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Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.2(9)

Release Date: April 18, 2012

Part Number: OL-19964-13 D0

This document describes the caveats and limitations for switches in the Cisco MDS 9000 Family. Use this document in conjunction with documents listed in the “[Related Documentation](#)” section on page 55.



Note

As of Cisco Fabric Manager Release 4.2(1a), Fabric Manager information will no longer appear in the Cisco MDS 9000 Family Release Notes for NX-OS releases. Cisco Fabric Manager Release Notes will include information that is exclusive to Fabric Manager as a management tool for Cisco MDS 9000 Family switches and Cisco Nexus 5000 Series switches. Refer to the following website for Release Notes for Cisco Fabric Manager:

http://www.cisco.com/en/US/products/ps10495/prod_release_notes_list.html

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 Family Release Notes*:

http://www.cisco.com/en/US/products/ps5989/prod_release_notes_list.html

Table 1 shows the on-line change history for this document.

Table 1 **Online History Change**

Revision	Date	Description
A0	04/18/2012	Created release notes.
B0	04/20/2012	<ul style="list-style-type: none">Changed the state of caveat CSCtq24644 from Resolved to Open.Removed the following caveats that were resolved in NX-OS Release 4.2(7e): CSCto68011, CSCth80324, CSCtl86272, CSCtn01631, CSCtn88331, CSCte70856, CSCtk10527, and CSCtl97673.



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Table 1 Online History Change

Revision	Date	Description
C0	05/18/2012	Added the “Converting Automatically Created PortChannels Before an Upgrade” section.
D0	06/25/2012	Revised the nondisruptive upgrade path to Cisco NX-OS Release 4.2(9) in Table 10 .

Contents

This document includes the following:

- [Introduction, page 2](#)
- [Components Supported, page 3](#)
- [MDS 9000 Chassis and Module Support in Cisco MDS NX-OS 4.x, page 10](#)
- [Migrating from Supervisor-1 Modules to Supervisor-2 Modules, page 12](#)
- [Supervisor-2A Module, page 12](#)
- [Software Download Process, page 12](#)
- [Upgrading Your Cisco MDS NX-OS Software Image, page 15](#)
- [Downgrading Your Cisco MDS SAN-OS Software Image, page 24](#)
- [New Features in Cisco MDS NX-OS Release 4.2\(9\), page 29](#)
- [Licensed Cisco NX-OS Software Packages, page 29](#)
- [Limitations and Restrictions, page 31](#)
- [Caveats, page 40](#)
- [Related Documentation, page 55](#)
- [Obtaining Documentation and Submitting a Service Request, page 58](#)

Introduction

The Cisco MDS 9000 Family of Multilayer Directors and Fabric Switches provides industry-leading availability, scalability, security, and management, allowing you to deploy high performance storage-area networks with lowest total cost of ownership. Layering a rich set of intelligent features onto a high performance, protocol agnostic switch fabric, the Cisco MDS 9000 Family addresses the stringent requirements of large data center storage environments: uncompromising 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. Formerly known as Cisco SAN-OS, Cisco MDS 9000 NX Software is fully interoperable with earlier Cisco SAN-OS versions and enhances hardware platform and module support.

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Components Supported

Table 2 lists the NX-OS software part numbers and hardware components supported by the Cisco MDS 9000 Family.



Note

To use the Cisco Storage Services Enabler package, Cisco MDS SAN-OS Release 1.3(5) or later must be installed on the MDS switch.

Table 2 *Cisco MDS 9000 Family Supported Software and Hardware Components*

Component	Part Number	Description	Applicable Product
Software	M95S2K9-4.2.9	MDS 9500 Supervisor/Fabric-2, NX-OS software	MDS 9500 Series only
	M92S2K9-4.2.9	MDS 9200 Supervisor/Fabric-2, NX-OS software	MDS 9222i Switch only
	M92S1K9-4.2.9	MDS 9216i Supervisor/Fabric-I, NX-OS software	MDS 9216i Switch only
	M91S2K9-4.2.9	MDS 9100 Supervisor/Fabric-2, NX-OS software	MDS 9124 Switch and MDS 9134 Switch
SSI Interface	SSI-M9K9-427d	Storage Services Interface for NX-OS Release 4.2(9)	MDS 9000 Family

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Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Product
Licenses	M9500SSE184K9	Storage Services Enabler License for one MSM-18/4 module	MDS 9500 Series only
	M9222ISSE1K9	Storage Services Enabler License	MDS 9222i Switch only
	M9200SSE184K9	Storage Services Enabler License for one MSM-18/4 module	MDS 9200 Series only
	M95DMM184K9	Data Mobility Manager License for one MSM-18/4 module	MDS 9500 Series only
	M9222IDMMK9	Data Mobility Manager License for Cisco MDS 9222i	MDS 9222i Switch
	M92DMM184K9	Data Mobility Manager License for one MSM-18/4 module	MDS 9200 Series only
	M95DMM184TSK9	Data Mobility Manager for one MSM-18/4 module — Time Limited to 180 days only	MDS 9500 Series only
	M9222IDMMTSK9	Data Mobility Manager — Time Limited to 180 days only	MDS 9222i Switch only
	M92DMM184TSK9	Data Mobility Manager for one MSM-18/4 module — Time Limited to 180 days only	MDS 9200 Series only
	M92SSESSNK9	Cisco Storage Services Enabler License for SSN-16 (1 engine)	MDS 9200 Series only
	M95SSESSNK9	Cisco Storage Services Enabler License for SSN-16 (1 engine)	MDS 9500 Series only
	M92SMESSNK9	Cisco Storage Media Encryption License for SSN-16 (1 engine)	MDS 9200 Series only
	M95SMESSNK9	Cisco Storage Media Encryption License for SSN-16 (1 engine)	MDS 9500 Series only
	M92IOASSN	Cisco I/O Accelerator License for SSN-16 (1 engine)	MDS 9200 Series only
	M95IOASSN	Cisco I/O Accelerator License for SSN-16 (1 engine)	MDS 9500 Series only
	M92IOA184	Cisco I/O Accelerator License for MSM-18/4	MDS 9200 Series only
	M95IOA184	Cisco I/O Accelerator License for MSM-18/4	MDS 9500 Series only
	M9222IIOA	Cisco I/O Accelerator License for Cisco MDS 9222i base switch	MDS 9222i Switch only
	M92EXTSSNK9	Cisco SAN Extension License for SSN-16 (1 engine)	MDS 9200 Series only
	M95EXTSSNK9	Cisco SAN Extension License for SSN-16 (1 engine)	MDS 9500 Series only
M9200XRC	Cisco XRC Acceleration	MDS 9200 Series only	
M9500XRC	Cisco XRC Acceleration	MDS 9500 Series only	

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Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Product
Chassis	DS-C9513	Cisco MDS 9513 Multilayer Director (13-slot multilayer director with 2 slots for Supervisor-2 modules, with 11 slots available for switching modules — SFPs sold separately)	MDS 9513 Switch
	DS-C9509	Cisco MDS 9509 Multilayer Director (9-slot multilayer director with 2 slots for Supervisor modules, with 7 slots available for switching modules — SFPs sold separately)	MDS 9509 Switch
	DS-C9506	Cisco MDS 9506 Multilayer Director (6-slot multilayer director with 2 slots for Supervisor modules, with 4 slots available for switching modules — SFPs sold separately)	MDS 9506 Switch
	DS-C9222i-K9	Cisco MDS 9222i Multilayer Fabric Switch (3-rack-unit (3RU) semimodular multilayer fabric switch with 18 4-Gbps Fibre Channel ports, 4 Gigabit Ethernet ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Services modules)	MDS 9222i Switch
	DS-C9216i-K9	Cisco MDS 9216i Multilayer Fabric Switch (3RU semi-modular multilayer fabric switch with 14 2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Services modules)	MDS 9216i Switch
	DS-C9134-K9	Cisco MDS 9134 34-Port Multilayer Fabric Switch (1RU fixed-configuration multilayer fabric switch with 32 4-Gbps and 2 10-Gbps Fibre Channel ports)	MDS 9134 Switch
	DS-C9124-K9	Cisco MDS 9124 24-Port Multilayer Fabric Switch (1RU fixed-configuration multilayer fabric switch with 24 4-Gbps Fibre Channel ports)	MDS 9124 Switch
Supervisor Modules	DS-X9530-SF2-K9	Cisco MDS 9500 Series Supervisor-2 Module	MDS 9500 Series
	DS-X9530-SF2A-K9	Cisco MDS 9500 Series Supervisor-2A Module	MDS 9500 Series

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Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Product
Switching Modules	DS-X9016	Cisco MDS 9000 16-Port Fibre Channel Switching Module with Small Form-Factor Pluggable (SFP) LC (16-port, 2-Gbps Fibre Channel switching module with SFP LC connectors for Cisco MDS 9216i and Cisco MDS 9500 Series)	MDS 9500 Series MDS 9216i Switch
	DS-X9032	Cisco MDS 9000 32-Port 2-Gbps Fibre Channel Switching Module with SFP LC connectors	MDS 9500 Series MDS 9216i Switch
	DS-X9112	Cisco MDS 9000 12-port 4-Gbps Fibre Channel Switching Module with SFP LC connectors	MDS 9500 Series MDS 9200 Series
	DS-X9124	Cisco 24-port 4-Gbps Fibre Channel Switching Module with SFP LC connectors	MDS 9500 Series MDS 9200 Series
	DS-X9148	Cisco MDS 9000 48-port 4-Gbps Fibre Channel Switching Module with SFP LC	MDS 9500 Series Mds 9200 Series
	DS-X9704	Cisco MDS 9000 Family 4-Port 10-Gbps Fibre Channel Switching Module with SFP LC	MDS 9500 Series MDS 9200 Series
	DS-X9224-96K9	Cisco MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	MDS 9500 Series
	DS-X9248-96K9	Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	MDS 9500 Series
	DS-X9248-48K9	Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	MDS 9500 Series MDS 9222i Switch
Services Modules	DS-X9316-SSNK9	Cisco MDS 9000 Family 16-Port Storage Services Node (SSN-16) — 16 fixed 1-Gbps Ethernet ports, plus 4 service engines that support 4 Gigabit Ethernet IP storage services ports.	MDS 9500 Series MDS 9222i Switch
	DS-X9304-18K9	Cisco MDS 9000 18/4-Port Multiservice Module (MSM-18/4) — 18-port, 4-Gbps Fibre Channel plus 4-port Gigabit Ethernet IP services and switching module with SFP LC connectors	MDS 9500 Series MDS 9200 Series
	DS-X9302-14K9	Cisco MDS 9000 14/2-Port Multiprotocol Services Module — 14-port, 2-Gbps Fibre Channel plus 2-port Gigabit Ethernet IP services and switching module with SFP LC connectors	MDS 9500 Series MDS 9216i Switch
	DS-X9032-SSM	Cisco MDS 9000 32-Port Storage Services Module — 32-port, 2-Gbps storage services module with SFP LC connectors	MDS 9500 Series MDS 9200 Series
External crossbar module	DS-13SLT-FAB1	Cisco MDS 9513 Switching Fabric1 Module	MDS 9513 Switch
	DS-13SLT-FAB2	Cisco MDS 9513 Switching Fabric2 Module	MDS 9513 Switch

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Table 2 *Cisco MDS 9000 Family Supported Software and Hardware Components (continued)*

Component	Part Number	Description	Applicable Product
Optics	DS-X2-FC10G-SR	X2 SC optics, 10-Gbps Fibre Channel for short reach	MDS 9500 Series MDS 9200 Series MDS 9134 Switch
	DS-X2-FC10G-LR	X2 SC optics, 10-Gbps Fibre Channel for long reach (10 km)	MDS 9500 Series MDS 9200 Series MDS 9134 Switch
	DS-X2-FC10G-ER	X2 SC optics, 10-Gbps Fibre Channel for extended reach (40 km)	MDS 9500 Series MDS 9200 Series MDS 9134 Switch
	DS-X2-FC10G-CX4	X2 SC optics, 10-Gbps Fibre Channel over copper	MDS 9500 Series MDS 9200 Series MDS 9134 Switch
	DS-X2-E10G-SR	X2 SC optics, 10-Gbps Ethernet for short reach	MDS 9500 Series MDS 9200 Series

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Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Product
LC-type fiber-optic SFP	DS-SFP-FC8G-SW	SFP+ optics (LC type) for 2-, 4-, or 8-Gbps Fibre Channel for shortwave mode	MDS DS-X9200 Series switching modules
	DS-SFP-FC8G-LW	SFP+ optics (LC type) for 2-, 4-, or 8-Gbps Fibre Channel for longwave mode; supports distances up to 10 km	MDS DS-X9200 Series switching modules
	DS-SFP-FC4G-SW	SFP optics (LC type) for 1-, 2-, or 4-Gbps Fibre Channel for shortwave mode	MDS 9124, MDS 9134, MDS 9222i, DS-X9100, and DS-X9200 Series switching modules
	DS-SFP-FC4G-MR	SFP optics (LC type) for 1-, 2-, or 4-Gbps Fibre Channel for longwave mode; supports distances up to 4 km	MDS 9124, MDS 9134, MDS 9222i, DS-X9100, and DS-X9200 Series switching modules
	DS-SFP-FC4G-LW	SFP optics (LC type) for 1-, 2-, or 4-Gbps Fibre Channel for longwave mode; supports distances up to 10 km	MDS 9124, MDS 9134, MDS 9222i, DS-X9100, and DS-X9200 Series switching modules
	DS-SFP-FC-2G-SW	SFP optics (LC type) for 1- or 2-Gbps Fibre Channel for shortwave mode; not supported for use in 4-Gbps-capable ports	MDS 9000 Series
	DS-SFP-FC-2G-LW	SFP optics (LC type) for 1- or 2-Gbps Fibre Channel for longwave mode for Cisco MDS 9500, MDS 9200, and MDS 9100 Series; not supported for use in 4-Gbps-capable ports	MDS 9000 Series
	DS-SFP-FCGE-SW	SFP optics (LC type) for 1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel for shortwave mode; not supported for use in 4-Gbps-capable ports	MDS 9000 Series
	DS-SFP-FCGE-LW	SFP optics (LC type) for 1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel for longwave mode; not supported for use in 4-Gbps-capable ports	MDS 9000 Series
	DS-SFP-GE-T	SFP (RJ-45 connector) for Gigabit Ethernet over copper	MDS 9000 Series
Cisco Coarse Wavelength-Division Multiplexing (CWDM)	DS-CWDM-xxxx	CWDM Gigabit Ethernet and 1- or 2-Gbps Fibre Channel SFP LC type, where product number xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm	MDS 9000 Family
	DS-CWDM4Gxxxx	CWDM 4-Gbps Fibre Channel SFP LC type, where product number xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm	MDS 9000 Family

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Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Product
Dense Wavelength-Division Multiplexing (DWDM)	DWDM-X2-xx.xx	DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure, with 15xx.xx nm wavelength, where xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33	MDS 9500 Series MDS 9200 Series
	DWDM-SFP-xxxx	DWDM Gigabit Ethernet and 1- or 2-Gbps Fibre Channel SFP LC type, where product number xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061nm	MDS 9000 Family
Add/Drop Multiplexer (ADM)	DS-CWDMOADM4A	4-channel CWDM optical ADM (OADM) module (Cisco CWDM 1470, 1490, 1510, or 1530 NM Add/Drop Module)	MDS 9000 Family
	DS-CWDMOADM4B	4-channel CWDM OADM module (Cisco CWDM 1550, 1570, 1590, or 1610 NM Add/Drop Module)	MDS 9000 Family
	DS-CWDM-MUX8A	ADM for 8 CWDM wavelengths	MDS 9000 Family
CWDM Multiplexer Chassis	DS-CWDMCHASSIS	2-slot chassis for CWDM ADMs	MDS 9000 Family
Power Supplies	DS-CAC-300W	300W AC power supply	MDS 9100 Series
	DS-C24-300AC	300W AC power supply	MDS 9124 Switch
	DS-CAC-845W	845W AC power supply for Cisco MDS 9200 Series	MDS9200 Series
	DS-CAC-3000W	3000W AC power supply for Cisco MDS 9509	MDS 9509 Switch
	DS-CAC-2500W	2500W AC power supply	MDS 9509 Switch
	DS-CDC-2500W	2500W DC power supply	MDS 9509 Switch
	DS-CAC-6000W	6000W AC power supply for Cisco MDS 9513	MDS 9513 Switch
	DS-CAC-1900W	1900W AC power supply for Cisco MDS 9506	MDS 9506 Switch
CompactFlash	MEM-MDS-FLD512M	External 512-MB CompactFlash memory for supervisor module	MDS 9500 Series
Port Analyzer Adapter	DS-PAA-2, DS-PAA	A standalone Fibre Channel-to-Ethernet adapter that allows for simple, transparent analysis of Fibre Channel traffic in a switched fabric	MDS 9000 Family
Smart Card Reader	DS-SCR-K9	Storage Media Encryption (SME) Smart Card Reader	MDS 9000 Family
Smart Card	DS-SC-K9	SME Smart Card	MDS 9000 Family
CD-ROM	M90FM-CD-441	Cisco MDS 9000 Management Software and Documentation CD-ROM for Cisco MDS 9000 NX-OS Software	MDS 9000 Family

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MDS 9000 Chassis and Module Support in Cisco MDS NX-OS 4.x

Table 3 lists the MDS hardware chassis supported by Cisco MDS NX-OS 4.x.

Table 3 Cisco MDS NX-OS 4.x Chassis Support Matrix

Switch	NX-OS 4.x Support
MDS 9513	Yes
MDS 9509	Yes
MDS 9506	Yes
MDS 9222i	Yes
MDS 9216i	Yes
MDS 9134	Yes
MD S 9124	Yes
Cisco Fabric Switch for HP c-Class BladeSystem and Cisco Fabric Switch for IBM BladeCenter	Yes

Table 4 lists the MDS hardware modules supported by Cisco MDS NX-OS 4.x. For the list of MDS hardware modules supported by Cisco MDS SAN-OS 3.x, see Table 5.

Table 4 Module Support Matrix for Cisco MDS NX-OS 4.x

Module	Description	MDS 9500 Series	MDS 9222i	MDS 9216i
DS-X9530-SF2-K9	MDS 9500 Supervisor-2 Module	Yes	N/A	N/A
DS-X9530-SF2A-K9	MDS 9500 Supervisor-2A Module	Yes	N/A	N/A
DS-X9530-SF1-K9	MDS 9500 Supervisor-1 Module	No	N/A	N/A
DS-X9224-96K9	24-port 8-Gbps Fibre Channel Switching Module	Yes ¹	No	No
DS-X9248-96K9	48-port 8-Gbps Fibre Channel Switching Module	Yes ¹	No	No
DS-X9248-48K9	4/44-port Host Optimized 8-Gbps Fibre Channel Switching Module	Yes	Yes	Yes
DS-X9316-SSNK9	16-port Storage Services Node (SSN-16)	Yes	Yes	No
DS-X9304-18K9	18/4-Port Multiservice Module (MSM-18/4)	Yes	Yes	Yes
DS-X9112	12-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes
DS-X9124	24-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes
DS-X9148	48-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes
DS-X9704	4-port 10-Gbps Fibre Channel Switching Module	Yes	Yes	Yes
DS-X9302-14K9	14/2-port Multiprotocol Services (MPS-14/2) Module	Yes	No	Yes
DS-X9016	16-port 1-, 2-Gbps Fibre Channel Switching Module	Yes	No	Yes

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Table 4 *Module Support Matrix for Cisco MDS NX-OS 4.x (continued)*

Module	Description	MDS 9500 Series	MDS 9222i	MDS 9216i
DS-X9032	32-port 1-, 2-Gbps Fibre Channel Switching Module	Yes	No	Yes
DS-X9032-SSM	32-port Storage Services Module (SSM)	Yes	Yes	Yes
DS-X9308-SMIP	8-port 1-, 2-Gbps IP Switching Module	No	No	No
DS-X9304-SMIP	4-port 1-, 2-Gbps IP Switching Module	No	No	No

1. Requires DS-13SLT-FAB2 in the MDS 9513.

Table 5 lists the MDS hardware modules supported by Cisco MDS SAN-OS 3.x.

Table 5 *Module Support Matrix for Cisco MDS SAN-OS 3.x*

Module	Description	MDS 9500 Series	MDS 9222i	MDS 9216i	MDS 9216A	MDS 9216
DS-X9530-SF2-K9	MDS 9500 Supervisor-2 Module	Yes	N/A	N/A	N/A	N/A
DS-X9530-SF2A-K9	MDS 9500 Supervisor-2A Module	Yes	N/A	N/A	N/A	N/A
DS-X9530-SF1-K9	MDS 9500 Supervisor-1 Module	Yes	N/A	N/A	N/A	N/A
DS-X9224-96K9	24-port 8-Gbps Fibre Channel Switching Module	No	No	No	No	No
DS-X9248-96K9	48-port 8-Gbps Fibre Channel Switching Module	No	No	No	No	No
DS-X9248-48K9	4/44-port Host Optimized 8-Gbps Fibre Channel Switching Module	No	No	No	No	No
DS-X9316-SSNK9	16-port Storage Services Node (SSN-16)	No	No	No	No	No
DS-X9304-18K9	18/4-Port Multiservice Module (MSM-18/4)	Yes	Yes	Yes	Yes	No
DS-X9112	12-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes	No
DS-X9124	24-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes	No
DS-X9148	48-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes	No
DS-X9704	4-port 10-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes	No
DS-X9302-14K9	14/2-port Multiprotocol Services (MPS-14/2) Module	Yes	No	Yes	Yes	Yes
DS-X9016	16-port 1-, 2-Gbps Fibre Channel Switching Module	Yes	No	Yes	Yes	Yes
DS-X9032	32-port 1-, 2-Gbps Fibre Channel Switching Module	Yes	No	Yes	Yes	Yes
DS-X9032-SSM	32-port Storage Services Module (SSM)	Yes	Yes	Yes	Yes	Yes

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Table 5 Module Support Matrix for Cisco MDS SAN-OS 3.x (continued)

Module	Description	MDS 9500 Series	MDS 9222i	MDS 9216i	MDS 9216A	MDS 9216
DS-X9308-SMIP	8-port 1-, 2-Gbps IP Switching Module	Yes	No	Yes	Yes	Yes
DS-X9304-SMIP	4-port 1-, 2-Gbps IP Switching Module	Yes	Yes	Yes	Yes	Yes

Migrating from Supervisor-1 Modules to Supervisor-2 Modules

As of Cisco MDS SAN-OS Release 3.0(1), the Cisco MDS 9509 and 9506 Directors support both Supervisor-1 and Supervisor-2 modules. Supervisor-1 and Supervisor-2 modules cannot be installed in the same switch, except during migration. Both the active and standby supervisor modules must be of the same type, either Supervisor-1 or Supervisor-2 modules. For Cisco MDS 9513 Directors, both supervisor modules must be Supervisor-2 modules.



Caution

Migrating your supervisor modules is a disruptive operation.



Note

Migrating from Supervisor-2 modules to Supervisor-1 modules is not supported.

To migrate from a Supervisor-1 module to a Supervisor-2 module, refer to the step-by-step instructions in the *Cisco MDS 9000 NX-OS Release 4.1(x) and SAN-OS 3(x) Software Upgrade and Downgrade Guide*.

Supervisor-2A Module

The Cisco MDS 9500 Series Supervisor-2A module, DS-X9530-SF2A-K9, is a new supervisor module for the Cisco MDS 9500 Series. The Supervisor-2A module is functionally equivalent to the Supervisor-2 module, but has these distinguishing features:

- The Supervisor-2A module supports the deployment of Fibre Channel over Ethernet (FCoE) in the MDS 9500 Multilayer Director Chassis
- The Supervisor-2A module has 2 GB of memory, twice that of the Supervisor-2 module

For additional information about the Supervisor-2A module, see the [Cisco MDS 9500 Series Supervisor-2A Tech Note](#).

Software Download Process

Use the software download procedure to upgrade to a later version, or downgrade to an earlier version, of an operating system. This section describes the software download process for the Cisco MDS NX-OS software and includes the following topics:

- [Determining the Software Version, page 13](#)
- [Determining Software Version Compatibility, page 13](#)
- [Downloading Software, page 13](#)

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- [Selecting the Correct Software Image for an MDS 9100 Series Switch, page 14](#)
- [Selecting the Correct Software Image for an MDS 9200 Series Switch, page 14](#)
- [Selecting the Correct Software Image for an MDS 9500 Series Switch, page 15](#)

Determining the Software Version

To determine the version of Cisco MDS NX-OS or SAN-OS software currently running on a Cisco MDS 9000 Family switch using the CLI, log in to the switch and enter the **show version EXEC** command.

To determine the version of Cisco MDS NX-OS or SAN-OS software currently running on a Cisco MDS 9000 Family switch using the Fabric Manager, view the Switches tab in the Information pane, locate the switch using the IP address, logical name, or WWN, and check its version in the Release column.

Determining Software Version Compatibility

Table 6 lists the software versions that are compatible in a mixed SAN environment, the minimum software versions that are supported, and the versions that have been tested. We recommend that you use the latest software release supported by your vendor for all Cisco MDS 9000 Family products.

Table 6 Software Release Compatibility

NX-OS Software	Minimum NX-OS Release	Tested NX-OS Release
NX-OS Release 4.2(9)	SAN-OS Release 3.3(1c) or later	SAN-OS Release 3.3(1c), 3.3(5)
	NX-OS Release 4.1(1b) or later	NX-OS Releases 4.1(1b), 4.2(5)
Fabric Manager Software	Minimum NX-OS Release	Tested NX-OS Releases
Fabric Manager Release 4.2(9)	SAN-OS Release 3.3(1c) or later	NX-OS Release 3.3(1c), 3.3(5)
	NX-OS Release 4.1(1b) or later	NX-OS Release 4.1(1b), 4.2(5), 4.2(7b)

Downloading Software

The Cisco MDS NX-OS software is designed for mission-critical high availability environments. To realize the benefits of nondisruptive upgrades on the Cisco MDS 9500 Directors, we highly recommend that you install dual supervisor modules.

To download the latest Cisco MDS NX-OS software, access the Software Center at this URL:

<http://www.cisco.com/public/sw-center>

See the following sections in this release note for details on how you can nondisruptively upgrade your Cisco MDS 9000 switch. Issuing the **install all** command from the CLI, or using Fabric Manager to perform the downgrade, enables the compatibility check. The check indicates if the upgrade can happen nondisruptively or disruptively depending on the current configuration of your switch and the reason.

```
Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
-----  -
```

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```

1      yes  non-disruptive      rolling
2      yes   disruptive        rolling  Hitless upgrade is not supported
3      yes   disruptive        rolling  Hitless upgrade is not supported
4      yes  non-disruptive      rolling
5      yes  non-disruptive        reset
6      yes  non-disruptive        reset
    
```

At a minimum, you need to disable the default device alias distribution feature using the **no device-alias distribute** command in global configuration mode. The **show incompatibility system bootflash:1.3(x)_filename** command determines which additional features need to be disabled.



Note

If you would like to request a copy of the source code under the terms of either GPL or LGPL, please send an e-mail to mds-software-disclosure@cisco.com.

Selecting the Correct Software Image for an MDS 9100 Series Switch

The system and kickstart image that you use for an MDS 9100 series switch depends on which switch you use, as shown in [Table 7](#).

Table 7 *Software Images for MDS 9100 Series Switches*

Cisco MDS 9100 Series Switch Type	Supervisor Module Type	Naming Convention
9124, 9134, Cisco Fabric Switch for HP c-Class BladeSystem, Cisco Fabric Switch for IBM BladeCenter	Supervisor-2 module	Filename begins with m9100-s2ek9

Selecting the Correct Software Image for an MDS 9200 Series Switch

The system and kickstart image that you use for an MDS 9200 series switch depends on which switch you use, as shown in [Table 8](#).

Table 8 *Software Images for MDS 9200 Series Switches*

Cisco MDS 9200 Series Switch Type	Supervisor Module Type	Naming Convention
9222i	Supervisor-2 module	Filename begins with m9200-s2ek9
9216i		Filename begins with m9200-ek9

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Selecting the Correct Software Image for an MDS 9500 Series Switch

The system and kickstart image that you use for an MDS 9500 Series switch depends on whether the switch is based on a Supervisor-1 module or a Supervisor-2 module, as shown in [Table 9](#).

Table 9 Software Images for Supervisor Type

Cisco MDS 9500 Series Switch Type	Supervisor Module Type	Naming Convention
9513, 9509, and 9506	Supervisor-2 module	Filename begins with m9500-sf2ek9

Use the **show module** command to display the type of supervisor module in the switch. The following is sample output from the **show module** command on a Supervisor -2 module:

```
switch# show module
Mod  Ports  Module-Type                Model                Status
---  ---
...
...
7    0      Supervisor/Fabric-2       DS-X9530-SF2-K9     active *
8    0      Supervisor/Fabric-2       DS-X9530-SF2-K9     ha-standby
```

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 16](#)
- [Enabling Telnet Required After an Upgrade, page 20](#)
- [Upgrading Effect on VSAN 4079, page 20](#)
- [FICON Supported Releases and Upgrade Paths, page 18](#)
- [Upgrading with IVR Enabled, page 21](#)
- [Reconfiguring SSM Ports Before Upgrading to NX-OS Release 4.2\(9\), page 22](#)
- [Upgrading the SSI Image on Your SSM, page 23](#)
- [Upgrading a Cisco MDS 9124 or Cisco MDS 9134 Switch, page 23](#)
- [Performing a Disruptive Upgrade on a Single Supervisor MDS Family Switch, page 24](#)
- [Resetting SNMP Notifications Following an Upgrade, page 24](#)
- [Converting Automatically Created PortChannels Before an Upgrade, page 24](#)



Note

Before you begin the upgrade process, review the list of chassis and modules that Cisco MDS NX-OS Release 4.2(9) supports. See the “MDS 9000 Chassis and Module Support in Cisco MDS NX-OS 4.x” section on [page 10](#).

For detailed instructions for performing a software upgrade using Cisco Fabric Manager, see the *Cisco Fabric Manager Release Notes for Release 4.2(1a)*, which is available from the following website:

http://www.cisco.com/en/US/products/ps10495/prod_release_notes_list.html

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

General Upgrading Guidelines



Note

To upgrade to NX-OS Release 4.2(9) from SAN-OS Release 3.2(3a) or earlier, first upgrade to SAN-OS Release 3.3(1) and then upgrade to NX-OS Release 4.2(9).

Use the following guidelines when upgrading to Cisco MDS NX-OS Release 4.2(9):

- Install and configure dual supervisor modules.
- Issue the **show install all impact upgrade-image** CLI command to determine if your upgrade will be nondisruptive.
- Be aware that you need to enable Telnet following the upgrade. See [“Enabling Telnet Required After an Upgrade” section on page 20](#).
- Follow the recommended guidelines for upgrading a Cisco MDS 9124 or MDS 9134 Switch as described in [“Upgrading a Cisco MDS 9124 or Cisco MDS 9134 Switch” section on page 23](#).
- Follow the guidelines for upgrading a single supervisor switch as described in [“Performing a Disruptive Upgrade on a Single Supervisor MDS Family Switch” section on page 24](#).
- Make note of the information concerning SANTap when performing upgrades on a Cisco MDS 9222i switch, as described in [“Upgrading an MDS 9222i Switch with SANTap or Invista is Provisioned on the SSM” section on page 20](#).
- Be aware of the impact of an upgrade on VSAN 4079 if you are upgrading from SAN-OS Release 3.x to NX-OS 4.2(9). See the [“Upgrading Effect on VSAN 4079” section on page 20](#) for details.
- Be aware that some features impact whether an upgrade is disruptive or nondisruptive:
 - **Fibre Channel Ports:** Traffic on Fibre Channel ports can be nondisruptively upgraded. See [Table 10](#) for the nondisruptive upgrade path for all NX-OS and SAN-OS releases.
 - **SSM:** Intelligent services traffic on the SSM, such as SANTap, NASB, and FC write acceleration, is disrupted during an upgrade. SSM Fibre Channel traffic is not.
 - **Gigabit Ethernet Ports:** Traffic on Gigabit Ethernet ports is disrupted during an upgrade or downgrade. This includes IPS modules and the Gigabit Ethernet ports on the MPS-14/2 module, the MSM-18/4 module, and the MDS 9222i switch. Those 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.
 - **Inter-VSAN Routing (IVR):** With IVR enabled, you must follow additional steps if you are upgrading from Cisco SAN-OS Release 2.1.(1a), 2.1(1b), or 2.1.(2a). See the [“Upgrading with IVR Enabled” section on page 21](#) for these instructions.
 - **FICON:** If you have FICON enabled, the upgrade path is different. See the [“FICON Supported Releases and Upgrade Paths” section on page 18](#).



Note

In addition to these guidelines, you may want to review the information in the [“Limitations and Restrictions” section on page 31](#) prior to a software upgrade to determine if a feature may possibly behave differently following the upgrade.

Use [Table 10](#) to determine your nondisruptive upgrade path to Cisco MDS NX-OS Release 4.2(9), find the image release number you are currently using in the Current column of the table, and use the path recommended.

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**Note**

The software upgrade information in [Table 10](#) applies only to Fibre Channel switching traffic. Upgrading system software disrupts IP traffic and SSM intelligent services traffic.

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Table 10 Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 4.2(9)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
NX-OS:	
All 4.2(x) releases and 4.1(x) releases	<ol style="list-style-type: none"> 1. Upgrade to NX-OS Release 4.2(9).
SAN-OS:	
Release 3.3(2), 3.3(3), 3.3(4x), and 3.3(5x).	<ol style="list-style-type: none"> 1. Upgrade to NX-OS Release 4.2(9).
Release 3.3(1c), all 3.2(x), 3.1(x), and 3.0(x) releases,	<ol style="list-style-type: none"> 1. Upgrade to SAN-OS Release 3.3(5b). 2. Upgrade to NX-OS Release 4.2(9).
Release 2.1(3), 2.1(2e), 2.1(2d), and 2.1(2b)	<ol style="list-style-type: none"> 1. Upgrade to SAN-OS Release 3.3(1c). 2. Upgrade to SAN-OS Release 3.3(5b). 3. Upgrade to NX-OS Release 4.2(9).
Release 2.1(2), 2.1(1b), 2.1(1a), and 2.0(x)	<ol style="list-style-type: none"> 1. Upgrade to SAN-OS Release 2.1(2b), 2.1(2d), 2.1(2e), or 2.1(3). 2. Upgrade to SAN-OS Release 3.3(1c). 3. Upgrade to SAN-OS Release 3.3(5b). 4. Upgrade to NX-OS Release 4.2(9).
Release 1.x	<ol style="list-style-type: none"> 1. Upgrade to SAN-OS Release 1.3(4a). 2. Upgrade to SAN-OS Release 2.1(2b). 3. Upgrade to SAN-OS Release 3.3(1c). 4. Upgrade to SAN-OS Release 3.3(5b). 5. Upgrade to NX-OS Release 4.2(9).

FICON Supported Releases and Upgrade Paths

Cisco MDS NX-OS Release 4.2(9) is not a FICON-qualified release.

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Table 11 lists additional SAN-OS and NX-OS releases that support FICON. Refer to the specific release notes for FICON upgrade path information.

Table 11 FICON Supported Releases

FICON Supported Releases	
NX-OS	Release 4.2(7b)
	Release 4.2(1b)
	Release 4.1(1c)
SAN-OS	Release 3.3(1c)
	Release 3.2(2c)
	Release 3.0(3b)
	Release 3.0(3)
	Release 3.0(2)
	Release 2.0(2b)

Use Table 12 to determine your FICON nondisruptive upgrade path to Cisco MDS NX-OS Release 4.2(1b). 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 12 FICON Nondisruptive Upgrade Path to MDS NX-OS Release 4.2(7b)

Current Release with FICON Enabled	Upgrade Path
NX-OS 4.2(1b)	You can nondisruptively upgrade directly to NX-OS Release 4.2(7b).
NX-OS 4.1(1c)	You can nondisruptively upgrade directly to NX-OS Release 4.2(7b).
SAN-OS 3.3(1c)	You can nondisruptively upgrade directly to NX-OS Release 4.2(7b).
SAN-OS 3.2(2c)	First upgrade to SAN-OS Release 3.3(1c), and then upgrade to NX-OS Release 4.2(7b).
SAN-OS 3.0(3b)	First upgrade to SAN-OS Release 3.3(1c), and then upgrade to NX-OS Release 4.2(7b).
SAN-OS 3.0(3)	First upgrade to SAN-OS Release 3.3(1c), and then upgrade to NX-OS Release 4.2(7b).
SAN-OS 3.0(2)	First upgrade to SAN-OS Release 3.3(1c), and then upgrade to NX-OS Release 4.2(7b).

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Table 12 FICON Nondisruptive Upgrade Path to MDS NX-OS Release 4.2(7b) (continued)

Current Release with FICON Enabled	Upgrade Path
SAN-OS 2.0(2b)	Use the interface shutdown command to administratively shut any Fibre Channel ports on Generation 1 modules that are in an operationally down state before nondisruptively upgrading from SAN-OS Release 2.0(2b) to SAN-OS Release 3.0(2) or SAN-OS Release 3.0(3b), and then upgrade to Release 3.3(1c). An operationally down state includes <code>Link failure</code> or <code>not-connected</code> , <code>SFP not present</code> , or <code>Error Disabled</code> status in the output of a show interface command. When an interface is administratively shut it will then show as <code>Administratively down</code> . Interfaces that are currently up or trunking do not need to be shut down.
SAN-OS 1.x	Upgrade to SAN-OS Release 3.0(2). Use the interface shutdown command to shut all the ports operationally down and administratively up on all the Generation 1 modules before nondisruptively upgrading to Release 2.0(2b) and then upgrade to 1.3(4a).

Upgrading an MDS 9222i Switch with SANTap or Invista is Provisioned on the SSM

On an MDS 9222i switch, if SANTap or Invista is provisioned on a Storage Services Module (SSM) in slot 2, then an In-Service Software Upgrade (ISSU) to NX-OS Release 4.2(1b) is not supported. The upgrade to NX-OS Release 4.2(1b) is supported if you set boot variables, save the configuration, and reload the switch. If the switch is running SAN-OS Release 3.3(1a) or earlier, first upgrade to SAN-OS Release 3.3(1c) and then upgrade to NX-OS Release 4.2(1b).

Enabling Telnet Required After an Upgrade

Following an upgrade from SAN-OS 3.x to NX-OS 4.x, you need to enable the Telnet server if you require a Telnet connection. As of MDS NX-OS Release 4.1(1b), the Telnet server is disabled by default on all switches in the Cisco MDS 9000 Family. In earlier releases, the Telnet server was enabled by default.

Upgrading Effect on VSAN 4079

If you are upgrading from a SAN-OS Release 3.x to NX-OS Release 4.2(1b), and you have not created VSAN 4079, the NX-OS software will automatically create VSAN 4079 and reserve it for EVFP use.

If VSAN 4079 is reserved for EVFP use, the **switchport trunk allowed vsan** command will filter out VSAN 4079 from the allowed list, as shown in the following example:

```
switch(config-if)# switchport trunk allowed vsan 1-4080
1-4078,4080
switch(config-if)#
```

If you have created VSAN 4079, the upgrade to NX-OS Release 4.2(1b) will have no affect on VSAN 4079.

If you downgrade after NX-OS Release 4.2(1b) creates VSAN 4079 and reserves it for EVFP use, the VSAN will no longer be reserved.

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Upgrading with IVR Enabled

An Inter-Switch Link (ISL) flap resulting in fabric segmentation or a merge during or after an upgrade from Cisco MDS SAN-OS Release 2.0(x) to a later image where IVR is enabled might be disruptive. Some possible scenarios include the following:

- FCIP connection flapping during the upgrade process resulting in fabric segmentation or merge.
- ISL flap results in fabric segmentation or merge because of hardware issues or a software bug.
- ISL port becomes part of PCP results in fabric segmentation or merge because of a port flap.

If this problem occurs, syslogs indicate a failure and the flapped ISL could remain in a down state because of a domain overlap.

This issue was resolved in Cisco SAN-OS Release 2.1(2b); you must upgrade to Release 2.1(2b) before upgrading to Release 3.3(1c). An upgrade from Cisco SAN-OS Releases 2.1(1a), 2.1(1b), or 2.1(2a) to Release 2.1(2b) when IVR is enabled requires that you follow the procedure below. If you have VSANs in interop mode 2 or 3, you must issue an IVR refresh for those VSANs.

To upgrade from Cisco SAN-OS Releases 2.1(1a), 2.1(1b), or 2.1(2a) to Release 2.1(2b) for all other VSANs with IVR enabled, follow these steps:

- Step 1** Configure static domains for all switches in all VSANs where IVR is enabled. Configure the static domain the same as the running domain so that there is no change in domain IDs. Make sure that all domains are unique across all of the IVR VSANs. We recommend this step as a best practice for IVR-non-NAT mode. Issue the **fcdomain domain id static vsan vsan id** command to configure the static domains.



Note Complete Step 1 for all switches before moving to Step 2.

- Step 2** Issue the **no ivr virtual-fcdomain-add vsan-ranges vsan-range** command to disable RDI mode on all IVR enabled switches. The range of values for a VSAN ID is 1 to 4093. This can cause traffic disruption.



Note Complete Step 2 for all IVR enabled switches before moving to Step 3.

- Step 3** Check the syslogs for any ISL that was isolated.

```
2005 Aug 31 21:52:04 switch %FCDOMAIN-2-EPORT_ISOLATED:
%$VSAN 2005%$ Isolation of interface
PortChannel 52 (reason: unknown failure)
2005 Aug 31 21:52:04 switch %FCDOMAIN-2-EPORT_ISOLATED: %$VSAN 2005%$
Isolation of interface PortChannel 51
(reason: domain ID assignment failure)
```

- Step 4** Issue the following commands for the isolated switches in Step 3:

```
switch(config)# vsan database
switch(config-vsan-db)# vsan vsan-id suspend
switch(config-vsan-db)# no vsan vsan-id suspend
```

- Step 5** Issue the **ivr refresh** command to perform an IVR refresh on all the IVR enabled switches.

- Step 6** Issue the **copy running-config startup-config** command to save the RDI mode in the startup configuration on all of the switches.

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- Step 7** Follow the normal upgrade guidelines for Release 2.1(2b). If you are adding new switches running Cisco MDS SAN-OS Release 2.1(2b) or later, upgrade all of your existing switches to Cisco SAN-OS Release 2.1(2b) as described in this workaround. Then follow the normal upgrade guidelines for Release 3.3(1c).



Note RDI mode should not be disabled for VSANs running in interop mode 2 or interop mode 3.

Reconfiguring SSM Ports Before Upgrading to NX-OS Release 4.2(9)

Starting with Cisco MDS SAN-OS Release 3.0(1), the SSM front panel ports can no longer be configured in auto mode, which is the default for releases prior to Release 3.0(1).



Note To avoid any traffic disruption, modify the configuration of the SSM ports as described below, before upgrading a SAN-OS software image prior to Release 3.3(1c) to NX-OS Release 4.2(9).

For more information on upgrading SAN-OS software, see the [“Upgrading Your Cisco MDS NX-OS Software Image” section on page 15](#).

If the configuration is not updated before the upgrade, the installation process for the new image will automatically convert all ports configured in auto mode to Fx mode. This change in mode might cause a disruption if the port is currently operating in E mode.

To upgrade the image on your SSM without any traffic disruption, follow these steps:

- Step 1** Verify the operational mode for each port on the SSM using the **show interface** command:

```
switch# show interface fc 2/1 - 32
fc2/1 is up
  Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
  Port WWN is 20:4b:00:0d:ec:09:3c:00
  Admin port mode is auto <----- shows port is configured in auto mode
  snmp traps are enabled
  Port mode is F, FCID is 0xef0300 <----- shows current port operational mode is F
  Port vsan is 1
  Speed is 2 Gbps
  Transmit B2B Credit is 3
```

- Step 2** Change the configuration for the first port of the quad when the admin port mode is auto. (A quad is a group of four ports, supported by a data path processor (DPP). The groups are 1 to 4, 5 to 8, 9 to 12, and so on.) Do not leave the port mode set to auto.

- a. Set the port admin mode to E or Fx if the current operational port mode is E, TE, F or FL.

```
switch# config t
switch(config)# interface fc 2/1
switch(config-if)# switchport mode fx
```

- b. Set the port admin mode to E if the current operational port mode is E:

```
switch# config t
switch(config)# interface fc 2/5
switch(config-if)# switchport mode e
```

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Step 3 Change the configuration for ports 2, 3, and 4 of the quad:

- a. Set the admin port mode to Fx if the admin port mode of these ports is E, TE, or auto.

```
switch# config t
switch(config)# interface fc 2/2
switch(config-if)# switchport mode fx
```

- b. If the first port in the port group has admin mode E or if the port is operational in E port mode, change the admin state of ports 2, 3, and 4 to shutdown.

```
switch# config t
switch(config)# interface fc 2/2
switch(config-if)# shutdown
```

Step 4 Save the running configuration to the startup configuration before the upgrade procedure to ensure that the changes are preserved during and after the upgrade. To save the configuration, enter the following command:

```
switch# copy running-config startup-config
```

Upgrading the SSI Image on Your SSM

Use the following guidelines to nondisruptively upgrade the SSI image on your SSM:

- Install and configure dual supervisor modules.
- SSM intelligent services traffic on SSM ports is disrupted during upgrades. Fibre Channel switching traffic is not disrupted under the following conditions:
 - Upgrade the SSI boot images on the SSMs on the switch to a release version supported by your Cisco SAN-OS release. Refer to the [Cisco MDS NX-OS Release Compatibility Matrix for Storage Service Interface Images](#).
 - All SSM applications are disabled. Use the **show ssm provisioning** command to determine what applications are configured. Use the **no ssm enable feature** command to disable these applications.
 - No SSM ports are in auto mode. See the “Reconfiguring SSM Ports Before Upgrading to NX-OS Release 4.2(9)” section on page 22.
 - The EPLD version on the SSM is at 0x07 or higher. Use the **show version module slot epld** command to determine your EPLD version. Refer to the [Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images](#) to upgrade your EPLD image.
 - Refer to the [Cisco Data Center Interoperability Support Matrix](#) and the “Managing Modules” chapter in the [Cisco NX-OS Fundamentals Configuration Guide](#) for information on upgrading your SSM.

Upgrading a Cisco MDS 9124 or Cisco MDS 9134 Switch

If you are upgrading from Cisco MDS SAN-OS Release 3.1(1) to Cisco NX-OS Release 4.2(9) on a Cisco MDS 9124 or MDS 9134 Switch, follow these guidelines:

- During the upgrade, configuration is not allowed and the fabric is expected to be stable.

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- The Fabric Shortest Path First (FSPF) timers must be configured to the default value of 20 seconds; otherwise, the nondisruptive upgrade is blocked to ensure that the maximum down time for the control plane can be 80 seconds.
- If there are any CFS commits in the fabric, the nondisruptive upgrade will fail.
- If there is a zone server merge in progress in the fabric, the nondisruptive upgrade will fail.
- If a service terminates the nondisruptive upgrade, the **show install all failure-reason** command can display the reason that the nondisruptive upgrade cannot proceed.
- If there is not enough memory in the system to load the new images, the upgrade will be made disruptive due to insufficient resources and the user will be notified in the compatibility table.

Performing a Disruptive Upgrade on a Single Supervisor MDS Family Switch

Cisco MDS SAN-OS software upgrades are disruptive on the Cisco MDS 9216i switch, which has a single supervisor. If you are performing an upgrade on this switch, you should follow the nondisruptive upgrade path shown in [Table 10](#), even though the upgrade is disruptive. Following the nondisruptive upgrade path ensures that the binary startup configuration remains intact.

If you do not follow the upgrade path, (for example, you upgrade directly from SAN-OS Release 2.1(2) or earlier version to NX-OS Release 4.2(x)), the binary startup configuration is deleted because it is not compatible with the new image, and the ASCII startup configuration file is applied when the switch comes up with the new upgraded image. When the ASCII startup configuration file is applied, there may be errors. Because of this, we recommend that you follow the nondisruptive upgrade path.



Note

You cannot upgrade an MDS 9120 switch or an MDS 9140 switch to Cisco NX-OS 4.x. See [Table 3](#) for the list of switches that support Cisco NX-OS 4.x.

Resetting SNMP Notifications Following an Upgrade

The SNMP notification configuration resets to the default settings when you upgrade to Cisco NX-OS Release 4.2(1b). Use the **snmp-server enable traps** command to reenable your required SNMP notifications.

Converting Automatically Created PortChannels Before an Upgrade

Before upgrading from NX-OS Release 4.1(x) or 4.2(x) to Release 5.x, ensure that you do not have any automatically created PortChannels present in the switch configuration. Use the **port-channel persistent** command to convert an automatically created PortChannel to a persistent PortChannel. Failure to convert automatically created PortChannels prior to the upgrade can result in traffic disruption because Autocreation of PortChannels is a deprecated feature as of NX-OS Release 4.1(1b).

Downgrading Your Cisco MDS SAN-OS Software Image

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

- [General Downgrading Guidelines, page 25](#)

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

- [Downgrading the SSI Image on Your SSM, page 28](#)

General Downgrading Guidelines

Use the following guidelines to nondisruptively downgrade from Cisco MDS NX-OS Release 4.2(9):

- Install and configure dual supervisor modules.
- Issue the system **no acl-adjacency-sharing** execute command to disable ACL adjacency usage on Generation 2 and Generation 1 modules. If this command fails, reduce the number of zones, IVR zones, TE ports, or a combination of these in the system and issue the command again.
- Disable all features not supported by the downgrade release. Use the **show incompatibility system downgrade-image** command to determine what you need to disable.
- Use the **show install all impact downgrade-image** command to determine if your downgrade will be nondisruptive.
- Be aware that some features impact whether a downgrade is disruptive or nondisruptive:
 - **Fibre Channel Ports:** Traffic on Fibre Channel ports can be nondisruptively downgraded. See [Table 13](#) for the nondisruptive downgrade path for all SAN-OS releases.
 - **SSM:** Intelligent services traffic on the SSM, such as SANTap, NASB, and FC write acceleration, is disrupted during a downgrade. SSM Fibre Channel traffic is not.
 - **Gigabit Ethernet Ports:** Traffic on Gigabit Ethernet ports is disrupted during a downgrade. This includes IPS modules and the Gigabit Ethernet ports on the MPS-14/2 module, the MSM-18/4 module, and the MDS 9222i switch. Those 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.
 - **IVR:** With IVR enabled, you must follow additional steps if you are downgrading from Cisco SAN-OS Release 2.1.(1a), 2.1.(1b), or 2.1.(2a). See the [“Upgrading with IVR Enabled” section on page 21](#) for these instructions.
 - **FICON:** If you have FICON enabled, the downgrade path is different. See the [“FICON Downgrade Paths” section on page 27](#).



Note

A downgrade from NX-OS Release 4.2(9) to SAN-OS Release 3.3(1x) is not supported on MDS switches, when FC-Redirect based applications, such as Data Mobility Manager or Storage Media Encryption, are configured in the fabric if either of the following conditions are satisfied:

1. A target for which FC-Redirect is configured is connected locally and there are Generation 1 modules with ISLs configured in the switch.
2. A host, for which FC-redirect is configured, is connected locally on a Generation 1 module.

If these conditions exist, remove the application configuration for these targets and hosts before proceeding with the downgrade.

Use [Table 13](#) to determine the nondisruptive downgrade path from Cisco NX-OS Release 4.2(1b). Find the SAN-OS image you want to downgrade to in the To SAN-OS Release column of the table and use the path recommended.

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Note

The software downgrade information in [Table 13](#) applies only to Fibre Channel switching traffic. Downgrading system software disrupts IP and SSM intelligent services traffic.

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Table 13 Nondisruptive Downgrade Path from NX-OS Release 4.2(9)

To NX-OS or SAN-OS Release	Nondisruptive Downgrade Path and Ordered Downgrade Steps
NX-OS:	
All 4.2(x) and 4.1(x) releases	<ol style="list-style-type: none"> 1. Downgrade to NX-OS Release 4.2(x) or 4.1(x).
SAN-OS:	
All 3.3(x) releases	<ol style="list-style-type: none"> 2. Downgrade to NX-OS Release 4.2(x) or Release 4.1(x). 3. Downgrade to SAN-OS Release 3.3(x).
All 3.2(x), 3.1(x), 3.0(x) releases, and all 2.1(x) releases.	<ol style="list-style-type: none"> 1. Downgrade to NX-OS Release 4.2(x) or Release 4.1(x). 2. Downgrade to SAN-OS Release 3.3(x). 3. Downgrade to SAN-OS Release 3.2(x), Release 3.1(x), Release 3.0(x), or Release 2.1(x).
All 2.0(x) releases.	<ol style="list-style-type: none"> 1. Downgrade to NX-OS Release 4.2(x) or Release 4.1(x). 2. Downgrade to SAN-OS Release 3.3(x). 3. Downgrade to SAN-OS Release 2.1(2x). 4. Downgrade to SAN-OS Release 2.0(x).
Release 1.x	<ol style="list-style-type: none"> 1. Downgrade to NX-OS Release 4.2(x) or Release 4.1(x). 2. Downgrade to SAN-OS Release 3.3(x). 3. Downgrade to SAN-OS Release 2.1(2b). 4. Downgrade to SAN-OS Release 1.3(4a). 5. Downgrade to SAN-OS Release 1.x.

FICON Downgrade Paths

Table 14 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 14 FICON Downgrade Path from NX-OS Release 4.2(7b)

To Release with FICON Enabled	Downgrade Path
NX-OS 4.2(1b)	You can nondisruptively downgrade directly from NX-OS Release 4.2(7b).
NX-OS 4.1(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(7b).
SAN-OS 3.3(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(7b).
SAN-OS 3.2(2c)	First downgrade to SAN-OS Release 3.3(1c) and then downgrade to Release 3.2(2c).
SAN-OS 3.0(3b)	First downgrade to SAN-OS Release 3.3(1c) and then downgrade to Release 3.0(3b).

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Table 14 FICON Downgrade Path from NX-OS Release 4.2(7b) (continued)

To Release with FICON Enabled	Downgrade Path
SAN-OS 3.0(2)	First downgrade to SAN-OS Release 3.3(1c) and then downgrade to Release 3.0(2).
SAN-OS 2.0(2b)	Use the interface shutdown command to administratively shut any Fibre Channel ports on Generation 1 modules that are in an operationally down state before nondisruptively downgrading from NX-OS Release 4.1 to SAN-OS Release 3.3(1c) then to SAN-OS Release 3.0(3b) or SAN-OS Release 3.0(2), and then to SAN-OS Release 2.0(2b). An operationally down state includes <code>Link failure</code> or <code>not-connected</code> , <code>SFP not present</code> , or <code>Error Disabled</code> status in the output of a show interface command. When an interface is administratively shut it will then show as <code>Administratively down</code> . Interfaces that are currently up or trunking do not need to be shut down.
SAN-OS 1.3(4a)	Downgrade to SAN-OS Release 3.3(1c) and then to Release 3.0(2). Use the shutdown command to shut all the ports operationally down and administratively up on all the Generation 1 modules before nondisruptively downgrading to Release 2.0(2b) and then downgrade to 1.3(4a).

Downgrading the SSI Image on Your SSM

Use the following guidelines when downgrading your SSI image on your SSM:

- On a system with at least one SSM installed, the **install all** command might fail on an SSM when you downgrade from Cisco NX-OS Release 4.1(x) to any SAN-OS 2.x release earlier than SAN-OS Release 2.1(2e). Power down the SSM and perform the downgrade. Bring up the SSM with the new bootvar set to the 2.x SSI image.
- Downgrade the SSI boot images on the SSMs on the switch to a release version supported by your Cisco SAN-OS release. Refer to the [Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images](#).
- SSM intelligent services traffic switching on SSM ports is disrupted on upgrades or downgrades.
- Fibre Channel switching traffic on SSM ports is not disrupted under the following conditions:
 - All SSM applications are disabled. Use the **show ssm provisioning** command to determine if any applications are provisioned on the SSM. Use the **no ssm enable feature** configuration mode command to disable these features.
 - The EPLD version on the SSM is at 0x07 or higher. Use the **show version module slot epld** command to determine your EPLD version. Refer to the [Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images](#) to upgrade your EPLD image.
 - Refer to the [Cisco Data Center Interoperability Support Matrix](#) and the “Managing Modules” chapter in the [Cisco MDS 9000 Family CLI Configuration Guide, Release 3.x](#), for information on downgrading your SSM.

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Downgrading an MDS 9500 Series Switch with an 8-Gbps Module Installed

If you attempt to perform a nondisruptive software downgrade from NX-OS Release 4.x to SAN-OS Release 3.x on an MDS 9500 Series switch that has an 8-Gbps module installed, the switch should display a message that the module is unsupported and stop the downgrade. Instead, the switch displays a message that the module is unsupported and proceeds with a disruptive downgrade. The following table shows the actual and expected behavior of the switch for a software downgrade.

Table 15 Downgrade Behavior on an MDS 9500 Series Switch with 8-Gbps Module Installed

Crossbar Fabric Mode	Switch Type	Software Version	Downgrade Software Version	Actual Install Behavior	Expected Install Behavior
DB mode ¹	MDS 9513 with 8-Gbps module	4.2(9)	3.3(x)	Disruptive	Abort. Disruptive after powerdown of 8-Gbps module.
DB mode	MDS 9513 without 8-Gbps module	4.2(9)	3.3(x)	Disruptive	Disruptive.
BM mode ²	MDS 9513 with 8-Gbps module	4.2(9)	3.3(x)	Abort	Abort. Nondisruptive after powerdown of 8-Gbps module.
BM mode	MDS 9513 without 8-Gbps module	4.2(9)	3.3(x)	Nondisruptive	Nondisruptive.
BM mode	MDS 9509 or 9506 with 8-Gbps module	4.2(9)	3.3(x)	Abort	Abort. Nondisruptive after powerdown of 8-Gbps module.
BM mode	MDS 9509 or 9506 without 8-Gbps module	4.2(9)	3.3(x)	Nondisruptive	Nondisruptive.

1. DB mode is the fabric mode that supports Generation 3 8-Gbps modules in an MDS 9513 switch chassis.

2. BM mode is the fabric mode that does not support Generation 3 8-Gbps modules in an MDS 9513 switch chassis.

New Features in Cisco MDS NX-OS Release 4.2(9)

Cisco MDS NX-OS Release 4.2(9) is a maintenance release that includes only bug fixes. There are no new features in this release.

Licensed Cisco NX-OS Software Packages

Most Cisco MDS 9000 family 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, Mainframe package, Fabric Manager Server (FMS) package, Storage Services Enabler (SSE) package, Storage Media Encryption package, and Data Mobility Manager package. On-demand ports activation licenses are also available for the Cisco MDS Blade Switch Series and 4-Gbps Cisco MDS 9100 Series Multilayer Fabric switches.

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Enterprise Package

The standard software package that is bundled at no charge with the Cisco MDS 9000 Family switches includes the base set of features that Cisco believes are required by most customers for building a SAN. The Cisco MDS 9000 family 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 fact sheet for more information.

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 family IP storage services. Refer to the Cisco MDS 9000 SAN Extension over IP package fact sheet for more information.

Mainframe Package

The Cisco MDS 9000 Mainframe package uses the FICON protocol and allows control unit port management for in-band management from IBM S/390 and z/900 processors. FICON VSAN support is provided to help ensure true hardware-based separation of FICON and open systems. Switch cascading, fabric binding, and intermixing are also included in this package. Refer to the Cisco MDS 9000 Mainframe package fact sheet for more information.

Storage Services Enabler Package

The Cisco MDS 9000 SSE package allows network-based storage applications and services to run on the Cisco MDS 9000 family SSMs, Cisco MDS 9000 18/4-Port Multiservice Module (MSM-18/4), and Cisco MDS 9222i. Intelligent fabric applications simplify complex IT storage environments and help organizations gain control of capital and operating costs by providing consistent and automated storage management. Refer to the Cisco MDS 9000 SSE package fact sheet for more information.

On-Demand Port Activation License

On-demand ports allow customers to benefit from Cisco NX-OS Software features while initially purchasing only a small number of activated ports on 4-Gbps Cisco MDS 9100 Series Multilayer Fabric switches. As needed, customers can expand switch connectivity by licensing additional ports.

Storage Media Encryption Package

The Cisco MDS 9000 Storage Media Encryption package enables encryption of data at rest on heterogeneous tape devices and virtual tape libraries as a transparent fabric service. Cisco SME is completely integrated with Cisco MDS 9000 Family switches and the Cisco Fabric Manager application, enabling highly available encryption services to be deployed without rewiring or reconfiguring SANs, and allowing them to be managed easily without installing additional management software. Refer to the Cisco MDS 9000 Storage Media Encryption package fact sheet for more information. The Storage Media Encryption package is for use only with Cisco MDS 9000 Family switches.

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Data Mobility Manager Package

The Cisco MDS 9000 Data Mobility Manager package enables data migration between heterogeneous disk arrays without introducing a virtualization layer or rewiring or reconfiguring SANs. Cisco DMM allows concurrent migration between multiple LUNs of unequal size. Rate-adjusted migration, data verification, dual Fibre Channel fabric support, and management using Cisco Fabric Manager provide a complete solution that greatly simplifies and eliminates most downtime associated with data migration. Refer to the Cisco MDS 9000 Data Mobility Manager package fact sheet for more information. The Data Mobility Manager package is for use only with Cisco MDS 9000 Family switches.

I/O Accelerator Package

The Cisco I/O Accelerator (IOA) package activates IOA on the Cisco MDS 9222i fabric switch, the Cisco MDS 9000 18/4 Multiservice Module (MSM-18/4), and on the SSN-16 module. The IOA package is licensed per service engine and is tied to the chassis. The number of licenses required is equal to the number of service engines on which the intelligent fabric application is used. The SSN-16 requires a separate license for each engine on which you want to run IOA. Each SSN-16 engine that you configure for IOA checks out a license from the pool managed at the chassis level. SSN-16 IOA licenses are available as single licenses.

XRC Acceleration License

The Cisco Extended Remote Copy (XRC) acceleration license activates FICON XRC acceleration on the Cisco MDS 9222i switch and on the MSM-18/4 in the Cisco MDS 9500 Series directors. One license per chassis is required. You must install the Mainframe Package and the SAN Extension over FCIP Package before you install the XRC acceleration license. The Mainframe Package enables the underlying FICON support, and the FCIP license or licenses enable the underlying FCIP support. XRC acceleration is not supported on the SSN-16.

Limitations and Restrictions

This section lists the limitations and restrictions for this release. The following limitations are described:

- [IPv6, page 32](#)
- [User Roles, page 32](#)
- [Red Hat Enterprise Linux, page 32](#)
- [Generation 1 Module Limitation, page 33](#)
- [Schedule Job Configurations, page 33](#)
- [Maximum Number of Zones Supported in Interop Mode 4, page 33](#)
- [InterVSAN Routing, page 33](#)
- [Java Web Start, page 33](#)
- [VRRP Availability, page 34](#)
- [Using a RSA Version 1 Key for SSH Following an Upgrade, page 34](#)
- [CFS Cannot Distribute All Call Home Information, page 34](#)

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- [Availability of F Port Trunking and F Port Channels, page 35](#)
- [Reserved VSAN Range and Isolated VSAN Range Guidelines, page 35](#)
- [Applying Zone Configurations to VSAN 1, page 36](#)
- [Running Storage Applications on the MSM-18/4, page 36](#)
- [RSPAN Traffic Not Supported on CTS Ports on 8-Gbps Switching Modules, page 36](#)
- [I/O Accelerator Feature Limitations, page 37](#)
- [Support for FCIP Compression Modes, page 37](#)
- [Saving Copies of the Running Kickstart and System Images, page 37](#)
- [PPRC Not Supported with FCIP Write Acceleration, page 37](#)
- [Configuring Buffer Credits on a Generation 2 or Generation 3 Module, page 37](#)
- [RCS Not Supported in Cisco NX-OS Release 4.2\(9\), page 38](#)
- [A McData Switch Can Become Inaccessible After a Zone Set Deactivation, page 39](#)
- [Configuring a Persistent FCID in an IVR Configuration with Brocade Switches, page 39](#)
- [Incompatibility for the FC Redirect IVR Feature in Cisco NX-OS Release 4.2\(9\), page 39](#)
- [Internal Component Affects Certain Hardware Running Older Software, page 39](#)

IPv6

The management port on Cisco MDS switches supports one user-configured IPv6 address, but does not support auto-configuration of an IPv6 address.

User Roles

In SAN-OS Release 3.3(x) and earlier, when a user belongs to a role which has a VSAN policy set to Deny and the role allows access to a specific set of VSANs (for example, 1 through 10), the user is restricted from performing the **configuration**, **clear**, **execute**, and **debug** commands which had a VSAN parameter outside this specified set. Beginning with NX-OS Release 4.1(1b), these users are still prevented from performing **configuration**, **clear**, **execute**, and **debug** commands as before, however, they are allowed to perform **show** commands for all VSANs. The ability to execute the **show** command addresses the following:

- In a network environment, users often need to view information in other VSANs even though they do not have permission to modify configurations in those VSANs.
- This behavior makes Cisco MDS 9000 Series switches consistent with other Cisco products, such as Cisco Nexus 7000 Series switches, that exhibit the same behavior for those roles (when they apply to the VLAN policy).

Red Hat Enterprise Linux

The Linux kernel core dump is not supported in NX-OS Release 4.1(1b) and later versions and therefore the CLI command has been removed. A syntax error message will be displayed if you import configurations from SAN-OS Release 3.3(x) and earlier to NX-OS Release 4.1(1b) and later. These

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syntax errors do not affect the application of other commands in the configuration and can be safely ignored. To address this, remove the kernel core configuration from the ASCII configuration file before importing the configuration.

Generation 1 Module Limitation

When a Cisco or other vendor switch port is connected to a Generation 1 module port (ISL connection), the receive buffer-to-buffer credit of the port connected to a Generation 1 module port should not exceed 255.

Schedule Job Configurations

As of MDS NX-OS Release 4.1(1b) and later, the scheduler job configurations need to be entered in a single line with a semicolon(;) as the delimiter.

Job configuration files created with SAN-OS Release 3.3(1c) and earlier, are not supported. However, you can edit the job configuration file and add the delimiter to support Cisco NX-OS Release 4.1(3a).

Maximum Number of Zones Supported in Interop Mode 4

In interop mode 4, the maximum number of zones that is supported in an active zone set is 2047, due to limitations in the connected vendor switch.

When IVR is used in interop mode 4, the maximum number of zones supported, including IVR zones, in the active zone set is 2047.

InterVSAN Routing

When using InterVSAN Routing (IVR), it is recommended to enable Cisco Fabric Services (CFS) on all IVR-enabled switches. Failure to do so may cause mismatched active zone sets if an error occurs during zone set activation.

Java Web Start

When using Java Web Start, it is recommended that you do not use an HTML cache or proxy server. You can use the Java Web Start Preferences panel to view or edit the proxy configuration. To do this, launch the Application Manager, either by clicking the desktop icon (Microsoft Windows), or type `./javaws` in the Java Web Start installation directory (Solaris Operating Environment and Linux), and then select **Edit> Preferences**.

If you fail to change these settings, you may encounter installation issues regarding a version mismatch. If this occurs, you should clear your Java cache and retry.

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VRRP Availability

The Virtual Router Redundancy Protocol (VRRP) is not available on the Gigabit Ethernet interfaces on the MSM-18/4 module or module 1 of the MDS 9222i switch, even though it is visible on these modules. The feature is not implemented in the current release.

Using a RSA Version 1 Key for SSH Following an Upgrade

For security reasons, NX-OS Release 4.2(1b) does not support RSA version 1 keys. As a result, if you upgrade to NX-OS Release 4.2(1b) from an earlier version that did support RSA version 1 keys, and you had configured a RSA version 1 key for SSH, then you will not be able to log in through SSH following the upgrade.

If you have a RSA version 1 key configured for SSH, before upgrading to NX-OS Release 4.2(9), follow these steps:

-
- Step 1** Disable SSH.
 - Step 2** Create RSA version 2 DSA keys.
 - Step 3** Enable SSH.
 - Step 4** Delete any RSA version 1 keys on any remote SSH clients and replace the version 1 keys with the new version 2 keys from the switch.

Proceed with the upgrade to NX-OS Release 4.2(9).

If you upgrade before disabling SSH and creating RSA version 2 keys, follow these steps:

-
- Step 1** Open a Telnet session and log in through the console.
 - Step 2** Issue the **no feature ssh** command to disable SSH.
 - Step 3** Issue the **ssh key rsa 1024** command to create RSA version 2 keys.
 - Step 4** Issue the **feature ssh** command to enable SSH.
-

CFS Cannot Distribute All Call Home Information

In MDS NX-OS Release 4.2(1b), CFS cannot distribute the following Call Home commands that can be configured with the **destination-profile** command:

- **destination-profile** *profile_name* **transport-method**
- **destination-profile** *profile_name* **http**

The output of the **show running-config callhome** command shows configured Call Home commands:

```
switch# show running-config callhome
> version 4.1(3)
> callhome
> email-contact abc@cisco.com <mailto:abc@cisco.com>
> phone-contact +14087994089
> streetaddress xyxyx
```

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```
> distribute
> destination-profile testProfile
> destination-profile testProfile format XML
> no destination-profile testProfile transport-method email
> destination-profile testProfile transport-method http
> destination-profile testProfile http https://xyz.abc.com
> destination-profile testProfile alert-group all
> transport email smtp-server 64.104.140.134 port 25 use-vrf management
> transport email from abc@cisco.com <mailto:abc@cisco.com>
> enable
> commit
```

When you attempt to apply these commands in the ASCII configuration, the following commands fail:

```
> no destination-profile testProfile transport-method email
> destination-profile testProfile transport-method http
> destination-profile testProfile http https://xyz.abc.com
```

To work around this issue, issue these commands after the **commit** command.

Availability of F Port Trunking and F Port Channels

Trunking F ports and trunking F port channels are not supported on the following MDS 9000 components:

- DS-C9134-K9, Cisco MDS 9134 Multilayer Fabric Switch, if NPIV is enabled and the switch is used as the NPV core switch
- DS-C9124-K9, Cisco MDS 9124 Multilayer Fabric Switch, if NPIV is enabled and the switch is used as the NPV core switch

Trunking F ports, trunking F port channels and regular F port channels are not supported on the following MDS 9000 components:

- DS-C9216i-K9, Cisco MDS 9216i Multilayer Fabric Switch
- DS-X9016, Cisco MDS 9000 2-Gbps16-Port Fibre Channel Switching Module
- DS-X9032, Cisco MDS 9000 2-Gbps 32-Port Fibre Channel Switching Module
- DS-X9032-14K9, Cisco MDS 9000 14/2-Port Multiprotocol Services Module (MPS-14/2)

For configuration information, refer to the “Configuring Trunking” section in the *Cisco MDS 9000 NX-OS Interfaces Configuration Guide*.

Reserved VSAN Range and Isolated VSAN Range Guidelines

On an NPV switch with a trunking configuration on any interface, or on a regular switch where the **feature fport_channel_trunk** command has been issued to enable the Trunking F PortChannels feature, follow these configuration guidelines for reserved VSANs and the isolated VSAN:

- If trunk mode is on for any of the interfaces or NP PortChannel is up, the reserved VSANs are 3040 to 4078, and they are not available for user configuration.
- The Exchange Virtual Fabric Protocol (EVFP) isolated VSAN is 4079, and it is not available for user configuration.
- VSAN 4079 will be impacted by an upgrade to NX-OS Release 4.1(3a), depending on whether or not VSAN 4079 was created prior to the upgrade. See the “[Upgrading Effect on VSAN 4079](#)” section on page 20 for details.

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The following VSAN IDs are assigned in the Fibre Channel Framing and Signaling (FC-FS) interface standard:

VF_ID Value	Value Description
00h	Do not use as a Virtual Fabric Identifier.
001h ... EFFh	Available as a Virtual Fabric Identifier.
F00h ... FEEh	Reserved.
FEFh	Control VF-ID (see Fibre Channel Link Services (FC-LS) and Fibre Channel Switch Fabric Generation 4 (FC-SW-4) standards).
FF0h ... FFEh	Vendor specific.
FFFh	Do not use as a Virtual Fabric Identifier.
FEFh = 4079	

Applying Zone Configurations to VSAN 1

In the setup script, you can configure system default values for the default-zone to be permit or deny, and you can configure default values for the zone distribution method and for the zone mode.

These default settings are applied when a new VSAN is created. However, the settings will not take effect on VSAN 1, because it exists prior to running the setup script. Therefore, when you need those settings for VSAN 1, you must explicitly issue the following commands:

- **zone default-zone permit** *vsan 1*
- **zoneset distribute full** *vsan 1*
- **zone mode enhanced** *vsan 1*

Running Storage Applications on the MSM-18/4

The Cisco MDS 9000 18/4-Port Multiservice Module (MSM-18/4) does not support multiple, concurrent storage applications. Only one application, such as SME or DMM, can run on the MSM-18/4 at a time.

RSPAN Traffic Not Supported on CTS Ports on 8-Gbps Switching Modules

An inter-switch link (ISL) that is enabled for Cisco TrustSec (CTS) encryption must be brought up in non-CTS mode to support remote SPAN (RSPAN) traffic on the following modules:

- DS-X9248-96K9: Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module
- DS-X9224-96K9: Cisco MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module
- DS-X9248-48K9: Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module

If the ISL link is brought up with CTS enabled, random packets drops of both RSPAN traffic and normal traffic will occur on the receiver port switch.

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I/O Accelerator Feature Limitations

In NX-OS Release 4.2(9), IOA does not support the following NX-OS features:

- IVR flows
- Devices with NPV and NPIV enabled
- F port trunking
- F port channeling

Support for FCIP Compression Modes

In Cisco NX-OS Release 4.2(9), FCIP compression mode 1 and compression mode 3 are not supported on the Cisco MSM-18/4 module and on the SSN-16 module.

Saving Copies of the Running Kickstart and System Images

After you upgrade to MDS NX-OS Release 4.2(9), you are not allowed to delete, rename, move, or overwrite the kickstart and system images that are in the current system bootvar settings on an active or standby MDS Supervisor-2 module on any Cisco MDS 9500 Series switch. This restriction does not apply to the integrated supervisor module on the MDS 9200 and MDS 9100 series switches.

Configuring Buffer Credits on a Generation 2 or Generation 3 Module

When you configure port mode to auto or E on a Generation 2 module, one of the ports will not come up for the following configuration:

- Port Mode: auto or E for all of the ports
- Rate Mode: dedicated
- Buffer Credits: default value

When you configure port mode to auto or E on a Generation 3 module, one or two of the ports will not come up for the following configuration:

- Port Mode: auto or E for the first half of the ports, the second half of the ports, or for all of the ports
- Rate Mode: dedicated
- Buffer Credits: default value

When you configure port mode to auto or E for all ports in the global buffer pool, you need to reconfigure buffer credits on one or more of the ports. The total number of buffer credits configured for all the ports in the global buffer pool should be reduced by 64.

PPRC Not Supported with FCIP Write Acceleration

IBM Peer to Peer Remote Copy (PPRC) is not supported with FCIP Write Acceleration.

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Rule Changes Between SAN-OS Release 3.3(1c) and NX-OS Release 4.2(1a) Affect Role Behavior

The rules that can be configured for roles were modified between SAN-OS Release 3.3(1c) and NX-OS Release 4.2(1a). As a result, roles do not behave as expected following an upgrade from SAN-OS Release 3.3(1c) to NX-OS Release 4.2(1a). Manual configuration changes are required to restore the desired behavior.

Rule 4 and Rule 3: after the upgrade, **exec** and **feature** are removed. Change rule 4 and rule 3 as follows:

SAN-OS Release 3.3(1c) Rule	NX-OS Release 4.2(1a), Set the Rule to:
rule 4 permit exec feature debug	rule 4 permit debug
rule 3 permit exec feature clear	rule 3 permit clear

Rule 2: after the upgrade, **exec feature license** is obsolete.

SAN-OS Release 3.3(1c) Rule	NX-OS Release 4.2(1a) Rule
rule 2 permit exec feature license	Not available in Release 4.2(1).

Rule 9, Rule 8, and Rule 7: after the upgrade, you need to have the feature enabled to configure it. In SAN-OS Release 3.3(1c), you could configure a feature without enabling it.

SAN-OS Release 3.3(1c) Rule	NX-OS Release 4.2(1a), to Preserve the Rule:
rule 9 deny config feature telnet	Not available in Release 4.2(1) and cannot be used.
rule 8 deny config feature tacacs-server	During the upgrade, enable the feature to preserve the rule; otherwise, the rule disappears.
rule 7 deny config feature tacacs+	During the upgrade, enable the feature to preserve the rule; otherwise, the rule disappears.

RCS Not Supported in Cisco NX-OS Release 4.2(9)

Cisco NX-OS Release 4.2(9) does not support the Reliable Commit Service (RCS) feature. Brocade Fabric OS (FOS) version 5.0.5f does support RCS. As a result, if you have an MDS switch that is running NX-OS Release 4.2(9) connected to a Brocade switch that is running FOS version 5.0.5f, and you attempt to activate the IVR zone set from the MDS switch, the active IVR zone set database will not be propagated to the Brocade switch. The host on the Brocade switch will not receive the RSCN when a regular zone set is activated or deactivated on the MDS switch, but the active and full zone set database will be propagated to the Brocade switch.

Cisco NX-OS Release 5.0(1a) and later releases support RCS.

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A McData Switch Can Become Inaccessible After a Zone Set Deactivation

In a fabric with an MDS switch that is running Cisco NX-OS Release 4.2(9) and a McData switch where there is an active IVR zone set and an active regular zone set, deactivating the zone set on the McData switch will cause the McData switch to become inaccessible and unreachable by ping. If this situation occurs, do one of the following:

- Power cycle the McData switch.
- Deactivate the regular zone set on the McData switch, but do not enter the **show fabric nodes** command followed by the **show zoning** command. After a brief delay, the switch becomes accessible.

Configuring a Persistent FCID in an IVR Configuration with Brocade Switches

The following information is relevant if you have a fabric that consists of Cisco MDS 9000 switches and Brocade switches, and the Cisco MDS switches are running either NX-OS Release 4.x or Release 5.x and Brocade is running FOS higher than 6.x. In an IVR configuration, when IVR NAT is enabled on a Cisco MDS 9000 switch, the device in the native VSAN should be configured with a persistent FCID. Assuming the FCID is 0xAABBCC, AA should be configured with the virtual IVR domain ID of the VSAN that contains the ISLs and BB should be configured in the following range:

- 1 through 64 if the Brocade switch is operating in native interop mode.
- 1 through 30 if the Brocade switch is operating in McData Fabric mode or McData Open Fabric Mode.

This configuration ensures that the devices connected to the Cisco MDS 9000 switch can be seen in the name server database on the Brocade switch.

Incompatibility for the FC Redirect IVR Feature in Cisco NX-OS Release 4.2(9)

A software incompatibility for the FC Redirect IVR feature exists between Cisco NX-OS Release 4.2(9) and Release 4.2(5). As a result, if you install Release 4.2(9) and configure IOA or SME and then downgrade to Release 4.2(5), you will not be able to upgrade to Release 4.2(9) because the FC Redirect IVR capability that is enabled in Release 4.2(5) is not supported in Release 4.2(9). To work around this issue, follow these steps:

1. On the switches running Release 4.2(5), shut the IOA or SME cluster on all switches that belong to the same cluster.
2. Clear all fc-redirect configurations.
3. Stop the fc-redirect process.
4. Enter the **no shut** command to bring up the IOA or SME cluster. All fc-redirect configurations will be restored and the FC Redirect IVR capability will be removed.
5. Proceed with the nondisruptive upgrade to Release 4.2(9).

Internal Component Affects Certain Hardware Running Older Software

If you are running Cisco SAN-OS Release 3.3(x), the following Cisco MDS 9000 devices will not come up if they use a specific version of an internal component:

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- DS-X9304-18K9, 18/4-Port Multiservice Module (MSM-18/4)
- DS-C9222i-K9, Cisco MDS 9222i Multilayer Fabric Switch

If you encounter this issue, upgrade to NX-OS Release 4.2(9), which is the minimum software release that has the fix for this issue.

For additional information, see [CSCty32238](#).

Caveats

This section lists the open and resolved caveats for this release. Use [Table 16](#) to determine the status of a particular caveat. In the table, “O” indicates an open caveat and “R” indicates a resolved caveat.

Table 16 Open Caveats and Resolved Caveats Reference

DDTS Number	NX-OS Software Release (Open or Resolved)	NX-OS Software Release (Open or Resolved)
	4.2(7e)	4.2(9)
Severity 1		
CSCti35366	O	R
CSCti54080	O	R
Severity 2		
CSCta13451	O	R
CSCti00670	O	R
CSCti14015	O	R
CSCti14835	O	R
CSCti58807	O	R
CSCti98457	O	R
CSCtj04344	O	R
CSCtj33878	O	R
CSCtj56122	O	R
CSCtj94298	O	R
CSCtk47039	O	R
CSCtk62239	O	R
CSCtq24644	O	O
CSCtr42293	O	R
CSCtr59985	O	R
CSCtr94463	O	R
CSCts72537	O	R
CSCts73112	O	R
CSCtt33003	O	R
CSCtx05810	O	R

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Table 16 Open Caveats and Resolved Caveats Reference (continued)

DDTS Number	NX-OS Software Release (Open or Resolved)	NX-OS Software Release (Open or Resolved)
	4.2(7e)	4.2(9)
CSCty32238	O	R
Severity 3		
CSCsl62213	O	R
CSCso67222	O	R
CSCsx33891	O	R
CSCtd04154	O	R
CSCth26851	O	R
CSCth93476	O	R
CSCti05659	O	R
CSCti06878	O	R
CSCtill858	O	R
CSCti23777	O	R
CSCti33087	O	R
CSCti38286	O	R
CSCti45617	O	R
CSCti76531	O	R
CSCti84084	O	R
CSCti92353	O	R
CSCtj09142	O	R
CSCtj11562	O	R
CSCtj23092	O	R
CSCtj28577	O	R
CSCtj35893	O	R
CSCtj35959	O	R
CSCtj35992	O	R
CSCtj36923	O	R
CSCtj66078	O	R
CSCtj84690	O	R
CSCtj97363	O	R
CSCtk08503	O	R
CSCtk18505	O	R
CSCtl53991	O	R
CSCtn11838	O	R
CSCtn26967	O	R

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Table 16 Open Caveats and Resolved Caveats Reference (continued)

DDTS Number	NX-OS Software Release (Open or Resolved)	NX-OS Software Release (Open or Resolved)
	4.2(7e)	4.2(9)
CSCtn93079	O	R
CSCtn95730	O	R
CSCto62199	O	R
CSCto65408	O	R
CSCtr20364	O	R
CSCtr58217	O	R
CSCtr83189	O	R
CSCtr92846	O	R
CSCts00885	O	R
CSCts21095	O	R
CSCtu13335	O	R
CSCtv21313	O	R
CSCtw52878	O	R
CSCty01609	O	R

Resolved Caveats

- CSCti35366

Symptom: The RSCN process might fail and cause a system reload. This symptom might be seen when many RSCNs are transmitted due to links changing state, but no responses are received from the destinations.

Workaround: This issue is resolved.
- CSCti54080

Symptom: The module manager process fails on a Cisco MDS 9000 switch that is running the special engineering NX-OS Release 4.2(7dE3), if the switch has a Generation 1 module installed. The failure occurs because the size of the image-compatibility matrix (srg) that is part of the module image increases. If the srg size is greater than 10KB during boot up, it causes memory corruption in module manager that results in the module manager fails. This issues does not occur on a switch that does not have a Generation 1 module.

Workaround: This issue is resolved.
- CSCta13451

Symptom: The initiator-side FCIP or IOA engine fails. This issue might be seen under certain rare conditions when FCP-2 error recovery procedures are invoked by the initiator to recover a SCSI read operation.

Workaround: This issue is resolved.
- CSCti00670

Symptom: In a very rare corner case, IVR fails when it gets a corrupted device update (DU) payload.

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- Workaround:** This issue is resolved.
- CSCti14015

Symptom: The port-monitor feature incorrectly logs alerts that BB credit is not-available following an ISSU to Cisco NX-OS Release 4.2(7). This symptom might be seen when there are idle ports, or ports that not experiencing buffer credit loss, the port-monitor feature logs alerts for a BB credit not-available condition, even though the condition does not actively exist on the switch.

Workaround: This issue is resolved.
 - CSCti14835

Symptom: In configuration where slow-drain timeout is configured, congestion-drop-timeout and preemptive-drop-timeout do not get applied.

Workaround: This issue is resolved.
 - CSCti58807

Symptom: Cisco MDS 9000 fabric switches should include fc2 commands in the **show tech** command.

Workaround: This issue is resolved.
 - CSCti98457

Symptom: A “BB credit not available” event is triggered by the Port Monitor before 100 msec, even though the configured value for the event to get trigger is 100 ms.

Workaround: This issue is resolved.
 - CSCtj04344

Symptom: A Fibre Channel port does not come up, but stays in init state. This symptom might be seen after a port link error recovery that is initiated by the module.

Workaround: This issue is resolved.
 - CSCtj33878

Symptom: If you use port-monitor policies with the portguard actions of “errdisable” or “flap” with the Absolute Threshold set, make sure that there are no old or stale counters for the port-monitor counter you are monitoring. If the counter has old or stale entries that are at or above the rising-threshold value, the interfaces specified in the Port Type field of the policy might go down once the policy is activated.

Workaround: This issue is resolved.
 - CSCtj56122

Symptom: If the number of mbufs in the compressed IO packet is 256, the IPS processor does not compact the IO packet.

Workaround: This issue is resolved.
 - CSCtj94298

Symptom: The Fabric-Device Management Interface (FDMI) cores are generated on a Cisco MDS 9500 switch. This symptom might be seen when FDMI is busy processing MTS messages, and it fails to send a heartbeat.

Workaround: This issue is resolved.
 - CSCtk47039

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Symptom: An MDS 9000 Family switch does not respond to an FDISC from an NPV-attached switch if the MDS 9000 switch is already processing an FDISC for the same pWWN. This issue occurs when the downstream device is running in NPV mode and the FDISC for the same pWWN must be in progress and no ABTS is sent to cancel the in-progress FDISC.

Workaround: This issue is resolved.

- CSCtk62239

Symptom: Under extremely rare circumstances, a Cisco MDS 9000 switch might fail and reload. After the reload, the output of the **show system reset-reason** command indicates that the trigger was an HA policy.

```
switch# show system reset-reason
----- reset reason for Supervisor-module 8 (from Supervisor in slot 8) ---
1) At 658542 usecs after Tue Nov 30 18:17:46 2010
   Reason: Reset triggered due to HA policy of Reset
   Service: rib hap reset
   Version: 4.2(3)
```

This issue can happen *only* if an external event triggers a RIB update. Examples of these types of external events include module insertions or reloads, and the addition of new switches and VSANs to a fabric.

Workaround: This issue is resolved.

- CSCtr42293

Symptom: An IOA tape read acceleration problem occurs when sending Accept (ACC) to the Read Exchange Concise (REC) Extended Link Service with `data_xfer_count = 0`, and when a few data packets have been sent. Once the REC ACC is sent, the host sends a Sequence Retransmission Request (SRR) FCP FC-4 Link Service Request to claim the rest of the data. The target sends a REJECT, which causes the host to end the exchange. This symptom might be seen when IOA retransmissions occur from target to host.

Workaround: This issue is resolved.

- CSCtr59985

Symptom: A tape target is unresponsive and a permanent error is sent to the host. The host side and target side IOA traces show multiple Read Exchange Concise and Sequence Retransmission Request events followed by ABTS for the read exchanges.

Workaround: This issue is resolved.

- CSCtr94463

Symptom: An FCIP engine fails and all FCIP links that are attached to that engine are brought down and up.

This issue is rare and has only been seen in one FICON environment with a triangular topology and both compression and FICON Tape Acceleration are enabled.

Workaround: This issue is resolved.

- CSCts72537

Symptom: Fabric Manager Server (FMS) sends multiple EMC E-mail Home e-mail messages when a module fails. This symptom might be seen when a Cisco MDS 9000 module fails and the MDS 9000 switch is running Cisco NX-OS Release 5.0(x) or Release 5.2(x).

Workaround: This issue is resolved.

- CSCts73112

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Symptom: A Cisco MDS 9500 Series switch might reset due to an IVR failure. The reset is triggered by the HA reset policy. The **show cores** command displays the following output:

```
switch# show cores
Module-num  InstanceProcess PID Core-create-time
-----
8           1           ivr    3020    Aug 14 00:19
8           1           ivr    27476   Aug 14 00:19
7           1           ivr    3024    Aug 14 00:19
7           1           ivr    544     Aug 14 00:19
```

This symptom might be seen on a Cisco MDS 9500 Series switch that is running NX-OS Release 4.2(7b).

Workaround: This issue is resolved.

- CSCtt33003

Symptom: An SNMP MIB walk on CiscoFcFeMIB over 64 iterations detected ~400K memory leak.

Workaround: This issue is resolved.

- CSCtx05810

Symptom: In very rare circumstances, the communication between 2 VSANs in an IVR NAT topology can get interrupted. In the path between the VSANs, one of the switches stops exporting the devices to the next hop VSAN, and the output of the **show ivr internal pvm** command on that switch shows that the RSCN_OFFLINE_SENT flag has been set for all affected devices.

Workaround: This issue is resolved.

- CSCty32238

Symptom: On certain hardware, IVR does not work. If IVR is not configured on the switch where the module is installed, then there is no impact from this issue.

The following devices with hardware revision 1.5 are affected by this issue:

- DS-X9248-96K9, 48-port 8-Gbps Fibre Channel Switching Module
- DS-X9248-48K9, 4/44-port host-optimized 8-Gbps Fibre Channel Switching Module
- DS-X9224-96K9, 24-port 8-Gbps Fibre Channel Switching Module

The following devices with hardware revision 1.0 are affected by this issue:

- DS-X9304-18K9, 18/4-Port Multiservice Module (MSM-18/4)
For this module, the affected version is 73-14372-01A0 hardware version 1.0 (due to the new 73-number)
- DS-C9222i-K9, Cisco MDS 9222i Multilayer Fabric Switch
For this switch, the affected version is 73-14373-01A0 hardware version 1.0 (due to the new 73-number)

For the DS-X9248-96K9, DS-X9248-48K9 and DS-X9224-96K9 modules, the output of the show module command indicates whether or not the device is affected.

```
switch# sh mod 2
Mod  Ports  Module-Type                Model                Status
---  ---
2    24      1/2/4/8 Gbps FC Module        DS-X9224-96K9       ok

Mod  Sw                Hw                World-Wide-Name(s) (WWN)
---  ---
2    5.2(1)           <B>1.0</B>        20:41:00:0d:ec:24:f4:c0 to
20:58:00:0d:ec:24:f4:c0
```

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In the preceding output, the device is hardware revision 1.0 and therefore not affected.

For the DS-X9304-18K9 and the DS-C9222i-K9, the **show module** command might indicate hardware version 1.0 due to new part numbers; however the **show sprom module** command shows the affected parts.

```
switch# sh mod 9
Mod  Ports  Module-Type                               Model                               Status
---  -
9    22      4x1GE IPS, 18x1/2/4Gbps FC Module       DS-X9304-18K9                       ok

Mod  Sw                Hw      World-Wide-Name(s) (WWN)
---  -
9    5.2(1)           1.0     22:01:00:0d:ec:25:e9:80 to 22:12:00:0d:ec:25:e9:80

Mod  MAC-Address(es)                               Serial-Num
---  -
9    00-1a-e2-03-4c-5c to 00-1a-e2-03-4c-64     JAE1131SCBW

switch# sh sprom module 9 1 |egrep "Part|Serial"
Serial Number   : JAE1131SCBW
Part Number     : 73-10688-06      <-- Not 73-14372-01 so h/w ver 1.0 is OK
Part Revision   : A0
```

Workaround: This issue is resolved.

- CSCsl62213

Symptom: The following message is seen in the output of the **show logging log** command:

```
%KERN-3-SYSTEM_MSG: Both SYN and FIN bits are set. Discard this packet - kernel
```

This symptom might be seen when an application is trying to establish a TCP connection to the mgmt port and both the SYN and FIN bits are set. As per the protocol, if both the SYN and FIN bits are set, then the packet is illegal and should be discarded.

Workaround: This issue is resolved.

- CSCso67222

Symptom: In very rare circumstances in IVR NAT configurations, it is possible that devices from two or more VSANs stop communicating. The root cause is there are stale device entries in IVR vdri-fsm, which cause IVR DEP and PVM to get stuck, which prevents the name server from registering the devices.

There is a stale device entry in vdri-fsm device list:

```
switch4# sh ivr internal vdri-fsm vsan 130 domain 203

VDRI FSM: A=1:V=130:D=0xcb(203)
Native VSAN/AFID = 111/1 Cur State: LSR_OWNER

Number of Devices Advertised: 1
FCID: 0xcb7f98 WWN=10:00:00:00:c9:7a:06:4c PV Pending: Add=No Del=No
<---offline device, pwwn not in ivr zoneset and fcns database

PNAT
switch1# sh ivr internal pnat vdom-info vsan 130
IVR2 PNAT: Virtual domain info for 1:130:203 is_owner=false, owner_dom=13,
local_dom=15
ID: VDOM-1:130:203
switch2# sh ivr internal pnat vdom-info vsan 130
IVR2 PNAT: Virtual domain info for 1:130:203 is_owner=false, owner_dom=13,
local_dom=35
ID: VDOM-1:130:203
```

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```
switch3# sh ivr internal pnat vdom-info vsan 130
IVR2 PNAT: Virtual domain info for 1:130:203 is_owner=false, owner_dom=13,
local_dom=33
ID: VDOM-1:130:203
switch4# sh ivr internal pnat vdom-info vsan 130
NONE
```

There should be outputs like the following:

```
is_owner=true, owner_dom=13, local_dom=13
```

Therefore, at switch2 and switch3, the system keeps trying with switch4, but cannot get an OXID. The counter below shows the retry count.

```
switch2# show ivr internal dep vsan 130
Internal information for DEP FSM
-----
vsan      domain  nh      status  sync_status req i/f
   130    0xcb(203)  111      NONE    FCID_RW 9955 <-----Missing OXID here
Number of DEP entries : 1
```

```
switch1# show ivr internal dep vsan 130
Internal information for DEP FSM
-----
vsan      domain  nh      status  sync_status req i/f
   130    0xcb(203)  111      NONE    FCID_RW 10034<-----Missing OXID here
```

The output should be like the following:

```
12    0x23(35)  211      ALL_DONE OXID|FCID_RW  0 [ fc5/1 fc9/2 fc4/2 fc1/8
fc6/1 fc5/2 fc2/8 fc6/2 fc3/8 fc1/10 fc4/8 fc2/10 fc4/10 fc3/10 ]
```

```
switch2# show ivr internal pvm dom 203 vsan 130
AFID:1 Vsan:130 Virtual domain:203
Domains:13,15,33,35
Domains added to route LSR:13,15 <----- should have full list 13,15,33,35
Flags:0x3 (ROUTE_ADDED )

Device List

Port WWN:10:00:00:00:xx:yy:zz:aa
Domains with rewrite completed:13,15,33,35
Domains with registered NS info:13,15 <----- should have full list 13,15,33,35
Flags:0x3 (INITIAL_SYNC RSCN_ONLINE_SENT )
```

Stale domain entry: on the LSR_owner switch that has the stale device in vdri, the zone database may also have an inconsistent domain while the peer switch does not.

```
switch# show zone internal vsan 130

203(0xcb)

rib has both fspf and ivr entry
fspf      130    cb0000 ff0000  00 00    D P A  1    63    F  normal frm
   ivr 13:203  Domain  0xcb(203)
ivr       130    cbffff ffffff  00 00    R P A  1    0    F  normal frm
   sup-fc0
```

This symptom might be seen under the following conditions:

- A version of software between SAN-OS Release 3.2(x) and NX-OS Release 4.1(x) is loaded on the switch.

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- A device state change occurs due to a stimulus such as an F port down, E link flapping, VSAN suspend, or domain withdrawn.
- A device goes down or a domain goes down during an ISSU or switchover.

Workaround: This issue is resolved.

- CSCsx33891

Symptom: In very rare circumstances, the SANTap process or the SME process might fail. If the failure occurs on the Cisco MDS9222i switch, it might cause a full switch reload. This symptom might be seen in NX-OS Release 4.1(x) software.

Workaround: This issue is resolved.

- CSCtd04154

Symptom: The DMM CPP interface cpp1/1/1 does not come up unless there is an active port in VSAN 1. VSAN 1 is the DMM management VSAN.

Workaround: This issue is resolved.

- CSCth26851

Symptom: If QoS is enabled and you are running ZONE QOS and you globally disable it from Fabric Manager Server or a script that runs the CLI commands simultaneously across the fabric, you may not be able to activate the zone set after this event.

The output of the show logging log command shows the following message:

```
switch# 2010 Jun  2 18:47:47 switch %ZONE-2-ZS_CHANGE_ACA_FAILED: %$VSAN 1%$ ACA
failed : domain 0x1 returns NO_REASON_CODE
```

If you try to activate the zone set from Fabric Manager Server, the following error message appears:

```
switch:zone: Qos needs to be enabled to perform this action
```

The problem is that QoS does gets disabled, however the QoS zone attribute parameters do not get cleaned up in the running configuration. This issue can occur in Basic and Enhanced Zoning Modes.

This symptom might be seen when you run ZONE QOS and disable QoS globally in the fabric.

Workaround: This issue is resolved.

- CSCth93476

Symptom: A SCSI flow that is configured for Fibre Channel write acceleration might disappear after a module reloads. This symptom can be seen under the following conditions:

- SCSI flows are configured and the module is reloaded.
- SCSI flows are configured and the switch is upgraded from NX-OS Release 4.2(x) to NX-OS Release 4.2(7a).

Workaround: This issue is resolved.

- CSCti05659

Symptom: SFP tx power and current are not displayed correctly even though the interface is enabled.

This symptom might be seen when a port experiences the following sequence of events:

- Before 248 days after module bootup: an SFP is inserted, the port brought up and the SFP is removed from that port, or the port is disabled.
- After 248 days following module bootup: an SFP is inserted and the port is brought up.

Workaround: This issue is resolved.

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- CSCti06878

Symptom: The Cisco MDS 9222i failed with following reason:

```
switch# show system reset-reason
----- reset reason for Supervisor-module 1 (from Supervisor in slot 1) ---
1) At 436178 usecs after Thu Jul 15 09:39:32 2010
   Reason: Reset triggered due to HA policy of Reset
   Service: Service "bootvar"
   Version: 3.3(4a)
```

Workaround: This issue is resolved.
- CSCti1858

Symptom: The port-group-monitor feature does not generate alarms when the configured port-ASIC bandwidth threshold is crossed.

This symptom might be seen when the port-group-monitor feature is used on a Cisco MDS 9000 device that is running NX-OS Release 4.2(7). Alarms are not generated when the threshold is crossed, even when traffic is running that has crossed the threshold.

Workaround: This issue is resolved.
- CSCti23777

Symptom: A port on a Generation 3 module is disabled and set to hwFailure (hardware failure) state.

This symptom might be seen when a port MAC address experiences a double bit ECC error (type 87) as indicated in the output of the **show logging onboard exceptionlog** command:

```
"Error Description: IP_FCMAC_ERR Interrupt, port = x, src_bit = 87"
```

Workaround: This issue is resolved.
- CSCti33087

Symptom: The Call Home service on a Cisco MDS 9500 series switch can fail and cause a supervisor switchover.

This symptom might be seen under normal working conditions. The following configuration sequence can lead to the failure:

```
destination-profile new_profile
destination-profile new_profile alert-group License
destination-profile new_profile alert-group Syslog-group-port
destination-profile new_profile message-level 5
```

Workaround: This issue is resolved.
- CSCti38286

Symptom: When creating a job, DMM intermittently reports:

```
DMM_JOB_INFRA_FC_REDIRECT_SETUP_ERR
```

This symptom might be seen when there are two or more paths to a host, multiple paths to existing storage, and multiple paths to the new storage.

Workaround: This issue is resolved.
- CSCti45617

Symptom The **show fcdomain fcid** command is not available to users with network-operator roles.

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This symptom might be seen on Cisco MDS 9000 switches running NX-OS Release 4.2(x) and later releases.

Workaround: This issue is resolved.

- CSCti76531

Symptom: No Call Home email alert is generated specifically for Gigabit FCIP interfaces.

This symptom might be seen in NX-OS Release 4.1(x) and Release 4.2(x).

Workaround: This issue is resolved.

- CSCti84084

Symptom: The congestion-drop timer configuration should not allow a range be specified. One value should be specified.

Workaround: This issue is resolved.

- CSCti92353

Symptom: Call Home alerts are not sent for port or link down events. This symptom might be seen because Call Home messages are not generated after an upgrade to Cisco NX-OS Release 4.2(7a).

Workaround: This issue is resolved.

- CSCtj09142

Symptom: The switch generates core files after a downgrade from NX-OS Release 4.2.7a to Release 4.1.3a.

Workaround: This issue is resolved.

- CSCtj11562

Symptom: The port group monitor feature is enabled, and the log entry and trap are generated for “Rising Threshold > 100% of Port Group Bandwidth Used.”

This symptom might be seen when the port group monitor feature is enabled in NX-OS Release 4.2(3).

Workaround: This issue is resolved.

- CSCtj23092

Symptom: In certain conditions, when a server connected to a Cisco MDS 9000 Family switch is shut down, it appears to still be logged into the fabric. This issue might be seen in an IBM virtualized environment, with the VIOS connected to an NPV switch. When an LPAR that is running AIX is shut down, it remains logged into the fabric and its FC ID appears in the outputs of the **show npv flogi-table** command on the NPV switch and the **show flogi database** command on the core switch.

Workaround: This issue is resolved.

- CSCtj28577

Symptom: The syslogd process fails in NX-OS

Workaround: This issue is resolved.

- CSCtj35893

Symptom: The PMON **counter** command should be enabled only after monitoring is enabled.

Workaround: This issue is resolved.

- CSCtj35959

Symptom: The SSM module reloads when the iSCSI process fails. This symptom might be seen when normal iSCSI operations are in progress.

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Workaround: This issue is resolved.

- CSCtj35992

Symptom: Output Discards may not appear in the output of the **show interface fc slot/port** command when the switch drops Class 3 Fibre Channel frames.

Workaround: This issue is resolved.

- CSCtj36923

Symptom: The Fabric Configuration Server fails due to heartbeat failure when retrieving the switch port details from the port manager and updating its database.

Workaround: This issue is resolved.

- CSCtj66078

Symptom: The port-group-monitor feature generates an alert that shows > 100% when the interface is changed to admin state up if the port-group-monitor policy is already active.

```
2010 Oct 19 12:40:00 switchname %PMON-SLOT6-2-PMON_RISING_THRESHOLD: Port
Group
1 RX crossed rising threshold 50%, fc6/1=0%, fc6/2=891417%, fc6/3=0%, 891417%
of port group bandwidth is used.
2010 Oct 19 12:40:00 switchname %PMON-SLOT6-2-PMON_RISING_THRESHOLD: Port
Group
1 TX crossed rising threshold 50%, fc6/1=0%, fc6/2=188287%, fc6/3=0%, 188287%
of port group bandwidth is used.
```

This symptom might be seen when using the port-group-monitor feature on Cisco MDS 9000 Series devices running NX-OS Release 4.2(3). Alarms are created erroneously if a port-group-monitor policy is active and a port in a port group is admin no shut.

Workaround: This issue is resolved.

- CSCtj84690

Symptom: When upgrading from NX-OS Release 4.1(3a) to Release 5.0(1a), certain ports are brought down because of Diag failure. The following error messages appear:

```
2010 Jul 5 19:33:39 MDSSWITCH %IMAGE_DNLD-SLOT5-2-IMG_DNLD_STARTED:
Module image download process. Please wait until completion...
2010 Jul 5 19:33:57 MDSSWITCH %IMAGE_DNLD-SLOT5-2-IMG_DNLD_COMPLETE:
Module image download process. Download successful.
2010 Jul 5 19:35:00 MDSSWITCH %MODULE-5-LCM_MODULE_UPGRADE_END: Upgrade
of module 5 ended
2010 Jul 5 19:35:00 MDSSWITCH %PLATFORM-5-MOD_STATUS: Module 5
current-status is MOD_STATUS_ONLINE/OK
2010 Jul 5 19:35:00 MDSSWITCH %PORT-5-IF_DOWN_LOOPBACK_DIAG_FAILURE:
%$VSAN 10%$ Interface fc5/37 is down (Diag failure)
2010 Jul 5 19:35:00 MDSSWITCH %PORT-5-IF_DOWN_LOOPBACK_DIAG_FAILURE:
%$VSAN 10%$ Interface fc5/38 is down (Diag failure)
2010 Jul 5 19:35:00 MDSSWITCH %PORT-5-IF_DOWN_LOOPBACK_DIAG_FAILURE:
%$VSAN 10%$ Interface fc5/39 is down (Diag failure)
```

The logs have the following error message:

```
5) Event:E_DEBUG, length:84, at 242335 usecs after Mon Jul 5 19:35:00 2010
[103] 3170:ohms_lc_exception: ERROR: Exception from module 5
PortBits 0xffff00000000
```

This symptom might be seen when all interfaces that were brought down with “Diag failure” were listed in an exception that occurred before the upgrade was performed.

Workaround: This issue is resolved.

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- CSCtj97363

Symptom: The supervisor hangs and the mgmt0 interface does not respond. All data traffic through the system is lost.

This symptom might be seen only on the Cisco MDS 9222i switch. The watchdog does not recover the CPU automatically after the following type of exception occurs:

“Machine Check in kernel mode: Caused by (from MCSR=x): . Signal 7”

Workaround: This issue is resolved.
- CSCtk08503

Symptom: After a change in IVR topology, such as after a new switch is added, there might be issues with establishing connectivity in new IVR zones. The scope of the problem is usually limited to certain switches and VSANs. On some of these switches, the **show ivr internal vdri-fsm** command shows that the virtual domain representing these switches’ native VSANs in remote or transit VSANs is unexpectedly stuck in NOT_ADVERTISING state. The problem usually affects only new flows, that is, devices that have not been zoned or connected before the topology change. This symptom might be seen when IVR1 (non-NAT) is used.

Workaround: This issue is resolved.
- CSCtk18505

Symptom: In rare circumstances, the FCS service on an Cisco MDS 9000 switch might fail. Messages similar to the following appear in the switch log:

```
2010 Nov 2 02:59:42 %SYSMGR-3-HEARTBEAT_FAILURE: Service "fcs" sent SIGABRT for not
heartbeat for last 6 periods. Last heartbeat 31.42 secs ago.
2010 Nov 2 02:59:43 %SYSMGR-2-SERVICE_CRASHED: Service "fcs" (PID 2913) hasn't caught
signal 6
(core will be saved).
2010 Nov 2 02:59:43 %CALLHOME-2-EVENT: SW_CRASH fcs in slot 7 crashed with crash type
: stateful crash
```

Workaround: This issue is resolved.
- CSCtl53991

Symptom: RMON alarms that check the percentage-utilization bandwidth threshold may sometimes fail to report accurate values. This issue might occur when an internal SNMP get of the interface utilization fails, which triggers a false-positive RMON alarm that indicates a bandwidth utilization on an interface that is incorrect.

Workaround: This issue is resolved.
- CSCtn11838

Symptom: An iSCSI configuration might not be completely restored following an unsuccessful upgrade and switchover.

Workaround: This issue is resolved.
- CSCtn26967

Symptom: When an FCIP links starts dropping frames due to congestion control, there is no message given to the user. This issue occurs only in NX-OS Release 4.2 and later.

Workaround: This issue is resolved.
- CSCtn93079

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Symptom: Call Home is not created for a standby supervisor failure. This issue was seen when the standby supervisor failed and was periodically being reset. When the switch was checked, the standby supervisor was in active state or powered on.

Workaround: This issue is resolved.

- CSCtn95730

Symptom: An upgrade from SAN-OS Release 3.3(4) to Release 4.2(7a) on a Cisco MDS 9124e 24-port Fabric Switch for c-Class BladeSystem is disruptive. The **install all** command ended with the following messages before reload:

```
<date> unlock_local_module: Trying to unlock module 0
<date> unlock_local_module: failed to unlock module 0 (2)
```

```
Last reset.....
```

```
Reason: Reset triggered due to HA policy of Reset
Service: fdmi hap reset
```

```
FC traffic interrupted
```

Workaround: This issue is resolved.

- CSCto62199

Symptom: The Cisco 9222i switch spontaneously reboots itself, and the following stack trace can be seen in the output of the **show system exception** command:

```
STACK Call Trace:
[<f724ebf4>]str_isr_handle_cpm_one_intr_reg+0x94/0x310 [klm_str]
[<f724f4dc>]str_isr_cpm_0to3+0xf8/0x154 [klm_str]
[<f72510c0>]str_isr_bh+0x1bc/0x218 [klm_str]
[<c004cf50>]worker_thread+0x17c/0x228
[<c0052a8c>]kthread+0xec/0x128
[<c001bdf0>]original_kernel_thread+0x44/0x60
```

Workaround: This issue is resolved.

- CSCto65408

Symptom: Following an interface flap, the interface goes into an error-disabled state because it reaches the port reinitialization limit. Either the interface is down (error disabled), or the vendor reports out-of-order PLOGIs. This symptom might be seen when Fibre Channel flows are configured. The issue is severe when many Fibre Channel flows are configured and if the device that flaps is in many zones with many zone members.

Workaround: This issue is resolved.

- CSCtr20364

Symptom: An RSCN is not sent to zone members in an IVR remote VSAN when the physical interface goes down. This symptom might be seen when the devices are in an IVR zone. The RSCN is sent to the local IVR VSAN zone members, but not to the remote IVR VSAN zone members.

Workaround: This issue is resolved.

- CSCtr58217

Symptom: Some SNMP ipAddrEntry requests do not return with Get-Next.

Workaround: This issue is resolved.

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- CSCtr83189
Symptom: The Cisco MDS IOA feature fails when IOA flows frequently flap due to logout and tape sessions that are cleaned up on the host and target IOA nodes.
Workaround: This issue is resolved.
- CSCtr92846
Symptom: An SME cluster with a single node goes offline after an upgrade from SAN-OS Release 3.3(1c) to NX-OS Release 4.2(7d).
Workaround: This issue is resolved.
- CSCts00885
Symptom: The **show interface fcipx** command shows Path MTU 592 instead of the interface or other higher path MTU. This symptom might be seen after a reload or activation of the module that contains the Gigabit Ethernet interfaces used in FC IP.
Workaround: This issue is resolved.
- CSCts21095
Symptom: Lower than expected performance occurs when a Qlogic HBA is connected to a Cisco MDS 9000 switch and a port is configured in F mode.
Workaround: This issue is resolved.
- CSCtu13335
Symptom: DMM is limited to five jobs per storage port.
Workaround: This issue is resolved.
- CSCtv21313
Symptom: Attempt to add ITLs to tape-device in Cisco Fabric Manager results in the following message:

```
There was a problem adding tape path to tape device xxx. (Failed to create Path Tape Device:
xxx Error: Failure response received from the switch: Previous config in progress. Please try
again later.) Please try again.
```

Workaround: This issue is resolved.
- CSCtw52878
Symptom: A Tivoli Storage Manager (TSM) that is in an IOA flow logs ANR8311E errno=16. This symptom might be seen when IOA sends a SCSI busy message to the TSM server.
Workaround: This issue is resolved.
- CSCty01609
Symptom: The standby supervisor remains in a powered-up state and not ha-standby even though a process is failing.
Workaround: This issue is resolved.

Open Caveats

- CSCtq24644
Symptom: Packet errors are seen on an ASIC on the 18/4-Port Multiservice Module (MSM-18/4).

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The issue might be seen on the 18/4-Port Multiservice Module (MSM-18/4) when one of the SPI interfaces from an ASIC is connected to the Octeon processor.

Workaround: None.

Related Documentation

The documentation set for NX-OS for the Cisco MDS 9000 Family includes the following documents. To find a document online, access the following web site:

http://www.cisco.com/en/US/products/ps5989/tsd_products_support_series_home.html

The documentation set for Cisco Fabric Manager appears in the *Cisco Fabric Manager Release Notes for Release 4.2(5)*, which is available from the following website:

http://www.cisco.com/en/US/products/ps10495/prod_release_notes_list.html

Release Notes

- *Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Releases*
- *Cisco MDS 9000 Family Release Notes for MDS SAN-OS Releases*
- *Cisco MDS 9000 Family Release Notes for Storage Services Interface Images*
- *Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images*

Regulatory Compliance and Safety Information

- *Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family*

Compatibility Information

- *Cisco Data Center Interoperability Support Matrix*
- *Cisco MDS 9000 NX-OS Hardware and Software Compatibility Information and Feature Lists*
- *Cisco MDS NX-OS Release Compatibility Matrix for Storage Service Interface Images*
- *Cisco MDS 9000 Family Switch-to-Switch Interoperability Configuration Guide*
- *Cisco MDS NX-OS Release Compatibility Matrix for IBM SAN Volume Controller Software for Cisco MDS 9000*
- *Cisco MDS SAN-OS Release Compatibility Matrix for VERITAS Storage Foundation for Networks Software*

Hardware Installation

- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9500 Series Supervisor-2A Module Tech Note*
- *Cisco MDS 9200 Series Hardware Installation Guide*

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- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9124 and Cisco MDS 9134 Multilayer Fabric Switch Quick Start Guide*

Software Installation and Upgrade

- *Cisco MDS 9000 NX-OS Release 4.1(x) and SAN-OS 3(x) Software Upgrade and Downgrade Guide*
- *Cisco MDS 9000 Family Storage Services Interface Image Install and Upgrade Guide*
- *Cisco MDS 9000 Family Storage Services Module Software Installation and Upgrade Guide*

Cisco NX-OS

- *Cisco MDS 9000 Family NX-OS Licensing Guide*
- *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*
- *Cisco MDS 9000 Family NX-OS System Management Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Interfaces Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Fabric Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Quality of Service Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Security Configuration Guide*
- *Cisco MDS 9000 Family NX-OS IP Services Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Intelligent Storage Services Configuration Guide*
- *Cisco MDS 9000 Family NX-OS High Availability and Redundancy Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Inter-VSAN Routing Configuration Guide*

Command-Line Interface

- *Cisco MDS 9000 Family Command Reference*

Intelligent Storage Networking Services Configuration Guides

- *Cisco MDS 9000 I/O Acceleration Configuration Guide*
- *Cisco MDS 9000 Family SANTap Deployment Guide*
- *Cisco MDS 9000 Family Data Mobility Manager Configuration Guide*
- *Cisco MDS 9000 Family Storage Media Encryption Configuration Guide*
- *Cisco MDS 9000 Family Secure Erase Configuration Guide*
- *Cisco MDS 9000 Family Cookbook for Cisco MDS SAN-OS*

Troubleshooting and Reference

- *Cisco NX-OS System Messages Reference*

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- *Cisco MDS 9000 Family NX-OS Troubleshooting Guide*
- *Cisco MDS 9000 Family NX-OS MIB Quick Reference*
- *Cisco MDS 9000 Family NX-OS SMI-S Programming Reference*

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

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