



CHAPTER 1

Overview

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. Cisco DCNM 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.

Cisco DCNM encapsulates and defines the properties of the Fabric, and binds all the Leaf/Spine/Border Leaf/Edge Router and other entities that fall into the purview of the Fabric.

In Cisco DCNM Release 10.0.x, the multi-fabric feature is enabled for fabrics of different encapsulation types, such as FabricPath and VXLAN fabric. All the encapsulation types can exist together and the fabric-level consistency can be validated.

Cisco DCNM provides a high level of visibility and control through a single web-based management console for Cisco Nexus Series Switches, Cisco MDS, and Cisco Unified Computing System (UCS) products. During the DCNM installation, you can choose install applications related to Programmable Fabric only for Programmable Fabric-mode installations. Cisco DCNM also includes Cisco DCNM-SAN client functionality.

From Cisco DCNM Release 10.0.x, DCNM-LAN thick client is not supported. However, most of salient features are migrated and the operations can be performed from the Cisco DCNM Web Client.

This chapters contains the following:

- [Introduction of Cisco DCNM, page 1-1](#)
- [Programmable Fabric and non-Programmable Fabric, page 1-3](#)
- [Installation Options, page 1-4](#)
- [Deployment Options, page 1-5](#)

Introduction of Cisco DCNM

Cisco DCNM provides an alternative to the command-line interface (CLI) for most switch configuration commands.

In addition to complete configuration and status monitoring capabilities for Cisco MDS 9000 switches, Cisco DCNM-SAN provides powerful Fiber Channel troubleshooting tools. These in-depth health and configuration analysis capabilities leverage unique MDS 9000 switch capabilities: Fiber Channel Ping and Traceroute.

Cisco DCNM-SAN includes these management applications:

- [Cisco DCNM Server, page 1-2](#)
- [Cisco DCNM Web Client, page 1-2](#)
- [Cisco DCNM-SAN Client, page 1-2](#)
- [Device Manager, page 1-2](#)
- [Performance Manager, page 1-3](#)

Cisco DCNM Server

The Cisco DCNM-SAN Server component must be started before running Cisco DCNM-SAN. On a Windows PC, Cisco DCNM-SAN Server is installed as a service. This service can then be administered using the Windows Services in the control panel. Cisco DCNM-SAN Server is responsible for discovery of the physical and logical fabric and for listening for SNMP traps, syslog messages, and Performance Manager threshold events.

Cisco DCNM Web Client

The Cisco DCNM Web Client allows operators to monitor and obtain reports for Cisco MDS and Nexus events, performance, and inventory from a remote location using a web browser. Licensing and discovery are part of the Cisco DCNM web client.

From Cisco DCNM Release 10.0(1), the salient features of the DCNM LAN Client are migrated to be accessed and monitored via the Web Client. The Web Client now provides provisioning, monitoring of Ethernet interfaces for the Ethernet switches. It allows you to configure complex features such as vPC, VDC, and FabricPath and provides the topology representation of vPC, port channel, VLAN mappings, and FabricPath.

Cisco DCNM-SAN Client

The Cisco DCNM-SAN Client displays a map of your network fabrics, including Cisco MDS 9000 Family switches, third-party switches, hosts, and storage devices. The Cisco DCNM-SAN Client provides multiple menus for accessing the features of the Cisco DCNM-SAN Server.

Device Manager

Cisco DCNM-SAN automatically installs the Device Manager. Device Manager provides two views of a single switch:

- **Device View**—displays a graphic representation of the switch configuration and provides access to statistics and configuration information.
- **Summary View**—displays a summary of xE ports (Inter-Switch Links), Fx ports (fabric ports), and Nx ports (attached hosts and storage) on the switch, as well as Fibre Channel and IP neighbor devices. Summary or detailed statistics can be charted, printed, or saved to a file in tab-delimited format.

Performance Manager

Performance Manager presents detailed traffic analysis by capturing data with SNMP. This data is compiled into various graphs and charts that can be viewed with any web browser.

Programmable Fabric and non-Programmable Fabric

This section details basic overview on Programmable Fabric and non-Programmable Fabric.

- [Information about Programmable Fabric, page 1-3](#)
- [Information about non-Programmable Fabric, page 1-3](#)

Information about Programmable Fabric

Cisco Programmable Fabric boosts network flexibility and efficiency. Programmable Fabric innovations simplify fabric management, optimize fabric infrastructure, and automate provisioning across physical and virtual environments.

Programmable Fabric offers the following functionalities:

Optimized Fabric Infrastructure for Enhanced Efficiency and Scale

The optimized spine-leaf topology provides enhanced forwarding, distributed control plane, and integrated physical and virtual environments. The topologies enable any network anywhere, supporting transparent mobility for physical servers and virtual machines, including network extensibility. This increases the resiliency with smaller failure domains and multitenant scale.

Simplified Fabric Management with Open APIs for Ease of Operations

Cisco Programmable Fabric allows centralized fabric management across both physical servers and virtual machines. It provides automated network provisioning, common point of fabric access, and host, network, and tenant visibility. Open APIs allow better integration with orchestration and automation tools, in addition to cloud platforms.

Automated Provisioning for Greater Agility

With complete mobility across the fabric, the Programmable Fabric uses network automation and provisioning to simplify physical server and virtual machine deployments. The network administrator can define profile templates for both physical and virtual machine. When a server administrator provisions virtual machine and physical servers, instances of network policies are automatically created and applied to the network leaf switch. As virtual machines move across the fabric, the network policy is automatically applied to the leaf switch.

Information about non-Programmable Fabric

Cisco DCNM in non-Programmable Fabric mode provisions and optimizes the overall uptime and reliability of the data center fabric. The following are the significance of Programmable Fabric mode:

- centralize fabric management to facilitate resource movement including adding and editing resources

- monitors SAN client, and detects performance degradation
- aids easy diagnosis and troubleshooting of data center outages
- simplifies operational management of virtualized data centers

Installation Options

Cisco DCNM, Release 10.0.x offers four types of installers. The images are packaged with the Cisco DCNM installer, signature certificate, and signature verification script.

You must unzip the desired Cisco DCNM Installer image zip file to a directory. Image signature can be verified by following the steps in README file. The installer from this package installs the Cisco DCNM software.

This section includes 4 options

- [DCNM Open Virtual Appliance for VMWare, page 1-4](#)
- [DCNM ISO Virtual Appliance for VMWare/KVM/CSP2100, page 1-4](#)
- [DCNM Installer for Windows \(64-bit\), page 1-4](#)
- [DCNM Installer for Linux \(64-bit\), page 1-4](#)

DCNM Open Virtual Appliance for VMWare

This installer is available as an Open Virtual Appliance file (.ova). The installer contains a pre-installed OS, DCNM and other applications needed for Programmable Fabric. This requires a vCenter/ESXi 5.1/5.5 environment. This can be deployed either in Programmable Fabric or in non-Programmable Fabric modes. By default, it is deployed in Programmable Fabric mode.

DCNM ISO Virtual Appliance for VMWare/KVM/CSP2100

This installer is available as an ISO image (.iso). The installer is a bundle of OS, DCNM and other applications needed for Dynamic Fabric Automation. This can be deployed either on VMWare ESXi 5.x environment or as a Kernel-based Virtual Machine on RHEL 6.x. This can be deployed either in Programmable Fabric or in non-Programmable Fabric modes. By default, it gets deployed in Programmable Fabric mode.

DCNM Installer for Windows (64-bit)

This installer is available as an executable (.exe) and does not support Programmable Fabric features.

DCNM Installer for Linux (64-bit)

This installer is available as a binary (.bin) and does not support Programmable Fabric features.

Deployment Options

The installer available for Cisco DCNM Release 10.0.x can be deployed in one of the below modes.

- [Standalone Server, page 1-5](#)
- [Standalone with external Oracle, page 1-5](#)
- [High Availability for Virtual Appliances, page 1-5](#)

Standalone Server

All types of installers (.ova, .iso, .bin, .exe) are packaged along with PostgreSQL database. The default installation steps for the respective installers result in this mode of deployment.

Standalone with external Oracle

If you have more than 50 switches in your setup or if you expect your setup to grow over time, an external Oracle server is recommended. This mode of deployment requires the default installation setup, followed by steps to configure DCNM to use the external Oracle as described under section [Oracle Database for DCNM Servers, page 2-19](#).

High Availability for Virtual Appliances

The DCNM Virtual appliances, both OVA and ISO, can be deployed in High Availability mode to have resilience in case of application or OS failures. For more information, see [Managing Applications in a High-Availability Environment](#).

