



## CHAPTER 7

# Installing and Managing Licenses for Cisco Data Center Network Manager

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This chapter describes Cisco Data Center Network Manager's licensing model and how to install and manage licenses for Cisco DCNM.

This chapter includes the following sections:

- [Licensing Terminology, page 7-2](#)
- [Cisco DCNM-LAN Features, page 7-3](#)
- [Cisco DCNM-SAN Features, page 7-6](#)
- [Cisco DCNM Server-Based Licenses, page 7-8](#)
- [Installing Cisco DCNM Licenses, page 7-10](#)
- [Viewing Licenses Using the Cisco DCNM Wizard, page 7-11](#)
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- [Transferring Licences, page 7-14](#)

## Information About Cisco DCNM Software Licenses

Cisco Data Center Network Manager is Cisco's Domain manager for NX-OS capable platforms that helps troubleshoot paths, manage network resources and simplify provisioning of NX-OS based features across multiple SAN and LAN protocols. Cisco DCNM is enterprise level tool that is deployed at some of the Cisco's largest accounts around the globe monitoring and configuring mission critical data centers that include financial institutions, cloud service providers, governments and some of the top Fortune 500 companies.

The license costs for Cisco Data Center Network Manager are determined by the switch platform type and by the number of units within each platform. The advanced feature licenses are available for the following switch platforms: Cisco Nexus 7000, Nexus 5000, Nexus 3000, MDS 9100, MDS 9200, and MDS 9500 Series switches. Each platform has an individual price that is based on whether it is a LAN versus SAN switch and modular versus a fixed chassis. The advanced features for Cisco Nexus 1000V and Cisco Nexus 4000 Series switches are part of the image at no cost. In addition, Cisco DCNM has a many features that are enabled for free as part of the image. These features that are free are referred to as essential features. The features are split between SAN and LAN platforms (hardware support and Cisco NX-OS features) and application-specific features such as VMware path analytics [vCenter integration], performance trending, event forwarding, and so on. For the list of licenses, [Cisco DCNM Server-Based Licenses, page 7-8](#).

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However, the biggest value of Cisco DCNM is its license structure. If you have purchased the Cisco DCNM advanced feature license for any Cisco Nexus or MDS switches, that license stays valid for the lifetime of the platform at Cisco. For example, if you replace an older switch with a new generation switch of the same platform (that is, MDS 9506 with MDS 9513) the license can be reassigned. Cisco DCNM advanced licenses are also available as part of Cisco Nexus 7000 and Nexus 5000 software promotional bundles.

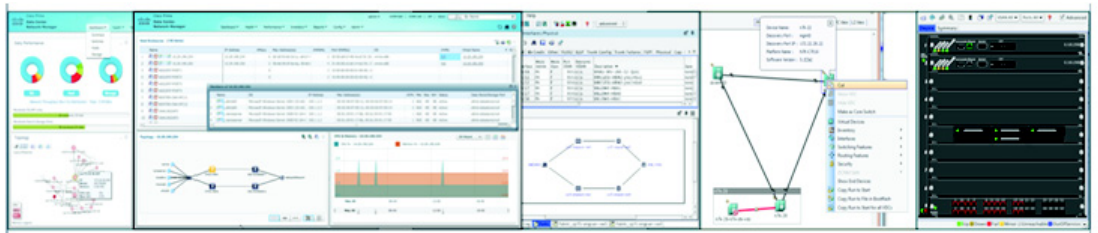
Cisco DCNM also supports older Fabric Manager (FM) licenses (SAN only) that have been installed on the switch. These licenses provide high availability (HA) with up to ten management servers that manage a single fabric in parallel. However, Fabric Manager licenses are only valid for the lifetime of the switch inside the data center and expire when the switch is decommissioned from the data center. You can still order FM licenses as spares if you prefer the HA capability.

Services contract SKUs (CON-SAU) are required for Cisco TAC support for upgrades from one version of Cisco DCNM to another. The upgrade path also includes the Fabric Manager to DCNM upgrade (from FMS 5.0 to DCNM 5.2).

If you would like to evaluate Cisco DCNM in your own environment, Cisco makes the advanced licenses available for 60 days which can be extended by another 60 days if required (EVAL/DEMO site). This demo license is limited to 20 units per platform. To see how Cisco DCNM can enable network and storage teams to use the essential and advanced features, see this video at <http://www.cisco.com/go/dcnm>.

Cisco DCNM consists of four components (see [Figure 7-1](#)): Device Manager, Converged LAN and SAN web client, LAN Java Client (DCNM for LAN), and SAN Java Client (DCNM for SAN). Starting with Release DCNM 6.1, web client enables consolidation of multiple data centers. As part of the advanced feature license, Cisco provides scale-out architecture where multiple DCNM servers are deployed with a single database instance. The sizing criteria is listed in the DCNM FAQ document and release notes.

**Figure 7-1 WebUI, JAVA Client and Device Manager**



## Licensing Terminology

The following terms are used in this chapter:

- **Advanced License**—License that unlocks advanced features of Cisco DCNM
- **Essential Features**—Features that come at no cost as part of the product install (unlocked).
- **Server Based License**—Cisco DCNM License that is tied down to the host ID of the management or database server and is located on the management server itself (license pool).
- **Switch Embedded License**—Fabric Manager License that is installed on the switch supervisor enabling "FM\_package" and associated with a switch serial number.
- **Licensed feature**—Permission to use a particular feature through a license file, a hardware object, or a legal contract. This permission is limited to the number of users, number of instances, time span, and the implemented switch.

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- Licensed application—Software feature that requires a license to be used.
- License enforcement—Mechanism that prevents a feature from being used without first obtaining a license.
- Node-locked license— License that can only be used on a particular switch that uses the switch's unique host ID.
- Host IDs—MAC address of the DCNM server used to claim a license by providing a valid Product Authorization Key (PAK)
- Chassis Serial Number—Switch serial number used to claim a Fabric Manager license by providing a valid PAK.
- Proof of purchase—Document that entitles its rightful owner to use licensed feature(s) on one Cisco MDS switch as described in that document. Also known as the claim certificate.
- Product Authorization Key (PAK)—The feature that allows you to obtain a license key from one of the sites listed in the proof of purchase document. After registering at the specified website, you will receive your license key file and installation instructions through an e-mail.
- License key file—Switch-specific unique file that specifies the licensed features. Each file contains digital signatures to prevent tampering and modification. License keys are required to use a licensed feature. License keys are enforced within a specified time span. The license keys can be downloaded directly from Cisco.com and sent as an e-mail attachment.
- Evaluation license—License that is time bound and valid for 60 days for each 20 units of the specified platform
- Permanent license—License that is not time bound.
- Support—If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support at this URL: [http://www.cisco.com/en/US/support/tsd\\_cisco\\_worldwide\\_contacts.html](http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html)


**Note**

The Cisco DCNM installer supports only US English. Attempting to install a license for any locale other than US English results in an error.

## Cisco DCNM-LAN Features

Table 7-1 displays the Cisco DCNM-LAN features.

**Table 7-1 DCNM-LAN Features**

Feature	DCNM Essential Edition (Free)	DCNM Advanced Edition (Licensed)
Port/Port Channel	✓	✓
Static Port Pinning	✓	✓
LACP	✓	✓

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**Table 7-1 DCNM-LAN Features (continued)**

<b>Feature</b>	<b>DCNM Essential Edition (Free)</b>	<b>DCNM Advanced Edition (Licensed)</b>
VLAN 802.1q/P VLAN	✓	✓
STP (MST, RPSVT)	✓	✓
ACL (MAC, IP, VLAN)	✓	✓
Port Security	✓	✓
Traffic Storm Control	✓	✓
IGMP Snooping	✓	✓
AAA	✓	✓
Environmental (HwRes Utilization with TCAM statistics)	✓	✓
Module Temperature	✓	✓
SPAN	✓	✓
Discovery and Inventory	✓	✓
Fault Management (Filtering, TCA, and actions)	✓	✓
Traffic Statistics Reports	✓	✓
RBAC	✓	✓
Port Profile	✓	✓
Template Center	✓	✓
Web Services and Java API	✓	✓

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**Table 7-1 DCNM-LAN Features (continued)**

<b>Feature</b>	<b>DCNM Essential Edition (Free)</b>	<b>DCNM Advanced Edition (Licensed)</b>
SMTP	✓	✓
vPCs		✓ ✓
802.1X		✓
Gateway load-balancing protocol (GLBP)		✓
Object tracking		✓
Keychain management		✓
DHCP snooping		✓
Dynamic ARP Inspection		✓
ARP access control lists (ACLs)		✓
IP Source Guard		✓
Traffic storm control		✓
Port security		✓
IP tunnels		✓
Virtual Device Contexts (VDCs)		✓
Logical vPC view of the Topology feature		
Display of historical statistical data		✓

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**Table 7-1 DCNM-LAN Features (continued)**

Feature	DCNM Essential Edition (Free)	DCNM Advanced Edition (Licensed)
FabricPath		✓
Host tracking		✓



**Note**

Cisco DCNM requires licenses only for Cisco Nexus 7000, 5000, and 3000 series switches and do not require licenses for Cisco Nexus 4000, 1000v and Cisco Catalyst 6000 series switches.

To purchase licenses for all the advanced edition features, see *Cisco DCNM Release Notes, Release 6.x*.

## Cisco DCNM-SAN Features

Table 7-2 displays the Cisco DCNM-SAN features that are free and licensed.

**Table 7-2 Cisco DCNM-SAN Features**

Feature	DCNM Essential Edition (Free)	DCNM Advanced Edition (Licensed)
FC/FCoE/FICON/iSCSI Topology View	✓	✓
Fabric, Device, and Summary Views	✓	✓
Port, Switch, and fabric-level configuration	✓	✓
Event and security management	✓	✓
Configuration analysis tools	✓	✓
Network diagnostic and troubleshooting tools	✓	✓
Real-time performance monitoring	✓	✓
One command multi-switch CLI access	✓	✓
Device Manager	✓	✓

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**Table 7-2 Cisco DCNM-SAN Features (continued)**

<b>Feature</b>	<b>DCNM Essential Edition (Free)</b>	<b>DCNM Advanced Edition (Licensed)</b>
Template based provisioning	✓	✓
Gold Diagnostics	✓	✓
Heterogeneous storage array discovery		✓
Scale-out federation architecture		✓
SAN Host Path Redundancy Analysis		✓
Automatic fabric failover		✓
VMware vCenter Plug-in		✓
Multiple fabric management		✓
Centralized management server with discovery		✓
Continuous health and event monitoring		✓
Historical performance monitoring and reporting		✓
Event forwarding		✓
DCNM proxy services		✓
Configuration backup, archive, and compare		✓
Roaming user profiles		✓
VMpath analytics		✓
Domain Dashboards		✓

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**Table 7-2 Cisco DCNM-SAN Features (continued)**

Feature	DCNM Essential Edition (Free)	DCNM Advanced Edition (Licensed)
Capacity Manager		✓
Event Snooze		✓
SMI-S <sup>1</sup>		✓

1. Minimum of one DCNM-SAN Advanced License is required for each fabric.



**Note**

Cisco DCNM requires licenses only for Cisco Nexus 7000, 5000, and 3000 series switches and do not require licenses for Cisco Nexus 4000, 1000v and Cisco Catalyst 6000 series switches.

To purchase licenses for all the advanced edition features, see *Cisco DCNM Release Notes, Release 6.x*.

## Cisco DCNM Server-Based Licenses

Table 7-3 displays the Cisco DCNM server based licenses.

**Table 7-3 Cisco DCNM Server-Based Licenses**

Platform	Electronic Part Number	Physical Part Numbers	Chassis Part Numbers
DCNM for SAN Advanced Edition for MDS 9100	L-DCNM-S-M91-K9=	DCNM-SAN-M91-K9=	DCNM-SAN-M91-K9
DCNM for SAN Advanced Edition for MDS 9200	L-DCNM-S-M92-K9=	DCNM-SAN-M92-K9=	DCNM-SAN-M92-K9
DCNM for SAN Advanced Edition for MDS 9500	L-DCNM-S-M95-K9=	DCNM-SAN-M95-K9=	DCNM-SAN-M95-K9
DCNM for SAN Advanced Edition for MDS 9700	L-DCNM-S-M97-K9=	DCNM-SAN-M97-K9=	DCNM-SAN-M97-K9
DCNM for SAN Advanced Edition for Nexus 5000	L-DCNM-S-N5K-K9=	DCNM-SAN-N5K-K9=	DCNM-SAN-N5K-K9
DCNM for SAN Advanced Edition for Nexus 6001	L-DCNM-S-N61-K9=	DCNM-SAN-N61-K9=	DCNM-SAN-N61-K9



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**Table 7-3 Cisco DCNM Server-Based Licenses**

<b>Platform</b>	<b>Electronic Part Number</b>	<b>Physical Part Numbers</b>	<b>Chassis Part Numbers</b>
DCNM for SAN Advanced Edition for Nexus 6004	L-DCNM-S-N64-K9=	DCNM-SAN-N64-K9=	DCNM-SAN-N64-K9
DCNM for SAN Advanced Edition for Nexus 7000	L-DCNM-S-N7K-K9=	DCNM-SAN-N7K-K9=	DCNM-SAN-N7K-K9
DCNM for SAN Advanced Edition for Nexus 7700	L-DCNM-S-N77-K9=	DCNM-SAN-N77-K9=	DCNM-SAN-N77-K9
DCNM for LAN Advanced Edition for Nexus 3000	L-DCNM-L-N3K-K9=	DCNM-LAN-N3K-K9=	DCNM-LAN-N3K-K9
DCNM for LAN Advanced Edition for Nexus 5000	L-DCNM-L-N5K-K9=	DCNM-LAN-N5K-K9=	DCNM-LAN-N5K-K9
DCNM for LAN Advanced Edition for Nexus 6001	L-DCNM-L-N61-K9=	DCNM-LAN-N61-K9=	DCNM-LAN-N61-K9
DCNM for LAN Advanced Edition for Nexus 6004	L-DCNM-L-N64-K9=	DCNM-LAN-N64-K9=	DCNM-LAN-N64-K9
DCNM for LAN Advanced Edition for Nexus 7000	L-DCNM-N7K-K9=	DCNM-N7K-K9=	DCNM-N7K-K9
DCNM for LAN Advanced Edition for Nexus 7700	L-DCNM-L-N77-K9=	DCNM-LAN-N77-K9=	DCNM-LAN-N77-K9
DCNM SAN & LAN Advanced Edition for Nexus 5000	NA	DCNM-LS-N5K-K9=	DCNM-LS-N5K-K9
DCNM SAN & LAN Advanced Edition for Nexus 6001	L-DCNM-LS-N61K9=	DCNM-LS-N61-K9=	DCNM-LS-N61-K9
DCNM SAN & LAN Advanced Edition for Nexus 6004	L-DCNM-LS-N64K9=	DCNM-LS-N64-K9=	DCNM-LS-N64-K9
DCNM SAN & LAN Advanced Edition for Nexus 7700	L-DCNM-LS-N77K9=	DCNM-LS-N77-K9=	DCNM-LS-N77-K9

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## Installing Cisco DCNM Licenses

### BEFORE YOU BEGIN

You must have network administrator privileges to complete the following procedure. Acquire the required licensing file.

### DETAILED STEPS

**Step 1** Start the License Wizard by choosing **Admin > License**.

**Step 2** Choose the **Server License Files** tab (see [Figure 7-2](#)).

The valid Cisco DCNM-LAN and DCNM-SAN devices that are licensed are displayed.



#### Note

Ensure the security agent is disabled when you load licenses.

**Figure 7-2** Installing Cisco DCNM Licenses

Filename	Feature	PID	SAN (Free/Total)	LAN (Free/Total)	Eval Expiration
DCNM201209211714236133c	DCNM-SAN-LAN	DCNM-LS-N74-K9	0 / 10	10 / 10	
DCNMEVALFEAT20120920145539x	DCNM-SAN	DCNM-SAN-M95-K9-EVAL	10 / 20		Mon Nov 19 00:00:00 GMT-0800 2012
DCNMEVALFEAT20120921111524x	DCNM-SAN	DCNM-SAN-M92-K9-EVAL	10 / 20		Tue Nov 20 00:00:00 GMT-0800 2012
DCNMEVALFEAT20120924104852z	LAN-ENT-N7K	DCNM-N7K-K9-EVAL		14 / 20	Fri Nov 23 00:00:00 GMT-0800 2012

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

Copy the license file into `INSTALL_DIR/dcnm/licenses` directory. On a Microsoft Windows system, the default `INSTALL_DIR` value is `C:\Program Files\Cisco Systems`.

**Step 3** Click **Add License File**.

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**Note**

Ensure that you do not edit the contents of the .lic file or the Cisco Data Center Network Manager software ignore 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 will be counted.

## Viewing Licenses Using the Cisco DCNM Wizard

You can view the existing Cisco DCNM licenses.

### DETAILED STEPS

**Step 1** Start the License Wizard by choosing **Admin > License**.

Figure 7-3 displays the license information.

**Figure 7-3 Cisco DCNM Licenses**

The screenshot shows the Cisco DCNM Licenses page. At the top, there is a navigation bar with 'Admin' > 'License' selected. Below the navigation bar, there are two main sections: 'License Assignments' and 'Server License Files'. The 'License Assignments' section contains a table with the following data:

License	Free/Total Server-based Licenses	Unlicensed/Total (Switches/VDCs)	Need To Purchase
SAN	45 Free / 50 Total	0 Unlicensed / 25 Total	10
LAN	24 Free / 30 Total	0 Unlicensed / 15 Total	10

Below the 'License Assignments' section, there is a 'Server License Files' section with a table listing 40 items. The table has the following columns: Group, Switch Name, WWN/Chassis Id, Model, License State, License Type, and Eval Expiration. The 'License State' column shows various states such as 'Unlicensed', 'Permanent', and 'Eval'. The 'Eval Expiration' column shows dates like 'Mon Nov 19 00:00:00 GMT-0800 2012'.



**Note**

By default, the Switch Licenses tab is displayed.

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Table 7-4 displays the Cisco DCNM server license fields.

**Table 7-4 Cisco DCNM Server License Files**


Field	Description
File Name	Name of the license file.
Feature	Describes the feature name specified in the license file. The following values are supported: <ul style="list-style-type: none"> <li>• DCNM-LAN</li> <li>• DCNM-SAN</li> <li>• DCNM-SAN-LAN</li> <li>• LAN-ENT-N7K</li> </ul>
PID	Describes the product ID found in the vendor string of the license file. For example, DCNM-N7K-K0 is an enterprise license for Cisco Nexus 7000 series switches.
SAN (Free or Total)	Lists the number of SAN licenses used and that are available.
LAN (Free or Total)	Lists the number of LAN licenses used and that are available.
Eval Expiration	Displays the expiry date of the license. <div style="margin-top: 10px;">  <p><b>Note</b> Text in the eval expiration field will be in Red for licenses that expires in seven days.</p> </div>

Table 7-5 displays the Cisco DCNM switch license fields.

**Table 7-5 Cisco DCNM Switch Licenses**

Field	Description
Group	Displays if it is a Fabric or a LAN group.
Switch Name	Displays the name of the switch.
Model	Displays the model of the device. For example, DS-C9124 or N5K-C5020P-BF.
License State	Displays the license state of the switch that can be one of the following: <ul style="list-style-type: none"> <li>• Permanent</li> <li>• Eval</li> <li>• Unlicensed</li> <li>• License Not Supported</li> <li>• Expired</li> <li>• Invalid</li> </ul>

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**Table 7-5 Cisco DCNM Switch Licenses**

Field	Description
License Type	Displays if the license is a switch-based embedded license or a server-based license.
Eval Expiration	Displays the expiry date of the license. <b>Note</b> Text in the eval expiration field will be in Red for licenses that expires in seven days.

## Managing Licenses

This section includes the following topics:

- [Adding Cisco DCNM Licenses, page 7-13](#)
- [Assigning Licenses, page 7-13](#)
- [Unassigning Licenses to a Switch, page 7-14](#)

## Adding Cisco DCNM Licenses

### BEFORE YOU BEGIN

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

### DETAILED STEPS

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**Step 1** Start the License Wizard by choosing **Admin > License**.

**Step 2** Click on the **Server License File** tab.

**Step 3** Click **Add License File**.

Browse to the directory where you have stored the license file and add the license file. Once the licenses are added, assign the licenses to existing switches. For switches that are yet to be discovered, licenses are automatically assigned.

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## Assigning Licenses

### BEFORE YOU BEGIN

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

### DETAILED STEPS

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**Step 1** Start the License Wizard by choosing **Admin > License**.

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- Step 2** From the table, select the switch that you want to assign the license to.
- Step 3** Click **Assign License**.
- 

## Unassigning Licenses to a Switch

### BEFORE YOU BEGIN

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

### DETAILED STEPS

- 
- Step 1** Start the License Wizard by choosing **Admin > License**.
- Step 2** From the table, select the switch that you want to unassign the license.
- Step 3** Click **Unassign License**.
- 

## Transferring Licences

Cisco DCNM licenses are specific to the HOST ID (MAC address) of the DCNM management server. To transfer a Cisco DCNM license to another management server contact your customer service representative or if purchased directly from Cisco contact Cisco's global licensing operations.

For Fabric Manager licenses that are associated with switch serial number, rehosting of licenses is supported only for RMAs. If the switch fails and it is covered by a services contract, the FM license is rehomed to the new switch.

If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco Systems, contact Cisco Technical Support at this URL: [http://www.cisco.com/en/US/support/tsd\\_cisco\\_worldwide\\_contacts.html](http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html).

## Self-Serve License Transfer Process

The feature enables you to move the licenses from one DCNM server to another.

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- Step 1** Use your browser and go to the Cisco License Registration Portal at [www.cisco.com/go/license](http://www.cisco.com/go/license).
- Step 2** Click **Continue to Product License Registration**.
- Step 3** From the menu bar, use the Transfer drop-down and select **License for Transfer - Initiate**.
- Step 4** Under Specify License Source, use the **search node lock** filter to enter the MAC address and click **Search** or select MAC address of the source from the list.
- Step 5** You must add a license if another CCO user has registered this license. Click **Add License**. A pop-up window appears.
- Step 6** Use **Select the product type** drop-down and select License File.
- Step 7** In the credentials field, paste the contents of the license file obtained from a source DCNM file or your e-mail and click **OK**. Click **Next** to continue.

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- Step 8** Under Specify Target & Options, in the Host Id field, enter the MAC address of the target DCNM server and click **Next** to continue.
- Step 9** Review the transfer details and in the Sent To field and specify the email address of the license key recipient.
- Step 10** Select the name of End user and use the checkbox to accept the terms of the license.
- Step 11** Click **Submit** to complete the configuration. You can now wait for the license key to be emailed or download instantly.
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