

NX-OS 9.4(1a) Release Notes

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Release Notes

HPE C-series Fabric Switches for NX-OS 9.4(1a)

This document provides additional information about the HPE SN8700C 16-slot, 8-slot, and 4-slot 16/32/64Gb Director Switch, HPE SN6010C 16Gb FC Switch, HPE SN6610C 32Gb FC Switch, HPE SN6620C 32Gb FC Switch, HPE SN6630C 32Gb FC Switch, HPE SN6640C 32Gb Multiservice Switch, HPE SN6710C 64Gb FC Switch, HPE SN6720C 64Gb FC Switch, and HPE SN6730C 64Gb FC Switch.

HPE C-series SAN Switches and Directors Model Name Cross Reference

To get the list of Cisco product names and the equivalent HPE C-series product name, refer the "Cross Reference" document at: <u>https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002352en_us</u>

Cisco MDS 9000 NX-OS Release Notes

This is not a mandatory upgrade, although HPE recommends upgrading to this version because it incorporates changes that correct issues identified in previous versions. As part of the NX-OS 9.4(1a) image updates provided by HPE, the **Cisco MDS 9000 Series Release Notes, Release 9.4(1a)** have been included in the bundle. For a complete list and detailed description of features included in the NX-OS 9.4(1a) release, refer to the Cisco release notes as appropriate.

Furthermore, the **Cisco Nexus Dashboard Fabric Controller** release 12.1.3b software and **Cisco Data Center Network Manager (DCNM)** release 11.5(4) are both available in separate bundles. Cisco Nexus Dashboard Fabric Controller and Cisco Data Center Network Manager (DCNM) support both the Cisco MDS 9000 product family and the Cisco Nexus product family.

HPE C-Series Smart Licensing

HPE supports the Cisco Smart Licensing Using Policy (SLP) on HPE C-series Fabric switches running NX-OS 9.2(2) or later versions. Installation of Product Authorization Key (PAK) or Smart Licensing version 1.0 licenses are not supported from NX-OS 9.2(2) onwards. Since HPE C-series 64G switches are smart enabled and need an End Customer Smart Account (ECSA), you need to either use an existing Smart Account (SA) or create a new Smart Account for license usage reporting purposes. Refer to the document HPE C-Series Smart Licensing to see details on Smart accounts and how to create one. For more details, see the "Smart Licensing Using Policy" chapter in the <u>Cisco MDS 9000 Series Licensing Guide, Release 9.x.</u>

Cisco Nexus Dashboard Fabric Controller software

Cisco Data Center Network Manager (DCNM) is renamed as Cisco Nexus Dashboard Fabric Controller (NDFC) from Release 12.0.1a. Cisco NDFC is designed with an HTML-based web User Interface (UI), which is the main interface for the product. There is also a fully integrated device manager used for visualizing and managing each individual switch or director.

The day-to-day SAN operations, such as In-Service Software Upgrades (ISSU), Zoning, Event management, Port Monitoring (PMON), etc., are managed and maintained from the simplified web UI. The application is a platform providing historical data that can be used to help during day-to-day troubleshooting, viewing analytics data, and looking for SAN congestion through slow-drain analysis. NDFC is also critically important for reviewing event data, SNMP traps, syslogs, and consolidated auditing and reporting. NDFC provides detailed visibility, analytics, and inventory, to provide awareness of performance at a deeper level than basic monitoring. Cisco NDFC has a data collection layer that has Simple Network Management Protocol (SNMP), NX-API, streaming telemetry data (some of which comes directly from Cisco ASICS residing in Cisco products).

For Cisco Nexus Dashboard related details please refer <u>Cisco Nexus Dashboard Release Notes</u>, For Cisco Nexus Dashboard Fabric Controller details refer <u>Cisco Nexus Dashboard Fabric Controller Release</u> Notes.

Detailed information about the Nexus Dashboard deployment, Nexus Dashboard Fabric Controller Installation or Upgrade, refer the **Cisco Nexus Dashboard Deployment Guide**, and **Cisco Nexus Dashboard Fabric Controller** Installation and Upgrade Guide provided along with the ND and NDFC bundle.

Note: Some of the links take you outside the Hewlett Packard Enterprise website. Hewlett Packard Enterprise has no control over and is not responsible for information outside the Hewlett Packard Enterprise website.



Cisco Data Center Network Manager (DCNM) software

From Release 11.5(1), DCNM license trial period is extended to 120 days. However, the trial period remains 60 days for inline upgrades. This license will work for any licensable switch and expires after 60 days.

To get the licensed version after the trial period ends, customers must purchase the appropriate HPE DCNM E-LTU (switch-based) license to continue to utilize the advanced DCNM features.

Please go to **Administration > Manage Licensing > DCNM** on the DCNM Web Client or go to the **license files** tab of the DCNM-SAN Client control panel to find the license files. You can assign the licenses to the switches through either the **Administration > Manage Licensing > DCNM** window on the DCNM Web Client or the **license assignment** tab of the DCNM-SAN Client control panel.

Detailed information about these new features is available in the **Cisco DCNM Release Notes, Release 11.5(4),** and in the feature-configuration guides for DCNM for SAN.

Note: For the latest supported HPE storage products, refer to the HPE Single Point of Connectivity Knowledge (SPOCK) website at: <u>http://www.hpe.com/storage/spock</u>

You must sign up for an HPE Passport to be granted access.

NX-OS Images and Management Software Updates

An active warranty or support agreement must be linked to your HPE Support Center profile to access Cseries switch firmware.

Refer to the following steps to access NX-OS firmware updates and Release Notes:

- Go to HPE Support Center
- Enter your C-series switch HPE part number (i.e. for SN6610C, enter either **Q9D35A** or **Q9D34A** or **Q9D36A**) into the search box, and press the search button.
- Click on the link for your switch model.
- Click on **Drivers and Software** tab.
- Select * Cisco 9xxx Series NX-OS for HPE C-Series SAN Switches
- Click Download Software to download the firmware zip file (Entitlement required).
- To read the Firmware Release Notes, click on the **Release Notes** link.

Note: To ensure that you have selected the latest version of the firmware/driver, click the **Revision History** tab to see if a new version of the firmware/driver is available.

C-Series Support Matrix with NX-OS 9.X

MDS Switch Model	Switch Description	Supported Switching Modules
HPE SN6710C 64Gb FC Switch (S0W92A, S0W92B, S0W93A, S0W93B, S1V10A, S1V10B, S1V09A, S1V09B, S1V06A)	Fabric switch offers 24 64 Gb Fibre Channel ports	N/A
HPE SN6720C 64Gb FC Switch (S0W94A, S0W94B, S0W95A, S0W95B, S1V12A, S1V12B, S1V11A, S1V11B, S1V07A)	Fabric switch offers 48 64 Gb Fibre Channel ports	N/A
HPE SN6730C 64Gb FC Switch (S2R99A, S2S00A, S2S01A, S2S02A, S2S03A)	Fabric switch offers 96 64 Gb Fibre Channel ports	N/A
HPE SN6640C 32Gb Multiservice Switch (R8M66A, R8M67A)	Fabric switch offers up to 12 of 32Gbps FC ports, 4 of 1/10GbE, 2 of 25GbE or 1 of 40GbE FCIP Ports.	N/A
HPE SN6630C 32Gb FC Switch (R4D90A, R4D91A, R4D92A)	Fabric switch offers 48 to 96 32 Gb Fibre Channel ports	N/A
HPE SN6620C 32Gb FC Switch (R0P12A, R0P13A, R0P14A)	Fabric switch offers 24 to 48 32 Gb Fibre Channel ports	N/A
HPE SN6610C 32Gb FC Switch (Q9D34A, Q9D35A, Q9D36A, R7L02A)	Fabric switch offers 8 to 32 32 Gb Fibre Channel ports	HPE SN6610C 16-port Fibre Channel Expansion Module (Q9D33A)
HPE SN6500C 16Gb FC/FCIP/FCOE Multi- service (E7Y64A)	Fabric switch offers up to 40 of 16Gbps FC ports, 2 of 1/10Gb IP, 8 of 10Gb FCoE ports.	N/A
HPE SN6010C 16Gb FC switch (K2Q16A, K2Q17A)	Fabric switch offers 12 or 48 16Gb Fibre Channel ports	N/A
HPE SN8700C 16-slot 16/32/64 Gb FC director (R7L00B, R7L00A) with Fabric-3 Module (R7L01B, R7L01A)	Director class switch which can accommodate sixteen switching modules.	HPE SN8700C 64Gb 48-port 64Gb SFP+ Fibre Channel Director Module (S0W90A) HPE SN8700C 64Gb 48-port 32Gb SFP+ Fibre Channel Director Module (R9F23B, R9F23A) HPE SN8500C/SN8700C 48-port 32Gb Fibre Channel Director Module (Q9D32B, Q9D32A)
HPE SN8700C 8-slot 16/32/64 Gb FC director (R6M36B, R6M36A) with Fabric-3 Module (R6M34B, R6M34A)	Director class switch which can accommodate eight switching modules.	HPE SN8700C 64Gb 48-port 64Gb SFP+ Fibre Channel Director Module (S0W90A) HPE SN8700C 64Gb 48-port 32Gb SFP+ Fibre Channel Director Module (R9F23B, R9F23A) HPE SN8500C/SN8700C 48-port 32Gb Fibre Channel Director Module (Q9D32B, Q9D32A)

MDS Switch Model	Switch Description	Supported Switching Modules
HPE SN8700C 4-slot 16/32/64 Gb FC	Director class switch which	HPE SN8700C 64Gb 48-port 64Gb SFP+
director (R6M35B, R6M35A) with Fabric-3 Module (R6M33B, R6M33A)	can accommodate four switching modules.	Fibre Channel Director Module (SOW90A)
	_	HPE SN8700C 64Gb 48-port 32Gb SFP+
		Fibre Channel Director Module (R9F23B, R9F23A)
		HPE SN8500C/SN8700C 48-port 32Gb Fibre Channel Director Module (Q9D32B,
		Q9D32A)

NX-OS 9.4(1a) Naming Convention

MDS 9000 Switch Model	Image Type	Image Name
HPE SN8700C 16-slot 16/32/64 Gb FC Director Switch (Cisco MDS 9718) HPE SN8700C 8-slot 16/32/64 Gb FC	kickstart image	m9700-sf4ek9-kickstart-mz.9.4.1a.bin
Director Switch (Cisco MDS 9710) HPE SN8700C 4-slot 16/32/64 Gb FC Director Switch (Cisco MDS 9706)	system image	m9700-sf4ek9-mz.9.4.1a.bin
HPE SN6710C 64Gb FC Switch	kickstart image	m9124v-s8ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9124V)	system image	m9124v-s8ek9-mz.9.4.1a.bin
HPE SN6720C 64Gb FC Switch	kickstart image	m9148v-s8ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9148V)	system image	m9148v-s8ek9-mz.9.4.1a.bin
HPE SN6730C 64Gb FC Switch	kickstart image	m9396v-s3ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9396V)	system image	m9396v-s3ek9-mz.9.4.1a.bin
HPE SN6640C 32Gb Multiservice Switch	kickstart image	m9220-s7ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9220i)	system image	m9220-s7ek9-mz.9.4.1a.bin
HPE SN6630C 32Gb FC Switch	kickstart image	m9300-s2ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9396T)	system image	m9300-s2ek9-mz.9.4.1a.bin
HPE SN6620C 32Gb FC Switch	kickstart image	m9148-s6ek9-kickstart-mz.9.4.1a.bin
	system image	m9148-s6ek9-mz.9.4.1a.bin
HPE SN6610C 32Gb FC Switch	kickstart image	m9100-s6ek9-kickstart-mz.9.4.1a.bin
	system image	m9100-s6ek9-mz.9.4.1a.bin
HPE SN6500C 16Gb FC/FCIP/FCOE Multi-	kickstart image	m9250-s5ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9250i)	system image	m9250-s5ek9-mz.9.4.1a.bin

MDS 9000 Switch Model	lmage Type	Image Name
	kickstart image	m9100-s5ek9-kickstart-mz.9.4.1a.bin
(Cisco MDS 9148S)	system image	m9100-s5ek9-mz.9.4.1a.bin

Other Images	Image Type	Image Name
Cisco Nexus Dashboard	Cisco Nexus Dashboard ISO image (for upgrade)	nd-dk9.3.0.1f.iso
Cisco Nexus Dashboard	Cisco Nexus Dashboard OVA file	nd-dk9.3.0.1f.ova
Cisco Nexus Dashboard Fabric Controller Software (Formerly DCNM)	Cisco Nexus Dashboard fabric controller file	Cisco-ndfc-12.1.3b.nap
Data Center Network Manager (DCNM)	Windows 64-Bit installer	dcnm-installer-x64-windows.11.5.4.exe
Data Center Network Manager (DCNM)	Linux 64-Bit installer	dcnm-installer-x64-linux.11.5.4.bin

All C-series switches can be managed with the command-line interface (CLI) or Simple Network Management Protocol (SNMP). The graphical user interfaces (GUI) used to manage all C-series switches is Cisco Nexus Dashboard Fabric Controller Software (Formerly DCNM) and Cisco Device Manager.

For more details and how to access the **Device Manager**, check "Cisco Device Manager" under "C-series management applications" on the <u>SAN Design Reference Guide</u>.

Additional Mounting Requirements

C-series Fabric Switches can be installed in all HPE standard racks. Please note the following restrictions:

Side-Rail Rack-Mounted Options

All side-rail rack-mounted options must have a minimum of four (4) inch clearance distance above or below the switch chassis for the C-series SN8700C (MDS 9710) Series Multilayer Directors and MDS 9200 Series Multilayer Fabric Switches. Side-rail rack-mount options include HPE zero-U options, KVM switches and power distribution units (PDUs). The minimum distance between the top of the switch to the bottom of any side rail rack mounted option, or the bottom of the switch and the top of the side rail rack mounted option must be at least four (4) inches.

HPE Rack Cabinet Support

For standard HPE Rack Cabinets with closed side panels, you must have at least two-and-one-half inches (2.5 in.) (6.4 cm) of air space between the rack walls and the MDS 9200, 9700 chassis air vents. For the SN8700C (MDS 9710) you must have at least four inches (4.0 in.) (10.16 cm) of air flow between the rack walls and the director. If the air space does not meet these minimum requirements, remove the rack side panels.

The HPE 10842 (800mm wide, 42U) Rack Cabinet is ideally used as a networking rack accommodating primarily switching equipment. It can also be used as a server/switch rack. The 10842 rack is a wider version of the 42U 9000 series rack at 800 mm/31.3 in width. This added width provides approximately eight additional inches of room outside of the internal mounting rails, which can be used for cabling.

Other Types of Cabinets

When the C-series SN8700C (MDS 9700) Family Multilayer Directors and MDS 9200 Family Multilayer Fabric Switches are installed in racks other than those mentioned above, including any open sided racks, the following guidelines must be followed to prevent overheating:

- Closed-sided racks must have at least two-and-one-half inches (2.5 in.) (6.4 cm) of air space between the walls and the MDS 9700 chassis air vents. The SN8700C (MDS 9710) must have at least four inches (4.0 in.) (10.16 cm) of air flow between the rack walls and the director.
- Open-sided racks (for example, racks commonly used for telecommunications equipment), with switches installed side by side must have at least six inches (6 in.) (15.2 cm) of air space between two different switch chassis.
- All rack types must have nothing to obstruct the cooling vents with side mounted options.

Cabling

When cabling any C-series product, the front door on all HPE standard racks should be removed to allow for adequate cable space; this will ensure a safe bending radius on all fibre channel cables. This is especially pertinent in high port density (Director) installations. Please consult the relevant *Cisco Hardware Installation Guide* for further information.

Serial Port

You must use the serial interface to configure a switch IP address. Refer to the *Cisco MDS* 9000 *Family Configuration Guide* for instructions on how to connect the serial port to a host machine.

Initial Installation Recommendations/Requirements

The C-series MDS 9000 Family of switches does not automatically allow SAN connectivity for the first-time, outof-the box power up. For more comprehensive **initial setup information**, **please refer to the Cisco documentation found at <u>http://www.cisco.com</u>.**

Note: The setup dialog prompts for all the necessary settings.

HPE Specific Known Issues

Problem Description: After updating the firmware or resetting an HPE Virtual Connect SE 100Gb F32 Module connected to C-series 16G or 32G switches, the switch interfaces may stay offline. To resolve this, users must perform a port flap (shut/no shut) on the switch side to bring the interface back up. This problem is addressed in NX-OS 9.4(2), which will be available later.

Workaround: Consider configuring the switch interface into F mode, as the problem is only observed when using Auto mode.

Problem Description: 3PAR and Primera Smart SAN is not supported with C-Series/Cisco switches. Cisco switches support a different type of enhanced zoning rather than Smart SAN.

As a result, if a C-Series/Cisco switch is attached to a 3PAR or Primera Array, it may report that enhanced zoning is supported and possibly enabled, although the supported enhanced zoning is not available from Smart SAN. The Smart SAN state for a target port attached to a C-Series/Cisco switch might report as disabled or enabled, instead of unsupported, due to the information reported when a 3PAR or Primera Array queries the switch about enhanced zoning support.

Additionally, when connecting a 3PAR or Primera Storage Array, with 8/16/32Gb Target ports attached to a Cisco MDS switch, you may encounter the switch generating the log message:

"SCR rejected: Sending LS-RJT: Invalid registration function 0xb from fcid <FCID>, Reason code-Logical error, Reason code expl-Request not supported"

The same message may be generated on the Cisco MDS switch when a 3PAR or Primera target port is flapped (shut/ no shut). This should be followed by a second SCR which should be accepted by the switch.

Workaround: Currently there is no fix for this issue. This issue does not affect any C-Series/Cisco switch, 3PAR, or Primera functionalities.

Problem Description: 3PAR Storage array 16/32Gb Target ports may not login to 32Gb and 16Gb C-series Switches with default switch port mode "auto". This issue may also occur when target port is flapped (shut/ No shut) at the switch end while keeping the port mode in "Auto".

Workaround: Change the switch port mode to "F" OR reset target port on 3PAR to get the FLOGI.

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Cisco MDS 9000 Series Release Notes

Release 9.4(1a)

This document describes the features, issues, and deployment guidelines for the Cisco MDS NX-OS software for use on the Cisco MDS 9000 Series Switches.

Note: The documentation set for this product strives to use bias-free language. For this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

Note: Release notes are updated on an as needed basis with new information on restrictions and issues. See the following website for the most recent version of the <u>Cisco MDS 9000 Series Release Notes</u>.

Date	Description
January 12, 2024	Initial Release

Introduction

The Cisco MDS 9000 Series of Multilayer Directors and Fabric Switches provide best-in-class high availability, scalability, security, and management that enables to deploy high-performance storage area networks. Layering a rich set of intelligent features onto a high-performance switch fabric, the Cisco MDS 9000 Series has the flexibility to fit small deployments and to address the stringent requirements of large data center storage environments: high availability, security, scalability, sustainability, ease of management, and seamless integration of new technologies.

MDS NX-OS Release 9.4(1a) is a FICON qualification release. Fibre Connection (FICON) interface capabilities enhance certain Cisco MDS 9000 Series switches by supporting both open systems and mainframe storage network environments.

About Software Images

The Cisco MDS NX-OS operating system is shipped with the Cisco MDS 9000 Series Switches. The Cisco MDS NX-OS software consists of two images: the kickstart image and the system image. These images can be upgraded or downgraded to different versions. The versions of both images must match for the system to boot.

Each model of the Cisco MDS switch has unique kickstart and system images. For more information on the image names for each Cisco MDS switch, see the <u>Cisco MDS 9000 NX-OS Software Upgrade and</u> <u>Downgrade Guide, Release 9.x</u>.

To download the new Cisco MDS 9000 Series Switches NX-OS software, go to the Storage Networking Software download website at <u>https://software.cisco.com/download/find/MDS</u>.

Choosing Between Cisco MDS NX-OS Open Systems Releases

Cisco uses release numbering to indicate the maturity of a Cisco MDS NX-OS release train. Cisco MDS NX-OS major versions are incremented when significant software features or hardware support are added. Because of the focus on new features and hardware, all bugs may not yet have been fixed. After an initial release, minor version numbers of the release train are incremented as bugs are resolved, and minor feature enhancements and security patches are integrated. This provides increased stability to the new features and updated security.

For Cisco recommended MDS NX-OS releases for each type of hardware, see the <u>Recommended</u> <u>Releases for Cisco MDS 9000 Series Switches</u> document.

Components Supported

For information on supported software and hardware components, see the <u>Cisco MDS 9000 Series</u> <u>Compatibility Matrix</u>.

IBM FICON Qualification Status

Fibre Connection (FICON) interface capabilities enhance certain Cisco MDS 9000 Series switches by supporting both open systems and mainframe storage network environments.

FICON Supported Platforms with MDS NX-OS Release 9.4(1a)

- Cisco MDS 9706 Director Switch
 - Cisco MDS 9700 48-port 64-Gbps Switching Module (DS-X9748-3072K9)

Note: The 64G transceivers are not supported for FICON Channel or Control Unit connections.

- · Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module (DS-X9648-1536K9)
- Cisco MDS 24/10-Port SAN Extension Module (DS-X9334-K9)
- Cisco MDS 48-Port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9)
 Note: This switching module is not supported on IBM Z16 System.
- Cisco MDS 9706 Crossbar Fabric-1 Switching Module (DS-X9706-FAB1)
- Cisco MDS 9706 Crossbar Fabric-3 Switching Module (DS-X9706-FAB3)
- Cisco MDS 9700 Series Supervisor-1 Module (DS-X97-SF1-K9)
- Cisco MDS 9700 Series Supervisor-4 Module (DS-X97-SF4-K9)
- Cisco MDS 9710 Director Switch
 - Cisco MDS 9700 48-port 64-Gbps Switching Module (DS-X9748-3072K9)
 Note: The 64G transceivers are not supported for FICON Channel or Control Unit connections.
 - Cisco MDS 9700-48 Port 32-Gbps Fibre Channel Switching Module (DS-X9648-1536K9)
 - Cisco MDS 24/10-Port SAN Extension Module (DS-X9334-K9)
 - Cisco MDS 48-Port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9)
 Note: This switching module is not supported on IBM Z16 System.
 - Cisco MDS 9710 Crossbar Fabric-1 Switching Module (DS-X9710-FAB1)
 - Cisco MDS 9710 Crossbar Fabric-3 Switching Module (DS-X9710-FAB3)
 - Cisco MDS 9700 Series Supervisor-1 Module (DS-X97-SF1-K9)
 - Cisco MDS 9700 Series Supervisor-4 Module (DS-X97-SF4-K9)

- Cisco MDS 9250i Multiservice Fabric Switches
- Cisco MDS 9220i Multiservice Fabric Switches

FICON on IBM OEM switches and modules

FICON is also supported on the following IBM OEM switches and modules:

- IBM SAN192C-6
 - IBM 48-Port 64-Gbps Fibre Channel Switching Module (03FR076)

Note: The 64G transceivers are not supported for FICON Channel or Control Unit connections.

- IBM 48-Port 32-Gbps Fibre Channel Switching Module (01FT644)
- IBM SAN Director Supervisor Module 4 (02JD753)
- IBM SAN Director Supervisor Module 1 (01FT600)
- IBM 24/10 Port SAN Extension Module (01FT645)
- IBM SAN384C-6
 - IBM 48-Port 64-Gbps Fibre Channel Switching Module (03FR076)

Note: The 64G transceivers are not supported for FICON Channel or Control Unit connections.

- IBM 48-Port 32-Gbps Fibre Channel Switching Module (01FT644)
- IBM SAN Director Supervisor Module 4 (02JD753)
- IBM SAN Director Supervisor Module 1 (01FT600)
- IBM 24/10 Port SAN Extension Module (01FT645)
- IBM SAN50C-R
- IBM SAN16C-R

FICON Supported Releases

The following table lists Cisco MDS NX-OS releases that are qualified for FICON. Refer to the specific release notes for FICON upgrade path information.

Table 1. FICON Supported Releases

FICON Supported Releases		
MDS NX-OS	Release 9.4(1a)	
	Release 8.4(2e)	
	Release 8.4(2c)	
	Release 8.4(2b)	
	Release 8.4(1a)	
	Release 8.1(1b)	

FICON Supported Releases

Release 8.1(1a)

FICON Tape Acceleration

FICON Tape Acceleration (FTA) is not supported with Release 9.4(1a) on any MDS 9000 platform.

Upgrading Cisco MDS NX-OS Software Image

This section lists the guidelines that are recommended for upgrading Cisco MDS NX-OS software images and includes the following topics:

- General Upgrading Guidelines
- Open Systems Nondisruptive Upgrade Paths
- FICON Systems Nondisruptive Upgrade Paths

For detailed instructions for performing a software upgrade using Cisco NDFC, see <u>Cisco NDFC Release</u> <u>Notes</u>.

General Upgrading Guidelines

This section lists the general guidelines for performing a software upgrade:

- Before the software upgrade, collect the output of the **show tech-support details** command. Save the output in a secure location.
- Cisco MDS 9700 Series Director switches support dual redundant supervisor modules. To allow a
 nondisruptive upgrade on these platforms, ensure that both the modules are installed and functional.
 The **show module** command must display one with the status "active" and the other as "hastandby".
- Use the **show install all impact** <*target-system-image>* command to determine if the upgrade will be nondisruptive.
- Some features are impacted by whether an upgrade is disruptive or nondisruptive:
 - Fibre Channel Ports: Fibre Channel ports can be nondisruptively upgraded without affecting traffic on the ports. See <u>Open Systems Nondisruptive Upgrade Paths</u> for all MDS NX-OS releases.
 - Fibre Channel over Ethernet (FCoE) Ports: FCoE ports can be nondisruptively upgraded without affecting traffic on the ports. See <u>Open Systems Nondisruptive Upgrade Paths</u> for all MDS NX-OS releases.
 - IPStorage Ports: Traffic on IPStorage ports on Cisco MDS 9220i, Cisco MDS 9250i, and Cisco MDS 24/10-Port SAN Extension Modules is disrupted during an upgrade or downgrade. Nodes that are members of VSANs traversing an FCIP ISL are impacted, and a fabric reconfiguration may occur. If supported, iSCSI initiators to the IPStorage ports lose connectivity to iSCSI targets while the upgrade is in progress.
 - I/O Acceleration: Traffic that uses I/O Acceleration is disrupted during an upgrade.

Note: In addition to these guidelines, review the information in <u>Limitations and Restrictions</u> before a software upgrade to determine if a feature may behave differently after the upgrade.

- The same release of the target kickstart and system images in the **install all** command must be used.
- If you are upgrading Cisco MDS 9700 Series Directors from Cisco MDS NX-OS Release 8.3(1), Release 8.3(2), Release 8.4(1), or Release 8.4(1a) to Release 8.4(2) or later releases, ensure that you perform a switchover before upgrading. For more information, see <u>CSCvt87216</u>.
- Starting with Release 9.2(1), the size of the TxWait log file has increased. After the upgrade is complete, ensure that you use **clear logging onboard txwait** to clear the logging area. Otherwise, the file will be automatically deleted and recreated at the new file size when the file size exceeds 512 KB.

For more information, see the Cisco MDS 9000 Series Interfaces Configuration Guide. Release 9.x.

- For upgrading FICON-qualified MDS switches to Release 9.4(1a), ensure the following:
 - No FICON port swap configurations are present, and,
 - No Ports in FICON VSANs have Prohibit/Allow or Block/Unblock configurations.

Open Systems Nondisruptive Upgrade Paths

The software upgrade information in this section applies only to Fibre Channel switching traffic. Upgrading system software disrupts IP traffic and intelligent services traffic.

Current MDS NX-OS Release	Nondisruptive Upgrade Paths and Ordered Upgrade Steps
9.4(1)	Upgrade directly to MDS NX-OS Release 9.4(1a).
9.3(x)	Upgrade directly to MDS NX-OS Release 9.4(1a)
9.2(x)	Upgrade directly to MDS NX-OS Release 9.4(1a)
8.5(1)	Upgrade directly to MDS NX-OS Release 9.4(1a)
8.4(2c), 8.4(2d), 8.4(2e), 8.4(2f)	Upgrade directly to MDS NX-OS Release 9.4(1a)
Any 8.x prior to 8.4(2c)	Step 1.Upgrade to MDS NX-OS Release 8.4(2c) or 8.4(2d) or 8.4(2e) or 8.4(2f). Step 2.Upgrade to MDS NX-OS Release 9.4(1a)
7.3(1)DY	Step 1.Upgrade to MDS NX-OS Release 8.1(1b). Step 2.Upgrade to MDS NX-OS Release 8.4(2c). Step 3.Upgrade to MDS NX-OS Release 9.4(1a)
6.2(29), 6.2(31), 6.2(33)	Step 1.Upgrade to MDS NX-OS Release 8.4(2c) or 8.4(2d). Step 2.Upgrade to MDS NX-OS Release 9.4(1a)

Nondisruptive Upgrade Paths to Cisco MDS NX-OS Release 9.4(1a)

Note: Upgrading MDS NX-OS from unsupported releases to MDS NX-OS Release 9.4(1a) is disruptive.

FICON Systems Nondisruptive Upgrade Paths

Use the following table to determine the nondisruptive upgrade path for FICON-qualified releases. Find the image release number using the Current Release with the FICON Enabled column of the table and follow the recommended path.

Current FICON-qualified Release	Nondisruptive Upgrade Paths and Ordered Upgrade Steps
8.4(2e)	Upgrade directly to MDS NX-OS Release 9.4(1a).
8.4(2c)	Upgrade directly to MDS NX-OS Release 9.4(1a).
8.4(2b)	Step 1.Upgrade directly to MDS NX-OS Release 8.4(2c) or 8.4(2e). Step 2.Upgrade to MDS NX-OS Release 9.4(1a).
8.4(1a)	Step 1.Upgrade directly to MDS NX-OS Release 8.4(2c). Step 2.Upgrade to MDS NX-OS Release 9.4(1a).
8.1(1b)	Step 1.Upgrade directly to MDS NX-OS Release 8.4(2c). Step 2.Upgrade to MDS NX-OS Release 9.4(1a).
8.1(1a)	Step 1.Upgrade to MDS NX-OS Release 8.1(1b). Step 2.Upgrade to MDS NX-OS Release 8.4(2c). Step 3.Upgrade to MDS NX-OS Release 9.4(1a).
6.2(11e)	Step 1.Upgrade to MDS NX-OS Release 8.1(1a). Step 2.Upgrade to MDS NX-OS Release 8.1(1b). Step 3.Upgrade to MDS NX-OS Release 8.4(2c). Step 4.Upgrade to MDS NX-OS Release 9.4(1a).

FICON Nondisruptive Upgrade Paths from MDS NX-OS Release 9.4(1a)

Note: Upgrading MDS NX-OS from unsupported releases to MDS NX-OS Release 9.4(1a) is disruptive.

Downgrading Cisco MDS NX-OS Software Image

This section lists the guidelines that are recommended for downgrading Cisco MDS NX-OS software images and includes the following topics:

- General Downgrading Guidelines
- Open Systems Nondisruptive Downgrade Paths
- FICON Systems Nondisruptive Downgrade Paths

General Downgrading Guidelines

This section lists the general guidelines for performing a software downgrade:

- Before the software downgrade, collect the output of the **show tech-support details** command. Save the output in a secure location.
- Cisco MDS 9700 Series Director switches support dual redundant supervisor modules. To allow a
 nondisruptive downgrade on these platforms, ensure that both the supervisor modules are installed
 and functional. The **show module** command must display one with status as "active" and the other
 as "ha-standby".
- Use the **show install all impact** <*downgrade-system-image>* command to determine if the downgrade will be nondisruptive.
- From Cisco MDS NX-OS Release 9.4(1), ensure that the LLDP feature is disabled before you perform the downgrade to the target release.

- Some features are impacted by whether a downgrade is disruptive or nondisruptive:
 - Fibre Channel Ports: Fibre Channel ports can be nondisruptively downgraded without affecting traffic on the ports. See <u>Open Systems Nondisruptive Downgrade Paths</u> for all MDS NX-OS releases.
 - Fibre Channel over Ethernet (FCoE) Ports: FCoE ports can be nondisruptively downgraded without affecting traffic on the ports. See <u>Open Systems Nondisruptive Downgrade Paths</u> for all MDS NX-OS releases.
 - IPStorage Ports: Traffic on IPStorage ports on MDS 9220i, MDS 9250i, and MDS 24/10-Port SAN Extension Modules is disrupted during an upgrade or downgrade. Nodes that are members of VSANs traversing an FCIP ISL are impacted, and a fabric reconfiguration may occur. If supported, iSCSI initiators that are connected to the IPStorage ports lose connectivity to iSCSI targets while the upgrade is in progress.
 - **I/O Acceleration**: Traffic that uses I/O Acceleration is disrupted during a downgrade.
- If you are downgrading from this release to a release before Cisco MDS NX-OS Release 9.2(1), ensure that you run the clear logging onboard txwait command after the downgrade is complete. Otherwise, log in to the OBFL TxWait file may cease with an error. For more information, see the Cisco MDS 9000 Series Interfaces Configuration Guide, Release 9.x.
- Any hardware that is not supported by the downgrade release version will be powered down when the downgrade release starts running. Power off and or remove any unsupported components before downgrading. For more information about supported hardware, see the <u>Cisco MDS 9000</u> <u>Series Compatibility Matrix</u>.

Open Systems Nondisruptive Downgrade Paths

The software upgrade information in this section applies only to Fibre Channel switching traffic. Downgrading system software disrupts IP traffic and intelligent services traffic.

Target MDS NX-OS Release	Nondisruptive Downgrade Paths and Ordered Upgrade Steps
9.4(1)	Downgrade directly to the target release.
9.3(x)	Downgrade directly to the target release.
9.2(x)	Downgrade directly to the target release.
8.5(1)	Downgrade directly to the target release.
8.4(2c), 8.4(2d), 8.4(2e), 8.4(2f)	Downgrade directly to the target release.
Any 8.x prior to 8.4(2c)	Step 1.Downgrade to MDS NX-OS Release 8.4(2c) or 8.4(2d) or 8.4(2e) or 8.4(2f). Step 2.Downgrade to the target release.
7.3(1)DY	Step 1.Downgrade to MDS NX-OS Release 8.4(2c). Step 2.Downgrade to MDS NX-OS Release 8.1(1b). Step 3.Downgrade to the target release.
6.2(29), 6.2(31), 6.2(33)	Step 1.Downgrade to MDS NX-OS Release 8.4(2c) or 8.4(2d). Step 2.Downgrade to the target release.

Nondisruptive Downgrade Paths from NX-OS Release 9.4(1a)

Note: Downgrading to an unsupported release from Release 9.4(1a) is disruptive.

FICON Systems Nondisruptive Downgrade Paths

The following table lists the downgrade paths for FICON releases. Find the image release number that you want to downgrade to in the To Release with FICON Enabled column of the table and follow the recommended downgrade path.

FICON Nondisruptive Downgrade Paths from MDS NX-OS Release 9.4(1a)

Target FICON-qualified Release	Nondisruptive Downgrade Paths and Ordered Downgrade Steps
8.4(2e)	Downgrade directly to the target release.
8.4(2c)	Downgrade directly to the target release.
8.4(2b)	Step 1.Downgrade directly to MDS NX-OS Release 8.4(2c). Step 2.Downgrade to the target release.
8.4(1a)	Step 1.Downgrade to MDS NX-OS Release 8.4(2c). Step 2.Downgrade to the target release.
8.1(1b)	Step 1.Downgrade directly to MDS NX-OS Release 8.4(2c). Step 2.Downgrade to the target release.
8.1(1a)	Step 1.Downgrade directly to MDS NX-OS Release 8.4(2c). Step 2.Downgrade to MDS NX-OS Release 8.1(1b). Step 3.Downgrade to the target release.
6.2(11e)	Step 1.Downgrade to MDS NX-OS Release 8.4(2c). Step 2.Downgrade to MDS NX-OS Release 8.1(1b). Step 3.Downgrade to MDS NX-OS Release 8.1(1a). Step 4.Downgrade to the target release.

Note: Downgrading to an unsupported release from Release 9.4(1a) is disruptive.

New Hardware Features

There are no new hardware features in Cisco MDS NX-OS Release 9.4(1a).

New Software Features

Product Impact	Feature	Description
Licensing	Licensing Package	From MDS Release 9.4(1a), the Mainframe License Package is not required to configure FICON.
		For more information, see the Cisco MDS 9000 Series Licensing Guide, Release 9.x.

Product Impact	Feature	Description
	FICON	Support for FICON is available as part of the base feature set and does not require any license for FICON-supported platforms, including MDS 9706, MDS 9710, MDS 9220i, and MDS 9250i switches. For more information, see the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 9.x.
	Fabric Binding	Support for the Fabric Binding feature is available as part of the base feature set and does not require any license. For more information, see the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 9.x.

Unsupported Features

SDV feature

Cisco MDS NX-OS Release 9.3(2) and later releases do not support Cisco SAN device virtualization (SDV).

Traditional and Smart Licensing Version 1.0 Licenses

Cisco MDS NX-OS Release 9.2(2) and later releases do not support installation of Product Authorization Key (PAK) or Smart Licensing version 1.0 licenses.

For more information such as how to migrate licenses software updates, see the *Smart Licensing Using Policy* chapter in <u>Cisco MDS 9000 Series Licensing Guide</u>, <u>Release 9.x</u>.

Python 2

Support for Python 2 is deprecated from Cisco MDS NX-OS Release 9.2(2). Python 3 remains supported instead. Python 2 scripts should be checked for compatibility with Python 3 to ensure they continue to function as expected.

For more information, see the *Python API* chapter in the <u>Cisco MDS 9000 Series Programmability Guide</u>, <u>Release 9.x</u>.

Zoning Features

LUN zoning, read-only zones, and broadcast zones are no longer supported.

If these features are already configured, completely remove all the configurations that include these features before attempting to boot any module. In addition, you cannot configure these features after you bring up any module.

XRC Acceleration License

From Cisco MDS NX-OS Release 8.1(1a), the Cisco Extended Remote Copy (XRC) acceleration license is obsoleted on Cisco MDS 9000 Series Switches due to improvements in the mainframe XRC feature.

Virtual Router Redundancy Protocol (VRRP)

From Cisco MDS NX-OS Release 8.3(1) and later, the VRRP feature is not supported on Cisco MDS 9000 Series Switches.

Data Encryption Standard (DES) Encryption for SNMP

From Cisco MDS NX-OS Release 8.5(1), AES-128 is the default encryption mechanism for SNMPv3. DES encryption for SNMP is supported only for DES users who upgrade from previous releases to Cisco MDS NX-OS Release 8.5(1). Ensure that you delete all the SNMPv3 users configured with DES encryption before upgrading to Cisco MDS NX-OS Release 8.5(1) and later releases. Any downgrades from Cisco MDS NX-OS Release 8.5(1) will be restricted if any of the SNMPv3 users have DES encryption configured as the privacy protocol. All such users will either need to be deleted or reconfigured to use no privacy protocol or AES128 encryption before downgrading.

For more information, see the <u>Cisco MDS 9000 Series System Management Configuration Guide, Release</u> <u>9.x</u>.

FPIN Notifications

Fabric Performance Impact Notifications (FPIN) notifications for oversubscription-based congestion is not supported.

FCWA, XER, DMM, SME

FCWA, XRC, DMM, and SME features are not supported from Release 8.x.

FICON Port Swap

FICON Port Swap is not supported from Release 9.4(1a).

FICON Prohibit/Allow and Block Attributes of FICON Ports

Prohibit/Allow and Block attributes that were used on a per FICON Port Address basis is not supported from Release 9.4(1a).

Limitations and Restrictions

SAN Extension Tuner

SAN Extension Tuner (SET) is not supported on Cisco MDS 9220i switches in Cisco MDS NX-OS Release 8.5(1) or later.

Fibre Channel Read Diagnostic Parameters

Fibre Channel RDP querying is not supported on NP, Port Channel, or FCoE links.

Slow Drain Detection and Congestion Isolation

ER_RDY is not supported on FC interfaces running at 10 Gbps.

FPIN

FPIN is not supported on switches that are operating in NPV mode.

FCIP Support

 In Cisco MDS NX-OS Release 9.2(2) or later releases, FCIP Write Acceleration is not supported between 24/10 SAN Extension Module and Cisco 18+4 MSM module and between 24/10 SAN Extension Module and Cisco SSN16 module.

- In Cisco MDS NX-OS Release 9.2(2) or later releases, Simultaneous use of IVR and FCIP Write Acceleration features is not supported on FCIP tunnels configured on Cisco MDS 9700 Director switches.
- On Cisco MDS 24/10 Port SAN Extension Module, configuring multiple FSPF equal cost paths (ECMP) port channels with FCIP members in the same VSAN is not a valid configuration. If this is configured, then the traffic flows through only one of the port channels.
- On FCIP links that are carrying FICON VSANs, compression and/or encryption should not be used.

iSCSI Support

iSCSI is not supported on Cisco MDS 9700 Directors with Cisco MDS 24/10 port SAN Extension Modules and Cisco MDS 9220i multiservice fabric switch.

Cisco TrustSec FC Link Encryption

Cisco TrustSec FC Link Encryption support is available only on certain ports for the following modules and switches:

Model	Description	Cisco TrustSec Capable Ports	Encryption Key Length
DS-X9748- 3072K9	64 Gbps Fibre Channel Switching module	9, 11, 13, 15, 25, 27, 29, 31	AES 128 bit
DS-X9648- 1536K9	32 Gbps Fibre Channel Switching Module	9-12, 25-28, 41-44	AES 128 bit
DS-X9448- 768K9	16 Gbps Fibre Channel Switching module	All FC ports	AES 128 bit
DS-X9334-K9	24/10 Port SAN Extension Module	All FC ports	AES 128 bit
DS-C9132T-K9	MDS 9132T Fabric Switch	9-12, 25-28	AES 128 bit
DS-C9148T-K9	MDS 9148T Fabric Switch	9-12, 25-28, 41-44	AES 128 bit
DS-C9396T-K9	MDS 9396T Fabric Switch	Base ports: 9-12, 25-28, 41-44 LEM ports: 57-60, 73-76, 89-92	AES 128 bit
DS-C9220I-K9	MDS 9220i 32 Gbps 12-Port Fibre Channel Fabric Switch	9-12	AES 128 bit
DS-C9124V- 24PEVK9	MDS 9124V 64 Gbps 24-Port Fibre Channel Fabric Switch	9-12	AES 128 bit
DS-C9148V- 48PETK9	MDS 9148V 64 Gbps 48-Port Fibre Channel Fabric Switch	9-12, 33-36	AES 128 bit
DS-C9396V-K9	64 Gbps 96 Port Fibre Channel switch	1-4, 25-28, 57-60, 81-84	AES 128 bit

Resolved Issues

Severity 1 (Catastrophic) Issues

Bug ID	Headline	Known Impacted Releases
CSCwh60299	A fabric switch with SFP checksum errors reloads after an ISSU	8.4(2f)

Severity 3 (Moderate) Issues

Bug ID	Headline	Known Impacted Releases
CSCwf16978	ssh-certificate and ssh-public based authorization parse and assign last group from Idap server	9.4(1)
CSCwf36248	LDAP:network-admin role not assigned to user if role is not the first entry in parsed roles	9.4(1)
CSCwf51090	Analytics treats NVME frames as SCSI frames and records incorrect SCSI metrics	9.4(1)
CSCwf78450	Link does not come up on 64 Gbps FC port randomly	9.4(1)
CSCwf87828	M9718 sup3 : Fib process crashed when triggered a reload	9.4(1)
CSCwh10886	callhome module crash on MDS 9396V platform	9.4(1)
CSCwh14489	MDS Fabric Switches can't save large service core files due to dump partition size	9.2(2)
CSCwh49190	ficonstat crash af ISSU to 8.4(2e)	8.4(2e)

Severity 4 (Minor) Issues

Bug ID	Headline	Known Impacted Releases
CSCvu27928	Need more detail in "Return code 0x4093007E (Issu cannot be done, bootflash is busy)." error	8.5(1)

Open Issues

Severity 2 (Severe) Issues

Bug ID	Headline	Known Impacted Releases
<u>CSCvp48050</u>	MDS 9700 control plane packet drops after switch boot	9.4(1a) 8.4(1)
CSCvv27832	Kernel panic on MDS DS-X97-SF4-K9 model supervisor	8.4(2a), 8.4(1a), 8.4(1)

Severity 3 (Moderate) Issues

Bug ID	Headline	Known Impacted Releases
CSCwe84668	ISLs at 64G auto speed go to notConnected state sometimes after several flaps	9.4(1a), 9.4(1) 9.3(2a), 9.3(2), 9.3(1)

Bug ID	Headline	Known Impacted Releases
CSCwf94683	GLDN :: MDS[9132U, 9220I, 9148V, 9148T] : WWN Snmpwalk failure	9.4(1)
CSCwf94678	GLDN :: MDS[9396T,9396V] : NTP Snmpwalk failure	9.4(1)
CSCwh76823	9396s : pmon crash seen while running show tech fpm	9.4(1a)
CSCwi36075	Interfaces stuck in offline status after storage processor upgrade	9.4(1a), 9.4(1) 9.3(2a), 9.3(2), 9.3(1)

Severity 4 (Minor) Issues

Bug ID	Headline	Known Impacted Releases
<u>CSCvf08416</u>	'show tech details' triggers 'pam_ftp(ftp:auth): conversation failed - ftpd' syslogs	8.5(1) 8.4(1), 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d). 8.4(2e) 8.3(2), 8.3(1) 8.2(2), 8.2(1)
<u>CSCvj93031</u>	IPv6 source address not displayed in log in failure logs	8.5(1) 8.4(1), 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e) 8.3(2), 8.3(1)
<u>CSCvs23106</u>	SCSI target discovery service running even after removal of last DS-X9334-K9 module from switch	 8.5(1) 8.4(1), 8.4(1a), 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e) 8.3(1), 8.3(2) 8.2(1), 8.2(2) 8.1(1), 8.1(1a), 8.1(1b)
<u>CSCvt15761</u>	Nondisruptive reload causes reinitialization of error disabled ports on other linecards	8.5(1) 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e)
<u>CSCvv00538</u>	Remove misleading ficonstat 'merge failed' message in non- FICON VSAN	8.5(1) 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e)
CSCwc61263	Linecard fails to boot up with '%PORT-5- MODULE_BRINGUP_NOT_ALLOWED' error	8.4(2e), 8.4(2c) 8.1(1)

Severity 5 (Cosmetic) Issues

Bug ID	Headline	Known Impacted Releases
CSCvs67788	" rmon event 5" displays as PMON@INFO instead of NOTIFICATION(5) owner PMON@NOTIFICATION	8.4(1)

Severity 6 (Enhancement) Issues

Bug ID	Headline	Known Impacted Releases
<u>CSCvo22835</u>	All flows are briefly suspended while moving an IOA flow between 2 clusters	8.5(1) 8.4(1), 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e) 8.3(2), 8.3(1) 8.2(2), 8.2(1) 8.1(1b), 8.1(1a), 8.1(1)
<u>CSCvp70681</u>	Streaming to telemetry receiver stops, receiver stays in "idle" state	8.5(1) 8.4(1), 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e)
<u>CSCvw77444</u>	Need to automatically sync bootflash:/scripts directory between active and standby sups	9.4(1) 8.1(1a)
<u>CSCvx37657</u>	Need to save nonvolatile logs about BIOS programming errors	8.5(1) 8.4(2c), 8.4(2d), 8.4(2e) 8.3(2)
<u>CSCwa89654</u>	Enhancement: Upgrade MDS 9000 nginx version to greater than or equal to 1.20.1	9.4(1) 8.4(2c)
CSCwb13413	A fabric module with a faulty link to a linecard is not powered down	8.4(1)
CSCwe86920	Add option to 'show tech-support' to exclude and include subcommands	9.4(1) 8.1(1)
CSCwf48167	Span tx is not working in NPV mode on all platforms, rx is working	9.4(1)
CSCwf66251	Need a syslog warning when number of zone members exceeds maximum supported	8.4(2d)

Related Documentation

The documentation set for the Cisco MDS 9000 Series includes the documents that are listed in this section. To find a document online, access the following URL:

http://www.cisco.com/en/US/products/ps5989/tsd products support series home.html

Cisco Nexus Dashboard Fabric Controller (Formerly DCNM)

http://www.cisco.com/en/US/products/ps9369/tsd products support series home.html

Release Notes

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-ossoftware/products-release-notes-list.html

Licensing Information

https://www.cisco.com/c/en/us/td/docs/dcn/mds9000/sw/9x/configuration/licensing/cisco-mds-9000nx-os-licensing-guide-9x.html

Regulatory Compliance and Safety Information

http://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/hw/regulatory/compliance/RCSI.ht ml

Compatibility Information

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-ossoftware/products-device-support-tables-list.html

Installation and Upgrade

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-ossoftware/products-installation-guides-list.html

Configuration Guides

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-ossoftware/products-installation-and-configuration-guides-list.html

CLI

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-ossoftware/products-command-reference-list.html

Troubleshooting and Reference

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/tsdproducts-support-troubleshoot-and-alerts.html

Statement of Volatility

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/tsdproducts-support-troubleshoot-and-alerts.html

Documentation Roadmap

https://www.cisco.com/c/en/us/td/docs/storage/san_switches/mds9000/roadmaps/rel90.html

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