

Managing Modular Infrastructure by using OpenManage Essentials (OME)

This Dell EMC technical white paper describes how to manage the modular infrastructure by using OME.

Abstract

This Dell EMC technical white paper describes how to manage the modular infrastructure by using OME.

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Contents

Revisions.....	2
Acknowledgements.....	2
Executive summary.....	5
1 Features discussed in this technical white paper.....	6
2 Prepare OpenManage Essentials for managing Modular Infrastructure.....	7
2.1 Target device requirements.....	7
2.2 File share settings.....	7
2.2.1 Requires for file sharing.....	7
2.2.2 Set up a file share.....	8
3 Create Chassis infrastructure template from a reference Chassis by using IOA devices or MX Chassis template from a reference MX Chassis	9
4 View and edit Chassis infrastructure template or MX Chassis template.....	13
5 Deploy chassis infrastructure template or MX chassis template.....	17
6 Deploy a template on bare-metal devices.....	18
6.1 Requirements for deploying template on bare-metal devices	18
6.2 Purpose and definition of the 'Repurpose and Bare-metal' Device Group.....	18
6.2.1 Add devices to the 'Repurpose and Bare Metal' Device Group	18
6.3 Deploy the template.....	19
6.3.1 Deploy the template to Chassis or MX Chassis	19
6.3.2 Edit the device-specific attributes of the Deploy Template task.....	20
7 Auto-deploy configuration templates	22
7.1 Auto-deploy requirements	22
7.2 Set up Auto Deploy of the template.....	22
7.2.1 Create a Service Tag CSV File	22
7.2.2 Set up bare-metal Auto Deploy of the template to Chassis Service Tags	22
7.2.3 Modify the Auto Deployment settings.....	24
8 Create Chassis baseline or MX Chassis baseline	25
9 Associate devices to Chassis Configuration baseline or MX Chassis Configuration baseline	29
10 View compliance of devices associated to the Chassis baseline or MX Chassis baseline	31
11 Make the associated devices compliant to Chassis baseline or MX Chassis baseline	34
12 Upgrade old Chassis templates	36
13 Upgrade the existing Chassis Templates (created by using OME 2.3 and earlier versions).....	37
14 Recreate Chassis baselines.....	40
15 Check configuration compliance of devices in OpenManage Essentials.....	42
15.1 Configuration compliance requirements.....	42

- 15.2 Set up and run the configuration inventory.....42
 - 15.2.1 Modify configuration inventory Ccredentials and/or schedule42
 - 15.2.2 Run configuration inventory per target.....43
- 15.3 View and Leverage the compliance report.....44
- 16 Create the template from a reference IOA45
- 17 Deploy an IOA template49
 - 17.1 Deploy an IOA template to IOA device.....49
 - 17.2 Edit the device-specific attributes of an IOA Deploy Template task.....49
- 18 Create a template from a file51
 - 18.1 Create a template from a TXT File51
 - 18.2 Create a template from an XML File.....52
 - 18.3 Create a template from a JSON File53
- 19 Export a Chassis Infrastructure template or an MX Chassis template.....54
- 20 Troubleshoot issues in managing Modular Infrastructure by using OpenManage Essentials55
 - 20.1 Troubleshoot the File Share issues in managing Modular Infrastructure.....55
 - 20.2 Troubleshoot the template creation in OpenManage Essentials.....57
 - 20.2.1 File requirements for creating templates in OpenManage Essentials57
 - 20.3 Troubleshoot the Chassis template deployment or the MX Chassis template deployment.....57
 - 20.4 Troubleshoot the Auto-deploying templates58
 - 20.5 Troubleshoot the configuration compliance in OpenManage Essentials58
- A Technical support and resources60
 - A.1 Related resources60

Executive summary

OME 2.5 supports "Simplified modular infrastructure configuration management", where MX Chassis configurations are managed similar to CMC.

OME 2.3 and later versions of OME supports "Simplified modular infrastructure configuration management", where the chassis and IOA configurations are managed together. The Chassis Infrastructure templates contain both the CMC template and all the supported IOA templates on the Chassis.

OME simplifies the configuration compliance features by separating the deployment templates and configuration baselines. The OME introduces new features to create configuration baselines, associate the devices to configuration baselines, and make the devices compliant to the associated baselines.

This technical white paper discusses about:

- Creating the Chassis Infrastructure templates and MX Chassis templates
- Deploying the Chassis Infrastructure template and MX Chassis template
- Creating the configuration baselines
- Associating the devices to configuration baselines
- Making the devices compliant to associated baselines by using the **Configuration Baseline** feature
- Best practices
- Troubleshooting information

1 Features discussed in this technical white paper

- Comprehensive use case examples for using the OME IOA configuration features
- Requirements and setup for using the features
- Creating a template from the Chassis or IOA or MX Chassis
- Editing a Chassis template or MX Chassis template
- Deploying a Chassis template to a Chassis and its IOAs
- Deploying a MX Chassis template to a MX Chassis
- Setting up auto deployment with Chassis templates or MX Chassis templates
- Deploying a template to IOA
- Creating a configuration baseline of the Chassis or MX Chassis
- Associating configuration baseline template to one or multiple Chassis or MX Chassis
- Configuring the Configuration Inventory

2 Prepare OpenManage Essentials for managing Modular Infrastructure

The MX Chassis must be discovered by using the MX Chassis Discovery-All Components option in Discovery wizard. When an MX Chassis is discovered by using the MX Chassis Discovery-All Components option in discovery wizard, all the servers of the blade chassis are also discovered automatically in OME.

The chassis devices must be discovered by using the Chassis (CMC) Discovery-All Components option in discovery wizard. When a CMC is discovered by using Chassis (CMC) Discovery-All Components option in the discovery wizard, all the servers and IOAs of the blade chassis are also discovered automatically in OME.

2.1 Target device requirements

- For the MX Chassis, supported firmware versions are:
 - PowerEdge MX7000 with firmware version 1.0
- No license is required for the MX Chassis
- For the chassis, supported firmware versions are:
 - PowerEdge M1000e with chassis firmware version of 5.10 and later, installed
 - PowerEdge VRTX with chassis firmware version of 2.1 and later, installed
 - PowerEdge FX2 or FX2s with chassis firmware version of 1.3 and later, installed
- For the chassis, required licenses are:
 - PowerEdge PowerEdge FX2, PowerEdge FX2s, and V PowerEdge RTX Chassis must have an Enterprise license
- For the IOAs, supported firmware versions are:
 - In the OME version 2.3, the I/O aggregator must have an installed firmware version of 9.10.0.0, 9.10.0.1P10, or 9.11.0.0.
- IOAs must be configured in any of the following operational modes:
 - Standalone
 - Virtual Link Trunk (VLT)
 - Programmable MUX (PMUX)

2.2 File share settings

The device configuration and deployment features require a staging area (file share) for modular chassis infrastructure. This section describes the details of the file share and how to setup the file share.

Note—In case of MX Chassis, file share is not required for device configuration and deployment features.

2.2.1 Requires for file sharing

The file share is a staging area for deployment. To use the deployment features, the file share is required to send and receive configuration files to and from a device. During the “create” or “deploy” task, configuration

files will briefly exist in the file share folder. After the completion of 'create' or 'deploy' task, the file is deleted. Security attributes (passwords and other sensitive data) are not included in the file.

2.2.2 Set up a file share

The file share settings must be entered in the OME. The file share settings require a username and a password of a user who has privileges to read and write the files on OEM system. During the deployment or configuration task, the username and password are sent to the remote targets to access the file share. Using an administrator account is recommended.

1. Navigate to the **Deployment** portal.
2. In the left pane, click **File Share Settings** under **Common Tasks**.
3. Type the user name and password and check the **Allow using file share for Device Configuration feature on server** check box in the **File Share Settings** dialog box, and then click **Apply**.

File Share Settings

File Share Settings

The Device Configuration feature requires a file share on the OpenManage Essentials server for all operations done on a chassis.
It is recommended to avoid using the file share because of security reasons in the Windows operating systems.
To use Device Configuration feature on chassis, type the credentials that will be assigned and used for accessing the file share.

Domain \ Username: .\Administrator

Password: [redacted]

File Share Status: Ok

Allow using file share for Device Configuration feature on server

Help Cancel Apply

Figure 1 File share settings

3 Create Chassis infrastructure template from a reference Chassis by using IOA devices or MX Chassis template from a reference MX Chassis

OME 2.5 supports "Simplified modular infrastructure configuration management", where MX Chassis configurations are managed similar to CMC.

OME 2.3 and later versions support "Simplified modular infrastructure configuration management", where the CMC and IOA configurations are managed together. The Chassis Infrastructure templates have both the CMC template and all the supported IOA templates on the Chassis.

Example use case—you have a new or existing blade chassis (with or without IOAs), or a new or existing MX Chassis from which you want to create the template.

This section describes how to create the template from a discovered device. The reference device is the device which is discovered in OME, configured in a desired way, and the functionality of the device is intended to be replicated on other devices. The reference template is essential for the successful configuration of your other devices. Ensure that the reference device is configured correctly before creating the template.

To accomplish this use case:

1. Navigate to the **Deployment** tab.
2. In the left pane, click **Create Template** under **Common Tasks**.
3. In the **Create Template** dialog box, type a unique name for the template.
4. Select **Create from Device**.
5. Select **Chassis** or **MX Chassis** as the device type.
6. Select the target CMC (if you have selected Chassis as the device type) or MX Chassis (if you have selected MX Chassis as the device type) from the device tree.

Note—Alternatively, you can select the target by entering the device name or Service Tag in the search box next to Create from Device.

7. Enter the user credentials in **Execution credential**:
 - a. For the target CMC and IOAs on the chassis (if you have selected Chassis as the device type).
 - b. For the target MX Chassis (if you have selected MX Chassis as the device type)

Note—The CMC and MX Chassis credentials must have administrator privileges on the target CMC and MX Chassis respectively. IOA credentials are optional. If IOA credentials are not provided then, the IOA attributes will not be captured.

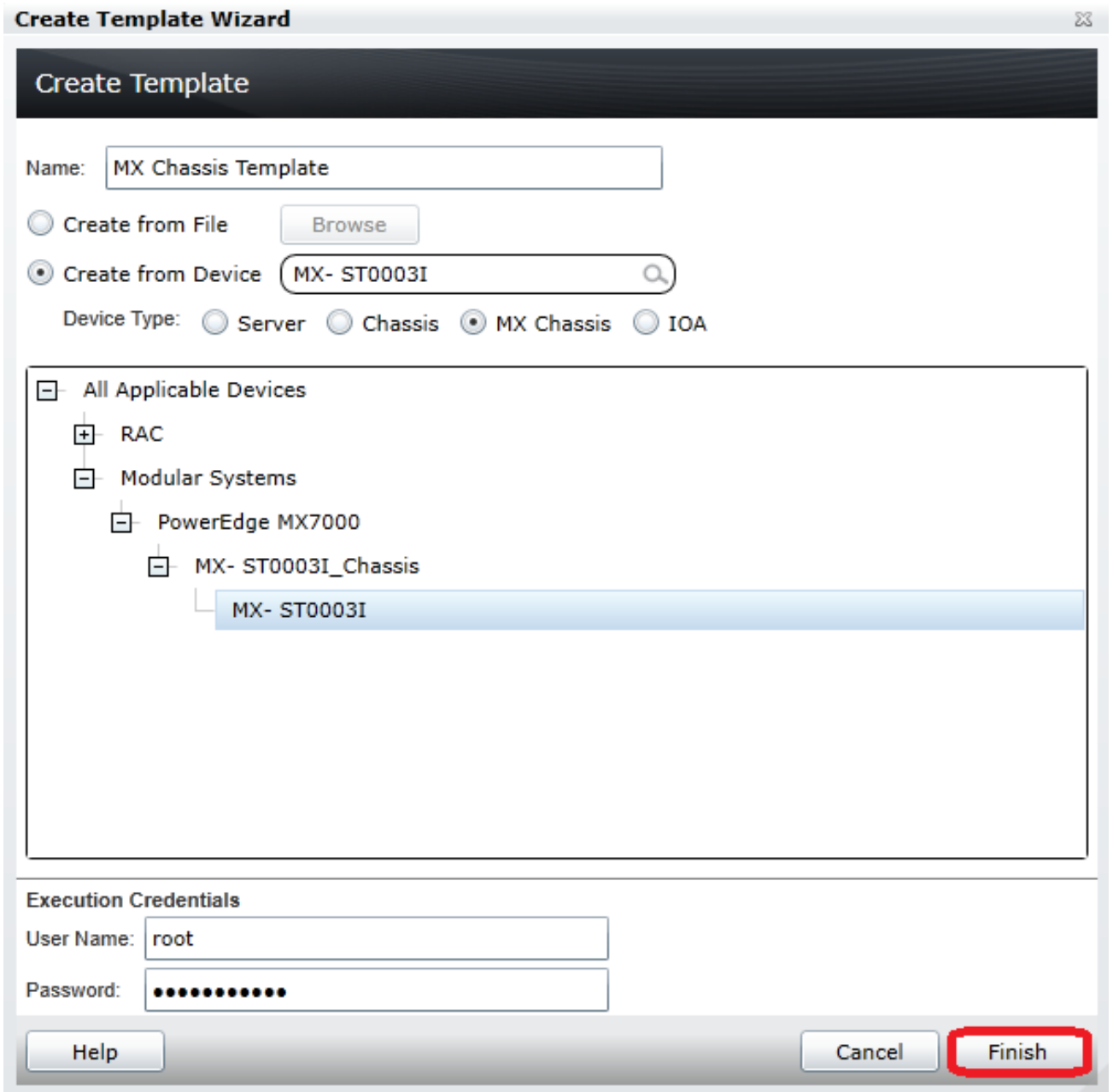


Figure 2 Create MX Chassis template from reference device wizard

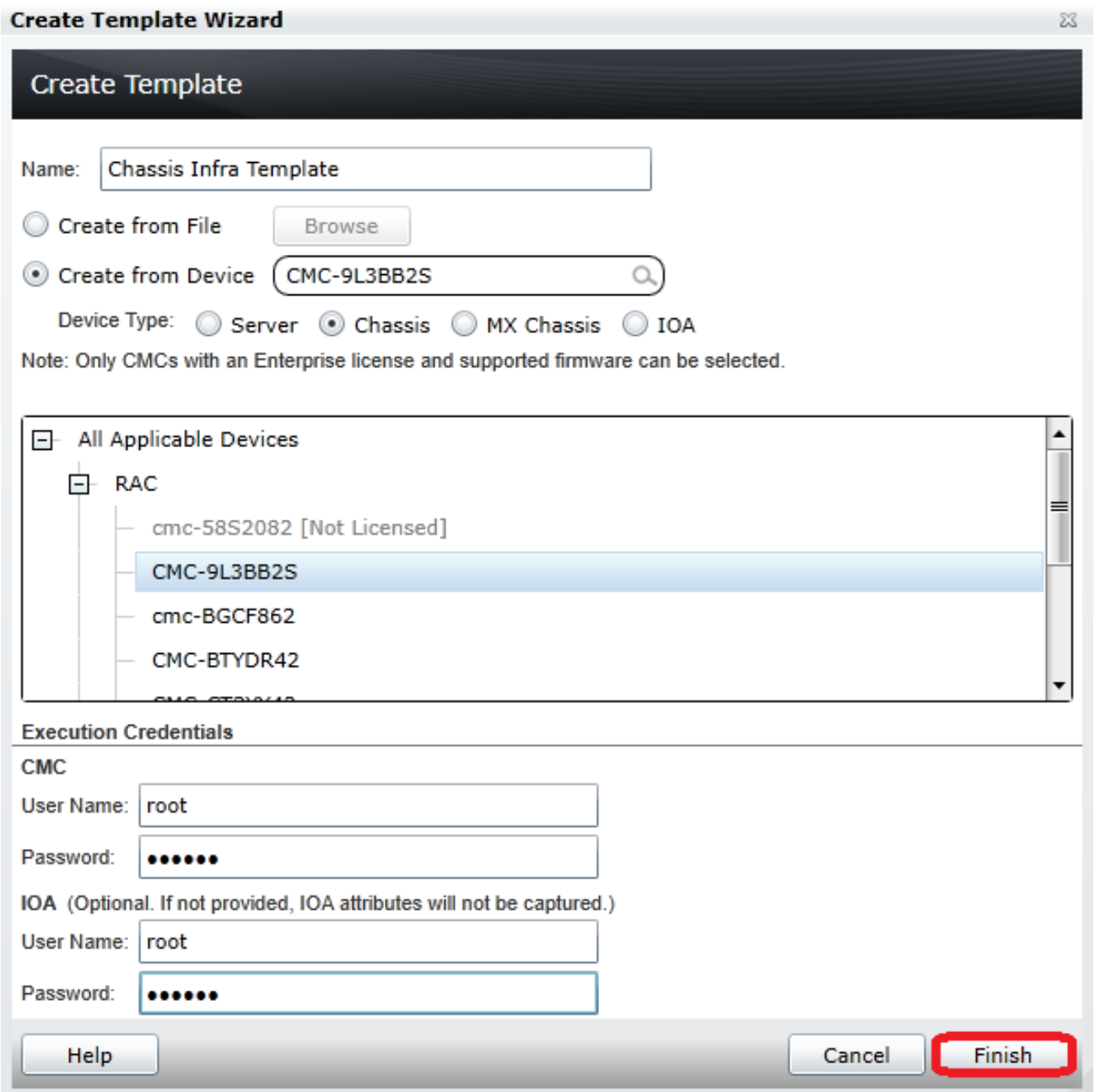


Figure 3 Create chassis template from reference device wizard

8. Click **Finish**.
9. Click **OK**.
The task is created when the wizard is closed.
10. To view the created task, click the **Tasks** tab in **Deployment**.
11. To view the progress of the task, see the Task Execution History.
12. To view the details of execution history, double-click the task execution history entry, or right-click the task execution history entry.
13. Select **Details**.
Information about the issues (such as incorrect credentials) is displayed.

14. If the task is successful, the template is created and displayed in the Chassis Templates tree (if you have created template for Chassis) or MX Chassis Templates tree (if you have created template for MX Chassis).
15. If the task is unsuccessful, right-click the task execution history or the task, and then click **Run**.

Note—Enter the CMC and IOA credentials (for Chassis device type) or MX Chassis credentials (for MX Chassis device type) to rerun the task.

4 View and edit Chassis infrastructure template or MX Chassis template

Example use case—you have an existing template (Chassis infrastructure template or MX Chassis template) and you have to change some of the template attributes. To accomplish this use case:

1. Navigate to the **Deployment** tab.
2. Select any Chassis Infrastructure template or MX Chassis template in the **Templates** tree.

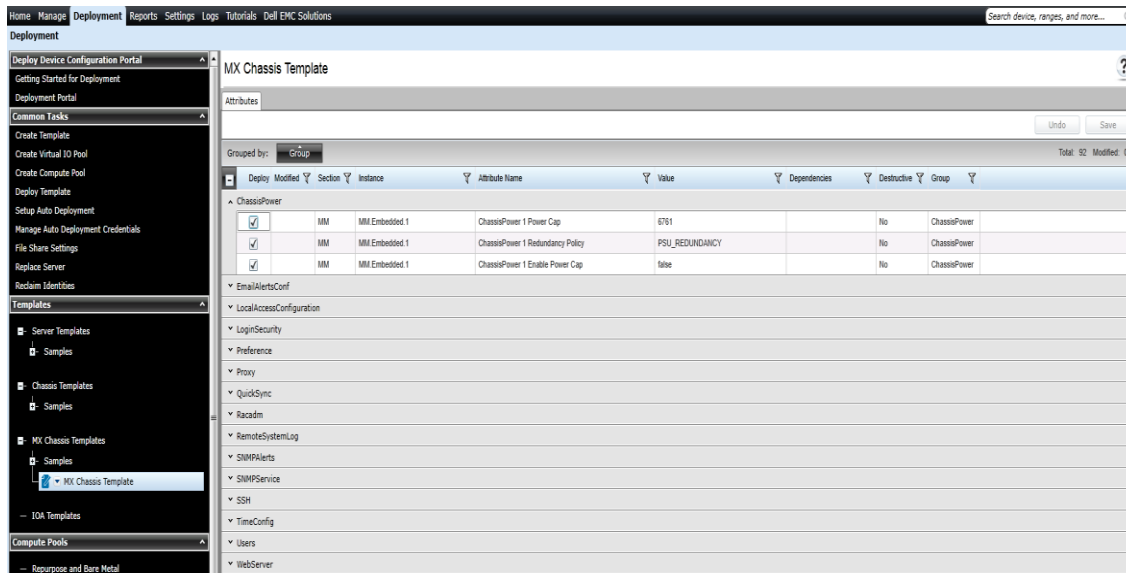


Figure 4 MX chassis template

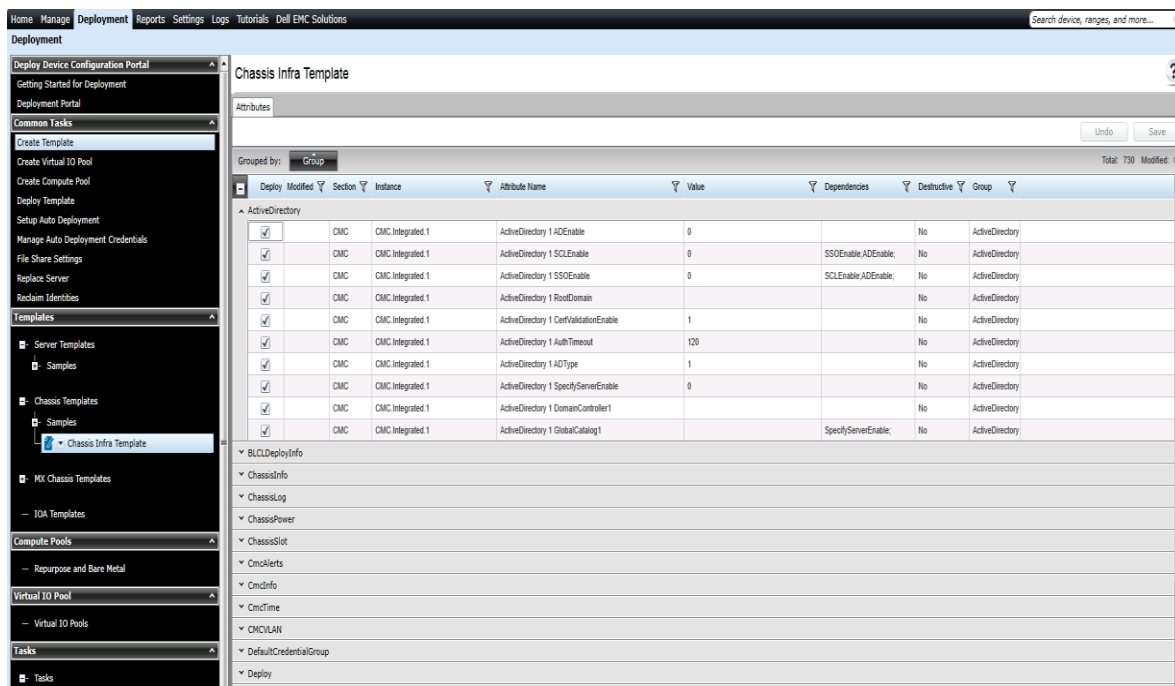


Figure 5 Chassis infrastructure templates

To change the CMC device template attributes or MX Chassis template attributes:

1. Under **Attributes**, select the attribute value.
2. Click **Save**.
3. In the **Save Template** dialog box, click **Yes**

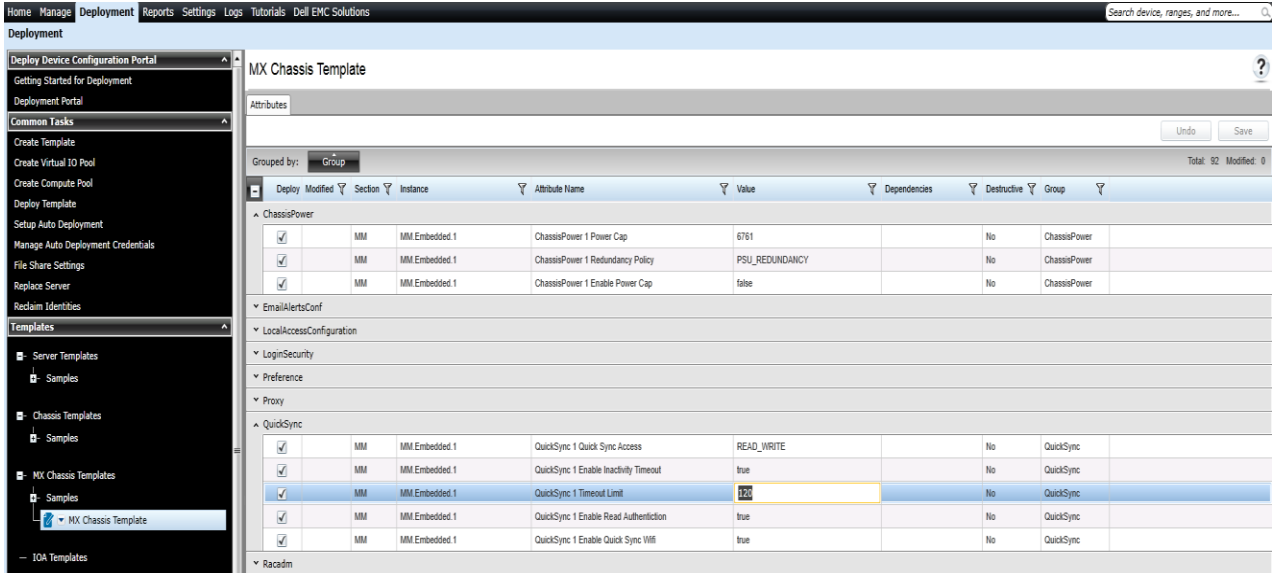


Figure 6 Editing MX chassis template attributes

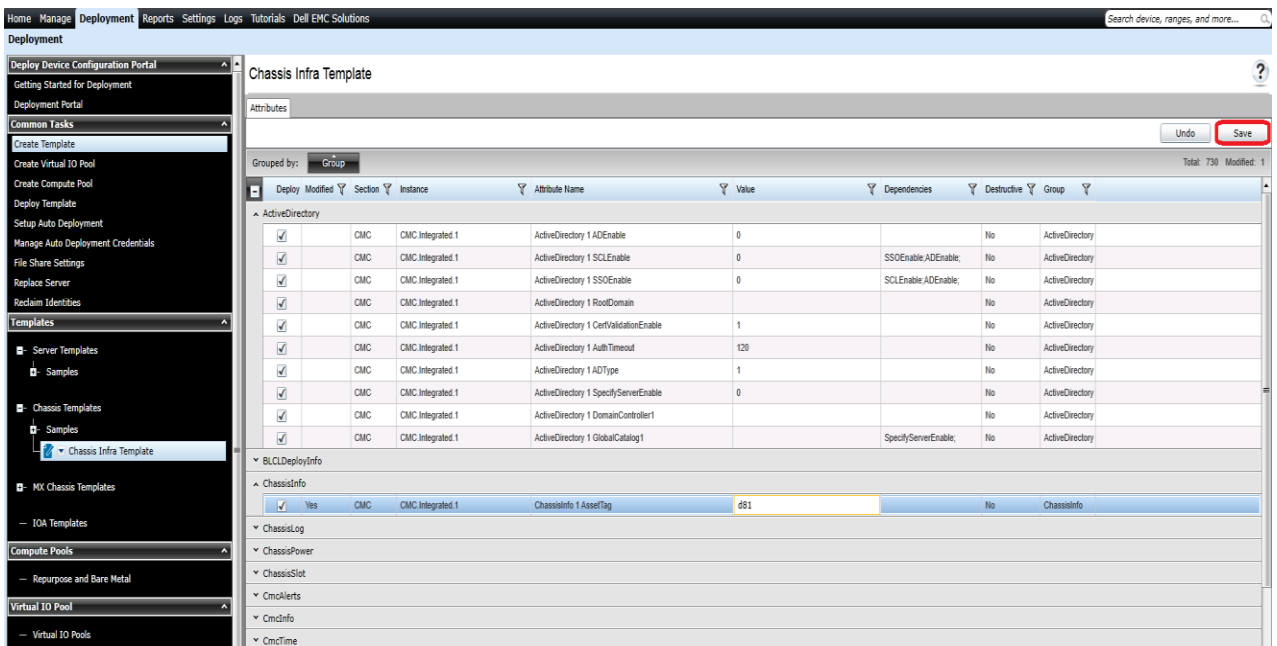


Figure 7 Editing chassis template attributes of chassis infrastructure template

Note—Editing the template attributes in the deployment wizard is not supported. Only device-specific attributes of the CMC device and IOA template(s) can be modified.

- To view the corresponding IOA templates, navigate to other tabs named with IOA names.

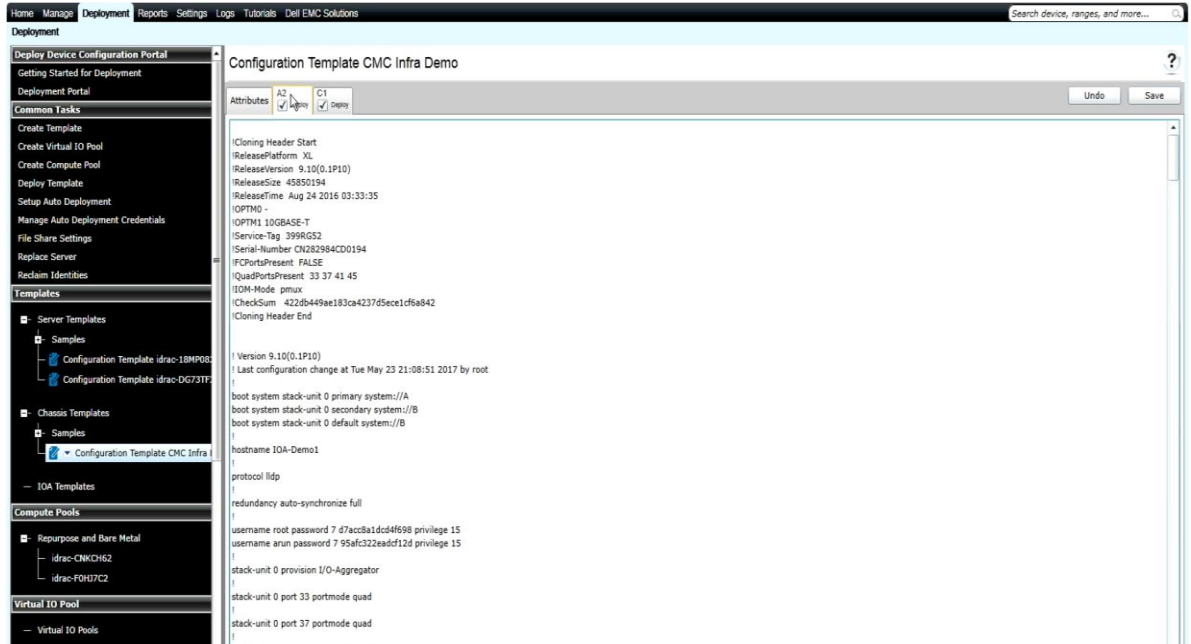


Figure 8 Viewing the IOA templates of chassis infrastructure template

Note—The modification of IOA attributes is not supported.

To deploy the IOA template on the specific IOA:

- Under **Attributes**, clear the IOA value.
- Click **Save**.
- In the **Save Template** dialog box, click **Yes**.

Note—IOA templates selection in the Deployment wizard is not supported. Only the device specific attributes of the CMC device and IOA template can be modified in the Deployment wizard.

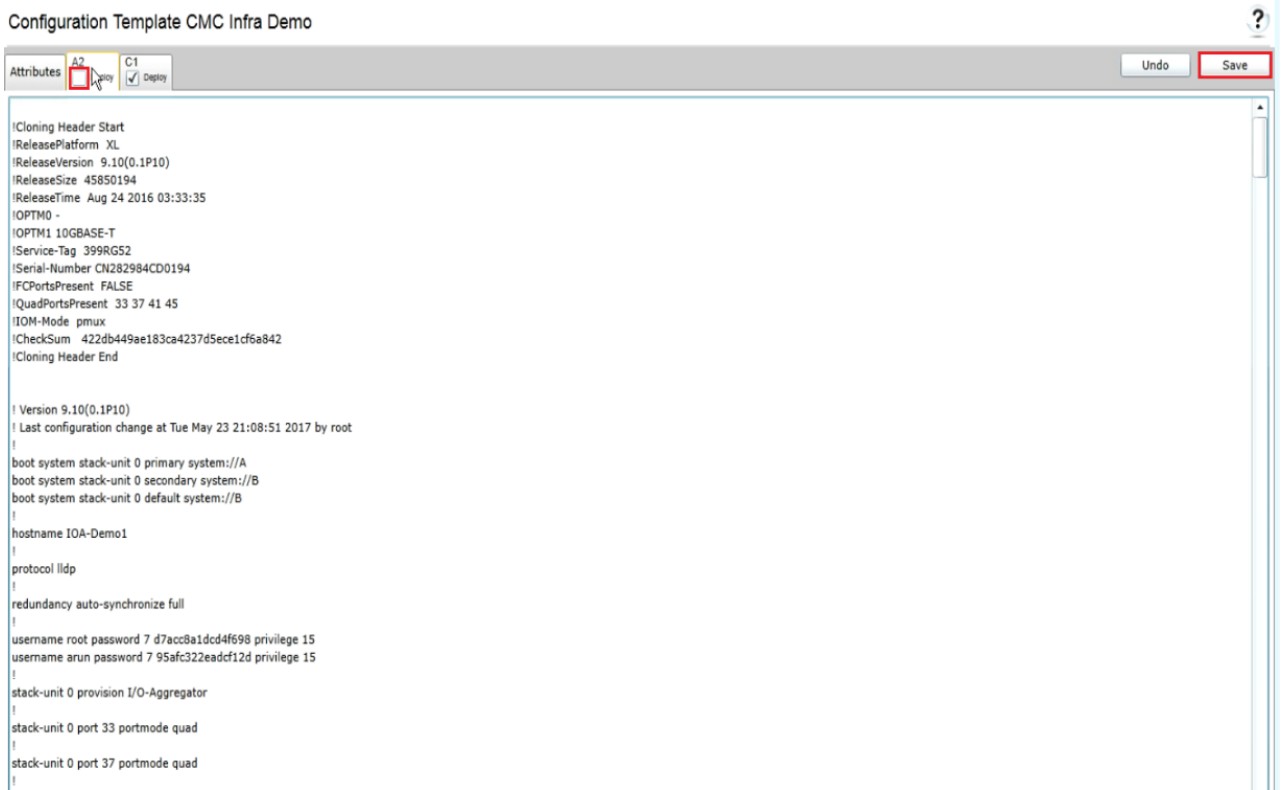


Figure 9 Selecting the IOA templates of chassis infrastructure template

5 Deploy chassis infrastructure template or MX chassis template

Example use case—Based on the requirements of your data center, you have configured the settings of the particular MX Chassis or Chassis and the corresponding IOAs (CMC devices and the IOAs on the Chassis). You have a new or existing MX Chassis or Chassis which you want to reuse. You want to copy the settings of the configured MX Chassis or Chassis and its IOAs and apply them to the new or existing MX Chassis or Chassis.

To accomplish this use case:

1. Check the configuration of MX Chassis or Chassis and available IOAs which are already configured.
2. Save the configuration in OME as a MX Chassis template or Chassis Infrastructure template. See [Create Chassis Infrastructure Template from a Reference Chassis by using IOA Devices or MX Chassis Template from a Reference MX Chassis](#).
3. Add the target CMC device (the new or existing CMC device) of the chassis or target MX Chassis to the Repurpose and Bare-metal device group. See [Add devices to the 'Repurpose and Bare Metal' Device Group](#).
4. Deploy the template to the MX Chassis or CMC device and its IOAs. See [Deploy the Template](#).

Note—Creating and deploying the template have requirements for the OME system and target devices. To review the requirements for creating the template, see [Target Device Requirements](#). To review the requirements for deploying the template, see [Deploying the Template](#).

Note—**MX Chassis template can be deployed on MX Chassis device only and CMC template can be deployed on CMC device only.** The Quick Deploy Settings cannot be configured for MX7000 Chassis by using the MX Chassis configuration template.

6 Deploy a template on bare-metal devices

This section describes the procedure for deploying the template on CMC devices by using manual I/O or on MX Chassis.

Deploying the templates involves sending and applying configuration settings to the remote devices. The template may contain a single configuration setting, one or more specific functional areas configuration settings, or a full device configuration setting. To deploy the template, you must create the template first. The template is essential for the successful task deployment. Make sure that the device from where you are creating the template is configured in the same way you wish to deploy it, when you create the template. To create the template, see [Create Chassis Infrastructure Template from a Reference Chassis by using IOA Devices or MX Chassis Template from a Reference MX Chassis](#).

The template created from the target may contain destructive attributes (especially if it contains RAID configuration settings). Deploying the destructive attributes may cause data loss, connectivity issues, failure to start, and other problems. It is important to review and understand each destructive attribute before deploying it to the target devices.

6.1 Requirements for deploying template on bare-metal devices

1. The file share must be configured for modular chassis infrastructure deployment feature. See [Set up File Share](#).
2. The target devices must meet the minimum requirements for the deployment and configuration features. See [Target Device Requirements](#).
3. The target devices must be added to the repurpose and bare-metal device group. See [Add devices to the 'Repurpose and Bare Metal' Device Group](#).
4. Minimum one user-created template (a cloned sample template is a user created template).

6.2 Purpose and definition of the 'Repurpose and Bare-metal' Device Group

The Repurpose and Bare-metal device group consists of all the devices eligible for deploying the template task. Add the devices to this group, only if you intend to deploy a template to the devices. If you do not intend to deploy the template to the devices, it is recommended to remove the devices from the Repurpose and Bare-metal device group. You must not add the production devices to the Repurpose and Bare-metal device group, because deploying the template can be destructive and cause downtime or the data loss.

6.2.1 Add devices to the 'Repurpose and Bare Metal' Device Group

1. Navigate to the **Deployment** tab.
2. In the left pane, click **Deployment Portal** under **Deploy Device Configuration Portal**.
3. Click the **Repurpose and Bare-metal Devices** tab.
4. In the lower-right corner of the grid, click **Modify Devices**.
5. Check the target devices in the message displayed. The target devices must be discovered and the target server must have the Server configuration for OME license.
6. Click **OK**.

Note—Only the devices that satisfy the deploy requirements appear in device selection. To review the requirements, see [Deploy Requirements](#).

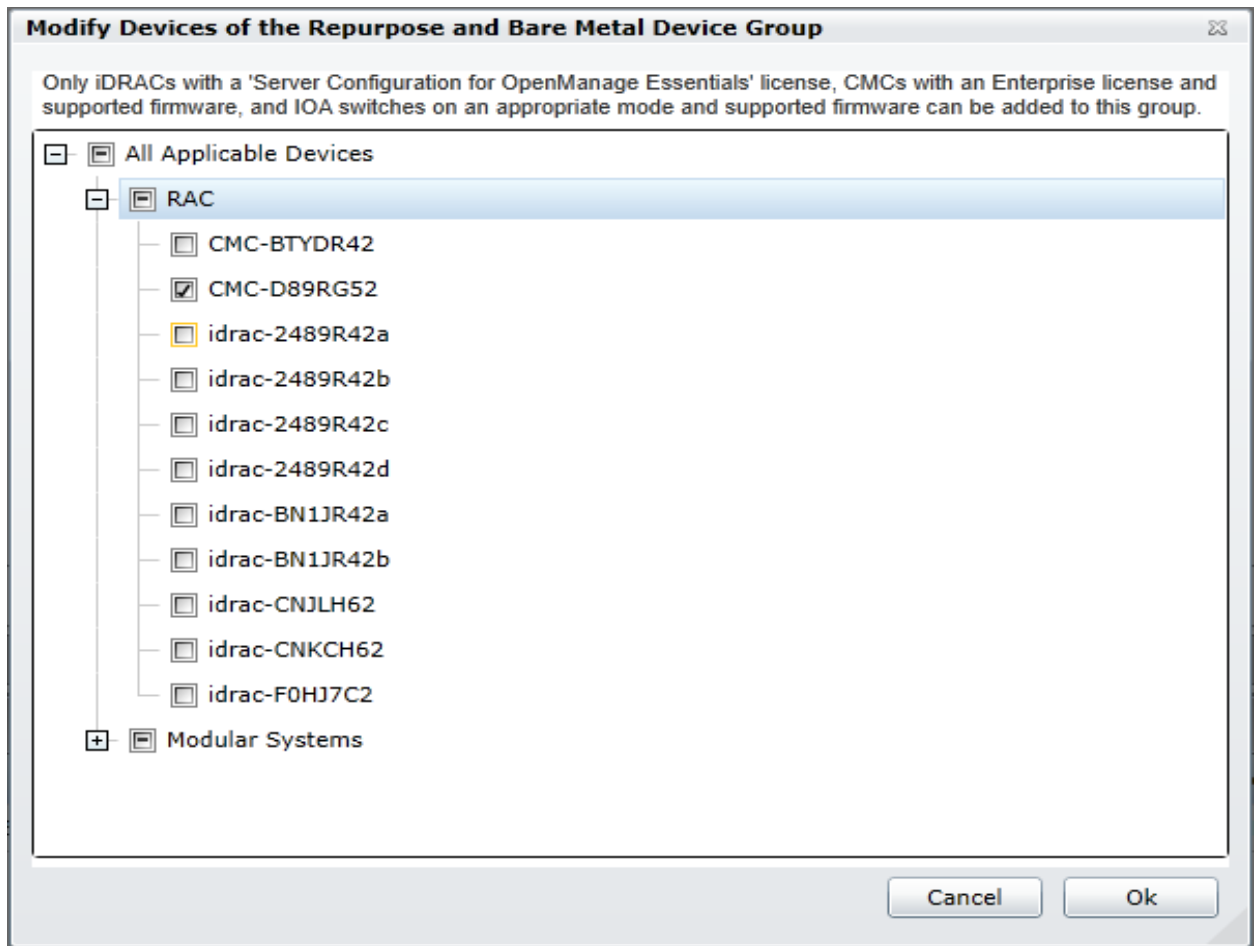


Figure 10 Modifying Repurpose and Bare Metal Device Group

6.3 Deploy the template

This section describes the procedure for deploying a Chassis Infrastructure template to chassis (CMC device and the IOAs present on the chassis) or an MX Chassis template to an MX Chassis.

6.3.1 Deploy the template to Chassis or MX Chassis

1. Navigate to the **Deployment** tab.
2. In the left pane, click **Deploy Template** under **Common Tasks**.
3. Type a unique name for the task. The name is optional, since a default name is supplied, but it is a generic name, and the same default name is always supplied. Selecting a name that is relevant to what is being deployed is suggested.
4. Select **Deploy Template**, and then click **Next**.
5. Select the template to be deployed on the target CMC device of the target chassis or on the target MX Chassis device and click **Next**.
6. Select the target CMC devices of the chassis or target MX Chassis and click **Next**.
7. Type the device specific attributes for each target CMC devices and the IOA devices of the target chassis.

Note—These are the attributes, such as 'StaticGateway', that are not included in the templates because they do not necessarily apply to all target devices. For more details, see [Editing the Device Specific Attributes of Deploy Template Task](#).

8. Click **Next**.
9. To continue the deployment when the template is incompatible with the target devices, on the **Options** page, select **Continue on warnings**.
10. Click **Next**.
11. Set the schedule when the deploy template task runs. `Run now` will run the task when the wizard is closed. `Run at` will run the task on the selected future time.
12. Type the credentials for target devices (CMC and IOAs, or MX Chassis). The credentials must be valid for all target devices and must have the Operator or Administrator privileges on iDRAC.
13. If the Chassis Infrastructure template contains only the CMC Device Template, type only the CMC credentials.

Note—The credentials must be valid for all target devices (CMC and IOAs, or MX Chassis), and have Administrator privileges.

14. Click **Next**.
15. Review the task in **Summary** and click **Finish**.
16. Review the message. The deploy action can be destructive. It is important to review and understand the template you are deploying.

Note—While deploying MX Chassis template with RemoteSystemLog and SNMPAlerts group, all the attributes of these groups should be sent.

6.3.2 Edit the device-specific attributes of the Deploy Template task

Device specific attributes are attributes, such as 'StaticGateway', that are not included in templates because they do not necessarily apply to all target devices. Editing and deploying device specific attributes is optional because a device may already have the device specific attributes configured or the attributes may not be applicable to that specific device. If the template being deployed has device specific attributes, the device specific attributes will appear in the **Edit Attributes** page of the deploy wizard. The **Edit Attributes** page lists the target CMC devices of the chassis on the left side and displays the device specific attributes for the selected device in the right side grid. The IOA device specific attributes such as **IOA host name** appears under the sections named by their IOA names (such as A1, A2, B1, B2, C1, and C2).

Note—No device specific attributes are available for MX Chassis template during deployment.

To edit the attributes:

1. In the left pane, select a device.
2. Click **Deploy** on the attributes that you want to deploy to that device.
3. Edit the **Value** of each checked attribute.
4. Click **Save**.
5. Repeat for each device.

Note—OME will automatically rediscover the target CMC device of the target chassis whenever a new static IP address is deployed, after completing the deployment successfully. A new discovery range will be added when needed.

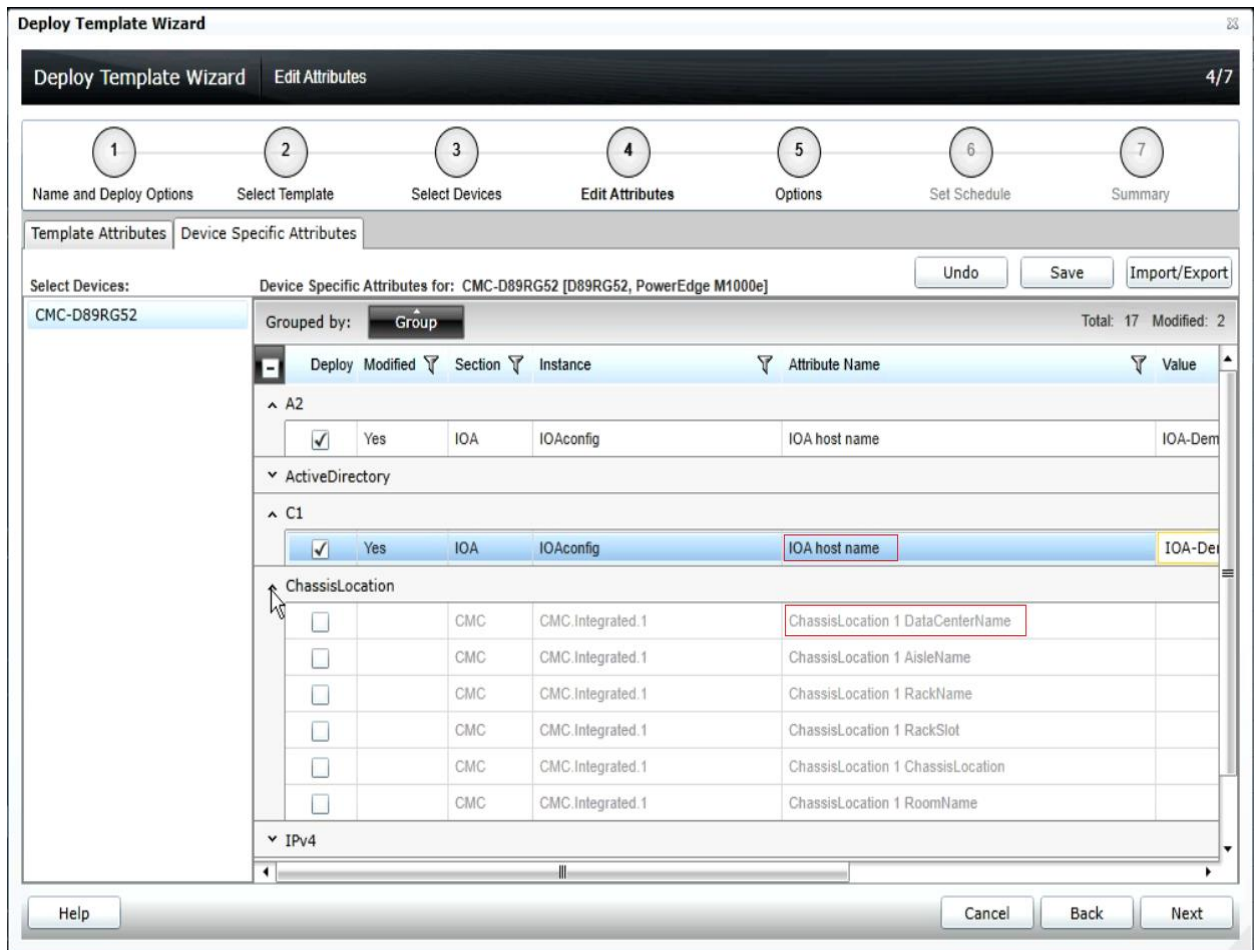


Figure 11 Editing the device specific attributes

Alternatively, you can import and export the grid to file to edit. You may want to export/import if you have a large number of devices with a large number of device specific attributes. The device-specific attributes grid can be exported by selected device or all devices. All devices will export to a single file that can be opened in a spreadsheet processing application. After editing the file, it may be imported. The edited values must be valid for the attribute. The grids will be populated with the import data. The UI logs will report any problems with format or values of the import file.

7 Auto-deploy configuration templates

Auto deploying the templates applies to all the attribute values of the templates to the device, after it is discovered. To add auto-deploy entries for devices that have not been discovered by OME, a list of Service Tags for the target devices must be provided. To auto-deploy the template, you must first create the template. See [Create Chassis Infrastructure Template from a Reference Chassis by using IOA Devices or MX Chassis Template from a Reference MX Chassis](#).

Note—Auto deploy is only for devices that have not been discovered by OME. To deploy to devices discovered by OME, see [Deploying Template to Bare Metal Devices](#).

7.1 Auto-deploy requirements

In order to add auto deployment entries, the following requirements must be satisfied:

- Must have the template to deploy. See [Create Chassis Infrastructure Template from a Reference Chassis by using IOA Devices or MX Chassis Template from a Reference MX Chassis](#).
- Must satisfy all device configuration requirements of target device. See [Target Device Requirements](#).
- Target Service Tags cannot be matched with a Service Tag of the discovered device.
- A CSV file with the Service Tags. See [Create a Service Tag CSV File](#).

7.2 Set up Auto Deploy of the template

This section describes how to set up the auto deployment of the template against Service Tags. Also, describes how to create and format the auto deployment CSV file, and the auto deployment wizard.

7.2.1 Create a Service Tag CSV File

To create the Service Tag CSV file:

- Must have a column named **ServiceTag**
- Each Service Tag must correspond to Dell EMC standards Service Tags.
- Service Tags corresponding to the Service Tag of discovered device in OME, may not be required.

4.

	A
1	ServiceTag
2	ABCDEFGF
3	HY3912B
4	A123456
5	VNX189W

Figure 12 Format of a CSV file

7.2.2 Set up bare-metal Auto Deploy of the template to Chassis Service Tags

To set up bare-metal auto deploy of the template to Chassis Service Tags:

1. Navigate to the **Deployment** tab.
2. In the left pane, click Setup Auto Deployment under Common Tasks.
3. Select **Deploy Template**, and then click **Next**.

4. Select a server or chassis template (as applicable to the type of target devices) to be deployed on the target servers or chassis, and then click **Next**.
5. Click the **Import** button to import the csv file that contains the Service Tags. The imported Service Tags must be compatible with the type of template selected in the step **Error! Reference source not found.**
6. Browse to the location where the file is saved, select the file, and then click **Open**. All the Service Tags in the file will be imported and listed in OME. The **Import Summary** window is displayed.
7. Review and click **Ok** to close the window.
8. Click **Next**.
9. (optional) Enter the unique attributes per Service Tag. For details, see [Edit the device-specific attributes of the Deploy Template task](#).
10. Click **Next**.
11. Select the execution credentials for the Service Tags. Instead of entering the credentials for each target device, credential definitions must be created. Credential definitions can be added as needed. Credential definitions can be assigned to multiple targets. Credentials are required for each target device. If no credentials exist yet, at least one (a default set of credentials) must be created. Follow these steps, otherwise go to last step.
 - i. Click **Add New Credential**.
 - ii. Type a description for the credential set (the description text is displayed in the credential selection page).
 - iii. Type the username and password.
 - iv. Click **Finish**.

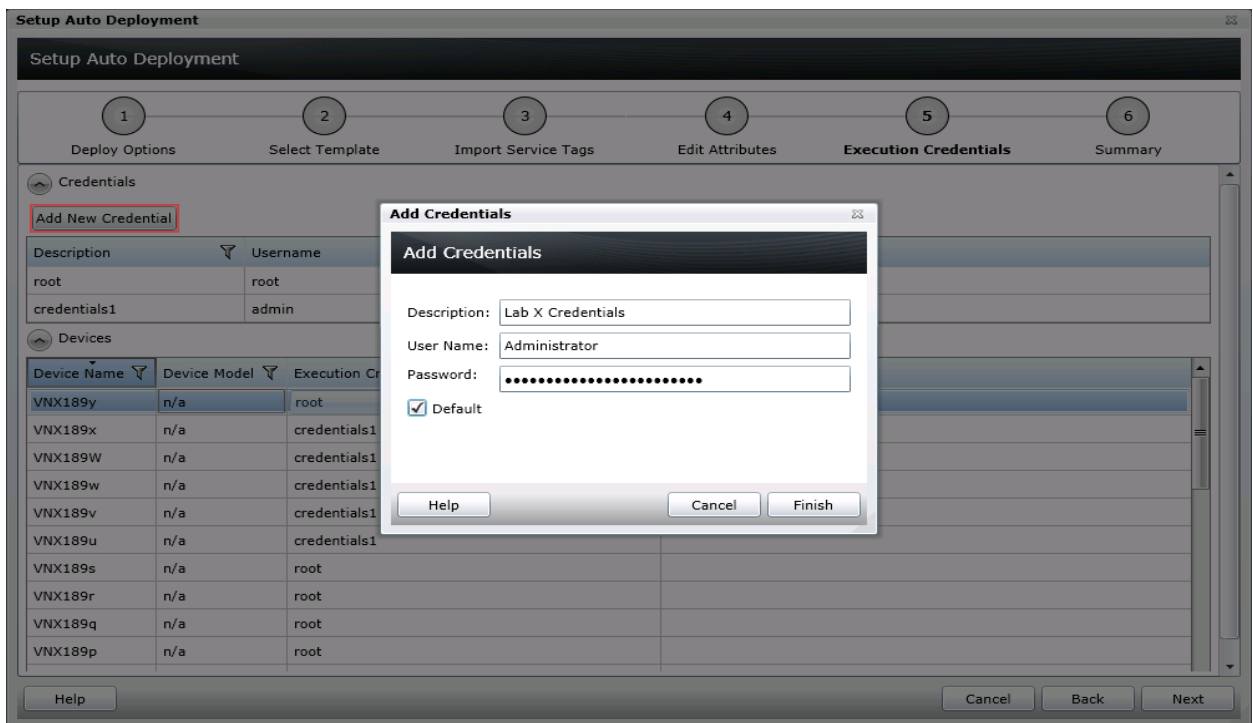


Figure 13 Auto deployment target credentials page

12. Review the task in the **Summary** pane and click **Finish**.
13. All the Service Tags that were imported are listed in the Auto Deployment tab.

Note—The Service Tags remain in the Auto Deployment tab until they are discovered and inventoried in OME and the 'Deploy Configuration to Undiscovered Devices' task creates a deploy task for the device with the Service Tag. The 'Deploy Configuration to Undiscovered Devices' task checks periodically if the devices are discovered and inventoried in OME. Once the discovery and inventory is complete and a deploy task is created, the devices will move to the Repurpose and Bare-metal Devices group and the auto deployment entry will be deleted. Deploy configuration tasks are created to deploy the templates that were selected. The tasks created for the Service Tag entries can be viewed under the tasks tab in the deployment portal. Double-click the task to view the task details. Task execution history entries can be found in the task execution history grid. Double-click the task execution history entry to view the task execution history details.

7.2.3 Modify the Auto Deployment settings

By default, the Deploy Configuration to Undiscovered Devices task runs after every 60 minutes. When this task runs, it checks if any of the auto deployment Service Tags were discovered. If the device matching an auto deployment Service Tag is discovered, a deploy template task is automatically created and the specified template is deployed to that device.

To modify the execution interval for the Deploy Configuration to Undiscovered Devices task or to enable or disable it:

1. Select **Deployment Settings** under **Settings**.
2. Select or clear the **Enable auto deployment for recently discovered devices** check box to enable or disable the Deploy Configuration to Undiscovered Devices task respectively.

Note—If the task is disabled, the Service Tags in the Auto Deployment grid will not be deployed automatically.

3. In the **Run auto deployment every** box, type or select the minutes you want the 'Deploy Configuration to Undiscovered Devices' task to run.

The screenshot shows the OpenManage Essentials Settings page. The left sidebar contains a list of settings categories, with 'Deployment Settings' selected. The main content area is titled 'Deployment Settings' and includes 'File Share Settings' and 'Auto Deployment Settings'. The 'Auto Deployment Settings' section is highlighted with a red box and contains the following options:

- Enable auto deployment for recently discovered devices
- Run auto deployment every Minutes

At the bottom right of the settings area, there are 'Cancel' and 'Apply' buttons. The 'Apply' button is highlighted with a red box.

Figure 14 Auto deployment settings page

4. Click **Apply**.

8 Create Chassis baseline or MX Chassis baseline

Example use case—you have a blade chassis (new or existing) or MX Chassis (new or existing) for which you want to create the configuration baseline.

To accomplish this use case:

1. Click **Manage**→**Configuration**.
2. In the left pane, click **Create Baseline** under **Common Tasks**.
3. Type a unique name for the template.
4. Select **Create from Device**.
5. Select **Device Type** as **Chassis** or **MX Chassis**.
6. Select the target CMC device (if you have selected Chassis as device type) or MX Chassis (if you have selected MX Chassis as device type) from the device tree.

Note—Alternatively, you can select the target by entering the device name or Service Tag in the search box next to Create from Device.

7. Type the Execution credentials for the target.

Note—The credentials must have administrator privileges on the target device.

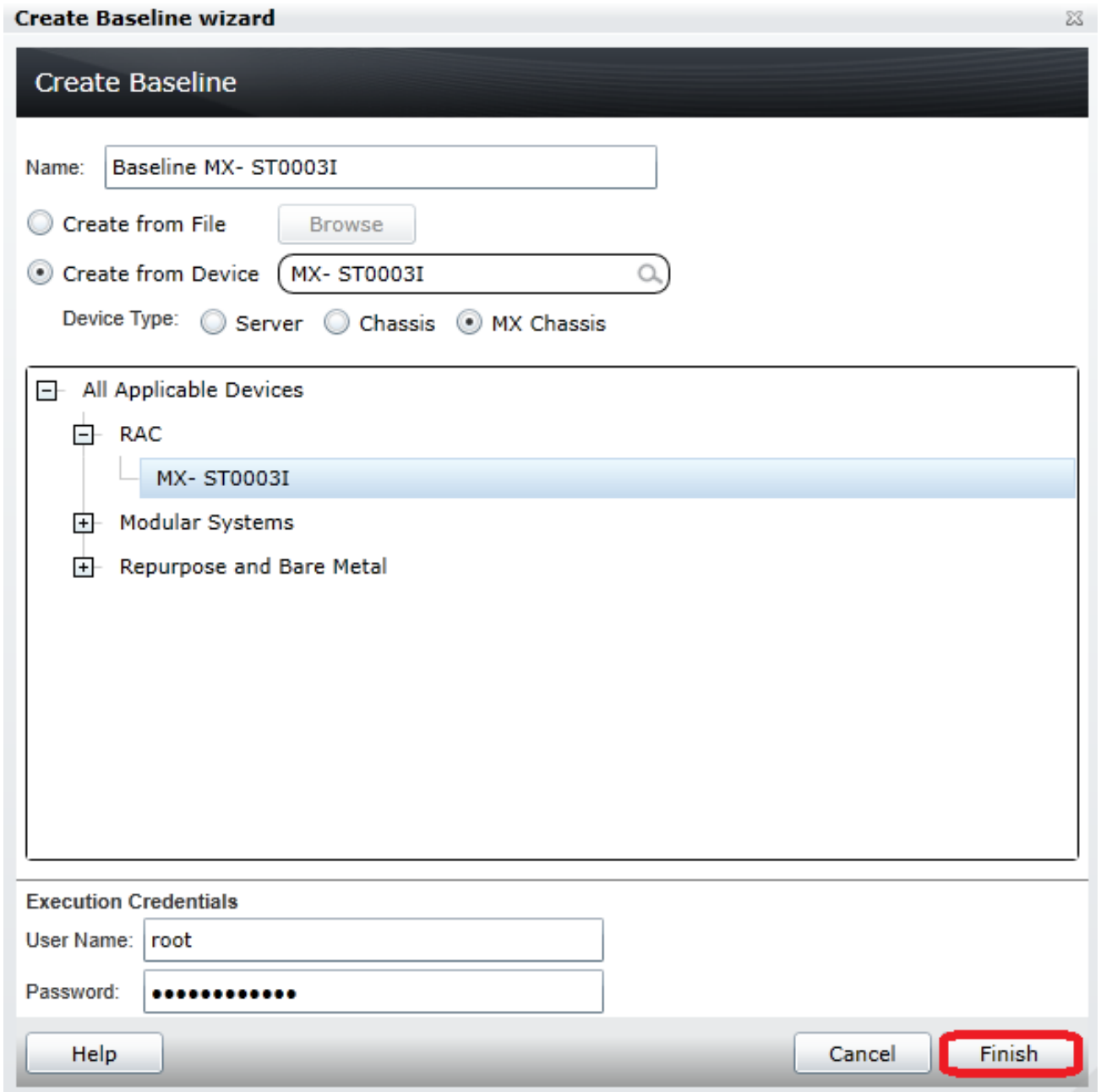


Figure 15 Create MX chassis baseline

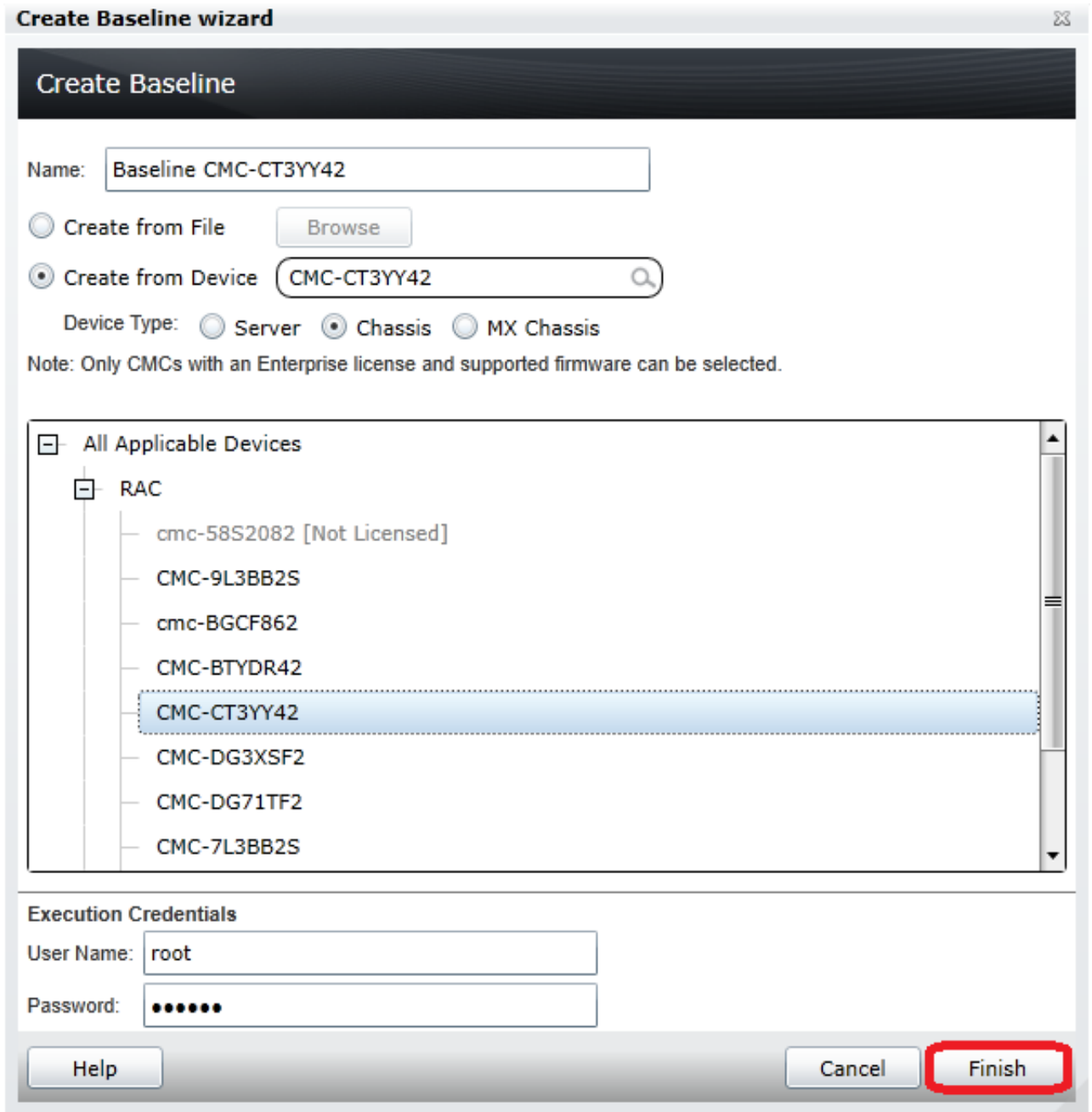


Figure 16 Create chassis baseline

8. Click **Finish**.
9. Click **OK**. The task is created when the wizard is closed.
10. To view the created task, navigate to
 - a) **Tasks** → **Configuration Tasks** → **Chassis Baseline Configuration Import** (if you have selected Chassis as device type)
 - b) **Tasks** → **Configuration Tasks** → **MX Chassis Baseline Configuration Import** (if you have selected MX Chassis as device type)
 - c) Click **Tasks**.
11. To view the progress of the task, view the **Task Execution History** grid.

12. To view the details of the execution history, double-click the task execution history entry, or right-click the task execution history entry and select **Details**. The details provide you the information (such as incorrect credentials).
13. If the task is successful, the baseline is created and displayed in the **Chassis Baselines** (if you have created baseline for Chassis) or **MX Chassis Baselines** (if you have created baseline for MX Chassis) tree.
14. If the task is unsuccessful, right-click the task execution history or the task, and then click **Run**.

Note: Enter the credentials for target to run the task again.

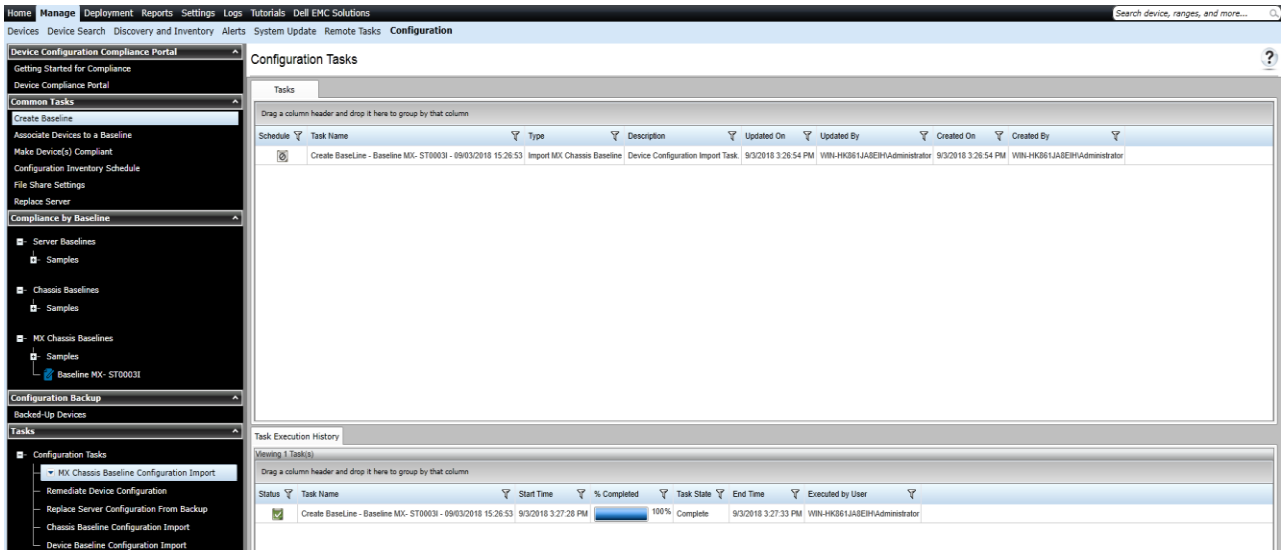


Figure 17 View MX chassis baseline task

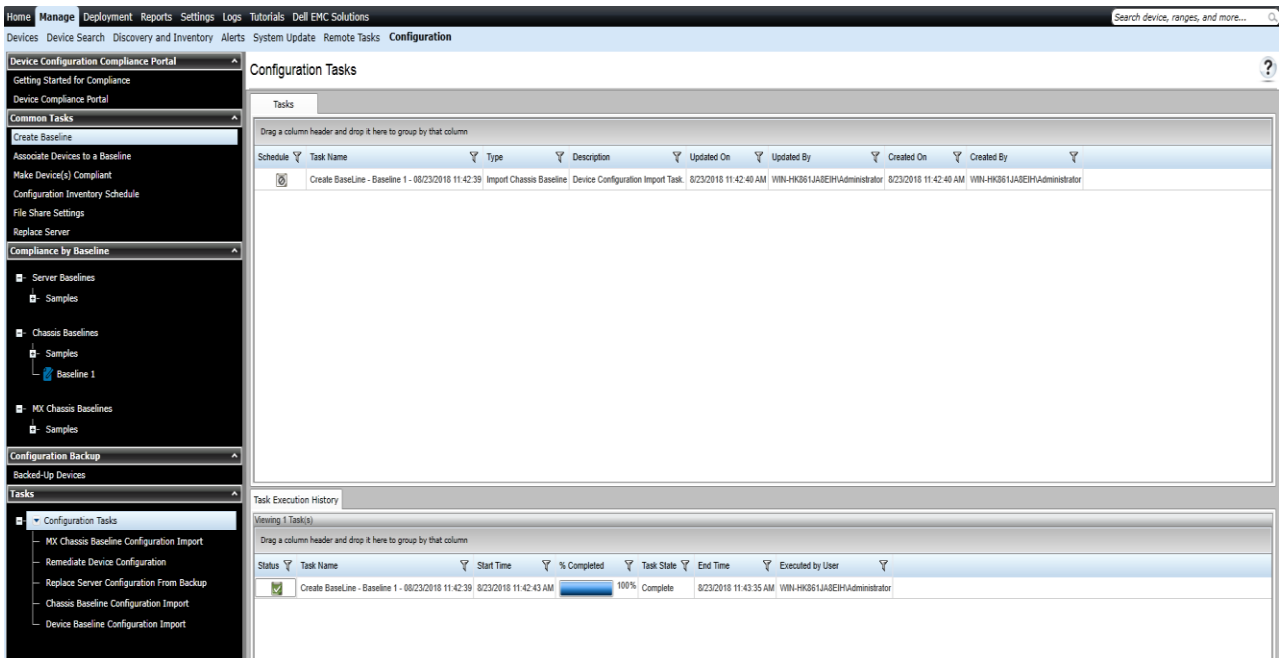


Figure 18 View chassis baseline task

9 Associate devices to Chassis Configuration baseline or MX Chassis Configuration baseline

Example use case—you have a new Chassis baseline or MX Chassis baseline created, for which you want to associate the devices.

To accomplish this use case:

1. Click **Manage** → **Configuration**.
2. Click the new Chassis Baseline in **Chassis Baselines** or new MX Chassis Baseline in **MX Chassis Baselines** tree.

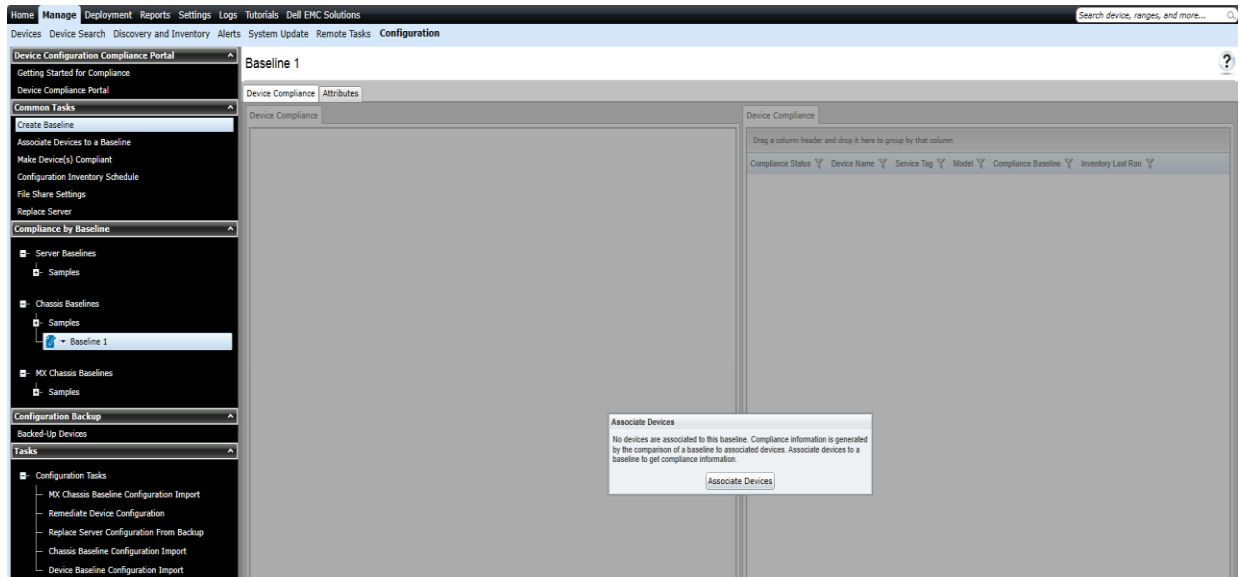


Figure 19 Associate devices to configuration baseline

3. Click **Associate Devices**.
4. If you have not configured the Configuration Inventory Schedule or File share settings, you receive a message to configure the settings required for Configuration Baseline feature.
5. To configure the file share settings and retrieve the configuration inventory of the devices, see [File share settings](#).
6. To configure the Configuration Inventory Schedule, see [Set up and run the configuration inventory](#).
7. On the **Associate Devices to a Baseline** page, in the Select Baseline step, select the Chassis baseline or MX Chassis baseline for which you want to associate the devices.
8. Click **Next**.
9. Select the CMC devices to be associated to the Chassis or MX Chassis devices to be associated to the MX Chassis in Select Devices step.
10. Click **Finish**.
11. Click **Ok**.

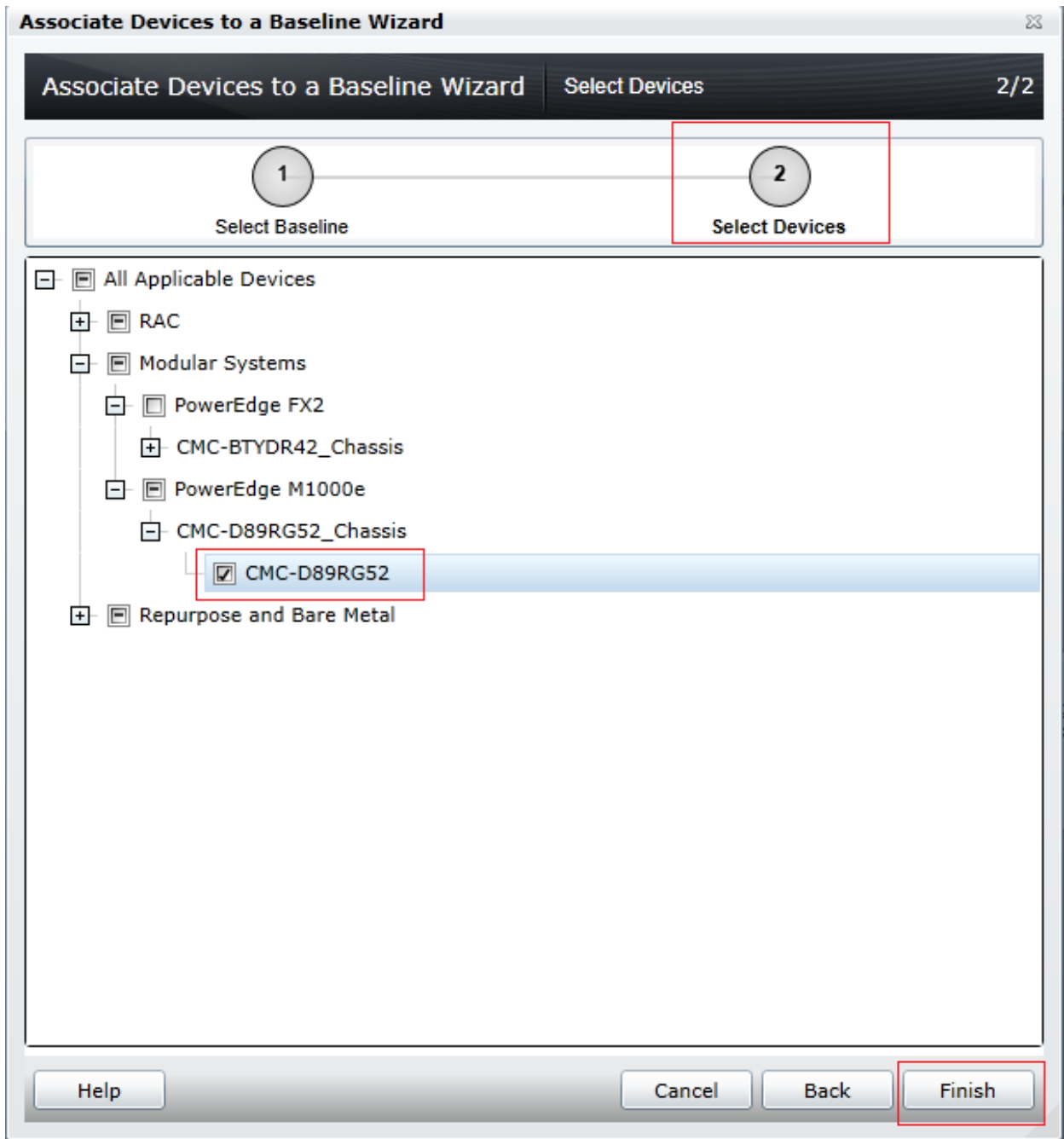


Figure 20 Associating target devices to chassis baseline

Note—If you associate devices with a different configuration baseline while the Make Device(s) Compliant task is running, the latest baseline is considered by the task for remediation of these devices.

10 View compliance of devices associated to the Chassis baseline or MX Chassis baseline

Example use case—you have a new chassis baseline or a new MX Chassis baseline created for which you want to view the compliance of devices associated to the chassis baseline.

To accomplish this use case:

1. Click **Manage** → **Configuration**.
2. Click the new Chassis Baseline template in the **Chassis Baselines** or new MX Chassis Baseline template in **MX Chassis Baselines** tree.

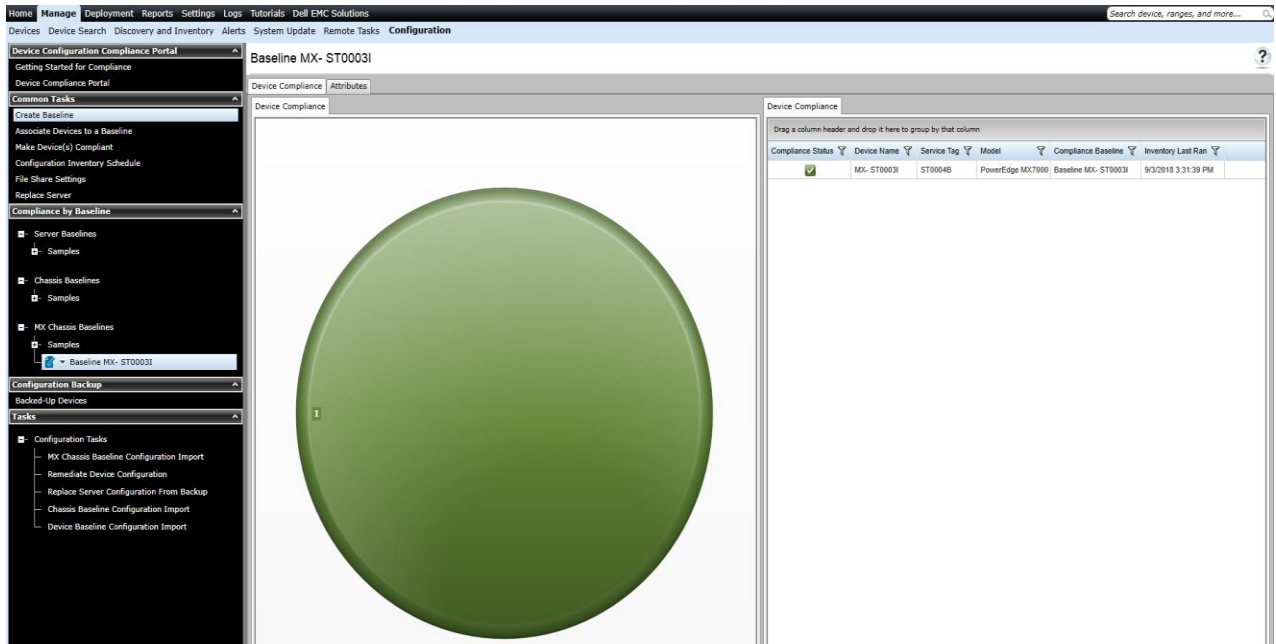


Figure 21 View Compliance of Associated Devices to an MX Chassis Baseline

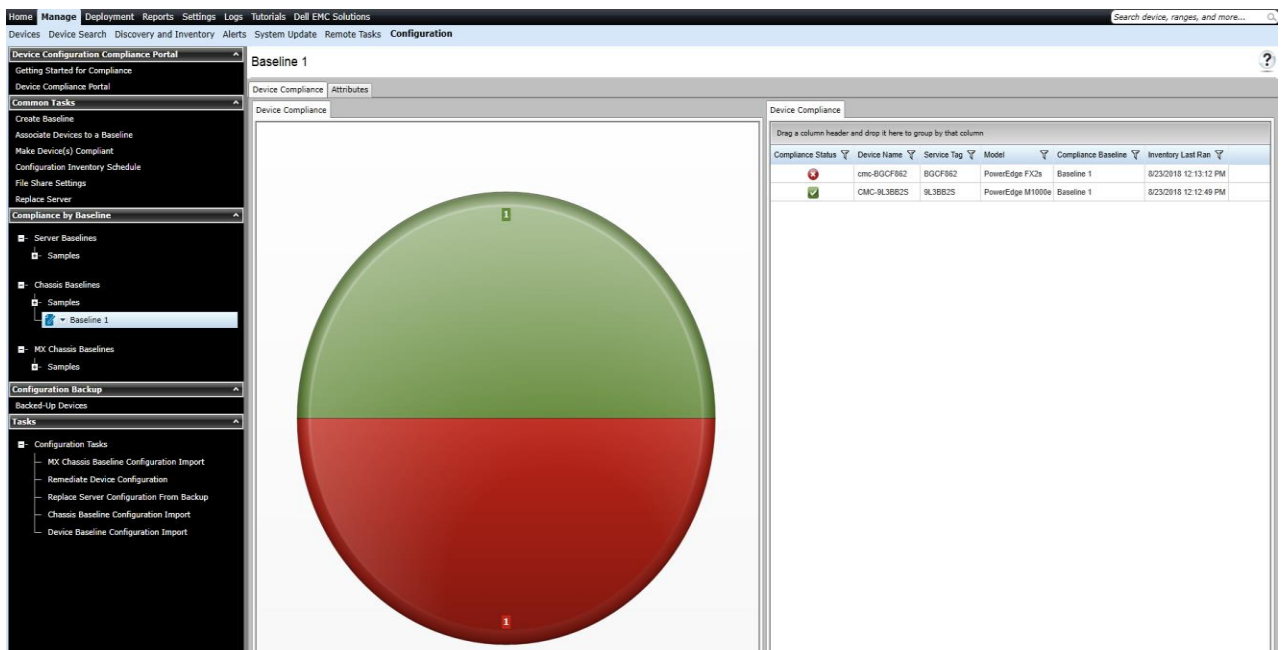


Figure 22 View Compliance of Associated Devices to a Chassis Baseline

3. In **Device Compliance** tab, right-click the non-compliant device.
4. Click **View Compliance Details**.
The non-compliant attributes are displayed.

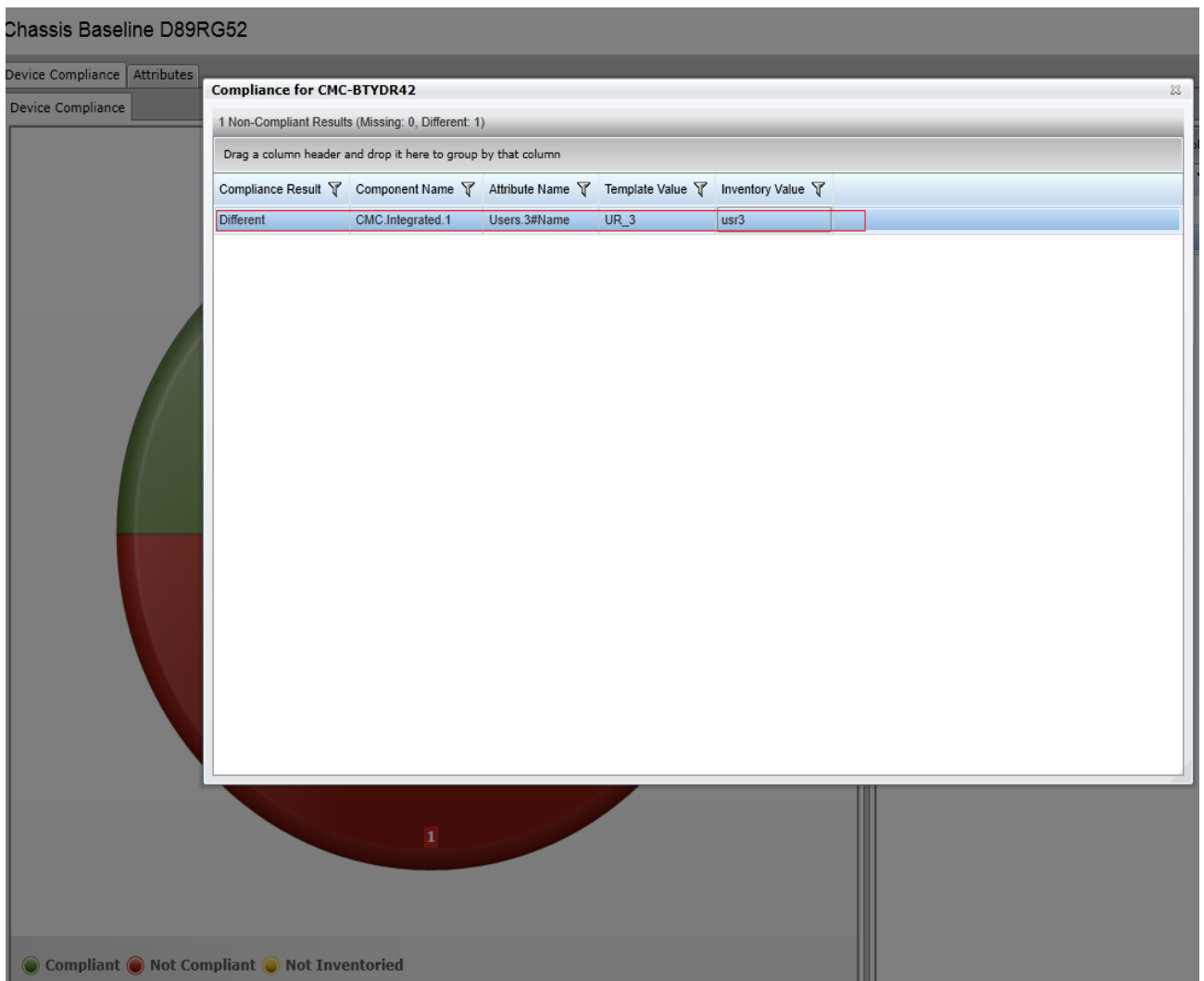


Figure 23 View Non-Compliant Attributes of Associated Devices to the Chassis Baseline

11 Make the associated devices compliant to Chassis baseline or MX Chassis baseline

Example use case—you have a Chassis baseline or MX Chassis baseline for which some of the associated devices are not compliant.

To accomplish this use case:

1. Click **Manage** → **Configuration**.
2. Click the new Chassis Baseline in **Chassis Baselines** tree or new MX Chassis Baseline in **MX Chassis Baselines** tree.
3. Under **Device Compliance**, right-click any non-compliant device.
4. Select **Make Compliant**.

Chassis Baseline D89RG52

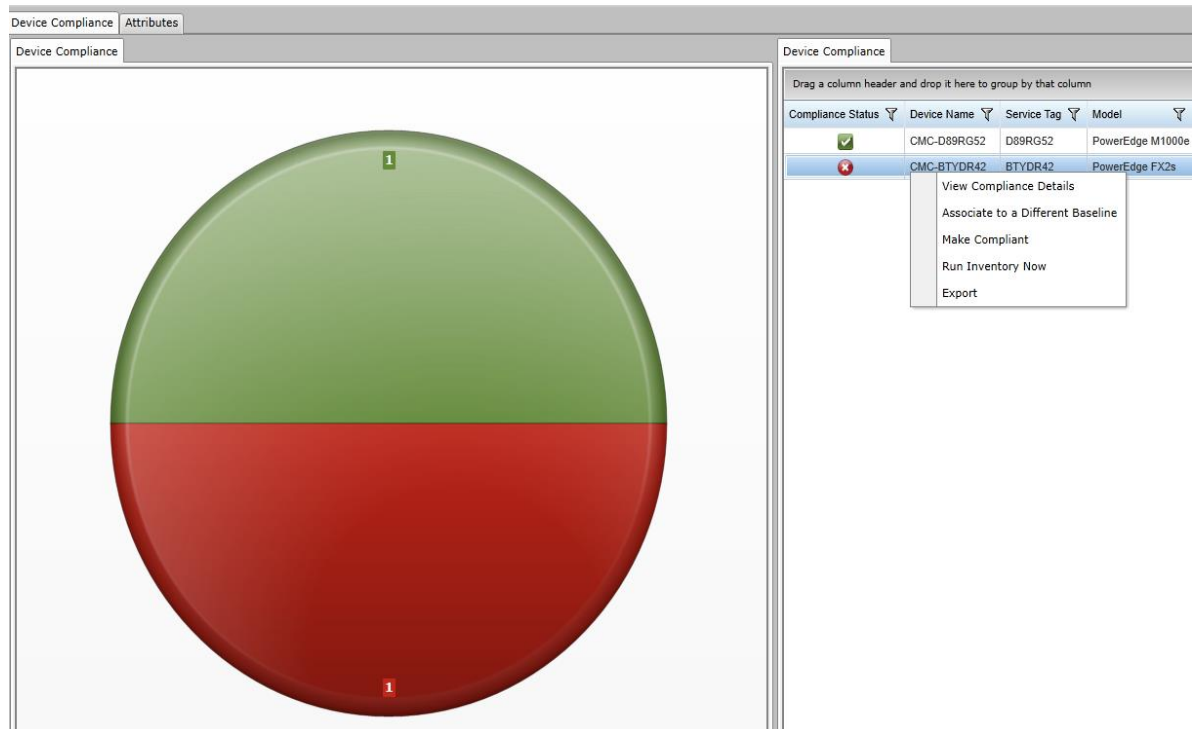


Figure 24 Device compliance

5. In **Make Devices Compliant Wizard**, type a unique name for the Make Compliant task.
6. Click **Next**.
7. Select the device for which you want to make compliant. The non-compliant attributes for each associated device appears.
8. Click **Next**.

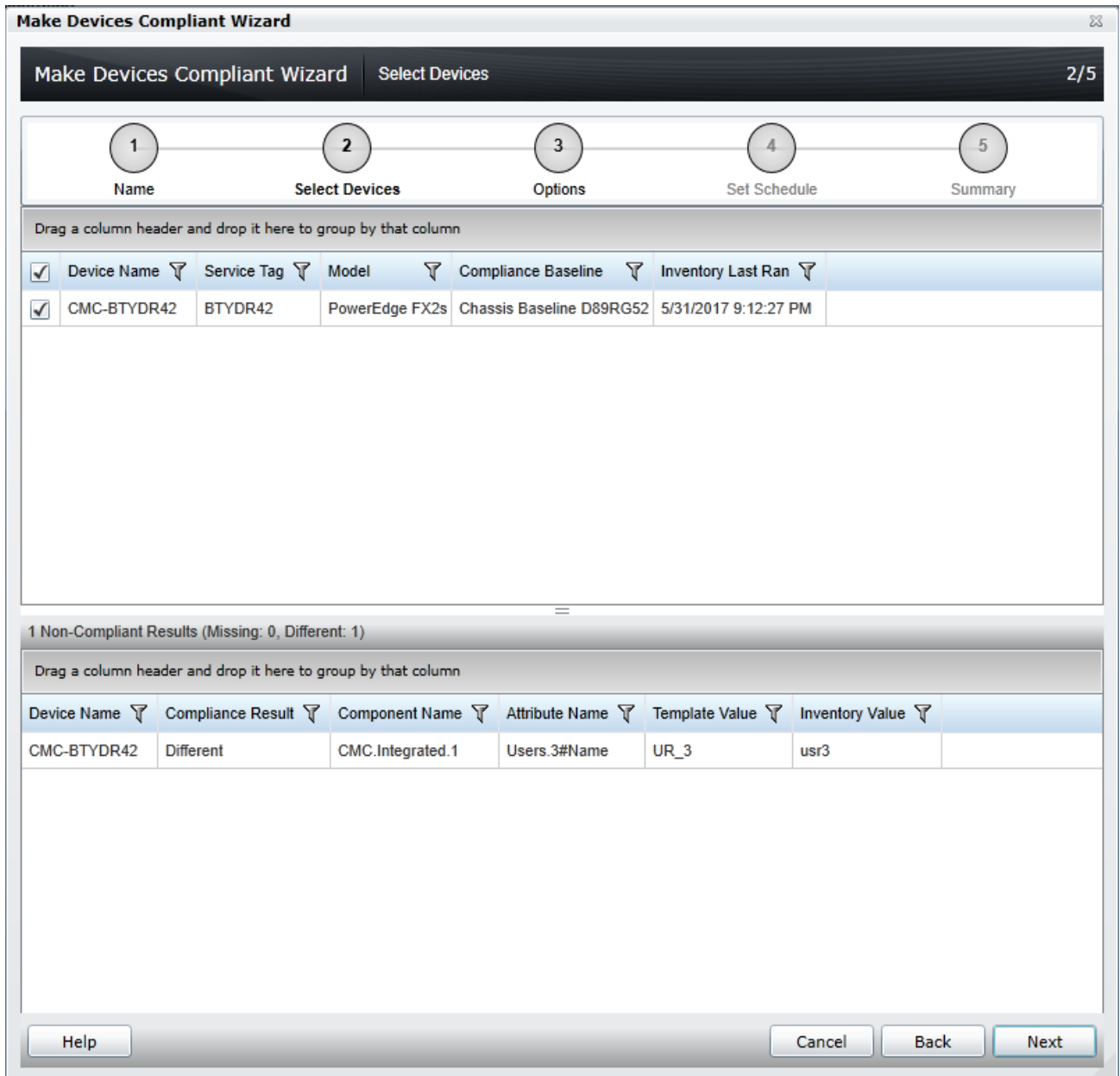


Figure 25 Make devices compliant

9. To make the Server or iDRAC compliant, navigate to the Options step, and then click **Next**.
10. Set the schedule when the deploy template task runs. **Run now** will run the task when the wizard is closed. **Run at** will run the task on the selected future time. Type the credentials for all target devices. The credentials must be valid for all target devices and must have the Operator or Administrator privileges on target devices.
11. Click **Next**.
12. Review the task in the **Summary** pane and click **Finish**.

12 Upgrade old Chassis templates

In OME 2.3, the Chassis Templates are enhanced to provide:

- User-friendly attribute names
- Enhanced deployment task details with detailed status reporting for changed/failed attributes

After upgrading the OME version to 2.3, all the old chassis templates (created in the OME version 2.2 or earlier) will be shown with a broken icon in **Deployment Portal**. The old templates can be recreated by using the **Recreate this Template** option. The association between the CMC device and the Chassis template will be retained. The existing Configuration Inventory will be deleted after the upgrade. The compliance will be shown after the re-creation of template and Scheduled/Refresh (Manual) Configuration Inventory.

13 Upgrade the existing Chassis Templates (created by using OME 2.3 and earlier versions)

Example use case—you want to use existing chassis templates (created in OME version 2.2 or earlier) in OME 2.3 after the version upgrade.

This section describes how to upgrade the chassis template (created in OME 2.2 or earlier) and use them in OME 2.3. The OME 2.3 uses enhanced version of the chassis template. For more details, see [Upgrade old Chassis templates](#). Also, supports Chassis Infrastructure Templates with IOAs. Therefore, all the chassis templates (created in OME 2.2 or earlier) needs to be upgraded to get enhanced capabilities.

To accomplish this use case:

1. Upgrade the OME to version 2.3.
2. Start **OME Console**. A dialog box is displayed.
3. Click **Ok**.

Note—After the upgrade, OME 2.3 creates a corresponding Chassis Baseline template and associates to the devices, for all the CMC template.

4. Select **Manage**→**Configuration**.

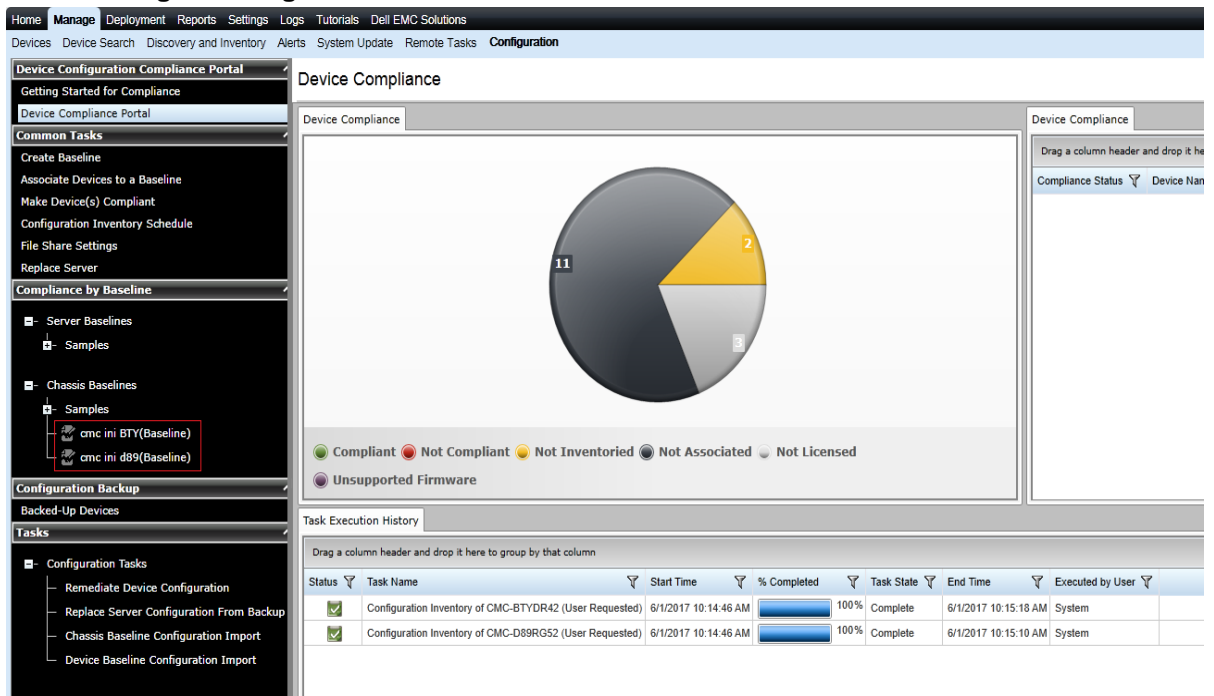


Figure 26 New Chassis Baselines Created in OME 2.3 for Existing CMC Templates

5. Select **Deployment**.
6. Expand **Chassis Templates** tree. The existing CMC templates appears with a broken icon.
7. Click the existing CMC template.

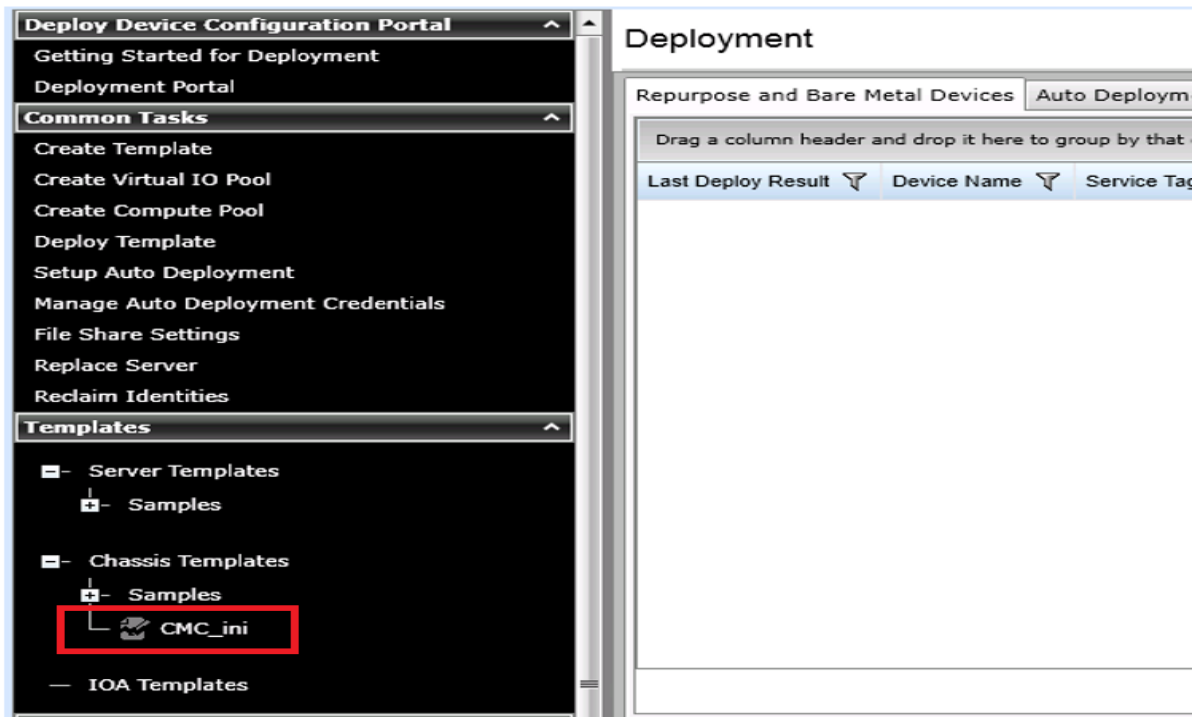


Figure 27 Existing CMC Templates (Created in OME 2.2 or Earlier) After Upgrade

8. Click **Recreate this Template.**

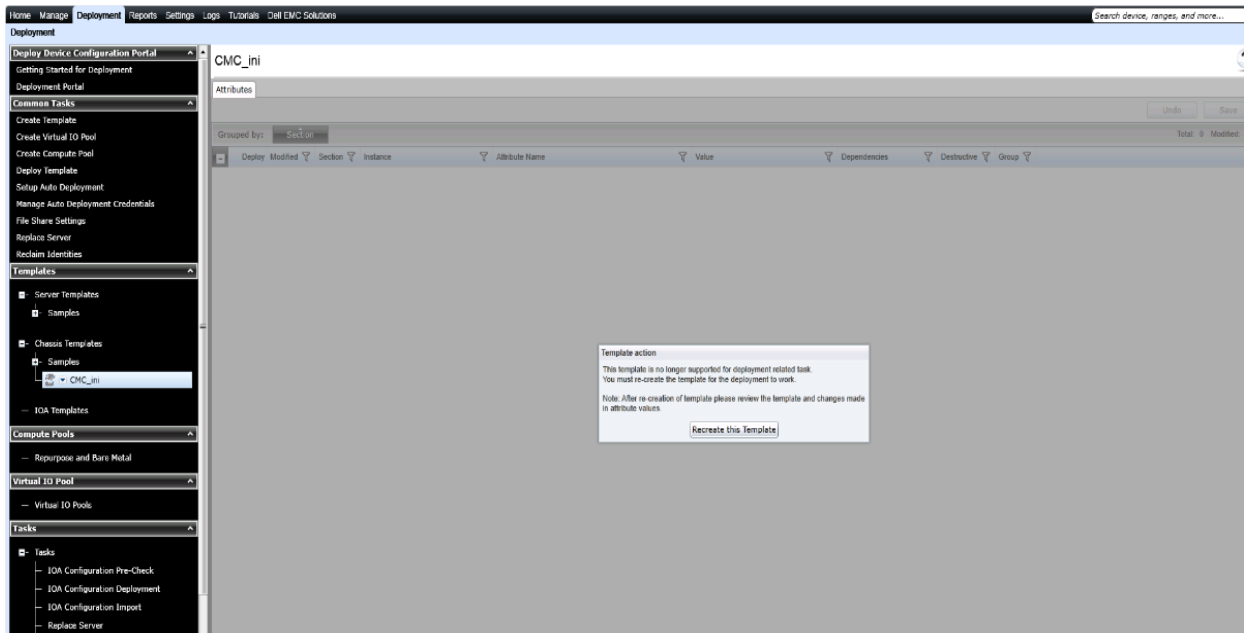


Figure 28 Recreate this Template Dialog

9. In the **Task Authentication** dialog box, type the credentials for CMC device.
10. If you want to capture the IOA templates on that chassis to create a Chassis Infrastructure template (containing the CMC device and all the IOAs), type the IOA credentials.
11. Click **Ok**. The task is created to upgrade the existing template.

The screenshot displays the OME interface. On the left is a navigation pane with the following sections:

- Deployment Portal**
 - Common Tasks**
 - Create Template
 - Create Virtual IO Pool
 - Create Compute Pool
 - Deploy Template
 - Setup Auto Deployment
 - Manage Auto Deployment Credentials
 - File Share Settings
 - Replace Server
 - Reclaim Identities
 - Templates**
 - Server Templates
 - Samples
 - Chassis Templates
 - Samples
 - CMC_ini
 - IOA Templates
 - Compute Pools**
 - Repurpose and Bare Metal
 - Virtual IO Pool**
 - Virtual IO Pools
 - Tasks**
 - Tasks
 - IOA Configuration Pre-Check

The main content area is titled 'Repurpose and Bare Metal Devices' and 'Auto Deployment'. It contains a table with the following data:

Schedule	Task Name	Type	Description
	Create Template - CMC_ini - 03/27/2017 02:39:13	Import Chassis Template	Device Configu
	Create Template - CMC_ini - 03/27/2017 02:06:18	Import Chassis Template	Device Configu
	Deploy Configuration to Undiscovered Devices	Auto Deployment	Deploy configu

Below this table is the 'Task Execution History' section, which contains another table:

Status	Task Name	Start Time	% Completed
	Create Template - CMC_ini - 03/27/2017 02:39:13	3/27/2017 2:39:18 AM	100
	Create Template - CMC_ini - 03/27/2017 02:06:18	3/27/2017 2:06:33 AM	100

Figure 29 CMC Template Recreate Task

14 Recreate Chassis baselines

Example use case—after upgrading the OME to version 2.3, you want to use the compliance feature for the devices associated to existing chassis templates (created by using OME 2.2 or earlier versions).

This section describes how to recreate the chassis baseline templates (created in OME 2.3 after the upgrade) and use them with Device Compliance features. After upgrade, OME 2.3 creates a new chassis baseline template for all the existing CMC templates. However, these chassis baseline template are cloned from the previous format of the chassis templates. The OME 2.3 uses enhanced version of the chassis template. For more details, see [Upgrade old Chassis templates](#). To use the Device Compliance features, the chassis baseline templates need to be created again.

To accomplish this use case:

1. Select **Manage**→**Configuration**.
2. Click **Chassis Baselines** tree. The chassis baseline templates with broken icon appear.
3. Click the chassis baseline template (with a broken icon).

12.

Status	Task Name	Start Time	% Completed	Task State	End Time	Executed by User
✓	Configuration Inventory of CMC-BTYDR42 (User Requested)	6/1/2017 10:14:46 AM	100%	Complete	6/1/2017 10:15:18 AM	System
✓	Configuration Inventory of CMC-D89RG52 (User Requested)	6/1/2017 10:14:46 AM	100%	Complete	6/1/2017 10:15:10 AM	System

Figure 30 New Chassis Baselines Created in OME 2.3 for the Existing CMC

4. In the right side pane, click **Recreate this Baseline** in the dialog box.

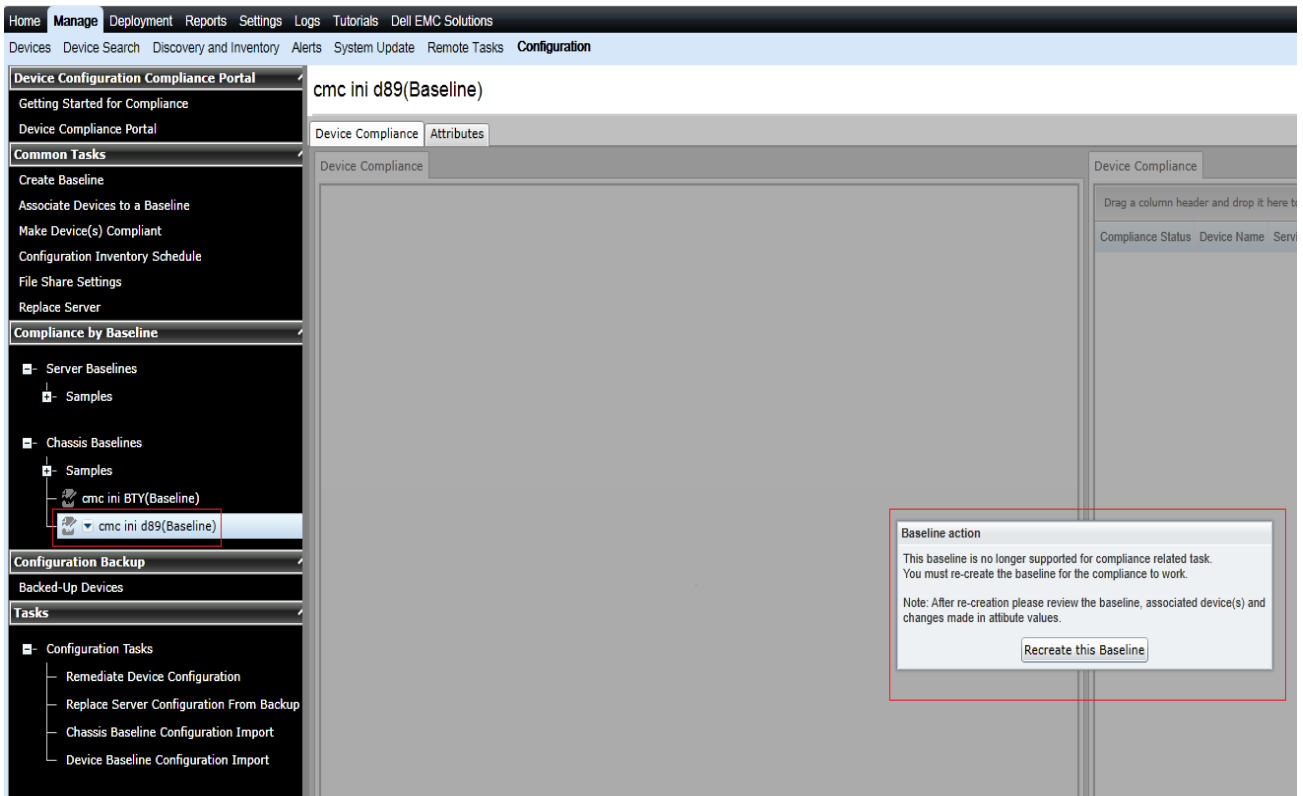


Figure 31 Recreate baseline dialog

5. In the **Task Authentication** dialog, type the credentials for CMC device.
6. Click **Ok**. The Create Baseline Template task is created.

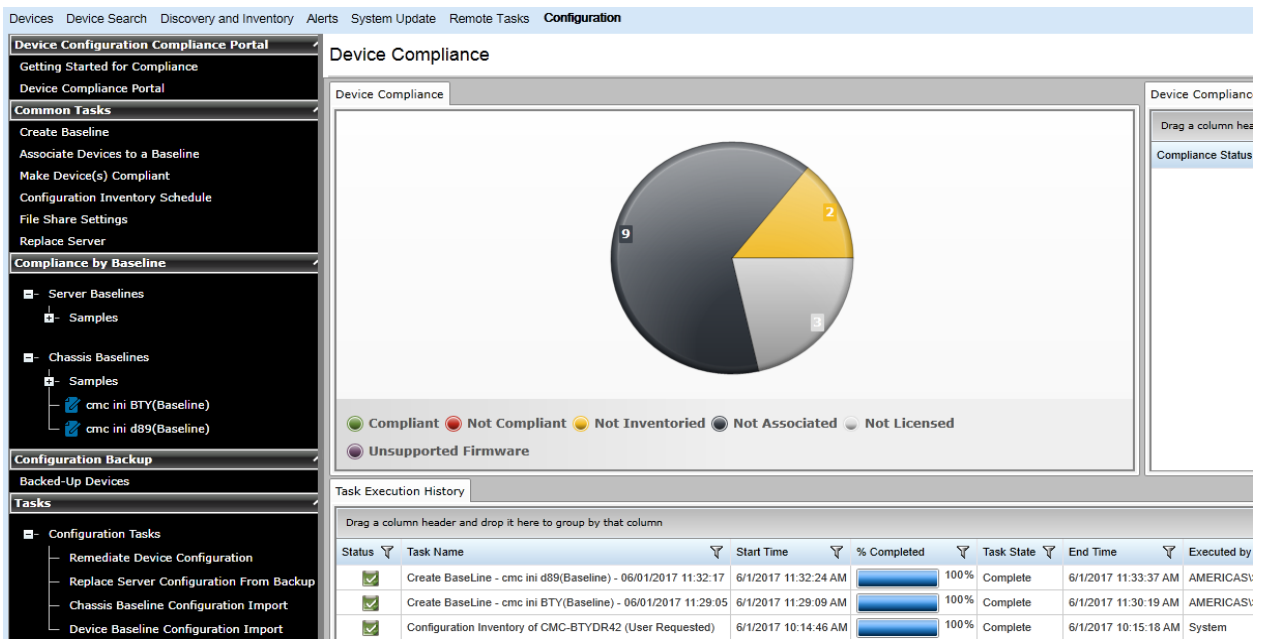


Figure 32 CMC Baseline Template Recreate Task

15 Check configuration compliance of devices in OpenManage Essentials

Configuration compliance detects drift of a device's attributes from the template's attributes. The configuration inventory process acquires configuration information (inventory) from all the applicable devices, and compares the inventory against an associated compliance template.

Note—Device configuration compliance feature is not available for Dell Networking IOAs.

15.1 Configuration compliance requirements

- The file share must be configured for CMC and iDRACs. File share is not required for MX Chassis configuration compliance. See [Set up a file share](#).
- The target devices must satisfy the minimum requirements for the deployment and configuration features. See [Target Device Requirements](#).
- At least one user created template (a cloned sample template is a user created template).
- Configuration Inventory must be enabled and the target device credentials must be provided.

15.2 Set up and run the configuration inventory

The configuration inventory task collects the attribute information from all eligible devices. The eligible device is any device that meets the device configuration target requirements. See [Target Device Requirements](#). The values in inventory are used to calculate the compliance of the device against the associated template of the device.

Note—Dell Networking IOAs will not be listed for scheduled configuration inventory collection.

15.2.1 Modify configuration inventory Ccredentials and/or schedule

The configuration inventory schedule and credentials may be modified. If the network or performance problems are encountered, the configuration inventory can be disabled.

To modify the schedule and set the credentials for the configuration inventory:

1. Select **Manage** → **Configuration**.
2. In the left pane, click **Configuration Inventory Schedule** under **Common Tasks**.
3. If credentials have not been added, click **Add New Credential**.
4. Type a unique description.
5. Type the username and password of the target devices.
6. Select **Default** for the credential to automatically map the credential to the discovered devices.

Note—Setting the default credentials is must.

7. Select the credentials for each device. Each device can have the credentials.
8. Click **Next**.

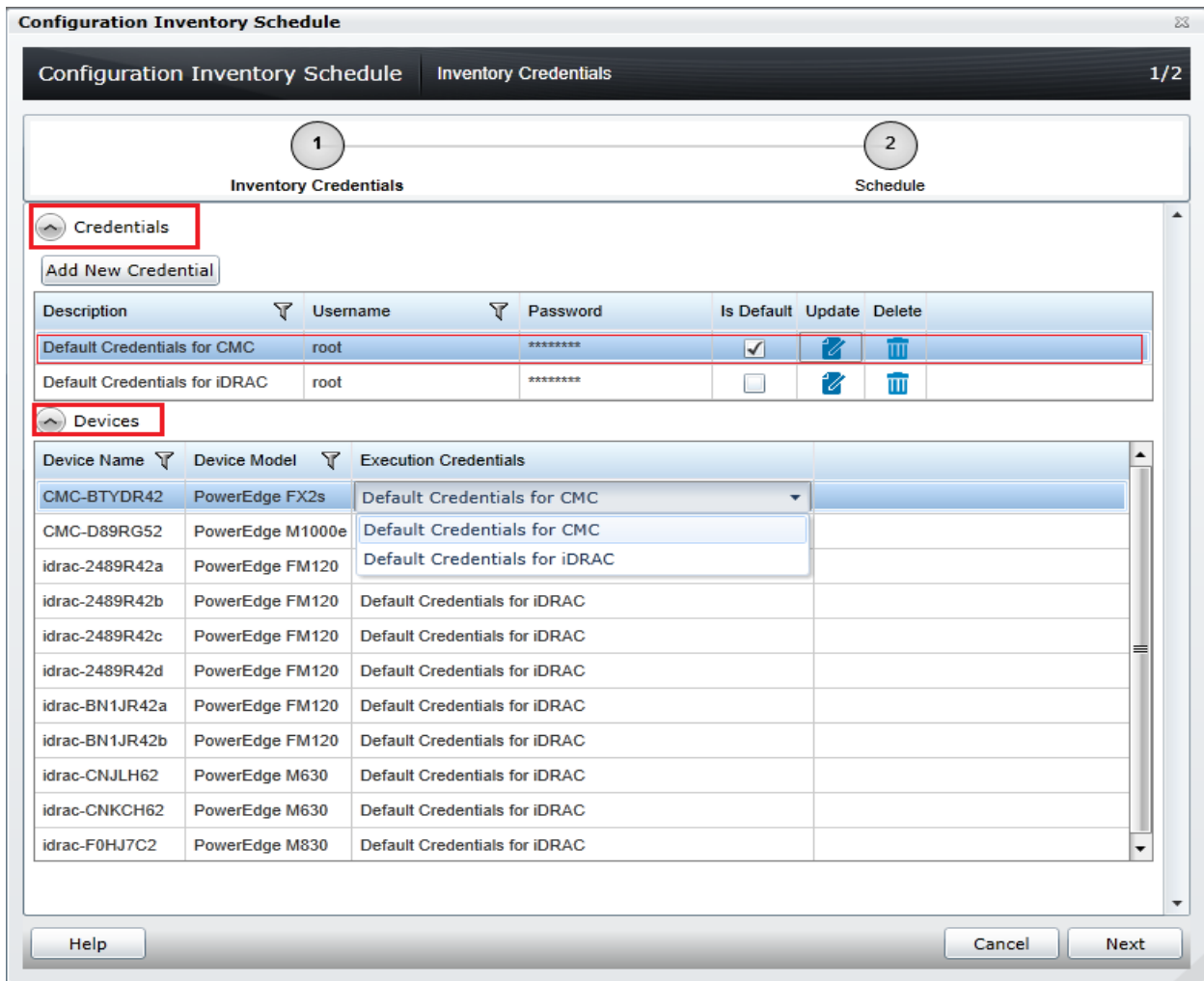


Figure 33 Configuration Inventory Credentials Page

9. Ensure that **Enable Configuration Inventory** is selected.
10. Select the schedule—either every week on the same day and time or every day or hour interval. The Execution histories for the configuration inventory are displayed in the **Task Execution History** grid.
11. Double-click the **Execution History** to view task details or right-click the **Execution History** row and select the details.

15.2.2 Run configuration inventory per target

To get the current configuration inventory from the device:

1. Select **Manage** → **Devices**.
2. Right-click the target device under **All Devices** tree.
3. Click **Device Configuration**.
4. Select **Refresh Device Configuration Inventory**.

15.3 View and Leverage the compliance report

The device compliance panel shows the configuration compliance status and state of all eligible devices. See [Target Device Requirements](#). To view all the devices and its state, click a slice of the pie chart. Device configuration compliance can be viewed in the **Configuration** tab under the **Manage** tab.

Eligible Device	Required Action
Compliant Devices	No action required.
Not Compliant Devices	Double-click the compliance row to view differences between the associated template and the device's inventory.
	Adjust the device's settings or associate to a different template to make the device compliant.
Not Inventoried Devices	Inventory the device. See Set up and run the configuration inventory .
	Make sure the credentials for the target are accurate.
Devices without license	Import a CMC Enterprise license.
	Make sure the credentials for the target are accurate.

16 Create the template from a reference IOA

To create the template from the reference IOA:

1. Select the **Deployment** tab.
2. In the left pane, click **Create Template** under **Common Tasks**.
3. Type a unique name for the template.
4. Select **Create from Device**.
5. In the device type selection, select the target IOA.

Note—Alternatively, you can select the target by typing the device name or Service Tag in the search box next to the **Create from Device** button.

6. Type **Execution credentials** for the target.

Note—The credentials must have administrator privileges on the target IOA.

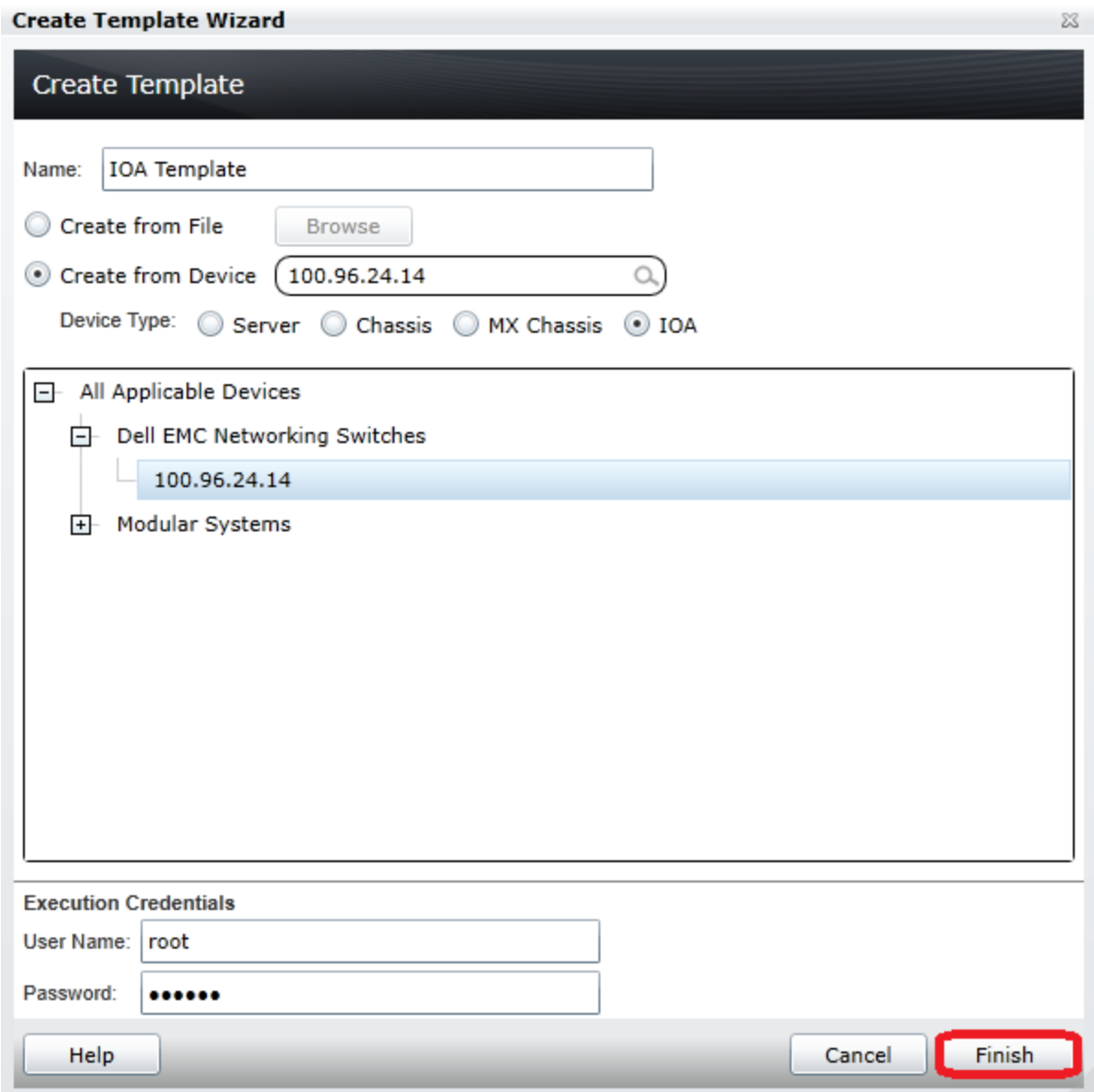


Figure 34 Create IOA template from reference device wizard

13. Click **Finish**.
14. Click **OK**. The task is created when the dialog box is closed.
15. In the **Deployment** portal, click **Tasks**.
16. To view the progress of the task, Click **Task Execution History**.
17. To view the details of the execution history, double-click or right-click the task execution history entry.
18. Select **Details**. The details provide the information (such as incorrect credentials, etc.).
19. If the task is successful, the template is created and displayed in the **IOA Templates** tree.
20. If the task is unsuccessful, right-click the task execution history or the task, and then click **Run**.

Note—Enter the IOA credentials to run the task again.

The screenshot displays the OME interface. On the left is a navigation pane with the following structure:

- Templates
 - Server Templates
 - Samples
 - Chassis Templates
 - Samples
 - cmc ini BTY
 - cmc ini d89
 - IOA Templates
 - IOA template_1
- Compute Pools
 - Repurpose and Bare Metal
- Virtual IO Pool
 - Virtual IO Pools
- Tasks
 - Tasks

The main area shows the 'Task Execution History' table:

Status	Task Name	Start Time	% Completed	Task State
✓	Create Template - IOA template_1 - 06/01/2017 12:01:42	6/1/2017 12:01:47 PM	100%	Complete
✓	Create Template - cmc ini d89 - 06/01/2017 10:49:58	6/1/2017 10:50:07 AM	100%	Complete
✓	Create Template - cmc ini d89 - 06/01/2017 10:11:32	6/1/2017 10:11:36 AM	100%	Complete
✓	Create Template - cmc ini BTY - 06/01/2017 10:10:59	6/1/2017 10:11:03 AM	100%	Complete

Figure 35 Create template task of IOA

IOA template_1

Configuration

```

!Cloning Header Start
!ReleasePlatform XL
!ReleaseVersion 9.10(0.1P10)
!ReleaseSize 45850194
!ReleaseTime Aug 24 2016 03:33:35
!OPTM0 -
!OPTM1 10GBASE-T
!Service-Tag 299RG52
!Serial-Number CN282984CD0184
!FCPortsPresent FALSE
!IOM-Mode standalone40G
!Checksum 7d07319b562f11298b9f2f92a464d8c5
!Cloning Header End

!
! Version 9.10(0.1P10)
!
boot system stack-unit 0 primary system: B:
boot system stack-unit 0 secondary system: B:
boot system stack-unit 0 default system: B:
!
hostname ioadc1
!
protocol lldp
!
redundancy auto-synchronize full
!
username root password 7 d7acc8a1dcd4f698 privilege 15
!
stack-unit 0 provision I/O-Aggregator
!
interface TenGigabitEthernet 0/1
!
protocol lldp
no shutdown
!
interface TenGigabitEthernet 0/2
!
protocol lldp
no shutdown
!
interface TenGigabitEthernet 0/3
!
protocol lldp
no shutdown
!

```

Figure 36 IOA template

17 Deploy an IOA template

This section describes how to deploy an IOA template to IOAs.

17.1 Deploy an IOA template to IOA device

To deploy the IOA template to IOA device:

1. Select **Deployment**.
2. In the left pane, click **Deploy Template** under **Common Tasks**.
3. Type a unique name for the task.

Note—This step is optional since a default name is supplied, but it is a generic name. It is recommended to type the name relevant to what is being deployed.

4. Make sure **Deploy Template** is selected and click **Next**.
5. Select the template to be deployed and click **Next**.
6. Select the target IOA devices and click **Next**.
7. Type the device specific attributes for each IOA device. These are the attributes, such as 'IOA host name', that are not included in templates because they do not necessarily apply to all the target devices. For more details, see [Edit the device-specific attributes of an IOA Deploy Template task](#).
8. Click **Next**.
9. If you want to check the whether the device configuration template is deployed successfully, on the **Options** page, select **Perform pre-check only**.
10. If you do not want to stop the deployment when the template is incompatible with the target devices, select **Continue on warnings**.
11. Click **Next**.
12. Set the schedule when the deploy template task runs. `Run now` will run the task when the wizard is closed. `Run at` will run the task on the selected future date. Type the credentials for all the target IOA devices.
13. The credentials must have Administrator privileges and valid for all the IOA devices.
14. Click **Next**.
15. Review the task in the **Summary** pane and click **Finish**.
16. Review the message. The deploy action can be destructive. It is important to review and understand the template you are deploying.

17.2 Edit the device-specific attributes of an IOA Deploy Template task

Device specific attributes, such as 'IOA host name', are not included in templates because they do not necessarily apply to all the target devices. Editing and deploying device specific attributes is optional because the device may already have the device specific attributes configured or the attributes may not be applicable to that specific device. If the template being deployed has device specific attributes, the device specific attributes will appear on the **Edit Attributes** page of the deploy wizard. The **Edit Attributes** page contains the target IOA devices in the left side and the device specific attributes for the selected device in the right side grid.

To edit the attributes:

1. In the left pane, select a device.
 2. Click **Deploy** on the attributes that you want to deploy to that device.
 3. Edit the **Value** of each checked attribute.
-

4. Click **Save**.
5. Repeat for each device.

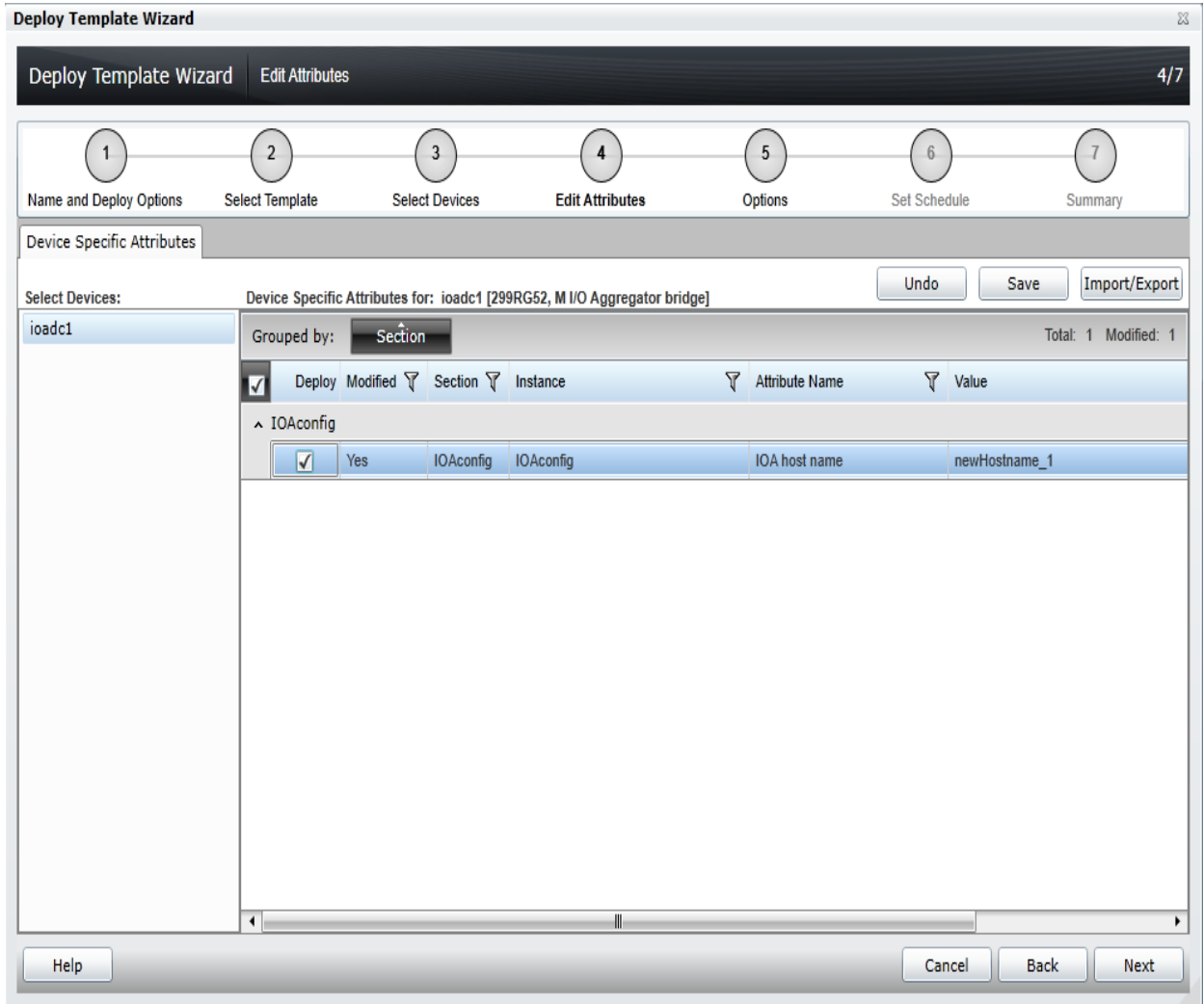


Figure 37 Edit Attributes pane

Alternatively, you can import and export the grid to file to edit. You may want to export or import if you have a large number of devices with a large number of device specific attributes. The device specific attributes grid can be exported by using the selected device or all devices. All devices will export to a single file that can be opened in a spreadsheet processing application. After editing the file, the file may be imported. The edited values must be valid for the attribute. The grids will be populated with the import data. The UI logs will report any problems with format or values of the import file.

18 Create a template from a file

18.1 Create a template from a TXT File

The TXT format is for IOA devices and creating a template from a TXT file will create the IOA template.

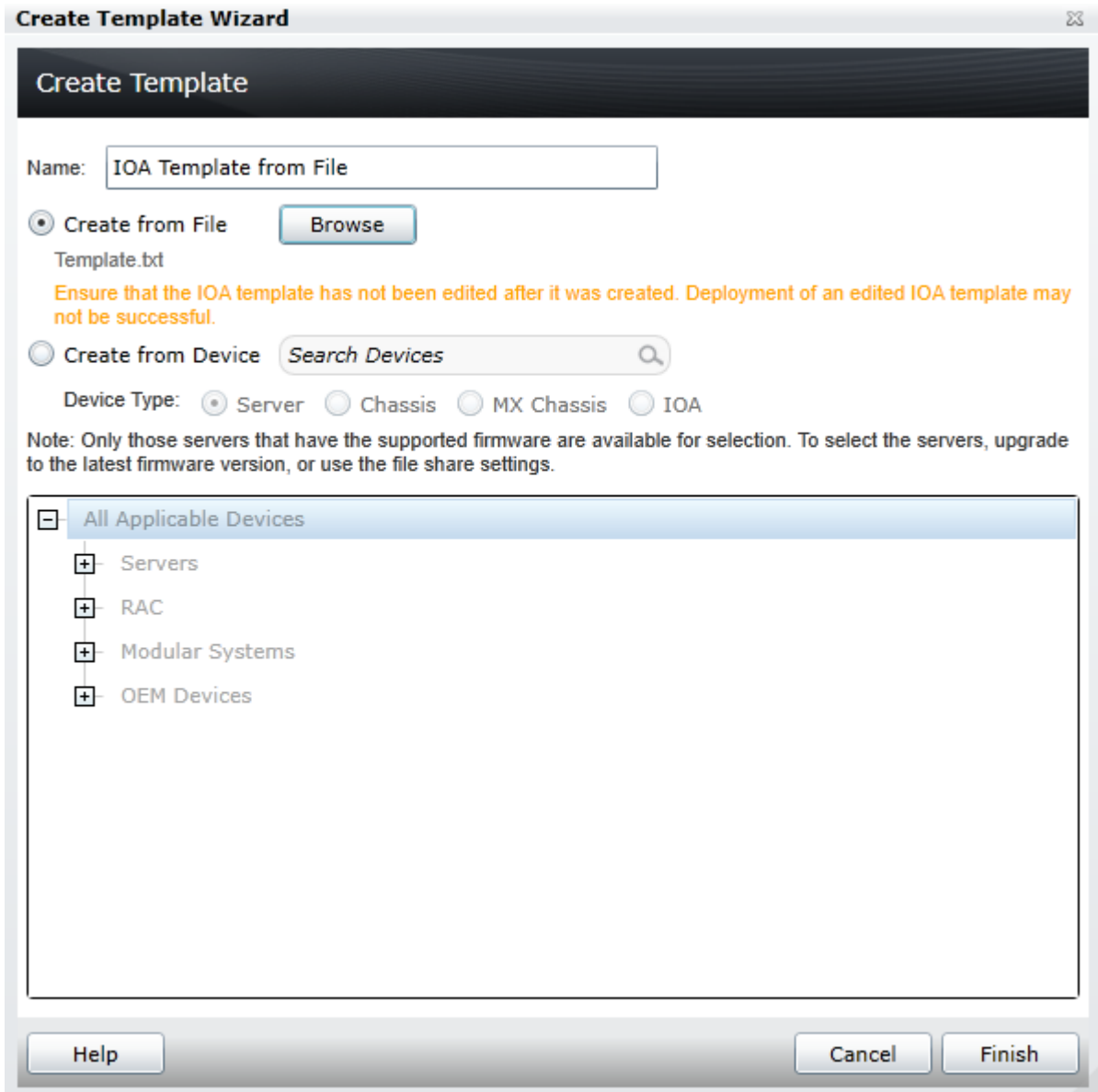


Figure 38 Create IOA Template from TXT File

18.2 Create a template from an XML File

The XML format is for Chassis devices and creating a template from an XML file will create the Chassis template.

To create the template from an XML file:

1. Navigate to the **Deployment** tab.
2. In the left pane, click **Create Template** under **Common Tasks**.
3. Type a unique name for the template.
4. Select **Create from File**.
5. Click **Browse** and browse to the file's location.
6. Select the file and click **Open**.

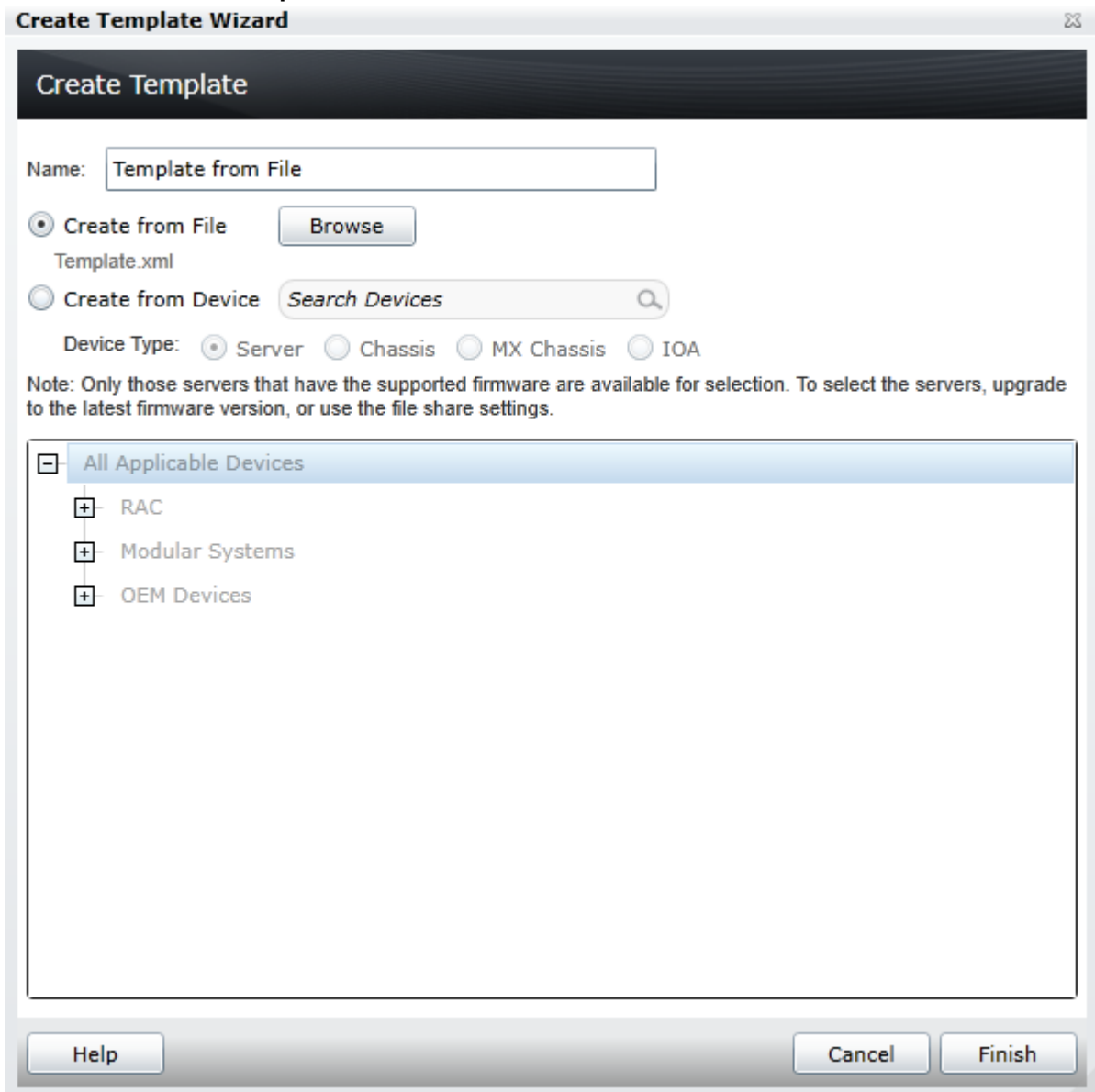


Figure 39 Create Template from an XML File

7. Click **Finish** to create the template. The template name is added to the Chassis Templates tree.

18.3 Create a template from a JSON File

The JSON format is for MX Chassis devices and creating a template from a JSON file will create the MX Chassis template.

To create the template from a JSON file:

1. Navigate to the **Deployment** tab.
2. In the left pane, click **Create Template** under **Common Tasks**.
3. Type a unique name for the template.
4. Select **Create from File**.
5. Click **Browse** and browse to the file's location.
6. Select the file and click **Open**.

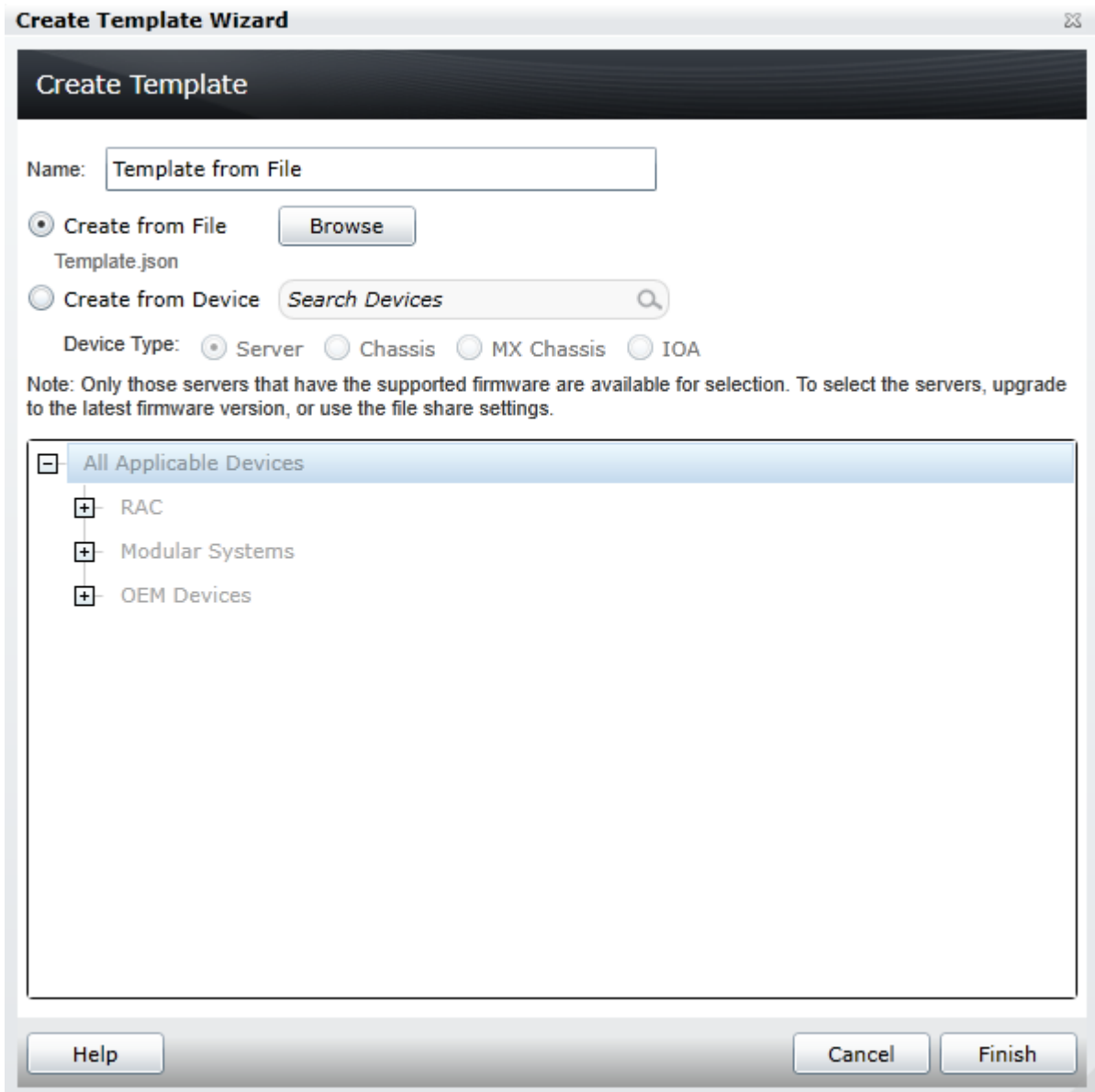


Figure 40 Create Template from a JSON File

7. Click **Finish** to create the template. The template name is added to the MX Chassis Templates tree

19 Export a Chassis Infrastructure template or an MX Chassis template

1. Select **Deployment**.
2. In the left pane, right-click **Chassis Templates** or **MX Chassis Templates** under **Common Tasks**.
3. Click **Export Template**.

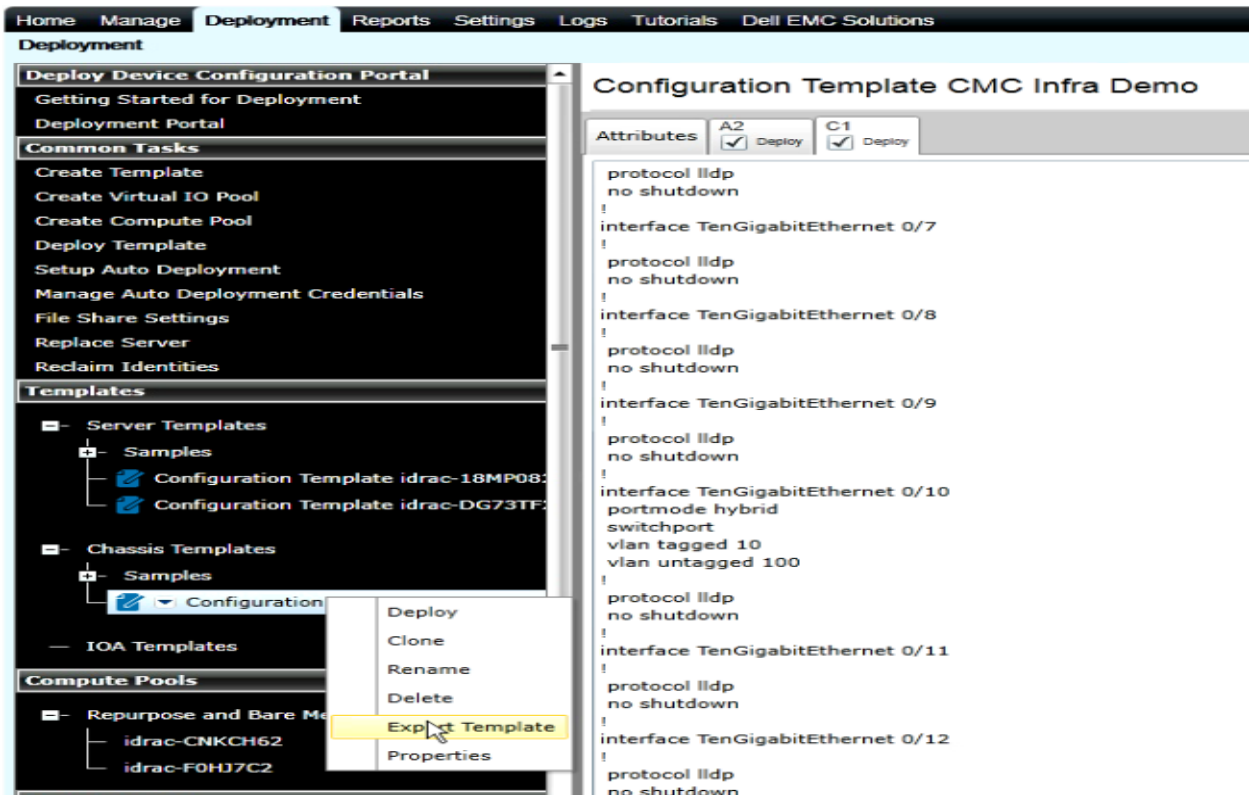


Figure 41 Export Template

4. In the **Export Template** dialog, select **Ok**.
5. In the **Save As** dialog box, type a filename for the exported chassis infrastructure template or MX Chassis template. The chassis infrastructure template will be exported in .zip format. The .zip file contains the CMC device template in .XML format and all the IOA templates in .TXT format. The MX Chassis template will be exported in .JSON format.

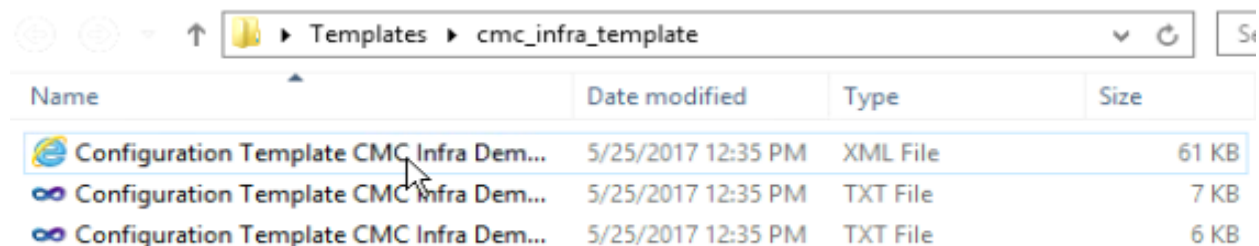


Figure 42 Chassis Infrastructure Template Folder

20 Troubleshoot issues in managing Modular Infrastructure by using OpenManage Essentials

20.1 Troubleshoot the File Share issues in managing Modular Infrastructure

To troubleshoot the file share:

1. Check the file share status in OME.

Note—The file share status is at the bottom of the file share wizard and is in the Deployment Settings preference.

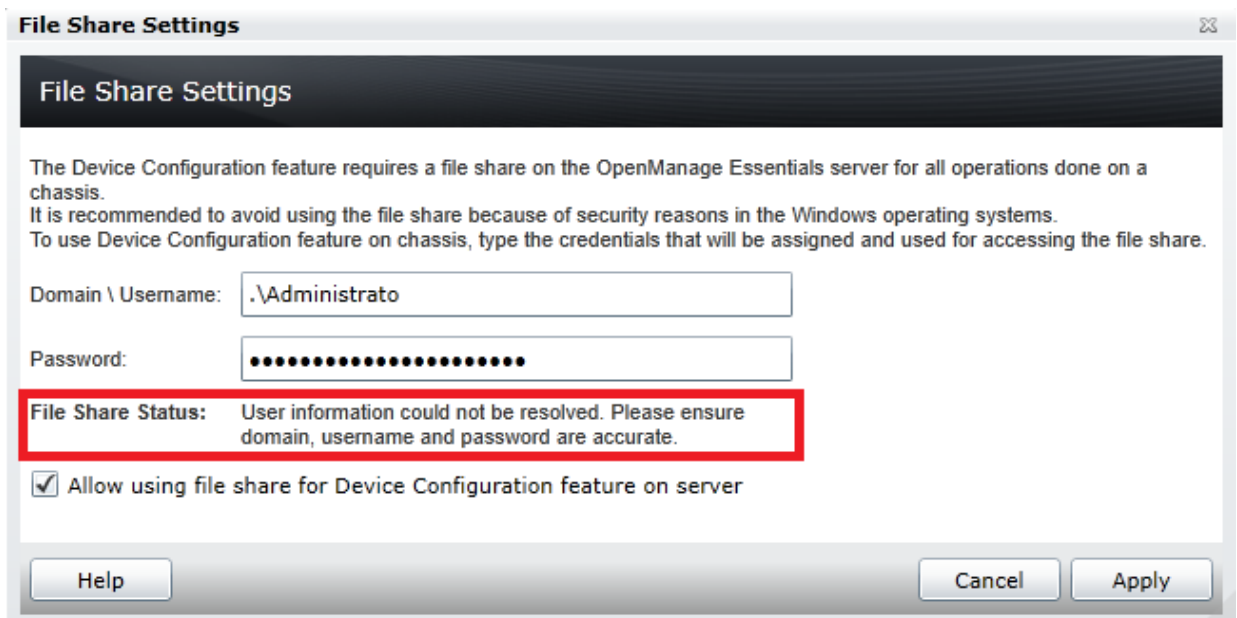


Figure 43 File Share Settings Status

2. Check the domain, username, and password.
3. Check the share folder in Windows Explorer.
4. Make sure that the **ServerConfig** folder exists in the installation configuration folder (by default, Program Files\Dell\SysMgt\Essentials\configuration).
5. Make sure that the folder is shared.
6. To share the folder, right-click the folder, select **Properties**, and then select **Sharing**.

Note—The Advanced Sharing permission settings should have the user entered in OME, as the only user with permissions to the folder.

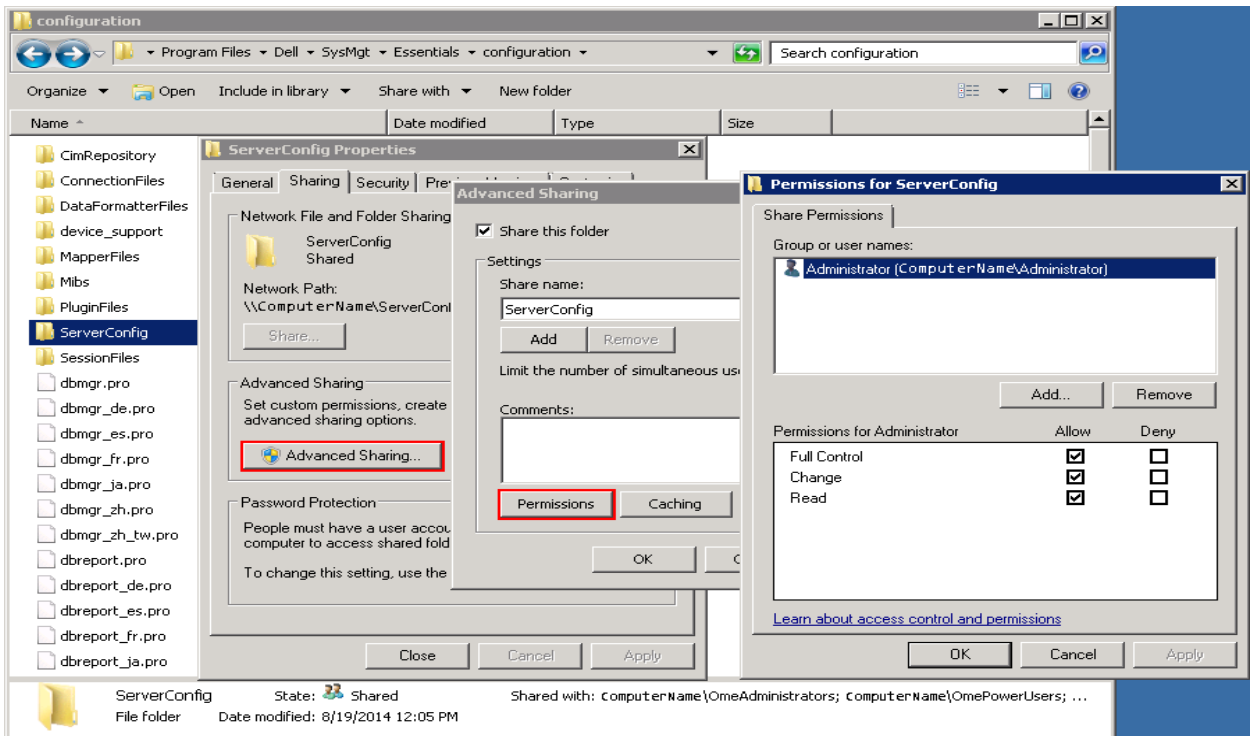


Figure 44 Advanced Sharing Tab of the ServerConfig Folder

7. Verify the share folder location by using the `net share` command.
8. Open the command prompt and type `net share`.
A share with the name `ServerConfig` should be in the network share list.

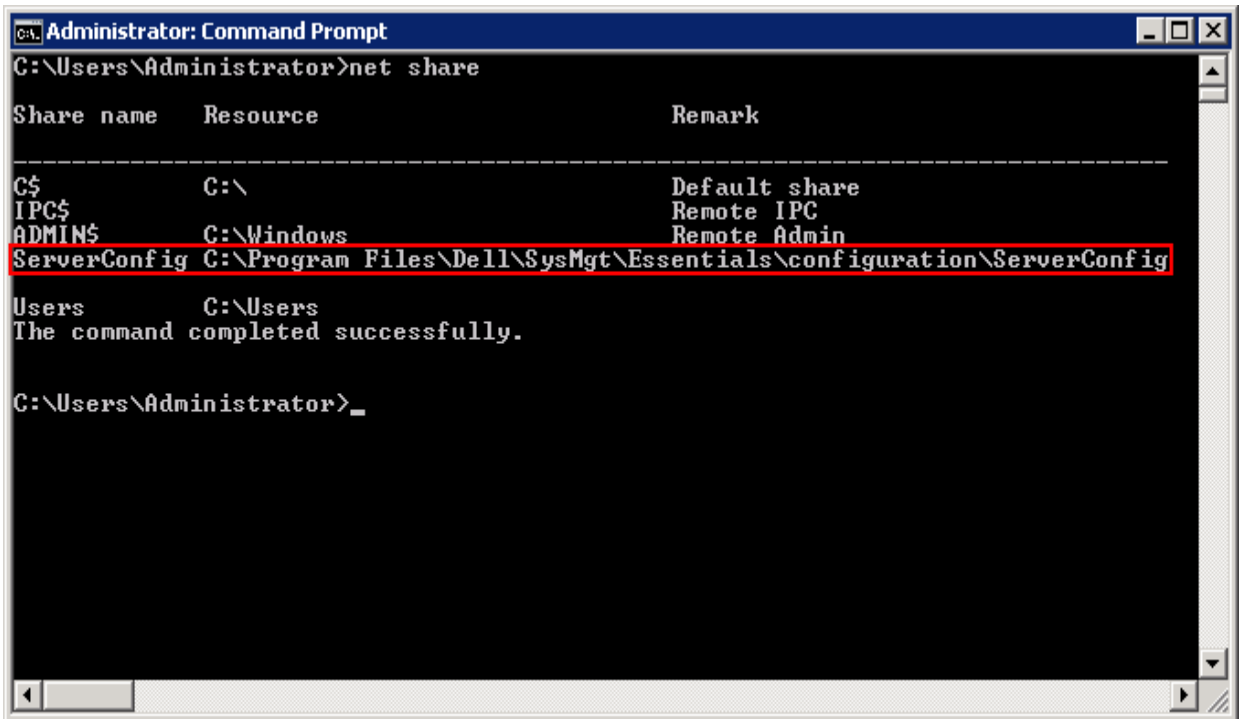


Figure 45 Net Share Command Results

9. In the User Accounts window, check the user permissions.

20.2 Troubleshoot the template creation in OpenManage Essentials

To troubleshoot the creation of template from a reference device:

1. Make sure that the file share settings are configured correctly. See [Set up a file share](#) or [Troubleshoot the File Share issues in managing Modular Infrastructure](#).
2. Right-click the task or task execution history and select **Run**.
3. Make sure that the typed credentials have privileges to run the task.

Note—The credentials must have administrator privileges on the CMC/IOA/MX Chassis.

4. Make sure that the minimum firmware version and supported operational mode requirements are satisfied by the reference Dell Networking IOA device.

To troubleshoot the creation of template from a file:

1. Make sure the file meets the requirements. See [File Requirements](#).
2. If you do not see the file you want, make sure that the file type is correct.

Note—The available options are an .xml file, a .txt file, and a .json file.

20.2.1 File requirements for creating templates in OpenManage Essentials

Files used for a template must meet the following requirements:

For an XML file:

- Must be well formed.
- Must contain at least one attribute.

For a TXT file:

- Must be a valid Dell Networking IOA configuration file.

For a JSON file:

- Must be well formed.
- Must contain at least one attribute.

20.3 Troubleshoot the Chassis template deployment or the MX Chassis template deployment

The task execution history details provide the troubleshooting information.

1. Check the file share settings. See [Troubleshoot the File Share issues in managing Modular Infrastructure](#).
2. To see the task execution history details, double-click the task execution history entry or right-click and select **Details**. The **Results** tab displays information on task activities and any errors that occurred.
3. If the task is incomplete, the task will be timed out and exits after 30 minutes of inactivity.
4. Run the task again. A restart and/or CMC reset may be required.

20.4 Troubleshoot the Auto-deploying templates

Whenever the Deploy Configuration to Undiscovered Devices task is executed, it looks for Service Tags in the **Auto Deployment** list. The following situations may be encountered:

- There are no Service Tags in the Auto Deployment list. In this case, the task exits, and no entry is created in the task execution history grid.
- The task finds one or more Service Tags in the Auto Deployment list for devices that have not been discovered by OME yet. In this case, a task execution history entry is created and it indicates why the Service Tag was not processed.
- The task finds one or more Service Tags in the Auto Deployment list for devices that have been discovered by OME. It creates tasks named Deploy Configuration to Undiscovered Devices–Task–timestamp to deploy to those devices. In this case, an execution history entry is created and the entry specifies which Service Tags were processed for deployment.
- If an error occurs in a task created for auto deployment to a device, to troubleshoot the error, see [Troubleshoot the File Share issues in managing Modular Infrastructure](#).

20.5 Troubleshoot the configuration compliance in OpenManage Essentials

To troubleshoot the configuration compliance:

- If a device is not shown in the pie chart, make sure it meets the device configuration requirements. For details, see [Target Device Requirements](#).
- If a device has acquired the license recently and shows as unlicensed, refresh the inventory of the device by right-clicking on the device in the device view under Manage→Devices and select **Refresh Inventory**. After the inventory is run, the device state should no longer be 'Not Licensed'.
- If you believe that the state of a device is incorrect, refresh the configuration inventory of the device (right-click the device compliance entry and select **Run Inventory Now**'.
- If the existing template cannot be upgraded, perform discovery and inventory on the CMC device from which the template was created.

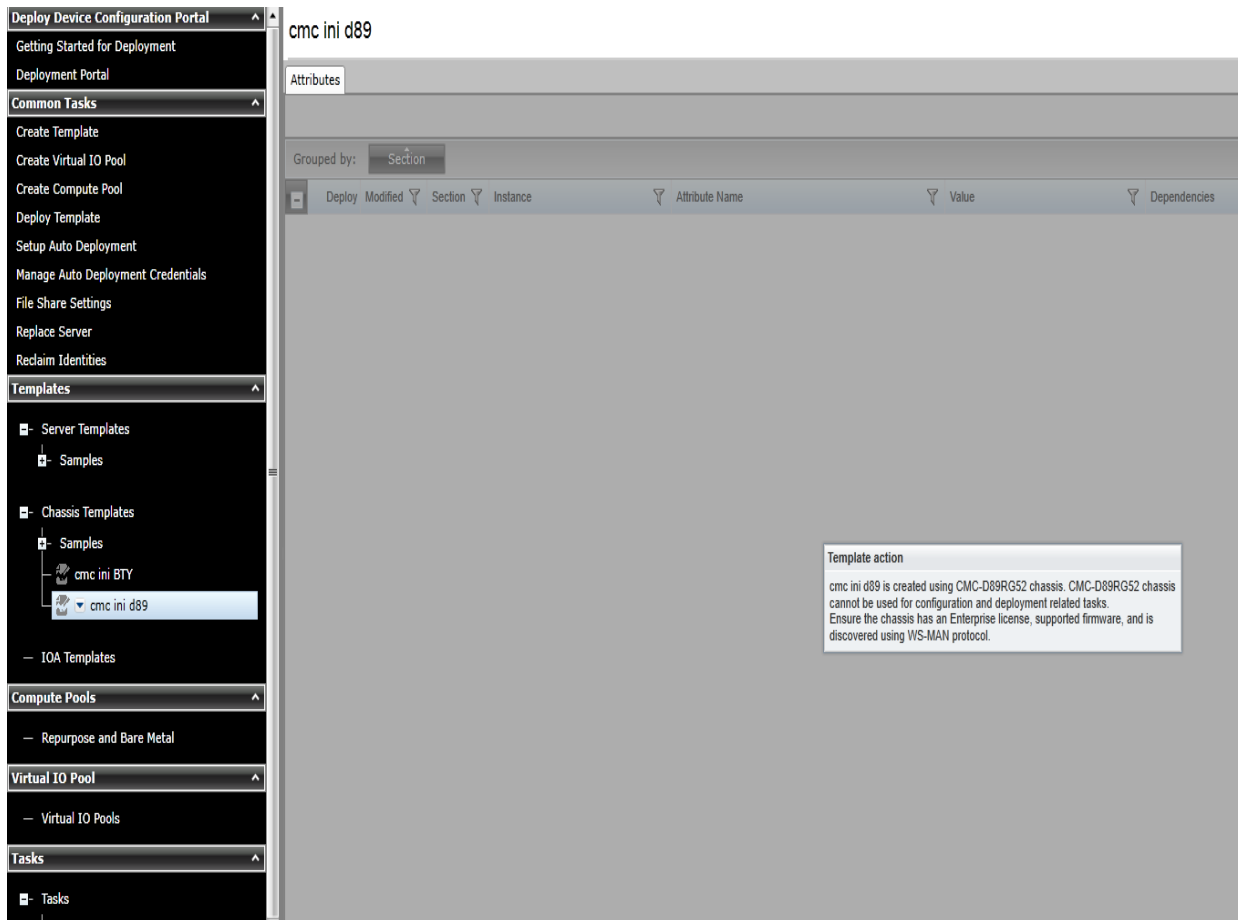


Figure 46 Troubleshoot configuration compliance in OpenManage Essentials

A Technical support and resources

Dell.com/support is focused on meeting customer needs with proven services and support.

A.1 Related resources

Referenced or recommended Dell publications:

- Dell OpenManage Essentials TechCenter page:
<http://en.community.dell.com/techcenter/systems-management/w/wiki/1989.openmanage-essentials.aspx>
- Chassis discovery feature in OME:
http://en.community.dell.com/techcenter/extras/m/white_papers/20441673
- Deployment and Managing Configurations with Dell OpenManage Essentials