

# Cisco Data Center Network Manager 10

Cisco® Data Center Network Manager (DCNM) 10 unifies and automates Cisco Nexus® and Cisco MDS 9000 Family multitenant infrastructure for data center management across Cisco Nexus 5000, 6000, 7000, and 9000 Series Switches in NX-OS mode using Cisco NX-OS Software as well as across Cisco MDS 9100 and 9300 Series Multilayer Fabric Switches, 9200 Series Multiservice Switches, and 9500 and 9700 Series Multilayer Directors. Data Center Network Manager 10 lets you manage very large numbers of devices while providing ready-to-use management and automation capabilities plus Virtual Extensible LAN (VXLAN) overlay visibility into Cisco Nexus LAN fabrics.

## Product Overview

Cisco Data Center Network Manager 10 software provides an advanced network management system (NMS) for LAN, SAN, and programmable fabric management infrastructure on Cisco Nexus switch infrastructure (Figure 1).

This initial release supports multitenant, multifabric infrastructure management for Cisco Nexus switches with available support for Cisco MDS 9000 Family storage management integration. The manager is deployed in a ready-to-use virtual appliance that includes the infrastructure necessary to manage and automate the deployment and operation of large fabrics.

The manager provides fabric-oriented configuration and operations management. It is optimized for very large deployments with little overhead, but traditional deployments are supported as well for implementations that do not require automation. Fabric deployments can be customized by the user to meet business needs.

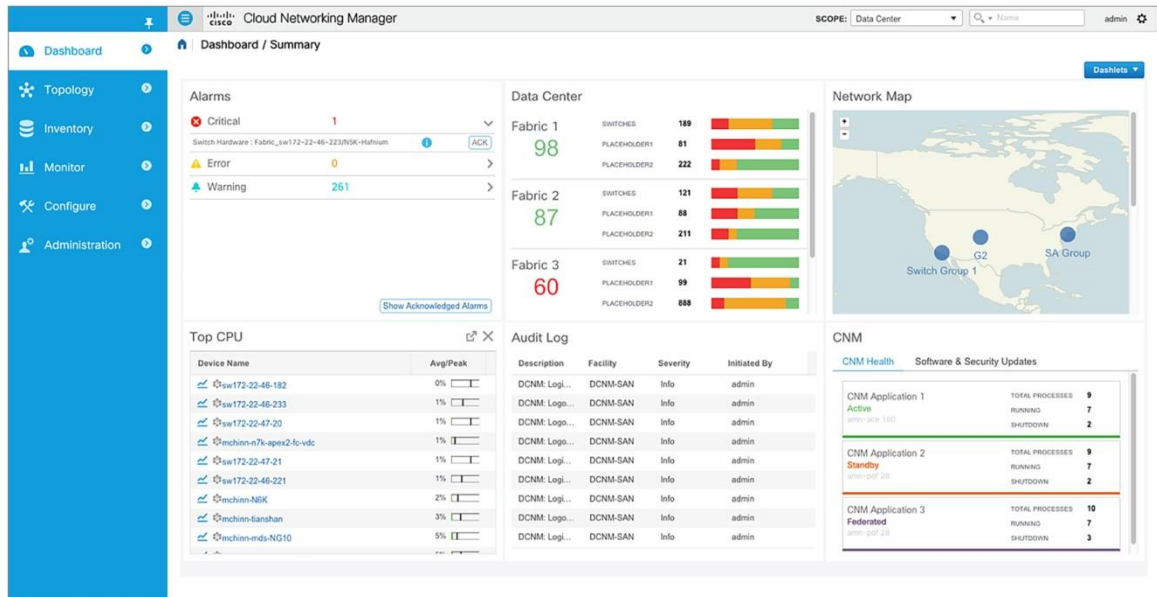
Representational state transfer (REST) APIs allow easy integration from Cisco or third-party overlay managers.

Multitenant cloud deployments and scalable fabric management are supported through integration with popular hypervisor solutions such as VMware vSphere and OpenStack alongside orchestration mechanisms such as Cisco UCS® Director.

Data Center Network Manager 10 provides a virtual appliance form factor to simplify deployment and reduce labor and operating expenses (OpEx). No external database is required for enterprise deployments in high-availability configurations.

Data Center Network Manager 10 provides new interfaces for reoccurring management tasks such as SAN zoning, device-alias management, slow-drain analysis, SAN host-path redundancy, and port-monitoring configuration.

**Figure 1.** Cisco Data Center Network Manager 10



## Features and Benefits

Table 1 lists the features and benefits of Data Center Network Manager 10.

**Table 1.** Features and Benefits

Feature	Benefit
<b>Cloud Infrastructure and Fabric Management</b>	
<b>Fabric control and overlay visibility</b>	Provides fabric management for multiple, dissimilar types of LAN fabrics: for example, VXLAN, Cisco FabricPath, and traditional 3-tier LAN deployments can be managed from Data Center Network Manager
<b>Multiple-fabric support</b>	Uses fabric as a managed object, allowing IT managers to keep resource pools for a given fabric separate while still using the same instance of the management tool
<b>Unified topology views</b>	<ul style="list-style-type: none"> <li>• Presents topology views showing physical and overlay networks on the same page, helping IT administrators quickly identify the extent of virtual overlay networks on a programmable fabric</li> <li>• Presents smart topology views showing virtual port channels (vPCs) and virtual device contexts for Cisco Nexus networks; topology views include VXLAN search</li> </ul>
<b>Multisite manager searches, monitoring</b>	<ul style="list-style-type: none"> <li>• Provides a high-level dashboard for tracking and synchronizing data with other Data Center Network Manager deployments in remote or local data centers</li> <li>• Allows searches to query across the enterprise to locate elements that match search criteria (for example, switch, virtual machine, MAC address, or segment ID)</li> </ul>
<b>Power-on autoprovisioning (POAP) infrastructure</b>	<ul style="list-style-type: none"> <li>• Includes day-0 POAP for quick bootstrapping of switch infrastructure</li> <li>• Includes Domain Host Configuration Protocol (DHCP) and file server functions along with user-customizable, best-practices templates to help ensure that deployments are consistent and properly configured</li> </ul>
<b>VXLAN fabric management</b>	<ul style="list-style-type: none"> <li>• In topology view, shows VXLAN Tunnel Endpoint status; search allows users to visualize the extent of the VXLAN overlay in the fabric</li> <li>• Shows VXLAN network identifier (VNI) status on a per-switch basis</li> <li>• In switch inventory view, shows VXLAN details</li> </ul>
<b>Virtual machine and virtual routing and forwarding (VRF) table search</b>	Shows which switches contain the tenant's virtual machine hosts or contain a VRF table for a given tenant or organization, which helps users quickly identify where tenant traffic is located in a large fabric

Feature	Benefit
<b>Per-fabric pool management</b>	Allows pool resources such as IP addresses and VXLAN segment IDs to be allocated on a per-fabric basis
<b>Multitier fabric visualization with pod support</b>	<ul style="list-style-type: none"> <li>• Provides easy-to-understand view of large-scale data center fabrics</li> <li>• Allows administrators to group devices into pods, or "data closets"</li> </ul>
<b>Cable plan visualization and management</b>	<ul style="list-style-type: none"> <li>• Indicates the intent of the device cabling and the way that each device in a leaf or spine or other arrangement is supposed to be connected, helping operators effectively manage the network</li> <li>• Enforces the cable plan on the fabric and indicates errors graphically in a display that is easy for operators to understand</li> </ul>
<b>Role-based access control (RBAC) for fabric objects</b>	Allows RBAC within the fabric to separate administrative tasks between functional domains
<b>Multitenant Cloud Fabric Automation</b>	
<b>Multiple-orchestrator support</b>	<ul style="list-style-type: none"> <li>• Provides easy integration with multitenant cloud hypervisor and orchestration mechanisms such as OpenStack, Cisco UCS Director, and vSphere</li> <li>• Supports orchestrations through REST APIs and Advanced Message Queuing Protocol (AMQP) event notification</li> </ul>
<b>Border leaf and edge router autoconfiguration</b>	<ul style="list-style-type: none"> <li>• Simplifies and automates configuration for egress nodes on the fabric</li> <li>• Automatically load-shares egress traffic among multiple border leaf nodes</li> <li>• Provides external configuration notification to data center interconnect (DCI) devices</li> </ul>
<b>REST and JavaScript Object Notation (JSON) API</b>	<ul style="list-style-type: none"> <li>• Provides external API for manipulation of multitenant data and device autoconfiguration data</li> <li>• Provides easy automation mechanism for automatic fabric control using custom automation solutions</li> <li>• Enables integration with third-party or custom orchestration tools.</li> <li>• Allows deployment of Data Center Network Manager 10 templates through an API for general-purpose switch updates across multiple devices</li> </ul>
<b>Event bus for orchestration</b>	Allows fabric automation to listen to external events from third-party hypervisor and orchestrator solutions
<b>Three-tier fabric visualization with pod support</b>	<ul style="list-style-type: none"> <li>• Provides easy-to-understand view of large-scale data center fabrics</li> <li>• Allows administrators to group devices into pods, or "data closets"</li> </ul>
<b>Provisioning</b>	
<b>Automated discovery</b>	<ul style="list-style-type: none"> <li>• Using automated network discovery, provides up-to-date physical and logical inventory information</li> <li>• Tracks inventory and performance information in real time</li> </ul>
<b>Provisioning GUI, tools, and wizards</b>	Provides prebuilt GUI, tools, and workflows for provisioning LAN services such as vPC
<b>Provisioning templates</b>	<ul style="list-style-type: none"> <li>• Provides prebuilt templates for bulk-capable general provisioning</li> <li>• Provides a prebuilt template deployment scheduler and rollback mechanism</li> <li>• Offers customizable templates with conditional statements</li> <li>• Allows JavaScript external method calls for calculation during template deployment</li> <li>• Allows creation of new templates using template editor</li> <li>• Allows import and conversion of configuration scripts to templates</li> </ul>
<b>Configuration and change management</b>	<ul style="list-style-type: none"> <li>• Provides predeployment validation of configuration changes to help reduce human errors (POAP includes this feature as well)</li> <li>• Tracks fabric configuration for day-1 and later device changes</li> <li>• Provides a general configuration archive to track changes, allowing rollback to a last-known good state</li> <li>• Provides capability to back up configuration files from all switches</li> </ul>
<b>Software image management</b>	<ul style="list-style-type: none"> <li>• Includes Cisco In-Service Switch Upgrade (ISSU) support</li> <li>• Includes support for graceful insertion and removal (GIR)</li> <li>• Includes software maintenance update (ISSU) support that allows update of NX-OS modules</li> </ul>
<b>Visibility, Monitoring, and Troubleshooting</b>	
<b>Dashboards</b>	<ul style="list-style-type: none"> <li>• Provides last-24-hours summary of events and top talkers</li> <li>• Offers custom summary view of LAN and SAN domains and topology groups</li> <li>• Provides host, switch, and fabric dashboards</li> <li>• Allows context-based searches from dashboards</li> <li>• Provides views of configurations, events, and traffic</li> </ul>

Feature	Benefit
<b>Topology views</b>	<ul style="list-style-type: none"> <li>• Displays topology in near-real time for data center infrastructure</li> <li>• In topology views, shows link-layer and overlay status details alongside switch details to aid troubleshooting and visibility</li> </ul>
<b>Topology overlays</b>	<ul style="list-style-type: none"> <li>• Provides general visibility into Layer 2 network connectivity mapped on the physical topology view</li> <li>• Allows users to filter topology views by overlay</li> <li>• Includes search functions for VLAN, VXLAN, vPC, and Layer 2 overlays</li> </ul>
<b>Performance and capacity management</b>	<ul style="list-style-type: none"> <li>• Provides detailed visibility into real-time and historical performance statistics in the data center</li> <li>• Provides insight into port and bandwidth use, error count, traffic statistics, etc.</li> <li>• Includes scheduled reports that can be offloaded for postprocessing</li> </ul>
<b>Capacity manager</b>	<ul style="list-style-type: none"> <li>• Tracks port use by port tier and predicts when an individual tier pool will be consumed</li> <li>• Charts view of port consumption based on custom groupings</li> <li>• Finds and combines or reclaims underused ports</li> </ul>
<b>Health check and correction</b>	Identifies and autoresolves vPC inconsistencies
<b>Host tracking</b>	Tracks the details and connectivity of servers (hosts) that are connected to NX-OS devices
<b>VMware vCenter plug-in</b>	<ul style="list-style-type: none"> <li>• Brings the DCNM computing dashboard into vCenter for dependency mapping and inventory, performance, configuration, and event views</li> <li>• Provides topology, configuration, event, and performance views in the context of the virtual host</li> </ul>
<b>Event management</b>	<ul style="list-style-type: none"> <li>• Provides real-time network-health summary with detailed view of individual network components, enabling operations staff to respond quickly to events based on event severity</li> <li>• Allows operator to acknowledge working on an alert and, when the alert is resolved, delete it</li> <li>• Forwards syslog alerts based on a monitored facility</li> </ul>
<b>Reports</b>	<ul style="list-style-type: none"> <li>• Provides reports using predefined templates, including inventory, use, and health reports</li> <li>• Provides easy-to-schedule reports that can be exported for postprocessing or sent by email</li> <li>• Creates custom port groups related to tenants, applications, or organizations for performance reporting</li> </ul>
<b>SAN features</b>	<ul style="list-style-type: none"> <li>• Provides a new, easy-to-use web-based zoning interface to drastically reduce the cycle time for common administration tasks</li> <li>• Provides a new web-based device-alias configuration to ease transition to a web-based user interface for zoning and other management tasks</li> <li>• Provides new slow-drain analysis features to increase efficiency and reduce the time to discovery for slow-drain devices</li> <li>• Provides consolidated SAN host-path-redundancy feature to better organize and identify virtual and physical hosts with path-redundancy problems in the fabric</li> <li>• Provides a new port monitoring (PMon) configuration that allows fabricwide deployment and customization of PMon events and actions</li> </ul>
<b>Operations</b>	
<b>Embedded database for enterprise deployments</b>	Does not require any external database or database administrator to manage large installations
<b>High availability for embedded database</b>	Does not require an external database for high-availability deployments; the included database supports high availability without the need for a third-party database
<b>HTML5 user interface</b>	Uses standards-based HTML5 GUIs, which do not require additional client-side graphical components such as Adobe Flash or Sun Java to manage the LAN and programmable fabrics
<b>Event handling</b>	<ul style="list-style-type: none"> <li>• Integrates with the enterprise operations console (network operations center [NOC]) for alerts and events</li> <li>• Uses email messages and traps to notify operations staff of service disruptions</li> <li>• Adds context to path alerts by identifying the name of the host, Inter-Switch Link (ISL), and storage entity</li> <li>• Allows creation of custom port groups based on priority and severity level of the application and implementation of rule-based event forwarding to notify the system or user of traps and syslog messages generated for the custom port group</li> </ul>

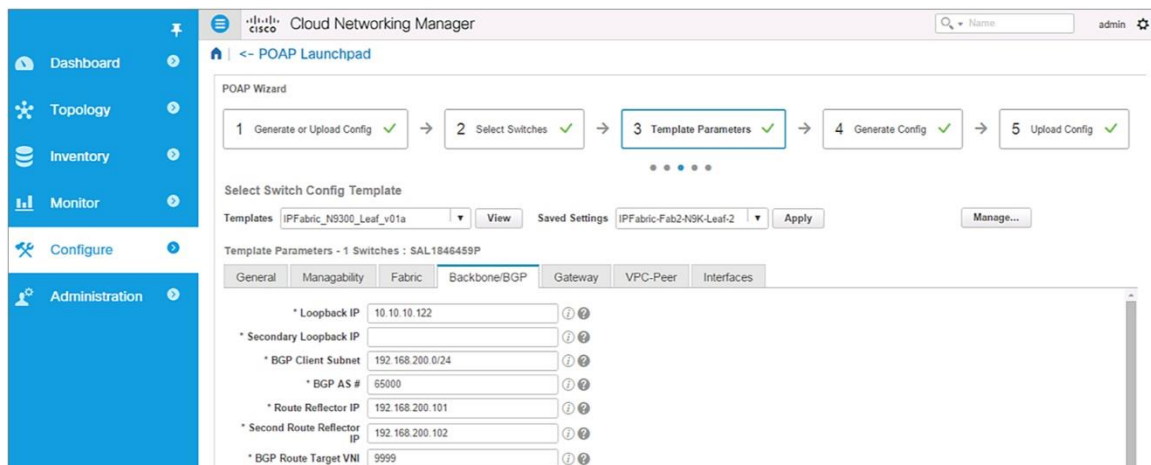
## Multiple-Fabric Management Provides Support for Mixed Environments

Data Center Network Manager 10 allows customers considering moving to Cisco Nexus 9000 Series infrastructure to manage new programmable fabrics alongside existing Cisco Nexus 5000 and 7000 Series environments. This capability helps reduce the overhead for operations staff because the manager visualizes both traditional and overlay networks. The administrator can define independent fabrics, in which pools and other unique sets of information can be defined on a per-fabric basis. Single-pane management helps ensure that all aspects of the data center are visible and manageable so that organizations can administer Cisco Nexus and MDS 9000 Family fabrics.

## Pool Management and Best-Practice Templates Help Reduce Errors Deploying VXLAN Networks

VXLAN deployment can be daunting for users new to the technology because each VXLAN tunnel endpoint (VTEP) may require multiple addresses. Validated VXLAN templates along with existing FabricPath templates help IT keep the fabric well ordered (Figure 2).

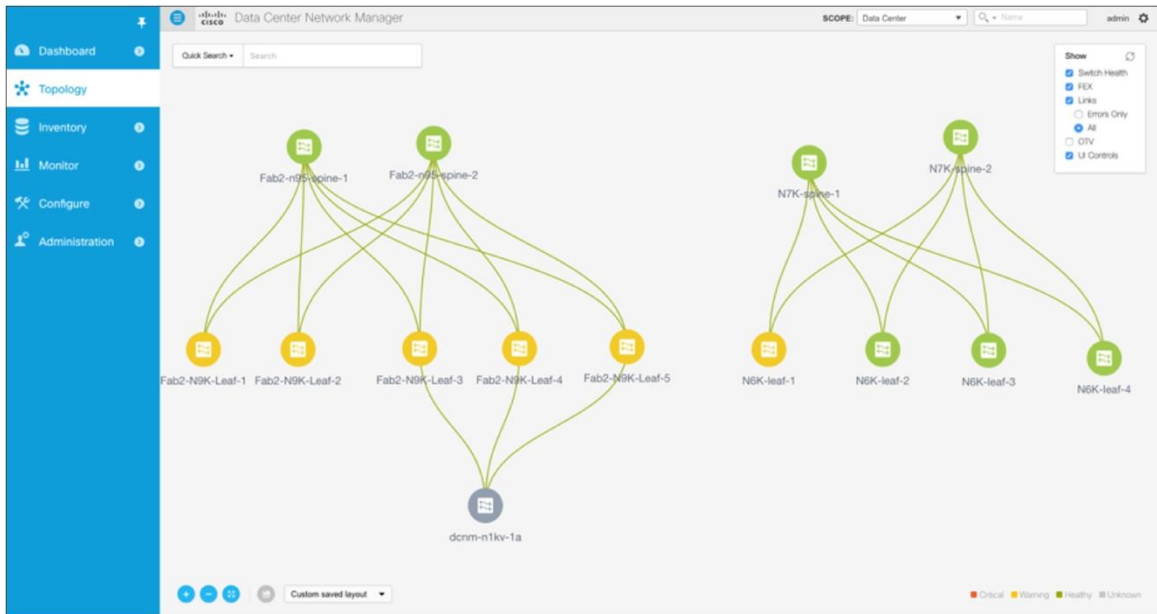
**Figure 2.** Template Deployment Using Cisco Validated POAP Templates



## Hybrid Topology Views Help IT Understand and Troubleshoot Problems on Multitenant Fabrics

Topology views show overlay networks such as VXLAN and FabricPath LAN segments regardless of which manager or controller provisioned those segments (Figure 3). This feature allows IT to visualize the extent of the LAN segment in the fabric and understand where the traffic from a given tenant transits the fabric. Topology views also show and integrate cable-plan data to identify cabling and link-level errors on the fabric. This feature helps administrators quickly identify miscabled devices. The built-in search function allows administrators to search by virtual machine name, virtual machine IP address, virtual machine MAC address, segment ID, or switch ID. A click-and-go slide-out panel in the topology view allows individual switches to be managed without the need to leave the topology view.

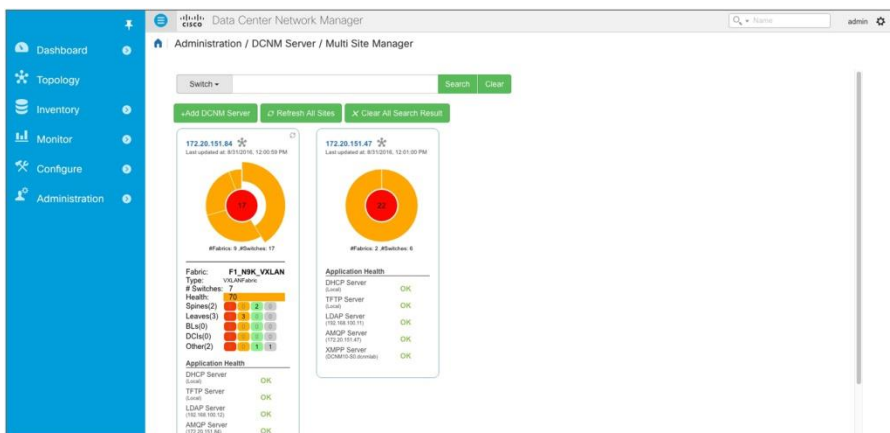
**Figure 3.** Topology View Showing Multiple Fabrics with Overlay Visibility for VXLAN, FabricPath, Layer 2, and vPC



### Multisite Manager Gives Administrators Global View and Search Capabilities

The multisite manager feature allows administrators to attach views from remote instances of Data Center Network Manager 10 (Figure 4). This capability provides administrators with high-level statistics about the remote instances.

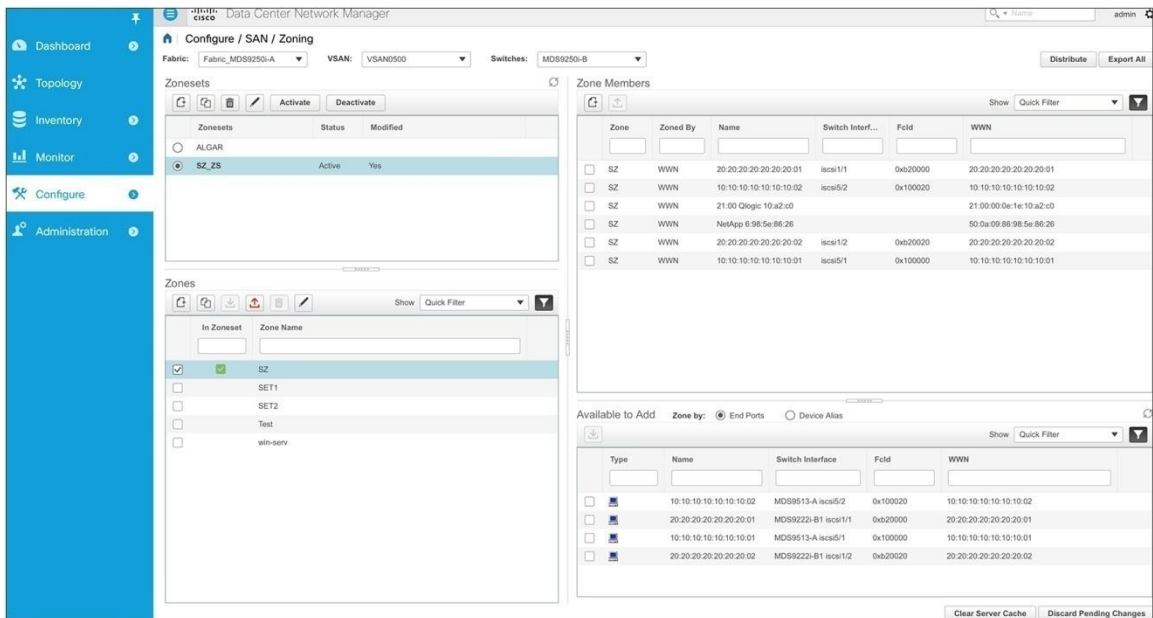
**Figure 4.** Multisite Manager with Global Search



### New and Improved SAN Zoning Interface Vastly Improves Task Efficiency

The new SAN zoning interface in Data Center Network Manager 10 vastly improves zoning functions and efficiency. With its focus on the administrator, this next-generation interface provides an enhanced experience, allowing administrators to quickly and accurately perform the most common of SAN management tasks. Visual indicators provide information and actions to decrease the cycle time for common zoning tasks.

**Figure 5. SAN Zoning Interface**



## Product Specifications

Table 2 provides preliminary specifications for Data Center Network Manager 10.

**Table 2. Preliminary Product Specifications**

Item	Specification
<b>Number of VXLAN VNIs</b>	Up to device limits
<b>Data Center Network Manager 10 virtual appliance platform</b>	<ul style="list-style-type: none"> <li>VMware vSphere 5.5 (with VMware ESXi) or vSphere 6</li> <li>Red Hat Enterprise Linux 7.1 with Kernel-based Virtual Machine (KVM)</li> </ul>
<b>Virtual appliance memory: minimum requirements (small and large models)</b>	<ul style="list-style-type: none"> <li>Small: 8 GB</li> <li>Large: 12 GB</li> </ul>
<b>Number of virtual appliance CPU cores: minimum requirements on host (small and large models)</b>	<ul style="list-style-type: none"> <li>Small: 2</li> <li>Large: 4</li> </ul>
<b>Virtual appliance disk space: minimum requirements (small and large models)</b>	<ul style="list-style-type: none"> <li>Small: 100 GB</li> <li>Large: 160 GB</li> </ul>
<b>External database support</b>	Oracle for Federated deployments
<b>External DHCP server support</b>	Cisco Prime™ Network Registrar
<b>Secure client support</b>	Secure HTTP (HTTPS) and Secure Shell (SSH) Protocol
<b>Secure file access</b>	Secure Copy (SCP) and Secure File Transfer Protocol (SFTP)
<b>Protocols used by the virtual appliance</b>	HTTP, HTTPS, Extensible Messaging and Presence Protocol (XMPP), AMQP, SCP, Trivial FTP (TFTP), DHCP, and Lightweight Directory Access Protocol Version 3 (LDAPv3)
<b>Web browser support</b>	See product release notes; must support HTML5
<b>API support</b>	REST API using JSON
<b>Troubleshooting and visualization display</b>	Link-down status, miscabling status, virtual machine search, and organization and partition search
<b>API for cloud and service integration</b>	REST and JSON through API support
<b>Switches supported</b>	See product release notes (currently, Cisco Nexus 1000V Switches; 2000 Series Fabric Extenders; and 3000, 5000, 6000, 7000, and 9000 Series Switches and MDS 9100, 9200, 9300, 9500, and 9700 Series switches are supported)



## System Requirements

This section lists supported hardware and software for Data Center Network Manager 10 server and client architecture. The application has been tested in English language browsers only.

## Server Requirements

Data Center Network Manager 10 is available as an ISO virtual appliance and supports installation on the following hypervisors:

- VMware ESXi 5.5
- VMware vCenter 5.5
- VMware vCenter 6.0
- KVM on Red Hat Enterprise Linux 6.6

## Host Requirements

Table 3 lists the server resource requirements for deploying the Data Center Network Manager 10 ISO virtual appliance.

**Table 3.** Host Requirements for Bare-Metal or ISO Cisco Data Center Network Manager 10 Deployment on Hypervisor

Small Deployment: Up to 50 Switches	Large Deployment: More than 50 Switches
Bare-metal host: Cisco UCS C220 Rack Server: 1 CPU	Bare-metal host: Cisco UCS C220 Rack Server: 1 CPU
2 virtual CPUs (vCPUs) at 2 GHz (or faster)	4 vCPUs at 2 GHz (or faster)
8 GB of memory, with 100-GB hard drive allocated	12 GB of memory, with 160-GB hard drive allocated

## Browsers

Web browsers that support HTML5 are qualified for use with Data Center Network Manager 10, including Internet Explorer, Firefox, Safari, and Chrome.

## Ordering and Installation Information

To order Data Center Network Manager 10 licenses, contact your Cisco sales representative.

### About Cisco Data Center Network Manager Software Licenses

Data Center Network Manager is Cisco's unified data center fabric manager for LAN and SAN fabrics, including LAN and SAN platforms that support NX-OS.




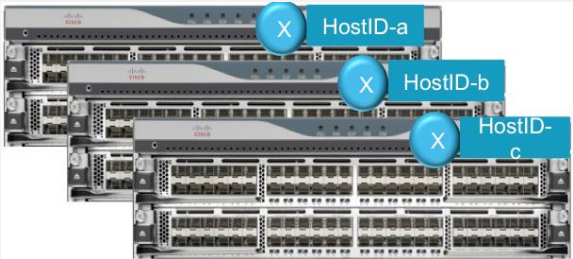
The manager includes some base functions with no license applied, but most users will want to purchase Advanced Feature licenses that enable performance and configuration management for their fabrics and platforms.

The manager is licensed by platform type (for example, Cisco Nexus 9300 platform or MDS 9700 Series) and operational domain (LAN or SAN). For hybrid devices that support both LAN and SAN functions (such as Cisco Nexus 7000, 5000, and 6000 Series and Cisco Nexus 7700 platform switches), a LAN plus SAN license may be available.

Licenses are either server based (green token), with the license installed on the Data Center Network Manager server, or switch based (blue token), with the license installed on the switch itself. Table 4 summarizes the differences.



**Table 4.** Server-Based and Switch-Based Licenses

Server Based	Switch Based
<p data-bbox="297 384 513 478">  <span>Green Token</span> </p>  <p data-bbox="297 789 867 831">Register the Data Center Network Manager server's MAC address for each product activation key (PAK).</p> <p data-bbox="297 848 423 869">Characteristics:</p> <ul data-bbox="297 877 850 957" style="list-style-type: none"> <li>• LAN or SAN switches</li> <li>• Locked to Data Center Network Manager server's MAC address</li> <li>• Not locked to switches' host ID</li> </ul>	<p data-bbox="907 384 1107 478">  <span>Blue Token</span> </p>  <p data-bbox="907 789 1214 810">Register each switch using its host ID.</p> <p data-bbox="907 848 1034 869">Characteristics:</p> <ul data-bbox="907 877 1484 995" style="list-style-type: none"> <li>• SAN function only (MDS 9000 Family or Cisco Nexus 7000 or 5000 Series storage only)</li> <li>• Locked to host ID</li> <li>• Nontransferable, with no rehosting allowed; license expires upon retirement of the switch</li> </ul>

Advanced Feature licenses are available for the following switch platforms:

- Cisco Nexus 9500 platform
- Cisco Nexus 9300 platform
- Cisco Nexus 9200 platform
- Cisco Nexus 7000 Series
- Cisco Nexus 7700 platform
- Cisco Nexus 6000 Series
- Cisco Nexus 5000 Series
- Cisco Nexus 3000 Series
- Cisco MDS 9100 Series
- Cisco MDS 9200 Series
- Cisco MDS 9300 Series
- Cisco MDS 9700 Series
- Cisco MDS 9500 Series

License prices depend on the type of switch (LAN or SAN) and the form factor of the chassis (modular or fixed chassis).

The advanced features for Cisco Nexus 1000V and Cisco Nexus 4000 Series Switches are included in the base Data Center Network Manager server software.

Data Center Network Manager through version 10.1(0) also supports older Fabric Manager licenses (SAN only) installed on the switch.

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Service contract SKUs (CON-SAU) are required for Cisco Technical Assistance Center (TAC) support, including upgrades from one version of Data Center Network Manager to another.

## How to Order

Follow these steps to order Data Center Network Manager:

1. Obtain the non-licensed base Data Center Network Manager server part number: for example, R-DCNM-SVR-10-K9. Order this part number as a spare or as a license option for the switch (if available). This is the US\$0 base part number for the Data Center Network Manager server. It is used for TAC support if no Advanced Feature licenses are installed.
2. Obtain Advanced Feature licenses for each device to be managed. Remember that if you are using server-based licenses, you register the MAC address of the Data Center Network Manager server (you can see this requirement on the Administration > License page).
3. Choose options such as the following popular choices:
  - Order a software bundle that includes Data Center Network Manager: for example, select **N7K-C7004-SBUN-P1**.
  - Select the DCNM-LAN or DCNM-SAN or DCNM-LS option for the switch platform: for example, select **DCNM-N7K-K9** as a software license option for a Cisco Nexus chassis.
  - Order a spare server-based license: for example, select **DCNM-N7K-K9=** to manage one Cisco Nexus 7000 Series chassis using a server-based license.
  - Order a spare switch-based license: for example, select **DCNM-S-M91XK9=** to manage an MDS 9100 Series switch.

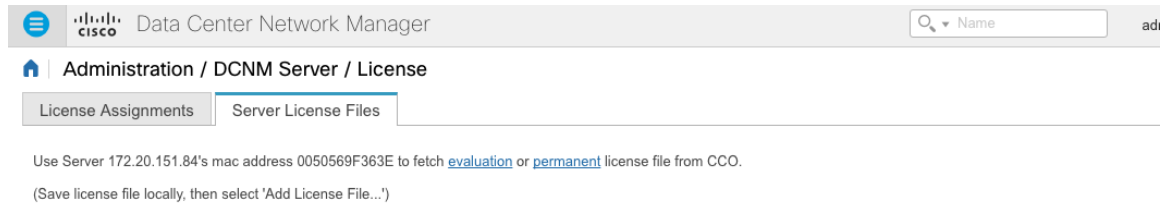
**Note:** If you are purchasing a chassis and selecting license options, look carefully at the Data Center Network Manager license options available. For storage devices, you may see a choice of switch-based or server-based license options or possibly an Enterprise bundle with a Data Center Network Manager license (for example, **M91ENTDCNMX-K9**). An "X" in the Data Center Network Manager part number or the Enterprise bundle indicates that the DCNM license is a switch-based license.

## How to Register and Install Your Licenses

Follow these steps to register and install Data Center Network Manager licenses:

1. Register the licenses.
  - For server-based licenses, identify the MAC address of the server. Go to the Administration > DCNM Server > License page and select the Server License Files tab. You will find your Data Center Network Manager server's MAC address there. Use this address for PAK registration (Figure 6).

**Figure 6.** Registering Server-Based Licenses



License Files Total 13

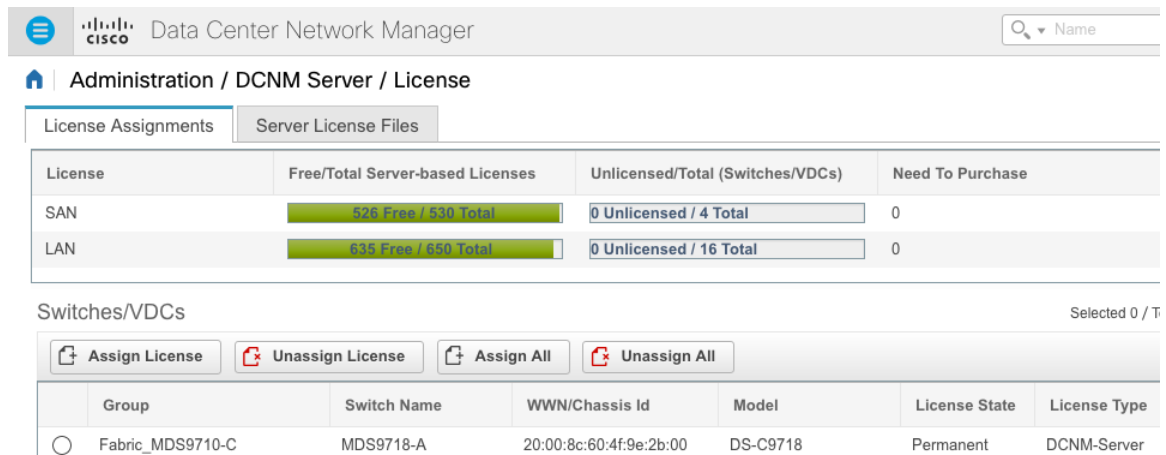
Filename	Feature	PID	SAN (Free/Total)	LAN (Free/Total)
DCNM201606141547416400...	DCNM-SAN-LAN	DCNM-LS-N7K-K9=	50 / 50	47 / 50

- For switch-based licenses, obtain the switch's serial number for each switch you want to manage and register that number. From the NX-OS command line, enter the command **show licenses host-id**.

```
Switch# show license host-id
License hostid: VDH=SAL1832Y6W3
Switch#
```

- Install the license files. Go to the Administration > DCMN Server > License page and select the Server License Files tab. Select the Add License File button to add your license file to Data Center Network Manager.
- Assign licenses to your switches. After you add the license files, Data Center Network Manager will display an option to assign all available licenses. Alternatively, you can access the License Assignments tab on the same page to assign licenses manually using the buttons (Figure 7).

**Figure 7.** Assigning Licenses Manually



### Cisco Data Center Network Manager Server Base Part Numbers

Order a base nonlicensed part number for TAC support and tracking (Table 5). If you do not order Advanced Feature licenses, then you need this part number to order CON-SAU PIDs for Data Center Network Manager server TAC support.

**Table 5.** Base Part Numbers

Server Product Number	Description
R-DCNM-SVR-10-K9	Base DCNM Server - Software E-Delivery
R-DCNM-SVR-10-K9=	Base DCNM Server - Software E-Delivery spare
DCNM-SVR-10-K9	Base DCNM Server - DVD

**Note:** There are no associated licenses for the part numbers in Table 5. These are software delivery part numbers used to track, distribute, and provide access and support for the Data Center Network Manager server.

### Cisco Data Center Network Manager Advanced Feature License Part Numbers

The Advanced Feature license part numbers include part numbers for licenses that can be installed on the DCNM server (for LAN, SAN or combination), licenses that can be installed on the switch (SAN only) and spare part numbers for physical or e-delivery. Various software bundles (SBUNs) for a given platform may include one or more of the nonspare option part numbers listed in Table 6.

**Table 6.** Advanced Feature License Part Numbers

Platform	Part Number	Description
Nexus 9500	L-DCNM-N95-K9=	DCNM LAN Enterprise Lic for one Nexus 9500 Chassis eDelivery
Nexus 9500	DCNM-LAN-N95-K9	DCNM for LAN Advanced Edt. for Nexus 9500 switches
Nexus 9500	DCNM-SAN-N95-K9	DCNM SAN Adv Features for Nexus 9500 Server-Based
Nexus 9300	DCNM-LAN-N93-K9	DCNM for LAN Advanced Edt. for Nexus 9300 switches
Nexus 9300	DCNM-LAN-N93-K9=	DCNM for LAN Advanced Edt. for Nexus 9300 switches
Nexus 9300	L-DCNM-N93-K9=	DCNM LAN Enterprise Lic for one Nexus 9300 Chassis eDelivery Spare
Nexus 9200	DCNM-LAN-N92-K9=	DCNM for LAN Advanced Edt. for Nexus 9200 switches, Spare
Nexus 9200	DCNM-LAN-N92-K9	DCNM for LAN Advanced Edt. for Nexus 9200 switches
Nexus 7700	DCNM-LAN-N77-K9	DCNM for LAN Advanced Edt. for Nexus 7700 Chassis
Nexus 7700	DCNM-SAN-N77-K9	DCNM for SAN Advanced Edition for Nexus 7700 chassis
Nexus 7700	DCNM-LS-N77-K9	DCNM for SAN and LAN Advanced Edt. for Nexus 7700 chassis
Nexus 7700	DCNM-LAN-N77-K9=	DCNM for LAN Advanced Edt. for Nexus 7700 Chassis
Nexus 7700	L-DCNM-S-N77-K9=	DCNM for SAN Advanced Edt. for Nexus 7700 Chassis
Nexus 7700	DCNM-SAN-N77-K9=	DCNM for SAN Advanced Edition for Nexus 7700 chassis
Nexus 7700	L-DCNM-L-N77-K9=	DCNM for LAN Advanced Edt. for Nexus 7700 Chassis
Nexus 7700	L-DCNM-LS-N77K9=	DCNM for SAN and LAN Advanced Edt. for Nexus 7700 Chassis
Nexus 7000	DCNM-N7K-K9	DCNM for LAN Enterprise License for one Nexus 7000 Chassis
Nexus 7000	DCNM-SAN-N7K-K9	DCNM for SAN Advanced Edition for Nexus 7000
Nexus 7000	DCNM-N7K-K9=	DCNM LAN Ent. License for a quantity of Nexus 7000 Chassis
Nexus 7000	DCNM-SAN-N7K-K9=	DCNM for SAN Advanced Edition for Nexus 7000 spare
Nexus 7000	L-DCNM-N7K-K9=	DCNM LAN Enterprise Lic for one Nexus 7000 Chassis eDelivery
Nexus 7000	L-DCNM-S-N7K-K9=	E-Delivery DCNM for SAN Advanced Edt. for Nexus 7000 spare
Nexus 6001	DCNM-LAN-N61-K9=	DCNM for LAN Advanced Edt. for Nexus 6001 switches
Nexus 6001	DCNM-LS-N61-K9=	DCNM for SAN and LAN Advanced Edt. for Nexus 6001 switches
Nexus 6001	DCNM-SAN-N61-K9=	DCNM for SAN Advanced Edt. for Nexus 6001 switches
Nexus 6001	L-DCNM-L-N61-K9=	DCNM for LAN Advanced Edt. for Nexus 6001 switches
Nexus 6001	L-DCNM-S-N61-K9=	DCNM for SAN Advanced Edt. for Nexus 6001 switches
Nexus 6001	DCNM-LAN-N61-K9	DCNM for LAN Advanced Edt. for Nexus 6001 switches

Platform	Part Number	Description
<b>Nexus 6001</b>	DCNM-LS-N61-K9	DCNM for SAN and LAN Advanced Edt. for Nexus 6001 switches
<b>Nexus 6001</b>	DCNM-SAN-N61-K9	DCNM for SAN Advanced Edt. for Nexus 6001 switches
<b>Nexus 6004</b>	DCNM-LS-N64-K9=	DCNM for SAN and LAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 6004</b>	DCNM-SAN-N64-K9=	DCNM for SAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 6004</b>	L-DCNM-L-N64-K9=	DCNM for LAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 6004</b>	L-DCNM-LS-N64K9=	DCNM for SAN and LAN Advanced Edt. for Nexus 6001 switches
<b>Nexus 6004</b>	L-DCNM-S-N64-K9=	DCNM for SAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 6004</b>	DCNM-LAN-N64-K9	DCNM for LAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 6004</b>	DCNM-LS-N64-K9	DCNM for SAN and LAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 6004</b>	DCNM-SAN-N64-K9	DCNM for SAN Advanced Edt. for Nexus 6004 switches
<b>Nexus 5000</b>	DCNM-LAN-N5K-K9	DCNM for LAN Advanced Edt. for Nexus 5000
<b>Nexus 5000</b>	DCNM-LS-N5K-K9	DCNM Converged Advanced Edt. for Nexus 5000
<b>Nexus 5000</b>	DCNM-SAN-N5K-K9	DCNM for SAN License for Nexus 5000
<b>Nexus 5000</b>	DCNM-LAN-N5K-K9=	DCNM for LAN Advanced Edt. for Nexus 5000
<b>Nexus 5000</b>	DCNM-LS-N5K-K9=	DCNM Converged Advanced Edt. for Nexus 5000
<b>Nexus 5000</b>	DCNM-SAN-N5K-K9=	DCNM for SAN License for Nexus 5000
<b>Nexus 5000</b>	L-DCNM-L-N5K-K9=	DCNM for LAN Advanced Edt. for Nexus 5000
<b>Nexus 5000</b>	L-DCNM-S-N5K-K9=	E-Delivery DCNM for SAN Advanced Edition for N5K spare
<b>Nexus 3000</b>	DCNM-LAN-N3K-K9	DCNM for LAN Advanced Edt. for Nexus 3000
<b>Nexus 3000</b>	DCNM-LAN-N3K-K9=	DCNM for LAN Advanced Edt. for Nexus 3000
<b>Nexus 3000</b>	L-DCNM-L-N3K-K9=	DCNM for LAN Advanced Edt. for Nexus 3000
<b>MDS 9100</b>	DCNM-S-M91XK9=	DCNM for SAN Advanced Edt. for MDS 9100 embedded
<b>MDS 9100</b>	DCNM-S-M91XK9	DCNM SAN Adv Features for MDS 9100 Switch-Based
<b>MDS 9100</b>	DCNM-SAN-M91-K9	DCNM for SAN License for MDS 9100
<b>MDS 9100</b>	DCNM-SAN-M91-K9=	DCNM for SAN License for MDS 9100
<b>MDS 9100</b>	L-DCNM-S-M91-K9=	DCNM SAN License for MDS 9100
<b>MDS 9200</b>	DCNM-S-M92XK9	DCNM SAN Adv Features for MDS 9200 Switch-Based
<b>MDS 9200</b>	DCNM-SAN-M92-K9	DCNM for SAN License for MDS 9200
<b>MDS 9200</b>	DCNM-S-M92XK9=	DCNM for SAN Advanced Edt for MDS 9200 embedded
<b>MDS 9200</b>	DCNM-SAN-M92-K9=	DCNM for SAN License for MDS 9200
<b>MDS 9200</b>	L-DCNM-S-M92-K9=	DCNM SAN License for MDS 9200
<b>MDS 9300</b>	DCNM-S-M93XK9	DCNM SAN Adv Features for MDS 9300 Switch-Based
<b>MDS 9300</b>	DCNM-SAN-M93-K9	DCNM SAN Adv. Feat. for MDS 9300
<b>MDS 9300</b>	DCNM-SAN-M93X-K9	DCNM SAN Adv. Feat. for MDS 9300 Switch based
<b>MDS 9300</b>	DCNM-LAN-N93-K9=	DCNM for LAN Advanced Edt. for Nexus 9300 switches
<b>MDS 9300</b>	DCNM-SAN-M93-K9=	DCNM SAN Adv. Feat. for MDS 9300, spare
<b>MDS 9300</b>	L-DCNM-N93-K9=	DCNM LAN Enterprise Lic for one Nexus 9300 Chassis eDelivery
<b>MDS 9300</b>	L-DCNM-S-M93-K9=	DCNM SAN Adv. Feat. for MDS 9300, eDelivery
<b>MDS 9300</b>	L-M93ENTDCNMX-K9=	Ent. + DCNM SAN Adv. Feat. for MDS 9300 Switch based, eDeliv
<b>MDS 9500</b>	DCNM-S-M95XK9	DCNM SAN Adv Features for MDS 9500 Switch-Based
<b>MDS 9500</b>	DCNM-SAN-M95-K9	DCNM for SAN License for MDS 9500
<b>MDS 9500</b>	DCNM-S-M95XK9=	DCNM for SAN Advanced Edt for MDS 9500 embedded
<b>MDS 9500</b>	DCNM-SAN-M95-K9=	DCNM for SAN License for MDS 9500
<b>MDS 9500</b>	L-DCNM-N95-K9=	DCNM LAN Enterprise Lic for one Nexus 9500 Chassis eDelivery

Platform	Part Number	Description
MDS 9500	L-DCNM-S-M95-K9=	DCNM SAN License for MDS 9500
MDS 9700	DCNM-S-M97XK9	DCNM SAN Adv Features for MDS 9700 Switch-Based
MDS 9700	DCNM-SAN-M97-K9	DCNM for SAN License for MDS 9700
MDS 9700	L-DCNM-S-M97-K9=	E-Delivery DCNM for SAN License for MDS 9700
MDS 9700	L-DCNM-S-M97XK9=	E-Delivery DCNM for SAN Advanced Edt. for MDS 9700 embedded
	<b>SBUN Part Numbers Used for Expansion</b>	<b>These part numbers are used only by Cisco Nexus 7000 Series and 7700 platform SBUNs. They are shown here for reference and are equivalent to Data Center Network Manager Option part numbers for the platform.</b>
Nexus 7000	DCNM-N7K-K9-SBUN <sup>†</sup>	DCNM for LAN Enterprise License for one Nexus 7000 Chassis
Nexus 7000	DCNM-SANN7KK9-SBUN <sup>†</sup>	DCNM for SAN Advanced Edition for Nexus 7000
Nexus 7700	DCNM-L-N77-K9-SBUN <sup>†</sup>	DCNM for LAN Advanced License for Nexus 7700 Chassis
Nexus 7700	DCNM-S-N77-K9-SBUN <sup>†</sup>	DCNM for SAN Advanced Edition for Nexus 7700 chassis
Nexus 7700	DCNM-SANN77K9-SBUN <sup>†</sup>	DCNM for LAN Enterprise License for one Nexus 7700 Chassis
Nexus 7000	DCNM-SAN-N7K4-SBUN <sup>†</sup>	DCNM for SAN Advanced Edition for Nexus 7004
Nexus 7000	DCNM-N7K-C7K4-SBUN <sup>†</sup>	DCNM for LAN Enterprise License for one Nexus 7004 Chassis
Nexus 7000	DCNM-N74-K9-SBUN <sup>†</sup>	DCNM for LAN Advanced License Nexus 7004 Chassis

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