

# NX-OS 8.2(2) Release Notes

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HPE C-series NX-OS 8.2(2) Release Notes

Cisco NX-OS 8.2(2) Release Notes

# Release Notes

## HPE C-series Fabric Switches for NX-OS 8.2(2)

This document provides additional information about the HPE StoreFabric SN8500C 8-slot and 4-slot 16/32 Gb Director Switch, HPE StoreFabric SN6610C 32Gb FC Switch, the HPE StoreFabric SN6010C Fabric Switch, the HPE StoreFabric SN6500C 16Gb FC/FCIP/FCOE Multi-service Switch

## 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 8.2(2) image updates provided by HPE, the *Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 8.2(2) (March, 2018)* have been included in the bundle. For a complete list and detailed description of features included in the NX-OS 8.2(2) release, refer to the Cisco release notes as appropriate.

As a part of NX-OS 8.2(2) image updates provided by HPE, Cisco Prime Data Center Network Manager (DCNM) Release 10.4(2) has been included in the bundle. Cisco Prime DCNM combines Cisco Fabric Manager, which previously managed SANs, and Cisco DCNM, which previously managed only LANs, into a unified product that can manage a converged data center fabric. As a part of the product merger in Cisco DCNM, the name Cisco DCNM for SAN replaces the name Cisco Fabric Manager.

Cisco Prime DCNM Release 10.4(2) supports the Cisco Nexus product family and the Cisco MDS 9000 product family.

DCNM for SAN uses server-based licenses that will allow you to purchase a pool of DCNM for SAN licenses instead of a switch-based Fabric Manager Server (FMS) license. The installed base of existing FMS licenses are grandfathered into DCNM for SAN, which means that you do not have to purchase a new DCNM license to use the advanced features of DCNM for SAN if you have an existing FMS license. HPE's C-series Data Center Network Manager (DCNM) Package extends Cisco Prime Data Center Network Manager by providing historical performance data collection for network traffic hot-spot analysis, centralized management services and advanced application integration.

Detailed information about these new features is available in the *Cisco Prime DCNM Release Notes, Release 10.4*, 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: <http://www.hpe.com/storage/spock>

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 C-series switch firmware.

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

- Go to <http://www.hpe.com>.
- Select **Support** from the drop-down menu in the top right corner of the home page.
- Under Product Support, click **HPE Support Center**.
- Enter your C-series switch (i.e. SN6010C) into the search box, and you will be presented with a list of models associated with this switch. Click on the link for your model.
- Click **Drivers & Software**.
- Select **Firmware (Entitlement required) Version: v8.2(2)**
- To read the Firmware Release Notes, click on the **Release Notes** link

## Hardware Components

### C-series Support Matrix with NX-OS 8.X

MDS Switch Model	Switch Description	Supported Switching Modules
HPE StoreFabric SN6610C 32Gb FC Switch (Q9D34A, Q9D35A, Q9D36A)	Fabric switch offers 8 to 32 32 Gb Fibre Channel ports	HPE StoreFabric SN6610C 16-port Fibre Channel Expansion Module (Q9D33A)
HPE StoreFabric SN8500C 8-slot 16/32 Gb FC director (C8S71A) with Fabric-1 Module (C8S74A)	Director class switch which can accommodate eight switching modules	HPE StoreFabric SN8500C 48-port 32Gb Fibre Channel Director Module (Q9D32A)  HPE StoreFabric SN8500C 48-port 16Gb FC Module (C8S70A)  HPE StoreFabric C-series SN8500C 48-port FCoE Module (E7Y66A)
HPE StoreFabric SN8500C 4-slot 16/32 Gb FC director (K2Q18A) with Fabric-1 Module (K2Q19A)	Director class switch which can accommodate four switching modules	HPE StoreFabric SN8500C 48-port 32Gb Fibre Channel Director Module (Q9D32A)  HPE StoreFabric SN8500C 48-port 16Gb FC Module (C8S70A)  HPE StoreFabric C-series SN8500C 48-port FCoE Module (E7Y66A)
HPE StoreFabric SN6010C 16Gb FC switch (K2Q16A, K2Q17A)	Fabric switch offers 12 or 48 16Gb Fibre Channel ports	N/A
HPE StoreFabric 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

## NX-OS 8.2(2) Naming Convention

MDS 9000 Switch Model	Image Type	Image Name
HPE StoreFabric SN8500C 8-slot 16/32 Gb FC Director Switch, HP StoreFabric SN8500C 4-slot 16/32 Gb FC Director Switch (Cisco MDS 9710 and 9706)	kickstart image	m9700-sf3ek9-kickstart-mz.8.2.2.bin
	system image	m9700-sf3ek9-mz.8.2.2.bin
HPE StoreFabric SN6500C 16Gb FC/FCIP/FCOE Multi-service Switch (Cisco MDS 9250i)	kickstart image	m9250-s5ek9-kickstart-mz.8.2.2.bin
	system image	m9250-s5ek9-mz.8.2.2.bin

HPE StoreFabric SN6610C 32Gb FC Switch (Cisco MDS 9132T)	kickstart image	m9100-s5ek9-kickstart-mz.8.2.2.bin
HPE StoreFabric SN6010C 16Gb FC Switch (Cisco MDS 9148S)	system image	m9100-s5ek9-mz.8.2.2.bin

Other Images	Image Type	Image Name
Data Center Network Manager (DCNM)	Windows 64-Bit installer	dcnm-installer-x64-windows.10.4.2.exe
Data Center Network Manager (DCNM)	Linux 64-Bit installer	dcnm-installer-x64-linux.10.4.2.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 Data Center Network Manager (DCNM) and Cisco Device Manager.

## 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 SN8500C (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 SN8500C (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 SN8500C (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 SN8500C (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, out-of-the box power up. For more comprehensive **initial setup information**, please refer to the **Cisco documentation found at <http://www.cisco.com>**.

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

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## HPE Specific Known Issues

### Problem Description:

When connecting a C-series 32 Gb FC switch with 32 Gb SFPs on the switch side to a Storage array or a Host HBA with 8 Gb SFPs on the device side, switch may reboot if auto-negotiation is enabled.

**Workaround:** switch port speed should be kept at a fixed 8G. (Default "Auto negotiate speed" is not supported for this release).

### Problem Description:

HPE Enterprise Virtual Array (EVA) P6000 is getting detected as "host" instead of "storage" in the DCNM, Device Type. At this instance LUNs which are presented from HPE Enterprise Virtual Array (EVA) P6000 will not be visible in the presented hosts. This issue is irrespective of host operating system.

**Workaround:** Changing the device type to "storage" in the Local full zone database of DCNM and rescanning the host system will resolve this issue.

1. Log into Data Center Network Manager
2. From Fabric, click Host Port tab
3. Select EVA P6000 Controller port WWN then mouse right click to select Device Attributes
4. Click on "Enclosures" tab
5. Change the "Device Type" for the desired device to "Storage" from the drop down.
6. Save changes by selecting the "Apply Changes" icon.

### Problem Description:

Limitation of Smart Zoning when using inter switch link (ISL) between MDS switches and Nexus switches. When Smart Zoning is enabled in MDS switches, it will not allow Nexus switches to merge to fabric. It fails with a message "zone merge failure". This message does not clearly show that the reason of ISL failure is because Smart Zoning is enabled on the MDS switches.

### Workaround:

To connect a Nexus 5000 switch to an MDS switch fabric, Smart Zoning must not be enabled.

**Problem Description:** The SN1000E, SN1200E and SN1600E HBA properties may display as "Unknown" vendor in Data Center Network Manager Host Ports list.

**Workaround:** Enabling the FDMI in Emulex driver by setting the driver parameter EnableFDMI to 1 will allow Data Center Network Manager to display the vendor name.

**Problem Description:** The HPE 81B/82B/41B/42B PCIe FC HBA may display as switches in Data Center Network Manager Switches list.

**Workaround:** Right click the entry in the switch list and select Purge then click refresh icon in the task bar.

**Problem Description:** SV3200 FC array vendor information is not available in DCNM.

This issue is cosmetic only, and as such does not affect switch functionality.

**Problem Description:** Broadcom cards information is not available in DCNM.

In the DCNM GUI information like Link Status, Vendor, Serial Number, Model, Firmware version, Driver version Information is not displayed.

This issue is cosmetic only, and as such does not affect switch functionality.

**Problem Description:** CN12000E and 556FLR HBA information is not available in DCNM.

In the DCNM GUI information like Link Status, Vendor, Serial Number, Model, Firmware version, Driver version Information is not displayed.

This issue is cosmetic only, and as such does not affect switch functionality.

**Problem Description:** 3PAR Storage array 16Gb 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.

**Problem Description:** In NX-OS 8.1(1) and later releases, 8Gb 3PAR Target ports may fail to do flogi when "FLOGI Scale Optimization" NX-OS feature is enabled and switchport mode is set to "F".

Issue may be encountered when 3PAR "Port persistence" (partner) ports are connected in the same VSAN. Issue is not seen when 3PAR "Port persistence" (partner) ports are connected in the different VSAN.

**Workaround:** Change the switchport mode to "Auto" OR Disable the "FLOGI Scale Optimization" NX-OS feature when switch port-type is set to "F mode" for 8Gb 3PAR Target(with Port persistence).

[https://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/sw/8\\_x/config/fabric/cisco\\_mds9000\\_fabric\\_config\\_guide\\_8x/managing\\_flogi.html](https://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/sw/8_x/config/fabric/cisco_mds9000_fabric_config_guide_8x/managing_flogi.html)

```
MDS9710# show flogi internal info | i scale
```

```
Stats: fs_flogi_scale_enabled: 0
```

```
MDS9710# show flogi internal info | i quiesce
```

```
Stats: fs_flogi_quiesce_timerval: 0
```

**Problem description:** During DCNM install or upgrade, the server needs new tcp, udp port 5989 free during the process.

**Workaround:** DCNM uses 8080 port for installing, for freeing up this port user has to be run the mentioned commands in windows command line interface:

```
netstat -o -n -a | findstr 8080
```

By running this command we will get the process ID and kill the Process ID.

```
taskkill /F /PID 2544
```

```
SUCCESS: The process with PID 1092 has been terminated.
```

```
netstat -o -n -a | findstr 5989
```

```
TCP 0.0.0.0:5989 0.0.0.0:0 LISTENING 1092
```

```
taskkill /F /PID 1092
```

```
SUCCESS: The process with PID 1092 has been terminated.
```

# Cisco MDS 9000 Series Release Notes, Release 8.x

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**First Published: May 04, 2017**

This document describes the caveats and limitations for switches in the Cisco MDS 9000 Series. Use this document in conjunction with documents listed in the [“Obtaining Documentation and Submitting a Service Request”](#) section on page 28.

Release notes are sometimes updated with new information on restrictions and caveats. Refer to the following website for the most recent version of the [Cisco MDS 9000 Series Release Notes](#).

**Table 1**      *Change History*

Date	Description
May 04, 2017	Updated Release Notes for 8.1(1).
September 28, 2017	Updated Release Notes for 8.2(1).
February 28, 2018	Updated Release Notes for 8.1(1a).
March 9, 2018	Updated Release Notes for 8.2(2).

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## Introduction

The Cisco MDS 9000 Series of Multilayer Directors and Fabric Switches provides best-in-class high availability, scalability, security, and management, allowing you 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 addresses the stringent requirements of large data center storage environments: high availability, security, scalability, ease of management, and seamless integration of new technologies.

Cisco MDS 9000 NX-OS software powers the award-winning Cisco MDS 9000 Series Multilayer Switches. It is designed to create a strategic SAN platform with superior reliability, performance, scalability, and features.

## Choosing Between Cisco MDS NX-OS Releases

Cisco uses MDS NX-OS release numbering to indicate when significant features or hardware support are added to the code. This allows older trains to provide stability and newer trains to focus new features and hardware.

- Cisco MDS NX-OS Release 6.2(x) - This release train provides general support for most Cisco MDS platforms except for newer platforms such as Cisco MDS 9718 Director and Cisco MDS 9132T.
- Cisco MDS NX-OS Release 8.1(x) - This release train marks the removal of Cisco MDS 9500 technology hardware support. It only supports the newer Cisco MDS 9700 technology hardware (these are systems with 16 and 32 Gbps FC, 10 and 40 Gbps FCoE, and 10 Gbps IPS ports) and adds support for the Cisco MDS 48 Port 32 Gbps Fibre Channel Switching Module.
- Cisco MDS NX-OS Release 8.2(x) - This release train supports the same platforms as the 8.1(x) train as well as the Cisco MDS 9132T Fibre Channel Switch. It is based on Cisco MDS NX-OS Release 8.1(x).

Details about the new features and hardware supported by each Cisco MDS NX-OS release can be found in the [“New Hardware and Software Features” section on page 14](#).

## Components Supported

For information on supported software and hardware components, see the [Cisco MDS 9000 Series Compatibility Matrix](#).

# FICON

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

FICON is supported on the following Cisco MDS 9000 Series switches:

- Cisco MDS 9706
  - Cisco MDS 24/10 port SAN Extension module (DS-X9334-K9)
  - Cisco MDS 48 Port 16 Gbps Fibre Channel Switching Module (DS-X9448-768K9)
- Cisco MDS 9710
  - Cisco MDS 24/10 port SAN Extension module (DS-X9334-K9)
  - Cisco MDS 48 Port 16 Gbps Fibre Channel Switching Module (DS-X9448-768K9)
- Cisco MDS 9250i

## FICON Supported Releases

The Cisco MDS NX-OS Release 8.1(1a) is an IBM-certified FICON release for Cisco MDS

[Table 2](#) lists the NX-OS releases that are certified for FICON. Refer to the specific release notes for FICON upgrade path information.

**Table 2** *FICON Supported Releases*

<b>FICON Supported Releases</b>	
NX-OS	Release 8.1(1a)
	Release 6.2(11e)
	Release 6.2(11d) for the <i>Cisco MDS 9250i Switch only</i>
	Release 6.2(11c) for <i>all FICON supported platforms except the Cisco MDS 9250i Switch</i>
	Release 6.2(5b)
	Release 6.2(5a)
	Release 5.2(2s)
	Release 5.2(2)
	Release 4.2(7b)
	Release 4.2(1b)
	Release 4.1(1c)

# Subscribing for Important Product Update Notifications

Cisco provides a subscription service to notify you of important events related to Cisco MDS software and hardware for the following categories:

- End-of-Sale and End-of-Life Announcements
- Field Notices
- Security Advisories
- Software Updates [New, Certified, Software Advisories, Deferred, Obsoleted]
- Known Bugs

We recommend that you at least subscribe to the Field Notices, Security Advisories, and Software Updates [New, Certified, Software Advisories, Deferred, Obsoleted] categories, if not all categories, so that you can receive notifications about any critical product issues.

To subscribe to a category for receiving notifications of important updates:

1. Go to <https://www.cisco.com/>, and log in to your account.
2. Click **Support**.
3. Under the **Support Resources** category, click **Cisco Notification Service**.
4. On the **Cisco Notification Service** page, click **Add Notification**.
5. Under the **Topic Type** menu, click the **Alert-centric** option and then click **Continue**.
6. Under the **Topic** menu, choose a category and then click **Continue**.
7. Under the **Sub-Topic(s)** menu, type “mds nx-os” in the search box and then click **MDS 9000 NX-OS and SAN-OS Software** option from the list.
8. Under the **Finish** menu, click **Finish**.



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**Note** You must renew your notification subscriptions annually.

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## Upgrading Your Cisco MDS NX-OS Software Image

This section lists the guidelines recommended for upgrading your Cisco MDS NX-OS software image and includes the following topics:

- [General Upgrading Guidelines, page 4](#)
- [Open Systems Nondisruptive Upgrade Paths, page 5](#)
- [FICON Upgrade Paths, page 9](#)

For detailed instructions for performing a software upgrade using Cisco DCNM, see the [Cisco DCNM Release Notes](#).

## General Upgrading Guidelines

Follow these general guidelines before performing a software upgrade:

- Install and configure dual supervisor modules before the upgrade.

- Issue the **show install all impact *upgrade-image*** command to determine if your upgrade will be nondisruptive.
- Some features are impacted whether an upgrade is disruptive or nondisruptive:
  - **Fibre Channel Ports:** Fibre Channel ports can be nondisruptively upgraded without affecting traffic on the ports. See the “[Open Systems Nondisruptive Upgrade Paths](#)” section on page 5 section for all MDS NX-OS releases.
  - **Gigabit Ethernet Ports:** Traffic on Gigabit Ethernet or IPStorage ports is disrupted during an upgrade or downgrade. This includes IPStorage ports on the MDS 9250i and Cisco MDS 24/10 Port SAN Extension Module. Nodes that are members of VSANs traversing an FCIP ISL are impacted, and a fabric reconfiguration occurs. iSCSI initiators connected to the Gigabit Ethernet ports lose connectivity to iSCSI targets while the upgrade is in progress.



Note

In addition to these guidelines, you may want to review the information in the “[Limitations and Restrictions](#)” section on page 21 prior to a software upgrade to determine if a feature may possibly behave differently following the upgrade.

## 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.

### Upgrading Guidelines for Cisco MDS NX-OS Release 8.2(2)

- Prior to upgrading any Cisco MDS 9706 and Cisco MDS 9710 switches to Cisco MDS NX-OS Release 8.2(2), the switches should be checked if they are affected by [CSCvf99665](#). This defect manifests as a corrupt IPv6 address with a zero length mask (/0) on the mgmt0 interface. The actual IPv6 address itself is not important but if it has a /0 mask then it is invalid. This invalid IPv6 address cannot be removed by normal configuration. Refer to the following example:
 

```
show interface mgmt0
.
.
.
::10.1.1.2.255/0
```

 If a switch is found to be affected, there are specific steps that must be taken after upgrading to Cisco MDS NX-OS Release 8.1(1a). For information on these specific steps, see the **Resolution Summary** section in [CSCvf99665](#).
- Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before upgrading from Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1) to Cisco MDS NX-OS Release 8.1(1) or later releases.

## Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.2(2)

**Table 3** Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.2(2)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
<b>MDS NX-OS:</b>	
All 8.1(x) releases	Upgrade directly to MDS NX-OS Release 8.2(2)
All 7.3(x) releases	<ol style="list-style-type: none"><li>1. Upgrade to MDS NX-OS Release 8.1(1a)</li><li>2. Upgrade to MDS NX-OS Release 8.2(2)</li></ol>
6.2(13a) and above releases	<ol style="list-style-type: none"><li>1. Upgrade to MDS NX-OS Release 8.1(1a)</li><li>2. Upgrade to MDS NX-OS Release 8.2(2)</li></ol>
All 6.2(x) releases prior to 6.2(13a)	<ol style="list-style-type: none"><li>1. Upgrade to MDS NX-OS Release 6.2(13a)</li><li>2. Upgrade to MDS NX-OS Release 8.1(1a)</li><li>3. Upgrade to MDS NX-OS Release 8.2(2)</li></ol>

### Upgrading Guidelines for Cisco MDS NX-OS Release 8.2(1)

- Prior to upgrading any Cisco MDS 9706 and Cisco MDS 9710 switches to Cisco MDS NX-OS Release 8.2(2), the switches should be checked if they are affected by [CSCvf99665](#). This defect manifests as a corrupt IPv6 address with a zero length mask (/0) on the mgmt0 interface. The actual IPv6 address itself is not important but if it has a /0 mask then it is invalid. This invalid IPv6 address cannot be removed by normal configuration. Refer to the following example:  

```
show interface mgmt0
mgmt0 is up
Internet address is 1.2.3.4/24
...
::148.173.170.255/0
fe80::2e31:24ff:fe51:b834/64
```

If a switch is found to be affected, there are specific steps that must be taken after upgrading to Cisco MDS NX-OS Release 8.1(1a). For information on these specific steps, see the **Resolution Summary** section in [CSCvf99665](#).
- Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before upgrading from Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1) to Cisco MDS NX-OS Release 8.1(1) or later releases.
- Upgrading to Cisco MDS NX-OS Release 8.2(1) on a device with the **esp-aes-xcbc-mac** algorithm is not supported. In such a scenario, we recommend that you first change the algorithm, and then upgrade to Cisco MDS NX-OS Release 8.2(1).
- We recommend that you delete existing IP ACLs on the management interface before upgrading to Cisco MDS NX-OS Release 8.2(1). You can reconfigure the IP ACLs after the upgrade is complete. For more information, see [CSCvh30932](#).

## Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.2(1)

**Table 4** Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.2(1)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
<b>MDS NX-OS:</b>	
All 8.1(x) releases	Upgrade directly to MDS NX-OS Release 8.2(1)
All 7.3(x) releases	<ol style="list-style-type: none"> <li>1. Upgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Upgrade to MDS NX-OS Release 8.2(1)</li> </ol>
6.2(13a) and above releases	<ol style="list-style-type: none"> <li>1. Upgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Upgrade to MDS NX-OS Release 8.2(1)</li> </ol>
All 6.2(x) releases prior to 6.2(13a)	<ol style="list-style-type: none"> <li>1. Upgrade to MDS NX-OS Release 6.2(13a)</li> <li>2. Upgrade to MDS NX-OS Release 8.1(1a)</li> <li>3. Upgrade to MDS NX-OS Release 8.2(1)</li> </ol>

### Upgrading Guidelines for Cisco MDS NX-OS Release 8.1(1a)

- Prior to upgrading any Cisco MDS 9706 and Cisco MDS 9710 switches to Cisco MDS NX-OS Release 8.2(2), the switches should be checked if they are affected by [CSCvf99665](#). This defect manifests as a corrupt IPv6 address with a zero length mask (/0) on the mgmt0 interface. The actual IPv6 address itself is not important but if it has a /0 mask then it is invalid. This invalid IPv6 address cannot be removed by normal configuration. Refer to the following example:

```
show interface mgmt0
mgmt0 is up
Internet address is 1.2.3.4/24
...
::148.173.170.255/0
fe80::2e31:24ff:fe51:b834/64
```

If a switch is found to be affected, there are specific steps that must be taken after upgrading to Cisco MDS NX-OS Release 8.1(1a). For information on these specific steps, see the **Resolution Summary** section in [CSCvf99665](#).
- Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before upgrading from Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1) to Cisco MDS NX-OS Release 8.1(1) or later releases.

### Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.1(1a)

**Table 5** Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.1(1a)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
<b>MDS NX-OS:</b>	
All 7.3(x) releases	Upgrade directly to MDS NX-OS Release 8.1(1a)

**Table 5 Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.1(1a)**

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
6.2(21) <sup>a</sup>	<ol style="list-style-type: none"> <li>1. Upgrade to MDS NX-OS Release 6.2(23)</li> <li>2. Upgrade to MDS NX-OS Release 8.1(1)</li> <li>3. Upgrade to MDS NX-OS Release 8.1(1a)</li> </ol>
All 6.2(13a) and above releases except 6.2(21)	Upgrade directly to MDS NX-OS Release 8.1(1a)
All 6.2(x) releases prior to 6.2(13a)	<ol style="list-style-type: none"> <li>1. Upgrade to MDS NX-OS Release 6.2(13a)</li> <li>2. Upgrade to MDS NX-OS Release 8.1(1a)</li> </ol>

a. Upgrading specifically from MDS NX-OS Release 6.2(21) to MDS NX-OS Release 8.1(1a) is disruptive. For more information, see [CSCvj40760](#) in the “Open Caveats in Cisco MDS NX-OS Release 8.1(1a)” section on page 25.

For FICON upgrade paths, see the [FICON Upgrade Paths, page 9](#) section.

## Upgrading Guidelines for Cisco MDS NX-OS Release 8.1(1)

- Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before upgrading from Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1) to Cisco MDS NX-OS Release 8.1(1) or later releases.
- Prior to upgrading the Cisco MDS 9706 and Cisco MDS 9710 switches to Cisco MDS NX-OS Release 8.1(1), ensure that they are not affected by [CSCvg05230](#). This defect manifests as a corrupt IPv6 address and mask on the mgmt0 interface. An affected switch cannot be upgraded or downgraded while running the Cisco MDS NX-OS Release 8.1(1). Because this issue cannot be resolved through normal methods, we recommend that you contact the Cisco TAC for help in purging the IPv6 NVRAM fields nondisruptively. This process is simpler if performed before upgrading to Cisco MDS NX-OS Release 8.1(1). For more information, including how to determine if a switch is affected, see [CSCvg05230](#) and [CSCvf99665](#).
- We recommend that you delete existing IP ACLs on the management interface before upgrading to Cisco MDS NX-OS Release 8.1(1). You can reconfigure the IP ACLs after the upgrade is complete. For more information, see [CSCvh30932](#).

## Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.1(1)

**Table 6 Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.1(1)**

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
<b>MDS NX-OS:</b>	
All 7.3(x) releases	Upgrade directly to MDS NX-OS Release 8.1(1)

**Table 6** *Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 8.1(1)*

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
6.2(13a) and above releases	Upgrade directly to MDS NX-OS Release 8.1(1)
All 6.2(x) releases prior to 6.2(13a)	<ol style="list-style-type: none"><li>1. Upgrade to MDS NX-OS Release 6.2(13a)</li><li>2. Upgrade to MDS NX-OS Release 8.1(1)</li></ol>

## FICON Upgrade Paths

Use [Table 7](#) to determine the nondisruptive upgrade path for FICON-certified releases. Find the image release number you are currently using in the Current Release with FICON Enabled column of the table and follow the recommended path.

**Table 7** *FICON Nondisruptive Upgrade Path*

Current Release with FICON Enabled	Upgrade Path
NX-OS Release 6.2(11e)	You can nondisruptively upgrade directly to NX-OS Release 8.1(1a).
NX-OS Release 6.2(11d)	You can nondisruptively upgrade directly to NX-OS Release 8.1(1a).
NX-OS Release 6.2(11c)	You can nondisruptively upgrade directly to NX-OS Release 8.1(1a).
NX-OS Release 6.2(5b)	You can nondisruptively upgrade to NX-OS Release 6.2(11c) or 6.2(11e).
NX-OS Release 6.2(5a)	You can nondisruptively upgrade directly to NX-OS Release 8.1(1a).
NX-OS Release 5.2(2), 5.2(2E4), and 5.2(2s)	You can nondisruptively upgrade to NX-OS Release 6.2(5b).
NX-OS Release 4.2(7b)	You can nondisruptively upgrade NX-OS Release 5.2(2), 5.2(2E4), and 5.2(2s).
NX-OS Release 4.2(1b)	You can nondisruptively upgrade to NX-OS Release 4.2(7b).
NX-OS Release 4.1(1c)	You can nondisruptively upgrade to NX-OS Release 4.2(1b).

## Downgrading Your Cisco MDS NX-OS Software Image

This section lists the guidelines recommended for downgrading your Cisco MDS NX-OS software image and includes the following topics:

- [General Downgrading Guidelines, page 9](#)
- [Open Systems Nondisruptive Downgrade Paths, page 10](#)
- [FICON Downgrade Paths, page 13](#)

### General Downgrading Guidelines

Follow these general guidelines before you perform a software downgrade:

- Disable all features that are not supported by the downgrade release. Use the **show incompatibility system downgrade-image** command to determine what needs to be disabled.



- Use the **show install all impact downgrade-image** command to determine if your downgrade is nondisruptive.
- Some features impact whether a downgrade is disruptive or nondisruptive:
  - **Fibre Channel Ports:** Fibre Channel ports can be nondisruptively downgraded without affecting traffic on the ports.
  - **Gigabit Ethernet Ports:** Traffic on IPStorage ports is disrupted during a downgrade. This includes IPStorage ports in MDS 9250i and 24/10 Port SAN Extension Module. Nodes that are members of VSANs traversing an FCIP ISL are impacted, and a fabric reconfiguration occurs. iSCSI initiators connected to the Gigabit Ethernet ports lose connectivity to iSCSI targets while the downgrade is in progress.

Find the NX-OS or SAN-OS image that you want to downgrade to in the To NX-OS or SAN-OS Release column of the table and follow the steps in the order specified to perform the downgrade.



**Note**

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The software downgrade information in the below tables applies only to Fibre Channel switching traffic. Downgrading system software disrupts IP and intelligent services traffic.

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## ISSD Guidelines for Cisco MDS 9396S Switch

- Downgrading from Cisco MDS NX-OS Release 8.x to Cisco MDS NX-OS Release 7.3(0)D1(1) or Cisco MDS NX-OS Release 6.2(13a) is not supported on a Cisco MDS 9396S Switch which has DS-CAC-1200W as a power supply unit (PSU) and DS-C96S-FAN-I as port side intake fan tray.
- Downgrading from Cisco MDS NX-OS Release 8.x to Cisco MDS NX-OS Release 6.2(13) is not supported on the Cisco MDS 9396S Multilayer Fabric Switch. The minimum recommended image for Cisco MDS 9396S Multilayer Fabric Switch is 6.2(13a).

## ISSD Guidelines for Cisco MDS 9250i Switch

- Downgrading from Cisco MDS NX-OS Release 8.x to Cisco MDS NX-OS Release 7.3(0)D1(1), or 6.2(13a) and lower is not supported on a Cisco MDS 9250i Switch which has only one online PSU.
- Downgrading from Cisco MDS NX-OS Release 8.x to Cisco MDS NX-OS Release 7.3(0)D1(1), or 6.2(13a) and lower on a Cisco MDS 9250i Switch with two online PSUs results in loss of N:N grid redundancy. The switch will run in non-redundant mode.
- Downgrading from Cisco MDS NX-OS Release 8.x to Cisco MDS NX-OS Release 7.3(0)D1(1), or 6.2(13a) and lower on a Cisco MDS 9250i Switch with three online PSUs results in loss of N:N grid redundancy. The switch will run in N+1 power redundant mode.

## Open Systems Nondisruptive Downgrade Paths

- Downgrading directly from Cisco MDS NX-OS Releases 8.1(1) and 8.1(1a) to releases prior to Cisco MDS NX-OS Release 6.2(9) is not supported. In such a scenario, we recommend that you first downgrade to Cisco MDS NX-OS Release 6.2(13a) or higher and then downgrade to the required release.
- Downgrading directly from Cisco MDS NX-OS Release 8.1(1) to Cisco MDS NX-OS Release 7.3(0)DY(1) is not supported. In such a scenario, we recommend that you first downgrade to Cisco MDS NX-OS Release 7.3(0)D1(1) and then upgrade to 7.3(0)DY(1).

- Downgrading directly from Cisco MDS NX-OS Release 8.1(1) to Cisco MDS NX-OS Release 7.3(1)DY(1) is not supported. In such a scenario, we recommend that you first downgrade to Cisco MDS NX-OS Release 7.3(0)D1(1) and then upgrade to 7.3(1)DY(1).
- Downgrading from Cisco MDS NX-OS Releases 8.1(1) and 8.1(1a) is not supported if the FLOGI Scale Optimization feature is enabled on Cisco MDS 9718 Switches.

## Downgrading Guidelines for Cisco MDS NX-OS Release 8.2(2)

Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before downgrading from Cisco MDS NX-OS Release 8.1(1) or later releases to Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1).

## Nondisruptive Downgrade Path from Cisco MDS NX-OS Release 8.2(2)

**Table 8** *Nondisruptive Downgrade Path from NX-OS Release 8.2(2)*

To NX-OS or SAN-OS Release	Nondisruptive Downgrade Path and Ordered Downgrade Steps
<b>NX-OS:</b>	
All 8.1(x) releases	Downgrade directly from MDS NX-OS Release 8.2(2)
All 7.3(x) releases	<ol style="list-style-type: none"> <li>1. Downgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Downgrade to the target release</li> </ol>
All 6.2(13a) and above releases	<ol style="list-style-type: none"> <li>1. Downgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Downgrade to the target release</li> </ol>
All releases prior to 6.2(13a)	<ol style="list-style-type: none"> <li>1. Downgrade to MDS NX-OS Release 8.1(a)</li> <li>2. Downgrade to NX-OS Release 6.2(13a)</li> <li>3. Downgrade to the target release</li> </ol>

## Downgrading Guidelines for Cisco MDS NX-OS Release 8.2(1)

Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before downgrading from Cisco MDS NX-OS Release 8.1(1) or later releases to Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1).

## Nondisruptive Downgrade Path from Cisco MDS NX-OS Release 8.2(1)

**Table 9** *Nondisruptive Downgrade Path from NX-OS Release 8.2(1)*

To NX-OS or SAN-OS Release	Nondisruptive Downgrade Path and Ordered Downgrade Steps
<b>NX-OS:</b>	
All 8.1(x) releases	Downgrade directly from MDS NX-OS Release 8.2(1)
All 7.3(x) releases	<ol style="list-style-type: none"> <li>1. Downgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Downgrade to the target release</li> </ol>
All 6.2(13a) and above releases	<ol style="list-style-type: none"> <li>1. Downgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Downgrade to the target release</li> </ol>
All releases prior to 6.2(13a)	<ol style="list-style-type: none"> <li>1. Downgrade to MDS NX-OS Release 8.1(1a)</li> <li>2. Downgrade to NX-OS Release 6.2(13a)</li> <li>3. Downgrade to the target release</li> </ol>

## Downgrading Guidelines for Cisco MDS NX-OS Release 8.1(1a)

Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before downgrading from Cisco MDS NX-OS Release 8.1(1) or later releases to Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1).

## Nondisruptive Downgrade Path from Cisco MDS NX-OS Release 8.1(1a)

**Table 10** *Nondisruptive Downgrade Path from NX-OS Release 8.1(1a)*

To NX-OS or SAN-OS Release	Nondisruptive Downgrade Path and Ordered Downgrade Steps
<b>NX-OS:</b>	
All 7.3(x) releases	Downgrade directly from MDS NX-OS Release 8.1(1a)
All 6.2(13a) and above releases	Downgrade directly from MDS NX-OS Release 8.1(1a)
All releases prior to 6.2(13a)	<ol style="list-style-type: none"> <li>1. Downgrade to NX-OS Release 6.2(13a)</li> <li>2. Downgrade to the target release</li> </ol>

For FICON downgrade paths, see the [FICON Downgrade Paths, page 13](#) section.

## Downgrading Guidelines for Cisco MDS NX-OS Release 8.1(1)

Ensure that you power off the modules using the **poweroff module** command and remove the Cisco MDS 9700 48-Port 32-Gbps Fibre Channel Switching Module and Cisco MDS 24/10-Port SAN Extension Module before downgrading from Cisco MDS NX-OS Release 8.1(1) or later releases to Cisco MDS NX-OS Release 6.x, Cisco MDS NX-OS Release 7.3(0)D1(1), or Cisco MDS NX-OS Release 7.3(1)D1(1).

## Nondisruptive Downgrade Path from Cisco MDS NX-OS Release 8.1(1)

*Table 11 Nondisruptive Downgrade Path from NX-OS Release 8.1(1)*

To NX-OS or SAN-OS Release	Nondisruptive Downgrade Path and Ordered Downgrade Steps
<b>NX-OS:</b>	
All 7.3(x) releases	Downgrade directly from MDS NX-OS Release 8.1(1)
All 6.2(13a) and above releases	Downgrade directly from MDS NX-OS Release 8.1(1)
All releases prior to 6.2(13a)	<ol style="list-style-type: none"><li>1. Downgrade to NX-OS Release 6.2(13a)</li><li>2. Downgrade to the target release</li></ol>

## FICON Downgrade Paths

Table 12 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.

**Table 12**      *FICON Nondisruptive Downgrade Paths*

<b>To Release with FICON Enabled</b>	<b>Downgrade Path</b>
NX-OS Release 6.2(11e)	You can nondisruptively downgrade directly from NX-OS Release 8.1(1a).
NX-OS Release 6.2(11d)	You can nondisruptively downgrade directly from NX-OS Release 8.1(1a).
NX-OS Release 6.2(11c)	You can nondisruptively downgrade directly from NX-OS Release 8.1(1a).
NX-OS Release 6.2(5b)	You can nondisruptively downgrade to NX-OS Release 6.2(11c) or 6.2(11e).
NX-OS Release 6.2(5a)	You can nondisruptively downgrade directly from NX-OS Release 8.1(1a).
NX-OS Release 5.2(2) and 5.2(2s)	You can nondisruptively downgrade directly from NX-OS Release 6.2(5b).
NX-OS Release 4.2(7b)	You can nondisruptively downgrade directly from NX-OS Release 5.2(2) or 5.2(2s).
NX-OS Release 4.2(1b)	You can nondisruptively downgrade directly from NX-OS Release 4.2(7b).
NX-OS Release 4.1(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).

## New Hardware and Software Features

- [New Hardware Features in Cisco MDS NX-OS Release 8.2\(2\), page 14](#)
- [New Software Features in Cisco MDS NX-OS Release 8.2\(2\), page 14](#)
- [New Hardware Features in Cisco MDS NX-OS Release 8.2\(1\), page 14](#)
- [New Software Features in Cisco MDS NX-OS Release 8.2\(1\), page 15](#)
- [New Hardware Features in Cisco MDS NX-OS Release 8.1\(1a\), page 16](#)
- [New Software Features in Cisco MDS NX-OS Release 8.1\(1a\), page 16](#)
- [New Hardware Features in Cisco MDS NX-OS Release 8.1\(1\), page 17](#)
- [New Software Features in Cisco MDS NX-OS Release 8.1\(1\), page 17](#)

### New Hardware Features in Cisco MDS NX-OS Release 8.2(2)

There are no new hardware features in Cisco MDS NX-OS Release 8.2(2).

### New Software Features in Cisco MDS NX-OS Release 8.2(2)

There are no new software features in Cisco MDS NX-OS Release 8.2(2).

### New Hardware Features in Cisco MDS NX-OS Release 8.2(1)

This section lists the new hardware chassis and features introduced in Cisco MDS NX-OS Release 8.2(1).

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## Cisco MDS 9132T Fibre Channel Switch

The Cisco MDS 9132T 32-Gbps 32-Port Fibre Channel Switch is a powerful compact one rack-unit (1RU) device with up to 32x32-Gbps full line rate Fibre Channel ports, and a pluggable and modular Linecard Expansion Module (LEM) which can be inserted and removed as a Field Replaceable Unit (FRU).

## New SFPs Support

Support for third-party SFPs is introduced for Cisco MDS 9132T Fibre Channel Switch and Cisco MDS 48 Port 32 Gbps Fibre Channel Switching Module.

For more information, see the [Interoperability Matrix for Cisco Nexus and MDS 9000](#).

## New Software Features in Cisco MDS NX-OS Release 8.2(1)

This section lists the new software features introduced in Cisco MDS NX-OS Release 8.2(1).

### Cisco MDS SAN Telemetry Streaming

The Cisco MDS SAN Telemetry Streaming feature is introduced to monitor, analyze, identify, and troubleshoot performance issues on Cisco MDS switches.

For more information about this feature, see the [Cisco MDS 9000 Series NX-OS SAN Telemetry Streaming Configuration Guide](#).

### Buffer-to-Buffer Credit Recovery

The buffer-to-buffer credit recovery feature is supported for F ports.

For more information about this feature, see the [Cisco MDS 9000 Series Interfaces Configuration Guide](#).

### Enhancements for Debugging FCoE Slow Drain

The congestion drop timeout and pause drop timeout commands in FCoE are modified to align with the commands used in Fibre Channel.

For more information about this feature, see the [Cisco MDS 9000 Series Interfaces Configuration Guide](#).

### Virtual Machine Identifier

The Virtual Machine Identifier (VMID) feature is introduced to identify virtual machines that are running on hypervisors.

For more information about this feature, see the [Cisco MDS 9000 Series Fabric Configuration Guide](#).

### HBA Link Diagnostics

The HBA Link Diagnostics feature helps in validating the health of links between Host Bus Adapters (HBAs) and Cisco MDS switches in a network.

For detailed information about this feature, see the [Cisco MDS 9000 Series System Management Guide](#).

## Fibre Channel Read Diagnostic Parameters Enhancements

Querying of non-switch (edge) devices with RDP is supported.

For detailed information about this feature, see the [Cisco MDS 9000 Series Command Reference](#).

## LDAP Enhancements

LDAP connections on port 636 automatically starting securely with SSL or TLS is introduced.

For more information about this feature, see the [Cisco MDS 9000 Series Security Configuration Guide](#).

## SHA-2 Encryption and Fingerprint Hashing Support

- New user accounts will have passwords encrypted with SHA-2 by default.
- SHA-2 fingerprint hashing is supported only on Cisco MDS 9132T, Cisco MDS 9148S, MDS 9396S, MDS 9250i, and MDS 9700 Series switches.

For more information about this feature, see the [Cisco MDS 9000 Series Security Configuration Guide](#).

## Anti-counterfeit Measures

Anti-counterfeit measures have been introduced for the Cisco MDS 9132T Fibre Channel Switch.

## IOA on Cisco MDS 24/10 Port SAN Extension Module

For information about this feature, see the [Cisco MDS MDS 9000 Series I/O Accelerator Configuration Guide](#).

## Secure Boot Support

Secure boot support has been introduced for the Cisco MDS 9132T Fibre Channel Switch.

## New Hardware Features in Cisco MDS NX-OS Release 8.1(1a)

There are no new hardware features in Cisco MDS NX-OS Release 8.1(1a).

## New Software Features in Cisco MDS NX-OS Release 8.1(1a)

### FICON over FCIP Support on Cisco MDS 24/10 SAN Extension Module

FICON over FCIP support on Cisco MDS 24/10 SAN Extension Module has been introduced on Cisco MDS 9706 and 9710 switches.

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## New Hardware Features in Cisco MDS NX-OS Release 8.1(1)

This section lists the new hardware chassis and features introduced in Cisco MDS NX-OS Release 8.1(1).

### Cisco MDS 48 Port 32 Gbps Fibre Channel Switching Module

The Cisco MDS 48 Port 32 Gbps Fibre Channel Switching Module is supported on Cisco MDS 9700 Series Multilayer Directors. This module delivers predictable performance, scalability, and innovative features to support private and virtualized data centers.

For more information about this module, see the [Cisco MDS 9700 Series Hardware Installation Guide](#).

## New Software Features in Cisco MDS NX-OS Release 8.1(1)

This section lists the new software features introduced in Cisco MDS NX-OS Release 8.1(1).

### Fibre Channel Read Diagnostic Parameters

The Fibre Channel Read Diagnostic Parameters (RDP) is a feature that provides the capability to read port and link diagnostics parameters like link errors, port name, port speed, SFP diagnostics, temperature, Rx power, Tx power, current, connector type, FEC status, buffer credits, serial number, vendor details, model number, and manufacture date.

### FLOGI Scale Optimization

The FLOGI scale optimization feature increases the chassis-wide FLOGI scale limits. This feature is supported only on Cisco MDS 9718 Directors and is enabled by default.

For more information about this feature, see the [Cisco MDS 9000 Series Fabric Configuration Guide](#).

### Port Monitoring Enhancements

The link connecting an edge switch to a core switch must be treated as an ISL (core port), instead of an F port or a TF port. The port monitor may take port-guard action on the link if it is treated as an edge port, which will result in isolating the devices that are connected to the edge switch.

For more information about this feature, see the [Cisco MDS 9000 Series Interfaces Configuration Guide](#).

### Slow Drain Detection and Isolation Enhancements

Prior to Cisco MDS NX-OS Release 8.1(1), Slow Drain Detection and Congestion Avoidance was used to drop frames, reset, error-disable, or flap a port on a slow-drain device. From Cisco MDS NX-OS Release 8.1(1), the Slow Drain Detection and Congestion Isolation feature is introduced to isolate slow flows and route them to a low priority virtual link so that normal flows are not affected.

For more information about this feature, see the [Cisco MDS 9000 Series Interfaces Configuration Guide](#).



## 40G FCoE Long Distance Support

The following QSFPs have been introduced to support FCoE Long Distance:

- QSFP-40GE-LR4 –10 km
- QSFP-40GE-ER4 –40 km

For more information about this feature see the [Cisco MDS 9700 Series Hardware Installation Guide](#) and the [Cisco MDS 9000 Series QoS Configuration Guide](#).

## Smart Software Licensing

Smart Software Licensing is a standardized licensing platform that simplifies the Cisco software experience and helps you understand how Cisco software is used across your network.

For more information about this feature, see the [Cisco MDS 9000 Series Licensing Guide](#).

## NVMe Support

NVMe support has been introduced for Cisco MDS 9000 Series Switches.

## Anti-counterfeit Measures

Anti-counterfeit measures have been introduced for the Cisco MDS 48 Port 32 Gbps Fibre Channel Switching Module.

## Secure Boot Support

Secure boot support has been introduced for the Cisco MDS 48 Port 32 Gbps Fibre Channel Switching Module.

## Licensed Cisco NX-OS Software Packages

Most Cisco MDS 9000 Series software features are included in the standard package. However, some features are logically grouped into add-on packages that must be licensed separately, such as the Cisco MDS 9000 Enterprise package, SAN Extension over IP package, and the Mainframe package. On-demand ports activation licenses are also available for the Cisco MDS 9250i Multiservice Fabric Switch, Cisco MDS 9148S 48-Port Multilayer Fabric Switch, and the Cisco MDS 9396S 96-Port Multilayer Fabric Switch.



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**Note** A license is not required to use the Cisco MDS 24 Port 40 Gigabit Fibre Channel over Ethernet Module (DS-X9824-960K9), and the Cisco MDS 48 Port 10 Gigabit Fibre Channel over Ethernet Module (DS-X9848-480K9).

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For more information about licensed Cisco NX-OS software packages, see [Cisco MDS Licensing Datasheets](#).

## Enterprise Package

The standard software package that is bundled at no charge with the Cisco MDS 9000 Series switches includes the base set of features that we believe are required by most customers for building a SAN. The Cisco MDS 9000 Series also has a set of advanced features that are recommended for all enterprise SANs. These features are bundled together in the Cisco MDS 9000 Enterprise package. Refer to the [Cisco MDS 9000 Enterprise Package Data Sheet](#) for more information.



**Note**

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The IVR feature on Cisco MDS 9700 Series Directors with the Cisco MDS 24/10 port SAN Extension Module (DS-X9334-K9) requires an Enterprise package.

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## SAN Extension Over IP Package

The Cisco MDS 9000 SAN Extension over IP package allows the customer to use FCIP to extend SANs over wide distances on IP networks using the Cisco MDS 9000 Series IP storage services. Refer to the [Cisco MDS 9000 SAN Extension over IP Package](#) fact sheet for more information.



**Note**

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The FCIP feature on Cisco MDS 9700 Series Directors with the Cisco MDS 24/10 port SAN Extension Module (DS-X9334-K9) does not require a license.

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## On-Demand Port Activation License

On-demand ports allow customers to benefit from Cisco NX-OS Software features while initially purchasing only a few activated ports on the Cisco MDS 9250i Multiservice Fabric Switch, MDS 9148S 48-Port Multilayer Fabric Switch, and the Cisco MDS 9396S Multilayer Fabric Switch. As needed, customers can expand switch connectivity by licensing additional ports.

## I/O Accelerator Package

Starting from Cisco MDS NX-OS Release 8.2(1), the Cisco I/O Accelerator (IOA) package activates IOA on the Cisco MDS 24/10 Port SAN Extension module. A single license is applicable for both the engines in Cisco MDS 24/10 port SAN Extension Module. The IOA package is licensed per module and is tied to the chassis. Each Cisco MDS 24/10 Port SAN Extension module engine that you configure for IOA checks out a license from the pool managed at the chassis level. Cisco MDS 24/10 Port SAN Extension module IOA licenses are available as single licenses.

## Unsupported Features

### Data Mobility Manager

Starting from Cisco MDS NX-OS Release 8.1(1), the Cisco MDS Data Mobility Manager is not supported on Cisco MDS 9000 Series Switches.

## Zoning Features

LUN zoning, read-only zones, and broadcast zones are no longer supported. These features affect the following hardware:

- Cisco MDS 9250i Multiservice Fabric Switch
- Cisco MDS 9396S Multilayer Fabric Switch
- Cisco MDS 9700 48-port 16-Gbps Fibre Channel Module

You cannot bring up these modules if these features are already configured. You should completely remove all configurations that include these features before you attempt to bring up these modules. In addition, you cannot configure these features after you bring up these modules.

## Slow Drain Detection and Isolation Enhancements

ER\_RDY is not supported on interfaces whose speed is set to 10-Gbps.

## XRC Acceleration License

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

## FICON Tape Acceleration

In Cisco MDS NX-OS Release 8.1(1a), FICON Tape Acceleration (FTA) is not supported on Cisco MDS 24/10 SAN Extension Module.

## FICON on Cisco MDS 48-Port 32-Gbps Fibre Channel Switching Module

In Cisco MDS NX-OS Release 8.1(1a), FICON is not supported on Cisco MDS 48-Port 32-Gbps Fibre Channel Switching Module.

## Deprecated Hardware

Starting from Cisco MDS NX-OS Release 8.1(1), the following hardware models are not supported:

- Cisco MDS 9513
- Cisco MDS 9509
- Cisco MDS 9506
- Cisco MDS 9500 Series Supervisor-2A Module
- Cisco MDS 24-Port 8-Gbps Fibre Channel Switching Module
- Cisco MDS 24-Port 8-Gbps Fibre Channel Switching Module
- Cisco MDS 48-Port 8-Gbps Fibre Channel Switching Module
- Cisco MDS 32-Port 8-Gbps Advanced Fibre Channel Switching Module
- Cisco MDS 48-Port 8-Gbps Advanced Fibre Channel Switching Module
- Cisco MDS 10-Gbps 8-Port FCoE Module

- Cisco MDS 16-Port Storage Services Node (SSN-16)
- Cisco MDS 18/4-Port Multiservice Module (MSM)

## Limitations and Restrictions

### Fibre Channel Read Diagnostic Parameters

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

### FCIP Support

In Cisco MDS NX-OS Release 8.x, FCIP Write Acceleration is not supported between 24/10 San Extension Module and Cisco 18+4 MSM and Cisco SSN16 Modules.

In Cisco MDS NX-OS Release 8.x, FCIP Write Acceleration along with IVR is not supported on FCIP tunnels configured on Cisco MDS 9700 Series switches.

In Cisco MDS NX-OS Release 8.x, Write Acceleration on FCIP port channels should not be configured between two MDS 9700 Series switches with Cisco MDS 24/10 port SAN Extension Module under the following conditions:

- If traffic flows between an FCoE port and an FC port through an FCIP port channel.
- If traffic flows between an FCIP port and an FC port through an FCIP port channel.

### 40GE IP Storage Interfaces Support

40GE IP Storage Interfaces are not supported.

### iSCSI Support

iSCSI is not supported on Cisco MDS 9700 Directors with Cisco MDS 24/10 port SAN Extension Modules.

## Caveats

- [Resolved Caveats in Cisco MDS NX-OS Release 8.2\(2\), page 22](#)
- [Open Caveats in Cisco MDS NX-OS Release 8.2\(2\), page 22](#)
- [Resolved Caveats in Cisco MDS NX-OS Release 8.2\(1\), page 22](#)
- [Open Caveats in Cisco MDS NX-OS Release 8.2\(1\), page 24](#)
- [Resolved Caveats in Cisco MDS NX-OS Release 8.1\(1a\), page 24](#)
- [Open Caveats in Cisco MDS NX-OS Release 8.1\(1a\), page 25](#)
- [Resolved Caveats in Cisco MDS NX-OS Release 8.1\(1\), page 25](#)

- [Open Caveats in Cisco MDS NX-OS Release 8.1\(1\), page 26](#)

## Resolved Caveats in Cisco MDS NX-OS Release 8.2(2)

**Table 13** *Open Caveats in Cisco MDS NX-OS Release 8.2(2)*

Identifier	Description
<a href="#">CSCva20758</a>	ISSU - TSH Gdb to upg Gdb Lead to SNMP Crash on MDS 9513
<a href="#">CSCvc04449</a>	VL credits configured in Congestion Isolation mode gets lost after toggling the feature.
<a href="#">CSCvd87879</a>	Link will not come up when credits configured is less than 34 in congestion-isolation mode.
<a href="#">CSCvd89879</a>	USB is not detected in MDS 9148s and MDS 9396s switch with 8.1(1) image.
<a href="#">CSCvf88178</a>	SAN-Analytics: read/write_io_initiation/completion_time_max discrepancy in storage ports.
<a href="#">CSCvf99665</a>	ISSU/D fails with bootflash busy err; seg fault mounting bootflash (not mounted).
<a href="#">CSCvh29101</a>	MDS NXOS 7.x & 8.x:: OU name has space in LDAP rootDN, NXOS adding extra backward slash '\'
<a href="#">CSCvh30932</a>	IP access list corruption after NX-OS upgrade
<a href="#">CSCvh99074</a>	'show tech-support' subcommand on a fully loaded MDS 9700 fails and exits

## Open Caveats in Cisco MDS NX-OS Release 8.2(2)

**Table 14** *Open Caveats in Cisco MDS NX-OS Release 8.2(2)*

Identifier	Description
<a href="#">CSCvc75645</a>	9396S/9148S - licmgr crashed while installing incremental port licenses.
<a href="#">CSCvd94841</a>	DCNM SAN Client FCIP Wizard Fails to configure FCIP Tunnels on DS-X9334-K9 module.
<a href="#">CSCvh21454</a>	MDS9250i or MDS9148S reloads due to kernel panic.
<a href="#">CSCvj22775</a>	Devices take a long time or fail to login to 32 Gbps ports at 16 Gbps.

## Resolved Caveats in Cisco MDS NX-OS Release 8.2(1)

**Table 15** *Resolved Caveats in Cisco MDS NX-OS Release 8.2(1)*

Identifier	Description
<a href="#">CSCud43510</a>	LDAP fails when using SSL and port 636.
<a href="#">CSCus58026</a>	Improve diagnostics when MDS reloads due to full volatile DB.

**Table 15 Resolved Caveats in Cisco MDS NX-OS Release 8.2(1)**

Identifier	Description
CSCuv42986	Callhome stops working.
CSCuy09742	copy run start times out after removing ntp source-interface mgmt 0.
CSCuz06438	"switchport fill-pattern idle speed 8000" CLI is blocked in 9148S,9250i.
CSCuz22707	MDS9710 Older PSU PN/SN detected after switchover.
CSCva23686	Fill word IDLE not reported correctly in port info.
CSCva54781	show install all impact failed with free space test failed error.
CSCvb49642	Add Tx/Rx datarate threshold counters to OBFL.
CSCvb97552	Display a warning when fcip acceleration is enabled.
CSCvc62072	LC module uptime is wrongly calculated.
CSCvc63852	PLOGI sent from host to target misdirected to supervisor when received on a ISL.
CSCvc67941	MDS 9396S kernel panic on hung read of PSU SPROM.
CSCvc92256	"SSE cmd = 34 failed" error messages in onboard log.
CSCvc97863	actlcam crashes due to double free.
CSCvd29813	9148s/ 9250i: Incorrect value seen for "fec corrected and uncorrected blocks" under DM Port monitor.
CSCvd34842	Need to log FCIP errors to OBFL.
CSCvd49500	MDS 9396S Fan hardware PID not accurate.
CSCvd62800	Unable to remove SNMP host by ip address/hostname from running configuration.
CSCve00931	Saving configuration eventually causes restart of 'span' service.
CSCve10201	No traffic sent across an FCIP interface with tcp max-bandwidth-mbps 33 or less.
CSCve23084	'New Zoneset <name> is significantly bigger/smaller than current active Zoneset' warning not issued.
CSCve24145	zone/zoneset clone, rename, and convert failures are logged as successful in the accounting log.
CSCve24391	Corruption in actlcam index object list.
CSCve32147	Switch scheduler failing to redirect job outputs to TFTP server.
CSCve47182	SCSI reads over FCIP TA link fail when target device has status confirmation enabled.
CSCve50663	Hardware driver crashes when initialization fails and whole module is powered down.
CSCve58695	Remove the Authentication Method Option Esp-aes-xcbc-mac under FCIP IPSec Configuration.
CSCve70443	Disable Single Bit ECC Errors from being logged in Syslog Message.
CSCve72490	Offline port RSCN not sent.
CSCve97661	Host-Storage Connectivity loss due to misconfiguration of PC between NPV and NPV-Core (NPIV) switch.

## Open Caveats in Cisco MDS NX-OS Release 8.2(1)

*Table 16 Open Caveats in Cisco MDS NX-OS Release 8.2(1)*

Identifier	Description
<a href="#">CSCvc04449</a>	VL credits configured in Congestion Isolation mode gets lost after toggling the feature.
<a href="#">CSCvc75645</a>	9396S/9148S - licmgr crashed while installing incremental port licenses.
<a href="#">CSCvd87879</a>	Link will not come up when credits configured is less than 34 in congestion-isolation mode.
<a href="#">CSCvd89879</a>	USB is not detected in MDS 9148s and MDS 9396s switch with 8.1(1) image.
<a href="#">CSCvd94841</a>	DCNM SAN Client FCIP Wizard Fails to configure FCIP Tunnels on DS-X9334-K9 module.
<a href="#">CSCvf88178</a>	SAN-Analytics: read/write_io_initiation/completion_time_max discrepancy in storage ports.
<a href="#">CSCvf99665</a>	ISSU/D fails with bootflash busy err; seg fault mounting bootflash (not mounted).
<a href="#">CSCvh21454</a>	MDS9250i or MDS9148S reloads due to kernel panic.
<a href="#">CSCvh30932</a>	IP access list corruption after NX-OS upgrade.
<a href="#">CSCvj22775</a>	Devices take a long time or fail to login to 32 Gbps ports at 16 Gbps.

## Resolved Caveats in Cisco MDS NX-OS Release 8.1(1a)

*Table 17 Resolved Caveats in Cisco MDS NX-OS Release 8.1(1a)*

Identifier	Description
<a href="#">CSCuv42986</a>	Callhome stops working.
<a href="#">CSCvb76482</a>	RDP request for local port/remote port query gets an additional ELS response.
<a href="#">CSCvc04449</a>	VL credits configured in Congestion Isolation mode gets lost after toggling the feature.
<a href="#">CSCvc16087</a>	Port Assert Seen On Reloading 24/10 SAN extension Module having FCIP Tunnels.
<a href="#">CSCvd87879</a>	Link will not come up when credits configured is less than 34 in congestion-isolation mode.
<a href="#">CSCvd89879</a>	USB is not detected in MDS 9148s and MDS 9396s switch with 8.1(1) image.
<a href="#">CSCve10201</a>	No traffic sent across an FCIP interface with tcp max-bandwidth-mbps 33 or less.
<a href="#">CSCve27707</a>	Base port should not checkout licenses in smart mode for 9148s,9250i,9396s.
<a href="#">CSCve29398</a>	Zone server fails when a zone has 255+ members.
<a href="#">CSCve53588</a>	Congestion-isolation feature not isolating slow device when ISSU to NX-OS 8.1(1).

**Table 17** *Resolved Caveats in Cisco MDS NX-OS Release 8.1(1a)*

Identifier	Description
<a href="#">CSCve76170</a>	MDS 9148s and 9396s - init system results in corrupted bootflash.
<a href="#">CSCvf99665</a>	ISSU/D fails with bootflash busy err; seg fault mounting bootflash (not mounted).
<a href="#">CSCvg02575</a>	Kernel panic on fabric switch during ISSU to or ISSD from 8.1(1).
<a href="#">CSCvh30932</a>	IP access list corruption after NX-OS upgrade.
<a href="#">CSCvh99074</a>	'show tech-support' subcommand on a fully loaded MDS 9700 fails and exits.

## Open Caveats in Cisco MDS NX-OS Release 8.1(1a)

**Table 18** *Open Caveats in Cisco MDS NX-OS Release 8.1(1a)*

Identifier	Description
<a href="#">CSCvc75645</a>	9396S/9148S - licmgr crashed while installing incremental port licenses.
<a href="#">CSCvd94841</a>	Cisco DCNM SAN Client FCIP Wizard fails to configure FCIP tunnels on DS-X9334-K9 module.
<a href="#">CSCvh21454</a>	MDS9250i or MDS9148S reloads due to kernel panic.
<a href="#">CSCvi11757</a>	FEC for 16G FICON does not interoperate with HDS 16G FICON disk arrays.
<a href="#">CSCvj22775</a>	Devices take a long time or fail to login to 32 Gbps ports at 16 Gbps.
<a href="#">CSCvj40760</a>	ISSU from 6.2(21) to 8.1(1a) is incorrectly disruptive for all FC ports all platforms.

## Resolved Caveats in Cisco MDS NX-OS Release 8.1(1)

**Table 19** *Resolved Caveats in Cisco MDS NX-OS Release 8.1(1)*

Identifier	Description
<a href="#">CSCus21289</a>	mts set options returned -1 errno=2 for pid=7286 opc=106513.
<a href="#">CSCuu23485</a>	OpenSSL to CISCO SSL Migration for Vulnerability Fixes.
<a href="#">CSCuw78551</a>	MDS9250i IPStorage port is in init state though connected switch is up.
<a href="#">CSCux20090</a>	Unable to attach module on MDS fabric switch.
<a href="#">CSCuy04686</a>	Changing user password results in clear text sent to TACACS server logs.
<a href="#">CSCuy20167</a>	Remove the second "txbytes compressed" for auto compression.
<a href="#">CSCuy60295</a>	Fix potential code path for ACL TCAM usage going negative.
<a href="#">CSCuy96388</a>	Unable to install port activation license on MDS 9396S and 9148S.
<a href="#">CSCuz07307</a>	Getting password prompt even when entering password in copy ftp command.
<a href="#">CSCuz33342</a>	Logging level port link-failure critical fails to work after ISSU.
<a href="#">CSCuz55997</a>	Fan hardware info not displayed.



**Table 19 Resolved Caveats in Cisco MDS NX-OS Release 8.1(1)**

Identifier	Description
<a href="#">CSCva64432</a>	Switch Accepts GPN_ID when port is already offline.
<a href="#">CSCva64534</a>	Include "sh system internal kernel nvram-messages previous" in show tech.
<a href="#">CSCvb17477</a>	MDS 9500: Power Supply capacity shows n/a on DM after powering off/on PSU.
<a href="#">CSCvb18873</a>	During port-mon initialization LC configuration download fails.
<a href="#">CSCvb21271</a>	Enable per-process memory usage limit on MDS linecards.
<a href="#">CSCvb26079</a>	Port-monitor does not alert sync-loss when port is flapping continuously.
<a href="#">CSCvb68546</a>	NX-OS "show tech ivr" missing asterisks for active IVR zoneset.
<a href="#">CSCvb94242</a>	MDS 9396S PSU#2 fan failure alerts flapping.
<a href="#">CSCvc17723</a>	Port crashes during Port license installation.
<a href="#">CSCvc23058</a>	Spurious SFP alarms.
<a href="#">CSCvc23945</a>	Implement proper validation of WWN in port security.
<a href="#">CSCvc23955</a>	Certain WWNs erroneously declared invalid.
<a href="#">CSCvc43884</a>	Switch crash due to acl hap reset.
<a href="#">CSCvc55114</a>	Module fails to initialize when ports in speed group 10g and switchport fcrxbbcredit extended.
<a href="#">CSCvc62286</a>	LDAP rootDN has an extra ' ' in debug if it has the value "dc=il" and LDAP is failing.
<a href="#">CSCvc69321</a>	'install all' command blocked after original 'install' command session is terminated.
<a href="#">CSCvc97863</a>	ACLTCAM crashes due to double free.
<a href="#">CSCvd47149</a>	LUN zoning is not supported when zone commit is done.
<a href="#">CSCvd49251</a>	FICON FTA - Crash on CU side when running multiple DFDSS dumps to IBM 3500 tape system.
<a href="#">CSCvd49500</a>	MDS 9396S Fan hardware PID not accurate.

## Open Caveats in Cisco MDS NX-OS Release 8.1(1)

**Table 20 Open Caveats in Cisco MDS NX-OS Release 8.1(1)**

Identifier	Description
<a href="#">CSCvb76482</a>	RDP request for local port/remote port query gets an additional ELS response.
<a href="#">CSCvc04449</a>	VL credits configured in Congestion Isolation mode gets lost after toggling the feature.
<a href="#">CSCvc16087</a>	Port Assert Seen On Reloading 24/10 SAN extension Module having FCIP Tunnels.
<a href="#">CSCvc75645</a>	9396S/9148S - licmgr crashed while installing incremental port licenses.

**Table 20**      *Open Caveats in Cisco MDS NX-OS Release 8.1(1)*

Identifier	Description
<a href="#">CSCvd87879</a>	Link will not come up when credits configured is less than 34 in congestion-isolation mode.
<a href="#">CSCvd89879</a>	USB is not detected in MDS 9148s and MDS 9396s switch with 8.1(1) image.
<a href="#">CSCvd94841</a>	DCNM SAN Client FCIP Wizard Fails To configure FCIP Tunnels on DS-X9334-K9 module.
<a href="#">CSCve10201</a>	No traffic sent across an FCIP interface with tcp max-bandwidth-mbps 33 or less.
<a href="#">CSCve27707</a>	Base port should not checkout licenses in smart mode for 9148s,9250i,9396s.
<a href="#">CSCve29398</a>	Zone server fails when a zone has 255+ members.
<a href="#">CSCve53588</a>	Congestion-isolation feature not isolating slow device when ISSU to NX-OS 8.1(1).
<a href="#">CSCve76170</a>	MDS 9148s and 9396s - init system results in corrupted bootflash.
<a href="#">CSCvf99665</a>	ISSU/D fails with bootflash busy err; seg fault mounting bootflash (not mounted).
<a href="#">CSCvg02575</a>	Kernel panic on fabric switch during ISSU to or ISSD from 8.1(1).
<a href="#">CSCvh21454</a>	MDS9250i or MDS9148S reloads due to kernel panic.
<a href="#">CSCvh30932</a>	IP access list corruption after NX-OS upgrade.
<a href="#">CSCvj22775</a>	Devices take a long time or fail to login to 32 Gbps ports at 16 Gbps.

## Related Documentation

The documentation set for the Cisco MDS 9000 Series includes the documents 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](http://www.cisco.com/en/US/products/ps5989/tsd_products_support_series_home.html)

The documentation set for Cisco Prime Data Center Network Manager is available from the following URL:

[http://www.cisco.com/en/US/products/ps9369/tsd\\_products\\_support\\_series\\_home.html](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>

## Regulatory Compliance and Safety Information

<http://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/hw/regulatory/compliance/RCSI.html>

## Compatibility Information

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

## Installation and Upgrade

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

## Configuration Guides

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

## Command-Line Interface

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

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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