Cisco Data Center Network Manager Licensing Guide, Release 11.x

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Cisco Data Center Network Manager Licensing

Overview

Cisco Data Center Network Manager (Cisco DCNM) is a multi-domain manager for NX-OS capable platforms that helps provision, monitor, manage, and maintain NX-OS based data center deployments. Cisco DCNM supports SAN fabrics, LAN fabrics, IP for media controller and traditional LAN deployments.

Cisco DCNM has various features which are enabled at no cost as part of the image. The features are divided based on 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 many more.

In order to enable all advanced features and capabilities of DCNM management tool, a license is required. Each device managed by Cisco DCNM needs a license key, which provides a Right to Manage (RTM) for a given node. The license key, or a pack of licenses, may be installed in the Cisco DCNM server (for LAN or SAN function) or on the switch (for SAN function). DCNM LAN expertise is licensed as part of switch-tier licenses which includes Essential, Advantage, and Premier tiers. DCNM SAN expertise is licensed as part of the ACI-STRG which is an add-on for Cisco Nexus 9300 switches.

From Release 11.1(1), DCNM supports the Cisco Smart License hosting of DCNM Licenses. After enabling smart licensing in DCNM, you can request a DCNM license from Cisco Smart Software Manager (CSSM) server. CSSM is an intuitive portal where you can activate and manage all your licenses related to Cisco.

From Release 11.2(1), DCNM also provides a license-hosting platform for the Network Insights applications, like Network Insights for Resources (NIR) and Network Insights Advisor (NIA). It validates the license entitlements on behalf of these applications.

From Release 11.3(1), DCNM supports discovery and provisioning of non-Nexus switches such as Cisco UCS, and Cisco CSR.

From Release 11.4(1), DCNM supports non-Nexus switches such as Cisco ASR1k, and Cat 9000.

From Release 11.5(2), Switch-smart license type is added for switches.

The purpose of DCNM advanced feature license is to enable additional capabilities and features apart from a basic installation offered for no cost.

Few basic licensing concepts are illustrated here:

- DCNM server-based license keys supply a license ID that uniquely identifies the server hosting the DCNM application.

- DCNM server-based license keys are created in such a way that they include this license ID.

- You will receive the license key file. Go to **Administrator > Manage Licensing > DCNM**. On **Server License Files** tab, click **Add license file** to add the `.lic` file. It permits the use of additional features packaged in the Cisco DCNM software.

- DCNM switch-based licenses keys must be created with a license ID that is the switch's HostID. vFM_SERVER_PKG is an option available on switch-based license only for SAN.

- To install switch-based license through POAP, place an appropriate switch license file in the path `/var/lib/dcnm/licenses`. DCNM generates a `.idx` file, later bootstrap will copy and install the license on the switch.

- Cisco Nexus Essentials and Advantage Licenses supply an implicit RTM license that is tied to the switch's HostID. DCNM must be able to detect those licenses by querying the node.

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 (https://software.cisco.com/software/csws/ws/platform/home).

For a more detailed overview on Cisco Licensing, go to https://www.cisco.com/c/en/us/buy/licensing/licensing-guide.html.

Cisco DCNM Licensed Devices

For DCNM server-based licenses, the DCNM keeps a pool of licenses that are assigned to the discovered switches. The DCNM licensed devices feature allows you to select which physical devices you can manage. You assign a license instance to one of the discovered nodes.

For switch-based licenses such as SAN, NX-OS, DCN storage add-on, and DCN tiered licenses (Essentials/Advantage/Premier) DCNM indicates that the device is managed as DCNM recognizes the device carries an RTM license.

You can add devices to licenses based on your license support. For example, if you install two LAN Enterprise licenses that each support 5 devices of a given type of device, you can add a total of 10 devices to the list of licensed devices.

The license price for DCNM native PIDs, which are not Nexus Essentials or Advantage are determined by the platform type and by the number of units within each platform. The advanced feature licenses are available for the following switching platforms: Cisco Nexus 7000, Nexus 7700, Nexus 9200, Nexus 9300, Nexus 9500, Nexus 5000, Nexus 3000, MDS 9100, MDS 9200, MDS 9300, MDS 9500, and MDS 9700 Series. Each platform has an individual price that is based on whether it is a LAN versus SAN switch and modular versus fixed chassis. The supported features for Cisco Nexus 1000V series switches are part of the image at no cost.

If you have purchased the Cisco DCNM server-based advanced feature license for any Cisco Nexus or Cisco 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 9706 with MDS 9718) the license can be reassigned.

If you have purchased the Cisco DCNM switch-based smart software license for any Cisco Nexus switches, it enables you to purchase licenses for 3 years, 5 years, or 7 years based on your licensing requirements.

For a more detailed overview on Cisco Licensing, go to https://www.cisco.com/c/en/us/buy/licensing/licensing-guide.html.

Cisco DCNM also honors older Fabric Manager (FM) licenses (SAN only) that have been installed on switches. Just like all switch-based licenses, 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.

Service contracts SWSS are required for DCNM SAN Advanced license for Cisco TAC support and upgrades from one version of Cisco DCNM to another.

If you try to use a Cisco DCNM licensed feature on a device that you have not added to the list of licensed devices, the Cisco DCNM client does not allow you to use the feature to configure the unlicensed device.

Cisco DCNM is packaged with a time-based default evaluation license upon installation. An Advanced Feature Trial License exists on the server after the initial installation. On the Cisco DCNM Web Client, a license filename with text of **30DayTrialLicense** is added in **Administration > DCNM Server > License** window. After 30 days of trial, click **Assign All** or **Unassign All** to change all the license from evaluation license to permanent licenses.

The 120 Days trial license provides 50 SAN and 50 LAN advanced feature licenses without having to download or install a single file. This license will work for any licensable switch and expires after 120 days. If you are using server-based licenses, you must use the MAC address of the DCNM server to fetch an evaluation license or a permanent license from www.cisco.com. Switch-based permanent licenses for Cisco MDS 9000 Series Switches need the serial number of the chassis instead.

Licensing Terminology

The following terms are used in the Licensing Guide:

- Advanced license: License that unlocks advanced features of Cisco DCNM.

- Chassis serial number: The switch serial number that is used to claim a fabric manager license by providing a valid Product Authorization Key (PAK). This serial number is the same as the Host ID of the switch.

- Eval: The duration of support for a product or a feature.

- Evaluation license: License that is time-bound and valid for 60 days for every 20 units of the specified platform.

- Host IDs: MAC address of the Cisco DCNM server used to claim a license by providing a valid PAK or the Host ID of the switch for a switch-based license.

- License enforcement: Mechanism that prevents a feature from being used without first obtaining a license.

- License key file: Device-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. You can download license keys directly from the Cisco website and send it as an email attachment.

- Licensed application: A software feature that requires a license to be used.

- Licensed feature: Permission to use a particular feature through a license file, a hardware object, or a legal contract. This permission is limited to time span, and the implemented switch.

- Node-locked license: License that can only be used on a particular switch that uses the unique host ID.

- Permanent license: License that is not time-bound.

- Product Authorization Key (PAK): The feature that allows you to obtain a license key from one of the sites that are 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 email.

- Product identifier (PID): The product ID that provides information about the product like the name, product number, and so on.

- Proof of purchase: A document that entitles its rightful owner to use licensed features on a Cisco MDS switch as described in that document. This document is also known as the claim certificate.

- Server-based license: Cisco DCNM license that is tied down to the host ID of the management or database server. It is located on the management server or the license pool.

- Switch-embedded license: DCNM license that is installed on the switch supervisor and associated with a switch serial number.

- Support: If you purchase Cisco support through a Cisco reseller, contact the reseller directly. If you purchase support directly from Cisco, contact Cisco Technical Support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html

• Term: The duration of a license.

• Unlicensed features: Features that come at no cost as part of the product install. These features are unlocked.

Note The Cisco DCNM related license supports only US English. Installing a license for any locale other than US English results in an error.

Guidelines and Limitations for Administering DCNM Licensed Devices

Administering DCNM Licensed Devices has the following configuration guidelines and limitations:

• You can add only managed devices to the list of licensed devices.

• You can add to the list of licensed devices only as many devices as permitted by all of the advanced feature licenses that you have installed or that are recognized in the switch.

• When you remove a device from the list of licensed devices, the device becomes unlicensed.
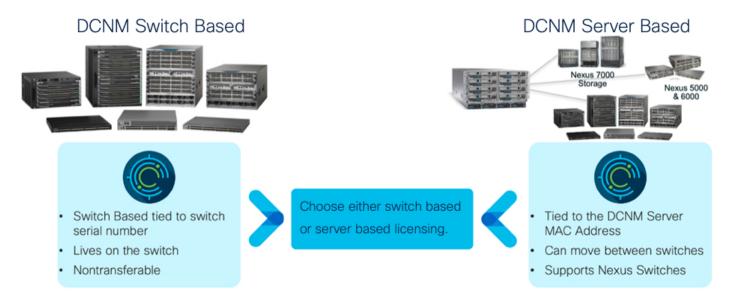
Note A device will not be deleted from inventory based on a license action.

If the physical device supports virtual device context (VDCs), all the VDCs on the device are removed from Cisco DCNM. To continue managing the device, you must discover the device.

DCNM Licensing Types and Examples

Cisco DCNM Licensing can be server-based or switch-based, smart thru DCNM license, or switch smart-based. Licenses are identified by specific product identifiers (PIDs).

Cisco DCNM Licensing Model

DCNM Switch Based

- Switch Based tied to switch serial number
- Lives on the switch
- Nontransferable

Choose either switch based or server based licensing.

DCNM Server Based

- Tied to the DCNM Server MAC Address
- Can move between switches
- Supports Nexus Switches

- • Server-based: They are generic for a given product family. For example, DCNM-LAN-N95-K9 is a server-based license for Nexus 9500 Series Switches. The server manages any device it finds for that series of switches. All licenses are tied to the MAC address of the server.

- • Switch-based: They are specific to the managed switch. For example, DCNM-SAN-M92X-K9= is a switch-based license for Cisco MDS 9200 Switches. The license is tied to the host ID of the switch, for example, JAE1842025J.

  To get a host ID, use the following command: **switch#** show license host-id.

  The "X" in the license PID indicates a switch-based license. This type of license is typically used for storage functionality, but it is not used for LAN functionality. The NXOS Essentials or Advantage licenses are effectively switch-based licenses that enable DCNM.

- • Smart through DCNM: These are smart licenses enabled on DCNM, used to manage licenses from CSSM for devices and renew them if required.

  For a more detailed overview on Cisco Licensing, go to https://www.cisco.com/c/en/us/buy/licensing/licensing-guide.html.

- • Switch smart-based: They are specific to the switches. If smart licensing is enabled on a switch, the switch procures switch-smart license from CSSM (Cisco Smart Software Manager).

You can get a license in the following two ways:

- • Purchase along with switch

  - • Get the NXOS, DCN Storage add-on, and DCN tiered licenses or Advantage license or the NXOS/ACI combined Essentials, Advantage, or Premier license subscription. This package gives you the RTM with DCNM.

  - • Get the software bundle as part of the purchase, like N77-C7710-SBUN-P1.

  - • Get the Cisco DCNM native license, like DCNM-LAN-N93-K9, as part of the purchase.

- • Spare License

- Purchase a spare Nexus Essentials or Advantage or Nexus/ACI combined Essentials, Advantage, Premier subscription license.

- Purchase a spare Software Bundle.

- Purchase a Server-based license. For example: L-DCNM-N5K-K9=

- Purchase a Switch-based license. For example: L-DCNM-S-M97XK9=

Following table displays the various license examples:

Table 1: Server-based License Examples

PID/License	Class	Description	Type
DCNM-SVR-11-K9	DCNM	Server PID for 0$ SKU Purchase	Implicit License; no license file required
DCNM-SVR-11-K9=	DCNM	Server PID for 0$ SKU Purchase	Implicit License; no license file required **Note** Only one DCNM-SVR-11-K9= license is required for each Native HA cluster, regardless of the number of DCNM nodes.
DCNM-LAN-N5K-K9	N5000	DCNM LAN Adv Features for Nexus 5000	Server-based
DCNM-LS-N5K-K9=	N5000	DCNM LAN+SAN Adv Features for Nexus 5000	Server-based
L-DCNM-LS-N5K-K9=	N5000	DCNM LAN+SAN Adv Features for Nexus 5000 eDelivery	Server-based
L-DCNM-S-N7K-K9=	N7000	DCNM SAN Adv Features License for Nexus 7000 eDelivery	Server-based
N77-SBUN-P2=	N7000	Includes LAN, VDC, EL2, TRS & DCNM LAN Licenses - Promotion includes DCNM-L-N77-K9-SBUN Server-license	Server-based
DCNM-LAN-N77-K9	N7000	DCNM LAN Adv Features License for Nexus 7700 Server-based	Server-based

PID/License	Class	Description	Type
DCNM-LAN-N95-K9	N9500	DCNM LAN Adv Features License for Nexus 9500 Server-based	Server-based
DCNM-SAN-M91-K9	MDS9000	DCNM for SAN Adv. License for MDS 9100 Server-based DCNM for SAN Adv. License for MDS 9100 Server-based	Server-based
L-DCNM-S-M91-K9=	MDS9000	DCNM SAN License for MDS 9100	Server-based (eDelivery; Spare)
DCNM-SAN-M92-K9	MDS9000	DCNM for SAN Adv. License for MDS 9200 Server-based DCNM for SAN Adv. License for MDS 9200 Server-based	Server-based
L-DCNM-S-M92-K9=	MDS9000	DCNM SAN License for MDS 9200	Server-based (eDelivery; Spare)
DCNM-SAN-M97-K9	MDS9000	DCNM for SAN Adv. License for MDS 9700 Server-based DCNM for SAN Adv. License for MDS 9700 Server-based	Server-based
L-DCNM-S-M97-K9=	MDS9000	DCNM SAN License for MDS 9700	Server-based (eDelivery; Spare)

Table 2: Switch Based License Examples

PID/License	Class	Description	Type
L-DCNM-S-N5KXK9=	N5000	DCNM SAN Adv Features for Nexus 5000 Switch-based eDelivery	Switch-based
DCNM-S-M91XK9	MDS9000	DCNM SAN Adv Features for MDS 9100 Switch-based	Switch-based
DCNM-S-M91XK9=	MDS9000	DCNM SAN for MDS 9100	Switch-based (eDelivery; Spare)
DCNM-S-M92XK9	MDS9000	DCNM SAN Adv Features for MDS 9200 Switch-based	Switch-based
DCNM-SAN-M93X-K9	MDS9000	DCNM SAN Adv. License for MDS 9300 Switch-based	Switch-based
L-DCNM-S-M93X-K9=	MDS9000	DCNM SAN License for MDS 9300	Switch-based (eDelivery; Spare)
DCNM-S-M97XK9	MDS9000	DCNM SAN Adv. Feat. For MDS 9700 Switch-based	Switch-based

PID/License	Class	Description	Type
DCNM-S-M97XK9=	MDS9000	DCNM SAN for MDS 9700	Switch-based (eDelivery; Spare)

For a more detailed overview on Cisco Licensing, go to https://www.cisco.com/c/en/us/buy/licensing/licensing-guide.html.

Viewing Licenses Using Cisco DCNM Web UI

You can view the existing Cisco DCNM licenses. From the Cisco DCNM Web UI homepage, choose **Administration > Manage Licensing > DCNM**.

Note For releases earlier than Cisco DCNM, Release 11.3(1), choose **Administration > DCNM Server > License** from Cisco DCNM home page.

Table 3: 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: • DCNM-LAN • DCNM-SAN • DCNM-SAN-LAN
PID	Describes the product ID found in the vendor string of the license file. For example, DCNM-N7K-K0 is an advanced feature license for Cisco Nexus 7000 series switches.
SAN (Free/Total)	Lists the number of SAN licenses used and that are available. The total number of licenses for new installations are 50 in Cisco DCNM, Release 11.3(1) and 500 for releases earlier than Cisco DCNM, Release 11.3(1). However, the total number of licenses remains 500 for inline upgrade from earlier releases to Cisco DCNM, Release 11.3(1).
LAN (Free/Total)	Lists the number of LAN licenses used and that are available. The total number of licenses for new installations are 50 in Cisco DCNM, Release 11.3(1) and 500 for releases earlier than Cisco DCNM, Release 11.3(1). However, the total number of licenses remains 500 for inline upgrade from earlier releases to Cisco DCNM, Release 11.3(1).
Eval Expiration	Displays the expiry date of the license. **Note** Text in the evaluation expiration field is in Red for licenses that expires in seven days.

Feature History for Licensing Features in DCNM Web UI

The following table shows the feature history of the licensing features in DCNM Web UI.

Table 4: Cisco DCNM Server Licensing Feature History

Release	Feature History
Cisco DCNM, Release 11.5(2)	• Switch smart license: New license type is added for switches. • Trial Period: Changed from 60 days to 120 days. However, the trial period remains 60 for inline upgrades.
Cisco DCNM, Release 11.4(1)	There are no updates for this release.
Cisco DCNM, Release 11.3(1)	• Application Licensing Tool: Support added to manage licenses for applications. • Bulk Install: Support added to upload multiple licenses at a single instance and manage file-based licenses installed on the switches. • Honor License Mode: Support added to use licensed features even after the license expires. Switches remain in honor mode until the switch is licensed again or you manually remove the license. • Number of licenses: Changed from 500 to 50. However, the number of licenses remains 500 for inline upgrades. • Trial period: Changed from 30 days to 60 days. However, the trial period remains 30 for inline upgrades.
Cisco DCNM, Release 11.2(1)	There are no updates for this release.
Cisco DCNM, Release 11.1(1)	Smart License: Support added to manage the licenses at device-level and renew them if required. For a more detailed overview on Cisco Licensing, go to https://www.cisco.com/c/en/us/buy/licensing/licensing-guide.html.

The following table provides the navigation paths to the licensing features in Cisco DCNM Web UI.

Table 5: Cisco DCNM Server Licensing Navigation Path

DCNM Release	Supported Deployments	DCNM Web UI Navigation Path [1]
Cisco DCNM, Release 11.5(1)	LAN Fabric	**Manage Licensing** You can view the existing DCNM licenses, switch licenses, and application licenses in the Cisco DCNM Web UI. Choose **Administration > Manage Licensing**. The **Manage Licensing** menu includes the following submenus: • **DCNM** 　• **License Assignments** 　• **Smart License** 　• **Server License Files** • **Switch Features** 　• **Bulk Install** • **Applications** 　• **Application Licenses** 　• **Application License Files** **Note**　The application licensing tool is supported on Cisco DCNM OVA and ISO installations only.
	Media Controller	
	SAN Management	
Cisco DCNM, Release 11.4(1)	LAN Fabric	
	Media Controller	
	SAN Management	
Cisco DCNM, Release 11.3(1)	Classic LAN	
	LAN Fabric	
	Media Controller	
	SAN Management	
Cisco DCNM, Release 11.2(1)	Classic LAN	**Managing Licenses** You can view the existing Cisco DCNM licenses in the Cisco DCNM Web UI. Choose **Administration > DCNM Server > License**. You can view and assign licenses in the following tabs: • **License Assignments** • **Smart License** • **Server License Files**
	LAN Fabric	
	Media Controller	
	SAN Management	

DCNM Release	Supported Deployments	DCNM Web UI Navigation Path [1]
Cisco DCNM, Release 11.1(1)	Classic LAN LAN Fabric Media Controller SAN Management	**Managing Licenses** You can view the existing Cisco DCNM licenses in the Cisco DCNM Web UI. Choose **Administration > DCNM Server > License**. You can view and assign licenses in the following tabs: • **License Assignments** • **Smart License** • **Server License Files**
Cisco DCNM, Release 11.0(1)	Classic LAN LAN Fabric Media Controller SAN Management	**Managing Licenses** You can view the existing Cisco DCNM licenses in the Cisco DCNM Web UI. Choose **Administration > DCNM Server > License**. You can view and assign licenses in the following tabs: • **License Assignments** • **Server License Files**

[1] Refer to your deployment-specific configuration guide from https://www.cisco.com/c/en/us/support/cloud-systems-management/prime-data-center-network-manager/products-installation-and-configuration-guides-list.html for more information.

Cisco DCNM Features Licensing

This section includes free and licensed DCNM-LAN features, DCNM-SAN features, and the SAN Client features that work with licensed fabric. The features for which no license is required are also listed out.

LAN Feature Licenses

The following table displays the Cisco DCNM-LAN features that are free and licensed.

Table 6: LAN Fabric Features

Feature	DCNM Unlicensed Mode	DCNM with Advanced Feature Licenses
Dashboard	Yes	Yes
Performance Monitoring	—	Yes
Health Score	—	Yes
Topology	Yes	Yes
Topology-Health	—	Yes

Feature	DCNM Unlicensed Mode	DCNM with Advanced Feature Licenses
Port Capacity	—	Yes
Discovery and Inventory	Yes	Yes
Alarms	Yes	Yes
Reports	Yes	Yes
Image Upgrade (ISSU)	Yes	Yes
Fabric Builder	—	Yes
VMM Discovery	Yes	Yes

Table 7: Classic LAN Features

Feature	DCNM Unlicensed Mode	DCNM with Advanced Feature Licenses
Dashboard	Yes	Yes
Performance Monitoring	—	Yes
Health Score	—	Yes
Topology	Yes	Yes
Topology-Health	—	Yes
Port Capacity	—	Yes
Discovery and Inventory	Yes	Yes
Alarms	Yes	Yes
Reports	Yes	Yes
Image Upgrade ISSU RPM SMU	—	Yes
Templates	Yes	Yes
vPC	—	Yes
VMM Discovery	Yes	Yes
Configure, Backup, and Restore	—	Yes

SAN Feature Licenses

The following table displays the Cisco DCNM-SAN features that are free and are licensed.

> ✎
>
> **Note** Cisco DCNM requires licenses only for MDS 9100, MDS 9200, MDS 9300, MDS 9500, MDS 9700 Series switches, Cisco Nexus 7000, 7700, 9200, 9300, 9500, 5000, and 3000 series switches, non-Nexus switches such as Cisco UCS, Cisco CSR, Cisco ASR1k and Cat 9000 and do not require licenses for Cisco Nexus 1000v series switches.

Table 8: Cisco DCNM-SAN Features

Feature	DCNM Unlicensed Mode	DCNM with Advanced Feature licenses installed
FC/FCoE/FICON/iSCSI Topology View	Yes	Yes
Fabric, Device, and Summary Views	Yes	Yes
Port, Switch, and fabric-level configuration	Yes	Yes
Event and security management	Yes	Yes
Configuration analysis tools	Yes	Yes
Network diagnostic and troubleshooting tools	Yes	Yes
Real-time performance monitoring	Yes	Yes
One command multi-switch CLI access	Yes	Yes
Device Manager	Yes	Yes
Template based provisioning	Yes	Yes
Gold Diagnostics	Yes	Yes
Heterogeneous storage array discovery	—	Yes
Scale-out federation architecture	—	Yes
SAN Host Path Redundancy Analysis	—	Yes
Automatic fabric failover	—	Yes
VMware vCenter Plug-in	—	Yes
Multiple fabric management	—	Yes
Centralized management server with discovery	—	Yes
Continuous health and event monitoring	—	Yes
Historical performance monitoring and reporting	—	Yes
Event forwarding	—	Yes

Feature	DCNM Unlicensed Mode	DCNM with Advanced Feature licenses installed
DCNM proxy services	—	Yes
Configuration backup, archive, and compare	—	Yes
Roaming user profiles	—	Yes
Vmpath analytics (VMware discovery)	—	Yes
Domain Dashboards	—	Yes
Capacity Manager	—	Yes
Event Snooze	—	Yes
Reporting	—	Yes
San Insights	—	Yes

Advanced SAN Feature Licenses

The following table displays the Cisco DCNM-SAN advanced features that are free and licensed.

Table 9: Cisco DCNM-SAN Advanced Features

Feature	Only works with licensed fabric (at least one switch licensed on the fabric)	Licensed Switch (applies to each switch individually)	Every Fabric Licensed (at least one switch in every fabric)
Vmpath Analytics (VMware discovery)	Yes	—	—
Storage Array discovery via SMI-S	Yes	—	—
SMI-S APIs -Northbound	Yes	—	—
Performance Monitoring (dashboards, views and reports)	—	Yes	—
Backup Configuration	—	Yes	—
Event Forwarding	—	Yes	—
Port Capacity Manager	—	Yes	—
Automatic Fabric Failover (requires federation)	Yes	—	—
SAN Host Path Redundancy	—	—	Yes
Health Score	—	—	—
SME	—	Yes	—

Feature	Only works with licensed fabric (at least one switch licensed on the fabric)	Licensed Switch (applies to each switch individually)	Every Fabric Licensed (at least one switch in every fabric)
Slowdrain Analysis	—	—	Yes
SAN Insights	—	Yes[2]	—

[2] SAN Insights is part of the DCNM Advanced licenses. To enable metric collection and to populate SAN Insights pages, you must have both DCNM Advanced License (switch-based or served-based) and SAN Analytics license per switch.

Cisco DCNM-SAN Client with Licensed Fabric

The following table displays the Cisco DCNM-SAN Client features that work with licensed fabric with a minimum of one licensed switch on the fabric.

Table 10: Cisco DCNM-SAN Client Features

Feature	Licensed Fabric	Unlicensed Fabric
Multiple client open sessions	Y	N
Multiple fabric open	Y	N
Remote client session	Y	N
Show Path	Y	N
Single fabric opened locally to DCNM server, as only client session	Y	Y
IOA	Y	N
Wizards	Y	Y

Switch Smart License

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

Note From Cisco NX-OS Release 9.3(6), switch smart license is supported.

To enable switch smart license on DCNM:

- Enable smart license feature on the switch, using freeform CLI configuration.

- Configure smart licensing on the switch, using **feature license smart** or **license smart enable** command on the switch.

- Push token of your device to smart account using license smart register **idtoken** command. Use **EXEC** option in DCNM to push token. For more details, refer to Running EXEC Mode Commands in DCNM.

For unlicensed switches, licenses are assigned based on this priority:

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

Running EXEC Mode Commands in DCNM

When you first log in, the Cisco NX-OS software places you in the EXEC mode. The commands available in the EXEC mode include the show commands that display the device status and configuration information, the clear commands, and other commands that perform actions that you do not save in the device configuration.

The following procedure shows how to run EXEC commands in DCNM:

Procedure

Step 1	From DCNM, navigate to **Control > Fabrics > Fabric Builder**.
Step 2	Click a fabric and then click **Tabular view** in the **Actions** menu.
Step 3	Select one or more switches and click the **Play** button (Execute Commands).
Step 4	From the **Template** drop-down list, select **exec_freeform**.
Step 5	Enter the commands in the **Freeform CLI** field.
Step 6	Click **Deploy** to run the EXEC commands.
Step 7	In the **CLI Execution Status** window, you can check the status of the deployment. Click **Detailed Status** under the **Command** column to view details.
Step 8	In the **Command Execution Details** window, click the info under the **CLI Response** column to view the output or response.

Base Unlicensed Feature

The following are the features for which no license is required.

- SAN and LAN discovery.
- Event Registration (traps/syslogs/accounting/threshold).
- Event Registration (traps/syslogs/accounting/threshold).
- Web Services (SOAP XML API).
- Federation (upto 10 DCNM servers).
- EMC Callhome.

Restrictions on Opening an Unlicensed Fabric

The following are a few restrictions with respect to opening an unlicensed fabric. Opening a fabric from remote SAN client requires Cisco DCNM Advanced License.

- If you are using a remote Cisco DCNM SAN client, you will not be able to open any unlicensed fabric. The fabric needs to be licensed, and therefore the Cisco DCNM Essential license will not work.

- If you are trying to open an unlicensed fabric from SAN client running on the Cisco DCNM server, you will be able to open only one unlicensed fabric at a time.

- If one instance is opened from a local SAN client, you can not open another instance of an unlicensed fabric.

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