BigFix Compliance
Analytics User Guide

Special notice

Before using this information and the product it supports, read the information in Notices *(on page cv)*.

Edition notice

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

Contents

Chapter 1. Introduction

BigFix Compliance Analytics is a component of BigFix Compliance, that includes technical controls and tools that are based on industry practices and standards for endpoint and server security configuration.

The compliance statuses of all endpoints against deployed policies are continually collected, aggregated, and reported using a powerful Compliance Analytics engine, database and user interface in BigFix Compliance. Various compliance reports, showing both current status and historical trend for the entire deployment or individual endpoint, provide comprehensive analytics to meet the various needs of security, IT operation, or compliance teams. With BigFix Compliance Analytics, you can track the effectiveness of the compliance efforts and quickly identify security exposures and risks.

BigFix Compliance Analytics provides consistent report across three security domains:

- Security Configuration Reporting *(on page 64)*
- Patch Reporting *(on page 78)*
- Vulnerability Reporting *(on page 94)*

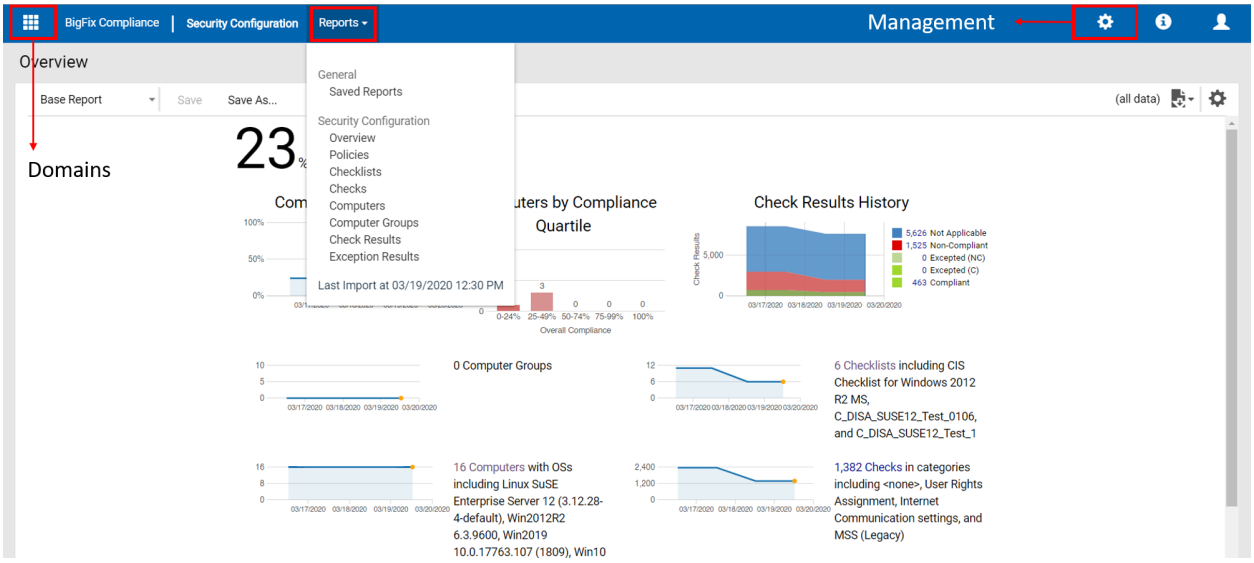
Chapter 2. General Usage Concepts

Primary Menus

This topic gives you an overview of the primary menus in BigFix Compliance Analytics.

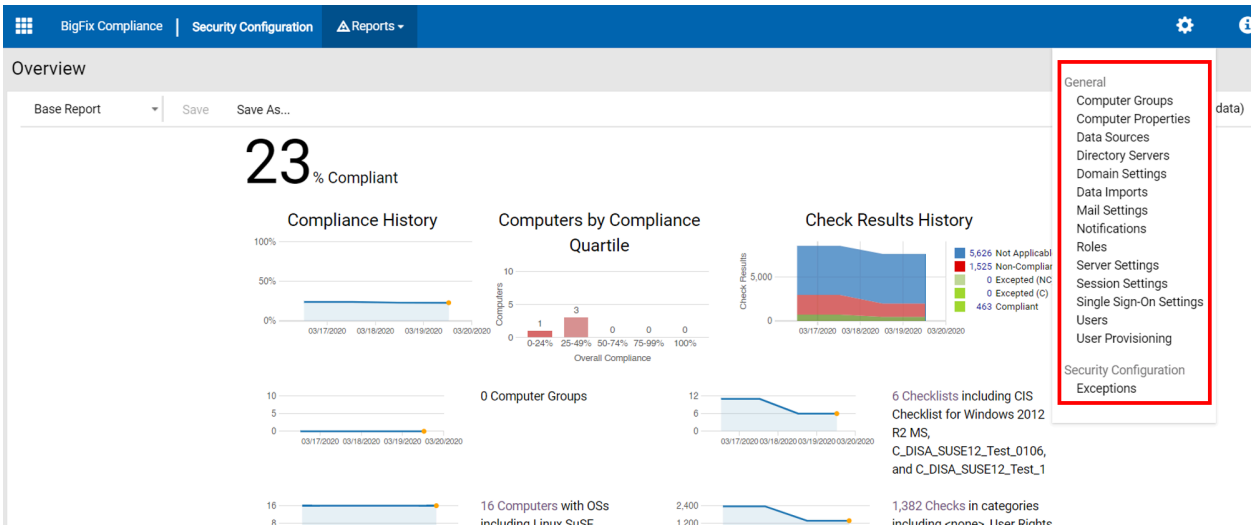
Domains: By clicking **Domains** icon on the header you can switch between the **Security Configuration**, **Patch** and **Vulnerability** domains.

Reports: After you select a domain, the **Reports** dropdown lists out domain specific reports. For example, In the below screenshot, the **Security Configuration** domain is selected using **Domains**, under the **Reports** dropdown, General reports, and the reports related to only **Security Configuration** domain is listed.



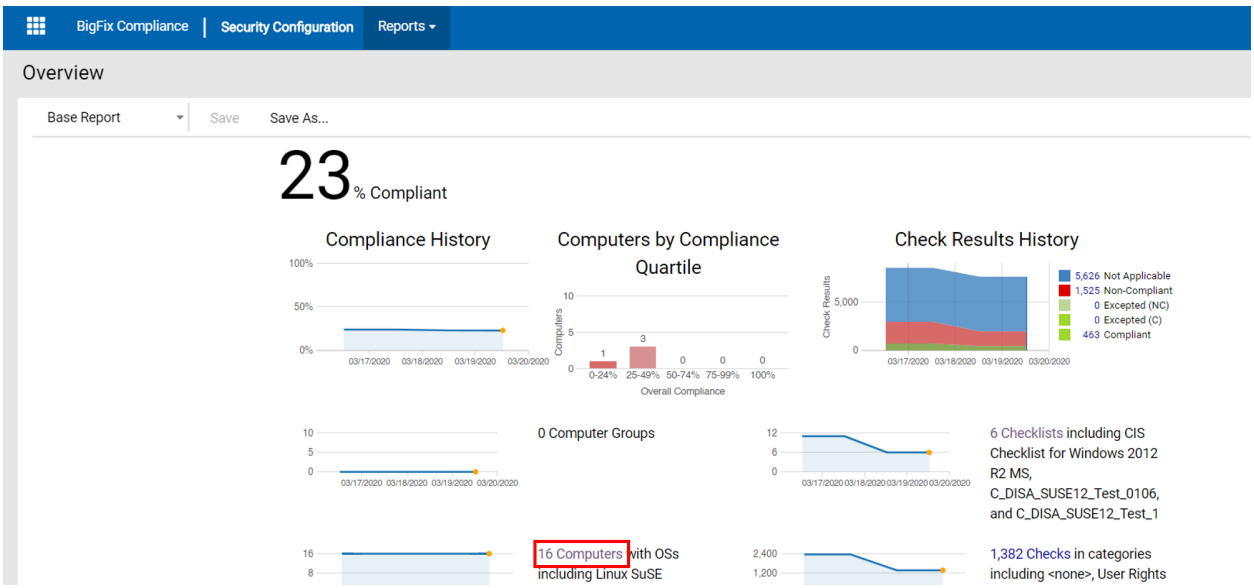
Management Gear Icon: You can perform management tasks within BigFix Compliance Analytics to control various aspects of compliance deployment. From the **Management Gear Icon** dropdown list, users with appropriate permissions can manage general tasks like Computer Groups, Computer Properties, Data Sources, and domain specific management like Exceptions.

Note: Users with appropriate permissions can manage these common management tasks and domain specific tasks to control compliance deployment.



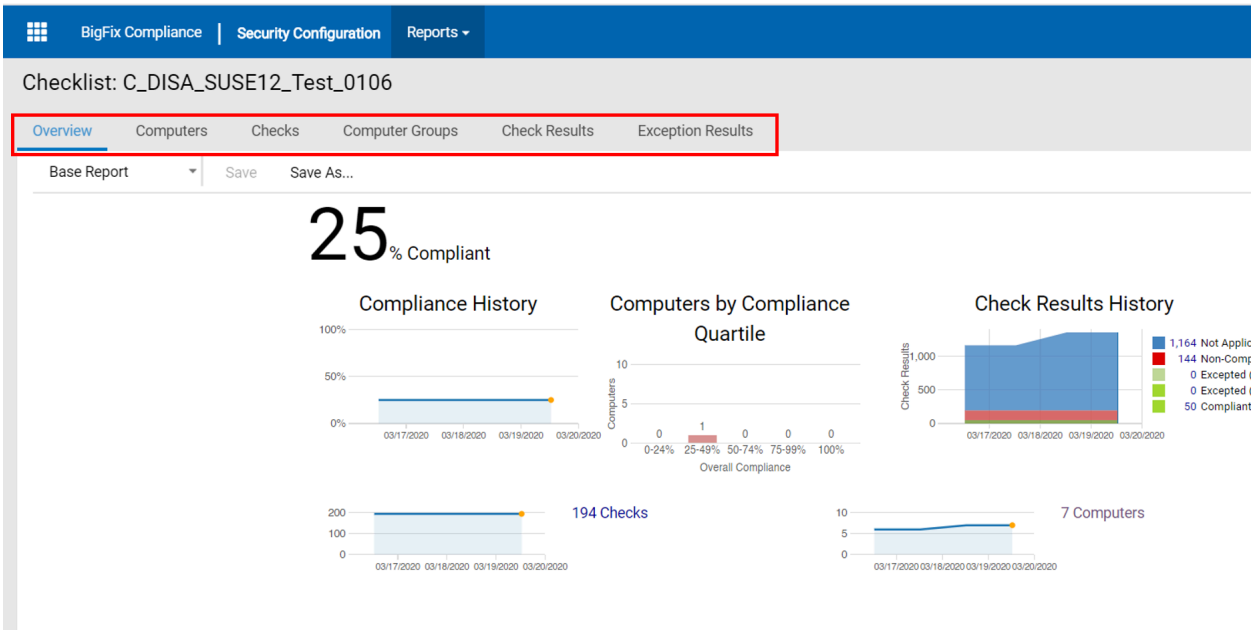
Linked Navigation

You can use linked text to navigate through report types. For example, click *16 Computers* on the Overview report to display the related Computers report.



Sub-Report Navigation

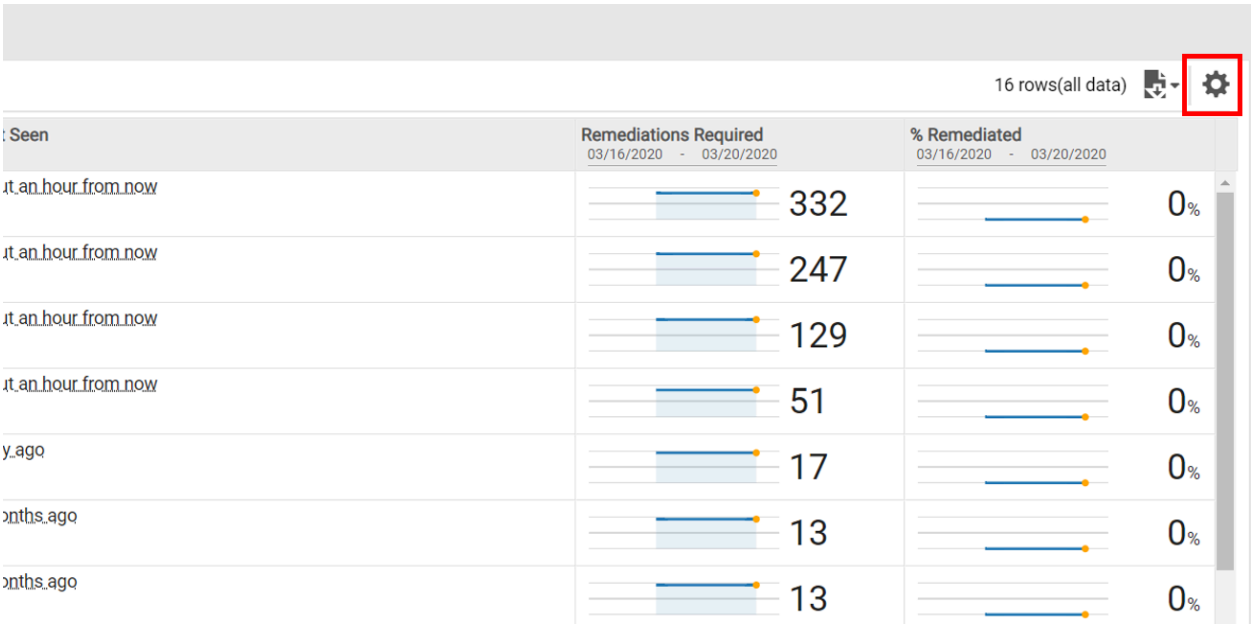
You can also explore reports within a given scope from the sub-report navigation menu. To view all checks, all computers, or all exceptions appropriate for a given checklist, click each tab to view the results.



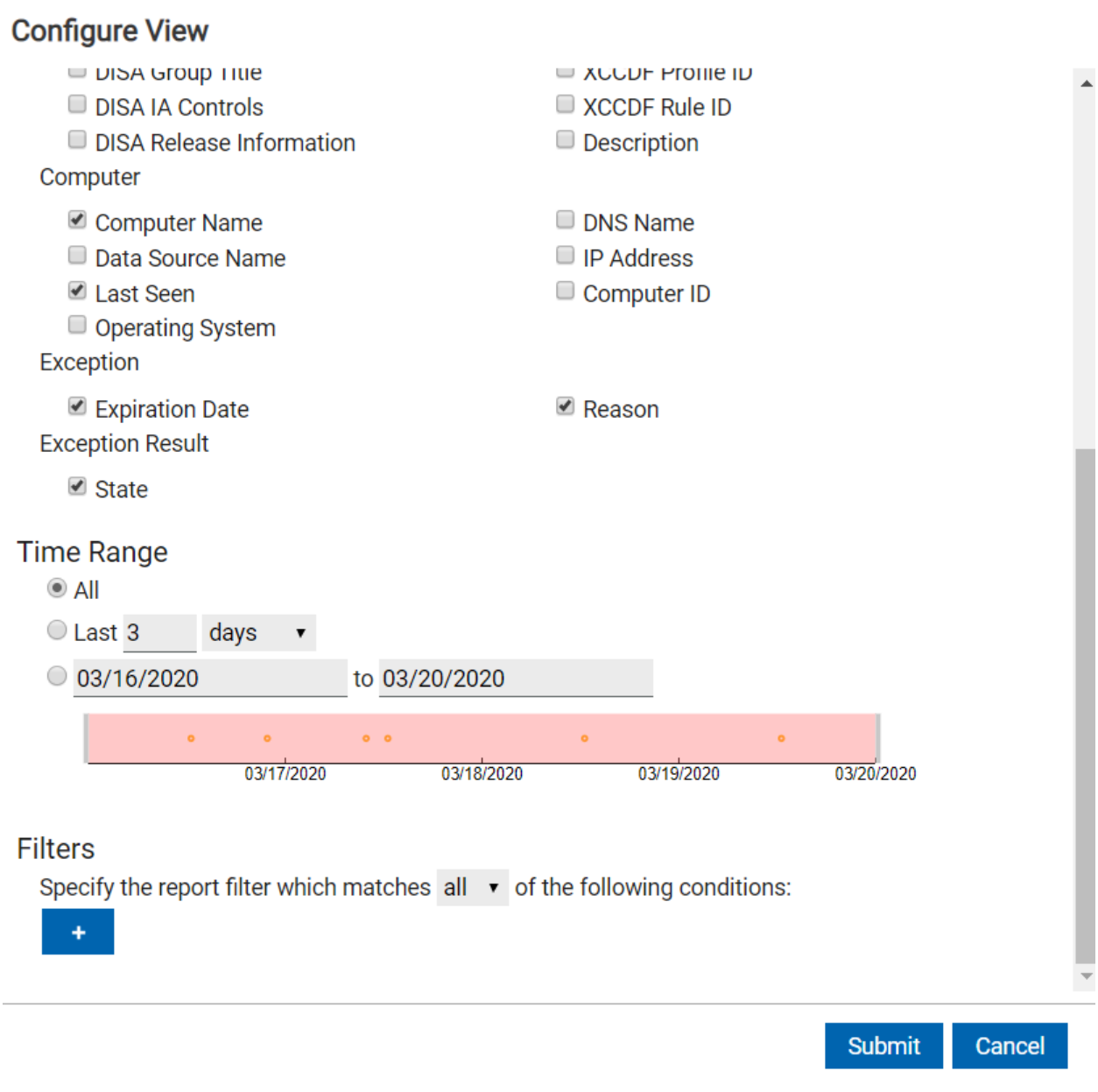
Customizing Grid Views

This task helps you to customize the grid views.

To customize the grid views of each report, such as deleting the columns from the grid view or adding additional columns, click **Configure View Gear Icon** to create custom grid views.



You can select different checkboxes to configure the grid view.



Procedure

- **Options**: By disabling the Autosize Columns, the report no longer autosizes to the width of the viewport, instead should be manually adjusted to the desired width.
- **Columns**: select the columns from the list to be featured in the report.
- **Time Range**: The timestamps of data to be included in the report. Graphs are adjusted to the new range. In addition, any static data values reflects the end date of the new time range.
- **Filters**: Allows filtering the displayed data based on the criteria specified. For example, setting a filter of "Name contains 'foo'" causes the grid to only display rows with the substring "foo" in the name.

Saved Reports

This topic gives you the insights on saving the report and viewing the saved reports.

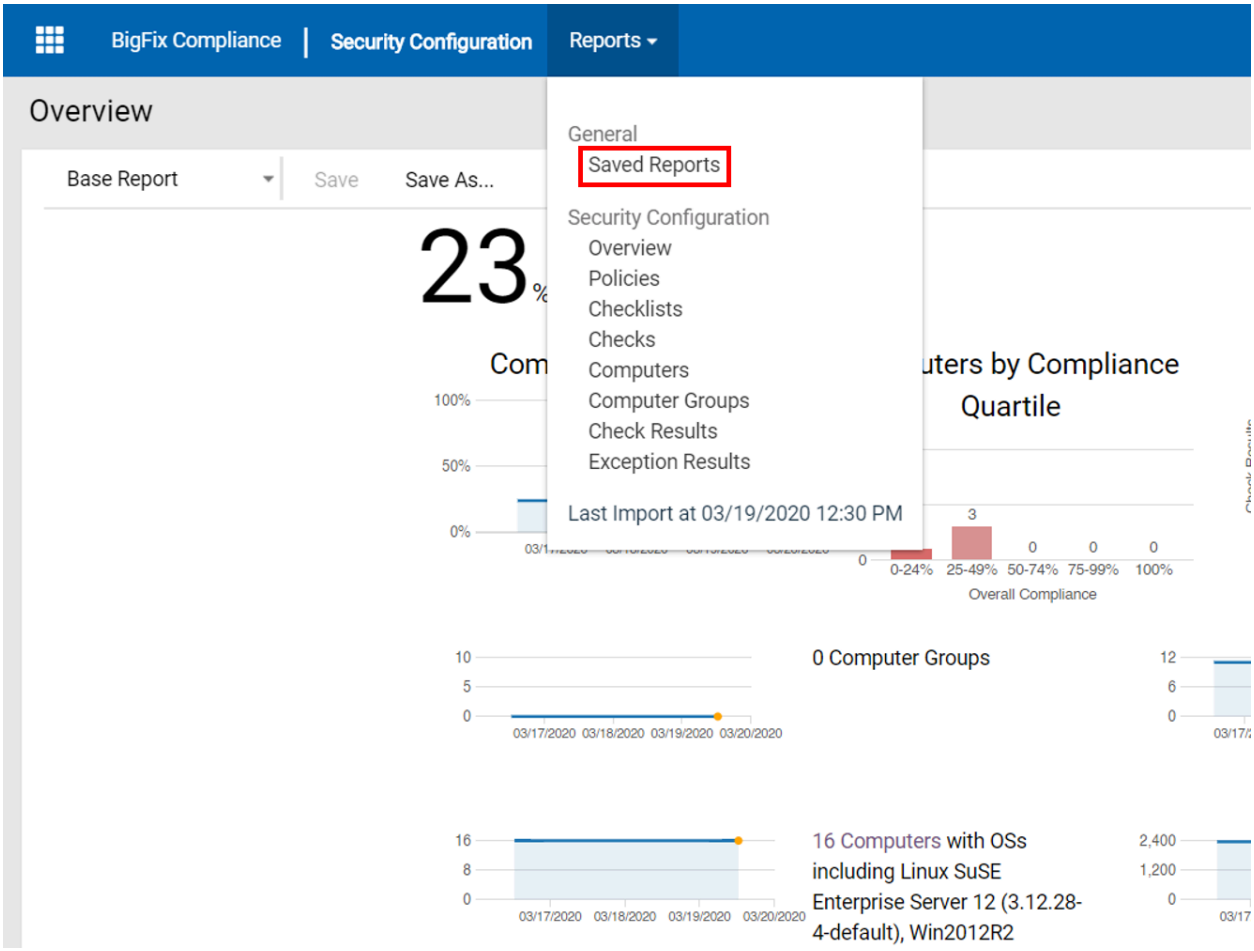
Saving Reports

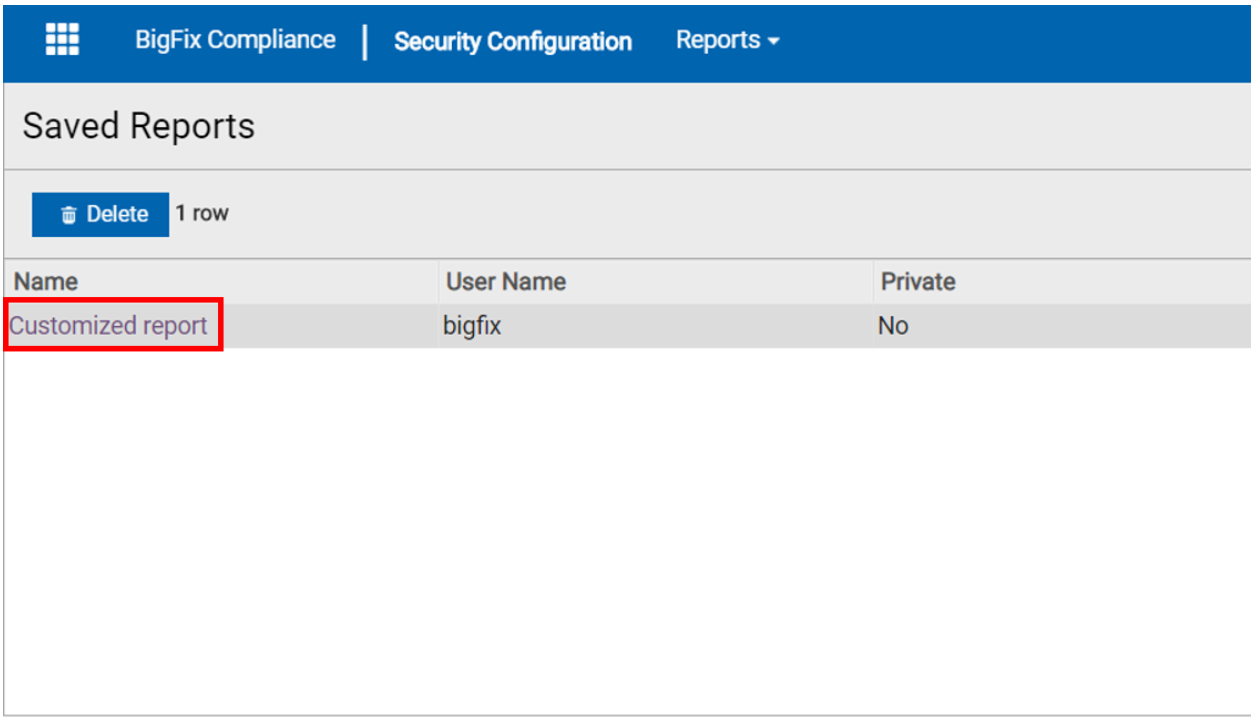
You can save any report view preferences to use it in future. Open any report view that you want to use in future. Click **Save as**, and enter the report name, and click **Create** to save the report view.

To edit the report, see Configuring a report resource as the default view *(on page 14)*.

Viewing Saved Reports

When you save a report view, it will be available as a link in the Saved Reports menu. Selecting a saved report from the menu regenerates the saved customized report. Click **Saved Reports** in the **Reports** menu. Click the report link to regenerate the saved report view.





Configuring a report resource as the default view

This task will guide you to set a default report view.

Use the Set as default option to configure a specific report as the default view when you are loading any report. The option reduces the steps that are needed to access reports when you are loading resources, including the following resources.

- Overview reports
- Detailed report views
- Grid report views for checklists, vulnerabilities, exceptions, computers, and computer groups

The users can set the default view based on their permission levels:

- Standard users can set the report view to private or default.
- Administrators can set the report view to private, default, or global default.

Private

This option makes the report private, and only the user who saved the report can access the report. Even an administrator will not be able to access the saved report.

Set as default

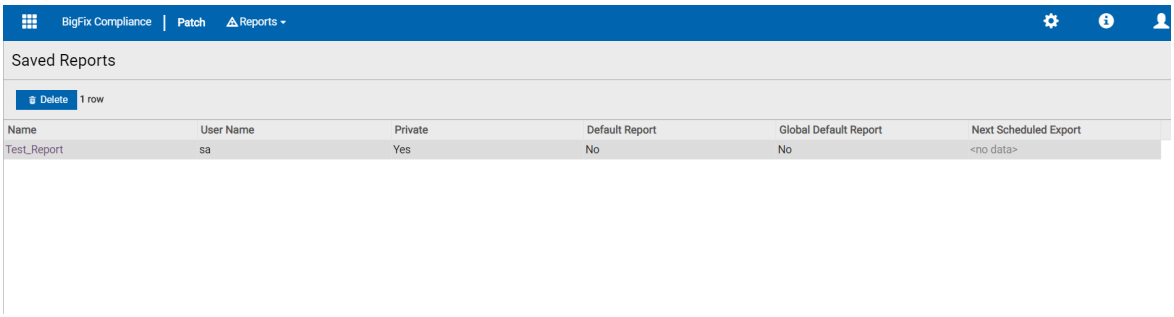
This option saves the report in a default view. Both the user and administrator can view the saved report in a default view.

Set as global default

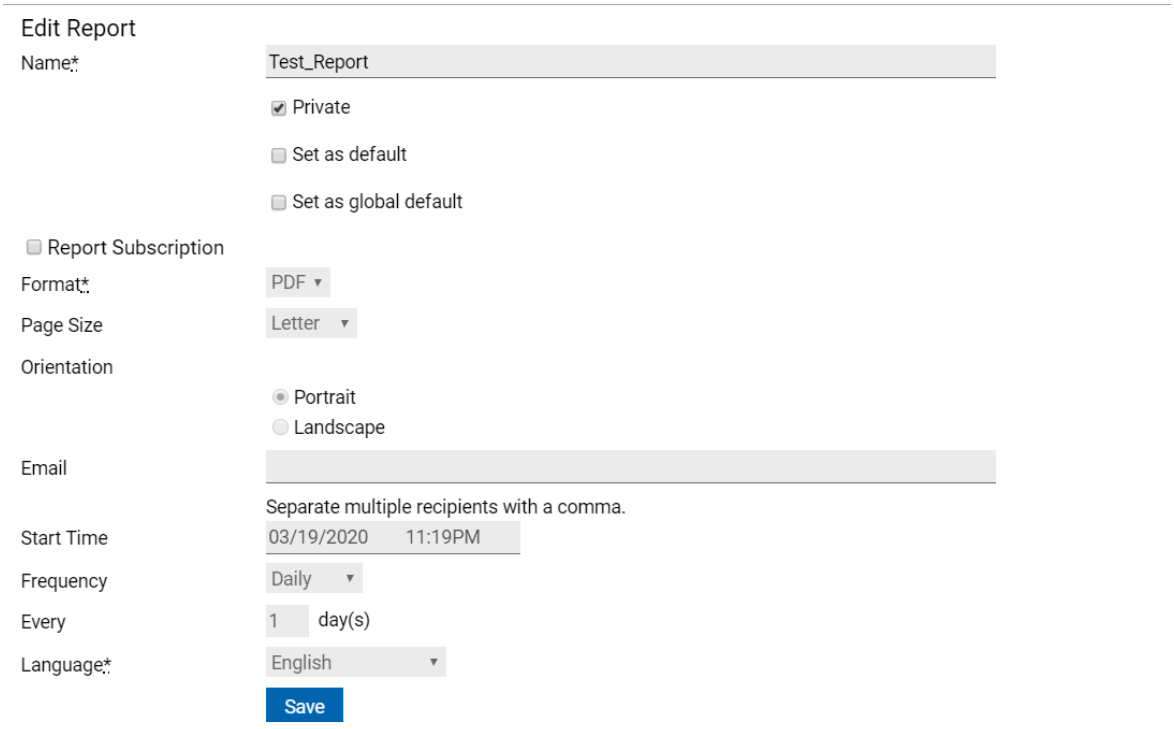
This option saves the report in the global default view, and all the users will view the report in the saved global default view.

Note: Only administrators can set the report views to global default, but if a standard user already sets the report view to default, the administrator cannot overwrite the settings.

1. Go to **Reports > Saved Reports** and select the report.



2. From the **Edit Report** panel, set the report view.
   - Private
   - Set as default
   - Set as global default



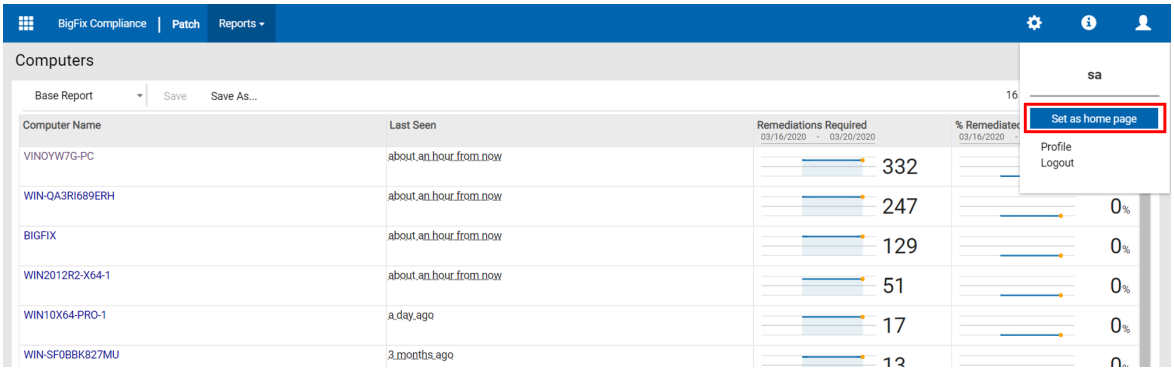
3. Set the report properties.
4. Click **Save**.

Configuring a report resource as the home page

This task helps you to set any page or report, including saved reports, as your home page.

1. Go to the page you want to set as the home page.
2. From the upper right corner, select the **Account** menu and click **Set as home page**.

Note: When a page is currently set as the home page, the option is disabled.



When you login to BigFix Compliance Analytics application, the report you made as home page will be displayed.

Scheduling

You can use this section to manage the reports.

Schedule

You can schedule an export process to push a report to the email IDs in the pre-defined timeline.

Procedure

1. Select the required format (`PDF, CSV, XLSX`) from the format menu.
2. Select the page size from the menu.
3. Set the orientation to either portrait or landscape.
4. Enter the email ID. Insert commas between multiple email IDs.
5. Enter the start date and start time.
6. Select the export frequency from the menu.
7. Select the language from the menu.
8. Click **Save**.

You must set up the mail settings to schedule an export to the desired email IDs. To set up the mail settings, see Enabling mail settings *(on page 26)*.

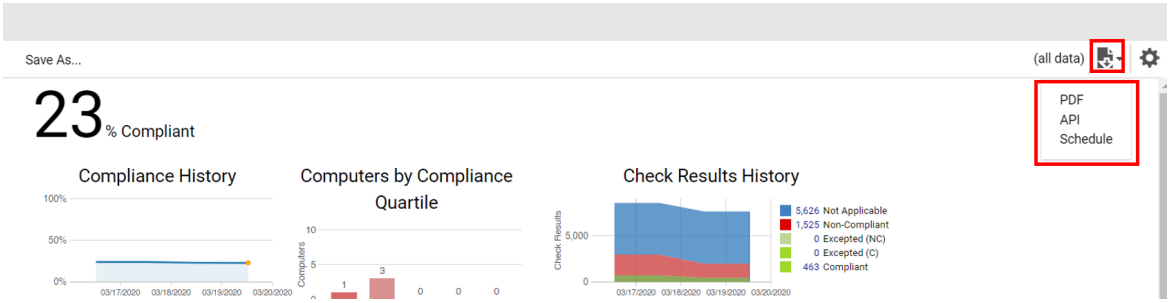
Note: When scheduling PDF or XLSX reports, the number of rows in PDF format is limited to 65,536 and in XLSX format to 30,000 respectively.

Exporting Reports

This task will guide you to export reports in multiple formats.

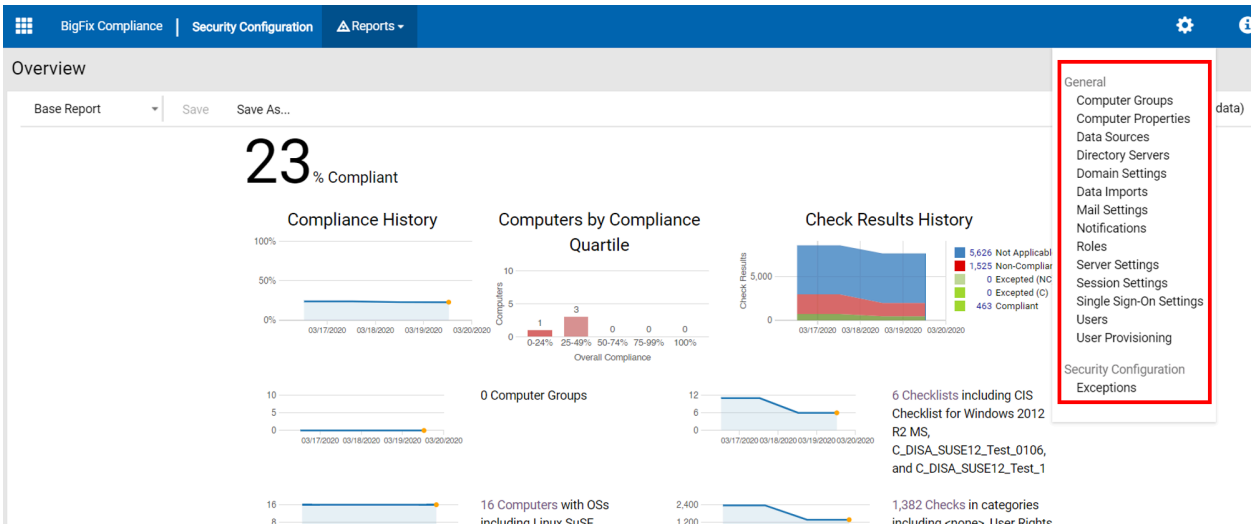
You can export the reports in `.csv` or `.pdf` or `API` file format to your local computer by clicking the **Export Options Icon** and then select **CSV** or **PDF** or **API** link to export the report in a corresponding format.

Note: Some reports cannot be exported in `.csv` format.



Chapter 3. Management Tasks

The following management tasks can be performed if you have appropriate permissions.



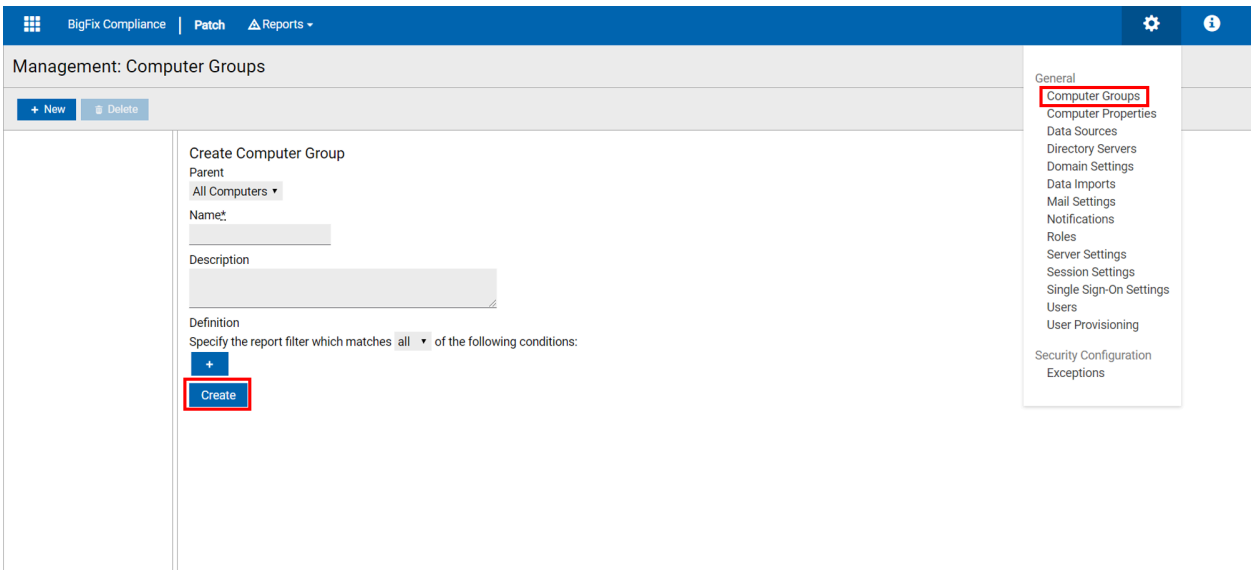
Computer Groups

BigFix Compliance Analytics computer groups help you organize the compliance data that displays in your reports. Specifically, you can filter data to limit what you want to see displayed in your overviews and lists.

All users need to be assigned to a computer group in order to log in to BigFix Compliance Analytics. Logged-in users can see compliance data based on their associated computer group.

To create a computer group, click the **Management Gear Icon**drop-down menu at the top of the console and select **Computer Groups**. Click **New**. Use the dropdown menu to assign your group to a parent. Enter the **Name** and **Description** of the computer group. Use the **Definition** field to assign parameters to your group.

When finished, click *Create*.



Note: You must perform an import after saving your changes.

Configuring multiple computer groups

You must have Administrator privileges or use the Manage Computers Group role to configure user accounts to include multiple computer groups.

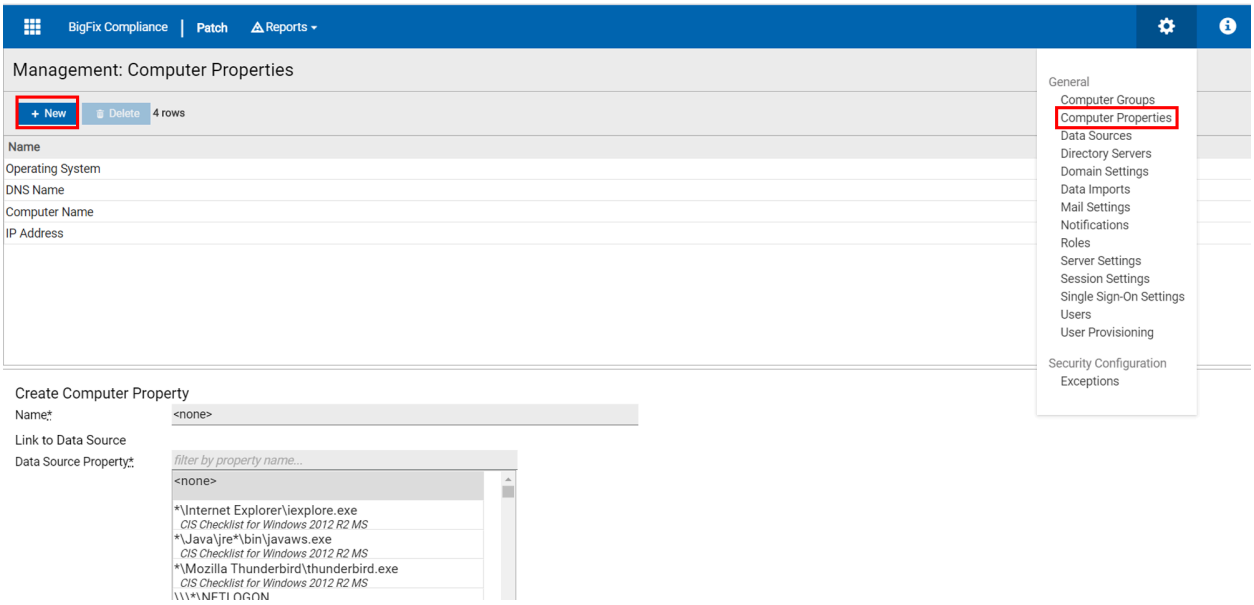
This feature enables non-Administrator users to view ranges for computer group compliance data by granting the user access to multiple computer group during user creation or user account updates.

1. Log in to Security Compliance and Analytics as an Administrator or using the Manage Computer Groups role.
2. From the navigation menu, click **Management Gear Icon**. Select **User** from the dropdown menu.
3. From the **Managers: Users** window, create a new user.
    a. Enter the details for the following fields:
    b. From the Computer Groups dropdown menu, select the computer groups that the new user will be associated with.
    c. Enter then confirm a password.
    d. Enter the email address.
4. From the top navigation menu, click **Reports**. Click **Import Now**.

To confirm if the multiple group was configured correctly, login to the new user account that has more than one computer group associated with it.

Computer Properties

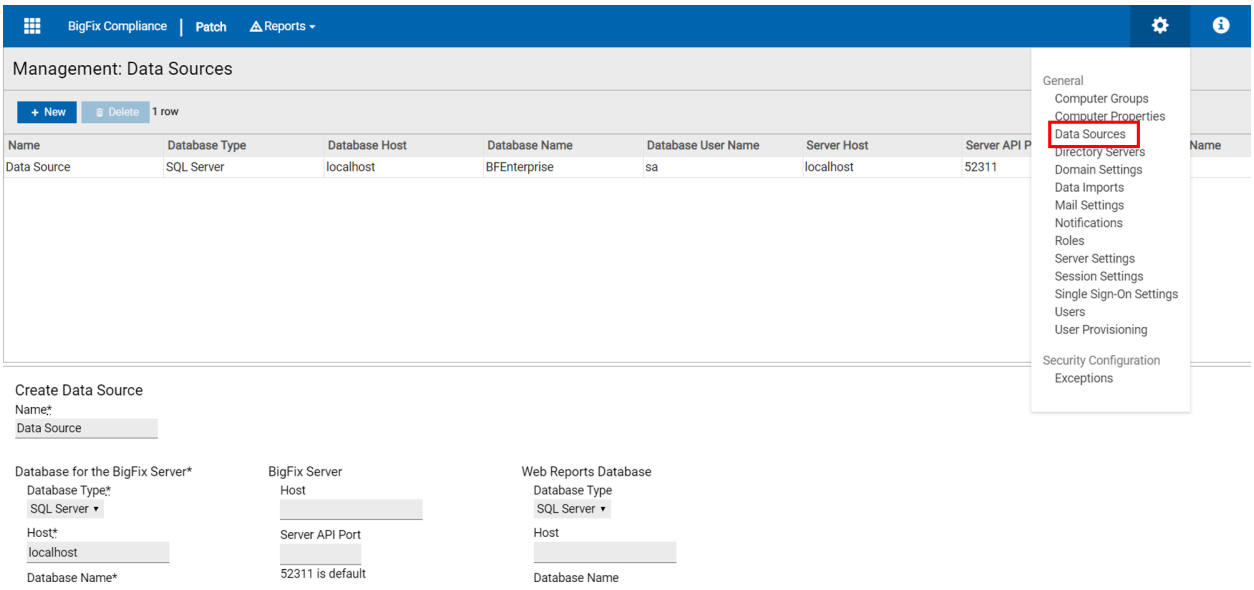
You can create computer properties using the BigFix data sources available for reporting and filtering within the BigFix Compliance Analytics interface. You can use the default properties in your console, or click **New** to create new properties. These computer properties are later displayed in the report columns.



Note: You must perform an import *(on page 23)* after saving your changes.

Data Sources

Using data sources, you can view information about the BigFix Compliance database on which your BigFix Compliance Analytics data is based. You can also view information about the Web Reports database that is the source of some or all of your BigFix Compliance Analytics users. The Web Reports connection provides a single-sign-on capability for users Web Reports and BigFix Compliance Analytics. You cannot edit these settings after the initial setup, but you can add the Web Reports database information if you originally skipped this step.



Domain Settings

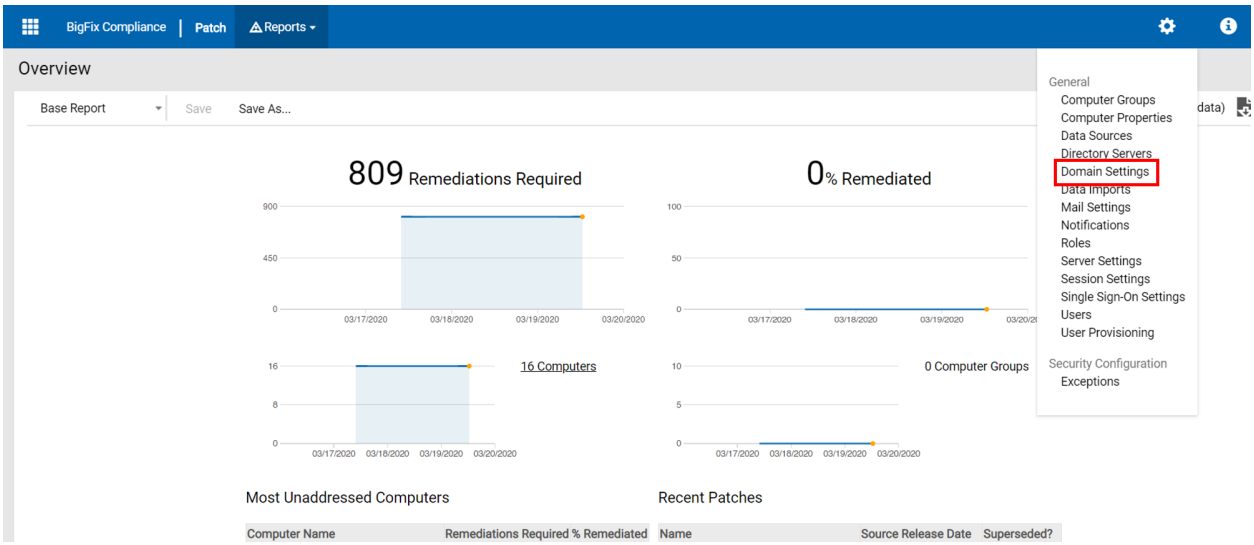
You can enable the patch and vulnerability report, and security configuration report using the **Domain Settings**.

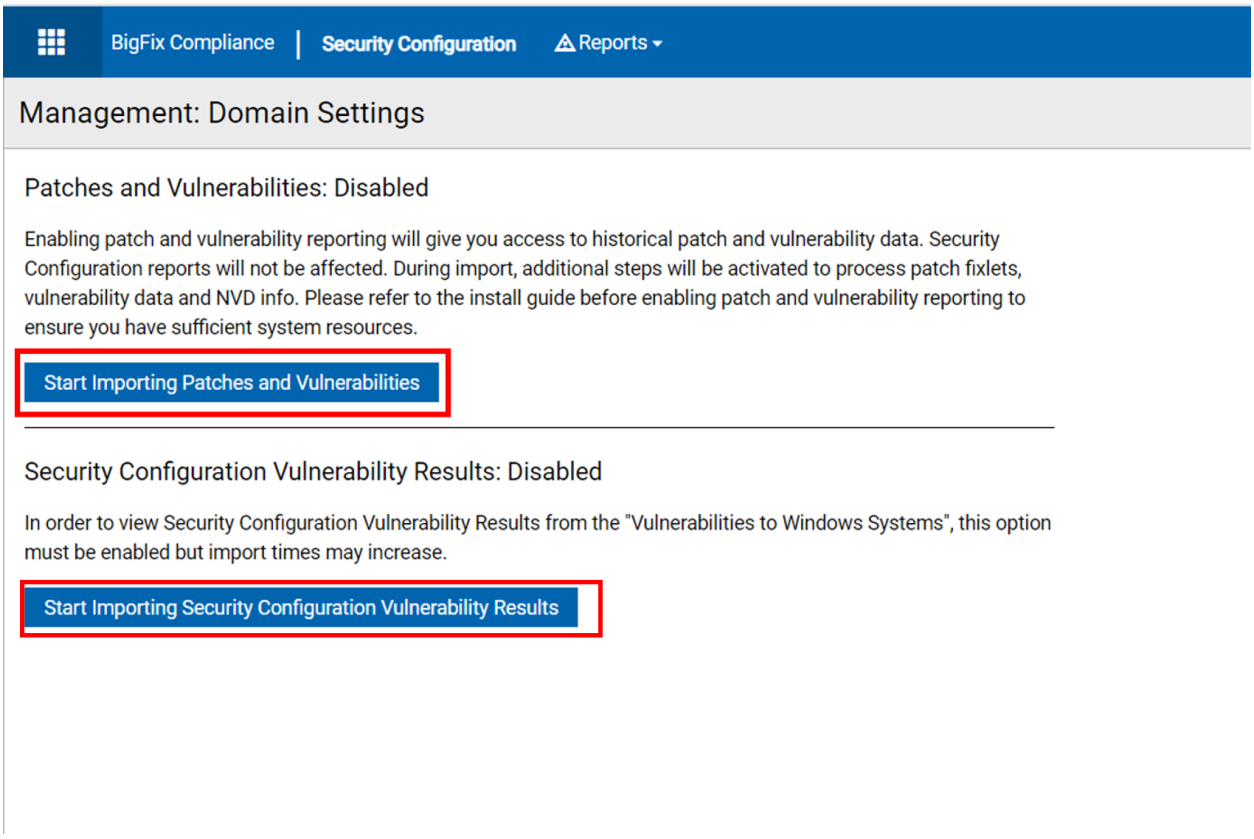
Enabling patch and vulnerability reporting will give you access to historical patch and vulnerability data. Security Configuration reports will not be affected. During import, additional steps will be activated to process patch fixlets, vulnerability data and NVD info.

If must enable Security Configuration Vulnerability Results to view the vulnerabilities to Windows systems.

To enable the Patch and Vulnerability Report, and Security Configuration Vulnerability Results:

1. On the header bar, click **Management Gear Icon**.
2. Select **Domain Settings** from the menu.
3. Under Patches and Vulnerabilities, click **Start Importing Patches and Vulnerabilities**.
4. In the window that opens, click **Yes, include** to enable the patch and vulnerability reporting.
5. Under Security Configuration Vulnerability Results, click **Start Importing Security Configuration Vulnerability Results**.
6. In the window that opens, click **Yes, include** to enable Security Configuration Vulnerability Results.



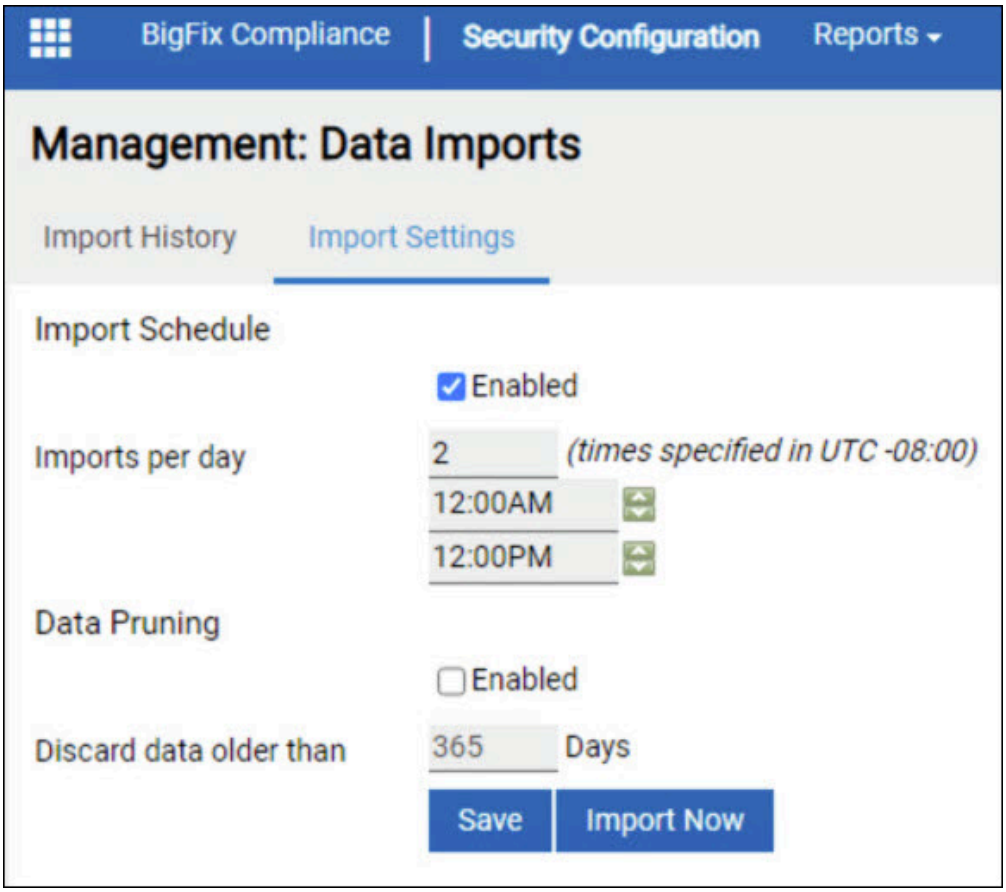


Note: Enabling the patch and vulnerability reporting increases the duration of import processes and requires additional resources from the BigFix Compliance database. For information about importing data to the patch and vulnerability reporting application, see Data Imports *(on page 23)*.

Note: Pleaes refer to Primary Menus to switch between the **Security Configuration**, **Patch** and **Vulnerability** domains.

Data Imports

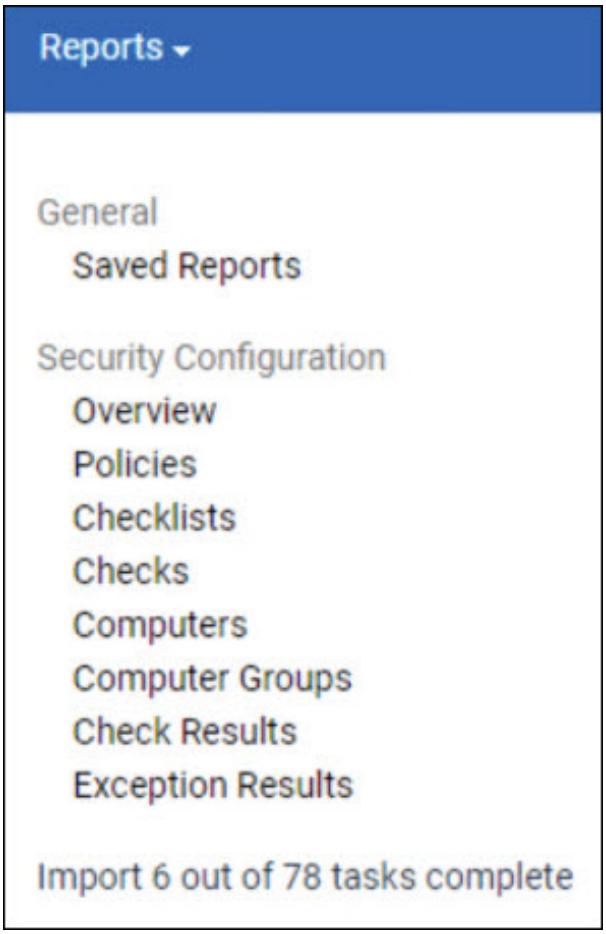
Use the **Import Settings** tab to schedule a recurring import, disable recurring imports, start a manual import, and view current import status.



Run an immediate import by clicking **Import Now** in the **Import Settings** tab. To schedule a recurring import, first check the import box at the top of the window and set the desired daily start time.

From the Data Imports interface, you can also enable Data Pruning and discard older data. Click **Save** to confirm the change.

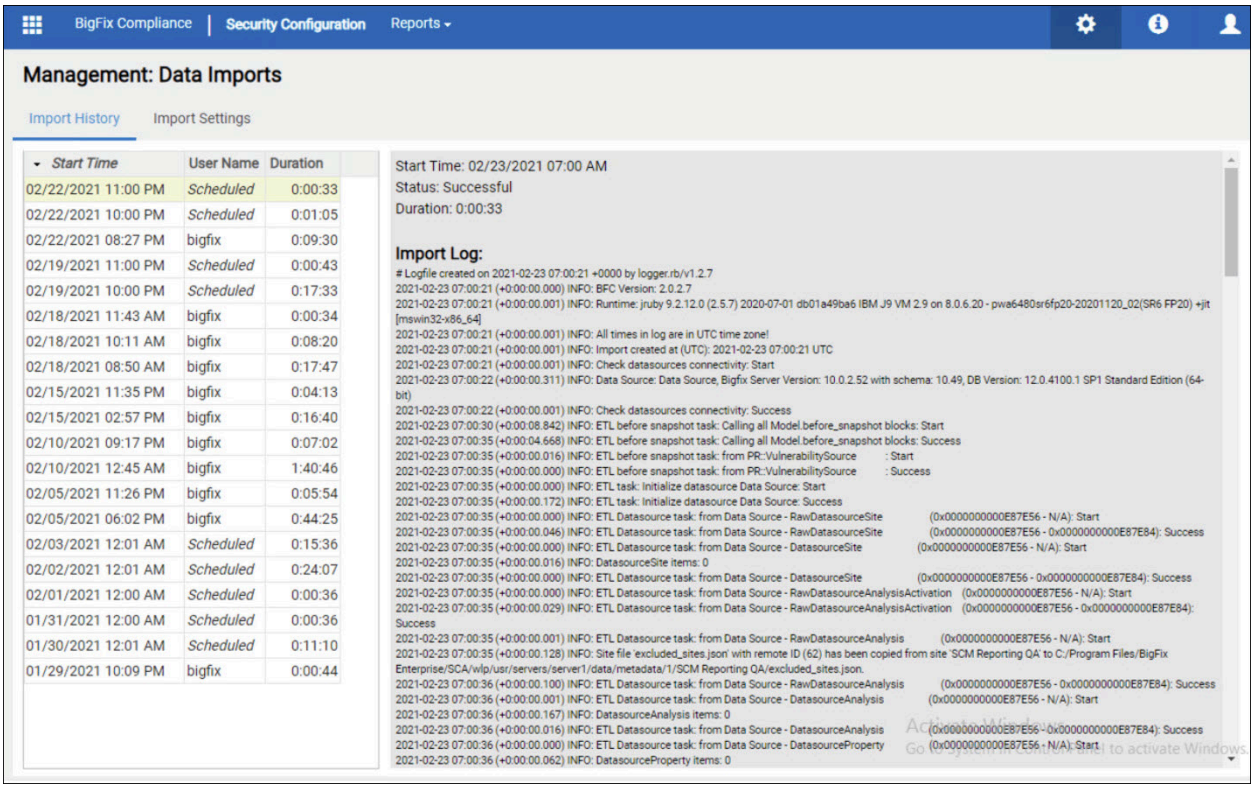
Import progress is measured by the number of tasks completed.

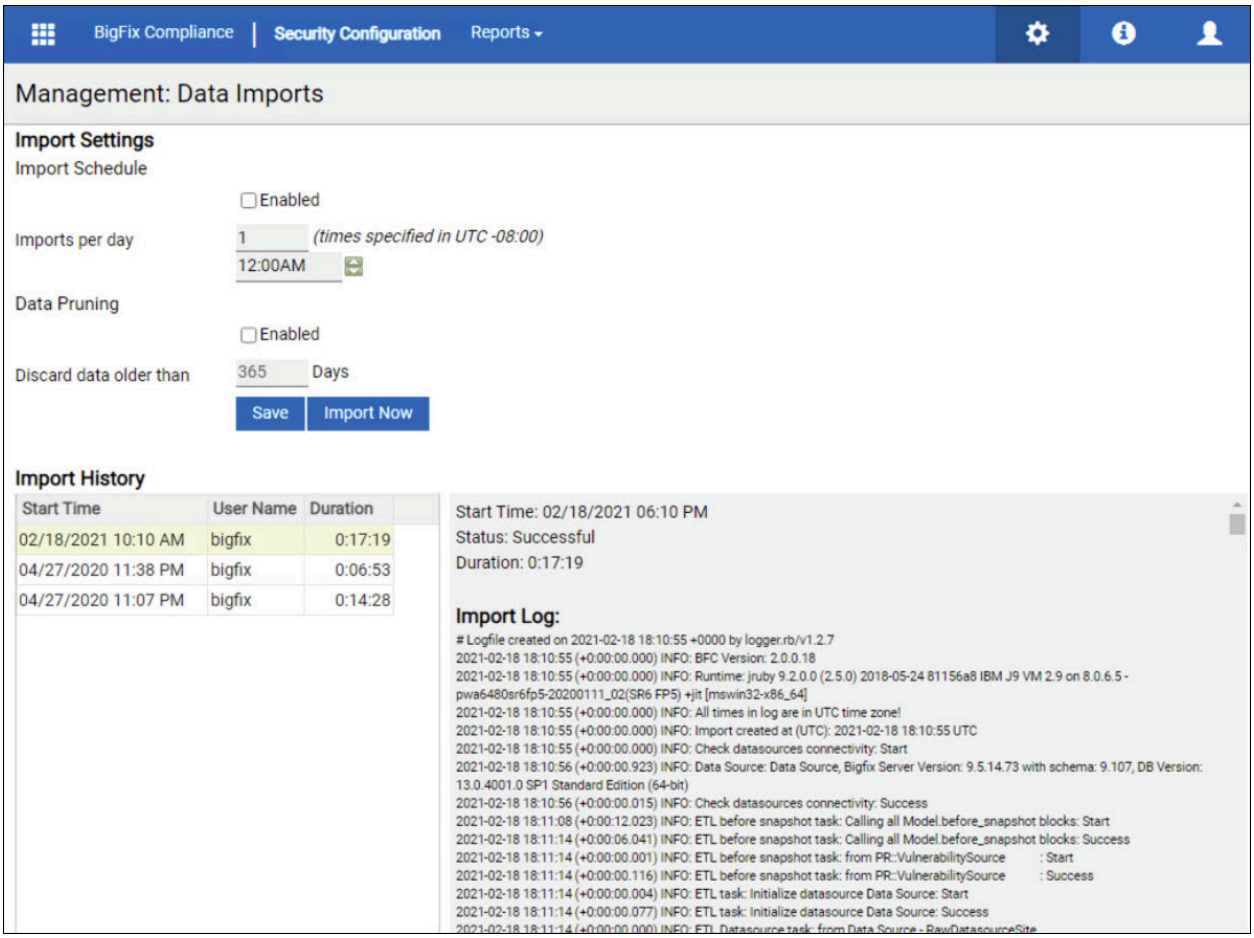


Use the **Import History** tab to view the logs of previous imports.

To avoid non-use of SCA, it is suggested to run the import during non-productive hours.

Note: For SCA 2.0.1.36 and prior, Import Settings and Import History are viewed within the same page.


BigFix Compliance | Security Configuration Reports
Management: Data Imports
Import History
Import Settings
Start Time
User Name
Duration
02/22/2021 11:00 PM Scheduled 0:00:33
02/22/2021 10:00 PM Scheduled 0:01:05
02/22/2021 08:27 PM bigfix 0:09:30
02/19/2021 11:00 PM Scheduled 0:00:43
02/19/2021 10:00 PM Scheduled 0:17:33
02/18/2021 11:43 AM bigfix 0:00:34
02/18/2021 10:11 AM bigfix 0:08:20
02/18/2021 08:50 AM bigfix 0:17:47
02/15/2021 11:35 PM bigfix 0:04:13
02/15/2021 02:57 PM bigfix 0:16:40
02/10/2021 09:17 PM bigfix 0:07:02
02/10/2021 12:45 AM bigfix 1:40:46
02/05/2021 11:26 PM bigfix 0:05:54
02/05/2021 06:02 PM bigfix 0:44:25
02/03/2021 12:01 AM Scheduled 0:15:36
02/02/2021 12:01 AM Scheduled 0:24:07
02/01/2021 12:00 AM Scheduled 0:00:36
01/31/2021 12:00 AM Scheduled 0:00:36
01/30/2021 12:01 AM Scheduled 0:11:10
01/29/2021 10:09 PM bigfix 0:00:44
Start Time: 02/23/2021 07:00 AM
Status: Successful
Duration: 0:00:33
Import Log:
Logfile created on 2021-02-23 07:00:21 +0000 by logger.rb/v1.2.7
2021-02-23 07:00:21 (+0:00:00.000) INFO: BFC Version: 2.0.2.7
2021-02-23 07:00:21 (+0:00:00.001) INFO: Runtime: jruby 9.2.12.0 (2.5.7) 2020-07-01 db01a49ba6 IBM J9 VM 2.9 on 8.0.6.20 - pwa6480sr6fp20-20201120_02(SR6 FP20) +jit [mswin32-x86_64]
2021-02-23 07:00:21 (+0:00:00.001) INFO: All times in log are in UTC time zone!
2021-02-23 07:00:21 (+0:00:00.001) INFO: Import created at (UTC): 2021-02-23 07:00:21 UTC
2021-02-23 07:00:21 (+0:00:00.001) INFO: Check datasources connectivity: Start
2021-02-23 07:00:22 (+0:00:00.311) INFO: Data Source: Data Source, Bigfix Server Version: 10.0.2.52 with schema: 10.49, DB Version: 12.0.4100.1 SP1 Standard Edition (64-bit)
2021-02-23 07:00:22 (+0:00:00.001) INFO: Check datasources connectivity: Success
2021-02-23 07:00:30 (+0:00:08.842) INFO: ETL before snapshot task: Calling all Model.before_snapshot blocks: Start
2021-02-23 07:00:35 (+0:00:04.668) INFO: ETL before snapshot task: Calling all Model.before_snapshot blocks: Success
2021-02-23 07:00:35 (+0:00:00.016) INFO: ETL before snapshot task: from PR::VulnerabilitySource : Start
2021-02-23 07:00:35 (+0:00:00.000) INFO: ETL before snapshot task: from PR::VulnerabilitySource : Success
2021-02-23 07:00:35 (+0:00:00.000) INFO: ETL task: Initialize datasource Data Source: Start
2021-02-23 07:00:35 (+0:00:00.172) INFO: ETL task: Initialize datasource Data Source: Success
2021-02-23 07:00:35 (+0:00:00.000) INFO: ETL Datasource task: from Data Source - RawDatasourceSite (0x0000000000E87E56 - N/A): Start
2021-02-23 07:00:35 (+0:00:00.046) INFO: ETL Datasource task: from Data Source - RawDatasourceSite (0x0000000000E87E56 - 0x0000000000E87E84): Success
2021-02-23 07:00:35 (+0:00:00.000) INFO: ETL Datasource task: from Data Source - DatasourceSite (0x0000000000E87E56 - N/A): Start
2021-02-23 07:00:35 (+0:00:00.016) INFO: DatasourceSite items: 0
2021-02-23 07:00:35 (+0:00:00.000) INFO: ETL Datasource task: from Data Source - DatasourceSite (0x0000000000E87E56 - 0x0000000000E87E84): Success
2021-02-23 07:00:35 (+0:00:00.000) INFO: ETL Datasource task: from Data Source - RawDatasourceAnalysisActivation (0x0000000000E87E56 - N/A): Start
2021-02-23 07:00:35 (+0:00:00.029) INFO: ETL Datasource task: from Data Source - RawDatasourceAnalysisActivation (0x0000000000E87E56 - 0x0000000000E87E84): Success
2021-02-23 07:00:35 (+0:00:00.001) INFO: ETL Datasource task: from Data Source - RawDatasourceAnalysis (0x0000000000E87E56 - N/A): Start
2021-02-23 07:00:35 (+0:00:00.128) INFO: Site file 'excluded_sites.json' with remote ID (62) has been copied from site 'SCM Reporting QA' to C:/Program Files/BigFix Enterprise/SCA/wlp/usr/servers/server1/data/metadata/1/SCM Reporting QA/excluded_sites.json.
2021-02-23 07:00:36 (+0:00:00.100) INFO: ETL Datasource task: from Data Source - RawDatasourceAnalysis (0x0000000000E87E56 - 0x0000000000E87E84): Success
2021-02-23 07:00:36 (+0:00:00.001) INFO: ETL Datasource task: from Data Source - DatasourceAnalysis (0x0000000000E87E56 - N/A): Start
2021-02-23 07:00:36 (+0:00:00.167) INFO: DatasourceAnalysis items: 0
2021-02-23 07:00:36 (+0:00:00.016) INFO: ETL Datasource task: from Data Source - DatasourceAnalysis (0x0000000000E87E56 - 0x0000000000E87E84): Success
2021-02-23 07:00:36 (+0:00:00.000) INFO: ETL Datasource task: from Data Source - DatasourceProperty (0x0000000000E87E56 - N/A): Start
2021-02-23 07:00:36 (+0:00:00.062) INFO: DatasourceProperty items: 0

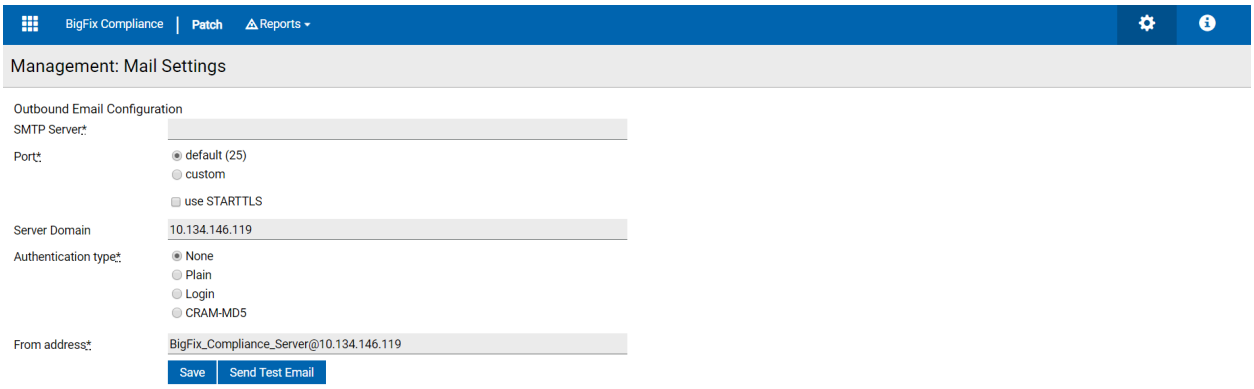


Enabling mail settings

You must configure outbound email in mail settings to schedule an export to an email recipient. The patch report can be sent to multiple email recipients.

Procedure

1. Click **Management Gear Icon**.
2. Select **Mail Settings** from the menu.
3. In **Outbound Email Configuration**, set the configuration.
4. Enter the details in **SMTP Server** details.
5. Select the port in **Default or Custom**.
6. Select the **use STARTTLS** check box to make the connection secure.
7. Enter the **Server Domain**.
8. Select the **Authentication type**.
9. Enter the senders address in **From address** section.
10. Click **Save**.



For information about scheduling an export, see Scheduling *(on page 16)*.

Notifications

You can create email notifications using this section.

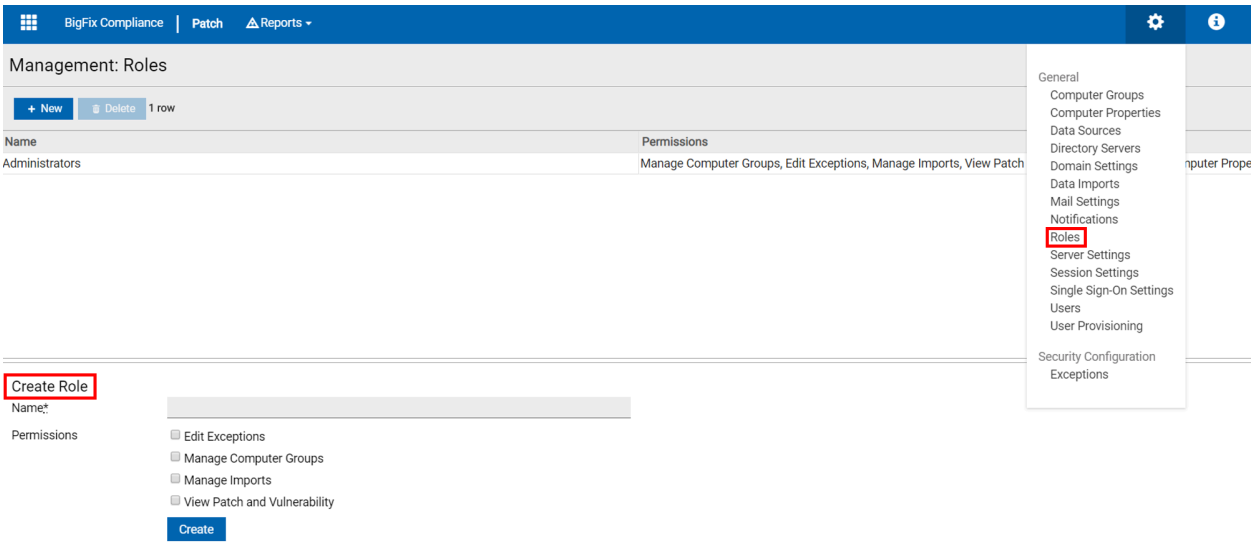
To create email notifications:

1. On the header bar, click **Management Gear Icon**.
2. Click **Notifications**.
3. Enter the **Name**.
4. Select the **Type** using the dropdown.
5. Select the **Report**.
6. Select the **Alerts**.
7. Enter the email address of the recipients.
8. Click **Create**.

   You must set up the mail settings to create email notifications to the recipients. To set up the mail settings, see Enabling mail settings *(on page 26)*.

Roles

Use the Roles to assign new roles to users or edit existing roles. You can assign permissions to the users to Edit Exceptions Manage Computer Groups, Manage Imports, and View Patch and Vulnerability etc.



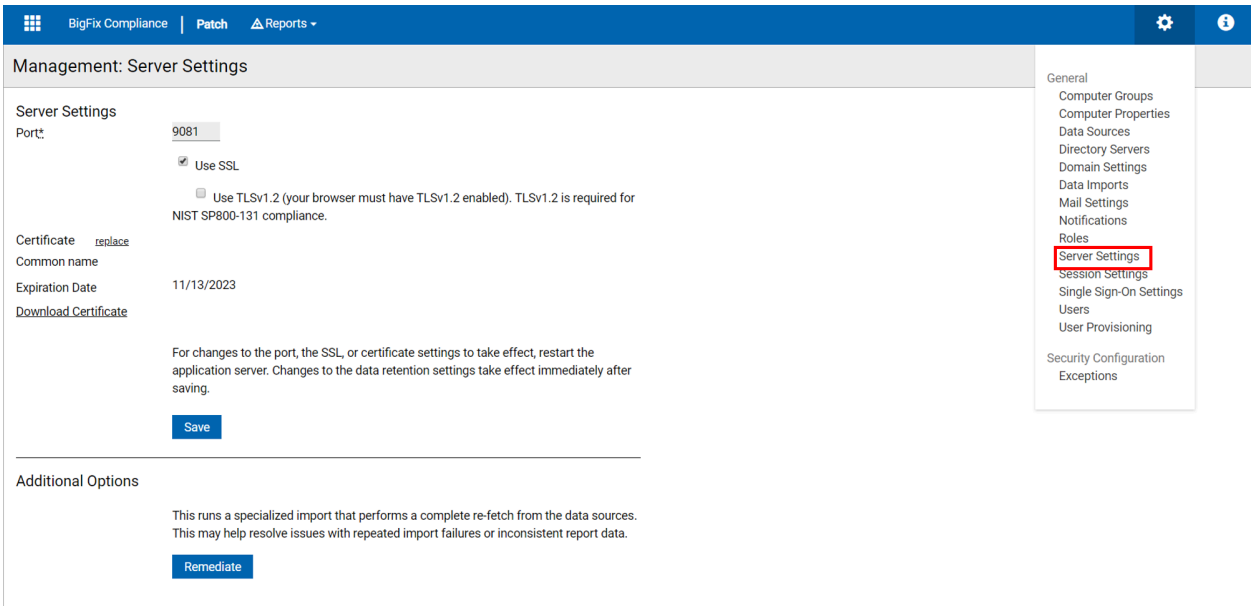
Important: Administrators can assign permissions to the created role. User will be able to view/edit the reports based on the permissions provided by administrators.

Server Settings

Configure server settings including HTTP port, SSL, TLS, data retention, and SSL certificate expiry notifications.

Use the Server Settings to configure the HTTP port, SSL, TLS, and enable or disable data retention. Any changes to the port or SSL settings require a service restart.

Figure 1. Server Settings



Enabling TLS 1.2 with SQL Server

Follow the steps to set up TLS 1.2, which is required for NIST SP800-131 compliance.

- The TLS set up requires installing supported versions of MS SQL and the latest patches.
- The minimum required version is MS SQL Server 2012 Service Pack 3.
- Ensure that your browser is TLS 1.2 enabled.
- For BFC V1.10.x and earlier:
  - Open the `jvm.options` file with a text editor and add the following code:

    ```
    -Dcom.ibm.jsse2.overrideDefaultTLS=true
    ```

    File location: `<SCA>\wlp\usr\servers\server1\`

    Note: Ensure that there are no extra/empty space or tab in the code.

  - You must restart the compliance service for the updates to take effect.
- For BFC V2.0.x and later, the code is already added in `jvm.options`.

  File location: `<SCA>\wlp\usr\servers\server1\configDropins\defaults\`

1. Install one of the supported versions of MS SQL server and the latest patches. Minimum requirement is MS SQL Server 2012 Service Pack 3. For more information about the updates that Microsoft is releasing to enable TLS 1.2 support for Microsoft SQL Server setup, see https://support.microsoft.com/en-us/help/3135244/tls-1.2-support-for-microsoft-sql-server
2. Generate your self-signed certificate using Openssl or IIS manager tool (make sure the certificate owner or 'common name' match with your hostname).
   a. OpenSSL > req -x509 -sha256 -nodes -days 365 -newkey rsa:2048 -keyout privateKey.key -out certificate.crt
   b. Make sure you combine your certificate and keys into .pfx
   c. OpenSSL > pkcs12 -export -out sca_server.pfx -inkey privateKey.key -in certificate.crt
   d. Use IIS manager to generate Self-signed certificate and export to .pfx directly. To install the IIS manager, go to Server Manager, click adding features and add Web Server(IIS). For information on generating certificates, see https://aboutssl.org/how-to-create-a-self-signed-certificate-in-iis/
3. Upload the certificate/key into BigFix Compliance.
4. From the command line, run mmc.exe.
5. Add a certificate snap-in.
   a. Select **File > Add/Remove Snap-in**.
   b. Select the **Certificates** snap-in and click **Add**.
   c. Select **Computer account** and click **Next**.
   d. Ensure that the **Local computer** option is selected and click **Finish**.
   e. Click **OK**.
6. Import the certificate.

a. In the Console window, go to **Console Root > Certificates**.
b. Right-click **Certificates** and select **All Tasks > Import**.
c. From the Welcome Window, click **Next**.
d. Click **Browse** and select the certificate store that you created.
e. Click **Next**.
f. Enter the password for the certificate store and click **Next**.
g. Ensure that **Place all certificates in the following store** is selected and that **Certificate Store** is set to **Personal**.
h. Click **Next** and click **Finish**.

7. Manage the private keys.
   a. Right-click the certificate file and select **All Tasks > Manage Private Keys**.
   b. Click **Add**.
   c. Click **Check Names**, select **MSSQLSERVER** and click **OK** (If **MSSQLSERVER** is not found, choose **SERVICE** instead).
   d. Click **OK** on the **Select Users and Groups** window.
   e. Set permissions for **MSSQLSERVER** on the **Permissions** window and click **OK**. For example, select **Allow for Read** for a Read-only option.
8. Configure the SQL Server to accept the encrypted connections by following the SQL Server documents. For more information, see https://docs.microsoft.com/en-us/previous-versions/sql/sql-server-2012/ms191192(v=sql.110)#EncryptConnection
9. Restart the SQL server and BigFix Compliance.

Secure Sockets Layer (SSL)

Configure and manage SSL certificates for secure communication in BigFix Compliance Analytics.

HCL BigFix uses SSL certificates to establish secure and trusted communication between servers, consoles, web applications, scanners, and client endpoints. Proper certificate management is essential for maintaining security, ensuring compliance, and preventing service disruptions. This document describes the SSL certificate management in HCL BigFix environment.

SSL certificate management includes the following tasks:

- **Certificate Installation:** Install SSL certificates to enable secure HTTPS connections.
- **Keystore Management:** Manage the SSL keystore that contains the certificate and private key. For information about regenerating the SSL keystore, see Regenerating the SCA SSL Keystore *(on page 31)*.
- **Certificate Monitoring:** Monitor SSL certificate expiration dates to prevent service disruptions. For information about automated certificate expiry notifications, see SSL Certificate Expiry Notification *(on page 32)*.
- **Certificate Renewal:** Renew SSL certificates before they expire to maintain continuous service availability.

For information about server settings related to SSL configuration, see Server Settings *(on page 28)*.

Regenerating the SCA SSL Keystore

Learn how to regenerate the SSL keystore for BigFix Compliance (SCA) when updating the SSL certificate.

Before you begin, ensure that the following requirements are met:

- The customer already has a valid SSL certificate, such as: `.p12`, `.pfx`, `.crt+.key`, or `.jks`.
- The **SCA installation root directory** is referenced as `<BFC_ROOT>`.

Typical Paths:

```
Keystore: <BFC_ROOT>\wlp\usr\servers\server1\resources\security\key_server.jceks
```

```
Config: <BFC_ROOT>\wlp\usr\servers\server1\server.xml
```

When updating the SSL certificate used by **BigFix Compliance (SCA)**, a new Liberty-compatible keystore file (`key_server.jceks`) must be generated.

There are two possible scenarios:

- Generate a new self-signed certificate.
- Convert an **existing SSL certificate** (already issued by a CA) into the JCEKS format. This document covers **Case 2**, which matches the customer's scenario

1. **Convert the SSL certificate if it is already in PKCS#12 format**.
   If you already have a `.p12` or `.pfx` file that contains both the private key and certificate chain, convert it directly to

   ```
   keytool -importkeystore ^
    -srckeystore newcert.p12 ^
    -srcstoretype PKCS12 ^
    -destkeystore key_server.jceks ^
    -deststoretype JCEKS ^
    -srcstorepass <source_password> ^
    -deststorepass <new_password>
   ```

2. **Combine certificate and private key if they are in separate files**.
   If you have separate `.crt and .key`files, first create a PKCS#12 container using `OpenSSL`:

   ```
   openssl pkcs12 -export \
    -in server.crt \
    -inkey server.key \
    -out newcert.p12 \
    -name "default"
   ```

   Then, run the same **`keytool -importkeystore`** command from the previous step.
3. **Encode the New Keystore Password**.

Use Liberty's built-in utility to encode the password before putting it into `server .xml`:

```
D:\SCA\wlp\bin\securityUtility encode "<new_password>" --encoding=aes
```

Example Output

```
{aes}vUuQxKDl7P7H1q93Ld4xqw==
```

4. **Update the `server.xml` file**.
   Edit only the password line for the default keystore:

```
<keyStore id="defaultKeyStore"
          location="key_server.jceks"
          password="{aes}vUuQxKDl7P7H1q93Ld4xqw==" />
```

5. **Restart SCA**.
   Restart the Liberty server hosting SCA.
   Verify in logs:

```
<BFC_ROOT>\wlp\usr\servers\server1\logs\messages.log
```

   You should see: `CWWKS4104A: SSL certificate has been successfully loaded`
6. **Optional Verification**.
   Check the loaded certificate:

```
keytool -list -v -keystore key_server.jceks -storetype JCEKS -storepass <new_password>
```

7. **Quick Summary of Exchange**.

Table 1. Quick Summary

Step	Action	Command / File	Notes
1	Customer already has SSL certificate	.p12 / .pfx / .crt + .key	-
2	Convert or import	keytool -importkeystore	Creates key_server.jceks
3	Encode password	securityUtility encode	Produces {aes}… string
4	Update config	server.xml	Replace password only
5	Restart & verify	SCA Liberty logs	Confirm CWWKS4104A

The new SSL certificate is successfully applied, `key_server.jceks` regenerated, and SCA runs with the updated encrypted password reference.

SSL Certificate Expiry Notification

The Secure Sockets Layer (SSL) Certificate Expiry Notification feature automatically monitors SSL certificate expiration dates and sends email alerts to administrators to prevent service disruptions.

The SSL Certificate Expiry Notification feature automatically monitors SSL certificate expiration dates and sends email alerts to administrators.

The notification system operates as follows:

1. A scheduled job runs every morning at 8 AM to check the expiration date of SSL certificates.
2. If a certificate is going to expire within 7 days, the system triggers an email to the administrator with details about the certificate and recommended actions.
3. If the certificate is not renewed after 7 days and expires, the system sends daily email reminders to the administrator until the certificate is renewed.

This automated monitoring ensures administrators have sufficient advance notice to renew certificates during normal business hours and avoid emergency situations.

Related Information

- Server Settings *(on page 28)*
- Secure Sockets Layer (SSL) *(on page 30)*

Directory Servers

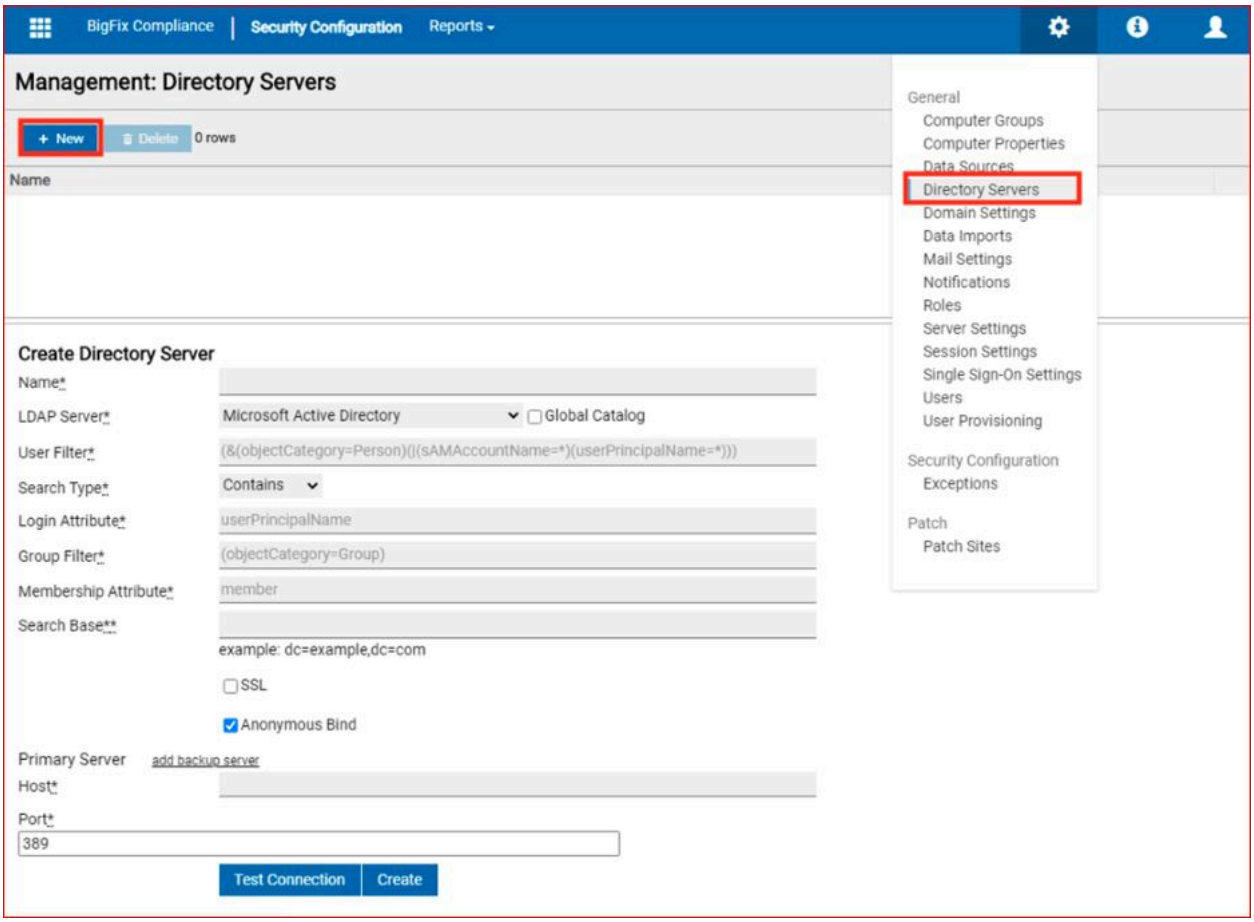
BigFix Compliance Analytics supports authentication with directory servers through Lightweight Directory Access Protocol (LDAP). You can add directory servers to BigFix Compliance Analytics so that the users can log in using credentials based on your existing authentication scheme.

To authenticate BigFix Compliance Analytics users with directory servers, you must do the following:

1. Add a directory server
2. Link a user to the directory server (See Users *(on page 59)* section).

You can also use the User Provisioning feature to automatically create users (with directory server authentication) without doing it individually from the Users menu.

- (Optional) Add a user provisioning rule (See User Provisioning *(on page 60)* section).



Adding a directory server

To use LDAP, you must first configure a connection to your directory server.

- You must have the Administrators role (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 optional.

   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 logon 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.

Editing a directory server

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**.

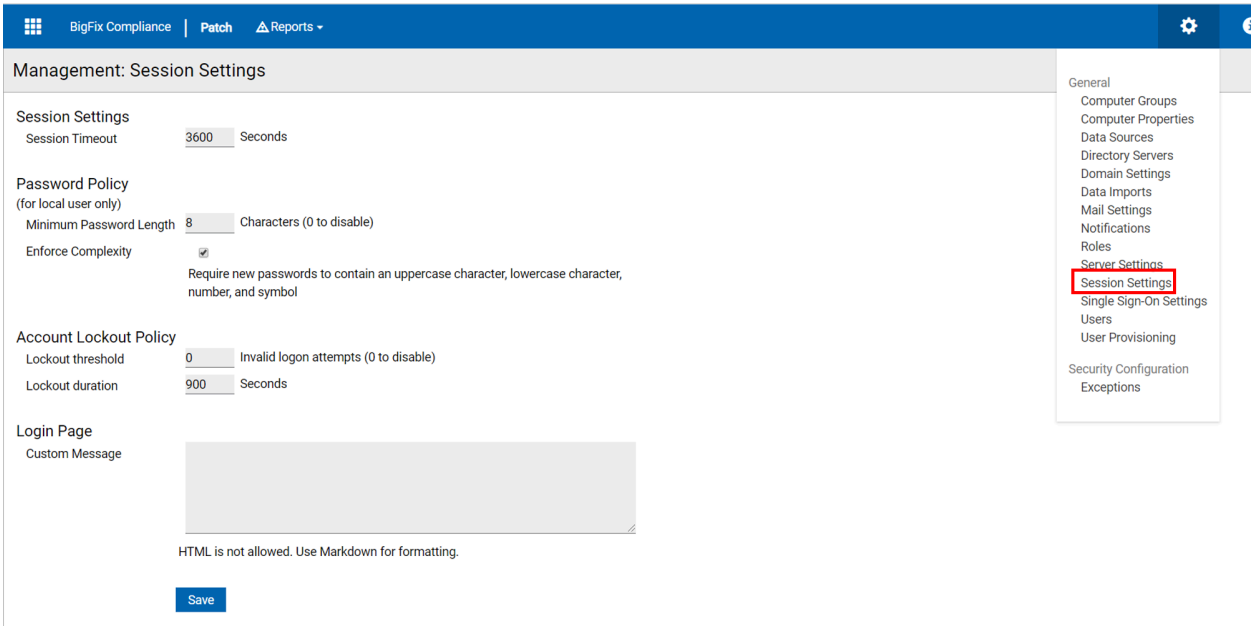
Deleting a directory server

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**.

Session Settings

You can change your session settings to specify the session time for a logged in user who is inactive for a certain period and to custom the message on the login page using Markdown text.

To make changes in your session setting, go to **Management Gear Icon > Session Settings**.



You can configure the following settings:

Session Settings

Set the session timeout.

Password Policy

This policy is for local users only. You can set the password of length and require users to have more a more complex password.

Account Lockout Policy

Set the number of allowed invalid log on attempts and the duration before the account is locked.

Login Page

You can enter a message. Note that Markdown formatting is supported, but HTML is not allowed.

Make your changes then click **Save**.

Single Sign-On (SSO) settings

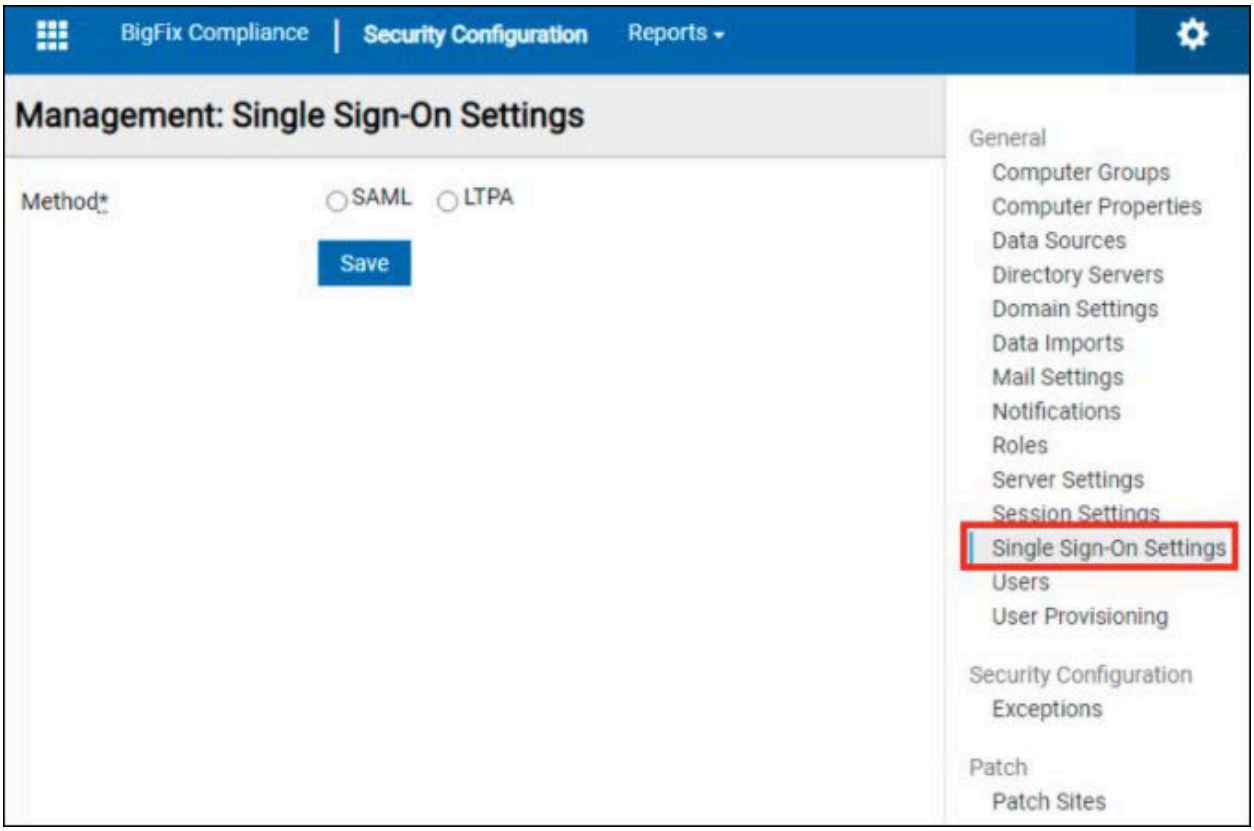
This section provides information on the different Single sign-on (SSO) settings.

Authenticating users with SSO

BigFix Compliance supports SSO for user authentication through the following:

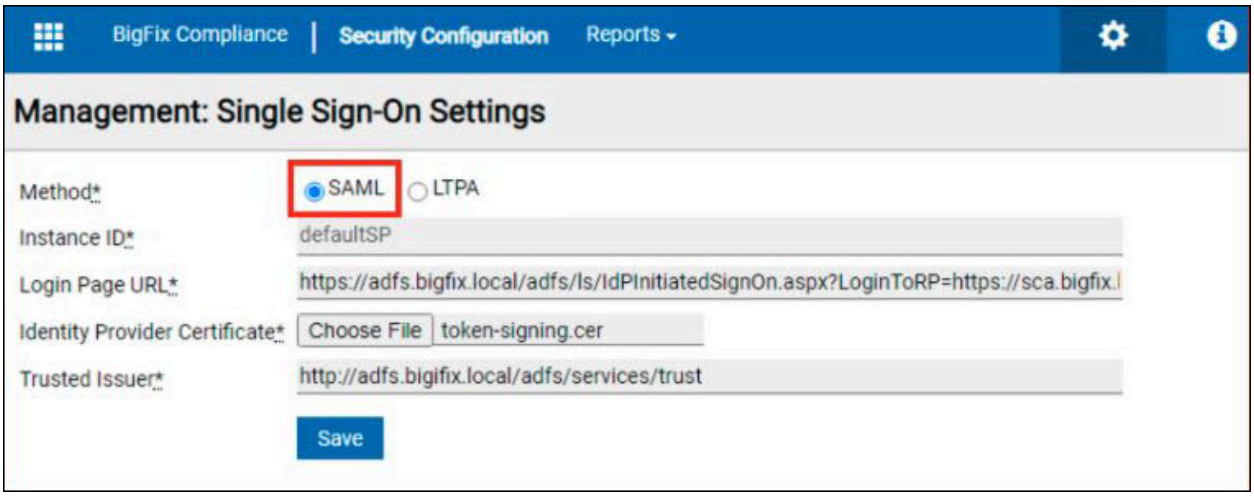
- Security Assertion Markup Language (SAML)
- Lightweight Third-Party Authentication (LTPA)

To open the SSO settings page, navigate to the settings gear icon and click **Single Sign-On Settings** from the list.



Configuring SAML **Single Sign-On** (SSO)

Follow the below steps to set up the SAML SSO for your system with Active Directory Federation Services (ADFS).



Before you begin Get the following information from the identity provider (IdP):

- Login URL
- Token-Signing Certificate
- Trusted Issuer

- Back up on the following `.xml` files:
  - `<Install Dir>\wlp\usr\servers\server1\server.xml`
  - `<Install Dir>\wlp\usr\servers\server1\app\tema.war\web.xml`
- When enabling the SSO in server settings, you must have at least one SSO user created. Before enabling SSO, perform the following steps:
  - Create a SSO user from **Management > Users**. The operator must create at least one user with administrators role and SSO as an authentication method.
  - Consider changing the authentication method of existing users to the SSO.
  - Create user provisioning rules as necessary.

Note: The username format for user provisioning must be according to the User-Principal-Name (or a SAM-Account-Name, without domain). User provisioning on SSO is associated with what is indicated on the directory server.

Perform the following steps to configure the SSO:

1. Login to BigFix Compliance as an administrator (with FQDN URL).
2. Create a SSO user with administrator rights in the BigFix Compliance server.
   a. Go to **Management > > Users**. Click **Create User**.
   b. Enter the username. The format of the username is related to the Name ID format of the claim rules on relaying party trust on ADFS. Ensure that the username format follows the LDAP attribute format.**User-Principal-Name**

      The username format is `<user>@<domain name>`.

      Example: `user01@bigfix.local`

      SAM-Account-Name

      The username format is `<user>` without domain part.

      Example: `user01`

      E-Mail Address

      The username is the email address in the profile of the user.

      Example: `user01@bigfix.local`

   c. Check administrators role.

      Note: At least one SSO user must have the administrators role.

   d. Specify **Computer Groups** as necessary (not applicable for the administrator).

e. Select **Single Sign-On** as the authentication method.
f. Enter the **email address** and **contact information**.
g. Click **Create**.

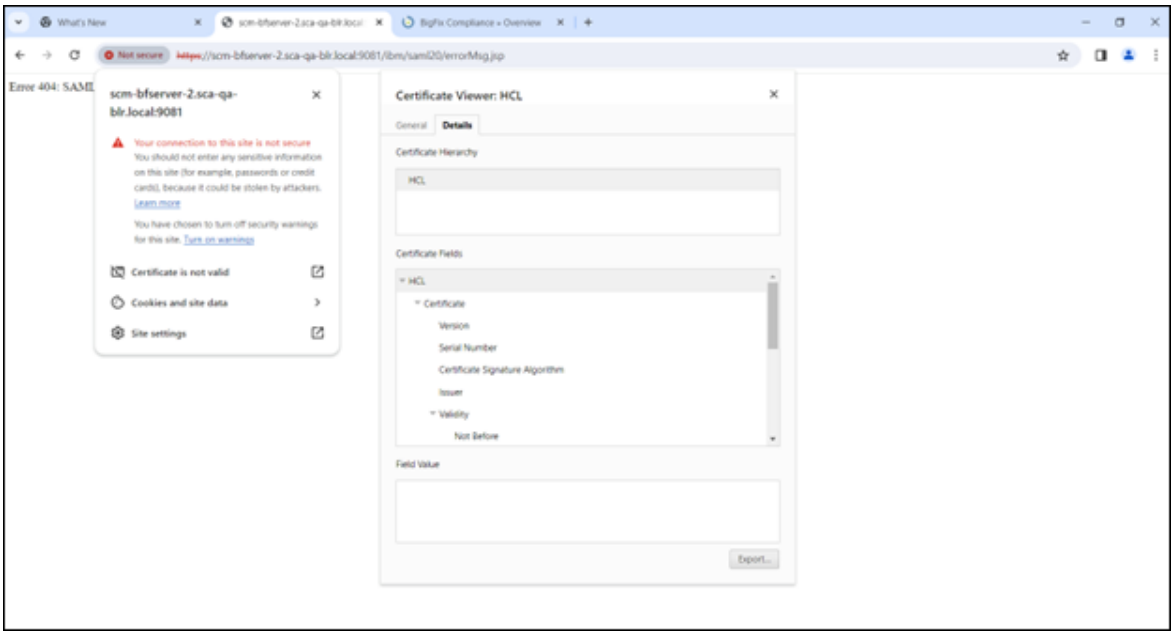
3. Follow these steps to use user provisioning:
   a. Add your directory server by creating an entry in **Management > Directory Servers**. Refer to Directory Servers *(on page 34)*.
   b. Configure the user provisioning rule in **Management > User Provisioning**. When the SSO is enabled, the authentication method of all the provisioned users is SSO. Refer to User Provisioning *(on page 60)*.

   Create a SAML configuration entry.
   a. Click **New**.
   b. Select **SAML** as the SSO method.
   c. Enter the values for the following field(s).
      - **Login Page URL**: Enter the login page URL.
        - ADFS:`https://<ADFS_hostname>/adfs/ls/IdPInitiatedSignOn.aspx?LoginToRP=https://<SCA_hostname>:9081/ibm/saml20/defaultSP`
        - ENTRA ID: `https://launcher.myapps.microsoft.com/api/signin/<APPICATION ID / GUID>?tenantId=<TENANT ID / GUID>`
      - **Identity Provider Certificate**: Browse to select the identity provider certificate. This certificate refers to the Token-Signing certificate exported from ADFS in DER/Base64 encoded X.509.
      - **Trusted Issuer**: Enter the trusted issuer.
        - ADFS: `http://<ADFS_hostname>/adfs/services/trust`
        - ENTRA ID: `https://sts.windows.net/<TENANT ID / GUID>/`
   d. Click **Save**.
   e. Restart BigFix Compliance service.

Using SCA HTTPS Certificate for SAML

By default, the SCA is creates a dedicated and self signed certificate in separate keystore defined in the `sever.xml` as "SPKeyStore". It is possible to use the certificate stored in the "defaultKeyStore". To adjust the setup for this purpose, follow these steps:

1. Navigate to the path `\SCA\wlp\usr\servers\server1\server.xml`.
2. Remove `keyAlias="samlsp` and `keyStoreRef="SPKeyStore` from `server.xml`.
3. Open BigFix Compliance in 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 (base64 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 Compliance server.

Configuring SAML SSO - Microsoft Active Directory Services (ADFS)

1. Download the metadata of the service provider and configure the service provider details on the identity provider. Download the service provider metadata file, `spMetadata.xml` from the link.
    a. Log in to BigFix Compliance and go to **Management > Single Sign-On Settings**.
    b. Click the **Download SP Metadata** link to download the service provider metadata file, `spMetadata.xml`.

    Note: When the SAML SSO entry is created, only the **Delete** button and the **Download SP Metadata** link are enabled. If the download link is not enabled, try the following:

i. Open the `C:\Program Files\IBM\SCA\wlp\usr\servers\server1\apps\tema.war\WEB-INF\config\` folder or the BigFix Compliance installation path.
ii. Copy the `options.cfg.sample` file and save it as `options.cfg` into the folder.
iii. Open the `options.cfg` file and locate the line: `#platform.sso.saml.metadata.link.ssl.verify=false`.
iv. Remove # from the code and save the file.
v. Restart the BigFix Compliance service.
vi. Log in again and check if the download link is enabled.

2. Configure Relying Party Trusts in ADFS Management with the metadata file.
    a. In ADFS Management, navigate to **Relying Party Trusts**, click **Add Relying Party Trust**.
    b. Click **Start** and select **Import data about the relying party from a file**.
    c. Click **Browse** and specify the `spMetadata.xml` file and click **Next**.
    d. Specify a display name (for example Compliance) and click **Next**.
    e. Click **Next** all the way and **Close**.
    f. In the **Edit Claim Rules** window, click **Add Rule** and click **Next**.
    g. Enter a claim rule name such as Name ID.
    h. Select **Active Directory** as attribute store.
    i. Select **User-Principal-Name** as LDAP Attribute and **Name ID** as Outgoing Claim Type.
    j. Click **Finish**.
3. Once ADFS is configured, continue to enable SSO in BigFix Compliance, on **Management > Single Sign-On** page:
    a. Click **Enable**.
    b. Restart BigFix Compliance service.

    After the service is restarted, BigFix Compliance login page will redirect to the login page of the identity provider. Enter your credentials. Once authentication is successful, it will be redirected to the BigFix Compliance landing page (Security Configuration Overview page).

Configuring SAML SSO - Microsoft Entra ID

To configure BigFix Compliance with Microsoft Entra ID, consider that only the Identity Provider Initiated (IdP-initiated) scenario is supported. Microsoft Entra ID does not support SAML HTTP Post redirect binding, which is necessary for IBM WebSphere Liberty used by BigFix Compliance.

When configuring the SCA in Microsoft Entra ID, make sure that you do not set the Sign-On URL and Relay State. By specifying Entra's **User Access URL** as the Login Page URL in SCA, users will be redirected to Microsoft Entra ID's Identity Provider Initiated (IdP-initiated) flow.

1. Follow Microsoft guide Security Assertion Markup Language (SAML) single sign-on (SSO) for on-premises apps with Microsoft Entra application proxy - Microsoft Entra ID | Microsoft Learn and use following information:
    a. Identifier (Entity ID): https://<bigfix sca server>:9081/ibm/saml20/defaultSP
    b. Reply URL (Assertion Consumer Service URL): https:// <bigfix sca server>:9081/ibm/saml20/defaultSP/acs
    c. Sign on URL: keep empty
    d. Relay State: keep empty
2. Once the Entra ID is configured, continue to enable SSO in BigFix Compliance, on **Management > Single Sign-On** page:
    a. Click **Enable**.
    b. Restart BigFix Compliance service.

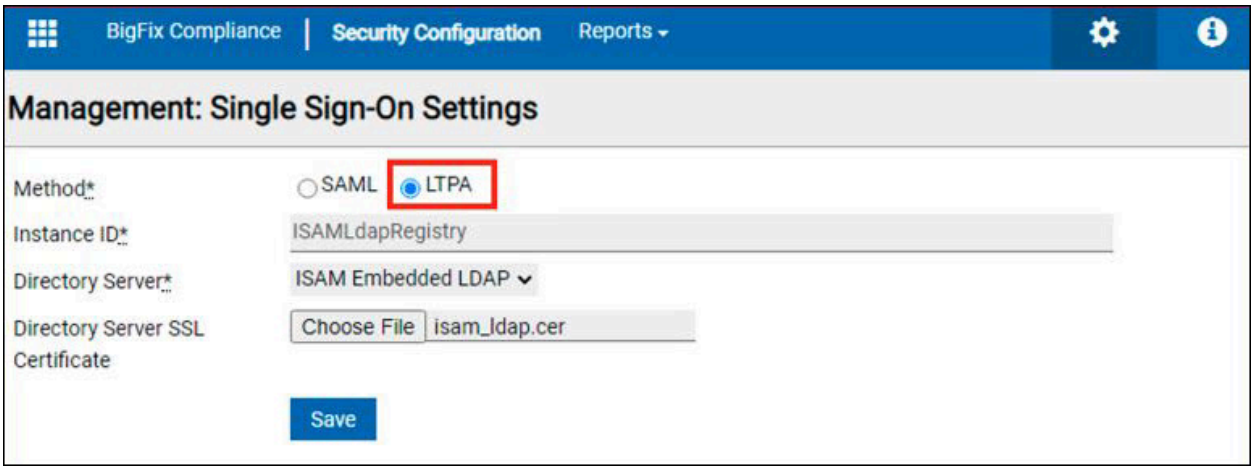
    After the service is restarted, BigFix Compliance login page will redirect to the login page of the identity provider. Enter your credentials. Once authentication is successful, it will be redirected to the BigFix Compliance landing page (Security Configuration Overview page).

Possible issues

- An endless redirection loop is made. Proceed with manual setup and avoid the use of metadata from BigFix Compliance. Make sure that neither the Sign-On URL nor the Relay State is configured. If these settings are configured, recreate the application definition in Entra ID from beginning.
- When the correct page is provided in SCA Login Page for Service Provider Initiated (SP-initiated) flow, you may get error AADSTS750054. This error is caused by the lack of compatibility between Entra and WebSphere HTTP binding methods (Redirect only vs. POST only). For more detailed information about the error, refer to Microsoft Learn - Troubleshoot AADSTS750054 error.

Configuring LTPA Single Sign-On for your system

Follow these steps to set up the Lightweight Third-Party Authentication (LTPA) SSO for your system with IBM Security Access Manager for Web (ISAM).



Before you begin

Note: After the SSO is enabled, only SSO users can log in to the BigFix Compliance Analytics. To avoid log-in access issues, all existing users, except the local administrator user, should convert to SSO users.

When enabling SSO server settings, you must have existing SSO users. Before enabling SSO, you need to do the following:

- Identify the ISAM server, Directory Server, and the Compliance Server.
- Back up the following `.xml` files:
  - `<Install Dir>/wlp/usr/servers/server1/server.xml`
  - `<Install Dir>/wlp/usr/servers/server1/app/tema.war/web.xml`
- Create SSO users from **Management > Users**. The operator must create at least one single sign-on user with administrators role.
- Create User Provisioning rules.

Note: The username format for user provisioning must be a User-Principal-Name (or a SAM-Account-Name, without domain). User provisioning on SSO is associated with what is indicated on the directory server.

Perform the following steps:

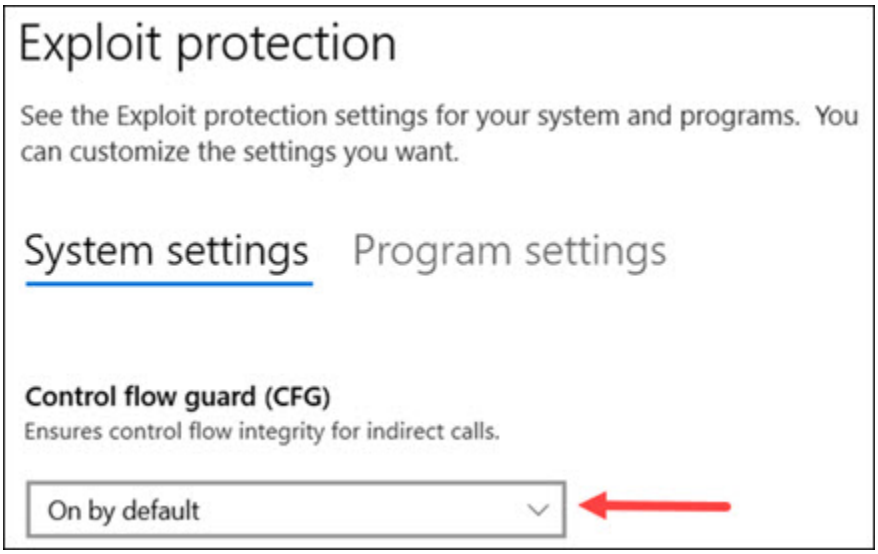
1. Login to BigFix Compliance and go to **Management > Directory Servers**.
2. Create a Directory Server entry for single sign-on authentication. (See Directory Servers *(on page 34)* section for how to add a Directory Server).
3. Go to **Management > Users** to create an SSO user.
   a. Go to **Management > Users**. Click **Create User**.
   b. Enter a username that is registered in the directory server.
   c. Check **Administrators** role (at least one single sign-on user needs to have Administrators role).
   d. Specify Computer Groups, as necessary. (not applicable for administrator).

   e. Select Single Sign-On as the authentication method.
   f. Enter the email address and contact information.
   g. Click **Create**.
4. Create an LTPA configuration entry.
   a. Go to **Management > Single Sign-On Settings**.
   b. Select **LTPA** as the SSO method.
   c. Select the directory server that was created in Step 2.
   d. If the directory server is configured with SSL option, click **Browse** and upload the directory server's certificate.
   e. Click **Save**.
5. Restart the BigFix Compliance service.
6. Download LTPA Keys from BigFix Compliance.
   a. Login back to the SSO settings page.
   b. Click **Download LPTA Keys** link and save `ltpa.keys`.
7. Configure reverse proxy / virtual junction on ISAM with BigFix Compliance server certificate and LTPA keys
   For more information, refer to https://help.hcl-software.com/bigfix/11.0/inventory/Inventory/security/t_configuring_sso_isam.html.
8. Enable SSO in BigFix Compliance.
   a. Login back to the SSO settings page.
   b. Click **Enable**.
9. Restart BigFix Compliance service.
10. Access BigFix Compliance by ISAM's virtual host/url such as, `https://<virtual_host>/sca`.

Adding Exception to Exploit Protection Control Flow Guard in Windows 2019

This topic describes how to add exception to the Control flow guard (CFG) to prevent the BigFix Compliance and Inventory services from crashing.

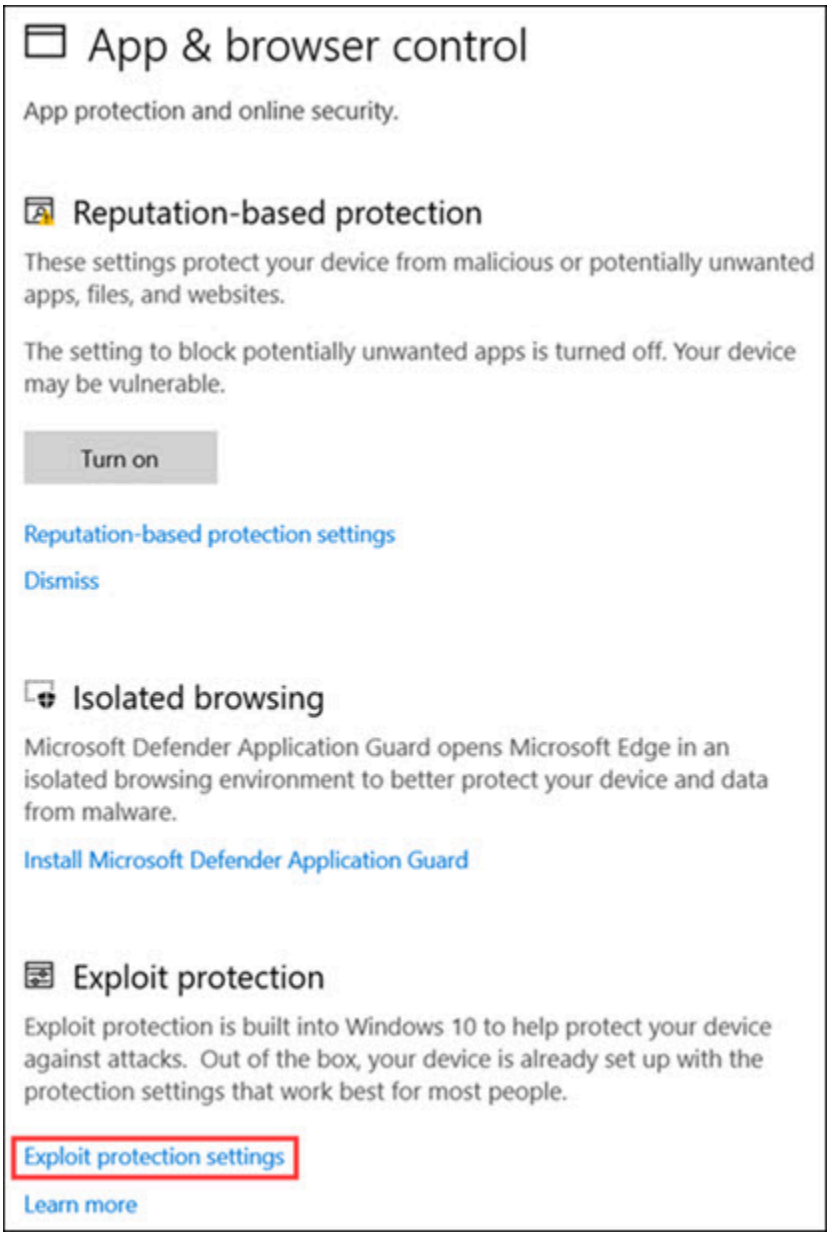
By default, the CFG for BigFix Compliance and Inventory `javaw.exe` file is set to **Use default (On)** when you update BigFix servers to Windows 2019. When CFG is explicitly set to **On by default**, the Security Assertion Markup Language (SAML) is enabled, and the first authentication to ADFS or SSO causes the BigFix Compliance and Inventory services to crash. Also, there are no error logs recorded in the `tema.log` file related to the crash. To prevent this, you must add custom setting for `javaw.exe`.



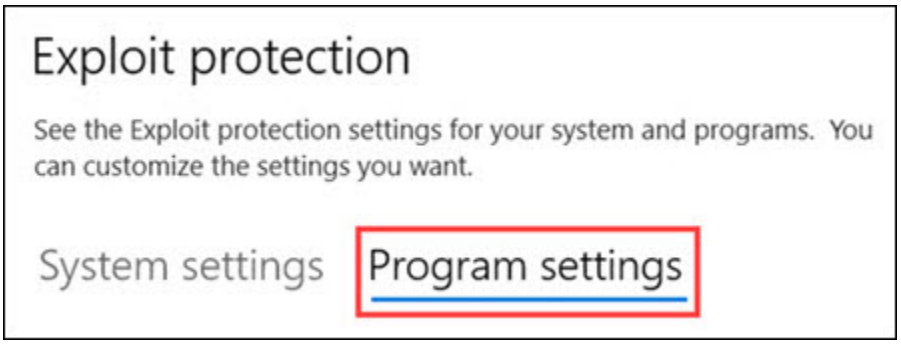
Note: CFG set to **On by default**, which results in crashing BigFix Compliance and Inventory services.

Perform the following steps to turn off the CFG:

1. Go to **Settings > Update & security > Windows security > App & browser control** and click **Exploit protection settings**.

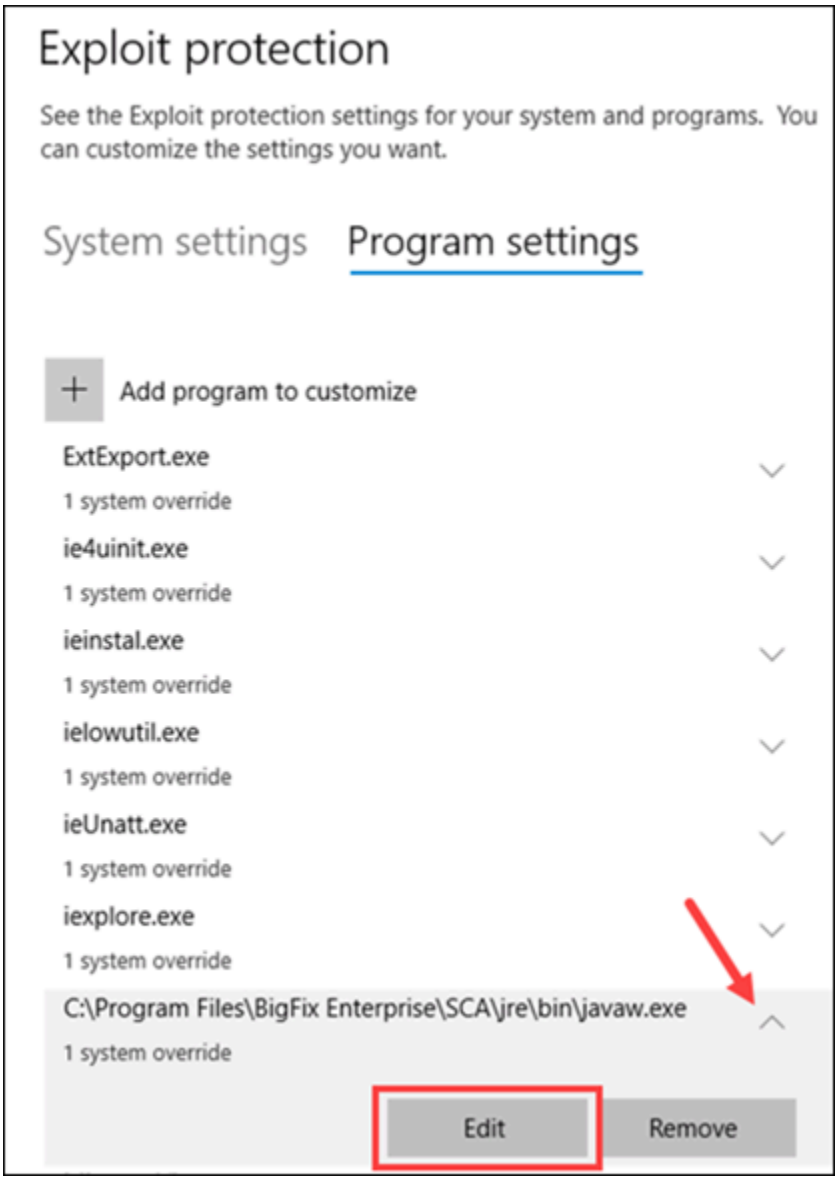


2. Click **Program settings**.

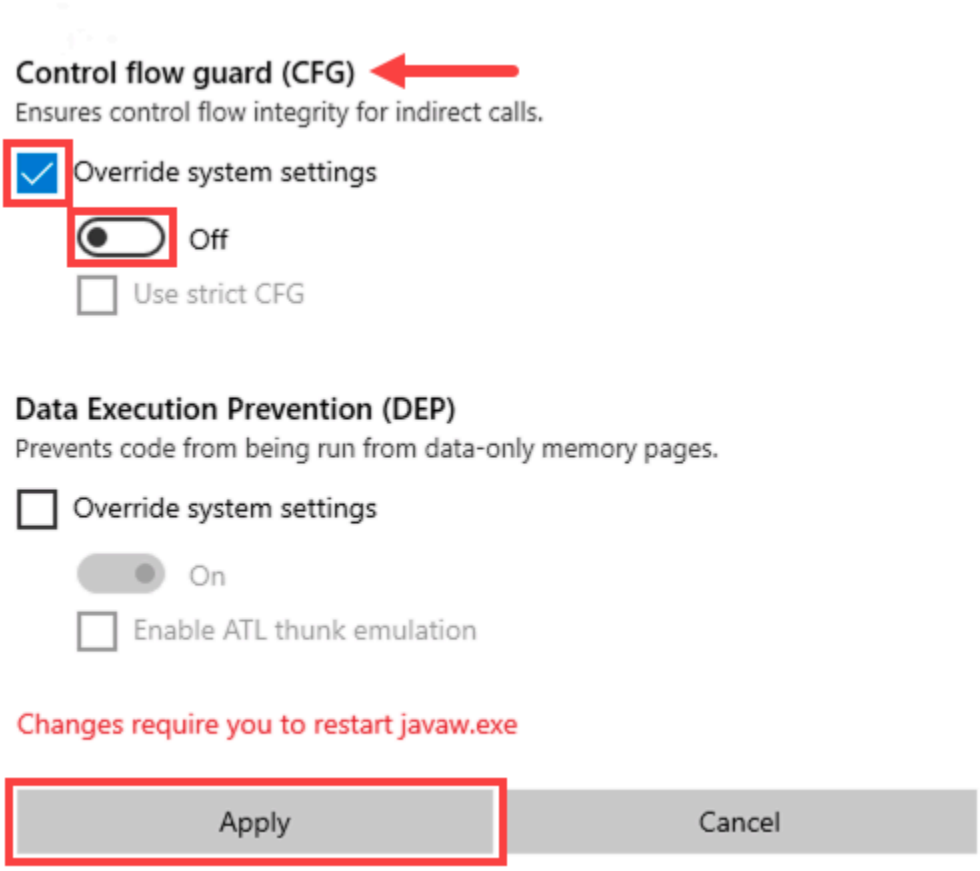


3. In the **Program settings** tab, navigate to `javaw.exe` and from the drop-down click **Edit**.

Note: By default, the `javaw.exe` file is located in the `<SCA>\jre\bin\` folder.



4. In **Control flow guard (CFG)** settings, check **Override system settings** and set the toggle switch to **Off**.
5. Click **Apply**.



Important: Restart the BigFix Compliance service to implement the changes.

Disable SAML SSO configuration

You can revert to the default SAML Single Sign-On (SSO) configuration with SSO disabled if there are problems with logging in to the application.

To disable the SSO configuration for SAML manually, follow the below procedure:

1. Stop the BigFix Compliance service.
2. Make changes in the `server.xml` file that is in the following directory:
   - UNIX™: `sca_install_dir/wlp/usr/servers/server1`
   - Windows™: `sca_install_dir\wlp\usr\servers\server1`

   a. Remove the `<application-bnd>` element from inside 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 from the `<featureManager>` element.

c. Remove the `<samlWebSso20>` element, if presents.

3. Make changes in the `web.xml` file that is in the following directory.
   - UNIX™: `sca_install_dir/wlp/usr/servers/server1/apps/tema.war/WEB-INF`
   - Windows™: `sca_install_dir\wlp\usr\servers\server1\apps\tema.war\WEB-INF`

   a. Set 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>
```

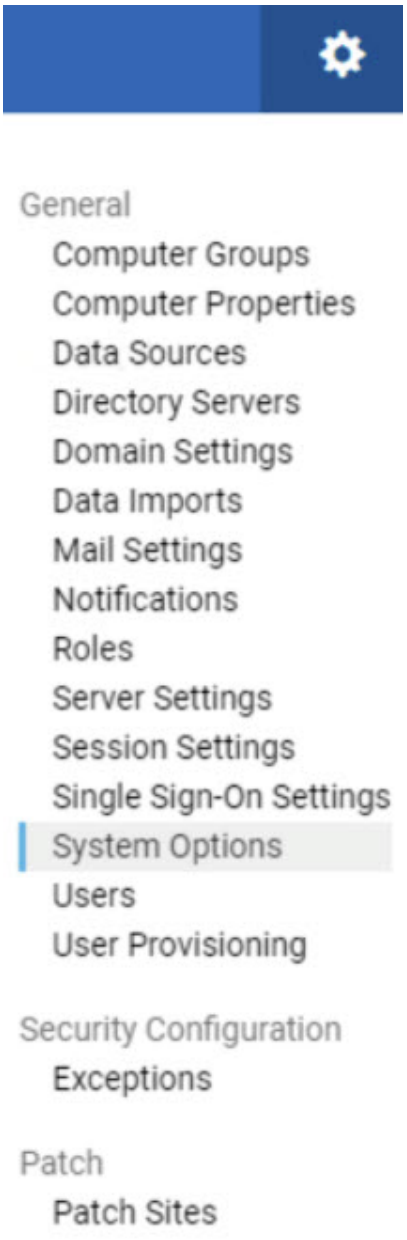
c. Start the BigFix Compliance.

System Options

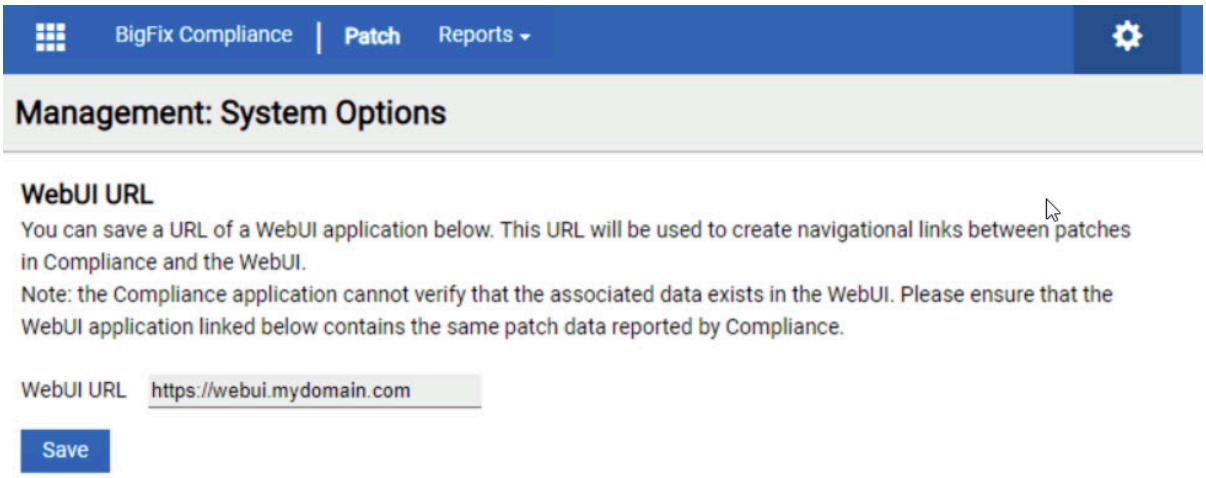
Use System Options too add WebUI URL in Compliance's report.

You can specify WebUI URL under **Management > System Options**. You can also add the WebUI URL in Compliance's report.

Note: If the WebUI URL is not specified in the System Options, then these links are not shown in the Patch details page or in 'Configure View' option.



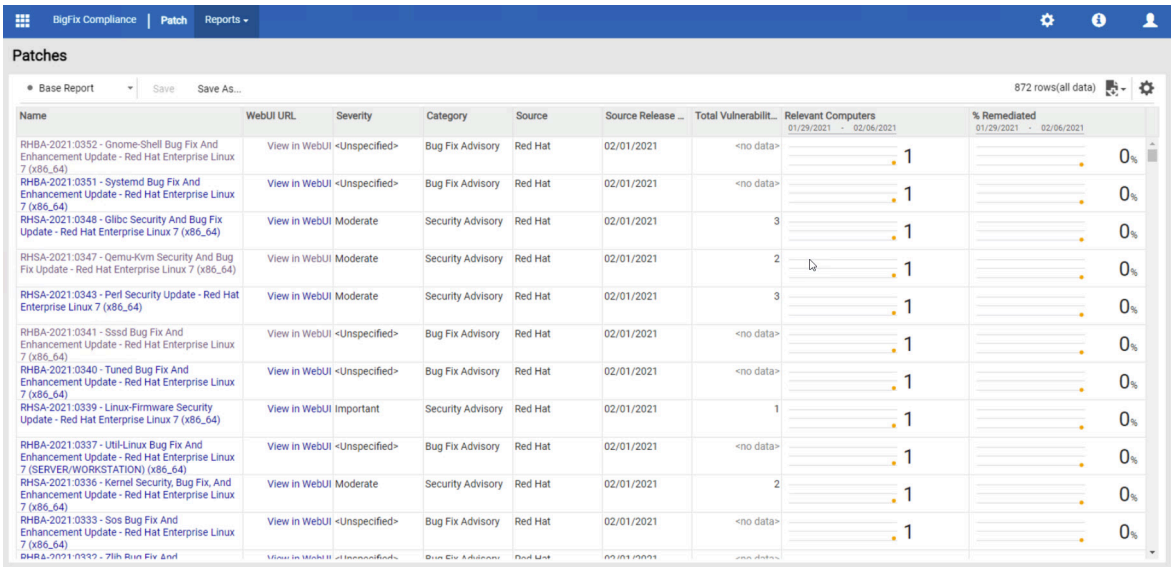
Enter WebUI URL and click **Save**.



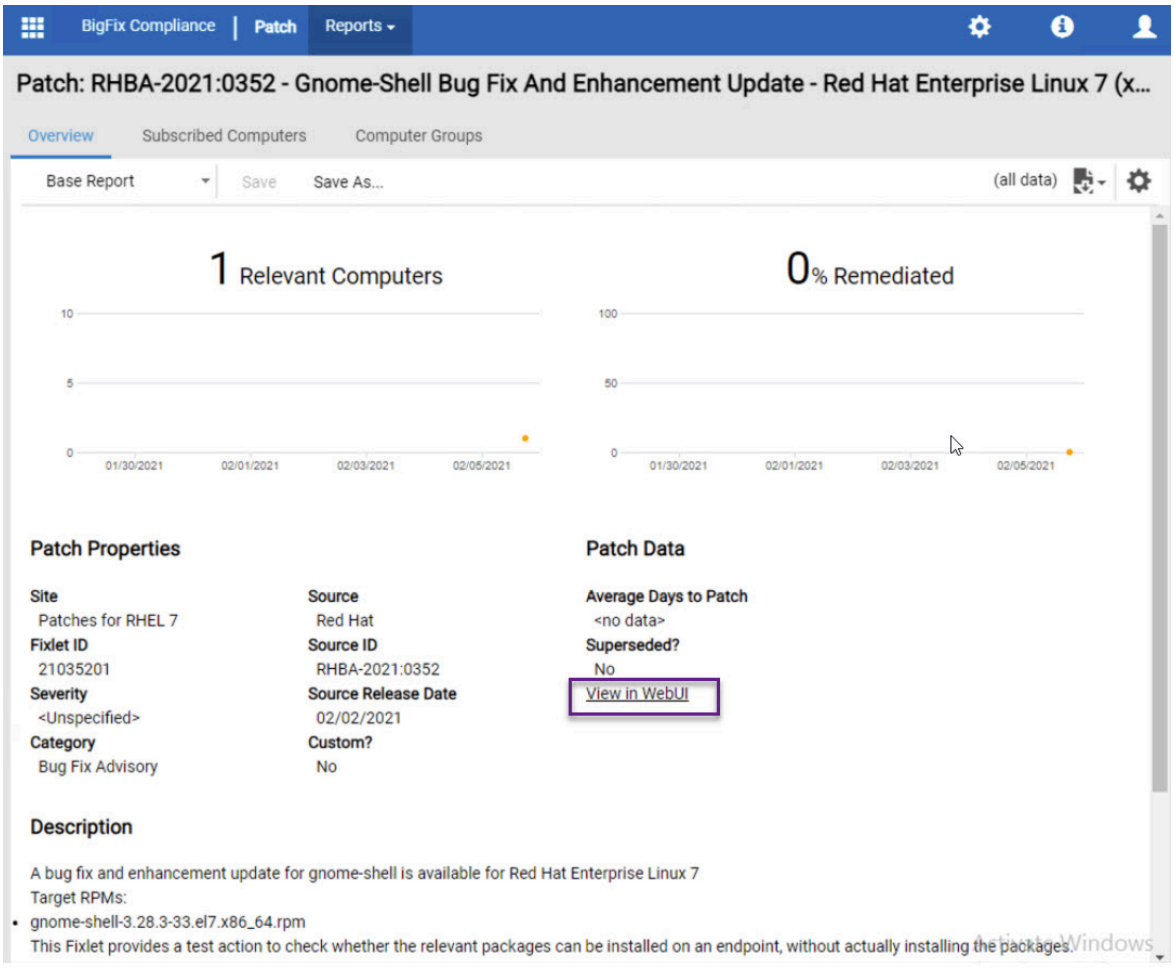
Note: System Options is available in Compliance 2.0p2 or above.

Adding a WebUI URL using Patch details page

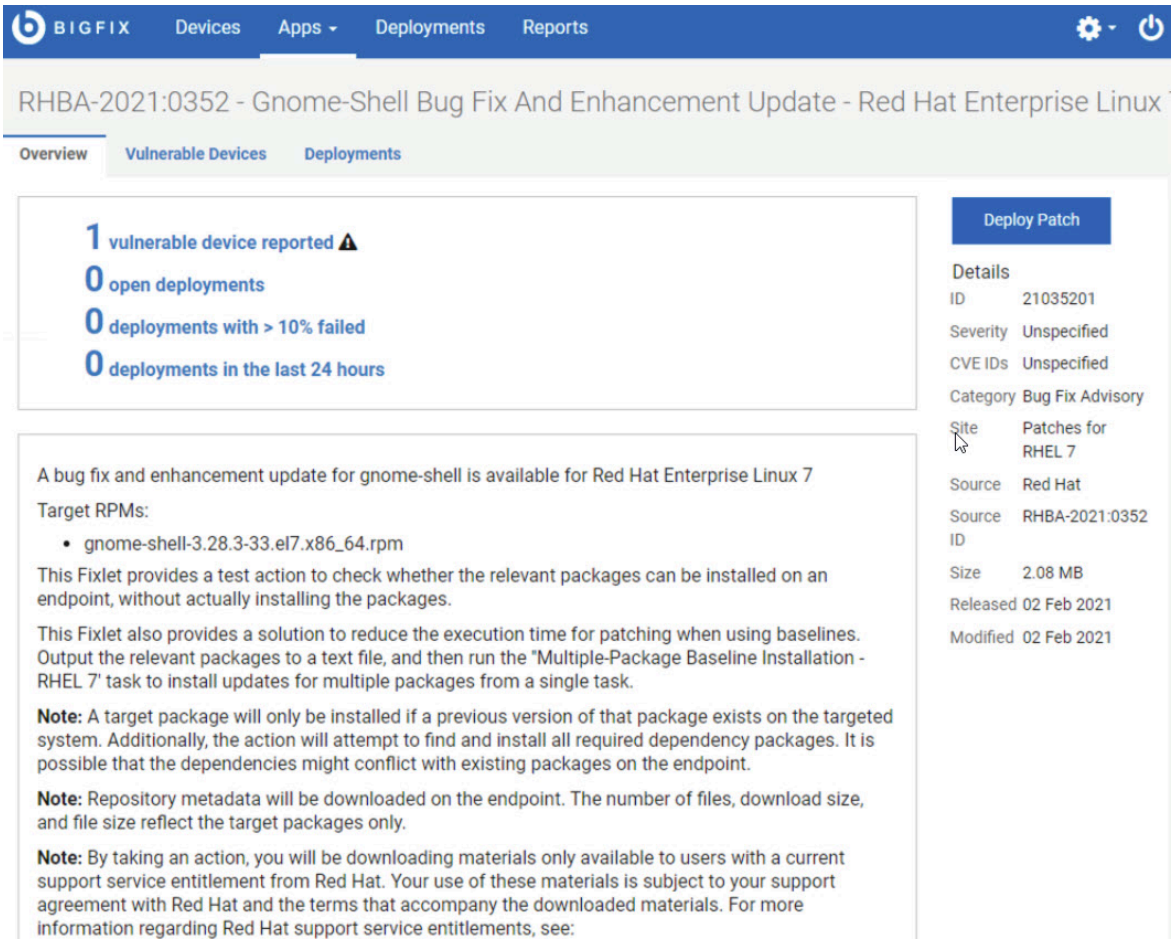
1. Navigate to **Reports > Patches** or navigate to **Reports > Computers > Computer name > Subscribed Patches**
2. Click the Patch name.



3. Click the **View in WebUI** link in Patch details page.



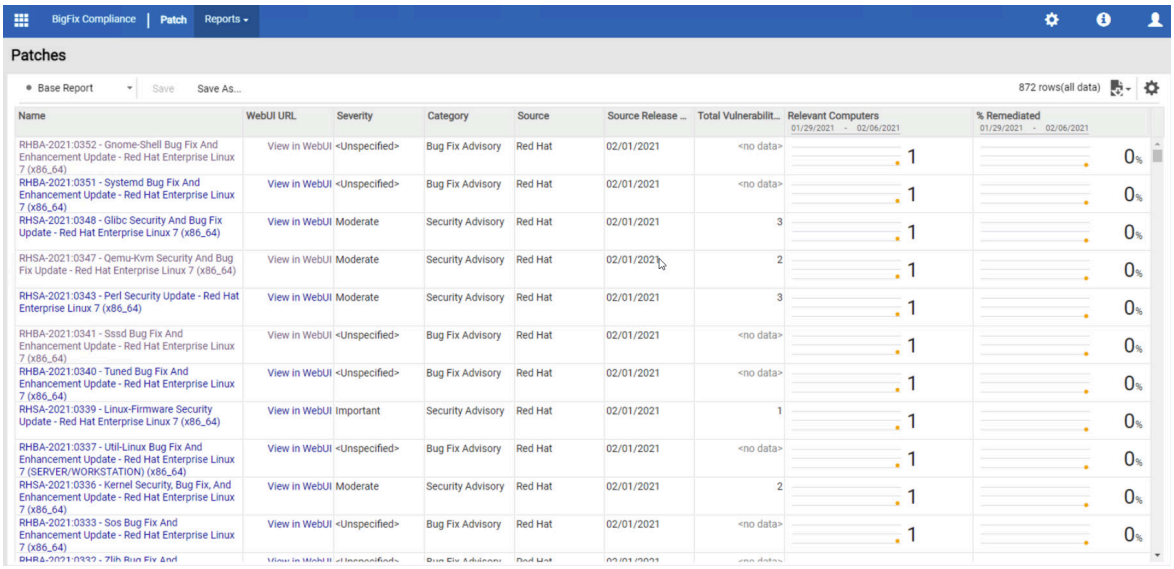
The following WebUI Patch page is displayed.



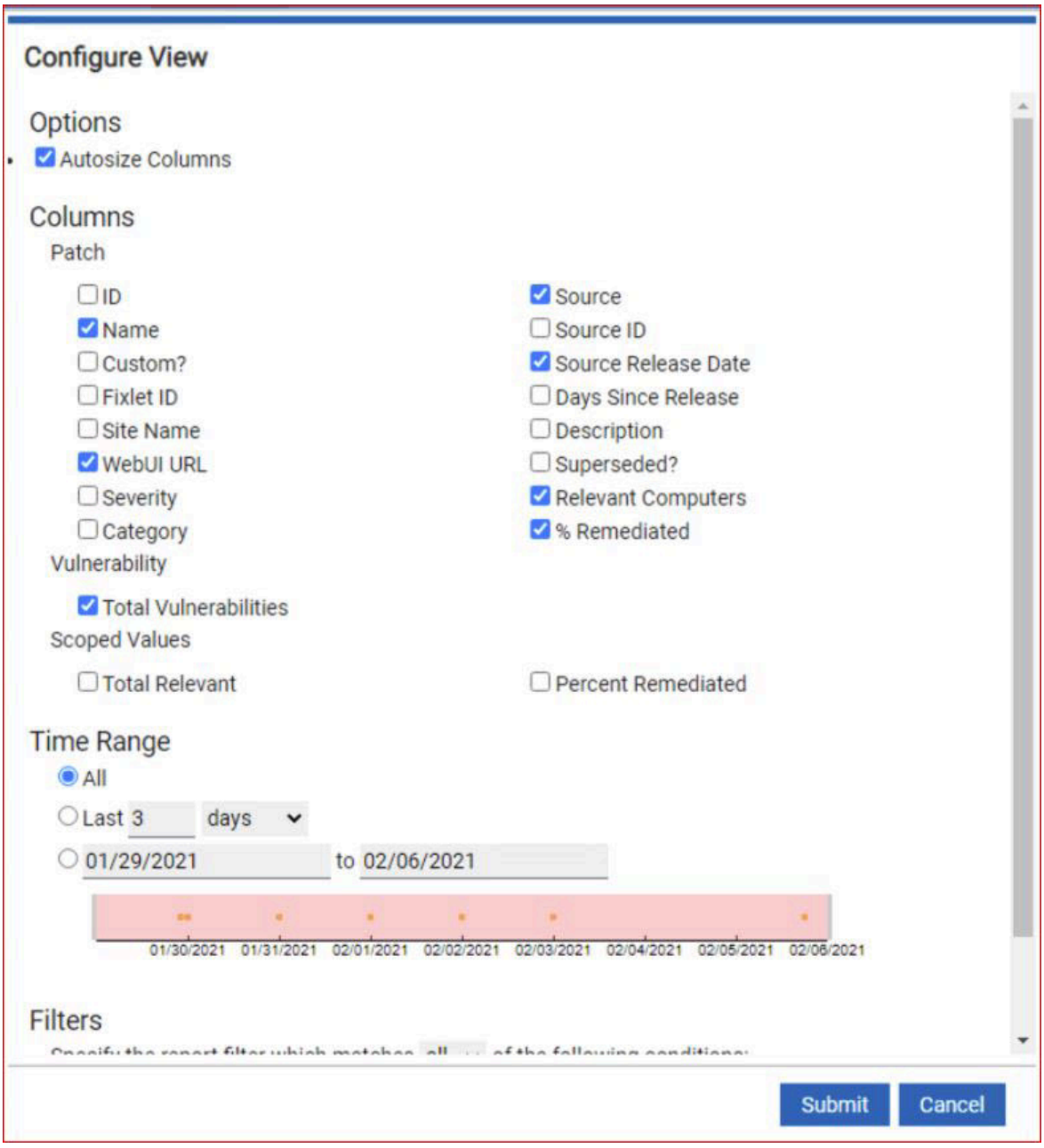
Note: When redirected to WebUI, the WebUI login page may be displayed if the user is not authenticated in the browser. On successful authentication, destination Patch page is displayed.

Enabling WebUI URL column in a Patch grid report

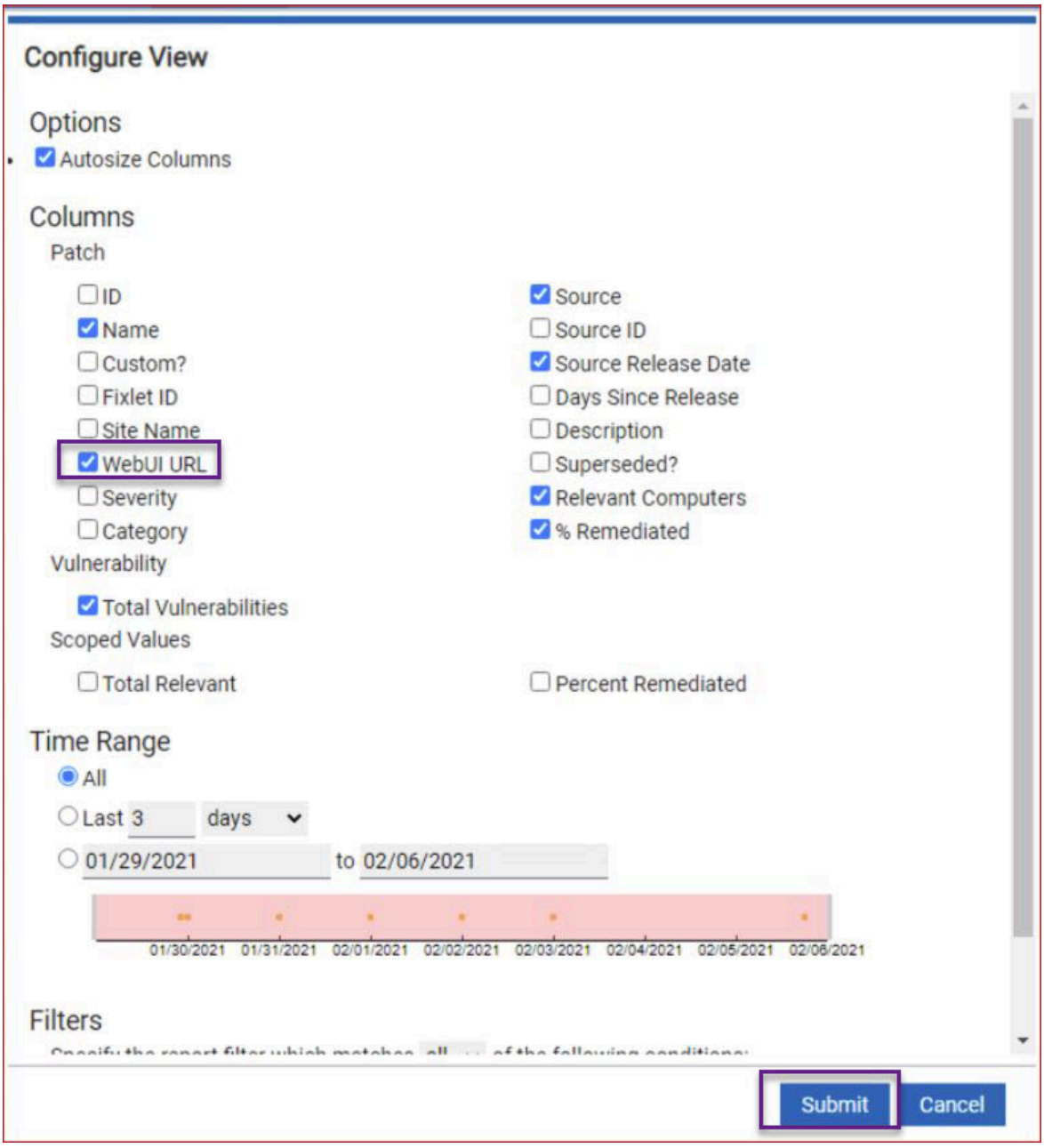
1. Navigate to **Reports > Patches** or navigate to **Reports > Computers > Computer name > Subscribed Patches**



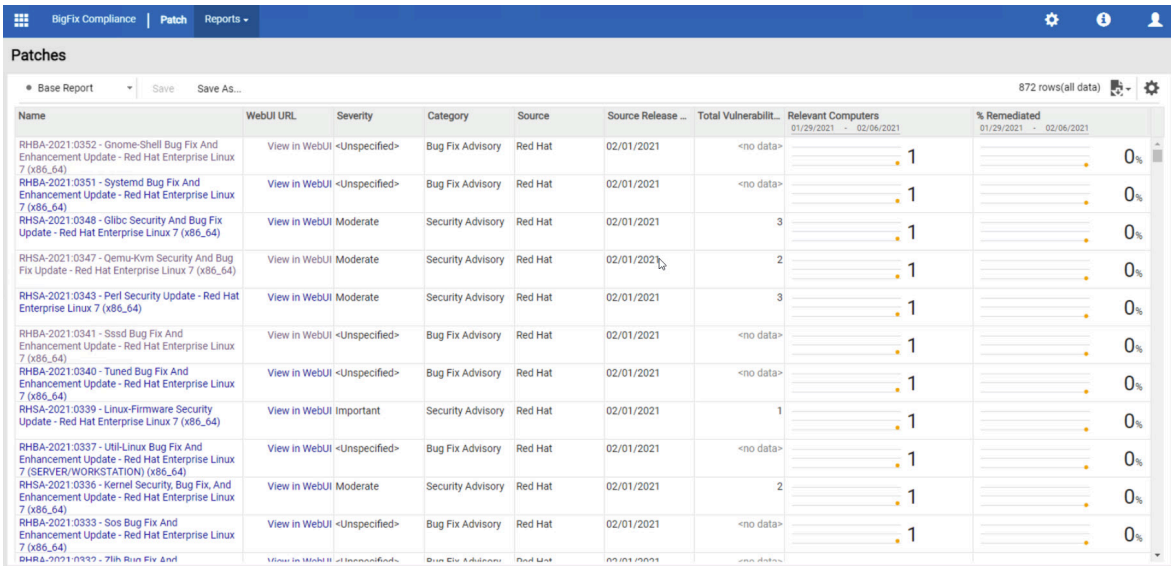
2. Click **Configure View**.



3. Select the **WebUI URL** checkbox in the Columns group and click **Submit**.



4. Click **View in WebUI** in the grid report.



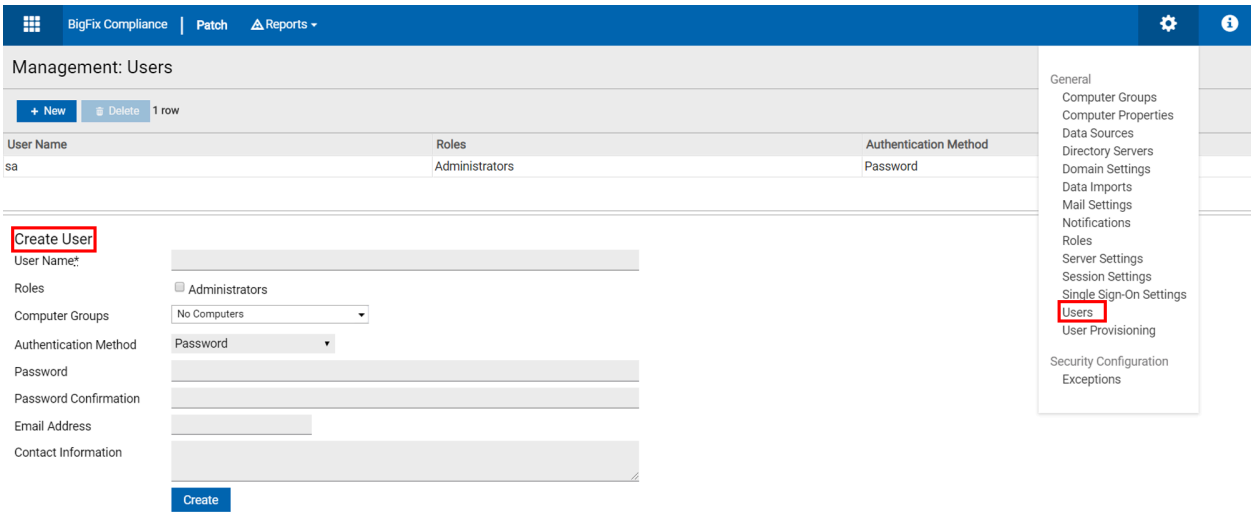
Note:

- When the WebUI URL link is not available, you see "N/A" for all patches under custom patch sites (specified in **Management > Patch Sites**).

- Only one WebUI URL can be specified at this time even with deployment having multiple datasources (links to the patches from rest of the datasources are invalid).

Users

Use the Users section to create and edit users, assign roles, and assign a set of computer groups to which the user has access and authentication method. Administrators can edit user passwords, email addresses, and contact information.



Important: Administrators need to select relevant roles for the user. User will be able to view/edit the reports and management menu based on the selected role. A user without any roles can only view reports under Security Configuration and has no access to the management menu (see Roles *(on page 27)* section).

Note: Administrators must assign appropriate Computer Group(s) to a user. A user can only view reports on the computers assigned to the user. A user without a computer assigned will not be able to login.

Authentication method can be chosen from one of the following:

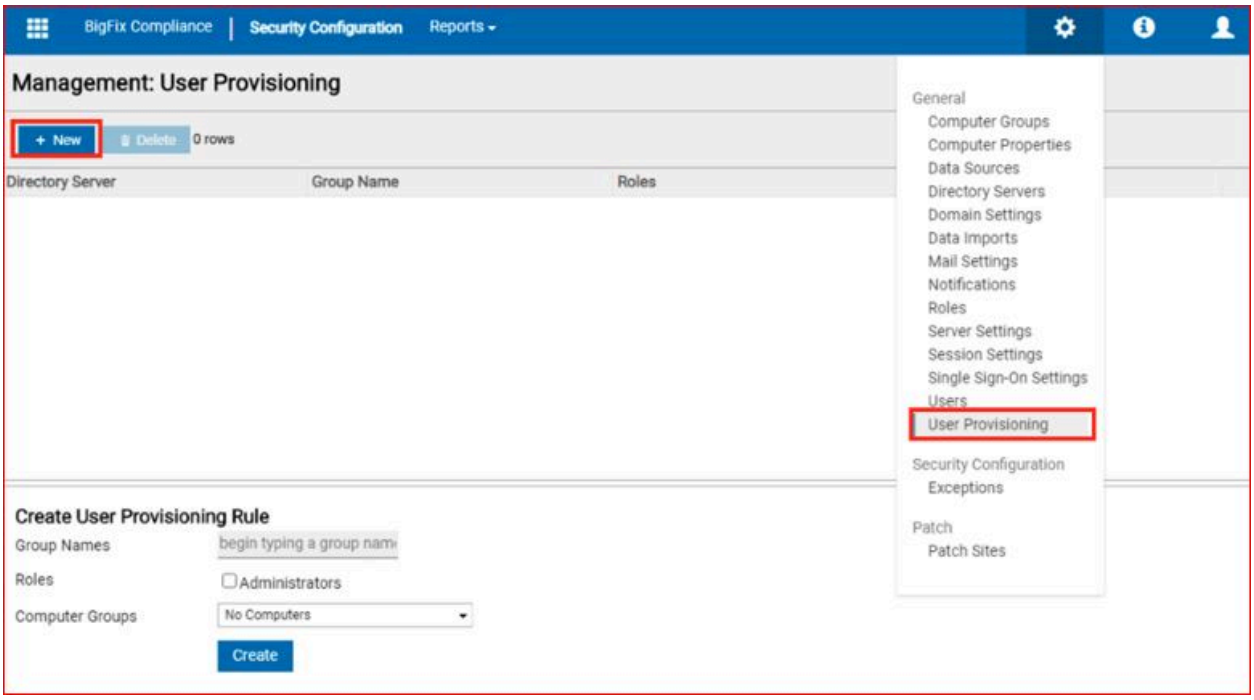
- Password
- WebReport (See Integrating users with Web Reports)
- Directory Server (See Directory Server)
- Single Sign-On (See Single Sign-On)

All users need to be assigned to a computer group in order to log in to BigFix Compliance Analytics. Logged-in users can see compliance data based on their associated computer group.

You can set the Users account to configure multiple computer groups. To configure multiple groups, see Configuring multiple computer groups *(on page 19)*.

User Provisioning

Use the User Provisioning feature to automatically create a user with Directory Server authentication upon first-time login based on a rule that specifies which user group from Directory Server (LDAP group) the rule applies to, Roles, and Computer Group(s) to avoid creating users individually. However, this feature works only for the members of thea specified LDAP group and not applied to the members of the subgroups or the nested groups.



Integrating users with Web Reports

You can use the Web Reports component to allow your local Web Reports users to access BigFix Compliance.

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.

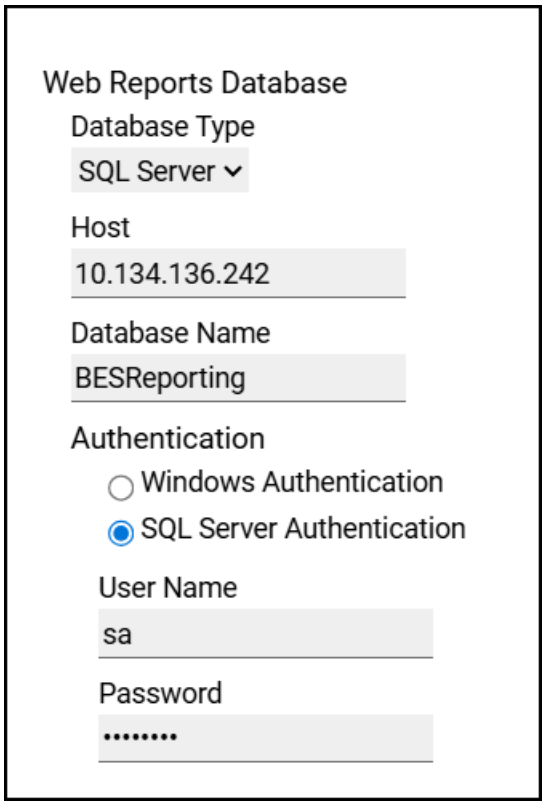
You can use the same credentials for the user as specified in Web Reports. To achieve this, create an entry for the user in BigFix Compliance using the username as in Web Reports and choose Web Reports as the authentication method. Whenever you change the credentials in Web Reports, they will also be valid in BigFix Compliance with no additional configuration.

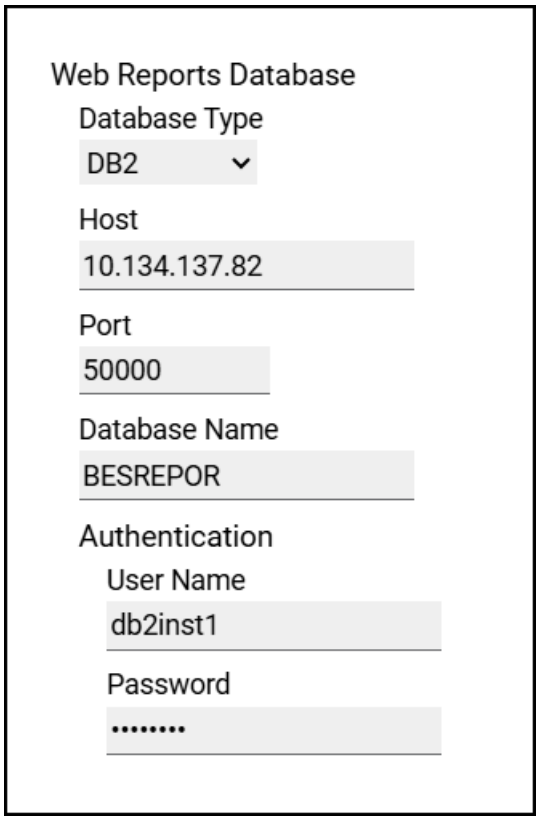
The role of the user is managed in BigFix Compliance.

Only local Web Reports users are supported.

1. Connect your BigFix Compliance server to the Web Reports database.
    a. Log in to BigFix Compliance.
    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.





2. Each of your Web Reports users must be manually added to BigFix Compliance. After you complete this action, the users will be linked with their equivalents in Web Reports:

   a. In BigFix Compliance, 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**.

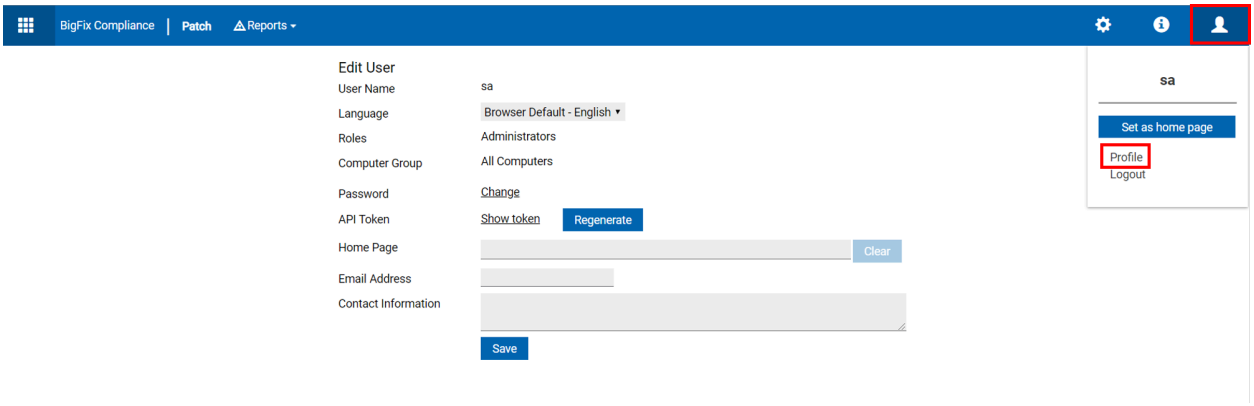
   f. Click **Create**.

   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 Compliance 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 Compliance.

Account Preferences

Use the Account Preferences section to change passwords, contact information, or API tokens. Click the **Account** drop-down menu from the top of the window. Select **Profile** to perform the settings.



Chapter 4. Security Configuration Reporting

For all the security and configuration checklists deployed across the entire environment using BigFix Compliance, BigFix Compliance Analytics provides various reports to show both current status and historic the trend for an individual endpoint, individual checklist, or even individual check. An aggregated compliance posture for the entire deployment is also provided to report the overall status and progress toward the desired security and configuration policies.

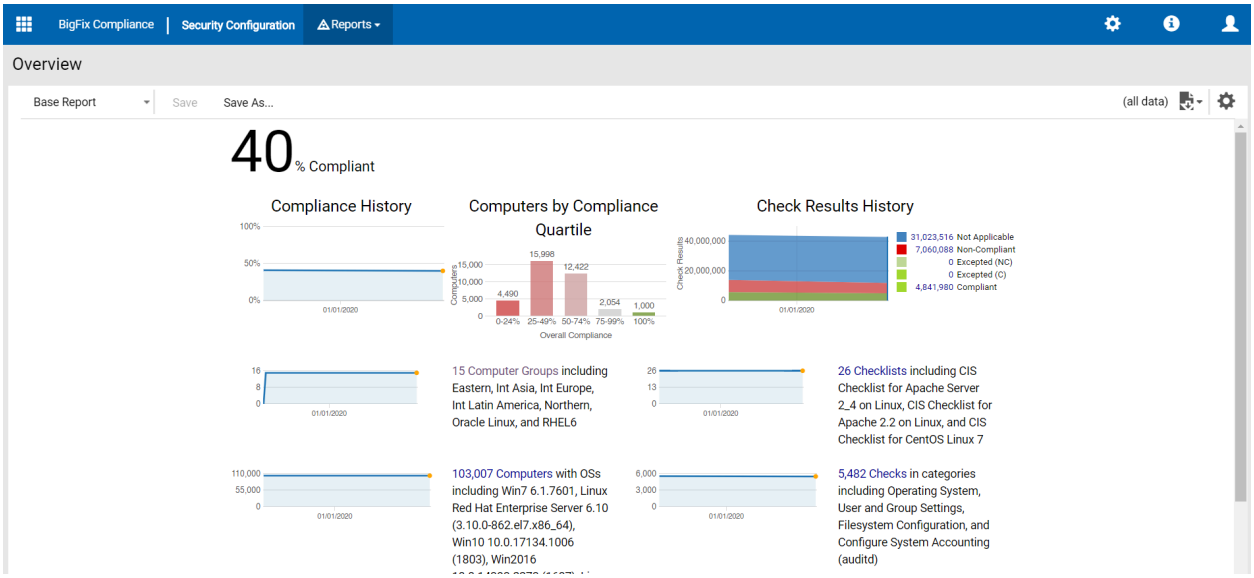
BigFix Compliance Analytics display graphical and tabular views of Security Configuration domain and different aspects of your deployment compliance status.

The following reports are available in Security Configuration domain:

- Policies
- Checklists
- Checks
- Computers
- Computer Groups
- Check Results
- Exception Results

Overview Report

The following graphical reports are available from the primary Overview window of the Security Configuration domain dashboard:



Deployment Overview

Shows deployment information (such as quantity of computers and quantity of checks) and overall, historical aggregate compliance for all checks on all computers visible to logged-in users.

Checklist Overview

Shows information about a single checklist (such as quantity of checks in the checklist) and overall, historical aggregate compliance for the checklist as applied to all computers visible to logged in users.

Computer Overview

Shows information about a single computer (such as number of checks evaluated on the computer) and overall, historical aggregate compliance of all checks evaluated by the computer.

Computer Group Overview

Shows information about a computer group (such as number of children/sub-groups and number of member computers) and overall, historical aggregate compliance of the group.

Check Overview

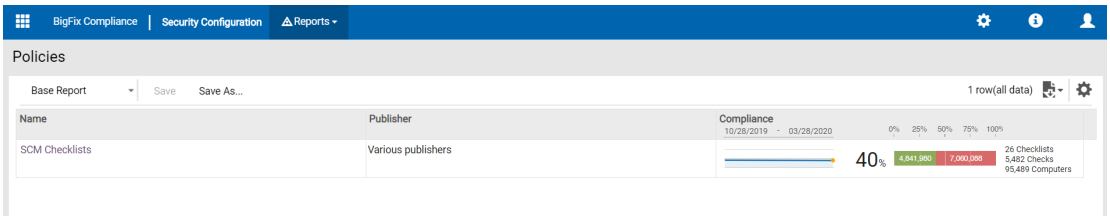
Shows information about a single check (such as check source and check description) and overall, historical aggregate compliance of the check as evaluated by all computers visible to logged in users.

Policies Report

Select Security Configuration domain using **Domains** and click **Reports** to find the following report:

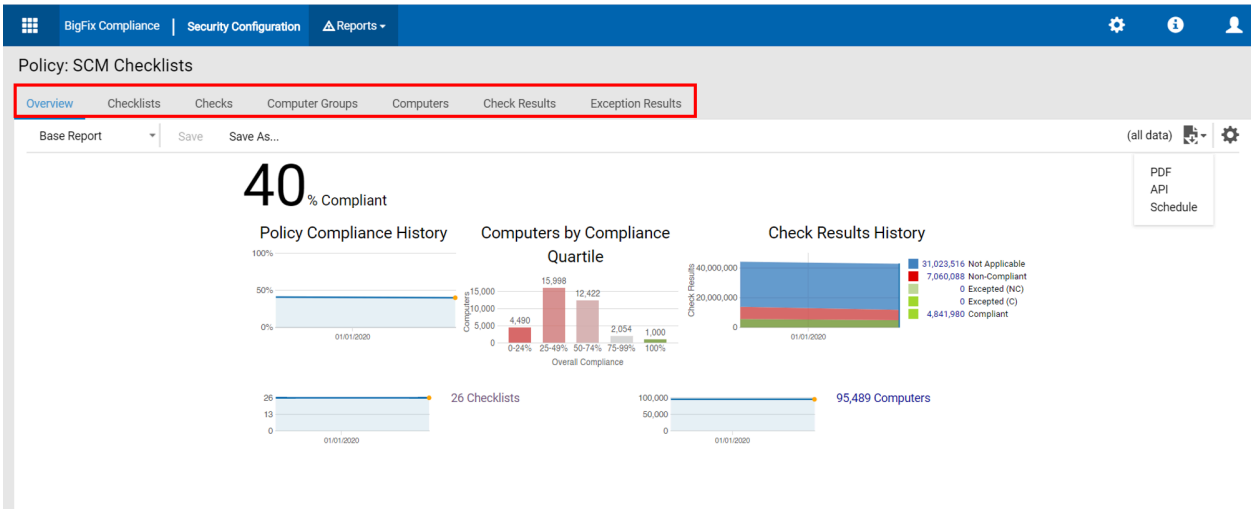
Policies

Shows the list view of deployed policies, publisher details, description of the policies, and the overall, historical aggregate of the compliance results.



Policy Overview Report

To access the Policy Overview report, click any policy that appears in the list view.



Policy Overview report

The Policy Overview report presents a graphical representation of the compliance history, computers by compliance quartile, and check results history with an overall compliance percentage shown in the top left corner of the console.

Policy Sub-Reports

To access the Policy sub-reports, click the Reports dropdown menu at the top of the console and select Policies. Click any policy that appears on the list view to open the sub-reports.

The sub-reports of the Policy report are Checklists, Checks, Computer Groups, Computers, Check Results and Exception Results.

Checklists

The Checklists sub-report contains a list of checklists and historical aggregate of the compliance results.

Checks

The Checks sub-report contains list of checks, desired values and historical aggregate of the compliance results.

Computer Groups

The Computer Groups sub-report contains list of computer groups and historical aggregate of the compliance results.

Computers

The Computers sub-report contains list of computers, last seen details and historical aggregate of the compliance results.

Check Results

The Check Results sub-report contains list of checklist, checks, computers, last seen details, and historical aggregate of the compliance results.

Exception Results

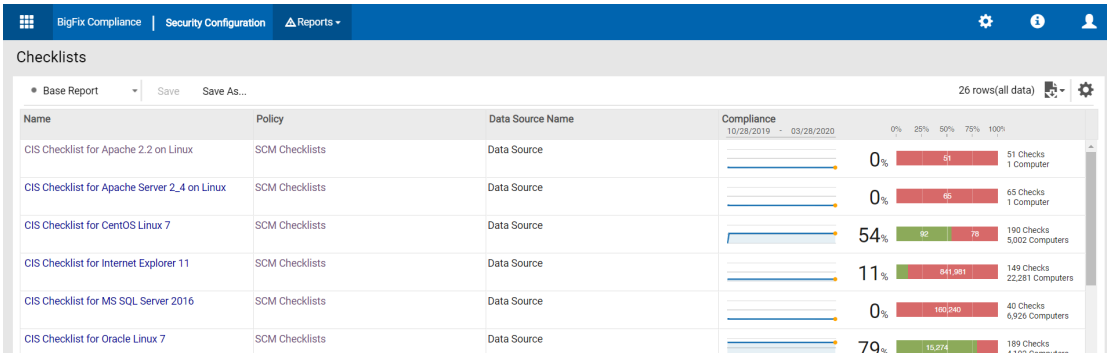
The Exception Results sub-report contains list of checklist, check name, computer name, last seen details, expiration date, reason and state.

Checklists Report

Select Security Configuration domain using **Domains** and click **Reports** to find the following report:

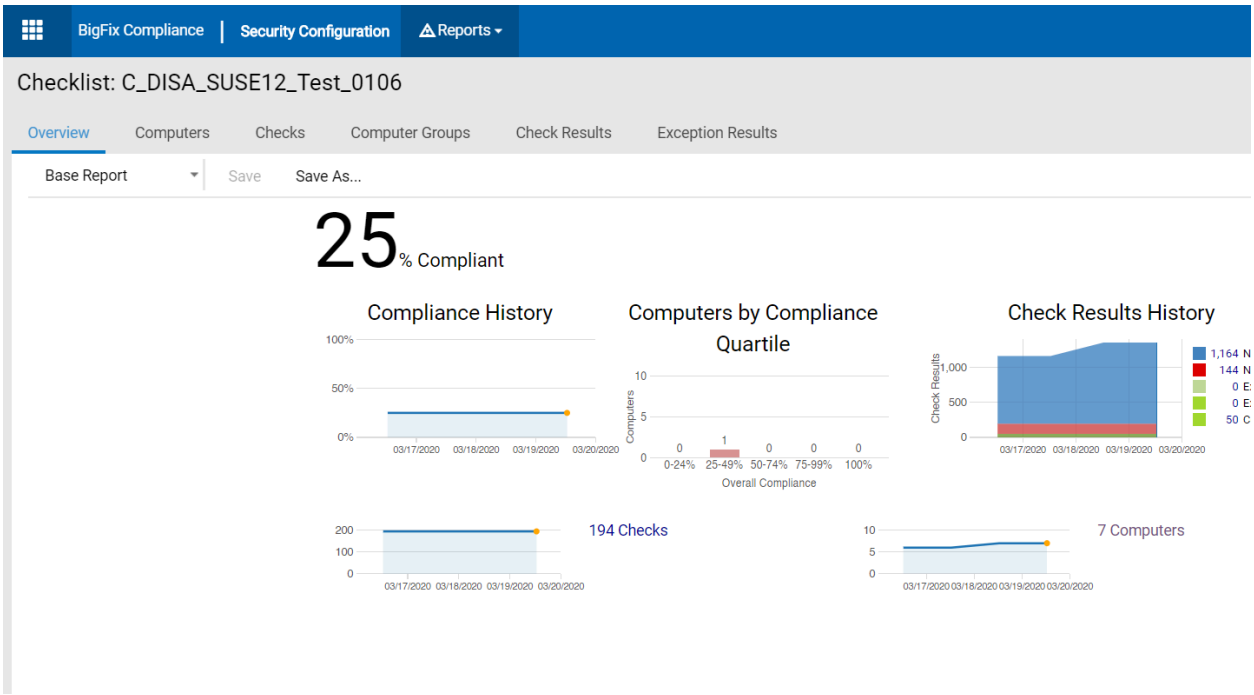
Checklists

Shows the list view of checklists, policy, data source name and the overall, historical aggregate of the compliance results.



Checklist Overview Report

To access the Checklists Overview report, click any checklist that appears in the list view.



Checklist Overview report

The Checklist Overview report represents a graphic representation of compliance history, computers by compliance quartile, and check results history with an overall compliance percentage shown in the top left corner of the console.

Checklist Sub-Reports

To access the Checklists sub-reports, click the Reports dropdown menu at the top of the console and select Checklists. Click any checklist that appears on the list to open the sub-reports.

The sub-reports of the Checklist report are Computers, Checks, Computer Groups, Check Results and Exception Results.

Computers

The Computers sub-report contains list of computers, last seen details and historical aggregate of the compliance results.

Checks

The Checks sub-report contains list of checks, desired values and historical aggregate of the compliance results.

Computer Groups

The Computer Groups sub-report contains list of computer groups and historical aggregate of the compliance results.

Check Results

The Check Results sub-report contains list of checks, computers, last seen details, and historical aggregate of the compliance results.

Checks Report

Select Security Configuration domain using **Domains** and click **Reports** to find the following report:

Checks

Shows the detailed view of various checks, their descriptions, desired values, and the overall, historical aggregate of the compliance results.

Columns

Name:

This section lists all the checks by their names. Each check represents a specific criterion or setting that must undergo validation to ensure compliance with security standards.

Description:

This part provides a detailed explanation of what each check entails. It includes the specific details of what the check monitors or evaluates within the system.

Desired Values:

1. Each check has a 'desired value' which represents the expected or compliant state for that check.
2. The desired value can be of different types such as integer, string, or none.
3. It is important to note that not all checks have a designated desired value. If a check does not have a desired value, it implies that it is not modifiable, and its value will be shown as <none> or none.
4. Checks with desired values can be configured to meet different requirements.

This part provides a detailed explanation of what each check entails. It includes the specific details of what the check monitors or evaluates within the system.

Compliance Results:

This shows the historical cumulative data depicting how the systems have adhered to each check over a period of time.

Note: The values from both the BigFix Console and CIS Benchmarks, including their desired states, can be retrieved and, if configurable, modified through the BigFix console.

Note: CIS benchmark documents are accessible in the console via fixlet descriptions of each check.

Note: The desired value is customer-defined, while the default value aligns with CIS recommendations.

Figure 2. Sample of Check Report from Security Configuration Domain

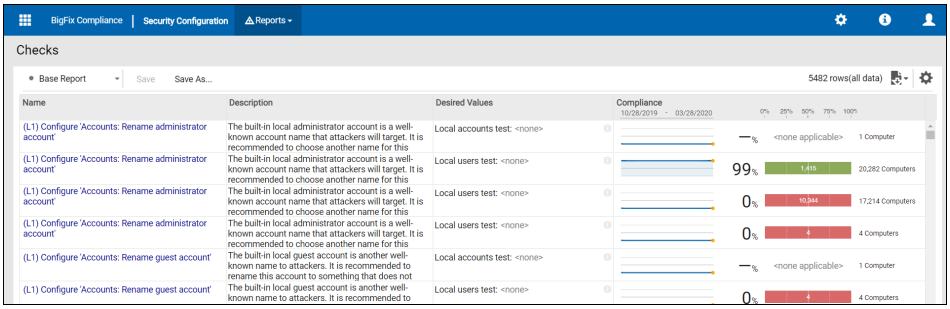


Figure 3. Check with customized Desired Value

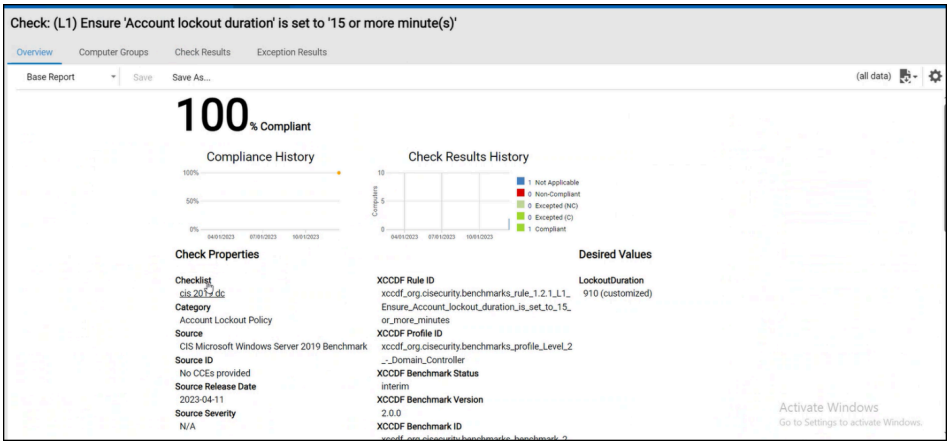
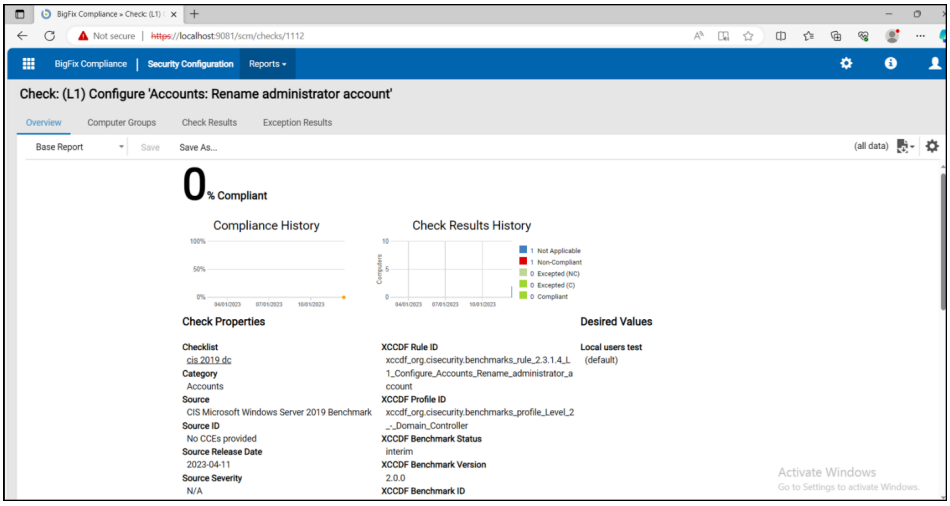
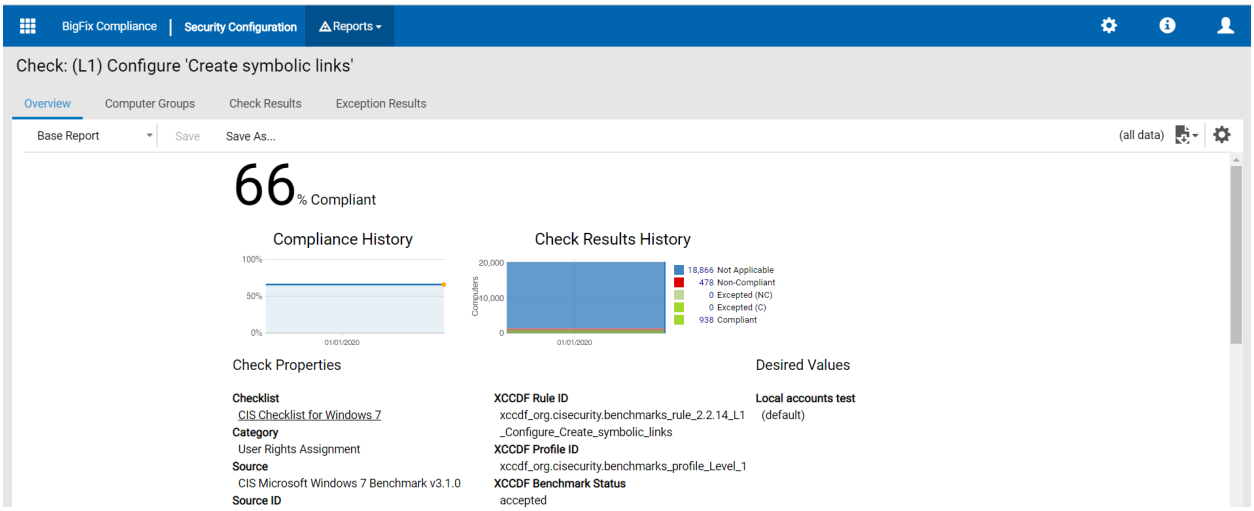


Figure 4. Check with no default Desired Value



Check Overview Report

To access the Check Overview report, click any check that appears in the list view.



Check Overview report

The Check Overview report represents a graphic representation of compliance history, check properties, and check results history with an overall compliance percentage shown in the top left corner of the console.

Check Sub-Reports

To access the Checks sub-reports, click the Reports dropdown menu at the top of the console and select Checks. Click any check that appears on the list to open the sub-reports.

The sub-reports of the Check report are Computer Groups, Check Results and Exception Results.

Computer Groups

The Computer Groups sub-report contains list of computer groups and historical aggregate of the compliance results.

Check Results

The Check Results sub-report contains list of checks, computers, last seen details, and historical aggregate of the compliance results.

Exception Results

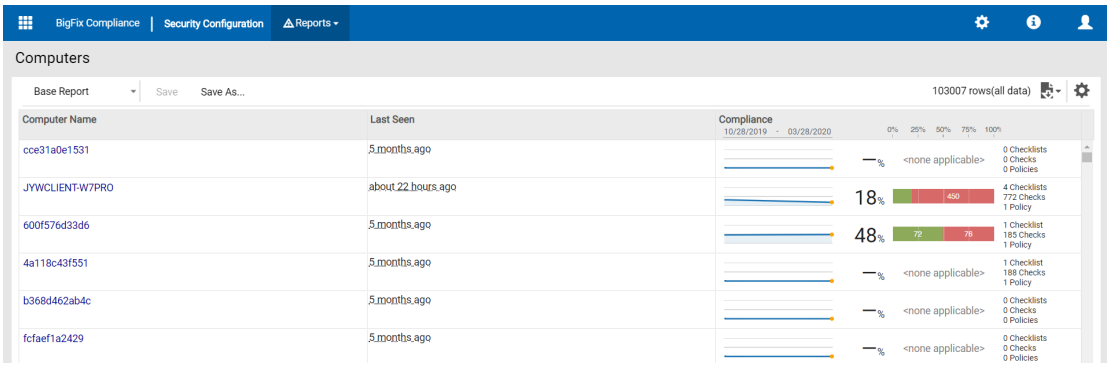
The Exception Results sub-report contains list of computers, last seen details, expiration date, reason and state.

Computers Report

Select Security Configuration domain using **Domains** and click **Reports** to find the following report:

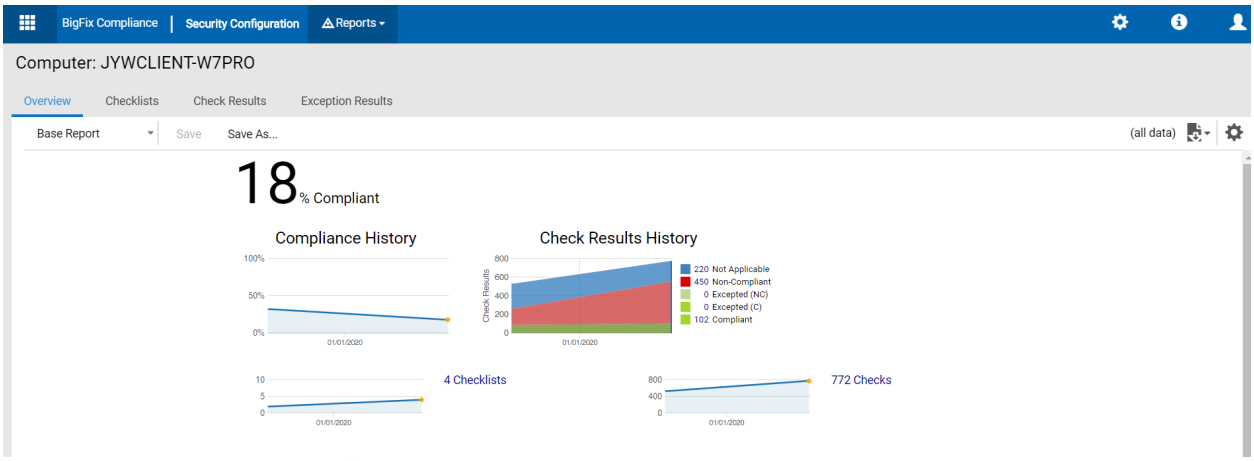
Computers

Shows the list view of computers, last seen and the overall, historical aggregate of the compliance results.



Computer Overview Report

To access the Computer Overview report, click any computer that appears in the list view.



Computer Overview report

The Computer Overview report represents a graphic representation of compliance history, computer properties, and check results history with an overall compliance percentage shown in the top left corner of the console.

Computer Sub-Reports

To access the Computer sub-reports, click the Reports dropdown menu at the top of the console and select Computers. Click any computer that appears on the list to open the sub-reports.

The sub-reports of the Computer report are Checklists, Check Results and Exception Results.

Checklists

The Checklists sub-report contains a list of checklists and historical aggregate of the compliance results.

Check Results

The Check Results sub-report contains list of checklist, checks, and historical aggregate of the compliance results.

Exception Results

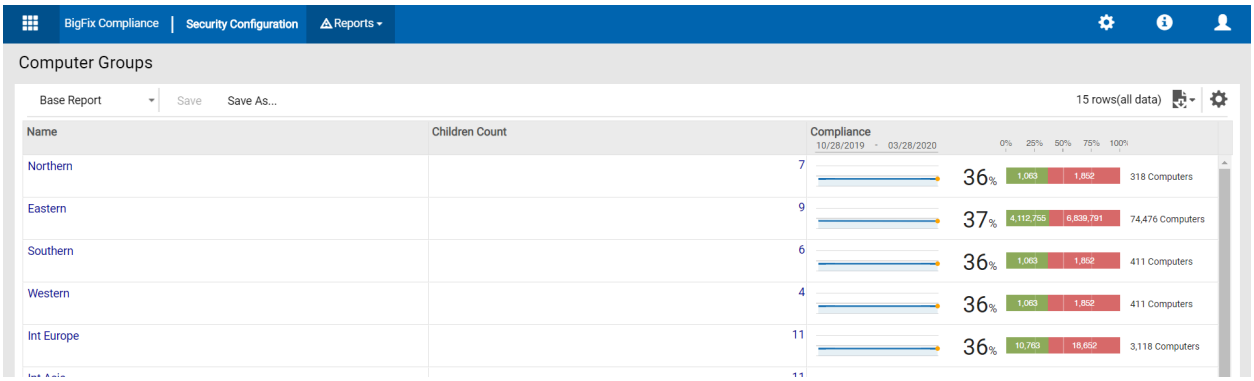
The Exception Results sub-report contains list of checklist, checks, expiration date, reason and state.

Computer Groups Report

Select Security Configuration domain using **Domains** and click **Reports** to find the following report:

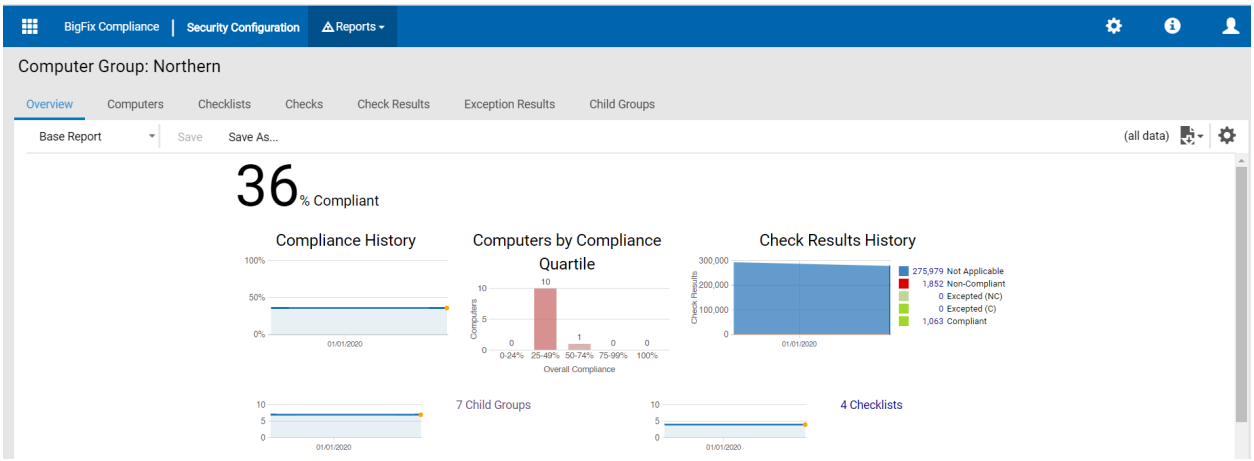
Computer Groups

Shows the list view of computer groups, sub-groups (children) and the overall, historical aggregate of the compliance results.



Computer Group Overview Report

To access the Computer Groups Overview report, click any computer group that appears in the list view.



Computer Group Overview report

The Computer Group Overview report represents a graphic representation of compliance history, computers by compliance quartile, child groups, checklists and check results history with an overall compliance percentage shown in the top left corner of the console.

Computer Group Sub-Reports

To access the Computer Groups sub-reports, click the Reports dropdown menu at the top of the console and select Computer Groups. Click any computer group that appears on the list to open the sub-reports.

The sub-reports of the Computer Group report are Computers, Checklists, Checks, Check Results, Exception Results and Child Groups.

Computers

The Computers sub-report contains list of computers, last seen details and historical aggregate of the compliance results.

Checklists

The Checklists sub-report contains a list of checklists and historical aggregate of the compliance results.

Checks

The Checks sub-report contains list of checks, desired values and historical aggregate of the compliance results.

Check Results

The Check Results sub-report contains list of checklist, checks, computers, last seen details, and historical aggregate of the compliance results.

Exception Results

The Exception Results sub-report contains list of checklist, check name, computer name, last seen details, expiration date, reason and state.

Child Groups

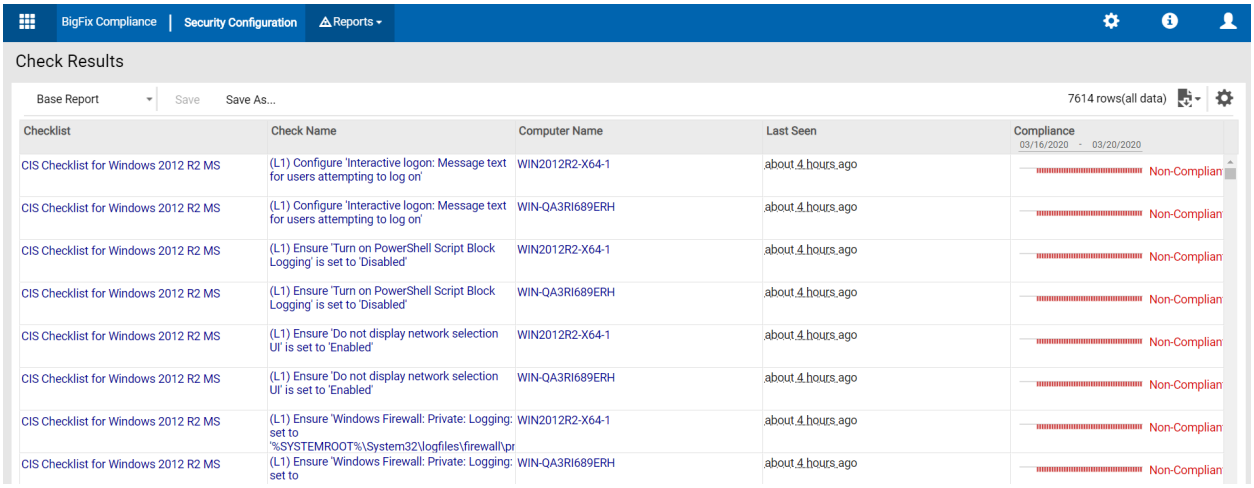
The Child Groups sub-report contains list of computer group, children count, and historical aggregate of the compliance results.

Check Results Report

Select Security Configuration domain using **Domains** and click **Reports** to find the following report:

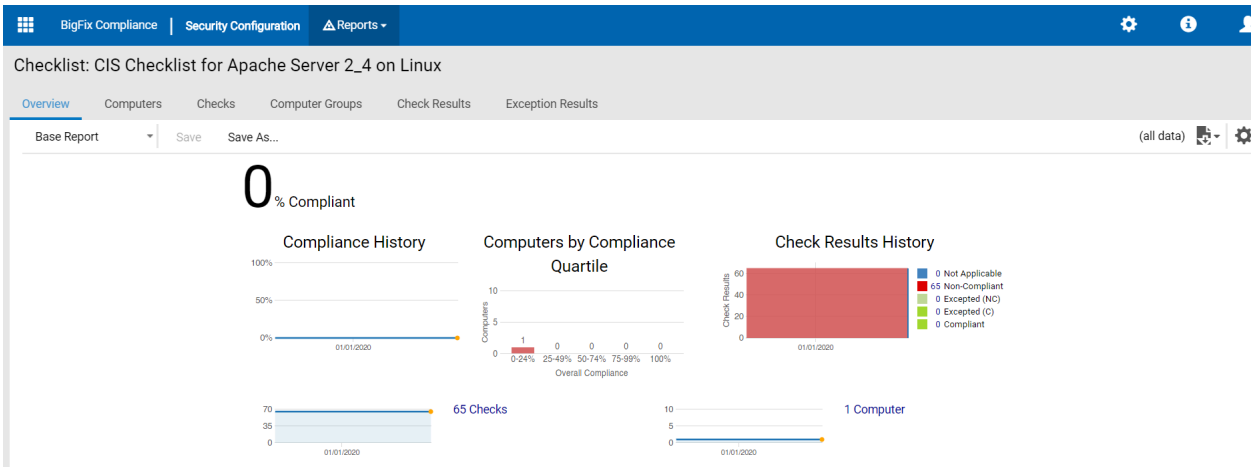
Check Results

Shows the list view of checklist, check name, computer name, last seen, and the overall, historical aggregate of the compliance results.



Check Results Overview Report

To access the Check Results Overview report, click any checklist that appears in the list view..



Checklist Overview report

The Checklist Overview report represents a graphic representation of compliance history, computers by compliance quartile, checklists, computer and check results history with an overall compliance percentage shown in the top left corner of the console.

Check Results Sub-Report

To access the Check Results sub-reports, click the Reports dropdown menu at the top of the console and select Check Results. Click any checklist that appears on the list to open the sub-reports..

The sub-reports of the Check Results report are Computers, Checks, Computer Groups, Check Results and Exception Results.

Computers

The Computers sub-report contains list of computers, last seen details and historical aggregate of the compliance results.

Checks

The Checks sub-report contains list of checks, desired values and historical aggregate of the compliance results.

Computer Groups

The Computer Groups sub-report contains list of computer groups and historical aggregate of the compliance results.

Check Results

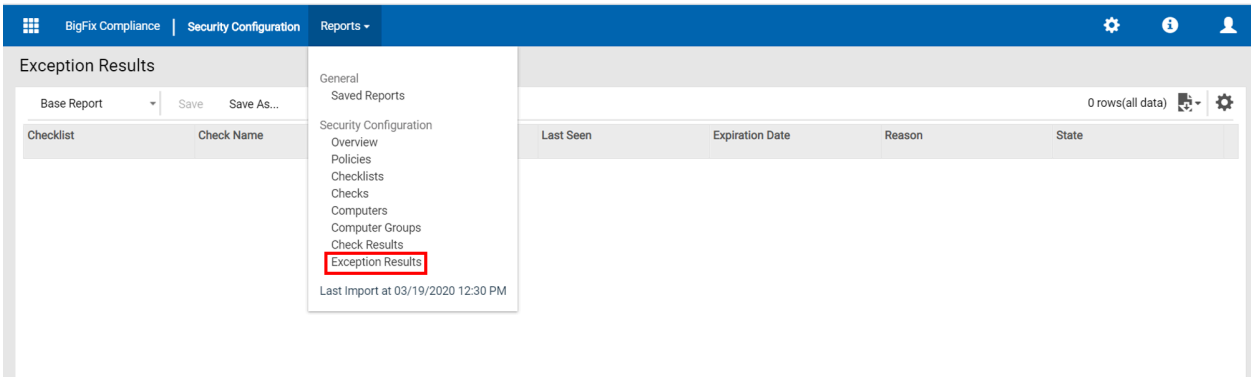
The Check Results sub-report contains list of checklist, checks, computers, last seen details, and historical aggregate of the compliance results.

Exception Results

The Exception Results sub-report contains list of checklist, check name, computer name, last seen details, expiration date, reason and state.

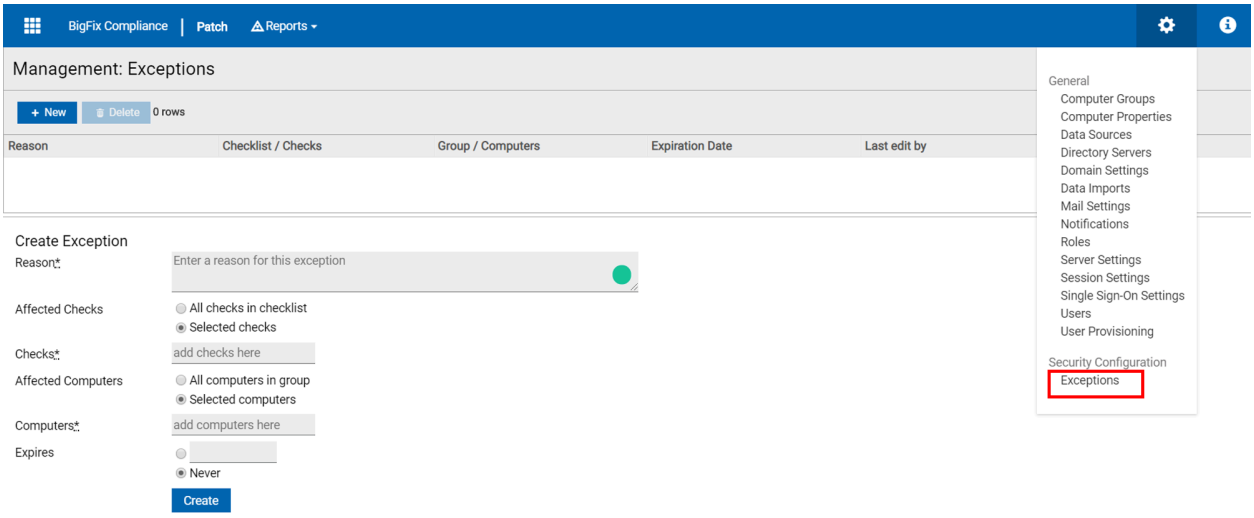
Exception Results report

The Exception Reults report shows the list view of checklist, check name, last seen, expiration date reason, and state.



Exceptions

You can use the Exceptions menu to create and edit exceptions for checks, computers, computer groups, and checklists with or without an expiration date. You can also view a list of existing and active exceptions. To edit an exception, click an exception name in the list, and the Edit Exception and Exception History menus display.



Chapter 5. Patch Domain

Learn more about patch domain that share a common patching context. The concept is intergral to organize and manage the patching activities across the diverse environments.

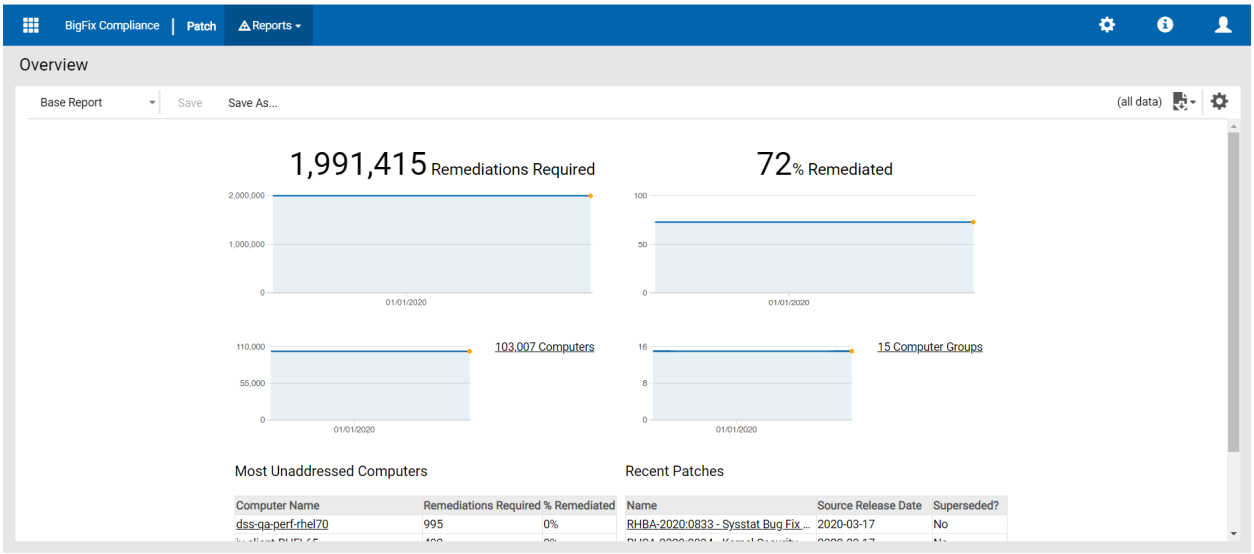
Patch report extends the analytics and reporting capabilities of BigFix Compliance from security configuration to security patching. This feature allows you to gain a comprehensive and historical view of patching activities across the entire deployment to assess the overall patching posture. It enables more efficient prioritization of vulnerability remediation by identifying the critical and high severity patches that have to be applied. It also tracks when a new patch is released by the vendors and applies to each endpoint to help you demonstrate compliance with regulations or policies and pass the audits

BigFix Patch domain report is a component of BigFix Compliance Analytics. The patch domain report has a different category of reports like Overview, Patches, Computers, Computer Groups, and Unsupported Computers. The generated reports can be filtered, sorted, grouped, customized, or exported by using various tools.

Prerequisites: You have to enable patch reporting to import the patch data. To enable the patch reports, see Domain Settings *(on page 21)*.

Overview Report

The following graphical reports are available from the primary Overview window of the Patch domain dashboard:



Deployment Overview

Displays the current percentage of remediation, the historical aggregate of remediation that are still required, and the applied remediation.

Computer Overview

Displays the current number of computers, the historical aggregate of the computers that are included in the report, and a summary of their operating system platforms.

Computer Groups Overview

Displays the current number of computer groups, the historical aggregate of computer groups that are included in the report, and a summary of the computer groups.

Most Unaddressed Computers Overview

Displays the list of computers that require the most number of patches.

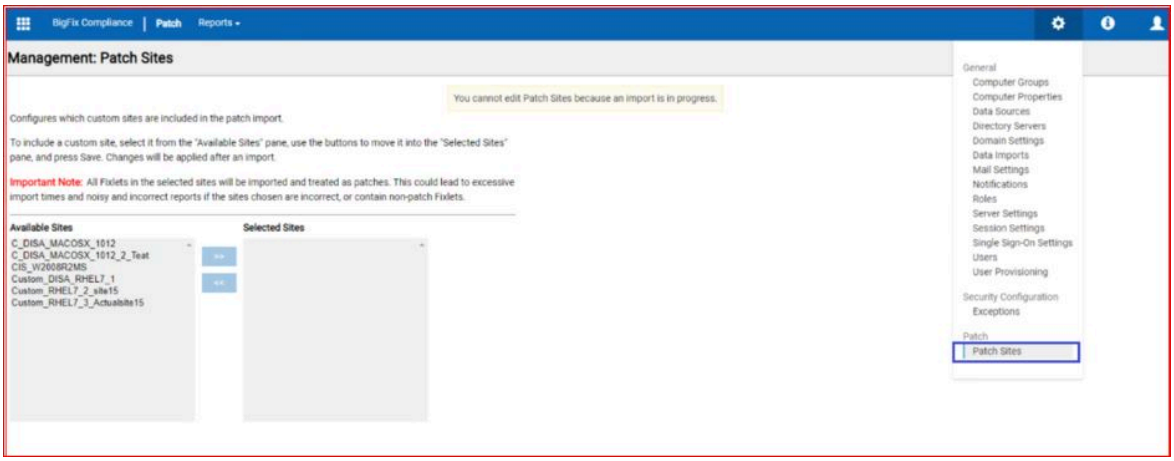
Recent Patch Overview

Displays the list of the most recently available patches

Custom Patch Sites

Out of the box, Patch and Vulnerability Reporting uses data from the supported external patch sites. Starting with version 2.0.1, user with the "Edit Patch Sites" permission can configure Compliance to include specified custom sites.

1. Click the gear icon in the management page and click **Patch Sites**.



2. Select and move sites from the **Available Sites** list into the **Selected Sites** list.
3. After confirming the changes, click **Save**. Subsequent imports include the selected sites in reports.
   Custom site patches are reported as normal with the external site patches. However, the important distinction is that the custom site patches cannot be superseded. Any patch that originates from a custom site is treated as non-superseded. This means that the vulnerabilities associated with the patch through its superseded patches cannot be included in the related vulnerabilities. If you want to associate a patch with additional vulnerabilities, the patch must be amended to include the additional CVEs in the CVENames or MIME_x-fixlet-cve fields.

   Ensure that the patch has working relevance. If the patch was copied from a Windows site, any relevance that disables evaluation including *false* relevance and relevance that checks for the **EnableSuperseedEval** client setting must be removed.

EnableSupersededEval

In normal conditions, superseded patch fixlets have their relevance always evaluated to `not relevant`. This freezes the ETL logic for `PR::PatchResult` to the previous patch results or to return unknown status when a patch fixlet becomes superseded. In a client setting when `BESClient_WindowsOS_EnableSupersededEval` is set to 1, the superseded patch fixlet do not auto evaluate to `not relevant`.

If patch_a that addresses vuln_x and is superseded by patch_b which also addresses vuln_y.

Unpatched computer with setting enabled.

Scenario A: When the computer applies patch_a

patch_a result in console: not relevant

patch_a result in sca: not applied

patch_b result in console: relevant

patch_b result in sca: not applied

vuln_x result in sca: vulnerable

vuln_y result in sca: vulnerable

By applying the superseded fixlet, from both patch results view and vulnerability results view, Compliance becomes incorrect.

Scenario B: When the computer applies patch_b

patch_a result in console: not relevant

patch_a result in sca: not applied

patch_b result in console: not relevant

patch_b result in sca: applied

vuln_x result in sca: not vulnerable

vuln_y result in sca: not vulnerable

View enrolled Android Devices in SCA

Learn how to view and filter the Android devices that are enrolled through BigFix MDM in Security and Compliance Analytics (SCA). This guide explains where the Android devices appear in the SCA reports and provides step-by-step instructions for filtering patch data specific to the Android devices.

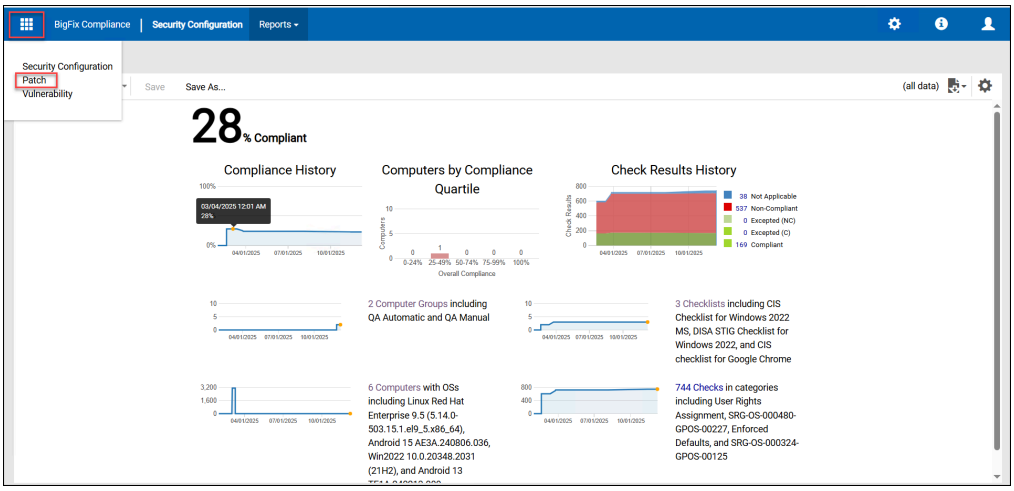
Before you can view or filter the Android devices in SCA, you must complete the installation and configuration process of the Android MDM. Refer to the following steps for detailed installation and configuration of the Android MDM:

- Installing MDM services
- Install BigFix MDM Service for Android.

This task explains how to view Android devices and their associated patches within Security and Compliance Analytics (SCA).

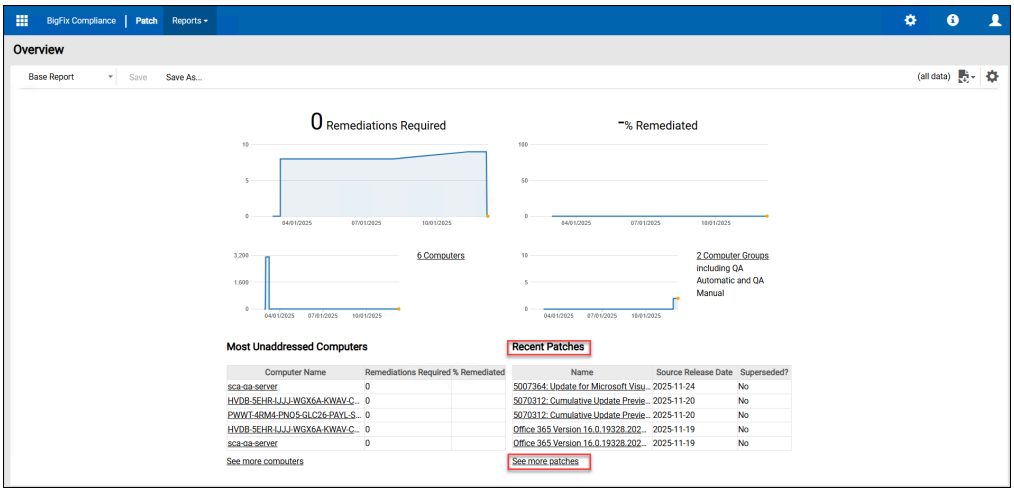
1. Log in to the **SCA application** and navigate to the **Computers** section to confirm the Android devices are listed.

Figure 5. Patch View



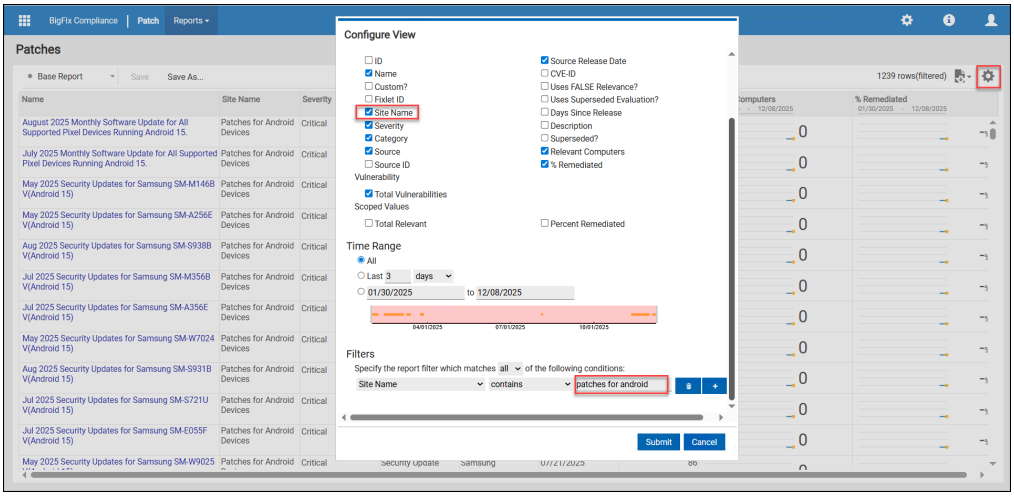
2. Navigate to the **Patch** section and click **See More Patches** to display all available patches.

Figure 6. See More Patches



3. In the **Patch** view, use the **Site Name** filter and set the condition to **Patches for Android** to display only the patches specific to Android devices.

Figure 7. Patches for Android



The system displays all available patches that are relevant to enrolled Android devices, ready for compliance reporting.

ESXi Device Enrollment

Learn how to add VMware ESXi hosts to BigFix Compliance using vSphere and plugin-based discovery.

As per platform requirements, complete the following setup from the BES Support site:

- Install the **BigFix Plugin Portal**. This acts as the communication and execution bridge between BigFix and VMware vSphere/ESXi. The communication flow is as follows: **BigFix Console > BigFix Server > Plugin Portal > vCenter / ESXi Host (VMware APIs)**. For more information, refer to The Plugin Portal.
- Install the **BigFix Plugin for VMware Discovery**. This reports ESXi devices to the BigFix root server.

  Important: The user account used to install the VMware Plugin must have Read-only access at the vCenter level to retrieve information about ESXi hosts in the data center.

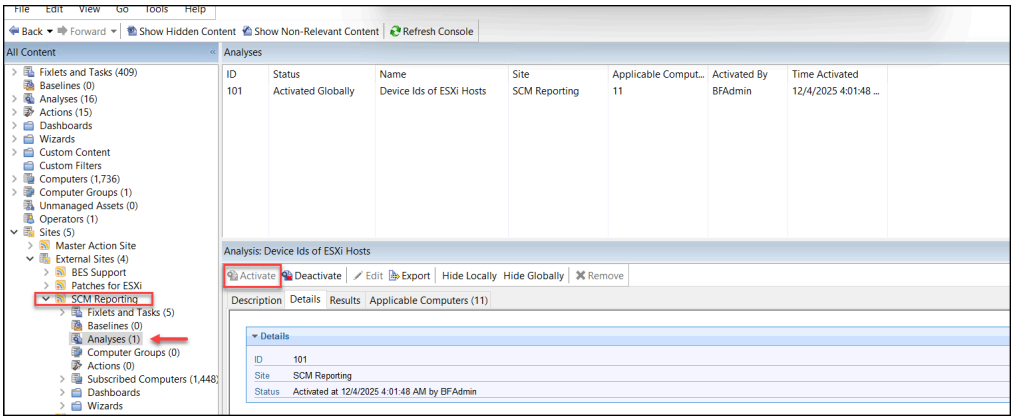
  For installation details, refer to Installing the VMware plug-in.
- Run the **Fixlet 5629 - VMware Plugin: Manage Hosts Discovery** and provide the **Action Parameter 1** to enable reporting of ESXi hosts. For details, refer to VMware Asset Discovery Plugin Inspectors.

This task describes how to import and view VMware ESXi hosts and their associated patches within Security and Compliance Analytics (SCA).

Import and Enable Analyses

1. Navigate to the SCM Reporting Site. Open the **BigFix Console > Sites > External Sites > SCM Reporting**.
2. Within the **SCM Reporting site**, locate the **Analyses** section and find **Device IDs of ESXi Hosts**. Right-click the **Analyses** and select **Activate**.

Figure 8. Enable Analyses

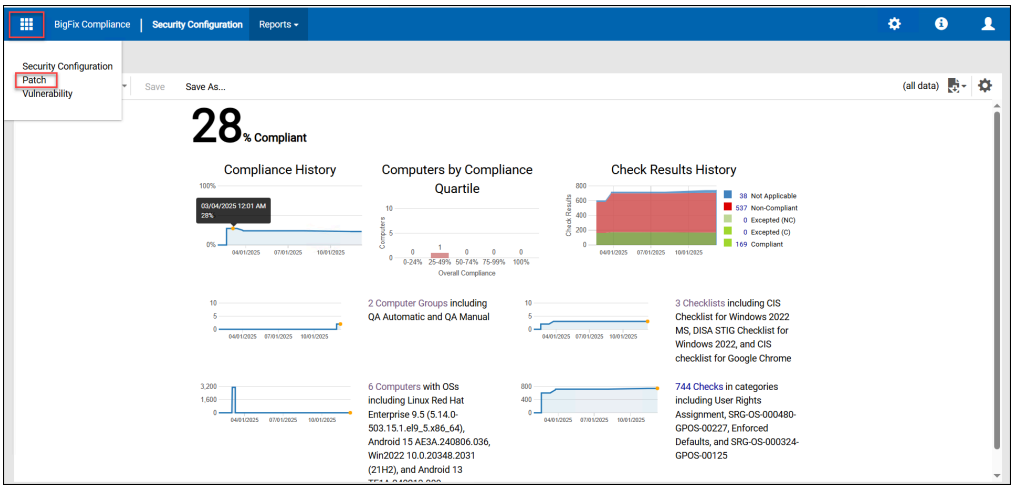


3. Once the enrollment is complete, SCA begins importing the ESXi hosts automatically.

Validate and View ESXi Devices

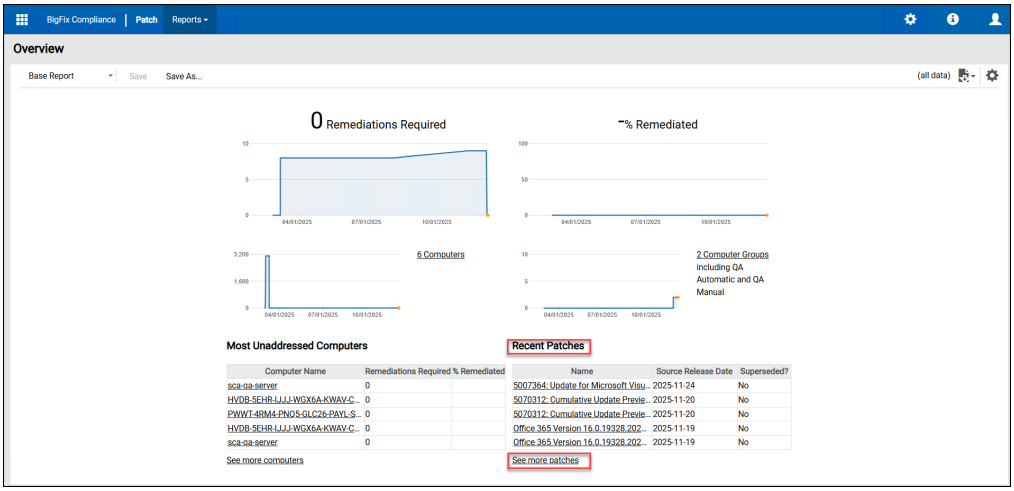
1. Log in to the **SCA application** and navigate to the **Computers** section to confirm that the ESXi hosts are listed.

Figure 9. Patch View



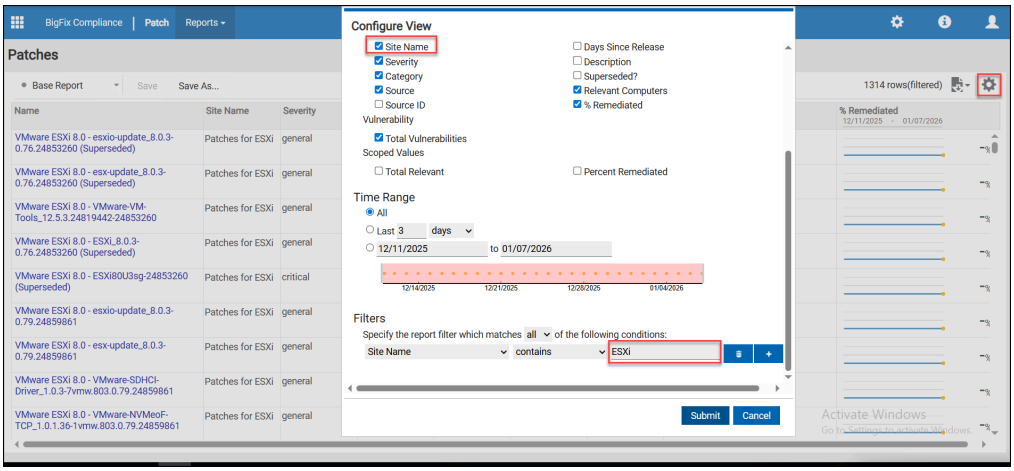
2. Navigate to the **Patch** section and click **See More Patches** to display all available patches.

Figure 10. See More Patches



3. In the **Patch** view, use the **Site Name** filter and set the filter condition to **Patches for ESXi** filter to show only the available patches specific to ESXi devices.

Figure 11. Filter Site Name



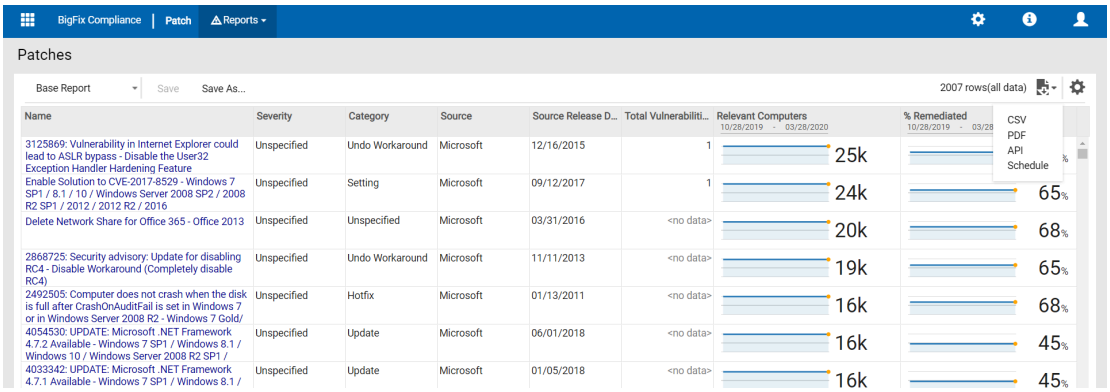
The system displays all available patches that are relevant to enrolled ESXi devices, ready for compliance reporting.

Patches Report

Select Patches domain using **Domains** and click **Reports** to find the following report:

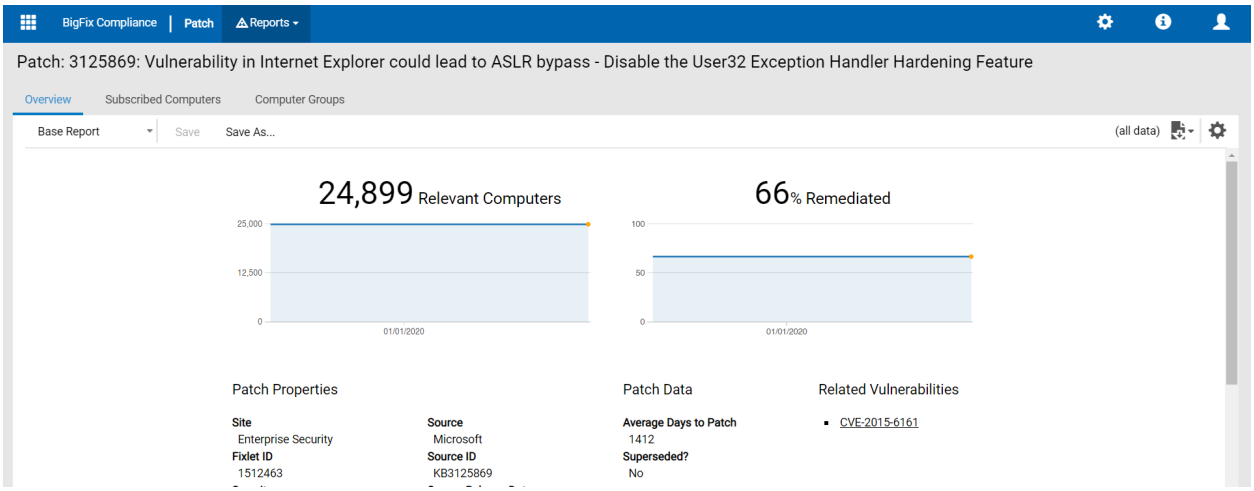
Patches

Shows the list view of patches, severity, category, source, source release date, total vulnerability, relevant computers, and % remediated.



Patch overview Report

To access the Patches Overview report, click any patch that appears in the list view.



Patch Overview report

The Patch Overview report represents a graphical representation of the relevant computers, %remediated, patch properties, patch data and related vulnerabilities.

Patch Sub-Reports

To access the Patches sub-reports, click the Reports dropdown menu at the top of the console and select Patches. Click any patches that appears on the list to open the sub-reports.

The sub-reports of the Patch report are Subscribed Computers and Computer Groups.

Subscribed Computers

The Subscribed Computers sub-report contains list of computers, last seen details and remediated status.

Computer Groups

The Computer Groups sub-report contains list of computer groups, computer count, relevant computers, and % remediated.

Adding external sites

You can add external sites that are not included in the supported sites list.

You must perform the below actions only when you need to track the patch history of endpoints in patch sites, and not for the list of supported patch sites. Adding patch sites increases the time it takes to complete an ETL import process. You must run the remediation report to add the external sites to supported sites list. After you add the external sites, the site contents are included in the Patch Reporting.

To add external sites:

1. In the BigFix console, subscribe to the sites.
2. Stop the BigFix Compliance service.
3. Create a backup copy of the original file `patch_sites.json` in the directory. The directory is located in `C:\Program Files\BigFix Enterprise\SCA\wlp\usr\servers\server1\apps\tema.war\WEB-INF\domains\pr\config\`.

   Note: Save the backup copy in a different directory other than the current directory it resides.

4. Copy the same `patch_sites.json` file into this directory `C:\Program Files\BigFix Enterprise\SCA\wlp\usr\servers\server1\apps\tema.war\WEB-INF\data\config\` and rename it to `custom_patch_sites.json`.
5. Edit the `custom_patch_sites.json` and add the missing sites ID.
6. Start the BigFix Compliance service.
7. Run the Remediation report from **Management menu > Server Settings**.

BFC Patch Sites

Starting from 2.0.1, the file name has changed in the SCM Reporting site to `patch_sites.2.json`. The code will look for a `custom_patch_sites.json` file, then look for the proper version of `patch_sites.json` in the SCM reporting site for the version of SCA, and then the local `patch_sites.json` file in the application code base.

The Patch Reporting application supports the following sites:

Table 2. Supported Sites

Site name	URL	Notes
Patches for Windows English	http://sync.bigfix.com/cgi-bin/bf-gather/bessecurity	No

Table 2. Supported Sites (continued)

Site name	URL	Notes
Patches for Windows (Brazilian Portuguese)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesbrazilianportuguese	No
Patches for Windows (Czech)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesczech	No
Patches for Windows (NLD)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesnld	No
Patches for Windows (Finnish)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesfinnish	No
Patches for Windows (French)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesfrench	No
Patches for Windows (German)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesgerman	No
Patches for Windows (Hungarian)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatcheshungarian	No
Patches for Windows (Italian)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesitalian	No
Patches for Windows (Japanese)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesjapanese	No
Patches for Windows (Korean)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatcheskorean	No
Patches for Windows (Norwegian)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesnorwegian	No
Patches for Windows (Polish)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchespolish	No
Patches for Windows (Simplified Chinese)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatcheschineses	No
Patches for Windows (Spanish)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesspanish	No
Patches for Windows (Swedish)	http://sync.bigfix.com/cgi-bin/bfgather/windowspatchesswedish	No

Table 2. Supported Sites (continued)

Site name	URL	Notes
Patches for Windows (Turkish)	http://sync.bigfix.com/cgi-bin/bf-gather/windowspatchesturkish	No
Patches for Windows (CHT)	http://sync.bigfix.com/cgi-bin/bf-gather/windowspatchescht	No
Patches for Windows (Russian)	http://sync.bigfix.com/cgi-bin/bf-gather/windowspatchesrussian	No
Patches for Windows (Danish)	http://sync.bigfix.com/cgi-bin/bf-gather/windowspatchesdanish	No
Patches for Windows (Hebrew)	http://sync.bigfix.com/cgi-bin/bf-gather/windowspatcheshebrew	No
Patches for Windows (Greek)	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforwindowsgreek	No
Updates for Windows Applications	http://sync.bigfix.com/cgi-bin/bf-gather/updateswindowsapps	No
Windows Point of Sale	http://sync.bigfix.com/cgi-bin/bf-gather/windowspointofsale	No
Patches for RHEL 5 Extended Support	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhel5ESU	Added to all SCA Versions
Patches for RHEL 6 Extended Support	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhel6ESU	Added to all SCA Versions
Patches for RHEL 7 Extended Support	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhel7ESU	Added to all SCA Versions
Patches for RHEL 8 Extended Support	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhel8ESU	Added to all SCA Versions
Patches for RHEL 7	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhel7	No
Patches for RHEL RHSM 7 on System z	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhelrhsm7z	No
Patches for RHEL RHSM 6 on System z	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhelrhsm6z	No
Patches for RHEL 7 PPC64LE	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhelppc64le7	No

Table 2. Supported Sites (continued)

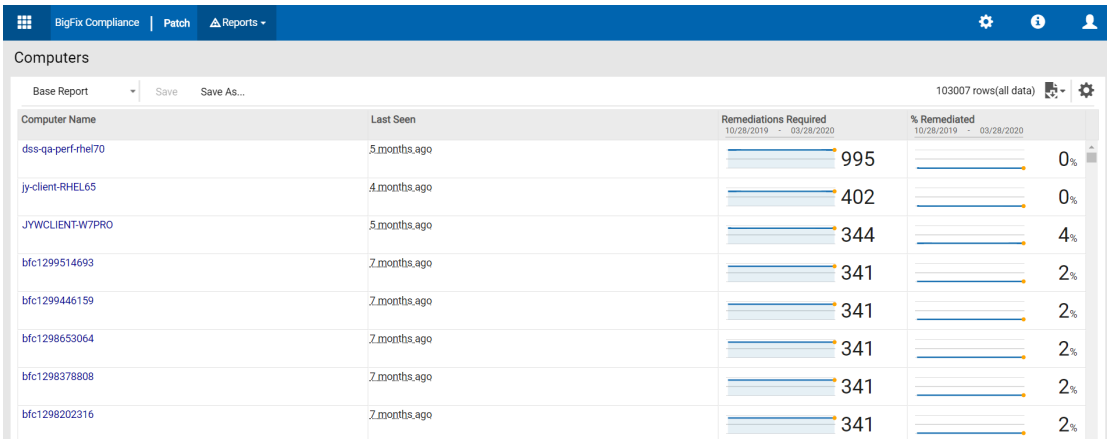
Site name	URL	Notes
Patches for RHEL PPC64BE 7	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhelppc64be7	No
Patches for RHEL 6 Native Tools	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhelppc64be7	No
Patches for RHEL 8 (BFC 2.0)	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforrhel8	No
Patches for CentOS6 Plugin R2 (BFC 2.0.1)	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforcentos6pluginr2	Added to all SCA versions
Patches for CentOS7 Plugin R2 (2.0.1)	http://sync.bigfix.com/cgi-bin/bf-gather/patchesforcentos7pluginr2	Added to all SCA versions
Patches for Mac OS X (2.0.1)	http://sync.bigfix.com/cgi-bin/bf-gather/macpatches	Uses non-standard x-fixlet-super-seded_id so only supported 2.0.1 and later.
Updates for Mac Applications (2.0.1)	http://sync.bigfix.com/cgi-bin/bf-gather/updatesmacapps	Uses non-standard x-fixlet-super-seded_id so only supported 2.0.1 and later.
Windows 7 ESU (2.01)	http://sync.bigfix.com/cgi-bin/bf-gather/win7esu	Added to all SCA versions.
Windows 2008 ESU (2.0.1)	http://sync.bigfix.com/cgi-bin/bf-gather/win2008ESU	Added to all SCA versions.

Computers Report

Select Patches domain using **Domains** and click **Reports** to find the following report:

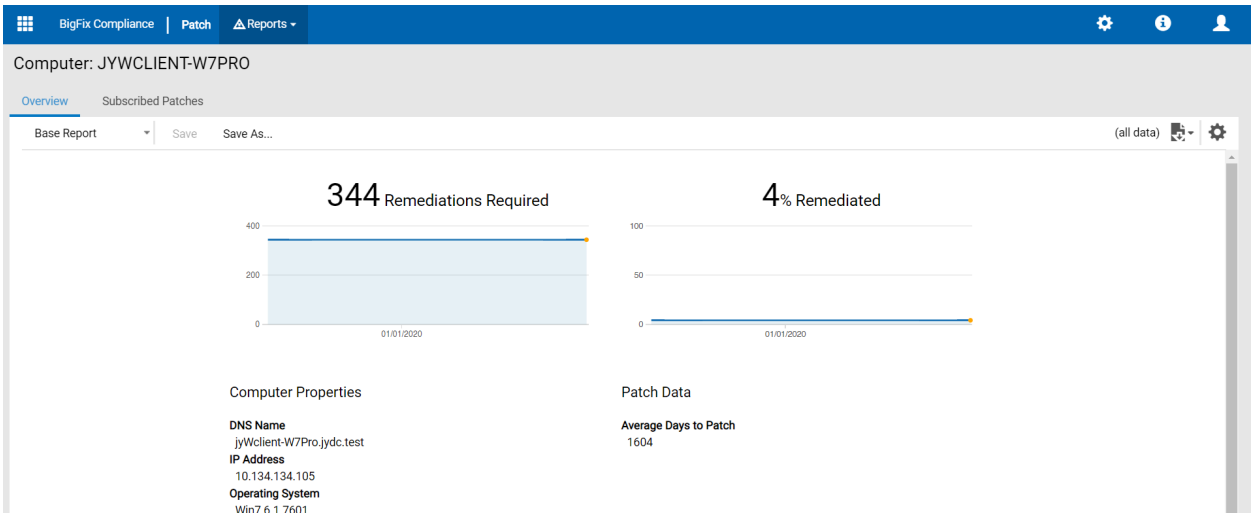
Computers

Shows the list view of computers, remediations required and % remediated.



Computer Overview Report

To access the Computers Overview report, click any computer that appears in the list view.



Computer Overview report

The Computer Overview report represents a graphic representation of remediations required, % remediated, computer properties and patch data.

Computer Sub-Report

To access the Computers sub-reports, click the Reports dropdown menu at the top of the console and select Computers. Click any computers that appears on the list to open the sub-reports.

The sub-report of the Computer report is Subscribed Patches.

Subscribed Patches

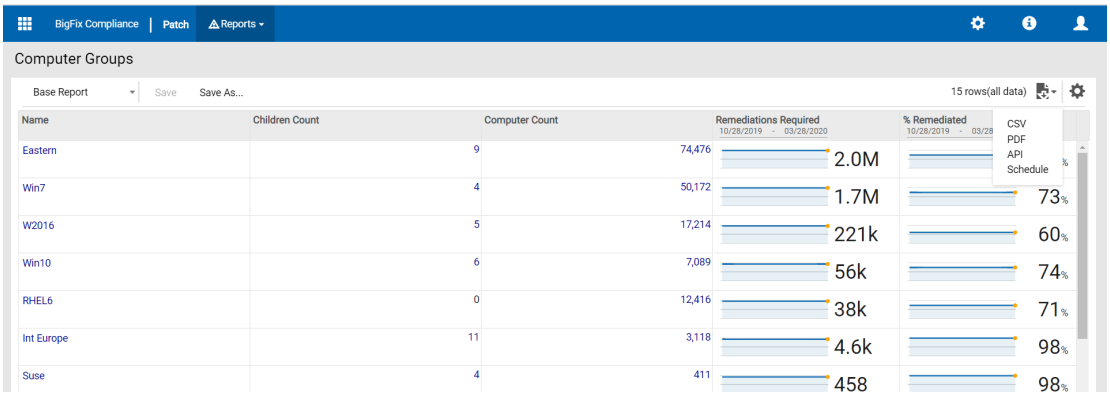
The Subscribed Patches sub-report contains a list of patches, severity, category, source, source release date, and remediated status.

Computer Groups Report

Select Patches domain using **Domains** and click **Reports** to find the following report:

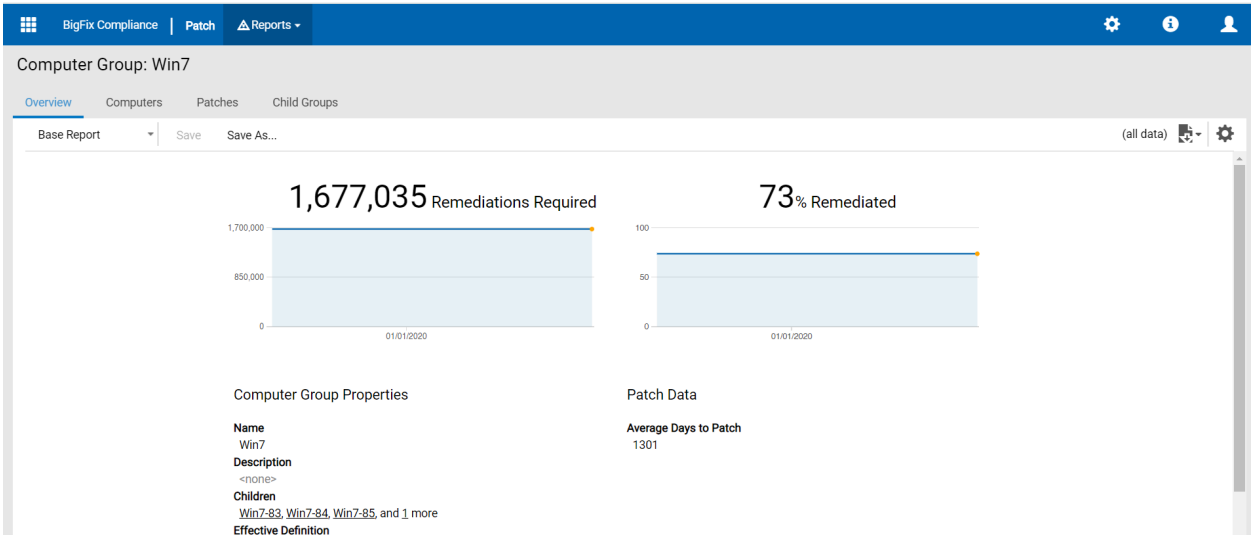
Computer Groups

Shows the list view of computer groups, sub-groups (children), computer count, remediations required and % remediated.



Computer Group Overview Report

To access the Computer Group Overview report, click any computer group that appears in the list view.



Computer Group Overview report

The Computer Group Overview report represents a graphic representation of remediations required, % remediated, computer group properties, and patch data.

Computer Group Sub-Reports

To access the Computer Group sub-reports, click the Reports dropdown menu at the top of the console and select Computer Groups. Click any computer group that appears on the list to open the sub-reports.

The sub-reports of the Computer Group report are Computers, Patches, and Child Groups.

Computers

The Computers sub-report contains list of computers, last seen details, remediation required, and % remediated details.

Patches

The Patches sub-report contains list patches, severity, category, source, source release date, total vulnerability, relevant computers, and % remediated details.

Child Groups

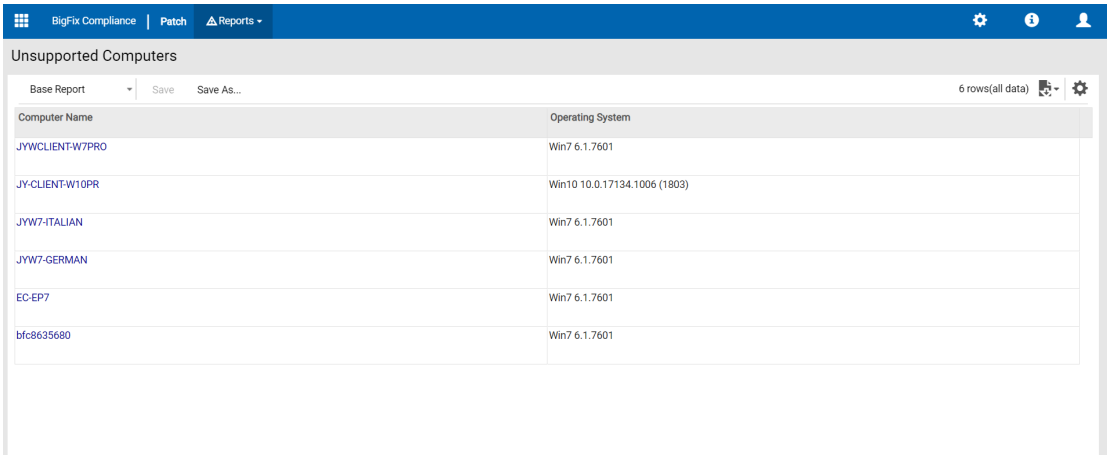
The Child Groups sub-report contains list computer groups, children count, computer count, remediations required, and % remediated details.

Unsupported Computers Report

Select Patches domain using **Domains** and click **Reports** to find the following report:

Unsupported Computers

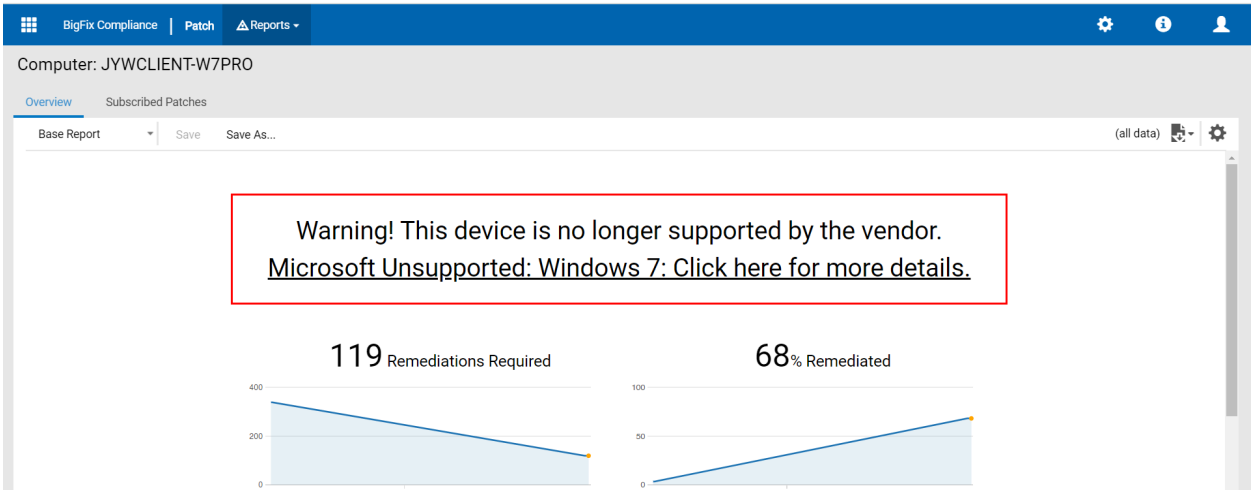
Shows the list view of computer name and operating system.



Note: If you have to remove the computer listed in this report, you must upgrade the OS of the listed computer to a supported OS.

Computer Overview Report

To access the Computers Overview report, click any computer that appears in the list view.



Computer overview report

The Computer Overview report represents a graphic representation of remediations required, % remediated and a warning note.

Computer Sub-Report

To access the Computer sub-report, click the Reports dropdown menu at the top of the console and select Unsupported Computers. Click any computer that appears on the list to open the sub-report.

The sub-report of the Computer report is Subscribed Patches.

Subscribed Patches report

The Subscribed Patches sub-report contains list of patches, severity, category, source, and source release date, and remediated status.

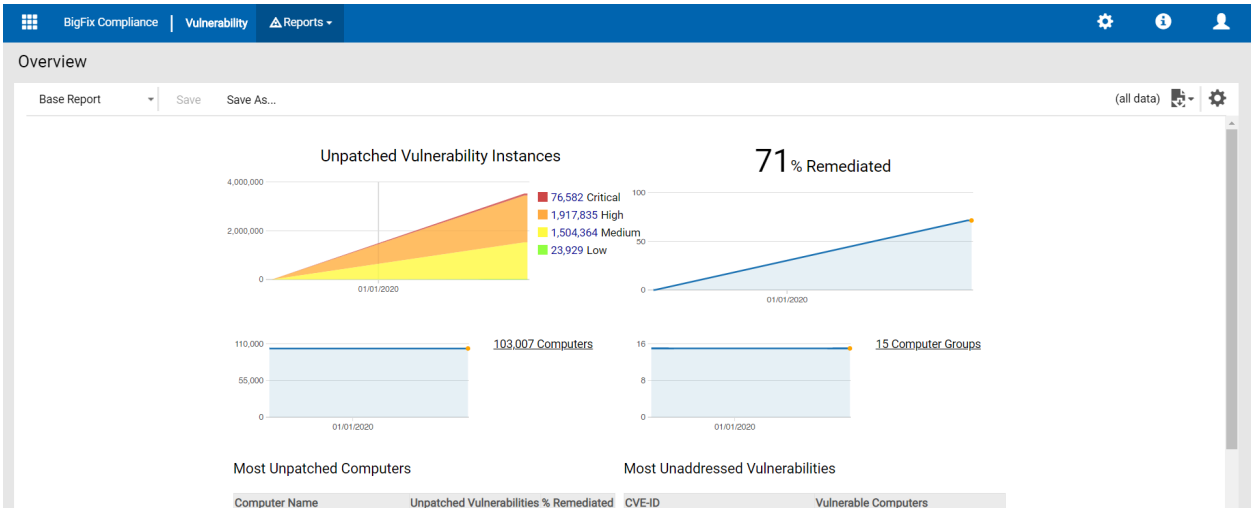
Chapter 6. Vulnerability Domain

The BigFix Compliance vulnerability reporting extends the analytics and reporting capabilities of the BigFix Compliance. The vulnerability domain report focuses on tracking and reporting the endpoint vulnerability after the patching actions. The report also enables you to identify risks, prioritize remediation, and be compliant. .

Prerequisites: You have to enable vulnerability reporting to import the data. To enable the vulnerability reports, see Domain Settings *(on page 21)*.

Overview Report

The following graphical reports are available from the primary Overview window of the Vulnerability domain dashboard:



Deployment Overview

Displays the current unpatched vulnerability instances, and the applied remediation.

The Unpatched Vulnerability Instances report displays all the instances of the vulnerability across all the endpoints. For example, if 3 vulnerabilities are unpatched and present on 10 computers, the number of Unpatched Vulnerabilities Instances calculated will be a total of 30, that will be tracked in this report graph. Similarly the remediation percentage is the remediation of these vulnerability instances.

Computer Overview

Displays the current number of computers, the historical aggregate of the computers that are included in the report, and a summary of their operating system platforms.

Computer Groups Overview

Displays the current number of computer groups, the historical aggregate of computer groups that are included in the report, and a summary of the computer groups.

Most Unpatched Computers Overview

Displays the list of computers that require the most number of patches.

Most Unaddressed Vulnerabilities

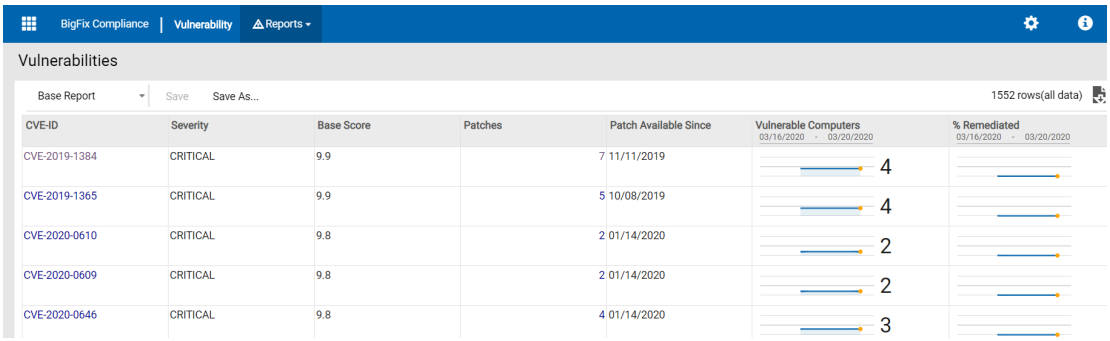
Displays the list of unaddressed vulnerabilities.

Vulnerabilities Report

Select Vulnerability domain using **Domains** and click **Reports** to find the following report:

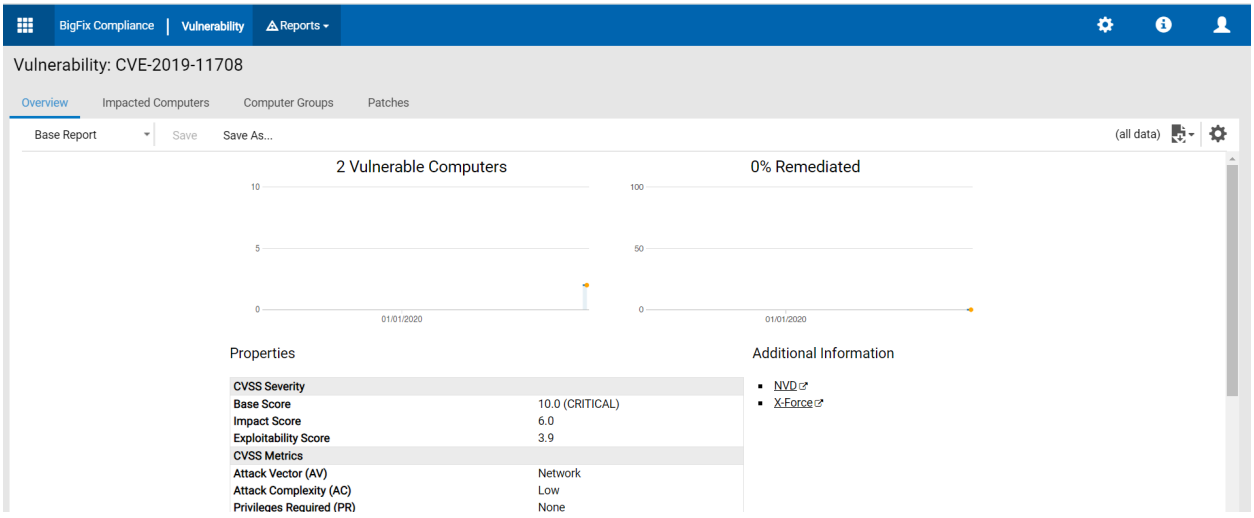
Vulnerabilities

Shows the list view of CVE-ID, severity, base score, patches, patch available since, vulnerable computers, and % remediated.



Vulnerability Overview Reports

To access the Vulnerability Overview report, click any CVE-ID that appears in the list view.



Vulnerability Overview report

The Vulnerability Overview report represents a graphic representation of vulnerable computers, % remediated, and the computer properties. All the data displayed in Vulnerability Overview Report is from NVD.

Vulnerability Sub-Reports

To access the Vulnerability sub-reports, click the Reports dropdown menu at the top of the console and select Vulnerabilities. Click any CVE-ID that appears on the list to open the sub-reports.

The sub-reports of the Vulnerability report are Impacted Computers, Computer Groups and Patches.

Impacted Computers

The Impacted Computers sub-report contains list of computers, last seen details, vulnerable status, date remediated and days to remediate.

Computer Groups

The Computer Groups sub-report contains list of computer groups, computer counts, vulnerable computers, and % remediated.

Patches

The Patches sub-report contains list of patches, severity, category, source, source release date, superseded details, and relevant computers.

Vulnerability Reporting Mechanics 2.0.10 or later

This section describes mechanics in version 2.0.10 or later.

The vulnerability data for Compliance is extracted from the following sources:

- The vulnerability CVEs listed in the patch Fixlet metadata (`CVENames`, `MIME_x-fixlet-cve`).
- Vulnerability details from the external NVD feeds.
- The patch Fixlet evaluation result.

Compliance does not conduct direct scans on devices directly for vulnerabilities. Instead, the vulnerability status of a device is determined based on its patch applicability.

Table 3. Patch applicability and Vulnerability (CVE) reporting

Table shows the possible combinations of states and it's impact on Vulernability reporting

CVE ID	Patch	Available in site	Superseded	Uses false evaluation	Uses superseded evaluation	Computer got enabled superseeded evaluation	If Patch is relevant	If Patch is not relevant	List in CVE patch list
CVE-X	Patch A	Y	N	N	N	N/A	Vulnerable	Not Vulnerable	Y
CVE-X	Patch Z	Y	Y	N	**N**	**N/A**	Vulnerable	Not Vulnerable	Y
CVE-X	Patch D	Y	Y	N	Y	Y (note 1)	Vulnerable	Not Vulnerable	Y

Table 3. Patch applicability and Vulnerability (CVE) reporting

Table shows the possible combinations of states and it's impact on Vulernability reporting

(continued)

CVE ID	Patch	Available in site	Superseded	Uses false evaluation	Uses superseded evaluation	Computer got enabled superseeded evaluation	If Patch is relevant	If Patch is not relevant	List in CVE patch list
CVE-X	Patch C	Y	Y	N	**Y**	**N**	**N/A**	Unknown	**Y**
CVE-X	Patch B	Y	Y	**Y**	N	N/A	N/A	N/A	**N** (note 2)
CVE-X	Patch X	N					N/A	N/A	N

- *Note 1: Superseded eval must be On on all computers to have assessment*
- *Note 2: Patch is not longer used to assess exposure comparing to previous mechanics*

Rules for assessing state when device reports state for more than one patch addressing vulnerability (CVE):

- **Any** listed **Patch** gives "**Vulnerable**" then computer is "**Vulnerable**
- "No Patch gives "Vulnerable", but there is **at least one "Unknown" then Unknown**
- **All** Patches gives "**Not vulnerable**" computer is "**Not Vulnerable**"

Table 4. Changes comparing to previous mechanics

Table online differences between previous and current calculation mechanics

Before	Now
Required Remediation covers all the relevant Fixlets	Required Remediation is limited to not superseded ones and having CVE listed
CVE added to the list from all patches listed in sites	CVE added to the list only from “active” patches
Patches listed for CVE as long as they are in site	Patches listed for CVE only when evaluated ("active")
Superseded chain used in algorithm	No use of chain
Patch history impact assessment	Assessment is only based on current Patch Fixlet applicability

Patches and Superseded Content EnableSupersededEval

Generalized pattern from

```
_BESClient_WindowsOS_EnableSupersededEval
```

to

`_BESClient_*_EnableSupersededEval`

WindowsOS, SLE for SUSE, OEL for ORACLE, CentOS for CentOS, AIX for AIX, Ubuntu for Ubuntu, and RockyLinux

For more information, see: Supersedence in Windows and Supersedence for Non-Windows.

Vulnerability Reporting Mechanics

The vulnerability data for Compliance is extracted from the following sources:

- The vulnerability CVEs listed in the patch fixlet metadata (`CVENames`, `MIME_x-fixlet-cve`).
- The supersedence information in the patch fixlet metadata (`MIME_x-fixlet-superseded-id`).
- Vulnerability details from the external NVD feeds.
- The patch fixlet evaluation result.

Compliance do not scan devices directly for vulnerabilities. The vulnerability of a device is derived from its patch applicability status.

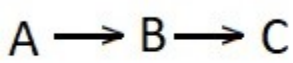
Table 5. Patch applicability status

Fixlet Status	Patch Application Status	Vulnerability Status
Not Relevant	Applied	Remediated
Relevant	Not Applied	Not Remediated

The following sections explains how the Vulnerability Reporting mechanism works and how it affects reporting.

Supersedence chain

Vendors may release patches that include fixes found in previous patches (now obsolete). This process is knows as supersedence, the old obsolete patch is now regarded and flagged as "superseded".



In the above image:

Patch A is superseded by Patch B and then Patch B is superseded by the current Patch C.

Patch C is the superseding patch that replaces the previous two patches and contains all of their security fixes. If Patch C is applied, it is no longer necessary to apply Patch A or Patch B.

However, if Compliance checks the metadata for Patch C, it cannot determine that it also resolved the vulnerabilities described in A and B. Therefore, Compliance creates a *Supersedence chain* during the import process and gathers information about an endpoint's vulnerability status. Using the *Supersedence chain*, Compliance associates implicitly

resolved vulnerabilities with their respective patches. Thus, when Patch C is applied, all the vulnerabilities in A, B, and C patches are accurately marked as *Remediated*.

Patches for Windows and EnableSupersededEval

The EnableSupersededEval is a client setting used by the Patches for Windows site. By default, it is disabled, which prevents superseded patches in the site from being evaluated.

The default behavior of patch applicability evaluation (with the flag turned off) is typically desirable. When a newer patch is available, the superseded patch should no longer be applied. However when determining the vulnerability status, Compliance cannot distinguish between an applied superseded patch Fixlet and a superseded Fixlet with evaluation disabled.

Compliance handles the above described situation in the following ways:

- **If a patch is detected for the first time and is superseded**. Compliance cannot determine the patch status and may display the resolution as *Never Relevant* indicating a state of ambiguity and that it cannot determine whether or not the patch has been applied to a given endpoint.
- **If a patch that was observed previously becomes superseded**. Compliance takes forward the previous evaluation for any endpoints that had evaluated it. For example, a patch that was applied on an endpoint previously still retains a status of *remediated*.
- **If the endpoint has turned on the EnableSupersededEval flag**. Compliance continues to respect the live evaluation status for superseded patches.

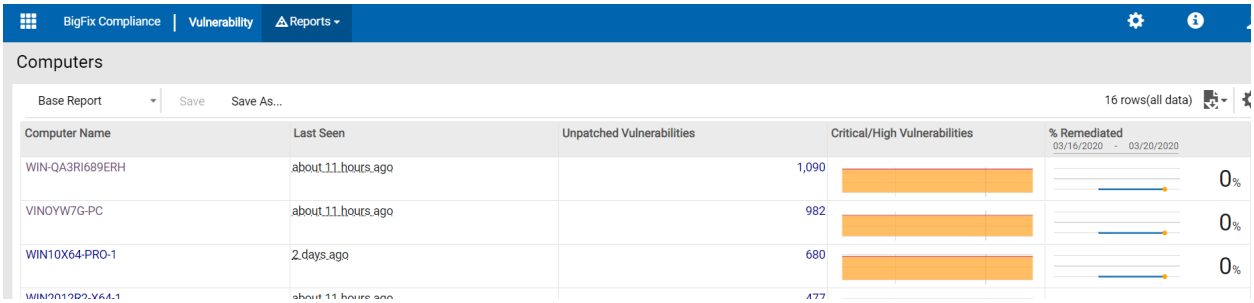
In effect, a fresh install or enablement of Patch and Vulnerability Reporting in Compliance has incomplete data about the vulnerability posture. As Compliance is installed for a longer duration, it observes details about which patches were previously applied, it becomes better and able to infer which vulnerabilities are remediated or not.

Computers Report

Select Vulnerability domain using **Domains** and click **Reports** to find the following report:

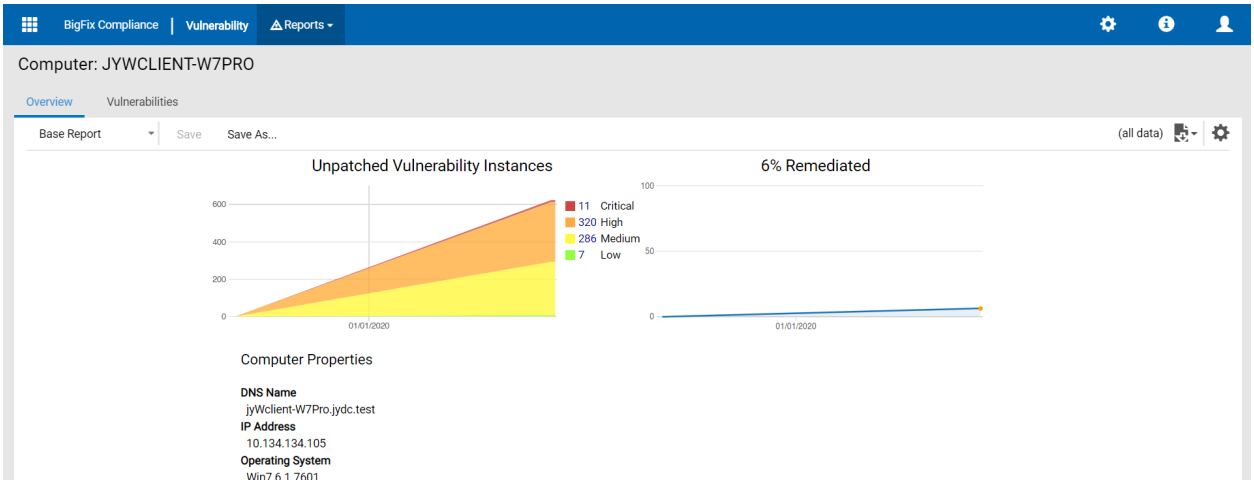
Computers

Shows the list view of computers, last seen, unpatched vulnerability, critical vulnerabilities and % remediated.



Computer Overview Report

To access the Computer Overview report, click any computer that appears in the list view.



Computer Overview report

The Computer Overview report represents a graphic representation of unpatched vulnerability instances, computer properties and % remediated.

Computer Sub-Report

To access the Computer sub-report, click the Reports dropdown menu at the top of the console and select Computers. Click any computer that appears on the list to open the sub-report.

The sub-report of the Computers report are Vulnerabilities.

Vulnerabilities

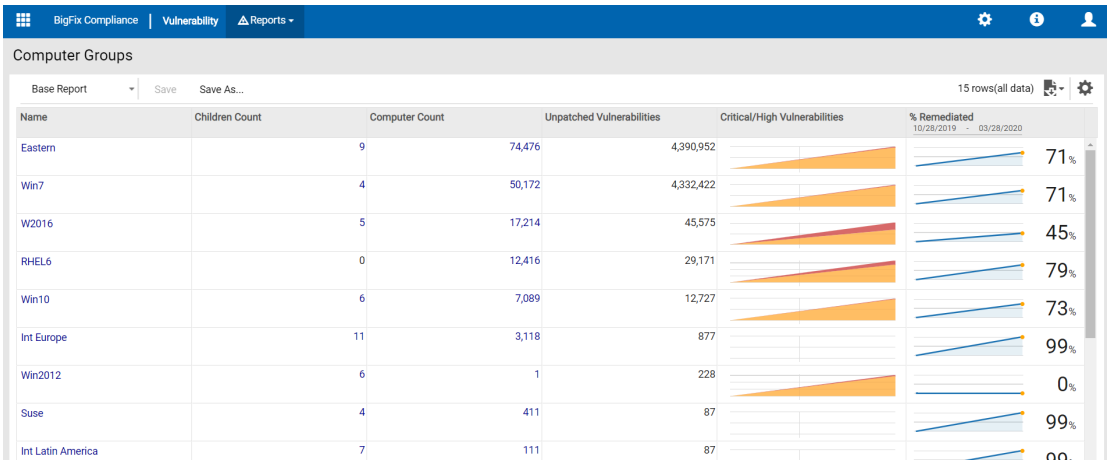
The Vulnerabilities sub-report contains list of CVE-IDs, severity, base score, vulnerable details, dates of first patch available, date remediated, and days to remediate.

Computer Groups Report

Select Vulnerability domain using **Domains** and click **Reports** to find the following report:

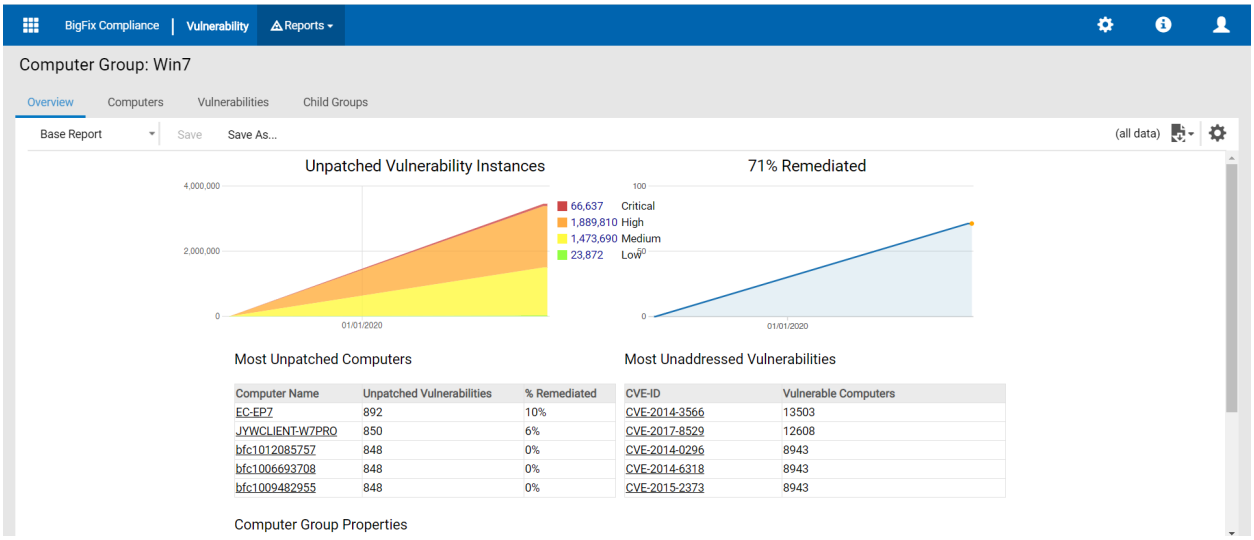
Computer Groups

Shows the list view of computer groups, sub-groups (children), computer count, unpatched vulnerabilities, critical vulnerabilities and % remediated.



Computer Group Overview Reports

To access the Computer Group Overview report, click any computer group that appears in the list view.



Computer Group Overview report

The Computer Group Overview report represents a graphic representation of unpatched vulnerability instances, % remediated, most unpatched computers, most unaddressed vulnerabilities, and computer group properties.

Computer Group Sub-Reports

To access the Computer Group sub-reports, click the Reports dropdown menu at the top of the console and select Computer Groups. Click any computer group that appears on the list to open the sub-reports.

The sub-reports of the Computer Groups report are Computers, Vulnerabilities and Child Groups.

Computers

The Computers sub-report contains list of computers, last seen details, unpatched vulnerabilities, critical vulnerabilities, and % remediated.

Vulnerabilities

The Vulnerabilities sub-report contains list of CVE-IDs, severity, base score, patches, patch available since, vulnerable computers, and % remediated.

Child Groups

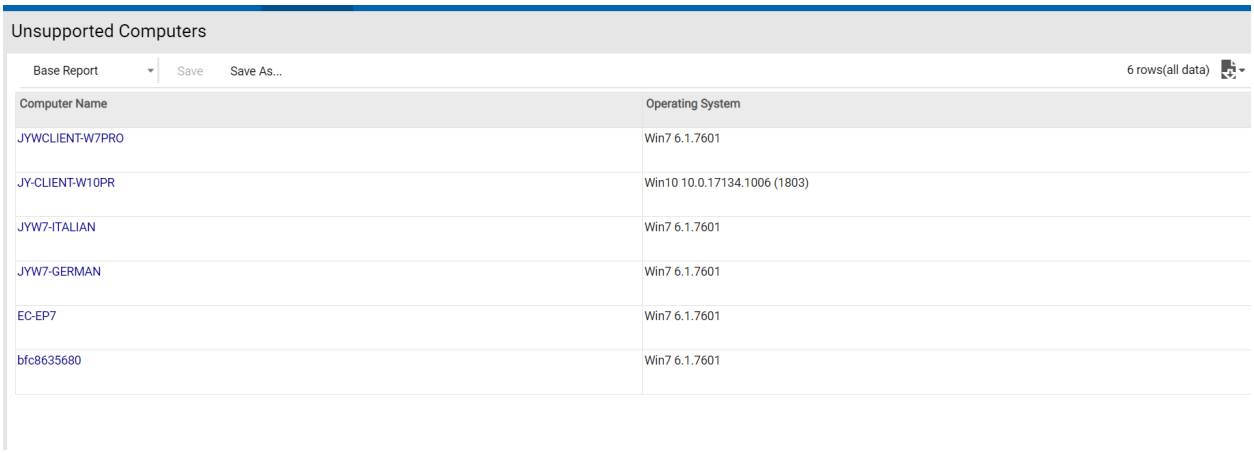
The Child Groups sub-report contains list of computer groups, children counts, computer counts, unpatched vulnerabilities, critical vulnerabilities, and % remediated.

Unsupported Computers Report

Select Vulnerability domain using **Domains** and click **Reports** to find the following report:

Unsupported Computers

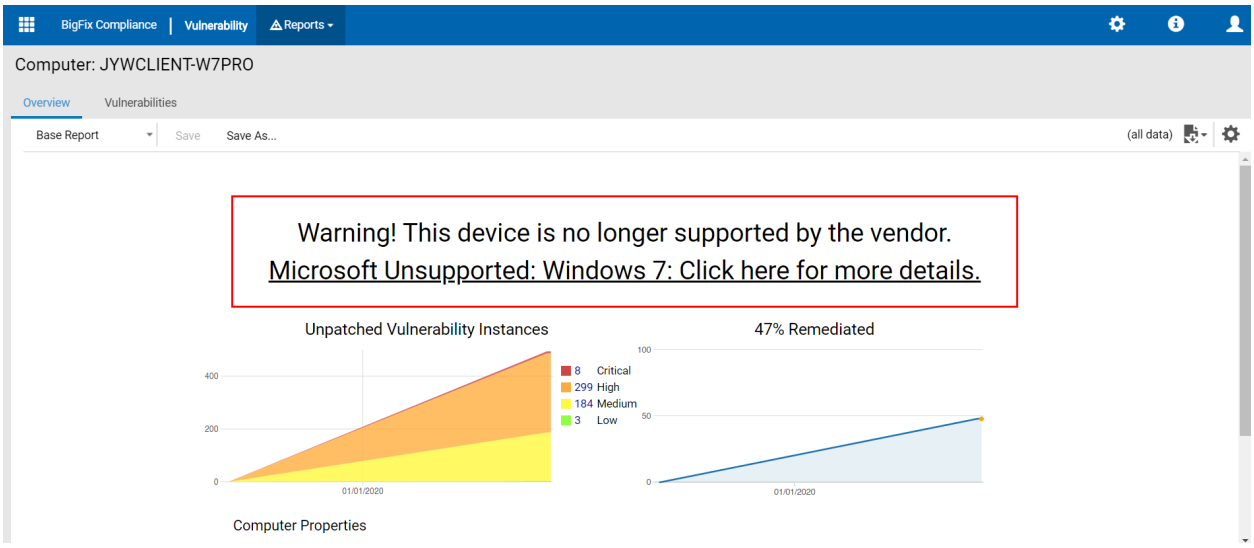
Shows the list view of computer name, and operating system.



Note: If you have to remove the computer listed in this report, you must upgrade the OS of the listed computer to a supported OS.

Computer Overview Report

To access the Computer Overview report, click any computer that appears in the list view.



Computer overview report

The Computer Overview report represents a graphic representation of unpatched vulnerability instances, % remediated, warning note and computer properties.

Computer Sub-Report

To access the Computer sub-reports, click the Reports dropdown menu at the top of the console and select Unsupported Computers. Click any computer that appears on the list to open the sub-report.

The sub-report of the Computer report is Vulnerabilities.

Vulnerabilities

The Vulnerabilities sub-report contains list of CVE-IDs, severity, base score, vulnerable details, dates of first patch available, date remediated, and days to remediate.

Appendix A. Support

For more information about this product, see the following resources:

- BigFix Support Portal
- BigFix Developer
- BigFix Playlist on YouTube
- BigFix Tech Advisors channel on YouTube
- BigFix Forum

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