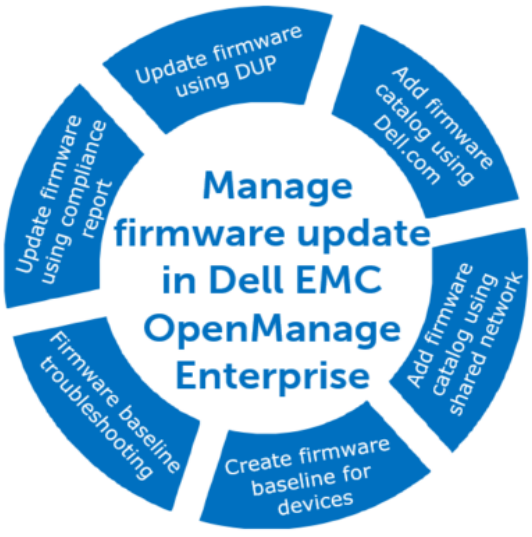
Creating firmware baselines and catalogs by using Dell EMC OpenManage Enterprise

This technical white paper provides information about creating firmware catalogs, creating firmware baselines, and then managing them. Scenario-based troubleshooting steps are given to help you resolve firmware update-based issues in Dell EMC OpenManage Enterprise.



Abstract

This technical white paper provides information about creating firmware catalogs, creating firmware baselines, and then managing them. Brief procedure is provided about viewing a firmware baseline compliance report, and then upgrading the firmware version.

A list of PowerEdge servers and chassis that support the firmware management in Dell EMC OpenManage Enterprise is also given. Some important scenario-based procedures are given to help you resolve any Dell EMC OpenManage Enterprise firmware update troubleshooting issues. Also, the procedure to update firmware by using a single DUP is discussed.

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Contents

Acronyms

Acronym	Expansion
CLI	Command Line Interface
Dell EMC iDRAC	Dell EMC Integrated Dell Remote Access Controller
DRM	Dell EMC Repository Manager
DUP	Dell Update Package
FTP	File Transfer Protocol
FW	Firmware
GUI	Graphical User Interface
LOM	LAN over Motherboard
OS	Operating System
PERC	Dell PowerEdge RAID Card
QRL	Quick Resource Locator

Executive summary

Firmware update is one of the critical activities in device monitoring and management that helps you keep the environment up-to-date and compliant. It also protects the devices against vulnerabilities and fixes bugs. Dell EMC OpenManage Enterprise enables you to regularly check the compliance of devices and upgrade or roll back, as necessary. This Dell EMC technical white paper describes the procedures to add and manage firmware catalogs and firmware baselines, and then view and manage firmware baseline compliance reports.

With the increasing demand in datacenter to maintain different groups of servers on different firmware and driver baselines, this feature helps data center administrators to simplify the operation. Primary use case for this feature is to have different catalogs generated by DRM, filtered for specific use cases, and then use them against the custom groups.

To perform any tasks on Dell EMC OpenManage Enterprise, you must have necessary user privileges. See Role-based user privileges in Dell EMC OpenManage Enterprise in this technical white paper.

Quick links to the sections in this technical white paper:

- Create online firmware catalog by using Dell EMC OpenManage Enterprise
- Create a custom catalog by using Dell EMC OpenManage Enterprise
- Create a firmware baseline by using OpenManage Enterprise
- Dell EMC OpenManage Enterprise Firmware Update Support Matrix
- View firmware baseline compliance report in Dell EMC OpenManage Enterprise
- Update the device firmware version by using the firmware baseline compliance report
- Update firmware by using DUP in Dell EMC OpenManage Enterprise

You can also view the following videos to get more information about using the unmatched features of Dell EMC OpenManage Enterprise Graphical User Interface (GUI):

- Creating a firmware baseline in Dell EMC OpenManage Enterprise (01:22 m)
- Dell EMC OpenManage Enterprise Systems Management Console (02:02 m)
- Dell EMC OpenManage Enterprise (01:44 m)

Note—For more information about the field definitions involved in the tasks performed that are discussed in this technical white paper, see the Online Help documentation by clicking the **?** symbol in the upper-right corner of that respective page or dialog box. Else, you can also see the Dell EMC OpenManage Enterprise 3.0 User's Guide available on the support site.

1 Role-based user privileges in Dell EMC OpenManage Enterprise

Also see the following sections in this technical white paper:

- Dell EMC OpenManage Enterprise Firmware Update Support Matrix
- Manage firmware catalogs in Dell EMC OpenManage Enterprise
- Create firmware baselines by using Dell EMC OpenManage Enterprise

Dell EMC OpenManage Enterprise Features	User levels for accessing Dell EMC OpenManage Enterprise		
	Admin	Device Manager	Viewer
Run reports	Y	Y	Y
View	Y	Y	Y
Manage Baseline	Y	Y	N
Configure device	Y	Y	N
Firmware update	Y	Y	N
Manage jobs	Y	Y	N
Create monitoring policies	Y	Y	N
Deploy OS	Y	Y	N
Power control	Y	Y	N
Manage reports	Y	Y	N
Manage templates	Y	Y	N
Set up the OpenManage Enterprise appliance	Y	N	N
Manage discovery	Y	N	N
Manage groups	Y	N	N
Refresh inventory	Y	N	N
Set up security	Y	N	N
Manage traps	Y	N	N

Note—To view the latest information about the minimum requirements for Dell EMC OpenManage Enterprise, see the *Dell EMC OpenManage Enterprise Support Matrix* on the support site.

2 Dell EMC OpenManage Enterprise Firmware Update Support Matrix

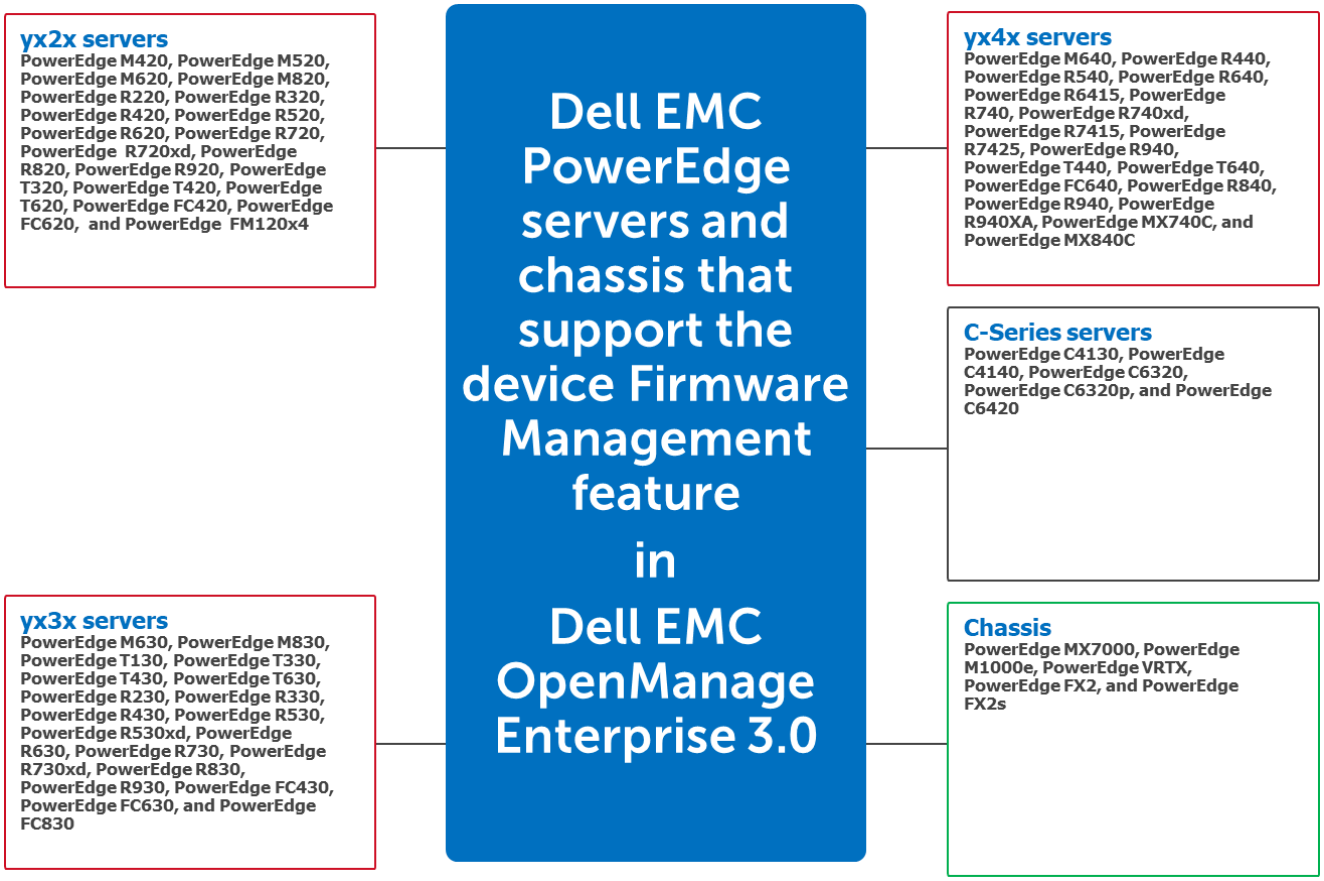


Figure 1 Dell EMC PowerEdge servers supporting device firmware management in Dell EMC OpenManage Enterprise 3.0

Note—The following Dell EMC devices do not support the firmware update operation at the time when this technical white paper is published:

- Dell EMC 11G PowerEdge servers
- Dell EMC VxRail Hyper-converged appliances
- Dell EMC XC Series Web-Scale converged appliances
- Dell EMC PowerEdge FD332 Storage module
- Dell EMC Storage devices (previously Dell Compellent devices)—FS8600 version 6, SC4020, SC7020, SC8000, and SCv2000.
- Dell EMC Networking Devices (previously Dell Force 10 devices)—C150, C300, S25P, S50, S55, S60, S3048, S4048, S4810, S4820P, S4820T, Z9000, and MXL 10/40GbE.

Note—For more information about the other supported features and hardware/software requirements, see the *Dell EMC OpenManage Enterprise Version Support Matrix* available on the support site.

3 Manage firmware catalogs in Dell EMC OpenManage Enterprise

- Create online firmware catalog by using Dell EMC OpenManage Enterprise
- Create a custom catalog by using Dell EMC OpenManage Enterprise

Catalogs are bundles of firmware based on device types. All the available catalogs (update packages) are validated and posted to Dell.com. When you create an online catalog, the catalog file is downloaded but the corresponding DUPs are not downloaded. This reduces the extra effort of administrators and device managers to frequently access Dell.com, and also reduces the overall updating and maintenance time.

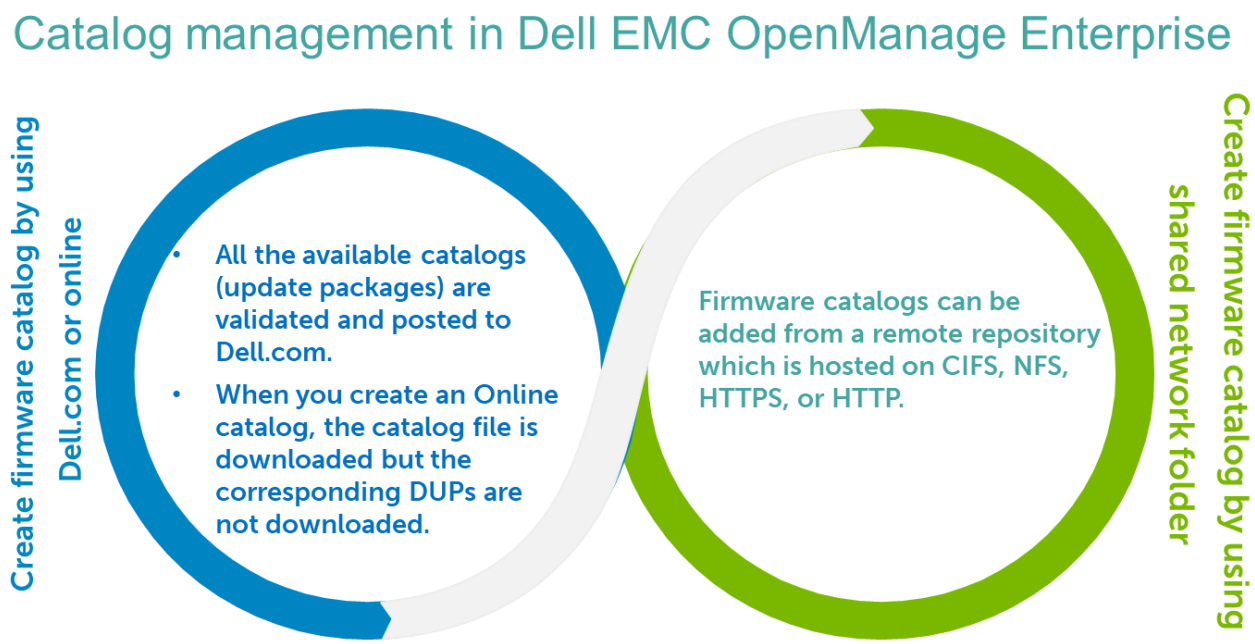


Figure 2 Catalog management in Dell EMC OpenManage Enterprise

- Dell EMC OpenManage Enterprise enables you to add a firmware catalog from either Dell online or a local network by using different protocols. These remote repositories contain the catalog and Dell Update Packages (DUPs) necessary for firmware update. The catalog contains information about firmware version, DUP criticality, and DUP location. For field definitions on the Catalog Management page, see the *Online Help* documentation by clicking the **?** symbol on the GUI element you are working on.
- This section describes the methods to create firmware catalog and the key points to consider while creating. See the video Creating a firmware baseline in Dell EMC OpenManage Enterprise—Tech Release (01:22 m).

3.1 Create online firmware catalog by using Dell EMC OpenManage Enterprise

a. Log in to Dell EMC OpenManage Enterprise.
b. Click **Configuration → Firmware**.
c. Click **Catalog Management**, and then click **Add**.

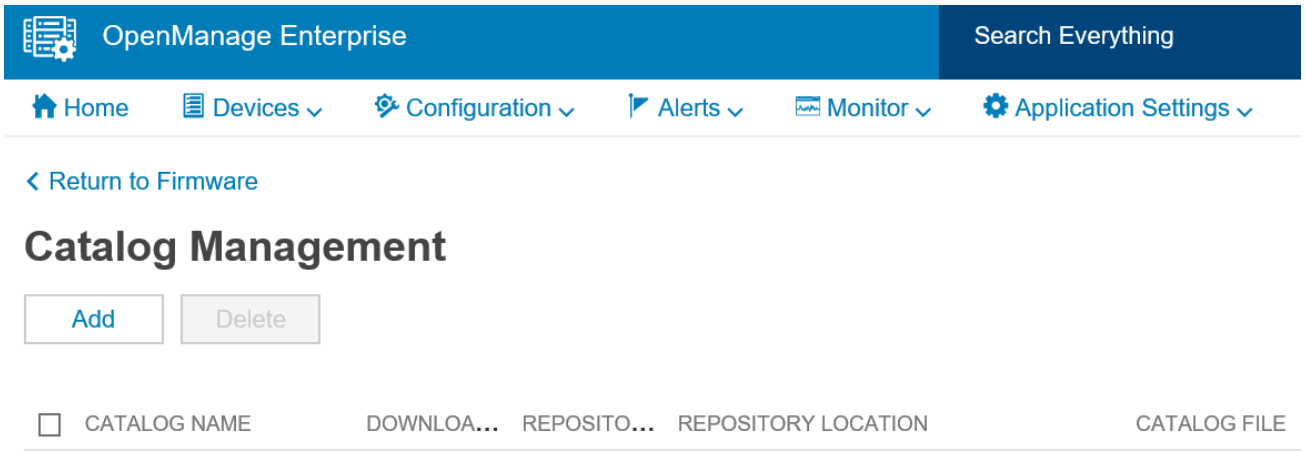


Figure 3 Create a firmware catalog by using Catalog Management in Dell EMC OpenManage Enterprise

In the **Add Firmware Catalog** dialog box, for example, enter `Online` as the catalog name.

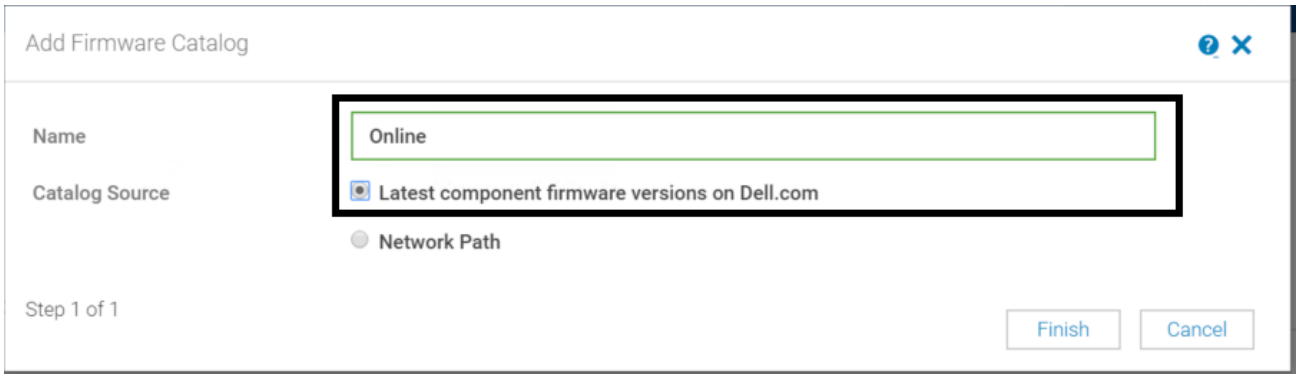


Figure 4 Enter Online as the firmware catalog type

d. Click **Finish**.

A firmware catalog is added by using the latest firmware available on the Dell.com site, and then displayed in the list of catalogs.
To go back to the **Firmware** page, click **Return to Firmware**.

Note—This feature is not supported by using the IPv6 protocol at the time of release of this technical white paper.

3.2 Create a custom catalog by using Dell EMC OpenManage Enterprise

Firmware catalogs can be added from a remote repository which is hosted on CIFS, NFS, HTTPS, or HTTP. Here is an example of creating a firmware catalog by using a firmware saved on the CIFS.

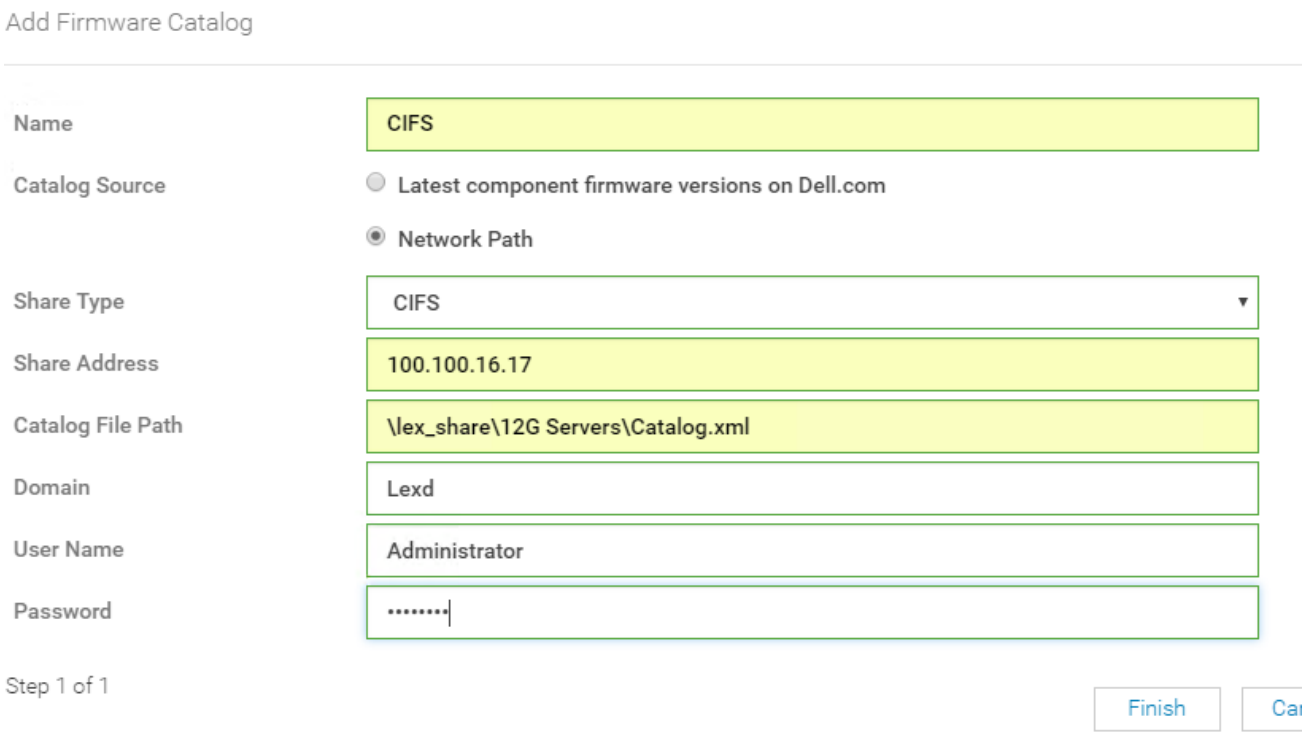


Figure 5 Create a firmware repository or catalog by using a firmware saved on CIFS

1. On the **Catalog Management** page, click **Add**.
   In the **Add Firmware Catalog** dialog box:

   a. Enter a name for the firmware catalog, and then select **Network Path**.
   The **Share Type** drop-down menu is displayed.
   b. Select one of the following: NFS, CIFS, HTTP, or HTTPS.
   For more information about field definitions on this page, see the “Create a firmware catalog by using local network” section in the *Online Help* by clicking the **?** symbol in the **Add Firmware Catalog** dialog box.

Table 1 Description about the fields in the Add Firmware Catalog dialog box

Field	Description
Share Type	Select CIFS from the drop-down menu.
Share Address	Enter the address of the catalog file location. The share address can have a maximum of 255 characters. The IP address, or, hostname, or FQDN must have a valid host name, IPv4 address, or IPv6 address.
Catalog File Path	Enter the path of the catalog file location. The catalog file path can have a maximum of 255 characters. Example file paths for: • CIFS: filepath\catalog.xml

	• NFS: \NFS\foldername\Catalog.xml
Domain	This option is available only if the Share Type is CIFS. The domain can have a maximum of 255 characters.
User Name	This option is available only if the Share Type is CIFS or HTTPS. The user name can have a maximum of 255 characters.
Password	This option is available only if the Share Type is CIFS or HTTPS. The password can have a maximum of 255 characters.

Note: A new online catalog from can be created only after deleting the existing online catalog.

After a firmware catalog is created, Dell EMC OpenManage Enterprise displays the information such as remote repository location, number of bundles present in the catalog. A list of all the baselines associated with the catalog is displayed. Catalog Management also enables you to edit and delete the catalog.

Note—Firmware updates from the local share can be performed by using the catalog created by Dell EMC Repository Manager (DRM).

4 Create firmware baselines by using Dell EMC OpenManage Enterprise

A firmware baseline is a reference to a catalog to which a set of devices are associated to adhere to the particular firmware level. A baseline can be associated on the basis of one baseline-to-many device and many baselines-to-many devices. For example, the baseline you create for a BIOS version can be associated to many servers. Similarly, you can associate two baselines to one device—say, one for the iDRAC firmware version and the other for BIOS.

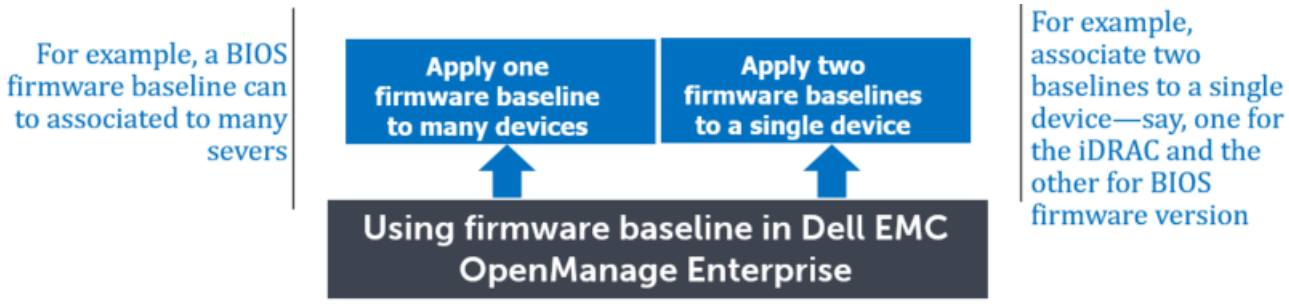


Figure 6 Using firmware baseline in Dell EMC OpenManage Enterprise

This section describes the steps to create a firmware baseline and associate the baseline with a catalog and devices or groups.

1. On the Dell EMC OpenManage Enterprise page, click **Configuration** → **Firmware**.
2. Click **Create Baseline**.

   In the **Create Firmware Baseline** dialog box:

   a. In the **Baseline Information** section:

      i. From the **Catalog** drop-down menu, select a catalog type.
      ii. To add a catalog to this list, click **Add**. See Manage firmware catalogs in Dell EMC OpenManage Enterprise in this technical white paper.
      iii. In the **Baseline Name** box, enter a name for the baseline, and then enter the baseline description.
      iv. Click **Next**.

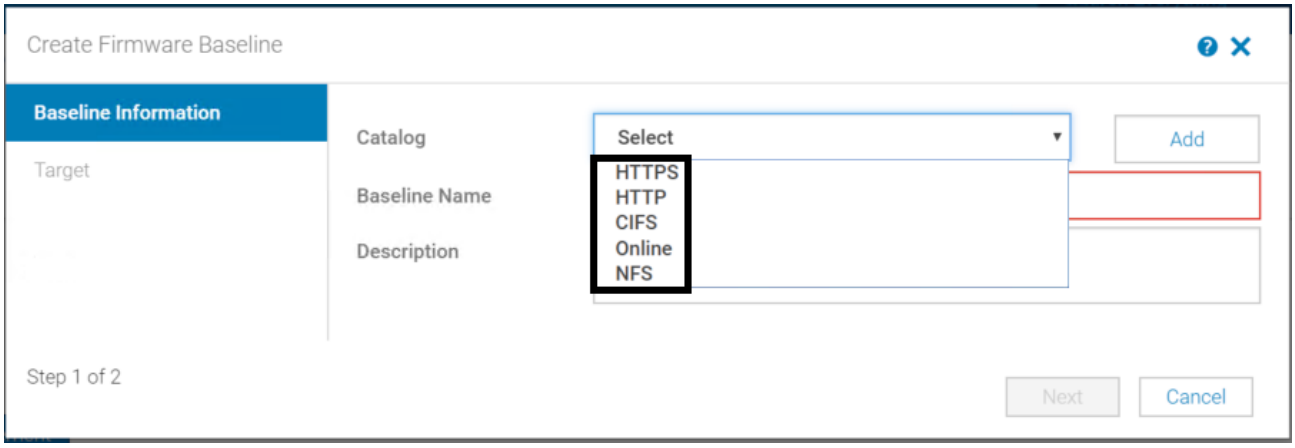


Figure 7 Select a firmware catalog in Dell EMC OpenManage Enterprise

4.1 Create a firmware baseline for devices by using Dell EMC OpenManage Enterprise

1. To select the target device(s) in the **Target** section:

    a. Select **Select Devices**, and then click the **Select Devices** button.

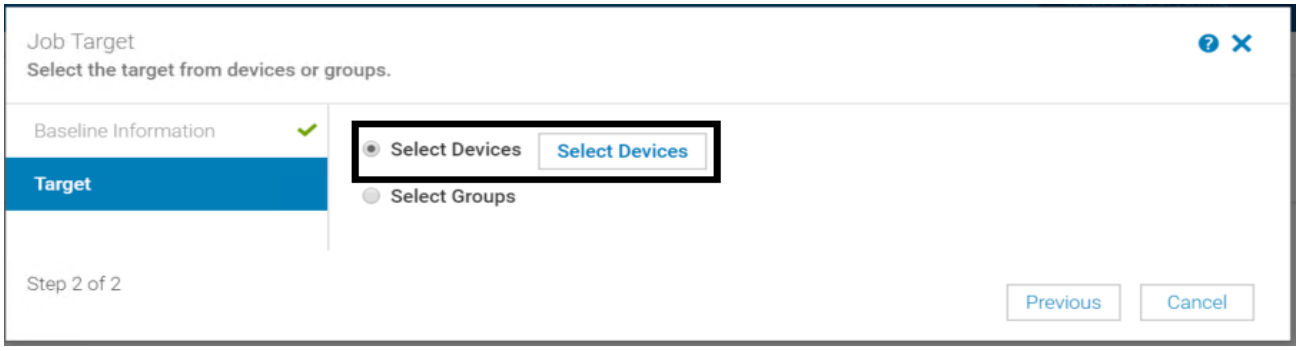


Figure 8 Select devices for creating firmware baseline

    b. In the **Select Devices** dialog box, all the compute devices monitored by Dell EMC OpenManage Enterprise, IOMs, and devices under static or query group are displayed in respective groups. Currently, VXRail, and XC series products are not supported.
    c. In the left pane, click the category name. Devices in that category are displayed in the working pane.
    d. Select the check box corresponding to the device(s). The selected devices are listed under the Selected Devices tab.

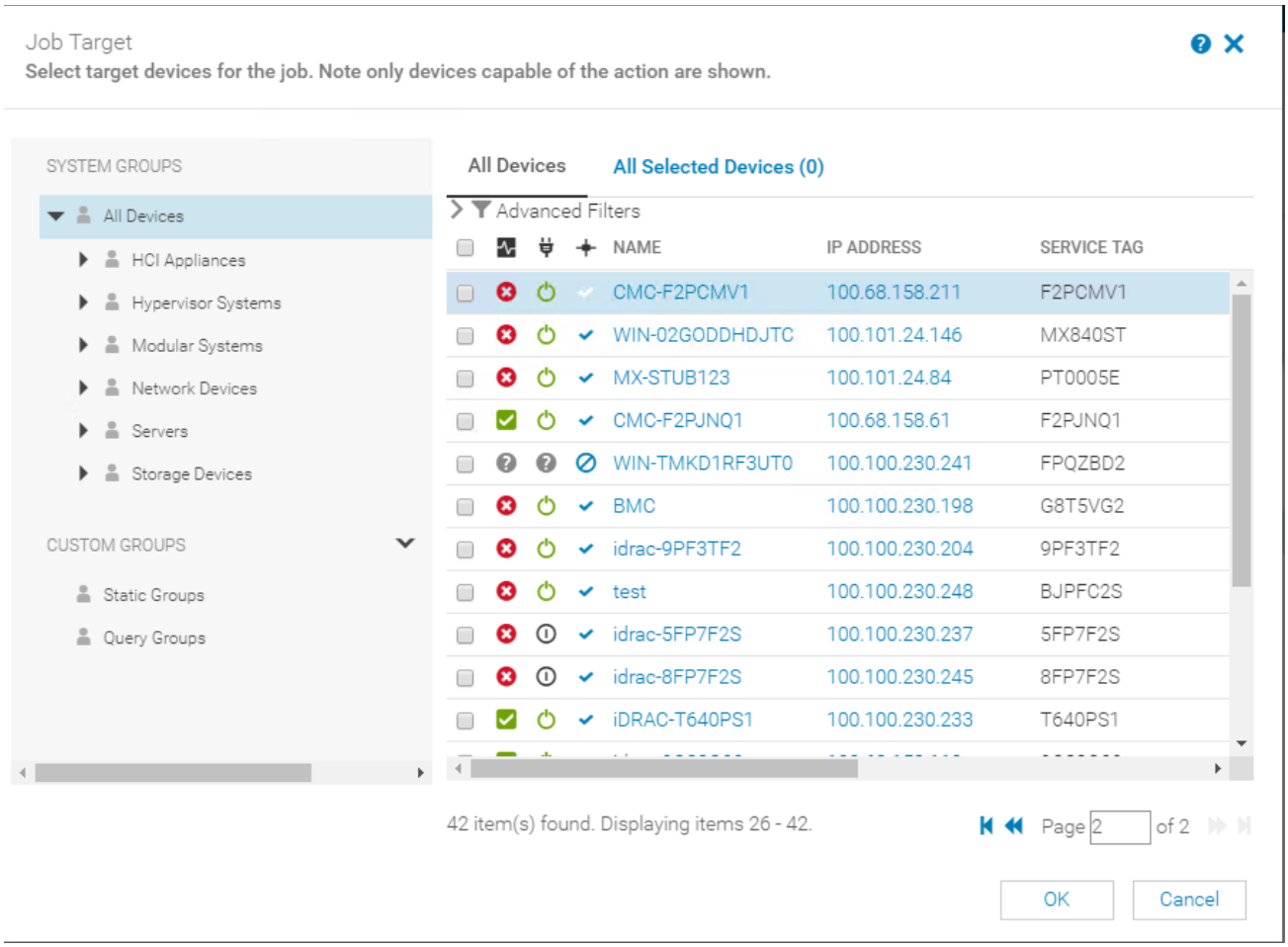


Figure 9 Select devices in the Select Devices dialog box

4.2 Create a firmware baseline for device groups by using Dell EMC OpenManage Enterprise

1. To select the target device group(s):

    a. In the **Job Target** dialog box:

        i. Select **Select Groups**, and then click the **Select Groups** button.
        ii. In the **Select Groups** dialog box, the items monitored by Dell EMC OpenManage Enterprise such as iDRAC, chassis, IOMs, and devices under static or query group are displayed in respective categories.

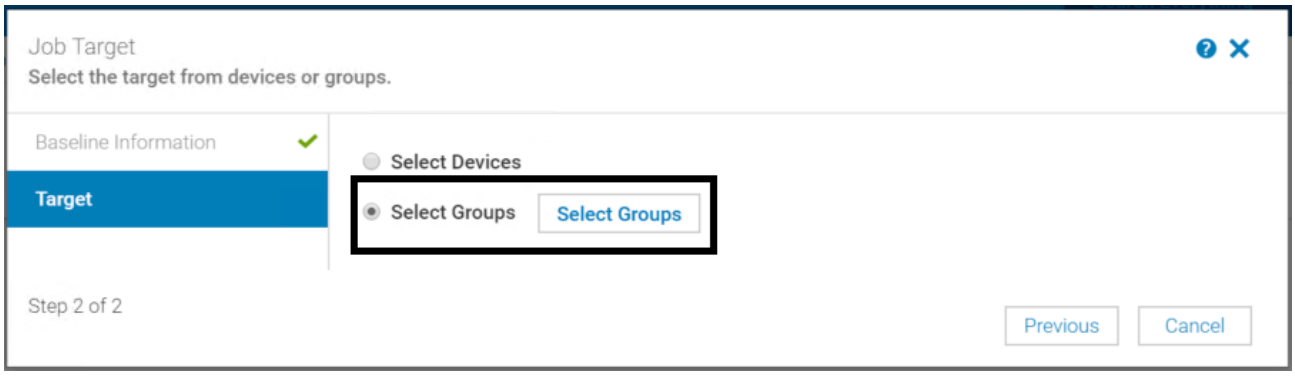


Figure 10 Select device groups for creating firmware baseline in Dell EMC OpenManage Enterprise

iii. In the left pane, click the category name. Devices in that category are displayed in the working pane.
iv. Select the check box corresponding to the group(s). The selected groups are listed under the **Selected Groups** tab.

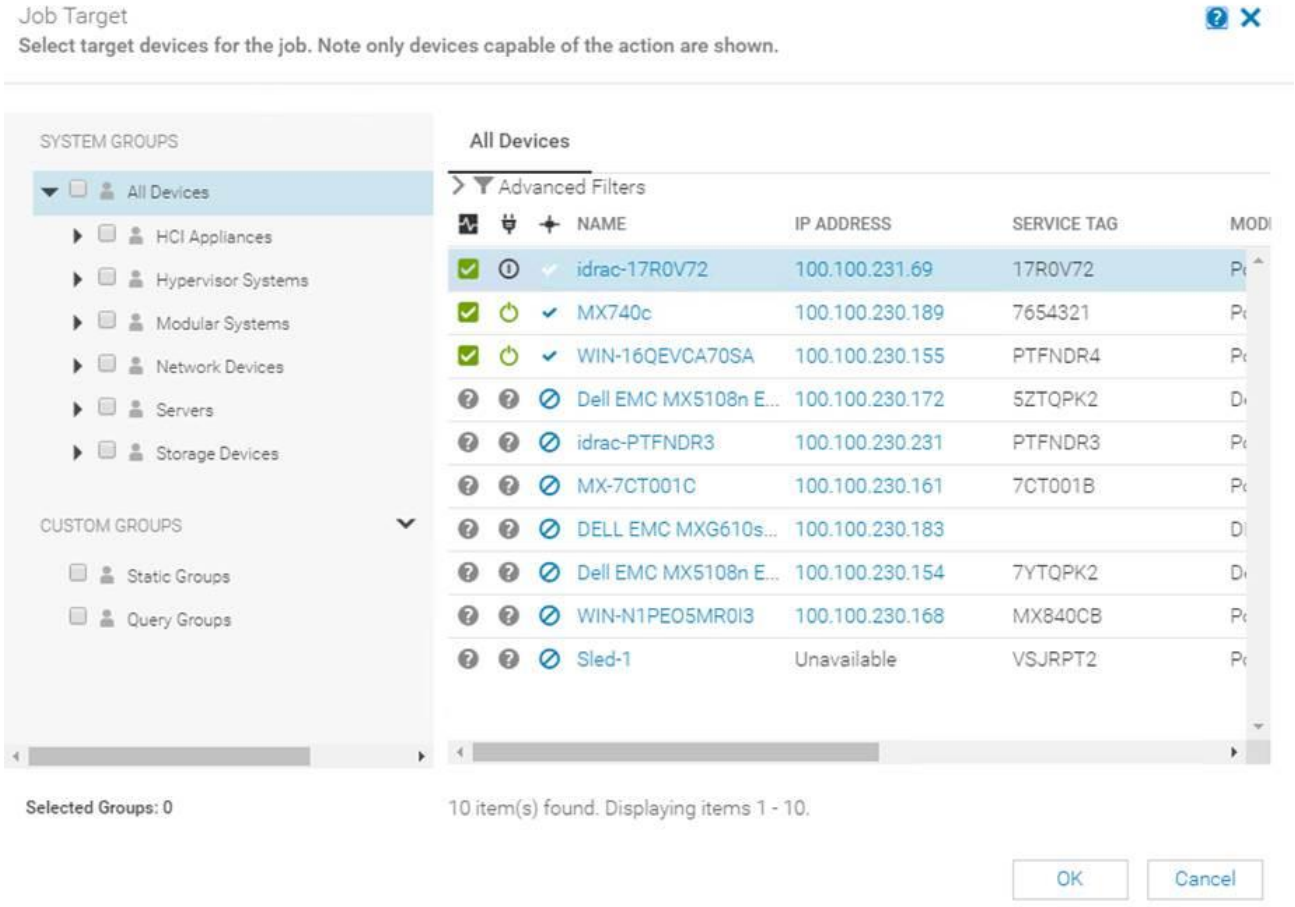


Figure 11 Select device groups for applying firmware baseline in Dell EMC OpenManage Enterprise

b. Click **Finish**.

A message is displayed that a job is created for creating the baseline. In the **Baseline** table, data about the device and baseline job is displayed.

4.3 Edit a firmware baseline in Dell EMC OpenManage Enterprise

1. On the **Baseline Compliance** page, select the check box associated with the baseline that must be edited.
   The baseline related information is displayed in the working pane.
2. Click **Edit**.

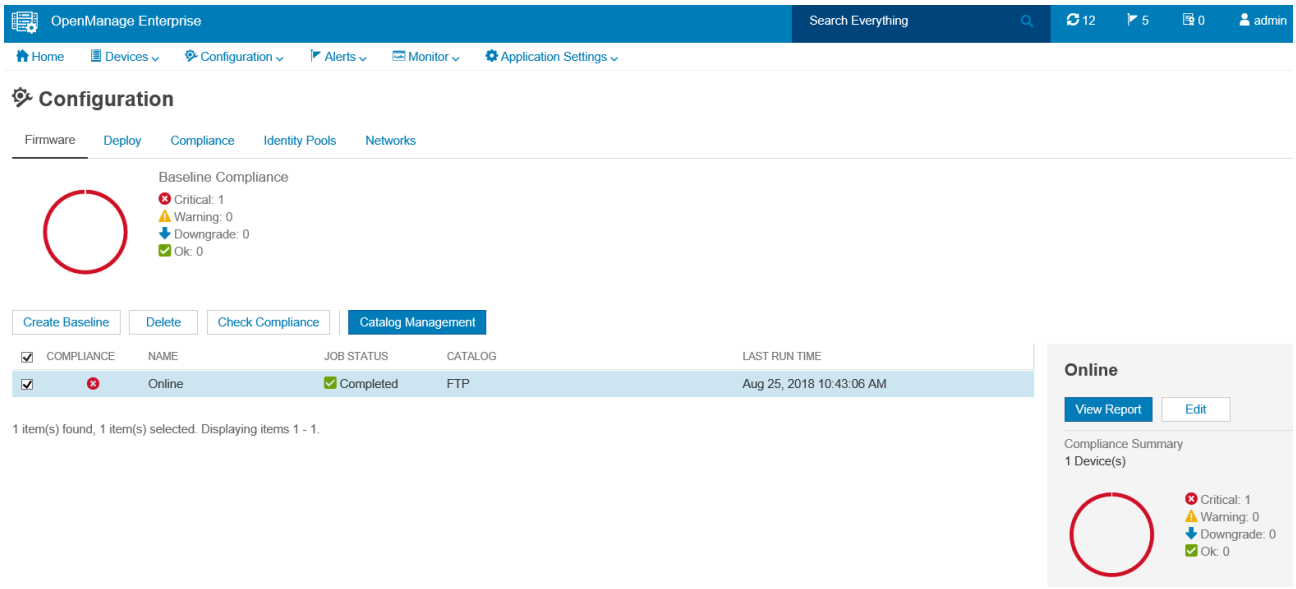


Figure 12 Select a firmware baseline on the Baseline Compliance page

3. Edit the baseline name and target device (device groups).

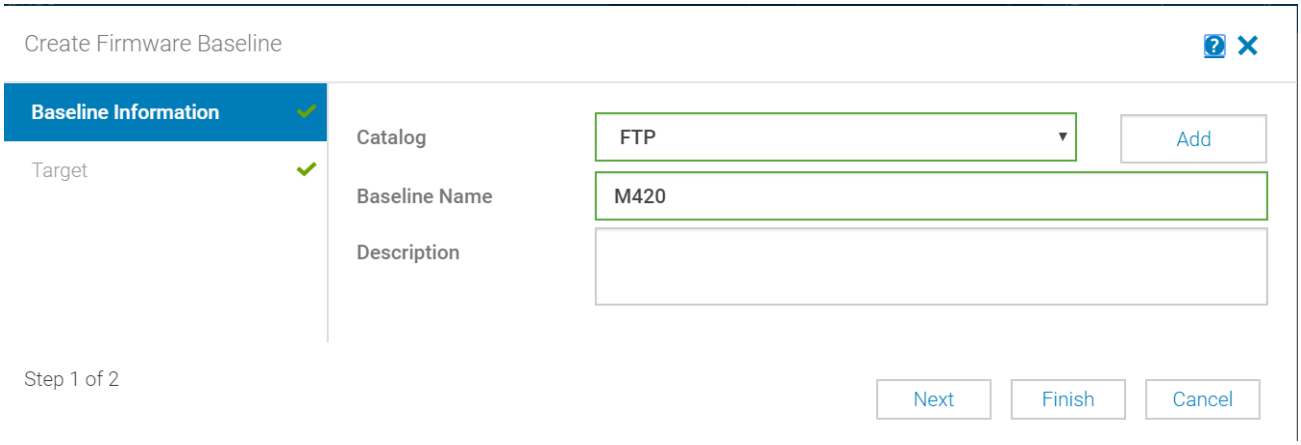


Figure 13 Edit a firmware baseline in Dell EMC OpenManage Enterprise

4.4 Delete a firmware baseline in Dell EMC OpenManage Enterprise

1. On the **Baseline Compliance** page, select the check box associated with the baseline that must be edited.
   The baseline related information is displayed in the right pane.
2. Click **Delete**.

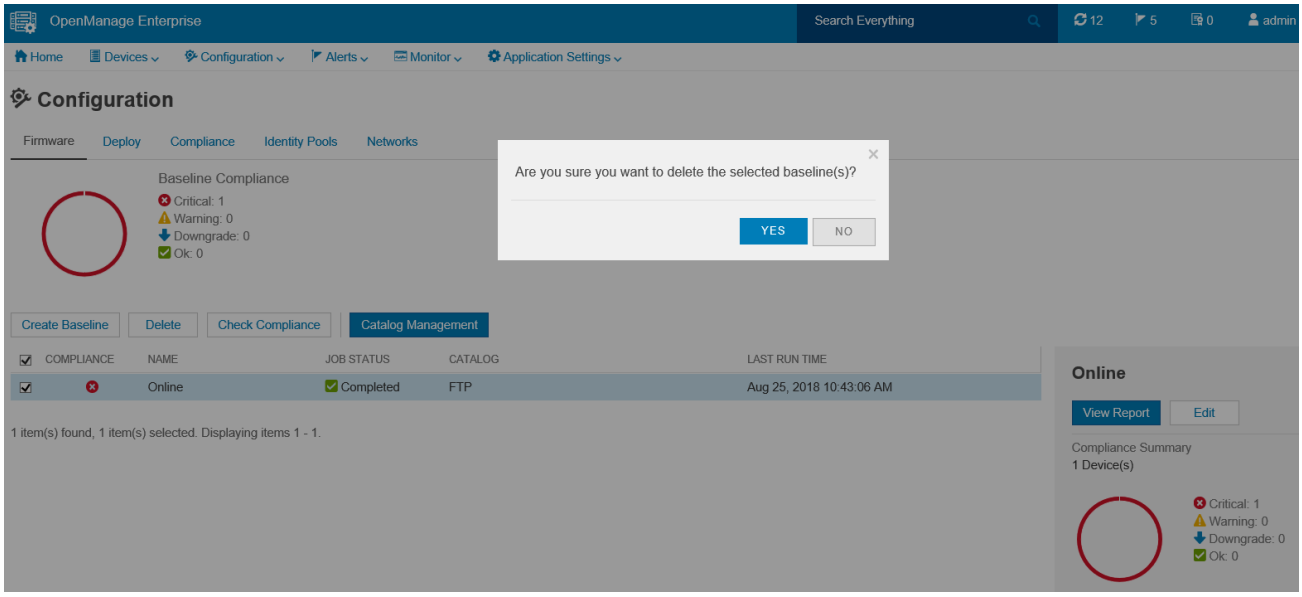


Figure 14 Delete a firmware baseline by using Dell EMC OpenManage Enterprise

3. When prompted, click **Yes**.
   The firmware baseline is deleted from the list of firmware baselines.

5 View firmware baseline compliance report in Dell EMC OpenManage Enterprise

Firmware baseline compliance report displays the compliance of devices or device groups selected. The compliance specifies if an action is required. The compliance level of devices in the baselines is indicated by a Donut chart on the Firmware page.

When more than one device is associated with a baseline, the status of a device with the least compliance level to the baseline is indicated as the compliance level of that baseline. For example, if many devices are associated to a firmware baseline, and the compliance level of many devices is **OK** and **Downgrade**, but if the compliance of one device in the group is Critical, the compliance level of the baseline is indicated as Critical.

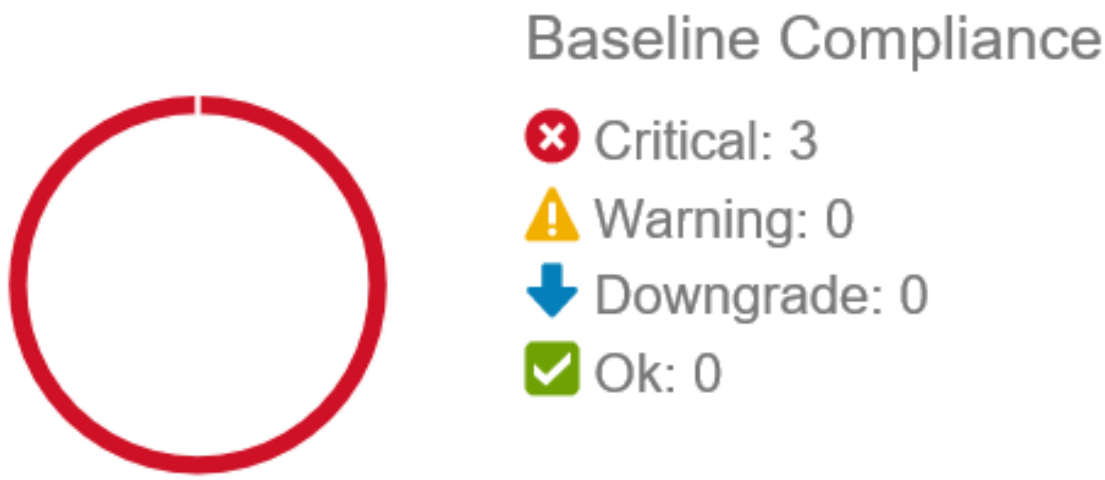


Figure 15 Firmware baseline compliance status symbols used in Dell EMC OpenManage Enterprise

However, you can view the firmware compliance of individual devices associated with a firmware baseline to either upgrade or downgrade the firmware version on that device.

To view the device firmware compliance report:

1. Select the check box corresponding to the baseline and click **View Report** in the right pane.

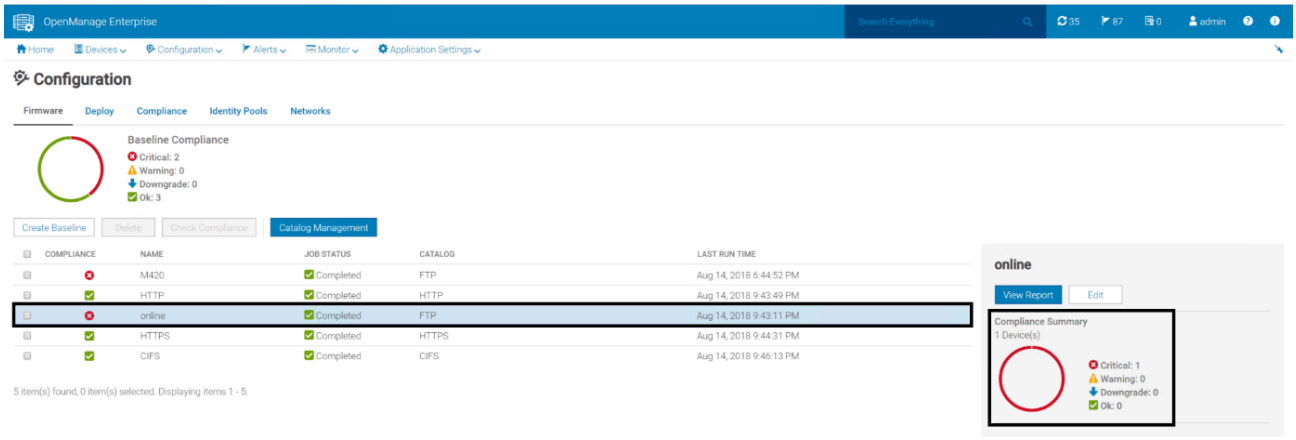


Figure 16 View firmware baseline report by using Dell EMC OpenManage Enterprise

On the **Compliance Report** page, the list of devices associated with the baseline and their compliance level is displayed.

Note—If each device has its own status, the highest severity status is considered as the status of the group to which the device belongs to. For more information about the Rollup Health status, see the *Managing the Rollup Health Status by using iDRAC on the Dell EMC 14th Generation and later PowerEdge Servers* technical white paper on the support site.

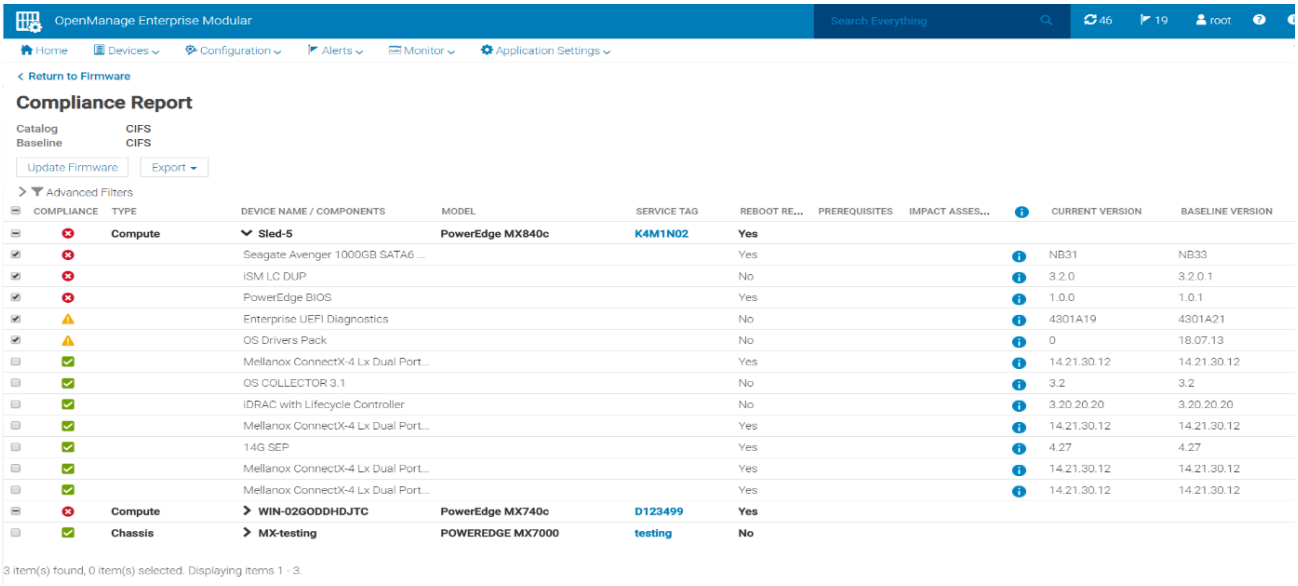


Figure 17 Firmware baseline compliance report in Dell EMC OpenManage Enterprise

5.1 Update the device firmware version by using the firmware baseline compliance report in Dell EMC OpenManage Enterprise

After you run a firmware compliance report, if the firmware version on the device is earlier than the version on the catalog, the Compliance Report page indicates the device firmware status as Upgrade. To update a device firmware by using the baseline compliance report:

1. Select the check box corresponding to the baseline to which the device is attached, and then click **View Report** in the right pane.
   a. On the **Compliance Report** page, the list of devices associated with the baseline and their compliance level is displayed. For field descriptions, see the Online Help documentation by clicking the **?** symbol in the upper-right corner.
   b. Select the check box corresponding to the device whose firmware must be updated. You can select more than one device with similar properties.
   c. Click **Update Firmware**.
   d. In the **Update Firmware** dialog box, select:

      - **Update Now**: The firmware update task is immediately initiated. To make the update effective during the next device restart, select the **Stage for next server reboot** check box. The devices that do not require a reboot are also updated.
      - **Schedule Later**: Select to specify a date and time when the firmware version must be updated. This mode is recommended if you do not want to disturb your current tasks.

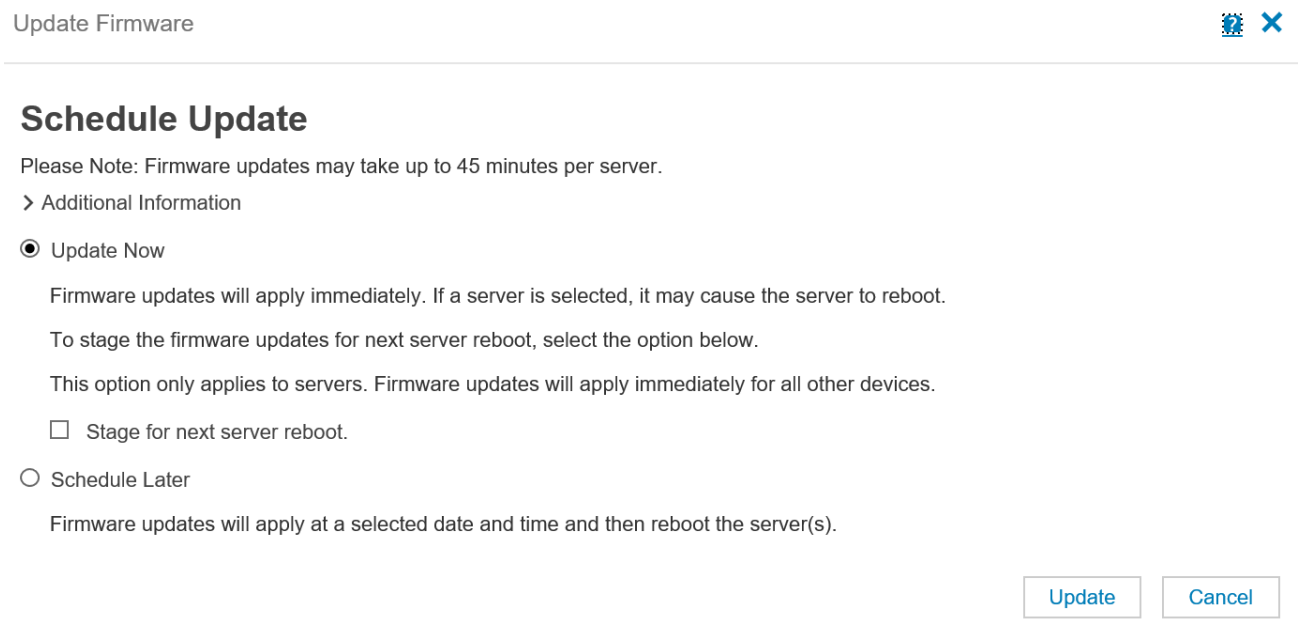


Figure 18 Schedule firmware update on Dell EMC OpenManage Enterprise

   e. Click **Update**.

Note—To update a device, you must associate the device to a catalog.

6 Update firmware by using DUP in Dell EMC OpenManage Enterprise

Dell EMC OpenManage Enterprise enables you to manually select a DUP (Dell Update Package) from local directory to apply on the device (s). Before applying, the DUP is validated for compliance-check and signature-check. The feature displays information about the version being applied and provides details on the criticality of the DUP.

1. On the Dell EMC OpenManage Enterprise page, click **All Devices**.
   a. Select the device (s) from the list and click **Update Firmware**.

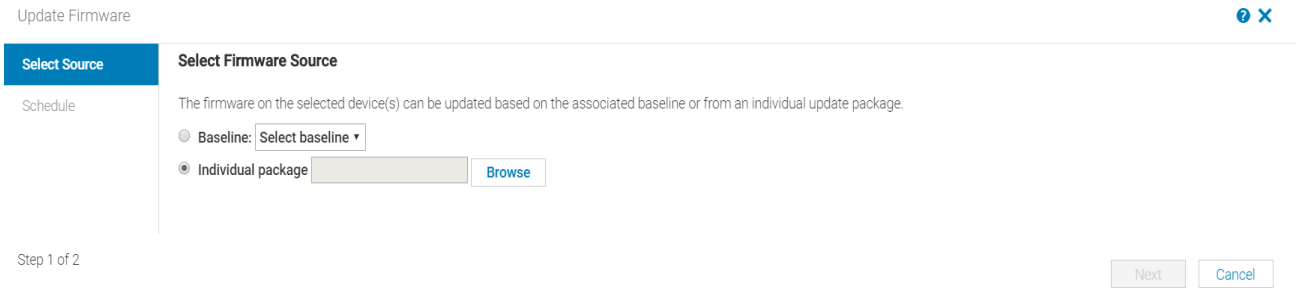


Figure 19 Select device to update the firmware version by using Dell EMC OpenManage Enterprise

   b. Browse to the DUP location and upload the DUP file.
   After the DUP is uploaded, it is validated and compliance-check is performed against the software inventory of the device. Compliance report for the DUP is displayed as shown in the sample screen shot here.

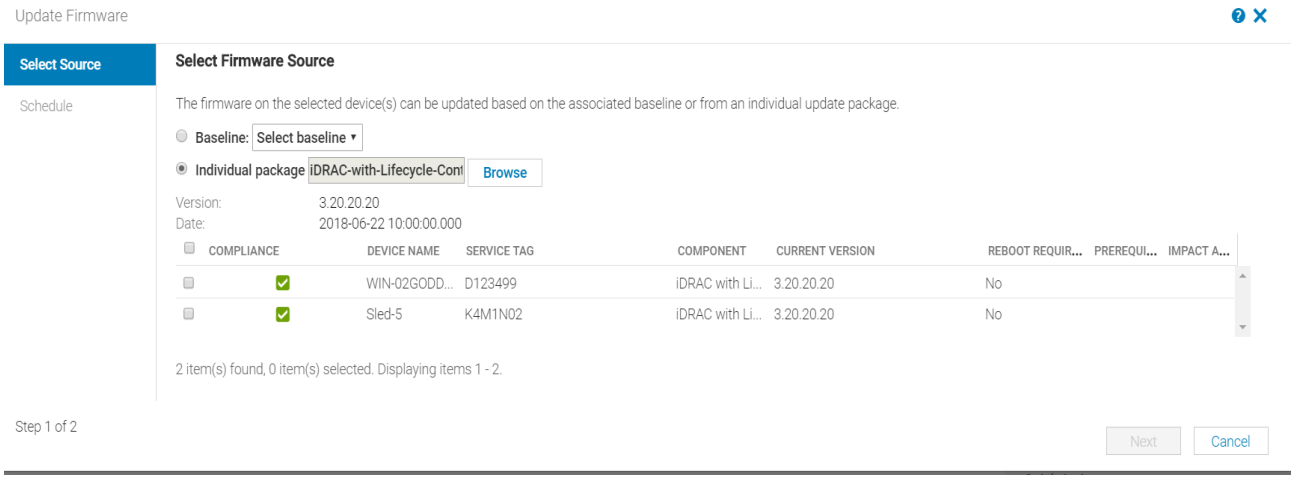


Figure 20 Update device firmware by using a DUP in Dell EMC OpenManage Enterprise

Note—By using a DUP, you cannot update or roll back the firmware version of Chassis Management Controller (CMC).

7 Troubleshooting issues in Dell EMC OpenManage Enterprise when performing firmware update on target devices

7.1 Unable to update firmware on target device by using Dell EMC OpenManage Enterprise because of internet connection issues

7.1.1 Issue

The Dell EMC OpenManage Enterprise firmware version cannot be updated either because connection to the internet is ended or data packets are lost while downloading the DUPs from Dell.com.

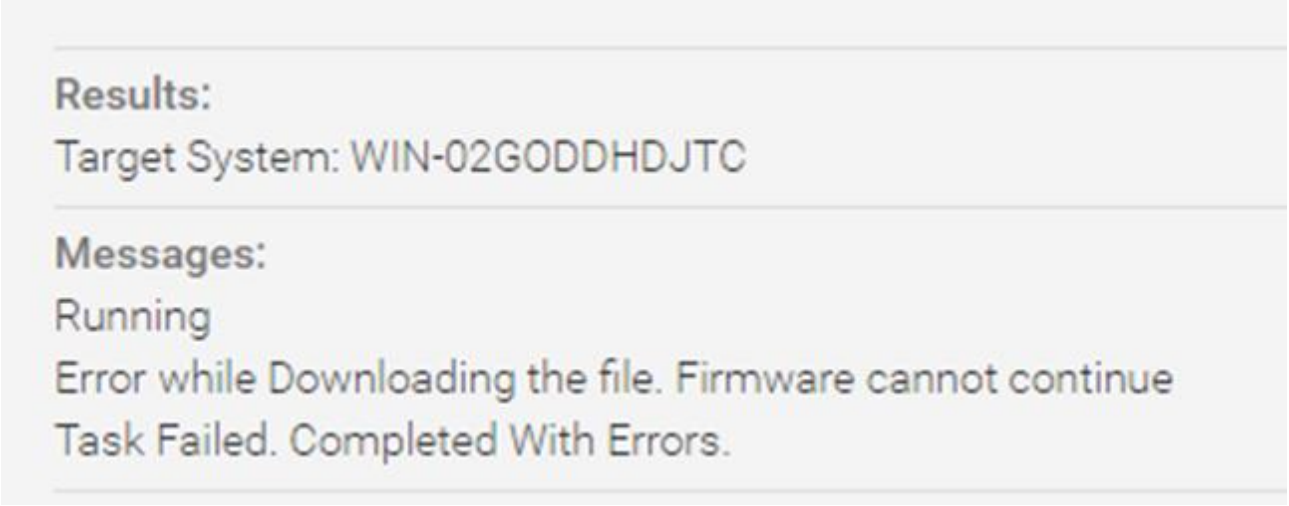


Figure 21 Firmware on target device cannot be updated because of internet issues in Dell EMC OpenManage Enterprise

7.1.2 Resolution

Ensure that uninterrupted network connection is available.

7.2 Unable to update firmware on target device by using Dell EMC OpenManage Enterprise because target device is unreachable

7.2.1 Issue

The firmware cannot be updated because either the target device is not reachable or is not responding.

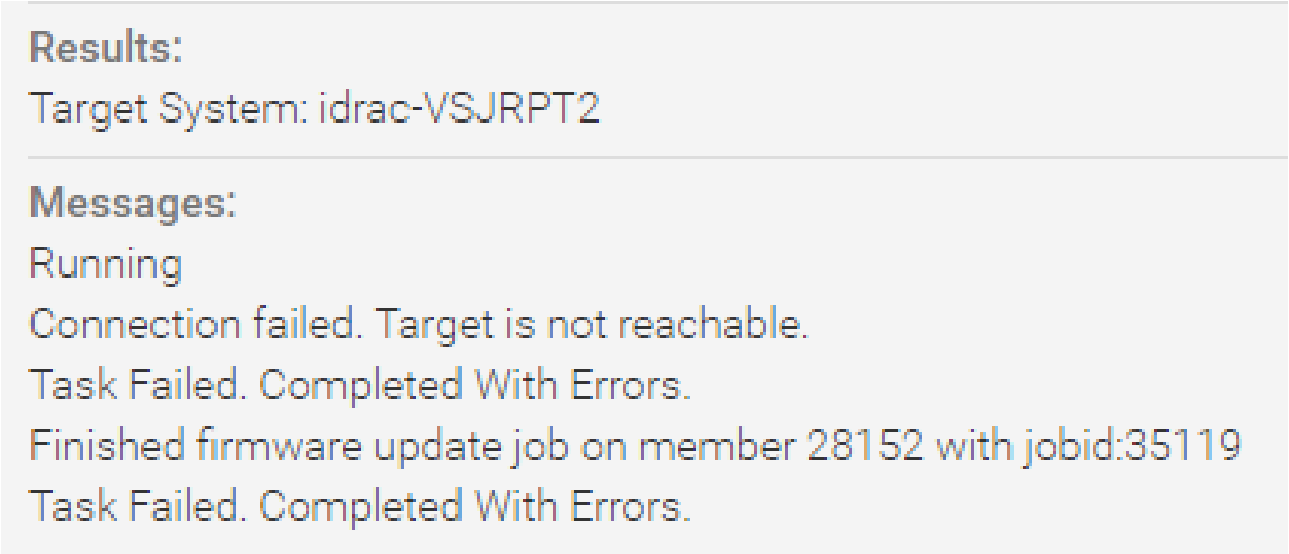


Figure 22 Firmware on target device cannot be updated because the target device is not responding in Dell EMC OpenManage Enterprise

7.2.2 Resolution

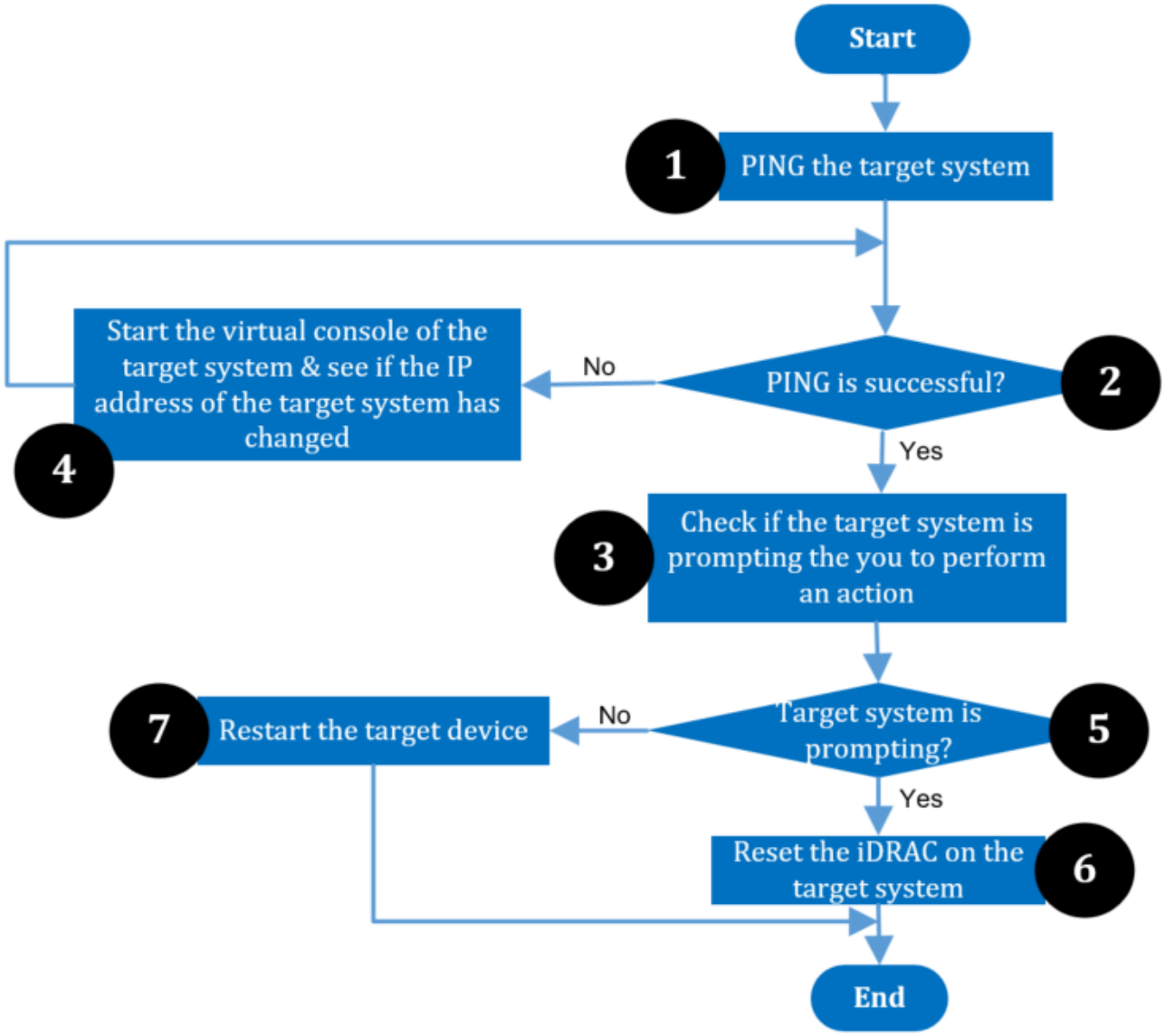


Figure 23 Process chart showing the resolution to firmware update issues because the target device is not responding

7.3 Unable to update firmware on target device by using Dell EMC OpenManage Enterprise because Lifecycle Controller is in use

7.3.1 Issue

Unable to update Dell EMC OpenManage Enterprise firmware because of an issue in Lifecycle Controller.

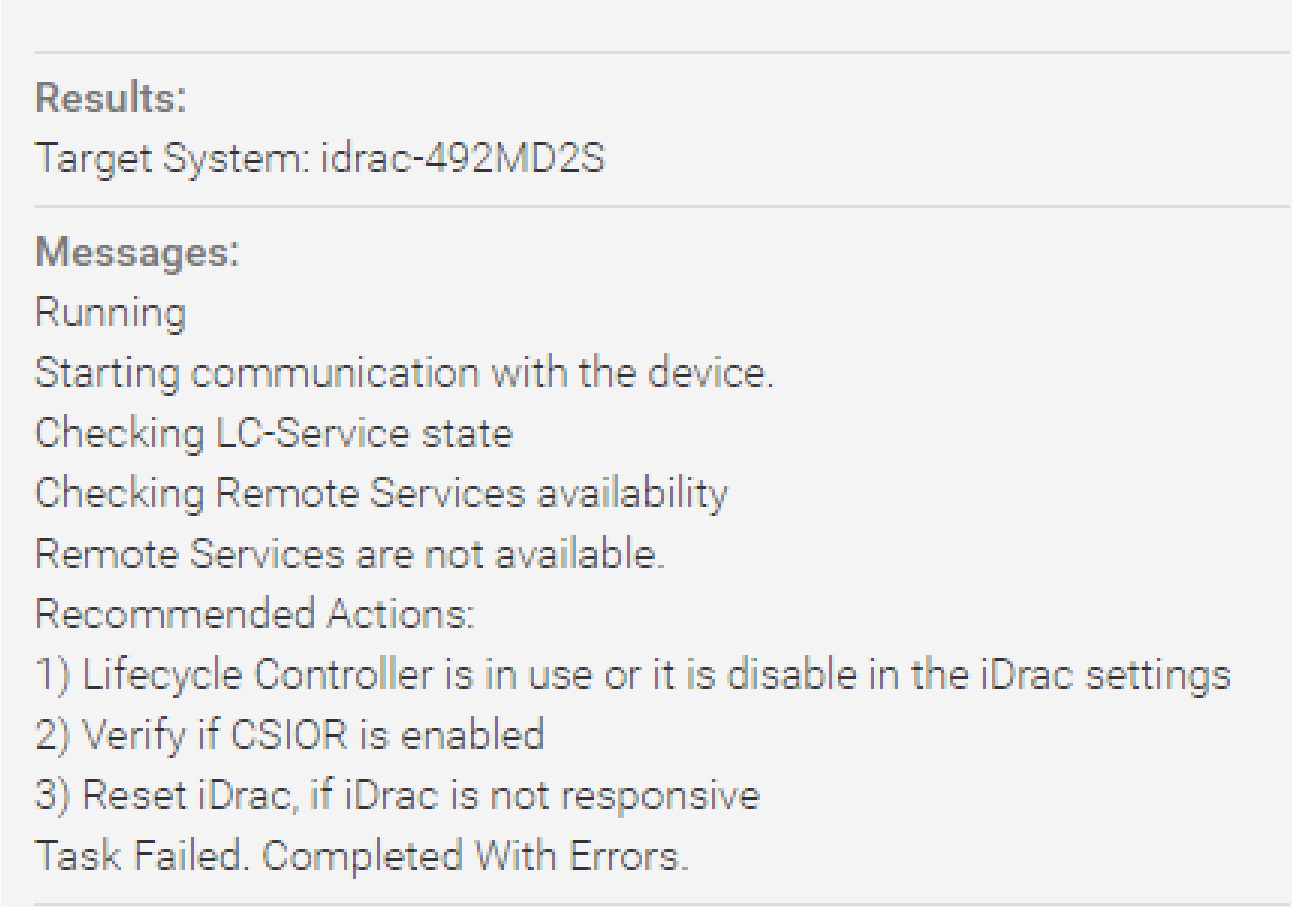


Figure 24 Firmware on target device cannot be updated by using Dell EMC OpenManage Enterprise because of an issue in Lifecycle Controller

7.3.2 Resolution

1. Start the virtual console of the target appliance.
   a. Check if the target server is requesting for an input from you.
   b. Else, reboot the system and wait until the target IP is booted to the operating system.
   c. If the tasks in 1–3 does not resolve the issue, reset the iDRAC.
   d. Update the firmware after the iDRAC reset operation is completed.

7.4 Unable to update firmware on target device by using Dell EMC OpenManage Enterprise because either an incorrect file is used or file signature is incorrect

7.4.1 Issue

Unable to update Dell EMC OpenManage Enterprise firmware because either an incorrect file is used or file signature is incorrect.

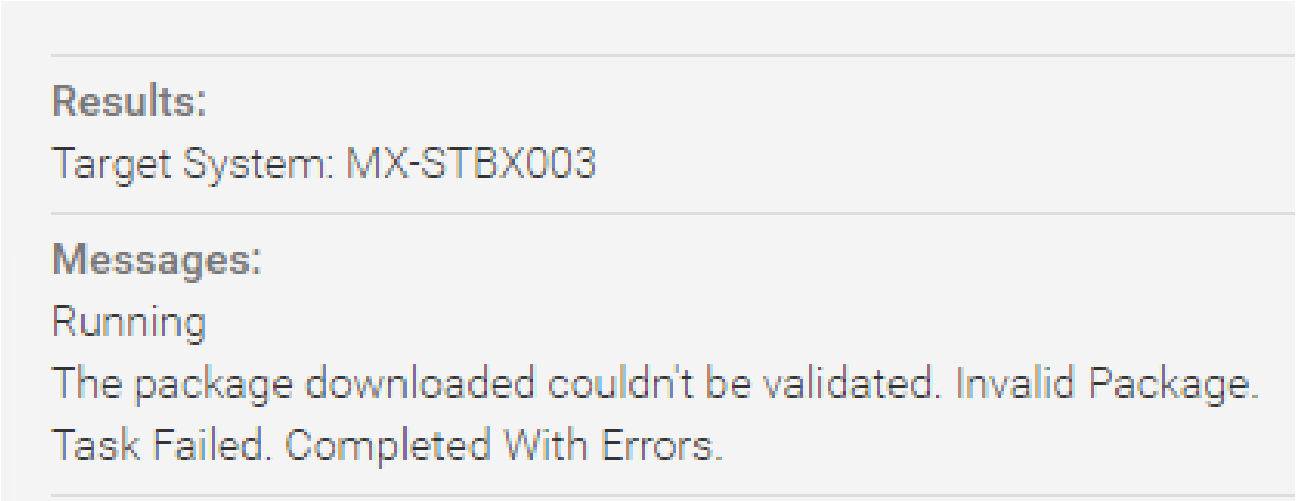


Figure 25 Firmware on target device cannot be updated by using Dell EMC OpenManage Enterprise because of an incorrect file is used

7.4.2 Resolution

Try any one of the following:

- Update the firmware by using the online versions. See Create online firmware catalog by using Dell EMC OpenManage Enterprise.
- Download the update package once again and retry the operation.

7.5 Dell EMC OpenManage Enterprise is unable to create a firmware catalog

7.5.1 Issue

This issue occurs during any of the following scenarios:

- Dell EMC OpenManage Enterprise is unable to connect to internet while creating an online catalog.
- The proxy configuration settings are not correctly configured.
- Incorrect credentials are entered while creating a custom firmware catalog by using CIFS or HTTPS.
- Invalid catalog file path or share address is entered while creating custom firmware catalog by using NFS, CIFS, HTTP, or HTTPS.

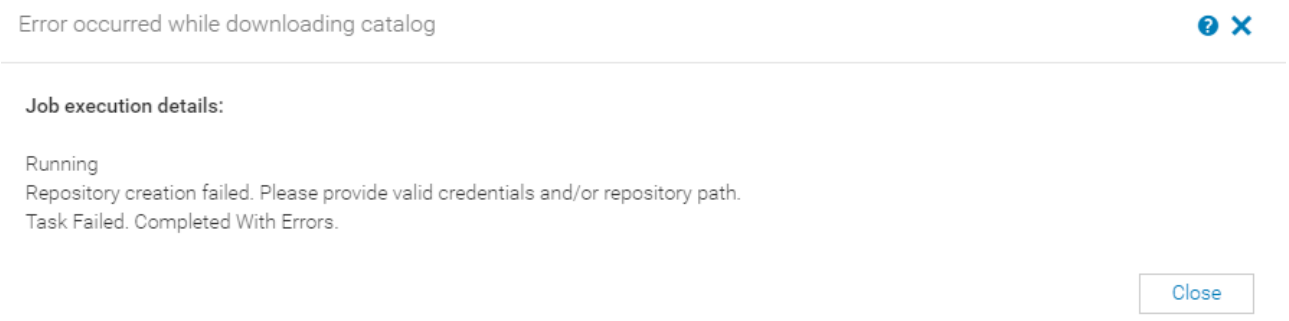


Figure 26 Dell EMC OpenManage Enterprise is unable to create firmware catalogs

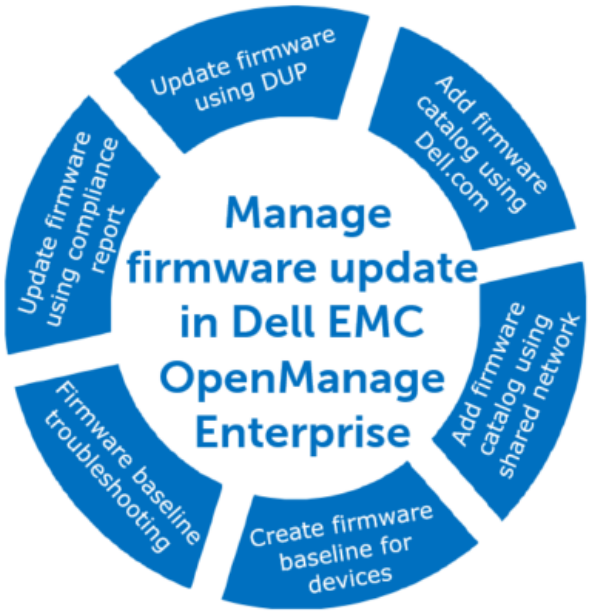
7.5.2 Resolution

Make sure that the following are correct and retry the operation:

- Internet connection to the device.
- Correct file path or file name while creating the catalogs.
- Correct credentials while creating the custom catalogs.

Conclusion

Dell EMC provides its customers with products that simplify and streamline their IT processes, freeing administrator's time to focus on activities that help grow the business. This technical white paper provides comprehensive step-by-step information about creating customized catalog baselines suited to your datacenter activities. To maximize utilization, special notes and cautions are specified, where necessary. It provides screen shots to enhance readability and tabulated descriptions that enable you to rapidly identify items of interest. For more information about different Dell EMC PowerEdge servers, see the Dell PowerEdge Servers Portfolio Guide.



You can also view the following videos to get more information about using the Dell EMC OpenManage Enterprise Graphical User Interface (GUI):

- Creating a firmware baseline in Dell EMC OpenManage Enterprise—Tech Release (01:22 m)
- Dell EMC OpenManage Enterprise Systems Management Console (02:02 m)
- Dell EMC OpenManage Enterprise (01:44 m)
- Viewing device details by using Dell EMC OpenManage Enterprise (01:28 m)
- Discovering new devices by using Dell EMC OpenManage Enterprise (01:21 m)

A Technical support and resources

- Dell.com/support is focused on meeting customer needs with proven services and support.
- To watch quick and short videos about handling the PowerEdge server components, visit the QRL video website.

A.1 Related resources

A.1.1 Contacting Dell EMC

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit www.dell.com/support.
   a. Select your support category.
   b. Verify your country or region in the **Choose a Country/Region** drop-down menu at the top of page.
   c. Select the appropriate service or support link based on your need.

For information about documentation support:

1. Go to dell.com/support/manuals.
   a. In the **Tell us about your Dell system** section, under No, select **Choose from a list of all Dell products** and click **Continue**.
   b. In the **Select your product type** section, click **Software, Monitors, Electronics & Peripherals**.
   c. In the **Choose your Dell Software, Monitors, Electronics & Peripherals** section, click **Software**.
   d. In the **Choose your Dell Software** section, click the required link from the following:
   - Client System Management
   - Enterprise System Management
   - Remote Enterprise
   - System Management–Serviceability Tools

   e. To view the document, click the required product version.

A.1.2 About Dell EMC OpenManage Enterprise

Dell EMC OpenManage Enterprise is a hardware management and monitoring application that provides a comprehensive view of the Dell EMC servers, chassis, storage, network switches, and other devices on the enterprise network. With Dell EMC OpenManage Enterprise, a web-based and one-to-many Systems Management application for Dell EMC systems and other third-party devices, you can:

- Discover and manage devices in a data center environment.
- Create and manage Dell EMC OpenManage Enterprise users and their permissions.
- Group and manage devices.
- Monitor the health of your devices.
- Manage device firmware versions and perform system updates and remote tasks.
- Create and deploy device configuration templates.

- View and manage system alerts and alert policies.
- View hardware inventory and compliance reports.
- Monitor and report about warranty and licenses.

Note—For information about supported browsers, see the Dell EMC OpenManage Enterprise Support Matrix available on the support site.

Some of the security features of Dell EMC OpenManage Enterprise are:

- Role-based access that limits access to console settings and device actions.
- Hardened appliance with Security-Enhanced Linux (SELinux) and an internal firewall.
- Encryption of sensitive data in an internal database.
- Use of encrypted communication outside the appliance (HTTPs).
- Create and enforce firmware and configuration-related policies.
- Provision for configuring and updating the bare-metal servers.

Dell EMC OpenManage Enterprise has a domain-task-based GUI, where the navigation is designed by considering the sequence of tasks that are predominately used by an administrator and device manager. When you add a device to an environment, Dell EMC OpenManage Enterprise automatically detects the device properties, places it under relevant device group, and enables you to manage the device. The typical sequence of tasks performed by Dell EMC OpenManage Enterprise users:

- Deploying and managing Dell EMC OpenManage Enterprise
- Configure Dell EMC OpenManage Enterprise by using Text User Interface
- Discovering devices for monitoring or management
- Managing All Devices
- Monitoring devices by using the Dell EMC OpenManage Enterprise dashboard
- Organize devices into groups
- Manage the device firmware
- Viewing and configuring devices
- Monitoring device alerts
- View archived alerts
- View device warranty information
- Manage device configuration templates
- Manage the device configuration compliance baseline
- Monitor device compliance with compliance templates
- Manage audit logs
- Managing Dell EMC OpenManage Enterprise appliance settings
- Run an inventory job now
- Manage the device warranty
- Managing reports and MIB files
- Role-based Dell EMC OpenManage Enterprise user privileges