Cisco MDS 9000 Series Release Notes

Release 9.4(3)

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.
- 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 Cisco MDS 9000 Series Release Notes.

Date	Description
December 6,2024	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.

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 Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 9.x.

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

About Firmware Images

Cisco MDS 9000 Series Switches contain a number of hardware components with updatable firmware. The Transceiver Firmware bundle contains updates for various port transceivers. The EPLD Firmware bundle contains updates for programmable logic devices in the system.

These updates can be disruptive and so are not part of the Cisco NX-OS software image. They are released with every Cisco NX-OS release but do not frequently contain changes. Refer to the specific Release Notes for any recommended fixes.

For more information on Transceiver Firmware, see the *Cisco MDS 9000 Series Transceiver Firmware Release Notes, Release 9.4(3)*.

For more information on EPLD bundles, see the *Cisco MDS 9000 Series EPLD Release Notes, Release 9.4(3)*.

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 Recommended Releases for Cisco MDS 9000 Series Switches document.

Components Supported

For information on supported software and hardware components, see Cisco MDS 9000 Series Compatibility Matrix.

IBM FICON Qualification Status

Cisco MDS NX-OS Release 9.4(3) is not IBM FICON qualified. For more information on releases that are IBM FICON qualified, see Cisco MDS 9000 NX-OS and SAN-OS Software Release Notes.

Upgrade and Downgrade Paths

The following sections provide information about non-disruptive upgrade and downgrade paths for Cisco MDS NX-OS Release 9.4(3). For guidelines that are recommended for upgrading or downgrading Cisco MDS NX-OS software images, see the Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 9.x.

Upgrading Cisco MDS NX-OS Software Image

Open Systems Nondisruptive Upgrade Paths

Nondisruptive Upgrade Paths to Cisco MDS NX-OS Release 9.4(3).

Current MDS NX-OS Release	Nondisruptive Upgrade Paths and Ordered Upgrade Steps
9.4(2a)	Upgrade directly to MDS NX-OS Release 9.4(3)
9.4(2)	**Step 1.**Upgrade to MDS NX-OS Release 9.4(2a) **Step 2.**Upgrade to MDS NX-OS Release 9.4(3)
9.4(1a)	Upgrade directly to MDS NX-OS Release 9.4(3)
9.4(1)	Upgrade directly to MDS NX-OS Release 9.4(3)
9.3(x)	Upgrade directly to MDS NX-OS Release 9.4(3)
9.2(x)	Upgrade directly to MDS NX-OS Release 9.4(3)
8.5(1)	Upgrade directly to MDS NX-OS Release 9.4(3)
8.4(2c), 8.4(2d), 8.4(2e), 8.4(2f)	Upgrade directly to MDS NX-OS Release 9.4(3)

Current MDS NX-OS Release	Nondisruptive Upgrade Paths and Ordered Upgrade Steps
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(3)
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(3)
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(3)

Note: Upgrading MDS NX-OS from unsupported releases to MDS NX-OS Release 9.4(3) is disruptive.

Downgrading Cisco MDS NX-OS Software Image

Open Systems Nondisruptive Downgrade Paths

Nondisruptive Downgrade Paths from NX-OS Release 9.4(3)

Target MDS NX-OS Release	Nondisruptive Downgrade Paths and Ordered Upgrade Steps
9.4(x)	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) **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) **Step 2.**Downgrade to the target release

Note:

- Downgrading MDS NX-OS Release 9.4(3) to unsupported MDS NX-OS releases is disruptive.
- Downgrading MDS NX-OS Release 9.4(3) to MDS NX-OS Release 9.4(2) release is not recommended.

New and Enhanced Software Features

Product Impact	Feature	Description
Ease of Use	System	Support to display an accurate reason when the switch experiences a power failure is added. The linecards and supervisor modules log the Reset reason as **reset due to bad voltage**. See the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 9.x.
		Support to display PSU logs is introduced. The command **show logging onboard internal power** displays the status of PSUs. See the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 9.x.
Feature Set	Call Home Alerts	Support for secure Call Home email alerts has been added. See the Cisco MDS 9000 Series System Management Configuration Guide, Release 9.x.
	Fabric Switch Temperature Thresholds	All MDS fabric switches have improved minor and major temperature thresholds to better alert and protect these switches. See the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 9.x.
	IPStorage interface MAC counters	IPStorage interface MAC counters have been added to the **show interface counters detailed** command. See the Cisco MDS 9000 Series IP Services Configuration Guide, Release 9.x.
	Linecard Kernel Syslog	Support for logging kernel messages from MDS 9700 Fibre Channel switching modules has been added. The **logging module kernel** <*priority*> configuration command has been added. See the Cisco MDS 9000 Series System Management Configuration Guide, Release 9.x.
	Port Monitor Tx Overutilization Counter	Support for the Port Monitor tx-overutilization counter has been added. This improves network performance by providing better detection and management of congestion. See the Cisco MDS 9000 Series Interfaces Configuration Guide, Release 9.x .
	System	Support to display power capacity and power distribution details is introduced. The command **show environment power detail** is added. See the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 9.x.
Security	FC-SP Encryption Key Size	Support for AES-256 encryption key size for Fibre Channel Security Protocol has been added. The **encryption** configuration command has been added to the **SA** configuration mode. See the Cisco MDS 9000 Series Security Configuration Guide, Release 9.x.

Unsupported Features

MD5 Hash in FCSP

Cisco MDS NX-OS Release 9.4(2) and later releases do not support the MD5 hash algorithm in Fibre Channel Security Protocol (FC-SP) as it is no longer considered secure. The default hash algorithm has been changed to SHA1.

10G and 40G FCoE linecards

Cisco MDS NX-OS Release 9.4(2) and later releases do not support the following FCoE linecards:

- DS-X9848-480K9 – 48-port 10-Gbps FCoE Switching Module
- DS-X9824-960K9 – MDS 9700 24-port 40-Gbps FCoE Switching Module

For more information, see the Cisco MDS 9700 Series Multilayer Directors Hardware Installation Guide.

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 does not support installation of Product Authorization Key (PAK) or Smart Licensing version 1.0 licenses. Licenses are now managed through Smart License using Policy (SLP).

For more information such as how to migrate licenses, see Smart Licensing Using Policy chapter in Cisco MDS 9000 Series Licensing Guide, Release 9.x.

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 Cisco MDS 9000 Series Programmability Guide, Release 9.x.

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)

Cisco MDS NX-OS Release 8.3(1) and later releases do not support the VRRP feature on Cisco MDS 9000 Series Switches.

Data Encryption Standard (DES) 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 Cisco MDS 9000 Series System Management Configuration Guide, Release 9.x.

Fabric Performance Impact Notifications (FPIN)

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

FCWA, XRC, DMM, SME

Cisco MDS NX-OS Release 8.1(1) and later releases do not support FCWA, XRC, DMM and SME features.

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.

FCIP Support

- In Cisco MDS NX-OS Release 9.2(2) and 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.

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

Model	Description	Cisco TrustSec Capable Ports	Encryption Key Length
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 2 (Severe) Issues

Bug ID	Headline	Known Impacted Releases
CSCwj80322	FCSP service crash after reload or enabling the FCSP feature	9.4(2a), 9.4(2), 9.4(1a), 9.4(1) 9.3(2a), 9.3(2), 9.3(1)
CSCwj97007	Cisco NX-OS Software CLI Command Injection Vulnerability	9.4(2), 9.4(1a), 9.4(1) 9.3(2a), 9.3(2), 9.3(1) 9.2(2), 9.2(1a), 9.2(1)
CSCwk14579	TACACS authentication fails after ISSU to Cisco MDS NX-OS 9.4(2)	9.4(2)
CSCwk62258	Evaluation of MDS 9000 Series for OpenSSH regreSSHion vulnerability (CVE-2024-6387)	9.4(2), 9.4(1a)
CSCwk64707	ISSU fails due to BIOS Read/write lock not available in 64 Gbps FC linecard	9.4(2)
CSCwm91493	Configuring Callhome Destination Profile " Full_txt" with format " XML" results in Swtich crash	8.4(2f)

Severity 3 (Moderate) Issues

Bug ID	Headline	Known Impacted Releases
CSCwk08005	Received " error: Unable to open the btmp file /var/log/btmp: No such file or directory - dcos_sshd"	9.4(2a), 9.4(2)
CSCwk10899	Need to read, clear and log module power status registers after boot up	9.2(2)
CSCwk76653	Excessive " Cache ECC Error accessing SFP .." messages causes switch unresponsiveness	9.4(2) 8.4(2f)
CSCwk80971	Mgmt port LINK LED might not turn on though link is up	9.4(1a)
CSCwm32973	Module that triggers arbitor sync loss supervisor switchover is not logged	9.3(2)
CSCwm33137	Active Zone Database Section missing from running-config	
CSCwm33645	Need syslog and recovery action after inband initialisation failure	9.2(1)
CSCwm52602	MDS FC port gets error disabled when configured with credits between 501-1000	9.4(2a), 9.4(2), 9.4(1a), 9.4(1) 9.3(2a), 9.3(2), 9.3(1) 9.2(2), 9.2(1a), 9.2(1)
CSCwm86254	ISSU error 0x40930015 'BIOS/loader/bootrom of above module may be in corrupted state'	9.4(1) 9.3(1) 9.2(1)
CSCwn05499	Traffic disruption after a TCAM register parity error	8.4(2e), 8.4(2d)

Open Issues

Severity 2 (Severe) Issues

Bug ID	Headline	Known Impacted Releases
CSCwm97871	Soft zoning triggered after linecard hw programming failures	9.4(3), 9.4(1a) 9.3(2a)
CSCwn00984	'acltcam' service crash on MDS 9700 32 Gbps linecard	9.4(2a)
CSCwn18181	PMON congestion signal stops functioning after upgrade/downgrade	9.4(3). 9.4(2a), 9.4(2), 9.4(1a) 9.3(2a), 9.3(2)

Severity 3 (Moderate) Issues

Bug ID	Headline	Known Impacted Releases
CSCwm79623	pixmc cores when flapping multiple interfaces in a port-channel	9.4(2a)

Bug ID	Headline	Known Impacted Releases
CSCwn22414	FPM 'Peer Congestion' and 'Peer Congestion Clear' support needed for tx-overutilization counter	9.4(3)
CSCwn25489	PMON: Congestion Signals sent for txwait counter when its not monitored in active policy	9.4(3)
CSCwm68404	ISL diagnostics fail to start when interface has 64 Gbps optics	9.4(3)
CSCwn14935	PMON DIRL tx-overutilization measures egress buffer utilization incorrectly during rate recovery	9.4(3)
CSCwm97165	FICON - Active link for src/dest FC port channel is wrong on 9148V	9.4(3)
CSCwn07489	Peer WWN is 00:00:00:00:00:00:00:00 in F port-channel database display	9.4(2)

Severity 4 (Minor) Issues

Bug ID	Headline	Known Impacted Releases
CSCvf08416	'show tech details' triggers 'pam_ftp(ftp:auth): conversation failed - ftpd' syslogs	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 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)
CSCvj93031	IPv6 source address not displayed in log in failure logs	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 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)
CSCvs23106	SCSI target discovery service running even after removal of last DS-X9334-K9 module from switch	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 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)
CSCvt15761	Nondisruptive reload causes reinitialization of error disabled ports on other linecards	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 8.5(1) 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e)

Bug ID	Headline	Known Impacted Releases
CSCvv00538	Remove misleading ficon stat 'merge failed' message in non-FICON VSAN	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 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	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 8.4(2e), 8.4(2c) 8.1(1)
CSCwk33644	Power Supply status of "Powered-dn" causes Amber System Status LED	9.4(3), 9.4(2a), 9.4(2), 9.4(1a), 9.4(1)

Severity 6 (Enhancement) Issues

Bug ID	Headline	Known Impacted Releases
CSCvo22835	All flows are briefly suspended while moving an IOA flow between 2 clusters	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 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)
CSCvp70681	Streaming to telemetry receiver stops, receiver stays in "idle" state	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 8.5(1) 8.4(1), 8.4(2), 8.4(2a), 8.4(2b), 8.4(2c), 8.4(2d), 8.4(2e)
CSCvw77444	Need to automatically sync bootflash:/scripts directory between active and standby sups	9.4(3), 9.4(2a), 9.4(2), 9.4(1a), 9.4(1) 8.1(1a)
CSCvx37657	Need to save nonvolatile logs about BIOS programming errors	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 8.5(1) 8.4(2c), 8.4(2d), 8.4(2e) 8.3(2)
CSCwb13413	A fabric module with a faulty link to a linecard is not powered down	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 8.4(1)
CSCwe86920	Add option to 'show tech-support' to exclude and include subcommands	9.4(3), 9.4(2a), 9.4(2), 9.4(1a), 9.4(1) 8.1(1)

Bug ID	Headline	Known Impacted Releases
CSCwf48167	Span tx is not working in NPV mode on all platforms, rx is working	9.4(3), 9.4(2a), 9.4(2), 9.4(1a), 9.4(1)
CSCwf66251	Need a syslog warning when number of zone members exceeds maximum supported	9.4(3), 9.4(2a), 9.4(2), 9.4(1a) 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-os-software/products-release-notes-list.html

Documentation Suite

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

Statement of Volatality

https://trustportal.cisco.com/c/r/ctp/trust-portal.html?search_keyword=mds%209000&solutioncategory=Data%20Center#/1646059028492371

Documentation Feedback

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