



Administration

This chapter contains the following topics:

- [DCNM Server, on page 1](#)
- [Management Users, on page 17](#)
- [Performance Setup, on page 24](#)
- [Event Setup, on page 25](#)
- [Credentials Management, on page 29](#)

DCNM Server

The DCNM Server menu includes the following submenus:

Starting, Restarting, and Stopping Services

By default, the ICMP connectivity between DCNM and its switches validates the connectivity during Performance Management. If you disable ICMP, Performance Management data will not be fetched from the switches. You can configure this parameter in the **server properties**. To disable ICMP connectivity check from Cisco DCNM Web UI, choose **Administration > DCNM Server > Server Properties**, and set `skip.checkPingAndManageable` parameter value to `true`.

To clean up the performance manager database (PM DB) stale entries, start, restart, or stop a service, from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > DCNM Server > Server Status**.
The **Status** window appears that displays the server details.
- Step 2** In the **Actions** column, click the action you want to perform. You can perform the following actions:
- Start or restart a service.
 - Stop a service.
 - Clean up the stale PM DB entries.

- Reinitialize the Elasticsearch DB schema.

Step 3 View the status in the **Status** column.

What to do next

See the latest status in the **Status** column.

Using the Commands Table

The commands table contains links to commands that launch new dialog boxes to provide information about the server status and server administrative utility scripts. You can execute these commands directly on the server CLI.

- **ifconfig**: click this link to view information about interface parameters, IP address, and netmask used on the Cisco DCNM server.
- **appmgr status all**: click this link to view the DCNM server administrative utility script that checks the status of different services currently running.
- **appmgr show vmware-info**: click this link to view information about the CPU and Memory of Virtual Machine.
- **clock**: click this link to view information about the server clock details such as time, zone information.



Note The commands section is applicable only for the OVA or ISO installations.

Viewing Log Information

You can view the logs for performance manager, SME server, web reports, web server, and web services. These processes have no corresponding GUI that allows you to view information about these log files. If you see errors, preserve these files for viewing.

Beginning with Release 11.2(1), for DCNM OVA and DCNM ISO installations, all log files with .log extension are also listed.



Note Logs cannot be viewed from a remote server in a federation.

To view the logs from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Administration > DCNM Server > Logs**.

You see a tree-based list of logs in the left column. Under the tree, there is a node for every server in the federation. The log files are under the corresponding server node.

- Step 2** Click a log file under each node of the tree to view it on the right.
- Step 3** Double-click the tree node for each server to download a ZIP file containing log files from that server.
- Step 4** (Optional) Click **Generate Techsupport** to generate and download files required for technical support.

This file contains more information in addition to log files.

Note A TAR.GZ file will be downloaded for OVA and ISO deployments, and a ZIP file will be downloaded for all other deployments.

- Step 5** (Optional) Click the **Print** icon on the upper right corner to print the logs.
-

Server Properties

You can set the parameters that are populated as default values in the DCNM server.

The backup configuration files are stored in the following path:

```
/usr/local/cisco/dcm/dcnm/data/archive
```

The number of archived files that can be retained is set in the **# Number of archived files per device to be retained:** field. In the Cisco DCNM LAN Fabric installation, the backup is taken per fabric and not per device. If the number of backup files exceeds the value entered in the field, the first version of the backup is deleted to accommodate the latest version. For example, if the value entered in the field is **50** and when the 51st version of the fabric is backed up, the first backup file is deleted.

To set the parameters of the DCNM server from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > DCNM Server > Server Properties**.
- Step 2** Click **Apply Changes** to save the server settings.
-

Modular Device Support

To support any new hardware that does not require many major changes, a patch can be delivered instead of waiting for the next DCNM release. **Modular Device Support** helps to deliver and apply the DCNM patch releases. An authorized DCNM administrator can apply the patch to the production setup. Patch releases are applicable for the following scenarios:

- Support any new hardware, like chassis or line cards
- Support latest NX-OS versions
- Support critical fixes as patches

To view the patch details from Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Administration > DCNM Server > Modular Device Support**.

You see the **DCNM Servers** column on the left in the window and **Modular Device support information** window on the right.

Step 2 Expand **DCNM Servers** to view all the DCNM servers.

It includes the list of patches installed along with the version number, corresponding platforms supported, chassis supported, NX-OS version supported, PID supported, backup directory and the last patch deployment time in the **Modular Device support information** table.

What to do next

For more details about how to apply and rollback a patch, go to <http://www.cisco.com/go/dcnm> for more information.

Managing Licenses

You can view the existing Cisco DCNM licenses by choosing **Administration > DCNM Server > License**. You can view and assign licenses in the following tabs:

- **License Assignments**
- **Smart License**
- **Server License Files**



Note By default, the **License Assignments** tab appears.

The following table displays the SAN and LAN license information.

Field	Description
License	Specifies SAN or LAN.
Free/Total Server-based Licenses	Specifies the number of free licenses that are purchased out of the total number of licenses.
Unlicensed/Total (Switches/VDCs)	Specifies the number of unlicensed switches or VDCs out of the total number of switches or VDCs.
Need to Purchase	Specifies the number of licenses to be purchased.

This section includes the following topics:

License Assignments

The following table displays the license assignment details for every switch or VDC.

Field	Description
Group	Displays if the group is fabric or LAN.
Switch Name	Displays the name of the switch.
WWN/Chassis ID	Displays the world wide name or Chassis ID.
Model	Displays the model of the device. For example, DS-C9124 or N5K-C5020P-BF.
License State	Displays the license state of the switch that can be one of the following: <ul style="list-style-type: none"> • Permanent • Eval • Unlicensed • Not Applicable • Expired • Invalid
License Type	Displays if the license is a switch-based embedded license or a server-based license.
Expiration Date	Displays the expiry date of the license. Note Text under the Expiration Date column is in red for licenses, which expire in seven days.
Assign License	Select a row and click this option on the toolbar to assign the license.
Unassign License	Select a row and click this option on the toolbar to unassign the license.
Assign All	Click this option on the toolbar to refresh the table and assign the licenses for all the items in the table.
Unassign All	Click this option on the toolbar to refresh the table and unassign all the licenses.



Note You must have network administrator privileges to assign or unassign licenses.

When the fabric is first discovered and if the switch does not have a valid switch-based license, a license is automatically assigned to the fabric from the file license pool until no more licenses are left in the pool. If you have an existing fabric and a new switch is added to the fabric, the new switch is assigned a license if one is available in the file license pool and if it does not already have a switch-based license.

After you register smart license, if you click **Assign License** for a switch that does not have a permanent license, a smart license is assigned to the switch. The priority of licenses that are assigned are in the following order:

1. **Permanent**
2. **Smart**
3. **Eval**

Disabling smart licensing unassigns licenses of switches that were smart-licensed.

The evaluation license is assigned for switches that do not support smart licensing. The license state is **Eval** and the license type is **DCNM-Server**. See *Cisco DCNM Licensing Guide, Release 11.x* to view the list of switches that support smart licensing.

Smart License

From Cisco DCNM Release 11.1(1), you can use the smart licensing feature to manage licenses at device-level and renew them if required. From Cisco DCNM Web UI, choose **Administration > DCNM Server > License > Smart License**. You will see a brief introduction on Cisco smart licensing, a menu bar, and the **Switch Licenses** area.

In the introduction, click **Click Here** to view the information on smart software licensing.

The menu bar has the following icons:

- **Registration Status:** Displays details of the current registration in a pop-up window when clicked. The value is **UNCONFIGURED** if the smart licensing is not enabled. After you enable the smart licensing without registering, the value is set to **DEREGISTERED**. The value is set to **REGISTERED** after you register. Click the registration status to view the last action, account details, and other registration details in the **Registration Details** pop-up window.
- **License Status:** Specifies the status of the license. The value is **UNCONFIGURED** if the smart licensing is not enabled. After you enable the smart licensing without registering, the value is set to **NO LICENSES IN USE**. The value is set to **AUTHORIZED** or **OUT-OF-COMPLIANCE** after registering and assigning licenses. Click the license status to view the last action, last authorization attempt, next authorization attempt, and the authorization expiry in the **License Authorization Details** pop-up window.
- **Control:** Allows you to enable or disable smart licensing, register tokens, and renew the authorization.

The following table describes the fields that appear in the **Switch Licenses** section.

Field	Description
Name	Specifies the license name.
Count	Specifies the number of licenses used.
Status	Specifies the status of the licenses used. Valid values are Authorized and Out of Compliance .
Description	Specifies the type and details of the license.
Last Updated	Specifies the timestamp when switch licenses were last updated.

Field	Description
Print	Allows you to print the details of switch licenses.
Export	Allows you to export the license details.

After you remove a product license from your account in Cisco Smart Software Manager, disable the smart licensing and register it again.

Enabling Smart Licensing

To enable smart licensing from Cisco DCNM Web UI, perform the following steps:

Procedure

-
- Step 1** Choose **Administration > DCNM Server > License > Smart License**.
- Step 2** Click **Control** and choose **Enable** in the drop-down list to enable the smart licensing.
A confirmation window appears.
- Step 3** Click **Yes**.
Instructions to register the DCNM instance appear.
The registration status changes from **UNCONFIGURED** to **DEREGISTERED**, and the license status changes from **UNCONFIGURED** to **No Licenses in Use**.
-

Registering a Cisco DCNM Instance

Before you begin

Create a token in Cisco Smart Software Manager.

Procedure

-
- Step 1** Choose **Administration > DCNM Server > License > Smart License**.
- Step 2** Click **Control** and choose **Register** in the drop-down list.
The **Register** window appears.
- Step 3** Select the transport option to register the smart licensing agent.
The options are:
- **Default - DCNM communicates directly with Cisco's licensing servers**
This option uses the following URL: <https://tools.cisco.com/its/service/odcce/services/DDCCEService>
 - **Transport Gateway - Proxy via Gateway or Satellite**
Enter the URL if you select this option.

- **Proxy - Proxy via intermediate HTTP or HTTPS proxy**

Enter the URL and the port if you select this option.

Step 4 Enter the registration token in the **Token** field.

Step 5 Click **Submit** to register the license.

The registration status changes from **DEREGISTERED** to **REGISTERED**. The name, count, and status of switch licenses appear.

Click **Registration Status: REGISTERED** to see the details of the registered token.

The switch details are updated under the **Switches/VDCs** section of the **License Assignments** tab. The license type and the license state of switches that are licensed using the smart license option are **Smart**.

What to do next

Troubleshoot communication errors, if any, that you encounter after the registration.

Troubleshooting Communication Errors

To resolve the communication errors during registration, perform the following steps:

Procedure

Step 1 Stop the DCNM service.

Step 2 Open the server properties file from the following path: `/usr/local/cisco/dcm/fm/conf/server.properties`

Note The server properties file for Windows will be in the following location: `C:/Program Files/Cisco/dcm/fm/conf/server.proprties`

Step 3 Include the following property in the server properties file: `#cisco.smart.license.production=false`
`#smartlicense.url.transport=https://CiscoSatellite_Server_IP/Transportgateway/services/DeviceRequestHandler`

Step 4 Update the Cisco satellite details in Host Database in the `/etc/hosts` file in the following syntax:
`Satellite_Server_IP CiscoSatellite`

Step 5 Start the DCNM service.

Renew Authorization

You can manually renew the authorization only if you have registered. Automatic reauthorization happens periodically. Click **License Status** to view details about the next automatic reauthorization. To renew authorization from Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Administration > DCNM Server > License > Smart License**.

Step 2 Click **Control** and choose **Renew Authorization** in the drop-down list to renew any licensing authorizations.

A request is sent to Cisco Smart Software Manager to fetch updates, if any. The **Smart Licenses** window is refreshed after the update.

Disabling Smart Licensing

To disable smart licensing from Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > DCNM Server > License > Smart License**.
- Step 2** Select **Control** and select **Disable** to disable smart licensing.
A confirmation window appears.
- Step 3** Click **Yes**.
The license status of the switches using this token, under the **License Assignments** tab, changes to **Unlicensed**. This token is removed from the list under the **Product Instances** tab in the Cisco Smart Software Manager.
If a smart license is not available and you disable smart licensing, release the license manually from the **License Assignments** tab.

Server License Files

From Cisco DCNM Web UI, choose **Administration > DCNM Server > License > Server License Files**. The following table displays the Cisco DCNM server license fields.

Field	Description
Filename	Specifies the license file name.
Feature	Specifies the licensed feature.
PID	Specifies the product ID.
LAN (Free/Total)	Displays the number of free versus total licenses for LAN.
Expiration Date	Displays the expiry date of the license. Note Text in the Expiration Date field is in Red for licenses that expires in seven days.

Adding Cisco DCNM Licenses

To add Cisco DCNM licenses from Cisco DCNM, perform the following steps:

Before you begin

You must have network administrator privileges to complete the following procedure.

Procedure

Step 1 Choose **Administration > DCNM Server > License** to start the license wizard.

Step 2 Choose the **Server License Files** tab.

The valid Cisco DCNM-LAN license files are displayed.

Ensure that the security agent is disabled when you load licenses.

Step 3 Download the license pack file that you received from Cisco into a directory on the local system.

Step 4 Click **Add License File** and select the license pack file that you saved on the local machine.

The file is uploaded to the server machine, which is saved into the server license directory, and then loaded on to the server.

Note Ensure that you do not edit the contents of the .lic file or the Cisco DCNM software ignores any features that are associated with that license file. The contents of the file are signed and must remain intact. When you accidentally copy, rename, or insert the license file multiple times, the duplicate files are ignored, but the original is counted.

Native HA

Procedure

Step 1 By default, DCNM is bundled with an embedded database engine PostgreSQL. The native DCNM HA is achieved by two DCNMs running as **Active / Warm Standby**, with their embedded databases synchronized in real time. So once the active DCNM is down, the standby takes over with the same database data and resume the operation. The *standby host database down* scenario is documented after this procedure.

Step 2 From the menu bar, choose **Administration > DCNM Server > Native HA**.

You see the **Native HA** window.

Step 3 You can allow manual failover of DCNM to the standby host by clicking the **Failover** button, and then click **OK**.

- Alternatively, you can initiate this action from the Linux console.

- a. SSH into the DCNM active host.
- b. Enter "`"/usr/share/heartbeat/hb_standby"`

Step 4 You can allow manual syncing database and disk files to standby host by clicking **Force Sync**, and then click **OK**.

Step 5 You can test or validate the HA setup by clicking **Test** and then click **OK**.

What to do next

Some HA troubleshooting scenarios are noted in this sub section.

The standby host database is down: Typically, the DCNM database (PostgreSQL) is up on the active and standby hosts. In DCNM 10.1 and earlier versions, the standby database can be down due to a database synchronization failure.

- Enter “ps -ef | grep post”. You should see multiple postgres processes running. If not, it indicates that the database is down.
- Restore database data from a backup file that is created at the beginning of database synchronization. Change directory to “/usr/local/cisco/dcm/db”
- Check existence of file replication/ pgsq-standby-backup.tgz. If the file exists, restore database data files:

```
rm -rf data/*
tar -zxf replication/ pgsq-standby-backup.tgz data
/etc/init.d/postgresql-9.4 start
ps -ef | grep post
```

The active DCNM host will synchronize the two databases.

The TFTP server is not bound to the eth1 VIP address on the active host: The TFTP server should run on the active host (not on the standby host), and it should be bound to the eth1 VIP address. In some setups, the bind address is not the VIP address, as per the TFTP configuration file, and this could cause issues when switches try to use TFTP.

- Enter “grep bind /etc/xinetd.d/tftp” to check if the TFTP configuration file has the right bind address. If the displayed IP address is not the eth1 VIP address, then change the bind address to the VIP address. Repeat the procedure for the standby host. Update the bind address to the VIP address.
- Enter " " /etc/init.d/xinetd restart” on the active host to restart TFTP.



Note The TFTP server can be started or stopped with the “appmgr start/stop ha-apps” command.

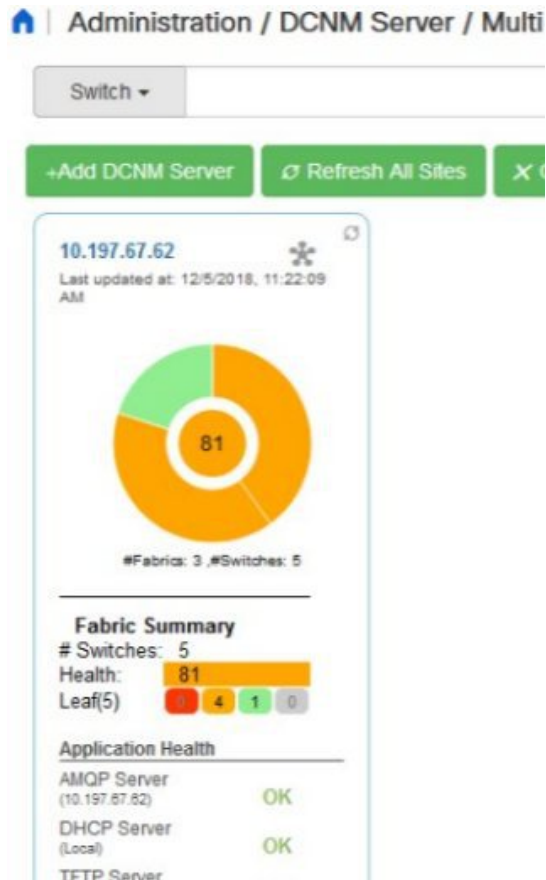
Multi Site Manager

Using Multi Site Manager, you can view the health of a DCNM server application and retrieve switch information for switches in local and remote sites. To access switch information for remote DCNM servers, you must register the server in Multi Site Manager. The procedures to access remote DCNM servers and search for switch information are explained:

Add Remote DCNM Server Information

This procedure allows you to access a DCNM server in a remote site from the DCNM server that you are currently logged on to. For the remote site to access the current DCNM server, registration is required on the remote site.

1. Choose **Administration > DCNM Server > Multi Site Manager**. The Multi Site Manager screen comes up.



The currently logged on DCNM application health status is displayed on the screen.



Note The **Application Health** function is only available for the DCNM ISO/OVA installation type and not for the Windows/RHEL installation type.

2. Click **+Add DCNM Server**. The **Enter Remote DCNM Server Information** screen comes up.

Enter the remote DCNM server name, its IP address or URL, the user credentials of the remote DCNM server, and optionally, the port number.



Note Do not disable the **Use HTTPS** check box. If you disable, DCNM will not be accessible.

Enter Remote DCNM Server Information

* DCNM Name	<input type="text" value="remote-DCNM"/>
* IP/DNS Name	<input type="text" value="172.28.8.125"/>
* User	<input type="text" value="admin"/>
* Password	<input type="password" value="....."/>
Use HTTPS	<input checked="" type="checkbox"/>
Port Number	<input type="text" value="1099"/>

Close

OK

- Click **OK**. After validation, the remote DCNM server is represented in the screen, next to the local DCNM server.

The screenshot shows the Multi Site Manager interface. At the top, there is a 'Switch' dropdown, 'Search', and 'Clear' buttons. Below these are three green buttons: '+Add DCNM Server', 'Refresh All Sites', and 'Clear All Search Result'. The main area displays two server cards. The left card is for a local server with IP 10.197.67.62, last updated at 12/5/2018, 11:22:09 AM. It shows a donut chart with 81 and '#Fabrics: 3, #Switches: 5'. The right card is for a remote server named 'remote-DCNM', last updated at 10/10/2018, 5:39:59 PM. It shows a donut chart with 32 and '#Fabrics: 1, #Switches: 7'. Below the chart is 'Application Health' for 'AMQP Server (172.28.8.125)' with a status of 'OK'. A red arrow points to the 'remote-DCNM' card.

You can click **Refresh All Sites** to display updated information.

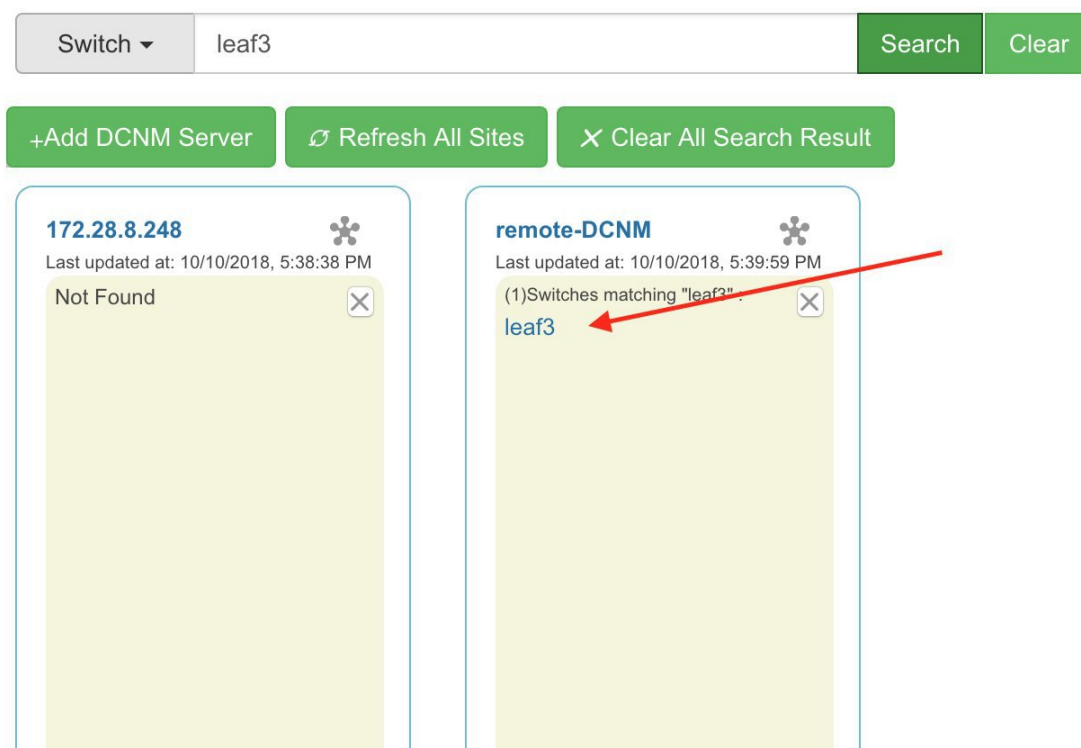
Retrieve Switch Information

- Choose **Administration > DCNM Server > Multi Site Manager**. The Multi Site Manager screen comes up

2. From the search box at the top of the screen, search for a switch based on one of the following parameters:
 - VM information (**VM IP** and **VM Name** fields) - A connected VM's IP address or name.
 - Switch information (**Switch** and **MAC** fields) – A switch's name or MAC address.
 - Segment (**Segment ID** field) that has presence on the switch.

If there is a match, the switch name appears as a hyperlink below the search box, in the appropriate local or remote DCNM server depiction.

In this example, the switch **leaf3** is available in the remote site managed by a DCNM server. A link to **leaf3** is available in the **remote-DCNM** panel.



3. Click **leaf3** to view detailed switch information in an adjacent browser tab.

At any point in time, you can click the **Launch Topology View** icon to view the fabric's topology.

Device Connector

The Device Connector is an embedded management controller that enables the capabilities of Cisco Intersight, a cloud-based management platform.

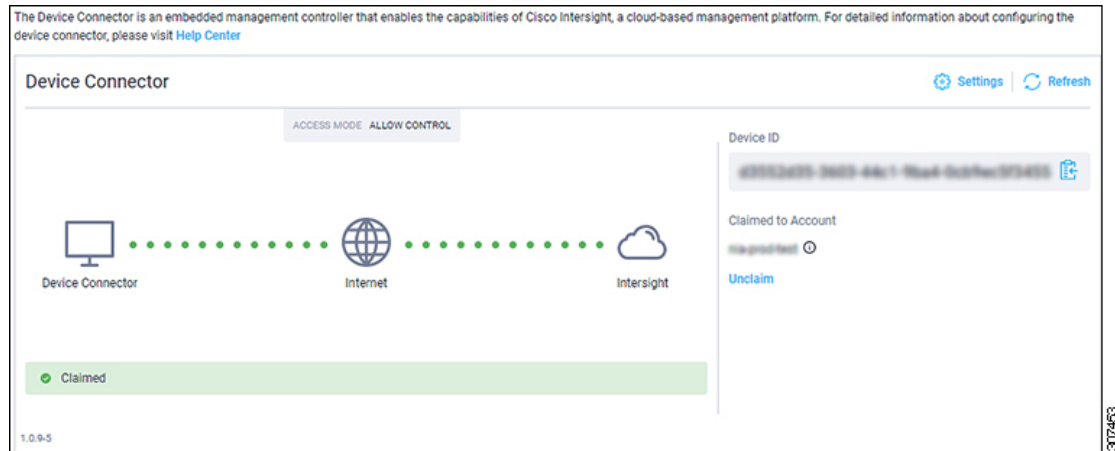
Networks Insights applications are connected to the Cisco Intersight cloud portal through a Device Connector which is embedded in the management controller of the Cisco DCNM platform. Cisco Intersight is a virtual appliance that helps manage and monitor devices through the Network Insights application. The Device Connector provides a secure way for connected DCNM to send information and receive control instructions from the Cisco Intersight portal, using a secure Internet connection.

Configuring Device Connector

To configure the Device Connector from the Cisco DCNM Web UI, perform the following steps:

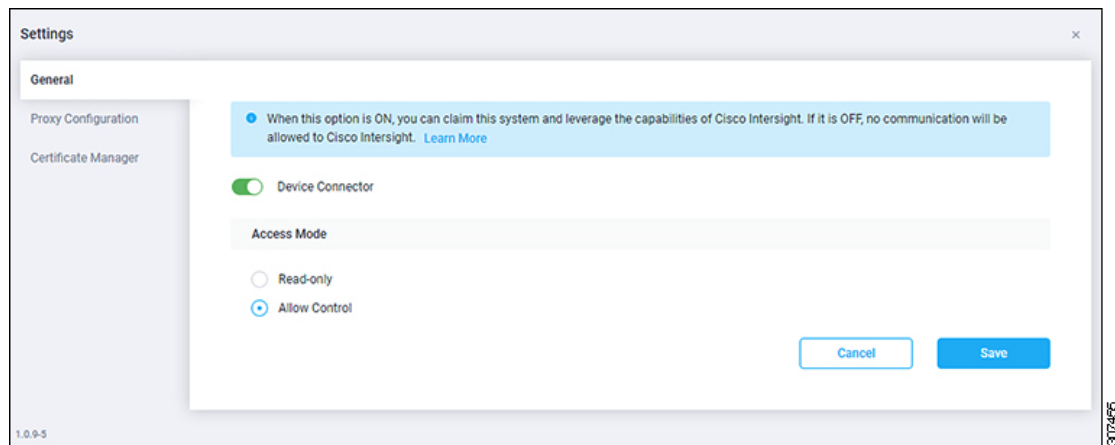
1. Choose **Administration > DCNM Server > Device Connector**.

The Device Connector work pane appears.



2. Click **Settings**.

The **Settings - General** window appears.



- **Device Connector (switch)**

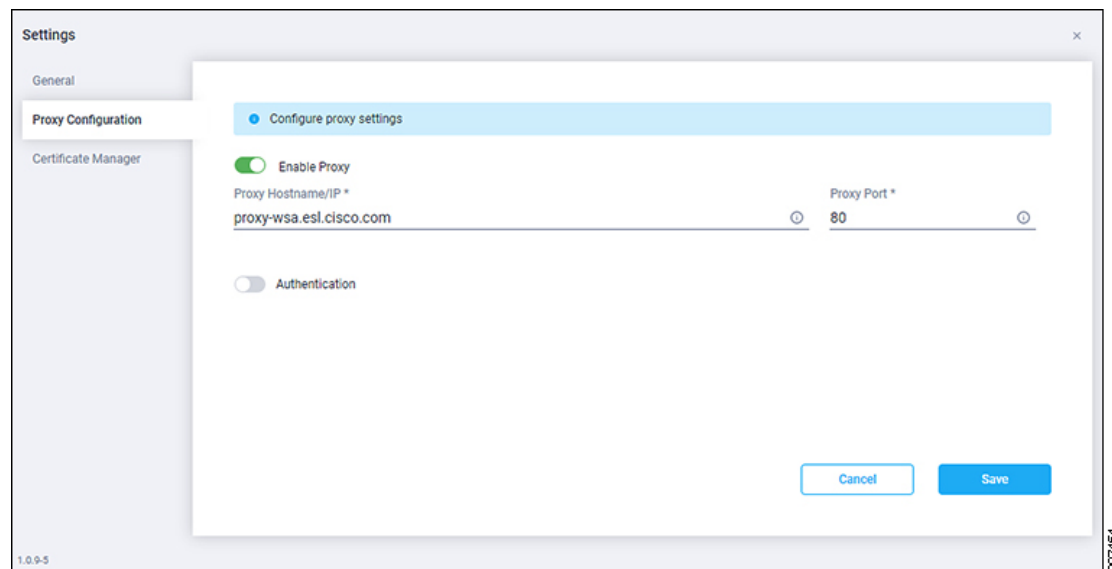
This is the main switch for the Device Connector communication with Cisco Intersight. When the switch is on (green highlight), the Device Connector claims the system and leverages the capabilities of the Cisco Intersight. If the switch is off (gray highlight), no communication can occur between Cisco DCNM and Cisco Intersight.

- **Access Mode**

- **Read-only:** This option ensures that there are no changes to this device from Intersight. For example, actions such as upgrading firmware or a profile deployment is not allowed in the Read-Only mode. However, the actions depend on the features available for a particular system.
- **Allow Control:** This option (selected by default) enables you to perform full read/write operations from the appliance, based on the features available in Cisco Intersight.

3. Set the Device Connector to on (green highlight) and choose **Allow Control**.
4. Click **Proxy Configuration**.

The **Settings - Proxy Configuration** window appears.



- **Enable Proxy (switch)**

Enable HTTPS Proxy to configure the proxy settings.



Note Network Insights requires Proxy settings.

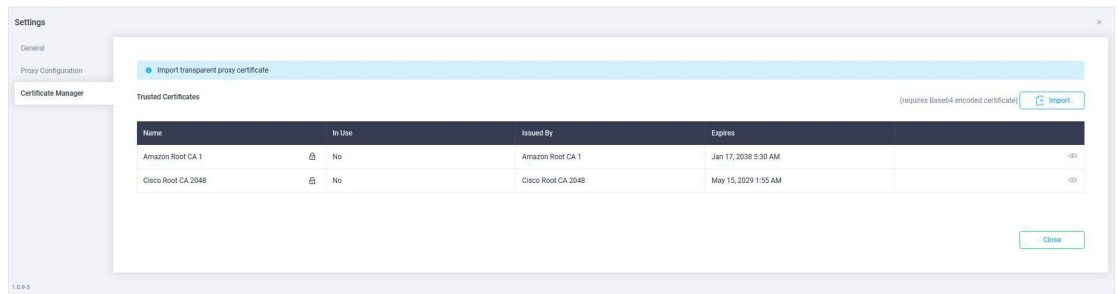
- **Proxy Hostname/IP* and Proxy Port*:** Enter a proxy hostname or IP address, and a proxy port number.
- **Authentication (switch)**

Enable proxy access through authentication. When the switch is on (green highlight), authentication to the proxy server is required. If the switch is off (gray highlight), it does not require authentication.

Username* and Password: Enter a user name and password for authentication.

The device connector does not mandate the format of the login credentials, they are passed as-is to the configured HTTP proxy server. The username must be a qualified domain name depending on the configuration of the HTTP proxy server.

5. Enable the proxy (green highlight) and enter a hostname and port number.
6. (Optional) If proxy authentication is required, enable it (green highlight) and enter a username and password.
7. Click **Save**.
8. Click **Certificate Manager**.



The trusted certificates appear in the table.

A list of trusted certificates appears. You can import a valid trusted certificate.

- **Import**

Browse the directory, choose, and import a CA signed certificate.



Note The imported certificate must be in the ***.pem (base64encoded)** format.

- You can view the list of certificates with the following information:

- **Name**—Common name of the CA certificate.
- **In Use**—Whether the certificate in the trust store is used to successfully verify the remote server.
- **Issued By**—The issuing authority for the certificate.
- **Expires**—The expiry date of the certificate.



Note You cannot delete bundled certificates.

Management Users



Note Every time you login to DCNM, the DCNM server fetches information from the ISE server for AAA authentication. The ISE server will not authenticate again, after the first login.

The Management Users menu includes the following submenus:

Remote AAA

To configure remote AAA from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Administration > Management Users > Remote AAA Properties**.

The AAA properties configuration window appears.

Step 2 Use the radio button to select one of the following authentication modes:

- **Local**: In this mode the authentication authenticates with the local server.
- **Radius**: In this mode the authentication authenticates against the RADIUS servers specified.
- **TACACS+**: In this mode the authentication authenticates against the TACACS servers specified.
- **Switch**: In this mode the authentication authenticates against the switches specified.
- **LDAP**: In this mode the authentication authenticates against the LDAP server specified.

Step 3 Click **Apply**.

Note Restart the Cisco DCNM LAN services if you update the Remote AAA properties.

Local

Procedure

Step 1 Use the radio button and select **Local** as the authentication mode.

Step 2 Click **Apply** to confirm the authentication mode.

Radius

Procedure

Step 1 Use the radio button and select **Radius** as the authentication mode.

Step 2 Specify the Primary server details and click **Test** to test the server.

Step 3 (Optional) Specify the Secondary and Tertiary server details and click **Test** to test the server.

Step 4 Click **Apply** to confirm the authentication mode.

TACACS+

Procedure

- Step 1** Use the radio button and select **TACACS+** as the authentication mode.
- Step 2** Specify the Primary server details and click **Test** to test the server.
- Step 3** (Optional) Specify the Secondary and Tertiary server details and click **Test** to test the server.

Note For IPv6 transport, enter Physical and VIP address for AAA authentication as the order of addresses changes during failover situation.

- Step 4** Click **Apply** to confirm the authentication mode.
-

Switch

Procedure

- Step 1** Use the radio button to select **Switch** as the authentication mode.
DCNM also supports LAN switches with the IPv6 management interface.
- Step 2** Specify the Primary Switch name and click **Apply** to confirm the authentication mode.
- Step 3** (Optional) Specify the names for Secondary and Tertiary Switches.
- Step 4** Click **Apply** to confirm the authentication mode.
-

LDAP

Procedure

- Step 1** Use the radio button and select **LDAP** as the authentication mode.

The screenshot shows the Cisco Data Center Network Manager interface for configuring Remote AAA. The left sidebar contains navigation options: Dashboard, Topology, Inventory, Monitor, Configure, and Administration. The main content area is titled 'Administration / Management Users / Remote AAA'. It features several configuration fields and options:

- Auth Mode:** Radio buttons for Local, Radius, TACACS+, Switch, and LDAP (selected).
- Host:** Text input field containing 'ds.cisco.com' and a 'Test...' button.
- Port:** Text input field containing '389'.
- SSL Enabled:** A checkbox that is currently unchecked.
- Base DN:** Text input field containing 'DC=cisco,DC=com'.
- Filter:** Text input field containing '\$userid@cisco.com'.
- Auth Non-Restricted:** A checkbox that is currently unchecked.
- Determine Role By:** Radio buttons for Attribute and Admin Group Map (selected).
- Role Admin Group:** Text input field containing 'dcnm-admins'.
- Map TO DCNM Role:** Text input field containing 'network-admin'.
- Access Map:** An empty text input field.

Step 2 In the **Host** field, enter either the IPv4 or IPv6 address.

If DNS service is enabled, you can enter DNS address (hostname) of the LDAP server.

Step 3 In the **Port** field, enter a port number.

Enter 389 for non-SSL; enter 636 for SSL. By default, the port is configured for non-SSL.

Step 4 Select the **SSL Enabled** check box, if SSL is enabled on the AAA server.

Note You must enter **636** in the Port field, and select **SSL Enabled** check box to use LDAP over SSL.

This ensures the integrity and confidentiality of the transferred data by causing the LDAP client to establish a SSL session, before sending the bind or search request.

Step 5 In the **Base DN** field, enter the base domain name.

The LDAP server searches this domain. You can find the base DN by using the **dsquery.exe user -name <display_name>** command on the LDAP server.

For example:

```
ldapsrvr# dsquery.exe users -name "John Smith"
```

```
CN=john smith,CN=Users,DC=cisco,DC=com
```

The Base DN is DC=cisco,DC=com.

Note Ensure that you enter the elements within the Base DN in the correct order. This specifies the navigation of the application when querying Active Directory.

Step 6 In the **Filter** field, specify the filter parameters.

These values are used to send a search query to the Active Directory. The LDAP search filter string is limited to a maximum of 128 characters.

For example:

- \$userid@cisco.com

This matches the user principal name.

- CN=\$userid,OU=Employees,OU=Cisco Users

This matches the exact user DN.

Step 7

Choose an option to determine a role. Select either **Attribute** or **Admin Group Map**.

- **Admin Group Map:** In this mode, DCNM queries LDAP server for a user based on the Base DN and filter. If the user is a part of any user group, the DCNM role will be mapped to that user group.
- **Attribute:** In this mode, DCNM queries for a user attribute. You can select any attribute. When you choose **Attribute**, the **Role Admin Group** field changes to **Role Attributes**.

Step 8

Enter value for either **Roles Attributes** or **Role Admin Group** field, based on the selection in the previous step.

- If you chose **Admin Group Map**, enter the name of the admin group in the **Role Admin Group** field.
- If you chose **Attribute**, enter the appropriate attribute in the **Attributes** field.

Step 9

In the **Map to DCNM Role** field, enter the name of the DCNM role that will be mapped to the user.

Generally, **network-admin** or **network-operator** are the most typical roles.

For example:

```
Role Admin Group: dcnm-admins
Map to DCNM Role: network-admin
```

This example maps the Active Directory User Group **dcnm-admins** to the **network-admin** role.

To map multiple Active Directory User Groups to multiple roles, use the following format:

```
Role Admin Group:
Map To DCNM Role: dcnm-admins:network-admin;dcnm-operators:network-operator
```

Note that **Role Admin Group** is blank, and **Map To DCNM Role** contains two entries delimited by a semicolon.

Step 10

In the **Access Map** field, enter the Role Based Access Control (RBAC) device group to be mapped to the user.

Step 11

Click **Test** to verify the configuration. The Test AAA Server window appears.

Step 12

Enter a valid **Username** and **Password** in the Test AAA Server window.

If the configuration is correct, the following message is displayed.

```
Authentication succeeded.
The cisco-av-pair should return 'role=network-admin' if this user needs to
see the DCNM Admin pages. 'SME' roles will allow SME page access. All other
roles - even if defined on the switches - will be treated
as network operator.
```

This message is displayed regardless of 'Role Admin Group' or 'Attribute' mode. It implies that Cisco DCNM can query your Active Directory, the groups, and the roles are configured correctly.

If the test fails, the LDAP Authentication Failed message is displayed.

Warning Don't save the configuration unless the test is successful. You cannot access DCNM if you save incorrect configurations.

Step 13

Click **Apply Changes** icon (located in the right top corner of the screen) to save the configuration.

- Step 14** Restart the DCNM SAN service.
- For Windows – On your system navigate to **Computer Management > Services and Applications > Services**. Locate and right click on the DCNM application. Select **Stop**. After a minute, right click on the DCNM application and select **Start** to restart the DCNM SAN service.
 - For Linux – Go to `/etc/init.d/FMServer.restart` and hit return key to restart DCNM SAN service.
-

Managing Local Users

As an admin user, you can use Cisco DCNM Web UI to create a new user, assign the role and associate one or more groups or scope for the user.

This section contains the following:

Adding Local Users

Procedure

- Step 1** From the menu bar, choose **Administration > Management Users > Local**. You see the **Local Users** page.
- Step 2** Click **Add User**.
- You see the **Add User** dialog box.
- Step 3** Enter the username in the **User name** field.
- Note** The username is case sensitive, but the username guest is a reserved name, which is not case sensitive. The guest user can only view reports. The guest user cannot change the guest password, or access the Admin options in DCNM Web Client.
- Step 4** From the **Role** drop-down list, select a role for the user.
- Step 5** In the **Password** field, enter the password.
- Note** All special characters, except SPACE is allowed in the password.
- Step 6** In the **Confirm Password** field, enter the password again.
- Step 7** Click **Add** to add the user to the database.
- Step 8** Repeat Steps 2 through 7 to continue adding users.
-

Deleting Local Users

To delete local users from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > Management Users > Local**.

The **Local Users** page is displayed.

- Step 2** Select one or more users from the **Local Users** table and click the **Delete User** button.
 - Step 3** Click **Yes** on the warning window to delete the local user. Click **No** to cancel deletion.
-

Editing a User

To edit a user from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > Management Users > Local**.
 - Step 2** Use the checkbox to select a user and click the **Edit User** icon.
 - Step 3** In the **Edit User** window, the **Username** and **Role** are mentioned by default. Specify the **Password** and **Confirm Password**.
 - Step 4** Click **Apply** to save the changes.
-

User Access

You can select specific groups or fabrics that local users can access. This restricts local users from accessing specific groups or fabrics for which they have not been provided access. To do this, perform the following steps:

Procedure

- Step 1** Choose **Administration > Management Users > Local**.
The **Local Users** window is displayed.
- Step 2** Select one user from the **Local Users** table. Click **User Access**.
The **User Access** selection window is displayed.

Step 3 Select the specific groups or fabrics that the user can access and click **Apply**.

The screenshot shows the Cisco Data Center Network Manager interface. The breadcrumb navigation is Administration / Management Users / Local. The 'Local Users' section contains a table with the following data:

User Name	Role	Access	Password Expiration Status
<input type="checkbox"/> admin	network-admin	Data Center	Password never expires.
<input type="checkbox"/> poap	network-admin	Data Center	Password never expires.
<input type="checkbox"/> root	network-admin	Data Center	Password never expires.
<input checked="" type="checkbox"/> john	network-admin	Data Center	Password never expires.

The 'User Access' dialog box is open, showing a list of folders and sub-folders with checkboxes. The 'john-fx2' and 'fx2' folders are selected. The 'Default_LAN' folder is highlighted. The dialog box has 'Apply' and 'Cancel' buttons at the bottom.

Managing Clients

You can use Cisco DCNM to disconnect DCNM Client Servers.

Procedure

Step 1 Choose **Administration > Management Users > Clients**.

A list of DCNM Servers are displayed.

Step 2 Use the check box to select a DCNM server and click **Disconnect Client** to disconnect the DCNM server.

Note You cannot disconnect a current client session.

Performance Setup

The Performance Setup menu includes the following submenus:

Performance Setup LAN Collections

If you are managing your switches with the Performance Manager, you must set up an initial set of flows and collections on the switch. You can use Cisco DCNM to add and remove performance collections. License the switch and kept it in the **Managed Continuously** state before creating a collection for the switch.



Note To collect Performance Manager data, ICMP ping must be enabled between the switch and DCNM server. Set **pm.skip.checkPingAndManageable** server property to true and then restart the DCNM. Choose Web UI > **Administration > DCNM Server > Server Properties** to set the server property.

To add a collection, follow these steps:

Procedure

- Step 1** Choose **Administration > Performance Setup > LAN Collections**.
- Step 2** For all the licensed LAN switches, use the check boxes to enable performance data collection for **Trunks, Access, Errors & Discards, and Temperature Sensor**.
- Step 3** Use the check boxes to select the types of LAN switches for which you want to collect performance data.
- Step 4** Click **Apply** to save the configuration.
- Step 5** In the confirmation dialog box, click **Yes** to restart the Performance Manager. The Performance Manager has to be restarted for any new setting to take effect.

Event Setup

The Event Setup menu includes the following submenus:

Viewing Events Registration

To enable **Send Syslog, Send Traps** and **Delayed Traps** you must configure the following in the DCNM SAN client:

- Enabling **Send Syslog**: Choose **Physical Attributes > Events > Syslog > Servers**. Click **Create Row**, provide the required details, and click **Create**.
- Enabling **Send Traps**: Choose **Physical Attributes > Events > SNMP Traps > Destination**. Click **Create Row**, provide the required details, and click **Create**.
- Enabling **Delayed Traps**: Choose **Physical Attributes > Events > SNMP Traps > Delayed Traps**. In the **Feature Enable** column, use the check boxes to enable delayed traps for the switch and specify the delay in minutes.

Procedure

- Step 1** Choose **Administration > Event Setup > Registration**.
The SNMP and Syslog receivers along with the statistics information are displayed.
- Step 2** Check the **Enable Syslog Receiver** check box and click **Apply**, to enable the syslog receiver if it is disabled in the server property.
To configure event registration or syslog properties, choose **Administration > DCNM Server > Server Properties** and follow the on-screen instructions.
- Step 3** Select **Copy Syslog Messages to DB** and click **Apply** to copy the syslog messages to the database.
If this option is not selected, the events will not be displayed in the events page of the Web client.
The columns in the second table display the following:
- Switches sending traps
 - Switches sending syslog
 - Switches sending syslog accounting
 - Switches sending delayed traps
-

Notification Forwarding

You can use Cisco DCNM Web UI to add and remove notification forwarding for system messages.

This section contains the following:

Adding Notification Forwarding

Cisco DCNM Web UI forwards fabric events through email or SNMPv1 traps.

To add and remove notification forwarding for system messages from the Cisco DCNM Web UI, perform the following steps:



Note Test forwarding works only for the licensed fabrics.

Procedure

- Step 1** Choose **Administration > Event Setup > Forwarding**.
The events forwarding scope, the recipient email address, severity of the event and type of the event is displayed. The description Regex field is applicable only when the forwarding source is selected as Syslog while adding the events forwarder.
- Step 2** Check the **Enable** checkbox to enable events forwarding.

- Step 3** Specify the **SMTP Server** details and the **From** email address.
- Step 4** Click **Apply** to save the configuration, or in the **Apply and Test** icon, use the drop-down to select the fabric. Click **Apply and Test** to save and test the configuration.
- Step 5** In the **Event Count Filter**, add a filter for the event count to the event forwarder.
- The forwarding stops forwarding an event if the event count exceeds the limit as specified in the event count filter. In this field, you can specify a count limit. Before an event can be forwarded, the Cisco DCNM checks if its occurrence exceeds the count limit. If it does, the event will not be forwarded.
- Step 6** Select the **Snooze** checkbox and specify the **Start** date and time and the **End** date and time. Click **Apply** to save the configuration.
- Step 7** Under the **Event Forwarder Rules** table, click the + icon to add an event forwarder rule.
- You see the **Add Event Forwarder Rule** dialog box.
- Step 8** In the **Forwarding Method**, choose either **E-mail** or **Trap**. If you choose **Trap**, a **Port** field is added to the dialog box.
- Step 9** If you choose the **E-mail** forwarding method, enter the IP address in the **Email Address** field. If you choose the **Trap** method, enter the trap receiver IP address in the **Address** field and specify the port number.
- You can either enter an IPv4 or IPv6 addresses or DNS server name in the **Address** field.
- Step 10** For **Forwarding Scope**, choose the **Fabric/LAN** or **Port Groups** for notification.
- Step 11** In the **Source** field, select **DCNM** or **Syslog**.
- If you select **DCNM**, then:
- From the **Type** drop-down list, choose an event type.
 - Check the **Storage Ports Only** check box to select only the storage ports.
 - From the **Minimum Severity** drop-down list, select the severity level of the messages to receive.
 - Click **Add** to add the notification.
- If you select **Syslog**, then:
- In the **Facility** list, select the syslog facility.
 - Specify the syslog **Type**.
 - In the **Description Regex** field, specify a description that matches with the event description.
 - From the **Minimum Severity** drop-down list, select the severity level of the messages to receive.
 - Click **Add** to add the notification.

Note The **Minimum Severity** option is available only if the **Event Type** is set to All.

The traps that are transmitted by Cisco DCNM correspond to the severity type. A text description is also provided with the severity type.

```
trap type(s) = 40990 (emergency)
40991 (alert)
40992 (critical)
40993 (error)
40994 (warning)
40995 (notice)
40996 (info)
40997 (debug)
textDescriptionOid = 1, 3, 6, 1, 4, 1, 9, 9, 40999, 1, 1, 3, 0
```

Removing Notification Forwarding

You can remove notification forwarding.

Procedure

- Step 1** Choose **Administration > Event Setup > Forwarding**.
 - Step 2** Select the check box in front of the notification that you want to remove and click **Delete**.
-

Event Suppression

Cisco DCNM allows you to suppress the specified events that are based on the user-specified suppressor rules. Such events will not be displayed on the Cisco DCNM Web UI. The events will neither be persisted to DCNM database, nor forwarded via email or SNMP trap.

You can view, add, modify, and delete suppressor rules from the table. You can create a suppressor rule from the existing event table. Select a given event as the template, and invoke the rule dialog window. Event details are automatically ported from the selected event in the event table to the input fields of the rule creation dialog window.

This section includes the following:

Add Event Suppression Rules

To add rules to the Event Suppression from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > Event Setup > Suppression**.
The **Suppression** window is displayed.
- Step 2** Click the **Add** icon above the **Event Suppressors** table.
The **Add Event Suppressor Rule** window is displayed.
- Step 3** In the **Add Event Suppressor Rule** window, specify the **Name** for the rule.
- Step 4** Select the required **Scope** for the rule that is based on the event source.
In the Scope drop-down list, the LAN groups and the port groups are listed separately. You can choose **LAN**, **Port Groups** or **Any**. For **LAN**, select the scope of the event at the Fabric or Group or Switch level. You can only select groups for **Port Group** scope. If use selects **Any** as the scope, the suppressor rule is applied globally.
- Step 5** Enter the **Facility** name or choose from the **LAN Switch Event Facility** List.
If you do not specify a facility, wildcard is applied.
- Step 6** From the drop-down list, select the Event **Type**.
If you do not specify the event type, wildcard is applied.

- Step 7** In the **Description Matching** field, specify a matching string or regular expression.
- The rule matching engine uses regular expression that is supported by Java Pattern class to find a match against an event description text.
- Step 8** Check the **Active Between** box and select a valid time range during which the event is suppressed.
- By default, the time range is not enabled, i.e., the rule is always active.
- Note** In general, you must not suppress accounting events. Suppressor rule for Accounting events can be created only for certain rare situations where Accounting events are generated by actions of DCNM or switch software. For example, lots of *'sync-snmp-password'* AAA syslog events are automatically generated during the password synchronization between DCNM and managed switches. To suppress Accounting events, navigate to the **Suppressor table** and invoke the **Add Event Suppressor Rule** dialog window.
- Note** Choose **Monitor > Switch > Events** to create a suppressor rule for a known event. There is no such shortcut to create suppressor rules for Accounting events.
-

Delete Event Suppression Rule

To delete event suppressor rules from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1** Choose **Administration > Event Setup > Suppression** .
- Step 2** Select the rule from the list and click **Delete** icon.
- Step 3** Click **Yes** to confirm.
-

Modify Event Suppression Rule

To modify the event suppressor rules, do the following tasks:

Procedure

- Step 1** Choose **Administration > Event Setup > Suppression**.
- Step 2** Select the rule from the list and click **Edit**.
- You can edit **Facility**, **Type**, **Description Matching** string, and **Valid time range**.
- Step 3** Click **Apply** to save the changes,
-

Credentials Management

The Credential Management menu includes the following submenus:

LAN Credentials

While changing the device configuration, Cisco DCNM uses the device credentials provided by you. However, if the LAN Switch credentials are not provided, Cisco DCNM prompts you to open the **Administration > Credentials Management > LAN Credentials** page to configure LAN credentials.

Cisco DCNM uses two sets of credentials to connect to the LAN devices:

- **Discovery Credentials**—Cisco DCNM uses these credentials during discovery and periodic polling of the devices.
- **Configuration Change Credentials**—Cisco DCNM uses these credentials when user tries to use the features that change the device configuration.

LAN Credentials Management allows you to specify configuration change credentials. Before changing any LAN switch configuration, you must furnish *Configuration Change* SSH credentials for the switch. If you do not provide the credentials, the configuration change action will be rejected.

These features get the device write credentials from LAN Credentials feature.

- Upgrade (ISSU)
- Maintenance Mode (GIR)
- Patch (SMU)
- Template Deployment
- POAP-Write erase reload, Rollback
- Interface Creation/Deletion/Configuration
- VLAN Creation/Deletion/Configuration
- VPC Wizard

You must specify the configuration change credentials irrespective of whether the devices were discovered initially or not. This is a one-time operation. Once the credentials are set, that will be used for any configuration change operation.

Default Credentials

Default credentials is used to connect all the devices that the user has access to. You can override the default credentials by specifying credentials for each of the devices in the Switch Table below.

Cisco DCNM tries to use individual switch credentials in the Switch Table, to begin with. If the credentials (username/password) columns are empty in the Switch Table, the default credentials will be used.

Switch Table

Switch table lists all the LAN switches that user has access. You can specify the switch credentials individually, that will override the default credentials. In most cases, you need to provide only the default credentials.

You can perform the following operations on this screen.

- [Edit Credentials, on page 31](#)
- [Validate Credentials, on page 31](#)

- [Clear Switch Credentials, on page 31](#)

The LAN Credentials for the DCNM User table has the following fields.

Field	Description
Switch	Displays the LAN switch name.
IP Address	Specifies the IP Address of the switch.
User Name	Specifies the username of the switch DCNM user.
Password	Displays the encrypted form of the SSH password.
Group	Displays the group to which the switch belongs.

Edit Credentials

Perform the following task to edit the credentials.

1. From the Cisco DCNM home page, choose **Administration > Credentials Management > LAN Credentials**, check the **Switch** check box for which you need to edit the credentials.
2. Click Edit icon.
3. Specify **User Name** and **Password** for the switch.

Validate Credentials

Perform the following task to validate the credentials.

1. From the **Administration > Credentials Management > LAN Credentials**, check the **Switch** check box for which you need to validate the credentials.
2. Click **Validate**.
A confirmation message appears, stating if the operation was successful or a failure.

Clear Switch Credentials

Perform the following task to clear the switch credentials.

1. From the **Administration > Credentials Management > LAN Credentials**, check the **Switch** check box for which you need to clear the credentials.
2. Click **Clear**.
3. Click **Yes** to clear the switch credentials from the DCNM server.

