.
  - c. Click the name of the computer on which the fixlet was run.
  - d. When the detailed report for that computer opens, add `/mustgather` to the report URL in the web browser to download the package to your computer. For example:

```
https://<host>:<port>/sam/computers/1/mustgather
```
3. Provide the log package to BigFix Support.

## Disaster recovery

To perform disaster recovery for your BigFix environment, you need to regularly back up the BigFix Inventory database and the BigFix platform server.

### Regular back up

Ensure you regularly back up:

- BigFix server.
- BigFix Inventory database.



**Note:** The BigFix Inventory data is stored in the database. Thus, you do not have to additionally back up the BigFix Inventory server.

### Disaster recovery

To perform the disaster recovery of your BigFix Inventory environment:

- Restore the BigFix server. For more information, see: [Running server backup and restore](#)
- Restore your BigFix Inventory database. For more information, see: [Backing up and restoring the database \(on page dccclxxvii\)](#)

## Common problems

Learn how to solve some common problems with the server installation, configuration and administration.

The following list contains descriptions of common installation problems:

## Agent problems

The **Deployment Health** widget provides the status of computers that do not meet one or more of the deployment health conditions. To resolve deployment health issues, perform the steps relevant for your particular problem. The BigFix console provides fixlets that can be run to resolve some deployment health issues. Issues that cannot be resolved by using fixlets must be resolved manually.

### **Disconnected: The computer has not connected to the server for the last 72 hours**

These computers did not connect to the server for the last three days. You must check whether each computer listed in the report is up and running or why it is not connected to your network.

 **Important:** When you decommission a computer in your environment, the software installed on this computer is still listed on the metric reports. Remove the computer from BigFix database, to reflect the status change in the reports. For more information, see: [Removing inactive computers \(on page dcccxc\)](#).

### **Low disk space: The drive on which the agent is installed has less than 100 MB of free disk space**

Computers with low disk space have less than 100 MB of free space available. To identify the affected computers:

1. Log in to the BigFix console.
2. Click **Sites > External sites > BES Support > Fixlets and Tasks**.
3. In the upper right pane, click **BES Client Computer is Low on Free Disk Space**. The list of computers is displayed.
4. Free up disk space on each affected computer.

### **Out of sync: The time that is set on the computer differs by at least an hour from the time that is set on the server**

Out of sync computers have incorrect system clock times. To update the clocks on affected computers:

1. Log in to the BigFix console.
2. Click **Sites > External sites > BES Support > Fixlets and Tasks**.
3. In the upper right pane, select **BES Clients Have Incorrect Clock Time** and click **Take Action**.
4. In the lower right pane of the window that opens, select the computers whose clocks you want to synchronize and click **OK**.

### **Missing prerequisites: Scanner prerequisites are not installed on the computer**

Linux™ computers with missing prerequisites do not have the correct C++ runtime library versions installed.

1. Log in to the BigFix console.
2. Click **Sites > External sites > BigFix Inventory > Analyses**.
3. In the upper right pane, select the **Scanner Information** analysis and then click **Results** to see which computers are missing the correct C++ runtime library.
4. Install the C++ runtime libraries manually on each computer that is returned by this analysis. The required version of the `/usr/lib/libstdc++.*` or `/usr/lib64/libstdc++.*` library is 6.

If the scanner is still experiencing problems, ensure the endpoints have the correct version of the bzip2 archiver installed.

1. Log in to the BigFix console.
2. Click **Sites > External sites > BigFix Inventory > Analyses**.
3. In the upper right pane, select the **Software Scan Status** analysis and then click **Results** to see which computers return the Invalid archived status.
4. Copy the correct version of the bzip2 archive manually to each computer that is returned by this analysis, to the `/LMT/CIT/custom` folder. Name the file:

- **UNIX** bzip2
- **Windows** bzip2.exe

The correct version of the bzip2 archive for your operating system can be obtained from your operating system vendor. It can also be compiled on the endpoint with resources from [bzip](#).

## Catalog problems

Catalog problems are related to the inability to download a new catalog or upload it to BigFix Inventory.

**The software catalog cannot be downloaded because the Server Software Catalog Update task is not applicable.**



**Note:** The Server Software Catalog Update task is not relevant for BigFix Inventory versions before 9.2.11.

When you install BigFix Inventory, the target computer sends information about the new software to the BigFix server. Then, the BigFix server verifies that the computer is linked to this server. If it is, the server marks it with the custom setting `SUA_Server_Path_[user_ID]`. If the setting is set to the BigFix Inventory installation path, the task is applicable.

If the setting is not specified for a particular computer, the Server Software Catalog Update task might not be applicable. If you are sure that BigFix Inventory is installed on this computer, specify the setting manually.

1. Log in to the BigFix console that is linked to your BigFix server.
2. In the navigation bar, click **Computers**.
3. In the right-upper pane, right-click the computer on which you installed BigFix Inventory, and click **Edit Computer Settings**.

4. To add a setting, click **Add**.
5. In the **Setting Name**, type `SUA_Server_Path_{user_ID}`.



**Note:** `{user_ID}` is the ID of a Linux™ user who installed BigFix Inventory.

6. In the **Setting Value**, specify the BigFix Inventory installation path.
7. Click **OK**.

If the `SUA_Server_Path_{user_ID}` setting is set properly and the problem persists, ensure that the following conditions are fulfilled:

- The BigFix Inventory server is installed on a computer with a single static IP.
- The computer on which the BigFix Inventory server is installed can decompress the downloaded catalog file.
- A manually downloaded catalog is not in the `/opt/BFI/bfi_catalog` directory.
- BigFix Inventory Server 10.0.13 or lower: the BigFix server can connect to the BigFix Inventory server by using port 9081.
- The BigFix Inventory server can connect to the BigFix server by using port 52311.
- The BigFix Inventory server has an entry for the BigFix server in the `etc/hosts` file.
- The BigFix server has an entry for the BigFix Inventory server in the `etc/hosts` file.
- The user that you provided when you configured the connection to the BigFix server has the right permissions to run the fixlet. For more information, see the topic [Operators permissions](#) in the BigFix documentation.

#### **The Catalog Download task fails while caching catalog files:**

- BigFix Inventory Server 10.0.13 or lower: BigFix server cannot connect to the BigFix Inventory.
- BigFix Inventory Server 10.0.14 or higher: BigFix server cannot connect to its own instance.

The problem occurs when the BigFix and BigFix Inventory servers are installed in separate networks and the automatic lookup of their IP addresses does not work correctly. To ensure that IP addresses of the servers are correct and the communication between them works, change the default settings, and manually enter the IP addresses or domain names of the servers. For more information, see: [Configuring servers in separate networks \(on page dlxxxvi\)](#).

**When you upload a software catalog file, the following error is displayed:** Upload failed. The uploaded file does not appear to be a valid catalog. **On inspection, file appears truncated.**

If there is a delay when initially downloading the catalog file from the server, then the downloaded file might be truncated. For example, if more than 30 seconds is taken to rename and save the file. This problem depends on how your browser handles the downloading of large files. To solve this problem, accept and save the file within a short time period or use a different browser.

**Backups of software directories are reported as separate products.**

If you store backups of software directories on your endpoints, they might be reported as separate software instances resulting in false discoveries and incorrect license consumption. To avoid this problem, either [exclude the backups from scanning \(on page dclii\)](#) or compress them with a data compressor, such as zip or rar.

**A duplicated software component is created during a second import of catalog customizations.**

If you import a custom catalog definition that contains unique IDs to another BigFix Inventory instance, then modify a publisher or vendor in the signature xml file and import it again, the second import will create a new software component in the hierarchy. The signature definition will be removed from the original hierarchy.

This behavior is caused by using the same signature **uniqueid**. When the custom catalog definition XML file reuses a signature **uniqueid** that exists in the database, the signature is updated to reflect the new software component. To correct the data in the catalog, delete the first catalog entry and ensure that the new entry contains the needed data or reimport the new catalog with a different unique signature ID.

**The number of discovered software instances is higher than the number of instances that are installed.**

The problem might occur when the product is discovered both by a custom signature and a signature from the catalog provided by BigFix. It happens when you create a custom signature and later on a signature for the same product is delivered with the software catalog provided by BigFix. Because the catalogs are fully independent, the two signatures are not merged.

To verify whether it is the case, perform the following steps:

1. In the top navigation bar, click **Reports > Software Installations**.
2. Hover over the **Manage Report View** icon , and click **Manage Report View**. Then, select the **Component Definition Source** check box.
3. Filter the report to the product for which the number of discovered instances was too high.
4. Check whether the catalog that is listed in the **Component Definition Source** column is Custom for some instances and some other type for other instances of a particular product. If yes, delete the custom signature for this product.

The number of discovered instances should be normalized after the next software scan and import of data.

**Part numbers are not matched with products after you upload the part number file.**

The problem might be related to the outdated application data.

- Ensure that import of data was completed after the upload of the part number file. Log in to BigFix Inventory, and go to **Reports > Part Number Upload**. Look at the Upload and Import History and check the status of the latest action. After import completes, it should be marked as successful.
- Check if you have the latest version of the software catalog. If not, [update the software catalog to the latest version. \(on page cmxciv\)](#)

- Make sure that the list of discovered software is up-to-date by checking the date of the last scan in the Software Scan Status analysis in the BigFix console. To update the inventory data, run the Initiate Software Scan fixlet. Set up a single scan by clearing the Reapply this action check box on Execution tab.

After applying any changes, upload the part number file again and run the import of data.

**The version of the software catalog is displayed in different formats in BigFix Inventory and in the BigFix console.**

The catalog upload process is automatized and the task that triggers the catalog upload is changes. Because of these changes, the software catalog can be displayed in a date format or as a fixpack version. To ensure the version consistency, upgrade the BigFix Inventory server to the latest version.

**The `<not set>` value appears under the Product Name on Software Classification panel**

The product name is not set if the component does not have any product relation that is defined in the software catalog. The component is detected on its own.

To resolve this issue, make sure that you have the latest version of BigFix software catalog.

- To check your current version of software catalog, see: [Verifying the current version of BigFix Inventory and the software catalog \(on page dlxxxviii\)](#).
- To update the software catalog, see: [Updating server software catalog \(on page cmxciv\)](#).



**Note:** If upgrading the software catalog does not help, contact the relevant product team and ask them to register the product. You can use custom bundling to create a new relation as a temporary workaround. For more information, see: [Assigning components to products \(on page cmlxxix\)](#).

### Missing content from the new IBM software catalog

Since catalog version 10.0.2, Server Software Catalog Update fixlet updates only non-IBM part of the catalog. The same applies to the manual catalog upload. To get the latest supported IBM catalog part you must upgrade BigFix Inventory. It is in line with IBM ILMT 9.2.20, <https://www.ibm.com/support/pages/node/6223460>.

However, the definition of the software catalog does not change for other vendors, and the manual updates continue to be supported.

### Updating server software catalog

The server software catalog is automatically updated during every upgrade of BigFix Inventory. BigFix Inventory Server Software Catalog is refreshed more often than server and you can benefit from the newly connected by updating the server software catalog.

- The **Server Software Catalog Update** task updates the data in the following directories:
  - **Linux** /opt/BFI/wlp/usr/servers/server1/data/sam/catalog/BFI
  - **Windows** C:\Program Files\BigFix Enterprise\BFI\wlp\usr\servers\server1\data\sam\catalog\BFI

### Automatic Server Catalog Update (recommended)

1. Log in to the BigFix console.
2. In the navigation bar, click **External Sites > BigFix Inventory Discovery > Fixlets and Tasks**.
3. In the upper-right pane, select **Server Software Catalog Update**, and then click **Take Action**. The action is applicable only on the computer on which the BigFix Inventory server is installed. Select the computer, and click **OK**.



**Note:** Software catalogs from BigFix Inventory Discovery site requires BigFix Inventory server version 11.0.0.0 or newer, and **Server Software Catalog Update** fixlet is moved to the new fixlet site, BigFix Inventory Discovery.

If the task is not applicable on that computer, see: [Catalog problems \(on page mcccxlvi\)](#).

4. Wait for the scheduled import of data or run it manually.

### Manual Server Catalog Update

1. Download the server software catalog
  - a. Log in to the BigFix console.
  - b. In the navigation bar, click **External Sites > BigFix Inventory Discovery > Fixlets and Tasks**.
  - c. In the upper-right pane, select **Server Software Catalog Update**.
  - d. Use the link in on Description panel to download the server software catalog to the computer from which you access the BigFix Inventory web user interface.
2. Upload the server software catalog to BigFix Inventory.
  - a. Log in to BigFix Inventory.
  - b. In the navigation bar, click **Management > Server Software Catalog Update**.
  - c. **10.0.15** (version 10.0.15 only) Expand "Advanced" section.
  - d. Click **Browse** and select the software catalog file.
  - e. To upload the file, click **Upload**. The software catalog file and the charge unit data are listed in the **Upload and Import History** table. Their status is **Pending**.
  - f. Wait for the scheduled import of data or run it manually.

During the import, scanner software catalogs that are used for software discovery are created and automatically distributed to the computers in your infrastructure.

By default, catalog is propagated in automated fashion. If you have disabled this function follow the procedure mentioned in [Manually updating scanner catalogs \(on page dclxxxv\)](#). Allow one or two days for the Catalog distribution. Distribution time depends on distance to the endpoint and it's availability to process new actions. If you use the disconnected scanner, refer to [distribute the downloaded software catalog \(on page dclxvi\)](#) for each computer.

## Data import problems

Data import problems are related to situations in which the data import fails or the data that is displayed in reports is inconsistent as a result of a failed import.

## Data import errors

This topic lists the errors that might appear when you perform data imports. You can also find solution to those error in this topic.

### Error messages

**During the initial import, the following error is written in the logs:** `Error was getaddrinfo: name or service not known (SocketError)`.

During the initial import, the following error is written in the logs:

```
ERROR: Datasource file citsearch_0_4580013_cit.xml.bz2 raised an exception
while reading from {:port=>"52311", :path=>"/UploadReplication",
:query=>{:BaseDirectory=>1,
:Name=>"\\13\\4580013\\citsearch_0_4580013_cit.xml.bz2",
:shal=>"5B0FE15F7E097171566F0AC3B9BE93826FDC0D41", :offset=>0}}.
Error was getaddrinfo: name or service not known (SocketError)
```

The problem might be caused by incorrect DNS name settings. To solve the problem, ensure that BigFix Inventory can ping the BigFix server by using the DNS name that is specified in the fixlet site. To find the DNS name, on the computer where the BigFix server is installed, go to the `C:\Program Files (x86)\BigFix Enterprise\BES Installers\Server`, and find the `ActionSite.afxm` file. If BigFix Inventory cannot ping the BigFix server by using this DNS name, add the name to the `etc\hosts` file on the BigFix Inventory server.

**The import fails. After you rerun the import, the software inventory is empty.**

One of the scenarios in which the problem occurs is when you run an import and the BigFix server is not running. After you restart the server and rerun the import, the software inventory is empty. To solve the problem, manually initiate the scanner. Gather fresh scan data, and run the import.

As an alternative, you can run the Force Reupload of Software Scan Results task and then run the import of data. This task forces reupload of inventory data that was gathered by the software inventory and the file system scans to the BigFix server. The data is then imported to BigFix Inventory.

**The import fails because the transaction log is full.**

After a failed import, the import log contains the following error:

```
Batch failure. The batch was submitted, but at least one exception occurred on an individual
member of the batch. Use getNextException() to retrieve the exceptions for specific batched
elements.
ERRORCODE=-4229,
```

Also, the following error can be found in the `tema.log` file:

```
Batch execution error: Error for batch element #903:
The transaction log for the database is full.
```

To solve the problem, complete the following steps:

1. [Increase the size of the transaction log \(on page mcdxlvi\)](#) for the database.
2. Restart the DB2® and BigFix Inventory servers.

### The import fails because the Java™ heap size is too low.

After a failed import, the import log contains the following error:

```
E SRVE0777E: Exception thrown by application class
'java.lang.StringBuilder.ensureCapacityImpl:342'
java.lang.OutOfMemoryError: Java heap space
```

To solve the problem, [increase the Java heap size \(on page mcdxli\)](#).

**The import fails and the following message is written in the logs:** Overflow occurred during numeric data type conversion.

The problem occurs when you create a contract custom field that requires an integer value, and then enter a value that is greater than 32767. To solve the problem, enter a smaller value.

**The import fails and the following message is written in the logs:** The SQL statement or command failed because of a database system error. (Reason "optBitFilterSize less than min"). SQLCODE=-901, SQLSTATE=58004, DRIVER=4.14.111.

To solve the problem, create a script that reorganizes internal database tables and keeps statistics up-to-date, and run it against the BigFix Inventory database.

1. Create the `reorg.sh` script.

```
$ cat reorg.sh
#!/bin/bash
db2 connect to TEMADB
db2 -x "select 'reorg table',substr(rtrim(tabschema)||'.'||rtrim(tabname),1,50),
'allow no access;'from syscat.tables where type = 'T' and tabschema not in
(NULLID,'SYSCAT','SYSFUN','SYSIBM','SYSPROC','SYSSTAT') order by tabschema,tabname
```

```

" > reorgs.sql
db2 -tvf reorgs.sql
db2 terminate

db2 connect to TEMADB
db2 -x "select 'runstats on table',substr(rtrim(tabschema)||'.'||rtrim(tabname),1,50),
' and indexes all;'from syscat.tables where type = 'T' and tabschema not in
(NULLID,'SYSCAT','SYSFUN','SYSIBM','SYSPROC','SYSSTAT') order by tabschema,tabname
" > runstats.sql
db2 -tvf runstats.sql
db2 terminate

```

2. Log in as a database instance owner to the computer where the DB2® is installed and run the script.

**The import fails and the following message is written in the logs:** INFO: ETL from Data Source *data\_source\_name*

- RawDatasourceFixletResult: Failed

The problem occurs because there is not enough disk space on the computer where the BigFix Inventory database is installed. To solve the problem, free some disk space.

**The import fails and the following message is written in the logs:** Snapshot isolation transaction failed accessing database 'TEMADE' because snapshot isolation is not allowed in this database. Use ALTER DATABASE to allow snapshot isolation.

To solve the problem, enable snapshot isolation in the MS SQL Server. For more information, see the [Microsoft™ SQL Server documentation](#).

**After adding a large data source, the import fails and the following message is written in the logs:** 500 Internal Server Error.

The problem might occur because there is not enough disk space on the computer where the BigFix database is installed. To calculate the amount of required disk space, perform the following steps:

1. Optimize the import of data from BigFix. Log in to BigFix Inventory and go to **Management > Advanced Server Settings**. Then, change the value of the **schema\_next** parameter to true.
2. To calculate the required disk space, check how many objects exist in all fixlet sites that you have enabled in the BigFix console. An object is every computer group, analysis, fixlet, and task that exist in the console, including the ones that are not relevant. Every 1000 of objects requires 1GB of free disk space. For example, if you have 500 fixlets and tasks, 300 analyses, and 20 computer groups, you have 820 objects in total. The BigFix database requires 1 GB of disk space.

**The import fails and the following message is written in the logs:** INFO: ETL from Datasource -

RawDatasourceAnalysis (0x000000 - 0x00000035): Failed.

During the import, the following error is written in the logs:

```
INFO: ETL from Datasource - RawDatasourceAnalysis (0x000000 - 0x00000035): Failed
ERROR: Sequel::SerializationFailure: Java::ComMicrosoftSqlServerJdbc::SQLException:
Transaction (Process ID 1111) was deadlocked on lock resources with another process
and has been chosen as the deadlock victim. Rerun the transaction
```

To solve the problem, ensure that no actions such as a backup or recovery are taking place on the BigFix database. Then, rerun the import.

### The import fails after you change the host name of the BigFix Inventory server.

Changing the host name of the BigFix Inventory server is not supported. When the application cannot recognize the original host name, the ETL step of a data import is failing and you cannot gather and process data from your endpoints. A new host name requires a new installation of BigFix Inventory.

The host name also cannot be changed for the BigFix server. In this case, the host name of the server is recorded into your license certificate during the installation. To change it, you must create a new license certificate that requires a new installation.

### The import hangs after the database connection is lost and recovered

During the import of data, database connection is lost and information about connection problems is displayed on the user interface. After you restart the database, the user interface is refreshed but the import hangs. Additionally, the following or similar error is written in the logs.

```
ERROR: Sequel::DatabaseError: DBNAME: temadb25 -
Java::ComIbmDb2JccAm::SqlNonTransientConnectionException:
[jcc][t4][10335][10366][4.22.29] Invalid operation: Connection is closed. ERRORCODE=-4470,
SQLSTATE=08003
```

To solve the problem, restart the BigFix Inventory server.

### A successful software scan is run but there are no changes to the data after the data import to the BigFix Inventory server.

Check the maximum archive file size to ensure that it is greater than the scan file size.

1. Log on to the BigFix console.
2. In the left navigation, click **Computers**, right-click the name of the appropriate computer, and then click **Edit Computer Settings**.
3. Check the **\_BESClient\_ArchiveManager\_MaxArchiveSize** setting is greater than the size of the largest scan file. If needed, edit the value to increase the maximum archive size.

Verify that there are no software scan errors.

1. In the BigFix console navigation, click **Sites > External Sites > BigFix Inventory > Analyses**.
2. Select the **Software Scan Status** analysis.
3. In the lower pane, click the **Results** tab, and verify that the status of the software scan is OK for the computers.

**The import is delayed when there more than 20 computer groups and all computers have metrics calculation enabled.**

**Some of the products are not discovered.**

If you optimized the volume of scanned file data, either during the post-upgrade configuration or manually, you must run an import for the changes to take effect. After the import, some software items might not be visible on the reports. It is an expected behavior. To ensure that the software inventory is properly reported, perform the following steps.

1. Ensure that the catalog that is uploaded to BigFix Inventory is in the canonical format. If the catalog is in the native format, upload a new catalog. If the catalog is in canonical format but a new version is available, upload the new catalog. To check the format of the uploaded catalog, click **Management > Catalog Upload** and check the **Catalog Format** column.
2. Stop the current scan.
  - a. Log in to the BigFix console and in the left navigation tree, click **Actions**.
  - b. In the upper-right pane, click **Initiate Software Scan** and then click **Stop**.
3. [Initiate a new software scan. \(on page dcx\)](#) Wait for the scan to finish.
4. Wait for the scheduled import or run it manually.

**Files with a particular extension are not reported on the Scanned File Data report.**

The problem might occur if you optimized the volume of scanned file data and removed the extension from the list of monitored extensions. To solve the problem, contact HCL support in order to add the file extension that you want to monitor.

**After a failed import of scan data, the data that is displayed in reports is inconsistent**

If there are inconsistencies in the data, and the last data import failed, the data inconsistencies might be the result of the import failure. To solve the problem, run the import again.

As an alternative, you can run the Force Reupload of Software Scan Results task and then run the import of data. This task forces reupload of inventory data that was gathered by the software inventory and the file system scans to the BigFix server. The data is then imported to BigFix Inventory.

**The data import log cannot be viewed in the user interface.**

The problem might occur if you enabled debug logging for the import process. Debug information significantly increases the size of the import log file and it might happen that the log file cannot be displayed in the user interface. To solve the problem, consider the following solutions:

- Instead of viewing the log file in the user interface, open it as a file. The log file is in one of the following directories:
  - **Linux** `installation_directory/wlp/usr/servers/server1/logs/imports`
  - **Windows** `installation_directory\wlp\usr\servers\server1\logs\imports`

To avoid problems in the user interface, move the log file to a different location so that BigFix Inventory does not load it into the user interface.

- [Server log file \(on page mcdxv\)](#) to limit the amount of information saved in the log file.

### **Software is properly discovered by the scan but is not reported in BigFix Inventory after the import.**

The problem occurs on BigFix 9.0 installed on Linux™. If the value of the sequence changed in the BigFix database and is higher than the sequence that was imported, scan results are not imported during a particular import. To solve the problem, wait for the next scheduled import or run it manually.

### **Data about a computer was not imported from the BigFix server.**

Because BigFix Inventory imports live data that is constantly changing on the BigFix server, it might happen that some data, for example about computers, might not be imported. That happens because only the scope of data that is calculated at the beginning of an import is processed during the import.

Example: If a computer is saved in the BigFix database during a data import from BigFix to BigFix Inventory, it will not be imported.

 **Important:** It might also happen that after the second data import, the imported computers do not have important properties such as **Computer Name**, **IP Address**, or **Operating System**. To fix this problem:

1. In the navigation tree of the BigFix console, click **Computers** and then in the list pane, select the computer for which the properties are missing.
2. In the lower right pane, click **Send refresh** 3 times. All missing computers properties will be imported during the next data import.

### **BigFix Inventory takes longer to import data due to the File Facts ETL step involved**

The default list of excluded Windows endpoints is extended to improve the data import and overall file scan. For a newly installed scanner, the list of exclusions has been extended with directories containing large files that are not related to the software discovery. The list of excluded directories are listed in the [KB article](#). To add your preferred entry of exclusion for upgraded scanners, follow the instruction provided in the [KB article](#).

## Data import warnings

This topic lists the warning messages that might appear when you perform data imports. The warnings appear when running the file fact handler.

### **Warning messages**

#### **File Facts Result exceeding limit of files**

**Step:** ETL SAM::FileFact

**Versions:** 10.0.4 or higher

**Message in data import log:**

```
Import: FileFactHandler:42780) FileFactHandler::endDocument::File
44575::0::AE5142947EA6176C027C33DCA8EEBF7A02F76E60::\20\1086551120\
itsitsearch_0_1086551120.xml.bz2
on computer 44575 has 12224 lines which is above the limit of 10000 lines.
All entries will be imported.
```

**Meaning:** Warning message that appears about exceeding 10000 entries for File Scan result on a given computer. Review the Scanned File Data on the computer using provided computer ID in the log. Consider excluding some directories from scan.

**File Facts Result exceed limit of size (Default: 4 MB)**

**Step:** ETL SAM::FileFact

**Versions:** 10.0.4 or higher

**Message in Data Import Log:**

```
WARN: (ImportFileFactAction) Skipping file itsitsearch_0_1081026664.xml.bz2 on computer 22137
of size
6611177 B because it is over limit of 4194304 B. Nothing to import.
```

**Meaning:** Warning message about exceeding the limit of Scan Result maximum size (scanFileSizeLimit Advanced Server Settings). The scan result is not processed and as a result, no changes are made to existing data. Get the Computer Support Data and review the File Scan result at [itsitsearch\\_0\\_<computer\\_id>.xml.bz2](#) against possible exclusions from the scan.

**Issue with SLM Tag scan result**

**Step:** SlmTagImport

**Versions:** 10.x

**Message in Data Import Log:**

```
WARN:(ImportSlmTags-Thread:2) SlmTagsScanFileHandler::handle::Wrong file for computer id = 33948
provided.
```

**Meaning:** Issue with SLM Tag Scan Result preventing processing of the scan result. There might be a corrupt, empty or missing `list.txt` file inside. Review SLM Tag Scan Result file [slmtagsearch\\_0\\_<computer\\_id>\\*\\_slmtag.tar.gz/.zip](#).

**Application usage data exceeds limit of size 1 MB**

**Step:** SAM::RawAppUsagePropertyValue

**Versions:** 10.x

**Message in Data Import Log:**

```
WARN: Application Usage Data for remote computer with ID 552839986 trimmed to 1MB.
The data exceeds the allowed length.
```

**Meaning:** The result is larger than 1MB and only first 1MB is stored. This can happen on systems that have been existing since long. For example automation tools that create and run one time and unique processes or executables. As a result, it is ordered from most recent changes applications usage are updated in this case. The most recent Initiate Software Scan fixlet must be used to prevent this warning message.

**Issue with fetch file from BigFix Platform**

**Step:** Various: CIT Facts, ISO Tag Facts...

**Versions:** 10.x

since long

**Message in Data Import Log:**

```
WARN: Received only 46 of 3009 bytes of \35\550993735\citsearch_0_550993735_cit.xml.bz2 / }
WARN: Registering failed read for file citsearch_0_550993735_cit.xml.bz2 on computer 856590
```

**Meaning:** The most common issue is BigFix Platform being overloaded or any change in the file when BigFix Inventory fetches data during the `RawDataSourceFile` step. As a result, the file is marked for re-read during the next import.

**Unable to get the path and name from string**

**Step:** File Fact Import

**Versions:** 10.x

**Message in Data Import Log:**

```
WARN:(Import: FileFactHandler:57465)com.ibm.license.mgmt.etl.core.actions.filefact.
FileFactRecordBuilder::build::Could not parse file for computer: 2071634,
unable to get path and name from string: "runcit_sw.sh", skipping invalid record.
```

**Meaning:** Malformed entry in file system scan. Such entry is ignored. Ensure that most recent Initiate Software Scan is being used.

**UUID not found - processing of duplicate guests from VM Manager is skipped**

**Step:** VMManager Data Import

**Versions:** 10.x

**Message in Data Import Log:**

```
WARN:[ILMTCore] (ImportMergeTask-Thread:1) MergeGuestStrategy::process::
UUID:8429-4789-0735-0157 3771-6736-98 was found:
on host HOST1.HOSTNAME.ORG (PROCESSED)
on host HOST2.HOSTNAME.ORG (DUPLICATE)
skipping processing of duplicated guest from vm manager (https://VMMAN.HOSTNAME.ORG:5986/wsman)
```

**Meaning:** In BigFix Inventory each device requires an assigned unique ID to be able to correctly place the VMs in virtualization hierarchy. If there is a duplicate ID, the entry is rejected and the VM is not placed in the virtualization hierarchy. It is mandatory for the VM UUID to be unique.

The affected VMs are listed in the message.

**No virtual machine detected**

**Step:** VMManager Data Import

**Versions:** 10.x

**Message in Data Import Log:**

```
WARN:[ILMTCore] (ImportMergeTask-Thread:1) There is no virtual machines detected in the vm
manager
scan result. Scan taken by vm manager tool on computer with id 828655 to vm manager
https://VMMAN.HOSTNAME.ORG/sdk/vimService.wsdl at Tue Apr 12 03:48:55 UTC 2022.
Please verify whether defined user (BFI_USER@HOSTNAME.ORG) has read rights to all required
objects.
```

**Meaning:** The message about no VM being detected appears. It does not show the reason behind the VM not being detected. The reason can be insufficient permission or lack of VMs deployed. If the issue persists, it is recommend to check permissions.

**VM Manager has been marked as deleted**

**Step:** VM Manager Data Import

**Versions:** 10.x

**Message in Data Import Log:**

```
2022-04-12 15:20:26 (+0:00:00.015) WARN: [ILMTCore] (ImportMergeTask-Thread:1)
MergeDataTask::processTask::That vm manager has been marked as deleted, the data coming from
this VM manager
will be discarded.
```

**Meaning:** Removal of the VM Manager configuration in VM Manager panel results in ignoring any future result appearing from such configuration. It appears only in the next import as data from VM Manager might be already collected and waiting for import.

### Missing computer ID

**Step:** SAM::AppUsage SAM::DeepHw SAM::SharedDisk

**Versions:** 10.x

#### Message in Data Import Log:

```
WARN: (ImportThread) Skipping import of computer data: Computer ID missing for datasource 7.
```

**Meaning:** It is not possible to map Remote Computer ID to the computers known to BigFix Inventory. This might be possible because of synchronization issue. Contact support if the problem persists.

### Exception while decrypting scan result

**Step:** SAM::CitFact SAM::IsotagFact

**Versions:** 10.x

#### Message in Data Import Log:

```
WARN: Exception while decrypting DatasourceFile citsearch_0_6076322_cit.xml.bz2 Error was pad
block corrupted in
org/jruby/ext/openssl/Cipher.java:1210:in `final'
D:/Program
Files/ibm/BFI/wlp/usr/servers/server1/apps/tema.war/WEB-INF/app/models/datasource_file.rb:155
:in `get_data_from_bigfix_server'
D:/Program
Files/ibm/BFI/wlp/usr/servers/server1/apps/tema.war/WEB-INF/app/models/datasource_file.rb:109
:in `read_data_into_mem'
D:/Program
Files/ibm/BFI/wlp/usr/servers/server1/apps/tema.war/WEB-INF/domains/sam/app/models/sam/scan_fil
e.rb:62:in `get_file_into_datasource_file'
D:/Program
Files/ibm/BFI/wlp/usr/servers/server1/apps/tema.war/WEB-INF/domains/sam/app/models/sam/cit_fact
.rb:82:in `block in etl_source'
D:/Program
Files/ibm/BFI/wlp/usr/servers/server1/apps/tema.war/WEB-INF/lib/threaded_mapper.rb:76:in `block
in initialize'
WARN: Registering failed read for file citsearch_0_6076322_cit.xml.bz2 on computer 12565
```

**Meaning:** BigFix Inventory fetches information about the files to import at the beginning of the Data Import. During the import process those files might be updated on BigFix Platform side and information

read at the beginning does not match current state. For this reason, file is being fetch but cannot be decrypted. Such file is marked as "Read Failed" and will be repeated on next import.

It can happen if the scan was forced one more time after regular scan not yet imported by BigFix Inventory.

#### **Disconnected Scan: Importing older scan package from:**

**Step:** SAM::DisconnectedScan

**Versions:** 10.x

#### **Message in Data Import Log:**

```
WARN: Importing older scan package from: 2022-01-10T14:59:00+00:00 for computer: 218986. This
computer already has data from: 2022-01-10 14:59:00 UTC.
```

**Meaning:** When importing more then one package form single device older results are ignored with the above message.

#### **Disconnected Scan: Skipping file**

**Step:** SAM::DisconnectedScan

**Versions:** 10.x

#### **Message in Data Import Log:**

```
INFO: Skipping file: scanner_status.yml. Unsupported file in: 202201101459-7839250-28.zip.
```

**Meaning:** Disconnected Scanner package might include additional files that are not recognized by scanner and ignored with the above message.

#### **Destination for disconnected scan package already exists**

**Step:** SAM::DisconnectedScan

**Versions:** 10.x

#### **Message in Data Import Log:**

```
WARN: Exception while processing Disconnected Scan package 202201031457-7839250-28.zip. Only
first 16
packages has been processed. Fix the problem by removing package causing error.
The following error occurred: Destination 'D:\Program
Files\ibm\BFI\wlp\usr\servers\server1/tmp/datasources/
12/UploadManager\shal/40/40/cit_capacity_1_40_tlm_hw.zip' already exists
```

**Meaning:** There is an issue with extraction of Disconnected Scanner package due to an issue with overwriting the file on the disk. File is located on host of BigFix Inventory Server in provided location. Consider removing file and running Data Import again.

**Issues, such as missing physical processor group, missing lpar group, or inconsistency in the HW scan file received**

**Step:** ETL from ImportCapacity

**Versions:** 10.x

**Message in Data Import Log:**

```
INFO: ETL from ImportCapacity: Start
WARN: [ILMTCore] (ImportCapacity-Thread:0) The HW scan file received from agent does not contain
a
physical processor group.
WARN: [ILMTCore] (ImportCapacity-Thread:0) The HW scan file received from agent is not
consistent,
discarding the HW scan results...If no other detailed information is traced earlier, the problem
may be
in missing 'Lpar' group in HW scan output or missing or empty PhysicalProcessor group.
WARN: [ILMTCore] (ImportCapacity-Thread:0) CapacityScanFileHandler::processTask::Some error
occurred
during importing the capacity scan from file : tlm_hw_202201170706_1642424799.xml for endpoint :
41303.
```

**Meaning:** Malformed Capacity scan result. Check Hardware Inventory: Status for listed computer. Ensure that there are no known defects on the BigFix Inventory Scanner / Run Capacity Scan and Upload Results fixlet for the given OS. Consider upgrading to most recent version.

**Inconsistent data detected when inventory builder is run**

**Step:** ETL from InventoryBuilder

**Versions:** 10.x

**Message in Data Import Log:**

```
INFO: (ImportThread) ProductInventoryBO: before dropAndCreateDiscoveredSoftwareDetailsTable ->
ultimateUpdateDiscoveredSoftwareDetailsTable
WARN: (ImportThread) Some data inconsistency detected during inventory builder - there was
more then one current records with the same instance_hash present.Total number of problematic
records is: 4.
```

**Meaning:** It is an unexpected condition when creating Software Classification view leading to have more then one Component Instance (Software Component with given Release in given path on given

computer). BigFix Inventory drops one of entries to avoid duplicates. Check if you are on most recent version of BigFix Inventory Server. If the issue persists, contact support to determine the scenario and adjust Inventory Builder logic.

### Missing CVE file for the current year

**Step:** Calculating software components vulnerability risk based on NIST NVD

**Versions:** 10.x

#### Message in Data Import Log:

```
WARN: (ImportAndProcessCVE) com.ibm.license.mgmt.bfi.bl.cve.CVELoader::loadNextFile::Missing
file for
year 2022
```

**Meaning:** When the year changes and BigFix Inventory server is upgraded after (or later) the first date of the year, the server does not include the new files, the above warning appears. Upgrade BigFix Inventory server once again (subsequent upgrade) to allow the new files get included. The warning disappears after the upgrade. Refer to [this \(on page mcccxxii\)](#) section to learn about subsequent upgrade procedure.

### Platform of the computer is not defined

**Step:** Calling Model.after\_snapshot

**Versions:** 10.x

#### Message in Data Import Log:

```
WARN: There are multiple computers with not well determined Platform.
Software will not be properly discovered on them. Listing top 10:
```

#### Example:

```
Datasource: <DS> Computer: (Id: <ID> RemoteId: <ID>) OS: ANY Platform: IsUnix: 1
Datasource: <DS> Computer: (Id: <ID> RemoteId: <ID>) OS: ANY Platform: IsUnix: 1
```

**Meaning:** To match with correct signatures, BigFix Inventory requires the platform of the computer to be correctly defined so that the signatures can have limited scope to particular platform only. Platform is assessed based on the OS property. This property might not be available or there can be some issue with synchronization of this property between BigFix Inventory and BigFix Platform. As a result, computer does not have defined platform. This warning indicates if there are any such computers in the system. When all computers have proper setting the message `All computers got proper Platform set` appears. In case when computers are listed with such error it is needed to go to **Management > feature page** and use the "Import all computer properties and do matching of all facts once again (next import only)" option to resolve the issue. If the problem occurs again, check procedures for rolling out BigFix

Agents. Ensure that they are properly initiated and have sufficient time to report the basic data and this information reaches the BigFix Platform.

## Database problems

Database problems are related to issues with connecting to DB2 and MSSQL Server as well as retrieving information from these databases.

### Windows SQL Server

#### During the import, SQL Server uses 99% of the physical memory.

To solve the problem, set the maximum amount of memory that can be used by SQL Server. For more information, see [Server Memory Options](#) and [How to: Set a Fixed Amount of Memory \(SQL Server Management Studio\)](#) in the SQL Server documentation.

#### The login process to SQL Server fails.

During a login process to SQL server, the following error is displayed:

```
Login failed for user 'username'. The user is not associated with a trusted SQL Server connection.
(Microsoft SQL Server, Error: 18452).
```

The cause of this error is that SQL server is configured to use Windows Authentication mode and does not allow the use of SQL accounts. To solve this problem, enable the SQL Server Authentication in SQL Server. For more information, see [Enabling the SQL Server Authentication Mode](#).

#### SQL Server authentication is locked out for the database user.

The problem occurs when the credentials are provided wrongly in configuration files.

To unlock the user, turn off BigFix Inventory in services and then perform the below steps:

1. Open **SQL Server Management Studio**.
2. Connect to the SQL Server instance you want to configure.
3. In the **Object Explorer** window, expand the **Security** folder.
4. Expand the **Logins** folder and select the **related database user** from the context menu.
5. Right-click **Properties > Status**.
6. Deselect '**SQL Server authentication: Login is locked out**'.
7. Click **OK** to save the changes.

### Linux DB2

**BigFix Inventory cannot connect to its database and the following error is written in the logs:** `Connection refused. ERRORCODE=-4499, SQLSTATE=08001.`

The problem occurs because the DB2® database is not yet activated after a restart and is thus not accessible to BigFix Inventory. To solve the problem, run the following command after you restart the database:

```
db2 activate db database_name
```

### Issues and resolution related to DB2 database fix pack installation

After you install DB2 fix pack and restart BigFix Inventory, the application does not work and following message is displayed.

```
We're sorry, but something went wrong.
```

In `tema.log` the following error is found:

```
Java::ComIbmDb2JccAm::SqlSyntaxErrorException: The name of the object to be created is identical to the existing name "DBO.SCHEMA_MIGRATIONS" of type "TABLE"
```

Once you install a fix pack for DB2, perform the steps mentioned in [DB2 for Linux, UNIX, and Windows](#).



**Note:** Take a backup of the database before you activate or deactivate your database. For more information, see [Backing up the DB2 database](#). To learn about maintaining a database, see [Maintaining the DB2 database](#).

### BigFix Inventory cannot connect to the database. The default port range is modified.

The default local port range for Linux™ is 32768-61000. If the default range is modified, it is possible that the DB2® port number is allocated to another local process. If the port number is pre-allocated, BigFix Inventory cannot connect to DB2®. To troubleshoot this issue, complete the following steps:

- Ensure that IPv4 is being used.
- Use the netstat command to check whether DB2® is listening on the expected port, and no other socket is pre-allocated the DB2® port.
- If DB2® is not listening on the expected port, restart DB2® and check again.

### Unable to establish a connection to a data source in the BigFix Inventory web user interface with single sign-on enabled.

An error message is displayed after you saved the connection parameters on the **Data Sources** pane:

```
Unexpected WebSEAL Response.
Code: 0x38cf04d3
Error: DPWWA1235E
Please contact your system administrator. This may indicate an insufficient proxy HTTPS timeout.
```

To be able to save the connection parameters successfully, increase the **https-timeout** parameter in the ISAM Reverse Proxy configuration. For example, to set the timeout to 5 minutes:

1. Log on to IBM Security Access Manager.
2. In the top navigation bar, click **Secure Web Settings > Manage > Reverse Proxy**.

3. Select the instance and then, from the drop-down list on the right of the Reverse Proxy bar, select **Manage > Configuration > Edit Configuration File**.
4. In the **Advanced Configuration File Editor**, locate the **https-timeout** parameter and specify the value as 300.

Example:

```
https-timeout = 300
```

5. Click **Save**.

## Both databases

**After you restore the BigFix database, new data is not displayed in BigFix Inventory.**

To ensure that only newly created data is imported to BigFix Inventory, the data that is stored in the BigFix database is marked with the so-called sequence number. The number is incremented with every change. Every import contains data starting from the sequence number reported during the last successful import to the current sequence number.

When the BigFix database is restored, the sequence number is restored to the value from the time when the database backup was created. Thus, there is a possibility that the sequence number after the restoration is lower than the sequence number reported during the last successful import. In such case, the first import after the database restoration does not include any data. After that import, the sequence number is updated and the next import contains new data.

However, data from the period between the database restoration and the first successful import is not imported which creates a gap. To solve the problem, go to **Management > Advanced Server Settings**, and change the value of the **resynchronize\_datasources\_once** parameter to true. Then, run an import. This initial import takes time depending on the amount of software scan data from the restored BigFix database to cover the gap. The subsequent imports will run in the normal operation mode.

### Checking the database name.

The default database name is `TEMADB` (which was `SUADB` in the earlier versions). You can check the name of your database in the `database.yml` file in one of the following directories.

```
Linux /opt/ibm/BFI/wlp/usr/servers/server1/config/database.yml
```

```
Windows C:\Program Files\BigFix Enterprise\BFI\wlp\usr\servers  
\server1\config\database.yml
```

In earlier versions, the default installation path is `C:\Program Files\BigFix Enterprise\SUA` or `/opt/ibm/SUA`.

## Installation and upgrade problems

Solve common problems that are related to installation, configuration, and upgrade of BigFix Inventory.

### Scanner installation fails with return code 126 (permission denied)

**BFI Install or Upgrade Scanner** fixlet fails with return code 126 (permission denied) when `/var` directory on the endpoint is mounted with the "noexec" option.

The scanner install log file shows the following error:

```
/var/opt/BESClient/LMT/CIT/citinstall/installcit.sh: line 11: /var/opt/BESClient/LMT/CIT/citinstall/wcitinst: Permission denied
```

Software scan fails when `/var` directory on the endpoint is mounted with the "noexec" option.

Refer to the [limitation \(on page dcx\)](#) for more information.

### Upgrade of the server with a fixlet fails on Windows.

The problem occurs when BigFix Inventory server file or folder is locked by an external application. For more information, see [Server installation and uninstallation return codes \(on page mcccxciii\)](#).

### Installation of the server cannot continue and an error is displayed.

Installation of the BigFix Inventory server cannot continue and the following message is displayed:

```
./tools/getArch: line 108: print: command not found
./tools/getArch: line 109: print: command not found
./tools/getArch: line 116: print: command not found
setup-server-9.0-linux-x86_64.sh: line 52: print: command not found
```

The error might be caused by the fact the operating system is not fully configured. You might also need to reboot the operating system.

### Installation of the BigFix server with a remote SQL Server database fails.

The problem might occur while installing the BigFix server on the Windows 2008 Server operating system. When the installer attempts to connect to the remote SQL Server database, the following message is displayed:

```
Computer Browser Error with Windows Authentication
```

To solve the problem, enable the file and printer sharing in Windows:

1. Go to **Control Panel > Network and Sharing Center**.
2. Click **Advanced sharing settings**.
3. Select the **Turn on file and printer sharing** check box.
4. Click **Save changes**.

### Installation of the BigFix Inventory server does not start on Linux.

The problem occurs when the Symantec process **rtvscand** is running. To solve the problem, you can stop the **rtvscand** process or exclude the `/tmp` folder from Symantec scan. For more information about excluding the `/tmp` folder, see: [How to Configure Scan Exclusions in SEP for Linux](#).

**Installation fails and a warning about the lack of free disk space in a given directory is displayed. However, there is enough free space in that directory.**

To solve the problem, perform the following steps.

1. Open the command line.
2. Run the following command to change the variable that is responsible for checking disk space requirements.

- **Linux** `export tlm_debug_disable_disk_space_check=true`
- **Windows** `set tlm_debug_disable_disk_space_check=true`

3. Run the following command to start the installation.

- **Linux** `./setup-server-linux-x86_64.sh`
- **Windows** `setup-server-windows-x86_64.bat`

**Installation cannot be started, because the `/tmp` directory has the `NOEXEC` flag.**

In some environments, the `/tmp` directory might be mounted with the `NOEXEC` flag, which blocks the installation. The problem can be recognized by the following error in the `ia.log` file.

```
Launching installer...

./server/parts/CDROM_Installers/Disk1/InstData/Linux_64/VM/setupServer.b
in: line 3318: /tmp/install.dir.20400/Linux/resource/jre/jre/bin/java:
Permission denied
```

The `/tmp` directory is used to store temporary files during the installation. Since the BigFix Inventory installer is based on InstallAnywhere, you can change the `IATEMPDIR` environment variable that specifies the temporary directory of InstallAnywhere, and set it to a custom directory.

1. Create a custom temporary directory, for example:

```
mkdir /root/Install_tmp
```

2. Set the `IATEMPDIR` variable to the new directory:

```
export IATEMPDIR=/root/Install_tmp
```

3. Restart the installation.

**Installation of BigFix Inventory with All-in-one installer fails because the file system where the DB2 instance directory resides is mounted as `NOSUID` or `NOEXEC` (or both).**

Remount the file system where the DB2 instance directory resides, and make sure is not mounted with the `NOSUID` or `NOEXEC` flag (or both).

**During the configuration of the connection to a remote DB2 database, the following error is displayed:** The user specified for the communication with the database could not be found in the system.

The problem occurs when the remote DB2 database is installed on an AIX computer. It means that the user that you want to use for connecting to the database does not exist on the LDAP server. To solve the problem, specify a different user or create a user with the specified credentials on the LDAP server.

**During the installation of BigFix Inventory for non-English-language locales, some Java exceptions are displayed in English.**

Even for non-English-language locales, some Java exceptions that might occur during the installation are displayed in English. However, the Details view that contains the exceptions also includes more information that can help you to understand and solve the issue. If you want to see the translated description of a problem, you can switch to the Problems view where all the available details are provided.

**During the configuration of the connection to the BigFix server, the following message is displayed:** Could not determine character set of the BES database. Are you sure the BES server is running an agent?.

The problem occurs when the BigFix client was removed from the computer where the BigFix server is installed. To solve the problem, manually set the `_BESClient_DeploymentEncoding_IANAName` property to that of your deployment code page.

**The list of non-English languages in the installation wizard is reduced.**

To see your language as an option in the installation wizard, change your system locale to a chosen language:

1. On Linux, open the Terminal and run the following command:

```
export LC_ALL=language_code.UTF8
```

For example, `export LC_ALL=en_US.UTF8`.

2. Run the locale command to verify changes.
3. Restart the installation and choose the language.



**Note:** To install BigFix Inventory on Windows in Korean language, you must have administrator role with English language. Some of the symbols are not supported in Korean language and this may lead to crash the installer.

**Despite upgrading to the latest version, the service name still shows the old version.**

The display name of the service on Windows does not change after the upgrade, which is a limitation. It does not, however, impact BigFix Inventory in any way. To update the service name, restart your computer.

**The server cannot be upgraded because the task Upgrade to the latest version of BigFix Inventory is not relevant.**

The problem occurs when the previous version of the server was installed manually on a computer without the BigFix client. To make the upgrade task relevant, perform the following steps:

1. Install the BigFix client on the computer with the BigFix Inventory server.
2. Set the value of the `SUA_Server_Path_{user_ID}` parameter to the installation path of the BigFix Inventory.
  - a. Log in to the BigFix console that is linked to your BigFix server.
  - b. In the navigation bar, click **Computers**.
  - c. In the upper-right pane, right click the computer on which you installed BigFix Inventory, and click **Edit Computer Settings**.
  - d. To add a setting, click **Add**.
  - e. In the **Setting Name**, type `SUA_Server_Path_{user_ID}`.



**Note:** `user_ID` on Linux is the Linux user ID of the user who installed BigFix Inventory, while on Windows it must be set to 0.

- f. In the **Setting Value**, specify the BigFix Inventory installation path.
- g. Click **OK**.

**Upgrade of the BigFix Inventory server with a fixlet is not possible on Linux because the fixlet is not relevant due to problems with relevance 6 is not met.**

When the **Upgrade to the latest version of BigFix Inventory (version)** fixlet is not relevant, use the **Analyze the Relevance of a Fixlet or Task** fixlet to check which part of the relevance expression is not matched. For detailed instructions, see: [Relevance \(on page mcdxx\)](#).

If the problem is with relevance 6, it is most likely that the `/etc/passwd` file cannot be accessed or read. To work around this problem, create a custom copy of the **Upgrade to the latest version of BigFix Inventory (version)** fixlet with relevance 6 removed.

1. Relevance 6 checks whether there is enough disk space to perform the upgrade. Because you are going to remove these checks from the fixlet, ensure that enough free disk space is available in the relevant directories. After you run the **Upgrade to the latest version of BigFix Inventory (version)** fixlet, the BigFix server downloads the new installer to its file system (1 GB on the server). Then, it delivers the package to the specified endpoint and extracts it (1 GB on the endpoint). The upgrade also requires 0.5 GB in the system temporary directory and 1 GB on the disk where BigFix Inventory is installed plus the current size of the following directories.
  - `install_dir\wlp\usr\servers\server1\data`
  - `install_dir\wlp\usr\servers\server1\logs`

Where `install_dir` is the BigFix Inventory installation directory. By default, the BigFix Inventory server is installed in the following directory.

- `Linux /opt/BFI`
- `Windows C:\Program Files\BigFix Enterprise\BFI`

2. Create a custom copy of the **Upgrade to the latest version of BigFix Inventory (version)** fixlet.
  - Log in to the BigFix console.
  - In the navigation tree, go to **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
  - Right-click the fixlet **Upgrade to the latest version of IBM BigFix Inventory (version)**, and click **Create Custom Copy**.
  - Change the name of the fixlet so that you can easily recognize it.
  - Open the **Relevance** tab, remove relevance 6, and click **OK**.

3. To upgrade the BigFix Inventory server with a custom version of the fixlet, click **Take Action**.  
Select the computer on which the BigFix Inventory server is installed, and click **OK**.

If you want to upgrade the server later, the custom copy of the fixlet is available in **Sites > Master Action Site > Fixlets and Tasks**.

4. After the BigFix Inventory server is upgraded, remove the custom version of the fixlet.
  - In the navigation tree, go to **Sites > Master Action Site > Fixlets and Tasks**.
  - Right-click the custom version of the fixlet, and click **Remove**. Then, click **OK** to confirm.

#### Upgrade of the server with a fixlet fails on Linux.

The problem occurs when the server was installed by a non-root user. To solve the problem, upgrade the server in [interactive \(on page dccxxv\)](#) or [silent \(on page dccxxvi\)](#) mode.

#### After the upgrade, the Usage per Computer report is empty

To solve the problem, run the import of data.

#### Manually changing the port number of BigFix Inventory

If you cannot access the user interface (**Management > Server Settings**) to change the port number, you can also do it in the `server.xml` file.

1. Go to `install_dir/wlp/usr/servers/server1`, and edit the `server.xml` file.
2. In **httpsPort**, enter the new port number.

```
<httpEndpoint host="*" httpsPort="9081" id="tema">
```

The change takes effect immediately, the server does not need to be restarted.

#### Uninstalling BigFix Inventory fails because the BigFix Inventory service is unresponsive and cannot be stopped.

You can manually force an unresponsive service to stop.

1. Open the command line.
2. Run the following command:

- **Linux** `service BFIserver status`
- **Windows** `sc queryex BFIServer`

3. Identify the PID of the BigFix Inventory process.
4. In the same command line, run the following command:

- **Linux** `kill -9 identified_PID`
- **Windows** `taskkill /pid identified_PID /f`

## Hardware inventory problems

Find the solution to the issues that you have encountered while working with virtual machine managers and hardware inventory.

### Update of the VM Manager tool fails

When you run the **Update VM Manager Tool to version** fixlet, the update fails. When you view the details of the action on a particular computer, the script can fail on various lines, for example:

```
waithidden cmd /c "rmdir "{parameter "homefolder"}" /s /q"
continue if {exit code of action = 0}
```

To solve the problem, perform the following steps:

1. Go to the computer on which the update of the VM Manager tool failed and open the `<BES_Client>/LMT` folder.
2. If the folder does not contain the `VMMAN_copy` folder, create it.
3. Copy the `config` and `keydb` folders from the `<BES_Client>/LMT/VMMAN` folder to the `<BES_Client>/LMT/VMMAN_copy` folder.
4. Remove the `VMMAN` folder.
5. Run one of the following fixlets to complete the update. It might take some time before the fixlet becomes relevant.
  - Run the **Install VM Manager Tool version number** fixlet, if the update failed on the computer where the main instance of the VM Manager tool is installed.
  - Run the **Install Additional VM Manager Tool (OPTIONAL) version number** fixlet if the update failed on the computer where an additional instance of the VM Manager tool is installed.

### Error message CODVM0005E is displayed when attempting to connect to the VM manager over SSL.

When trying to connect to the VM manager over SSL, an error message is displayed: CODVM0005E An error occurred when attempting to connect to the VM manager at the following address: hostName. To solve the problem, complete the following steps:

1. Go to <https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?source=jcesdk>.
2. Provide your BigFix ID and password and click **Sign in**. You might need to register with BigFix to download the files.

3. Select **Unrestricted SDK JCE Policy files for Java 5.0 SR16, Java 6 SR13, Java 7 SR4 and later versions** and then click **Continue**.
4. View the license agreement, select **I Agree**, and then click **I confirm**.
5. Click **Download Now**.
6. Extract the files and copy them to the following directory:

```
<BES_Client>/LMT/VMMAN/java/jre/security
```

7. Restart the server.

**Server is running, but an exception in traces appears. The exception is related to the connection with the specified ESX with the following message:** `javax.net.ssl.SSLException: Unrecognized SSL message, plaintext connection?`

1. Add the following lines to file `/etc/vmware/hostd/config.xml`:

```
..
  <ssl>
    <doVersionCheck> false </doVersionCheck>
    <handshakeTimeoutMs>30000</handshakeTimeoutMs>
  </ssl>
  <http>
    <readTimeoutMs>45000</readTimeoutMs>
    <writeTimeoutMs>45000</writeTimeoutMs>
    <blacklistPeriodMs>3000</blacklistPeriodMs>
  </http>
  <vmdb>
  ...
```

2. Restart the hostd service using `service mgmt-vmware restart`.
3. Verify that the exception does not occur.

**Server is running, but an `org.xml.sax.SAXParseException` exception in traces appears. The exception is related to the connection with the specified ESX.**

Make sure that you have the latest patches to your problematic ESX server installed.

#### **Upgrade of vCenter server from v5.0 to v5.1 causing server connection failure.**

The following message is displayed `CODVM0003E The VM manager denied access because of invalid credentials`. To solve this issue, perform the following steps:

1. In vCenter, stop all sessions under a user name that is defined as a user credential in VM manager for specific vCenter.
2. Remove this user name.
3. From vCenter, add the user name back with read-only or propagation authorities.
4. Redefine the VM manager entry for this specific vCenter using the same user name credential.

### Specification of the domain for the user name for VM Managers is inconsistent.

Different definitions of users are used for each type of VM manager:

- For Microsoft Hyper-V, you must use the Administrator account. The user is defined as `user_name\domain` or `user_name@domain`. For example: `test\cluster.com` or `test@cluster.com`.
- For VMware, the user is defined as `domain\user_name`, for example: `cluster.com\test`.
- For RHV-M, the user is defined as `user_name@domain`, for example: `test@cluster.com`.
- **9.2.12** For Citrix Hypervisor (formerly XenServer), the user is defined as `user_name`, for example `root`.
- **9.2.14** For Oracle VM Server for x86, the user is defined as `user_name`, for example: `test`.
- **9.2.17** For Nutanix, the user is defined as `user_name`, for example: `test`.

### Changes to the VM managers are not updated on the BigFix server.

Changes to the VM managers are not updated on the BigFix server and the following error message is displayed in the VM Managers panel: `The last modification of VM managers was not processed correctly on the BigFix server. The data is not synchronized with the VM Manager Tool.`

To solve the problem, make sure that the VM Manager tool is installed. You can also [check the history \(on page mcccxxi\)](#) of the Configure VM Manager Tool action in the BigFix console to investigate the failed step. Additional information can also be found in the BigFix console log files that are in one of the following directories:

- **Linux** `/var/opt/BES Client/___BESData/___Global/Logs`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Client\___BESData\___Global\Logs`

### The connection test does not finish.

See the solution for: [Data from VM managers is not updated on the BigFix server. \(on page mcccxx\)](#)

### Connection to Hyper-V fails with the following error: `The RPC server is unavailable.`

Ensure that port 135 as well as all Windows dynamic ports are open for communication.

### Data from VM managers is not updated on the BigFix server.

If you run a connection test for a VM manager and it does not finish, it might indicate a problem with the BigFix client that is installed on the BigFix server. If the client is stopped, actions that you perform in BigFix Inventory are sent to the BigFix server but the status is marked as Not reported. To determine further actions, investigate the BigFix client that is installed on the BigFix server.

For the same reason, data from VM managers might not be uploaded to the BigFix server. Check the value in the **Last Successful Operation** column to verify if the data was recently sent to the server.

**Actions that are performed in the VM Managers panel, such as testing the connection or adding a new VM manager, fail.**

If actions that you perform in the VM Managers panel fail, you can log in to the BigFix console that is linked to your primary data source and check the history of recent actions, such as Configure VM Manager Tool or VM Manager Tool - connection test. By doing so, you can investigate details of the failed step and determine the solution. If you are not sure which data source to connect to, log in to BigFix Inventory and click **Management > Data Sources**.

To check the history of recent actions, complete the following steps:

1. Log in to the BigFix console that is linked to your primary data source.
2. In the navigation tree, click **Computers**.
3. In the upper-right pane, select the computer that is defined as your primary data source.
4. In the lower-right pane, click the **Action History** tab.
5. Double-click on one of the recent actions that failed:
  - If the connection test was unsuccessful, check the VM Manager Tool - connection test action.
  - If modification of VM managers failed, check the Configure VM Manager Tool action.
6. In the new window, click the **Computers** tab.
7. Double-click on the action.
8. Locate the failed step and check the details.

#### **The VM Managers panel is blocked or contains error messages.**

The VM Managers panel is either blocked completely, with no possibility of performing any actions, or it contains one of the error messages that instruct you to install the VM Manager tool or the BigFix services.

To solve the problem, complete the following steps:

- Ensure that the BigFix server and client are installed on the target endpoint.
- Install and start Web Reports on the BigFix server. For more information, see: [Installing the Web Reports](#).
- Subscribe the BigFix server to the **BigFix Inventory** site.
- Make sure that the content of the **BigFix Inventory** site is up-to-date. If your computer does not have access to the Internet, see: [Downloading files in an air-gapped environment](#).
- Subscribe the target endpoint to the **BigFix Inventory** site.
- Make sure that the VM Manager tool is installed. For more information, see: [Installing the VM Manager tool \(on page dccc xvii\)](#).

#### **CPU frequency that is displayed on the Hardware Inventory report equals zero**

CPU frequency is an additional parameter. It is retrieved only from computers that are not managed by VM managers or from virtual machines that are not in the *OK* status. CPU frequency values do not influence PVU calculations.

#### **Virtual machines that are managed by the VMware vCloud Director have duplicate BIOS UUIDs.**

The problem occurs when virtual machines are deployed from catalog templates. To work around the problem, see: [BIOS UUIDs in vCloud Director are not unique when virtual machines are deployed from catalog templates \(2002506\)](#).

### The Hardware Inventory report in BigFix Inventory displays *No Scan Data* after capacity scans were run on VMware guest operating systems.

The import log contains multiple occurrences of the following errors.

```
Some error occurred during importing the capacity scan from file :
capacity_scan_file_name.xml for endpoint :
endpoint_number.
```

```
getNodeInfo Error: VMware VirtualMachine UUID (06XZXA0) do not match with the UUID pattern!
```

In the scan files uploaded by the clients, the UUID tag contains the hosts serial number instead of the virtual machine UUID. Example:

```
<VirtualMachineGuest version="1">
  <UUID>06CZFCV</UUID>
  <HypervisorType>VMware</HypervisorType>
</VirtualMachineGuest>
```

BigFix Inventory requires unique virtual machine UUID numbers to properly calculate the capacity for all virtual machines. This error might be caused by the host serial number appearing in the place where virtual machine UUID is normally recorded. If you install an operating system with the so-called Reseller Option Kit (ROK) media, some data might be obtained from the server BIOS, instead of from the virtual machine.

To enable the correct retrieval of UUID data from operating systems installed with the ROK media, edit the virtual machine's `.vmtx` file and set the `reflectHost` parameter to `false`. Example:

```
SMBIOS.reflectHost = "false"
```

If the problem persists, force the upload of capacity scan data. To do this, perform the following steps.

1. Log in to the BigFix console.
2. In the navigation tree, go to **Fixlets and Tasks** and select the **Run Capacity Scan and Upload Results** fixlet.
3. In the lower pane, click **Take Action**, and choose **Click here to run a single capacity scan and force upload of results**.
4. Open the **Target** tab and select the computers that you want to scan. Then, click **OK**.
5. Wait for the scheduled import, or run it manually.

### Data on the Hardware Inventory report is outdated.

The problem might occur when the import of capacity scan data fails. To solve the problem, perform the following steps:

1. Log in to the BigFix console.
2. In the navigation tree, go to **Fixlets and Tasks** and select the **Run Capacity Scan and Upload Results** fixlet.
3. In the lower pane, click **Take Action**, and choose **Click here to run a single capacity scan and force upload of results**.
4. Open the **Target** tab and select the computers that you want to scan. Then, click **OK**.
5. Wait for the scheduled import, or run it manually.

When the scan finishes, its results are uploaded to the BigFix server. After the data is imported to BigFix Inventory, the Hardware Inventory report should be up-to-date.

#### **The Hardware Inventory report displays no Processor Brand String data.**

The problem might occur after the migration, or upgrade. To see the Processor Brand String data on the report, force the upload of capacity data by completing the following steps.

1. Log in to the BigFix console.
2. In the navigation tree, go to **Fixlets and Tasks** and select the **Run Capacity Scan and Upload Results** fixlet.
3. In the lower pane, click **Take Action**, and choose **Click here to run a single capacity scan and force upload of results**.
4. Open the **Target** tab and select the computers that you want to scan. Then, click **OK**.
5. Wait for the scheduled import, or run it manually.

#### **Computers have the *No Scan Data* status because results of the capacity scan were removed from the BigFix Inventory server**

Results of the capacity scan are stored in a folder on the computer where the BigFix Inventory server is installed. If the folder is removed, the status of computers on the BigFix Capacity Completeness widget changes to *No Scan Data*. If the results of the next capacity scan differ from the results that currently exist on the scanned computers, they are uploaded to the BigFix Inventory server. Then, the status of computers changes from *No Scan Data* to *OK*. However, if the results of the next capacity scan are the same as the results that exist on the scanned computer, they are not uploaded and the computers remain in the *No Scan Data* status. To solve the problem, perform the following steps.

1. Log in to the BigFix console.
2. In the navigation tree, go to **Fixlets and Tasks** and select the **Run Capacity Scan and Upload Results** fixlet.
3. In the lower pane, click **Take Action**, and choose **Click here to run a single capacity scan and force upload of results**.
4. Open the **Target** tab and select the computers that you want to scan. Then, click **OK**.
5. Wait for the scheduled import, or run it manually.

## Scan problems

The most common problems with software scans are reported on the Software Scan Health widget. Refer to this topic to learn how to solve problems that are reported on the widget as well as for solutions to other scan-related problems.

### Software Scan Health widget

The Software Scan Health widget shows the health of scans that are running in your infrastructure. You can drill down to reports for specific computers with scan problems. By sorting the columns of a report, you can quickly understand which computers are failing which specific software scan types.

**Failed Scan: At least one type of software scan (catalog-based, file system, package data, or software tags) did not complete successfully.**

This problem might occur because the computer is out of space, is misconfigured, or the scan was stopped.

**Missing Scan: The last attempt to initiate at least one type of software scan (catalog-based, file system, package data, or software tags) was more than 30 days ago.**

This problem might occur because the computer is out of space, is misconfigured, or the scan was stopped.

**Outdated Catalog: The version of the catalog on the agent is older than the version that is available on the server.**

When you upload a software catalog to BigFix Inventory or edit your custom catalog, the status of the catalog is pending until you run an import. During the import, endpoint catalogs are created and the version of the catalog that is displayed on the Software Catalog widget is updated. Endpoint catalogs are then distributed to the computers in your infrastructure.

The time when the endpoint catalog reaches the computers depends, for example, on the computer connection status. When the endpoint catalog is updated on the computer, information about the new version of the catalog is gathered by the Software Scan Status analysis. After the next import, information about the version of the catalog that is available on the computer is updated in BigFix Inventory.

Because this entire flow might take some time, it can happen that a computer has the Outdated Catalog status even though there are no problems. To verify whether any action is needed, perform the following steps:

1. On the Software Catalog widget, check the date when the catalog was last edited.
2. On the Software Scan Health widget, click **Outdated Catalog** to view the list of affected computers and check the date in the **Last Software Change** column.

- If the last scan import was before the date when the catalog was last edited, wait for the next scan and the subsequent import. As described above, distribution of the endpoint catalog to the computers and reporting its version from the computers to BigFix Inventory might take some time.
- If the last scan import was after the date when the catalog was last edited, force the distribution of the software catalog to the computers. For more information, see: [Troubleshooting scanner catalogs update \(on page mcdxxvi\)](#).

### **Scan Not Uploaded: Results of the catalog-based scan or file system scan were not uploaded to the BigFix server.**

This problem might occur because the computer or a relay is offline, there is a network outage, or the last scan attempt was more than 30 days ago. Check whether each computer listed in the report is running and that the scan results are uploaded to the server on a regular basis. You can check the time of last scan attempt for all types of the software scan in the Software Scan Status analysis.

If the problem persists, it might indicate that the initial download of the catalog to the endpoints failed. To solve the problem, upload the latest catalog to the agent. For more information, see: [Troubleshooting scanner catalogs update \(on page mcdxxvi\)](#).

#### **IBM i**

IBM i computer scans are excluded from the Scan Not Uploaded check.

### **Unscanned Shared Disks: A remote shared disk is not scanned by the agent.**

License usage for IBM software that is installed on an unscanned shared disk might be under-reported. To solve the problem, enable scans of remote shared disks.

#### **9.2.12**

The status is based on scanning shared disks by using the basic mode. Starting from application update 9.2.12, you can discover software that is installed on shared disks by using the optimized mode. This mode allows for reducing the load that scans produce on shared disks. For more information, see: [Discovering software on shared disks \(on page dcxxx\)](#).

## **Other scan problems**

### **10.0.5**

#### **Long running scans caused by signatures using `config.xml` file to discover the IBM Clarity Data Collection**

The signatures which were using `config.xml` to discover the IBM Clarity Data Collection 6.6 and 7.2, caused the scans to run longer. In BigFix Inventory version 10.0.5, the signatures have been removed from the LMT catalog.

### **The software scans cannot be initiated because the Initiate Software Scans task is not applicable**

The software scans depend on the scanner catalogs that are used by the scanner to discover software. The scanner catalogs are created when you upload the software catalog to BigFix Inventory. If you cannot run the software scans, it might mean that the catalogs were not created. Before you update the scanner catalogs manually, complete the following steps to check the cause of this problem:

1. On the computer on which the task is not applicable, go to the `<BES_Client>\LMT\CIT` directory.
2. Check if the `catalog.bz2` file exists. The file contains the scanner catalogs.
3. Log in to the BigFix console.
4. In the navigation bar, click **Actions**.
5. In the upper-right pane, locate the **Catalog Download (Version version)** action and select it.
6. Check the details of the action. You can check on which computer the action failed and investigate the failed steps. Try to determine the cause of the problem and fix it.

If you cannot determine the cause, update the catalogs manually. For more information, see:

[Troubleshooting scanner catalogs update \(on page mcdxxvi\)](#).

### **In the Software Scan Status analysis, the status of a software scan is Failed and the value in the Is archive file size exceeded column is True**

The problem occurs when the scan file is larger than the maximum archive file size that can be sent by the BigFix client. To solve the problem, perform the following steps:

1. Check the BigFix client log for information about the size of the file that exceeded the limit. By default, the log is in the following location.

Linux	<code>/var/opt/BESClient/___BESData/___Global/Logs</code>
Windows	<code>C:\Program Files (x86)\BigFix Enterprise\BESClient \\_BESData\\_Global \Logs</code>

2. Log in to the BigFix console.
3. In the left navigation, click **Computers**, right-click the computer on which the scan failed, and then click **Edit Computer Settings**.
4. Increase the value of the `_BESClient_ArchiveManager_MaxArchiveSize` parameter.

### **The software scan cannot be run on an LPAR because the Initiate Software Scan is not relevant on that computer**

When a WPAR exists on an LPAR, all WPAR processes are visible on the level of the LPAR. When the software scan is running on the WPAR, the process is visible on the level of the LPAR and thus the Initiate Software Scan fixlet is not relevant on the LPAR. To run the software scan on the LPAR, wait for the scan to finish on the WPAR. Alternatively, perform the following steps:

1. Log in to the BigFix console.
2. Select the **Initiate Software Scan** fixlet and click **Take Action**.
3. On the **Target** tab, select **Dynamically target by property**.
4. Expand **By Retrieved Properties** and then expand **By Computer Name**.
5. Select the LPAR computer on which you want to run the software scan and click **OK**.

### **Upgrade of the scanner fails on a WPAR**

When a WPAR exists on an LPAR, you must first upgrade the scanner on the LPAR, and then on the WPAR.

### **Software scans are failing. Computers where the scans are failing have the Low Disk Space status on the Deployment Health widget.**

The problem might be caused by insufficient disk space for the scanner cache. To solve the problem, move the scanner cache folder to a different location or optimize the cache. For more information, see: [Optimizing scanner cache configuration \(on page dclxxxiv\)](#).

### **Software components that are installed in the `/usr/lpp` directory on AIX are not discovered**

The problem occurs because the `/usr/lpp` directory is by default excluded from software scans. Starting from scanner version 2.8.0.5000, the directory is included in software scans, and components installed in this directory are discovered. Thus, to solve the problem, update the scanner to version 2.8.0.5000 or later, and wait for the next scheduled software scan. Alternatively, you can manually include the `/usr/lpp` directory in software scans. For more information, see: [Including the excluded directories back in scans \(on page dcliv\)](#).

### **After the update of the scanner, the number of software components discovered on AIX increased and some duplicates appeared**

Previously, the `/usr/lpp` directory was excluded from software scans. However, components whose signatures existed only in this directory were not discovered. Thus, starting from scanner version 2.8.0.5000, the `/usr/lpp` directory was included in software scans. It caused that more components are discovered and displayed on the reports. However, components installed in the `/usr/lpp` might also be discovered in other directories. In such case, duplicate components appear on the reports. To solve the problem, suppress the duplicates. For more information, see: [Excluding and suppressing software instances \(on page cmlxxxi\)](#). You can also create a custom rule that suppresses components that are discovered in `/usr/lpp` and other directories. For more information, see: [Creating and managing custom rules \(on page cmlxxxiii\)](#).

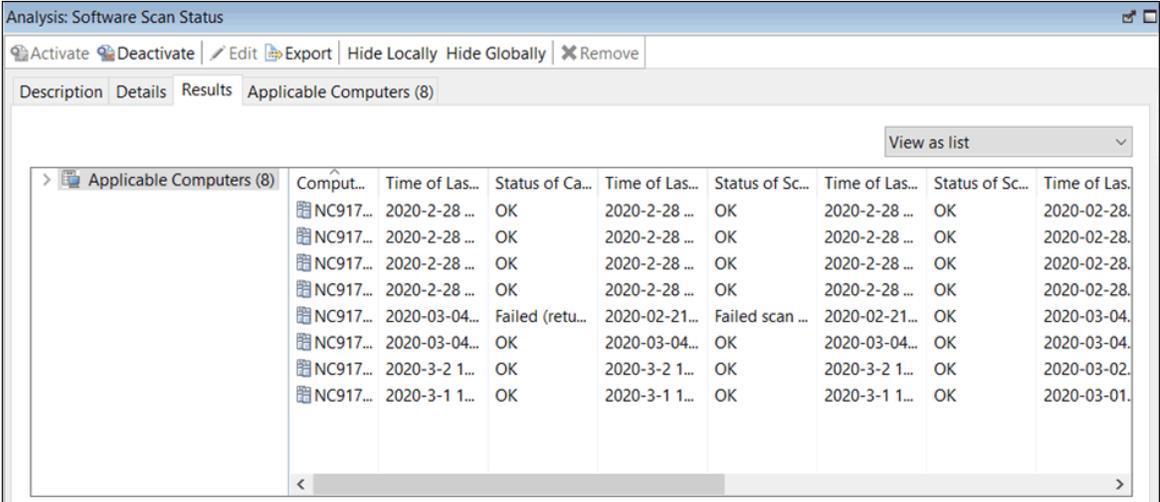
### **How to check the results of the Software Scan Status analysis**

To check the status of the software scan, view the results of the Software Scan Status analysis.

1. Log in to the BigFix console.
2. In the navigation tree, go to **Sites > External Sites > BigFix Inventory > Analyses**.
3. Select the **Software Scan Status** analysis.
4. In the lower pane, open the **Results** tab.



**Tip:** Scroll right to view all the relevant data.



The screenshot shows a window titled 'Analysis: Software Scan Status' with a toolbar containing 'Activate', 'Deactivate', 'Edit', 'Export', 'Hide Locally', 'Hide Globally', and 'Remove'. Below the toolbar are tabs for 'Description', 'Details', 'Results', and 'Applicable Computers (8)'. A 'View as list' dropdown is visible in the top right. The main area displays a table with the following columns: 'Comput...', 'Time of Las...', 'Status of Ca...', 'Time of Las...', 'Status of Sc...', 'Time of Las...', 'Status of Sc...', and 'Time of Las...'. The table contains 8 rows of data for computers with IDs starting with 'NC917...'. The scan dates range from 2020-2-28 to 2020-3-1. Most scans are 'OK', but one scan on 2020-03-04 is 'Failed (retu...)'.

Comput...	Time of Las...	Status of Ca...	Time of Las...	Status of Sc...	Time of Las...	Status of Sc...	Time of Las...
NC917...	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-02-28...
NC917...	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-02-28...
NC917...	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-02-28...
NC917...	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-2-28 ...	OK	2020-02-28...
NC917...	2020-03-04...	Failed (retu...	2020-02-21...	Failed scan ...	2020-02-21...	OK	2020-03-04...
NC917...	2020-03-04...	OK	2020-03-04...	OK	2020-03-04...	OK	2020-03-04...
NC917...	2020-3-2 1...	OK	2020-3-2 1...	OK	2020-3-2 1...	OK	2020-03-02...
NC917...	2020-3-1 1...	OK	2020-3-1 1...	OK	2020-3-1 1...	OK	2020-03-01...

### New software titles were added to the catalog, a data import was run but the software is not visible in the BigFix Inventory web user interface

One of the reasons for the missing software titles in the BigFix Inventory UI is that non-standard file types were used as software signatures. If you added a rule with non-standard file extensions, you must either wait until all the steps in the [catalog data flow \(on page mlv\)](#) complete or perform those steps yourself. To have accurate inventory data:

1. Run a data import ([on page dclxxiii](#)) to propagate the catalog to the endpoints.
2. Verify that the catalog was propagated successfully.
3. Upload the scan data ([on page dcxvii](#)) to the BigFix Inventory server.
4. Run another data import.

### The scanner cannot be updated on 32-bit Linux x86

The problem occurs on the 32-bit Linux x86 with the `libstdc++.so.5` library for which the last available version of the scanner is 2.8.0.3000. To solve the problem, update the library to `libstdc++.so.6` if available. Otherwise, the scanner cannot be updated.

#### 9.2.5 IBM i Software Scan Health limitations on IBM i

The result of the file system scan is positive by default in the IBM i environment. The **File System Scan Successful** column is always set to yes.

#### UNIX After running a scan on a large system with high number of mount points or share drives, the log file contains multiple return codes related to insufficient memory

During file scan or software scan that is performed on large servers with high number of mount points or share drives, memory requirements for the scanner increase. If there is not enough memory available for the scanner to work, the log file might contain the following return codes:

- 125 which indicates memory allocation failure.
- 134 which translates into the operating system signal 6 - SIGABRT.
- 139 which translates into the operating system signal 11 - SIGSEGV.

For more information, see: [Software scan return codes \(on page mcccxcvi\)](#).

To check whether the issue is related to problems with memory, monitor the memory usage of the scanner and determine if it reaches the limits set on the system. Ensure that your limit allows scanner to work properly. For example, for the scanner on a sever with 20 000 mount points or share drive the required memory is about 500 MB of RAM. Thus, the `ulimit` for `data seg size`, or `ulimit -d` must be set to at least 500000. For more information, see: [Ulimit command \(on AIX\)](#).

When you scan large systems with high number of mount points or share drives, consider the following aspects:

- The scan can be slow.
- The scanner logging must be set to minimum, as it has significant impact on performance in such environments.
- Do not set a CPU threshold, or if required, ensure that the limit is not too low.

#### **Windows** Optimized scan of shared disks does not complete on Windows

When you enable optimized scan of shared disk, the scan does not complete. In the BigFix console, when you go to **Actions**, the status of the Optimized Shared Disks Scan Update Resources List action is Pending Downloads and the following error is displayed in the Summary section.

```
HTTP Error 28: Timeout was reached: Connection timed out after 10000 milliseconds"
```

The problem occurs on Windows systems with multiple interfaces. To solve the problem, see: [Configuring servers in separate networks \(on page dlxxxvi\)](#).

## Security problems

Security problems in BigFix Inventory might include issues with logging in to the application or those related to the security of your credentials and your environment. However, you can easily recover from these problems.

### **Login credentials and the authenticity token are stored as plain text in the HTTP packet.**

After logging in, the login form that contains the credentials is sent as plain text in the HTTP packet. You can solve this issue by configuring SSL.

### **When creating a new user, autocomplete is enabled for the password field.**

When creating a new user, the password field might be filled by autocomplete based on the password that is stored in the browser.

### **The server is not working properly after certificates are modified.**

If the server is not working properly after certificates are modified and the server is restarted, then delete the keystore file `key_server.jceks` and restart the server. The keystore file is regenerated with a self-signed certificate. You can investigate the problem in the `tema.log` file.

The keystore file name is different for different versions:

- Starting from 10.0.8.0
  - `key_server.p12`
- For earlier versions
  - `key_server.jceks`

### Difficulty establishing a connection with HTTPS.

If you have difficulty when establishing a connection with HTTPS and you are using SSL, check that your browser supports TLS 1.2 and that it is enabled.

### The single sign-on configuration values are not updated automatically after you modify the server port.

Modifying the port number on the **Server Settings** pane in BigFix Inventory while single sign-on is enabled invalidates the single sign-on configuration. For information how to properly modify the port, see [Modifying port in BigFix Inventory that has single sign-on enabled \(on page mcccx\)](#).

If you already modified the BigFix Inventory server port and are experiencing issues signing onto BigFix Inventory, you need to:

1. [Revert the disabled SSO configuration for SAML \(on page mcccxcv\)](#) or [Revert the disabled SSO configuration for LTPA \(on page mcccviii\)](#).
2. Provide the new port value on the **Server Settings** page. To access the page, click **Management > Server Settings**.
3. Re-create the single sign-on configuration with the new port value. For more information, see either [Configuring SSO based on SAML token \(on page mcccxxxvi\)](#) or [Configuring SSO based on LTPA \(on page mcccxcvii\)](#).

### After you log in to BigFix Inventory for the first time with single sign-on enabled, you are redirected to an BigFix icon instead of the overview page.

To recover from this error, follow the instructions in [Handling the favicon.ico file with Mozilla Firefox](#).

### When you are importing a certificate in the PEM format and an encrypted private key in the pkcs8 format, an error about incorrect password for the private key is displayed.

When you are importing a certificate and a private key in the pkcs8 format, the following error is displayed:

```
Error when validating private key password: problem parsing ENCRYPTED
PRIVATE KEY: java.lang.SecurityException: JCE cannot authenticate the provider BC.
```

To solve the problem, add the following line to the `installation_dir/jre/lib/security/java.security` file:

```
security.provider.10=org.bouncycastle.jce.provider.BouncyCastleProvider
```

Then, restart the BigFix Inventory server.

### When you log in to BigFix Inventory using the LDAP authentication, the following error message is displayed:

**Error contacting the Directory Server for authentication.**

The error might occur if the SSL LDAP certificate that is used to authenticate users in BigFix Inventory was recently updated. To refresh the certificate in the BigFix Inventory database, perform the following actions:

1. Log in to BigFix Inventory as a local administrator.
2. In the top navigation bar, click **Management > Directory Servers**.
3. Choose the LDAP server that is used to authenticate users.
4. Click **Test Connection**, and wait for connection test to finish.
5. Click **Save**.

### Antivirus software detects the LMT/CIT directory as possible threat.

The **LMT/CIT** directory is one of the default scanner directories that is required by BigFix Inventory. It is not infected with any malicious software and does not pose any threat to your system. It is recommended to exclude this directory from antivirus scans.

### Secure connection is not initialized and the CWWK00801E error can be found in the tema.log file.

Secure connection is not initialized and the following error can be found in the **tema.log** file.

```
000000b7 com.ibm.ws.channel.ssl.internal.SSLHandshakeErrorTracker
CWWK00801E: Unable to initialize SSL connection. Unauthorized access was denied
or security settings have expired. Exception is javax.net.ssl.SSLHandshakeException:
Client requested protocol TLSv1 not enabled or not supported.
```

## Server operation problems

Server operation problems in BigFix Inventory might include general issues that you might encounter when you use the application and its functions. However, you can easily recover from these problems.

### Scan configuration displays the status: Server unavailable

The scan schedule cannot be displayed and set because the BigFix server or the Web Reports service is not responding. To fix the problem:

1. Go to **Management > Data Sources**.
2. Check the connection parameters for the BigFix server.
3. Go to a browser on BigFix Inventory computer and test the following URL:

```
https://bigfix-server-address:52311/api/query?relevance=id%20of%20bes%20computers%20whose%20(root%20server%20flag%20of%20it=true)
```

4. When prompted, log in providing the connection parameters for the BigFix server, that you verified in [step 2 \(on page mcccclxxxii\)](#).

The expected result is:

```
<BESAPI xsi:noNamespaceSchemaLocation="BESAPI.xsd">
  <Query Resource="id of bes computers whose (root server flag of it=true)">
    <Result>
      <Answer type="integer">number value</Answer>
    </Result>
    <Evaluation>
      <Time>0.202ms</Time>
      <Plurality>Singular</Plurality>
    </Evaluation>
  </Query>
</BESAPI>
```

The following message indicates that Web Reports service is started but the required information is not collected yet. Wait a couple of minutes and retry the query.

```
<BESAPI xsi:noNamespaceSchemaLocation="BESAPI.xsd">
  <Query Resource="id of bes computers whose (root server flag of it=true)">
    <Result/>
    <Error>Singular expression refers to nonexistent object.</Error>
  </Query>
</BESAPI>
```

You can receive one of the following error messages:

- HTTP 401: Unauthorized

It indicates that you provided invalid credentials or the authorization step was canceled.

- Cannot perform relevance query evaluation at this time because there is no reachable Web Reports instance collecting data from this Server.

It indicates that Web Reports service is down or there is an issue with network connection, for example: proxy or firewall blocks access to Web Reports. Contact your network administrator for assistance to enable the communication between the BigFix server and Web Reports.

### The RPM scanner fixlet fails on AIX® 6.1

The scanner fails and the RPM installation package returns `undefined` during the software scan. To remedy this problem, upgrade your BigFix server, console, and clients to version 8.2.1175.

#### **Version 8.0 and 8.1 BigFix® Enterprise Server Clients cannot subscribe to the BigFix Inventory server.**

The solution is to unsubscribe all computers from the current site or remove the site, and then subscribe the clients back.

#### **A report was created correctly but it could not be sent as a PDF attachment to an email.**

The PDF report could not be sent because the mail server in your company does not accept large email attachments. To fix the problem:

1. Determine the size of large reports that are generated by BigFix Inventory: generate a sample PDF by clicking the **PDF** icon in the BigFix Inventory web user interface.
2. Contact your mail server administrator and request a higher size limit for email attachments in both the outgoing and incoming mail server configuration.

#### **Data that is gathered by an analysis property is incorrect.**

The same analysis property can exist in multiple external sites. In such a situation, the data that is gathered by the analysis might come from any of the sites, not necessarily the intended one. If some unexpected data is gathered by an analysis property, ensure that the analysis that you defined comes from the correct site. Go to the following URLs:

- [https://<bfi\\_host>:<port>/management/sam/unix\\_package\\_properties](https://<bfi_host>:<port>/management/sam/unix_package_properties)
- [https://<bfi\\_host>:<port>/management/sam/package\\_properties](https://<bfi_host>:<port>/management/sam/package_properties)
- [https://<bfi\\_host>:<port>/management/sam/app\\_usage\\_properties](https://<bfi_host>:<port>/management/sam/app_usage_properties)

Click the name of the property, and in the **Data Source Property** list, check whether the site is correct. The name of the site is displayed below the name of the property. If the site is incorrect, change it.

#### **BigFix Inventory does not start after rebooting the server.**

The problem often occurs in environments where BigFix Inventory and DB2® are installed on the same server. After rebooting the server, the DB2® instance is not started which also blocks BigFix Inventory from starting.

To fix the problem, ensure that your DB2® instance is running and then start BigFix Inventory:

1. Log in as the DB2® instance owner and start the instance:

```
su db2inst1
db2start
```

2. Start the BigFix Inventory server:

```
/etc/init.d/SUAserver start
```

**'We're sorry, but something went wrong.'**

For more information about the error, check the server log file `tema.log` in the `installation_directory/wlp/usr/servers/server1/logs/` directory.

**Software that is deployed under a `tmp` directory is not discovered.**

Temporary directories (`tmp`) contain large amounts of irrelevant data. Thus, they are not scanned by default. However, some applications are installed under `tmp` directories. As a result, they are not discovered by software scans. To solve the problem, include all `tmp` directories except for the main temporary directory of the operating system into software scans. It ensures that applications that are installed under `tmp` directories are correctly discovered but the main temporary directory of the operating system is not unnecessarily scanned.

On the computer where the software is installed, go to the `BESClient/LMT/CIT/` directory and open the `exclude_path.txt` file. It lists all directories that are excluded from software scans.

- For UNIX operating systems
  1. Remove the `*/tmp/*` directory from the list.
  2. Add the following directories and save the file.

```
/tmp/*
/var/tmp/*
*/usr/tmp/*
```

- For Windows
  1. Remove the `*/tmp/*` directory from the list and save the file.

**Return code 9 or 29 is displayed in the results of the Software Scan Status analysis.**

The return code indicates that the scanner timed out. To solve the problem, perform the following tasks:

- Increase the scan timeout in the **Configure Scan Timeout** task.
- Increase the amount of CPU that can be consumed by the scanner by increasing CPU threshold in the **Initiate Software Scan** task.
- Exclude directories with backups from software scans.
- Decrease the scanner trace level in the **Edit Scanner Trace Settings** task.

If all other options fail, reinstall the scanner.

**An error occurs while importing contracts through REST API.**

When using a curl command to import contracts through REST API, the following error is displayed:

```
curl: (18) transfer closed with outstanding read data remaining
```

To solve the problem, upgrade curl to a later version:

**Linux** Curl must use the NSS library 3.14, or later. Run `curl --version`. The version of NSS is displayed in the output. Upgrade curl if the NSS version is earlier than 3.14.

```
curl 7.19.7 (x86_64-redhat-linux-gnu) libcurl/7.19.7 NSS/3.14.0.0
zlib/1.2.3 libidn/1.18 libssh2/1.4.2
```

**Windows** Upgrade to curl 7.27.0, or later.

**When you make an API call, the call fails and the following message is written in the log:** `The connection is closed.`

The problem occurs when you make an API during the import. To solve the problem, wait until the import finishes and ensure that the BigFix Inventory server is running. Then, repeat the API call.

**The `tema.log` file contains the following error:** `E CWWKF0002E: A bundle could not be found for com.ibm.ws.javaee.servlet.3.0/[1.0.0,1.0.100).`

The error occurs after you enable single sign-on. There are no other problems except for the errors in the log. To solve the problem, perform the following steps:

1. Go to the BigFix Inventory installation directory and open the `wlpstart.bat` file.
  - Linux: `/opt/ibm/BFI/wlp/bin/wlpstart.bat`
  - Windows: `C:\Program Files\BigFix Enterprise\BFI\wlp\bin\wlpstart.bat`

2. Add the `--clean` parameter to the last line in the file.

```
call "%WLP_PATH%\bin\server.bat" start server1 --clean
```

3. [Stop the server \(on page dcccxlvi\)](#).
4. [Start the server \(on page dcccxlv\)](#).
5. Verify that the errors no longer appear in the log and remove the `--clean` parameter from the `wlpstart.bat` file.

**Emails with scheduled reports are not sent via email after the BigFix Inventory server was upgraded.**

To fix this problem, restart the BigFix Inventory server.

**BigFix Inventory server redirects to the database setup page because the `database.yml` file is corrupted**

The `database.yml` file has a strictly defined format and it should be modified only using text editors which support Unix and Windows line-endings. Using Notepad is not recommended, as the older versions, like on Windows Server 2016, display the file incorrectly. Also, formatting of the file must be preserved while saving `database.yml` file as the file is in YAML format and whitespace characters denote its structure. If the file is corrupted, BigFix Inventory server can not read the and the server redirects to the database setup page.

For more details, refer to:

- [Moving the BigFix Inventory database \(on page dccclxxxvii\)](#)
- [Updating the database password \(on page dccclxxxviii\)](#)
- [Enabling database connection encryption for MS SQL for BigFix Inventory \(on page mcclvii\)](#)
- [Enabling database connection encryption for DB2 for BigFix Inventory \(on page mcclx\)](#)
- [Configuring database password encryption \(on page mccc xvii\)](#)

## User interface problems

User interface problems in BigFix Inventory are mostly related to information that is incorrectly displayed in the application or to errors that arise in the non-English-language versions of the software. However, you can easily recover from these problems.

### **After restarting the computer, the BigFix Inventory user interface cannot be launched.**

When you restart the computer on which you have BigFix Inventory installed, you must start the DB2® database before starting the application. Otherwise, you will not be able to log in to BigFix Inventory.

If you restart your computer, complete the following steps before starting the application:

1. Switch to the DB2® instance owner:

```
su - db2inst1
```

2. Start the database:

```
db2start
```

3. Restart BigFix Inventory:

```
/etc/init.d/BFIserver restart
```

### **On a low-resolution monitor, the user interface is not displayed correctly.**

The minimal supported screen resolution is 1360x768 pixels. Recommended screen resolution is 1920x1080 pixels.

### **On Linux, text columns in reports are not alphabetically sorted.**

Text columns in BigFix Inventory are sorted differently on Linux, and Windows. If you click a column header, the values are sorted in a case-sensitive way on Linux (all the names with capital letters are displayed first) and case-insensitive on Windows (capitalized and non-capitalized words are mixed and sorted in alphabetical order).

### **On the Catalog Audit report, the values are displayed in an incorrect time zone.**

Values that are related to dates and time are based on the time zone that is set in your operating system. However, the Daylight Saving Time is not considered. Thus, values are set to an incorrect time zone.

### **When you leave a page while modifying data, there is no warning that the data will be lost.**

When you modify data, for example, in one of the panels from the **Catalog Customization** menu, the data will be lost if you change the view or close the page. No warning is displayed. Ensure that you save all data before navigating to another view.

**The `Import is now running` message is not refreshed even after the import is complete.**

The page with the `Import is now running` message is not refreshed and the message is still displayed even when the import is complete. To solve this issue, you can hover over the **Reports** menu and check the percentage status of the import on the bottom of the drop-down list. You can also refresh the page manually.

**The PDF reports are missing a part of text or the font is incorrect.**

To ensure that text in PDF is properly displayed, the following font families or their substitutes must be installed in the operating system with BigFix Inventory installation:

- Windows: Arial, Verdana
- Linux: Times, Lucida

Non-latin characters may require additional font families, depending on selected language:

- Windows: SimSun, Mongolian Baiti, Microsoft Yi Baiti, Microsoft Himalaya, Batang, MS PMincho, Tahoma
- Linux: ZYSong, Baekmuk Batang, Kochi Mincho

**Limitation:** Style of latin and non-latin characters may be different.

**The PDF reports open in the same browser tab as BigFix Inventory.**

The generated PDF reports open in the same tab as BigFix Inventory. Because of this issue, you might be forced to stop any activity in the application until the PDF opens. To solve the issue, change the settings in your browser.

**The PDF reports that are downloaded by using Firefox are corrupted.**

Although the PDF reports are correctly displayed in the browser, the downloaded file is corrupted. The problem occurs in Firefox. To solve the issue, use a different browser.

**Autocomplete suggests irrelevant results.**

In some cases, autocomplete might suggest irrelevant results. For example, when you type HCL® as a publisher and then start typing the software product, autocomplete will list all possible software products instead of only those that belong to HCL®.

**When you open links to product details in new tabs, an error is displayed**

When you open the All Metrics or the IBM PVU Subcapacity report and open links to products that are displayed on these reports in new tabs, an error is displayed. The problem occurs because information about the time range for which the metric quantity should be displayed on the report is lost while opening the links in new tabs. To solve the problem, refresh the page.

**Paths for Korean and Japanese locales contain incorrect delimiter.**

Paths for Korean and Japanese locales use a backslash (\) as a delimiter, instead of won (₩) or yen.

**There is a missing space before the colon (:) for French locale.**

When a colon is used in text, there is a missing space before it although it is required in French language.

**The string on the Browse button on the Catalog Upload panel is not displayed in languages other than English.**

This error is caused by the web browser internal configuration and does not depend on BigFix Inventory.

**Some Chinese characters are not displayed correctly.**

To solve the problem, install the Zhong Yi Song TrueType font for the GB18030 standard:

1. Obtain the `fonts-chinese-zysong` package.
2. Install the package by running the following command:

```
rpm -ivh fonts-chinese-zysong-0.1-5.e15.noarch.rpm --nodeps
```

The new font was installed in the `/usr/share/fonts/zh_CN/TrueType` directory. The characters should now be displayed correctly.

**Messages are displayed in multiple languages.**

The language in which some of some messages are displayed depends on the settings of the BigFix Inventory server. To change the language settings on the server:

1. Open the `jvm.options` file that is in the `installation_directory/wlp/usr/servers/server1/` directory.
2. Add the following lines to the file and specify the language to be used.

```
-Duser.country=country  
-Duser.language=language
```

For example:

```
-Duser.country=US  
-Duser.language=en
```

3. Restart the server.

**Names of roles and computer properties are not translated.**

Starting from version 9.2.3, the language in which names of roles and computer properties are displayed depends on the language that was chosen during the installation of the BigFix Inventory server. For earlier versions, the language depends on the language that was set in the web browser during the creation of database connections after the installation.

If you need to change the language in which these items are displayed, you must do it manually. To change the name of a role, go to **Management > Roles**, select the role that is displayed in a wrong language, and change its name. To change the name of a computer property, go to **Management > Computer Properties**, select the property that is displayed in a wrong language, and change its name. In both cases, wait for a scheduled import or run in manually for the changes to take effect.

The changes that you make apply to all users regardless of their language settings.

#### 'We're sorry, but something went wrong.'

For more information about the error, check the server log file `tema.log` in the `installation_directory/wlp/usr/servers/server1/logs/` directory.

#### Unable to log in with users from Microsoft™ Active Directory

If you are having problems with your Active Directory users, append the user name with a domain, for example `username@domain.com`. Adding a domain is required starting from Software Use Analysis 9.2.0.2, but it also concerns Active Directory servers that were configured in previous versions. See the following cases for more information about how this change might impact your existing users.

##### Active Directory with Global Catalog

LDAP Server*	Microsoft Active Directory	<input checked="" type="checkbox"/> Global Catalog
--------------	----------------------------	--

- If you added users through User Provisioning in BigFix Inventory, new users are created whenever you log in with a user name and a domain. You can delete all Active Directory users that have only the user name specified because you will not be able to log in with those users.
- If you added users manually in BigFix Inventory, you must create them again, this time also specifying the domain. You can delete all Active Directory users that have only the user name specified because you will not be able to log in with those users.

##### Active Directory without Global Catalog

LDAP Server*	Microsoft Active Directory	<input type="checkbox"/> Global Catalog
Search Base*	dc=domain,dc=com	

If you did not use the Global Catalog, you must have specified a domain in the Search Base field. This domain is automatically added to all users in BigFix Inventory and no action is required from you.

#### URLs that point to the product web user interface do not work.

If you enabled single sign-on in BigFix Inventory, the link that is available in the **Start** menu on Windows™ might not work because an extra `"https://"` prefix is added to the url.

You can access this link on Windows™ 2008 by clicking **Start > All Programs > BigFix Inventory > Web Interface**. This URL is defined in the **WebUI** file that is in the following location: `C:\Program Files\ibm\BFI\admin\resources\WebUI`.

To fix this issue:

1. Open the **WebUI** file in a text editor, for example Notepad++, and remove the extra "https://" from the beginning of the URL.



**Note:** The default shortcut path is `https://localhost:9081`. If LTPA SSO is enabled, it needs to be updated to `https://virtual-junction-host-name:9081`.

2. Clear the cache in your web browser.
3. End all your browser processes.
4. Restart the system on which your browser is installed.

#### **When opening an exported CSV report in Microsoft Excel, some data is corrupted.**

Due to formatting issues in some versions of Microsoft Excel, the data might be displayed in incorrect columns. This problem mostly concerns components that have a comma in their name, which results in wrong formatting.

To fix this problem, complete the following steps.

1. Open Microsoft Excel.
2. In the navigation bar, click **Open**, and navigate to the folder that contains your report.
3. Change the valid file extensions to **All Files (\*.\*)** to see the report.
4. Open the file.
5. In the Text Import Wizard, select **Delimited**, and then choose **Comma** as a delimiter, and a quotation mark (") as a text qualifier.

After clicking **Finish**, the data will be divided among appropriate columns and displayed correctly.

#### **The CSV format of the report shows blank field values**

When you download the CSV format of a report after selecting all columns from the **Configure** view, some fields show blank values. This issue is because of the limitation in MS Excel worksheet ([MS Excel limitations](#)). It is suggested to download the reports with the default columns to view the values.

You can use this parameter in Advanced Server Setting to change the default value of the character.

#### **Loading any report takes substantial amount of time in case of huge deployments.**

In case of huge deployments, it can take a lot of time to generate a full report. Thus, if you do not need to view a full report as a default, you can use the work around and filter the report to limit the list of items.

1. Open a report and wait until it loads.
2. Hover over the **Manage Report View** icon , and click **Configure View**.
3. Set up adequate filters so that the report view is simple and limited to a few entries and click **Submit**.
4. Hover over the **Manage Report View** icon , and click **Save As**.
5. Name the report and save it as default.

This simple report that you created is now set as the default view. You no longer need to wait for the full report to load. You can further filter the data to view only the information that you require.

### A new computer has an empty computer name and operating system in BigFix Inventory

To solve the problem, go to **BigFix console > Computers**, right-click on the computer and choose **Send Refresh**. Repeat the steps for 3 times. Then run data import in BigFix Inventory.

## Logs and return codes

Find logs and interpret return codes to troubleshoot issues.

### Database creation logs and return codes

The log file is automatically generated when you create a database during the initial configuration of BigFix Inventory. The log file contains a return code that can help you check why database creation or validation failed. The file is in the `/tmp` directory and has a time stamp suffix, for example: `/tmp/createdb_20131018-131841`.

**Linux** The log file is created only if you installed BigFix Inventory on Linux™ and use a DB2® server.

### Return codes

Check the return code to find the reasons for database creation problems.

**Table 188. Return codes for the create database script**

*The table consists of two columns and 9 rows.*

Return code	Description and possible solutions
0	Database successfully created.
1	Help message is displayed, or incorrect syntax.
100	One or more errors occurred during the database creation. Database creation error. Check the database creation log: creation log <code>/tmp/createdb_latest_timestamp</code> .

**Table 188. Return codes for the create database script**

*The table consists of two columns and 9 rows.*

(continued)

Return code	Description and possible solutions
101	Database already created.
102	One or more errors occurred during the database validation. There is something wrong with the DB2® commands run from the script. The script requires a correctly initialized DB2® environment.
103	The DB2® version could not be correctly read from the db2level command. The db2level command returned the DB2® version string in an unexpected format.
104	Unsupported database version. ®You can check the version by running the db2level and db2licm -l commands as the SYSADM user.
105	An unsupported edition of the database was found in the system. You can check the version by running the db2level and db2licm -l commands as the SYSADM user.
127	Cannot run the db2 command. Incorrectly configured DB2® instance. The user that runs the script must have SYSADM authority. Try to run the script as the DB2® instance owner.

## Server installation and upgrade logs

Installation and upgrade log files are in the same directories, because those processes are completed by using the same installer. If you encounter any problems while installing or upgrading the server, refer to those log files for more information about any occurring errors.

### Log files

There are several log files that are created either during the installation or upgrade, or only when the process failed or completed successfully. Each path starts with a variable that is specific to the operating system. Those variables are explained below the table.

**Table 189. Installation and upgrade log files**

Installation Status	Windows	Linux
In progress	%USERPROFILE%\BFI_<version>	\$HOME/BFI_<version>
	%USERPROFILE%\<timestamp>.log	\$HOME/<timestamp>.log
	BESclient_installation_directory\LMT\BFI_upgrade.log	BESclient_installation_directory/LMT/BFI_upgrade.log
Failed	%USERPROFILE%\BFI_<version>time-stamp_uniqueID_logs.zip	\$HOME/BFI_<version>_<timestamp>.log-tar.gz

**Table 189. Installation and upgrade log files (continued)**

Installation Status	Windows	Linux
Successful	<code>installation_directory\BFI_&lt;version&gt;timestamp_uniqueID_logs.zip</code>	<code>installation_directory/BFI_&lt;version&gt;_timestamp_uniqueID_logs.tar.gz</code>

**%USERPROFILE%**

Home directory of the user who installed the server, for example `C:\Users\Administrator\`.



**Important:** When you upgrade by using a Fixlet, the upgrade runs under the `NT AUTHORITY\SYSTEM` user whose default home directory is `C:\Windows\System32\config\systemprofile\`.

**\$HOME**

Home directory of the user who installed the BigFix client, for example `/root/`.

**Log file contents**

To understand the root cause of installation and upgrade problems, review logs for messages with a severity level of WARN or ERROR. The following example shows a warning message.

```
<Message Id="CODIN0215W" Severity="WARN">
<Time Millis="1381929782997"> 2013-10-16 15:23:02.997+02:00</Time>
<Server Format="IP">NC040226.kraklab.pl.ibm.com</Server>
<ProductI>dCOD</ProductI>d
<Component>Install</Component>
<ProductInstance></ProductInstance>
<LogText><![CDATA[CODIN0215W The following ports are in use: 9081, .
The installation process can be continued but the server will not be started.
The server has to be started manually after resolving the ports conflict.]]></LogText>
<Source FileName="com.ibm.license.mgmt.install.ia.common.CommunicationCommon"
Method="okToContinue" />
<TranslationInfo Type="JAVA" Catalog="userLocales.InstallMessageEWI" MsgKey="checkPorts">
<Param><![CDATA[9081, ]]]></Param></TranslationInfo>
<Principal></Principal>
</Message>
```

To learn more about errors and return codes that can appear in the logs, go to [Server installation and uninstallation return codes \(on page mcccxciii\)](#).

**Server installation and uninstallation return codes**

If the server installation or uninstallation fails, check the return code to learn about the reason of the problem and possible solutions.

**Table 190. Server installation and uninstallation return codes**

Return code	Possible cause and solutions
0	The server was installed successfully.
5	An unexpected error occurred.
6	An unexpected exception occurred.
7	An internal error occurred. The installer failed to save the file with information that was collected or generated during the preinstallation stage.
8	The installation was canceled.
9	A post-installation step was terminated before it was finished. Problems with resuming the installation might occur.
11	Validation of the communication ports failed. Either the same port is specified for more than one parameter or the specified port is in use. If you want to specify a port that is temporarily used but will be available later, set the <b>RSP_DISABLE_COMMUNICATION_WARNINGS</b> parameter to true. For more information, see: <a href="#">Server installation response file (on page dxxxii)</a> .
13	Validation of the license agreement, or the file path failed. Either the license agreement was not accepted, the path to the installation response file is not absolute, or the command is too long. To accept the license agreement, set the <b>RSP_LICENSE_ACCEPTED</b> parameter to true.  If the problem persists, ensure that you provided an absolute path to the response file, or move the files to a different directory to shorten the command, for example <code>/root/BFI</code> or <code>C:\BFI</code> .
14	There is not enough space for the installation. To check how much free disk space is required to proceed with the installation, see the following installation log: <code>installation_dir/BFI_9.2_timestamp_logs.tar.gz</code> .
18	Validation of the installation path failed. The specified path is incorrect or the installation directory is read-only.
20	An unknown response file parameter was specified. Remove the parameter from the installation response file.
21	The response file was not found. It is either empty or contains Windows™ line endings instead of UNIX™ ones.
23	The command-line interface or another application from the BigFix Inventory installation path is still running. End the process manually or set the <b>RSP_AUTO_CLOSE_PROCESSES</b> parameter to true.
26	An internal error occurred. Creation of the log directory failed.
27	It was impossible to recognize the environment, for example, installed products.
28	The upgrading scenario is not supported.

**Table 190. Server installation and uninstallation return codes (continued)**

Return code	Possible cause and solutions
29	A part of BigFix Inventory that is already installed, is corrupted.
30	The uninstallation wizard could not find product information in registries. BigFix Inventory was already uninstalled.
31	The host name was not obtained. To verify the host name, in the command-line interface, enter the following command: <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;"> <pre>nslookup host_name</pre> </div>
32	An exception was detected while reading the <code>setup.ini</code> file.
33	An attempt of creating a log directory in the installation path failed because a file called <code>BFI9.2</code> already exists. To proceed with the installation, delete the file.
34	The log directory is read-only.
35	The system <code>TEMP</code> environment variable does not point to a valid directory.
36	Installation in console mode is not supported. Use interactive or silent mode.
37	The required resources could not be extracted from the installation image.
38	The required resources could not be found inside the installation image.
41	The post-installation failed. <div style="margin-top: 10px;">  <b>Tip:</b> If the issue occurs when upgrading BigFix Inventory server using a fixlet, and the fixlet is no longer relevant, resume the installation in interactive mode. One of possible causes of this problem is that a folder or a log file from BigFix Inventory installation folder is open in an external application or there is a command line running, which locks the resource and prevents the upgrade operation. </div>
42	Another instance of the installer is already running.
46	The post-installation was interrupted.
50	Resuming a failed installation in silent mode is not supported.
55	All elements of the infrastructure are already installed.
59	An internal error occurred. Contact IBM® support.
74	The previous installation or upgrade has not been finished successfully.
208	The installation could not finish because of the <code>NOEXEC</code> on the <code>tmp</code> directory. If all installation steps are completed, no further action is required. Otherwise, remove <code>NOEXEC</code> from the <code>tmp</code> directory or specify a new <code>tmp</code> directory in the following environment variable: <code>IATEMPDIR</code> . For example, <code>mkdir /root/Install_tmp; export IATEMPDIR=/root/Install_tmp</code> . Next, repeat the installation.

**Table 190. Server installation and uninstallation return codes (continued)**

Return code	Possible cause and solutions
214	The uninstallation process could not connect to the X server. Verify that the <code>DISPLAY</code> variable is properly set and points to a working X server.

**TASK**

[Uninstalling the server on Windows in interactive mode \(on page dxlvi\)](#)

[Uninstalling the server on Windows in silent mode \(on page dxlvi\)](#)

**TASK**

[Uninstalling the server on Linux in silent mode \(on page dlxxi\)](#)

[Uninstalling the server on Linux in interactive mode \(on page dlxxi\)](#)

## Software scan return codes

If the software scan fails, an error code that indicates why the scan failed is returned. Check what is the possible cause of scan failure that is indicated by each code and how to solve the problem.

### Locating the return codes

The error codes for the software scan are returned in the results of the Software Scan Status analysis.

The screenshot shows a window titled "Analysis: Software Scan Status" with a toolbar containing "Activate", "Deactivate", "Edit", "Export", "Hide Locally", "Hide Globally", and "Remove". Below the toolbar are tabs for "Description", "Details", "Results", and "Applicable Computers (14)". The "Applicable Computers (14)" tab is active, displaying a table with the following columns: "Com...", "Computer ID", "Status of Catalog-based Scan", "Status of File System Scan", and "Tim...".

Com...	Computer ID	Status of Catalog-based Scan	Status of File System Scan	Tim...
BF...	1580283	4:-1073740791	4:-1073740791	202
BF...	5156948	OK	OK	202
BF...	7589803	OK	OK	202
bf...	9315608	OK	OK	202
BF...	537280261	OK	OK	202
BF...	537636982	OK	OK	202
BF...	543504681	OK	OK	202
BF...	1074520740	OK	OK	202
bf...	1079863547	OK	OK	202
BF...	1087958098	OK	OK	202
BF...	1618310329	OK	Failed (return code: 139)	202
bf...	1620140556	OK	OK	202
bf...	1622697488	OK	OK	202
W...	1082836776	Upload Failed	Upload Failed	202

The Software Scan Status describes values for:

- Status of Catalog-based Scan
- Status of File System Scan
- Status of Scan for Software Identification Tag Files
- Status of Scan for Package Data
- Status of Resource Utilization Scan
- Status of Scan for Application Usage Statistics
- Status of Scan for Application Usage Statistics with Path

The above properties read the code from files created during software scan (Initiate Software Scan and then `runcit_sw.sh/.bat` file being run in the background). For example, for Catalog Scan, the file is named as `catalog_scan_status.info`.

## Possible Status Messages

Software Scan Status reads the codes

Displayed Status	Code in file	Meaning
Not supported	N/A	Given endpoint is not supported
Running	0	Scan in progress or terminated without updating the status
OK	1	
Failed (return code: <RC>) <i>Failed (return code:5)</i>	2:<RC> 2:5	Scan returned with error. Error as reported by Scanner/CIT. See also, <a href="#">Software scan return codes (on page mcccxcviii)</a> .
Failed (return code: 255)	2:255	Expected file to execute has been not found. Issue with previous step.
Failed: (return code: 9009)	2:9009	Expected file to copy / move has been not found. Issue with previous step.
Upload Failed	N/A	Check MaxArchiveSizeExceeded on the endpoint
Invalid archiver	9	There is an issue with 7za.exe/pack.cmd on Windows or bzip2 on other platforms
No information	N/A	missing .info file for scan
Inspector interrupted	N/A	BigFix interrupted evaluation of the relevance due to timeout. If problem persist reach support, relevance might need optimization. BigFix does not received the result of given property. Consider using "Force Refresh" on the endpoint to get complete report.

Displayed Status	Code in file	Meaning
Property not found	N/A	BigFix does not received the result of given property. Consider using "Force Refresh" on the endpoint to get complete report.
4: <RC>	4: <RC>	Indicates issue with use of command move on Windows boxes <ul style="list-style-type: none"> <li>• -1073740791 - STATUS_STACK_BUFFER_OVERRUN</li> <li>• -1073741571 – file system error</li> <li>• -1073741819 – file system error</li> </ul>
Failed (return code: 90)	N/A	Initiate Software Scan action stopped the execution as it detected that software scan process ( <code>wscansw</code> ) is already running. This can happen if there are more than one Initiate Software Scan action scheduled for the same start time.
Failed (return code: 91)	N/A	Initiate Software Scan action stopped the execution as it detected that file scan process ( <code>wscanfs</code> ) is already running. This can happen if there are more than one Initiate Software Scan action scheduled for the same start time.
<error>	<error>	Issue with Relevance evaluation

### Software scan return codes

Return code	Possible cause and solutions
0	No errors.
1	<p><b>Windows</b> Scan data was not gathered. To verify what is the cause of the problem, go to the computer where the problem occurred, open the command prompt and run the following command.</p> <pre>cscript</pre> <p>The command should return one of the following errors:</p> <ul style="list-style-type: none"> <li>• 'cscript' is not recognized as an internal or external command, operable program or batch file.</li> </ul> <p>The message indicates that the Windows <code>cscript</code> is not recognized as an internal or external command, operable program or batch file. To solve the problem, perform the following steps. The exact steps might differ depending on the version of Windows that you are using.</p> <ol style="list-style-type: none"> <li>1. On the computer where the problem occurred, open the Control Panel, and go to <b>System and Security &gt; System &gt; Advanced system settings</b>.</li> <li>2. Click <b>Environment Variables</b>.</li> </ol>

Return code	Possible cause and solutions
	<p>3. In the <b>Path</b> field variable, add <code>;C:\windows\system32</code>.</p> <p>4. Restart BigFix client.</p> <ul style="list-style-type: none"> <li>  </li> </ul> <p>The message indicates that the Windows <code>VBScript.dll</code> script is not registered. To solve the problem, perform the following steps.</p> <ol style="list-style-type: none"> <li>On the computer where the problem occurred, click the Start button, and type <code>cmd</code>. In the search results, right-click the Command Prompt, and click <b>Run as administrator</b>.</li> <li>In the command prompt, type <code>%windir%\system 32</code>, and press Enter.</li> <li>Type <code>regsvr32 vbscript.dll</code>, and press Enter.</li> <li>Type <code>regsvr32 jscript.dll</code>, and press Enter.</li> </ol> <p>If the registration completed successfully, the following message is displayed: <code>DllRegisterServer in vbscript.dll succeeded</code>.</p>
2	<p>The scanner configuration file is corrupted. Reinstall or upgrade the scanner.</p> <ul style="list-style-type: none"> <li> <a href="#">Installing the scanner (BigFix scenario) (on page dcviij)</a> </li> <li> <a href="#">Updating the disconnected scanner (disconnected scenario) (on page dcxcvii)</a> </li> </ul>
3	<p>A signature file could not be parsed. <a href="#">Update the scanner catalog (on page mcdxxvi)</a> on the endpoints where the problem occurred.</p>
4	<p>Scan output file could not be saved to the output directory. Ensure that the scan output directory is writable. By default, the directory is:</p> <ul style="list-style-type: none"> <li>  </li> <li>  </li> </ul>
5	<p>For <i>File System Scan</i>:</p> <ul style="list-style-type: none"> <li>  </li> </ul> <p>For <i>Scan for Application Usage Statistics with Path</i>:</p> <ul style="list-style-type: none"> <li>Scan failed because collected amount of data was too large to process. Disable <i>Collect extended application usage statistics</i> option in the <i>Initiate Software Scan</i> fixlet to prevent the error.</li> </ul>
6	<p>Scanner catalog does not exist on the endpoint. <a href="#">Update the scanner catalog (on page mcdxxvi)</a> on the endpoints where the problem occurred.</p>

Return code	Possible cause and solutions
8	<p>Scanner internal error occurred. Gather scanner logs and contact BigFix Support. By default, the log files are in the following directory:</p> <pre> <b>UNIX</b> /usr/ibm/tivoli/common/CIT/logs or /var/ibm/tivoli/common/CIT/ logs <b>IBM i</b> /etc/cit/logs <b>Windows</b> C:\Program Files\ibm\tivoli\common\CIT\logs </pre>
9	<p>The scanner timed out. Perform the following tasks:</p> <ul style="list-style-type: none"> <li>• Increase the scan timeout in the Configure Scanner Query Timeout task.</li> <li>• Increase the amount of CPU that can be consumed by the scanner by increasing CPU threshold in the Initiate Software Scan task.</li> <li>• Exclude directories with backups from software scans. For more information, see: <a href="#">Excluding directories from being scanned (on page dcl)</a>.</li> <li>• Decrease the scanner trace level in the Edit Scanner Trace Settings task.</li> </ul> <p>If all other options fail, reinstall the scanner.</p>
10	<p>The scanner is being upgraded. Wait until the upgrade finishes.</p>
11	<p>Scan output file or directory is read only. Ensure that the scan output file or directory is writable for the user that is running the BigFix client. By default, the directory is:</p> <pre> <b>UNIX</b> /var/opt/BESClient/LMT/CIT <b>Windows</b> C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT </pre>
12	<p>The <code>cit.ini</code> file was not found. Install the scanner. By default, the <code>cit.ini</code> file is located in the following directory:</p> <pre> <b>UNIX</b> /etc/cit <b>Windows</b> C:\Windows\cit </pre>
13	<p>The scanner configuration file was not found. Reinstall or update the scanner.</p>
14	<p>The scanner trace file was not found. Reinstall or update the scanner.</p>
15	<p>Failure to read or write CIT configuration files (incorrect values being written, corrupt files or incompatible with the scanner). Reinstall or upgrade the scanner.</p>
16	
17	

Return code	Possible cause and solutions
18	<p>One of the scanner files could not be open. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following files:</p> <ul style="list-style-type: none"> <li>• Scanner configuration file <code>CitHWConfig.xml</code>, scanner properties file <code>Cit.properties</code>, and scanner trace file <code>CitTrace.properties</code>, which by default are in the following directory: <ul style="list-style-type: none"> <li><b>UNIX</b> <code>/opt/tivoli/cit/config/</code></li> <li><b>Windows</b> <code>C:\Program Files\tivoli\cit\config</code></li> </ul> </li> </ul>
19	<p>One of the scanner files could not be renamed. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following files:</p> <ul style="list-style-type: none"> <li>• Scanner configuration file <code>CitHWConfig.xml</code>, scanner properties file <code>Cit.properties</code>, and scanner trace file <code>CitTrace.properties</code>, which by default are in the following directory: <ul style="list-style-type: none"> <li><b>UNIX</b> <code>/opt/tivoli/cit/config/</code></li> <li><b>Windows</b> <code>C:\Program Files\tivoli\cit\config</code></li> </ul> </li> </ul>
20	<p>One of the scanner files could not be deleted. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following files:</p> <ul style="list-style-type: none"> <li>• Scanner configuration file <code>CitHWConfig.xml</code>, scanner properties file <code>Cit.properties</code>, and scanner trace file <code>CitTrace.properties</code>, which by default are in the following directory: <ul style="list-style-type: none"> <li><b>UNIX</b> <code>/opt/tivoli/cit/config/</code></li> <li><b>Windows</b> <code>C:\Program Files\tivoli\cit\config</code></li> </ul> </li> </ul>
21	The scanner configuration file is corrupted. Reinstall or upgrade the scanner.
22	The scanner trace file is corrupted. Reinstall or upgrade the scanner.
24	Invalid parameter value in SW or FS scanner configuration (SW scanner, FS scanner). Reinstall or upgrade the scanner.
25	
26	
27	
28	A required shared library file is not available. Reinstall or upgrade the scanner.
29	<p>The scanner timed out. Perform the following tasks:</p> <ul style="list-style-type: none"> <li>• Increase the scan timeout in the Configure Scanner Query Timeout task.</li> <li>• Increase the amount of CPU that can be consumed by the scanner by increasing CPU threshold in the Initiate Software Scan task.</li> </ul>

Return code	Possible cause and solutions
	<ul style="list-style-type: none"> <li>• Exclude directories with backups from software scans. For more information, see: <a href="#">Excluding directories from being scanned (on page dcl)</a>.</li> <li>• Decrease the scanner trace level in the Edit Scanner Trace Settings task.</li> </ul> <p>If all other options fail, reinstall the scanner.</p>
30	The scanner query failed. Gather scanner logs and contact BigFix Support.
31	The scan process was interrupted. Stop the scan action that is running on the endpoints where the problem occurred and start the scans again.
32	There is an issue with accessing the configuration file, or there is not enough free space available on the drive. If there is enough space but the problem persists, contact <a href="#">support</a> .
36	The scanner configuration file is corrupted. Reinstall or upgrade the scanner.
37	Scanner internal error occurred. Gather scanner logs and contact BigFix Support.
40	<p>An error occurred while creating the warning file during the software scan. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following directory:</p> <pre> UNIX /var/opt/BESClient/LMT/CIT Windows C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT </pre>
41	Scanner process initialization failed. Gather scanner logs and contact BigFix Support.
42	The signature catalog schema cannot be found. Reinstall or update the scanner. If it does not help, gather scanner logs and contact .
49	<p>The user that runs the scan does not have the read permission to the scanner properties file <code>cit.properties</code>. Ensure that the administrator or root of the computer on which the problem occurred has the read permissions to this file. By default, the file is in the following directory:</p> <pre> UNIX /opt/tivoli/cit/config/ Windows C:\Program Files\tivoli\cit\config </pre>
51	The scanner configuration file was not found. Reinstall or upgrade the scanner.
52	Scanner internal error occurred. Gather scanner logs and contact BigFix Support.
53	The scanner configuration file is invalid. Reinstall or upgrade the scanner.
54	The scan file cannot be compressed. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following directory:

Return code	Possible cause and solutions
	<pre> <b>UNIX</b> /var/opt/BESClient/LMT/CIT <b>Windows</b> C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT </pre>
56	<p>The scan output signature file cannot be created. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following directory:</p> <pre> <b>UNIX</b> /var/opt/BESClient/LMT/CIT <b>Windows</b> C:\Program Files(x86)\BigFix Enterprise\BESClient\LMT\CIT </pre>
57	<p>Failure to load a scanner plugin. Possibly corrupt installation. Reinstall or upgrade the scanner. If you have fapolicyd (File Access Policy Daemon) installed, then you need to whitelist the software scanner. For more information, refer to <a href="#">Whitelisting scanner (on page mcdviii)</a>.</p>
125	<p>Scanner memory allocation issue. Check if Cache Optimization is enabled and scanner is up-to-date.</p>

### Return codes greater than 128

**UNIX** Some return codes are triggered by the problems that are signaled by the operating system. These are the return codes greater than 128. To check what is the system signal, use the following calculation:

```
return code - 128 = operating system signal
```

To identify the issue, check the meaning of the signal in the operating system documentation.

The following table presents the list of the most common return codes, their possible cause and solution.

**Table 191. Scanner return codes greater than 128**

Return code	Signal	Possible cause and solution
134	6 - SIGABRT	There might not be enough memory available for the process to work. Increase the memory limit for this process by changing ulimit for <code>data seg size: ulimit -d</code> . If the problem persists, contact BigFix Support.
138	10 - SIGBUS	There is not enough disk space on the computer. Free some disk space. If the problem persists, ensure that you use the latest version of the scanner.

**Table 191. Scanner return codes greater than 128 (continued)**

Return code	Signal	Possible cause and solution
139	11 - SIGSEGV	There might not be enough memory available for the process to work. Increase the memory limit for this process by changing ulimit for <code>data</code> seg size: <code>ulimit -d</code> . If the problem persists, contact BigFix Support.
255		Expected file to execute has been not found. Issue with previous step.

### Platform specific errors / windows

**Windows** Below table explains the Windows error return codes:

Return code	Possible cause and solution
1260	Windows cannot open this program because it has been prevented by a software restriction policy. It is recommended to update the system with latest patches.

### Capacity scan return codes

If the capacity scan fails, an error code that indicates why the scan failed is returned. Check what is the possible cause of scan failure that is indicated by each code and how to solve the problem.

### Locating the return codes

If the capacity scan fails, first check whether the return code is related to the scanner, or to running the `checkCapacityScanOutput.vbs` script. If the log refers to the script, the return code is specific for the script. It indicates that the capacity scan results are incomplete. The problem is usually solved after the next scan or after the upgrade of the scanner to the latest version.

Check for the error codes:

- The scanner error codes for capacity scan are written in the BigFix client logs. The logs are stored in the following locations:

**Linux** `/var/opt/BESClient/___BESData/___Global/Logs`

**Windows** `C:\Program Files (x86)\BigFix Enterprise\BESClient\___BESData\___Global\Logs`

- To check the error codes that are related to running the `checkCapacityScanOutput.vbs` script, check the Run Capacity Scan and Upload Results action in the BigFix console. On the Computers tab, identify the computer on which the action failed by checking its status. Double-click this computer. The error code is written in execution details.

## Capacity scan return codes

**Table 192. Capacity scan return codes**

Return code	Possible cause and solutions
0	No errors.
1	Wrong arguments were used during the capacity scan. Ensure that the capacity scan is triggered with an official fixlet.
2	<p>The scan configuration file is corrupted. For more information, refer to <a href="#">Update the fixlet site (on page dccxxvi)</a>.</p> <p>If you have fapolicyd (File Access Policy Daemon) installed, then you need to whitelist the capacity scanner. For more information, refer to <a href="#">Whitelisting scanner (on page mcdviii)</a>.</p>
5	The user that runs the scan does not have read permission to the scanner configuration file. Ensure that the BigFix client is running as SYSTEM user on Windows, or root for other operating systems.
8	<p>Scanner internal error occurred. Gather scanner logs and contact HCL Support. By default, the log files are in the following directory:</p> <pre>Linux /usr/ibm/tivoli/common/CIT/logs Windows C:\Program Files\ibm\tivoli\common\CIT\logs</pre> <p>If the logs are not in the default directory, check the value of the <code>common_trace_path</code> parameter in the following file for information about the location of the logs:</p> <pre>Linux /opt/tivoli/cit/config/Cit.properties Windows C:\Program Files\tivoli\cit\config\Cit.properties</pre>
11	<p>Scan output file or directory is read only. Ensure that the scan output file or directory is writable for the user that is running the BigFix client. By default, the directory is:</p> <pre>UNIX /var/opt/BESClient/LMT/CIT Windows C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT</pre>
13	The scanner configuration file was not found. Reinstall or update the scanner.
18	One of the scanner files could not be open. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following files:

**Table 192. Capacity scan return codes (continued)**

Return code	Possible cause and solutions
	<ul style="list-style-type: none"> <li>Scanner configuration file <code>CitHWConfig.xml</code>, scanner properties file <code>Cit.properties</code>, and scanner trace file <code>CitTrace.properties</code>, which by default are in the following directory: <ul style="list-style-type: none"> <li><b>Linux</b> <code>/opt/tivoli/cit/config/</code></li> <li><b>Windows</b> <code>C:\Program Files\tivoli\cit\config</code></li> </ul> </li> </ul>
21	The scanner configuration file is corrupted. Reinstall or upgrade the scanner.
49	The user that runs the scan does not have the read permission to the scanner properties file <code>Cit.properties</code> . Ensure that the administrator or root of the computer on which the problem occurred has the read permissions to this file. By default, the file is in the following directory: <ul style="list-style-type: none"> <li><b>Linux</b> <code>/opt/tivoli/cit/config/</code></li> <li><b>Windows</b> <code>C:\Program Files\tivoli\cit\config</code></li> </ul>
54	The scan file cannot be compressed. Ensure that the administrator or root of the computer on which the problem occurred has the read and write permissions to the following directory: <ul style="list-style-type: none"> <li><b>Linux</b> <code>/var/opt/BESClient/LMT/CIT</code></li> <li><b>Windows</b> <code>C:\Program Files (x86)\BigFix Enterprise\BESClient\LMT\CIT</code></li> </ul>

### Return codes greater than 128

**UNIX** Some return codes are triggered by the problems that are signaled by the operating system. These are the return codes greater than 128. To check what is the system signal, use the following calculation:

```
return code - 128 = operating system signal
```

To identify the issue, check the meaning of the signal in the operating system documentation.

The following table presents the list of the most common return codes, their possible cause and solution.

**Table 193. Scanner return codes greater than 128**

Return code	Signal	Possible cause and solution
134	6 - SIGABRT	There might not be enough memory available for the process to work. Increase the memory limit for this process by changing ulimit for <code>data</code>

Table 193. Scanner return codes greater than 128 (continued)

Return code	Signal	Possible cause and solution
		<code>seg size: ulimit -d</code> . If the problem persists, contact BigFix Support.
138	10 - SIGBUS	There is not enough disk space on the computer. Free some disk space. If the problem persists, ensure that you use the latest version of the scanner.
139	11 - SIGSEGV	There might not be enough memory available for the process to work. Increase the memory limit for this process by changing ulimit for <code>data seg size: ulimit -d</code> . If the problem persists, contact BigFix Support.

Return codes related to the `checkCapacityScanOutput.vbs` scriptTable 194. Return codes linked to the `checkCapacityScanOutput.vbs` script

p

Return code	Possible cause	Systems other than Windows	Solution
	<b>Windows</b> Windows systems		
1	A general VBS script error. The Windows Script Host could be disabled.	n/a	Enable Windows Script Host.
2	<code>ComponentID</code> is missing the <code>SerialNumber</code> attribute in capacity scan output file.	Capacity scan output file is missing the <code>PhysicalProcessor</code> section.	Update the scanner to the latest version.  For more information, see: <a href="#">Installing the scanner (on page dcviii)</a>
3	<code>SerialNumber</code> attribute in the capacity scan output file does not contain any value.	Capacity scan output file is missing the <code>OperatingSystem</code> section.	
4	Capacity scan output file is missing the <code>PhysicalProcessor</code> section.	Capacity scan output file is missing the <code>Lpar</code> section.	
5	Capacity scan output file is missing the <code>OperatingSystem</code> section.	n/a	
6	Capacity scan output file is missing the <code>Lpar</code> section.	n/a	

**Table 194. Return codes linked to the `checkCapacityScanOutput.vbs` script**

p

(continued)

Return code	Possible cause	Systems other than Windows	Solution
	<b>Windows</b> Windows systems		
7	Capacity scan output file is missing the <code>ComponentID</code> section.	Capacity scan output file is missing the <code>ComponentID</code> section.	

## Whitelisting scanner

This section describes the methods to whitelist scanner services.

By default, **fapolicyd** (File Access Policy Daemon) blocks the scan. Below are the scenarios with error codes and error messages:

1. Installation of the software scanner, *Install or Upgrade Scanner* fixlet fails with error code 1 and the `installCITlog.txt` file located at `BES Client\LMT\CIT\` folder, displays code 32512.

```
Exec '/opt/tivoli/cit/bin/wscancfg -s common_trace_path /usr/ibm/tivoli/common/CIT/logs >/dev/null
2>&l' returned 32512
Setting common trace path='/usr/ibm/tivoli/common/CIT/logs' result=32512
Installation failed, rolling back
```

2. *Initiate Software Scan* fixlet completes, but all types of scan end with error code 57 in the `<computer_id>_citlog.log` file located in `BESClient/LMT/CIT/` folder.

```
Catalog scan failed: scanner finished with errors (57)
```

3. Running capacity scanner *Run Capacity Scan and Upload Results* fails with error code 2.

## Workaround

Add the scanner files to **fapolicyd** whitelist to allow their execution.



**Note:** If you install the scanner in an alternate directory `<BES Client>/CITBin`, edit the paths accordingly.

- **Install or Upgrade Scanner fails (RC 32512) with fapolicyd enabled**

To whitelist shared libraries used during installation of the software scanner, modify the **41-shared-obj.rules** file located in `/etc/fapolicyd/rules.d/` folder. The following lines should precede the original rules:

```
allow perm=open exe=/opt/tivoli/cit/bin/wscancfg trust=0 :
path=/opt/tivoli/cit/bin/libCcLogWrapper.so ftype=application/x-sharedlib trust=0
```

```

allow perm=open exe=/opt/tivoli/cit/bin/wscancfg trust=0 :
  path=/opt/tivoli/cit/bin/libciticfg.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscancfg trust=0 :
  path=/opt/tivoli/cit/bin/libxmlproxy.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscancfg trust=0 :
  path=/opt/tivoli/cit/bin/libbase.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscancfg trust=0 :
  path=/opt/tivoli/cit/bin/libxerces-c-3.2.1.so ftype=application/x-sharedlib trust=0

```

Then execute the fagenrules `--load` command to update the active rules and restart the **fapolicyd** service.

- **Software Scan fails (RC 57) with fapolicyd enabled**

The following rules should be placed in **41-shared-obj.rules** file located in `/etc/fapolicyd/rules.d/` folder, preceding the original rules:

```

allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/wscansw.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libxerces-c-3.2.1.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libplugin.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libciticfg.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libxmlproxy.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libCcLogWrapper.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libbase.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/libfs.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/plugins/libcoreplugin.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/plugins/libcsplugin.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/plugins/libfssplugin.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/plugins/libregplugin.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/plugins/libxmlplugin.so ftype=application/x-sharedlib trust=0

```

```

allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/provider_cache.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/provider_cache2.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscansw trust=0 :
  path=/opt/tivoli/cit/bin/provider_cache3.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/wscanfs.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/libfs.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/libCcLogWrapper.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/libciticfg.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/libxmlproxy.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/libbase.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/libxerces-c-3.2.1.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/provider_cache.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/provider_cache2.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanfs trust=0 :
  path=/opt/tivoli/cit/bin/provider_cache3.so ftype=application/x-sharedlib trust=0

```

Then execute the `fagenrules --load` command to update the active rules and restart the **fapolicyd** service.

- **Run Capacity Scan and Upload Results fails (RC 2) with fapolicy enabled**

The following rules should be placed in `41-shared-obj.rules` file located in `/etc/fapolicyd/rules.d/` folder, preceding the original rules:

```

allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
  path=/opt/tivoli/cit/bin/wscanhw.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
  path=/opt/tivoli/cit/bin/libCcLogWrapper.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
  path=/opt/tivoli/cit/bin/libciticfg.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
  path=/opt/tivoli/cit/bin/libxmlproxy.so ftype=application/x-sharedlib trust=0

```

```
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
path=/opt/tivoli/cit/bin/libxerces-c-3.2.1.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
path=/opt/tivoli/cit/bin/libbase.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
path=/opt/tivoli/cit/bin/libInvHW.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/cpuid trust=0 :
path=/opt/tivoli/cit/bin/libbase.so ftype=application/x-sharedlib trust=0
allow perm=open exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
path=/opt/tivoli/cit/bin/libbase.so ftype=application/x-sharedlib trust=0
```

Additionally, the following rule should be placed in **90-deny-execute.rules** file, preceding the original rules:

```
allow perm=execute exe=/opt/tivoli/cit/bin/wscanhw trust=0 :
path=/opt/tivoli/cit/bin/cpuid ftype=application/x-executable trust=0
```

Then execute the `fagenrules --load` command to update the active rules and restart the **fapolicyd** service.



**Note:** For more information on **fapolicyd**, refer to the [Red Hat document](#) if you are using Red Hat. For other Linux distributions, refer to <https://github.com/linux-application-whitelisting/fapolicyd>.

## Return codes of capacity scans on virtualization hosts

If the capacity scan that is run by using the Run Capacity Scan on Virtualization Hosts task fails, an error code that indicates why the scan failed is returned. The code is presented in the results of the Status of Capacity Scan on Virtualization Hosts analysis. Check what is the possible cause of scan failure that is indicated by each code and how to solve the problem.

**Table 195. Return codes of capacity scans on virtualization hosts**

Return code	Possible cause and solution
0	No errors.
20	Unsupported virtualization type. To solve the problem, perform the following steps: <ul style="list-style-type: none"> <li>• Verify that the computer on which you ran the task is a virtualization host. If it is not, you do not need to run the task on this computer.</li> <li>• Verify that the computer runs on a <a href="#">supported virtualization (on page cdxxxii)</a>. If the virtualization is a supported version of PowerKVM, KVM x86, Citrix Hypervisor (formerly Xen-</li> </ul>

**Table 195. Return codes of capacity scans on virtualization hosts (continued)**

Return code	Possible cause and solution
	Server), contact BigFix Support. If it is a different type of a supported virtualization, configure VM managers to collect capacity data from these hosts. For more information, see: <a href="#">Adding VM managers in central mode (on page dccxcv)</a> .
30	KVM virtualization architecture could not be recognized. KVM virtualization was detected, but testing the <b>virsh</b> command to determine whether the architecture is x86 or Power failed. Contact BigFix Support.
40	Determining the number of processor sockets or cores failed. The returned result is not a number. Contact BigFix Support.
50	No valid host UUID could be retrieved by using the <b>xe</b> , <b>dmidecode</b> , and <b>xl</b> command. Verify that the UUID of the computer is correctly returned by SMBIOS. If it is not correctly returned, contact the hardware vendor to solve the problem.
Other codes	If other codes are returned, check the <code>run_vtech_scan.log</code> log file to learn running which command returned the code. The log file is in the installation directory of the BigFix client, by default: <code>var/opt/BESClient/BFI/vtech/run_vtech_scan.log</code> .

#### Related information

[Collecting capacity data from virtualization hosts for Xen and KVM \(on page dcxxv\)](#)

## Import logs

Import logs contain information about the import of data from the BigFix server to BigFix Inventory. They list steps related to the import process and show their status. Each action in the log file is reported according to the UTC time zone, but the file also shows information about the local time zone of your server. **10.0.5** The import log also shows a warning about duplicate UUIDs (universally unique identifier).

The logs are stored in one of the following directories:

- **Linux** `installation_directory/wlp/usr/servers/server1/logs/imports`
- **Windows** `installation_directory\wlp\usr\servers\server1\logs\imports`

The log from the latest import is also accessible from the BigFix Inventory user interface. To view the log, click **Management > Data Imports**. The last megabyte of the log data is displayed in the web user interface.

To download an earlier version of the import log from the user interface, identify the table row with the import that you are interested in, and click **Download**. The log file is saved in the download directory of your web browser.

## Import Settings

Enabled

Imports per day:  (times specified in UTC +01:00)

Time:

## Import History

Start Time	User Name	Duration	Download
04/21/2015 10:...	Scheduled	0:01:27	<a href="#">Download</a>

Start Time: 04/21/2015 08:09 AM  
 Status: Successful  
 Duration: 0:01:27

### Import Log

The last megabyte of data from the import log:

```

duler for System x', :version=>"2.2.0", :tag_version=>0, :version_scheme=>"multipartnumeric", :delta=>nil,
:file_name=>"1988-03.com.ibm.ibm_Platform_Resource_Scheduler_for_System_x-2.2.0.swidtag", :license
2015-04-21 08:11:00 (+0:00:00.000) DEBUG: SAM::IsotagFact Finished parsing scan file. Lines: 2
2015-04-21 08:11:00 (+0:00:00.001) INFO: [sequel/lib/jdbc.rb:249] set identity_insert [sam].[isotags] off
2015-04-21 08:11:00 (+0:00:00.002) INFO: [sequel/lib/jdbc.rb:249] set identity_insert [sam].[isotags] on
  
```

## Log level

By default, the data import logging level is set to INFO. You can change the setting to collect debug information about broken relationships, for example deleted component relationships. To enable debug logging, go to **Management > Advanced Server Settings**, and change the value of the **debug\_logging\_for\_imports** parameter to true.

Enabling the debug logging level increases the size of the data import log, which might lead to errors while displaying the log in the user interface. For more information, see [Troubleshooting \(on page mccccli\)](#).

## Import statuses

### Successful

The import finished successfully.

### Incomplete

The import could not finish. It might happen when the BigFix Inventory server is stopped during the import. Ensure that the server is running, check the import logs, and rerun the import.

### Failed

The import failed. Ensure that the BigFix server is running, check the import logs, and rerun the import.

## Time zone

The time of all actions saved in the import log file is specified according to the UTC time zone. You can compare these actions to the local time zone of your server to learn when exactly a particular action occurred. Information about your server time zone is written in the beginning of the log file and is repeated every 1000 entries. The following examples are the excerpts from the log file:

Linux

```
[INFO]: Local Server Time Zone is +0200 Europe/Warsaw
```

## Windows

```
[INFO]: Local Server Time Zone is CurrentTimeZone=-300 (UTC-06:00) DaylightBias=-60
```

## Reviewing the import log

Review the following INFO messages in the import log to check how much data was transferred during the import.

### Summary for complex table

Information about	Items specified in the import log	Description
Infrastructure	<b>Computer items</b>	The total number of computers in your environment. A computer is a system with a BigFix client that provides data to BigFix Inventory.
Software and hardware	<b>SAM::ScanFile items</b>	The number of files that have input data for the following items: <ul style="list-style-type: none"> <li>• File system scan information (<b>SAM::FileFact items</b>)</li> <li>• Catalog-based scan information (<b>SAM::CitFact items</b>)</li> <li>• Software identification tag scan information (<b>SAM::IsotagFact items</b>)</li> </ul>
	<b>SAM::FileFactDelta items</b>	The total count of information pieces about files that changed between the last two full file system scans.
	<b>SAM::FileFact items</b>	The total count of information pieces about files from all computers in your environment (contained in the processed scan files).
	<b>SAM::CitFact items</b>	The total count of information pieces from catalog-based scans (contained in the processed scan files).
	<b>SAM::IsotagFact items</b>	The total count of information pieces from software identification tag scans (contained in the processed scan files).
Installed packages	<b>SAM::PackageFact items</b>	The total count of information pieces about Windows™ packages that were gathered by the package data scan.
	<b>SAM::UnixPackageFact items</b>	The total count of information pieces about UNIX™ packages that were gathered by the package data scan.
Software usage	<b>SAM::AppUsagePropertyValue items</b>	The total number of processes that were captured during scans on the systems in your infrastructure.

### Example:

```
INFO: Computer items: 15000
INFO: SAM::AppUsagePropertyValue items: 4250
INFO: SAM::ScanFile items: 30000
INFO: Delta changes applied on model SAM::FileFact: 0 rows
INFO: Number of computers processing delta file scan data: 0
INFO: SAM::FileFactDelta items: 0
INFO: Number of computers processing full file scan data: 16
```

```

INFO: Inserting new 28423 rows into SAM::FileFact
INFO: SAM::FileFact items: 15735838
INFO: SAM::IsotagFact items: 0
INFO: SAM::CitFact items: 149496
INFO: SAM::PackageFact items: 406687
INFO: SAM::UnixPackageFact items: 1922564

```

## Server log file

The server log file `tema.log` is in the `installation_directory/wlp/usr/servers/server1/logs/` directory. The log file saves all actions related to the server and is the primary source of information for troubleshooting purposes. Each action in the log file is reported according to the UTC time zone, but the file also shows information about the local time zone of your server.

**10.0.3** `Production.log` is no longer created. All information is stored in `tema.log`.

## Settings that you can modify

Logging properties are set in the `server.xml` file that is in one of the following directories:

- **Linux** `installation_directory/wlp/usr/servers/server1`
- **Windows** `installation_directory\wlp\usr\servers\server1`

You can change the following settings:

### messageFileName

The server log file name. The default name is `tema.log`.

### logDirectory

The server log file location. The default location is:

- **Linux** `installation_directory/wlp/usr/servers/server1`
- **Windows** `installation_directory\wlp\usr\servers\server1`

### maxFileSize

The maximum size (in MB) that a log file can reach before it is rolled over. To disable this attribute, set the value to 0. The default value is 10.

### maxFiles

If an enforced maximum file size exists, this setting is used to determine the maximum number of iterations of the server log file. If the log file reaches the maximum size that is defined in the `maxFileSize` parameter, the remaining messages roll over to another iteration of the file.

## Log level

There are three options to maximize the log level information:

### 1. Performance log for data

**10.0.4** Performance logs are automatically enabled. You can disable the log using the query, `update adm.control set value = 'false' where name = 'PERFORMANCE_LOGS_ENABLED'`. To enable the log again, use the query, `update adm.control set value = 'true' where name = 'PERFORMANCE_LOGS_ENABLED'`.

### 2. Debug log for data imports in **Advanced Server** setting. Change `debug_logging_for_imports` parameter before you import the data.



**Note:** Enable the setting only when needed by the support team.

### 3. BigFix Inventory application debug logs

Modify `jvm.options` in one of the following directories:

- **Linux** `installation_directory/wlp/usr/servers/server1`
- **Windows** `installation_directory\wlp\usr\servers\server1`

To modify the file, perform these steps:

- a. Change `#-DTEMA_LOG_DEBUG=true` to `-DTEMA_LOG_DEBUG=true`.



**Note:** To change the log level from DEBUG to any other level, change the value of the parameter. For example, If the `-DTEMA_LOG_DEBUG` parameter is enabled, DEBUG level is used. If the `#-DTEMA_LOG_DEBUG` parameter is disabled, INFO level is used.

- b. Restart BigFix Inventory.

After restarting, `tema.log` includes logs at **DEBUG** level.

**10.0.9** Starting from version 10.0.9, BigFix Inventory Server `TEMA_LOG_DEBUG jvm.options` flag is limited only to the application log. This allows to safely enable the option without impacting the data import log. Data import log is controlled by **Advanced Server** settings.

## Time zone

The time of all actions saved in the log file is according to the UTC time zone. You can choose to view these actions in your preferred time zone to analyze the cause. The server time zone is mentioned the beginning of the log file and is repeated every 1000 entries. The following examples are the excerpts from the log file:

**Linux**

```
[INFO]: Local Server Time Zone is +0200 Europe/Warsaw
```

**Windows**

```
[INFO]: Local Server Time Zone is CurrentTimeZone=-300 (UTC-06:00) DaylightBias=-60
```

## Enabling the logging of memory consumption

You can log information about the memory that is used by BigFix Inventory.

1. On the computer where the BigFix Inventory server is installed, go to one of the following directories, and create or modify the `server.env` file.

- **Linux** `install_dir/wlp/usr/servers/server1`
- **Windows** `install_dir\wlp\usr\servers\server1`

2. Add the following variable to the file.

```
LOG_MEMORY=true
```

3. Restart the BigFix Inventory server.

Each log returns memory consumption information.

```
INFO: Memory Used,458MB,Memory Diff,0kB,Memory Committed,743MB,
DEBUG: SF = # <SAM::ScanFile @values={:scan_file_id=>1, :file_size=>18681, :computer_id=>4,
:file_name=>*"itsitsearch_0_3205710.xml.bz2"}>
INFO: Memory Used,460MB,Memory Diff,1835kB,Memory Committed,743MB,
DEBUG: Checking cache for /itsitsearch_0_3205710.xml.bz2
```

## VM Manager tool return codes

If you encounter any problems while configuring or managing the VM Manager tool, refer to the log files for more information about any occurring errors. The log files for the VM Manager tool are in the following directories:

- Trace log files: `BES Client\LMT\VMMAN\logs`
- Installation log files: `BES Client\LMT\VMMAN\logs\install`

For more information, see: [Log files \(on page dcccxxvii\)](#).

The log file contains a return code that can help you check why the issue occurs and solve the problem.

**Table 196. VM Manager tool return codes**

Return code	Description and possible solutions
0	No errors.
1	It failed to initialize the logs and the log files are not created. Ensure that the <code>log4j2.xml</code> file is located in its default directory:  <div style="text-align: center;"><b>Linux</b> <code>/var/opt/BESClient/LMT/VMMAN/config/</code></div>

Table 196. VM Manager tool return codes (continued)

Return code	Description and possible solutions
	<p><b>Windows</b> C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VM-MAN\config\</p> <p> <b>Note:</b> For BigFix Inventory version below 10.0.3, the log file <code>log4j.properties</code> is used.</p>
2	<p>The security module did not start successfully. Ensure that <code>keys.jackes</code> key-store is located in its default directory:</p> <p><b>Linux</b> /var/opt/BESClient/LMT/VMMAN/keydb/</p> <p><b>Windows</b> C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\keydb\</p>
3	<p>It failed to lock the <code>.lock</code> file. When the file is locked, it means that the application is working properly. Locking the file might fail because the application is already running or because some other process is blocking the file. To solve the issue, find the process that is blocking the <code>.lock</code> file and stop it.</p>
4	<p>The used command is incorrect. Follow the displayed instructions and type the correct command.</p>
5	<p>It is not possible to read the configuration files. Ensure that the following folder contains all configuration files and that they are correct:</p> <p><b>Linux</b> /var/opt/BESClient/LMT/VMMAN/config/</p> <p><b>Windows</b> C:\Program Files (x86)\BigFix Enterprise\BES Client\LMT\VMMAN\config\</p>
6	<p>The command did not complete successfully. For more information, check command output and the log file.</p>
7	<p>The application did not start in running mode because the service is not installed. Run the command <code>-install</code> and install the service.</p>
8	<p>The service did not start in running mode. For more information, check the log file.</p>
10	<p>It failed to connect to VM Manager using the command <code>test connection</code>. For more information, check the command output.</p>

**Table 196. VM Manager tool return codes (continued)**

Return code	Description and possible solutions
12	It was not possible to add the VM Manager certificate to the keystore. The alias that was used to create the certificate already exists. Use another alias.
13	Adding the certificate did not complete successfully. For more information, see the log files.
14	It failed to change the password for keystore. For more information, check the command output and log files.
15	It is not possible to regenerate the encryption key for VM Manager. For more information, check the command output and log files.
16	The command <code>run once</code> did not perform any action because there are no VM Managers defined.

## Changing and analyzing scanner trace settings

You can change the scanner trace settings to collect diagnostic data to help in investigating problems.

### Changing scanner trace settings

If requested by HCL® support or to limit the amount of traces generated by the scanner tool, you can change the scanner trace settings.

1. Log on to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
3. Select **Edit Scanner Trace Settings**, specify the following values:
  - Trace level
  - Number of trace files
  - Trace file size

In the lower pane, click **Take Action**.

4. To select a subset of computers on which you want to create the capacity configuration, open the **Target** tab, and then click the computers.

**Table 197. Trace level values****Supported trace level**

Value on Scanner Level / Analysis	Value on "Edit Scanner Trace Settings" fixlet	Description
MIN	DEFAULT	Only errors are traced. This is the default value.
MID	VERBOSE	Errors, entry and exit points are traced.
MAX	<Not available>	All traces are enabled.

Value on Scanner Level / Analysis	Value on "Edit Scanner Trace Settings" fixlet	Description
		This scanner value has a negative impact on stability and duration of the scan. It is not recommended for use. In BigFix Inventory version 10.0.5 and higher, this option is removed from the list of "Edit Scanner Trace Settings" fixlet.



**Note:** The trace level values appear as Min and Mid in the log and properties file where Min represents Default and Mid represents Verbose.

In disconnected scanner folder there is a script, `setcfg.bat` in windows and `setcfg.sh` on unix systems. When you run this script, it shows help screen with instruction and requests for new values to be set. You can set the new value or enter '0' to reset the parameter to default. You can also press ENTER to skip setting the value. After you finish this step, it shows the amount of disk space required by all log files. Another way to run the script is to use a parameter, such as `./setcfg.sh -r`. This script resets all parameters to default.

## Analyzing scanner trace settings

You can check scanner trace settings for computers, and see the number of trace files and trace file size.

1. Log on to the BigFix console.
2. In the navigation tree, click **Sites > External Sites > BigFix Inventory > Analyses**.
3. In the upper-right pane, select an **Scanner Trace Settings** analysis, and in the lower-right pane, click the **Result** tab.

For each endpoint, you can view the following information:

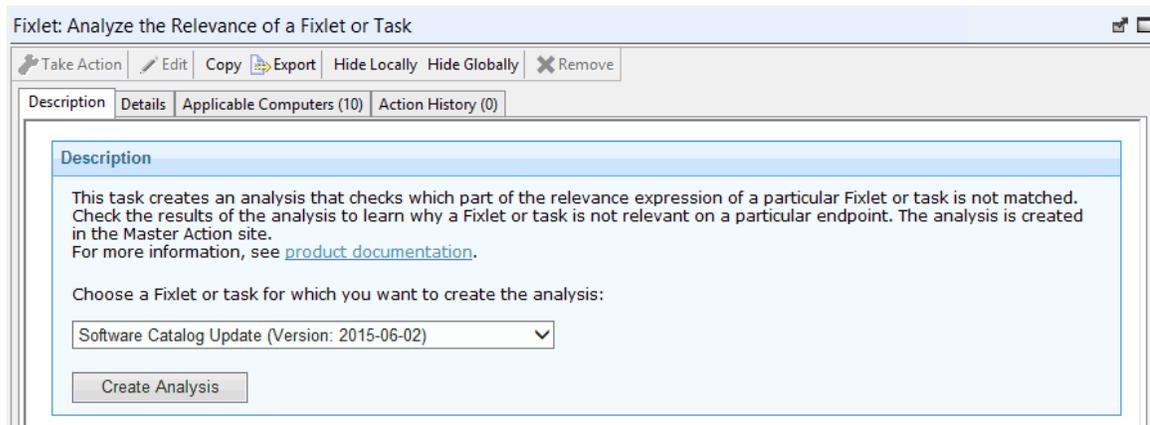
- Computer host name
- Computer ID
- Trace level
- Number of trace files
- Trace file size

## Checking why a fixlet or task is not relevant

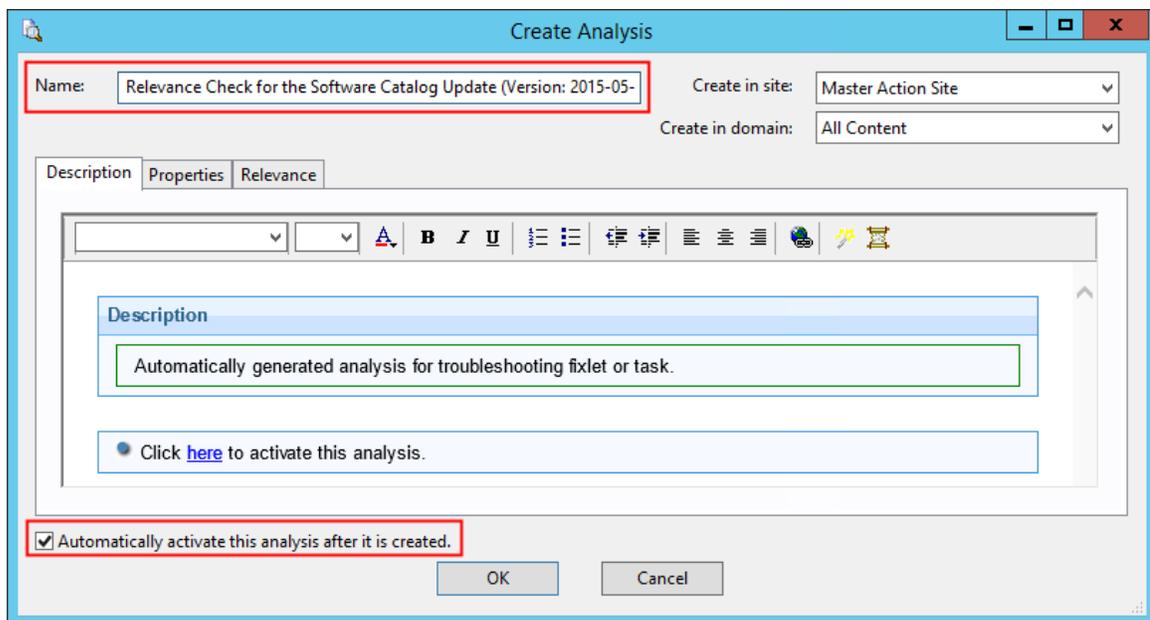
**9.2.1** Available from 9.2.1. When a fixlet or task is not relevant on a particular endpoint, you can create an analysis that checks which part of the relevance expression is not matched. This way, you can identify the exact reason why the fixlet or task cannot be run on an endpoint and troubleshoot the problem.

1. In the navigation tree of BigFix, click **Sites > External Sites > BigFix Inventory > Fixlets and Tasks**.
2. In the upper right pane, select **Analyze the Relevance of a Fixlet or Task**.

3. Choose the fixlet or task that you want to analyze. Then, click **Create Analysis**.



4. **Optional:** In the window that opens, you can change the display name of the analysis or decide whether the analysis is activated automatically.



5. To create the analysis, click **OK**.

By default, the analysis is created in the Master Action site and is activated globally.

6. Open the Master Action site and click **Analyses**.

7. In the upper right pane, select **Relevance Check for the name Task/Fixlet from the BigFix Inventory Site** and open the **Results** tab. The part of the relevance expression that causes that the fixlet or task is not relevant on a particular endpoint has the value `False`.

In this example, the second and third part of the relevance is not matched and thus causes that the entire task is not relevant.

Description	Details	Results	Applicable Computers (3)
View as list			
Applicable Computers	Computer Na...	Software Catal...	Software Catalog Update (Version: 2015-05-13)_2
	NC040208	True	False
	NC91431261...	True	True
	NC91431270...	True	True
			Software Catalog Update (Version: 2015-05-13)_3
			False
			True
			True

8. When you know which part of the relevance expression is not matched, open the **Details** tab to see the content of the relevance.

In this example, the task is not relevant for two reasons. First, the targeted endpoint does not meet the operating system requirements (relevance 2). Second, the directory *SUA\_Server\_Path/properties/version* or *SUA\_Server\_Path/iso-swid* does not exist on the endpoint or the latest software catalog is already available on that endpoint (relevance 3).

▼ Properties

**Software Catalog Update (Version: 2015-05-13)\_4**  
Period 30 days

```
( (if (name of operating system as lowercase starts with "win") then (true) else (name of operating system as lowercase starts with "linux" and (exists package "zip" of rpm) and (exists package "unzip" of rpm))) )
```

**Software Catalog Update (Version: 2015-05-13)\_3**  
Period 30 days

```
exists settings whose (name of it starts with "SUA_Server_Path" AND ((exists folder (value of it & "/properties/version") AND exists files of folder (value of it & "/properties/version")) OR (exists folder (value of it & "/iso-swid") AND exists files of folder (value of it & "/iso-swid"))) AND not exists file (value of it & "/sua_catalog/SUA2_June_2015.zip") of client
```

**Software Catalog Update (Version: 2015-05-13)\_2**  
Period 30 days

```
( (name of operating system contains "Linux Red Hat Enterprise Server" and version of operating system >= "6.3" and version of operating system < "8.0") or (name of operating system as lowercase starts with "win2008r2") or (name of operating system as lowercase starts with "win2012") )
```

**Software Catalog Update (Version: 2015-05-13)\_1**  
Period 30 days

```
( (if (name of it as lowercase starts with "win") then (true) else ((name of it as lowercase starts with "linux") OR (name of it as lowercase starts with "aix") OR (name of it as lowercase starts with "hp-ux" AND ((architecture of it as lowercase contains "ia64") OR (family name of main processor as lowercase contains "pa-risc") OR (exists match (regex "^PA8[0-9]{3}(\s+)?$") of (family name of main processor)))) OR (exists match (regex "sunos 5\.(8|9|10|11)") of (name of it as lowercase)) of operating system)) of operating system AND (if exists property "in proxy agent context" then ( not in proxy agent context ) else true) )
```

When you know the exact reason why a fixlet or task is not relevant on an endpoint, you can troubleshoot the problem.

The analysis is created in the Master Action site and thus is activated on all endpoints that report to BigFix, not only the endpoints that are subscribed to the BigFix Inventory site. To avoid performance issues, deactivate the analysis when you identify and troubleshoot the problem with the relevance of a fixlet or task. To deactivate an analysis, right-click it and click **Deactivate**.

## Removing the server manually

If you encounter any problems with uninstalling the BigFix Inventory server, you can remove it manually.

1. Run the following command to verify that the process associated with the server is running:

```
ps -ef | grep <installation dir>/cli | grep server1
```

 **Tip:** The ID of the process is the number next to the user name.

2. End the process by running the following command:

```
kill -9 <process ID>
```

3. Remove the directory in which you installed BigFix Inventory:

```
rm -rf <installation dir>
```

For example:

```
rm -rf /opt/BFI
```

4. Edit the `.com.zerog.registry.xml` file that is in the `/var` directory. If you installed the server as a non-root user, the registry file is in `$HOME/`.
5. In the registry file, locate the entries that are related to BigFix Inventory. Remove the entries that represent the product and all the related components. You can recognize them by the product name and a common file path. If the registry file contains entries only for BigFix Inventory, you can delete the whole file.

---

### TASK

[Uninstalling the server on Windows in interactive mode \(on page dxlvi\)](#)

[Uninstalling the server on Windows in silent mode \(on page dxlvi\)](#)

### TASK

[Uninstalling the server on Linux in silent mode \(on page dlxxi\)](#)

[Uninstalling the server on Linux in interactive mode \(on page dlxxi\)](#)

## Checking the client installation date

You can create a property on your BigFix server that enables the date when your endpoints first connected to the server.

This procedure might be useful if you are using an automated tool to silently install many BigFix clients. To verify that the clients were installed and check their installation dates, you can add a column that shows the dates when your clients first connected to the server.

1. Create a property on your BigFix server that enables the new column:

- a. Log in to the BigFix console.
- b. Click **Tools > Manage Properties**, and then click **Add New**.
- c. In the **Name** field, enter **First Report Time**.
- d. In the **Relevance** field, enter the following relevance expression:

```
(month of it as two digits & "/" & day_of_month of it as two digits & "/" & year of it as string)
of date (local time zone) of (minimum of subscribe times of sites)
```



**Note:** The preceding expression changes the date format to `DD/MM/YYYY`, which makes it suitable for sorting in a CSV format. If you want to keep the default format (Mon, 1 Jan 2014), use the following relevance expression: `minimum of subscribe times of sites`.

- e. In the **Evaluate** field, choose **12 hours**.
  - f. Click **OK**. The new column can be viewed in the **Computers** page.
2. **Optional:** Add the created column to Web Reports where your data can be viewed as reports, or exported to a CSV or PDF format:

- a. Log in to Web Reports.



**Tip:** You can access Web Reports under the following web address:

[http://BigFix\\_server\\_hostname/webreports](http://BigFix_server_hostname/webreports).

- b. Click **Explore Data**.
- c. In the **Computer** section, click **Edit Columns**, and then select the **First Report Time** column.
- d. Click **Save Report**.
- e. **Optional:** To export your report, click **Export to CSV** or **Export to PDF**.

## Changing the PVU per core value

### 9.2.3

Available from 9.2.3. The number of processor value units is assigned per processor core based on the information that is provided in the PVU table. It might happen that the value that is assigned to a processor in your environment is incorrect. In such case, manually change the PVU per core value to ensure that subcapacity licenses are properly calculated. When the problem that causes incorrect detection of the PVU value is solved, reset the PVU per core to the value that is specified in the PVU table.



You must have the Manage Hardware Inventory permission to perform this task.

The manual update of PVU per Core Value fixlet that was used in earlier versions of BigFix Inventory is deprecated. The PVU per core value can now be changed on the **Hardware Inventory** panel. If you previously changed the PVU per core value on some computers by using the fixlet, run the deprecated fixlet on these computers to remove the adjustment. Do it to avoid a situation in which the PVU values changed by the fixlet overwrite the values that you specify on the **Hardware Inventory** panel.

- To calculate PVU values for Linux on IBM Power Systems, set the PVU per core value to 70. The solution is applicable only when Linux runs on all LPARs that exist on a single server. The solution is not applicable when various operating systems run on LPARs that exist on a single server.
- Changing the PVU per core value is not possible for computers with the *No Scan Data* status. Capacity data is not available for such computers and it is not possible to determine whether the PVU per core value was properly assigned or requires changing. The pencil icon is not available for computers with the *No Scan Data* status.

To change the PVU per core value, perform these steps:

1. In the top navigation bar, click **Reports > Hardware Inventory**.
2. Click the pencil in the **PVU per Core** column, and click **Change PVU per Core**.

Status ▾	Computer N...	IP Adresse...	Partition ...	Server ID	Server C...	Vendor	Brand	Type	Model	PVU per ...	Changed ...	Default P...
OK	NC042208	9.167.42.2...	2	Microsoft A...	2	Microsoft(R)	Microsoft(...	One core	All Existing	70	False	False
OK	NC042207	169.254.1...	2	IBM Corp. ...	8	Intel(R)	Xeon(R)	Multi-core	3400-36	<a href="#">Change PVU per Core</a>	False	False
No VM ...	NC040191	9.167.40.1...	2	TLM_VM_...	2	Intel(R)	Xeon(R), ...	Multi-core	6500-659...	120	False	False

3. Provide the PVU value that you want to assign to the processor.

It is changed for the server that is listed in the **Server ID** column and all virtual machines that are hosted on that server.

**!** **Important:** Ensure that you provide a correct PVU per core value as it affects your PVU reports. In case of doubts, contact BigFix Support for guidance.

4. Provide a justification for changing the PVU value, for example a support case number and then click **Change**. The justification is listed on the Audit Trail report.

The changed PVU per core value is displayed on the Hardware Inventory report. To reflect the change on other reports, recalculate the data. Open the All Metrics report, and click **Recalculate**.

When the problem that causes incorrect detection of the PVU value is solved, reset the changed PVU per core value to the value that is provided in the PVU table. To do this, click the pencil in the **PVU per Core** column, and click **Reset PVU per Core**. Then, click **Reset**. The PVU per core value is reset on the server that is listed in the **Server ID** column and all virtual machines that are hosted on that server.

Status ▾	Computer...	IP Address...	Partition ...	Server ID	Server Co...	Vendor	Brand	Type	Model	PVU per ...	Changed ...	Default P...
OK	NC042208	9.167.42.2...	2	Microsoft A...	2	Microsoft(R)	Microsoft(...	One core	All Existing	120	True	False
OK	NC042207	169.254.1...	2	IBM Corp. ...	8	Intel(R)	Xeon(R)	Multi-core	3400-365			False
No VM ...	NC040191	9.167.40.1...	2	TLM_VM_4...	2	Intel(R)	Xeon(R), M...	Multi-core	6500-655			False

## Troubleshooting scanner catalogs update

Scanner catalogs are used by the scanner to discover software on the endpoints. The catalogs are automatically updated after each import of the BigFix software catalog. Use this procedure only if the automatic update of the scanner catalogs fails or one of the Advanced Server Settings: **enable\_automatic\_task\_deployment** or **enable\_automatic\_catalog\_download** is set to false.

### Procedure for BigFix Inventory Server 10.0.14 and higher

- Check whether the action that automatically updates scanner catalogs was created.
  - Log in to the BigFix console.
  - In the navigation bar, click **Actions**.
  - In the upper-right pane, locate the **Scanner Catalog Distribution (Version version)** [version 10.0.15 or higher] or **Catalog Download (Version version)** action.  
The source of the action should be Master Operator Site.
- If the action not exists follow the procedure to create it manually: [Procedure for BigFix Inventory Server 10.0.14 or higher \(on page dclxxxvi\)](#)
- If the action exists, check whether it failed due to prefetch problems.
  - Select the **Scanner Catalog Distribution (Version version)** [version 10.0.15 or higher] or **Catalog Download (Version version)** action.
  - Open the **Computers** tab, and double-click a computer on which the status of the action is *Failed*.
  - Check whether the reason of the failure is a problem with prefetching the catalog.

```
Failed prefetch catalog.xml.bz2
```

If the status is *Failed*, BigFix server is not able to fetch the file. Possible reasons are:

- Wrong DNS name of the server
- File not available on the server

To troubleshoot the issue:

- Locate the URL of the catalog file in BigFix Console. It would be in form:

```
http://<BIGFIX PLATFORM SERVER DNS NAME>:52311/Upload/<SHA1 of file>/CIT_catalog_<OS CODE>.xml.gz, for example
```

http://bigfix-server.acme.org:52311/Uploads/0153d037792dc39d31152797cb4f6a0346e1f1b9/  
CIT\_catalog\_UNIX.xml.gz

- b. Open the URL in browser
  - i. If you receive the 404 - Not Found response you can query /api/uploads or check BigFix Platform server installation dir `\wwwrootbes\Uploads` (for example, `C:\Program Files (x86)\BigFix Enterprise\BES Server\wwwrootbes\Uploads`) if path and file exists. If file not exists follow the [Procedure for BigFix Inventory Server 10.0.14 or higher \(on page dclxxxvi\)](#) for manual update of scanner catalog.
  - ii. If server DNS name cannot be resolved determine what DNS name is correct and check if URL works with corrected DNS name.

```
prefetch catalog.xml.bz2 sha1:24dcb13c743f2f92b0c5e9887e9df1d4491c4a66 size:398083
http://host_name:52311/Uploads/24dcb13c743f2f92b0c5e9887e9df1d4491c4a66/CIT_catalog_WIND
OWS.xml.bz2
sha256:1e81c865d7fc96468649dbd5c334a2d77b12c5dd252671e22a7e5df0bd7ccbbe
```

 **Important:** Change the *host\_name* for all catalogs.

1. Having correct DNS name confirm that it will work in Action, by coping Catalog Download action and adjusting URL there.
2. To use different DNS name for future catalog updates create `server.env` file on BigFix Inventory Server in `\wlp\usr\servers\server1\ dir` and define URL for all or selected Data Sources. Example entry for Data Source with ID 1. Remebere to include port at the end! BFI Server needs restart.

```
BIGFIX_SERVER_URL_FOR_DATASOURCE_ID_1=http://correctbigfix.acme.org:52311
```

Scanner catalogs are imported to the computers in your infrastructure and are used to discover the installed software.

## Procedure for BigFix Inventory Server 10.0.13 and older

Before you force the update of scanner catalogs, ensure that the following requirements are met.

- The BigFix Inventory server is visible to the BigFix server.
- If Secure Socket Layer (SSL) is enabled in BigFix Inventory, the BigFix server recognizes SSL certificates of BigFix Inventory as valid.

1. Check whether the action that automatically updates scanner catalogs was created.
  - a. Log in to the BigFix console.
  - b. In the navigation bar, click **Actions**.

- c. In the upper-right pane, locate the **Catalog Download (Version version)** action.  
The source of the action should be Master Operator Site.
2. If the action exists, check whether it failed due to prefetch problems. If it does not exist, go to step 3 ([on page mcdxxviii](#)).
  - a. Select the **Catalog Download (Version version)** action.
  - b. Open the **Computers** tab, and double-click a computer on which the status of the action is *Failed*.
  - c. Check whether the reason of the failure is a problem with prefetching the catalog.

```
Failed prefetch catalog.xml.bz2
```

If the status is *Failed*, communication between the BigFix server and the BigFix Inventory server is blocked. Ensure that the servers can communicate. Then, download the Catalog Download Fixlet to force the catalog update. If you cannot change the configuration to allow communication between servers, edit the fixlet so that the BigFix Inventory server can download catalogs from the BigFix server, and then run the fixlet.

3. Download the fixlet for forcing the update of scanner catalogs.
  - a. Log in to BigFix Inventory.
  - b. In the top navigation bar, click **Management > Catalog Upload**.
  - c. Click the question mark sign . Then, click **Catalog Download Fixlet**. Choose the location where you want to save the `catalog_download.bes` file, and click **Save**.
4. **Optional:** If the problem is caused by the lack of communication between servers, edit the `catalog_download.bes` file and substitute the `host_name` and `port` of the BigFix Inventory server with values that allow the server for downloading scanner catalogs from the BigFix server.

```
prefetch catalog.xml.bz2 sha1:24dcb13c743f2f92b0c5e9887e9df1d4491c4a66
size:398083 http://host_name:port/sam/catalogs/CIT_catalog_WINDOWS.xml.bz2
sha256:1e81c865d7fc96468649dbd5c334a2d77b12c5dd252671e22a7e5df0bd7ccbbe
```

 **Important:** Change the `host_name` and `port` for all catalogs.

5. Upload the `catalog_download.bes` file to the BigFix console and run the Catalog Download (Version: *version*) fixlet.
  - a. Copy the file to the computer where the BigFix console is installed.
  - b. Log in to the BigFix console.
  - c. To import the file to the console, click **File > Import**.
  - d. Open the directory where you store the `catalog_download.bes` file, select the file, and click **Open**.  
The file is imported.
  - e. In the left pane, click **Sites > Master Action Site > Fixlets and Tasks**. The list of available fixlets opens in the upper right pane.

- f. Select **Catalog Download (Version: *version*)**, and click **Take Action**.
  - g. Select computers on which you want to run the fixlet, and click **OK**.
6. Wait for the next scheduled software scan and import of data or run these actions manually. For more information, see: [Initiating software scans \(on page dclxx\)](#) and [Scheduling imports of data \(on page dclxxiii\)](#).
  7. **Optional:** If the problem is not solved, manually copy the catalog files from the BigFix Inventory server to the BigFix server.

- a. Log in to the computer where the BigFix Inventory server is installed and go to the following directory.

- **Linux** `/opt/BFI/wlp/usr/servers/server1/data/sam/public/catalogs`
- **Windows** `C:\Program Files\IBM\BFI\wlp\usr\servers\server1\data\sam\public\catalogs`

- b. Copy the following files to a temporary folder on the computer where the BigFix server is installed.

- `CIT_catalog_AIX.xml.bz2`
- `CIT_catalog_HPUX.xml.bz2`
- `CIT_catalog_I5OS.xml.bz2`
- `CIT_catalog_LINUX.xml.bz2`
- `CIT_catalog_SUN.xml.bz2`
- `CIT_catalog_WINDOWS.xml.bz2`

- c. Open the `catalog_download.bes` file that you downloaded in step 3 ([on page mcdxxviii](#)) in a text editor, and check the `sha1` value for each catalog file.

For example, the `sha1` value for the catalog on Windows is `24dcb13c743f2f92b0c5e9887e9df1d4491c4a66`.

```
prefetch catalog.xml.bz2 sha1:24dcb13c743f2f92b0c5e9887e9df1d4491c4a66
size:398083 http://host_name:port/sam/catalogs/CIT_catalog_WINDOWS.xml.bz2
sha256:1e81c865d7fc96468649dbd5c334a2d77b12c5dd252671e22a7e5df0bd7ccbbe
```

Change the names of all catalog files to their `sha1` values.

- d. Copy the renamed catalog files to the following directory.

- **Linux** `/var/opt/BESserver/wwwrootbes/bfmirror/downloads/sha1`
- **Windows** `C:\Program Files (x86)\BigFix Enterprise\BES Server\wwwrootbes\bfmirror\downloads\sha1`

- e. Wait for the next scheduled software scan and import of data or run these actions manually.

Scanner catalogs are imported to the computers in your infrastructure and are used to discover the installed software.

Install or Upgrade Scanner in private mode on windows (10.0.2 or lower)



**Note:** Applies to BigFix Inventory Server versions up to 10.0.2.0

If the catalog is not propagated to the scanner that is installed in the private mode, you have to run the 'Update Catalog Download fixlet templates on BFI server' fixlet. The templates will be regenerated after the next software catalog upload. The templates will be regenerated after the next software catalog upload.

In case you have already the newest catalog uploaded the BFI server and then you have installed agent in the private mode, the newest catalog may not be automatically propagated to the agent. In such case follow the steps:

1. Download the fixlet for forcing the update of scanner catalogs.
  - a. Log in to **BigFix Inventory**.
  - b. In the top navigation bar, click **Management > Catalog Upload**.
  - c. Click the question mark sign **Question** mark sign. Then, click **Catalog Download Fixlet**. Choose the location where you want to save the `catalog_download.bes` file, and click Save.
2. Edit the `catalog_download.bes` file and substitute the relevance:

This:

```
<Relevance><![CDATA[if (name of operating system as lowercase starts with "win")
then (exists (folder "cit" of folder (value of variable "windir" of environment))
whose (exists file "cit.ini" of it) and (exists folder ((key "CIT_HomeDirectory" of file "cit.ini" of
folder "cit"
of folder (value of variable "windir" of environment)) & "\bin") whose ((exists file "wscansw.exe" of
it)
and (exists file "wscanfs.exe" of it)))) else (exists (folder "/etc/cit") whose (exists file
"cit.ini" of it)
and (exists folder ((key "CIT_HomeDirectory" of file "cit.ini" of folder "/etc/cit") & "/bin") whose
((exists file "wscansw" of it) and (exists file "wscanfs" of it)))))]></Relevance>
```

with the following:

```
<Relevance><![CDATA[if (name of operating system as lowercase starts with "win") then
((exists (folder "cit" of folder (value of variable "windir" of environment)) whose (exists file
"cit.ini" of it)
and (exists folder ((key "CIT_HomeDirectory" of file "cit.ini" of folder "cit" of folder (value of
variable "windir"
of environment)) & "\bin") whose ((exists file "wscansw.exe" of it) and (exists file "wscanfs.exe" of
it))))
OR (exists folder ((pathname of parent folder of data folder of client) & "\LMT\CIT\scanner\bin")
whose
((exists file "wscansw.exe" of it) and (exists file "wscanfs.exe" of it)))) else (exists (folder
"/etc/cit")
whose (exists file "cit.ini" of it) and (exists folder ((key "CIT_HomeDirectory" of file "cit.ini" of
folder
"/etc/cit") & "/bin") whose ((exists file "wscansw" of it) and (exists file "wscanfs" of
it)))))]></Relevance>
```

This:

```
<Relevance>if (name of operating system as lowercase starts with "win") then ((exists (folder "cit" of
folder
(value of variable "windir" of environment)) whose (exists file "cit.ini" of it)) and ((key
"CIT_Exploiters" of
file "cit.ini" of folder "cit" of folder (value of variable "windir" of environment)) contains
"SUA:")) else
((exists (folder "/etc/cit") whose (exists file "cit.ini" of it)) and ((key "CIT_Exploiters" of file
"cit.ini"
of folder "/etc/cit") contains "SUA:"))</Relevance>
```

with the following:

```
<Relevance><![CDATA[if (name of operating system as lowercase starts with "win") then (((exists
(folder "cit" of
folder (value of variable "windir" of environment)) whose (exists file "cit.ini" of it)) and ((key
"CIT_Exploiters"
of file "cit.ini" of folder "cit" of folder (value of variable "windir" of environment)) contains
"SUA:")) OR
(exists folder ((pathname of parent folder of data folder of client) & "\LMT\CIT\scanner\config")
whose
(exists file "Cit.properties" of it))) else ((exists (folder "/etc/cit") whose (exists file "cit.ini"
of it))
and ((key "CIT_Exploiters" of file "cit.ini" of folder "/etc/cit") contains "SUA:"))]]></Relevance>
```

3. Upload the `catalog_download.bes` file to the BigFix console and run the **Catalog Download** (Version: version) fixlet.
  - a. Copy the file to the computer where the BigFix console is installed.
  - b. Log in to the BigFix console.
  - c. To import the file to the console, click **File > Import**.
  - d. Open the directory where you store the `catalog_download.bes` file, select the file, and click **Open**. The file is imported.
  - e. In the left pane, click **Sites > Master Action Site > Fixlets and Tasks**. The list of available fixlets opens in the upper right pane.
  - f. Select **Catalog Download** (Version: version), and click **Take Action**.
  - g. Select computers on which you want to run the fixlet, and click **OK**.

Preserving bundling when the BigFix client is reinstalled or reverted from a snapshot

When the BigFix client is reinstalled or reverted from a snapshot, the next time it registers at the BigFix server, it receives a new Data Source Computer ID. The BigFix client with the old Data Source Computer ID becomes inactive because it does not report with the same Computer ID. As a result, the BigFix console shows duplicated entries for

the same computer. Additionally, the affected computer loses bundling information for software that was discovered on this computer. To avoid this situation, store some registry keys data aside of the computer whose identity you want to preserve.

To preserve the identity of a computer on which the BigFix client is already installed, you need to prepare a gold image of this computer and store some registry keys data aside. The gold image is a simple VM template that can be deployed multiple times. This procedure is applicable in the following cases:

- You revert the computer from a VM snapshot with registry keys data stored aside. In this case, the computer keeps its previous Data Source Computer ID.
- You revert the computer from a VM snapshot without registry keys data stored aside. In this case, the BigFix client needs to register on the BigFix server to receive its unique Data Source Computer ID.

1. The BigFix server can match the data that is stored aside to the BigFix client that is reinstalled or reverted from a snapshot when the **ClientIdentityMatch** parameter of the BigFix server is set to 100. By default, the parameter is set to 0. To change the value of the parameter, go to the computer on which the BigFix server is installed and perform the following steps.

- **Windows** Go to **Start > BigFix Administrative Tool > Advanced Options** and set the value of the **ClientIdentityMatch** parameter to 100.
- **Linux** Run the following command.

```
./BESAdmin.sh -setadvancedoptions -sitePvkLocation=/root/backup/license.pvk
-sitePvkPassword=pippo000 -update clientIdentityMatch=100
```

Ensure that you complete this action before you install the BigFix client on the computer whose identity you want to preserve. For more information about the **ClientIdentityMatch** parameter, see: [List of advanced options](#).

2. Install the BigFix client on the computer whose identity you want to preserve. For available methods, see: [Installing the BigFix clients \(on page dxxiii\)](#).

After the installation of the BigFix client completes, the computer automatically registers at the BigFix server and receives a unique Data Source Computer ID.

3. Include the BigFix client in a computer image that can be deployed multiple times.

a. Stop the BigFix client.

- **Windows** Open the Windows services dialog box and stop the BigFix client service.
- **Linux** Run the following command.

```
BESClient stop
```

b. Go to the following location.

- **Windows** `HKEY_LOCAL_MACHINE\SOFTWARE\BigFix\EnterpriseClient\GlobalOptions`
- **Linux** `/var/opt/BESClient/besclient.config` under the section `[Software\BigFix\EnterpriseClient\GlobalOptions]`.

Remove values for the following parameters.

- RegCount
- ComputerID
- ReportSequenceNumber

c. Delete `__BESData` and `KeyStorage` folders from the default installation directory of the BigFix client.

- **Windows** `C:\Program Files\BigFix Enterprise\BES Client`
- **Linux** `/var/opt/BESClient`

Your computer is now ready to be imaged. It is important to save the gold image when the BigFix client service is stopped. To prepare a VM template, follow documentation for the virtualization technology that you use.

4. Reload the image without any computer identity that is stored aside and start the BigFix client.

- **Windows** Open the Windows services dialog box and start the BigFix client service.
- **Linux** Run the following command.

```
BESClient start
```

After you start the BigFix client service, the computer that is reloaded from this image registers automatically at the BigFix server and receives a new Data Source Computer ID.

5. To preserve the new identity of this computer, store some registry keys data aside before you power off the computer.

a. Stop the BigFix client service.

b. Store the following data.

- The registry key value for `ComputerID` from the following location.
  - **Windows** `HKEY_LOCAL_MACHINE\SOFTWARE\BigFix\EnterpriseClient\GlobalOptions`
  - **Linux** `/var/opt/BESClient/besclient.config` under the section `Software\BigFix\EnterpriseClient\GlobalOptions`.
- The `BES Client\KeyStorage` folder from the default installation directory of the BigFix client.

6. Reload the computer from the gold image with the BigFix client service stopped.

7. Import the data that you stored in step 5 (on page [mcdxxxiii](#)).

8. Start the BigFix client.

The gold image of your computer is ready and you can reload it at any time. Thanks to the registry keys data stored aside, the computer keeps its identity and bundling information of software that was discovered on this computer.

You can write a script to automate some of the steps. For example, the script can:

- Start and stop the BigFix client service.
- Store and restore registry keys data that is needed to identify the computer.

If you want to deploy the image multiple times in your environment, it is beneficial to include the scripts in the gold image to help you make the process more effective.

## Setting the code page for double-byte languages

Double-byte character corruption can occur in some environments because BigFix Inventory uses the code page to transcode data. For double-byte languages such as Korean, Japanese, and Chinese, set the code page to avoid character corruption.

The **\_BESClient\_DeploymentEncoding\_IANAName** setting of the BESClient running on the BigFix server must use the correct character set for double-byte languages. For example, for simplified Chinese the setting is CP936. One double-byte code page translation is allowed per BigFix server that is configured as a data source for BigFix Inventory.

1. Log in to the BigFix console.
2. Go to your **Subscribed Computers**, and select the computer on which you have both the BigFix server and the BESClient installed.
3. Go to **Edit Settings**, and change the **\_BESClient\_DeploymentEncoding\_IANAName** setting to the correct encoding.
4. Stop the BigFix Inventory server.
5. Log in to the database server as a user with DB2 authority, open a DB2 command line and run the following commands:

```
db2 "connect to database database_name"  
  
db2 "update dbo.datasources_sequences set last_sequence=cast( x'0000000000000000' as char(8) for bit  
data)'"  
  
db2 commit
```

6. Start the BigFix Inventory server and run a data import.

## Contacting Support

HCL Support provides assistance with product defects.

Before contacting Support, your company must have an active software maintenance contract, and you must be authorized to submit problems to HCL. For information about the types of maintenance contracts available, see "Enhanced Technical Support" in the *Software Support Handbook* at: <https://support.hcltechsw.com/csm>.

Complete the following steps to contact Support with a problem:

1. Define the problem, gather background information, and determine the severity of the problem. For help, see "*Contacting Software Support*" in the *Software Support Handbook*.
2. Gather diagnostic information.
3. Submit your problem to Support in one of the following ways:
  - Online: Visit the Support site: <https://support.hcltechsw.com/csm>.
  - By phone: For the phone number to call in your country, go to the "*Contact Information*" section of the *Software Support Handbook*.

If the problem you submit is for a software defect or for missing or inaccurate documentation, HCL Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible,

HCL Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. HCL publishes resolved APARs on the HCL Support website daily, so that other users who experience the same problem can benefit from the same resolution.

# Tuning performance

Learn how to plan the infrastructure of BigFix Inventory and to configure the application server to achieve optimal performance. The following guidelines are applicable in big data environments as well as in smaller environments that are running on low-performance hardware.

Your deployment architecture depends on:

- the number of endpoints managed
- the number of facts captured, such as file facts, ISO tags, package facts, resource utilization metrics tags, and other information
- dynamics of the changes in environment: on endpoints and software classification operation influencing calculation of license metrics
- number of configured computer groups
- number of concurrent users using the application
- load from 3rd party system integrating through APIs

The BigFix Inventory server stores its data in a dedicated database, either DB2 or MS SQL Server. When you plan and install the BigFix Inventory infrastructure, consider the hardware requirements for all the components. For more information, see: [Hardware requirements \(on page dx\)](#).

To benefit from all the good practices, use BigFix server version 9.5.5 and above.

## Setting up scans and import

Learn how to improve the scanning and importing activities to optimize the performance in your infrastructure.

### Good practices for running scans and imports

Apply the good practices when running scans and imports to ensure that your infrastructure works efficiently.

#### **Initial configuration task**

- Run the initial import

It is a good practice to run the initial import before you schedule scans and activate analysis. This import uploads the software catalog from the installation directory to BigFix Inventory and extracts basic data about endpoints from the BigFix server. Make sure that the scan data from the first scan group is available in BigFix server and then run the second import. When the scan results from the second scan group are available in the BigFix server, you can run the next import of data.

## Scanning related activities

- Plan scan frequency

After you find the optimal size of scan groups, set the frequency of software scans. The most common frequency is weekly so that every endpoint is scanned once a week. If your environment has more than 100 000 endpoints, consider performing scans less frequently, for example monthly. If scans are running daily, take into account system updates. When many files are modified, the next data import runs longer.

- Avoid scanning when it is not needed

Scan frequency depends on how often software changes on the endpoints and on your reporting needs. Group endpoints on which software changes dynamically together and scan them more frequently, for example once a week. Group endpoints with a more stable set of software together and scan them less frequently, for example once a month.

- Limit the number of computer properties gathered during scans

By default, BigFix Inventory retrieves four computer properties from the BigFix server: computer name, DNS name, IP address, and operating system. Imports can be much longer if you extract more properties from BigFix during each import. It is a good practice to limit the number of computer properties to 10 or fewer.

- Limit the number of BigFix Inventory computer groups

Create only as many computer groups as are needed. Import of data gets longer with a growing number of computer groups. If the size of your environment requires that you create many computer groups, consider skipping calculation of extended software aggregates. By skipping these calculations, you can reduce the length of data imports in very large environments. For more information, see: [Disabling the calculation of extended software aggregates \(on page mcdxlxiii\)](#).

- Enable the collection of checksums for a small group of endpoints

Each change to the configuration of the cryptographic hash collection (enabling, disabling, adding new types) significantly lengthens the first data import that follows the change. Because of multiple modifications on the file system, the new configuration triggers a complete data import instead of the delta one, in which only modifications are imported. This first data import might take up to three times longer, and the subsequent ones about 10% longer than data imports without file hashes. The impact of subsequent data imports is considered as moderate. Before you enable the collection of file hashes, divide your environment into scan groups to distribute the load of the imported data. For more information, see: [Enabling the collection of checksums \(on page mccxxv\)](#).

## Import related activities

- Maintain frequent imports

After the installation, imports are scheduled to run once a day. Do not change this configuration. However, you might want to change the hour when the import starts. If your import is longer than 24 hours, you can

improve the scan groups configuration. Alternatively, you can preserve the current configuration because BigFix Inventory handles overlapping imports. If an import is running, no other import is started.

- Consider web user interface

Data import is a computation-intensive task so be prepared to experience slower user interface response times while you are using BigFix Inventory. Thus, it is better to schedule the imports to take place at other times when you are not likely to use the application WebUI.

If, in case of huge deployments, loading any report takes substantial amount of time, see: [User interface problems \(on page mcccxxxvi\)](#).

## Dividing the infrastructure into scan groups

To avoid running into performance issues, you should divide the computers in your infrastructure into scan groups and properly set the scan schedule. You should start by creating a benchmark scan group on which you can try different configurations to achieve optimal import time. After the import time is satisfactory for the benchmark group, you can divide the rest of your infrastructure into analogous scan groups.

1. Create a single scan group that will be your benchmark.

The size of the scan group might vary depending on the size of your infrastructure. However, the recommendation is to avoid creating a group larger than 20 000 endpoints. For more information about creating computer groups, see: [Lesson 1 \(Optional\): Creating computer groups in the BigFix console \(on page mcccxxxv\)](#)

2. Run **Initiate Software Scan** fixlet and scan the computers in this scan group. For more information, see: [Initiating software scans \(on page dcx\)](#).
3. When the scan finishes, use **Upload Software Scan Results** fixlet to upload the results of the scan to the BigFix server. For more information, see: [Uploading software scan results \(on page dcxvii\)](#).
4. Run an import of data. For more information about running imports, see: [Scheduling imports of data \(on page dclxxiii\)](#). Check the import time and decide whether its duration is satisfactory.
5. If you are not satisfied with the import time, go to the following directory and check the import log.
  - **Linux** `installation_directory/wlp/usr/servers/server1/logs/imports`
  - **Windows** `installation_directory\wlp\usr\servers\server1\logs\imports`
6. Undertake one of the following actions:
  - If you see that the duration of the import of raw file system scan data or package data takes longer than one third of the ETL time and the volume of the data is large (a few millions of entries), create a smaller group.
  - If you see that the duration of the import of raw file system scan data or package data takes longer than one third of the ETL time but the volume of the data is low, fine-tune hardware. For information about processor and RAM requirements as well as network latency and storage throughput, see: [Hardware requirements \(on page dx\)](#).

7. If you see that processing of usage data takes an excessive amount of time and you are not interested in collecting usage data, disable gathering of usage data. For more information, see: [Disabling the collection of software usage \(on page dclxxxvii\)](#).
8. After you adjust the first scan group, run the software scan again, upload its results to the BigFix server and run an import of data.
9. When you achieve an import time that is satisfactory, decide whether you want to have a shorter scan cycle.

If you have an environment that consists of 42 000 endpoints and you created seven scan groups of 6000 endpoints each, your scan cycle will last seven days. To shorten the scan cycle, you can try increasing the number of computers in a scan group, for example, to 7000. It will allow you for shortening the scan cycle to six days.



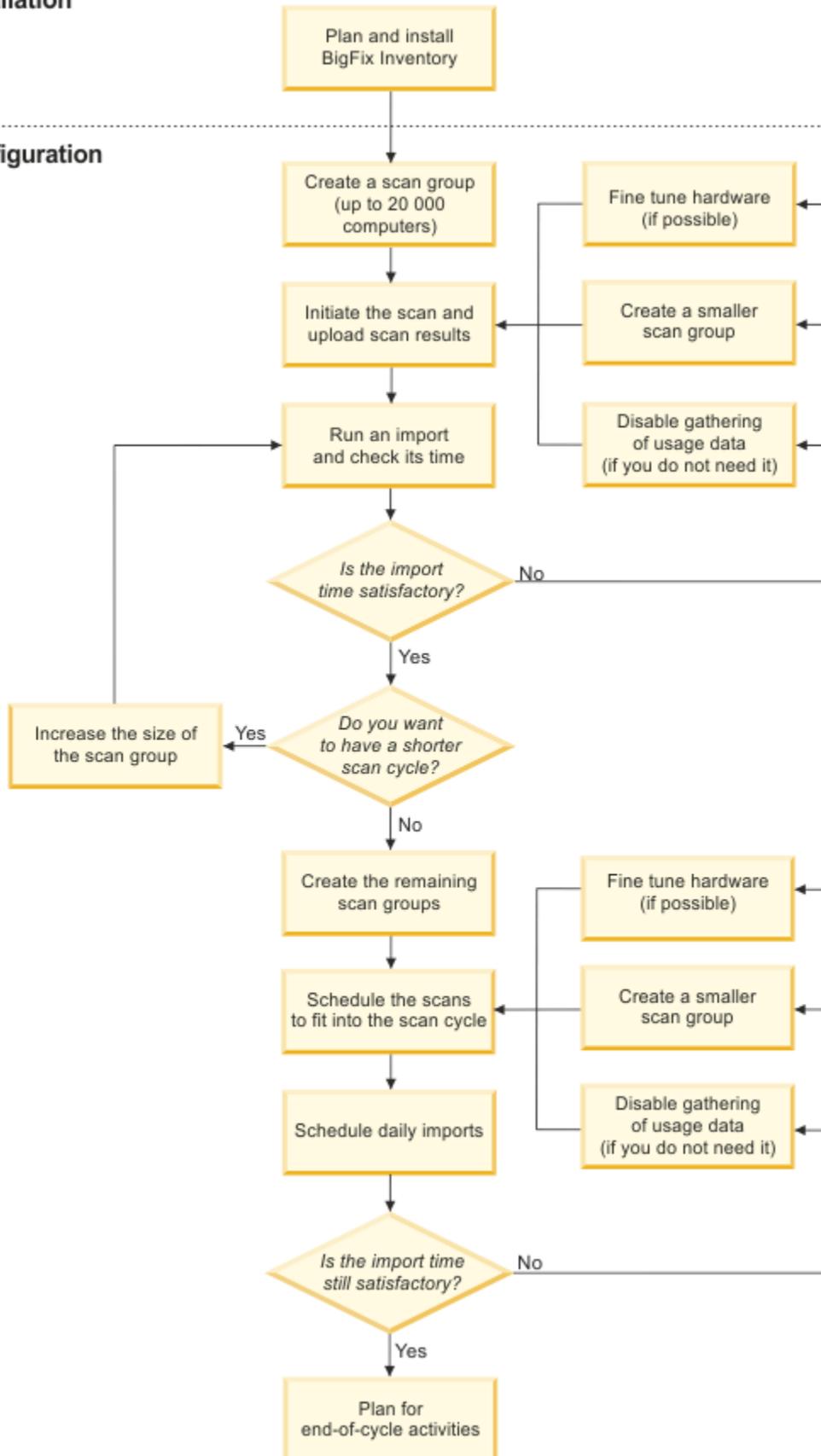
**Note:** After you increase the scan group size, observe the import time to ensure that its performance remains on an acceptable level.

When you are satisfied with the performance of the benchmark scan group, create the remaining groups. Schedule scans so that they fit into your preferred scan cycle. Then, schedule import of data from BigFix server. Observe the import time. If it is not satisfactory, adjust the configuration as you did in the benchmark scan group. When you achieve suitable performance, make room for end-of-scan-cycle activities and plan to have a data export to other integrated solutions

Use the following diagram to get an overview of actions and decisions that you will have to undertake to achieve optimal performance of BigFix Inventory.

## Installation

## Configuration



## Scan schedule

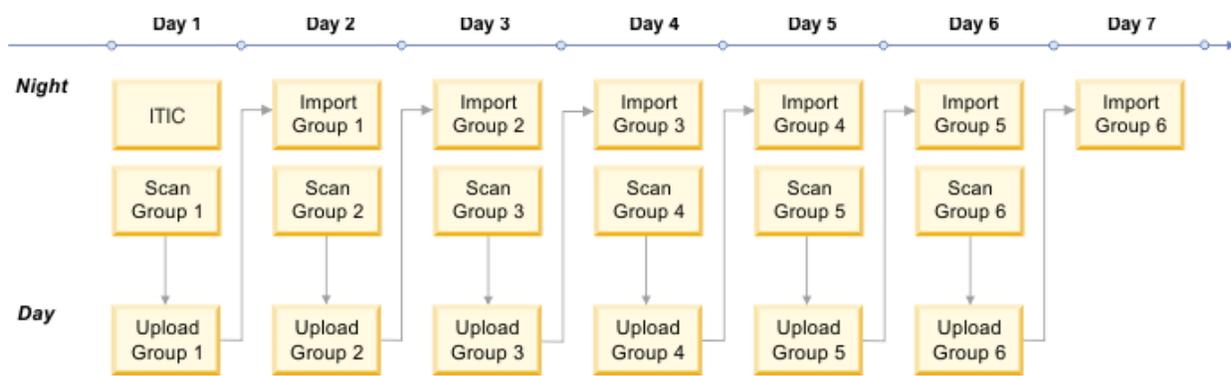
It is critical for BigFix Inventory performance that you accurately schedule scans in the scan groups in your environment. If the configuration is not well-balanced, you might experience long import times.

For environments larger than 35 000 endpoints, divide your endpoints into separate scan groups. The system administrator can then set a different scanning schedule for every scan group in your environment.

### Example

If you have 60 000 endpoints, you can create six scan groups (every group containing 10 000 endpoints). The first scan group has the scanning schedule set to Monday, the second to Tuesday, and so on. Using this configuration, every endpoint is scanned once a week. At the same time, the BigFix server receives data only from 1/6 of your environment daily and for every daily import the BigFix Inventory server needs to process data only from 10 000 endpoints (instead of 60 000 endpoints). This environment configuration shortens the BigFix Inventory import time.

The image below presents a scan schedule for an infrastructure that is divided into six scan groups. You might achieve such a schedule after you implement recommendations that are contained in this guide. The assumption is that both software scans and imports of scan data to BigFix Inventory are scheduled to take place at night, while uploads of scan data from the endpoints to the BigFix server occur during the day.



If you have a powerful server computer and longer import time is acceptable, you can create fewer scan groups with greater number of endpoints in the BigFix console. Remember to monitor the import log to analyze the amount of data that is processed and the time it takes to process it.

For information how to create scan groups, see the topic [Computer groups](#) that is available in the BigFix documentation.

## Recommendations for the service provider environments

The service provider functionality is used to create separate subcapacity reports for different sets of computers. You can create such a report for each computer group. By default, the calculation of PVU and RVU MAPC consumption is disabled for new computer groups. After you enable it, a computer group becomes a subcapacity computer group, and can have its own subcapacity report. This, however, impacts performance due to increased number of subcapacity calculations.

If you decide to create more than 10 subcapacity computer groups, adjust the use of CPU resources and tune the default configuration of BigFix Inventory. The most important processes for subcapacity computer groups are aggregation and reaggregation. Performance of these processes depends on the maximum number of threads that can be run for the calculations, which by default is 2. You improve performance by increasing the number of available threads.

To increase the number of available threads, specify the values of the **maxAggregationThreads** and **maxReaggregationThreads** parameters. To specify the values of these parameters, log in to BigFix Inventory and go to **Management > Advanced Server Settings**. In general, you should provide two processor cores for each thread on your database server. For example, if you can provide 12 processor cores for the aggregation process itself, increase the number of threads to 6 by specifying **maxAggregationThreads=6**. For more information, see: [Advanced server settings \(on page dccc\)](#).

## Additional tasks for improving performance

Learn about additional tasks that you might want to perform to improve the performance in your infrastructure.

The default list of excluded Windows endpoints is extended to improve the data import and overall file scan. This helps in reducing the overall data import duration. For more information, refer to the [KB article](#).

## Changing the mode of sorting bundling options on the Software Classification panel

If the Software Classification panel runs slowly or the BigFix Inventory server is under a heavy load, you might want to change the mode of sorting bundling options.

After you invoke the function **Assign Components to Product** on the Software Classification panel, you might experience a performance issue while loading the data. By default, the bundling options that are displayed when you reassign a software component are sorted by confidence. To improve the performance, sort the displayed bundling options alphabetically. You can use a REST add-on in your web browser or the curl tool to perform this task.

- You can use the REST add-on in your web browser to sort the displayed bundling options alphabetically.
  - Open the REST add-on in your web browser, for example Advanced REST client.
  - To set the value of the **blockUiBundlingComputations** parameter to *true*, run the following REST API query:

```
PUT http://bfi_server_host_name:port_number/rest/configs?  
token=token&name=blockUiBundlingComputations&value=true
```

Example:

```
PUT  
http://localhost:9981/api/sam/configs?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&name=blockUiBundlingComputations&value=true
```

- You can use the curl tool to sort the displayed bundling options alphabetically.

- Start the curl tool.
- Enter the following command.

```
curl -v PUT
http://bfi_server_host_name:port_number/rest/configs?token=token&name=blockUiBundlingComputati
ons&value=true
```

Example:

```
curl -v PUT
http://localhost:9981/api/sam/configs?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&name=blockUiBundlingComputations&value=true
```

The bundling options are sorted alphabetically and are displayed more quickly because no additional computation is added to the server workload.

---

Related information

[Advanced server settings \(on page dccc1\)](#)

## Disabling the calculation of extended software aggregates

You can noticeably reduce the length of data imports in very large environments if you disable the calculation of extended software aggregates. Software aggregates are pieces of data that are gathered during software scans on your endpoints and which are later processed during successive data imports. They are displayed on the **Inventory Exploration** report.

You can disable the gathering of the following software aggregates:

- Total Runs
- Total Run Time
- Average Runs per Day
- Average Run Time
- First Used

1. Enable the new feature that allows for skipping the processing of extended software aggregates.
  - a. Open the following URL in your web browser: `https://bfi_server_name:port/management/feature`.
  - b. Select **Skip Extended Software Aggregates** and click **Save**.
2. To disable the calculation of extended software aggregates for a specific computer group:
  - a. In the BigFix Inventory web user interface, click **Management > Computer Groups**.
  - b. Expand the **All Computers** computer group and click the group for which you want to disable the calculation of software aggregates.
  - c. Select **Skip Extended Software Aggregates** and click **Save**.

After you run a data import, the individual entries for extended software aggregates are displayed on the **Inventory Exploration** report as **Not calculated**.

Run a data import to recalculate the aggregates.

## Shortening the retention period gradually to avoid problems with growing database size

Since BigFix Inventory 9.2.1, retention period is set to 7 days in a fresh installation, so this procedure does not apply in case of fresh 9.2.1 installations. If you did not configure the retention period after installation in earlier versions of BigFix Inventory and the data accumulation continued for several months, you must enable and repeatedly change the data retention configuration to make the retention period as short as possible. With each successive import, the historical data is deleted gradually and thus problems with growing database size are avoided.

For information about how to configure the retention period in the product web user interface, see [Configuring data retention period for raw utilization data \(on page dccxvi\)](#).



### Note:

- After this configuration was applied, the transaction log is used heavily because all the data is deleted in one transaction.
  - The database size is not decreased automatically. If you want to reclaim disk space that is occupied by database tables, run the command that is appropriate for your database management system.
  - If the data imports during which historical data was deleted failed, increase the retention period and run the import again.
1. Determine the date of the first successful import.
  2. Calculate the number of days since the first successful import. For example: If the import occurred 6 months ago: 6 months \* 30 days = 180 days.
  3. Set the retention period to begin 30 days after the first successful data import.  
Example: 5 months \* 30 days = 150 days.
  4. Run the data import.
  5. Set the retention period to begin 60 days after the first successful data import, that is, set the retention period to 120 days.  
Example: 4 months \* 30 days = 120 days.
  6. Repeat the step as many times as necessary, each time decreasing the retention period by 30 days.
  7. When the retention period is short enough, enter the target configuration of 7 days.

## Tuning performance in medium and large environments

You can learn the possible causes of the most common performance issues in medium and large environments. Follow the tips and the known solutions to these issues to keep the system in good shape and avoid performance problems.

## Scalability of multiple concurrent UI users

The number of users that are simultaneously logged in to BigFix Inventory and perform actions on the user interface influences the application performance. When BigFix Inventory is running on the hardware that meets the minimal hardware requirements, the optimal number of concurrent users is five.

## Tuning DB2 application database

To avoid performance issues in medium and large environments, configure the location of the transaction log and adjust the log size. If you are using DB2 as BigFix Inventory database, you might want also to change the swappiness parameter in Linux or configure the **DB2\_COMPATIBILITY\_VECTOR**.

Make sure that the statement concentrator is set to OFF on the DB2 instance where the BigFix Inventory is installed. For more information, see: [stmt\\_conc - Statement concentrator configuration parameter](#).

## Maintaining the DB2 database

To ensure that the DB® database works properly, you need to regularly back up your data and perform maintenance actions.

The configuration of DB2 has a significant impact on performance. You should perform some standard actions to administer the database correctly. If you have DB2 administration professionals, they can monitor the DB2 health and performance. In other cases, you should follow the procedures that are described in this topic to keep your database healthy.

### Perform regular backups

Perform regular backups of the data that is stored in the database.

It is advisable to back up the database before upgrading the server to facilitate recovery in case of failure.

1. Perform regular backups of the data that is stored in the database. It is advisable to back up the database before upgrading the server to facilitate recovery in case of failure.

- a. Stop the server.

- b. In the DB2 command-line interface, run the following command: `db2 backup database TEMADB.`



**Note:** `TEMADB` is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

- c. Start the server.

The backup is created in the current working directory, and the file name contains the instance name and time stamp of the backup procedure (for example: TLMA.0.db2inst1.NODE0000.CATN0000.20101105000715.001).

For more information about database backup strategies, see: [Developing a backup and recovery strategy](#).

## DB2 Maintenance: Reorganize Table and Refresh Indexes statistics

2. Reorganize the table to match the index and to reclaim space:

a. Stop the BigFix Inventory server.

b. In the DB2® command-line interface, run the following commands:

```

▪ db2 connect to TEMADB
▪ db2 -x "select 'reorg table',substr(rtrim(tabschema)||'.'||rtrim(tabname),1,50),' allow no
access;'from syscat.tables where type = 'T' and tabschema in ('ADM','SAM','DBO') order by
tabschema,tablename " > reorgs.sql
▪ db2 -tvf reorgs.sql
▪ db2 terminate

```

c. Start the BigFix Inventory server.

3. Keep the statistics up-to-date. By default, DB2® statistics are run automatically. If this option is disabled, you must manually run the following commands:

a. Stop the BigFix Inventory server.

b. In the DB2® command-line interface, run the following commands:

```

▪ db2 connect to TEMADB
▪ db2 -x "select 'runstats on table',substr(rtrim(tabschema)||'.'||rtrim(tabname),1,50),'
and indexes all;'from syscat.tables where type = 'T' and tabschema in ('DBO','SAM','ADM')
order by tabschema,tablename " > runstats.sql
▪ db2 -tvf runstats.sql
▪ db2 terminate

```

c. Start the server.

## Reclaim storage / reduce database size

To reduce tablespace size and avoid huge .LRG files please follow the below instructions.

- How to identify used pages in a tablespace
  - `db2 inspect check tablespace name USERSPACE1 results keep inspect.log`
    - This will generate a file `inspect.log` on the instance's diagnostic directory (usually `<instance directory>/sql1lib/db2dump`). If multinode, it will generate a file for each node, adding the node number at the end of the filename. i.e: `inspect.log.000`, `inspect.log.001`, etc. or it will generate separate folders for the nodes i.e: `DIAG000`, `DIAG0001`, etc.
- To format the output, you must navigate to where the output file is located and run:
  - `db2inspf inspect.log inspect.out`
    - This will generate `inspect.out` in the current directory

Please note that you may have to wait a while for the below commands to execute so please execute these commands a few minutes apart

- To recover the space, please run:
  - `db2 "ALTER TABLESPACE USERSPACE1 LOWER HIGH WATER MARK "`
- To reduce the size of USERSPACE1 please run:
  - `db2 "ALTER TABLESPACE USERSPACE1 REDUCE MAX`
- To check for any change in "High water mark (pages)"
  - `db2 "LIST TABLESPACES SHOW DETAIL"`

### Checking space occupied by individual tables

- To get the size of the tables in temadb please run:

```

▪ db2 "select char(date(TAB.STATS_TIME))||'-'||char(time(TAB.STATS_TIME))
      as STATSTIME, substr(TAB.TABSCHEMA,1,3) as TABSCHEMA,
      substr(TAB.TABNAME,1,35)
      as TABNAME, CARD as ROWS, (COL_OBJECT_P_SIZE + DATA_OBJECT_P_SIZE +
      INDEX_OBJECT_P_SIZE
      + LONG_OBJECT_P_SIZE + LOB_OBJECT_P_SIZE + XML_OBJECT_P_SIZE) as
      TAB_ALLOC_KB,
      (COL_OBJECT_L_SIZE + DATA_OBJECT_L_SIZE + INDEX_OBJECT_L_SIZE +
      LONG_OBJECT_L_SIZE
      + LOB_OBJECT_L_SIZE + XML_OBJECT_L_SIZE) as TAB_USED_KB,
      DICTIONARY_SIZE AS DICT_P_SIZE,
      DATA_OBJECT_P_SIZE AS DATA_P_SIZE, INDEX_OBJECT_P_SIZE AS
      INDEX_P_SIZE,
      LOB_OBJECT_P_SIZE AS LOB_P_SIZE, LONG_OBJECT_P_SIZE AS LONG_P_SIZE,
      XML_OBJECT_P_SIZE AS XML_P_SIZE, DATA_OBJECT_L_SIZE AS DATA_L_SIZE,
      INDEX_OBJECT_L_SIZE AS INDEX_L_SIZE,
      LOB_OBJECT_L_SIZE AS LOB_L_SIZE, LONG_OBJECT_L_SIZE AS LONG_L_SIZE,
      XML_OBJECT_L_SIZE AS XML_L_SIZE

```

```

from syscat.tables TAB join sysibmadm.admintabinfo ADMTI on
TAB.tabname=ADMTI.tabname and
TAB.tabschema=ADMTI.tabschema where TAB.TABSHEMA IN
('DBO','SAM','ADM') order by TABSCHEMA,
TABNAME with ur"

```

For a more advanced investigation of queries that are used by the BigFix Inventory server, you should use the DB2 design advisor command (`db2advvis`). It helps in finding new indexes that can improve the database performance. The Design Advisor uses the output from the DB2 monitors to suggest the creation of new indexes. The suggestions are based on the queries that are found in monitors. For more information about Design Advisor, consult the DB2 documentation:

#### DB2 11.5

- [db2advvis - DB2 Design Advisor command](#)
- [DB2® topic: Design Advisor](#)

## Configuring the transaction logs size

If your environment consists of many endpoints, increase the transaction logs size to improve performance.

The transaction logs size can be configured through the **LOGFILSIZ** DB2 parameter that defines the size of a single log file. To calculate the value that can be used for this parameter, you must first calculate the total disk space that is required for transaction logs in your specific environment and then multiply it, thus obtaining the size of one transaction log. The required amount of disk space depends on the number of endpoints in your environment and the number of endpoints in the biggest scan group for which data is processed during the import.

During the performance test execution, details such as, disc utilization, disk speed, memory utilization is calculated. The details are shown in the form of chart.



**Important:** Use the provided formula to calculate the size of transaction logs that are generated during the import of data. More space might be required for transaction logs that are generated when you remove the data source.

1. Use the following formula to calculate the disk space that is needed for transaction logs:

```

<The number of computers> × 0.0012 GB + <the number of computers in the biggest scan group> × 0.0012
GB + 17 GB

```

2. To obtain the size of a single transaction log file that can be specified in the **LOGFILSIZ** DB2 parameter, multiply the result by 1852.



**Note:** The number 1852 expresses the relation between the primary and secondary log files and is necessary to calculate the size of a single transaction log file (**LOGFILSIZ**). The factor was calculated assuming the default number of log files (**LOGPRIMARY** = 25 and **LOGSECOND** = 110).

- Run the following command to update the transaction log size in your database. Substitute *value* with the size of a single transaction log.



**Note:** **TEMADB** is the default database name. If you are unsure whether it applies to your database, see: [Checking the database name \(on page mcccclxii\)](#).

```
db2 update database configuration for TEMADB using logfilsiz value
```

- For the changes to take effect, restart the database. Run the following commands:

```
db2 deactivate db TEMADB
db2stop
db2start
db2 activate db TEMADB
```

- Restart the BigFix Inventory server.

- To stop the server, run the following command:

```
/etc/init.d/BFIserver stop
```

- To start the server, run the following command:

```
/etc/init.d/BFIserver start
```

Calculating the single transaction log size for 100 000 endpoints and 15 000 scan results:

```
100 000 × 0.0012 GB + 15 000 × 0.0012 GB + 17 GB = 155 GB
155 × 1852 = 287060
```

287060 is the value to be specified in the **LOGFILSIZ** parameter.

## Configuring the transaction log location for DB2

To increase database performance, move the DB2® transaction log to a file system that is separate from the DB2® file system.

---

Medium environments: **Strongly advised**

Large environments: **Required**

Very large environ- **Required**  
ments

---

1. To move the DB2® transaction log to a file system that is separate from the DB2® file system, update the DB2® **NEWLOGPATH** parameter for your BigFix Inventory database:

```
UPDATE DATABASE CONFIGURATION FOR TEMADB USING NEWLOGPATH value
```

Where *value* is a directory on a separate disk (different from the disk where the DB2® database is installed) where you want to keep the transaction logs. This configuration is strongly advised.

2. For the changes to take effect, restart the database. Run the following commands:

```
DEACTIVATE DB TEMADB
DB2STOP
DB2START
ACTIVATE DB TEMADB
```

3. Restart the BigFix Inventory server.

- a. To stop the server, run the following command:

```
/etc/init.d/BFIserver stop
```

- b. To start the server, run the following command:

```
/etc/init.d/BFIserver start
```

## Configuring swappiness in Linux hosting DB2 database server

Swappiness determines how quickly processes are moved from RAM to hard disk to free memory. It can assume the value 0 - 100. A low value means that your Linux™ system swaps out processes rarely while a high value means that processes are written to disk immediately. Swapping out runtime processes should be avoided on the DB2® server on Linux™, so it is advisable to set the swappiness kernel parameter to a low value or zero.

1. Log in to the Linux™ system as root.
2. Set the swappiness parameter to a low value or 0.
  - Option A:
    - a. Open the file `/etc/sysctl.conf` in a text editor and enter the **vm.swappiness** parameter of your choice.

Example:

```
vm.swappiness = 0
```

- b. Restart the operating system to load the changes.
  - Option B: To change the value without restarting the operating system, run the following command: `sysctl -w vm.swappiness=0`.

## Configuring the DB2\_COMPATIBILITY\_VECTOR variable for improved UI performance

For environments with 5000 or more clients in your infrastructure, set the value of the **DB2\_COMPATIBILITY\_VECTOR** variable to **MYS**. The change in the value might result in faster UI response time on some installations. For information about how to modify the registry variable, refer to [DB2\\_COMPATIBILITY\\_VECTOR registry variable](#).

## Configuring statement heap size

Statement heap size configuration parameter (`stmtheap`) refers to the limit of the statement heap, which is used as a workspace for the SQL compiler during compilation of an SQL statement. Statement heap size has an impact on the time taken to execute complex queries, for example generating the audit snapshot.

Allocating small statement heap size for complex queries causes the query to be not fully optimized and the execution takes longer. It also consumes excessive amount of disk space. This scenario occurs in databases that have large amount of data. On the other hand, allocating large statement heap size may cause in longer execution time for complex queries even if the database has small amount of data. It may be helpful to adjust the statement heap size for large environments, if there are queries that run for a long time, or use large amount of disk space.

Use the below command to define the statement heap size:

```
db2 update db config for TEMADB using stmtheap 81920 automatic
```



**Note:** Restart BigFix Inventory application and DB2 database after you change the statement heap size.

## Tuning MS SQL application database

To avoid performance issues in medium and large environments, configure the location of the transaction log. If you are using MS SQL as BigFix Inventory database, you might want to shrink the transaction log or update query optimization statistics.

## Optimizing the tempdb database in Microsoft SQL Server

**tempdb** is a system database in SQL Server whose main functions are to store temporary tables, cursors, stored procedures, and other internal objects that are created by the database engine.

By default, the database size is set to 8 MB and it can grow by 10% automatically. In large environments, its size can be as large as 15 GB. It is therefore important to optimize the tempdb database because the location and size of this database can negatively affect the performance of the BigFix Inventory server.

For information about how to set the database size and how to determine the optimal number of files, see the TechNet article [Optimizing tempdb Performance](#).

## MS SQL Server transaction log related activities

Perform the following activities to improve the performance and the reliability of your environment.

- Shrink the transaction log once a month. If the environment is large, it is advisable to shrink the log after every data import.

For more information, see: [How to: Shrink a File \(SQL Server Management Studio\)](#).

- The transaction log in MS SQL Server records all transactions and the database changes caused by each transaction.

For information how to configure the database transaction log, see: [Move the Database Transaction Log to Another Drive](#).

## Rebuilding database indexes

Rebuilding database indexes and updating the statistics is mandatory for BigFix Inventory to operate smoothly. If you experience a delay in UI response or importing data, make sure to defragment your hard disk and that statistics are up to date.

**10.0.4** From version 10.0.4, for new installations and upgrades, a job is included in MS SQL database named "<InventoryDB> Full database Index Reorganization." This job conducts required index maintenance.

The job follows the below criteria:

- The script runs everyday at 4 AM local time.
- If a [data import \(on page mdcxviii\)](#) is running (scheduled import or manual import), the job waits for the import to finish, and then attempts to rebuild the index. The job attempts to run 16 times after 30 minute intervals. The total time spent on waiting is 8 hours. If the import does not complete in 8 hours, the job exits the queue with an error message in the status log. In that case, the index is rebuilt the next day at the scheduled time.
- If an index rebuilding job already exists with the name, "<InventoryDB> Full database Index Reorganization," then the scripts do not overwrite the data and the existing configuration is retained.
- For the BigFix Inventory index rebuilding job to execute, the SQL Server Agent must be configured and running. The agent is turned off in some cases. You need to manually turn it on. To learn about how to configure and how to start SQL Server Agent, refer to [Configure SQL Server Agent](#) and [Start, Stop, or Pause the SQL Server Agent Service](#) respectively.
- It is recommended to configure SQL Server Agent to restart automatically in case of failure. For more information, see [Auto Restart SQL Server Agent](#).

For versions lower than 10.0.4, run the operation once a week to rebuild database.

The following example shows a simple approach to rebuild indexes and update statistics. The job rebuilds all indexes independent of their fragmentation. The script uses the standard database name as TEMADB.

```
USE TEMADB
GO
IF EXISTS (SELECT
*
FROM dbo.imports
```

```

WHERE success IS NULL)

BEGIN

PRINT N'CANNOT RUN index rebuild. BFI import is running!'

PRINT N'Wait until BFI import finishes'

END

ELSE

BEGIN

DECLARE table_cursor CURSOR FOR

SELECT

table_schema,

table_name

FROM INFORMATION_SCHEMA.TABLES

WHERE table_type = 'BASE TABLE'

OPEN table_cursor

DECLARE @tableName sysname

DECLARE @tableSchema sysname

FETCH NEXT FROM table_cursor INTO @tableSchema, @tableName

WHILE @@fetch_status != -1

BEGIN

PRINT N'START alter index all on ' + @tableSchema

+ N'.' + @tableName + N' rebuild';

EXECUTE (N'alter index all on ' + @tableSchema + N'.'

+ @tableName

+

N' rebuild')

PRINT N'END alter index all on ' + @tableSchema

+ N'.' + @tableName + N' rebuild';

FETCH NEXT FROM table_cursor INTO @tableSchema,

@tableName

END

CLOSE table_cursor

DEALLOCATE table_cursor

PRINT N'START sp_updatestats';

EXECUTE sp_updatestats

PRINT N'END sp_updatestats';

END

GO

```

## Creating Full Database Index Reorganization job

You can create a Full Database Index Reorganization job if required.

Below are the steps to create a Full Database Index Reorganization job in two different scenarios:

1. **Delete the existing Full Database Index Reorganization job**

- a. Connect to the DB.
- b. Run the following SQL query.
  - i. Replace 'DATABASE\_NAME\_TO\_REPLACE' with your actual BigFix Inventory database name.
  - ii. Execute the query.

```
EXEC msdb.dbo.sp_delete_job @job_name=N'DATABASE_NAME_TO_REPLACE Full Database Index Reorganization',  
@delete_unused_schedule=1
```

- c. Go to **SQL Server Agent**, expand the **Jobs** section and verify if **Database Name Full Database Index Reorganization** job does not exist.

2. **Create the 'Full Database Index Reorganization' job if the job does not exist**

- a. Connect to the DB.
- b. Run the following SQL query.
  - i. Replace 'DATABASE\_NAME\_TO\_REPLACE' with your actual BigFix Inventory database name.
  - ii. Execute the query.

```
BEGIN TRANSACTION  
  
    DECLARE @ReturnCode INT  
    SELECT @ReturnCode = 0  
  
    IF NOT EXISTS (SELECT name FROM msdb.dbo.syscategories WHERE  
name=N'[Uncategorized (Local)]' AND category_class=1)  
    BEGIN  
        EXEC @ReturnCode = msdb.dbo.sp_add_category @class=N'JOB',  
@type=N'LOCAL', @name=N'[Uncategorized (Local)]'  
        IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback  
    END  
  
    DECLARE @jobId BINARY(16)  
    EXEC @ReturnCode = msdb.dbo.sp_add_job  
@job_name=N'DATABASE_NAME_TO_REPLACE Full Database Index Reorganization',  
    @enabled=1,  
    @notify_level_eventlog=2,  
    @notify_level_email=0,  
    @notify_level_netsend=0,  
    @notify_level_page=0,
```

```

@delete_level=0,
@description=N'No description available.',
@category_name=N'[Uncategorized (Local)]',
@job_id = @jobId OUTPUT
IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback

EXEC @ReturnCode = msdb.dbo.sp_add_jobstep @job_id=@jobId,
@step_name=N'Check the BFI Import',
@step_id=1,
@cmdexec_success_code=0,
@on_success_action=3,
@on_success_step_id=0,
@on_fail_action=2,
@on_fail_step_id=0,
@retry_attempts=16,
@retry_interval=30,
@os_run_priority=0, @subsystem=N'TSQL',
@command=N'
        IF EXISTS (SELECT top(1) 1 FROM dbo.imports WHERE success IS
NULL)
        BEGIN
            RAISERROR('BFI Data import is in progress, aborting
query'',11,1);
        END
        ELSE PRINT('Import has completed, moving to next step')
        GO',
@database_name=N'DATABASE_NAME_TO_REPLACE',
@flags=0
IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback

EXEC @ReturnCode = msdb.dbo.sp_add_jobstep @job_id=@jobId,
@step_name=N'Reorganize all indexes',
@step_id=2,
@cmdexec_success_code=0,
@on_success_action=1,
@on_success_step_id=0,
@on_fail_action=2,
@on_fail_step_id=0,
@retry_attempts=0,
@retry_interval=0,
@os_run_priority=0, @subsystem=N'TSQL',
@command=N'

```

```

-----Common procedure to print Error details-----
create procedure #printErrorDetails as
begin
    Declare @ErrorMessage nvarchar(4000)
    Declare @ErrorSeverity int
    Declare @ErrorState int

    SELECT
        @ErrorMessage = ERROR_MESSAGE(),
        @ErrorSeverity = ERROR_SEVERITY(),
        @ErrorState = ERROR_STATE()

    PRINT '-----Error state: ' + CONVERT( VARCHAR(12), @ErrorState,
121) + '. Error severity: ' + CONVERT( VARCHAR(12), @ErrorSeverity, 121)
+ '. Error message: ' + @ErrorMessage
end
GO
set nocount on
-----Global variable declarations-----
Declare @MIN_REORG_FRAGMENTATION_LEVEL INT = 5
Declare @MIN_REBUILD_FRAGMENTATION_LEVEL INT = 30
Declare @PAGE_COUNT_THRESHOLD INT = 9
Declare @PAGE_COUNT_REORG_THRESHOLD INT = 99
Declare @REBUILD_FILL_FACTOR INT = 90
Declare @REBUILD_MAX_DOP INT = 1

PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' Begin reindexing
script for ' + DB_NAME()
-----Table to Hold Fragmented Objects----
create table #Reorganize (SchemaName varchar(50),tablename
varchar(100),Indexname varchar(150),Fragmentation float,Pages integer)
create table #RebuildOffline (SchemaName varchar(50), tablename
varchar(100),Indexname varchar(150),Fragmentation float,Pages integer)
create table #RebuildOnline (SchemaName varchar(50), tablename
varchar(100),Indexname varchar(150),Fragmentation float,Pages integer)

-----Table to hold the table names where AllowPageLocks is
disabled----
create table #Allow (tablen varchar(100))

-----For SQL Server Enterprise Edition online indexing is
supported-----

```

```

if CHARINDEX('Enterprise', convert(nvarchar(64),(select
serverproperty('Edition')))) > 0
begin
-----Inserting All fragmented table where fragmentation level is
between @MIN_REORG_FRAGMENTATION_LEVEL to @MIN_REBUILD_FRAGMENTATION_LEVEL
and having ALLOW_PAGE_LOCKS = ON in temptable----
insert into
#Reorganize(SchemaName,tablename,Indexname,Fragmentation,Pages)

select
s.name,o.name,i.name,ips.avg_fragmentation_in_percent,ips.page_count from
sys.objects o left outer join sys.schemas s on
o.schema_id= s.schema_id left outer join sys.indexes i on
o.object_id=i.object_id left outer join sys.dm_db_index_physical_stats
(db_id(), NULL, NULL, NULL, NULL) AS ips
on i.object_id=ips.object_id and i.index_id=ips.index_id
where o.type='U' and i.index_id > 0 and allow_page_locks = 1 and
avg_fragmentation_in_percent between @MIN_REORG_FRAGMENTATION_LEVEL
and @MIN_REBUILD_FRAGMENTATION_LEVEL and page_count >
@PAGE_COUNT_REORG_THRESHOLD

-----Inserting All fragmented table where fragmentation level
is greater than @MIN_REBUILD_FRAGMENTATION_LEVEL or (is greater than
@MIN_REORG_FRAGMENTATION_LEVEL and ALLOW_PAGE_LOCKS = OFF) in temptable
(online for non clustered indexes)-----
insert into
#RebuildOnline(SchemaName,tablename,Indexname,Fragmentation,Pages)

select
s.name,o.name,i.name,ips.avg_fragmentation_in_percent,ips.page_count from
sys.objects o left outer join sys.schemas s on
o.schema_id= s.schema_id left outer join sys.indexes i on
o.object_id=i.object_id left outer join sys.dm_db_index_physical_stats
(db_id(), NULL, NULL, NULL, NULL) AS ips
on i.object_id=ips.object_id and i.index_id=ips.index_id
where o.type='U' and i.index_id > 1 and
( ( avg_fragmentation_in_percent > @MIN_REBUILD_FRAGMENTATION_LEVEL and
page_count > @PAGE_COUNT_THRESHOLD ) or ( avg_fragmentation_in_percent
> @MIN_REORG_FRAGMENTATION_LEVEL and page_count >
@PAGE_COUNT_REORG_THRESHOLD and allow_page_locks = 0 ) )

```

```

-----Inserting All fragmented table where fragmentation level
is greater than @MIN_REBUILD_FRAGMENTATION_LEVEL or (is greater than
@MIN_REORG_FRAGMENTATION_LEVEL and ALLOW_PAGE_LOCKS = OFF) in temptable
(online for clustered indexes NOT containing text, ntext or image
fields)---
insert into
#RebuildOnline(SchemaName,tablename,Indexname,Fragmentation,Pages)

select
s.name,o.name,i.name,ips.avg_fragmentation_in_percent,ips.page_count from
sys.objects o left outer join sys.schemas s on
o.schema_id= s.schema_id left outer join sys.indexes i on
o.object_id=i.object_id left outer join sys.dm_db_index_physical_stats
(db_id(), NULL, NULL, NULL, NULL) AS ips
on i.object_id=ips.object_id and i.index_id=ips.index_id
where o.type='U' and i.index_id = 1 and o.name not in ( select
distinct TABLE_NAME from INFORMATION_SCHEMA.COLUMNS where data_type in
('TEXT', 'NTEXT','IMAGE' )
and ( ( avg_fragmentation_in_percent > @MIN_REBUILD_FRAGMENTATION_LEVEL
and page_count > @PAGE_COUNT_THRESHOLD ) or ( avg_fragmentation_in_percent
> @MIN_REORG_FRAGMENTATION_LEVEL and page_count >
@PAGE_COUNT_REORG_THRESHOLD and allow_page_locks = 0 ) )

-----Inserting All fragmented table where fragmentation
level is greater than @MIN_REBUILD_FRAGMENTATION_LEVEL or (is greater
than @MIN_REORG_FRAGMENTATION_LEVEL and ALLOW_PAGE_LOCKS = OFF) in
temptable (offline for clustered indexes containing text, ntext or image
fields)-----
insert into
#RebuildOffline(SchemaName,tablename,Indexname,Fragmentation,Pages)

select
s.name,o.name,i.name,ips.avg_fragmentation_in_percent,ips.page_count from
sys.objects o left outer join sys.schemas s on
o.schema_id= s.schema_id left outer join sys.indexes i on
o.object_id=i.object_id left outer join sys.dm_db_index_physical_stats
(db_id(), NULL, NULL, NULL, NULL) AS ips
on i.object_id=ips.object_id and i.index_id=ips.index_id
where o.type='U' and i.index_id = 1 and o.name in ( select distinct
TABLE_NAME from INFORMATION_SCHEMA.COLUMNS where data_type in ('TEXT',
'NTEXT','IMAGE' ) )

```

```

    and ( ( avg_fragmentation_in_percent > @MIN_REBUILD_FRAGMENTATION_LEVEL
and page_count > @PAGE_COUNT_THRESHOLD ) or ( avg_fragmentation_in_percent
> @MIN_REORG_FRAGMENTATION_LEVEL and page_count >
@PAGE_COUNT_REORG_THRESHOLD and allow_page_locks = 0 ) )

    end

    else

    begin

    -----For SQL Server Enterprise editions other than Enterprise
the online indexing is not supported, so rebuild all indexes
offline-----

    -----Inserting into Reorganize temp table-----

    insert into
#Reorganize(SchemaName,tablename,Indexname,Fragmentation,Pages)

    select
s.name,o.name,i.name,ips.avg_fragmentation_in_percent,ips.page_count from
sys.objects o left outer join sys.schemas s on
    o.schema_id= s.schema_id left outer join sys.indexes i on
    o.object_id=i.object_id left outer join sys.dm_db_index_physical_stats
(db_id(), NULL, NULL, NULL, NULL) AS ips
    on i.object_id=ips.object_id and i.index_id=ips.index_id
    where o.type='U' and i.index_id > 0 and
avg_fragmentation_in_percent between @MIN_REORG_FRAGMENTATION_LEVEL
and @MIN_REBUILD_FRAGMENTATION_LEVEL and page_count >
@PAGE_COUNT_REORG_THRESHOLD

    -----Inserting into Rebuildoffline temp table-----

    insert into
#RebuildOffline(SchemaName,tablename,Indexname,Fragmentation,Pages)

    select
s.name,o.name,i.name,ips.avg_fragmentation_in_percent,ips.page_count from
sys.objects o left outer join sys.schemas s on
    o.schema_id= s.schema_id left outer join sys.indexes i on
    o.object_id=i.object_id left outer join sys.dm_db_index_physical_stats
(db_id(), NULL, NULL, NULL, NULL) AS ips
    on i.object_id=ips.object_id and i.index_id=ips.index_id
    where o.type='U' and avg_fragmentation_in_percent >
@MIN_REBUILD_FRAGMENTATION_LEVEL and page_count > @PAGE_COUNT_THRESHOLD

```

```

-----Determining the tablenames where AllowPageLocks is
disabled-----
insert into #Allow(tablen)
select distinct t.name from sys.tables t join sys.indexes i on
t.object_id = i.object_id where allow_page_locks =0

end

-----Variable declarations-----
Declare @cmd varchar(1000)
Declare @Iname varchar(250)
Declare @Jname varchar(250)
Declare @sname varchar(150)
Declare @tname varchar(150)
Declare @frag float
Declare @pgs integer
Declare @index varchar(1000)
Declare @managePageLocks bit
Declare @bypassReorg bit

Declare @EXIT_CODE bit = 0

-----Manage Locking-----
set LOCK_TIMEOUT 5000
set DEADLOCK_PRIORITY LOW
-----Cursor for reorganize-----
Declare db_reindex CURSOR for
select Indexname,SchemaName,tablename, Fragmentation, Pages from
#Reorganize
OPEN db_reindex
FETCH NEXT from db_reindex into @Iname,@sname,@tname,@frag,@pgs
WHILE @@FETCH_STATUS = 0
BEGIN
set @managePageLocks = 0
set @bypassReorg = 0
set @Jname= @sname + '.'+ @tname
if exists (select 1 from #Allow where tablen = @tname)
begin
set @managePageLocks = 1
set @index = @Jname + '.' + @Iname
PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Allowing page locks
for ' + @index

```

```

        set @cmd= 'Alter Index ' + @Iname + ' on ' + @Jname + ' SET
(ALLOW_PAGE_LOCKS = ON)''

        BEGIN TRY

            execute (@cmd)

        END TRY

        BEGIN CATCH

            set @bypassReorg = 1

            set @EXIT_CODE = 1

            PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Exception during
ALTER INDEX for allowing page locks. By-passing reorg for ' + @index

            EXEC #printErrorDetails

        END CATCH

    end

    if ( @bypassReorg = 0 )

    begin

        set @cmd= 'Alter Index ' + @Iname + ' on ' + @Jname + ' reorganize
with (LOB_COMPACTION = ON)''

        PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' Reorganize
index ' + @Iname + ' on ' + @Jname + ' having fragmentation '+
CONVERT( VARCHAR(24), @frag, 121) + ' and ' + CONVERT( VARCHAR(12),
@pgs, 121) + ' pages''

        BEGIN TRY

            execute (@cmd)

        END TRY

        BEGIN CATCH

            set @EXIT_CODE = 1

            PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Exception during
reorganize. Continuing.''

            EXEC #printErrorDetails

        END CATCH

        if ( @managePageLocks = 1 )

        begin

            PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Disallowing page
locks for ' + @Jname + '.' + @Iname

            set @cmd= 'Alter Index ' + @Iname + ' on ' + @Jname + ' SET
(ALLOW_PAGE_LOCKS = OFF)''

            BEGIN TRY

                execute (@cmd)

            END TRY

            BEGIN CATCH

                set @EXIT_CODE = 1

```

```

        PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Exception
during ALTER INDEX for disallowing page locks. Continuing.'

        EXEC #printErrorDetails

    END CATCH

end

end

FETCH NEXT from db_reindex into @Iname,@sname,@tname,@frag,@pgs

END

CLOSE db_reindex

DEALLOCATE db_reindex

-----Cursor For Rebuild Online-----

Declare db_reindex CURSOR for

select  Indexname,SchemaName,tablename, Fragmentation, Pages from
#RebuildOnline

OPEN db_reindex

FETCH NEXT from db_reindex into @Iname,@sname,@tname,@frag,@pgs

WHILE @@FETCH_STATUS = 0

BEGIN

    set @Jname= @sname + '.'+ @tname

    set @cmd= 'Alter Index ' + @Iname + ' on ' + @Jname + ' rebuild
with (ONLINE = ON, MAXDOP = ' + CONVERT( VARCHAR(4), @REBUILD_MAX_DOP,
121) + ', PAD_INDEX = ON, FILLFACTOR = ' + CONVERT( VARCHAR(4),
@REBUILD_FILL_FACTOR, 121) + '))'

    PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' Rebuild index
online (with MAXDOP = ' + CONVERT( VARCHAR(4), @REBUILD_MAX_DOP, 121)
+ ') ' + @Iname + ' on ' + @Jname + ' having fragmentation ' +
CONVERT( VARCHAR(24), @frag, 121) + ' and ' + CONVERT( VARCHAR(12),
@pgs, 121) + ' pages'

    BEGIN TRY

        execute (@cmd)

    END TRY

    BEGIN CATCH

        set @EXIT_CODE = 1

        PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Exception during
rebuild. Continuing.'

        EXEC #printErrorDetails

    END CATCH

    FETCH NEXT from db_reindex into @Iname,@sname,@tname,@frag,@pgs

END

```

```

CLOSE db_reindex
DEALLOCATE db_reindex

-----Cursor For Rebuild Offline-----

Declare db_reindex CURSOR for
select  Indexname,SchemaName,tablename, Fragmentation, Pages from
#RebuildOffline
OPEN db_reindex
FETCH NEXT from db_reindex into @Iname,@sname,@tname,@frag,@pgs
WHILE @@FETCH_STATUS = 0
BEGIN
    set @Jname= @sname + '.'+ @tname
    set @cmd= 'Alter Index ' + @Iname + ' on ' + @Jname + '
rebuild with (PAD_INDEX = ON, FILLFACTOR = ' + CONVERT( VARCHAR(4),
@REBUILD_FILL_FACTOR, 121) + '))'
    PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' Rebuild index
offline ' + @Iname + ' on ' + @Jname + ' having fragmentation ' +
CONVERT( VARCHAR(24), @frag, 121) + ' and ' + CONVERT( VARCHAR(12),
@pgs, 121) + ' pages'
    BEGIN TRY
        execute (@cmd)
    END TRY
    BEGIN CATCH
        set @EXIT_CODE = 1
        PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' - Exception during
rebuild. Continuing.'
        EXEC #printErrorDetails
    END CATCH
    FETCH NEXT from db_reindex into @Iname,@sname,@tname,@frag,@pgs
END
CLOSE db_reindex
DEALLOCATE db_reindex
PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' End reindexing script
for ' + DB_NAME()

if ( @EXIT_CODE = 1 )
begin
    PRINT CONVERT( VARCHAR(24), GETDATE(), 121) + ' Reindexing script
completed but an error occurred and one of the steps failed!'
end
',
@database_name=N'DATABASE_NAME_TO_REPLACE',

```

```

@flags=0

IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback

EXEC @ReturnCode = msdb.dbo.sp_update_job @job_id = @jobId,
@start_step_id = 1

IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback

EXEC @ReturnCode = msdb.dbo.sp_add_jobschedule @job_id=@jobId,
@name=N'Runs daily at 04:00 AM',

    @enabled=1,

    @freq_type=4,

    @freq_interval=1,

    @freq_subday_type=1,

    @freq_subday_interval=0,

    @freq_relative_interval=0,

    @freq_recurrence_factor=0,

    @active_start_date=20210601,

    @active_end_date=99991231,

    @active_start_time=40000,

    @active_end_time=235959,

    @schedule_uid=N'4e4d7b59-fd7f-4772-a7c5-a5565443f9d4'

IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback

EXEC @ReturnCode = msdb.dbo.sp_add_jobserver @job_id = @jobId,
@server_name = N'(local)'

IF (@@ERROR <> 0 OR @ReturnCode <> 0) GOTO QuitWithRollback

COMMIT TRANSACTION

GOTO EndSave

QuitWithRollback:

    IF (@@TRANCOUNT > 0) ROLLBACK TRANSACTION

EndSave:

```

- c. Go to **SQL Server Agent**, expand the **Jobs** section and verify if **Database Name Full Database Index Reorganization** job exist.

## SQL server parallelism optimization

BigFix Inventory follows the process mentioned in [SQL Server parallelism optimization](#) to improve the database performance.

## REST API considerations

You can use BigFix Inventory REST API to retrieve large amounts of data that is related to computer systems, software instances, and license usage in your environment. Such information can then be passed to other applications for further processing and analysis.

Although using single API requests to retrieve data only from a selected subset of computers does not greatly impact the performance of BigFix Inventory, this is not true when retrieving data in bulk for all your computer systems at the same time. Such an action requires the processing of large amounts of data and it always influences the application performance and when possible should not be executed during data import.

In general, the API requests should not be used together with other performance intensive tasks, like software scans or data imports. Each user that is logged in to the application, as well as the number of actions that are performed in the web user interface during the REST API calls also decrease the performance.



**Important:** Each time you want to retrieve data through REST API, ensure that the use of BigFix Inventory is at a moderate level, so that the extra workload resulting from REST API does not overload the application and create performance problems.

### Special considerations

1. Up to version 10.0.2, the application that calls the APIs, must control the size of individual response. **10.0.2** Starting from 10.0.2, BigFix Inventory uses HTTP streaming in JSON responses. As a result, the response does not cause buffering on the server side to calculate the response size.
2. Before 10.0.2, BigFix Inventory used to send a HTTP error code in case of any issue during preparing whole response. Starting from 10.0.2, if an error occurs during streaming and the streaming gets interrupted, you must interpret the problem as an error.
3. Check only for changes in data and do not fetch all the data every time. Use `valid_from` / `valid_to` or `discovery_start` / `discovery_end` fields to retrieve changes.
4. When you complete your data import, BigFix Inventory does not call the APIs. In case, you attempt to perform this process, the request may fail with a misleading error. It is recommended to implement an option for the application to retry the request after some time.

### Optimizing response time

**10.0.2** Starting from 10.0.2, BigFix Inventory uses HTTP streaming for JSON responses. As a result, pagination can be omitted and the whole dataset can be fetched using a single query. The pagination feature is still available and can be used. When using the pagination feature, it is recommended to retrieve the total number of records only once and then iterate over pages.

### Avoiding calculation of the number of records returned

When executing an API call, use `countSwitch=1` attribute to avoid calculating number of reported rows. To return total number of the rows for an API query, use `countSwitch=2` and then retrieve pages of the records.

1. Retrieve total number of available records.

```
https://hostname:port/api/sam/raw_file_facts?token=token&countSwitch=2
```

2. Retrieve first 10000 records by using the **limit** parameter.

```
https://hostname:port/api/sam/raw_file_facts?token=token&countSwitch=1&limit=10000&offset=0
```

- Retrieve next 10000 records. You can ignore the already retrieved records by using the **offset** parameter.

```
https://hostname:port/api/sam/raw_file_facts?token=token&countSwitch=1&limit=10000&offset=10000
```

## Options to limit size of the individual response

**10.0.2** Starting from 10.0.2, BigFix Inventory uses HTTP streaming in JSON responses. In HTTP response method, the HTTP Header Transfer Encoding is set to chunked and the response size is not determined. As a result, the data is available in stream as the database provides records that matches the API. With this improvement, pagination in the API is optional and all data can be fetched with a single query.

### Using limit and offset

The limit and offset parameters works as same as their representation in SQL/RDBMS. This allows to page over the result set. The first page, Tradeoff is available in the shortest time and other subsequent pages load slowly. It needs more data to load the subsequent pages and it cannot be optimized.

When you retrieve data in bulk, you can also make several API requests and use the limit and offset parameters to paginate your results instead of retrieving all the data at the same time:

- Use the limit parameter to specify the number of retrieved results:

```
https://hostname:port/URL?token=token&countSwitch=1&limit=10000&offset=0
```

For example:

```
https://192.0.2.2:9081/api/sam/v2/computers?token=token&countSwitch=1&limit=10000&offset=0
```

- If you limit the first request to 100000 results, append the next request with the `offset=100000` parameter to omit the records that you already retrieved:

```
https://hostname:port/URL?token=token&countSwitch=1&limit=10000&offset=10000
```

For example:

```
https://192.0.2.2:9081/api/sam/v2/computers?token=token&countSwitch=1&limit=10000&offset=10000
```



**Note:** The limit and offset parameters can be omitted if you are retrieving data for 50 endpoints. For environments with approximately 200000 endpoints, you are advised to retrieve data in pages of 100000 rows for computer systems, 200000 rows for software instances, and 300000 rows for license usage.

## Using criteria

The alternative method depends on the API instance and is based on using criteria. It allows to optimize response time for subsequent pages as the application can extract information directly about the page, without preparing the whole data.

*Limit and offset parameters require to have the results ready according to some order and then extract it partially. With this approach, the API, when requested, yields the entire result. The pages are reported at different time. However, size of response varies due to the data structure.*

## Software Instance Paging example using criteria

There `instance_id` field provides an unique value of the entry. It does not guarantee that there will be no gaps in `instance_id` number. First `instance_id` is 1.

To get maximum value of `instance_id`, use the below example:

```
https://hostname:port/api/sam/v2/software_instances?
columns[]=instance_id&order[]=instance_id%20desc&offset=0&limit=1&countSwitch=1
```

The return value is:

```
{"total":-1,"rows":[{"instance_id":162}]}
```

Specifying order (`order[]=instance_id desc`) assures that as first will be reported with maximum value, so we can get just top row (`limit=1`). Returned value is maximum value of `instance_id`.

You can page over the `software_instances` using `instance_id` and criteria.

Below is an example request:`https://hostname:port/api/sam/v2/software_instances?`

```
columns[]=computer_id&columns[]=instance_id&columns[]=component_name&offset=0&limit=10000&countSwitch=1&criteria={"and":
[["instance_id", ">=", "1"], ["instance_id ", "<", "10000"]]
```

Limit and offset values are additional parameters but it is recommended to use them.

Control over paging is moved to the criteria part then:

```
criteria={"and":[
```

```
["instance_id", ">=", "1"],
```

```
["instance_id ", "<", "10000"]
```

```
]}]
```

Next page is returned by passing:

```
criteria={"and":[
```

```
["instance_id", ">=", "10000"],
```

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```
[ "instance_id ", "<", "20000" ]  
]}
```

This method leverage data indexes to extract immediately desired subset of data and should provide more stable response times over subsequent queries.

## Synchronizing with Data Imports

The below available APIs provide status information of the data import:

1. [https://hostname:port/api/import\\_status.json?token=token](https://hostname:port/api/import_status.json?token=token)
2. [https://help.hcltechsw.com/bigfix/9.5/inventory/Inventory/integration/r\\_get\\_import\\_status\\_bfi.html](https://help.hcltechsw.com/bigfix/9.5/inventory/Inventory/integration/r_get_import_status_bfi.html)

Consider synchronizing API bulk calls with data import by:

- checking if there is no import in progress (mode).
- checking if the time of last successful data import (*last\_success\_time*) is later than in previous synchronization.

## Understanding data changes

### Raw Data API

By default, raw data remains in the database for 7 days. To change this period, go to **Management > Advanced Server Settings** and change the value of the `raw_data_api_history_keep_days` parameter.

This applies to:

- `/api/sam/raw_package_facts.js`
- `/api/sam/raw_unix_package_facts.json`
- `/api/sam/raw_file_facts`

The APIs enables the below fields to be displayed:

<code>valid_from</code>	The date when you imported information about the file for the first time.	✓	String
<code>valid_to</code>	The date when you attempted to import information about the file for the first time. The value 9999-12-31T23:59:59Z indicates that the file is still being discovered.	✓	String

See below an example for filtering criteria for a request:

```
{ "or": [  
  
{ "and": [  
  
[ "valid_from", ">", "${import_time_previous}" ],
```

```
[ "valid_from", "<=", "${import_time_last}" ]

] }

,

{ "and": [

[ "valid_to", ">", "${import_time_previous}" ],

[ "valid_to", "<=", "${import_time_last}" ]

] }

] }
```

Where:

- `import_time_previous` – Previous successful data import time.
- `import_time_last` – Last successful data import time during initial load.

This API provides information about the hardware associated to the application.

### Hardware API (v2/computers)

The hardware API provides information about the hardware associated to the application.

<b>first_seen</b>	Date and time when the computer were entered in the application. The time is shown in GMT.		String
<b>is_deleted</b>	Information whether the computer was removed.	✓	Boolean
<b>deletion_date</b>	Date and time when the computer was removed. The time is shown in GMT.		String

### detailed\_hw\_\*association

This API provides detailed hardware information along with information when the information was modified for the last time. The API is used to limit synchronization only to new/updated records.

<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
-------------------	--	--------

### Software instances (v2/software\_instances)

This API shows information related to software associated to the application. The following information are applicable for the software.

<b>is_present</b>	Information whether the component is still installed in the environment.	Boolean
-------------------	--	---------

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<b>discovery_start</b>	Date and time when the component was reported for the first time. The time is shown in GMT.	✓	String
<b>discovery_end</b>	Date and time when the component was reported for the last time. The time is shown in GMT.	✓	String
<b>is_suppressed</b>	Information whether the component is suppressed on the computer on which it is installed.	✓	Boolean

# Integrating with REST API

External systems integration is one of the key features of BigFix Inventory. Business logic is enabled for integration and interfaces are provided for common integration points.

 **Restriction:** The database cannot be modified. The data can be retrieved only through REST API, not directly from the database.

## Considerations

- Although using single REST API requests to retrieve data only from a selected subset of computers does not greatly impact the performance of BigFix Inventory, this is not true when retrieving data in bulk for all your computer systems at the same time. To improve the performance of a REST API, retrieve the data in chunks. For more information, see: [REST API considerations \(on page mcdlxiv\)](#).
- Do not use REST API during the import as you might encounter a problem with the database connection. If the problem occurs, wait until the import finishes and ensure that the BigFix Inventory server is up and running. Then, repeat the API call.

## Using the token

To use REST API when you are not logged in to BigFix Inventory, you must provide the **token** parameter for each query. To check the token, log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.

The **token** parameter is not required when you are logged in to BigFix Inventory.

## REST API

Managing large amounts of information by using the application user interface can be time-consuming. You can use the REST APIs as an alternative to the graphical user interface to reduce the time that is needed to manage your software inventory and the content of your software catalog.

### REST API for retrieving authentication token

 **Important:** If you want to use REST API when you are not logged in to BigFix Inventory, you must provide the **token** parameter for each query. To check the token, log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.

The **token** parameter is not required when you are logged in to BigFix Inventory.

### REST API for retrieving the BigFix Inventory version

Although using single API requests to retrieve data only from a selected subset of computers does not greatly impact the performance of BigFix Inventory, this is not true when retrieving data in bulk for all your computer systems at the same time. To improve the performance of a REST API, retrieve the data in chunks. For more information, see: [REST API considerations \(on page mcdlxiv\)](#).

 **Restriction:** Do not use REST API during the import as you might encounter a problem with the database connection. If the problem occurs, wait until the import finishes and ensure that the BigFix Inventory server is up and running. Then, repeat the API call.

## API response language

The language of API response depends on the below criteria:

### When the user is authenticated

- The user's profile language is set to default language:
  - If the 'Accept-Language' header is defined in the request and the language is supported in BigFix Inventory, the API response appears in the defined language. If the language is not supported in BigFix Inventory, the response appears in the fallback language.
  - If the browser's language is supported in BigFix Inventory, the response appears in the selected language. If the browser's language is not supported in BigFix Inventory, the response appears in English language.
- The user's profile language is not set to default:
  - The API response appears in the selected user profile language.

### When the user is not authenticated

- If the 'Accept-Language' header is defined in the request and the language is supported in BigFix Inventory, the API response appears in the defined language. If the language is not supported in BigFix Inventory, the response appears in fallback language.
- If the 'Accept-Language' header is not defined in the request, the response appears in English language.



**Note:** The fallback language setting depends on the language that you set in the config file, such as `pristine_installer_language` property in the `config/lmt_settings.yml`. It should be set as a supported language. When the language is not supported, the default language becomes English.

## Abbreviations

The following abbreviations are used in the documentation that is related to REST API:

**HTTP**

Hyper Text Transfer Protocol. HTTP version 1.1 is defined in RFC 2616. Unless otherwise noted, the use of the term HTTP indicates both HTTP and HTTPS.

**HTTPS**

Hyper Text Transfer Protocol Secure, as defined in RFC 2818

**JSON**

JavaScript™ Object Notation, as defined in ECMA-262

**REST**

Representational State Transfer, as originally and informally described in *Architectural Styles and the Design of Network-based Software Architectures*

**URI**

Uniform Resource Identifier, as defined in RFC 3986, Draft 5

## Software Products and Software Components

BigFix Inventory detects software components which are bundled with the product.

The list shows the available software component. You can add a software component to Inventory as required. Below given is an example to BigFix Platform Agent which is installed at `/opt/BESClient/bin/`.

<input type="checkbox"/>	Publisher Name	Component Name	Component Ver...	Product Name	Metric	Installation Path	Process Na...	Total Runs	Total Run T...	First Used	Details
<input type="checkbox"/>	IBM	IBM BigFix Platform Agent	9.5	IBM BigFix Inventory	Client Device	/opt/BESClient/bin/swidtag	besclient	3	20 days, 21...	09/02/2019 ...	<a href="#">DETAILS &gt;</a>

Use the Software Component listing to see the number of active and inactive components.

Each row shows details, such as usage, product and metric that it is added to, the installation path about the selected component. You can select multiple components.

Publishe...	Component Name	Comp...	Product Name	Metric	Installation Path	Process ...	Total Runs	Total Ru...	First Used	Last Used	Average ...	Average ...	Has Usage	D
IBM	IBM DB2 Workgroup Server E...	10.5	IBM BigFix Inventory	Client De...	/opt/ibm/db2/V10.5/properties...	<no data>	<no data>	<no data>	<no data>	<no data>	<no data>	<no data>	No	D
IBM	IBM BigFix Platform Agent	9.5	IBM BigFix Inventory	Client De...	/opt/BESClient/bin/swidtag	besclient	3	20 days, ...	09/02/20...	09/23/20...	0.141	6 days, 2...	Yes	D
IBM	IBM BigFix Inventory Server	9.2	IBM BigFix Inventory	Client De...	/opt/ibm/BFI/iso-swid	<no data>	<no data>	<no data>	<no data>	<no data>	<no data>	<no data>	No	D

You can access information about computer properties through *Computer Properties (Management > Computers)*.

You can access the computer properties through the user interface or the API.



**Note:** The API shows the computer properties by its number and ID and not by its name.

**Table 198. API**

<code>computer_property_number</code>	Custom computer property that was added on the <b>Computer Properties</b> panel. To view the list of all custom properties, view the <a href="#">computer_details schema</a> . The name of the property as displayed on the user interface is shown in the <code>title</code> parameter.
---------------------------------------	--

You can use this feature to access user information, such as username from the system. It provides the basic user information which is already available at the Platform level. The user information may vary for each application.

### Create Computer Property

Name\*

### Link to Data Source

Data Source Property\*

- User Name
- ActionSite
- User Name
- User Name

## REST API resources and HTTP methods

The operations of the BigFix Inventory REST API protocol are defined as HTTP methods on certain REST resources.

**Table 199. Overview of REST operations**

Target REST operation URI	HTTP methods	Purpose of the operation
<code>api/get_token</code>	<a href="#">POST (on page mcdlxxxv)</a>	Returns a unique token that is required to authenticate REST API requests.
<code>api/sam/about</code>		Returns the version of BigFix Inventory.
<code>api/import_status.json</code>	<a href="#">GET (on page mdcxviii)</a>	Returns the current status of the data import.
<b>Core API</b>		
<b>9.2.10</b> <code>api/sam/v2/license_usage</code>	<a href="#">GET (on page mdlxix)</a>	Returns information about utilization of license metrics by products that are installed in your infrastructure.
	<a href="#">PUT (on page mdlxxx)</a>	Sets up license metric thresholds as well as values of custom fields that were added on the All Metrics report.
<b>9.2.8</b> <code>api/sam/v2/software_instances</code>	<a href="#">GET (on page mdxliv)</a>	Returns information about software inventory in your infrastructure.
<b>9.2.8</b> <code>api/sam/v2/computers</code>	<a href="#">GET (on page mdcxciii)</a>	Returns information about hardware inventory in your infrastructure.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_ip_addresses</code>	<a href="#">GET (on page mdv)</a>	Retrieves information related to IP addresses of computers in your infrastructure.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_lpars</code>	<a href="#">GET (on page mdx)</a>	Retrieves information related to the logical partition and its CPU resources.

Table 199. Overview of REST operations (continued)

Target REST operation URI	HTTP methods	Purpose of the operation
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_memories</code>	GET ( <i>on page mdxv</i> )	Retrieves information related to information related to the system memory of the scanned system.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_network_adapters</code>	GET ( <i>on page mdxix</i> )	Retrieves information related to information related to the type, model and MAC addresses of the network adapters.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_operating_systems</code>	GET ( <i>on page mdxxix</i> )	Retrieves information related to information related to the operating system on the scanned computer.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_partitions</code>	GET ( <i>on page mdxxxix</i> )	Retrieves information related to information related to the file system that is mounted on a scanned system: Unix mount points and Windows logical drives.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_physical_processors</code>	GET ( <i>on page mdxxxiv</i> )	Retrieves information related to information related to all active physical processors.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_smbios</code>	GET ( <i>on page mdx1</i> )	Retrieves information related to information related to SMBIOS of the scanned system.
<b>9.2.12</b> <code>api/sam/v2/detailed_hw_storages</code>	GET	Retrieves information related to information related to storage devices on the scanned system.
<code>api/sam/raw_app_usage_property_values</code>	GET ( <i>on page mdcxliii</i> )	Retrieves raw metering data.
<code>api/sam/raw_file_facts</code>	GET ( <i>on page mdcxxiii</i> )	Retrieves raw scanned file data.
<code>api/sam/raw_package_facts</code>	GET ( <i>on page mdcxxxii</i> )	Retrieves raw package data.
<code>api/sam/raw_unix_package_facts</code>	GET ( <i>on page mdcxxxviii</i> )	Retrieves raw UNIX package data.
<b>10.0.5</b> <code>/api/sam/unified/current/software</code>	GET ( <i>on page mdcc</i> )	Provides unified view of the currently installed software instances and package data.
<b>Configuration APIs</b>		
<b>10.0.6</b> <code>/api/sam/v2/contracts.json</code>	GET ( <i>on page mdccxlviii</i> )	Retrieves contract information.
<b>10.0.6</b> <code>/api/sam/v2/contracts.json</code>	PUT ( <i>on page mdccxvi</i> )	Adds and updates contracts.

**Table 199. Overview of REST operations (continued)**

Target REST operation URI	HTTP methods	Purpose of the operation
<code>api/sam/vmmanagers</code>	<a href="#">GET (on page mdccvi)</a>  <a href="#">PUT (on page mdccix)</a>	Returns information about VM managers that are defined in your infrastructure.  Adds or updates VM managers.
<b>9.2.8</b> <code>api/v1/servers</code>	<a href="#">PUT (on page mdccxxxi)</a>	Changes Oracle core factor that is assigned to a server.
<b>9.2.11</b> <code>sam/component_lifecycles</code>	<a href="#">POST (on page mdccxxvii)</a>	Sets the end of support date for software components.
<b>9.2.11</b> <code>sam/software_components/software_component_id/component_lifecycles</code>	<a href="#">DELETE (on page mdccxx)</a>	Removes the end of support date for a software component.
<b>9.2.11</b> <code>sam/software_components/software_component_id/component_lifecycles</code>	<a href="#">DELETE (on page mdccxx)</a>	Removes the end of support date for a software component.
<code>api/reports/report_ID</code>	<a href="#">GET (on page mdccxxvii)</a>	Exports a saved report view.
<code>api/reports</code>	<a href="#">POST (on page mdccxxx)</a>	Imports a saved report view.
<code>api/sam/configs</code>	<a href="#">GET (on page mdccxiii)</a>  <a href="#">PUT (on page mdccxvi)</a>	Returns information about the current settings of the administration server.  Changes the current settings of the administration server.
<b>10.0.4</b> <code>api/sam/v2/metrics</code>	<a href="#">POST (on page mdccxxvii)</a>  <a href="#">GET (on page mdccxxv)</a>  <a href="#">PUT (on page mdccxl)</a>  <a href="#">DELETE (on page mdccxli)</a>	Creates and manages the products and metrics.  Returns the list of products and metrics.  Updates the metrics for products.  Deletes metric for products.
<b>Historical APIs</b>		
<code>api/sam/clusters</code>	<a href="#">GET (on page mdclxvii)</a>	Returns information about clusters that group your host computer systems.

Table 199. Overview of REST operations (continued)

Target REST operation URI	HTTP methods	Purpose of the operation
<code>api/sam/computer_systems</code>	<a href="#">GET</a>	Returns a list of computer systems in your infrastructure.
<code>api/sam/license_usages</code>	<a href="#">GET</a>	Returns information about license usage reported by your computer systems.
<code>api/sam/software_instances</code>	<a href="#">GET</a> ( <i>on page <a href="#">mdcclxxvii</a></i> )	Returns a list of installed software instances.  <b>Note:</b> This REST API is now substituted with <code>api/sam/v2/software_instances</code> ( <i>on page <a href="#">mdxliv</a></i> ) REST API.
<code>api/sam/swinventory/confirm</code>	<a href="#">POST</a>	Confirms instances to bundle or assign.
<code>api/sam/swinventory/confirmRelease</code>	<a href="#">POST</a>	Confirms the assignment of instances for a release.
<code>api/sam/swinventory/exclude</code>	<a href="#">POST</a>	Excludes instances from pricing calculations.
<code>api/sam/swinventory/include</code>	<a href="#">POST</a>	Includes instances in pricing calculations.
<code>api/sam/swinventory/instanceToShare</code>	<a href="#">GET</a>	Returns a list of software releases that can share a particular instance.
<code>api/sam/swinventory/product/{product_id}/releases</code>	<a href="#">GET</a> ( <i>on page <a href="#">mdcclxxxvii</a></i> )	Returns a list of releases of a particular software product that is identified by its identifier.
<code>api/sam/swinventory/products</code>	<a href="#">GET</a>	Returns a list of software products.
<code>api/sam/swinventory/reassign</code>	<a href="#">POST</a>	Reassigns instances to a product.
<code>api/sam/swinventory/reassignRelease</code>	<a href="#">POST</a>	Reassigns instances to a product for a list of releases.
<code>api/sam/swinventory/release/{release_id}/instances</code>	<a href="#">GET</a>	Returns a list of instances for the requested software product release.
<code>api/sam/swinventory/share</code>	<a href="#">POST</a>	Shares an instance with a list of software products.
<code>api/sam/swinventory/targetBundlesOfInstances</code>	<a href="#">GET</a>	Returns a list of possible releases to which the requested software instance can be reassigned.
<code>api/sam/swinventory/targetBundlesOfReleases</code>	<a href="#">GET</a>	Returns a list of possible releases to which the instances of the requested software releases can be reassigned.
<code>api/sam/swinventory/targetInstances</code>	<a href="#">GET</a>	Returns a list of target instances that will be reassigned to a particular release.

## Common REST API elements

You use connectors and operators to build query segments that filter on matching conditions and values.

### Connectors

**Table 200. Connectors**

Connector	Description
<code>and</code>	Add all clauses with an <code>and</code> concatenator
<code>or</code>	Add all clauses with an <code>or</code> concatenator

### Parameters

**Table 201. Parameters**

Parameter	Description
<code>countSwitch</code>	<p>Specifies whether the query returns the requested data, the number of retrieved rows, or both. The operator can have the following values:</p> <ul style="list-style-type: none"> <li>• 1 - only requested data is returned</li> <li>• 2 - only the number of rows is returned</li> <li>• No value or any other value - both the requested data and the number of rows are returned</li> </ul>

### Operators

**Table 202. Operators**

Operator	Description	Applicable to
<code>=</code>	Equal to.	
<code>!=</code>	Not equal to.	
<code>&lt;</code>	Less than.	Numeric and date fields only.
<code>&lt;=</code>	Less than or equal to.	Numeric and date fields only.
<code>&gt;</code>	Greater than.	Numeric and date fields only.
<code>&gt;=</code>	Greater than or equal to.	Numeric and date fields only.
<code>last</code>	Relative period of time in the past (for example, last 7 days).	Date and time fields only.
<code>next</code>	Relative period of time in the future (for example, next 7 days).	Date and time fields only.

Table 202. Operators (continued)

Operator	Description	Applicable to
<code>starting</code>	Relative period of time starting in the past or in the future (for example, 7 days ago, or 7 days ahead) and lasting until infinity. For syntax, see <a href="#">Table 203: Relative date and time operators (on page mcdlxxx)</a> .	Date and time fields only.
<code>ending</code>	Relative period of time ending in the past or in the future (for example, 7 days ago, or 7 days ahead) and including all data until this point. For syntax, see <a href="#">Table 203: Relative date and time operators (on page mcdlxxx)</a> .	Date and time fields only.
<code>begins_with</code>	String begins with the specified value.	String fields only.
<code>not_begins_with</code>	String does not begin with the specified value.	String fields only.
<code>contains</code>	String contains the specified value.	String fields only.
<code>not_contains</code>	String does not contain the specified value.	String fields only.
<code>ends_with</code>	String ends with the specified value.	String fields only.
<code>not_ends_with</code>	String does not end with the specified value.	String fields only.
<b>9.2.13</b> <code>is_empty</code>	Column does not contain any value.  Example:	Selected columns only.
	<ul style="list-style-type: none"> <li><pre>https://hostname:port/api/sam/v2/software_instances?token=token&amp;criteria={"and":[{"exclusion_or_suppress_comment","is_empty"}]}</pre></li> </ul>	
<b>9.2.13</b> <code>is_not_empty</code>	Column contains a value.  Example:	Selected columns only.
	<ul style="list-style-type: none"> <li><pre>https://hostname:port/api/sam/v2/software_instances?token=token&amp;criteria={"and":[{"exclusion_or_suppress_comment","is_not_empty"}]}</pre></li> </ul>	

## Syntax of relative date and time operators

These operators can be used for all columns that use the date and time format.



**Note:** This contract API is applicable to old contracts (deprecated contracts). New contracts do not use this API. For details about new contracts, refer to [new contract management \(on page mclxxviii\)](#).

**Table 203. Relative date and time operators**

Operator	Syntax
last	Px[D W M Y]
next	<p>where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example:</p> <ul style="list-style-type: none"> <li>Retrieve data from computers that reported within last 7 days:           <pre>https://hostname:port/api/sam/computer_systems?token=token &amp;criteria={"and":[{"last_seen","last","P7D"}]}</pre> </li> <li>Retrieve contracts whose entitlement ends within next 7 days:           <pre>https://hostname:port/api/sam/contracts?token=token &amp;criteria={"and":[{"entitlement_end","next","P7D"}]}</pre> </li> </ul>
starting	[- +]Px[D W M Y]
ending	<p>where x is a number in the 1-999 range, -/+ stands for ago or ahead, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example:</p> <ul style="list-style-type: none"> <li>Retrieve contracts whose maintenance starts in a period of time starting 1 week ahead. This API retrieves only future contracts.           <pre>https://hostname:port/api/sam/contracts?token=token &amp;criteria={"and":[{"maintenance_start","starting","+P1W"}]}</pre> </li> <li>Retrieve contracts whose entitlement ends in a period of time ending 1 day ago. This API retrieves all possible contracts from the past until a day ago:           <pre>https://hostname:port/api/sam/contracts?token=token &amp;criteria={"and":[{"entitlement_end","ending","-P1D"}]}</pre> </li> </ul>

## Response elements for GET requests

**Table 204. Response elements for GET requests**

Element	Description
<code>total</code>	Number of all records that meet query parameter. The number of returned records might be smaller, for example if you use the <code>limit</code> parameter.
<code>rows</code>	Records that are returned by the query.

## Mapping REST API versions

**9.2.8** Available from 9.2.8. For some REST APIs, version 2 is created to provide improved functions or experience. In such cases, the original API becomes deprecated with time and only version 2 is further developed. If you have custom tools or internal processes that are based on such REST APIs, it is best to adjust the tools to use the new version of the APIs.

### Mapping columns between `software_instances` and `v2/software_instances` REST API

**9.2.8** Available from 9.2.8. If you have custom tools or internal processes that use the `software_instances` REST API, learn how columns in this API map to the columns in the `v2/software_instances` API. It is best to adjust the tools to use REST API in version 2.

The amount of data returned by the `v2/software_instances` API might be greater than the amount of data returned by the `software_instances` API. It happens because the `v2/software_instances` API returns historical data about uninstalled software and removed computers. It also returns multiple records if software is installed in multiple locations on the same computer. The `software_instances` API does not return this data.



**Note:** If a column from the `software_instances` API that you use does not map to any column in the `v2/software_instances` API or the mapping provides insufficient granularity of information, [submit an idea](#).

**Table 205. Mapping `software_instances` to `v2/software_instances` REST API**

<code>software_instances</code> API	<code>v2/software_instances</code> API	Comment
<code>id</code>		
<code>software_fact_id</code>		
<code>computer_system_id</code>		Computer systems are substituted with computers.
<code>computer_id</code>	<code>computer_id</code>	
<code>discoverable_guid</code>	<code>discoverable_guid</code>	

Table 205. Mapping software\_instances to v2/software\_instances REST API (continued)

software_instances API	v2/software_instances API	Comment
default_product_guid		<p>The <b>default_product_guid</b> column provides information about the default bundling.</p> <p>REST API version 2, provides information about the product to which the component is in fact assigned. The information is provided in the <b>product_name</b> column.</p>
first_used	usage_data.first_used	
last_used	usage_data.last_used	
valid_from	discovery_start	
valid_to	discovery_end	<p>The <b>valid_to</b> column always shows 9999-12-31T23:59:59Z because the <b>software_instances</b> REST API does not provide historical data.</p> <p>The <b>discovery_end</b> column provides the actual date when the component was reported for the last time.</p>
updated_at		
signature_count		
total_time	usage_data.total_time	
total_runs	usage_data.total_runs	
avg_run_time	usage_data.avg_run_time	
avg_runs_per_day	usage_data.avg_runs_per_day	
process	usage_data.process	
deleted	is_present	<p>The <b>deleted</b> column always shows <code>false</code>.</p> <p>The <b>is_present</b> column provides the actual information.</p>
catalog_dimension.software_title_name*	product_name	In most cases, the <b>catalog_dimension</b> columns provide information

Table 205. Mapping software\_instances to v2/software\_instances REST API (continued)

software_instances API	v2/software_instances API	Comment
catalog_dimension.publisher_name*	product_publisher_name	about the default product. In some cases, the columns provide information about the component.
catalog_dimension.software_title_release_name*	product_release_name	
catalog_dimension.version*	product_release	
catalog_dimension.software_title_version_name		 <b>Important:</b> * If the <b>catalog_dimension</b> columns contain information about a component, there is no mapping between REST API version 1 and version 2 because REST API version 2 always provides information about the product to which the component is in fact assigned.

## Mapping columns between **computer\_systems** and **v2/computers** REST API

**9.2.8** Available from 9.2.8. If you have custom tools or internal processes that use the **computer\_systems** REST API, learn how columns in this API map to the columns in the **v2/computers** API. It is best to adjust the tools to use REST API in version 2.



**Note:** If a column from the **computer\_systems** API that you use does not map to any column in the **v2/computers** API or the mapping provides insufficient granularity of information, [submit an idea](#).

Table 206. Mapping computer\_systems to v2/computers REST API

computer_systems API	computers API	Comments
id		Computer systems are substituted with computers.
parent_id		Computer systems are substituted with computers. Additionally, REST API version 2 is not hierarchical.
computer_id	id	
computer_remote_id	bigfix_id	

Table 206. Mapping computer\_systems to v2/computers REST API (continued)

computer_systems API	computers API	Comments
server_id	computer_hardware.server_id	
datasource_name		
datasource_id		
type	computer_hardware.computer_type	REST API version 2 has three possible values: physical, virtual, and computer running on a public cloud.
os	os	
host_name	name	
dns_name	dns_name	
ip_address	ip_address	
last_seen	last_seen	
hardware_manufacturer		The information is contained in the <b>computer_hardware.server_name</b> column.
hardware_model		The information is contained in the <b>computer_hardware.server_name</b> column.
hardware_serial_number		The information is contained in the <b>computer_hardware.server_name</b> column.
hardware_type		The information is contained in the <b>computer_hardware.server_name</b> column.
hardware_name	computer_hardware.server_name	
processor_brand_string	computer_hardware.processor_brand_string	
processor_type	computer_hardware.processor_type	
processor_brand	computer_hardware.processor_brand	
processor_vendor	computer_hardware.processor_vendor	

Table 206. Mapping computer\_systems to v2/computers REST API (continued)

computer_systems API	computers API	Comments
partition_cores	computer_hardware.partition_cores	
server_processors	computer_hardware.node_total_processors	
server_cores	computer_hardware.server_cores	
pvu_per_core	computer_hardware.pvu_per_core	
uuid		
cluster_id		Cluster ID is substituted with cluster name that is available in the <b>computer_hardware.cluster_name</b> column.

## Mapping functions of the **software\_instances** REST API

**9.2.14** Available from 9.2.14. If you have custom tools or internal processes that use the `software_instances` REST API, learn how to achieve your goals by using the `v2/license_usage` and `v2/software_instances` REST API. It is best to adjust the tools to use REST API in version 2.

### Mapping `software_instances` REST API functions

The `software_instances` REST API allows you to retrieve information about the software instance that contributed to the peak in the utilization of a license metric by a product during the reporting period. By default, the reporting period is set to 90 days.

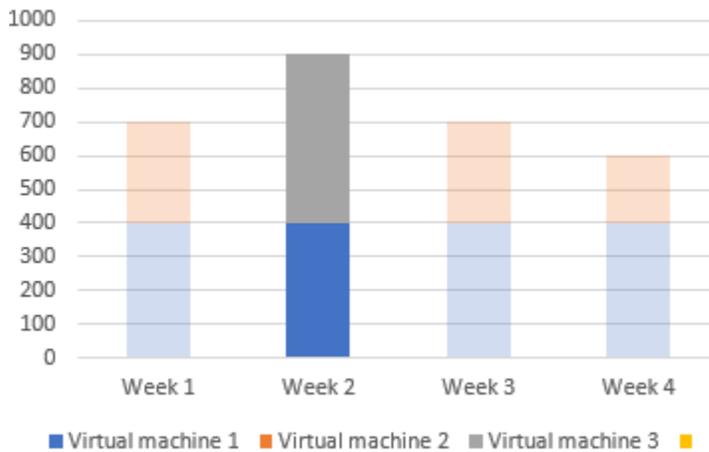
The `v2/software_instances` REST API allows you to retrieve information about all software instances in your environment. Additionally, you can retrieve data from any relevant period, including the details of existing components as well as historical data about components that were removed. By filtering the data you can narrow down the results to the instances that contributed to the peak in the utilization of a license metric by a product. Combining the capabilities of `v2/license_usage` and `v2/software_instances` APIs can not only substitute all functions of the old version of `software_instances` API, but also guarantees flexibility that allows you to alter the queries and retrieve the required data sample.

### Examples

Scenario: Retrieving information about the software instances that contributed to the peak in the utilization of a license metric by a product

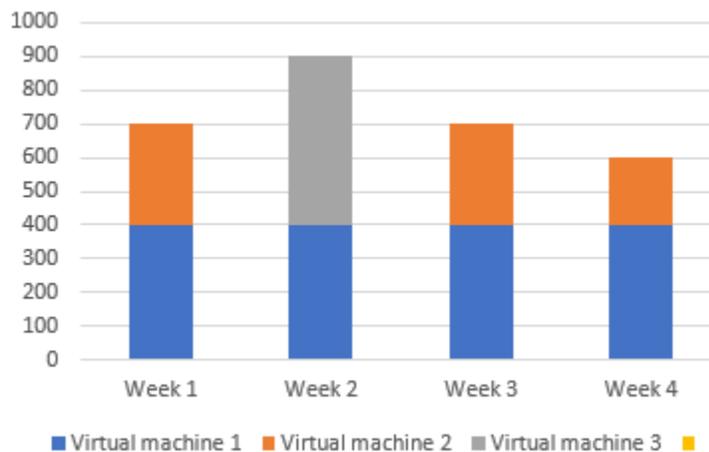
- `software_instances` **API** allows you to only retrieve information about the software instances that contributed to the peak of a license metric of a product over a reporting period.

Figure 15. Software instances that can be retrieved with the `software_instances` REST API



- `v2/license_usage` **and** `v2/software_instances` **APIs** allow you to retrieve the following information:
  - The list of all software instances that were used within a specified period

Figure 16. Software instances that can be retrieved with the `v2/software_instances` REST API



- The time of the peak in the utilization of a license metric by a product with the `hwm_peak_time` parameter value
- The list of software instances that contributed to the peak
- The overall utilization of a license metric of a product during the peak

To retrieve information about the software instances that contributed to the peak in the utilization of a license metric by a product proceed with the following steps.

1. Run the `v2/license_usage` REST API for a product and the license metric that is assigned to this product.

### Example

```
GET
  api/sam/v2/license_usage?columns[]=product_name&columns[]=metric_code_name&columns[]=hwm_quantity&
  columns[]=hwm_peak_time&criteria={"and":[{"product_name","=","IBM DB2 Advanced Enterprise
  Server Edition PVU Option"]}]
  &token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

2. See the value of the `hwm_peak_time` column for the product-license pair in the response.

### Example

```
[{
  "product_name": "IBM DB2 Advanced Enterprise Server Edition PVU Option",
  "metric_code_name": "PVU_SUB_CAP",
  "hwm_quantity": 960,
  "hwm_peak_time": "2018-10-11T01:12:26Z"
}]
```

3. Run the `v2/software_instances` REST API with the filter on the following columns: `Discovery Start` and `Discovery End`. Base the dates on the value of `hwm_peak_time`.

### Example

```
GET
  api/sam/v2/software_instances?columns[]=discovery_start&columns[]=discovery_end&columns[]=product_name&
  columns[]=metric_id&columns[]=computer_name&criteria={"and":[{"product_name","=","IBM DB2 Advanced Enterprise Server Edition PVU
  Option"}, {"metric_id","=","5"}, {"discovery_start", "<=", "2018-10-11T01:12:26Z"},
  [{"discovery_end", ">", "2018-10-11T01:12:26Z"}]}&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```



**Note:** The example uses the timestamp format used for PVU, RVP MPAC and VPC metrics. For different metrics, see: [Retrieval of software inventory \(v2\) \(on page mdxliv\)](#).

4. See the results for a list of software instances that contributed to the peak.

## REST API for retrieving authentication token

You use the `POST` operation on the `api/get_token` element to request your unique token that is required to authenticate the REST API requests.

To request your unique token, use the following URL:

```
https://hostname:port/api/get_token
```



**Important:** This REST API call does not work when single sign-on authentication is enabled. To view the token, log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.

**Table 207. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>POST /api/get_token</code>
<b>Purpose</b>	Returns the authentication token
<b>HTTP method</b>	<code>POST</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/get_token</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	n/a
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	<pre>{   "user" : "username",   "password" : "password" }</pre>

Table 207. Operation descriptions (continued)

Operation details	Description
<b>Request</b> <code>Content-Type</code>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Token</code> element
<b>Response</b> <code>Content-Type</code>	<code>application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<code>401 - "Unauthorized"</code>
	There is no match for the provided user name and password. If you are using Active Directory, ensure the user name is followed by a domain name, for example username@domain.com.

---

## Example HTTP conversation

### Request

```
POST api/get_token
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Request header**

```
Content-Type: application/json
```

**Request payload**

```
{
  "user" : "admin",
  "password" : "password"
}
```

**Response header**

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

**Response body (JSON)**

```
{
  "token" : "44072fb20fbe38322b5e67a7e780978e20abbc80"
}
```

## REST API for retrieving the BigFix Inventory version

You use the `GET` operation on the `api/sam/about` element to request information about the version of BigFix Inventory.

To retrieve information about the current version of BigFix Inventory, use the following URL:

```
https://hostname:port/api/sam/about?token=token
```

**! Important:**

- To use this API, you must be assigned to the All Computers group and have the View Hardware Inventory permission.
- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- By default, the retrieved data is sorted by `id`.

**Table 208. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/about</code>

Table 208. Operation descriptions (continued)

Operation details	Description
<b>Purpose</b>	Returns the version of BigFix Inventory
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/about</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	n/a
<b>Request headers</b>	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request Content-Type</b>	application/json
<b>Response headers</b>	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	About element
<b>Response Content-Type</b>	application/json

**Table 208. Operation descriptions (continued)**

Operation details	Description
<b>Normal HTTP response codes</b>	
	200 - OK
<b>Error HTTP response codes</b>	
	500 - "Bad Request" if a query parameter contains errors or is missing
	Message body includes an error message with details.

## Example HTTP conversation

### Request

```
GET /api/sam/about
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
{
  "product": "BigFix Inventory",
  "version": "9.2.20140331-2015"
}
```

## Core APIs

Core APIs include all primary set of APIs that are integrated with BigFix Inventory.

### Below APIs are supported:

- REST API for hardware (v2)
- REST APIs for retrieving software inventory, metric utilization and classifying software (v2)
- REST API associations

Use **REST API for retrieving raw scan results** for advanced integration and providing more insight to the environment.

## REST API for hardware (v2)

**9.2.8** Available from 9.2.8. You can use REST API requests to quickly retrieve large amounts of data related to hardware inventory, including historical data about removed computers. You can then pass this data to other applications for further processing and analysis.

### Retrieval of hardware inventory (v2)

**9.2.8** Available from 9.2.8. You use the `GET` operation on the `api/sam/v2/computers` element to request information about computers in your infrastructure. The API returns details of existing computers as well as historical data about computers that were removed.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/computers?token=token
```

### Resource information

**Table 209. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p>

**Table 209. Resource information (continued)**

Operation details	Description
	Content-Language
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	Computer Systems element
Response format	application/json
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

### 9.2.10 Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/computer.json?token=token
```

### Available columns

**Table 210. Available columns**

Column	Description	Displayed by default	Type
<b>id</b>	Identifier of the computer as defined in BigFix Inventory.		Nu-mer-ic
<b>bigfix_id</b>	Identifier of the computer as defined in BigFix.		Nu-mer-ic
<b>name</b>	Name of the computer.	✓	String
<b>dns_name</b>	DNS of the computer.		String
<b>ip_address</b>	IP address of the computer.	✓	String
<b>os</b>	Operating system of the computer.	✓	String
<b>os_type</b>	Type of the operating system of the computer.		String

Table 210. Available columns (continued)

Column	Description	Displayed by default	Type
<b>first_seen</b>	Date and time when the computer reported to BigFix for the first time. The time is specified in the GMT time zone.		String
<b>last_seen</b>	Date and time when the computer reported to BigFix for the last time. The time is specified in the GMT time zone.	✓	String
<b>is_deleted</b>	Information whether the computer was removed.	✓	Boolean
<b>deletion_date</b>	Date and time when the computer was removed. The time is specified in the GMT time zone.		String
<b>is_managed_by_vm_manager</b>	Information whether the computer is managed by a VM manager.		Boolean

## Applicable associations

You can additionally retrieve data from the following associations:

- **9.2.10** `computer_details` (on page [mdxcvi](#))
- `computer_hardware` (on page [mdc](#))
- `computer_health` (on page [mdxcviii](#))
- **9.2.12** `mounted_shared_disks` (on page [mdcix](#))
- **9.2.12** `detailed_hw_ip_addresses` (on page [mdv](#))
- **9.2.12** `detailed_hw_lpars` (on page [mdx](#))
- **9.2.12** `detailed_hw_memories` (on page [mdxv](#))
- **9.2.12** `detailed_hw_network_adapters` (on page [mdxix](#))
- **9.2.12** `detailed_hw_operating_systems` (on page [mdxxiv](#))
- **9.2.12** `detailed_hw_partitions` (on page [mdxxix](#))
- **9.2.12** `detailed_hw_physical_processors` (on page [mdxxxiv](#))
- **9.2.12** `detailed_hw_smbios` (on page [mdxl](#))
- **9.2.12** `detailed_hw_storages`



**Note:** Retrieving data from multiple API associations in a single request might increase the response time.

For more information about how to use API associations, see: [REST API associations \(on page mdxcii\)](#).



**Important:** All associations provide data about items that currently exist in the infrastructure. For removed computers and uninstalled software, these associations return `null`.

## Query parameters

**Table 211. Query parameters**

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve product name and release  <pre>URL?columns[]=first_seen</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending:  <pre>URL?order[]=id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records  <pre>URL?limit=100</pre>		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150  <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the <b>User</b> icon  and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;</pre>		String

Table 211. Query parameters (continued)

Parameter	Description	Required	Value
	<pre>&lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers that reported for the first time within a specific date range:</p> <pre>URL?criteria={"and":[{"first_seen", "&gt;", "1970-01-01T00:00:00+00:00Z"}, {"first_seen", "&lt;", "1970-01-02T00:00:00+00:00Z"}]}</pre>		
	<p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p> <p>Example: Retrieve computers that were first reported within the last 7 days</p> <pre>URL?criteria={"and":[{"first_seen", "last", "P7D"}]}</pre>		

## Example conversation - default columns

### Request

```
GET api/sam/v2/computers?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "name": "NC9143126194",
  "ip_address": ["9.143.126.194"],
  "os": "Win2012R2 6.3.9600",
  "last_seen": "2016-09-22T10:32:12Z",
```

```
"is_deleted":1  
}]
```

## Example conversation - all columns

### Request

```
GET api/sam/v2/computers?columns[]=id&columns[]=bigfix_id  
&columns[]=name&columns[]=dns_name  
&columns[]=ip_address&columns[]=os&columns[]=os_type  
&columns[]=first_seen&columns[]=last_seen&columns[]=is_deleted  
&columns[]=deletion_date&columns[]=is_managed_by_vm_manager  
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623  
Host: localhost:9081  
Accept: application/json  
Accept-Language: en-US
```

### Response body

```
[{  
  "id":2,  
  "bigfix_id":11368943,  
  "name":"NC9143126194",  
  "dns_name":"NC9143126194",  
  "ip_address":["9.143.126.194"],  
  "os":"Win2012R2 6.3.9600",  
  "os_type":"Windows",  
  "first_seen":"2016-10-04T09:42:55Z",  
  "last_seen":"2016-09-22T10:32:12Z",  
  "is_deleted":1,  
  "deletion_date":"2016-12-19T09:40:14Z",  
  "is_managed_by_vm_manager":0  
}]
```

## Example conversation - additional column

### Request

```
GET api/sam/v2/computers?columns[]=id  
&columns[]=is_deleted&columns[]=deletion_date  
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623  
Host: localhost:9081  
Accept: application/json  
Accept-Language: en-US
```

### Response body

```
[{
  "id":21,
  "is_deleted":1,
  "deletion_date":"2016-10-18T14:51:52Z"
}]
```

## Example conversation - association

### Request

```
GET api/sam/v2/computers?columns[]=id
&columns[]=computer_health.catalog_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "catalog_version":1304630
}]
```

## Retrieval of shared disks (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/shared_disks` element to request information about shared disks that are used in your infrastructure.

### Prerequisites

Before you can retrieve information about shared disks by using the REST API, discover the shared disks in your infrastructure. For more information, see: [Step 1: Discovering remote shared disks \(on page dcxxxii\)](#).

### Permissions

 You must have the View Shared Disks permissions to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/shared_disks?token=token
```

## Resource information

**Table 212. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Shared Disks element
Response format	application/json
Response codes	<p>200 - OK</p> <p>403 - "Forbidden" if the user is not authorized to perform the action</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/shared_disk.json?token=<token>
```

## Available columns

Table 213. Available columns

Column	Description	Displayed by default	Type
<b>id</b>	Identifier of the shared disk instance.	✓	Integer
<b>status</b>	Indicates the status of the computer that is designated to scan the shared disk instance. Possible values are: <ul style="list-style-type: none"> <li>• 0 - Shared disk detected</li> <li>• 1 - Child shared disk</li> <li>• 2 - Designating a computer</li> <li>• 3 - Waiting for software scan</li> <li>• 4 - OK</li> <li>• 5 - Designating new top-level directory</li> <li>• 6 - Designating a new computer</li> <li>• 7 - Waiting for software scan on the newly designated computer</li> </ul>	✓	Integer
<b>parent_id</b>	Identifier of the parent of the shared disk instance.	✓	Integer
<b>top_level</b>	Indicates whether the shared disk is a top-level directory in the shared disk structure. Possible values are: <ul style="list-style-type: none"> <li>• 0 - The directory is not top-level</li> <li>• 1 - The directory is top-level</li> </ul>		Boolean
<b>exported_directory</b>	Exported directory of the shared disk.	✓	String

Table 213. Available columns (continued)

Column	Description	Displayed by default	Type
<b>type</b>	Type of the shared disk. Possible values are: <ul style="list-style-type: none"> <li>• 0 - Network File System</li> <li>• 1- Samba File System</li> </ul>	✓	Integer
<b>computers_count</b>	Number of computers on which the shared disk is mounted.	✓	Integer

### Applicable associations

You can additionally retrieve data from the following associations:

- [designated\\_computer](#) (on page [mdcviii](#))
- [shared\\_disk\\_members](#) (on page [mdcxi](#))

### Query parameters

Table 214. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve product name and release  <pre>URL?columns[]=product_name&amp;columns[]=product_release</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending  <pre>URL?order[]=computer_id desc</pre>		Alphanumeric
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records  <pre>URL?limit=100</pre>		Numeric

Table 214. Query parameters (continued)

Parameter	Description	Required	Value
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150  <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt;</pre>		String

For more information about operators, see: [Common connectors and operators \(on page mcdlxxviii\)](#).

Example: Retrieve software instances whose product name contains "BigFix" OR the discovery start is within a specific date range

```
URL?criteria={ "or": [ ["product_name", "contains",
"BigFix"],
{ "and": [ ["discovery_start", ">",
"1970-01-01T00:00:00+00:00Z"],
["discovery_start", "<",
"1970-01-02T00:00:00+00:00Z"] ] } ] }
```

For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use

**Table 214. Query parameters (continued)**

Parameter	Description	Required	Value
	<p><i>last</i> or <i>next</i> as <i>&lt;operator&gt;</i>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p> <p>Example: Retrieve software instances that were first reported within the last 7 days</p>		<pre>URL?criteria={"and":[{"discovery_start","last","P7D"}]}</pre>

**Example conversation - default columns****Request**

```
GET api/sam/v2/shared_disks?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id": "5",
  "status": "0",
  "type": "0",
  "designated_computer_id": "29",
  "parent_id": "3",
  "computers_count": "10",
  "exported_directory": "192.0.2.24:/file_server/tlcm/ISO/RHEL"
```

**Example conversation - all columns****Request**

```
GET api/sam/v2/shared_disks?columns[]=id&columns[]=status
&columns[]=parent_id&columns[]=top_level&columns[]=exported_directory
&columns[]=type&columns[]=computers_count&columns[]=designated_copmuter_id
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

**Response body**

```
[{
  "id": "1",
```

```

"status": "0",
"parent_id": "5",
"top_level": "0",
"exported_directory": "192.0.2.24:/file_server/tlcm/HOME"
"type": "0",
"computers_count": "10",
"designated_computer_id": "29"

```

## Example conversation - association

### Request

```

GET api/sam/v2/shared_disks?columns[]=exported_directory
&columns[]=computers_count&columns[]=shared_disk_members.computer_id
&columns[]=shared_disk_members.mount_point&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US

```

### Response body

```

[[
  {
    "exported_directory": "192.0.2.24:/file_server/tlcm/HOME",
    "computers_count": "1",
    "members":
      {
        "computer_id": "5",
        "mount_point": "/mnt/fs"
      }
  }
]]

```

## REST API for retrieving detailed hardware information (v2)

You can use REST API requests to retrieve data related to detailed hardware information, such as memory, operating systems, storage, processors, partitions, network adapters, SMBIOS data, IP addresses and logical partition capacity data. You can then pass this data to other applications for further processing and analysis.



**Note:** The APIs from this section can be used as associations to the `api/sam/v2/computers` API.

## Retrieval of IP addresses (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_ip_addresses` element to request information related to IP addresses of computers in your infrastructure.

## Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_ip_addresses?token=token
```

## Resource information

**Table 215. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	IP Addresses element
Response format	application/json

**Table 215. Resource information (continued)**

Operation details	Description
Response codes	
	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_ip_address.json?token=token
```

## Available columns

The list of attributes related to IP addresses on the scanned system. The retrieved addresses are in the IPv4 format, except for the **ipv6\_address** attribute.

The output might contain multiple instances of each attribute from this group.

**Table 216. Columns with information related to IP addresses**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>address</b>	IP address of the computer.	String
<b>hostname</b>	Host name of the computer with the given IP.	String
<b>primary_dns</b>	Primary domain name system (DNS).	String
<b>permanent_mac_address</b>	Permanent media access control (MAC) address associated with the given IP address.	String
<b>ipv6_address</b>	IP address in version 6.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 217. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	<p>Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.</p> <p>Example: Retrieve the computer ID:</p> <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by computer ID descending:</p> <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the <code>limit</code> parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the <b>User</b> icon , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p>		String

Table 217. Query parameters (continued)

Parameter	Description	Required	Value
	<pre> &lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt; </pre>		
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre> URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]} </pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		

## Example conversation - default columns

### Request

```

GET /api/sam/v2/detailed_hw_ip_addresses?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US

```

### Response body

```

[ {
  "id":1
  "computer_id":1,
  "updated_at":"2018-05-16T14:37:08Z",
  "address":"9.174.39.183",

```

mdx

```
"hostname": "NC9174039183",  
"primary_dns": "9.20.136.11",  
"permanent_mac_address": "00:50:56:94:7C:95",  
"ipv6_address": "fe80:0000:0000:0000:44a3:f150:0968:869e%2"  
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_ip_addresses?columns[]=computer_id  
&columns[]=primary_dns  
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623  
Host: localhost:9081  
Accept: application/json  
Accept-Language: en-US
```

### Response body

```
[{  
  "computer_id": 1,  
  "primary_dns": "9.20.136.11"}  
}]
```

## Retrieval of information related to logical partition capacity (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_lpars` element to request information related to the logical partition and its CPU resources. The data retrieved by this API is not limited to LPARs on POWER. It includes data related to every supported virtualization technology.

## Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_lpars?token=token
```

## Resource information

Table 218. Resource information

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<b>Header</b>

**Table 218. Resource information (continued)**

Operation details	Description
	<p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	LPARS element
Response format	<code>application/json</code>
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_lpar.json?token=token
```

## Available columns

The list of attributes related to the logical partition and its CPU resources.

The scan output contains a single instance of each attribute from this group.

**Table 219. Columns with information about the logical partition and its CPU resources**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>lpar_capacity_in_cores</b>	The number of processor cores assigned to the partition.	String
<b>lpar_online_processor_count</b>	The number of active logical processors in the partition. Logical processors are the smallest CPU entities visible in the operating system, which are dividable and schedulable. Depending on the hardware platform, a logical processor might correspond to a chip, the core of a multi-core chip, or a hardware CPU thread on a multithreaded chip or core (provided that the feature is enabled).	String
<b>lpar_online_core_count</b>	The number of active cores in a logical partition. The core is active if any of the logical processors in the system is running on this core.	String
<b>lpar_online_package_count</b>	The number of active processor packages in the partition. The processor package is active if any of the logical processors in the system is running on this package.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 220. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.		String

Example: Retrieve the computer id:

```
URL?columns[]=computer_id
```

Table 220. Query parameters (continued)

Parameter	Description	Required	Value
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by computer ID descending:</p> <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;  &lt;boolean-operator&gt; ::= "and"   "or"  &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		String

**Table 220. Query parameters (continued)**

Parameter	Description	Required	Value
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre>		
	<p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		

### Example conversation - default columns

#### Request

```
GET api/sam/v2/detailed_hw_lpars?token=c77a88cfdde276de605c6fdee689b7961ddb93ef
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```
[{
  "id":1,
  "computer_id":1,
  "updated_at":"2018-05-28T01:22:16Z",
  "lpar_capacity_in_cores":"-1.000000",
  "lpar_online_processor_count":"2.000000",
  "lpar_online_core_count":"2.000000",
  "lpar_online_package_count":"2.000000"
}]
```

### Example conversation - selected columns

#### Request

```
GET api/sam/v2/detailed_hw_lpars?columns[]=id
&columns[]=lpar_capacity_in_cores
&token=c77a88cfdde276de605c6fdee689b7961ddb93ef
```

```
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "lpar_capacity_in_cores":"-1.000000"
}]
```

## Retrieval of information related to system memory (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_memories` element to request information related to the system memory of the scanned system.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_memories?token=token
```

### Resource information

**Table 221. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p>

**Table 221. Resource information (continued)**

Operation details	Description
	Specifies the content type of the response.
	<b>Header</b>
	<code>Content-Language</code>
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	<code>System Memory</code> element
Response format	<code>application/json</code>
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_memory.json?token=token
```

## Available columns

The list of attributes related to the memory on a scanned system.

The scan output contains a single instance of each attribute from this group.

**Table 222. Columns with information about the system memory**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String

Table 222. Columns with information about the system memory (continued)

Property	Description	Type
<b>total_physical</b>	Total amount of installed memory in kilobytes (KB).	String
<b>free_physical</b>	Total amount of free memory on the system in kilobytes (KB).	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 223. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>  <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150		Numeric

Table 223. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?limit=50&amp;offset=150</code>		
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the  <b>User icon</b> , and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }... ] &lt;right-bracket&gt; &lt;right-brace&gt;  &lt;boolean-operator&gt; ::= "and"   "or"  &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		String

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_memories?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
```

```
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "computer_id":1,
  "updated_at":"2018-05-28T01:22:16Z",
  "total_physical":"8010840",
  "free_physical":"221176"
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_memories?columns[]=id
&columns[]=total_physical
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "total_physical":"8010840"
}]
```

## Retrieval of information related to network adapters (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_network_adapters` element to request information related to the type, model and MAC addresses of the network adapters.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_network_adapters?token=token
```

## Resource information

**Table 224. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Network Adapter element
Response format	application/json
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_network_adapter.json?token=token
```

## Available columns

The list of attributes related to the network adapters.

The scan output might contain multiple instances of each attribute from this group.

**Table 225. Columns with information about the network adapters**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>permanent_address</b>	The permanent media access control (MAC) address associated with the adapter.	String
<b>current_address</b>	The current network address of the adapter.	String
<b>type</b>	The type of network adapter.	String
<b>model</b>	The model of the network adapter.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 226. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.		String

Example: Retrieve the computer id:

```
URL?columns[]=computer_id
```

Table 226. Query parameters (continued)

Parameter	Description	Required	Value
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by computer ID descending:</p> <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		String

Table 226. Query parameters (continued)

Parameter	Description	Required	Value
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre>		
	<p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		

### Example conversation - default columns

#### Request

```
GET api/sam/v2/detailed_hw_network_adapters?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```
[{
  "id":13,
  "computer_id":4,
  "updated_at":"2018-05-28T01:22:16Z",
  "permanent_address":"00:50:56:94:A1:39",
  "current_address":"00:50:56:94:A1:39",
  "type":"Ethernet Adapter",
  "model":"vmxnet3 Ethernet Adapter"
}]
```

### Example conversation - selected columns

#### Request

```
GET api/sam/v2/detailed_hw_network_adapters?columns[]=id
&columns[]=id&columns[]=type&columns[]=model
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

```
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":13,
  "type":"Ethernet Adapter",
  "model":"vmxnet3 Ethernet Adapter"
}]
```

## Retrieval of information related to the operating system (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_operating_systems` element to request information related to the operating system on the scanned computer.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_operating_systems?token=token
```

### Resource information

Table 227. Resource information

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p>

**Table 227. Resource information (continued)**

Operation details	Description
	<p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	<code>Operating System</code> element
Response format	<code>application/json</code>
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_operating_system.json?token=token
```

## Available columns

The list of attributes related to the operating system that is installed on the scanned system.

The scan output contains a single instance of each attribute from this group.

**Table 228. Columns with information about the operating system**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer

Table 228. Columns with information about the operating system (continued)

Property	Description	Type
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>name</b>	The name of an operating system; for example, Windows 10.	String
<b>major_version</b>	The major version of an operating system.	String
<b>minor_version</b>	The minor version of an operating system.	String
<b>Windows instal- l_date</b>	The date when the operating system was installed.	String
<b>os_arch</b>	The version of the operating system architecture.	String
<b>os_kernel_mode</b>	The kernel mode of the operating system (32-bit or 64-bit).	String
<b>Linux de- scription_string</b>	The description of the operating system.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 229. Query parameters

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.		Numeric

Table 229. Query parameters (continued)

Parameter	Description	Required	Value
	<p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the <b>User</b> icon , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and": [{"computer_id", "&gt;", "1000"}]}</pre>		String

**Table 229. Query parameters (continued)**

Parameter	Description	Required	Value
	For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code> , and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.		

**Example conversation - default columns****Request**

```
GET api/sam/v2/detailed_hw_operating_systems?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":13,
  "computer_id":22,
  "updated_at":"2018-05-28T01:22:16Z",
  "name":"Red Hat Enterprise Linux Server release 6.8 (Santiago)",
  "major_version":"2",
  "minor_version":"6",
  "install_date":"2017-10-31-08.37.06.000000",
  "os_arch":"x86_64",
  "os_kernel_mode":"64",
  "description_string":"Red Hat Enterprise Linux Server release 6.8 (Santiago)"
}]
```

**Example conversation - selected columns****Request**

```
GET api/sam/v2/detailed_hw_operating_systems?columns[]=id
&columns[]=name&columns[]=major_version&columns[]=minor_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":13,
  "name":"Red Hat Enterprise Linux Server release 6.8 (Santiago)",
  "major_version":"2",
  "minor_version":"6"
}]
```

## Retrieval of information related to partitions (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_partitions` element to request information related to the file system that is mounted on a scanned system: Unix mount points and Windows logical drives.

**Permissions**

You must have the View Endpoints and View Hardware Inventory permission to use this API.

**Resource URL**

```
https://hostname:port/api/sam/v2/detailed_hw_partitions?token=token
```

**Resource information****Table 230. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p>

**Table 230. Resource information (continued)**

Operation details	Description
	Specifies the content type of the response.
	<b>Header</b>
	<code>Content-Language</code>
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	<code>Partitions</code> element
Response format	<code>application/json</code>
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_partition.json?token=token
```

## Available columns

The list of attributes related to the file system that is mounted on a scanned system: Unix mount points and Windows logical drives.

The scan output might contain multiple instances of each attribute from this group.

**Table 231. Columns with information about partitions**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer

Table 231. Columns with information about partitions (continued)

Property	Description	Type
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>type</b>	The type of the partition; for example, Logical Drive or Remote Drive.	String
<b>media_type</b>	The media type that contains the partition; for example, Local Disc or CD-ROM.   <b>Note:</b> The media type is Unknown when the scanner cannot recognize it.	String
<b>device_name</b>	The name of the device or a label of a Windows drive; for example, <code>/dev/dsk/c1t3d0s0</code> or Storage.	String
<b>physical_size</b>	The size of a drive that contains the partition.	String
<b>fs_total_size</b>	Total size of the partition in kilobytes (KB).	String
<b>fs_free_size</b>	The amount of free space on the partition in kilobytes (KB).	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 232. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.		Numeric

Table 232. Query parameters (continued)

Parameter	Description	Required	Value
	<p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and": [{"computer_id", "&gt;", "1000"}]}</pre>		String

**Table 232. Query parameters (continued)**

Parameter	Description	Required	Value
	For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code> , and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.		

**Example conversation - default columns****Request**

```
GET api/sam/v2/detailed_hw_partitions??token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":4,
  "computer_id":1,
  "updated_at":"2018-05-28T01:22:16Z",
  "type":"Logical Drive",
  "media_type":"Local Disk",
  "device_name":"tmpfs",
  "physical_size":"4005420",
  "fs_total_size":"4005420",
  "fs_free_size":"4005408"
}]
```

**Example conversation - selected columns****Request**

```
GET api/sam/v2/detailed_hw_partitions?columns[]=id
&columns[]=media_type&columns[]=physical_size
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":4,
  "media_type":"Local Disk",
  "physical_size":"4005420"
}]
```

## Retrieval of information related to physical processors (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_physical_processors` element to request information related to all active physical processors.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_physical_processors?token=token
```

### Resource information

**Table 233. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p>

**Table 233. Resource information (continued)**

Operation details	Description
	Content-Language
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	Physical Processors element
Response format	application/json
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_physical_processor.json?token=token
```

## Available columns

The list of attributes related to all active physical processors including single chips and processor packages. You can retrieve values for each platform working as a host which translates into one operating system per physical processor.



**Note:** To retrieve information about physical processors for guest operating systems, such as VMware or BigFix LPAR, the complete information for the physical machine must be available.

The scan output might contain multiple instances of each attribute from this group.

**Table 234. Columns with information about physical processors**

Property	Description	Type
id	Identifier of the record.	Integer

**Table 234. Columns with information about physical processors (continued)**

Property	Description	Type
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>core_per_package_count</b>	The number of cores on a physical processor; for example, 8 cores for Intel Xeon E5-4620, and 12 for POWER9.	String
<b>logical_proc_per_core</b>	The number of logical processors assigned for each core; for example, 2 for Intel Xeon E5-4620, and 8 for POWER9.	String
<b>manufacturer</b>	<p>Processor manufacturer; for example Intel, AMD, or BigFix.</p> <p> <b>Note:</b> You can only retrieve information about the manufacturers that are supported by the scanner. Otherwise, the displayed value is Unknown.</p>	String
<b>family</b>	<p>Processor family; for example, Xeon, or POWER9.</p> <p> <b>Note:</b> You can only retrieve information about the processor families that are supported by the scanner. Otherwise, the displayed value is Unknown.</p>	String
<b>type</b>	<p>Processor type; for example, E5-4620 for Intel Xeon E5-4620.</p> <p> <b>Note:</b> If the scanner does not support type identification of the processor family the value is empty. If the scanner supports type identification for the processor family, however, the given types is not recognize, the displayed value is Unknown.</p>	String
<b>cpu_freq</b>	<p>Processor frequency in megahertz (MHz). This information is optional, and vendor-specific. Depending on the processor family the value might represent either nominal or current CPU frequency.</p> <p> <b>Note:</b> CPU frequency might be interpreted differently across processor architectures and families. If this information is not applicable the value is 0.</p>	String
<b>brandname</b>	Processor name. This information is optional, and specific to platform and vendor. Thus, it can be retrieved from a different source in case of each platform, or even processor family. If available, it is a copy of a value reported by CPUID instruction, BIOS or OS.	String

**Table 234. Columns with information about physical processors (continued)**

Property	Description	Type
<b>active_processor_count</b>	The number of active processors in the physical processor. A processor is active if a logical processor is running on this physical processor.	String
<b>active_core_count</b>	The number of active cores in the physical processor. The core is active if a logical processor is running on this core.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 235. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>  <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.		Numeric

Table 235. Query parameters (continued)

Parameter	Description	Required	Value
	<p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the <b>User icon</b> , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		String

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_physical_processors?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":7,
  "computer_id":4,
  "updated_at":"2018-05-30T01:15:05Z",
  "core_per_package_count":"1",
  "logical_proc_per_core":"1",
  "manufacturer":"Intel",
  "family":"Xeon",
  "type":"E7-8880",
  "cpu_freq":"2200",
  "brandname":"Intel(R) Xeon(R) CPU E7-8880 v4 @ 2.20GHz",
  "active_processor_count":"1",
  "active_core_count":"1"
}]
```

### Example conversation - selected columns

#### Request

```
GET api/sam/v2/detailed_hw_physical_processors?columns[]=computer_id
&columns[]=manufacturer&columns[]=family&columns[]=type
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```
[{
  "computer_id":4,
  "manufacturer":"Intel",
  "family":"Xeon",
  "type":"E7-8880"
}]
```

## Retrieval of information related to SMBIOS (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_smbios` element to request information related to SMBIOS of the scanned system.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_smbios?token=token
```

### Resource information

**Table 236. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>

**Table 236. Resource information (continued)**

Operation details	Description
Response payload	SMBIOS element
Response format	application/json
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_smbios.json?token=token
```

## Available columns

The list of attributes related to SMBIOS of the scanned system.

The scan output contains a single instance of each attribute from this group.

**Table 237. Columns with information about SMBIOS**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
Linux Windows <b>bios_vendor</b>	The manufacturer of the BIOS system.	String
Linux Windows <b>bios_version</b>	The version of the BIOS system.	String
Linux <b>system_version</b>	The version of the system.	String

Table 237. Columns with information about SMBIOS (continued)

Property	Description	Type
<div style="background-color: #800040; color: white; padding: 2px;">Linux</div> <div style="background-color: #800040; color: white; padding: 2px;">Windows</div> <b>sys-tem_serial_number</b>	The serial number of the system.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 238. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	<p>Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.</p> <p>Example: Retrieve the computer id:</p> <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by computer ID descending:</p> <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p>		Numeric

Table 238. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?limit=50&amp;offset=150</code>		
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the  , and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;  &lt;boolean-operator&gt; ::= "and"   "or"  &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		String

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_smbios?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
```

```
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":12,
  "computer_id":19,
  "updated_at":"2018-05-28T01:22:16Z",
  "bios_vendor":"Phoenix Technologies LTD",
  "bios_version":"6.00",
  "system_version":"None",
  "system_serial_number":"VMware-42 14 ea ea 03 c0 d5 03-fd f6 43 d6 44 a2 f8 52"
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_smbios?columns[]=computer_id
&columns[]=bios_vendor&columns[]=bios_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "computer_id":19,
  "bios_vendor":"Phoenix Technologies LTD",
  "bios_version":"6.00"
}]
```

## REST API for retrieving software inventory and metric utilization and classifying software (v2)

**9.2.8** Available from 9.2.8. You can use REST API requests to quickly retrieve large amounts of data related to license metric utilization as well as your software inventory, including historical data about uninstalled software. You can then pass this data to other applications for further processing and analysis.

### Retrieval of software inventory (v2)

**9.2.8** Available from 9.2.8. You use the `GET` operation on the `api/sam/v2/software_instances` element to request information about software installed in your infrastructure. The API returns details of existing components as well as historical data about components that were removed.

## Permissions

 You must have the View Endpoints and View Hardware Inventory permissions to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/software_instances?token=token
```

## Resource information

**Table 239. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Software Instances element
Response format	application/json

**Table 239. Resource information (continued)**

Operation details	Description
Response codes	200 - OK
	400 - "Bad Request" if a query parameter contains errors or is missing

### 9.2.10 Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/software_instance.json?token=<token>
```

### Available columns

**Table 240. Available columns**

Column	Description	Displayed by default	Type
<b>instance_id</b>	Identifier of the component instance.		Nu-mer-ic
<b>computer_id</b>	Identifier of the computer as defined in BigFix Inventory.		Nu-mer-ic
<b>computer_bigfix_id</b>	Identifier of the computer as defined in BigFix.		Nu-mer-ic
<b>computer_dns_name</b>	DNS of the computer.		String
<b>computer_name</b>	Name of the computer.	✓	String
<b>computer_ip_address</b>	IP address of the computer.	✓	String
<b>computer_os</b>	Operating system of the computer.		String
<b>computer_os_type</b>	Type of the operating system of the computer.		String
<b>component_name</b>	Component name.	✓	String
<b>component_release</b>	Component release number.	✓	String
<b>9.2.11 component_detailed_version</b>	Detailed version of a software component. The version is used as software signature. The software version is detected in several ways, such as in the presence of specific packages, the highest ver-		String

Table 240. Available columns (continued)

Column	Description	Displayed by default	Type
	sion of SWID tags, Windows file, and extended signature reporting. The package based discovery is available since BigFix Inventory <a href="#">10.0.4</a> .		
<b>discoverable_guid</b>	Component GUID.		String
<b>discoverable_family_guid</b>	Component family GUID. For example, if the component is IBM DB2 Enterprise Server Edition, component family is IBM DB2.		String
<b>component_publisher_name</b>	Component publisher.		String
<b>component_has_usage</b>	Information whether usage data is available for the component.		Boolean
<b>is_present</b>	Information whether the component is still installed in the environment.		Boolean
<b>discovery_start</b>	Date and time when the component was reported for the first time. The time is specified in the GMT time zone.	✓	String
<b>discovery_end</b>	Date and time when the component was reported for the last time. The time is specified in the GMT time zone.	✓	String
<b>discovery_path</b>	Path where the component is installed. Starting from BigFix Inventory 10.0.2, discovery path is available for all products.	✓	String
<b>product_name</b>	Name of the product to which the component is assigned.	✓	String
<a href="#">10.0.8</a> <b>product_guid</b>	Product GUID. For example, if the product release is IBM DB2 Enterprise Server Edition 10.5, product is IBM DB2 Enterprise Server Edition.		String
<b>product_family_guid</b>	Product family GUID. For example, if the product is IBM DB2 Enterprise Server Edition, product family is IBM DB2.		String
<b>product_publisher_name</b>	Product publisher.		String
<b>product_release_name</b>	Name of the product release to which the component is assigned.		String
<b>product_release</b>	Product release number.	✓	String
<b>product_release_guid</b>	Product release GUID.		String
<b>metric_id</b>	Identifier of the license metric that is used by the product. For information about the meaning of each <code>metric_id</code> , see: <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .		String

Table 240. Available columns (continued)

Column	Description	Displayed by default	Type
<b>metric_code_name</b>	Unique code name of the license metric that is used by the product. For information about the meaning of each <code>metric_code_name</code> , see: <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .		String
<b>is_confirmed</b>	Information whether the assignment of the component to the product is confirmed.		Boolean
<b>is_excluded</b>	Information whether the product is excluded from pricing calculations.		Boolean
<b>is_suppressed</b>	Information whether the component is suppressed on the computer on which it is installed.	✓	Boolean
<b>exclusion_or_suppress_comment</b>	Comment that was provided during the exclusion or suppression.		String
<b>9.2.13 bundle_id</b>	Identifier of the FlexPoint offering or CloudPak to which the software instance is bundled. Possible values include: <ul style="list-style-type: none"> <li>- 1 - The software instance cannot be assigned to any FlexPoint offering nor Cloud Pak because the component is not assigned to any product</li> <li>0 - The software instance is not bundled to any FlexPoint offering nor Cloud Pak</li> <li>Other values - Identifier of the FlexPoint offering or CloudPak to which the software instance is assigned</li> </ul>		String
<b>9.2.13 bundle_name</b>	Name of the FlexPoint offering or Cloud Pak to which the software instance is assigned. Possible values include: <ul style="list-style-type: none"> <li>Empty column - The software instance cannot be assigned to any FlexPoint offering nor Cloud Pak because the component is not assigned to any product</li> <li>None - The software instance is not bundled to any FlexPoint offering nor Cloud Pak</li> <li>Other values - Name of the FlexPoint offering or Cloud Pak to which the software instance is assigned</li> </ul>		String
<b>10.0.8 bundle_type</b>	Type of a bundle to which the software instance is assigned. Possible values include:		Numeric

Table 240. Available columns (continued)

Column	Description	Displayed by default	Type
	<ul style="list-style-type: none"> <li>-1 - The software instance is not assigned to any bundle or cannot be assigned because the component is not assigned to any product</li> <li>0 - FlexPoint bundle</li> <li>1 - Cloud Pak bundle</li> </ul>		
<b>10.0.8</b> <code>bundle_guid</code>	<p>GUID of the FlexPoint offering or Cloud Pak to which the software instance is assigned. Possible values include:</p> <ul style="list-style-type: none"> <li>Empty column - The software instance is not bundled to any FlexPoint offering nor Cloud Pak</li> <li>Other values - GUID of the FlexPoint offering or Cloud Pak to which the software instance is assigned</li> </ul>		String
<b>9.2.13</b> <code>is_vulnerable</code>	<p>Information whether any Common Vulnerabilities and Exposures (CVE) are matched to the component. Possible values include:</p> <ul style="list-style-type: none"> <li>0 - No CVEs are matched</li> <li>1 - At least one CVE is matched</li> </ul>		Boolean
<b>9.2.14</b> <code>is_charged</code>	<p>Information whether the component to product assignment is confirmed.</p>		Boolean
<b>10.0.8</b> <code>is_entitled</code>	<p>Information whether you declared the particular product as your software entitlement.</p>		Boolean

### Applicable associations

You can additionally retrieve data from the following associations:

- **9.2.12** `component_cpe` (on page [mdxciii](#))
- **9.2.14** `component_tags` (on page [mdcxii](#))
- `computer_hardware` (on page [mdc](#))
- `computer_health` (on page [mdxcviii](#))
- **9.2.13** `cve` (on page [mdciv](#))
- **9.2.11** `discovery_details` (on page [mdcvii](#))
- **9.2.14** `instance_tags` (on page [mdcxii](#))

- **9.2.13** `release_component_lifecycle` (on page [mdcx](#))
- `usage_data` (on page [mdcxiii](#))



**Important:** All associations provide data about items that currently exist in the infrastructure. For removed computers and uninstalled software, these associations return `null`.

## Query parameters

**Table 241. Query parameters**

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve product name and release  <pre>URL?columns[]=product_name&amp;columns[]=product_release</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending  <pre>URL?order[]=computer_id desc</pre>		Alphanumeric
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records  <pre>URL?limit=100</pre>		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150  <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token</a> (on page <a href="#">mcdlxxxviii</a> ). You can also log in to BigFix Inventory, hover over the <b>User</b> icon  , and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:		String

Table 241. Query parameters (continued)

Parameter	Description	Required	Value
	<pre> &lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt; </pre>		

For more information about operators, see: [Common connectors and operators \(on page mcdlxviii\)](#).

Example: Retrieve software instances whose product name contains "BigFix" OR the discovery start is within a specific date range

```

URL?criteria={ "or": [ ["product_name", "contains",
"BigFix"],
{ "and": [ ["discovery_start", ">",
"2018-10-01T00:00:00+00:00Z"],
["discovery_start", "<",
"2018-10-02T00:00:00+00:00Z"] ] } ] }

```

For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use *last* or *next* as `<operator>`, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.

Example: Retrieve software instances which took part in the license utilization peak. The date and time of the peak is: **2018-10-10T00:00:00+00:00Z**. Query searches for the instances that meet the following criteria: product name contains "DB2" AND use the given metric AND discovery start within the peak.

For PVU, RVU MAPC and VPC

**Table 241. Query parameters (continued)**

Parameter	Description	Required	Value
	<pre>URL?criteria={ "and": [ [ "discovery_start", "&lt;=", "2018-10-10T00:00:00+00:00Z" ], [ "discovery_end", "&gt;", "2018-10-10T00:00:00+00:00Z" ], [ "product_name", "contains", "DB2" ], [ "metric_id", "=", "5" ] ] }</pre>		
	<p>For other metrics</p> <pre>URL?criteria={ "and": [ [ "discovery_start", "&lt;", "2018-10-11T00:00:00+00:00Z" ], [ "discovery_end", "&gt;=", "2018-10-10T00:00:00+00:00Z" ], [ "product_name", "contains", "DB2" ], [ "metric_id", "=", "9" ] ] }</pre>		
	<p>Example: Retrieve software instances that were first reported within the last 7 days</p> <pre>URL?criteria={ "and": [ [ "discovery_start", "last", "P7D" ] ] }</pre>		

**Example conversation - default columns****Request**

```
GET api/sam/v2/software_instances?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "computer_name": "NC107069",
  "computer_ip_address": [ "10.0.107.69" ],
  "component_name": "BigFix Platform Agent",
  "component_release": "9.0",
  "is_present": 1,
  "discovery_start": "2016-04-28T15:37:26Z",
  "discovery_end": "2016-11-17T15:11:10Z",
  "discovery_path": "/opt/BESClient/bin/properties/version",
  "product_name": "BigFix for Power Management",
  "product_release": "9.0"
}]
```

## Example conversation - all columns

### Request

```
GET api/sam/v2/software_instances?columns[]=discovery_path
&columns[]=instance_id&columns[]=computer_id&columns[]=computer_bigfix_id
&columns[]=computer_dns_name&columns[]&columns[]=computer_name
&columns[]=computer_ip_address&columns[]=computer_os&columns[]=computer_os_type
&columns[]=component_name&columns[]=component_release&columns[]=discoverable_guid
&columns[]=component_publisher_name&columns[]=component_has_usage&columns[]=is_present
&columns[]=discovery_start&columns[]=discovery_end&columns[]=product_name
&columns[]=product_publisher_name&columns[]=product_release_name&columns[]=product_release
&columns[]=metric_id&columns[]=metric_code_name&columns[]=is_confirmed
&columns[]=is_excluded&columns[]=is_suppressed&columns[]=exclusion_or_suppress_comment
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "instance_id":1,
  "computer_id":3,
  "computer_bigfix_id":null,
  "computer_dns_name":"NC107069",
  "computer_name":"NC107069",
  "computer_ip_address":"10.0.107.69",
  "computer_os":"AIX 5.3",
  "computer_os_type":"AIX",
  "component_name":"BigFix Platform Agent",
  "component_release":"9.0",
  "discoverable_guid":"0768FB15-383C-4124-A7E2-0D76DDA06874",
  "component_publisher_name":"IBM",

  "component_has_usage":1,
  "is_present":0,
  "discovery_start":"2016-04-28T15:37:26Z",
  "discovery_end":"2016-11-17T15:11:10Z",
  "discovery_path":"/opt/BESClient/bin/properties/version",
  "product_name":"BigFix for Power Management",
  "product_publisher_name":"IBM",
  "product_release_name":"BigFix for Power Management",
```

mdliv

```
"product_release": "9.0",  
"metric_id": "6",  
"metric_code_name": "INTERNAL_RVU_MAPC",  
"is_confirmed": 0,  
"is_excluded": 0,  
"is_suppressed": 0,  
"exclusion_or_suppress_comment": null  
}]
```

## Example conversation - additional column

### Request

```
GET api/sam/v2/software_instances?columns[]=component_name  
&columns[]=product_name&columns[]=is_confirmed  
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623  
Host: localhost:9081  
Accept: application/json  
Accept-Language: en-US
```

### Response body

```
[{  
  "component_name": "BigFix Platform Agent",  
  "product_name": "BigFix for Power Management",  
  "is_confirmed": 0  
}]
```

## Example conversation - association

### Request

```
GET api/sam/v2/software_instances?columns[]=computer_id  
&columns[]=computer_health.catalog_version  
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623  
Host: localhost:9081  
Accept: application/json  
Accept-Language: en-US
```

### Response body

```
[{  
  "computer_id": 1,  
  "catalog_version": 1304630  
}]
```

## Classifying software (v2)

**9.2.14** Available from 9.2.14. You can use the `PUT` operation on the `api/sam/v2/software_instances` element to define, change, or migrate software classification.

### The API supports the following actions

- Assigning component instance to a product using relation existing in a catalog
- Assigning component instance to a product using custom bundling. The bundling needs to be created earlier in WebUI.
- Excluding products from metric calculation and clearing the exclusion
- Suppressing component from inventory and clearing the suppression
- **10.0.8** [Assigning a product to a Cloud Pak or FlexPoint Bundle \(on page mdlxi\)](#)
- **10.0.8** [Assigning a component to a product and product to a Cloud Pak in one call \(on page mdlxii\)](#)
- **10.0.16** [Assigning components to products and Cloud Paks according to custom bundling relations \(on page mdlxiii\)](#)

### Permissions

 You must have the View Endpoints and View Hardware Inventory permissions to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/software_instances?token=token
```

 **Important:** You can use this API to update or migrate software bundlings. You can only update the budlings that are defined in the software catalog or were earlier created manually in WebUI.

### Resource information

**Table 242. Resource information**

Operation details	Description
HTTP method	<code>PUT</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>

**Table 242. Resource information (continued)**

Operation details	Description
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p><code>en-US, ...</code></p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	<code>n/a</code> element
Response format	<code>application/json</code>
Response codes	<p><code>207 - OK</code></p> <p><code>500 - "Bad Request"</code> if a query parameter contains errors or is missing</p>

## Parameters



**Important:** The following parameters are required to assign a component instance to a product requests:

- **token**
- **is\_charged**
- **metric\_id**
- **product\_release\_guid**
- **instance\_id**, or, alternatively, a combination of parameters including: a parameter that identifies a computer: **computer\_dns\_name** or **computer\_bigfix\_id** and a parameter that identifies software: **discoverable\_guid** that can be followed by the **discovery\_path** parameter for precision.

Requests, such as suppression and exclusion require different set of parameters as described in the table below.

Table 243. Parameters

Parameters that are listed below are optional. You can include them in your query according to your needs. The out-of-range values for all the optional parameters are ignored.

Parameter	Description	Type
<code>instance_id</code>	Identifier of the component instance.	Nu-mer-ic
<code>computer_bigfix_id</code>	Identifier of the computer as defined in BigFix.	Nu-mer-ic
<code>computer_dns_name</code>	DNS of the computer.	String
<code>discoverable_guid</code>	Component GUID.	String
<code>discovery_path</code>	Path under which the component is installed. Available for BigFix products only. For non-BigFix products, the returned value is <code>null</code> .	String
<code>product_release_guid</code>	Product release GUID.	String
<code>metric_id</code>	Identifier of the license metric that is used by the product. For information about the meaning of each <code>metric_id</code> , see: <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .	In-te-ger
<code>is_confirmed</code>	Information whether the assignment of the component to the product is confirmed.	Boolean
<code>is_excluded</code>	Information whether the product is excluded from pricing calculations.	Boolean
<code>is_suppressed</code>	Information whether the component is suppressed on the computer on which it is installed.	Boolean
<code>exclusion_or_suppress_comment</code>	Comment that was provided during the exclusion or suppression.	String
<b>9.2.14</b> <code>is_charged</code>	Information whether the component to product assignment is charged.	Boolean
<code>token</code>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the <b>User</b> icon  , and click <b>Profile</b> . Then, click <b>Show token</b> .	Al-phanu-mer-ic
<code>verbose</code>	Descriptive information about the result of an API request. By default, this parameter is set to false.	Boolean
<code>simulate</code>	By adding this parameter to API request you can test the call to view its results and status. By default, this parameter is set to false.	Boolean



**Note:** You can change multiple values during a single request. For example, you can use a single request to reassign the component, and change its status to confirmed.

## Example conversation

### 1. Assigning a component

Assign a component instance with ID 214 to a product release with GUID 7E9162CD-B894-48B3-AFB7-1234567890AB using bundling with metric with ID 6 which has charged type as '0'.

#### Request

```
PUT
https://example.com:9081/api/sam/v2/software_instances?token=1234567890abcdef1234567890a
bcdef12345678
Content-Type: application/json
{
  "rows": [
    {
      "instance_id": 214,
      "product_release_guid": "7E9162CD-B894-48B3-AFB7-1234567890AB",
      "metric_id": 6,
      "is_charged": 0
    }
  ]
}
```

#### Response body

```
Response code: 207
Content-Type: application/json; charset=utf-8
{
  "valid_instances": {
    "Bundled": 1
  },
  "invalid_instances": {},
  "unmodified_instances": 0
}
```

### 2. Suppress a component instance with ID 103 from BigFix Inventory.

#### Request

```
PUT
https://example.com:9081/api/sam/v2/software_instances?token=1234567890abcdef1234567890a
bcdef12345678
Content-Type: application/json
{
  "rows": [
    {
      "instance_id": 103,
      "is_suppressed": 1
    }
  ]
}
```

### Response

```
Response code: 207
Content-Type: application/json; charset=utf-8
{
  "valid_instances": {
    "Suppressed": 1
  },
  "invalid_instances": {},
  "unmodified_instances": 0
}
```

### 3. Clear suppression of a component instance with ID 73

#### Request

```
PUT
https://example.com:9081/api/sam/v2/software_instances?token=1234567890abcdef1234567890a
bcdef12345678
Content-Type: application/json
{
  "rows": [
    {
      "instance_id": 73,
      "is_suppressed": 0
    }
  ]
}
```

#### Response

```
Response code: 207
Content-Type: application/json; charset=utf-8
{
  "valid_instances": {
    "Unsuppressed": 1
  },
  "invalid_instances": {},
  "unmodified_instances": 0
}
```

#### 4. Exclude product assigned to component instance with ID 94 from metric calculation

##### Request

```
PUT
https://example.com:9081/api/sam/v2/software_instances?token=1234567890abcdef1234567890a
bcdef12345678
Content-Type: application/json
{
  "rows": [
    {
      "instance_id": 94,
      "is_excluded": 1
    }
  ]
}
```

##### Response

```
Response code: 207
Content-Type: application/json; charset=utf-8
{
  "valid_instances": {
    "Excluded": 1
  },
  "invalid_instances": {},
  "unmodified_instances": 0
}
```

#### 5. Clear exclusion of a product assigned to component instance with ID 58

##### Request

```

PUT
https://example.com:9081/api/sam/v2/software_instances?token=1234567890abcdef1234567890a
bcdef12345678
Content-Type: application/json
{
  "rows": [
    {
      "instance_id": 58,
      "is_excluded": 0
    }
  ]
}

```

### Response

```

Response code: 207
Content-Type: application/json; charset=utf-8
{
  "valid_instances": {
    "Included": 1
  },
  "invalid_instances": {},
  "unmodified_instances": 0
}

```

## 10.0.8 Assigning a product to a Cloud Pak or FlexPoint Bundle

To assign a product to a Cloud Pak or FlexPoint Bundle, the following fields are required:

- **instance\_id** or a combination of fields that includes:
  - A field that identifies a computer: **computer\_dns\_name** or **computer\_bigfix\_id**
  - A field that identifies software: **discoverable\_guid** that can be followed by the **discovery\_path** parameter for precision
- **bundle\_name** or **bundle\_guid** or both

### Request

```

PUT api/sam/v2/software_instances?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
{
  "rows": [
    {
      "instance_id": 4,

```

```

    "bundle_name": "Unified Governance \u0026amp; Integration"
  }
]
}

```

### Response header

```
207 - OK
```

### Response body

```

{
  "valid_instances":
    {"Assigned to CloudPak":1},
  "invalid_instances": {},
  "unmodified_instances": 0
}

```

## 10.0.8 Assigning a component to a product and product to a Cloud Pak in one call

To assign a component to a product and then the product to a Cloud Pak in one REST API call, the following fields are required:

- **instance\_id** or a combination of fields that includes:
  - A field that identifies a computer: **computer\_dns\_name** or **computer\_bigfix\_id**
  - A field that identifies software: **discoverable\_guid** that can be followed by the **discovery\_path** parameter for precision
- **product\_release\_guid**
- **metric\_id**
- **is\_charged**
- **bundle\_name** or **bundle\_guid** or both

### Request

```

PUT api/sam/v2/software_instances?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
{
  "rows": [
    {
      "instance_id":1423,
      "product_release_guid": "1bde5fc0-0e29-496a-b581-bacdaa75810f",
      "metric_id":5,
      "is_charged":1,
      "bundle_name": "IBM Db2 Standard Edition Extension for IBM Cloud Pak for Data"
    }
  ]
}

```

```
]
}
```

### Response header

```
207 - OK
```

### Response body

```
{
  "valid_instances":
    {
      "Bundled":1,
      "Assigned to CloudPak":1
    },
  "invalid_instances":{},
  "unmodified_instances":0
}
```

## 10.0.16 Assigning components to products and Cloud Paks according to custom bundling relations

To assign a component to a product and potentially next the product to a Cloud Pak using custom bundling relation, the following fields are needed:

- **instance\_id** or a combination of fields that includes:
  - A field that identifies a computer: **computer\_dns\_name** or **computer\_bigfix\_id**
  - A field that identifies software: **discoverable\_guid** that can be followed by the **discovery\_path** parameter for precision
- **product\_release\_guid**
- **metric\_id**
- **is\_charged**
- **create\_custom\_bundling** set to 1 or **createCustomBundling** set globally for entire HTTP PUT request.
- **bundle\_name** or **bundle\_guid** or both, if bundling to Cloud Pak needs to be done in the same request

### Example 1

#### Request

```
PUT https://hostname:port/api/sam/v2/software_instances
```

#### Request header

```
Accept: application/json
  Accept-Language: en-US
  Token: <token>
```

**Request body**

```
{
  "rows": [
    {
      "instance_id":1423,
      "product_release_guid":"1bde5fc0-0e29-496a-b581-bacdaa75810f",
      "metric_id":5,
      "is_charged":1,
      "create_custom_bundling":1
      "bundle_name":"IBM Db2 Standard Edition Extension for IBM Cloud Pak for Data"
    }
  ]
}
```

**Response header**

207 - OK

**Response body**

```
{
  "valid_instances":
    {
      "Bundled":1,
      "Assigned to CloudPak":1
    },
  "invalid_instances":{},
  "unmodified_instances":0
}
```

**Example 2****Request**

```
PUT https://hostname:port/api/sam/v2/software_instances?createCustomBundling=true
```

**Request header**

```
Accept: application/json
      Accept-Language: en-US
      Token: <token>
```

**Request body**

```
{
  "rows": [
    {
```

```

    "instance_id":1423,
    "product_release_guid":"1bde5fc0-0e29-496a-b581-bacdaa75810f",
    "metric_id":5,
    "is_charged":1,
    "bundle_name":"IBM Db2 Standard Edition Extension for IBM Cloud Pak for Data"
  }
]
}

```

### Response header

```
207 - OK
```

### Response body

```

{
  "valid_instances":
  {
    "Bundled":1,
    "Assigned to CloudPak":1
  },
  "invalid_instances":{},
  "unmodified_instances":0
}

```

For more information, see [Tutorial: Migrating software assignments between two BigFix Inventory servers \(on page mccxlviii\)](#).

## Retrieval of software components (v2)

**9.2.14** Available from 9.2.14. You use the `GET` operation on the `api/sam/v2/software_components` element to request information about software components in your catalog. The API returns details of existing components as well as historical data about components that were removed.

### Permissions



You must have the View Software Catalog and Signatures permission to perform this task.

### Resource URL

```
https://hostname:port/api/sam/v2/software_components?token=token
```

## Resource information

**Table 244. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Software Components element
Response format	application/json
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

### 9.2.10 Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/software_component.json?token=<token>
```

## Available columns

Table 245. Available columns

Column	Description	Displayed by default	Type
<b>id</b>	Identifier of the component instance.	✓	Nu-mer-ic
<b>name</b>	Name of the component.	✓	String
<b>release</b>	Release of the component.	✓	String
<b>guid</b>	Component GUID.	✓	String
<b>is_ibm</b>	Information whether the component is an IBM software component.	✓	Boolean

## Applicable associations

You can additionally retrieve data from the following associations:

- [tags](#) (on page [mdcxii](#))

## Query parameters

Table 246. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve component name and id  <pre>URL?columns[]=name&amp;columns[]=id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by component ID descending  <pre>URL?order[]=id desc</pre>		Alphanumeric
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.		Numeric

**Table 246. Query parameters (continued)**

Parameter	Description	Required	Value
	<p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre>		
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User icon</b>, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p>		String

---

## Example conversation - default columns

### Request

```
GET api/sam/v2/software_components?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "name":"DB2 8.1",
  "release":8,
  "guid":"XYZ",
  "is_ibm":1,
}]
```

## Example conversation - association

### Request

```
GET api/sam/v2/software_components?columns[ ]=id&columns[ ]=name
&columns[ ]=tags.name
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "name":"DB2 8.1",
  "tags":
  [{"name":"ibm"}]
}]
```

## Retrieval of license metric utilization (v2)

**9.2.10** Available from 9.2.10. Use the `GET` operation on the `api/sam/v2/license_usage` element to request information about utilization of license metrics by products that are installed in your infrastructure. By default, the results are returned for the computer group of the user whose token is used for authentication and cover the period for which data is aggregated in this group. They also include custom fields that were added to the All Metrics report.

### Permissions



You must have the View License Metrics permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/license_usage?token=token
```

## Resource information

**Table 247. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p> <p><b>Header</b></p> <p>startdate</p> <p><b>Values</b></p> <p>YYYY-MM-DD</p> <p>Specifies the date starting from which the data is retrieved.</p> <p><b>Header</b></p> <p>enddate</p> <p><b>Values</b></p>

Table 247. Resource information (continued)

Operation details	Description
	<p>YYYY-MM-DD</p> <p>Specifies the date until which the data is retrieved.</p> <p><b>Header</b></p> <p>computerGroupId</p> <p><b>Values</b></p> <p>Integer</p> <p>Specifies ID of the computer group for which data is retrieved.</p>
Response payload	License Usage element
Response format	application/json
Response codes	<p>200 - OK</p> <p>400 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/license_usage.json?token=token
```

## Available columns

Table 248. Available columns

Column	Description	Displayed by default	Type
product_publisher_name	Name of the product publisher.	✓	String
product_id	Identifier of the software product.		Integer
product_name	Name of the software product.	✓	String
product_family_guid	GUID of the software product.		String
metric_id	Identifier of the license metric. For explanation of the returned values, see: <a href="#">Metric IDs and code names</a> (on page mdlxxxv).		String

Table 248. Available columns (continued)

Column	Description	Displayed by default	Type
<b>metric_name</b>	Name of the license metric. The value that is returned by the <code>metric_name</code> parameter is provided as reference and can slightly differ from the value that is provided as a metric description in <a href="#">Table 252: Metric ID, code name, and description (on page mdlxxxvi)</a> . It is best to retrieve metrics by using <code>metric_id</code> or <code>metric_code_name</code> parameters and then check the exact metric description by referring to <a href="#">Table 252: Metric ID, code name, and description (on page mdlxxxvi)</a> .		String
<b>metric_code_name</b>	Code name of the license metric. For explanation of the returned values, see: <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .	✓	String
<b>hwm_quantity</b>	The highest number of metric units that the product used within the period for which the data is retrieved. When metric quantity is not measured for a particular license metric, the value returned by the <b>hwm_quantity</b> parameter is -1. The value -1 cannot be used for sorting nor filtering.	✓	Integer
<b>threshold</b>	The maximum number of metric units that the product is entitled to use within a computer group. The value is set manually and is used to calculate the metric threshold delta.		Integer
<b>threshold_delta</b>	It is calculated by subtracting metric quantity from the threshold. When you specify a threshold for a license metric that is not calculated, the value returned by the <b>threshold_delta</b> parameter is 2147483647. The value 2147483647 cannot be used for sorting nor filtering.		Integer
<b>imported_part_numbers</b>	Part number that was imported to BigFix Inventory. It represents the product that is listed in the <b>product_name</b> column and its license metric.		String
<b>is_reaggregation_needed</b>	Specifies whether recalculation is needed for the product. The parameter cannot be used to filter or sort the results.		Boolean

Table 248. Available columns (continued)

Column	Description	Displayed by default	Type
<code>custom_field_number</code>	Custom field that was added to the All Metrics report. To view the list of all custom fields, view the <a href="#">license_usage.json schema (on page mdlxxi)</a> .		Various
<b>9.2.14</b> <code>hwm_peak_time</code>	The date and time when the highest number of metric units was used by a product in the selected period of time. If the value of <code>hwm_quantity</code> parameter is -1, the value of <code>hwm_peak_time</code> is meaningless.   <b>Note:</b> Retrieving <code>hwm_peak_time</code> might noticeably increase the time of retrieving the data.		String
<b>10.0.1</b> <code>bundle_id</code>	ID of the Cloud Pak or FlexPoint Bundle to which the product is assigned.		Integer
<b>10.0.1</b> <code>bundle_name</code>	Name of the Cloud Pak or FlexPoint Bundle to which the product is assigned.		String
<b>10.0.1</b> <code>bundle_type</code>	Type of the bundle. Possible values: <ul style="list-style-type: none"> <li>• -1 - Not a bundle</li> <li>• 0 - FlexPoint bundle</li> <li>• 1 - Cloud Pak</li> </ul>		Set of integers
<b>10.0.1</b> <code>bundle_guid</code>	GUID of the Cloud Pak or FlexPoint Bundle to which the product is assigned.		String
<b>10.0.1</b> <code>bundle_metric_contribution</code>	When the product is a part of a Cloud Pak or FlexPoint Bundle, the column shows the number of license metric units that the particular product contributes to the overall metric quantity of the Cloud Pak or FlexPoint Bundle to which that product is assigned.  It is the value from the <code>hwm_quantity</code> column multiplied by the conversion option that is specified for the particular product.		Integer

Table 248. Available columns (continued)

Column	Description	Displayed by default	Type
	When the product is not a part of the Cloud Pak or FlexPoint Bundle, the column is empty.		
<b>10.0.9</b> <code>product_bundle_ratio_divider</code>	<p>When the product is a part of a Cloud Pak or FlexPoint Bundle, the column shows the divider of the ratio that is used to convert product license metrics to license metrics of the bundle.</p> <p>For example, when IBM Security QRadar SOAR Users is installed as part of IBM Cloud Pak for Security, the conversion ratio is 5:1. The value of the <b>product_bundle_ratio_divider</b> column in this case would be 5.</p>		Integer
<b>10.0.9</b> <code>product_bundle_ratio_factor</code>	<p>When the product is a part of a Cloud Pak or FlexPoint Bundle, the column shows the factor of the ratio that is used to convert product license metrics to license metrics of the bundle.</p> <p>For example, when IBM Security QRadar SOAR Users is installed as part of IBM Cloud Pak for Security, the conversion ratio is 5:1. The value of the <b>product_bundle_ratio_factor</b> column in this case would be 1.</p>		Integer

## Query parameters

Table 249. Query parameters

Parameter	Description	Required	Value
<b>columns</b>	<p>Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.</p> <p>Example: Retrieve product name and threshold delta</p> <pre>URL?columns[]=product_name&amp;columns[]=threshold_delta</pre>		String
<b>computer-GroupId</b>	<p>Specify ID of the computer group for which you want to retrieve the data. If you do not specify this parameter, the data is retrieved for the computer group of the user whose token is used for authentication. If you specify the parameter, you can retrieve the data for a subgroup of this computer group.</p>		Integer

Table 249. Query parameters (continued)

Parameter	Description	Required	Value
	<p>To view IDs of computer groups, log in to BigFix Inventory and go to <b>Reports &gt; Computer Groups</b>. Then, hover of the <b>Manage Report View</b> icon , click <b>Configure View</b>, and select the ID column to display it on the report.</p> <p>Example: Retrieve data for computer group 5</p> <pre>URL?computerGroupId=5</pre>		
<b>order</b>	<p>Specify how to sort the retrieved data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by threshold delta</p> <pre>URL?order[]=threshold_delta desc</pre>		Alphanumeric
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the <b>limit</b> parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>startdate</b>	<p>Specify the date starting from which you want to retrieve the data. Specify it in the <code>YYYY-MM-DD</code> format. If you do not specify the filter, its default value is the date of the last successful import of data to BigFix Inventory minus the number of days for which data is calculated in the computer group (90 days by default).</p> <p>Example: Retrieve data starting from 14th July 2017</p> <pre>URL?startdate=2017-07-14</pre>		Date
<b>enddate</b>	<p>Specify the date until which you want to retrieve the data. Specify it in the <code>YYYY-MM-DD</code> format. If you do not specify the filter, its</p>		Date

Table 249. Query parameters (continued)

Parameter	Description	Required	Value
	<p>default value is the date of the last successful import of data to BigFix Inventory.</p> <p>Example: Retrieve data from 1st October 2017 to 31st October 2017</p> <pre>URL?startdate=2017-10-01&amp;enddate=2017-10-31</pre>		
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User icon</b>, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt;</pre>		String



**Note:** The `license_usage` REST API does not support nested filtering criteria.

Example 1: Retrieve software instances whose product name contains "BigFix" AND the threshold delta is below 0

```
URL?criteria={"and":[[ "product_name", "contains", "BigFix
"],
[ "threshold_delta", "<", "0" ] ] }
```

In case of the `threshold`, and `custom_field_number` fields, you can retrieve all entries for which the value is specified or for which it is not specified.

Table 249. Query parameters (continued)

Parameter	Description	Required	Value
	<p>Example 2: Retrieve software products for which the threshold is specified</p> <pre>URL?criteria={"and":[{"threshold","!="}]}</pre>		
	<p>Example 3: Retrieve software products for which the threshold is not specified</p> <pre>URL?criteria={"and":[{"threshold","="}]}</pre>		
	<p>If you created custom fields that use the date values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <i>&lt;operator&gt;</i>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		
	<p>Example 4: Retrieve software products for which entitlement ends within next month</p> <pre>URL?criteria={"and":[{"custom_field_1","next","P1M"]}}</pre>		
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p>		

## Example conversation - default columns

### Request

```
GET api/sam/v2/license_usage?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
Status Code: 200 OK
Content-Type: application/json
computerGroupId: 0
enddate: 2017-10-31
startdate: 2017-10-01
```

### Response body

```
[{
  "product_publisher_name": "IBM",
  "product_name": "WebSphere Service Registry and Repository",
  "metric_code_name": "PVU_FULL_CAP",
  "hwm_quantity": 480
}]
```

## Example conversation - all columns

### Request

```
GET api/sam/v2/license_usage?columns[]=product_id
&columns[]=product_name&columns[]=product_family_guid&columns[]=metric_id
&columns[]=metric_name&columns[]=metric_code_name&columns[]=hwm_quantity
&columns[]=threshold&columns[]=threshold_delta&columns[]=imported_part_numbers
&columns[]=is_reaggregation_needed&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "product_publisher_name": "IBM",
  "product_id": 29258,
  "product_name": "WebSphere Service Registry and Repository",
  "product_family_guid": "3b31a72e-468d-47bb-825a-ea26c8e85199",
  "metric_id": 3,
  "metric_code_name": "PVU_FULL_CAP",
  "metric_name": "PVU Full Capacity",
  "hwm_quantity": 480,
  "threshold": null,
  "threshold_delta": null,
  "imported_part_numbers": null,
  "is_reaggregation_needed": 0
  "bundle_name": null,
  "bundle_type": -1,
  "bundle_guid": null,
  "bundle_metric_contribution": null
}]
```

## Example conversation - additional column

### Request

```
GET api/sam/v2/license_usages?columns[]=product_name
&columns[]=metric_name&columns[]=threshold_delta
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "product_name": "WebSphere Service Registry and Repository",
  "metric_name": "PVU Full Capacity",
  "threshold_delta": 100
}]
```

## Example conversation - custom field

To retrieve data from custom fields that were added to the All Metrics report, start by viewing the [license\\_usage.json](#) schema. The schema lists all columns, including custom fields. Identify the custom field from which you want to retrieve the data.

### Request - check list of created custom fields

```
GET api/sam/v2/schemas/license_usage.json?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### Response - list of all columns, including custom fields

```
[{
  "product_name":
    {
      "type": "string",
      "description": "Name of the software product."
    },
  ...

  "custom_field_1":
    {
      "type": "date",
      "title": "Entitlement End"
    }
}]
```

After you identify the name of the custom field, you can use it in the REST API request.

**Request**

```
GET api/sam/v2/license_usages?columns[]=product_name
&columns[]=custom_field_1&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "product_name": "WebSphere Service Registry and Repository",
  "custom_field_1": "2017-10-01"
}]
```

**Example conversation - retrieving information about Cloud Pak or FlexPoint Bundle****Request**

```
GET api/sam/v2/license_usages?columns[]=product_name
&columns[]=bundle_name&columns[]=bundle_type&columns[]=bundle_metric_contribution
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&criteria={"and":[{"bundle_type","in","[0,1]"]}]
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "product_name": "IBM WebSphere Application Server Network Deployment",
  "bundle_name": "IBM Cloud Pak for Applications"
  "bundle_type": "1"
  "bundle_metric_contribution": "100"
}]
```

**Setting license metric thresholds and custom field values (v2)****9.2.10**

Available from 9.2.10. You use the `PUT` operation on the `api/sam/v2/license_usage` element to set up license metric thresholds as well as values of custom fields that were added on the All Metrics report.

**Permissions**

You must have the Manage Contracts permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/license_usage?token=token
```

## Resource information

Table 250. Resource information

Operation details	Description
HTTP method	PUT
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p> <p><b>Header</b></p> <p><code>computerGroupId</code></p> <p><b>Values</b></p> <p>Integer</p> <p>Specifies ID of the computer group for which values are changed.</p>

**Table 250. Resource information (continued)**

Operation details	Description
Response payload	n/a
Response format	application/json
Response codes	<p>200 - OK</p> <p>400 - "Bad Request" if a parameter contains errors</p> <p>401 - "Unauthorized user" if the user whose token is used for authentication is not authorized to access the data</p> <p>404 - "Not Found" if a parameter does not exist</p> <p>406 - "Not Acceptable" if the import is in progress and the values cannot be updated. For information about checking the status of the import, see: <a href="#">Running data imports (on page mdcxviii)</a>.</p>

## Schema description

To retrieve the list of all columns that are used by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/license_usage.json?token=token
```

## Query parameters

**Table 251. Query parameters**

Column	Description	Required	Type
<b>computerGroupId</b>	<p>Identifier of the computer group for which you want to update the values. If you do not specify this parameter, the values are updated for the computer group of the user whose token is used for authentication.</p> <p>To view IDs of computer groups, log in to BigFix Inventory and go to <b>Reports &gt; Computer Groups</b>. Then, hover of the <b>Manage Report View</b> icon , click <b>Configure View</b>, and select the ID column to display it on the report.</p>		
<b>bundle_id</b>	ID of the Cloud Pak or FlexPoint Bundle to which the product is assigned.	✓	Integer

Table 251. Query parameters (continued)

Column	Description	Required	Type
<b>product_id</b>	Identifier of the software product.	✓	Integer
<b>metric_id</b>	Identifier of the license metric. For the list of metric identifiers, see: <a href="#">Metric IDs and code names (on page mdlxxxv)</a> .	✓	String
<b>threshold</b>	The maximum number of metric units that the product is entitled to use within a computer group.	✓	Integer
<b>custom_field_number</b>	Custom field that was added to the All Metrics report. To view the list of all custom fields, view the <a href="#">license_usage.json schema (on page mdlxxxii)</a> .		Various



**Note:** You can change multiple values during a single request. For example, you can use a single request to set the metric threshold, set a value of one custom field, and clear the value of another custom field.

### Example conversation - setting a license metric threshold

1. To retrieve information about the identifier of the product for which you want to set the license metric threshold, use the following `GET` request. The request returns product ID and name as well as metric ID and code name.

#### Request

```
GET api/sam/v2/license_usage?columns[]=product_id&columns[]=product_name
&columns[]=metric_id&columns[]=metric_code_name&token=7adc3efb175e2bc0f4484bdd2efca54a8fa
04623
```

#### Response

```
[{
  "product_id": 29258,
  "product_name": "WebSphere Service Registry and Repository",
  "metric_id": 3,
  "metric_code_name": "PVU_FULL_CAP"
}]
```

2. To change the value of the license metric threshold, use the following `PUT` request.

A relation between the product specified by the `product_id` parameter and the license metric specified by the `metric_id` parameter must exist in the software catalog. Otherwise, the request returns an error. If the

relation does not exist in the software catalog, you can create it on the Products & Metrics panel. For more information, see: [Assigning an additional metric to a product \(on page ml\)](#).

#### Request

```
PUT api/sam/v2/license_usage?product_id=29258&metric_id=3
&threshold=300&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

#### Response

```
200 - OK
```

 **Tip:** To automate the process, you can write a script that parses the results returned by the `GET` request, iterates through these results, and updates them one by one by using the `PUT` request.

### Example conversation - setting the value of a custom field

1. To check the list of custom fields that were created on the All Metrics report, view the `license_usage.json` schema. The schema lists all columns, including custom fields. Identify the custom field for which you want to set the value.

#### Request - check the list of existing custom fields

```
GET api/sam/v2/schemas/license_usage.json?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

#### Response - list of all columns, including custom fields

```
[{
  "product_name":
    {
      "type": "string",
      "description": "Name of the software product."
    },
  ...
  "custom_field_1":
    {
      "type": "boolean",
      "title": "Requires Extension"
    }
}]
```

2. After you identify the name of the custom field, use the following `PUT` request.

#### Request

```
PUT api/sam/v2/license_usage?product_id=29258&metric_id=3&bundle_id=3496
&custom_field_1=1&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

**Response**

```
200 - OK
```

**Example conversation - clearing a license metric threshold**

1. To retrieve information about the identifier of the product for which you want to clear the license metric threshold, use the following `GET` request. The request returns product ID and name, metric ID and name, and the threshold value.

**Request**

```
GET api/sam/v2/license_usage?columns[]=product_id&columns[]=product_name
&columns[]=metric_id&columns[]=metric_name&columns[]=threshold
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

**Response**

```
[{
  "product_id": 29258,
  "product_name": "WebSphere Service Registry and Repository",
  "metric_id": 3,
  "metric_name": "PVU Full Capacity"
  "threshold": 300
}]
```

2. To clear the license metric threshold, specify an empty value in the `threshold` parameter. The same method is used for clearing values of custom fields.

**Request**

```
PUT api/sam/v2/license_usage?product_id=29258&metric_id=3
&threshold=&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

**Response**

```
200 - OK
```

**Metric IDs and code names**

**9.2.8** Available from 9.2.8. The `api/sam/v2/software_instances` and `api/sam/v2/license_usage` REST APIs return information about metric that is used by a product in the form of a unique metric ID or metric code name. Learn what is the relation between the metric ID and code name as well as what is the description of every metric.

**Table 252. Metric ID, code name, and description**

<b>Metric ID</b>	<b>Metric code name</b>	<b>Metric description</b>
10.0.12-23352	SQL_SERVER_MICROSOFT_VIRTUAL_PROCESSOR_CORES	Microsoft SQL Server Virtual Processor Cores
10.0.11-13314	SQL_SERVER_MICROSOFT_PHYSICAL_PROCESSOR_CORES	Microsoft SQL Server Physical Processor Cores
10.0.12 1285	WINDOWS_SERVER_MICROSOFT_VIRTUAL_PROCESSOR_CORES	Microsoft Windows Server Virtual Processor Core
10.0.12 26683	WINDOWS_SERVER_MICROSOFT_PHYSICAL_PROCESSOR_CORES	Microsoft Windows Server Physical Processor Core
10.0.12 30701	WINDOWS_SERVER_STANDARD_MICROSOFT_PHYSICAL_PROCESSOR_CORE	Microsoft Windows Server Standard Physical Processor Core
10.0.10-8413	FREE	Free
10.0.10 5347	MONTHLY_API_CALL	Monthly API call
10.0.9 19462	NAMED_USER	Named User
10.0.9 10808	CLIENT_ACCESS_LICENSE	Client Access License (CAL)
10.0.9-29884	MANAGEMENT_LICENSE	Management License (ML)
10.0.8-32264	MILLION_EVENT	Million Event
10.0.8-31967	PROCESS	Process
10.0.8-24028	TIERED_DECIMAL_TERABYTES	Tiered Decimal Terabyte Small
10.0.8-19454	EMPLOYEE_USER	Employee User
10.0.8-16552	CONCURRENT_CONNECTION	Concurrent Connection
10.0.8-4347	EXTERNAL_USER	External User
10.0.8 10251	RESOURCE_UNIT	Resource Unit
10.0.8 22960	GIGABITS_PER_SECOND	Gigabits per second
10.0.8 31139	INFREQUENT_USER	Infrequent User

Table 252. Metric ID, code name, and description (continued)

Metric ID	Metric code name	Metric description
10.0.7 17346	ACTIVE_CONTAINER	Active Container
-32603	CONCURRENT_USER	Concurrent User
-32470	VU_VALUE_UNIT	VU Value Unit
-32337	APPSERVER_CONNECTED	AppServer Connected
-30184	LIMITED_USE_VIRTUAL_SERVER	Limited Use Virtual Server
-29478	POPULATED_SOCKET	Populated Socket
-27870	MANAGED_SWITCH	Managed Switch
-27189	BED	Bed
-26157	SWITCH	Switch
-25214	TOKEN	Token
-24771	AUTHORIZED_USER_SINGLE_INSTALL	Authorized User Single Install
9.2.16 -24466	5000_FLOATING_USERS	5000 Floating Users
-24282	PRINTER	Printer
-23594	ESTABLISHMENT	Establishment
-21525	CURRENCY_VALUE_UNIT	Currency Value Unit
-21171	MILLION_SPEND_CONVERSION_UNITS	Million Spend Conversion Units
-18783	AUTHORIZED_USER	Authorized User
-18750	PROCESSOR	Processor
-18667	FEED	Feed
-18577	STORAGE_CAPACITY_UNIT_(101-250)	Storage Capacity Unit (101-250)
-17749	STORAGE_CAPACITY_UNIT_(751-1250)	Storage Capacity Unit (751-1250)
-16893	TEN_MONTHLY_JOBS	10 Monthly Jobs
-16798	TERABYTE	Terabyte
-16762	INSTALL_WITH_PAGES	Install with up to <number> Pages

**Table 252. Metric ID, code name, and description (continued)**

<b>Metric ID</b>	<b>Metric code name</b>	<b>Metric description</b>
-15896	RESOURCE_VALUE_UNIT	Resource Value Unit
-15529	INSTANCE	Instance
-15520	CLIENT_USER	Client User
-13938	STORE	Stores
-13494	AUTHORIZED_USER_SINGLE_SESSION	Authorized User Single Ses- sion
-13103	CLIENT_DEVICE	Client Device
-12983	TRANSACTION	Transaction
-11982	SIMULTANEOUS_SESSION	Simultaneous Session
-11743	FILE	File
-10658	TERMINAL	Terminal
-10377	HOST_SERVER	Host Server
-10210	PAGE	Page
-9208	APPLIANCE_INSTALL	Appliance Install
-8670	RACK	Rack
-8617	MILLION_OF_SERVICE_UNIT_PER_HOURS	Millions of Service Units per Hour
-8333	STORAGE_CAPACITY_UNIT_(251-500)	Storage Capacity Unit (251-500)
-8152	STORAGE_DEVICE	Storage Device
-7054	VIRTUAL_CORE_BASED	<deprecated> Microsoft Virtu- al Core with SA
-6957	TIERED_TERABYTES	Tiered Terabytes
-6399	PROCESSOR_DAY	Processor Day
-5373	TIVOLI_MANAGEMENT_POINT	Tivoli Management Point
-5368	STORAGE_CAPACITY_UNIT_(1-100)	Storage Capacity Unit (1-100)
-5256	STORAGE_CAPACITY_UNIT_(501-750)	Storage Capacity Unit (501-750)
-5048	ONE_M_ORDER_LINES	1 Million Order Lines

Table 252. Metric ID, code name, and description (continued)

Metric ID	Metric code name	Metric description
-4563	ORACLE_PROCESSORS	Oracle Processor Core
-4608	MANAGED_DEVICE	Managed Device Oracle Core Based
<b>9.2.16</b> -4050	ADDRESSABLE_DEVICE	Addressable Device
-2984	LIMITED_USE_AUTHORIZED_USER	Limited Use Authorized User
-2809	STORAGE_CAPACITY_UNIT_(2001+)	Storage Capacity Unit (2001+)
-2758	FLOATING_USER_SINGLE_SESSION_SINGLE_INSTALL	Floating User Single Session Single Install
-2583	SERVER_DEVICE	Server
-2368	CLIENT	Client
-1827	LIMITED_USE_MANAGED_SERVER	Limited Managed Server Unit
1	INTERNAL_OTHER	Unknown
3	PVU_FULL_CAP  Use this metric ID or code name to retrieve or set up thresholds of license metric utilization by using the <code>api/sam/v2/license_usage</code> REST API.	PVU Full Capacity
4	PVU_SUB_CAP  Use this metric ID or code name to retrieve or set up thresholds of license metric utilization by using the <code>api/sam/v2/license_usage</code> REST API.	PVU Subcapacity
5	INTERNAL_PVU  Use this metric ID or code name to retrieve information about the license metric that is assigned to a product by using the <code>api/sam/v2/software_instances</code> REST API.	PVU
6	INTERNAL_RVU_MAPC  Use this metric ID or code name to retrieve information about the license metric that is assigned to a product by using the <code>api/sam/v2/software_instances</code> REST API.	RVU MAPC
7	RVU_FULL_CAP	RVU MAPC Full Capacity

**Table 252. Metric ID, code name, and description (continued)**

Metric ID	Metric code name	Metric description
	Use this metric ID or code name to retrieve or set up thresholds of license metric utilization by using the <code>api/sam/v2/license_usage</code> REST API.	
8	RVU_SUB_CAP  Use this metric ID or code name to retrieve or set up thresholds of license metric utilization by using the <code>api/sam/v2/license_usage</code> REST API.	RVU MAPC Subcapacity
9	INTERNAL_INSTALL	Install Seats
10	FLEXPOINT	Flexpoint
488	TEN_AUTHORIZED_USER	10 Authorized User
526	MAILBOX	Mailbox
865	VIRTUAL_SERVER	Virtual Server
<b>9.2.16</b> 2110	500_FLOATING_USERS	500 Floating Users
2692	CONNECTOR_FOR_DEMAND_SIDE	Connector for Demand-side
3058	CONNECTION	Connection
3729	FLOATING_USER_SINGLE_INSTALL	Floating User Single Install
3774	USER_VALUE_UNIT	User Value Unit
<b>9.2.16</b> 3827	MANAGED_CONTAINER	Managed Container
5264	REGISTERED_USER	Registered User
5844	VIRTUAL_PROCESSOR_CORE	Virtual Processor Core
5856	ELIGIBLE_PARTICIPANT	Eligible Participant
6083	10_MANAGED_VIRTUAL_SERVERS	10 Managed Virtual Servers
6089	PER_TOKEN	Per Token
6420	MANAGED_VIRTUAL_NETWORK_DEVICE	Managed Virtual Network Device
<b>9.2.16</b> 6554	10000_FLOATING_USERS	10000 Floating Users
6967	APPLICATION	Application
7057	MONTHLY_MILLION_RULES_DECISIONS	Monthly Million Rules Decisions

Table 252. Metric ID, code name, and description (continued)

Metric ID	Metric code name	Metric description
7884	MILLION_SQUARE_FEET	Million Square Feet
8321	LIMITED_USE_SOCKET	Limited Use Socket
8604	INSTALL_WITH_3_AUTHORIZED_USERS	Install with 3 Authorized Users
8843	CONCURRENT_SESSION	Concurrent Session
9033	THOUSAND_ADDRESSABLE_DEVICES	Thousand Addressable Devices
10157	CONNECTOR	Connector
10310	PORT	Port
10989	APPLICATION_INSTANCE	Application Instance
11165	LINEAR_ASSET	Linear Asset
11328	USER	Users
12599	HUNDRED_THOUSAND_SQUARE_METERS	Hundred Thousand Square Meters
13557	FLOATING_USER	Floating User
14325	MONTHLY_THOUSAND_MANAGED_DECISION_ARTIFACTS	Monthly Thousand Managed Decision Artifacts
14692	SINGLE_PHYSICAL_PROCESSOR_BASED	Microsoft Single Processor
15006	FLOATING_USER_SINGLE_SESSION	Floating User Single Session
15282	DECIMAL_TERABYTE	Decimal Terabyte
16958	BASE_PROCESSOR	Base Processors
17437	SERVER_LESS_THAN_1000	Server Less Than 1000 Nodes
17502	MANAGED_CHASSIS	Managed Chassis
19131	MONTHLY_JOBS	Monthly Order Request
20170	SOCKET	Socket
20249	TICKETS	Tickets
21058	SERVER_GREATER_OR_EQUAL_TO_1000	Server Greater Or Equal to 1000 Nodes
21426	NETWORK_NODE	Network Node

**Table 252. Metric ID, code name, and description (continued)**

Metric ID	Metric code name	Metric description
9.2.16 21610	1000_FLOATING_USERS	1000 Floating Users
21704	CONNECTOR_FOR_SUPPLY_SIDE	Connector for Supply-side
21936	MANAGED_TERABYTE	Managed Terabyte
22225	STORAGE_CAPACITY_UNIT_(1251-2000)	Storage Capacity Unit (1251-2000)
22989	IDLE_STANDBY_SERVER	Idle Standby Server
23720	PHYSICAL_CORE_BASED	<deprecated> Microsoft Physical Core with SA
24179	MANAGED_CLIENT_DEVICES	Managed Client Devices
9.2.16 26571	MONTHLY_HOUR	Monthly Hour
27777	ASSET	Asset
28226	GENERAL_PURPOSE_GRAPHICS_PROCESSING_UNIT	General Purpose Graphics Proc Unit
28591	MANAGED_VIRTUAL_SERVER	Managed Virtual Server
28953	INSTALL	Install Instances
28967	MANAGED_SERVER	Managed Server
29313	ADDRESSABLE_DEVICES	Addressable Devices
31619	STG_TIER	STG Tier
31705	SERVER_WITH_ONE_PROCESSOR	Server with One Processor
31997	ADDITIONAL_PROCESSOR	Additional Processor
32455	DUAL_PHYSICAL_PROCESSOR_BASED	Microsoft Dual Processor

## REST API associations

**9.2.8** Available from 9.2.8. For REST APIs in version 2, you can use associations to retrieve additional data as part of API requests. For example, you can retrieve detailed information about computer hardware as part of the `software_instances` API request.

### Syntax

To retrieve the additional data, use the following syntax of the query:

```
<URL>?columns[ ]=<association>.<column>&token=<token>
```

Where:

- *<URL>* is the REST API request
- *<association>* is the name of the association from which you want to retrieve the column
- *<column>* is the name of the column that you want to retrieve
- *<token>* is the unique user authentication identifier

For example:

```
GET api/sam/v2/software_instances?columns[]=computer_health.catalog_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```



**Note:** Use API associations to retrieve information that cannot be obtained directly through an existing API.

## component\_cpe association

**9.2.12**

Available from 9.2.12. Use the `component_cpe` association to retrieve information about the discovered component as specified in the Common Platform Enumeration (CPE) dictionary as part of other REST API requests.

### Association

`component_cpe`

### Applicable REST APIs

You can use the `component_cpe` association with the following REST APIs:

- [/api/sam/v2/software\\_instances](#) (on page [mdxliv](#))

### Syntax

```
<URL>?columns[]=component_cpe.<column>&token=<token>
```

### Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/component_cpe.json?token=<token>
```

## Available columns

**Table 253. Columns with information about components as specified in the CPE standard**

Property	Description	Type
<b>cpe22</b>	Information about the discovered component in the CPE v2.2 format.	String
<b>cpe23</b>	Information about the discovered component in the CPE v2.3 format.	String

## Limitations

- BigFix Inventory does not support the following fields that are specified in the CPE standard: `update`, `edition`, `lang`.
- Marking of software as `o` (operating system) is automatic and might not always be accurate.
- Dots (.) and dashes (-) are not escaped as defined in the CPE standard. Otherwise, CPE information that is provided by BigFix Inventory could not be matched with the CVE data.

## computer association

### 9.2.10

Available from 9.2.10. Use the `computer` association to retrieve information about details of the computer and custom computer properties as part of REST API requests.

## Association

```
computer
```

## Applicable REST APIs

You can use the `computer` association with the following REST APIs:

- [/api/sam/raw\\_file\\_facts](#) (on page [mdcxiii](#))
- [/api/sam/unified/current/](#) (on page [mdcc](#))

## Syntax

```
<URL>?columns[ ]=computer.<column>&token=<token>
```

For example:

```
GET api/sam/raw_file_facts?columns[ ]=computer.ip_address
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request. The list contains custom computer properties that were added on the **Computer Properties** panel.

```
GET api/sam/schemas/associations/computer.json?token=<token>
```

## Available columns

**Table 254. Columns with information about computer details**

Column	Description	Type
<b>id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>remote_id</b>	Identifier of the computer as specified in the BigFix database.	Integer
<b>last_seen</b>	Date and time when the BigFix client connected to the BigFix server the last time.	String
<b>datasource_id</b>	Identifier of the BigFix server to which the computer reports.	Integer
<b>datasource_name</b>	Name of the BigFix server to which the computer reports.	String
<b>created_at</b>	Date and time when the information about the computer was imported from BigFix for the first time.	String
<b>valid_to</b>	The date and time when the computer stopped being discovered, for example because it was removed from the infrastructure, the data source was removed, or the BigFix client was uninstalled.	String
<b>os</b>	Operating system of the computer.	String
<b>dns_name</b>	Name of the computer that is specified in the Domain Name System.	String
<b>name</b>	Host name of the computer.	String
<b>ip_address</b>	IP address of the computer.	String
<b>computer_property_number</b>	Custom computer property that was added on the <b>Computer Properties</b>	String

**Table 254. Columns with information about computer details (continued)**

Column	Description	Type
	panel. To view the list of all custom properties, view the <a href="#">computer schema (on page mdxcv)</a> . The name of the property as displayed on the user interface is shown in the <code>title</code> parameter.	

## computer\_details association

**9.2.10** Available from 9.2.10. Use the `computer_details` association to retrieve information about details of the computer and custom computer properties as part of REST API requests.

### Association

```
computer_details
```

### Applicable REST APIs

You can use the `computer_details` association with the following REST APIs:

- [api/sam/v2/computers \(on page mcdxciii\)](#)

### Syntax

```
<URL>?columns[]=computer_details.<column>&token=<token>
```

For example:

```
GET api/sam/v2/software_instances?columns[]=computer_details.ip_address
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request. The list contains custom computer properties that were added on the **Computer Properties** panel.

```
GET api/sam/schemas/associations/computer_details.json?token=<token>
```

## Available columns

**Table 255. Columns with information about computer details**

Column	Description	Type
<b>id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>remote_id</b>	Identifier of the computer as specified in the BigFix database.	Integer
<b>last_seen</b>	Date and time when the BigFix client connected to the BigFix server the last time.	String
<b>datasource_id</b>	Identifier of the BigFix server to which the computer reports.	Integer
<b>datasource_name</b>	Name of the BigFix server to which the computer reports.	String
<b>created_at</b>	Date and time when the information about the computer was imported from BigFix for the first time.	String
<b>valid_to</b>	The date and time when the computer stopped being discovered, for example because it was removed from the infrastructure, the data source was removed, or the BigFix client was uninstalled.	String
<b>os</b>	Operating system of the computer.	String
<b>dns_name</b>	Name of the computer that is specified in the Domain Name System.	String
<b>name</b>	Host name of the computer.	String
<b>ip_address</b>	IP address of the computer.	String
<b>computer_property_number</b>	Custom computer property that was added on the <b>Computer Properties</b> panel. To view the list of all custom properties, view the <a href="#">computer_details schema (on page mdxcvi)</a> . The name of the property as displayed on the	String

**Table 255. Columns with information about computer details (continued)**

Column	Description	Type
	user interface is shown in the <code>title</code> parameter.	

computer\_health association

**9.2.8** Available from 9.2.8. Use the `computer_health` association to retrieve information about health of the computer, such as the status of software scans, or version of the installed BigFix client, as part of REST API requests.

### Association

```
computer_health
```

### Applicable REST APIs

You can use the `computer_health` association with the following REST APIs:

- [api/sam/v2/computers](#) (on page [mcdxciii](#))
- [api/sam/v2/software\\_instances](#) (on page [mdxliv](#))

### Syntax

```
<URL>?columns[]=computer_health.<column>&token=<token>
```

For example:

```
GET api/sam/v2/software_instances?columns[]=computer_health.catalog_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### **9.2.10** Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/computer_health.json?token=<token>
```

### Available columns

**Table 256. Columns with information about computer health**

Column	Description	Type
<code>is_subscribed</code> <b>11.0.0.0</b>	Indicates if Computer is subscribed to BigFix Inventory main site.	Boolean

Table 256. Columns with information about computer health (continued)

Column	Description	Type
<b>agent_version</b>	Version of the BigFix client that is deployed on the computer.	Numeric
<b>catalog_version</b>	Version of the BigFix-provided software catalog that is available on the computer.	Numeric
<b>catalog_custom_content_version</b>	Version of the custom software catalog that is available on the computer.	Numeric
<b>is_catalog_scan_successful</b>	Indicates whether the catalog scan was successful.	Boolean
<b>is_filesys_scan_successful</b>	Indicates whether the file system scan was successful.	Boolean
<b>is_idtag_scan_successful</b>	Indicates whether the last software tags scan was successful.	Boolean
<b>is_low_on_disk_space</b>	Indicates whether the computer has less than 100 MB of free disk space.	Boolean
<b>is_missing_prereqs</b>	Indicates whether any scanner prerequisites are missing on the computer.	Boolean
<b>is_out_of_date</b>	Indicates whether the latest version of the BigFix client is installed on the computer. For some operating systems, no newer version of the client is available.	Boolean
<b>is_out_of_sync</b>	Indicates whether the time that is set on the computer is at least an hour from the time that is set on the BigFix Inventory server.	Boolean
<b>is_package_scan_successful</b>	Indicates whether the latest package scan was successful.	Boolean
<b>last_scan_attempt</b>	Date and time when the last scan was initiated.	String

## computer\_hardware association

**9.2.8** Available from 9.2.8. Use the `computer_hardware` association to retrieve detailed hardware information as part of other REST API requests.

### Association

```
computer_hardware
```

### Applicable REST APIs

You can use the `computer_hardware` association with the following REST APIs:

- [api/sam/v2/computers](#) (on page *mcdxciii*)
- [api/sam/v2/software\\_instances](#) (on page *mdxliv*)

### Syntax

```
<URL>?columns[]=computer_hardware.<column>&token=<token>
```

For example:

```
GET api/sam/v2/software_instances?columns[]=computer_hardware.computer_type
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### 9.2.10 Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/computer_hardware.json?token=<token>
```

### Available columns

**Table 257. Columns with information about computer hardware**

Name on the Hardware Inventory report	Description	Type
<code>computer_type</code>	Computer Type. Possible values are: <ul style="list-style-type: none"> <li>• 0 - physical</li> <li>• 1- virtual</li> <li>• 2- computer running on a public cloud</li> </ul>	Numeric

Table 257. Columns with information about computer hardware (continued)

Name on the Hardware Inventory report	Description	Type
<b>shared_pool_id</b>	Identifier of IBM POWER shared processor pool.	String
<b>system_model</b>	Name of the hardware system or virtualization technology that is discovered by the BigFix client.	String
<b>cluster_name</b>	Name of the cluster to which the computer belongs.	String
<b>cluster_cores_count</b>	Number of processor cores available within the cluster to which the computer belongs.	Numeric
<b>partition_cores</b>	Number of processor cores on the partition on which the BigFix client is installed. The number does not take into account hyper-threading on the x86 architecture.	Numeric
<b>status</b>	<p>Status of the computer. Possible values are:</p> <ul style="list-style-type: none"> <li>• 1 - OK</li> <li>• 2 - No Scan Data</li> <li>• 3 - No Host Scan Data</li> <li>• 4 - No VM Manager Data</li> <li>• <b>9.2.10</b> 5 - Outdated VM Manager Data</li> </ul>	String
<b>server_id</b>	Internal identifier of the physical server that hosts a computer. In case of a virtual machine that is not fully defined, the ID is a placeholder for a physical server and it changes when you complete defining the virtual machine.	Numeric
<b>server_name</b>	A unique system in the infrastructure. For a physical machine, it is the hardware manufacturer, type, and a ma-	String

Table 257. Columns with information about computer hardware (continued)

Name on the Hardware Inventory report	Description	Type
	<p>chine serial number. For a virtual machine, it is the manufacturer and host name. For a virtual machine with an incomplete definition, it is a UUID that is prefixed with <code>TLM_VM_</code>.</p> <p>You can specify the data that is returned by this property by configuring the following advanced server settings: <b>managedServerTagTemplate</b> and <b>standaloneServerTagTemplate</b>. For more information, see: <a href="#">Configuring advanced server settings (on page dcccxlx)</a>.</p>	
<b>9.2.16</b> <code>server_serial_number</code>	A serial number of a physical server. In case of a virtual machine that is not fully defined, the Server Serial Number is a UUID that is prefixed with <code>TLM_VM_</code> .	Numeric
<b>9.2.16</b> <code>server_type</code>	A type of a physical server.	String
<b>9.2.16</b> <code>server_vendor</code>	A type of a physical server.	String
<b>9.2.16</b> <code>server_model</code>	A type of a physical server.	String
<code>node_total_processors</code>	Number of active sockets on the physical server for placing CPU units.	Numeric
<code>server_cores</code>	Number of active physical processor cores on the physical server.	Numeric
<code>server_id</code>	Identifier of the server.	
<code>pvu_per_core</code>	Number of PVUs that are assigned to a processor core on the computer. By default, the value is taken from the PVU table.	Numeric
<code>default_pvu_value</code>	Indicates whether a default number of processor value units is assigned to the computer.	Boolean

Table 257. Columns with information about computer hardware (continued)

Name on the Hardware Inventory report	Description	Type
10.0.0 parent_hostname	Hostname of the parent computer, if available. The value is null if the parent computer is not available.	String
10.0.9 platform	<p>Hardware architecture. Possible values are:</p> <ul style="list-style-type: none"> <li>• x86 platforms that are available on Windows, Linux, and SUN: <ul style="list-style-type: none"> <li>◦ IA32ONWIN64</li> <li>◦ AMD64</li> <li>◦ amd64</li> <li>◦ x86</li> <li>◦ i386</li> <li>◦ i586</li> <li>◦ i686</li> <li>◦ x86_64</li> </ul> </li> <li>• Power platforms that are available on AIX, IBM i, and Linux: <ul style="list-style-type: none"> <li>◦ ppc</li> <li>◦ ppc64</li> <li>◦ ppc64le</li> <li>◦ PowerPC</li> <li>◦ PowerPC64</li> </ul> </li> <li>• PA-RISC platform that is available on HP-UX: <ul style="list-style-type: none"> <li>◦ PA-RISC</li> </ul> </li> <li>• IA-64 platform that is available on HP-UX: <ul style="list-style-type: none"> <li>◦ ia64</li> </ul> </li> <li>• IBM Z platforms that are available on Linux <ul style="list-style-type: none"> <li>◦ s390</li> <li>◦ s390x</li> </ul> </li> </ul>	String

**Table 257. Columns with information about computer hardware (continued)**

Name on the Hardware Inventory report	Description	Type
	<ul style="list-style-type: none"> <li>• SPARC platform that is available on Solaris:               <ul style="list-style-type: none"> <li>◦ sparcv9</li> </ul> </li> </ul> <p>The list might change with time because the REST API stores the same value that is returned by the operating system.</p>	

The following properties identify the Current Physical Server Processor. In case of a virtual machine that is not fully defined, the information is gathered on VM level.

**Table 258. Columns with properties that identify the Current Physical Server Processor**

Property	Name on the Hardware Inventory report	Description	Type
<b>processor_brand_string</b>	Processor Brand String	Full specification of the processor including its brand, model and speed as read from the computer operating system.	String
<b>processor_brand</b>	Brand	Brand of the processor that was matched in the PVU table. If the brand is "Other", the processor is not listed in the PVU table.	String
<b>processor_model</b>	Model	Model of the processor.	String
<b>processor_type</b>	Type	Type of the processor according to the number of cores.	String
<b>processor_vendor</b>	Vendor	Vendor of the processor.	String

## cve association

**9.2.13** Available from 9.2.13. Use the `cve` association to retrieve information about Common Vulnerabilities and Exposures (CVEs) that were matched with a particular component through its detailed version as part of other REST API requests.

## Association

cve

## Applicable REST APIs

You can use the `cve` association with the following REST API:

- [/api/sam/v2/software\\_instances](#) (on page [mdxliv](#))

## Syntax

```
<URL>?columns[ ]=cve.<column>&token=<token>
```

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/cve.json?token=<token>
```

## Available columns

Table 259. Columns with information about CVEs

Property	Description	Type
<b>name</b>	A unique identifier of the vulnerability as assigned in the National Vulnerability Database.	String
<b>base_severity</b>	Severity of the CVE. Possible values: <ul style="list-style-type: none"> <li>• 0 - None</li> <li>• 1 - Low</li> <li>• 2 - Medium</li> <li>• 3 - High</li> <li>• 4 - Critical</li> </ul>	Integer
<b>base_score</b>	Base score of the CVE that represents innate characteristics of the vulnerability. It maps to the severity of the CVE. For example, base score in range between 0.1 and 3.9 is an equivalent of low severity in CVSS v3.0. For more information, see: <a href="#">Vulnerability Metrics</a> .	Float

**Table 259. Columns with information about CVEs (continued)**

Property	Description	Type
<b>vector_string</b>	Vector string of the CVE in the CVSS system. It is a textual representation of metric values that are used to score the vulnerability.	String
<b>exploitability_score</b>	Exploitability sub-score of the CVE that represent the ease and technical means by which the vulnerability can be exploited.	Float
<b>impact_score</b>	Impact sub-score of the CVE that indicates how important will be the consequences if the vulnerability is exploited.	Float
<b>source_version</b>	Version of CVSS that is used as the source of information about the severity and metrics of the CVE. Possible values: <ul style="list-style-type: none"> <li>• 2 - CVSS v2.0</li> <li>• 3 - CVSS v3.0</li> </ul>	Integer
<b>publish_date</b>	The date and time when the CVE was published in the National Vulnerability Database.	String
<b>modified_date</b>	The date and time when the CVE was last modified in the National Vulnerability Database.	String
<b>description</b>	Description of the CVE details.	String

### Sorting and filtering



**Note:** It is not recommended to filter information by more than two CVE properties at a time because of the high consumption of database resources.

- When you filter REST API responses by any CVE property, the filter shows all components that meet the specified criteria by searching through the full list of CVEs of each reported component.
- CVEs that are returned for a single component are sorted by the **base\_score** value.
- REST API responses cannot be sorted by columns from the `cve` association because the association returns multiple CVEs for each component.

## discovery\_details association

**9.2.11** Available from 9.2.11. Use the `discovery_details` association to retrieve details of a file that caused component discovery as part of a REST API request. The details include the name and size of the file as well as the path under which it was found.

### Association

```
discovery_details
```

### Applicable REST APIs

You can use the `discovery_details` association with the [api/sam/v2/software\\_instances](#) (on page *mdxliv*) REST API.

### Syntax

```
<URL>?columns[]=discovery_details.<column>&token=<token>
```

For example:

```
GET
api/sam/v2/software_instances?columns[]=discovery_details.discovery_path&token=7adc3efb175e2bc0f4484bdd2efca
54a8fa04623
```

### Available columns

**Table 260. Columns with information about file that caused component discovery**

Property	Description	Type
<b>discovery_path</b>	Path to the file that caused component discovery.	String
<b>file_name</b>	Name of the file that caused component discovery.	String
<b>file_size</b>	Size of the file that caused component discovery.	String

## designated\_computer association

**9.2.12**

Available from 9.2.12. Use the `designated_computer` association to retrieve information about computers that were designated to scan shared disks as part of other REST API requests.

### Association

`designated_computer`

### Applicable REST APIs

You can use the `designated_computer` association with the following REST APIs:

- [api/sam/v2/shared\\_disks](#) (on page [mcdxcix](#))

### Syntax

```
<URL>?columns[]=designated_computer.<column>&token=<token>
```

For example:

```
GET api/sam/v2/shared_disks?columns[]=designated_computer.ip_address
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/designated_computer.json?token=<token>
```

### Available columns

**Table 261. Columns with information about computer hardware**

Property	Description	Type
<b>id</b>	Identifier of the computer that was designated by BigFix Inventory to scan the shared disk as specified in the BigFix Inventory database.	Integer
<b>remote_id</b>	Identifier of the computer that was designated by BigFix Inventory to scan the shared disk as specified in the BigFix database.	Integer
<b>last_seen</b>	Date and time when the computer reported to BigFix for the last time.	String

**Table 261. Columns with information about computer hardware (continued)**

Property	Description	Type
	The time is specified in the GMT time zone.	
<b>datasource_id</b>	Identifier of the BigFix server to which the computer reports.	Integer
<b>datasource_name</b>	Name of the BigFix server to which the computer reports.	String
<b>created_at</b>	Date and time when the information about the computer was imported from BigFix for the first time.	String
<b>valid_to</b>	The date and time when the computer stopped being discovered, for example because it was removed from the infrastructure, the data source was removed, or the BigFix client was uninstalled.	String
<b>os</b>	Operating system of the computer.	String
<b>dns_name</b>	Name of the computer that is specified in the Domain Name System.	String
<b>name</b>	Host name of the computer.	String
<b>ip_address</b>	IP address of the computer.	String

mounted\_shared\_disks association

**9.2.12** Available from 9.2.12. Use the `mounted_shared_disks` association to retrieve information about shared disks that are mounted on each computer as part of other REST API requests.

## Association

`mounted_shared_disks`

## Applicable REST APIs

You can use the `mounted_shared_disks` association with the following REST APIs:

- [api/sam/v2/computers](#) (on page [mcdxciii](#))

## Syntax

```
<URL>?columns[]=mounted_shared_disks.<column>&token=<token>
```

For example:

```
GET api/sam/v2/computers?columns[]=mounted_shared_disks.mount_point
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/mounted_shared_disks.json?token=<token>
```

## Available columns

**Table 262. Columns with information about computer hardware**

Property	Description	Type
<b>shared_disk_id</b>	Identifier of the shared disk that is mounted on the computer.	Integer
<b>mount_point</b>	Directory in which the shared disk is mounted.	String
<b>exported_directory</b>	Exported directory of the shared disk.	String

release\_component\_lifecycle association

**9.2.13** Available from 9.2.13. Use the `release_component_lifecycle` association to retrieve information about when a component reaches its end of support as part of other REST API requests.

## Association

`release_component_lifecycle`

## Applicable REST APIs

You can use the `release_component_lifecycle` association with the following REST API:

- [/api/sam/v2/software\\_instances](#) (on page [mdxliv](#))

## Syntax

```
<URL>?columns[]=release_component_lifecycle.<column>&token=<token>
```

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/release_component_lifecycle.json?token=<token>
```

## Available columns

**Table 263. Columns with information about when a component reaches its end of support**

Property	Description	Type
<b>source_type</b>	Indicates whether the end of support date is predefined or was set by a user. Possible values: <ul style="list-style-type: none"> <li>• 0 - Set by a user</li> <li>• 1 - Predefined</li> </ul>	Integer
<b>eos_date</b>	Date when the component reaches its end of support.	String
<b>updated_at</b>	Date and time when the end of support date was last modified.	String

## shared\_disk\_members association

### 9.2.12

Available from 9.2.12. Use the `shared_disk_members` association to retrieve information about computers on which shared disks are mounted as part of other REST API requests.

## Association

`shared_disk_members`

## Applicable REST APIs

You can use the `shared_disk_members` association with the following REST APIs:

- [api/sam/v2/shared\\_disks](#) (on page [mcdxcix](#))

## Syntax

```
<URL>?columns[]=shared_disk_members.<column>&token=<token>
```

For example:

```
GET api/sam/v2/shared_disks?columns[]=shared_disk_members.mount_point
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/shared_disk_members.json?token=<token>
```

## Available columns

**Table 264. Columns with information about computer hardware**

Property	Description	Type
<b>computer_id</b>	Identifier of the computer on which the shared disk is mounted.	Integer
<b>mount_point</b>	Directory in which the shared disk is mounted.	String

## tags association

**9.2.14** Available from 9.2.14. Use the `tags` association to retrieve information about tags as part of other REST API requests.

## Association

`tags`

## Applicable REST APIs

You can use the `tags` association with the following REST APIs:

- [/api/sam/v2/software\\_instances](#) (on page [mdxliv](#))

### Syntax:

```
<URL>?columns[]=component_tags.<column>&token=<token>
```

```
<URL>?columns[]=instance_tags.<column>&token=<token>
```

- [/api/sam/v2/software\\_components](#) (on page [mdlxv](#))

### Syntax:

```
<URL>?columns[]=tags.<column>&token=<token>
```

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/tag.json?token=<token>
```

## Available columns

**Table 265. Columns with information about components as specified in the CPE standard**

Property	Description	Type
<b>ID</b>	Information about the unique identifier of a tag.	Integer
<b>name</b>	Name of a tag.	String

usage\_data association

**9.2.8** Available from 9.2.8. Use the `usage_data` association to retrieve information about application usage as part of other REST API requests.

## Association

```
usage_data
```

## Applicable REST APIs

You can use the `usage_data` association with the `api/sam/v2/software_instances` ([on page mdxliv](#)) REST API.

## Syntax

```
<URL>?columns[]=usage_data.<column>&token=<token>
```

For example:

```
GET api/sam/v2/software_instances?columns[]=usage_data.has_usage
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

## 9.2.10 Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request.

```
GET api/sam/schemas/associations/usage_data.json?token=<token>
```

## Available columns

**Table 266. Columns with information about usage**

Column	Description	Type
<b>avg_run_time</b>	Average amount of time during which a process or software was used. It is calculated by dividing the total run time by the number of total runs.	String
<b>avg_runs_per_day</b>	Average number of times a process or software item is started per day.	Numeric
<b>first_used</b>	Date and time when the information about the process was first collected by the BigFix client.	String
<b>has_usage</b>	Indicates whether a usage signature exists for the particular software.	Boolean
<b>last_used</b>	Date and time when the software item was last used or a process was last run.	String
<b>process</b>	Name of the process on which the calculation of software usage is based.	String
<b>total_runs</b>	Number of times a software item or process was started.	Numeric
<b>total_time</b>	Indicates how long the software item or process was running.	String

## Computer group association

**10.0.6** Use the `computer_group` association to retrieve information about computer group associated to the contracts.

### Syntax

```
<URL>?columns[ ]=computer_group.<column>&token=<token>
```

## Available columns

Column name	Description	Displayed by default	Type
<b>ID</b>	Identifier of the computer group.	✓	Integer
<b>name</b>	Name of the computer group.	✓	String

## Metric association

**10.0.6** Use the `metric` association to retrieve information about metric associated to the contracts.

### Syntax

```
<URL>?columns[]=metric.<column>&token=<token>
```

## Available columns

Column name	Description	Displayed by default	Type
<b>ID</b>	Identifier of the metric.	✓	String
<b>code_name</b>	Code name of the metric.	✓	Integer
<b>display_name</b>	Display name of the metric		String

## Purchase orders association

**10.0.6** Use the `purchase_orders` association to retrieve information about purchase orders associated to the contracts.

### Syntax

```
<URL>?columns[]=purchase_orders.<column>&token=<token>
```

## Available columns

Column name	Description	Displayed by default	Type
<b>purchase_number</b>	Identifier of a purchase order. Purchase numbers must be unique for a given contract. For the existing contracts, uniqueness of	✓	String

Column name	Description	Displayed by default	Type
	<p>this value is enforced when editing a contract.</p> <p>Allowed format is "YYYY-MM-DD", for example "2019-01-31". Value "9999-12-31" in REST API represents "Never".</p> <p>A special value ELA (Enterprise License Agreement) for purchase order value is added. It means unlimited number of licenses for a given entitlement period.</p>		
<b>document_link</b>	Document link of the purchase order. This value is optional.		String
<b>vendor</b>	Vendor of the purchase order. This value is optional.		String
<b>quantity</b>	Value of the purchase order. -1 means ELA and positive integer means a quantity of the purchase order.	√	Integer
<b>entitlement_start</b>	<p>Entitlement start date of the purchase order.</p> <p> <b>Note:</b> The allowed format is "YYYY-MM-DD", for example "2019-01-31". Value "9999-12-31" in REST API represents "Never" on UI.</p>	√	String
<b>entitlement_end</b>	Entitlement end date of the purchase order. This value is optional.	√	String

Column name	Description	Displayed by default	Type
	 <b>Note:</b> Allowed format is "YYYY-MM-DD", for example, "2019-03-31". Value "9999-12-31" in REST API represents "Never" on UI.		

## Software products association

**10.0.6** Use the `software_products` association to retrieve information about software products associated to the contracts.

### Syntax

```
<URL>?columns[ ]=software_products.<column>&token=<token>
```

### Available columns

Column name	Description	Displayed by default	Type
<b>name</b>	Name of the software products.	✓	String
<b>publisher_name</b>	Name of the publisher of the software products.	✓	String

## REST API for retrieving raw scan results

**9.2.2** Available from 9.2.2. Retrieving raw scan results through REST API is intended to improve the monitoring of your environment by allowing you to quickly discover software that was installed or modified recently. By using shortened data imports, data about your software reaches the server much quicker, and at the same time allows you to increase the number of imports that you can run each day.

A data import consists of several steps, out of which the most important ones are the retrieval of raw scan results, aggregation of this data, and finally calculation of your license consumption. In big environments, a complete data import can take up to several hours, which increases the time that is required for BigFix Inventory to show information about recent changes.

When using REST API to retrieve raw scan results, you can run a Raw Data Only type of data import that retrieves raw scan results, but omits later steps, such as aggregation and license calculations. This data import is much shorter, but the imported raw data can only be retrieved through REST API. Since the data is not aggregated, it is not displayed

in the BigFix Inventory UI. The UI still shows the state of your environment from the last successful complete data import.

## Running data imports

**9.2.2** Available from 9.2.2. You can use this REST API to check the status of a data import, or to run a *Raw Data Only*, or a *Complete* data import. All these actions are completed through a common API request. You distinguish between them by appending the request with specific parameters. To work with this API, you use the `GET` operation on the `api/import_status.json` element, or its alias `api/management/imports.json`.

### Before you begin



You must have the Manage Imports permission to perform this task.

### Checking the import status

Before you start running data imports, retrieve the status of a data import to ensure that no imports are currently in progress. The statuses that can be retrieved are explained in [Example HTTP conversation \(on page mdcxxii\)](#). To check the import status, use the following request:

```
https://hostname:port/api/import_status.json?token=token
```

### Running a Raw Data Only import

Running a *Raw Data Only* import is much quicker, because it only retrieves raw scan results. This type of data import is used for retrieving raw scan results through REST API. A *Raw Data Only* data import includes the following steps of the import process:

- Initialization of models:

```
Calling Model.before_snapshot
```

- Initialization of each data source:

```
Initialize datasource #{datasource.name}
```

- Computer data:

```
RawComputerId
Computer
ComputerPropertyValue
ComputerDimension
```

- Computer-related files:

```
RawDatasourceFile
DatasourceFile
SAM::ScanFile
```

- Scanned file, package, UNIX package, and application usage data:

```
SAM::FileFactDelta
SAM::FileFact
SAM::RawPackageFact
SAM::PackageFact
SAM::RawUnixPackageFact
SAM::UnixPackageFact
SAM::RawAppUsagePropertyValue
SAM::AppUsagePropertyValue
```

To start importing your raw data, append the API request with the **run** parameter, and specify the value as *raw\_only*:

```
https://hostname:port/api/import_status.json?token=token&run=raw_only
```



**Note:** After running a *Raw Data Only* data import, the raw data can be retrieved through REST API, but is not visible in the UI. The UI still shows the state of your environment from the last successful data import. The only exception is the Metering Data report that shows the most recent data even after a raw only data import. For more details, see [Importing raw scan data](#)

## Running a complete data import

Running a *Complete* import through REST API has the same effect as running the data import from the UI. To start importing your data, append the API request with the **run** parameter, and specify the value as *Complete*:

```
https://hostname:port/api/import_status.json?token=token&run=complete
```

## Operation descriptions



**Note:** Each API request must be authenticated with the token parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.

**Table 267. Operation descriptions**

Operation details	Description
<b>Operation</b>	GET /api/import_status.json, Or GET /api/management/imports.json
<b>Purpose</b>	Returns the status of the data import
<b>HTTP method</b>	GET

Table 267. Operation descriptions (continued)

Operation details	Description
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/import_status.json</code> , or <code>https://server_host_name:port_number/api/management/imports.json</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	n/a
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...;</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Import status</code> element
<b>Response</b> <code>Content-Type</code>	<code>application/json</code>

Table 267. Operation descriptions (continued)

Operation details	Description
<b>Normal HTTP response codes</b>	
	200 - OK
<b>Error HTTP response codes</b>	
	500 - "Bad Request" if a query parameter contains errors or is missing
	Message body includes an error message with details.

### Query parameters

You can use query parameters to narrow down the results of your search or perform extra actions. The following table presents query parameters that you can use for the `api/import_status.json` and `api/management/imports.json` elements.

Table 268. Query parameters for running a data import and retrieving its status

The table consists of four columns and nine rows.

Parameter	Description	Required	Value
<b>format</b>	Specifies the format of the retrieved information. The possible values are <code>json</code> or <code>xml</code> .  Retrieve information in the <code>json</code> format: <pre>URL?format=json</pre>	No	String
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric
<b>run</b>	Specifies the type of a data import to run. The possible values are: <ul style="list-style-type: none"> <li><code>complete</code> - runs a Complete data import</li> <li><code>raw_only</code> - runs a Raw Data Only import that retrieves raw scan results. The data is not aggregated and therefore not shown in the UI. You can only retrieve it through REST API.</li> </ul>	No	String

## Example HTTP conversation

### Request

```
GET api/import_status.json
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

If a data import has never been initiated:

```
{
  "mode": "none",
  "can_run_imports": true,
  "import_status_url": "/import_status",
  "import_create_url": "/management/imports",
}
```

If a data import is in progress:

```
{
  "mode": "running",
  "can_run_imports": true,
  "import_status_url": "/import_status",
  "import_create_url": "/management/imports",
  "progress": 59
}
```

If a data import is not running:

```
{
  "mode": "idle"/"pending",
  "can_run_imports": true,
  "import_status_url": "/import_status",
  "import_create_url": "/management/imports",
  "last_status": successful,
  "last_success_time": "2015-06-18T04:00:29Z"
  "last_import_time": "2015-06-18T04:00:29Z",
}
```

```

"last_import_type": "raw_only"
"next_import_time": "2015-06-20T06:00:00Z",
"next_import_time_in": 75057,
"next_import_type": "complete"
}

```

Where:

- `mode` - status of the data import, it can assume the following values:
  - `none` - a data import has never been initiated
  - `idle` - no data imports are currently running
  - `running` - a data import is in progress
  - `pending` - an action performed in the user interface requires a data import to be started for the change to take effect
- `can_run_imports` - specifies whether the user retrieving this API can run imports,
- `import_status_url` - web address of this API,
- `import_create_url` - web address of the data imports panel in BigFix Inventory,
- `progress` - percentage status of the running import,
- `last_status` - status of the last import,
- `last_success_time` - time of the last successful import,
- `last_import_time` - time of the last import,
- `last_import_type` - type of the last import,
- `next_import_time` - time of the next scheduled data import,
- `next_import_time_in` - remaining time (in seconds) to the next scheduled data import,
- `next_import_type` - type of the next scheduled data import.

## Retrieving raw scanned file data

**9.2.2** Available from 9.2.2. You use the `GET` operation on the `/api/sam/raw_file_facts` element to retrieve information about all files discovered on the computers in your infrastructure. The API returns details of existing files as well as historical data about files that were removed. By default, raw data is preserved for 7 days. To change this period, go to **Management > Advanced Server Settings** and change the value of the `raw_data_api_history_keep_days` parameter.

### Note



To obtain information about detected software use `api/sam/v2/software_instances` API.

### Before you begin

#### Use limit parameter when previewing API output

When you use `/api/sam/raw_file_facts` API for test purpose, append the `limit` parameter to achieve faster response time. First 100 records should be sufficient to have a view on the data available.

```
https://hostname:port/api/sam/raw_file_facts?token=token&limit=100
```

## Permissions



You must have the View Raw Data permission to perform this task.

## Resource URL

```
https://hostname:port/api/sam/raw_file_facts?token=token
```

## Resource information

**Table 269. Resource information**

*The table consists of two columns and 6 rows.*

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <hr/> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p>

**Table 269. Resource information**

The table consists of two columns and 6 rows.

(continued)

Operation details	Description
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
Response payload	File Fact element
Response format	application/json
Response codes	200 - OK 500 - "Bad Request" if a query parameter contains errors or is missing

### 9.2.10 Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/schemas/raw_file_fact.json?token=token
```

### Available columns

**Table 270. Columns with information about scanned files**

Column	Description	Displayed by default	Type
<b>computer_id</b>	Identifier of the computer on which the file was discovered.	✓	String
<b>path</b>	Path where the file was discovered.	✓	String
<b>name</b>	Name of the discovered file.	✓	String
<b>size</b>	Size of the discovered file.	✓	Integer
<b>version</b>	Version of the discovered file if available.	✓	String
<b>md5</b>	MD5 checksum of the file.	✓	String
<b>sha256</b>	SHA256 checksum of the file.	✓	String
<b>valid_from</b>	Date of the first import that contained information about the file.	✓	String

**Table 270. Columns with information about scanned files (continued)**

Column	Description	Displayed by default	Type
<b>valid_to</b>	Date of the first import that did not include information about the file. The value <code>9999-12-31T23:59:59Z</code> indicates that the file is still being discovered.	✓	String
<b>10.0.1 win_hdr_-product_name</b>	Name of the product with which the file is distributed.		String
<b>10.0.1 win_hdr_-copyright</b>	Copyright notices that apply to the file.		String
<b>10.0.1 win_hdr_-product_version</b>	Version of the product with which the file is distributed.		String
<b>10.0.1 win_hdr_-description</b>	Description of the file.		String
<b>10.0.1 win_hdr_-company</b>	Company that produced the file.		String
<b>10.0.1 win_hdr_-trademarks</b>	Trademarks and registered trademarks that apply to the file.		String

Columns starting with 'win\_hdr\_' require enablement. For details, refer to [Enabling the collection of additional properties of Windows executables \(on page mdcxxx\)](#).

### Applicable associations

You can additionally retrieve data from the following associations:

- [computer](#) (on page mdxciv)

### Query parameters

**Table 271. Query parameters**

*The table consists of four columns and nine rows.*

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the name and size of a file:		String

Table 271. Query parameters

The table consists of four columns and nine rows.

(continued)

Parameter	Description	Required	Value
	<code>URL?columns[]=name&amp;columns[]=size</code>		
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by name</p> <pre>URL?order[]=name desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved. For BigFix Inventory versions up to 10.0.1, if you omit the 'limit' parameter, 100 000 rows are retrieved. The number is defined at <a href="#">raw_data_api_default_limit (on page dccclxii)</a> on the <b>Advanced Server Settings</b> panel.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> Parameter <code>raw_data_api_default_limit</code> has been removed since BigFix Inventory version 10.0.2.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the <b>limit</b> parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150:</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the <b>User</b> icon , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;</pre>		

**Table 271. Query parameters**

The table consists of four columns and nine rows.

(continued)

Parameter	Description	Required	Value
	<pre>&lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: Retrieve scanned file data from computer systems with ID greater than 10:</p> <pre>URL?criteria={ "and": [ [ "computer_id", "&gt;", "10" ] ] }</pre> <p>For columns that use the date and time values, such as Last Seen, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p> <p>Example: Retrieve information from computers that were first reported in BigFix Inventory within last 7 days</p> <pre>URL?criteria={"and":[[ "valid_from", "last", "P7D" ] ] }</pre>		

### Example conversation - default columns

#### Request

```
GET api/sam/raw_file_facts
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```

{
  "computer_id": 5,
  "path": "C:\\BES\\BESAirgapTool",
  "name": "BESAirgapTool.exe",
  "size": 92174,
  "version": null,
  "valid_from": "2015-07-31T07:03:21Z"
  "valid_to": "9999-12-31T23:59:59Z"
}
{
  "computer_id": 5,
  "path": "C:/Program Files/ibm/SQLLIB/BIN",
  "name": "db2set.exe",
  "size": 81768,
  "version": "10.1",
  "valid_from": "2015-07-31T07:03:21Z",
  "valid_to": "9999-12-31T23:59:59Z"
}

```

## Example conversation - additional Windows parameters

### Request

```

GET api/sam/raw_file_facts
?columns[]=win_hdr_product_name
&columns[]=win_hdr_copyright
&columns[]=win_hdr_product_version
&columns[]=win_hdr_description
&columns[]=win_hdr_company
&columns[]=win_hdr_trademarks
&criteria=
{"and":[{"win_hdr_copyright","!=",""]}
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US

```

### Response

```

{
  "win_hdr_product_name": "Microsoft (R) Visual Studio (R) 2010",
  "win_hdr_copyright": "Ac Microsoft Corporation. All rights reserved.",
  "win_hdr_product_version": "10.0.40219.1",
  "win_hdr_description": "WebDev.WebServer40.exe",

```

```
"win_hdr_company": "Microsoft Corporation",  
"win_hdr_trademarks": ""  
}
```

## Enabling collection of additional properties of Windows executables

**10.0.1** Available from BigFix Inventory 10.0.1. You can enable the collection of additional properties of Windows executables by running a fixlet. The fixlet changes the configuration of the software scan for BigFix Inventory. When you choose to collect these properties and run the fixlet against a chosen endpoint, the software scan can recognize that additional data must be collected from an endpoint. If you choose to revert this setting, you need to run the fixlet again with collection checkbox disabled.

- Upgrade BigFix Inventory server to version 10.0.1 or higher.
- Upgrade the scanner to HCL Scanner using "Install or Upgrade Scanner" fixlet. Upgrade to this scanner is available only if BigFix Inventory is the only exploiter of the scanner. Alternatively, you can use "[Install or Upgrade Scanner in private mode on Windows \(on page dcix\)](#)" fixlet.
- If you upgrade BigFix Inventory from previous version, stop all *Initiate Software Scan* actions, and re-run the software scan for your endpoints. Post upgrade, BigFix Inventory collects additional information and hence the scan must be restarted.



**Important:** This setting must not be enabled for more than 50 000 endpoints.

Perform a test activation on a small group of computers (up to 1000 endpoints) and check its impact on the BigFix Inventory data import. Once you import data for first group, move to the next group. A single group should not have more than 10000 endpoints. If you import data for more or all endpoints at once it would extend significantly duration of Data Import. This activation process is applicable for enabling the collection for the first time as well as all subsequent changes. It is also applicable for disabling the collection.

### Impact of enabling data collection

The time taken for initial data import for each 10 000 endpoints after enabling the collection, might be three times longer than usual. For DB2 database, the transaction log usage during data import may increase by 80GB. The time taken for subsequent imports in an environment with 50 000 endpoints will be 25% longer than usual.

If you enable data collection import for DB2 and SQL Server databases, the disc consumption in BigFix Inventory may increase by 25%.

Additional properties are gathered during the software scan and the results are stored on the endpoint. For an average endpoint with 3000 discovered files, an additional 0.5 MB of disk space might be consumed. The additional data is compressed and transferred to BigFix server. So, the disc utilization increases by 1GB for an environment of 50 000 endpoints.

1. Log in to the BigFix console.
2. In the navigation bar, click **Sites > External Sites > BigFix Inventory 10 > Fixlets and Tasks**.
3. In the upper right pane, select **Configure Collection of Additional Properties of Windows Executables**.

Name	ID	Source Release Date	Source Severity	Site	Applicable Co...	Open Action C...	Category
(Deprecated) Manually Adjust the P/PU per Core Value	201	12/17/2019	Medium	BigFix Inventory...	0 / 7	0	Troubleshooting
(Deprecated) Map LMT/TA040 7.x Agents	61	12/17/2019	Low	BigFix Inventory...	0 / 7	0	Migration
Add Excluded Directories (10.0.1.0)	63	12/17/2019	Low	BigFix Inventory...	6 / 7	0	Scan Manage...
Add Targeting Exception to Temporarily Disable Scan...	30	12/17/2019	Low	BigFix Inventory...	7 / 7	0	Configuration
Analyze the Relevance of a Fixlet or Task (10.0.1.0)	15	12/17/2019	<N/A>	BigFix Inventory...	7 / 7	0	Troubleshooting
Change Scanner Cache Folder (10.0.1.0)	6	3/4/2020	Low	BigFix Inventory...	5 / 7	0	Scanner
Collect Detailed Hardware Information (10.0.1.0)	36	4/14/2020	Medium	BigFix Inventory...	6 / 7	0	Scanner
<b>Configure Collection of Additional Properties of Windows Executables (10.0.1.0)</b>	<b>110</b>	<b>12/17/2019</b>	<b>Low</b>	<b>BigFix Inventory...</b>	<b>7 / 7</b>	<b>0</b>	<b>Troubleshooting</b>
Configure File Checksums Collection (MD5/SHA-256...	66	5/27/2020	Low	BigFix Inventory...	1 / 7	0	Scan Manage...
Configure Scan Cache (10.0.1.0)	17	3/4/2020	Low	BigFix Inventory...	5 / 7	0	Scanner
Configure Scanner Query Timeout (10.0.1.0)	16	12/17/2019	Low	BigFix Inventory...	6 / 7	0	Scanner
Create Capacity Configuration for Linux on z Systems...	93	12/17/2019	High	BigFix Inventory...	0 / 7	0	Configuration
Delete Capacity Configuration for Linux on z Systems...	95	12/17/2019	Low	BigFix Inventory...	0 / 7	0	Configuration
Disable Application Usage Statistics (10.0.1.0)	28	12/17/2019	Low	BigFix Inventory...	7 / 7	0	Configuration

4. Enable **Collect additional properties of Windows executables** checkbox.
5. Click **Take Actions**.

**Task: Configure Collection of Additional Properties of Windows Executables (10.0.1.0)**

Take Action | Edit | Copy | Export | Hide Locally | Hide Globally | Remove

Description | Details | Applicable Computers (4) | Action History (10)

**Description**

This task configures the collection of additional properties of Windows executables and is intended for **advanced scenarios only**. This data is collected during the file system scan. For more information and requirements, see [Collecting Additional Properties of Windows Executables](#).

**NOTE:** This setting should not be enabled on more than 50,000 endpoints.

**Before you begin**

1. [Install or Upgrade Scanner \(10.0.1.0\)](#) to version 9.2.19.1000. Upgrade to this version is available only if BigFix Inventory is the only exploiter of the scanner (see Exploiters property of [Scanner Information](#) analysis).
2. [Initiate Software Scan \(10.0.1.0\)](#) from the updated Fixlet with version 10.0.1.0, or higher.
3. Use [Upgrade to the latest version of BigFix Inventory \(10.0.1.0\)](#) to upgrade to version 10.0.1.0, or higher.

**Activation:**

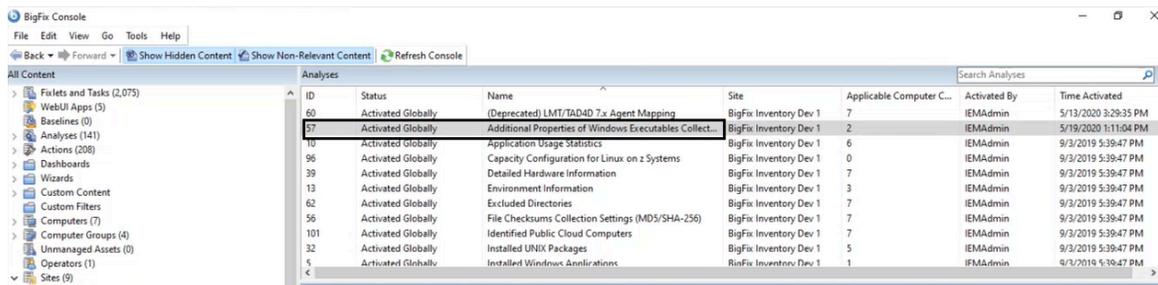
Do the test activation on a small group of computers up to 1000 endpoints, and check the impact on the BigFix Inventory data import. Enabling for all computers might require rollout in several steps to assure that the data import fits into the desired time frame.

To check current configuration settings, see the analysis: [Additional Properties of Windows Executables Collection Settings](#).

Collect additional properties of Windows executables

6. Select the computers from which you want to collect checksums, and click **OK**.

7. **Optional:** In the navigation bar, go to **Analyses**, select **Additional Properties of Windows Executables Collection Settings**, and click **Activate**. The analysis shows the current status of additional data collection on your endpoints.



Now wait for a new *Initiate Software Scan* and *Upload Software Scan* results. Run **Data Import** in BigFix Inventory. Then you can retrieve additional properties of Windows executables through REST API for raw scanned file data. For more information, refer to [Retrieving raw scanned file data](#).

## Retrieving raw package data

**9.2.2** Available from 9.2.2. This API retrieves raw package data, which contains information about all packages discovered on your computers. This information is retrieved from the Windows registry. Unlike in the UI, through this API you can retrieve all historical data that is stored in the database.

To obtain information about detected software use `api/sam/v2/software_instances` API.

### Before you begin

#### Use limit parameter when previewing API output

When you use `api/sam/raw_package_facts` API for test purpose, append the limit parameter to achieve faster response time. First 100 records should be sufficient to have a view on the data available.

```
https://hostname:port/api/sam/raw_package_facts?token=token&limit=100
```



**Note:** Each API request must be authenticated with the token parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User**

icon  and click **Profile**. Then, click **Show token**.

**Table 272. Operation descriptions**

Operation details	Description
<b>Operation</b>	GET <code>/api/sam/raw_package_facts</code>
<b>Purpose</b>	Returns raw package data.
<b>HTTP method</b>	GET

Table 272. Operation descriptions (continued)

Operation details	Description
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/raw_package_facts</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	n/a
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Package Fact</code> element
<b>Response <code>Content-Type</code></b>	<code>application/json</code>

Table 272. Operation descriptions (continued)

Operation details	Description
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	400 - "Bad Request" if a query parameter contains errors or is missing  Message body includes an error message with details.

### Available columns

Table 273. Available columns

Column	Description	Displayed by default	Type
<b>10.0.12</b> install_date	Software installation date.	Package installation date.	String
<b>10.0.12</b> path	Software installation path.	Package installation path.	String
<b>10.0.5</b> is_suppressed	Indicates that package is suppressed. When the package is suppressed the column value is 1. When the package is not suppressed, the value is 0.		Boolean
<b>10.0.5</b> comment	Comment about the suppression.		String
package_property_id	Identifier of the unix package property.	✓	Nu-mer-ic
<b>10.0.5</b> index_sha1	Package sha1 checksum	✓	String
computer_id	Identifier of the computer as defined in BigFix Inventory.	✓	Nu-mer-ic
description	Description of the package.	✓	String
name	Name of the package.	✓	String
version	Version of the package.	✓	String

Table 273. Available columns (continued)

Column	Description	Displayed by default	Type
<b>vendor</b>	Vendor of the package.	✓	String
<b>valid_from</b>	Date and time when the package was reported for the first time. The time is specified in the GMT time zone.	✓	String
<b>valid_to</b>	Date and time when the package was reported for the last time. The time is specified in the GMT time zone.	✓	String

## Query parameters

You can use query parameters to narrow down the results of your search.

Table 274. Query parameters

Parameter	Description	Required	Value
<b>columns</b>	<p>Specify which columns to retrieve. If you do not specify this parameter, a set of default columns is retrieved. Example:</p> <p>Retrieve the name and computer_id columns:</p> <pre>URL?columns[]=name&amp;columns[]=computer_id</pre>	No	String
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:</p> <p>Order by name descending:</p> <pre>URL?order[]=name desc</pre>	No	String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved. For BigFix Inventory versions up to 10.0.1, if you omit the 'limit' parameter, 100 000 rows are retrieved. The number is defined at <a href="#">raw_data_api_default_limit (on page dcccixii)</a> on the <b>Advanced Server Settings</b> panel.</p>	No	Numeric

Table 274. Query parameters (continued)

Parameter	Description	Required	Value
	 <b>Note:</b> Parameter <code>raw_data_api_default_limit</code> has been removed since BigFix Inventory version 10.0.2.		
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example:</p> <p>Retrieve 50 records starting after record 150:</p> <pre>URL?limit=50&amp;offset=150</pre>	No	Numeric
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written on one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;riterion&gt; [{ &lt;comma&gt; &lt;riterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;</pre> <pre>&lt;boolean-operator&gt; ::= "and"   "or" &lt;riterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		

For more information about operators, see [Common connectors and operators \(on page mcdlxxviii\)](#).

Example: Retrieve package data from computer systems with ID greater than 10:

```
URL?criteria={ "and": [ ["computer_id", ">", "10"]] }
```

For columns that use the date and time values, such as Last Seen, you can retrieve data also for a instead of a specific date. To do so, use *last* or *next* as `<operator>`, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example, to retrieve computer systems that reported within last 7 days, use the following API request:

Table 274. Query parameters (continued)

Parameter	Description	Required	Value
	URL?criteria={"and":[{"last_seen","last","P7D"]}]}		

## Example HTTP conversation

### Request

```
GET api/sam/raw_package_facts
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
{
  "package_property_id": 1,
  "computer_id": 3,
  "description": "{FA7394B8-CE65-4F9E-AC99-F372AD365424}",
  "name": "SQL Server 2008 R2 Database Engine Services",
  "version": "10.50.1600.1",
  "vendor": "Microsoft Corporation",
  "valid_from": "2015-08-05T14:41:19Z",
  "valid_to": "9999-12-31T23:59:59Z"
}
{
  "package_property_id": 1,
  "computer_id": 3,
  "description": "{0AECF03B-E9FC-4A17-999D-6641A2851B26}",
  "name": "BigFix Client",
  "version": "9.2.3.68",
  "vendor": "IBM Corp.",
  "valid_from": "2015-08-05T14:41:19Z",
  "valid_to": "9999-12-31T23:59:59Z"
}
```

## Retrieving raw UNIX package data

**9.2.2** Available from 9.2.2. This API retrieves raw UNIX package data, which contains information about all packages discovered on the UNIX operating systems. Unlike in the UI, through this API you can retrieve all historical data that is stored in the database.

To obtain information about detected software use `api/sam/v2/software_instances` API.

### Before you begin

#### Use limit parameter when previewing API output

When you use `api/sam/raw_unix_package_facts` API for test purpose, append the limit parameter to achieve faster response time. First 100 records should be sufficient to have a view on the data available.

```
https://hostname:port/api/sam/raw_unix_package_facts?token=token&limit=100
```



**Important:** Each API requests must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.

**Table 275. Operation descriptions**

*The table consists of two columns and 15 rows. For the eleventh row there are two levels.*

Operation details	Description
<b>Operation</b>	GET <code>/api/sam/raw_unix_package_facts</code>
<b>Purpose</b>	Returns raw scanned file data.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/raw_unix_package_facts</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	n/a
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>

Table 275. Operation descriptions

The table consists of two columns and 15 rows. For the eleventh row there are two levels.

(continued)

Operation details	Description
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Unix Package Fact</code> element
<b>Response</b> <code>Content-Type</code>	<code>application/json</code>
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	<p><code>400 - "Bad Request"</code> if a query parameter contains errors or is missing</p> <p>Message body includes an error message with details.</p>

## Available columns

**Table 276. Available columns**

Column	Description	Displayed by default	Type
<b>10.0.5</b> <code>is_suppressed</code>	Indicates that package is suppressed. When the package is suppressed the column value is 1. When the package is not suppressed, the value is 0.		Boolean
<b>10.0.5</b> <code>comment</code>	Comment about the suppression.		String
<code>unix_package_property_id</code>	Identifier of the unix package property.	✓	Nu-mer-ic
<code>version_id</code>	Internal version identifier of the package.		Nu-mer-ic
<code>type</code>	Type of the package data.	✓	String
<b>10.0.5</b> <code>index_sha1</code>	Package sha1 checksum	✓	String
<code>computer_id</code>	Identifier of the computer as defined in BigFix Inventory.	✓	Nu-mer-ic
<code>description</code>	Description of the package.	✓	String
<code>name</code>	Name of the package.	✓	String
<code>version</code>	Version of the package.	✓	String
<code>vendor</code>	Vendor of the package.	✓	String
<code>valid_from</code>	Date and time when the package was reported for the first time. The time is specified in the GMT time zone.	✓	String
<code>valid_to</code>	Date and time when the package was reported for the last time. The time is specified in the GMT time zone.	✓	String

## Query parameters

You can use query parameters to narrow down the results of your search.

Table 277. Query parameters

The table consists of four columns and nine rows.

Parameter	Description	Required	Value
<b>columns</b>	<p>Specify which columns to retrieve. If you do not specify this parameter, a set of default columns is retrieved. Example:</p> <p>Retrieve the name and computer_id columns:</p> <pre>URL?columns[]=name&amp;columns[]=computer_id</pre>	No	String
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:</p> <p>Order by name descending:</p> <pre>URL?order[]=name desc</pre>	No	String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved. For BigFix Inventory versions up to 10.0.1, if you omit the 'limit' parameter, 100 000 rows are retrieved. The number is defined at <a href="#">raw_data_api_default_limit (on page dccclxii)</a> on the <b>Advanced Server Settings</b> panel.</p> <p> <b>Note:</b> Parameter <code>raw_data_api_default_limit</code> has been removed since BigFix Inventory version 10.0.2.</p>	No	Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example:</p> <p>Retrieve 50 records starting after record 150:</p> <pre>URL?limit=50&amp;offset=150</pre>	No	Numeric
<b>token</b>	<p>A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.</p>	Yes	Alphanumeric

**Table 277. Query parameters***The table consists of four columns and nine rows.***(continued)**

Parameter	Description	Required	Value
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written on one line:		<pre> &lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; ::= &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt; </pre>
	For more information about operators, see <a href="#">Common connectors and operators (on page mcdlxxviii)</a> .		
	Example: Retrieve UNIX package data from computer systems with ID greater than 10:		<pre> URL?criteria={ "and": [ ["computer_id", "&gt;", "10"]] } </pre>
	For columns that use the date and time values, such as Last Seen, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b> , and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example, to retrieve computer systems that reported within last 7 days, use the following API request:		<pre> URL?criteria={ "and": [ ["last_seen", "last", "P7D"]] } </pre>

## Example HTTP conversation

### Request

```

GET /api/sam/raw_unix_package_facts
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US

```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
{
  "unix_package_property_id": -1,
  "computer_id": 14,
  "name": "lohit-oriya-fonts",
  "version": "2.4.3-6.el6",
  "vendor": "Red Hat, Inc.",
  "description": null,
  "type": "Rpm",
  "index_sha1": "176d82d8994b5c7b27f5ba8446cb40a802b2e8f5",
  "valid_from": "2016-02-29T15:33:10Z",
  "valid_to": "9999-12-31T23:59:59Z"
}
{
  "unix_package_property_id": -1,
  "computer_id": 14,
  "name": "libcollection",
  "version": "0.6.0-9.el6",
  "vendor": "Red Hat, Inc.",
  "description": null,
  "type": "Rpm",
  "index_sha1": "69ac3e6fc5674c4feb1c90aae88975d9d0ebe615",
  "valid_from": "2016-02-29T15:33:10Z",
  "valid_to": "9999-12-31T23:59:59Z"
}
```

## Retrieving raw metering data

**9.2.2** Available from 9.2.2. This API retrieves raw metering data, which contains information about the use of software items that are installed on your computers. Unlike in the UI, through this API you can retrieve all historical data that is stored in the database.

To obtain information about detected software use `api/sam/v2/software_instances` API.

### Before you begin

#### Use limit parameter when previewing API output

When you use the `api/sam/raw_app_usage_property_values` API for test purpose, append the limit parameter to achieve faster response time. First 100 records should be sufficient to have a view on the data available.

```
https://hostname:port/api/sam/raw_app_usage_property_values?token=token&limit=100
```



**Note:** Each API request must be authenticated with the token parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.

**Table 278. Operation descriptions**

*The table consists of two columns and 15 rows. For the eleventh row there are two levels.*

Operation details	Description
<b>Operation</b>	GET <code>/api/sam/raw_app_usage_property_values</code>
<b>Purpose</b>	Returns raw package data.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/raw_app_usage_property_values</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	n/a
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p>

**Table 278. Operation descriptions**

*The table consists of two columns and 15 rows. For the eleventh row there are two levels.*

(continued)

Operation details	Description
	Specifies the content type of the response.
	<b>Header</b>
	<code>Content-Language</code>
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
<b>Response payload</b>	<code>App Usage Property Value</code> element
<b>Response</b> <code>Content-Type</code>	<code>application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<code>500 - "Bad Request"</code> if a query parameter contains errors or is missing
	Message body includes an error message with details.

### Query parameters

You can use query parameters to narrow down the results of your search.

**Table 279. Query parameters**

*The table consists of four columns and nine rows.*

Parameter	Description	Required	Value
<code>columns[]</code>	Specify which columns to retrieve. If you do not specify this parameter, a set of default columns is retrieved. Example:  Retrieve the name and computer_id columns:	No	String

Table 279. Query parameters

The table consists of four columns and nine rows.

(continued)

Parameter	Description	Required	Value
	<code>URL?columns[]=name&amp;columns[]=computer_id</code>		
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:</p> <p>Order by name descending:</p>	No	String
	<code>URL?order[]=name desc</code>		
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved. For BigFix Inventory versions up to 10.0.1, if you omit the 'limit' parameter, 100 000 rows are retrieved. The number is defined at <a href="#">raw_data_api_default_limit (on page dccclxii)</a> on the <b>Advanced Server Settings</b> panel.</p> <p> <b>Note:</b> Parameter <code>raw_data_api_default_limit</code> has been removed since BigFix Inventory version 10.0.2.</p>	No	Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example:</p> <p>Retrieve 50 records starting after record 150:</p>	No	Numeric
	<code>URL?limit=50&amp;offset=150</code>		
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written on one line:		
	<code>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;</code>		

Table 279. Query parameters

The table consists of four columns and nine rows.

(continued)

Parameter	Description	Required	Value
	<pre>&lt;boolean-operator&gt; ::= "and"   "or"  &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		
	<p>For more information about operators, see <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: Retrieve metering data from computer systems with ID greater than 10:</p> <pre>URL?criteria={ "and": [ ["computer_id", "&gt;", "10"]] }</pre>		
	<p>For columns that use the date and time values, such as Last Seen, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example, to retrieve computer systems that reported within last 7 days, use the following API request:</p> <pre>URL?criteria={"and": [["last_seen", "last", "P7D"]]}</pre>		

## Example HTTP conversation

### Request

```
GET api/sam/raw_app_usage_property_values
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```

{
  "app_usage_property_id": -1,
  "computer_id": 2,
  "process": "BESClient.exe",
  "first_used": "2015-03-27T16:28:47Z",
  "last_used": "2015-08-03T11:46:16Z",
  "total_runs": 5,
  "total_time": 10888494,
  "avg_runs_per_day": 0.03943099252280677,
  "avg_run_time": 2177698.8,
  "valid_from": "2015-08-05T14:41:19Z",
  "valid_to": "9999-12-31T23:59:59Z"
}
{
  "app_usage_property_id": -1,
  "computer_id": 2,
  "process": "BESConsole.exe",
  "first_used": "2015-07-09T11:27:50Z",
  "last_used": "2015-07-13T13:33:42Z",
  "total_runs": 2,
  "total_time": 16767,
  "avg_runs_per_day": 0.4893077201884741,
  "avg_run_time": 8383.5,
  "valid_from": "2015-08-05T14:41:19Z",
  "valid_to": "9999-12-31T23:59:59Z"
}

```

## Retrieval of hardware inventory (v2)

**9.2.8** Available from 9.2.8. You use the `GET` operation on the `api/sam/v2/computers` element to request information about computers in your infrastructure. The API returns details of existing computers as well as historical data about computers that were removed.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/computers?token=token
```

## Resource information

**Table 280. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Computer Systems element
Response format	application/json
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

### 9.2.10 Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/computer.json?token=token
```

## Available columns

Table 281. Available columns

Column	Description	Displayed by default	Type
<b>id</b>	Identifier of the computer as defined in BigFix Inventory.		Nu-mer-ic
<b>bigfix_id</b>	Identifier of the computer as defined in BigFix.		Nu-mer-ic
<b>name</b>	Name of the computer.	✓	String
<b>dns_name</b>	DNS of the computer.		String
<b>ip_address</b>	IP address of the computer.	✓	String
<b>os</b>	Operating system of the computer.	✓	String
<b>os_type</b>	Type of the operating system of the computer.		String
<b>first_seen</b>	Date and time when the computer reported to BigFix for the first time. The time is specified in the GMT time zone.		String
<b>last_seen</b>	Date and time when the computer reported to BigFix for the last time. The time is specified in the GMT time zone.	✓	String
<b>is_deleted</b>	Information whether the computer was removed.	✓	Boolean
<b>deletion_date</b>	Date and time when the computer was removed. The time is specified in the GMT time zone.		String
<b>is_managed_by_vm_manager</b>	Information whether the computer is managed by a VM manager.		Boolean

## Applicable associations

You can additionally retrieve data from the following associations:

- **9.2.10** [computer\\_details](#) (on page [mdxcvi](#))
- [computer\\_hardware](#) (on page [mdc](#))
- [computer\\_health](#) (on page [mdxcviii](#))
- **9.2.12** [mounted\\_shared\\_disks](#) (on page [mdcix](#))
- **9.2.12** [detailed\\_hw\\_ip\\_addresses](#) (on page [mdv](#))
- **9.2.12** [detailed\\_hw\\_lpars](#) (on page [mdx](#))

- **9.2.12** `detailed_hw_memories` (on page [mdxv](#))
- **9.2.12** `detailed_hw_network_adapters` (on page [mdxix](#))
- **9.2.12** `detailed_hw_operating_systems` (on page [mdxxiv](#))
- **9.2.12** `detailed_hw_partitions` (on page [mdxxix](#))
- **9.2.12** `detailed_hw_physical_processors` (on page [mdxxxiv](#))
- **9.2.12** `detailed_hw_smbios` (on page [mdxi](#))
- **9.2.12** `detailed_hw_storages`



**Note:** Retrieving data from multiple API associations in a single request might increase the response time.

For more information about how to use API associations, see: [REST API associations](#) (on page [mdxcii](#)).



**Important:** All associations provide data about items that currently exist in the infrastructure. For removed computers and uninstalled software, these associations return `null`.

## Query parameters

Table 282. Query parameters

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve product name and release  <pre>URL?columns[]=first_seen</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending:  <pre>URL?order[]=id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records  <pre>URL?limit=100</pre>		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the <code>limit</code> parameter to paginate results.  Example: Retrieve 50 records starting after record 150		Numeric

Table 282. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?limit=50&amp;offset=150</code>		
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line: <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		String

For more information about operators, see: [Common connectors and operators \(on page mcdlxxviii\)](#).

Example: retrieve computers that reported for the first time within a specific date range:

```
URL?criteria={"and":[{"first_seen", ">",
"1970-01-01T00:00:00+00:00Z"},
["first_seen", "<", "1970-01-02T00:00:00+00:00Z"]]}
```

For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use *last* or *next* as **<operator>**, and then specify the time value in the following convention: PxP/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.

Example: Retrieve computers that were first reported within the last 7 days

Table 282. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?criteria={"and":[{"first_seen","last","P7D"}]}</code>		

### Example conversation - default columns

#### Request

```
GET api/sam/v2/computers?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```
[{
  "name": "NC9143126194",
  "ip_address": ["9.143.126.194"],
  "os": "Win2012R2 6.3.9600",
  "last_seen": "2016-09-22T10:32:12Z",
  "is_deleted": 1
}]
```

### Example conversation - all columns

#### Request

```
GET api/sam/v2/computers?columns[]=id&columns[]=bigfix_id
&columns[]=name&columns[]=dns_name
&columns[]=ip_address&columns[]=os&columns[]=os_type
&columns[]=first_seen&columns[]=last_seen&columns[]=is_deleted
&columns[]=deletion_date&columns[]=is_managed_by_vm_manager
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```
[{
  "id": 2,
  "bigfix_id": 11368943,
  "name": "NC9143126194",
  "dns_name": "NC9143126194",
  "ip_address": ["9.143.126.194"],
```

```
"os": "Win2012R2 6.3.9600",
"os_type": "Windows",
"first_seen": "2016-10-04T09:42:55Z",
"last_seen": "2016-09-22T10:32:12Z",
"is_deleted": 1,
"deletion_date": "2016-12-19T09:40:14Z",
"is_managed_by_vm_manager": 0
}]
```

## Example conversation - additional column

### Request

```
GET api/sam/v2/computers?columns[]=id
&columns[]=is_deleted&columns[]=deletion_date
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id": 21,
  "is_deleted": 1,
  "deletion_date": "2016-10-18T14:51:52Z"
}]
```

## Example conversation - association

### Request

```
GET api/sam/v2/computers?columns[]=id
&columns[]=computer_health.catalog_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id": 1,
  "catalog_version": 1304630
}]
```

## Retrieval of shared disks (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/shared_disks` element to request information about shared disks that are used in your infrastructure.

### Prerequisites

Before you can retrieve information about shared disks by using the REST API, discover the shared disks in your infrastructure. For more information, see: [Step 1: Discovering remote shared disks \(on page dcxxxij\)](#).

### Permissions

 You must have the View Shared Disks permissions to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/shared_disks?token=token
```

### Resource information

**Table 283. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p>

**Table 283. Resource information (continued)**

Operation details	Description
	en-US, ...  Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	Shared Disks element
Response format	application/json
Response codes	200 - OK  403 - "Forbidden" if the user is not authorized to perform the action  500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/shared_disk.json?token=<token>
```

## Available columns

**Table 284. Available columns**

Column	Description	Displayed by default	Type
<b>id</b>	Identifier of the shared disk instance.	✓	Integer
<b>status</b>	Indicates the status of the computer that is designated to scan the shared disk instance. Possible values are: <ul style="list-style-type: none"> <li>• 0 - Shared disk detected</li> <li>• 1 - Child shared disk</li> <li>• 2 - Designating a computer</li> <li>• 3 - Waiting for software scan</li> <li>• 4 - OK</li> <li>• 5 - Designating new top-level directory</li> </ul>	✓	Integer

Table 284. Available columns (continued)

Column	Description	Displayed by default	Type
	<ul style="list-style-type: none"> <li>• 6 - Designating a new computer</li> <li>• 7 - Waiting for software scan on the newly designated computer</li> </ul>		
<b>parent_id</b>	Identifier of the parent of the shared disk instance.	✓	Integer
<b>top_level</b>	Indicates whether the shared disk is a top-level directory in the shared disk structure. Possible values are: <ul style="list-style-type: none"> <li>• 0 - The directory is not top-level</li> <li>• 1 - The directory is top-level</li> </ul>		Boolean
<b>exported_directory</b>	Exported directory of the shared disk.	✓	String
<b>type</b>	Type of the shared disk. Possible values are: <ul style="list-style-type: none"> <li>• 0 - Network File System</li> <li>• 1 - Samba File System</li> </ul>	✓	Integer
<b>computers_count</b>	Number of computers on which the shared disk is mounted.	✓	Integer

### Applicable associations

You can additionally retrieve data from the following associations:

- [designated\\_computer](#) (on page [mdcviii](#))
- [shared\\_disk\\_members](#) (on page [mdcxi](#))

### Query parameters

Table 285. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve product name and release		String

Table 285. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?columns[]=product_name&amp;columns[]=product_release</code>		
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending		Alphanumeric
	<code>URL?order[]=computer_id desc</code>		
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records		Numeric
	<code>URL?limit=100</code>		
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150		Numeric
	<code>URL?limit=50&amp;offset=150</code>		
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the <b>User icon</b>  , and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:		String
	<pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt;</pre>		

Table 285. Query parameters (continued)

Parameter	Description	Required	Value
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: Retrieve software instances whose product name contains "BigFix" OR the discovery start is within a specific date range</p> <pre>URL?criteria={ "or": [ [ "product_name", "contains", "BigFix" ], { "and": [ [ "discovery_start", "&gt;", "1970-01-01T00:00:00+00:00Z" ], [ "discovery_start", "&lt;", "1970-01-02T00:00:00+00:00Z" ] ] } ] }</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p> <p>Example: Retrieve software instances that were first reported within the last 7 days</p> <pre>URL?criteria={"and":[["discovery_start","last","P7D"]]}</pre>		

## Example conversation - default columns

### Request

```
GET api/sam/v2/shared_disks?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id": "5",
  "status": "0",
  "type": "0",
  "designated_computer_id": "29",
  "parent_id": "3"
```

mdclx

```
"computers_count": "10"  
"exported_directory": "192.0.2.24:/file_server/tlcm/ISO/RHEL"
```

## Example conversation - all columns

### Request

```
GET api/sam/v2/shared_disks?columns[]=id&columns[]=status  
&columns[]=parent_id&columns[]=top_level&columns[]=exported_directory  
&columns[]=type&columns[]=computers_count&columns[]=designated_copmuter_id  
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### Response body

```
[{  
  "id": "1",  
  "status": "0",  
  "parent_id": "5",  
  "top_level": "0",  
  "exported_directory": "192.0.2.24:/file_server/tlcm/HOME",  
  "type": "0",  
  "computers_count": "10",  
  "designated_computer_id": "29"
```

## Example conversation - association

### Request

```
GET api/sam/v2/shared_disks?columns[]=exported_directory  
&columns[]=computers_count&columns[]=shared_disk_members.computer_id  
&columns[]=shared_disk_members.mount_point&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623  
Host: localhost:9081  
Accept: application/json  
Accept-Language: en-US
```

### Response body

```
[{  
  "exported_directory": "192.0.2.24:/file_server/tlcm/HOME",  
  "computers_count": "1",  
  "members":  
    {  
      "computer_id": "5",  
      "mount_point": "/mnt/fs"
```

```
}
}]
```

## REST API for retrieving detailed hardware information (v2)

You can use REST API requests to retrieve data related to detailed hardware information, such as memory, operating systems, storage, processors, partitions, network adapters, SMBIOS data, IP addresses and logical partition capacity data. You can then pass this data to other applications for further processing and analysis.



**Note:** The APIs from this section can be used as associations to the `api/sam/v2/computers` API.

## Retrieval of IP addresses (v2)

**9.2.12**

Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_ip_addresses` element to request information related to IP addresses of computers in your infrastructure.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_ip_addresses?token=token
```

### Resource information

**Table 286. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p>

**Table 286. Resource information (continued)**

Operation details	Description
	<p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	<code>IP Addresses</code> element
Response format	<code>application/json</code>
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

### Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_ip_address.json?token=token
```

### Available columns

The list of attributes related to IP addresses on the scanned system. The retrieved addresses are in the IPv4 format, except for the **ipv6\_address** attribute.

The output might contain multiple instances of each attribute from this group.

**Table 287. Columns with information related to IP addresses**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer

Table 287. Columns with information related to IP addresses (continued)

Property	Description	Type
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>address</b>	IP address of the computer.	String
<b>hostname</b>	Host name of the computer with the given IP.	String
<b>primary_dns</b>	Primary domain name system (DNS).	String
<b>permanent_mac_address</b>	Permanent media access control (MAC) address associated with the given IP address.	String
<b>ipv6_address</b>	IP address in version 6.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 288. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer ID: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records		Numeric

Table 288. Query parameters (continued)

Parameter	Description	Required	Value
	<pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value</p>		String

**Table 288. Query parameters (continued)**

Parameter	Description	Required	Value
	in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.		

**Example conversation - default columns****Request**

```
GET /api/sam/v2/detailed_hw_ip_addresses?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":1
  "computer_id":1,
  "updated_at":"2018-05-16T14:37:08Z",
  "address":"9.174.39.183",
  "hostname":"NC9174039183",
  "primary_dns":"9.20.136.11",
  "permanent_mac_address":"00:50:56:94:7C:95",
  "ipv6_address":"fe80:0000:0000:0000:44a3:f150:0968:869e%2"
}]
```

**Example conversation - selected columns****Request**

```
GET api/sam/v2/detailed_hw_ip_addresses?columns[]=computer_id
&columns[]=primary_dns
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "computer_id":1,
  "primary_dns":"9.20.136.11"
}]
```

## Retrieval of information related to logical partition capacity (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_lpars` element to request information related to the logical partition and its CPU resources. The data retrieved by this API is not limited to LPARs on POWER. It includes data related to every supported virtualization technology.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_lpars?token=token
```

### Resource information

**Table 289. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p>

**Table 289. Resource information (continued)**

Operation details	Description
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	<code>LPARS</code> element
Response format	<code>application/json</code>
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

### Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_lpar.json?token=token
```

### Available columns

The list of attributes related to the logical partition and its CPU resources.

The scan output contains a single instance of each attribute from this group.

**Table 290. Columns with information about the logical partition and its CPU resources**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>lpar_capacity_in_cores</b>	The number of processor cores assigned to the partition.	String
<b>lpar_online_processor_count</b>	The number of active logical processors in the partition. Logical processors are the smallest CPU entities visible in the operating system, which are dividable and schedulable. Depending on the hardware platform, a logical processor might correspond to a chip, the core of a multi-core chip, or a hardware CPU thread on a multithreaded chip or core (provided that the feature is enabled).	String

**Table 290. Columns with information about the logical partition and its CPU resources (continued)**

Property	Description	Type
<b>lpar_online_core_count</b>	The number of active cores in a logical partition. The core is active if any of the logical processors in the system is running on this core.	String
<b>lpar_online_package_count</b>	The number of active processor packages in the partition. The processor package is active if any of the logical processors in the system is running on this package.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 291. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>  <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.		Numeric

Table 291. Query parameters (continued)

Parameter	Description	Required	Value
	<p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the <b>User icon</b> , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		String

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_lpars?token=c77a88cfdde276de605c6fdee689b7961ddb93ef
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "computer_id":1,
  "updated_at":"2018-05-28T01:22:16Z",
  "lpar_capacity_in_cores":"-1.000000",
  "lpar_online_processor_count":"2.000000",
  "lpar_online_core_count":"2.000000",
  "lpar_online_package_count":"2.000000"
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_lpars?columns[]=id
&columns[]=lpar_capacity_in_cores
&token=c77a88cfdde276de605c6fdee689b7961ddb93ef
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "lpar_capacity_in_cores":"-1.000000"
}]
```

## Retrieval of information related to system memory (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_memories` element to request information related to the system memory of the scanned system.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_memories?token=token
```

## Resource information

Table 292. Resource information

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	System Memory element
Response format	application/json
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_memory.json?token=token
```

## Available columns

The list of attributes related to the memory on a scanned system.

The scan output contains a single instance of each attribute from this group.

**Table 293. Columns with information about the system memory**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>total_physical</b>	Total amount of installed memory in kilobytes (KB).	String
<b>free_physical</b>	Total amount of free memory on the system in kilobytes (KB).	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 294. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.		String

Example: Retrieve the computer id:

```
URL?columns[]=computer_id
```

Table 294. Query parameters (continued)

Parameter	Description	Required	Value
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>  <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150 <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line: <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		String

**Table 294. Query parameters (continued)**

Parameter	Description	Required	Value
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre>		
	<p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		

### Example conversation - default columns

#### Request

```
GET api/sam/v2/detailed_hw_memories?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response body

```
[{
  "id":1,
  "computer_id":1,
  "updated_at":"2018-05-28T01:22:16Z",
  "total_physical":"8010840",
  "free_physical":"221176"
}]
```

### Example conversation - selected columns

#### Request

```
GET api/sam/v2/detailed_hw_memories?columns[]=id
&columns[]=total_physical
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
```

```
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":1,
  "total_physical":"8010840"
}]
```

## Retrieval of information related to network adapters (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_network_adapters` element to request information related to the type, model and MAC addresses of the network adapters.

### Permissions



You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_network_adapters?token=token
```

### Resource information

**Table 295. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p>

**Table 295. Resource information (continued)**

Operation details	Description
	Specifies the content type of the response.
	<b>Header</b>
	<code>Content-Language</code>
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response payload	<code>Network Adapter</code> element
Response format	<code>application/json</code>
Response codes	<p><code>200 - OK</code></p> <p><code>500 - "Bad Request"</code> if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_network_adapter.json?token=token
```

## Available columns

The list of attributes related to the network adapters.

The scan output might contain multiple instances of each attribute from this group.

**Table 296. Columns with information about the network adapters**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String

Table 296. Columns with information about the network adapters (continued)

Property	Description	Type
<b>permanent_address</b>	The permanent media access control (MAC) address associated with the adapter.	String
<b>current_address</b>	The current network address of the adapter.	String
<b>type</b>	The type of network adapter.	String
<b>model</b>	The model of the network adapter.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 297. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>		Numeric

Table 297. Query parameters (continued)

Parameter	Description	Required	Value
	 <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the <b>User icon</b> , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and": [{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a</p>		String

**Table 297. Query parameters (continued)**

Parameter	Description	Required	Value
	number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.		

**Example conversation - default columns****Request**

```
GET api/sam/v2/detailed_hw_network_adapters?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":13,
  "computer_id":4,
  "updated_at":"2018-05-28T01:22:16Z",
  "permanent_address":"00:50:56:94:A1:39",
  "current_address":"00:50:56:94:A1:39",
  "type":"Ethernet Adapter",
  "model":"vmxnet3 Ethernet Adapter"
}]
```

**Example conversation - selected columns****Request**

```
GET api/sam/v2/detailed_hw_network_adapters?columns[]=id
&columns[]=id&columns[]=type&columns[]=model
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

**Response body**

```
[{
  "id":13,
  "type":"Ethernet Adapter",
  "model":"vmxnet3 Ethernet Adapter"
}]
```

## Retrieval of information related to the operating system (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_operating_systems` element to request information related to the operating system on the scanned computer.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_operating_systems?token=token
```

### Resource information

**Table 298. Resource information**

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>

**Table 298. Resource information (continued)**

Operation details	Description
Response payload	Operating System element
Response format	application/json
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

### Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_operating_system.json?token=token
```

### Available columns

The list of attributes related to the operating system that is installed on the scanned system.

The scan output contains a single instance of each attribute from this group.

**Table 299. Columns with information about the operating system**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>name</b>	The name of an operating system; for example, Windows 10.	String
<b>major_version</b>	The major version of an operating system.	String
<b>minor_version</b>	The minor version of an operating system.	String
<b>Windows install_date</b>	The date when the operating system was installed.	String
<b>os_arch</b>	The version of the operating system architecture.	String
<b>os_kernel_mode</b>	The kernel mode of the operating system (32-bit or 64-bit).	String

**Table 299. Columns with information about the operating system (continued)**

Property	Description	Type
<b>Linux</b> <code>description_string</code>	The description of the operating system.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 300. Query parameters**

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>  <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150		Numeric

Table 300. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?limit=50&amp;offset=150</code>		
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the  <b>User icon</b> , and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;  &lt;boolean-operator&gt; ::= "and"   "or"  &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a> .  Example: retrieve computers with computer ID greater than 1000.  <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b> , and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.		String

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_operating_systems?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
```

```
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":13,
  "computer_id":22,
  "updated_at":"2018-05-28T01:22:16Z",
  "name":"Red Hat Enterprise Linux Server release 6.8 (Santiago)",
  "major_version":"2",
  "minor_version":"6",
  "install_date":"2017-10-31-08.37.06.000000",
  "os_arch":"x86_64",
  "os_kernel_mode":"64",
  "description_string":"Red Hat Enterprise Linux Server release 6.8 (Santiago)"
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_operating_systems?columns[]=id
&columns[]=name&columns[]=major_version&columns[]=minor_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":13,
  "name":"Red Hat Enterprise Linux Server release 6.8 (Santiago)",
  "major_version":"2",
  "minor_version":"6"
}]
```

## Retrieval of information related to partitions (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_partitions` element to request information related to the file system that is mounted on a scanned system: Unix mount points and Windows logical drives.

## Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_partitions?token=token
```

## Resource information

**Table 301. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Partitions element
Response format	application/json

**Table 301. Resource information (continued)**

Operation details	Description
Response codes	200 - OK
	500 - "Bad Request" if a query parameter contains errors or is missing

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_partition.json?token=token
```

## Available columns

The list of attributes related to the file system that is mounted on a scanned system: Unix mount points and Windows logical drives.

The scan output might contain multiple instances of each attribute from this group.

**Table 302. Columns with information about partitions**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database.	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>type</b>	The type of the partition; for example, Logical Drive or Remote Drive.	String
<b>media_type</b>	The media type that contains the partition; for example, Local Disc or CD-ROM.   <b>Note:</b> The media type is Unknown when the scanner cannot recognize it.	String
<b>device_name</b>	The name of the device or a label of a Windows drive; for example, <code>/dev/dsk/c1t3d0s0</code> or Storage.	String
<b>physical_size</b>	The size of a drive that contains the partition.	String
<b>fs_total_size</b>	Total size of the partition in kilobytes (KB).	String

Table 302. Columns with information about partitions (continued)

Property	Description	Type
fs_free_size	The amount of free space on the partition in kilobytes (KB).	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

Table 303. Query parameters

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id: <pre>URL?columns[]=computer_id</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by computer ID descending: <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.  Example: Retrieve 100 records <pre>URL?limit=100</pre>  <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.		Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.  Example: Retrieve 50 records starting after record 150 <pre>URL?limit=50&amp;offset=150</pre>		Numeric

Table 303. Query parameters (continued)

Parameter	Description	Required	Value
<b>token</b>	A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a> . You can also log in to BigFix Inventory, hover over the <b>User</b> icon  , and click <b>Profile</b> . Then, click <b>Show token</b> .	✓	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		String

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_partitions??token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
```

```
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":4,
  "computer_id":1,
  "updated_at":"2018-05-28T01:22:16Z",
  "type":"Logical Drive",
  "media_type":"Local Disk",
  "device_name":"tmpfs",
  "physical_size":"4005420",
  "fs_total_size":"4005420",
  "fs_free_size":"4005408"
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_partitions?columns[]=id
&columns[]=media_type&columns[]=physical_size
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":4,
  "media_type":"Local Disk",
  "physical_size":"4005420"
}]
```

## Retrieval of information related to physical processors (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_physical_processors` element to request information related to all active physical processors.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/detailed_hw_physical_processors?token=token
```

## Resource information

**Table 304. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Physical Processors element
Response format	application/json
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_physical_processor.json?token=token
```

## Available columns

The list of attributes related to all active physical processors including single chips and processor packages. You can retrieve values for each platform working as a host which translates into one operating system per physical processor.



**Note:** To retrieve information about physical processors for guest operating systems, such as VMware or BigFix LPAR, the complete information for the physical machine must be available.

The scan output might contain multiple instances of each attribute from this group.

**Table 305. Columns with information about physical processors**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
<b>core_per_package_count</b>	The number of cores on a physical processor; for example, 8 cores for Intel Xeon E5-4620, and 12 for POWER9.	String
<b>logical_proc_per_core</b>	The number of logical processors assigned for each core; for example, 2 for Intel Xeon E5-4620, and 8 for POWER9.	String
<b>manufacturer</b>	Processor manufacturer; for example Intel, AMD, or BigFix.   <b>Note:</b> You can only retrieve information about the manufacturers that are supported by the scanner. Otherwise, the displayed value is Unknown.	String
<b>family</b>	Processor family; for example, Xeon, or POWER9.	String

**Table 305. Columns with information about physical processors (continued)**

Property	Description	Type
	 <b>Note:</b> You can only retrieve information about the processor families that are supported by the scanner. Otherwise, the displayed value is Unknown.	
<b>type</b>	Processor type; for example, E5-4620 for Intel Xeon E5-4620.   <b>Note:</b> If the scanner does not support type identification of the processor family the value is empty. If the scanner supports type identification for the processor family, however, the given types is not recognize, the displayed value is Unknown.	String
<b>cpu_freq</b>	Processor frequency in megahertz (MHz). This information is optional, and vendor-specific. Depending on the processor family the value might represent either nominal or current CPU frequency.   <b>Note:</b> CPU frequency might be interpreted differently across processor architectures and families. If this information is not applicable the value is 0.	String
<b>brandname</b>	Processor name. This information is optional, and specific to platform and vendor. Thus, it can be retrieved from a different source in case of each platform, or even processor family. If available, it is a copy of a value reported by CPUID instruction, BIOS or OS.	String
<b>active_processor_count</b>	The number of active processors in the physical processor. A processor is active if a logical processor is running on this physical processor.	String
<b>active_core_count</b>	The number of active cores in the physical processor. The core is active if a logical processor is running on this core.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 306. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.		String

Table 306. Query parameters (continued)

Parameter	Description	Required	Value
	<p>Example: Retrieve the computer id:</p> <pre>URL?columns[]=computer_id</pre>		
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by computer ID descending:</p> <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the <code>limit</code> parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the , and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [{ &lt;comma&gt; &lt;criteria&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;</pre>		String

**Table 306. Query parameters (continued)**

Parameter	Description	Required	Value
	<pre>&lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre>		
	<p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_physical_processors?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":7,
  "computer_id":4,
  "updated_at":"2018-05-30T01:15:05Z",
  "core_per_package_count":"1",
  "logical_proc_per_core":"1",
  "manufacturer":"Intel",
  "family":"Xeon",
  "type":"E7-8880",
  "cpu_freq":"2200",
  "brandname":"Intel(R) Xeon(R) CPU E7-8880 v4 @ 2.20GHz",
```

```

active_processor_count": "1",
"active_core_count": "1"
}]

```

## Example conversation - selected columns

### Request

```

GET api/sam/v2/detailed_hw_physical_processors?columns[]=computer_id
&columns[]=manufacturer&columns[]=family&columns[]=type
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US

```

### Response body

```

[ {
  "computer_id": 4,
  "manufacturer": "Intel",
  "family": "Xeon",
  "type": "E7-8880"
} ]

```

## Retrieval of information related to SMBIOS (v2)

**9.2.12** Available from 9.2.12. You use the `GET` operation on the `api/sam/v2/detailed_hw_smbios` element to request information related to SMBIOS of the scanned system.

### Permissions

 You must have the View Endpoints and View Hardware Inventory permission to use this API.

### Resource URL

```

https://hostname:port/api/sam/v2/detailed_hw_smbios?token=token

```

### Resource information

Table 307. Resource information

Operation details	Description
HTTP method	<code>GET</code>
Request headers	<b>Header</b> <code>Accept-Language</code> (optional)

**Table 307. Resource information (continued)**

Operation details	Description
Request format	<p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	SMBIOS element
Response format	application/json
Response codes	<p>200 - OK</p> <p>500 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this REST API together with their descriptions, use the following request.

```
GET api/sam/v2/schemas/detailed_hw_smbios.json?token=token
```

## Available columns

The list of attributes related to SMBIOS of the scanned system.

The scan output contains a single instance of each attribute from this group.

**Table 308. Columns with information about SMBIOS**

Property	Description	Type
<b>id</b>	Identifier of the record.	Integer
<b>computer_id</b>	Identifier of the computer as specified in the BigFix Inventory database	Integer
<b>updated_at</b>	Date and time when the current information was imported to BigFix Inventory.	String
Linux Windows <b>bios_vendor</b>	The manufacturer of the BIOS system.	String
Linux Windows <b>bios_version</b>	The version of the BIOS system.	String
Linux <b>system_version</b>	The version of the system.	String
Linux Windows <b>system_serial_number</b>	The serial number of the system.	String

## Related APIs

This API can be associated with the following API:

- [Retrieval of hardware inventory \(v2\) \(on page mcdxciii\)](#)

## Query parameters

**Table 309. Query parameters**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve the computer id:		String
	<pre>URL?columns[]=computer_id</pre>		

Table 309. Query parameters (continued)

Parameter	Description	Required	Value
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.</p> <p>Example: Order by computer ID descending:</p> <pre>URL?order[]=computer_id desc</pre>		String
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre> <p> <b>Note:</b> By default the <b>limit</b> parameter for this API is set to 100000.</p>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User</b> icon, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records which match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		String

Table 309. Query parameters (continued)

Parameter	Description	Required	Value
	<p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: retrieve computers with computer ID greater than 1000.</p> <pre>URL?criteria={"and":[{"computer_id", "&gt;", "1000"}]}</pre>		
	<p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <code>&lt;operator&gt;</code>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively.</p>		

## Example conversation - default columns

### Request

```
GET api/sam/v2/detailed_hw_smbios?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "id":12,
  "computer_id":19,
  "updated_at":"2018-05-28T01:22:16Z",
  "bios_vendor":"Phoenix Technologies LTD",
  "bios_version":"6.00",
  "system_version":"None",
  "system_serial_number":"VMware-42 14 ea ea 03 c0 d5 03-fd f6 43 d6 44 a2 f8 52"
}]
```

## Example conversation - selected columns

### Request

```
GET api/sam/v2/detailed_hw_smbios?columns[]=computer_id
&columns[]=bios_vendor&columns[]=bios_version
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

mdcc

```
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response body

```
[{
  "computer_id":19,
  "bios_vendor":"Phoenix Technologies LTD",
  "bios_version":"6.00"
}]
```

## 10.0.5 Retrieving unified view

Unified view APIs provides you a unified view of the instances.

### Supported APIs

Unified Software API to combine package data and software instance data

## 10.0.5 Unified Software API to combine package data and software instance data

**10.0.5** With the `/api/sam/unified/current/software` API, you can view the currently installed software instances and package data together.

### Simplified integrations with one API that covers discovered software

The API shows the following information:

- Currently installed software instances and package data
- Software instances and package data that are not suppressed
- Package data that is not recognized
- The computer data that can be accessed through computer association, such as [computer association \(on page mdxciv\)](#)

### Permissions



You must have the View Endpoints and View Raw Data permissions to use this API.

### Resource URL

```
https://hostname:port/api/sam/unified/current/software?token=<token>
```

### Syntax

```
GET /api/sam/unified/current/software?token=<token>
```

## Resource information

**Table 310. Resource information**

Operation details	Description
HTTP method	GET
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/json
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response payload	Unified Software element
Response format	application/json
Response codes	<p>200 - OK</p> <p>400 - "Bad Request" if a query parameter contains errors or is missing</p>

## Schema description

To retrieve the list of all columns that are returned by this association together with their descriptions, use the following request:

```
GET /api/sam/unified/current/schemas/software.json?token=<token>
```

## Available columns

**Table 311. Columns with information about computer details**

Column	Description	Displayed by default	Type
id	Identifier of the component instance or package.	✓	Numeric
name	Name of the component or package.	✓	String
release	Release of the component or package version.	✓	String
detailed_version	Detailed version of the component or package version.	✓	String
discoverable_guid	Globally unique identifier (GUID) of the component or <code>sha1</code> of the package.	✓	String
discoverable_family_guid	Family GUID of the component. For packages, the returned value is null.	✓	String
publisher_name	Component publisher or package vendor.	✓	String
discovery_start	Date and time when the component or package was reported for the first time. The time is specified in the GMT time zone.	✓	String
discovery_path	<p>For BigFix Inventory version below 10.0.12:</p> <ul style="list-style-type: none"> <li>• For component instance: path to the folder where the component is installed</li> <li>• For Windows packages: returned value is null</li> <li>• For Unix packages: returned value is null</li> </ul> <p><b>10.0.12</b> From BigFix Inventory version 10.0.12:</p>	✓	<p>String</p> <p> <b>Note:</b></p> <p><b>10.0.15</b></p> <p>In BigFix Inventory version 10.0.15, the defect in which 'discovery_path' property contains an unwanted end-of-line (eol) '\n' character</p>

**Table 311. Columns with information about computer details (continued)**

Column	Description	Displayed by default	Type
	<ul style="list-style-type: none"> <li>• For component instance: path to the folder where the component is installed</li> <li>• For Windows packages: it is the package installation path</li> <li>• For Unix packages: returned value is null</li> </ul>		 at the end of the path has been fixed. The path, for example, "C:\Program Files (x86)\Mozilla Firefox\n".
source	Type of the software: <ul style="list-style-type: none"> <li>• 0: component instance</li> <li>• 1: Windows package</li> <li>• 2: Unix package</li> </ul>		Numeric
computer.id	ID of the computer where the software is discovered.	✓	Numeric
computer.name	Name of the computer where the software is discovered.	✓	String

### Applicable association

You can additionally retrieve data from the [computer association \(on page mdxciv\)](#).

### Query parameters

**Table 312. Query parameters**

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, only default columns are retrieved.  Example: Retrieve release  <pre>URL?columns[]=name&amp;columns[]=release</pre>		String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name.  Example: Order by ID descending		Alphanumeric

Table 312. Query parameters (continued)

Parameter	Description	Required	Value
	<code>URL?order[]=id desc</code>		
<b>limit</b>	<p>Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.</p> <p>Example: Retrieve 100 records</p> <pre>URL?limit=100</pre>		Numeric
<b>offset</b>	<p>Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results.</p> <p>Example: Retrieve 50 records starting after record 150</p> <pre>URL?limit=50&amp;offset=150</pre>		Numeric
<b>token</b>	<p>A unique user authentication identifier. You can retrieve it by using <a href="#">REST API for retrieving authentication token (on page mcdlxxxviii)</a>. You can also log in to BigFix Inventory, hover over the  <b>User icon</b>, and click <b>Profile</b>. Then, click <b>Show token</b>.</p>	✓	Alphanumeric
<b>criteria</b>	<p>Retrieve records that match specific conditions. The parameter should have the following structure, written in one line:</p> <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt;</pre> <p>For more information about operators, see: <a href="#">Common connectors and operators (on page mcdlxxviii)</a>.</p> <p>Example: Retrieve a software instance whose name contains "BigFix" or the discovery start is within a specific date range</p>		String

Table 312. Query parameters (continued)

Parameter	Description	Required	Value
	<pre>URL?criteria={ "or": [ [ "name", "contains", "BigFix"], { "and": [ [ "discovery_start", "&gt;", "2018-10-01T00:00:00+00:00Z"], [ "discovery_start", "&lt;", "2018-10-02T00:00:00+00:00Z" ] ] } ] }</pre> <p>For columns that use the date and time values, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b>, and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years.</p> <p>Example: Retrieve software instances that were first reported within the last 7 days</p> <pre>URL?criteria={"and":[{"discovery_start","last","P7D"}]}</pre>		

## Example conversations

To review the suppressed windows packages, use the following API:

```
GET api/sam/raw_package_facts?columns[]=name&columns[]=
is_suppressed&columns[]=comment&criteria=
{"and":[{"is_suppressed","=",1}]}
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

To review the suppressed UNIX packages, use the following API:

```
GET api/sam/raw_unix_package_facts?columns[]=name&columns[]=
is_suppressed&columns[]=comment&criteria=
{"and":[{"is_suppressed","=",1}]}
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

To review the suppressed software instances, use the following API:

```
GET /api/sam/v2/software_instances?columns[]=component_name&columns[]=
component_release&columns[]=is_suppressed&columns[]=exclusion_or_suppress_comment&criteria=
{"and":[{"is_suppressed","=",1}]}
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

To view associated computer data, use the following API:

```
GET /api/sam/unified/current/software?columns[ ]=name&columns[ ]=release&columns[ ]
=computer.name&columns[ ]=computer.ip_address
&token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

## Configuration APIs

Configuration APIs include all APIs that you need to configure the application.

### Below APIs are supported:

- REST API for managing VM managers
- REST API for changing advanced server settings
- REST API for setting and deleting the end of support date
- REST API for adding and removing tags
- REST API for export and import of saved report views
- REST API for updating the Oracle core fact
- **10.0.4** REST API for managing license metrics

## REST API for managing VM managers

You can use REST API requests to add and change VM managers in your infrastructure.

### Retrieval of VM managers

Use the `GET` operation on the `api/sam/vmmanagers` element to retrieve information about VM managers that are defined in your infrastructure. The API returns the same data as available on the VM Managers panel. The VM Managers that do not report longer than the value allowed through `maxVMManagerVisibility` (on page *dccclx*) are not be returned by the API.

The REST API returns more information than is visible on the user interface. It returns information about VM managers that are managed both in central and distributed mode. It also returns information from virtualization technologies that do not require defining connection to the VM manager such as Xen or KVM without RHV-M. The scope of VM managers from which data is collected depends on which VM Manager Tools are installed on computers that belong to the computer group to which you are assigned.

**Permission required:** To retrieve information about VM managers, you must have the 'Manage VM Managers and Servers' permission.

**Table 313. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/vmmanagers</code>

Table 313. Operation descriptions (continued)

Operation details	Description
<b>Purpose</b>	Returns a list of VM managers.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/vmmanagers?token=token</code>
<b>Request Content-Type</b>	application/json
<b>Response Content-Type</b>	application/json
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	<p>400 - "Bad Request" if a query parameter contains errors or is missing</p> <p>401 - "Unauthorized" if the user does not have the Manage VM Managers and Servers permission</p> <p>403 - "Forbidden" if the computer where the central VM Manager tool is installed does not belong to the computer group that the user is assigned</p> <p>500 - "Internal Server Error" if no VM Manager tool is defined in the BigFix Inventory database.</p> <p>Message body includes an error message with details.</p>

## Response attributes

Table 314. Response attributes and their possible values

Attribute	Possible values
lastcollection	Date and time when data was collected from the VM manager.
deleted	Indicates whether the VM manager was removed from BigFix Inventory.
lastmodified	The date and time when the VM manager was last modified.
login	User name that is used to access the VM manager.
protocol	Communication protocol used by the VM manager. The attribute is applicable only for Hyper-V.

**Table 314. Response attributes and their possible values (continued)**

Attribute	Possible values
	<ul style="list-style-type: none"> <li>• 0 - WinRM</li> <li>• 1 - PowerShell</li> <li>• null - the VM manager is not Hyper-V</li> </ul>
<code>sharedcredentials</code>	Indicates whether the VM manager shares credentials with other hosts in the same cluster. The attribute is applicable only for Hyper-V.
<code>status</code>	<p>Status of the VM manager.</p> <ul style="list-style-type: none"> <li>• -1 - Invalid credentials - suspended</li> <li>• 0 - Pending</li> <li>• 1 - OK</li> <li>• 2 - Connection failed</li> <li>• 3 - Invalid credentials - attempting</li> <li>• 6 - Duplicated address</li> <li>• 7 - Hard timeout - suspended</li> <li>• 8 - OK - duplicated UUIDs discarded</li> <li>• 9 - No VM Manager Data</li> <li>• 98 - Inactive</li> <li>• 99 - Unknown problem</li> </ul> <p>For more information about each status, see: <a href="#">VM manager statuses (on page dccxcviii)</a>.</p>
<code>type</code>	<p>Type of the VM manager.</p> <ul style="list-style-type: none"> <li>• 1 - Hyper-V</li> <li>• 2 - VMware vSphere or VMware ESX</li> <li>• 3 - RHV-M</li> <li>• <b>9.2.12</b> 4 - Citrix Hypervisor (formerly XenServer)</li> <li>• 99 - Other. The value is used for VM managers for which data is collected by using the Run Capacity Scan on Virtualization Hosts task, for example Xen and KVM without RHV-M.</li> </ul>
<code>url</code>	Web address of the VM manager.
<code>vmmanagerid</code>	ID of the VM manager.
<code>vmmanagertoolid</code>	ID of the VM Manager tool that collects information from the particular VM manager.

## Example HTTP conversation

### Request

```
GET http://localhost:9081/api/sam/vmmanagers
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### Response body (JSON)

```
[{
  "vmmanagerid":1,
  "protocol":null,
  "deleted":false,
  "vmmanagertoolid":1,
  "sharecredentials":false,
  "lastmodified":"2016-06-12 09:06:51.723",
  "login":"admin@internal",
  "type":3,
  "url":"https://9.156.44.146:8443/api",
  "status":98
}]
```

## Adding and updating VM managers

You use the `PUT` operation on the `api/sam/vmmanagers` element to add or update VM managers. You can perform these actions only for VM managers that are managed in central mode.

To add or update VM managers, the following requirements must be met:

- You must have the Manage VM Managers and Servers permission
- The computer group to which you are assigned must contain the computer on which the central VM Manager tool is installed

**Table 315. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>PUT api/sam/vmmanagers</code>
<b>Purpose</b>	Adds a new VM manager or changes an existing one.
<b>HTTP method</b>	<code>PUT</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/vmmanagers?token=token</code>
<b>Request Content-Type</b>	<code>application/json</code>
<b>Response Content-Type</b>	<code>application/json</code>

**Table 315. Operation descriptions (continued)**

Operation details	Description
<b>Normal HTTP response codes</b>	
	200 - OK
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user does not have the Manage VM Managers and Servers permission
	403 - "Forbidden" if the computer where the central VM Manager tool is installed does not belong to the computer group that the user is assigned
	500 - "Internal Server Error" if no VM Manager tool is defined in the BigFix Inventory database. The code might also indicate an unknown problem that requires contacting BigFix support.



**Note:** The backslash character is a reserved character and can not be used in JSON. It must be properly escaped to be used in strings. Replace **Backslash** with `\\`. It applies to all fields in the API.

## Request attributes

**Table 316. Request attributes**

Attribute	Description
login	User name that is used to access the VM manager.
password	Password that is used to access the VM manager. The password is encrypted after it is sent.
protocol	Communication protocol used by the VM manager. The attribute is applicable only for Hyper-V. <ul style="list-style-type: none"> <li>• 0 - WinRM</li> <li>• 1 - PowerShell</li> </ul>
sharecredentials	Indicates whether the VM manager shares credentials with other hosts in the same cluster. The attribute is applicable only for Hyper-V.

**Table 316. Request attributes (continued)**

Attribute	Description
	<ul style="list-style-type: none"> <li>• <code>true</code> - the VM manager shares the credentials and it is not necessary to specify them</li> <li>• <code>false</code> - the VM manager does not share the credentials</li> </ul>
<code>type</code>	<p>Type of the VM manager.</p> <ul style="list-style-type: none"> <li>• 1 - Hyper-V</li> <li>• 2 - vCenter</li> <li>• 3 - RHV-M</li> <li>• <b>9.2.12</b> 4 - Citrix Hypervisor (formerly XenServer)</li> </ul>
<code>url</code>	<p>Web address of the VM manager. You can specify a full URL, a host name, or an IP address. The default URL differs depending on the virtualization type.</p> <ul style="list-style-type: none"> <li>• vCenter <ul style="list-style-type: none"> <li>◦ <code>https://&lt;vCenter_IP_address&gt;/sdk/vimService.wsdl</code></li> </ul> </li> <li>• RHV-M <ul style="list-style-type: none"> <li>◦ <code>https://&lt;RHV-M_IP_address&gt;/ovirt-engine/api</code></li> </ul> </li> <li>• Hyper-V <ul style="list-style-type: none"> <li>◦ <code>https://&lt;Hyper-V_IP_address&gt;/wsman</code></li> </ul> </li> </ul>
<code>vmmanagerid</code>	<p>ID of the VM manager that you want to change. To obtain the ID, use <a href="#">REST API for the retrieval of VM managers (on page mdccvi)</a>.</p>
<code>vmmanagertoolid</code>	<p>ID of the VM Manager tool that collects data from the VM manager that you want to change. To obtain the ID, use <a href="#">REST API for the retrieval of VM managers (on page mdccvi)</a>.</p>

**Example HTTP conversation - adding a VM manager**

To add a new VM manager, provide the following attributes:

- `login`
- `password`
- `url`
- `type`

**Request**

```
PUT http://localhost:9081/api/sam/vmmanagers
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
[
  {
    "login": "user1",
    "password": "vZaW1Ve6",
    "url": "192.0.2.24",
    "type": 2
  }
]
```

### Response

```
200 OK
```

### Example HTTP conversation - changing a VM manager

To change an existing VM manager, provide the following attributes:

- `login`
- `password`
- `url`
- `type`
- `vmmanagerid`
- `vmmanagertoolid`



**Important:** All attributes must be provided in the request regardless of how many of the attributes you want to change.

### Request

```
PUT http://localhost:9081/api/sam/vmmanagers
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
[
  {
    "vmmanagerid": 1,
    "vmmanagertoolid": 1,
    "login": "user1",
    "password": "vZaW1Ve6",
    "url": "192.0.2.24",
    "type": 3
  }
]
```

**Response**

200 OK

## REST API for changing advanced server settings

**9.2.3** Available from 9.2.3. You can change the parameters of the BigFix Inventory server by using REST API.

## Retrieval of the current values of advanced server settings

**9.2.3** Available from 9.2.3. You use the `GET` operation on the `api/sam/configs` element to request information about the current values of the BigFix Inventory server settings. The output is returned in the JSON format.

**Table 317. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/configs</code>
<b>Purpose</b>	Returns information about the current values of the BigFix Inventory server settings.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/configs</code>
<b>URL link relation</b>	n/a
<b>URL query parameters</b>	For a list of query parameters, see: <a href="#">Query parameters (on page mdccxiv)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>Application/json</p>

**Table 317. Operation descriptions (continued)**

Operation details	Description
	Specifies the content type of the response.
	<b>Header</b>
	<code>Content-Language</code>
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
<b>Response payload</b>	<code>configs</code> element
<b>Response Content-Type</b>	<code>Application/json</code>
<b>Normal HTTP response codes</b>	n/a
<b>Error HTTP response codes</b>	n/a

## Query parameters

The following table presents query parameters that you can use for the `configs` element.

**Table 318. Query parameters for retrieving current values of server settings**

*The table consists of four columns and two rows.*

Parameter	Description	Required	Value
<b>name</b>	Returns the configuration of a single parameter. For a complete list of possible values and their explanation, see: <a href="#">Advanced server settings (on page dccc1)</a> .	No	Name of the parameter
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

## Example HTTP conversation

Checking the current value of all parameters.

### Request

```
GET https://localhost:9081/api/sam/configs?token=
7adc3efb175e2bc0f4484bdd2efca54a8fa04623
```

### Excerpt for the response body (JSON)

```
[
  {
    "valueMax":10080,
    "valueMin":0,
    "valueType":"minutes",
    "name":"vmman_transfer_period","value":"720"},

  {
    "valueType":"boolean",
    "name":"vmman_check_uniqueness_enabled",
    "value":"true"},

  {
    "valueType":"boolean",
    "name":"blockUiBundlingComputations",
    "value":"false"},

  {
    "valueMax":10080,
    "valueMin":0,
    "valueType":"minutes",
    "name":"catalog_download_task_stagger_interval",
    "value":"0"},

  {
    "valueType":"boolean",
    "name":"storeHwDataForAllVMMManagerNodes",
    "value":"false"},

  ]
```

Checking the current value of a single parameter.

#### Request

```
GET https://localhost:9081/api/sam/configs?token=
7adc3efb175e2bc0f4484bdd2efca54a8fa04623&name=maxVMMManagerInactivity
```

#### Response body (JSON)

```
[
  {
    "valueMax":90,
    "valueMin":1,
    "valueType":"days",
    "name":"maxVMMManagerInactivity",
    "value":"3"}
  ]
```

## Configuration of advanced server settings

**9.2.3** Available from 9.2.3. You use the `PUT` operation on the `api/sam/configs` element to change the values of the BigFix Inventory server settings.

 You must be an Administrator to perform this task.

**Table 319. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>PUT /api/sam/configs</code>
<b>Purpose</b>	Changes the current value of a server setting.
<b>HTTP method</b>	<code>PUT</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/configs</code>
<b>URL link relation</b>	n/a
<b>URL query parameters</b>	For a list of query parameters, see: <a href="#">Query parameters (on page mdccxvii)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>application/x-www-form-urlencoded</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response <code>Content-Type</code></b>	n/a

Table 319. Operation descriptions (continued)

Operation details	Description
<b>Normal HTTP response codes</b>	
	204
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if the provided value is invalid. For example, it is out of range or has a wrong type.
	404 - "Not Found"

## Query parameters

The following table presents query parameters that you can use for the `configs` element.

Table 320. Query parameters for changing current values of server settings

Parameter	Description	Required	Value
<b>name</b>	Specifies the parameter whose value is to be changed. For a complete list of possible values and their explanation, see: <a href="#">Advanced server settings (on page dccc1)</a> .	Yes	Name of the parameter
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric
<b>value</b>	Specifies the new value of the parameter.	Yes	Value that is within the range specific for the parameter.

## Example HTTP conversation

### Request

```
PUT http://localhost:9981/api/sam/configs
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&name=
maxVMManagerInactivity&value=30
```

## REST API for setting and deleting the end of support date

**9.2.11** Available from 9.2.11. You can set and delete the end of support date for any software component by using REST API.

## Setting the end of support date for software components

**9.2.11** Available from 9.2.11. You use the `POST` operation on the `sam/component_lifecycles` element to set the end of support date for software components. The end of support date is added on the Software Components report. If

you want to change the end of support date, you must first delete the current date and then set a new one by using this API.

## Permissions

 You must have the Manage Catalogs permission to use this API.

## Resource URL

```
https://hostname:port/sam/component_lifecycles?token=token
```



**Note:** The URL is going to change in the future. If you are going to use it for integration, check for updates in future releases.

## Resource information

**Table 321. Resource information**

Operation details	Description
HTTP method	POST
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p> <p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the request.</p>
Request format	application/json
Request payload	<pre>{ "component_lifecycle": { "eos_date": "YYYY-MM-DD", "software_component_id": "software_component_id" } }</pre>
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p>

Table 321. Resource information (continued)

Operation details	Description
	<pre>application/json</pre> <p>Specifies the content type of the response.</p>
	<p><b>Header</b></p> <pre>Content-Language</pre>
	<p><b>Values</b></p> <pre>en-US, ...</pre> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response format	<pre>application/json</pre>
Response codes	<pre>200 - OK</pre> <pre>422 - "Unprocessable entity" if a parameter contains errors or is missing</pre>

### Example conversation - setting end of support date for a software component

- To retrieve information about the software component ID for which you want to set the end of support date, perform the following steps:
  - Log in to BigFix Inventory.
  - Go to **Reports > Software Components**.
  - Hover over the component name and check the URL address at the bottom of the page. The software component ID is a number at the end of the URL. For example: `sam/catalog/software_components/10379`
- To set the end of support date, use the following `POST` request.

#### Request header

```
POST sam/component_lifecycles?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Request Body

```
{ "component_lifecycle":
  {
    "eos_date": "2020-12-22",
    "software_component_id": "10379"}
}
```

**Response Header**

200 - OK

**Response Body**

```
{
  "created_at": "2018-01-26T10:30:06Z",
  "detailed_version": null,
  "eos_date": "2020-12-23",
  "id": 2,
  "is_release": true,
  "software_component_id": 10379,
  "source_id": 1,
  "source_type": 0,
  "updated_at": "2018-01-26T10:30:06Z"
}
```

## Deleting the end of support date for software components

**9.2.11**Available from 9.2.11. You use the `DELETE` operation on the `sam/`

`software_components/software_component_id/component_lifecycles/` element to remove the end of support date for a software component.

**Permissions**

You must have the Manage Catalogs permission to use this API.

**Resource URL**

```
https://hostname:port/sam/software_components/software_component_id/component_lifecycles?token=token
```

**Resource information****Table 322. Resource information**

Operation details	Description
HTTP method	<code>DELETE</code>
Request headers	<b>Header</b> <code>Accept-Language</code> (optional) <b>Values</b> en-US (only English is supported)

**Table 322. Resource information (continued)**

Operation details	Description
	Negotiates the language of the response. If the header is not specified, the content is returned in the server language.
Request format	<code>application/json</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p><code>en-US, ...</code></p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response format	<code>application/json</code>
Response codes	<code>200 - OK</code>

### Example conversation - clearing the end of support date for a software component

- To retrieve information about the software component ID for which you want to clear the end of support date, perform the following steps:
  - Log in to BigFix Inventory.
  - Go to **Reports > Software Components**.
  - Hover over the component name and check the URL address at the bottom of the page. The software component ID is a number at the end of the URL. For example: `sam/catalog/software_components/10379`
- To remove the end of support date, use the following `DELETE` request.

#### Request header

```
DELETE
sam/software_components/10379/component_lifecycles?token=7adc3efb175e2bc0f4484bdd2efca54
a8fa04623
Host: localhost:9081
```

```
Accept: application/json
Accept-Language: en-US
```

## Response

```
200 - OK
```

## REST API for adding and removing tags

**9.2.14** Available from 9.2.14. You can add and remove tags for any software component by using REST API.

### Adding tags for software components

**9.2.14** Available from 9.2.14. You use the `POST` operation on the `api/sam/v2/tags/software_components` element to add tags for software components.

## Permissions



You must have the Manage Catalogs permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/tags/software_components?token=token
```

## Resource information

**Table 323. Resource information**

Operation details	Description
HTTP method	<code>POST</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/x-www-form-urlencoded</code>
Request payload	<code>ids=id_1, id_2, id_3&amp;tags=tag_1, tag_2, tag_3</code>
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p>

Table 323. Resource information (continued)

Operation details	Description
	<pre>application/json</pre> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <pre>Content-Language</pre> <p><b>Values</b></p> <pre>en-US, ...</pre> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response format	<pre>application/json</pre>
Response codes	<pre>200 - OK</pre> <pre>400 - Bad request</pre>

### Example conversation - adding tags for the selected software components



**Note:** The length of a single tag is limited to 254 characters.

#### Request

```
POST
api/sam/v2/tags/software_components?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&ids=1,2,3&tags=tag1,tag2
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response

```
{
  "updated_components": 3
}
```

### Removing tags for software components

**9.2.14** Available from 9.2.14. You use the `DELETE` operation on the `api/sam/v2/tags/software_components` element to remove the previously added tags.

## Permissions

 You must have the Manage Catalogs permission to use this API.

## Resource URL

```
https://hostname:port/api/sam/v2/tags/software_components?token=token
```

## Resource information

**Table 324. Resource information**

Operation details	Description
HTTP method	DELETE
Request headers	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	application/x-www-form-urlencoded
Request payload	ids=id_1, id_2, id_3&tags=tag_1, tag_2, tag_3
Response headers	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If the header is not specified, the content is returned in the server language.</p>
Response format	application/json

**Table 324. Resource information (continued)**

Operation details	Description
Response codes	200 - OK
	400 - "Bad request"

### Example conversation - removing tags for the selected software components



**Note:** The length of a single tag is limited to 254 characters.

#### Request

```
DELETE
api/sam/v2/tags/software_components?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&ids=1,2,3&tags=tag1,tag2
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

#### Response

```
{
  "updated_components": 3
}
```

## REST API for export and import of saved report views

You can use REST API requests to export a saved report view from one instance of BigFix Inventory and import it to another instance of the application.

### Exporting and importing a saved report view

To export a saved report view to another instance of BigFix Inventory, check the ID of the report view in the source instance of BigFix Inventory. Then, use the GET operation to retrieve the definition of the saved report view. Next, use the POST operation to import it to another instance of BigFix Inventory.

The following procedure uses cURL command-line tool for negotiating API requests.

1. Check the identifier of the saved report view.
  - a. Log in to the instance of BigFix Inventory from which you want to export the saved report view.
  - b. In the top navigation bar, click **Reports > Saved Reports**. Open the saved report view and check the last number in the report URL.

In the following example, the report ID is 2.

```
http://server_host_name:port_number/sam/pvuonlysubcapreports#32fe0f54dc719893faacc1d0f38a0c9045
863729/2
```

2. Obtain API tokens from both instances of BigFix Inventory.
  - a. Hover over the **User** icon , and click **Profile**.
  - b. In the API Token line, click **Show token**.
3. Open the command line interface and change to the location where cURL is installed.
4. To export the report view, use the following GET request:

```
curl -o C:\saved_reports\report_definitions\pvu_subcapacity.txt
-X GET server_host_name:port_number/api/reports/report_ID?
token=5edd5aey7cd91467h08450bc258c31f0ce706543
```

Where:

**-o**

Specifies the path to the file where the definition of the saved report view is to be saved.

**-X**

Specifies the type of HTTP request.

**report\_ID**

Specifies the identifier of the saved report view that is to be exported.

If the request is successful, the following message is displayed:

```
HTTP/1.1 200 OK
```

5. To import the saved report view to another instance of BigFix Inventory, use the following POST request:

```
curl -H "Content-Type: application/json"
-X POST -d "@C:\saved_reports\report_definitions\pvu_subcapacity.txt"
server_host_name:port_number/api/reports?
token=5cd3gh78499496e89a3246ab343474e85d8bc8fc
```

Where:

**-H**

Specifies the header of the request.

**-X**

Specifies the type of HTTP request.

**-d**

Specifies the path to the file where the definition of the saved report view was saved.

The saved report view was imported to the target instance of BigFix Inventory.

## Export of saved report views

You use the `GET` operation on the `api/reports/report_ID` element to export a saved report view which can be then imported to another instance of BigFix Inventory.

**Table 325. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/reports/report_ID</code>
<b>Purpose</b>	Returns the saved report view with the specified ID.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/reports/report_ID</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccclxxxii)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>Application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p>

**Table 325. Operation descriptions (continued)**

Operation details	Description
	en-US, ...
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
<b>Response payload</b>	Saved reports element
<b>Response Content-Type</b>	Application/json
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	<p>401- There is no match for the provided user name and password</p> <p>401 - You are not assigned a Computer Group. You will not be able to access the system until you are assigned a valid Computer Group. Contact your administrator for assistance</p> <p>404 - Sequel::RecordNotFound</p>
	For more details about each error code, check the <code>tema.log</code> log file in the <code>install_dir/wlp/usr/servers/server1/logs/</code> directory.

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `api/reports` element.

**Table 326. Query parameters for retrieving saved report views**

Parameter	Description	Required	Value
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric
<b>id</b>	An identifier of the saved report. To find the report identifier, open the saved report and check the last number in the report URL. In the following example, the report ID is 3.	No	Numeric
	<pre>server_host_name:port/sam/app_usage_property_val ues#cafcac39cd0b242b82729377b0b2b872d3af8d8a/3</pre>		

## Example HTTP conversation

### Request

```
GET/api/reports/1
&token=a070afeca411d2fs25f5s4c962de2d002b14352F
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: Application/json
Content-Language: en-US
```

### Response body (JSON)

```
{
  "id":1,
  "user_id":1,
  "pagestate_id":"eb5743b7cd23316f0bc8a4dd3f63b90d73549042",
  "name":"pvu_test",
  "path":"/sam/pvuonlysubcapreports",
  "private":true,
  "state":{
    "columns":["product","quantity","hwm_history"],
    "criteria":{"and":[{"quantity",">","200"}]},
    "grid_options":["autosize_columns"],
    "order":{"asc":true,"col":null},
    "time_range":{
      "max":"2014-07-21T10:18:04Z",
      "min":"2014-04-21T22:00:00Z",
      "type":"absolute_to_now",
      "units":"days",
      "value":"90"
    },
    "column_order":{
      "hwm_history":1,
      "product":0,
      "quantity":2
    },
    "column_widths":{
      "hwm_history":180,
      "product":524,
      "quantity":719
    }
  }
}
```

## Import of saved report views

You use the `POST` operation on the `api/reports` element to import a saved report view from another instance of BigFix Inventory.

**Table 327. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>POST /api/reports</code>
<b>Purpose</b>	Imports a saved report view from another instance of BigFix Inventory.
<b>HTTP method</b>	<code>POST</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/reports</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccclxxxii)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	Saved reports element
<b>Request Content-Type</b>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>Application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p>

Table 327. Operation descriptions (continued)

Operation details	Description
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
<b>Response payload</b>	n/a
<b>Response Content-Type</b>	Application/json
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	<p>401- There is no match for the provided user name and password</p> <p>401 - You are not assigned a Computer Group. You will not be able to access the system until you are assigned a valid Computer Group. Contact your administrator for assistance.</p> <p>404 - Not Found</p> <p>404 - Sequel::RecordNotFound</p> <p>500 - Name is already taken</p> <p>500 - There was a problem with your request</p> <p>500 - We're sorry, but something went wrong. Please contact your BigFix Analytics administrator if the problem persists</p> <p>500 if the JSON format is invalid, a detailed message with the problem explanation is also returned. For example, if a name field is missing, the following message is displayed: The property '#/' did not contain a required property of 'name' in schema 69e40f9b-9a3e-53d1-a7d8-61d63eb191e8#</p> <p>For more details about each error code, check the <code>tema.log</code> log file in the <code>install_dir/wlp/usr/servers/server1/logs/</code> directory.</p>

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `api/reports` element.

Table 328. Query parameters for retrieving saved report views

Parameter	Description	Required	Value
<code>token</code>	A unique user authentication identifier.	Yes	Alphanumeric

## Example HTTP conversation

### Request header

```
Content-Type: application/json
Content-Language: en-US
```

### Request

```
POST /api/reports?token=465c33848de3db7ch5699023ea22deb5b1a476d1
{
  "id":4,
  "user_id":2,
  "pagestate_id":"7ebb0b0a018ab55fab8e6e40d5eb62529ea38fad",
  "name":"pvu_report",
  "path":"/sam/pvuonlysubcapreports",
  "private":true,
  "state":{
    "columns":["product","quantity","hwm_history"],
    "criteria":{"and":[{"quantity",">","200"}]},
    "grid_options":["autosize_columns"],
    "order":{
      "asc":true,
      "col":"quantity"
    },
    "time_range":{
      "max":"2014-07-21T10:18:04Z",
      "min":"2014-04-21T22:00:00Z",
      "type":"absolute_to_now",
      "units":"days",
      "value":"90"
    },
    "column_order":{
      "hwm_history":1,
      "product":0,
      "quantity":2
    },
    "column_widths":{
      "hwm_history":180,
      "product":524,
      "quantity":719
    }
  }
}
```

### Response

```
HTTP/1.1 200 OK
```

## REST API for updating the Oracle core factor

**9.2.8** Available from 9.2.8. You use the `PUT` operation on the `api/v1/servers` element to change the processor core factor that is applied to a group of servers for the purpose of calculating utilization of the Oracle Processor Core metric.

### Permissions



You must have the Manage Hardware Inventory permissions to use this API.

### Resource URL

```
https://hostname:port/api/v1/servers?token=token
```

For more information about using the REST API, see: [Changing the Oracle core factor through REST API \(on page cmxxix\)](#).

### Resource information

**Table 329. Resource information**

Operation details	Description
HTTP method	<code>PUT</code>
Request headers	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Negotiates the language of the response. If the header is not specified, the content is returned in the server language.</p>
Request format	<code>application/json</code>
Request payload	Oracle Core Factors element
Response headers	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p>

**Table 329. Resource information (continued)**

Operation details	Description
	Content-Language
	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If the header is not specified, the content is returned in the server language.
Response format	application/json
Response codes	200 - OK
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user is not authorized to perform the operation
	422 - "Unprocessable Entity" if the request is well-formed but cannot be processed due to semantic errors

## Available columns

**Table 330. Available columns**

Column	Description	Required	Type
server_id	ID of the server for which you want to change the core factor.	✓	Nu-mer-ic
oracle_core_factor	Oracle core factor that you want to assign to server.	✓	Float

## Example conversation

### Request header

```
Content-Type: application/json
Content-Language: en-US
```

### Response body

```
POST api/v1/servers?token=465c33848de3db7ch5699023ea22deb5b1a476d1
{
  "oracle_core_factors":
  [
    {
```

```

    "server_id": 1,
    "oracle_core_factor": 1.0
  },
  {
    "server_id": 2,
    "oracle_core_factor": 1.5
  }
]

```

#### 10.0.4 REST API for managing license metrics

Use REST API requests to retrieve, create, change, and delete license metrics. From version 10.0.5, you can also manage metrics through the UI. See also, [managing license metrics through UI \(on page mli\)](#).

##### Retrieval of license metrics

Use GET operation on `api/sam/v2/metrics` element to request information about license metrics defined or present in BigFix Inventory.

 You must have the View Contracts and Manage Contracts permissions to use the `api/sam/v2/metrics` API.

**Table 331. Operation descriptions**

Operation details	Descriptions
Operation	GET <code>api/sam/v2/metrics</code>
Purpose	Returns list of license metrics and their details
HTTP method	GET
Resource URI	<code>https://server_host_name:port_number/api/sam/v2/metrics?token=token</code>
Request content-type	<code>application/json</code>
Response content-type	<code>application/json</code>
Normal HTTP response codes	200-ok

##### Response attributes

**Table 332. Response attributes and their possible values**

Attribute	Possible values
<code>id</code>	Identifier of the license metric. For explanation of the returned values, see: <a href="#">Metric IDs and code names</a> .
<code>code_name</code>	Code name of the license metric. For explanation of the returned values, see: <a href="#">Metric IDs and code names</a> .

**Table 332. Response attributes and their possible values (continued)**

Attribute	Possible values
display_name	Name of the license metric.
source_type	Source type of license metric. Value 2 means a custom metric and Values 0 and 1 mean a predefined metric.
source_id	Source id of license metric

**Example HTTP conversion****Request**

```
https://localhost:9081/api/sam/v2/metrics?token=6b884e39d8d34e05192c5d72dd6739607293b828
```

**Response**

```
{
  "total": 3,
  "rows": [
    {
      "id": -32603,
      "code_name": "CONCURRENT_USER",
      "display_name": "Concurrent User",
      "source_type": 1,
      "source_id": 27
    },
    {
      "id": -32470,
      "code_name": "VU_VALUE_UNIT",
      "display_name": "VU Value Unit",
      "source_type": 1,
      "source_id": 32
    },
    {
      "id": -32337,
      "code_name": "APPSERVER_CONNECTED",
      "display_name": "AppServer Connected",
      "source_type": 1,
      "source_id": 108
    }
  ]
}
```

## Adding and updating license metrics

### Adding license metrics

Use POST operation on `api/sam/v2/metrics` element to create new license metric.

**Table 333. Operation descriptions for creating metric using POST operation**

Operation details	Description
Operation	POST <code>api/sam/v2/metrics</code>
Purpose	Creates new license metric
HTTP method	POST
Resource URI	<code>https://hostname:port/api/sam/v2/metrics?</code> <code>code_name=code_name&amp;display_name=display_name&amp;token=token</code>
Request content-type	<code>application/json</code>
Response content-type	<code>application/json</code>
Normal HTTP response codes	200-ok
Error HTTP response codes	400 – "Bad Request" if a query parameter contains errors or if the metric with same metric code name or display name already present

### Response attributes

**Table 334. Response attributes and their possible values**

Attribute	Possible values
<code>code_name</code>	Code name of the metric, which is created
<code>display_name</code>	Name of the metric created.
<code>source_type</code>	Source type of license metric created.
<code>source_id</code>	Source id of license metric created.
<code>error</code>	Reason for creation of metric failure.

### Example HTTP conversation



**Note:**



- Maximum length allowed for **code\_name** and **display\_name** attributes is 254.
- Attribute **code\_name** should not have any spaces in between the words and can use "\_" as word separator. All letters should be in upper case.

### 1. Create metric using POST operation

#### Request

```
POST
https://localhost:9081/api/sam/v2/metrics?code_name=METRIC_POST&display_name=DISPLAY&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

#### Response

```
200 ok
Response body (JSON)
{
  "id": 32468,
  "code_name": "METRIC_POST",
  "display_name": "DISPLAY",
  "source_type": 2,
  "source_id": 32468
}
```

### 2. Creation of metric failed. Metric already exist.

#### Request

```
POST
https://localhost:9081/api/sam/v2/metrics?code_name=METRIC_POST&display_name=DISPLAY&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

#### Response

```
400 Bad Request
Response body (JSON)
{
  "error": "Metric already present"
}
```

### 3. Creation of metric failed. Incorrect code name or display name.

#### Request

```
POST
https://localhost:9081/api/sam/v2/metrics?code_name=metric_post&display_name=DISPLAY&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

### Response

```
400 Bad Request
Response body (JSON)
{
  "error": "Metric code name or display name not proper"
}
```

### Updating license metrics

Use PUT operation on `api/sam/v2/metrics` element to update display name of already existing metric.

**Table 335. Operation descriptions for updating metric display name using PUT operation**

Operation details	Description
Operation	PUT api/sam/v2/metrics
Purpose	Updates metric display name for existing metric
HTTP method	PUT
Resource URI	https://hostname:port/api/sam/v2/metrics? code_name=code_name&display_name=display_name&token=token
Request content-type	application/json
Response content-type	application/json
Normal HTTP response codes	200-ok
Error HTTP response codes	400 – "Bad Request" metric does not exist or display name length given to for update is greater than 254  403 – "Forbidden", trying to update non custom metric, which has source_type other than 2

### Response attribute

**Table 336. Response attributes and their possible values**

Attribute	Possible values
code_name	Code name of the metric, for which update sent.

**Table 336. Response attributes and their possible values (continued)**

Attribute	Possible values
display_name	Updated name of the metric.
source_type	Source type of license metric updated.
source_id	Source id of license metric updated.
error	Reason for display name update fail.

**Example HTTP conversion**

## 1. Update metric using PUT operation

**Request**

```
PUT
https://localhost:9081/api/sam/v2/metrics?code_name=CONCURRENT_USER&display_name=Updatedv
alue&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

**Response**

```
200 ok
Response body (JSON)
{
  "id": 27,
  "code_name": "CONCURRENT_USER",
  "display_name": "Updated value",
  "source_type": 1,
  "source_id": 27
}
```

## 2. Metric update failed. Metric does not exist.

**Request**

```
PUT
https://localhost:9081/api/sam/v2/metrics?code_name=NOT_PRESENT&display_name=DISPLAY&toke
n=6b884e39d8d34e05192c5d72dd6739607293b828
```

**Response**

```
400 Bad Request
Response body (JSON)
{
  "error": "Metric does not exist"
}
```

### 3. Metric update failed. Display name length is more than 254.

#### Request

```
PUT
https://localhost:9081/api/sam/v2/metrics?code_name=CONCURRENT_USER&display_name=AAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

#### Response

```
400 Bad Request
Response body (JSON)
{
  "error": "Display name length is too long"
}
```

### 4. Metric update failed. Attempt to update non-custom metric.

#### Request

```
https://localhost:9081/api/sam/v2/metrics?code_name= VU_VALUE_UNIT
&display_name=Updatedvalue&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

#### Response

```
403 Forbidden
Response body (JSON)
{
  "error": "VU_VALUE_UNIT metric update not allowed"
}
```

## Deleting license metric

Use DELETE operation on `api/sam/v2/metrics` element to delete license metric.

**Table 337. Operation descriptions for creating metric using DELETE operation**

Operation details	Description
Operation	DELETE <code>api/sam/v2/metrics</code>
Purpose	Deletes new license metric
HTTP method	DELETE
Resource URI	<code>https://hostname:port/api/sam/v2/metrics?</code>

**Table 337. Operation descriptions for creating metric using DELETE operation (continued)**

Operation details	Description
	code_name=code_name&token=token
Request content-type	application/json
Response content-type	application/json
Normal HTTP response codes	200-ok
Error HTTP response codes	400 – "Bad Request" if the metric not present  403- "Forbidden" if the metric is non custom metric, having source_ type value other than 2

**Response attributes****Table 338. Response attributes and their possible values**

Attribute	Possible values
error	Reason for metric deletion failure

**Example HTTP conversation**

## 1. Metric deleted successfully

**Request**

```
DELETE
https://localhost:9081/api/sam/v2/metrics?code_name=TEST&token=6b884e39d8d34e05192c5d72dd
6739607293b828
```

**Response**

```
200 ok
Response body (JSON)
{
}
```

## 2. Delete metric failed

**Request**

```
DELETE
https://localhost:9081/api/sam/v2/metrics?code_name=TEST&token=6b884e39d8d34e05192c5d72dd
6739607293b828
```

**Response**

```
400 Bad Request
Response body (JSON)
{
  "error": "Metric does not exist"
}
```

### 3. Delete non-custom metric failed

#### Request

```
DELETE
https://localhost:9081/api/sam/v2/metrics?code_name=
VU_VALUE_UNIT&token=6b884e39d8d34e05192c5d72dd6739607293b828
```

#### Response

```
Response
403 Forbidden
Response body (JSON)
{
  "error": "VU_VALUE_UNIT metric delete not allowed"
}
```

## 10.0.6 REST API for managing contracts

With the `/api/sam/v2/contracts.json` API, you can import and export contract data with purchase information. This operation is used to automate integration with external purchase systems. You can also manage contracts using: [contracts CSV import \(on page mclxxxviii\)](#), user interface - [All Contracts panel \(on page mclxxviii\)](#) and [deprecated contracts migration \(on page mclxxxvi\)](#).

Check the limitations of [Adding and updating contracts \(on page mdccxlvj\)](#) before using the API.

### Permissions



You must have Manage Contracts permission along with access to the computer group of the contract.

### Resource URL

```
https://hostname:port/api/sam/v2/contracts?token=<token>
```

### Syntax

```
GET /api/sam/v2/contracts.json
```

### Schema description

```
/api/sam/v2/schemas/contract.json
```

## Association

- [computer\\_group](#) (on page [mdcxiv](#))
- [metric](#) (on page [mdcxv](#))
- [purchase\\_order](#) (on page [mdcxv](#))
- [software\\_product](#) (on page [mdcxvii](#))

## Available columns

Column name	Description	Importance
<b>contract_id</b>	<p>Identifier of contract.</p> <ul style="list-style-type: none"> <li>• A contract is updated only when a contract ID is available.</li> <li>• Contract ID must be unique among all contracts.</li> <li>• On UI, it is generated automatically.</li> </ul> <p><b>Type:</b> String</p>	Required
<b>name</b>	<p>Name of the contract.</p> <p><b>Type:</b> String</p>	Optional
<b>type</b>	<p>Type of the contract: 1 - License, 2 - Support, 3 - Service, 4 - Hardware, 5 - Other.</p> <p><b>Type:</b> Integer</p>	Optional
<b>threshold</b>	<p>Threshold for the contract measured value. It is optional.</p> <p><b>Type:</b> Integer</p>	Optional
<b>computer_group</b>	<p>Contract's computer group object. To check the list of computer group columns, see, <a href="#">computer_group</a> (on page <a href="#">mdcxiv</a>).</p>	Optional
<b>metric</b>	<p>Contract's metric group object. To check the list of metric columns, see, <a href="#">metric</a> (on page <a href="#">mdcxv</a>).</p>	Optional

Column name	Description	Importance
<b>purchase_order</b>	Array of purchase orders assigned to the contract. To check the list of purchase order columns, see, <a href="#">purchase_orders (on page mdcxv)</a> .	Optional
<b>software_products</b>	Array of software products assigned to the contract. To check the list of software product columns, see, <a href="#">software_product (on page mdcxvii)</a> .	Optional



**Note:** All associations, computer\_group, metric, purchase\_order, and software\_product are optional. If computer\_group association is not provided and contract is being created, All Computers group is used.

## Available metrics

For a list of available metric, refer to [Metric IDs and code names \(on page mdlxxv\)](#) and [10.0.4 REST API for managing license metrics \(on page mdccxxxv\)](#). Metrics not applicable to contracts are: INTERNAL\_PVU, INTERNAL\_RVU\_MAPC.

- If a column is not provided in the request for a contract, related contract's data is not changed.
- To clear a field, use **null** value, such as "contract\_custom\_field\_1": null, "threshold" null.
- If a request is invalid or an error occurs in processing, no contracts or related data is updated, and in the response, detailed explanation is provided for each invalid contract under "rowErrors". The entries numbering starts from 1.

```
{
  "incorrectRows":7,
  "allRows":7,
  "message":{"code":"CODUI4099E","text":"Contract processing failed. The contracts have not been
imported."},
  "rowErrors":{"1":["|CODUI4047E|Required field contract_id is empty",
"|CODUI4057E|Custom field with ID 2 is required"],"2":
[
  "|CODUI4057E|Custom field with ID 2 is required"],
  "3":
  [
    "|CODUI4042E|A contract with the specified contract ID already exists",
    "|CODUI4057E|Custom field with ID 2 is required"],"4":["|CODUI4057E|Custom field with ID 2 is
required"],
    "5":["|CODUI4057E|Custom field with ID 2 is required"],"6":["|CODUI4057E|Custom field with ID 2 is
required"],
    "7":["|CODUI4040E|A contract with the specified name and type already exists"]
}
```

```

    ]
  }
}

```

## Adding and updating contracts

**10.0.6** Use `/api/sam/v2/contracts.json` API to add and update contracts.

### PUT operation features

- The request does not delete contracts and it does not remove contract's purchase orders or assignments to software. It merges data with the database content.
- The operation matches metric by ID, or by code name if metric ID not provided. It creates a new metric if metric ID is not provided and metric code name is not found. The new metric has the same display name as code name from the request.
- The operation does not create new software or publisher, unless `createSoftware` parameter is set to true (**createSoftware=true**).
- The operation adds product-metric relation if needed.
- The operation matches computer group by ID, or by name if ID is not provided. In case of no ID and no name, "All computers" group is used. Only computer groups of type "Reporting" can be used in contracts.

### Example HTTP conversations

#### PUT `/api/sam/v2/contracts.json`

Adds or updates contracts provided in request body in JSON format (the format the same as the array under "rows" from GET request)

```

[
  {
    "contract_id": "C01", "name": "Contract1", "type": 2, "threshold": 100, "metric": { "id": 9, "code_name": "INTERNAL_INSTALL" }, "computer_group": { "id": 0, "name": "All Computers" }

    "purchase_orders": [ { "purchase_number": "PO1", "quantity": 5000, "entitlement_start": "2021-08-03", "entitlement_end": "2030-05-21" }

    {
      "purchase_number": "PO2", "quantity": 2, "entitlement_start": "2030-05-21",
      "entitlement_end": "2030-06-21" }, "software_products":
    [
      { "name": "Notepad++", "publisher_name": "don.h@free.fr" }
    ]
  }
]

```

## Limitations



**Note:** The limitations are applicable in BigFix Inventory version 10.0.6.

- Error messages are displayed by default in language which is provided under "Accept-Language" header. The language selected in the user profile is not taken into account.
- Custom field values must be provided in text format, such as "123" for integer type. This is not applicable to other fields.
- PUT operation does not support national characters, such as Latin alphabets. To update or add contract data containing such characters, use CSV import or import using the UI. See also, [Importing contracts \(on page mclxxxviii\)](#).
- Only ASCII characters in contracts data are fully supported in BigFix Inventory version 10.0.6. The issue is not applicable since version 10.0.7. From BigFix Inventory 10.0.7, software which contains non-ASCII characters are accepted in contracts REST API, as well as in the search field on UI, and contract fields like contract name in REST API can contain non-ASCII characters.

## Error codes

```

CODUI4040E=A contract with the specified name and type already exists
CODUI4041E=Some of the selected products are not assigned to the selected metric
CODUI4042E=A contract with the specified contract ID already exists
CODUI4043E=Purchase order numbers are not unique in this contract
CODUI4044E=Element {0} is missing in this contract
CODUI4045E=Incorrect JSON format. An array is expected.
CODUI4046E=Incorrect JSON format. The element at row {0} is not an object.
CODUI4047E=Required field {0} is empty
CODUI4048E=Required field {0} at row {1} is empty
CODUI4049E=Contract custom field with ID {0} does not exist
CODUI4050E=Product and publisher pair at row {0} is not found. Creating software option is not enabled.
CODUI4051E=Metric ID is not found
CODUI4052E=Specified metric code name is invalid. The field must contain up to 254 characters and can contain only uppercase letters, numbers, and the following characters: "-_".
CODUI4053E=Computer group with ID {0} is not accessible to the user or target contract computer group does not exist
CODUI4054E=Ambiguous computer group name. More than one matching group is found.
CODUI4055E=Field {0} at row {1} is too long. The maximal length is {2}.
CODUI4056E=Format of custom field with ID {0} is incorrect. Expected type: {1}
CODUI4057E=Custom field with ID {0} is required
CODUI4058E=Invalid contract type. Correct values are: 1,2,3,4,5.
CODUI4059E=Invalid contract threshold. The value must be a positive integer.
CODUI4060E=Field {0} is too long. The maximum length should be {1}.

```

```

CODUI4061E=Specified purchase order quantity at row {0} is invalid. The value must be a positive integer or
-1 for ELA.
CODUI4062E=Specified purchase order entitlement dates at row {0} are invalid. End date cannot be before start
date.
CODUI4063E=Format of field {0} at row {1} is incorrect. Expected type: {2}.
CODUI4064E=Software name at row {0} is already used by IBM bundle.
CODUI4065E=Software name at row {0} is already used by a software version or release of the same publisher.
CODUI4066E=Software at row {0} cannot be assigned to both Unknown metric and another metric.
CODUI4067E=Specified metric code name is not allowed.
CODUI4068E=Specified computer group name is not accessible to the user or target contract computer group does
not exist.
CODUI4098E=Data conversion error occurred at row {0}. Ensure all fields have expected data types.
CODUI4099E=Contract processing failed. The contracts have not been imported.

# For Contracts import from CSV
CODUI5040E=Incorrect number of columns at row {0}.
CODUI5041E=Invalid header: {0}.
CODUI5042E=Invalid number: {0} at row {1} in column {2}.
CODUI5043E=Missing required column: {0}.
CODUI5044E=All or none of the columns need to be provided: {0}.
CODUI5045E=The {0} column requires {1} column to be present.
CODUI5046E=Missing value at row {0} in column {1}.
CODUI5047E=Values need to be provided for all or none of {1} columns at row {0}.

```

## Retrieving contracts

**10.0.6** Use `/api/sam/v2/contracts.json` API to retrieve contracts.

### Example HTTP conversation

**GET /api/sam/v2/contracts.json**

```

{
    "total":1,"rows":
    [
        {
            "contract_id":"C01","name":"Contract1","type":2,"threshold":100,"metric":{"id":9,"code_name":"I
INTERNAL_INSTALL"},
            "computer_group":{"id":0,"name":"All
Computers"},"purchase_orders":[{"purchase_number":"P01","quantity":5000,"entitlement_start":

```

```

"2021-08-03", "entitlement_end": "2030-06-21"}, {"purchase_number": "PO2", "quantity": 2, "entitlement
_start": "2030-05-21", "entitlement_end": "2030-06-21"}]

"software_products": [{"name": "Notepad++", "publisher_name": "don.h@free.fr"}]
]
}

```

#### GET /api/sam/v2/contracts.json?columns[]=name&columns[]=contract\_custom\_field\_1

```

{
  "total": 1, "rows":
  [
    {
      "name": "Contract1", "contract_custom_field_1": "Value of the custom field"
    }
  ]
}

```



**Note:** Not all columns are displayed by default. To see the lists of available columns, check the below topics:

- [REST API for managing contracts \(on page mdccxlili\)](#)
- [Purchase orders association \(on page mdcxv\)](#)
- [Software products association \(on page mdcxvii\)](#)

## Historical APIs

For some REST APIs, version 2 is created to provide improved functions or experience. In such cases, the original API is deprecated and version 2 is supported. You must adjust your custom tools or internal processes to the new version of these APIs.

### Historical APIs include all APIs that you need to retrieve historical information.

- REST API for retrieving computer systems, clusters, software instances, and license usage
- REST API for software inventory management
- REST API for software classification

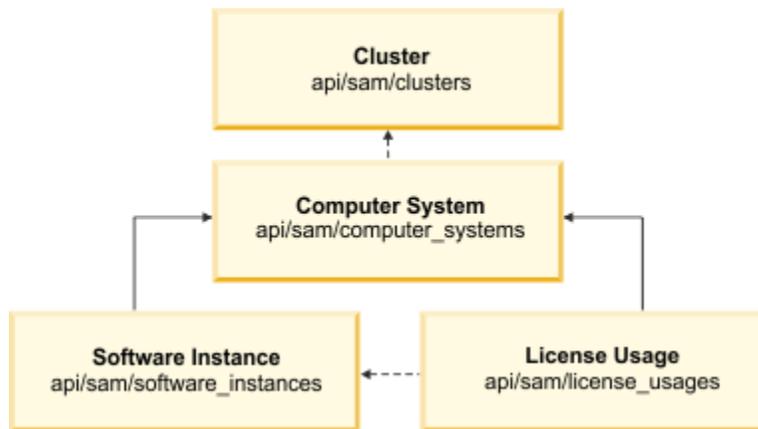


**Note:** The above APIs are not yet supported.

## REST API for retrieving computer systems, clusters, software instances, and license usage

You can use this REST API to quickly retrieve large amounts of data related to your computer systems, clusters, software instances, and license usage. Once the data is retrieved, it can be passed to other applications for further processing and analysis.

The following image represents the relations between all resources included in this REST API:



## Scenarios

Choose one of the scenarios to learn how to determine the license usage for all of your computer systems or only for the selected ones. The first approach is recommended if you want to retrieve your data in bulk and calculate the license usage for the whole environment. The second one, however, allows you to quickly target specific information by retrieving data for a chosen subset of computer systems.

### Determining license usage for all computer systems

You can extract your data in bulk to determine total license usage for software on all your computer systems. Instead of using reports in the application user interface, you can make API requests to quickly retrieve large amounts of data.

- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- To obtain the list of query parameters to narrow down your results and the list of available columns, see the information related to a particular API type.

### Performance considerations

- Retrieving large amounts of data might impact the performance of your environment, therefore API should not be used together with other performance intensive tasks, like data imports. For more information, see [REST API considerations \(on page mcdlxiv\)](#).
- Retrieve your data in pages rather than query for each computer ID separately. You can make several API requests and use the **limit** (on page mdcclix) and **offset** (on page mdcclix) parameters to paginate your results.

**Note:**

- For environments with approximately 200 000 endpoints, it is recommended to retrieve your data in pages of 100 000 rows for computer systems, 200 000 rows for software instances, and 300 000 rows for license usage. If you limit the first request to 100 000 results, append the next request with the **offset=100000** parameter to omit the already retrieved records. Adjust the values according to the size of your deployment.
- If you have a small number of endpoints, you can omit the **limit** and **offset** parameters, and retrieve your data by using only one API request.

## 1. Retrieve the list of your computer systems:

```
https://hostname:port/api/sam/computer_systems?
token=token&limit=100000&offset=100000
```

**Result:** Each computer system has a different `id`. You can later use this `id` to create a match between your software instances and computer systems.

```
{
  "id": 182,
  "parent_id": 175,
  "type": "virtual",
  "os": "Win2008R2 6.1.7601",
  "host_name": "NC9128109187",
  "dns_name": "NC9128109187",
  "ip_address": [
    "9.128.109.187"],
  "last_seen": "2014-06-06T03:56:39Z",
  "hardware_manufacturer": "-",
  "hardware_model": "-",
  "hardware_serial_number": "TLM_VM_4236ac43",
  "processor_type": "Multi-core",
  "processor_brand": "Xeon(R), 3 or 4 Socket",
  "processor_vendor": "Intel(R)",
  "processor_model": "E3-12xx, E7-28xx, E7-48xx",
  "partition_cores": "1.0",
  "server_processors": 1,
```

```
"server_cores": 1
}
```

- Retrieve the list of your software instances. The `software_title_name` column that allows you to recognize the name of your software is hidden by default, which means that you have to append the URL with the `columns[]` parameter followed by the name of a hidden column.

The following example retrieves the `computer_system_id` and `software_title_name` columns so that you can recognize which software is installed on which computer system. If you want to retrieve complete information, append the URL with the names of all columns. You can find the column names in [response body \(on page mdccclxii\)](#):

```
https://hostname:port/api/sam/software_instances?
token=token&limit=100000&offset=100000&
columns[]=computer_system_id&columns[]=catalog_dimension.software_title_name
```

**Result:** Each software instance contains a `computer_system_id` column that represents an ID of a computer that a particular instance is installed on. Use this column to match your software instances with computer systems. For example, if rows 152-155 contain a `computer_system_id=182` column, it means that all those software instances are installed on a computer system with ID 182.

```
{
  "computer_system_id": 182,
  "catalog_dimension": {
    "software_title_name": "BigFix Inventory"
  }
}
```

- Retrieve the license usage information. Append the URL with the `software_title_dimension.name` column to be able to recognize the name of the software that the license usage is presented for.

The following example retrieves the `computer_system_id`, `metric_name`, `peak_value`, and `software_title_dimension.name` columns. If you want to retrieve complete information, append the URL with the names of all columns. You can find the column names in [response body \(on page mdccclxxviii\)](#):

```
https://hostname:port/api/sam/license_usages?
token=token&limit=100000&offset=100000&
columns[]=computer_system_id&columns[]=metric_name&columns[]=peak_value&
columns[]=software_title_dimension.name
```

**Result:** Each record contains a `computer_system_id` column that represents an ID of a computer for which the license usage is calculated. Use this column to match the license usage with computer systems. For example, if rows 152-155 contain a `computer_system_id=182` column, it means that all those license usage records are presented for a computer system with ID 182. The `peak_value` column represents the peak license usage

(over last 90 days) for a particular software title (which is described by `software_title_dimension.name`). The `metric_name` column allows you to recognize whether the license type is PVU or RVU, full or subcapacity.

```
{
  "computer_system_id": 182,
  "metric_name": "RVU_FULL_CAP",
  "peak_value": 2,
  "software_title_dimension": {
    "name": "BigFix Inventory"
  }
},
{
  "computer_system_id": 182,
  "metric_name": "RVU_SUB_CAP",
  "peak_value": 2,
  "software_title_dimension": {
    "name": "BigFix Inventory"
  }
}
```

4. Determine the total license usage for a software title by summing up the values of all `peak_value` columns retrieved for this software title from all your computer systems. For example, sum up all `peak_values` for BigFix Inventory on all computer systems that contain entries for this particular software. Do not combine the metric types, but calculate the `PVU_FULL_CAP`, `RVU_FULL_CAP`, `PVU_SUB_CAP`, and `RVU_SUB_CAP` separately.

## Determining license usage for selected computer systems

You can narrow down the results of your API requests to retrieve data only from selected computer systems. This approach is recommended if you want to quickly target specific information.

- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- To obtain the list of query parameters to narrow down your results and the list of available columns, see the information related to a particular API type.

1. Retrieve selected computer systems by querying for their ID:

```
https://hostname:port/api/sam/computer_systems?
token=token&criteria={"or":[{"id","=","1"}, {"id","=","2"}]}
```

**Result:** Each computer system has a different `id`. You can later use this `id` to create a match between your software instances and computer systems. In API for software instances and license usage, this `id` is represented by the `computer_system_id` column.

```

{
  "id": 2,
  "parent_id": 175,
  "type": "virtual",
  "os": "Win2008R2 6.1.7601",
  "host_name": "NC9128109187",
  "dns_name": "NC9128109187",
  "ip_address": [
    "9.128.109.187"],
  "last_seen": "2014-06-06T03:56:39Z",
  "hardware_manufacturer": "-",
  "hardware_model": "-",
  "hardware_serial_number": "TLM_VM_4236ac43",
  "processor_type": "Multi-core",
  "processor_brand": "Xeon(R), 3 or 4 Socket",
  "processor_vendor": "Intel(R)",
  "processor_model": "E3-12xx, E7-28xx, E7-48xx",
  "partition_cores": "1.0",
  "server_processors": 1,
  "server_cores": 1
}

```

## 2. Retrieve software instances for selected computer systems by querying for their ID:

The following example retrieves the `computer_system_id` and `software_title_name` columns so that you can recognize which software is installed on which computer system. If you want to retrieve complete information, append the URL with the names of all columns. You can find the column names in [response body \(on page mdcclxi\)](#):

```

https://hostname:port/api/sam/software_instances?
token=token&
criteria={"or":[{"computer_system_id","=","1"},{"computer_system_id","=","2"}]}
&columns[]=computer_system_id&columns[]=catalog_dimension.software_title_name

```

**Result:** Each software instance contains a `computer_system_id` column that represents an ID of a computer that a particular instance is installed on. Use this column to match your software instances with computer systems. For example, if rows 152-155 contain a `computer_system_id=2` column, it means that all those software instances are installed on a computer system with ID 2.

```

{
  "computer_system_id": 2,
  "catalog_dimension": {

```

```
"software_title_name": "BigFix Inventory"
}
```

- Retrieve the license usage for selected computer systems by querying for their ID. Append the URL with the `software_title_dimension.name` column to be able to recognize the name of the software that the license usage is presented for.

The following example retrieves the `computer_system_id`, `metric_name`, `peak_value`, and `software_title_dimension.name` columns. If you want to retrieve complete information, append the URL with the names of all columns. You can find the column names in [response body \(on page mdcclv\)](#):

```
https://hostname:port/api/sam/license_usages?
token=token&
criteria={"or":[{"computer_system_id","=","1"},{"computer_system_id","=","2"}]}
&columns[]=computer_system_id&columns[]=metric_name&columns[]=peak_value&
columns[]=software_title_dimension.name
```

**Result:** Each record contains a `computer_system_id` column that represents an ID of a computer for which the license usage is calculated. Use this column to match the license usage with computer systems. For example, if rows 152-155 contain a `computer_system_id=2` column, it means that all those license usage records are presented for a computer system with ID 2. The `peak_value` column represents the peak license usage (over last 90 days) for a particular software title (which is described by `software_title_dimension.name`). The `metric_name` column allows you to recognize whether the license type is PVU or RVU, full or subcapacity.

```
{
  "computer_system_id": 2,
  "metric_name": "RVU_SUB_CAP",
  "peak_value": 2,
  "software_title_dimension": {
    "name": "BigFix Inventory"
  }
}
```

You retrieved the list of software instances that are installed on a particular computer system, as well as the license usage that they generate. This information is only a part of the total license usage generated on all your computer systems. To determine the total license usage for your environment, see [Determining license usage for all computer systems \(on page mdcc\)](#).

## Retrieval of computer systems

You use the `GET` operation on the `api/sam/computer_systems` element to request information about computer systems in your infrastructure.



**Important:** This REST API is planned to be entirely substituted with `api/sam/v2/computers` (on page mcdxciii) REST API. If you have custom tools or internal processes that are based on `api/sam/computer_systems` REST



API, it is best to adjust the tools to use the new version of the API. For information, see: [Mapping columns between computer\\_systems and v2/computers REST API \(on page mcdlxxxiii\)](#).

This API retrieves information about physical and virtual computer systems. Apart from computers that have an BigFix client installed, it also includes host systems on which the client is not deployed because some virtualization types do not allow for software to be installed on the host level (VMware ESXi, IBM PowerVM, and so on). Data related to such host computer systems must however be retrieved to build a proper hierarchy between the server and its virtual machines and to correctly report the PVU and RVU utilization.

The `type` property determines whether a computer system is a host computer or a virtual one. A host can be, for example, a virtualization server, ESX hypervisor, or a laptop with agent installed. A virtual machine refers only to virtual machines that can be deployed on a host. Because of this, you should not compare the outcome of the REST API with single reports, especially with the Computers, and Hardware Inventory reports.

To retrieve information about your computer systems, use the following URL:

```
https://hostname:port/api/sam/computer_systems?token=token
```



#### Important:

- To use this API, you must be assigned to the All Computers group and have the View Hardware Inventory permission.
- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- By default, the retrieved data is sorted by `id`.

**Table 339. Operation descriptions**

Operation details	Description
<b>Operation</b>	GET /api/sam/computer_systems
<b>Purpose</b>	Returns a list of computer systems.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<a href="https://server_host_name:port_number/api/sam/computer_systems">https://server_host_name:port_number/api/sam/computer_systems</a>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcclviii)</a> .
<b>Request headers</b>	<b>Header</b>

Table 339. Operation descriptions (continued)

Operation details	Description
	<p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<p><code>application/json</code></p>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p> <p><b>Header</b></p> <p><code>Import-Mode</code></p> <p><b>Values</b></p> <p><code>none, idle, running, pending</code></p> <p>Specifies the data import status.</p> <p><b>Header</b></p> <p><code>Import-Progress</code></p> <p><b>Values</b></p> <p>A percentage value, for example 59.</p>

**Table 339. Operation descriptions (continued)**

Operation details	Description
	Specifies the percentage progress of a data import.
<b>Header</b>	
	<code>Import-Last-Status</code>
<b>Values</b>	
	<code>successful, failed</code>
	Specifies the status of the last data import.
<b>Header</b>	
	<code>Import-Last-Success-Time</code>
<b>Values</b>	
	Date, for example <code>2014-06-18T04:00:29Z</code> .
	Specifies the time of the last successful data import.
<b>Response payload</b>	<code>Computer Systems</code> element
<b>Response Content-Type</b>	<code>application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<code>500 - "Bad Request"</code> if a query parameter contains errors or is missing
	Message body includes an error message with details.

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `api/sam/computer_systems` element.

**Table 340. Query parameters for retrieving software products**

Parameter	Description	Required	Value
<code>columns[]</code>	Specify which columns to retrieve. If you do not specify this parameter, a set of default columns	No	String

Table 340. Query parameters for retrieving software products (continued)

Parameter	Description	Required	Value
	<p>is retrieved. For available columns, see <a href="#">Response body (on page mdccixi)</a>. Example:</p> <p>Retrieve the name and version columns:</p> <pre>URL?columns[]=name&amp;columns[]=version</pre>		
<b>order</b>	<p>Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:</p> <p>Order by type descending:</p> <pre>URL?order[]=type desc</pre>	No	String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.	No	Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example: <p>Retrieve 50 records starting after record 150:</p> <pre>URL?limit=50&amp;offset=150</pre>	No	Numeric
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written on one line:		
	<pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criterion&gt; [{ &lt;comma&gt; &lt;criterion&gt; }...] &lt;right-bracket&gt; &lt;right-brace&gt;  &lt;boolean-operator&gt; ::= "and"   "or"  &lt;criterion&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-number&gt;   &lt;json-null&gt;</pre>		

For more information about operators, see [Common connectors and operators \(on page mcdlxxviii\)](#).

**Table 340. Query parameters for retrieving software products (continued)**

Parameter	Description	Required	Value
	Example: Retrieve computer systems whose operating system contains "AIX" OR the last seen date within a specific date range:		
			<pre>URL?criteria={ "or": [ [ "os", "contains", "aix" ], { "and": [ [ "last_seen", "&gt;", "1970-01-01T00:00:00+00:00Z" ], [ "last_seen", "&lt;", "1970-01-02T00:00:00+00:00Z" ] ] } ] }</pre>
	For columns that use the date and time values, such as Last Seen, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b> , and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example, to retrieve computer systems that reported within last 7 days, use the following API request:		
			<pre>URL?criteria={ "and": [ [ "last_seen", "last", "P7D" ] ] }</pre>

## Example HTTP conversation

### Request

```
GET api/sam/computer_systems
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

The above response header may be followed by different entries, depending on the current status of the data import which is represented by `Import-Mode`. To understand the returned values, see the following definitions:

- `none` - a data import has never been initiated
- `idle` - no data imports are currently running
- `running` - a data import is in progress
- `pending` - an action performed in the user interface requires a data import to be started for the change to take effect

If a data import has never been initiated:

```
Import-Mode: none
```

If a data import is in progress:

```
Import-Mode: running
Import-Progress: 41
```

If a data import is not running:

```
Import-Mode: idle/pending
Import-Last-Status: successful
Import-Last-Success-Time: Mon, 23 Jun 2014 12:18:29 GMT
```

## Response body (JSON)

If a particular entry is hidden by default, it is not retrieved by using the general URL. To retrieve such data, you must use query parameters to specify the name of the hidden column. For example, you can retrieve the `server_id` and `datasource_id` columns by using the `columns[]` parameter:

```
URL?columns[]=server_id&columns[]=datasource_id
```

```
{
  "id": 25,
  "parent_id": 9, //ID of a host for a VM
  "computer_id": 2, //hidden by default
  "computer_remote_id": 123, //hidden by default
  "server_id": 24, //hidden by default
  "datasource_name": "Data source", //hidden by default
  "datasource_id": 1, //hidden by default
  "type": "virtual", //type: virtual or host
  "os": "Linux Red Hat Enterprise Server 6.2)",
  "host_name": "NC040221",
  "dns_name": "NC040221.kraklab.pl.ibm.com",
  "ip_address": [
    "9.167.40.221",
    "192.168.122.1" ],
  "last_seen": "2014-04-08T14:33:41Z",
  "hardware_manufacturer": "IBM",
  "hardware_model": "System x3550 M2 -[794662G]-",
  "hardware_serial_number": "99B7166",
  "hardware_type": "7946", //hidden by default
  "hardware_name": "IBM Corp. 7946", //hidden by default
  "processor_brand_string": "Intel(R) Xeon(R) CPU E7-3400 @ 2.40GHz",
  "processor_type": "Multi-core",
  "processor_brand": "Xeon(R)",
```

```

"processor_vendor": "Intel(R)",
"processor_model": "3400-3699 or 5500-5699",
"partition_cores" : 1,           //null for host serves
"server_processors": 1,
"server_cores": 8,
"pvu_per_core": 70,             //hidden by default
"uuid":"50305bd3-1f09-7294-7033-b903767d4605" //hidden by default
"cluster_id":"1"                // hidden by default
} //ID of the cluster to which the computer system
belongs. Available only for type: host.

```

## Retrieval of clusters

You use the `GET` operation on the `api/sam/clusters` element to request information about clusters that group your host computer systems. This information represents the current state of your environment and does not include any historical data.

After you retrieve the IDs of your clusters, compare them with the `cluster_id` column retrieved by [API for computer systems \(on page mdcclv\)](#) to recognize which of these systems belong to which clusters. This information can also be viewed on the Hardware Inventory report in the user interface.

To retrieve information about clusters, use the following URL:

```
https://hostname:port/api/sam/clusters?token=token
```

### Important:

- To use this API, you must be assigned to the All Computers group and have the View Hardware Inventory permission.
- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- By default, the retrieved data is sorted by `id`.

**Table 341. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/clusters</code>
<b>Purpose</b>	Returns a list of clusters.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/clusters</code>

Table 341. Operation descriptions (continued)

Operation details	Description
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcclviii)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p> <p><b>Header</b></p> <p><code>Import-Mode</code></p> <p><b>Values</b></p> <p><code>none, idle, running, pending</code></p> <p>Specifies the data import status.</p>

**Table 341. Operation descriptions (continued)**

Operation details	Description
	<p><b>Header</b></p> <p><code>Import-Progress</code></p> <p><b>Values</b></p> <p>A percentage value, for example <code>59</code>.</p> <p>Specifies the percentage progress of a data import.</p>
	<p><b>Header</b></p> <p><code>Import-Last-Status</code></p> <p><b>Values</b></p> <p><code>successful, failed</code></p> <p>Specifies the status of the last data import.</p>
	<p><b>Header</b></p> <p><code>Import-Last-Success-Time</code></p> <p><b>Values</b></p> <p>Date, for example <code>2014-06-18T04:00:29Z</code>.</p> <p>Specifies the time of the last successful data import.</p>
<b>Response payload</b>	<code>Clusters</code> element
<b>Response Content-Type</b>	<code>application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<code>500 - "Bad Request"</code> if a query parameter contains errors or is missing
	Message body includes an error message with details.

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `api/sam/clusters` element.

Table 342. Query parameters for retrieving clusters

Parameter	Description	Required	Value
<b>columns</b>	Specify which columns to retrieve. If you do not specify this parameter, a set of default columns is retrieved. For available columns, see <a href="#">Response body (on page mdcclxvi)</a> . Example:  Retrieve the name and id columns:  <pre>URL?columns[]=name&amp;columns[]=id</pre>	No	String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:  Order by type descending:  <pre>URL?order[]=type desc</pre>	No	String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.	No	Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example:  Retrieve 50 records starting after record 150:  <pre>URL?limit=50&amp;offset=150</pre>	No	Numeric
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric

## Example HTTP conversation

### Request

```
GET api/sam/clusters
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

The above response header may be followed by different entries, depending on the current status of the data import which is represented by `Import-Mode`. To understand the returned values, see the following definitions:

- `none` - a data import has never been initiated
- `idle` - no data imports are currently running
- `running` - a data import is in progress
- `pending` - an action performed in the user interface requires a data import to be started for the change to take effect

If a data import has never been initiated:

```
Import-Mode: none
```

If a data import is in progress:

```
Import-Mode: running
Import-Progress: 41
```

If a data import is not running:

```
Import-Mode: idle/pending
Import-Last-Status: successful
Import-Last-Success-Time: Mon, 23 Jun 2014 12:18:29 GMT
```

### Response body (JSON)

```
{
  "id": 1,
  "name": "Production Cluster 1",
  "cores_count": 24,
  "vm_manager_url": "https://198.51.100/sdk",
}
```

### Example about adding a `vm_manager_status` column to the result

**API:** `/api/sam/clusters?`

`columns[]=name&columns[]=cores_count&columns[]=vm_manager_url&columns[]=vm_manager_status`

**Response:**

```
{
  {
```

```
{
  "id": 1,
  "name":
  "Production Cluster 1",
  "cores_count": 24,
  "vm_manager_url":
  "https://198.51.100/sdk",
  "vm_manager_status": "98"
}
}
```

### Example about filtering out data from inactive VM Managers

**API:** `api/sam/clusters?criteria=\`

```
{
  "and":
  [
    [
      "vm_manager_status", "!=", "98"
    ]
  ]
}
```

For description of other VM Managers statuses, see [Retrieval of VM managers \(on page mdccvi\)](#).

## Retrieval of software instances

You use the `GET` operation on the `api/sam/software_instances` element to request information about software installed in your infrastructure.



**Important:** **10.0.9** This REST API is now substituted with [api/sam/v2/software\\_instances \(on page mdxliv\)](#) REST API. If you have custom tools or internal processes that are based on `api/sam/software_instances` REST API, it is best to adjust the tools to use the new version of the API. For information, see: [Mapping columns between software\\_instances and v2/software\\_instances REST API \(on page mcdlxxxi\)](#).

To retrieve information about software instances installed on your computer systems, use the following URL:

```
https://hostname:port/api/sam/software_instances?token=token
```



**Note:**



- To use this API, you must be assigned to the All Computers group and have the View Endpoints permission.
- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- By default, the retrieved data is sorted by `id`.

Table 343. Operation descriptions

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/software_instances</code>
<b>Purpose</b>	Returns a list of software.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/software_instances</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccclxx)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p> <p>Specifies the content type of the response.</p>

Table 343. Operation descriptions (continued)

Operation details	Description
<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p>	<p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<p><b>Header</b></p> <p><code>Import-Mode</code></p> <p><b>Values</b></p> <p>none, idle, running, pending</p>	<p>Specifies the data import status.</p>
<p><b>Header</b></p> <p><code>Import-Progress</code></p> <p><b>Values</b></p> <p>A percentage value, for example 59.</p>	<p>Specifies the percentage progress of a data import.</p>
<p><b>Header</b></p> <p><code>Import-Last-Status</code></p> <p><b>Values</b></p> <p>successful, failed</p>	<p>Specifies the status of the last data import.</p>
<p><b>Header</b></p> <p><code>Import-Last-Success-Time</code></p> <p><b>Values</b></p> <p>Date, for example 2014-06-18T04:00:29Z.</p>	<p>Specifies the time of the last successful data import.</p>
<b>Response payload</b>	<code>Software Instances</code> element

**Table 343. Operation descriptions (continued)**

Operation details	Description
<b>Response</b> <code>Content-Type</code>	<code>application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<code>500 - "Bad Request"</code> if a query parameter contains errors or is missing
Message body includes an error message with details.	

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `api/sam/software_instances` element.

**Table 344. Query parameters for retrieving software products**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, a set of default columns is retrieved. Example:  Retrieve the name and version columns: <pre>URL?columns[]=name&amp;columns[]=version</pre>	No	String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:  Order by computer system ID descending: <pre>URL?order[]=computer_system_id desc</pre>	No	String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.	No	Numeric
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example:	No	Numeric

Table 344. Query parameters for retrieving software products (continued)

Parameter	Description	Required	Value
	Retrieve 50 records starting after record 150: <pre>URL?limit=50&amp;offset=150</pre>		
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written on one line: <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; ::= &lt;boolean-operator&gt; &lt;colon&gt; &lt;left-bracket&gt; &lt;boolean-operator&gt; ::= "and"   "or" &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt; &lt;column&gt; ::= &lt;json-string&gt; &lt;operator&gt; ::= &lt;json-string&gt; &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre>		
	For more information about operators, see <a href="#">Common connectors and operators (on page mcdlxxviii)</a> .		
	Example: Retrieve software instances whose publisher name contains "IBM" OR the last seen date within a specific date range: <pre>URL?criteria={ "or": [ ["publisher_name", "contains", "IBM"], { "and": [ ["last_seen", "&gt;", "1970-01-01T00:00:00+00:00Z"], ["last_seen", "&lt;", "1970-01-02T00:00:00+00:00Z"] ] } ] }</pre>		
	For columns that use the date and time values, such as Last Seen, you can retrieve data also for a period instead of a specific date. To do so, use <i>last</i> or <i>next</i> as <b>&lt;operator&gt;</b> , and then specify the time value in the following convention: PxD/PxW/PxM/PxY, where x is a number in the 1-999 range, and D, W, M, or Y is a designator that represents days, weeks, months, or years respectively. For example, to retrieve software instances that reported within last 7 days, use the following API request: <pre>URL?criteria={"and":[{"last_seen","last","P7D"}]}</pre>		

## Example HTTP conversation

### Request

```
GET api/sam/software_instances
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

The above response header may be followed by different entries, depending on the current status of the data import which is represented by `Import-Mode`. To understand the returned values, see the following definitions:

- `none` - a data import has never been initiated
- `idle` - no data imports are currently running
- `running` - a data import is in progress
- `pending` - an action performed in the user interface requires a data import to be started for the change to take effect

If a data import has never been initiated:

```
Import-Mode: none
```

If a data import is in progress:

```
Import-Mode: running
Import-Progress: 41
```

If a data import is not running:

```
Import-Mode: idle/pending
Import-Last-Status: successful
Import-Last-Success-Time: Mon, 23 Jun 2014 12:18:29 GMT
```

### Response body (JSON)

If a particular entry is hidden by default, it is not retrieved by using the general URL. To retrieve such data, you must use query parameters to specify the name of the hidden column. For example, you can retrieve the `computer_id` and `software_title_name` columns by using the `columns[]` parameter:

```
URL?columns[]=computer_id&columns[]=catalog_dimension.software_title_name
```

```
{
  "id": 123,
```

```

"software_fact_id": 123, //hidden by default
"computer_system_id": 3,
"computer_id": 3, //hidden by default
"discoverable_guid": "0768fb15-383c-4124-a7e2-0d76dda06874",
"default_product_guid": "78d380e0-9fb9-11e3-a151-005056872dc7", //hidden by default
"first_used": null,
"last_used": null,
"valid_from": "2014-04-02T14:24:04Z",
"valid_to": "9999-12-31T23:59:59Z",
"updated_at": "2014-04-02T14:24:04Z",
"signature_count": 1,
"total_time": 0,
"total_runs": 0,
"avg_run_time": null,
"avg_runs_per_day": null,
"process": null,
"deleted": false, //hidden by default
"catalog_dimension": //hidden by default
{
  "software_title_name": "BigFix Platform Agent",
  "publisher_name": "IBM",
  "software_title_version_name": "BigFix Platform Agent",
  "software_title_release_name": "BigFix Platform Agent",
  "version": "9.0"
}
}

```

## Retrieval of license usage

You use the `GET` operation on the `api/sam/license_usages` element to request information about license usage reported by your computer systems.

This API retrieves peak license usage over the last 90 days. PVU and RVU full capacity and subcapacity license usage is retrieved only on the host computer system level. To retrieve information about license usage reported by your computer systems, use the following URL:

```
https://hostname:port/api/sam/license_usages?token=token
```



**Important:**



- To use this API, you must be assigned to the All Computers group and have the View License Metrics permission.
- Each API request must be authenticated with the **token** parameter. You can retrieve it by using [REST API for retrieving authentication token \(on page mcdlxxxviii\)](#). You can also log in to BigFix Inventory, hover over the **User** icon , and click **Profile**. Then, click **Show token**.
- This API retrieves data for the last 90 days, until the last successful import.
- By default, the data retrieves is sorted by `computer_system_id`, `software_title_id`, and `metric_name` columns.

Table 345. Operation descriptions

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/license_usages</code>
<b>Purpose</b>	Returns information about license usage
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/license_usages</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdclxxvi)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>application/json</code></p>

Table 345. Operation descriptions (continued)

Operation details	Description
	Specifies the content type of the response.
<b>Header</b>	<b>Header</b>
	<code>Content-Language</code>
<b>Values</b>	<b>Values</b>
	en-US, ...
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
<b>Header</b>	<b>Header</b>
	<code>Import-Mode</code>
<b>Values</b>	<b>Values</b>
	none, idle, running, pending
	Specifies the import status.
<b>Header</b>	<b>Header</b>
	<code>Import-Progress</code>
<b>Values</b>	<b>Values</b>
	A percentage value, for example 59.
	Specifies the percentage progress of an import.
<b>Header</b>	<b>Header</b>
	<code>Import-Last-Status</code>
<b>Values</b>	<b>Values</b>
	successful, failed
	Specifies the status of the last import.
<b>Header</b>	<b>Header</b>
	<code>Import-Last-Success-Time</code>
<b>Values</b>	<b>Values</b>
	Date, for example 2014-06-18T04:00:29Z.

**Table 345. Operation descriptions (continued)**

Operation details	Description
	Specifies the time of the last successful import.
<b>Response payload</b>	<code>License Usages</code> element
<b>Response Content-Type</b>	<code>application/json</code>
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	500 - "Bad Request" if a query parameter contains errors or is missing  Message body includes an error message with details.

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `api/sam/license_usages` element.

**Table 346. Query parameters for retrieving license usage**

Parameter	Description	Required	Value
<b>columns[]</b>	Specify which columns to retrieve. If you do not specify this parameter, a set of default columns is retrieved. Example:  Retrieve the name and version columns: <pre>URL?columns[]=name&amp;columns[]=version</pre>	No	String
<b>order</b>	Specify how to sort the returned data. The default direction for sorting columns is ascending. If you want to specify a descending sort, append <code>desc</code> to the column name. Example:  Order by peak license usage descending: <pre>URL?order[]=peak_value desc</pre>	No	String
<b>limit</b>	Specify the number of rows to retrieve. If you omit this parameter, all rows are retrieved.	No	Numeric

**Table 346. Query parameters for retrieving license usage (continued)**

Parameter	Description	Required	Value
<b>offset</b>	Specify the number of rows to skip for retrieving results. You can use it together with the limit parameter to paginate results. Example:  Retrieve 50 records starting after record 150:  <pre>URL?limit=50&amp;offset=150</pre>	No	Numeric
<b>token</b>	A unique user authentication identifier. You can view your token in the Profile preferences of BigFix Inventory.	Yes	Alphanumeric
<b>criteria</b>	Retrieve records which match specific conditions. The parameter should have the following structure, written on one line:  <pre>&lt;criteria&gt; ::= &lt;left-brace&gt; &lt;boolean-operator&gt;&lt;colon&gt; &lt;left-bracket&gt; &lt;criteria&gt; [ { &lt;comma&gt; &lt;criteria&gt; }... ] &lt;right-bracket&gt; &lt;right-brace&gt;  &lt;boolean-operator&gt; ::= "and"   "or"  &lt;criteria&gt; ::= &lt;criteria&gt;   &lt;left-bracket&gt; &lt;column&gt; &lt;comma&gt; &lt;operator&gt; &lt;comma&gt; &lt;value&gt; &lt;right-bracket&gt;  &lt;column&gt; ::= &lt;json-string&gt;  &lt;operator&gt; ::= &lt;json-string&gt;  &lt;value&gt; ::= &lt;json-array&gt;   &lt;json-string&gt;   &lt;json-numver&gt;   &lt;json-null&gt;</pre> For more information about operators, see <a href="#">Common connectors and operators (on page mcdlxxviii)</a> .  Example: Retrieve license usage for software whose publisher name contains "BigFix":  <pre>URL?criteria={ "and": [ ["publisher_name", "contains", "BigFix"] ] }</pre>		

## Example HTTP conversation

### Request

```
GET api/sam/license_usages
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
Host: localhost:9081
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
```

```
Content-Language: en-US
```

The above response header may be followed by different entries, depending on the current status of the data import which is represented by `Import-Mode`. To understand the returned values, see the following definitions:

- `none` - a data import has never been initiated
- `idle` - no data imports are currently running
- `running` - a data import is in progress
- `pending` - an action performed in the user interface requires a data import to be started for the change to take effect

If a data import has never been initiated:

```
Import-Mode: none
```

If a data import is in progress:

```
Import-Mode: running
Import-Progress: 41
```

If a data import is not running:

```
Import-Mode: idle/pending
Import-Last-Status: successful
Import-Last-Success-Time: Mon, 23 Jun 2014 12:18:29 GMT
```

## Response body (JSON)

If a particular entry is hidden by default, it is not retrieved by using the general URL. To retrieve such data, you must use query parameters to specify the name of the hidden column. For example, you can retrieve the `software_title_dimension.name` column by using the `columns[]` parameter:

```
URL?columns[]=software_title_dimension.name
```

```
{
  "software_title_id": 36181,
  "metric_name": "RVU_FULLL_CAP",
  "computer_system_id": 4,
  "peak_value": 1,
  "peak_date": "2014-04-14",
  "peak_time": "2014-04-14T13:05:10Z",
  "reporting_period_start_date": "2014-04-01",
  "reporting_period_end_date": "2014-04-30",
  "software_title_dimension": //hidden by default
  {
```

```

"name": "BigFix Protection",
"guid": "d78048cf-842b-44e8-8036-e7e2bf8afb31",
"publisher_name": "BigFix",
"publisher_guid": "8a759f0c-b91a-4d7d-8c4a-a9d85e06c13d"
}
}

```

## REST API for software inventory management

You can reduce the time needed to manage your software inventory in a large environment by using REST API instead of the application user interface. You can use REST API to get a list of software products, releases, and release instances. You can also find out how your software can be bundled.



**Note:** REST API for software inventory management work only for IBM products. The REST APIs return only instances that are assigned to default license metrics.

## Retrieval of software products

You use the `GET` operation on the `api/sam/swinventory/products` element to request information about the software products that are installed in your infrastructure.



You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

**Table 347. Operation descriptions**

*The table consists of two columns and 15 rows. For the eleventh row there are two levels.*

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/swinventory/products</code>
<b>Purpose</b>	Returns a list of software products.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/products</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcclxxxii)</a> .
<b>Request headers</b>	<b>Header</b>

**Table 347. Operation descriptions**

*The table consists of two columns and 15 rows. For the eleventh row there are two levels.*

(continued)

Operation details	Description
	<p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>Application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Products</code> element
<b>Response</b> <code>Content-Type</code>	<code>Application/json</code>
<b>Normal HTTP response codes</b>	200 - OK

Table 347. Operation descriptions

The table consists of two columns and 15 rows. For the eleventh row there are two levels.

(continued)

Operation details	Description
<b>Error HTTP response codes</b>	<p>400 - "Bad Request" if a query parameter contains errors or is missing</p> <p>401 - "Unauthorized" if the user is not authorized to perform the operation</p> <p>416 - "Requested Range Not Satisfiable" if the user provided a <b>start</b> or <b>count</b> range that cannot be satisfied</p>
	Message body includes an error message with details.

## Available columns

Table 348. Available columns

The table consists of four columns and 9 rows.

Column	Description	Displayed by default	Type
<b>nmbOfAllRows</b>	Number of products that are returned by the REST API request.	✓	Integer
<b>licenseType</b>	<p>Indicates the type of the license that is assigned to the product.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• 1 - Other</li> <li>• 5 - PVU</li> <li>• 6 - RVU MAPC</li> </ul> <p> <b>Tip:</b> To retrieve more detailed information about the type of the license, use the <a href="#">api/sam/v2/software_instances</a> (on page <a href="#">mdxliv</a>) REST API.</p>	✓	Integer
<b>level</b>	Indicates whether the discovered software is a component or a product. In this REST API, the returned value is always <code>product</code> .	✓	String

**Table 348. Available columns**

*The table consists of four columns and 9 rows.*

(continued)

Column	Description	Displayed by default	Type
<b>children</b>	Indicates whether any instances of this product release are discovered.	✓	Boolean
<b>confidence</b>	Confidence of the default assignment of a software component to the software product that is expressed in per cents.	✓	Integer
<b>productReleaseComponent</b>	Name of the software product.	✓	String
<b>isConfirmed</b>	Indicates whether the software classification was manually confirmed. Possible values are: <ul style="list-style-type: none"> <li>• 0 - Not confirmed</li> <li>• 1 - Confirmed</li> </ul>	✓	Integer
<b>id</b>	Identifier of the software product.	✓	Integer
<b>type</b>	For internal use only. In this REST API, the returned value is always <code>root</code> .	✓	String

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `swinventory/products` element.

**Table 349. Query parameters for retrieving software products**

*The table consists of four columns and nine rows.*

Parameter	Description	Required	Value
<b>confirmed_filter</b>	The state of bundling confirmation. If the parameter is not specified, both confirmed and unconfirmed software instances are displayed.	No	truefalse
<b>count</b>	The number of rows to be returned.	No	Numeric Default: 80

**Table 349. Query parameters for retrieving software products**

*The table consists of four columns and nine rows.*

(continued)

Parameter	Description	Required	Value
<b>endDate</b>	Discovery end date. If the parameter is not specified, the current date is used.	No	Date in the YYYY-MM-DD format
<b>part_number_filter</b>	The part number to which the software item was assigned according to the imported part number list.	No	String
<b>product_release_component_filter</b>	The name of the software product, release, or component.	No	String
<b>start</b>	The number of the first row of data to be returned.	No	Numeric Default: 0
<b>startDate</b>	Discovery start date. If the parameter is not specified, the start date is set either to 90 days back, or to the server installation date, depending on which one of these dates is closer to the current date.	No	Date in the YYYY-MM-DD format
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

 **Note:** The token includes information about the computer group to which the user has access. Data that is retrieved is limited to data from computers that belong to this group.

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/products
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&startDate=2012-10-19
&endDate=2012-10-19 HTTP/1.1
Host: localhost:9080
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
[{
  "nmbOfAllRows" : "1967",
  "licenseType" : "1",
  "level" : "product",
  "children" : "true",
  "confidence" : "99",
  "productReleaseComponent" : "AIX 5.2 Workload Partitions for AIX 7",
  "isConfirmed" : "false",
  "id" : "30369",
  "type" : "root"
```

## Retrieval of releases of a product

You use the `GET` operation on the `api/sam/swinventory/product/{product_id}/releases` element to request information about the releases of a particular software product that is installed in your infrastructure.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

**Table 350. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/swinventory/product/{product_id}/releases</code>
<b>Purpose</b>	Returns a list of releases of a particular software product that is identified by its identifier.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/product/{product_id}/releases</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcclxxxvi)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p>

Table 350. Operation descriptions (continued)

Operation details	Description
	<p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <small>Content-Type</small>	<p><code>Application/json</code></p>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>Application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Releases</code> element
<b>Response</b> <small>Content-Type</small>	<p><code>Application/json</code></p>
<b>Normal HTTP response codes</b>	<p>200 - OK</p>
<b>Error HTTP response codes</b>	<p>400 - "Bad Request" if a query parameter contains errors or is missing</p> <p>401 - "Unauthorized" if the user is not authorized to perform the operation</p>

**Table 350. Operation descriptions (continued)**

Operation details	Description
	404 - "Not Found" if a release or instance of the product or version that is requested does not exist
	416 - "Requested Range Not Satisfiable" if the user provided a <b>start</b> or <b>count</b> range that cannot be satisfied
	Message body includes an error message with details.

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `swinventory/product/{product_id}/releases` element.

**Table 351. Query parameters for retrieving releases of a software product**

Parameter	Description	Required	Value
<b>confirmed_filter</b>	The state of bundling confirmation. If the parameter is not specified, both confirmed and unconfirmed software instances are displayed.	No	truefalse
<b>count</b>	The number of rows to be returned.	No	Numeric Default: 80
<b>endDate</b>	Discovery end date. If the parameter is not specified, the current date is used.	No	Date in the YYYY-MM-DD format
<b>part_number_filter</b>	The part number to which the software item was assigned according to the imported part number list.	No	String
<b>product_release_component_filter</b>	The name of the software product, release, or component.	No	String
<b>start</b>	The number of the first row of data to be returned.	No	Numeric Default: 0
<b>startDate</b>	Discovery start date. If the parameter is not specified, the start date is set either to 90 days back, or to the server installation date, depending on which one of these dates is closer to the current date.	No	Date in the YYYY-MM-DD format
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric



**Note:** The token includes information about the computer group to which the user has access. Data that is retrieved is limited to

Table 351. Query parameters for retrieving releases of a software product (continued)

Parameter	Description	Required	Value
	data from computers that belong to this group.		

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/product/38818/releases
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&startDate=2012-10-19
&endDate=2012-10-19 HTTP/1.1
Host: localhost:9080
Accept: application/json Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
[{
  "nmbOfAllRows": "1",
  "level": "release",
  "productReleaseComponent": "DB2 UDB Query Patroller 6.1",
  "id": "61922",
  "numberOfAllInstances": "1",
  "children": "true"
}]
```

## Retrieval of release instances

You use the `GET` operation on the `api/samswinventory/release/{release_id}/instances` element to request information about the instances of a software product release for a particular release that is installed in your infrastructure.

 You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

Table 352. Operation descriptions

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/swinventory/release/{release_id}/instances</code>
<b>Purpose</b>	Returns a list of instances for the requested software product release.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/release/{release_id}/instances</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcclxxxix)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p><code>Application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>Instances</code> element. Each instance is a single component on a single agent.

Table 352. Operation descriptions (continued)

Operation details	Description
<b>Response</b> <code>Content-Type</code>	<code>Application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<p><code>400 - "Bad Request"</code> if a query parameter contains errors or is missing</p> <p><code>401 - "Unauthorized"</code> if the user is not authorized to perform the operation</p> <p><code>404 - "Not Found"</code> if a release or instance of the product or version that is requested does not exist</p> <p><code>416 - "Requested Range Not Satisfiable"</code> if the user provided a <b>start</b> or <b>count</b> range that cannot be satisfied</p>
Message body includes an error message with details.	

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `swinventory/release/{release_id}/instances` element.

Table 353. Query parameters for retrieving release instances

Parameter	Description	Required	Value
<b>confirmed_filter</b>	The state of bundling confirmation. If the parameter is not specified, both confirmed and unconfirmed software instances are displayed.	No	truefalse
<b>count</b>	The number of rows to be returned.	No	Numeric Default: 80
<b>endDate</b>	Discovery end date. If the parameter is not specified, the current date is used.	No	Date in the YYYY-MM-DD format
<b>name_host_filter</b>	The name of the computer on which the software item is installed.	No	String
<b>name_server_filter</b>	The name of the server on which the software item is installed.	No	String
<b>operating_system_filter</b>	Operating system of the computer on which the software item is installed.	No	String

**Table 353. Query parameters for retrieving release instances (continued)**

Parameter	Description	Required	Value
<b>part_number_filter</b>	The part number to which the software item was assigned according to the imported part number list.	No	String
<b>product_release_-component_filter</b>	The name of the software product, release, or component.	No	String
<b>start</b>	The number of the first row of data to be returned.	No	Numeric Default: 0
<b>startDate</b>	Discovery start date. If the parameter is not specified, the start date is set either to 90 days back, or to the server installation date, depending on which one of these dates is closer to the current date.	No	Date in the YYYY-MM-DD format
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

 **Note:** The token includes information about the computer group to which the user has access. Data that is retrieved is limited to data from computers that belong to this group.

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/release/61922/instances
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&startDate=2012-10-19
&endDate=2012-10-19 HTTP/1.1
Host: localhost:9080
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
[{
  "isCharged": "true",
```

```

"operatingSystem": "Linux Red Hat Enterprise Server 5.4 (2.6.18-164.el5)",
"isConfirmed": "false",
"currentServerId": "TLM_VM_VMware-42 3b 3b 73 2a 12 4a c5-e0 56 d1 30 74 6b 53 2a",
"updateTime": "1374082814268",
"children": "false",
"hostname": "NC042189",
"productInventoryId": "347",
"id": "347",
"level": "instance",
"bundleRules": "the relation in the software catalog, the stand-alone product discovery",
"processorType": "Intel(R) Xeon(R) Multi-core 3400-3699 or 5500-5699",
"isAgentDeleted": "false",
"productReleaseComponent": "IBM CICS Transaction Gateway 6.0",
"pvuPerCore": "70",
"installationPaths": "/nfs/bak/SLES10.2/usr/catalog_test/linux01/1",
"nmbOfAllRows": "4",
"isSimple": "false"
}]

```

Retrieval of releases to which a software instance can be reassigned

You use the `GET` operation on the `api/sam/swinventory/targetBundlesOfInstances` element to request information about the possible releases to which the requested software instance can be reassigned.



You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

**Table 354. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/swinventory/targetBundlesOfInstances</code>
<b>Purpose</b>	Returns a list of possible releases to which the requested software instance can be reassigned.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/targetBundlesOfInstances</code>
<b>URL link relation</b>	n/a

Table 354. Operation descriptions (continued)

Operation details	Description
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccxciii)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>Application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>targetReleases</code> element
<b>Response <code>Content-Type</code></b>	<code>Application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>

**Table 354. Operation descriptions (continued)**

Operation details	Description
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user is not authorized to perform the operation
	404 - "Not Found" if a release or instance of the product or version that is requested does not exist
Message body includes an error message with details.	

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `swinventory/targetBundlesOfInstances` element.

**Table 355. Query parameters for retrieving releases to which a software instance can be reassigned**

Parameter	Description	Required	Value
<b>productInventoryId</b>	A list of unique product identifiers separated with a comma.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

 **Note:** The token includes information about the computer group to which the user has access. Data that is retrieved is limited to data from computers that belong to this group.

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/targetBundlesOfInstances
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&productInventoryId=200032 HTTP/1.1
Host: localhost:9080
Accept: application/json
Accept-Language: en-US
```

### Response header

```

HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US

```

### Response body (JSON)

```

[ {
  "productId": "69558",
  "isSelected": "false",
  "productInventoryId": "200032",
  "appliedRules": "the relation in the software catalog,
the stand-alone product discovery",
  "productName": "BigFix Smart Analytics System 2050 Departmental Base Remote Standby Server 1.0",
  "id": "69558",
  "branchType": "0",
  "isShared": "false"
} ]

```

Retrieval of releases to which a release instance can be reassigned

You use the `GET` operation on the `api/sam/swinventory/targetBundlesOfReleases` element to request information about the possible releases to which the instances of the requested software releases can be reassigned.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

**Table 356. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/swinventory/targetBundlesOfReleases</code>
<b>Purpose</b>	Returns a list of possible releases to which the instances of the requested software releases can be reassigned.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/targetBundlesOfReleases</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccxcvi)</a> .
<b>Request headers</b>	<b>Header</b>

Table 356. Operation descriptions (continued)

Operation details	Description
	<p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p> <p><b>Values</b></p> <p>Application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	<code>targetReleases</code> element
<b>Response</b> <code>Content-Type</code>	<code>Application/json</code>
<b>Normal HTTP response codes</b>	200 - OK

**Table 356. Operation descriptions (continued)**

Operation details	Description
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user is not authorized to perform the operation
	404 - "Not Found" if a release or instance of the product or version that is requested does not exist
Message body includes an error message with details.	

### Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `swinventory/targetBundlesOfReleases` element.

**Table 357. Query parameters for retrieving releases to which a release instance can be reassigned**

Parameter	Description	Required	Value
<b>confirmed_filter</b>	The state of bundling confirmation. If the parameter is not specified, both confirmed and unconfirmed software instances are displayed.	No	true/false
<b>endDate</b>	Discovery end date. If the parameter is not specified, the current date is used.	No	Date in the YYYY-MM-DD format
<b>name_host_filter</b>	The name of the computer on which the software item is installed.	No	String
<b>name_server_filter</b>	The name of the server on which the software item is installed.	No	String
<b>operating_system_filter</b>	Operating system of the computer on which the software item is installed.	No	String
<b>part_number_filter</b>	The part number to which the software item was assigned according to the imported part number list.	No	String
<b>product_release_component_filter</b>	The name of the software product, release, or component.	No	String
<b>releases</b>	A list of unique release identifiers separated with a comma.	Yes	Numeric

**Table 357. Query parameters for retrieving releases to which a release instance can be reassigned (continued)**

Parameter	Description	Required	Value
<b>startDate</b>	Discovery start date. If the parameter is not specified, the start date is set either to 90 days back, or to the server installation date, depending on which one of these dates is closer to the current date.	No	Date in the YYYY-MM-DD format
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric



**Note:** The token includes information about the computer group to which the user has access. Data that is retrieved is limited to data from computers that belong to this group.

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/targetBundlesOfReleases
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&releases=64050&startDate=2012-09-29&endDate=2012-10-02 HTTP/1.1
Host: localhost:9080
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
[{
  "productId": "72563",
  "isSelected": "false",
  "productInventoryId": "200223",
  "appliedRules": "the relation in the software catalog",
  "productName": "BigFix",
  "id": "72563",
  "branchType": "0",
```

```
"isShared": "false"
}]
```

## Retrieval of instances to reassign to a release

You use the `GET` operation on the `api/sam/swinventory/targetInstances` element to request information about the target instances that can be reassigned to a particular release.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

**Table 358. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>GET /api/sam/swinventory/targetInstances</code>
<b>Purpose</b>	Returns a list of target instances that can be reassigned to a particular release.
<b>HTTP method</b>	<code>GET</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/targetInstances</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccxcix)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	<code>Application/json</code>
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Type</code></p>

Table 358. Operation descriptions (continued)

Operation details	Description
<p><b>Values</b></p> <p><code>Application/json</code></p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>	
<b>Response payload</b>	<code>targetInstances</code> element
<b>Response Content-Type</b>	<code>Application/json</code>
<b>Normal HTTP response codes</b>	<code>200 - OK</code>
<b>Error HTTP response codes</b>	<p><code>400 - "Bad Request"</code> if a query parameter contains errors or is missing</p> <p><code>401 - "Unauthorized"</code> if a user is not authorized to perform the operation</p> <p><code>404 - "Not Found"</code> if a release or instance of the product or version that you requested for does not exist</p> <p>Message body includes an error message with details.</p>

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `GET/swinventory/targetInstances` element.

Table 359. Query parameters for retrieving instances to reassign to a release

Parameter	Description	Required	Value
<b>releaseId</b>	A unique identifier of a release.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

**Table 359. Query parameters for retrieving instances to reassign to a release (continued)**

Parameter	Description	Required	Value
	 <b>Note:</b> The token includes information about the computer group to which the user has access. Data that is retrieved is limited to data from computers that belong to this group.		

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/targetInstances
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&releaseId=72717 HTTP/1.1
Host: localhost:9080
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
[{
  "componentNameVersion": "IBM Tivoli Directory Server (SP) 6.0",
  "hostname": "Agent20",
  "path": "C:\Documents and Settings\Administrator\Signatures",
  "updateTime": "1349270690593",
  "productInventoryId": "200027",
  "appliedRules": "the relation in the software catalog, the infrastructure co-location",
  "productId": "72717",
  "id": "200027",
  "productNameVersion": "IBM WebSphere Process Server Hypervisor Edition for Novell SLES for x86 6.2",
  "isShared": "false"
}]
```

## Retrieval of instances shared by releases

You use the `GET` operation on the `api/sam/swinventory/instanceToShare` element to request information about the releases that can share a particular instance.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for IBM products. This REST API returns only instances that are assigned to default license metrics.

**Table 360. Operation descriptions**

Operation details	Description
<b>Operation</b>	GET /api/sam/swinventory/instanceToShare
<b>Purpose</b>	Returns a list of software releases that can share a particular instance.
<b>HTTP method</b>	GET
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/instanceToShare</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdccci)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request Content-Type</b>	Application/json
<b>Response headers</b>	<p><b>Header</b></p> <p>Content-Type</p> <p><b>Values</b></p> <p>Application/json</p> <p>Specifies the content type of the response.</p> <p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p>

**Table 360. Operation descriptions (continued)**

Operation details	Description
	en-US, ...
	Specifies the language of the response content. If this header is not specified, the content is returned in the server language.
<b>Response payload</b>	<code>targetReleases</code> element
<b>Response Content-Type</b>	Application/json
<b>Normal HTTP response codes</b>	200 - OK
<b>Error HTTP response codes</b>	<p>400 - "Bad Request" if a parameter contains errors or is missing</p> <p>401 - "Unauthorized" if you are not authorized for the operation</p> <p>404 - "Not Found" if a release or instance of the product or version that is requested does not exist</p> <p>Message body includes an error message with details.</p>

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `swinventory/instanceToShare` element.

**Table 361. Query parameters for retrieving an instance shared by releases**

Parameter	Description	Required	Value
<b>productInventoryId</b>	A unique identifier of a product.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric



**Note:** The token includes information about the computer group to which the user has access. Data that is retrieved is limited to data from computers that belong to this group.

## Example HTTP conversation

### Request

```
GET /api/sam/swinventory/instanceToShare
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&productInventoryId=200032 HTTP/1.1
Host: localhost:9080
Accept: application/json
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Language: en-US
```

### Response body (JSON)

```
[{
  "productId": "64050",
  "isSelected": "true",
  "productInventoryId": "200032",
  "appliedRules": "the relation in the software catalog, the stand-alone product discovery",
  "productName": "IBM Alphablox for Linux, UNIX and Windows 9.5",
  "id": "64050",
  "branchType": "0",
  "isShared": "false"
}]
```

## REST API for software classification

You can reduce the time that is needed to manage your software instances in a large environment by using REST API instead of the application user interface. You can use REST API to share instances, include or exclude instances from a pricing calculation, confirm and assign instances, and reassign instances.



**Important:** REST APIs for software classification work only for BigFix products and return only instances that are assigned to default license metrics.

## Share an instance with more than one product

You use the `POST` operation on the `api/sam/swinventory/share` element to share an instance of a component with more than one product.



You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

Table 362. Operation descriptions

Operation details	Description
<b>Operation</b>	<code>/api/sam/swinventory/share</code>
<b>Purpose</b>	Shares an instance with a list of software products.
<b>HTTP method</b>	POST
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/share</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcccv)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response</b> <code>Content-Type</code>	n/a
<b>Normal HTTP response codes</b>	<code>204 - No content</code>

Table 362. Operation descriptions (continued)

Operation details	Description
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user is not authorized to perform the operation
	404 - "Not Found" if a release or instance of the product or version that the user requested does not exist
	422 - "Unprocessable Entity" if the request was well-formed but was unable to be followed due to semantic errors
Message body includes an error message with details.	

### Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you use for the `POST/swinventory/share` element.

Table 363. Query parameters for sharing an instance with more than one product

The table consists of four columns and four rows.

Parameter	Description	Required	Value
<b>productIds</b>	A list of unique product identifiers separated with a comma. At least one identifier must be specified.  Use the <code>GET</code> operation on the <code>swinventory/instance-ToShare</code> element to get product identifiers.	Yes	Numeric
<b>productInventoryId</b>	A unique identifier of an instance that is shared by products.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric
<b>updateTime</b>	Timestamp of the last modification time of the instance expressed in milliseconds. This parameter is used to handle concurrent actions.  Use the <code>GET</code> operation on the <code>swinventory/release/{release_id}/instances</code> element to get the update time.	Yes	Numeric

## Example HTTP conversation

### Request

```
POST /api/sam/swinventory/share?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&productInventoryId=200032&updateTime=1349237658578&productIds=70665,70656 HTTP/1.1
Host: localhost:9080
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

#### Related information

[Retrieval of release instances \(on page mdccclxxxvii\)](#)

[Retrieval of instances shared by releases \(on page mdccc\)](#)

## Inclusion of instances in a pricing calculation

You use the `POST` operation on the `api/sam/swinventory/include` element to include instances in the pricing calculation.



You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

**Table 364. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>/api/sam/swinventory/include</code>
<b>Purpose</b>	Includes instances in a pricing calculation.
<b>HTTP method</b>	<code>POST</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/include</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcccvij)</a> .
<b>Request headers</b>	<b>Header</b>

Table 364. Operation descriptions (continued)

Operation details	Description
	<p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response <code>Content-Type</code></b>	n/a
<b>Normal HTTP response codes</b>	<p><code>204 - No content</code></p>
<b>Error HTTP response codes</b>	<p><code>400 - "Bad Request"</code> if a query parameter contains errors or is missing</p> <p><code>401 - "Unauthorized"</code> if the user is not authorized to perform the operation</p> <p><code>404 - "Not Found"</code> if a release or instance of the product or version that the user requested does not exist</p> <p><code>422 - "Unprocessable Entity"</code> if the request was well-formed but was unable to be followed due to semantic errors</p> <p>Message body includes an error message with details.</p>

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `POST/swinventory/include` element.

**Table 365. Query parameters for including instances in pricing calculations**

The table consists of four columns and three rows.

Parameter	Description	Required	Value
<b>productInventoryId</b>	A list of unique identifiers of instances that are to be included in the calculation separated with a comma. At least one identifier must be specified.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric
<b>updateTime</b>	A list of timestamps of the last modification time of instances expressed in milliseconds. The timestamps are separated with a comma. The first timestamp in the list corresponds to the first instance, and so on. This parameter is used to handle concurrent actions.  Use the <code>GET</code> operation on the <code>swinventory/release/{release_id}/instances</code> element to get the update times.	Yes	Numeric

### Example HTTP conversation

#### Request

```
POST /api/sam/swinventory/include?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&productInventoryId=198,300201&updateTime=1349237658578,1349237658588 HTTP/1.1
Host: localhost:9080
Accept-Language: en-US
```

#### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

#### Related information

[Retrieval of release instances \(on page mdccclxxxvii\)](#)

### Exclusion of instances from pricing calculations

You use the `POST` operation on the `api/sam/swinventory/exclude` element to exclude instances from pricing calculations.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

**Table 366. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>/api/sam/swinventory/exclude</code>
<b>Purpose</b>	Excludes instances from a pricing calculation.
<b>HTTP method</b>	POST
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/exclude</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcccix)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response <code>Content-Type</code></b>	n/a

**Table 366. Operation descriptions (continued)**

Operation details	Description
<b>Normal HTTP response codes</b>	
	204 - No content
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user is not authorized to perform the operation
	404 - "Not Found" if a release or instance of the product or version that the user requested does not exist
	422 - "Unprocessable Entity" if the request was well-formed but was unable to be followed due to semantic errors
Message body excludes an error message with details.	

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `POST/swinventory/exclude` element.

**Table 367. Query parameters for excluding instances from pricing calculations**

Parameter	Description	Required	Value
<b>productInventoryId</b>	A list of unique identifiers of instances to be excluded from the calculation separated with a comma. At least one identifier must be specified.	Yes	Numeric
<b>reason</b>	The reason for excluding an instance from the pricing calculations.	Yes	<code>backupbetacomponentevaluation-</code> <code>no_licensingnot_compatibleother</code>
<b>comment</b>	Additional comments for the reason of exclusion.	Only when reason is other	String
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric
<b>updateTime</b>	A list of timestamps of the last modification time of the instances expressed in milliseconds. Each timestamp is separated with a comma. The first timestamp in the list corresponds to the first instance, and so on. This	Yes	Numeric

**Table 367. Query parameters for excluding instances from pricing calculations (continued)**

Parameter	Description	Required	Value
	parameter is used to handle concurrent actions.		
	Use the <code>GET</code> operation on the <code>swinventory/release/{release_id}/instances</code> element to get the update times.		

## Example HTTP conversation

### Request

```
POST /api/sam/swinventory/exclude
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&productInventoryId=300001,500001&updateTime=1349237658578,1349237658588
&reason=no_licensing HTTP/1.1
Host: localhost:9080
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

### Related information

[Retrieval of release instances \(on page mdccclxxxvii\)](#)

## Reassignment of instances to a product

You use the `POST` operation on the `api/sam/swinventory/reassign` element to reassign instances to a different product.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

**Table 368. Operation descriptions**

Operation details	Description
Operation	<code>/api/sam/swinventory/reassign</code>

Table 368. Operation descriptions (continued)

Operation details	Description
<b>Purpose</b>	Reassigns instances to a different product.
<b>HTTP method</b>	POST
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/reassign</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcccxiij)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p>Accept-Language (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request Content-Type</b>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p>Content-Language</p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response Content-Type</b>	n/a
<b>Normal HTTP response codes</b>	204 - No content
<b>Error HTTP response codes</b>	<p>400 - "Bad Request" if a query parameter contains errors or is missing</p> <p>401 - "Unauthorized" if the user is not authorized to perform the operation</p>

**Table 368. Operation descriptions (continued)**

Operation details	Description
	404 - "Not Found" if a release or instance of the product or version that the user requested does not exist
	422 - "Unprocessable Entity" if the request was well-formed but was unable to be followed due to semantic errors
Message body excludes an error message with details.	

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `POST/swinventory/reassign` element.

**Table 369. Query parameters for reassigning instances to a different product**

*The table consists of four columns and four rows.*

Parameter	Description	Required	Value
<b>productId</b>	A unique identifier of a product to which the instance is to be reassigned.  Use the <code>GET</code> operation on the <code>swinventory/target-BundlesOfInstances</code> element to get product identifiers.	Yes	Numeric
<b>productInventoryId</b>	A list of unique identifiers of instances to be reassigned to a product separated with a comma. At least one identifier must be specified.	Yes	Numeric
<b>updateTime</b>	A list of timestamps of the last modification time of the instances expressed in milliseconds. The timestamps are separated with a comma. The first timestamp in the list corresponds to the first instance, and so on. This parameter is used to handle concurrent actions.  Use the <code>GET</code> operation on the <code>swinventory/release/{release_id}/instances</code> element to get the update times.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

## Example HTTP conversation

### Request

```
POST /api/sam/swinventory/reassign?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&productInventoryId=200027,300001&productId=72786&updateTime=
1349237658578,1349237658588 HTTP/1.1
Host: localhost:9080
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

#### Related information

[Retrieval of release instances \(on page mdccclxxxvii\)](#)

[Retrieval of releases to which a software instance can be reassigned \(on page mdccxcxi\)](#)

## Reassignment of instances to a product for a list of releases

You use the `POST` operation on the `api/sam/swinventory/reassignRelease` element to reassign instances for a list of releases to a product.



You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

**Table 370. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>/api/sam/swinventory/reassignRelease</code>
<b>Purpose</b>	Reassigns instances to a product for a list of releases.
<b>HTTP method</b>	<code>POST</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/reassignRelease</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcccxvi)</a> .

Table 370. Operation descriptions (continued)

Operation details	Description
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <code>Content-Type</code>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response</b> <code>Content-Type</code>	n/a
<b>Normal HTTP response codes</b>	204 - No content
<b>Error HTTP response codes</b>	<p>400 - "Bad Request" if a query parameter contains errors or is missing</p> <p>401 - "Unauthorized" if the user is not authorized to perform the operation</p> <p>404 - "Not Found" if a release or instance of the product or version that the user requested does not exist</p> <p>422 - "Unprocessable Entity" if the request was well-formed but was unable to be followed due to semantic errors</p>
Message body excludes an error message with details.	

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `POST/swinventory/reassignRelease` element.

**Table 371. Query parameters for retrieving instances to reassign to a release**

*The table consists of four columns and ten rows.*

Parameter	Description	Required	Value
<b>endDate</b>	Discovery end date. If the parameter is not specified, the current date is used.	No	Date in the YYYY-MM-DD format
<b>name_host_filter</b>	The name of the computer on which the software item is installed.	No	String
<b>name_server_filter</b>	The name of the server on which the software item is installed.	No	String
<b>operating_system_filter</b>	Operating system of the computer on which the software item is installed.	No	String
<b>part_number_filter</b>	The part number to which the software item was assigned according to the imported part number list.	No	String
<b>product_release_component_filter</b>	The name of the software product, release, or component.	No	String
<b>productId</b>	A unique identifier of a product to which the instance is to be assigned.  Use the <code>GET</code> operation on the <code>swinventory/target-BundlesOfReleases</code> element to get product identifiers.	Yes	Numeric
<b>releases</b>	A list of unique release identifiers separated with a comma. At least one identifier must be specified.	Yes	Numeric
<b>startDate</b>	Discovery start date. If the parameter is not specified, the first date that is not covered by a signed audit report is used. If there are no signed reports, the server installation date is used.	No	Date in the YYYY-MM-DD format
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

## Example HTTP conversation

### Request

```
POST /api/sam/swinventory/reassignRelease
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&releases=67757,95947&productId=67756&startDate=2012-09-29&endDate=2012-10-02
Host: localhost:9080
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

### Related information

[Retrieval of releases to which a release instance can be reassigned \(on page mdccxciv\)](#)

## Confirmation of instances to bundle or assign

You use the `POST` operation on the `api/sam/swinventory/confirm` element to confirm the bundling or assignment of instances.

 You must have the Manage Software Classification permission to perform this task.

 **Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

**Table 372. Operation descriptions**

Operation details	Description
<b>Operation</b>	<code>/api/sam/swinventory/confirm</code>
<b>Purpose</b>	Confirms the bundling or assignment of instances.
<b>HTTP method</b>	<code>POST</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/confirm</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	For a list of applicable query parameters, see: <a href="#">Query parameters (on page mdcccxviii)</a> .
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p>

**Table 372. Operation descriptions (continued)**

Operation details	Description
	<p>en-US (only English is supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request</b> <small>Content-Type</small>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response</b> <small>Content-Type</small>	n/a
<b>Normal HTTP response codes</b>	<code>204 - No content</code>
<b>Error HTTP response codes</b>	<p><code>400 - "Bad Request"</code> if a query parameter contains errors or is missing</p> <p><code>401 - "Unauthorized"</code> if the user is not authorized to perform the operation</p> <p><code>404 - "Not Found"</code> if a release or instance of the product or version that the user requested does not exist</p> <p><code>422 - "Unprocessable Entity"</code> if the request was well-formed but was unable to be followed due to semantic errors</p>
	<p>Message body excludes an error message with details.</p>

---

## Query parameters

You can use query parameters to narrow down the results of your search. The following table presents query parameters that you can use for the `POST/swinventory/confirm` element.

Table 373. Query parameters for confirming instances

Parameter	Description	Required	Value
<b>productInventoryId</b>	A list of unique identifiers of instances to be confirmed separated with a comma. At least one identifier must be specified.	Yes	Numeric
<b>updateTime</b>	A list of timestamps of the last modification time of instances expressed in milliseconds. The timestamps are separated with a comma. The first timestamp in the list corresponds to the first instance, and so on. This parameter is used to handle concurrent actions.  Use the <code>GET</code> operation on the <code>swinventory/release/{release_id}/instances</code> element to get the update times.	Yes	Numeric
<b>token</b>	A unique user authentication identifier.	Yes	Alphanumeric

## Example HTTP conversation

### Request

```
POST /api/sam/swinventory/confirm?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623
&productInventoryId=200027,300001&updateTime=1349237658578,1349237658588 HTTP/1.1
Host: localhost:9080
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

### Related information

[Retrieval of release instances \(on page mdclxxxvii\)](#)

## Confirmation of the assignment of instances for a release

You use the `POST` operation on the `api/sam/swinventory/confirmRelease` element to confirm the assignment of instances for a release.

 You must have the Manage Software Classification permission to perform this task.



**Important:** Use this REST API only for BigFix products. The REST API returns only instances that are assigned to default license metrics.

Operation details	Description
<b>Operation</b>	<code>api/sam/swinventory/confirmRelease</code>
<b>Purpose</b>	Confirms assignment of instances for a release.
<b>HTTP method</b>	<code>POST</code>
<b>Resource URI</b>	<code>https://server_host_name:port_number/api/sam/swinventory/confirmRelease</code>
<b>URL link relation</b>	n/a
<b>URI query parameters</b>	No
<b>Request headers</b>	<p><b>Header</b></p> <p><code>Accept-Language</code> (optional)</p> <p><b>Values</b></p> <p>en-US (English language only supported)</p> <p>Used to negotiate the language of the response. If this header is not specified, the content is returned in the server language.</p>
<b>Request payload</b>	n/a
<b>Request <code>Content-Type</code></b>	n/a
<b>Response headers</b>	<p><b>Header</b></p> <p><code>Content-Language</code></p> <p><b>Values</b></p> <p>en-US, ...</p> <p>Specifies the language of the response content. If this header is not specified, the content is returned in the server language.</p>
<b>Response payload</b>	n/a
<b>Response <code>Content-Type</code></b>	n/a
<b>Normal HTTP response codes</b>	<code>204 - No content</code>

Operation details	Description
<b>Error HTTP response codes</b>	
	400 - "Bad Request" if a query parameter contains errors or is missing
	401 - "Unauthorized" if the user is not authorized to perform the operation
	404 - "Not Found" if a release or instance of the product or version that the user requested does not exist
	422 - "Unprocessable Entity" if the request was well-formed but was unable to be followed due to semantic errors
Message body excludes an error message with details.	

## Query parameters

The following table presents query parameters that you can use for the `POST/swinventory/confirmRelease` element.

Parameter	Description	Required	Value
<b>endDate</b>	Discovery end date. If the parameter is not specified, the current date is used.	No	Date in the YYYY-MM-DD format
<b>name_host_filter</b>	The name of the computer on which the software item is installed	No	String
<b>name_server_filter</b>	The name of the server on which the software item is installed	No	String
<b>operating_system_filter</b>	Operating system of the computer on which the software item is installed	No	String
<b>part_number_filter</b>	The part number to which the software item was assigned according to the imported part number list.	No	String
<b>product_release_component_filter</b>	The name of a software product, software release, or a component	No	String
<b>releases</b>	A list of unique release identifiers. Each identifier is separated by a comma. At least one ID must be entered	Yes	Numeric
<b>startDate</b>	Discovery start date. If the parameter is not specified, the first date that is not covered by a signed audit report is used. If there are no signed reports, the server installation date is used.	No	Date in the YYYY-MM-DD format

Parameter	Description	Required	Value
token	A unique user authentication identifier.	Yes	Alphanumeric

## Example HTTP conversation

### Request

```
POST /api/sam/swinventory/confirmRelease
?token=7adc3efb175e2bc0f4484bdd2efca54a8fa04623&releases=95185
&startDate=2012-10-18&endDate=2013-01-26 HTTP/1.1
Host: localhost:9080
Accept-Language: en-US
```

### Response header

```
HTTP/1.1 204 OK
Content-Type: application/json
Content-Language: en-US
```

# Glossary

This glossary provides terms and definitions for the BigFix Inventory software and products.

The following cross-references are used in this glossary:

- *See* refers you from a nonpreferred term to the preferred term or from an abbreviation to the spelled-out form.
- *See also* refers you to a related or contrasting term.

[A \(on page mdcccxxiii\)](#) [B \(on page mdcccxxiii\)](#) [C \(on page mdcccxxiv\)](#) [D \(on page mdcccxxv\)](#) [E \(on page mdcccxxvi\)](#) [F \(on page mdcccxxvi\)](#) [G \(on page mdcccxxvii\)](#) [H \(on page mdcccxxvii\)](#) [I \(on page mdcccxxvii\)](#) [J \(on page mdcccxxviii\)](#) [K \(on page mdcccxxviii\)](#) [L \(on page mdcccxxviii\)](#) [M \(on page mdcccxxviii\)](#) [N \(on page mdcccxxviii\)](#) [O \(on page mdcccxxviii\)](#) [P \(on page mdcccxxviii\)](#) [Q \(on page mdcccxxviii\)](#) [R \(on page mdcccxxix\)](#) [S \(on page mdcccxxix\)](#) [T \(on page mdcccxxxi\)](#) [U \(on page mdcccxxxi\)](#) [V \(on page mdcccxxxi\)](#)

## A

### **activated processor core**

A processor core that is managed or used by a product, regardless of whether the capacity of the processor core can be limited through virtualization technologies.

### **administration server**

The database and web interface that software asset managers use for maintaining information about license entitlements and instances of installed products.

### **agent**

A process that performs an action on behalf of a user or other program without user intervention or on a regular schedule, and reports the results back to the user or program.

### **API**

See [application programming interface \(on page mdcccxxiii\)](#).

### **application programming interface (API)**

An interface that allows an application program that is written in a high-level language to use specific data or functions of the operating system or another program.

### **audit**

In ITIL, the act of confirming compliance with a standard or set of guidelines, or comparing actual measurements to targets, or verifying the accuracy of recorded information.

### **authentication**

In computer security, a process that ensures that the identities of both the sender and the receiver of a network transaction are true.

## B

### **bundle**

To package a collection of individually orderable components or products into a single offering, often for promotional purposes. Software manufacturers typically offer a single license to cover all components of a bundled offering.

**bundling**

A process during which the user assigns a component to a product.

**C****CA**

See [certificate authority \(on page mdcccxxiv\)](#).

**certificate**

In computer security, a digital document that binds a public key to the identity of the certificate owner, thereby enabling the certificate owner to be authenticated. A certificate is issued by a certificate authority and is digitally signed by that authority. See also [certificate authority \(on page mdcccxxiv\)](#), [certificate signing request \(on page mdcccxxiv\)](#).

**certificate authority (CA)**

A trusted third-party organization or company that issues the digital certificates. The certificate authority typically verifies the identity of the individuals who are granted the unique certificate. See also [certificate \(on page mdcccxxiv\)](#).

**certificate signing request (CSR)**

An electronic message that an organization sends to a certificate authority (CA) to obtain a certificate. The request includes a public key and is signed with a private key; the CA returns the certificate after signing with its own private key. See also [certificate \(on page mdcccxxiv\)](#), [keystore \(on page mdcccxxvii\)](#).

**client**

A software program or computer that requests services from a server. See also [host \(on page mdcccxxvi\)](#).

**cluster**

A set of independent systems or logical partitions (called nodes) that are organized into a network for the purpose of sharing resources and communicating with each other.

**compliance**

A state of being in accordance with established software and security specifications on target computers, or the process of becoming so.

**component**

A software item that is part of a software product, and might be separately identified, but is not individually licensed.

**Computer group**

An organized list of computers through which users can get dedicated reporting or perform common operations in bulk. This feature simplifies the maintenance of customer environments, and it can be used to represent, for instance, a department or region.

**confirmed instance**

An instance of an installed software product that has been explicitly assigned to one or more bundles.

**constant special item ID list (CSIDL)**

In Windows environments, a list that identifies frequently used special folders whose location might vary on different systems.

**contract**

A set of information about a software license for a product or products, its cost and entitlement period. When a contract is assigned to a computer group, it indicates which computers are entitled to the licenses described by that contract.

**core**

A single chip that houses a central processing unit (CPU) and is a component in the larger circuit design of a computer. A single chip can only contain one CPU, but a processor can contain multiple cores. See also [dual-core \(on page mdcccxxvi\)](#), [multi-core \(on page mdcccxxviii\)](#), [processor value unit \(on page mdcccxxviii\)](#).

**CSIDL**

See [constant special item ID list \(on page mdcccxxv\)](#).

**CSR**

See [certificate signing request \(on page mdcccxxiv\)](#).

**cURL**

A command line tool for retrieving and posting files using URL syntax.

## D

**data source**

The source of data itself, such as a database or XML file, and the connection information necessary for accessing the data.

**discover**

To identify resources within a network environment.

**DNS**

See [domain name server \(on page mdcccxxv\)](#).

**domain name server (DNS)**

A server program that supplies name-to-address conversion by mapping domain names to IP addresses.

### **dual-core**

Referring to a system that integrates two processors into one virtual processor. See also [core \(on page mdcccxxv\)](#), [multi-core \(on page mdcccxxviii\)](#).

## **E**

### **endpoint**

A server, computer, machine or device that is monitored.

### **entitlement**

In software licensing, the maximum allowed allocation of capacity as determined by a license agreement.

## **F**

### **fixlet**

A message that provides instructions to an agent to perform a management or reporting action.

### **full-capacity**

Pertains to a software licensing scheme that bases charges on the capacity of the entire machine or cluster of machines that is available to the licensed program, rather than on just one or more partitions. See also [processor value unit \(on page mdcccxxviii\)](#), [subcapacity \(on page mdcccxxx\)](#).

## **H**

### **host**

A computer that is connected to a network and that provides an access point to that network. The host can be a client, a server, or both a client and server simultaneously. See also [client \(on page mdcccxxiv\)](#).

### **host name**

In Internet communication, the name given to a computer. The host name might be a fully qualified domain name such as mycomputer.city.company.com, or it might be a specific subname such as mycomputer.

### **HTTP**

See [Hypertext Transfer Protocol \(on page mdcccxxvi\)](#).

### **Hypertext Transfer Protocol (HTTP)**

An Internet protocol that is used to transfer and display hypertext and XML documents on the web.

### **hypervisor**

Software or a physical device that enables multiple instances of operating systems to run simultaneously on the same hardware.

## I

**installation path**

The path where a software is installed.

**instance**

A software product or component that is installed on a server or logical partition (LPAR).

**IT infrastructure**

All of the hardware, software, networks, and other facilities (but not people or processes) required to develop, test, deliver, monitor, control, or support IT services.

## K

**keystore**

In security, a file or a hardware cryptographic card where identities and private keys are stored, for authentication and encryption purposes. Some keystores also contain trusted or public keys. See also [certificate signing request \(on page mdcccxxiv\)](#).

**knowledge base**

A collection of information about distributed software products and components, dependencies between them, the means to discover them, and their basic licensing properties. The knowledge base is used to generate software catalogs that asset management tools can use for software inventory identification, license compliance, and software provisioning.

## L

**LDAP**

See [Lightweight Directory Access Protocol \(on page mdcccxxvii\)](#).

**license**

A legal agreement that authorizes the use of proprietary information including, but not limited to, copyrighted or patented information.

**Lightweight Directory Access Protocol (LDAP)**

An open protocol that uses TCP/IP to provide access to directories that support an X.500 model and that does not incur the resource requirements of the more complex X.500 Directory Access Protocol (DAP). For example, LDAP can be used to locate people, organizations, and other resources in an Internet or intranet directory.

**locale**

A setting that identifies language or geography and determines formatting conventions such as collation, case conversion, character classification, the language of messages, date and time representation, and numeric representation.

### **logical partition (LP, LPAR)**

One or more virtualized images of a hardware computing system that can include shared and dedicated resources assigned from the pool of resources available on a physical server. Each image appears to the operating system running within it to be a unique instance of a physical server. See also [virtualization \(on page mdcccxxxi\)](#).

### **LP**

See [logical partition \(on page mdcccxxviii\)](#).

### **LPAR**

See [logical partition \(on page mdcccxxviii\)](#).

## **M**

### **multi-core**

Referring to a system that integrates multiple processors into one virtual processor. See also [core \(on page mdcccxxv\)](#), [dual-core \(on page mdcccxxvi\)](#).

### **Metric**

A measurement unit that defines usage of software license, for example, installed seats, PVU

## **O**

### **offering**

The element or integrated set of elements (hardware, software, services) designed to satisfy the wants and needs of current and/or prospective customers. A solution is the application of the offering in a specific customer environment.

## **P**

### **partition**

A logical division of storage on a fixed disk. See also [subcapacity \(on page mdcccxxx\)](#), [virtualization \(on page mdcccxxxi\)](#).

### **PID**

See [product identifier \(on page mdcccxxix\)](#).

### **pricing metric**

A measurement that defines how capacity is counted and applied against the customer's entitlement.

See also [entitlement \(on page mdcccxxvi\)](#).

### **processor value unit (PVU)**

A unit of measure that is assigned to each processor core for software licensing purposes. PVUs vary according to chip architecture. See also [core \(on page mdcccxxv\)](#), [full-capacity \(on page mdcccxxvi\)](#), [subcapacity \(on page mdcccxxx\)](#).

**product ID**

See [product identifier \(on page mdcccxxix\)](#).

**product identifier (PID, product ID)**

A unique value that identifies an BigFix software product. Every mainframe and distributed BigFix software product has a PID.

**Purchase order**

A set of information about purchased software

**PVU**

See [processor value unit \(on page mdcccxxviii\)](#).

## R

**raw data**

Unprocessed data that contains information about software items and manufacturers, obtained through software scans.

**Representational State Transfer (REST)**

A software architectural style for distributed hypermedia systems like the World Wide Web. The term is also often used to describe any simple interface that uses XML (or YAML, JSON, plain text) over HTTP without an additional messaging layer such as SOAP.

**resource value unit (RVU)**

A unit of measure by which a program can be licensed that is based on the number of units of a specific resource used or managed by the program.

**response file**

A file that can be customized with the setup and configuration data that automates an installation. During an interactive installation, the setup and configuration data must be entered, but with a response file, the installation can proceed without any intervention.

**REST**

See [Representational State Transfer \(on page mdcccxxix\)](#).

**RVU**

See [resource value unit \(on page mdcccxxix\)](#).

## S

**scan**

To systematically search a computer or a network for information about hardware, software, or configuration. See also [software scan \(on page mdcccxxx\)](#).

**signature**

The set of unique information that identifies a software application, such as the name, version, and file size of an application.

**silent mode**

A method for installing or uninstalling a product component from the command line with no GUI display. When using silent mode, you specify the data required by the installation or uninstallation program directly on the command line or in a file (called an option file or response file).

**site**

A subdivision of an organization that can track inventory and other data separately from other sites.

**server software catalog**

Set of information about software, its components, license metrics and methods of discovery embedded into BigFix Inventory Server as well as available as update package.

**scanner software catalog**

Set of signatures that needs to be evaluated on the endpoint by BigFix Inventory Scanner. It's generated by BigFix Inventory Server and contains signatures coming from server software catalog, generated in automated fashion as well as custom content.

**software contract**

A set of information about a software license for a product or products, its type, cost, amount of purchased license metrics, and the entitlement period. When a contract is assigned to a computer group, it indicates which computers the license is distributed to

**software hierarchy**

The combination of software product, version, release that represents a software item in the server software catalog. The product is the root of the hierarchy.

**software license**

A legal instrument governing the use or redistribution of software

**software product**

A software item that is licensed independently of other software items. For licensing purposes, software products are sometimes bundled into a single sales offering.

**software scan**

An automated process that discovers instances of software installed on the computers in a network. The software scan results include details about discovered software, such as version numbers. See also [scan \(on page mdcccxxx\)](#).

**subcapacity**

Pertains to a software licensing scheme that bases charges on the capacity of the partition where the licensed program is used, rather than on the total capacity in the server. See also [full-capacity \(on page mdcccxxvi\)](#), [partition \(on page mdcccxxviii\)](#), [processor value unit \(on page mdcccxxviii\)](#), [virtualization \(on page mdcccxxxi\)](#), [virtualization \(on page mdcccxxxi\)](#).

## T

### TLS

See [Transport Layer Security \(on page mdcccxxxi\)](#).

### Transport Layer Security (TLS)

A set of encryption rules that uses verified certificates and encryption keys to secure communications over the Internet. TLS is an update to the SSL protocol.

## V

### virtualization

The creation of a virtual computing resource such as an operating system, server, storage device, or network resources in a one-to-many or many-to-one association. For example, a single operating system might be divided into multiple partitions that operate as independent systems, or multiple disk devices might appear as a single logical drive. See also [logical partition \(on page mdcccxxviii\)](#), [partition \(on page mdcccxxviii\)](#), [subcapacity \(on page mdcccxxx\)](#).

### virtual machine (VM)

An instance of a data-processing system that appears to be at the exclusive disposal of a single user, but whose functions are accomplished by sharing the resources of a physical data-processing system.

### computer group

An organized list of computers through which users can get dedicated reporting or perform common operations in bulk. This feature simplifies the maintenance of customer environments, and it can be used to represent, for instance, a department or region.

### software license

A legal instrument governing the use or redistribution of software.

### metric

A measurement unit that defines usage of software license, for example, installed seats, and PVU.

### software contract

A set of information about a software license for a product or products, its type, cost, amount of purchased license metrics, and the entitlement period. When a contract is assigned to a computer group, it indicates which computers the license is distributed to.

### purchase order

A set of information about purchased software.

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