Administration

This chapter contains the following topics:

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.

From Cisco DCNM Release 11.4(1), you can see the status of the following services as well:

Note The following services are available for OVA/ISO deployments only.

- NTPD server: NTPD service running on DCNM OVA, the IP address, and the port to which the service is bound.
- DHCP server: DHCP service running on DCNM OVA, the IP address, and the port to which the service is bound.
- SNMP traps
- Syslog Receiver

The DCNM servers for these services are as follows:

Service Name	DCNM Server
NTPD Server	0.0.0.0:123
DHCP Server	0.0.0.0:67
SNMP Traps	0.0.0.0:2162
Syslog Server	0.0.0.0:514

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.

Customization

From Cisco DCNM Release 11.3(1), you can modify the background image and message on the Web UI login page. This feature helps you to distinguish between the DCNM instances, when you have many instances running at the same time. You can also use a company-branded background on the login page. Click on Restore Defaults to reset the customizations to their original default values.

To remove the customizations and restore to the default values, click **Restore defaults**.

Login Image

This feature allows you to change the background image on the Cisco DCNM Web UI login page. If you have many instances of DCNM, this will help you identify the correct DCNM instance based on the background image.

To edit the default background image for your Cisco DCNM Web UI login page, perform the following steps:

1. Choose **Administration > DCNM Server > Customization**.
2. In the Login Image area, click **Add (+)** icon.

   Browse for the image that you need to upload from your local directory. You can choose any of the following format images: JPG, GIF, PNG, and SVG.
3. Select the image and click **Open**.

   A status message appears on the right-bottom corner.

   ```
   Login image
   Upload Successful
   ```

Note We recommend that you upload a scaled image for fast load times.

   The uploaded image is selected and applied as the background image.

4. To choose an existing image as login image, select the image and wait until you see the message on the right-bottom corner.
5. To revert to the default login image, click **Restore Defaults**.

Message of the day (MOTD)

This feature allows you to add a message to the Cisco DCNM Web UI login page. You can a list of messages that will rotate on the configured frequency. This feature allows you to convey important messages to the user on the login page.

To add or edit the message of the day on the Cisco DCNM Web UI login page, perform the following steps:

1. Choose **Administration > DCNM Server > Customization**.
2. In the **Message of the day (MOTD)** field, enter the message that must appear on the login page.
3. Click **Save**.

Default Fabric for Overlay Deployments

From Release 11.4(1), Cisco DCNM Customizations allows you to choose one of the valid Fabrics as default. This feature is available in the Cisco DCNM LAN Fabric deployment only.

To set a default fabric for all overlay deployments on the Cisco DCNM Web UI, perform the following steps:

Note Only a user with **network admin** role can use configure the default fabric.

1. Choose **Administration > DCNM Server > Customization**.
2. In the **Default Fabric for Overlay Deployments** drop-down list, select set a Fabric to set as a default for all the overlay deployments.
3. Click **Save** to set the fabric as default.

   A note appears in the right bottom of the window confirming that the default fabric is updated successfully.
4. To remove the default fabric, choose **--select as option** from the drop-down list and click **Save**.

Network Preferences

Earlier to Release 11.5(1), **appmgr update network-properties** command allows you to modify network properties. From Release 11.5(1), Cisco DCNM allows you to modify few network parameters from the Web UI. Modifying these overwrites the previously configured parameters.

Choose Cisco DCNM **Web UI > Admin > DCNM Server > Customization > Network Preferences** to modify the DNS, NTP, and the eth1/eth2 interfaces.

DNS

In the DNS field, enter the DNS IP address. You can also configure the DNS server using an IPv6 address. You can configure more than one DNS server. Use comma (,) as differentiator between the IP addresses.

Note If you’re using Network Insights applications, ensure that the DNS server is valid and reachable.

NTP

In the NTP field, enter the IP address of the NTP server. The value must be an IP or IPv6 address or RFC 1123 compliant name.

Routes

In-Band (eth2)

In the In-Band Network area, enter the IPv4 address and Gateway IPv4 Address for the in-band network. If DCNM is on the IPv6 network, configure the network by entering relevant IPv6 Address for IPv6 address and Gateway IPv6 Address.

The In-Band Network provides reachability to the devices via the front-panel ports.

Out-of-Band (eth1)

In the Out-of-Band Network area, enter the IPv4 address and Gateway IPv4 Address. If DCNM is on the IPv6 network, configure the network by entering relevant IPv6 Address for IPv6 address and Gateway IPv6 Address.

Out-of-band management provides a connection to the device management ports (Typically mgmt0).

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. You can use the use **appmgr tech_support** command in the CLI to generate the techsupport file.

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.

Native HA

Before you begin

Note Ensure that you clear your browser cache and cookies everytime after a Federation switchover or failover.

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/ pgsql-standby-backup.tgz. If the file exists, restore database data files:

```
rm -rf    data/*
tar -zxf    replication/ pgsql-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.

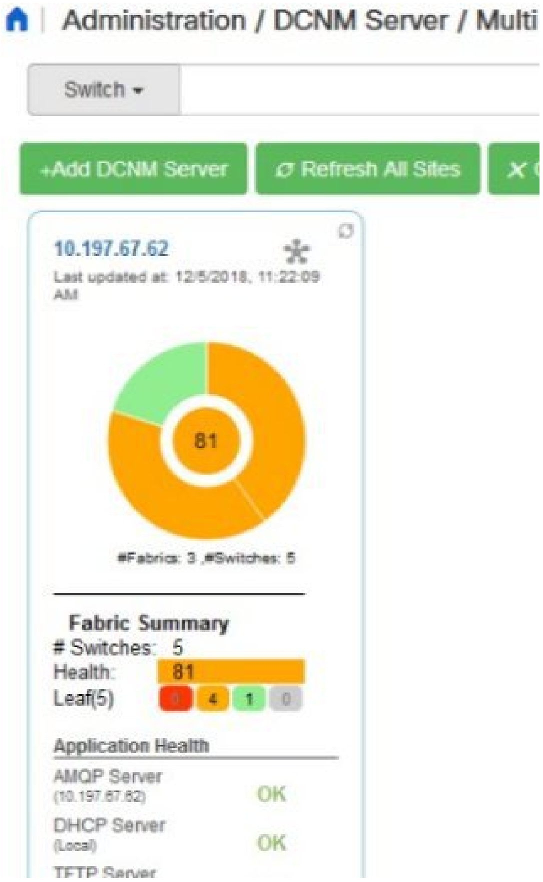
Multi Site Manager

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.



10.197.67.62

Last updated at: 12/5/2018, 11:22:09 AM

81

#Fabrics: 3 ,#Switches: 5

Fabric Summary

Switches: 5

Health: 81

Leaf(5) 0 4 1 0

Application Health

AMQP Server (10.197.67.62) OK

DHCP Server (Local) OK

TFTP Server

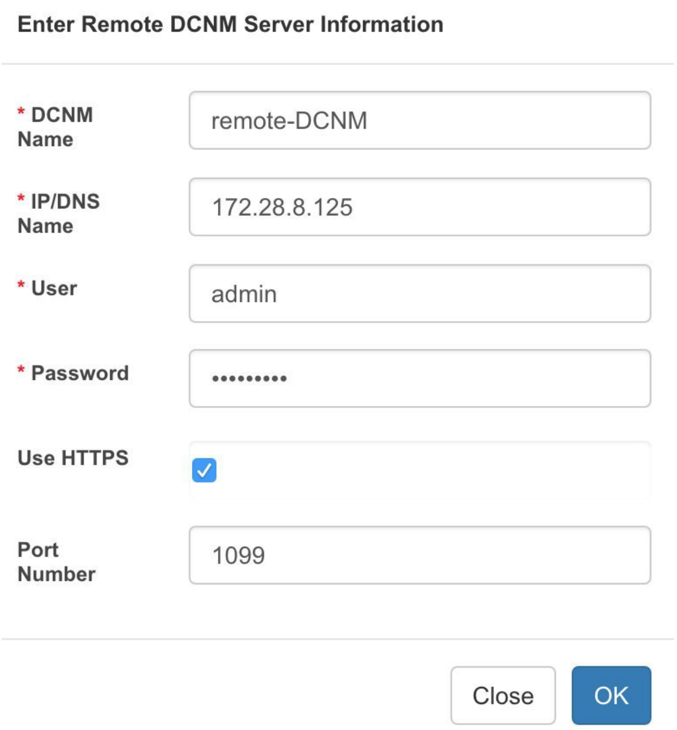
The currently logged on DCNM application health status is displayed on the screen.

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: remote-DCNM

* IP/DNS Name: 172.28.8.125

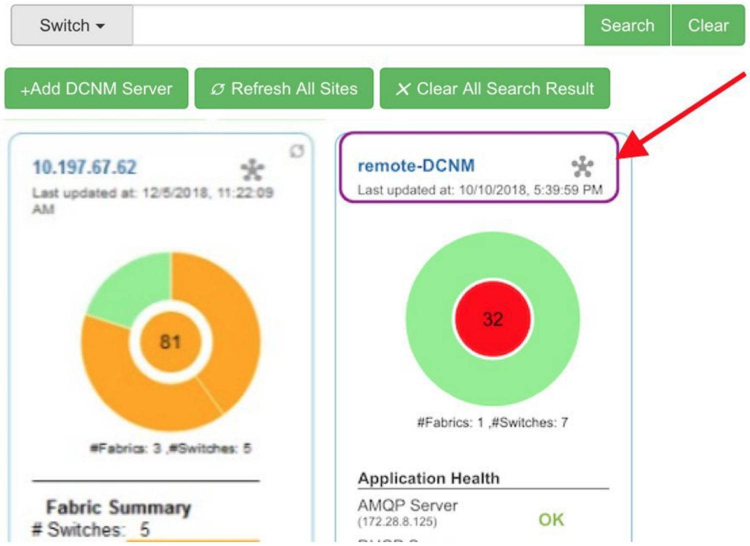
* User: admin

* Password: •••••••••

Use HTTPS: ☑

Port Number: 1099

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



10.197.67.62
Last updated at: 12/5/2018, 11:22:09 AM

#Fabrics: 3 ,#Switches: 5

Fabric Summary
Switches: 5

remote-DCNM
Last updated at: 10/10/2018, 5:39:59 PM

#Fabrics: 1 ,#Switches: 7

Application Health
AMQP Server (172.28.8.125) OK

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

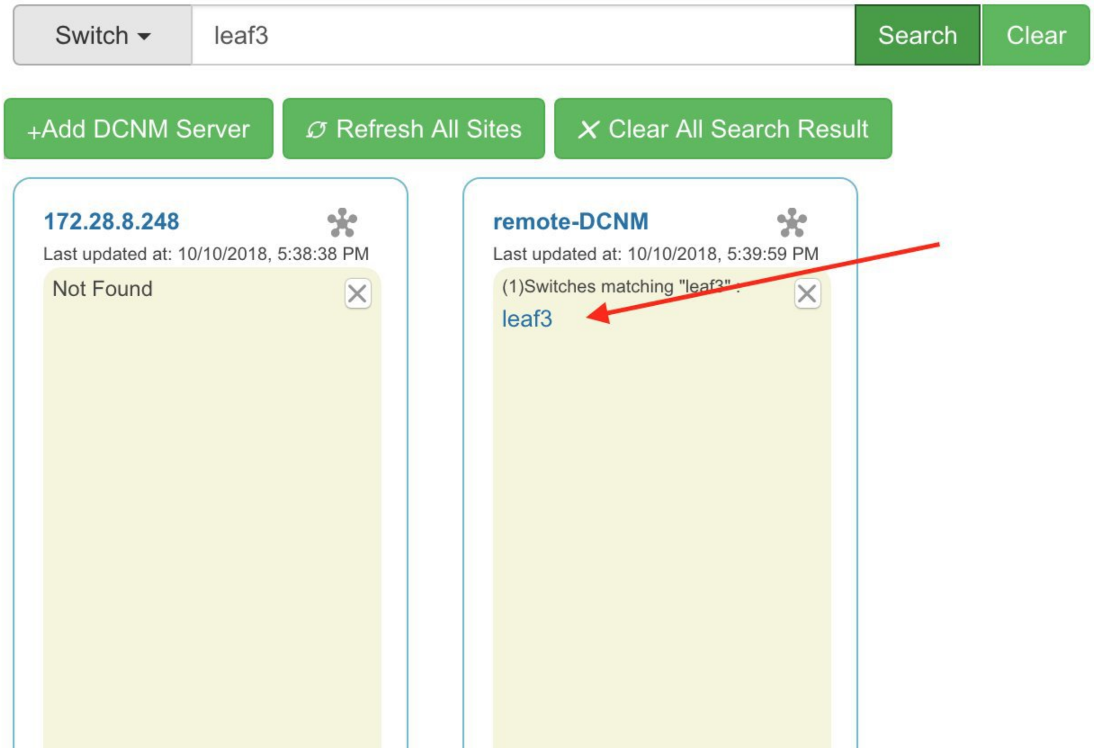
Retrieve Switch Information

1. 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.

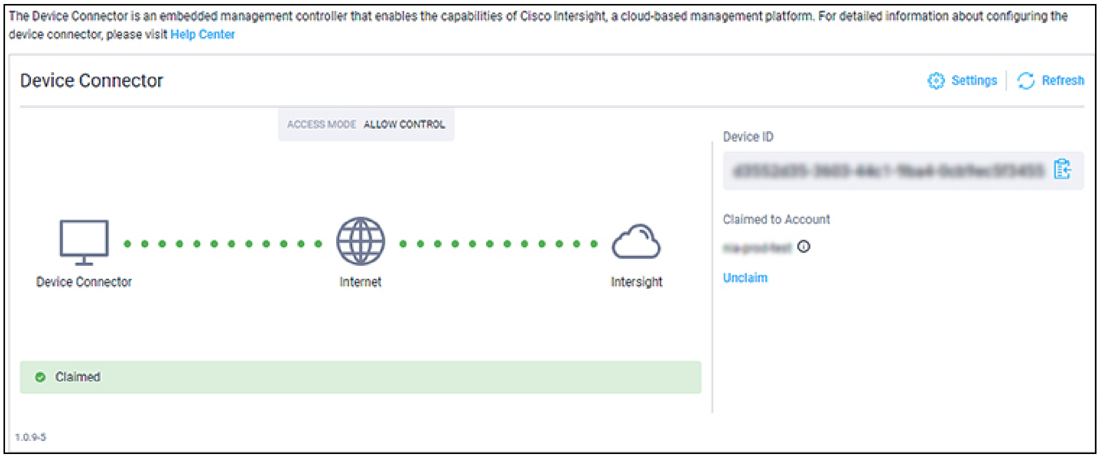
Networks Insights applications are connected to the Cisco Intersight cloud portal through a Device Connector which is embedded in the management controller of the Cisco DCNM platform. Cisco Intersight is a virtual appliance that helps manage and monitor devices through the Network Insights application. 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.



The Device Connector is an embedded management controller that enables the capabilities of Cisco Intersight, a cloud-based management platform. For detailed information about configuring the device connector, please visit Help Center

Device Connector

ACCESS MODE ALLOW CONTROL

Device ID

[redacted]

Claimed to Account

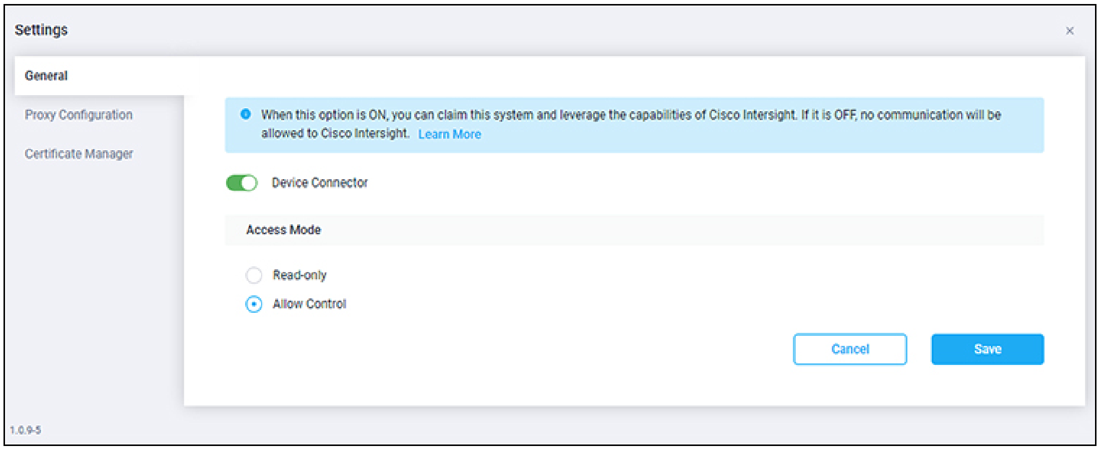
[redacted]

Claimed

1.0.9-5

2. Click **Settings**.

   The **Settings - General** window appears.



Settings

When this option is ON, you can claim this system and leverage the capabilities of Cisco Intersight. If it is OFF, no communication will be allowed to Cisco Intersight. Learn More

Device Connector

Access Mode

○ Read-only

● Allow Control

1.0.9-5

- **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**

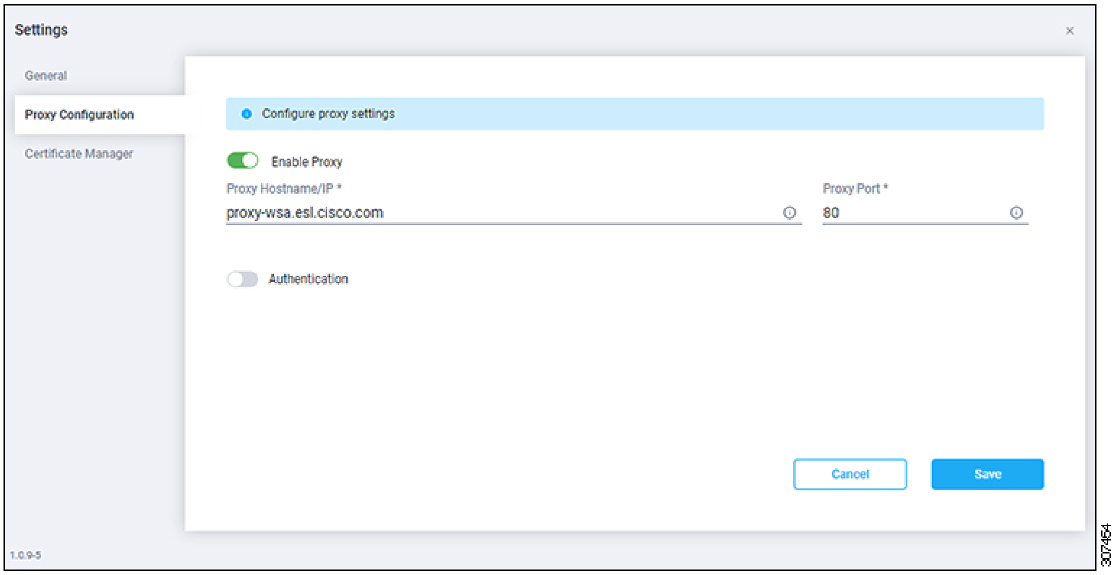
  - **Read-only**: This option ensures that there are no changes to this device from Intersight. For example, actions such as upgrading firmware or a profile deployment is not allowed in the Read-Only mode. However, the actions depend on the features available for a particular system.

  - **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.



Proxy Hostname/IP *
proxy-wsa.esl.cisco.com

Proxy Port *
80

   - **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.

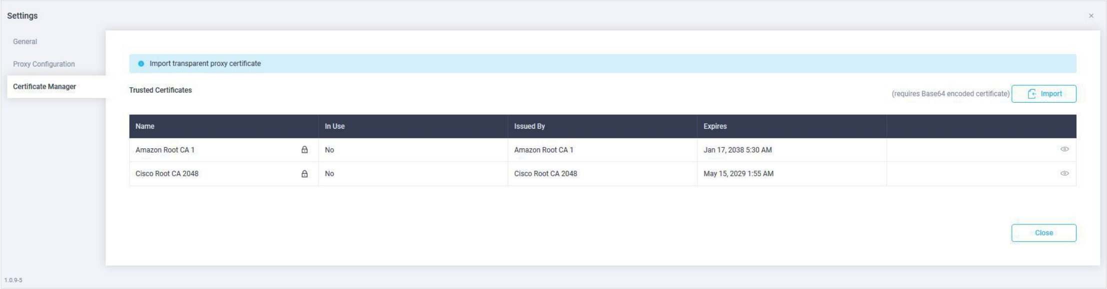
     The device connector does not mandate the format of the login credentials, they are passed as-is to the configured HTTP proxy server. The username must be a qualified domain name depending on the configuration of the HTTP proxy server.

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**.


Settings
General
Proxy Configuration
Certificate Manager
Import transparent proxy certificate
(requires Base64 encoded certificate)
Import
Close
1.0.9-5

Trusted Certificates

Name	In Use	Issued By	Expires	
Amazon Root CA 1	No	Amazon Root CA 1	Jan 17, 2038 5:30 AM	
Cisco Root CA 2048	No	Cisco Root CA 2048	May 15, 2029 1:55 AM	

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.

NX-API Certificate Management for Switches

Cisco NX-OS switches require an SSL certificate to function in NX-API HTTPS mode. You can generate the SSL certificates and get it signed by your CA. You can install the certificates manually using CLI commands on switch console.

From Release 11.4(1), Cisco DCNM provides a Web UI framework to upload NX-API certificates to DCNM. Later, you can install the certificates on the switches that are managed by DCNM.

This feature is supported only on Cisco DCNM OVA/ISO deployments.

Note This feature is supported on switches running on Cisco NXOS version 9.2(3) or higher.

For each switch, the data center administrator generates an ASCII (base64) encoded certificate. This certificate comprises two files:

- `.key` file that contains the private key
- `.crt/.cer/.pem` file that contains the certificate

Cisco DCNM also supports a single certificate file that contains an embedded key file, that is, `.crt/.cer/.pem` file can also contain the contents of .key file.

DCNM doesn’t support binary encoded certificates, that is, the certificates with `.der` extension are not supported. You can protect the key file with a password for encryption. Cisco DCNM does not mandate encryption; however, as this is stored on DCNM, we recommend that you encrypt the key file. DCNM supports AES encryption.

You can either choose CA-signed certificates or self-signed certificates. Cisco DCNM does not mandate the signing; however, the security guidelines suggest you use CA-signed certificates.

You can generate multiple certificates meant for multiple switches, to upload to DCNM. Ensure that you name the certificates appropriately, to help you choose the switch meant for that certificate.

You can upload one certificate and corresponding key file, or bulk upload multiple certificates and key files. After the upload is complete, you can view the upload list before installing these on the switches. If a certificate file that contains an embedded key file is uploaded, DCNM derives the key automatically.

Certificate and the key file must have the same filename. For example, if a certificate filename is `mycert.pem`, the key filename must be `mycert.key`. If the certificate and key pair filenames are not the same, then DCNM will not be able to install the certificate on the switch.

Cisco DCNM allows you to bulk install the certificates to the switches. Because bulk installation uses the same password, all encrypted keys must be encrypted with the same password. If the password is different for a key, you cannot install the certificate in bulk mode. Bulk mode installation allows you to install encrypted and unencrypted keys certificates together, but all encrypted keys must have the same password.

When you install a new certificate on the switch, it replaces the existing certificate and replaces it with the new certificate.

You can install the same certificate on multiple switches; however, you cannot use the bulk upload feature.

Note DCNM doesn’t enforce the validity of certificates or options provided in it. It is up to you and the requirements on the switch to follow the convention. For example, if a certificate is generated for Switch-1 but it is installed on Switch-2, DCNM doesn’t enforce it; switches may choose to accept or reject a certificate based on the parameters in the certificate.

On Cisco DCNM **Web UI > Administration > DCNM Server > NX API Certificates**, the following tables are displayed:

- **Certificate Installation Status table**: Displays the status of certificates last installed on the switches. It also displays the time when the certificates were updated previously.
- **Certificates Uploaded to DCNM table**: Displays the certificates uploaded on DCNM and any switch association.

  However, refer to the Certificate Installation Status table to see the certificate and switch association. Upload table is only meant for uploading certificates on DCNM and installing on the switches.

You can also watch the video that demonstrates how to use Switch NX-API SSL Certificate Management feature. See Video: Switch NX-API SSL Certificate Management.

Uploading the certificates on DCNM

To upload the certificates onto DCNM using the Cisco DCNM Web Client UI, perform the following steps:

Procedure

Step 1 Choose **Administration > DCNM Server > NX API Certificates**.

Step 2 In the **Certificates Uploaded to DCNM** area, click **Upload Certificates** to upload the appropriate license file.

Step 3 Browse your local directory and choose the certificate key pair that you must upload to DCNM.

You can choose certificates with extension .cer/.crt/.pem + .key file separately.

Cisco DCNM also allows you to upload a single certificate file that contains an embedded key file. The key file is automatically derived after upload.

Step 4 Click **Open** to upload the selected files to DCNM.

A successful upload message appears. The uploaded certificates are listed in the **Certificates Uploaded to DCNM** area.

In the **Certificate Installation Status** area, the certificate appears, with Status as **UPLOADED**.

If the certificate is uploaded without the key file, the status shows **KEY_MISSING**.

Installing Certificates on Switches

To install certificates on the switches using Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Administration > DCNM Server > NX API Certificates**.

Step 2 In the **Certificate Installation Status** area, for each certificate, click on the **Switch** column.

Step 3 From the drop-down list, select the switch to associate with the certificate.

Click **Save**.

Step 4 Select the certificate that you need to install and click **Install Certificates on Switch**.

You can select multiple certificates to perform a bulk install.

Step 5 In the **Bulk Certificate Install** window, upload the certificates to DCNM. Perform the following steps:

You can install a maximum of 20 certificates at the same instance, using the Bulk Install feature.

a) Choose the file transfer protocol to upload the certificate to DCNM.

   You can choose either SCP or SFTP protocol to upload the certificates.

b) Check the VRF checkbox for the certificates to support the VRF configuration.

   Enter the VRF name that the switch uses to reach DCNM. Generally, DCNM is reached via management VRF of switches, but it can be any VRF that is configured on the switch that is used to reach DCNM.

c) In the NX-API Certificate Credentials, enter the password which was used to encrypt the key while generating the certificates.

   Leave this field empty, if the key uploaded along with the certificate is not encrypted.

   Note that you can install unencrypted and encrypted keys and a certificate in a single bulk install; however, you must provide the key password used for encrypted keys.

d) Click **Install**.

   A notification message appears to confirm if the certificate was successfully installed on the specific switch.

In the Certificate Installation Status area, the Status of certificate now shows **INSTALLED**.

Unlinking and Deleting certificates

After the certificates are installed on the switch, DCNM cannot uninstall the certificate from DCNM. However, you can always install a new certificate on the switch. The certificates that are not installed on the switches can be deleted. To delete the certificate installed on the switch, you must unlink the certificate from the switch, and then delete it from DCNM.

Note Unlinking the certificate from the switch does not delete the certificate on the switch. The certificate still exists on the switch. Cisco DCNM cannot delete the certificate on the Switch.

To delete certificates from DCNM repository, using the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Administration > DCNM Server > NX API Certificates**.

Step 2 In the **Certificate Installation Status** area, select the certificate(s) that you need to delete.

Step 3 Click **Clear** Certificates.

A confirmation message appears.

Step 4 Click **OK** to clear the selected certificates.

The status column shows UPLOADED. The Switch column shows NOT_INSTALLED.

Step 5 Select the certificate and click **Clear Certificates**.

The Certificate is removed from the Certificate Installation Status table.

Step 6 In the Certificates Uploaded to DCNM area, select the certificate that is now unlinked from the Switch.

Click **Delete Certificates**.

The certificate is deleted from DCNM.

Troubleshooting NX API Certificate Management

While installing a certificate, you can encounter errors. The following sections provide information about troubleshooting the NX-API Certificate Management for switches.

COPY_INSTALL_ERROR

Problem Statement: Error message COPY_INSTALL_ERROR

Reason Cisco DCNM cannot reach the switch.

Solution:

- Verify if the switch is reachable from Cisco DCNM. You can perform an SSH login and ping the switch to verify.
- Switch connects to DCNM through it's management interface. Verify if you can ping DCNM from the Switch console. If the switch requires VRF, very if the correct vrf is provided.
- If the certificate private key is encrypted, ensure that you provide the correct password.
- Verify is the correct key file is uploaded with the certificate. Ensure that the certificate file and the key file have the same filename.

CERT_KEY_NOT_FOUND

Problem Statement: Error message CERT_KEY_NOT_FOUND

Reason: Key file was not uploaded while uploading the certificate (.cer, .crt, .pem).

Solution:

- Ensure that the certificate (.cer, .crt, or .pem) file and its corresponding .key file has the same filename

  For example: If the certificate file name is mycert.crt, the key file must be mycert.key.
- DCNM identifies key file with certificate file name, and therefore, it is necessary to have the key file with same filename.
- Upload the certificate and key file with same filename, and install the certificate.

Backing up DCNM

From Cisco DCNM, Release 11.5(1), you can trigger scheduled DCNM backups from the Cisco DCNM Web UI. When you trigger a backup from the Web UI, the **appmgr backup** command is run. You can see the following information under the **Server Backup Jobs** tab in the **Backup** window.

Table 1: Server Backup Jobs Tab

Parameters	Description
Node	Specifies if the backup is active or standby. For standalone nodes, it will appear as a localpath. **Note** For HA cluster, one active node and one standby node is created. However, you can choose only the active node for an HA cluster.
Schedule	Specifies when the scheduled backup is triggered.
Local Path	Specifies the local path, where the backup is stored.
Remote Destination	Specifies the username, host IP, and the remote destination, where the backup is stored. It is empty if you do not save the backup in a remote location. **Note** A copy of the backup is also stored in the local path.
Log Path	Specifies the path where the log entries are stored. You can use this information to troubleshoot any issues.
Saved Backups	Specifies the number of versions of a backup. The default value is 5.

You can perform the following actions in the **Backup** window:

Creating a Backup

To create a backup from the Cisco DCNM Web UI, perform the following steps:

Procedure

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

The **Backup** window appears, which has all the information under the **Server Backup Schedules** area.

Step 2 Click **Add**.

The **Create Backup Schedule** dialog box appears.

Step 3 Choose the time using the **Start At** drop-down list under the **Schedule** area.

Step 4 Choose the frequency of the backup.

The valid options are:

- **Daily**: Select this radio button if you want to trigger the backup everyday.

- **Weekly**: Select this radio button if you want to trigger the backup once a week. If you select this radio button, you get options to choose the day.

Step 5 Enter the number of backups you want to save in the **Max # of Saved Backups** field under the **Destination** area.

You can save upto 10 backups and the default value is 5.

Step 6 (Optional) Check the **Remote Destination** check box to save the backup in a remote location.

The following fields will be available after you check the **Remote Destination** check box.

Fields	Descriptions
User	Enter the username.
Password	Enter the password. **Note** You don't have to enter the password if you have enabled the key-less configuration between your DCNM and the remote host.
Host IP	Enter the host IP address which is connected to your DCNM.
Path	Enter the remote destination path where you want to save the backup.

Note

- The backup files are huge, with the size in gigabytes.
- A copy of the backup will always be saved in the local destination as well.

Step 7 Click **Create**.

The **Backup** window is populated even when you run the **appmgr backup** command using the CLI. You can also view the backups, which you scheduled from the Web UI, in the CLI using the **appmgr backup schedule show** command.

Modifying a Backup

To modify a backup from the Cisco DCNM Web UI, perform the following steps:

Procedure

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

The **Backup** window appears, which has all the information under the **Server Backup Schedules** area.

Step 2 Click **Modify**.

The **Modify Backup Schedule** dialog box appears.

Step 3 Make the necessary changes.

Step 4 Click **Modify**.

Deleting a Backup

To delete a backup from the Cisco DCNM Web UI, perform the following steps:

Procedure

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

The **Backup** window appears, which has all the information under the **Server Backup Schedules** area.

Step 2 Click **Delete**.

The confirmation dialog box appears.

Step 3 Click **Yes**.

Note If you run the **appmgr backup schedule none** command in the CLI, the backup is deleted. You can verify if the backup is deleted by refreshing the **Backup** window.

Job Execution Details

You can see the following information under the **Job Execution Details** tab in the **Backup** window.

Table 2: Server Backup Schedules Area

Parameters	Description
Node	Specifies if the node is active or standby. For standalone nodes, it will appear as a local node.
Backup File	Specifies the path, where the backup is stored.
Start Time	Specifies the time when the backup process started.
End Time	Specifies the time when the backup process ended.
Log File	Specifies the path where the log entries are stored. You can use this information to troubleshoot any issues.
Status	Specifies if the backup was a success or failed.
Error Message	Specifies error messages, if any, that appeared during the backup.

Manage Licensing

The Manage Licensing menu includes the following submenus:

Managing Licenses

You can view the existing Cisco DCNM licenses by choosing **Administration > Manage Licensing > DCNM**. 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. The total number of licenses for new installations are 50. However, the total number of licenses continues to be 500 for inline upgrade.
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.

Field	Description
License State	Displays the license state of the switch that can be one of the following: • Permanent • Eval • Unlicensed • Not Applicable • Expired • Invalid • Smart
License Type	Displays the license type of the switch that can be one of the following: • DCNM-Server • Switch • Smart • Honor • Switch-Smart
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**

To assign license to switches through POAP, refer to DCNM Licensing Guide.

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.

Honor License Mode

From Release 11.3(1), Cisco DCNM Eval license validity is extended from 30 days to 60 days. That implies, after 60 days. Every license has an expiry date attached to it. After the license expires, Cisco DCNM allows you to use all the licensed features. Switches remain in honor mode until the switch is licensed again or the user manually removes the license.

If there are switches in the Honor License mode, an error message appears after you logon to DCNM.

```
***************************************
*Your licenses are out of compliance.
Your inventory contains switches that are unlicensed for DCNM Operation*

***************************************
```

Go to **Administration** > **Manage Licensing** > **DCNM**, In the **Switches/VDCs** table, select the switch and click **Assign License** to renew the license.

Guidelines

- Switches that don’t have a license assigned to them is considered unlicensed. Unlicensed Switches aren’t allowed to use Licensed DCNM features.
- If a switch has an expired EVAL license, it will change from EVAL to Honor mode and the license features continues to be operational.
- You can’t assign expired EVAL licenses to the switches.
- Switches with switch-based honor license can’t be overwritten with any server-based license.
- When a license is assigned to a discovered switch and a valid license isn’t available, then an honor-based license with expiration date will be assigned to the switch.

Nag events for Honor-mode licenses

For every license in honor mode, an event is generated every seven days. A nag event informs the user "DCNM-SAN file license is in honor mode, need to assign/purchase a new license for this switch." Or "DCNM-LAN file license is in honor mode, need to assign/purchase a new license for this switch."

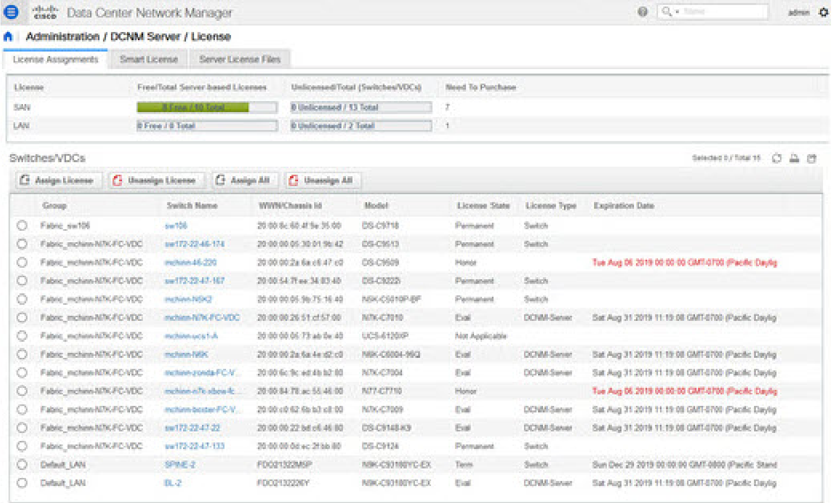
Additional popup notification appears when you logon to Cisco DCNM, to inform that “DCNM-SAN file license is in honor mode, need to assign/purchase a new license for this switch.”

Server-based honor license support

On the DCNM **Web UI** > **Administration** > **Manage Licensing** > **DCNM**, the **Licensed State** column displays **Honor** and **Expiration Date** column displays the date, time, and when the license expired and changed to the Honor mode.

Switches will remain in honor mode after reboot also. To change the license from honor mode, you must manually unassign the license or assign a new valid license to the switch.

The following image shows license page with a SAN switch in Honor mode.

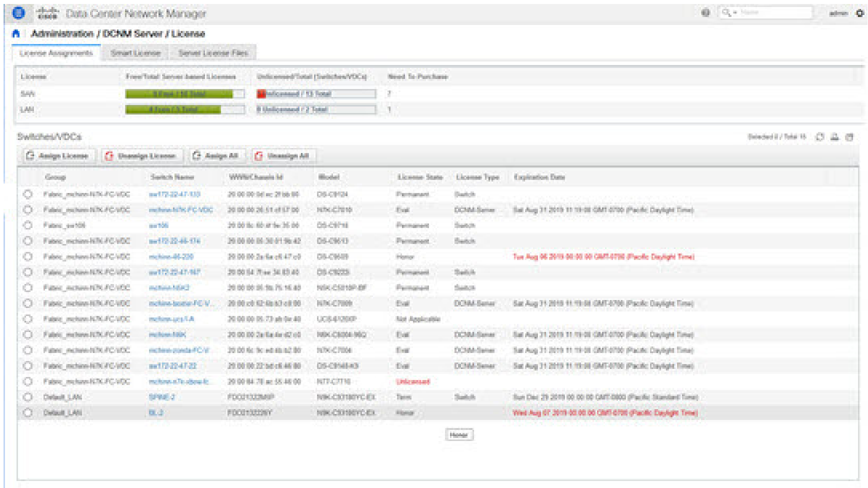


Data Center Network Manager
admin
Administration / DCNM Server / License
License Assignments
Smart License
Server License Files

License	Free/Total Server based Licenses	Unlicensed/Total (Switches/VDCs)	Need To Purchase
SAN	8 Free / 10 Total	0 Unlicensed / 13 Total	7
LAN	0 Free / 0 Total	0 Unlicensed / 2 Total	1

Group	Switch Name	WWN/Chassis Id	Model	License State	License Type	Expiration Date
Fabric_sw106	sw106	20:00:8c:60:4f:9e:35:00	DS-C9718	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	sw172-22-46-174	20:00:00:05:30:01:9b:42	DS-C9513	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-46-220	20:00:00:2a:6a:c6:47:c0	DS-C9509	Honor		Tue Aug 06 2019 00:00:00 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	sw172-22-47-167	20:00:54:7f:ee:34:83:40	DS-C9222i	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-N5K2	20:00:00:05:9b:75:16:40	N5K-C5010P-BF	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-N7K-FC-VDC	20:00:00:26:51:cf:57:00	N7K-C7010	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	mchinn-ucs1-A	20:00:00:05:73:ab:0e:40	UCS-6120XP	Not Applicable		
Fabric_mchinn-N7K-FC-VDC	mchinn-N6K	20:00:00:2a:6a:4e:d2:c0	N6K-C6004-96Q	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	mchinn-zonda-FC-V...	20:00:6c:9c:ed:4b:b2:80	N7K-C7004	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	mchinn-n7k-xbow-fc...	20:00:84:78:ac:55:46:00	N77-C7710	Honor		Tue Aug 06 2019 00:00:00 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	mchinn-boxter-FC-V...	20:00:c0:62:6b:b3:c8:00	N7K-C7009	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	sw172-22-47-22	20:00:00:22:bd:c6:46:80	DS-C9148-K9	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylig
Fabric_mchinn-N7K-FC-VDC	sw172-22-47-133	20:00:00:0d:ec:2f:bb:80	DS-C9124	Permanent	Switch	
Default_LAN	SPINE-2	FDO21322M5P	N9K-C93180YC-EX	Term	Switch	Sun Dec 29 2019 00:00:00 GMT-0800 (Pacific Stand
Default_LAN	BL-2	FDO2132226Y	N9K-C93180YC-EX	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylig

The following image shows license page with a LAN switch in Honor mode.

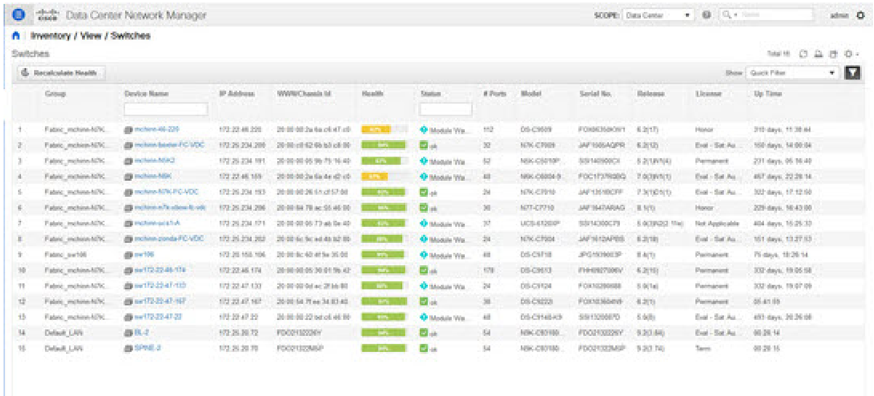


Data Center Network Manager
admin
Administration / DCNM Server / License
License Assignments
Smart License
Server License Files

License	Free/Total Server based Licenses	Unlicensed/Total (Switches/VDCs)	Need To Purchase
SAN	8 Free / 10 Total	Unlicensed / 13 Total	7
LAN	4 Free / 5 Total	0 Unlicensed / 2 Total	1

Group	Switch Name	WWN/Chassis Id	Model	License State	License Type	Expiration Date
Fabric_mchinn-N7K-FC-VDC	sw172-22-47-133	20:00:00:0d:ec:2f:bb:80	DS-C9124	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-N7K-FC-VDC	20:00:00:26:51:cf:57:00	N7K-C7010	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylight Time)
Fabric_sw106	sw106	20:00:8c:60:4f:9e:35:00	DS-C9718	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	sw172-22-46-174	20:00:00:05:30:01:9b:42	DS-C9513	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-46-220	20:00:00:2a:6a:c6:47:c0	DS-C9509	Honor		Tue Aug 06 2019 00:00:00 GMT-0700 (Pacific Daylight Time)
Fabric_mchinn-N7K-FC-VDC	sw172-22-47-167	20:00:54:7f:ee:34:83:40	DS-C9222i	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-N5K2	20:00:00:05:9b:75:16:40	N5K-C5010P-BF	Permanent	Switch	
Fabric_mchinn-N7K-FC-VDC	mchinn-boxter-FC-V...	20:00:c0:62:6b:b3:c8:00	N7K-C7009	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylight Time)
Fabric_mchinn-N7K-FC-VDC	mchinn-ucs1-A	20:00:00:05:73:ab:0e:40	UCS-6120XP	Not Applicable		
Fabric_mchinn-N7K-FC-VDC	mchinn-N6K	20:00:00:2a:6a:4e:d2:c0	N6K-C6004-96Q	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylight Time)
Fabric_mchinn-N7K-FC-VDC	mchinn-zonda-FC-V...	20:00:6c:9c:ed:4b:b2:80	N7K-C7004	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylight Time)
Fabric_mchinn-N7K-FC-VDC	sw172-22-47-22	20:00:00:22:bd:c6:46:80	DS-C9148-K9	Eval	DCNM-Server	Sat Aug 31 2019 11:19:08 GMT-0700 (Pacific Daylight Time)
Fabric_mchinn-N7K-FC-VDC	mchinn-n7k-xbow-fc...	20:00:84:78:ac:55:46:00	N77-C7710	Unlicensed		
Default_LAN	SPINE-2	FDO21322M5P	N9K-C93180YC-EX	Term	Switch	Sun Dec 29 2019 00:00:00 GMT-0800 (Pacific Standard Time)
Default_LAN	BL-2	FDO2132226Y	N9K-C93180YC-EX	Honor		Wed Aug 07 2019 00:00:00 GMT-0700 (Pacific Daylight Time)

The following image shows the switch table displaying the honor mode of license and term.



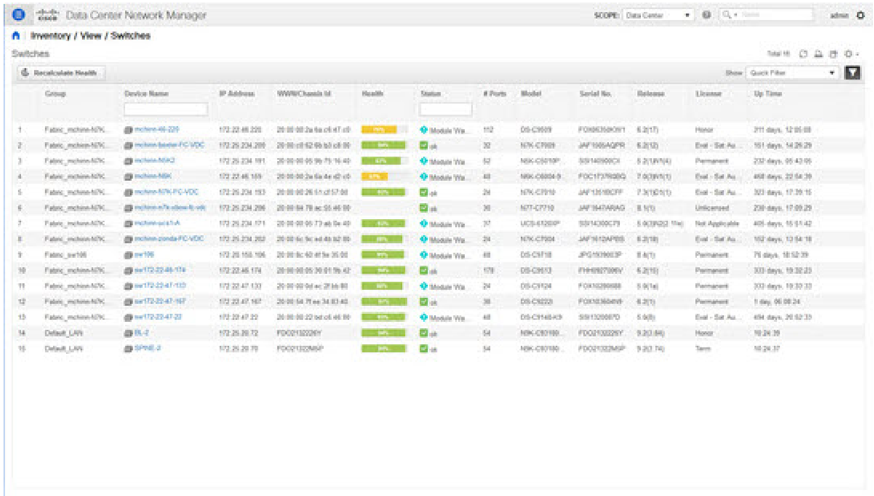
Inventory / View / Switches

Switches

Recalculate Health

	Group	Device Name	IP Address	WWN/Chassis Id	Health	Status	# Ports	Model	Serial No.	Release	License	Up Time
1	Fabric_mchinn-N7K...	mchinn-46-220	172.22.46.220	20:00:00:2a:6a:c6:47:c0	[illegible]	Module Wa...	112	DS-C9509	FOX063S0KW1	6.2(17)	Honor	310 days, 11:38:44
2	Fabric_mchinn-N7K...	mchinn-baxter-FC-VDC	172.25.234.200	20:00:c8:62:6b:b3:c8:00	[illegible]	ok	32	N7K-C7009	JAF1505AQPR	6.2(12)	Eval - Sat Au...	150 days, 14:00:04
3	Fabric_mchinn-N7K...	mchinn-N5K2	172.25.234.191	20:00:00:05:9b:75:16:40	[illegible]	Module Wa...	52	N5K-C5010P	SSI140900CX	5.2(1)N1(4)	Permanent	231 days, 05:16:40
4	Fabric_mchinn-N7K...	mchinn-N6K	172.22.46.169	20:00:00:2a:6a:4e:d2:c0	[illegible]	Module Wa...	48	N6K-C6004-9...	FOC1737R0BQ	7.0(3)N1(1)	Eval - Sat Au...	467 days, 22:28:14
5	Fabric_mchinn-N7K...	mchinn-N7K-FC-VDC	172.25.234.193	20:00:00:26:51:cf:57:00	[illegible]	ok	24	N7K-C7010	JAF1351BCFF	7.3(1)D1(1)	Eval - Sat Au...	322 days, 17:12:50
6	Fabric_mchinn-N7K...	mchinn-n7k-ubew-fc-vdc	172.25.234.206	20:00:84:78:ac:55:46:00	[illegible]	ok	36	N77-C7710	JAF1847ARAG	8.1(1)	Honor	229 days, 16:43:00
7	Fabric_mchinn-N7K...	mchinn-ucs1-A	172.25.234.171	20:00:00:05:73:ab:0e:40	[illegible]	Module Wa...	37	UCS-6120XP	SSI14300C79	5.0(3)N2(2.11e)	Not Applicable	404 days, 15:25:33
8	Fabric_mchinn-N7K...	mchinn-zonda-FC-VDC	172.25.234.202	20:00:6c:9c:ed:4b:b2:00	[illegible]	Module Wa...	24	N7K-C7004	JAF1612APBS	6.2(18)	Eval - Sat Au...	161 days, 13:27:53
9	Fabric_sw106	sw106	172.20.150.106	20:00:8c:60:4f:9e:35:00	[illegible]	Module Wa...	48	DS-C9718	JPG1939003P	8.4(1)	Permanent	75 days, 18:26:14
10	Fabric_mchinn-N7K...	sw172-22-46-174	172.22.46.174	20:00:00:05:30:01:9b:42	[illegible]	ok	178	DS-C9513	FHH0927006V	6.2(15)	Permanent	332 days, 19:06:58
11	Fabric_mchinn-N7K...	sw172-22-47-133	172.22.47.133	20:00:00:0d:ec:2f:bb:80	[illegible]	Module Wa...	24	DS-C9124	FOX1029008B	5.0(1a)	Permanent	332 days, 19:07:09
12	Fabric_mchinn-N7K...	sw172-22-47-167	172.22.47.167	20:00:54:7f:ee:34:83:40	[illegible]	ok	38	DS-C9222i	FOX1036049...	6.2(1)	Permanent	05:41:55
13	Fabric_mchinn-N7K...	sw172-22-47-22	172.22.47.22	20:00:00:22:bd:c6:46:00	[illegible]	Module Wa...	48	DS-C9148-K9	SSI13200870	5.0(8)	Eval - Sat Au...	491 days, 20:26:08
14	Default_LAN	BL-2	172.25.20.72	FDO2132226Y	[illegible]	ok	54	N9K-C93180...	FDO2132226Y	9.2(3.84)	Eval - Sat Au...	00:26:14
15	Default_LAN	SPINE-2	172.25.20.70	FDO21322MSP	[illegible]	ok	54	N9K-C93180...	FDO21322MSP	9.2(3.74)	Term	00:26:15

The following image shows Switch Dashboard with a LAN switch in Honor mode license.



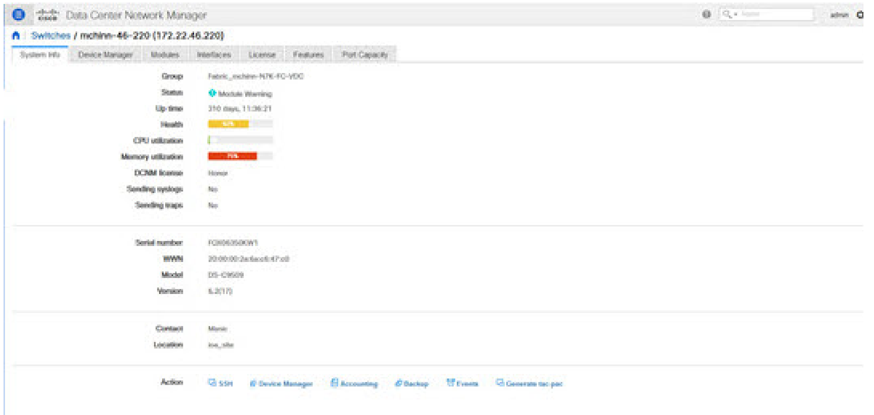
Inventory / View / Switches

Switches

Recalculate Health

	Group	Device Name	IP Address	WWN/Chassis Id	Health	Status	# Ports	Model	Serial No.	Release	License	Up Time
1	Fabric_mchinn-N7K...	mchinn-46-220	172.22.46.220	20:00:00:2a:6a:c6:47:c0	[illegible]	Module Wa...	112	DS-C9509	FOX063S0KW1	6.2(17)	Honor	311 days, 12:05:08
2	Fabric_mchinn-N7K...	mchinn-baxter-FC-VDC	172.25.234.200	20:00:c8:62:6b:b3:c8:00	[illegible]	ok	32	N7K-C7009	JAF1505AQPR	6.2(12)	Eval - Sat Au...	151 days, 14:26:29
3	Fabric_mchinn-N7K...	mchinn-N5K2	172.25.234.191	20:00:00:05:9b:75:16:40	[illegible]	Module Wa...	52	N5K-C5010P	SSI140900CX	5.2(1)N1(4)	Permanent	232 days, 05:43:05
4	Fabric_mchinn-N7K...	mchinn-N6K	172.22.46.169	20:00:00:2a:6a:4e:d2:c0	[illegible]	Module Wa...	48	N6K-C6004-9	FOC1737R0BQ	7.0(3)N1(1)	Eval - Sat Au...	468 days, 22:54:39
5	Fabric_mchinn-N7K...	mchinn-N7K-FC-VDC	172.25.234.193	20:00:00:26:51:cf:57:00	[illegible]	ok	24	N7K-C7010	JAF1351BCFF	7.3(1)D1(1)	Eval - Sat Au...	323 days, 17:39:15
6	Fabric_mchinn-N7K...	mchinn-n7k-ubew-fc-vdc	172.25.234.206	20:00:84:78:ac:55:46:00		ok	36	N77-C7710	JAF1847ARAG	8.1(1)	Unlicensed	230 days, 17:09:29
7	Fabric_mchinn-N7K...	mchinn-ucs1-A	172.25.234.171	20:00:00:05:73:ab:0e:40	[illegible]	Module Wa...	37	UCS-6120XP	SSI14300C79	5.0(3)N2(2.11e)	Not Applicable	405 days, 15:51:42
8	Fabric_mchinn-N7K...	mchinn-zonda-FC-VDC	172.25.234.202	20:00:6c:9c:ed:4b:b2:00	[illegible]	Module Wa...	24	N7K-C7004	JAF1612APBS	6.2(18)	Eval - Sat Au...	162 days, 13:54:18
9	Fabric_sw106	sw106	172.20.150.106	20:00:8c:60:4f:9e:35:00	[illegible]	Module Wa...	48	DS-C9718	JPG1939003P	8.4(1)	Permanent	76 days, 18:52:39
10	Fabric_mchinn-N7K...	sw172-22-46-174	172.22.46.174	20:00:00:05:30:01:9b:42	[illegible]	ok	178	DS-C9513	FHH0927006V	6.2(15)	Permanent	333 days, 19:32:23
11	Fabric_mchinn-N7K...	sw172-22-47-133	172.22.47.133	20:00:00:0d:ec:2f:bb:80	[illegible]	Module Wa...	24	DS-C9124	FOX1029008B	5.0(1a)	Permanent	333 days, 19:33:33
12	Fabric_mchinn-N7K...	sw172-22-47-167	172.22.47.167	20:00:54:7f:ee:34:83:40	[illegible]	ok	38	DS-C9222i	FOX1036049...	6.2(1)	Permanent	1 day, 06:08:24
13	Fabric_mchinn-N7K...	sw172-22-47-22	172.22.47.22	20:00:00:22:bd:c6:46:00	[illegible]	Module Wa...	48	DS-C9148-K9	SSI13200870	5.0(8)	Eval - Sat Au...	494 days, 20:52:33
14	Default_LAN	BL-2	172.25.20.72	FDO2132226Y	[illegible]	ok	54	N9K-C93180...	FDO2132226Y	9.2(3.84)	Honor	10:24:39
15	Default_LAN	SPINE-2	172.25.20.70	FDO21322MSP	[illegible]	ok	54	N9K-C93180...	FDO21322MSP	9.2(3.74)	Term	10:24:37

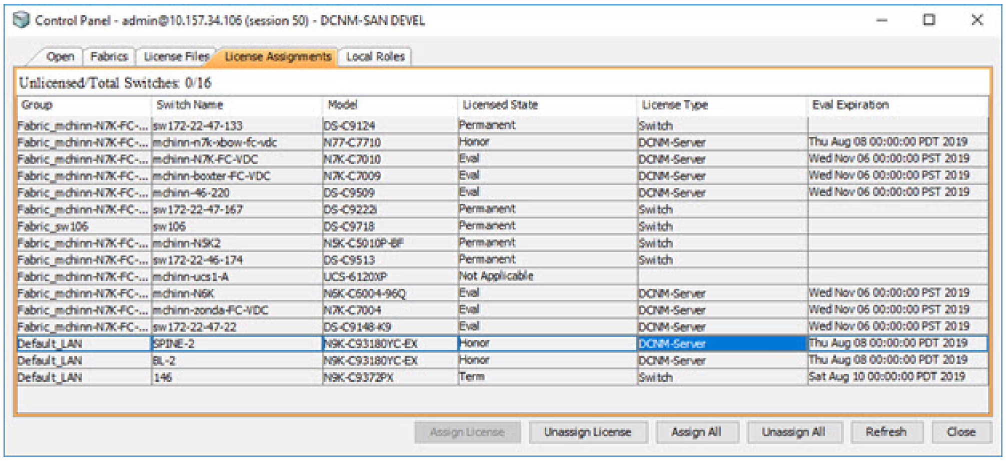
The following image shows Switch Dashboard with a SAN switch in Honor mode license.



Switches / mchinn-46-220 (172.22.46.220)

Group	Fabric_mchinn-N7K-FC-VDC
Status	Module Warning
Up time	310 days, 11:36:21
Health	[illegible]
CPU utilization	
Memory utilization	75%
DCNM license	Honor
Sending syslogs	No
Sending traps	No
Serial number	FOX063S0KW1
WWN	20:00:00:2a:6a:c6:47:c0
Model	DS-C9509
Version	6.2(17)
Contact	Marvin
Location	live_site
Action	SSH Device Manager Accounting Backup Events Generate tac-pac

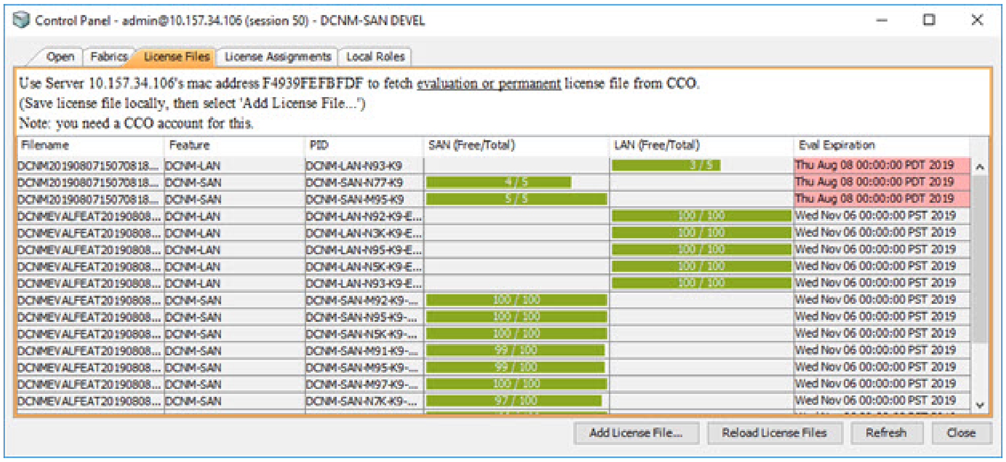
The following image shows the SAN Client License Agreement tab.



Unlicensed/Total Switches: 0/16

Group	Switch Name	Model	Licensed State	License Type	Eval Expiration
Fabric_mchinn-N7K-FC-...	sw172-22-47-133	DS-C9124	Permanent	Switch	
Fabric_mchinn-N7K-FC-...	mchinn-n7k-xbow-fc-vdc	N77-C7710	Honor	DCNM-Server	Thu Aug 08 00:00:00 PDT 2019
Fabric_mchinn-N7K-FC-...	mchinn-N7K-FC-VDC	N7K-C7010	Eval	DCNM-Server	Wed Nov 06 00:00:00 PST 2019
Fabric_mchinn-N7K-FC-...	mchinn-boxter-FC-VDC	N7K-C7009	Eval	DCNM-Server	Wed Nov 06 00:00:00 PST 2019
Fabric_mchinn-N7K-FC-...	mchinn-46-220	DS-C9509	Eval	DCNM-Server	Wed Nov 06 00:00:00 PST 2019
Fabric_mchinn-N7K-FC-...	sw172-22-47-167	DS-C9222i	Permanent	Switch	
Fabric_sw106	sw106	DS-C9718	Permanent	Switch	
Fabric_mchinn-N7K-FC-...	mchinn-N5K2	N5K-C5010P-BF	Permanent	Switch	
Fabric_mchinn-N7K-FC-...	sw172-22-46-174	DS-C9513	Permanent	Switch	
Fabric_mchinn-N7K-FC-...	mchinn-ucs1-A	UCS-6120XP	Not Applicable		
Fabric_mchinn-N7K-FC-...	mchinn-N6K	N6K-C6004-96Q	Eval	DCNM-Server	Wed Nov 06 00:00:00 PST 2019
Fabric_mchinn-N7K-FC-...	mchinn-zonda-FC-VDC	N7K-C7004	Eval	DCNM-Server	Wed Nov 06 00:00:00 PST 2019
Fabric_mchinn-N7K-FC-...	sw172-22-47-22	DS-C9148-K9	Eval	DCNM-Server	Wed Nov 06 00:00:00 PST 2019
Default_LAN	SPINE-2	N9K-C93180YC-EX	Honor	DCNM-Server	Thu Aug 08 00:00:00 PDT 2019
Default_LAN	BL-2	N9K-C93180YC-EX	Honor	DCNM-Server	Thu Aug 08 00:00:00 PDT 2019
Default_LAN	146	N9K-C9372PX	Term	Switch	Sat Aug 10 00:00:00 PDT 2019

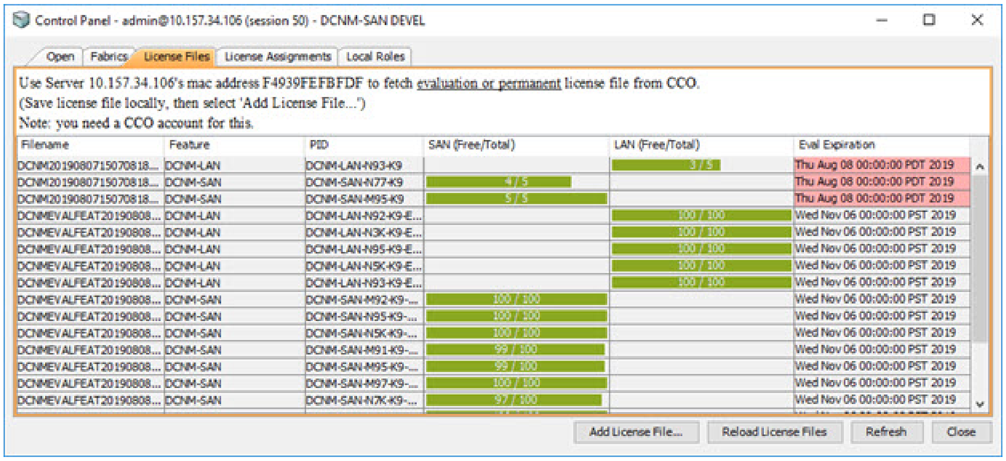
The following image shows the **SAN Client License** files tab.



Use Server 10.157.34.106's mac address F4939FEFBFDF to fetch evaluation or permanent license file from CCO.
(Save license file locally, then select 'Add License File...')
Note: you need a CCO account for this.

Filename	Feature	PID	SAN (Free/Total)	LAN (Free/Total)	Eval Expiration
DCNM2019080715070818...	DCNM-LAN	DCNM-LAN-N93-K9		3 / 5	Thu Aug 08 00:00:00 PDT 2019
DCNM2019080715070818...	DCNM-SAN	DCNM-SAN-N77-K9	4 / 5		Thu Aug 08 00:00:00 PDT 2019
DCNM2019080715070818...	DCNM-SAN	DCNM-SAN-M95-K9	5 / 5		Thu Aug 08 00:00:00 PDT 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N92-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N3K-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N95-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N5K-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N93-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M92-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-N95-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-N5K-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M91-K9-...	99 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M95-K9-...	99 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M97-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-N7K-K9-...	97 / 100		Wed Nov 06 00:00:00 PST 2019

Note Switch-based honor licenses can’t be overwritten with server-based license files.



Control Panel - admin@10.157.34.106 (session 50) - DCNM-SAN DEVEL

Use Server 10.157.34.106's mac address F4939FEFBFDF to fetch evaluation or permanent license file from CCO.
(Save license file locally, then select 'Add License File...')
Note: you need a CCO account for this.

Filename	Feature	PID	SAN (Free/Total)	LAN (Free/Total)	Eval Expiration
DCNM2019080715070818...	DCNM-LAN	DCNM-LAN-N93-K9		3 / 5	Thu Aug 08 00:00:00 PDT 2019
DCNM2019080715070818...	DCNM-SAN	DCNM-SAN-N77-K9	4 / 5		Thu Aug 08 00:00:00 PDT 2019
DCNM2019080715070818...	DCNM-SAN	DCNM-SAN-M95-K9	5 / 5		Thu Aug 08 00:00:00 PDT 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N92-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N3K-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N95-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N5K-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-LAN	DCNM-LAN-N93-K9-E...		100 / 100	Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M92-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-N95-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-N5K-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M91-K9-...	99 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M95-K9-...	99 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-M97-K9-...	100 / 100		Wed Nov 06 00:00:00 PST 2019
DCNMEVALFEAT20190808...	DCNM-SAN	DCNM-SAN-N7K-K9-...	97 / 100		Wed Nov 06 00:00:00 PST 2019

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 > Manage Licensing > DCNM > Smart License**. You will see a brief introduction on Cisco smart licensing, a menu bar, and the **Switch Licenses** area.

Introduction to Smart Licensing

Cisco Smart Licensing is a flexible licensing model that provides you with an easier, faster, and more consistent way to purchase and manage software across the Cisco portfolio and across your organization. And it's secure – you control what users can access. With Smart Licensing you get:

- **Easy Activation**: Smart Licensing establishes a pool of software licenses that can be used across the entire organization—no more PAKs (Product Activation Keys).
- **Unified Management**: My Cisco Entitlements (MCE) provides a complete view into all of your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.
- **License Flexibility**: Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

To use Smart Licensing, you must first set up a Smart Account on Cisco Software Central (software.cisco.com).

For a more detailed overview on Cisco Licensing, go to cisco.com/go/licensingguide.

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.

Field	Description
Last Updated	Specifies the timestamp when switch licenses were last updated.
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** > **Manage Licensing** > **DCNM** > **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** > **Manage Licensing** > **DCNM** > **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/oddce/services/DDCEService

- **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.properties

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 > Manage Licensing > DCNM > 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** > **Manage Licensing** > **DCNM** > **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.

Switch Smart License

If switch is pre-configured for a smart license, DCNM validates and assigns a switch smart license. To assign a license to switch from DCNM UI, choose **Administration** > **Manage Licensing** > **Assign License** or, **AssignAll**.

Note Before you assign switch smart license to a switch, you must configure greenfield switches through fabric builder freeform. To configure a switch, refer to NX-OS Licensing Guide.

Licenses assigned based on this priority for unlicensed switches:

1. DCNM Smart License
2. DCNM Server License
3. DCNM Eval License

Server License Files

From Cisco DCNM Web UI, choose **Administration** > **Manage Licensing** > **DCNM** > **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** > **Manage Licensing** > **DCNM** 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.

Switch Features—Bulk Install

From Release 11.3(1), Cisco DCNM allows you to upload multiple licenses at a single instance. DCNM parses the license files and extract the switch serial numbers. It maps the serial numbers in the license files with the discovered fabric to install the licenses on each switch. License files are moved to bootflash and installed.

To bulk install licenses to the switches on the Cisco DCNM Web Client UI, perform the following steps:

1. Choose **Administration** > **Manage Licensing** > **Switch features**.

2. In the Switch Licenses area, click **Upload License files** to upload the appropriate license file.

   The Bulk Switch License Install window appears.

3. In the Select file, click **Select License file(s)**.

   Navigate and choose the appropriate license file located in your local directory.

   Click **Open**.

4. Choose the file transfer protocol to copy the license file from the DCNM server to the switch.

   - Choose either **TFTP**, **SCP**, or **SFTP** protocol to upload the license file.

   Note Not all protocols are supported for all platforms. TFTP is supported for Win/RHEL DCNM SAN installation only. However, SFTP/SCP supported for all installation types.

5. Check the **VRF** check box for the licenses to support VRF configuration.

   Enter the VRF name of one of their defined routes.

6. Check the **Overwrite file on Switch** checkbox, to overwrite the license file with the new uploaded license file.

Note The overwrite command copies the new file over the existing one in boot flash. If the previous license was already installed, it won't override the installation.

7. In the DCNM Server credentials, enter the root username and password for the DCNM server.

   Enter the authentication credentials for access to DCNM. For DCNM Linux deployment, this is the username. For OVA\ISO deployments, use the credentials of the **sysadmin** user.

8. Click **Upload**.

   The License file is uploaded to the DCNM. The following information is extracted from the license file.

   - Switch IP – IP Address of the switch to which this license is assigned.
   - License File – filename of the license file
   - Features List –list of features supported by the license file

9. Select the set of licenses that you want to upload and install on their respective switches. A license file is applicable for a single specific switch.

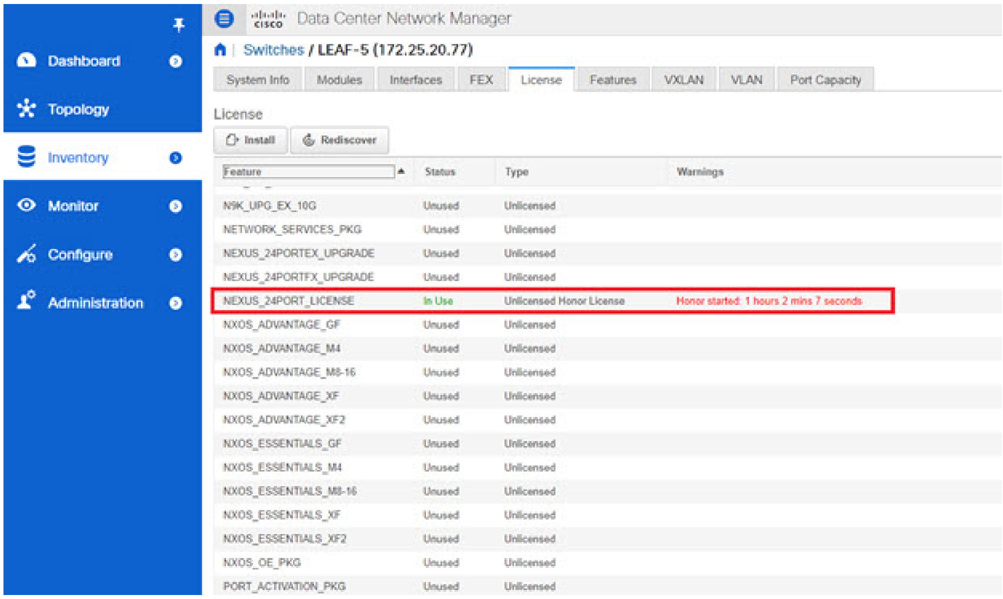
10. Click **Install Licenses**.

    The selected licenses are uploaded and installed on their respective switches. Status messages, including any issues or errors are updated for each file as it completes.

11. After the license matches with respective devices and installs, the **License Status** table displays the status.

Switch-based honor license support

On the DCNM **Web UI** > **Inventory** > **Switch** > **License**, the **Type** column displays “Unlicensed Honor License” and **Warnings** column displays **Honor started: …** with elapsed time since the license was changed to the Honor mode.

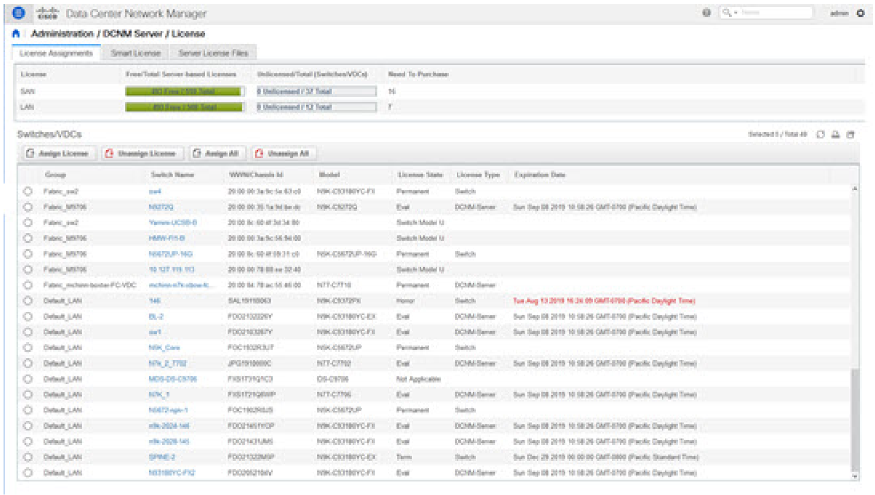


Switches / LEAF-5 (172.25.20.77)

License

Feature	Status	Type	Warnings
N9K_UPG_EX_10G	Unused	Unlicensed	
NETWORK_SERVICES_PKG	Unused	Unlicensed	
NEXUS_24PORTEX_UPGRADE	Unused	Unlicensed	
NEXUS_24PORTFX_UPGRADE	Unused	Unlicensed	
NEXUS_24PORT_LICENSE	In Use	Unlicensed Honor License	Honor started: 1 hours 2 mins 7 seconds
NXOS_ADVANTAGE_GF	Unused	Unlicensed	
NXOS_ADVANTAGE_M4	Unused	Unlicensed	
NXOS_ADVANTAGE_M8-16	Unused	Unlicensed	
NXOS_ADVANTAGE_XF	Unused	Unlicensed	
NXOS_ADVANTAGE_XF2	Unused	Unlicensed	
NXOS_ESSENTIALS_GF	Unused	Unlicensed	
NXOS_ESSENTIALS_M4	Unused	Unlicensed	
NXOS_ESSENTIALS_M8-16	Unused	Unlicensed	
NXOS_ESSENTIALS_XF	Unused	Unlicensed	
NXOS_ESSENTIALS_XF2	Unused	Unlicensed	
NXOS_OE_PKG	Unused	Unlicensed	
PORT_ACTIVATION_PKG	Unused	Unlicensed	

Note Switch-based honor licenses can’t be overwritten with server-based license files.



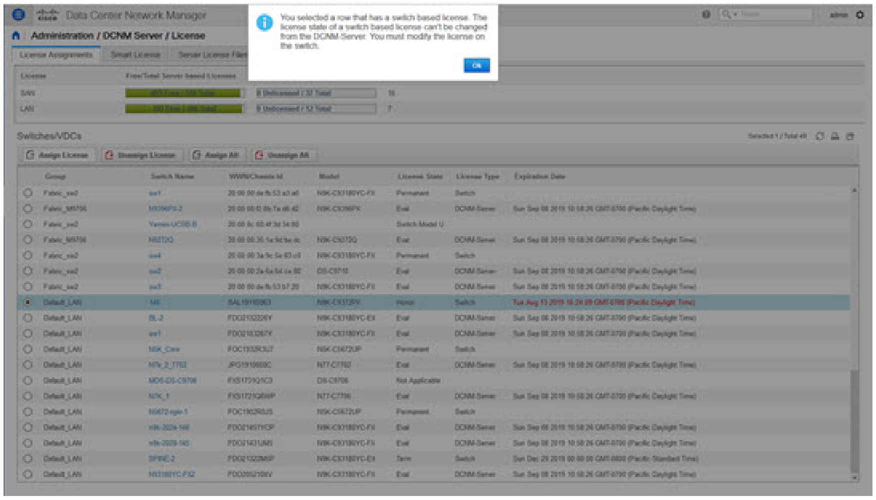
Administration / DCNM Server / License

License	Free/Total Server-based Licenses	Unlicensed/Total (Switches/VDCs)	Need To Purchase
SAN	490 Free / 500 Total	8 Unlicensed / 37 Total	16
LAN	490 Free / 500 Total	8 Unlicensed / 12 Total	7

Switches/VDCs

Selected 0 / Total 49

	Group	Switch Name	WWN/Chassis Id	Model	License State	License Type	Expiration Date
○	Fabric_sw2	sw4	20:00:00:3a:9c:5e:63:c0	N9K-C93180YC-FX	Permanent	Switch	
○	Fabric_M9706	N9272Q	20:00:00:35:1a:9d:be:dc	N9K-C9272Q	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Fabric_sw2	Yamini-UCSB-B	20:00:8c:60:4f:3d:34:80		Switch Model U		
○	Fabric_M9706	HMW-FI1-B	20:00:00:3a:9c:56:94:00		Switch Model U		
○	Fabric_M9706	N5672UP-16G	20:00:8c:60:4f:18:31:c0	N5K-C5672UP-16G	Permanent	Switch	
○	Fabric_M9706	10.127.119.113	20:00:00:78:88:ee:32:40		Switch Model U		
○	Fabric_mchinn-border-FC-VDC	mchinn-n7k-sbow-fc...	20:00:84:78:ac:56:46:00	N77-C7710	Permanent	DCNM-Server	
○	Default_LAN	146	SAL19118063	N9K-C9372PX	Honor	Switch	Tue Aug 13 2019 16:26:09 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	BL-2	FDO2132226Y	N9K-C93180YC-EX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	sw1	FDO2103267Y	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	N5K_Core	FOC1932R3J7	N5K-C5672UP	Permanent	Switch	
○	Default_LAN	N7k_2_7702	JPG1918000C	N77-C7702	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	MDS-DS-C9706	FXS1721Q1C3	DS-C9706	Not Applicable		
○	Default_LAN	N7K_1	FXS1721Q6WP	N77-C7706	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	N5672-nps-1	FOC1902R0J5	N5K-C5672UP	Permanent	Switch	
○	Default_LAN	n9k-2024-146	FDO21451YOP	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	n9k-2028-145	FDO21431JM5	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	SPINE-2	FDO21322M5P	N9K-C93180YC-EX	Term	Switch	Sun Dec 29 2019 00:00:00 GMT-0800 (Pacific Standard Time)
○	Default_LAN	N93180YC-FX2	FDO2052104V	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)



Data Center Network Manager

Administration / DCNM Server / License

You selected a row that has a switch based license. The license state of a switch based license can't be changed from the DCNM-Server. You must modify the license on the switch.

License	Free/Total Server based Licenses		
SAN	483 Free / 500 Total	8 Unlicensed / 32 Total	16
LAN	490 Free / 500 Total	8 Unlicensed / 12 Total	7

Switches/VDCs

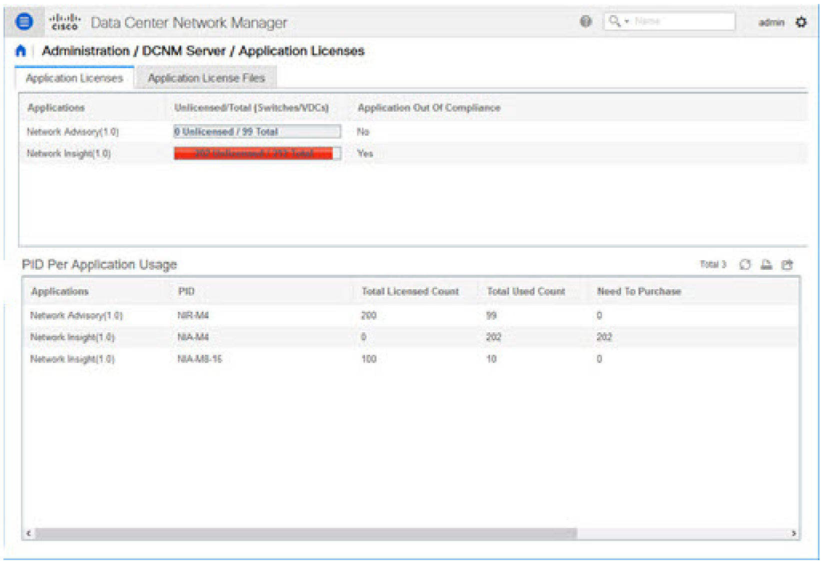
Selected 1 / Total 49

	Group	Switch Name	WWN/Chassis Id	Model	License State	License Type	Expiration Date
○	Fabric_sw2	sw1	20:00:00:de:fb:53:a3:a0	N9K-C93180YC-FX	Permanent	Switch	
○	Fabric_M9706	N9396PX-2	20:00:00:f2:8b:7a:d6:42	N9K-C9396PX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Fabric_sw2	Yamen-UCSB-B	20:00:8c:60:4f:3d:34:80		Switch Model U		
○	Fabric_M9706	N9272Q	20:00:00:35:1a:9d:be:dc	N9K-C9272Q	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Fabric_sw2	sw4	20:00:00:3a:9c:5a:83:c0	N9K-C93180YC-FX	Permanent	Switch	
○	Fabric_sw2	sw2	20:00:00:2a:6a:64:ca:80	DS-C9710	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Fabric_sw2	sw3	20:00:00:de:fb:53:b7:20	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
●	Default_LAN	146	SAL1915093	N9K-C9372PX	Honor	Switch	Tue Aug 13 2019 16:24:09 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	BL-2	FDO21322Z6Y	N9K-C93180YC-EX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	sw1	FDO21023267Y	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	N5K_Core	FOC1932R3U7	N5K-C5672UP	Permanent	Switch	
○	Default_LAN	N7k_2_7702	JPG1910000C	N77-C7702	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	MDS-DS-C9706	FXS1721Q1C3	DS-C9706	Not Applicable		
○	Default_LAN	N7K_1	FXS1721Q8WP	N77-C7706	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	N5672-sgw-1	FOC1902R0JS	N5K-C5672UP	Permanent	Switch	
○	Default_LAN	n9k-2024-146	FDO21451YCP	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	n9k-2028-145	FDO21431UMI	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)
○	Default_LAN	SPINE-2	FDO21322M6P	N9K-C93180YC-EX	Term	Switch	Sun Dec 29 2019 00:00:00 GMT-0800 (Pacific Standard Time)
○	Default_LAN	N93180YC-FX2	FDO20521S6V	N9K-C93180YC-FX	Eval	DCNM-Server	Sun Sep 08 2019 10:58:26 GMT-0700 (Pacific Daylight Time)

Application Licenses

From Release 11.3(1), you can manage licenses for applications on the Cisco DCNM. Choose **Web UI** > **Administration** > **Manage Licensing** > **Applications** to view the Application Licenses.

The Application Licenses tab displays the DCNM Applications with a summary of their unlicensed/total switches and if they are out of compliance. The PID Per Application Usage table displays the actual counts per PID given to the server from the Application Framework. The PIDs that need to be purchased for each application is also listed.



Data Center Network Manager

Administration / DCNM Server / Application Licenses

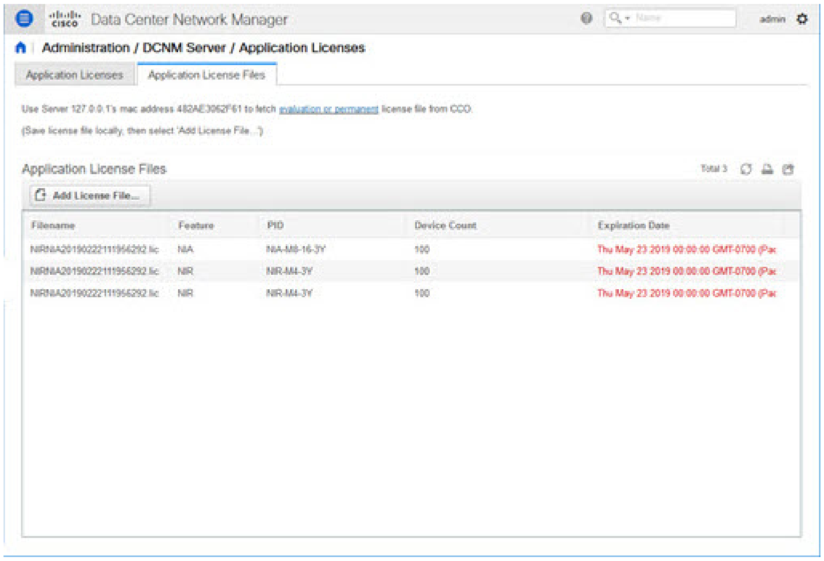
Applications	Unlicensed/Total (Switches/VDCs)	Application Out Of Compliance
Network Advisory(1.0)	0 Unlicensed / 99 Total	No
Network Insight(1.0)	202 Unlicensed / 212 Total	Yes

PID Per Application Usage

Total 3

Applications	PID	Total Licensed Count	Total Used Count	Need To Purchase
Network Advisory(1.0)	NIR-M4	200	99	0
Network Insight(1.0)	NIA-M4	0	202	202
Network Insight(1.0)	NIA-M8-16	100	10	0

The Application License Files tab allows you to add license files for the applications. Click on Add license file to add license file from your local directory. The license filename, application name, PID, device count and expiration date details are extracted from the imported license file. If the license isn't permanent or is eval or term, the expiration date is also listed.



Administration / DCNM Server / Application Licenses

Application Licenses | Application License Files

Use Server 127.0.0.1's mac address 482AE3062F61 to fetch evaluation or permanent license file from CCO.

(Save license file locally, then select 'Add License File...')

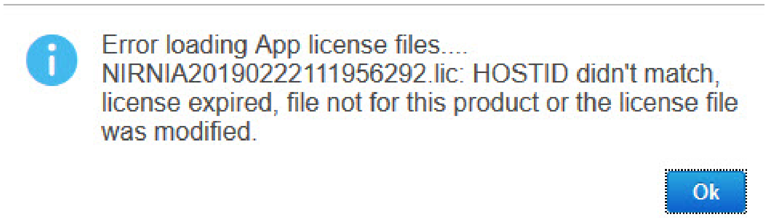
Application License Files

Total 3

Add License File...

Filename	Feature	PID	Device Count	Expiration Date
NIRNIA20190222111956292.lic	NIA	NIA-M8-16-3Y	100	Thu May 23 2019 00:00:00 GMT-0700 (Pac
NIRNIA20190222111956292.lic	NIR	NIR-M4-3Y	100	Thu May 23 2019 00:00:00 GMT-0700 (Pac
NIRNIA20190222111956292.lic	NIR	NIR-M4-3Y	100	Thu May 23 2019 00:00:00 GMT-0700 (Pac

The following image shows a sample error message while uploading an application license file.



Error loading App license files....
NIRNIA20190222111956292.lic: HOSTID didn't match, license expired, file not for this product or the license file was modified.

Ok

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**.

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.

Note When using the DCNM AAA or Radius authentication, you should not specify the hash (#) symbol at the beginning of a secret key. Otherwise, DCNM will try to use # as encrypted, and it will fail.

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.

Note When using the DCNM AAA or Radius authentication, you should not specify the hash (#) symbol at the beginning of a secret key. Otherwise, DCNM will try to use # as encrypted, and it will fail.

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.

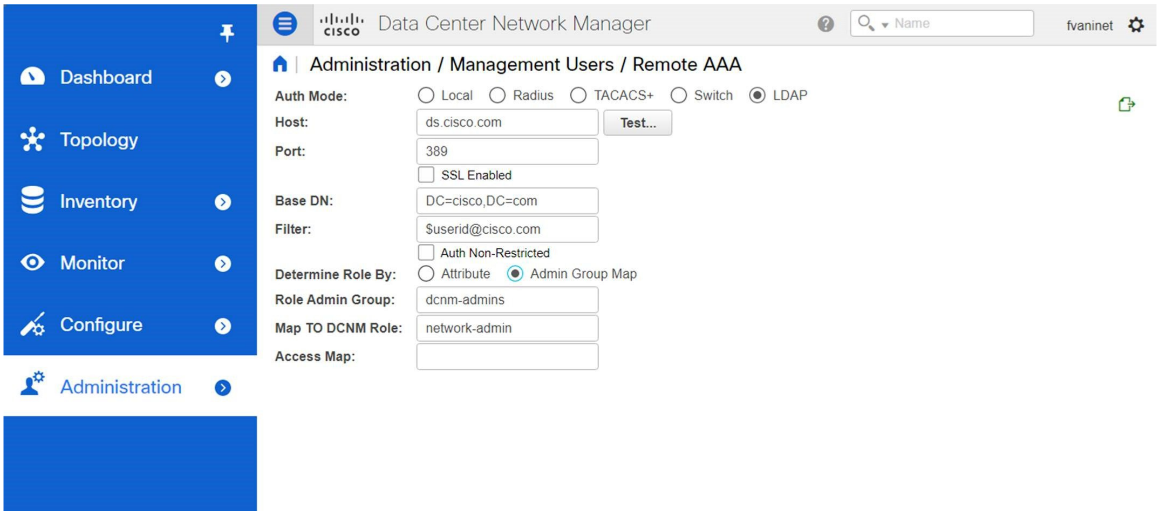
Step 3 (Optional) Specify the names for Secondary and Tertiary Switches.

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

LDAP

Procedure

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



Auth Mode: ○ Local ○ Radius ○ TACACS+ ○ Switch ● LDAP

Host: ds.cisco.com

Port: 389

□ SSL Enabled

Base DN: DC=cisco,DC=com

Filter: $userid@cisco.com

□ Auth Non-Restricted

Determine Role By: ○ Attribute ● Admin Group Map

Role Admin Group: dcnm-admins

Map TO DCNM Role: network-admin

Access Map:

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.

Note Cisco DCNM establishes a secured connection with the LDAP server using TLS. Cisco DCNM supports all versions of TLS. However, the specific version of TLS is determined by the LDAP server.

For example, if the LDAP server supports TLSv1.2 by default, DCNM will connect using TLSv1.2.

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:

```
ldapserver# 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.

From DCNM release 11.5(1), new user role **device-upg-admin** is added to perform operations only in Image Management window.

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

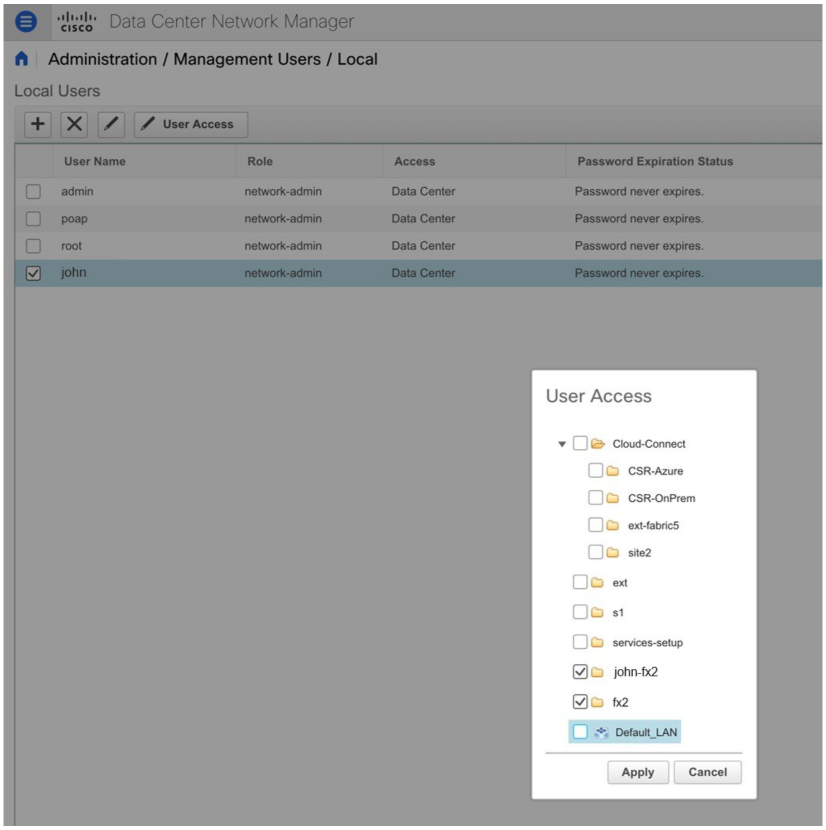
Step 1 Choose **Administration** > **Management Users** > **Local**.

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**.



Data Center Network Manager
Administration / Management Users / Local
Local Users
User Access

	User Name	Role	Access	Password Expiration Status
□	admin	network-admin	Data Center	Password never expires.
□	poap	network-admin	Data Center	Password never expires.
□	root	network-admin	Data Center	Password never expires.
☑	john	network-admin	Data Center	Password never expires.

User Access

- □ Cloud-Connect
  - □ CSR-Azure
  - □ CSR-OnPrem
  - □ ext-fabric5
  - □ site2
- □ ext
- □ s1
- □ services-setup
- ☑ john-fx2
- ☑ fx2
- □ Default_LAN

Note The **User Access** button grays out and the value under the **Access** column isn't **Data Center** if the user with the **network-admin** role doesn't have access to the entire data center. In that case, to create a new **network-admin** role user with access to the entire data center use the *addUser.sh/bat* script.

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**.

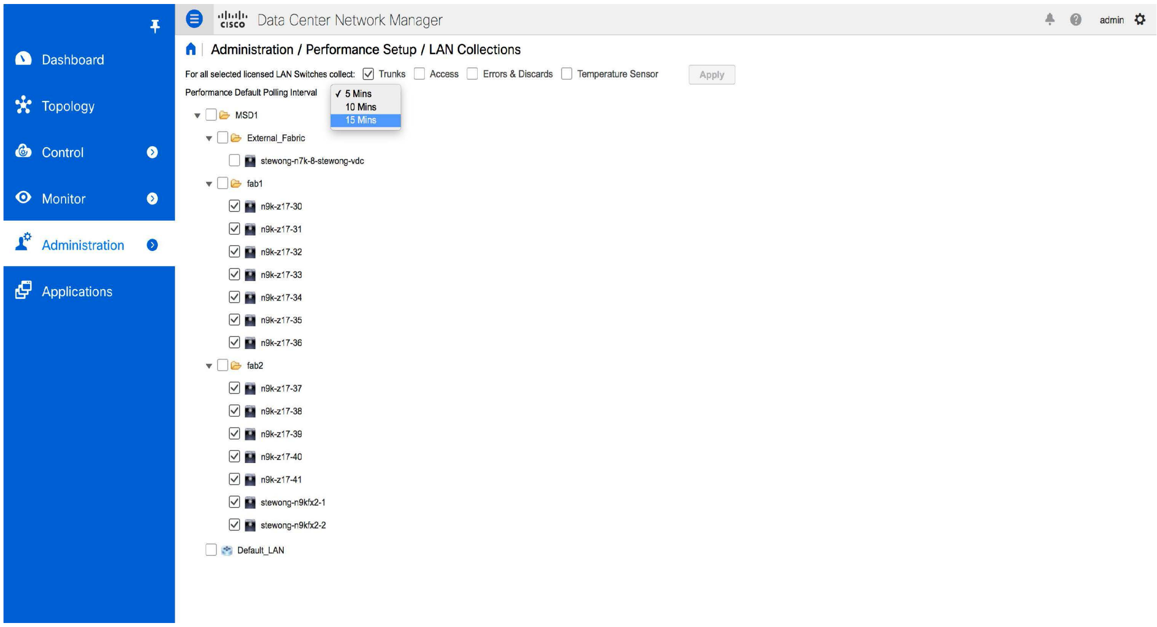
Step 2 For all the licensed LAN switches, use the check boxes to enable performance data collection for **Trunks**, **Access**, **Errors & Discards**, and **Temperature Sensor**.

Step 3 Select a value for **Performance Default Polling Interval** from the drop-down list. Valid values are **5 Mins, 10 Mins**, and **15 Mins** . The default value is **5 Mins**.

Step 4 Use the check boxes to select the types of LAN switches for which you want to collect performance data.

Step 5 Click **Apply** to save the configuration.

Step 6 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.



Administration / Performance Setup / LAN Collections

For all selected licensed LAN Switches collect: ☑ Trunks ☐ Access ☐ Errors & Discards ☐ Temperature Sensor Apply

Performance Default Polling Interval ✓ 5 Mins / 10 Mins / 15 Mins

- ☐ MSD1
  - ☐ External_Fabric
    - ☐ stewong-n7k-8-stewong-vdc
  - ☐ fab1
    - ☑ n9k-z17-30
    - ☑ n9k-z17-31
    - ☑ n9k-z17-32
    - ☑ n9k-z17-33
    - ☑ n9k-z17-34
    - ☑ n9k-z17-35
    - ☑ n9k-z17-36
  - ☐ fab2
    - ☑ n9k-z17-37
    - ☑ n9k-z17-38
    - ☑ n9k-z17-39
    - ☑ n9k-z17-40
    - ☑ n9k-z17-41
    - ☑ stewong-n9kfx2-1
    - ☑ stewong-n9kfx2-2
- ☐ Default_LAN

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.

Some SMTP servers may require addition of authentication parameters to emails that are sent from DCNM to the SMTP servers. Starting from Cisco DCNM Release 11.4(1), you can add authentication parameters to the emails that are sent by DCNM to any SMTP server that requires authentication. This feature can be configured by setting up the **SMTP>Authentication** properties in the **Administration>DCNM Server>Server Properties** window. Enter **true** in the **server.smtp.authenticate** field, enter the required username in the **server.smtp.username** field, and enter the required password in the **server.smtp.password** field.

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.

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:

a) From the **Type** drop-down list, choose an event type.
b) Check the **Storage Ports Only** check box to select only the storage ports.
c) From the **Minimum Severity** drop-down list, select the severity level of the messages to receive.
d) Click **Add** to add the notification.

If you select **Syslog**, then:

a) In the **Facility** list, select the syslog facility.
b) Specify the syslog **Type**.
c) In the **Description Regex** field, specify a description that matches with the event description.
d) From the **Minimum Severity** drop-down list, select the severity level of the messages to receive.
e) 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.

Note You cannot suppress EMC Call Home events from the Cisco DCNM Web UI.

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.

Note: After you enter appropriate credentials in **Password**, **Confirm Password** fields and click **Save**, the **Confirm Password** field is blank. A blank **Confirm Password** field implies that the password is saved successfully.

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 50
- Validate Credentials, on page 50
- Clear Switch Credentials, on page 51
- Using LAN Credentials to Deploy Configurations, on page 51

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.

Using LAN Credentials to Deploy Configurations

From Cisco DCNM Release 11.3(1), you can use the same DCNM user account credentials to deploy configurations to switches. To enable this functionality, you need to add the server property **dcnm.lanSwitch.sameUserAccount=true** in the *<dcnm_install_dir>/usr/local/cisco/dcm/fm/conf/server.properties* file, and restart the DCNM service.

Note By default, the value for this property is **false**. Therefore, you need to explicitly save the device configuration credentials in the **LAN Credentials** window.

Previously, every new user had to setup device credentials in DCNM to push configuration to switches. From DCNM Release 11.3(1), you can set up a service account credential for all the users to push configurations to switches without setting up device credentials. To enable this functionality, you need to add the server property **service.account** in the *<dcnm_install_dir>/usr/local/cisco/dcm/fm/conf/server.properties* file, and restart the DCNM service.

For example, if you want to use the credentials of the **admin** user for all the device configurations, perform the following steps:

1. Save the default LAN credentials for the **admin** user.
2. Add **service.account=admin** in the server.properties file.
3. Restart the DCNM service by the **appmgr restart dcnm** command.