

BigFix Insights for Vulnerability Management Quick Start Guide



Special notice

Before using this information and the product it supports, read the information in [Notices](#) (on page 20).

Edition notice

This edition applies to BigFix version 10 and to all subsequent releases and modifications until otherwise indicated in new editions.

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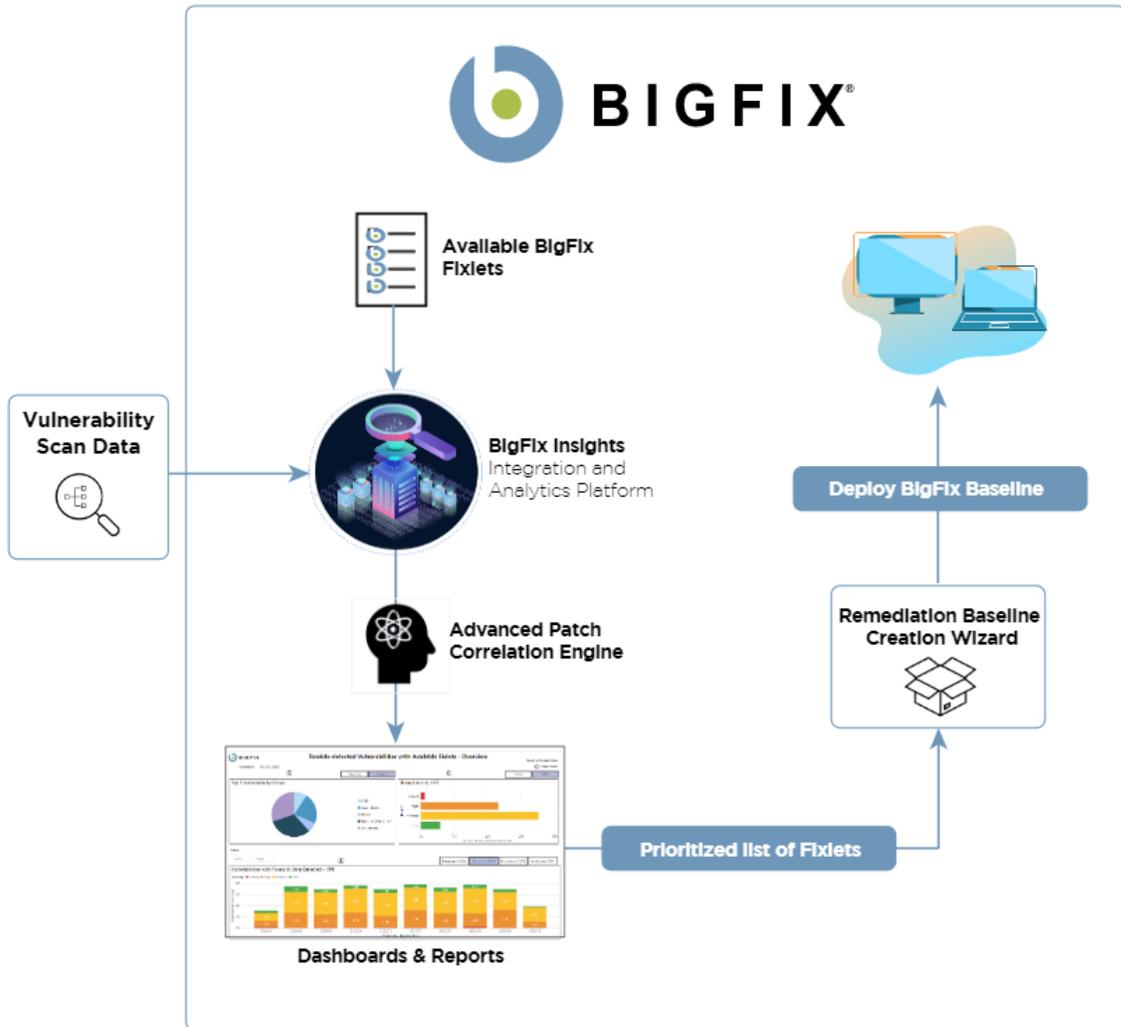
Chapter 1. BigFix Insights for Vulnerability Remediation

Use this section to become familiar with BigFix Insights for Vulnerability Remediation infrastructure and key concepts necessary to understand how it works.

BigFix Insights for Vulnerability Remediation integrates BigFix with sources of vulnerability data. The purpose is to guide BigFix users on how to apply the best patch and configuration settings to remediate discovered vulnerabilities, and thus reduce risk and improve security.

BigFix Insights for Vulnerability Remediation, uses advanced correlation algorithms to aggregate and process the vulnerability data with information from BigFix to drive analytics reports. The output of the analytics facilitates remediation through the Baseline Creation Wizard by recommending the latest available patches for the discovered vulnerabilities.

Figure 1. Architecture overview of BigFix Insights for Vulnerability Remediation



Chapter 2. System requirements

Learn more about the prerequisites and system requirements for BigFix Insights for Vulnerability Remediation (IVR) service.

Table 1. Prerequisites and system requirements for IVR service

Hardware requirements	
CPU	minimum 2 cores (recommended 4)
RAM	<p>On top of host OS requirements:</p> <ul style="list-style-type: none"> • < 1M Findings from Vulnerability Management Product = 16GB • < 2M Findings from Vulnerability Management Product = 32GB • < 3M Findings from Vulnerability Management Product = 48GB • < 4M Findings from Vulnerability Management Product = 64GB
Disc space	<ul style="list-style-type: none"> • < 1M Findings from Vulnerability Management Product = 4GB - 8GB preferred • < 2M Findings from Vulnerability Management Product = 8GB - 12GB preferred • < 3M Findings from Vulnerability Management Product = 12GB - 16GB preferred • < 4M Findings from Vulnerability Management Product = 16GB - 20GB preferred

Table 1. Prerequisites and system requirements for IVR service (continued)

Execution Time	<p>The overall run time of data synchronization and processing depends on:</p> <ul style="list-style-type: none"> • CPU Speed • Number of findings • Number of assets in insights • Number of patch sites loaded within the BFE environment • API latency • Conflicting workloads on IVR machine
Software requirements	
Prerequisites	<ul style="list-style-type: none"> • Microsoft VC++ Redistributable package 2012 https://www.microsoft.com/en-in/download/details.aspx?id=30679 • Microsoft® ODBC Driver 17 for SQL Server® https://www.microsoft.com/en-us/download/details.aspx?id=56567
Operating system	<ul style="list-style-type: none"> • Microsoft Windows 2016 • Microsoft Windows 2019
Supported BigFix versions	<ul style="list-style-type: none"> • Windows - based BigFix Server, Version 10 <p> Note: BigFix Insights for Vulnerability Remediation</p>

Table 1. Prerequisites and system requirements for IVR service (continued)

	 does not currently support non-Windows-based BigFix Server environments.
BigFix Component Requirements	<ul style="list-style-type: none"> • BigFix Insights WebUI App (v6) (minimum)
BigFix License Requirements	<ul style="list-style-type: none"> • BigFix Lifecycle • BigFix Compliance
Supported Vulnerability Management Platforms	<ul style="list-style-type: none"> • Qualys VMDR v2 REST API: https://www.qualys.com/docs/qualys-api-vmqc-user-guide.pdf • Tenable.SC • Tenable.IO
BI tool	<ul style="list-style-type: none"> • Power BI Desktop/Server, 2021 + (Rec. May 2021)  Note: Microsoft offers two distinct products called Power BI desktop. Use the one that is optimized for Power BI Report Server: https://www.microsoft.com/en-us/download/details.aspx?id=56723 <ul style="list-style-type: none"> • Tableau Desktop/Server, 2020.4 +

Table 1. Prerequisites and system requirements for IVR service (continued)

Network requirements	<ul style="list-style-type: none"> • Connectivity to Vulnerability Management API Server URL (port 443 by default) • Connectivity to BigFix Insights SQL database (port 1433 by default)
-----------------------------	--

Vulnerability Management API details

Qualys API requirements.

The Qualys API enforces limits on the API calls a customer can make based on their subscription settings. The limits apply to the use of all Qualys APIs except “session” V2 API (session login/logout). Default API control settings are provided by the service. Note these settings may be customized per subscription by Qualys Support.

For more details, refer to the link: <https://www.qualys.com/docs/qualys-api-limits.pdf>.

To estimate the number of API calls, use the below formula:

```
Total number of API calls = ( number of devices / batch size ) + (number of
unique vulnerabilities / 350)
```

where;

- `batch size` - configurable parameter that describes the maximum number of devices which can be fetched in a single API call
- `number of devices` - number of available devices in the scanned network
- `number of unique vulnerabilities` - number of unique vulnerabilities discovered in the scanned network
- `350` - maximum number of vulnerabilities that can be fetched in a single API call into the Qualys Knowledge Base API.

Qualys API user requirements

It is recommended to use 'Reader' user role. To edit user account, select **Users** tab in the **Vulnerability Management** dashboard. Hover the cursor over the **Login** and click **Edit**.

The screenshot shows the Qualys Cloud Platform interface. The top navigation bar includes 'Vulnerability Management' and 'Users'. The 'Users' tab is active, showing a list of users. The 'Reader Account' user is selected, and the 'Edit' option in the 'Quick Actions' menu is highlighted. Below the table, the details for the 'Reader Account' user are displayed.

Name	Login	Title	Role	Business Unit	VIP	Phone	Disk Space	Status	Last Login	Modified
API Reader	API		Reader	Unassigned		212-555-1212	0	Pending Activation		03/30/2021
		Sr Architect	Manager	Unassigned		415-420-8519	3 MB	Active	06/21/2021	06/04/2021
		Associate General Manager	Manager	Unassigned		267-239-1191	0	Active	04/06/2021	11/10/2020
		architect	Manager	Unassigned		5719267899	0	Active	03/04/2021	03/04/2021
Reader Account		account	Reader	Unassigned		7053767572	0	Active	06/21/2021	11/10/2020

Reader Account

ID: [Redacted]
 Name: Reader Account
 Role: Reader
 Business Unit: Unassigned
 GUI Access: No
 API Access: Yes
 Company: HCL
 Title: Reader Account

E-mail Address: [Redacted]
 Fax: -
 Phone: [Redacted]
 Address: 623 5th Ave
 City: New York
 Country: United States of America

In the **User Role** tab, select **Reader** as a user role and **Allow access to API**.

Edit User Launch Help  

Information: Users must be employees or contractors of your company who are bound to confidentiality obligations as protective as those contained in the Qualys® Service Agreement.

General Information >
Locale >
User Role >
Asset Groups >
Permissions >
Options >
Account Activity >
Security >
User Status >

User Role

User Role: * Reader ▼

Allow access to: GUI API

Business Unit: * Unassigned ▼

User configurations to transfer:

We recommend you allow the user to keep their configurations when they move to their new business unit. Otherwise user data is **removed permanently from your account** and it can't be recovered. [Learn more](#)

Transfer personal configurations
Includes option profiles, report templates, scheduled tasks, distribution groups and search lists.

Transfer Asset Groups
If not selected, configurations may become inactive (e.g. report templates, schedules) and you'll need to manually update them.

In the **Asset Groups** tab you can select asset groups that you wish to have access to.

The screenshot shows the 'Edit User' dialog box with the 'Asset Groups' tab selected. The left sidebar contains navigation options: General Information, Locale, User Role, Asset Groups (selected), Permissions, Options, Account Activity, Security, and User Status. The main content area is titled 'Asset Groups' and includes a search bar and a list of selected asset groups.

Edit User Launch Help  

Asset Groups

Use the selections below to designate which asset groups this user will have access to within this business unit.

Add asset groups: Add All | Remove All

3 asset groups selected

All	Remove
My Windows Server VM Group	View Remove
TestAssetGroup	View Remove

Cancel **Save**

For more information on how to assign to asset groups to the user, refer to the [link](#).

In the **Permissions** tab select **Manage VM module**.

Edit User Launch Help  

General Information >

Locale >

User Role >

Asset Groups >

Permissions >

Options >

Account Activity >

Security >

User Status >

Extended Permissions

Allow this user to perform the following actions:

- Manage VM module
- Purge host information/history
- Manage SCA module

Cancel **Save**

Refer to the [link](#) to find more information on User roles and permissions.

Tenable API requirements

The IVR server requires a Tenable user account. A user leveraged to Tenable.scIVR adapter needs compatible machines within the environment.

The Tenable account utilized for IVR should be assigned the default full access group, and auditor role permissions. This provides the account access needed to complete the dataflow. Additionally, the user can be defined using custom access permissions to limit the scope of assets retrieved by IVR. A group within Tenable can be limited by both the viewable hosts and the repositories. In general, the role of auditor should be leveraged as well, to follow the principle of least privileged. The IVR dataflow retrieves information only when the account has granted visibility to receive.

Tenable impact statement

IVR uses the pytenable library (developed by Tenable). IVR leverages a default batch size of 1000, which is conservative and is prescribed by Tenable. With the default settings, the Tenable.sc server should not see a noticeable impact when the IVR adapter is running.

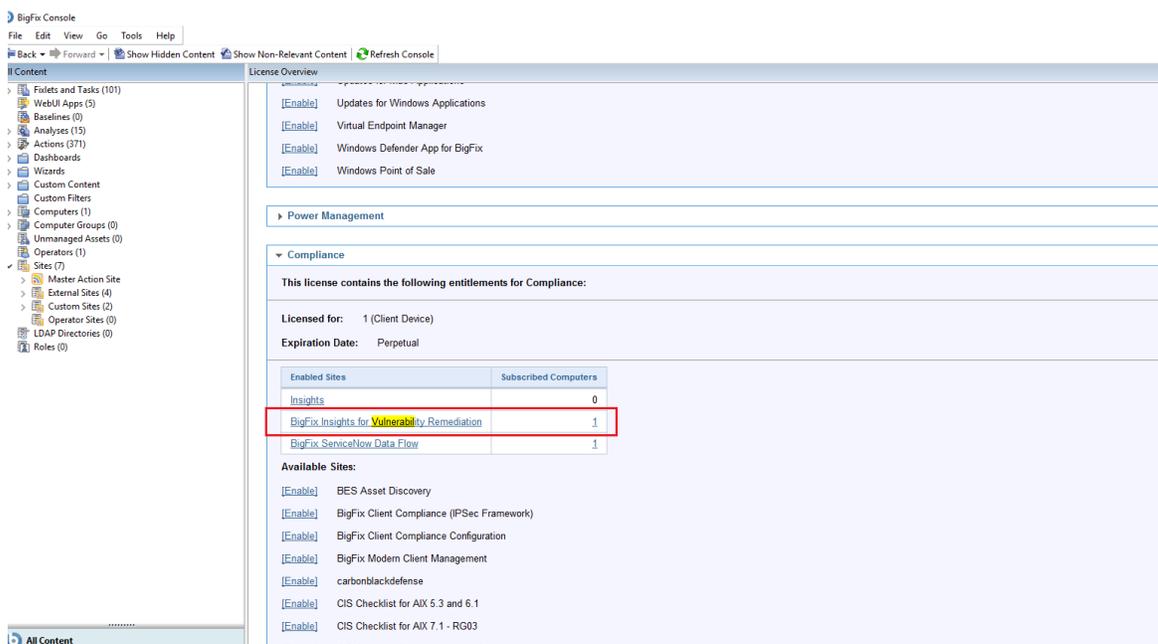
Chapter 3. Deployment and configuration

This module provides the steps to deploy and configure the BigFix Insights for Vulnerability Remediation solution.

To install and configure BigFix Insights for Vulnerability Remediation service, perform below steps:

1. Enable a content site.

Navigate to BigFix License Overview Dashboard. In **Compliance/Lifecycle** panel, click **Enable BigFix Insights for Vulnerability Remediation** Fixlet to gather the required content.



The screenshot shows the BigFix Console interface. The left sidebar contains a navigation tree with categories like Fixlets and Tasks, Analyses, Dashboards, and Sites. The main area displays the 'License Overview' for 'Compliance'. It lists several [Enable] buttons for various services. Below this, a section titled 'Compliance' shows license details: 'Licensed for: 1 (Client Device)' and 'Expiration Date: Perpetual'. A table shows the following data:

Enabled Sites	Subscribed Computers
Insights	0
BigFix Insights for Vulnerability Remediation	1
BigFix ServiceNow Data Flow	1

Below the table, there is a section for 'Available Sites' with several [Enable] buttons for services like BES Asset Discovery, BigFix Client Compliance, and various CIS Checklists.



Note: Please refer to the following link for more information (steps 4-10):

https://help.hcltechsw.com/bigfix/10.0/platform/Platform/Installation/post_installation_steps.html

2. Deploy the solution to the target server.

a. Click **Deploy - Tenable.SC/ Tenable.IO/Qualys BigFix IVR Service** Fixlet in the **BigFix Insights for Vulnerability Remediation** external site.

The screenshot shows the BigFix Console interface. On the left is a navigation pane with categories like 'Fixlets and Tasks (100)', 'WebUI Apps (3)', 'Baselines (0)', 'Analyses (15)', 'Dashboards', 'Wizards', 'Custom Content', 'Custom Filters', 'Unmanaged Assets (0)', 'Operators (1)', and 'Sites (7)'. The main area displays a table of Fixlets and Tasks. The table has columns for Name, Source Severity, Site, Applicable Co..., Open Action C..., Category, Download Size, Source, Source ID, and Source Release. The entry 'Deploy - Tenable.SC BigFix IVR Service' is highlighted with a red box. Below the table, there is a 'Task: Deploy - Qualys BigFix IVR Service' section with buttons for 'Take Action', 'Edit', 'Copy', 'Export', 'Hide Locally', 'Hide Globally', and 'Remove'. The 'Description' tab is active, showing a detailed description of the fixlet, prerequisites, requirements, and important considerations.

Name	Source Severity	Site	Applicable Co...	Open Action C...	Category	Download Size	Source	Source ID	Source Release...
Deployed - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Tenable.IO BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021
Deployed - Tenable.SC BigFix IVR Service		Master Action Site	1 / 1	0	Install	15.06 MB	HCL BigFix		6/22/2021

Description

This Fixlet will deploy and extract the BigFix Insights for Vulnerability Remediation Service on Windows Operating Systems (Windows 2016 and Windows 2019 Server Editions are supported) Once Deployed, additional configuration the service that must run locally on the target machine. This Fixlet will allow the user to select the path where the service will be deployed to. Once deployed, a Readme.txt file will be located within location file itemizes what additional tasks need to be done to properly finish the installation and configuration of the Insights for Vulnerability Remediation Service.

Prerequisites:

- Visual Studio C++ Redistributable 2012 - Installation Link: <https://www.microsoft.com/en-in/download/details.aspx?id=30679>
- ODBC Driver 17 Should be Installed - Download Link: <https://www.microsoft.com/en-us/download/details.aspx?id=56567>

Requirements:

- Operating Systems:
 - Windows Server 2016 (any edition)
 - Windows Server 2019 (any edition)
- Configuration requirements:
 - Network access to Insights Database (port 1433 by default)
 - Network access to Qualys REST API
 - MSSQL Server ODBC Driver Version >=17
 - BigFix Server must be on version 10.x (or greater)
 - BigFix Server must be on version 10.x (or greater)

Important Consideration

- Assure the destination location has sufficient space to accommodate the record cache files. Review the product documentation for more details and explanation.

Please enter the details below and take action with this fixlet to move forward with the deployment process

INSTALLATION LOCATION: C:\Program Files (x86)\BigFix

Actions

- Click [here](#) to deploy BigFix Insights for Vulnerability Remediation Service

b. Fill the **Installation Location** field in the Description tab and deploy the Fixlet.

The screenshot shows the 'Deploy - Qualys BigFix IVR Service' Fixlet details in the BigFix Console. The 'Description' tab is active, showing a detailed description of the fixlet, prerequisites, requirements, and important considerations. The 'INSTALLATION LOCATION' field is highlighted with a red box, containing the value 'C:\Program Files (x86)\BigFix'. Below the description, there are 'Actions' and a link to 'Click here to deploy BigFix Insights for Vulnerability Remediation Service'.

Name	Source Severity	Site	Applicable Co...	Open Action C...	Category	Download Size	Source	Source ID	Sour
Deploy - Qualys BigFix IVR Service		Master Action Site	1 / 1	0	Install	14.16 MB	HCL BigFix		4/7/21

Task: Deploy - Qualys BigFix IVR Service

Description

- Visual Studio C++ Redistributable 2012 - Installation Link: <https://www.microsoft.com/en-in/download/details.aspx?id=30679>
- ODBC Driver 17 Should be Installed - Download Link: <https://www.microsoft.com/en-us/download/details.aspx?id=56567>

Requirements:

- Operating Systems:
 - Windows Server 2016 (any edition)
 - Windows Server 2019 (any edition)
- Configuration requirements:
 - Network access to Insights Database (port 1433 by default)
 - Network access to Qualys REST API
 - MSSQL Server ODBC Driver Version >=17
 - BigFix Server must be on version 10.x (or greater)
 - The target machine must have a version 10.x BigFix client (or greater).

Important Consideration

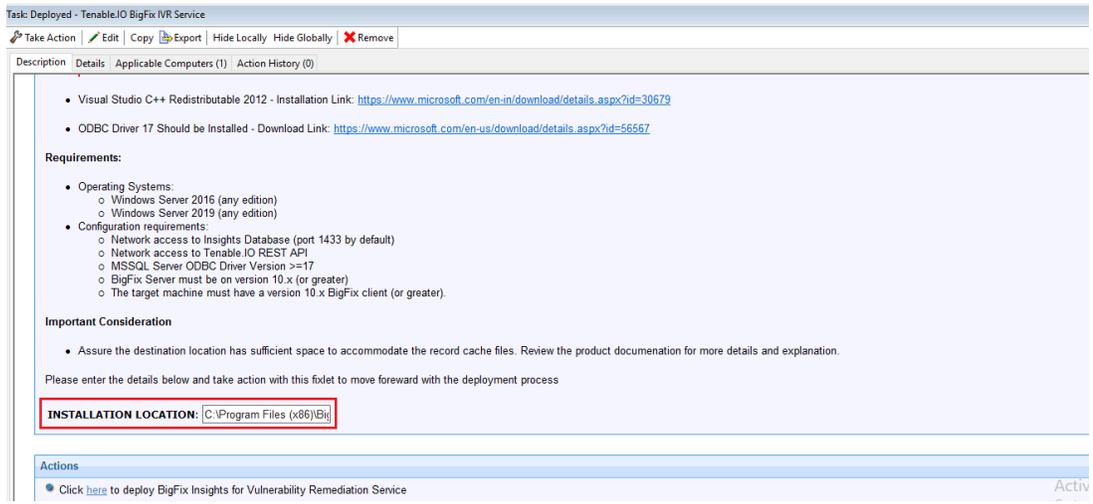
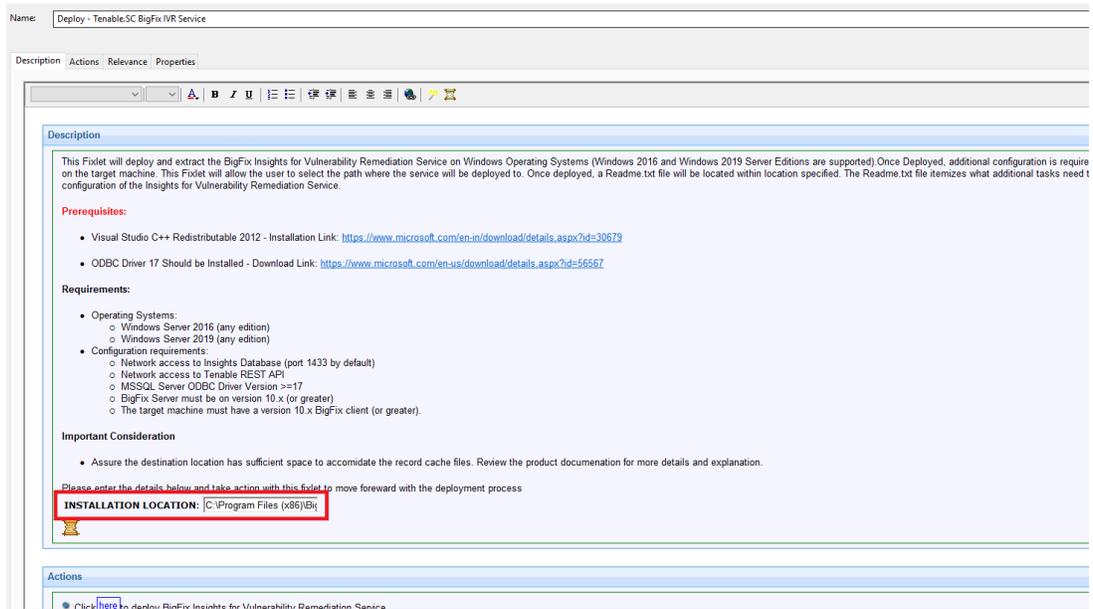
- Assure the destination location has sufficient space to accommodate the record cache files. Review the product documentation for more details and explanation.

Please enter the details below and take action with this fixlet to move forward with the deployment process

INSTALLATION LOCATION: C:\Program Files (x86)\BigFix

Actions

- Click [here](#) to deploy BigFix Insights for Vulnerability Remediation Service



Field	Qualys	Tenable
Installation Location	Full pathname to desired installation location of the BigFix Insights for Vulnerability Remediation Service. Ex: C:\Program Files\HCL\BigFix	

Field	Qualys	Tenable
	Insights for Vulnerability Remediation.	



Note: Please note the following pre-requisites:

- Microsoft Visual Studio C++ Redistributable 2012: <https://www.microsoft.com/en-in/download/details.aspx?id=30679>
- Microsoft ODBC Driver 17 for SQL Server: <https://www.microsoft.com/en-us/download/details.aspx?id=56567>
 - <https://www.microsoft.com/en-us/download/details.aspx?id=56567>



Warning: Do not deploy the BigFix Insights for Vulnerability Remediation Service to more than 1 machine.



Warning: Do not have more than 1 dataflow per IVR Service.

3. Run installation command.

Purpose: This step installs the BFIVR (BigFix Insights for Vulnerability Remediation) executable as a windows service.

- a. Navigate to the installation directory and run `BFIVR.exe --Install` command.

When successful, the message *'Installing service BFIVR. Service installed.'* appears in the command prompt.



Important: The command-line parameters for BFIVR.exe are case-sensitive.

4. Define the target for BigFix Insights.

Purpose: This step defines how the dataflow targets the Insights database.

- a. Note down of the Insights Server IP/hostname/fqdn and the database name.
- b. Create a connection string for the BigFix Insights database.
With the example below, modify the portions in italics denoting the target and databse. Ex: DRIVER={ODBC Driver 17 for SQL Server};SERVER=127.0.0.1;DATABASE=BFInsights
- c. Navigate to the installation directory and run `BFIVR.exe --UpdateTargetURL BigfixINSIGHT "<Your_ODBC_String>"` comandnd.

 **Important:** The ODBC string must be written within double quotes.

5. Define the target for the scanner.

Purpose: This step defines how the dataflow targets the scanner URL.

- a. Take a note of the Tenable.io/Tenable.sc/Qualys API scanner IP and port.
- b. Navigate to the installation directory and run of the following commands based on the desired target:

- `BFIVR.exe --UpdateTargetURL TenableSC https://<Server>:<Port>`
- `BFIVR.exe --UpdateTargetURL QualysAPI https://<Server>:<Port>`
- `BFIVR.exe --UpdateTargetURL TenableIO https://<Server>:<Port>`

 **Important:** The command-line parameters for BFIVR.exe are case-sensitive.

Example: If the IP of the Tenable Server is 192.168.0.133 and the target port is the default https port, the command looks as: `C:\BFIVR\BFIVR.exe --UpdateTargetURL TenableSC https://192.168.0.133`. To confirm the

command, verify the `DataflowsConfig.xml` file in the installation path. The file should now reference the parameters that you have defined as connection string for the Tenable sc datasource.

6. Set the credentials for Insights.

Purpose: This step defines how the dataflow authenticates with the Big Fix Insights database for standard ETL (Expand, Transform, Load) operations.

a. Obtain the credentials for your BigFix Insights database.

b. Navigate to the installation directory and run `\BFIVR.exe -- ProvideCredentials BigfixINSIGHT -Creds <Insights_User> <Insights_Pass>` command.



Note: The `Insights_User` must have access to the BigFix Insights database.



Note: When using special characters in password, make sure to enclose the password with double quotes.



Important: The command-line parameters for `BFIVR.exe` are case-sensitive.

Example: If the username is 'insights' and the associated password is 'BigFix123', the command looks as: `C:\BFIVR\BFIVR.exe -- ProvideCredentials BigfixINSIGHT -Creds insights BigFix123.`

When successful, the message 'The credentials provided are encrypted successfully!' appears in the command prompt.

7. Set the credentials for the scanner.

Purpose: This step defines how the dataflow authenticates with the Tenable.io/Tenable.sc/Qualys API scanner.

a. Obtain the credentials for your Tenable.io/Tenable.sc/Qualys API server.

b. Navigate to the installation directory and run respective command:

- `\BFIVR.exe --ProvideCredentials TenableSC -Creds <TenableSC_User> <TenableSC_Pass>`
- `\BFIVR.exe --ProvideCredentials QualysAPI -Creds <QualysAPI_User> <QualysAPI_Pass>`
- `\BFIVR.exe --ProvideCredentials TenableIO -Creds <TenableIO_User> <TenableIO_Pass>`

Example: If the username is 'secmanager' and the associated password is 'BigFix123', the command looks as:
`C:\BFIVR\BFIVR.exe --ProvideCredentials QualysAPI -Creds secmanager BigFix123.`

When successful, the message *'The credentials provided are encrypted successfully!'* appears in the command prompt.



Note: When using special characters in password, make sure to enclose the password with double quotes.



Note: For Tenable.io: Instead of username and password, provide access key and secret key. Example: `C:\BFIVR\BFIVR.exe --ProvideCredentials TenableIO -Creds 8008584200bdc99faad3b0e59205c2cb324c51e8849d8fd2079591dd003dacf24b61c51e3209289c3a8d51110dd9466328eabb7dcf7f2e81aRefer` to the link to see how to obtain API keys for Tenable.io.



Important: The command-line parameters for BFIVR.exe are case-sensitive.

8. Initialize the IVR schema on Insights.

Purpose: This step initializes the IVR Schema within BFInsights.

- a. Obtain the credentials for your BigFix Insights database.
- b. Navigate to the installation directory and run `\BFIVR.exe -- ProvideCredentials --InitializeSchemas -Creds <Insights_User> <Insights_Pass>` command.



Note: The account should have DBO rights to the database BigFix Insights DB.



Note: When using special characters in password, make sure to enclose the password with double quotes.

Example: If the username is insights and the associated password is BigFix123@!!, the command looks as follows:

```
C:\BFIVR>BFIVR.exe --InitializeSchemas -Creds insights  
"BigFix123@!!". When successful, the message 'Schema Initialized  
Successfully!' appears in the command prompt.
```

9. Validate the configuration.

Purpose: This step verifies the configuration provided from the previous steps.

- a. Navigate to the installation directory and run `\BFIVR.exe -- ValidateConfiguration` command.

When successful, the message *'Configuration verified successfully!'* appears in the command prompt.

10. Post - installation steps.

After you install the product, perform the steps provided in the link to verify that the installation run successfully: [Post - installation steps](#).

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