Cisco Data Center Network Manager 5.2

Product Overview

Q. What is Cisco® Data Center Network Manager (DCNM)?

A. Cisco DCNM is the recommended management system for Cisco Unified Fabric. It helps customers provision, monitor, and troubleshoot data center network infrastructure. It provides visibility and control of the unified data center, enabling service providers and IT departments to optimize for the quality of service (QoS) required to meet service-level agreements (SLAs) for internal and external customers.

Q. What are the benefits of using Cisco DCNM?

A. Cisco DCNM increases overall data center infrastructure uptime and reliability, hence improving business continuity. Focused on supporting efficient operations and management of virtual machine-aware (VM-aware) fabrics, Cisco DCNM provides a robust framework and comprehensive feature set that meets the routing, switching, and storage administration needs of present and future virtualized data centers. Cisco DCNM streamlines the provisioning the unified fabric and proactively monitors the SAN and LAN components. Offering an exceptional level of visibility and control through a single management console, or "single pane of glass," for Cisco Nexus®, Cisco MDS, and Cisco Unified Computing System™ product families, Cisco DCNM is Cisco's recommended solution for mission-critical data centers.

Q. What challenges does Cisco DCNM address?

A. Cisco DCNM proactively monitors the overall health of the data center network and generates alerts when it detects an issue that may negatively affect service. It identifies bottlenecks and predicts whether they will occur based on historical trending and forecasting, thus helping with capacity planning. Cisco DCNM automatically discovers newly added switches within the monitored fabric and keeps inventory of all its components. The tool helps SAN and LAN administrators provision unified fabric through simple-to-follow wizards that check configuration compliance before committing changes.

Q. What are the components of Cisco DCNM?

A. Cisco DCNM is composed of Cisco DCNM for SAN (formerly known as Cisco Fabric Manager) and Cisco DCNM for LAN.

Q. How is Cisco DCNM for SAN different than Cisco Fabric Manager?

A. Cisco DCNM for SAN maintains all the features of Cisco Fabric Manager and adds new features such as VM-aware management, Adobe Flex dashboards, and Fibre Channel over Ethernet (FCoE) management along with other enhancements in reporting and performance troubleshooting.

Q. Why is Cisco Fabric Manager being rebranded as Cisco DCNM for SAN?

A. LAN and SAN management is converging in a virtualized data center. This convergence calls for unification of the management plane to enable holistic management of the data center infrastructure. Recognizing the need to support this convergence in management, Cisco is merging two best-in-class management solutions, Cisco Fabric Manager and Cisco DCNM for LAN, into one combined unified product called Cisco DCNM. Cisco DCNM can be licensed as Cisco DCNM for SAN and as Cisco DCNM for LAN.

Product Features

Q. What are the main features of Cisco DCNM for SAN?

A. Table 1 summarizes the main features.

Table 1. Main Features

Feature	Description
Summary and host dashboards	Offers real-time fabric and network health summary with detailed views of individual network components, enabling operations staff to respond quickly to events based on their severity
Proactive monitoring	Facilitates early detection and prevention of outages, increasing network availability
Performance and capacity	Provides detailed visibility into real-time and historical performance statistics in the data center
VM-aware discovery and VMpath analysis	Provides a view of the virtual path through the physical fabric out to the storage array and to the data store, offing the capability to view performance for every switch hop to the individual VMware ESX server and virtual machine
Topology views	Provides a real-time operationally focused view of the data center infrastructure
Reports	Lets you build custom reports from predefined templates across all fabrics or select an individual fabric
Automated discovery	Provides up-to-date physical and logical inventory information
Configuration and change management	Enables predeployment validation of configuration changes, reducing the opportunities for misconfiguration; also provides the capability to compare current configuration files and copy back previously backed up files to the selected switches
Image management	Enables easy, nondisruptive (In-Service Software Upgrade [ISSU]) mass deployment of Cisco MDS 9000 SAN-OS and NX-OS Software images, which can be scheduled or run on demand
Web Services APIs	Enables easy integration with third-party applications, allowing accurate flow-through provisioning and data mining using Storage Management Initiative-Specification (SMI-S) and other web services APIs
Event forwarding	Notifies operations staff through email and pages of critical outages that may affect service
Federation and VSAN scoping	Provides the capability to scale for large and distributed data center deployments while maintaining a single management console
Cisco Unified Computing System discovery	Discovers and monitors the Cisco UCS fabric interconnect
FCoE management	Provides capability to discover, provision, and monitor the FCoE path

Q. What are the new features in Cisco DCNM for SAN 5.2?

A. The new features in Cisco DCNM for SAN 5.2 are:

- At-a-glance operations-focused web-based dashboards
  - Summary dashboard highlighting SAN health, top host, and storage ports, with access to detailed key performance indicators (KPIs)
  - Host dashboard, providing visibility into the host-to-storage port path for both physical and virtualized servers along with contextual performance and inventory information for servers
- VM-aware topology view showing all dependencies from the virtual machine, out to the physical host to the switch, and out to storage, with one-click access to attributes; VM-aware views increase service availability by identifying bottlenecks in virtual machine and VMware ESX performance
- VM-aware performance, monitoring CPU, memory, and I/O latency of virtual machines and VMware ESX servers
- Detailed topology views, providing end-to-end path information across multiple fabric clouds, including the shortest path and all possible paths to available storage ports
- Performance management enhancements, including the capability to trend and correlate across multiple performance indicators on a single chart, interactive zooming options, and predictive analysis

- Comprehensive FCoE management, including provisioning, discovery, and operation monitoring across a wide variety of Cisco platforms (Cisco Nexus® 5000 and 7000 Series Switches and Cisco MDS 9000 Family directors)
- Several new ready-to-use reports such as Inactive Path, Host-to-Storage Connectivity, Zone Discrepancy, Switch Health, Traffic by VSAN, and Potentially Unused Storage reports
- Single unified product combining the capabilities of the former Cisco Fabric Manager and Cisco DCNM for LAN products
  - Unified installation and a converged web client
  - Common credentials across the entire application with role-based access control (RBAC)
  - Convergence in licensing models, with licenses now hosted in the management server instead of the switches; existing Cisco Fabric Manager licenses remain applicable to help ensure transparent upgrades
- Support for industry-standard SMI-S interfaces for integration into enterprise management solutions

Licensing

Q. What are the Cisco DCNM for SAN offerings?

A. Cisco DCNM for SAN is available in two editions:

- Essentials Edition: Available at no charge
- Advanced Edition: Licensed based on the number and type of switches

Q. How do the features of the Cisco DCNM Essential Edition and the Cisco DCNM Advanced Edition differ?

A. Table 2 summarizes the differences between the two editions.

Table 2. Cisco DCNM Essential Edition and Advanced Edition Feature Comparison

Essential Edition	Advanced Edition
Summary and host dashboards	Federation and VSAN scoping
Automated fabric discovery	VM-aware monitoring
Template reports	Multiple Fabrics performance monitoring
Real-time performance snapshot	Performance forecasting
Provisioning: Fibre Channel and FCoE provisioning wizards	Historical performance trending
Configuration management: Switch and fabric configuration using provisioning wizards	Event forwarding
Web services APIs	
Fabric topology views	

Q. What features are available in Cisco DCNM for SAN Essentials Edition?

A. The Essentials Edition offers the following features:

- Summary and host dashboards
- Automated fabric discovery; only a single fabric can be managed, providing inventory and event management
- Template reports
- Real-time performance snapshot; monitoring is available only in real time without historical performance trending (performance trending is available with the Advanced Edition)

- Provisioning using Fibre Channel and FCoE provisioning wizards
- Configuration management with provisioning wizards for configuring switches and fabrics
- Web services APIs
- Fabric topology views

Q. What features are available in Cisco DCNM for SAN Advanced Edition?

A. The Advanced edition contains all the features available in the Essentials Edition and adds the following features:

- Federation and VSAN scoping
- VM-aware discovery and path analysis
- Fabric performance monitoring
- Event forwarding

Q. Will I still be able to purchase Cisco Fabric Manager licenses?

A. If you are running Cisco Fabric Manager Server (FMS), you will still be able to purchase Cisco Fabric Manager licenses. However, if you have upgraded to Cisco DCNM, your newly purchased switch licenses will move to a license pool file that will reside on the Cisco DCNM for SAN server. Your existing Cisco Fabric Manager licenses will still be discovered on the switches with Cisco DCNM for SAN. Essentially, Cisco will be supporting two license models for environments with Cisco Fabric Manager. For customers who have upgraded from Cisco FMS to Cisco DCNM for SAN and purchased additional switches, the license pool model will apply.

Q. When will Cisco be announcing the end of support and end of life for Cisco FMS?

A. Cisco Fabric Manager continues to be a supported product at this time. In order to give customers sufficient time to upgrade to the latest NX-OS and DCNM software, Cisco will be selling and supporting Cisco Fabric Manager till such time that NX-OS 5.0 is sold and supported. EoS/EoL plans for Cisco Fabric Manager will be finalized in conjunction with EoS/EoL plans for NX-OS 5.0.

Q. How is the Cisco DCNM for SAN licensing model different from the Cisco FMS model?

A. With the Cisco FMS licensing model, licenses were deployed on the switch (embedded), whereas with the Cisco DCNM for SAN model, switch licenses are deployed on the Cisco DCNM server. This model enables pooling of licensing in one central location for ease of management and portability.

Q. How do I know if the license file for Cisco DCNM for SAN is still on the switch or now resides on the server?

A. Cisco DCNM web client has a licensing inventory report that lists all the switches that have active license. It is irrelevant to the license discovery operation if the licenses are embedded on the switch or used from the pool of licenses on the management server. To access license pool usage go to DCNM control panel and click on the license files tab. To view licenses assigned to switches go to license assignment tab in the same control panel.

Q. Is there a trial license for Cisco DCNM for SAN?

A. Yes. The trial license is enabled on the Cisco DCNM for SAN server.

Q. What is the evaluation period for Cisco DCNM for SAN and can it be extended?

A. The evaluation period for Cisco DCNM for SAN can be obtained by going to http://www.cisco.com/go/ask-dcnm website and clicking on trial license link. Depending on customer needs up to 90 days trial license can be issued. Longer trial license periods are available with special approval from the Cisco DCNM product management team. The trial license is per server and expires from N trial days from the date of issue.

Q. Will I still be able to use the trial Cisco Fabric Manager license located on the switch?

A. The trial or evaluation license will no longer be available on the switch and will be migrated to the Cisco DCNM for SAN server.

Q. How can I determine whether the trial license for Cisco DCNM for SAN has been used?

A. The Cisco DCNM for SAN license report provides details about the license status whether it is and embedded-switch license or server-switch license.

Q. Will the show license command on the switch's command-line interface (CLI) display information about Cisco DCNM licensing?

A. No. The license is no longer located on the switch. Cisco DCNM for SAN has a licensing report that lists all the switches that are currently licensed.

Q. Currently, a Cisco FMS license cannot be transferred from one switch to another. With a pool-based approach, will I be able to use the same license for the newer switch as the one I was using for the older switch?

A. Yes. This is one of the advantages of the pool-based licensing approach. The Cisco DCNM for SAN license for managing a switch is not tightly coupled to the switch, and hence it can be used to manage a new switch when you retire an older switch as long as it is the same switch chassis.

Q. Can I transfer my Cisco DCNM for SAN license from one server to another?

A. Cisco DCNM for SAN licenses are locked to the MAC address (Host ID) of the management server on which the licenses have been deployed. If you need to migrate the license to a different sever (due to a server refresh), you need to contact Cisco licensing (licensing@cisco.com) to rehost the license on the new server.

Q. What happens to customers with existing embedded Cisco FMS licenses on switches?

A. Cisco DCNM for SAN will allow the use of these embedded Cisco FMS licenses, so you will still be able to use these licenses to manage existing switches. However, any new switch deployments will need to use the new licensing model, in which the license is added on the server and not the switch.

Q. What is the impact to existing FM licenses when upgrading from Cisco Fabric Manager to DCNM 5.2?

A. Cisco Fabric Manager customers who have their Cisco FMS licenses deployed on Cisco MDS 9000 Family switches can upgrade to Cisco DCNM 5.2 without disturbing any of their existing licenses. All currently installed Cisco FMS licenses will be automatically retained and supported by Cisco DCNM 5.2.

Q. How does Cisco DCNM for SAN licensing work?

A. Cisco DCNM for SAN is licensed based on the switch model and licenses are deployed on the Cisco DCNM server.

Technical Overview

Q. What types of access controls does Cisco DCNM provide?

A. Administrators can retain control and segmentation through RBAC while enabling single-pane-of-glass visibility across the network and storage access infrastructure. This control can be extended to integrate with enterprise authentication, authorization, and accounting (AAA) servers.

Q. Does Cisco DCNM for SAN monitor fabric in real time?

A. Yes. Cisco DCNM for SAN can receive and process switch event traps in real time. It also monitors performance on Inter-Switch Links (ISLs) at down to 30-second polling intervals and every 5 minutes for end devices. Real-time performance threshold alerting is available by configuring the remote monitoring (RMON) or performance monitoring (PMON) features on Cisco switches.

Q. What delivery mechanisms does Cisco DCNM for SAN use for alerts?

A. Cisco DCNM for SAN supports forwarding of alerts using Cisco Call Home, EMC Call Home, email, and Simple Network Management Protocol (SNMP) traps. Different notification profiles can be set up for alerts based on severity, event type, fabric, and VSAN.

Q. What is the scope of Cisco DCNM for SAN management?

A. Cisco DCNM supports a wide variety of Cisco hardware platforms deployed in the data center including:

- Cisco MDS 9500, MDS 9200, and MDS 9100 Series Switches
- Cisco Nexus 7000, 5000 Series Switches
- Cisco UCS 6100 Series Fabric Interconnects

Scaling Guidelines

Q. What are the hardware and software requirements for running Cisco DCNM for SAN?

A. See Table 3.

Table 3. Hardware and Software Requirements

Description	Server Requirements (Small - Up to 5000 Ports)	Server Requirements (Large - 15,000 Ports)	Client Requirements
Hardware	Dual-core CPUs; 2 GHz	Quad-core CPUs; 2 GHz	2 GHz
Memory	4 GB	8 GB min	1 GB
Hard Disk	40 GB	60 GB	1 GB
Operating System	Microsoft Windows 2008 (32-bit and 64-bit) Red Hat Enterprise Linux AS Release 5.4 (64-bit) Solaris 10 VMware ESX 4.0 and 4.1		Microsoft Windows 7 Solaris 10 Red Hat Enterprise Linux AS Release 5.4 (64-bit)
Other	PostgreSQL 8.2 Oracle 10g XE	Oracle 11g Enterprise	Mozilla Firefox 3.6, Java 6.21, and Microsoft Internet Explorer (IE) 7 and 8

Q. What are the scaling limits of Cisco DCNM for SAN?

A. Cisco DCNM for SAN supports 15,000 managed ports per server. For larger environments, a federation of up to 10 servers can be deployed, and this will let you scale to a total of 150,000 ports.

Q. Can Cisco DCNM for SAN run in a virtual environment?

A. Yes. Cisco DCNM for SAN can be deployed on a virtual machine running on VMware ESX 4.0. For large deployments (15,000 or more ports), one physical database server is required with SAN-attached storage. In that configuration, the Cisco DCNM server application can still run on a virtual machine.

Support

Q. What is the support model for Cisco DCNM for SAN?

A. The support model for Cisco DCNM for SAN remains the same as for Cisco FMS. Tier 1 and 2 support are managed by Cisco original storage manufacturer (OSM) partners. Tier 3 support is handled by the Cisco Technical Assistance Center (TAC). The exceptions are Cisco Nexus switches purchased through EMC, which are supported by Cisco SMARTnet® Service.

Q. What is the support model for Cisco Fabric Manager after DCNM 5.2 release?

A. Cisco Fabric Manager will continue to be sold and supported by Cisco, but it will be transitioned into a sustaining mode, meaning that it will receive only bug fixes and critical patches, but no new features or new hardware support.

Q. How do I download the latest Cisco DCNM for SAN software?

A. Cisco DCNM for SAN software can be downloaded by going to http://www.cisco.com/go/dcnm.

Q. Can Cisco FMS be upgraded to Cisco DCNM for SAN?

A. Yes. You can transparently upgrade from Cisco Fabric Manager 5.0 release to Cisco DCNM for SAN 5.2 without loosing any previous data.

Q. Where can I find more information about Cisco DCNM?

A. For more information about the Cisco DCNM software, send an email to ask-dcnm@cisco.com, visit the product homepage at http://www.cisco.com/go/dcnm, or contact your local account representative.

Q. Can two Cisco DCNM for SAN servers discover the same set of switches and fabrics to help ensure high availability?

A. Cisco DCNM for SAN licensing model is per MAC address of the management server. The high availability configuration where two different management servers are discovering the same fabric is not supported today. However in the federation setup, Cisco does offer a way to fail over fabrics to another management server as long as it is part of the federation.

Q. Does Cisco offer any implementation services for Cisco DCNM for SAN?

A. Yes. Cisco Advanced Services offers design and implementation services for Cisco DCNM for SAN. Please contact your Cisco representative for more details, or go to http://www.cisco.com/go/dcnm and click the Advanced Services link.

Q. Is there a community forum where questions can be posted?

A. Yes. Go to https://www.myciscocommunity.com and search for the Cisco DCNM discussion group.

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