



Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.2(1b)

Release Date: November 2, 2009

Part Number: OL-19964-03

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 39](#).



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/partner/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

Contents

This document includes the following:

- [Introduction, page 2](#)
- [Components Supported, page 2](#)
- [MDS 9000 Chassis and Module Support in Cisco MDS NX-OS 4.x, page 9](#)
- [Migrating from Supervisor-1 Modules to Supervisor-2 Modules, page 11](#)
- [Software Download Process, page 11](#)
- [Upgrading Your Cisco MDS NX-OS Software Image, page 14](#)
- [Downgrading Your Cisco MDS SAN-OS Software Image, page 23](#)
- [New Features in Cisco MDS NX-OS Release 4.2\(1b\), page 28](#)



Americas Headquarters:

Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

© 2009 Cisco Systems, Inc. All rights reserved.

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

- [Licensed Cisco NX-OS Software Packages, page 28](#)
- [Limitations and Restrictions, page 31](#)
- [Caveats, page 38](#)
- [Related Documentation, page 39](#)
- [Obtaining Documentation and Submitting a Service Request, page 41](#)

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.

Components Supported

[Table 1](#) 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 1 *Cisco MDS 9000 Family Supported Software and Hardware Components*

Component	Part Number	Description	Applicable Product
Software	M95S2K9-4.2.1b	MDS 9500 Supervisor/Fabric-2, NX-OS software	MDS 9500 Series only
	M92S2K9-4.2.1b	MDS 9200 Supervisor/Fabric-2, NX-OS software	MDS 9222i Switch only
	M92S1K9-4.2.1b	MDS 9216i Supervisor/Fabric-I, NX-OS software	MDS 9216i Switch only
	M91S2K9-4.2.1b	MDS 9100 Supervisor/Fabric-2, NX-OS software	MDS 9124 Switch and MDS 9134 Switch
SSI Interface	SSI-M9K9-421b	Storage Services Interface for NX-OS Release 4.2(1b)	MDS 9000 Family
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

Send documentation comments to mdsfeedback-doc@cisco.com

Table 1 *Cisco MDS 9000 Family Supported Software and Hardware Components (continued)*

Component	Part Number	Description	Applicable Product
Licenses (continued)	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

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

Table 1 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

Send documentation comments to mdsfeedback-doc@cisco.com

Table 1 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

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

Table 1 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

Send documentation comments to mdsfeedback-doc@cisco.com

Table 1 *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

Send documentation comments to mdsfeedback-doc@cisco.com

Table 1 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 Release 4.1(3a)	MDS 9000 Family

Send documentation comments to mdsfeedback-doc@cisco.com

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

[Table 2](#) lists the MDS hardware chassis supported by Cisco MDS NX-OS 4.x.

Table 2 *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 3](#) 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 4](#).

Table 3 *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-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
DS-X9032	32-port 1-, 2-Gbps Fibre Channel Switching Module	Yes	No	Yes

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

Table 3 *Module Support Matrix for Cisco MDS NX-OS 4.x (continued)*

Module	Description	MDS 9500 Series	MDS 9222i	MDS 9216i
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 4 lists the MDS hardware modules supported by Cisco MDS SAN-OS 3.x.

Table 4 *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-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
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

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

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*.

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 11](#)
- [Downloading Software, page 12](#)
- [Selecting the Correct Software Image for an MDS 9100 Series Switch, page 12](#)
- [Selecting the Correct Software Image for an MDS 9200 Series Switch, page 13](#)
- [Selecting the Correct Software Image for an MDS 9500 Series Switch, page 13](#)

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.



Note

We strongly recommend that you use the latest available software release supported by your vendor for all Cisco MDS 9000 Family products.

Send documentation comments to mdsfeedback-doc@cisco.com

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
-----	-----	-----	-----	-----
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 5](#).

Table 5 *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

Send documentation comments to mdsfeedback-doc@cisco.com

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 6](#).

Table 6 *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

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 7](#).

Table 7 *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
```

Send documentation comments to mdsfeedback-doc@cisco.com

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 14](#)
- [Enabling Telnet Required After an Upgrade, page 19](#)
- [Upgrading Effect on VSAN 4079, page 19](#)
- [FICON Supported Releases and Upgrade Paths, page 18](#)
- [Upgrading with IVR Enabled, page 20](#)
- [Reconfiguring SSM Ports Before Upgrading to NX-OS Release 4.2\(1b\), page 21](#)
- [Upgrading the SSI Image on Your SSM, page 22](#)
- [Upgrading a Cisco MDS 9124 or Cisco MDS 9134 Switch, page 22](#)
- [Performing a Disruptive Upgrade on a Single Supervisor MDS Family Switch, page 23](#)
- [Resetting SNMP Notifications Following an Upgrade, page 23](#)

**Note**

Before you begin the upgrade process, review the list of chassis and modules that Cisco MDS NX-OS Release 4.2(1b) supports. See the “[MDS 9000 Chassis and Module Support in Cisco MDS NX-OS 4.x](#)” section on page 9.

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/partner/products/ps10495/prod_release_notes_list.html

General Upgrading Guidelines

**Note**

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

Use the following guidelines when upgrading to Cisco MDS NX-OS Release 4.2(1b):

Send documentation comments to mdsfeedback-doc@cisco.com

- 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 19](#).
- 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 22](#).
- 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 23](#).
- 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 19](#).
- 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(1b). See the [“Upgrading Effect on VSAN 4079” section on page 19](#) 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 8](#) 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 20](#) 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](#).

Use [Table 8](#) to determine your nondisruptive upgrade path to Cisco MDS NX-OS Release 4.2(1b), find the image release number you are currently using in the Current column of the table, and use the path recommended.



Note

The software upgrade information in [Table 8](#) applies only to Fibre Channel switching traffic. Upgrading system software disrupts IP traffic and SSM intelligent services traffic.

Send documentation comments to mdsfeedback-doc@cisco.com

Table 8 *Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 4.2(1b)*

Current	Nondisruptive Upgrade Path
NX-OS 4.2(1a)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
NX-OS 4.1(3a)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
NX-OS 4.1(1c)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
NX-OS 4.1(1b)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
SAN-OS 3.3(4)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
SAN-OS 3.3(3)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
SAN-OS 3.3(2)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
SAN-OS 3.3(1c)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
SAN-OS 3.3(1a)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b)
SAN-OS 3.2(3a)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.2(3)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.2(2c)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.2(1a)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.1(4)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.1(3a)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.1(2b)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.1(2a)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.1(2)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.1(1)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.0(3a)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.0(3)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.0(2a)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.0(2)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 3.0(1)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.1(3)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.1(2e)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.1(2d)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.1(2b)	Upgrade to SAN-OS Release 3.3(x) and then upgrade to NX-OS Release 4.2(1b)

Send documentation comments to mdsfeedback-doc@cisco.com

Table 8 Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 4.2(1b) (continued)

Current	Nondisruptive Upgrade Path
SAN-OS 2.1(2)	Upgrade to SAN-OS Release 2.1(2b), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2d), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2e), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(3), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.1(1b)	Upgrade to SAN-OS Release 2.1(2b), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2d), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2e), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(3), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.1(1a)	Upgrade to SAN-OS Release 2.1(2b), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2d), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2e), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(3), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 2.0(x)	Upgrade to SAN-OS Release 2.1(2b), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2d), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(2e), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b) or Upgrade to SAN-OS Release 2.1(3), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b)
SAN-OS 1.x	Upgrade to SAN-OS Release 1.3(4a), then to Release 2.1(2b), then upgrade to Release 3.3(x), and then upgrade to NX-OS Release 4.2(1b)

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

FICON Supported Releases and Upgrade Paths

Cisco MDS NX-OS Release 4.2(1b) supports FICON.

[Table 9](#) lists additional SAN-OS and NX-OS releases that support FICON. Refer to the specific release notes for FICON upgrade path information.

Table 9 *FICON Supported Releases*

FICON Supported Releases	
NX-OS	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 10](#) 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 10 *FICON Nondisruptive Upgrade Path to MDS NX-OS Release 4.2(1b)*

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

Send documentation comments to mdsfeedback-doc@cisco.com

Table 10 FICON Nondisruptive Upgrade Path to MDS NX-OS Release 4.2(1b) (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.

Send documentation comments to mdsfeedback-doc@cisco.com

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.

Send documentation comments to mdsfeedback-doc@cisco.com

- 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(1b)

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(1b).

For more information on upgrading SAN-OS software, see the [“Upgrading Your Cisco MDS NX-OS Software Image” section on page 14](#).

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
```

Send documentation comments to mdsfeedback-doc@cisco.com

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(1b)” section on page 21.
 - 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(1b) 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.

Send documentation comments to mdsfeedback-doc@cisco.com

- 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 8](#), 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 2](#) 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.

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 23](#)
- [Downgrading the SSI Image on Your SSM, page 27](#)

General Downgrading Guidelines

Use the following guidelines to nondisruptively downgrade your Cisco MDS NX-OS Release 4.2(1b):

Send documentation comments to mdsfeedback-doc@cisco.com

- 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 11](#) 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 20](#) for these instructions.
 - **FICON:** If you have FICON enabled, the downgrade path is different. See the [“FICON Downgrade Paths”](#) section on [page 26](#).



Note

A downgrade from NX-OS Release 4.2(1b) 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 11](#) 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.



Note

The software downgrade information in [Table 11](#) applies only to Fibre Channel switching traffic. Downgrading system software disrupts IP and SSM intelligent services traffic.

Send documentation comments to mdsfeedback-doc@cisco.com

Table 11 Nondisruptive Downgrade Path from NX-OS Release 4.2(1b)

To SAN-OS Release	Nondisruptive Downgrade Path
NX-OS 4.2(1a)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
NX-OS 4.1(3a)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
NX-OS 4.1(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
NX-OS 4.1(1b)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.3(4)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.3(3)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.3(2)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.3(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.3(1a)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.2(3a)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.2(3a).
SAN-OS 3.2(3)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.2(3).
SAN-OS 3.2(2c)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.2(2c).
SAN-OS 3.2(1a)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.2(1a).
SAN-OS 3.1(4)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.1(4).
SAN-OS 3.1(3a)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.1(3a).
SAN-OS 3.1(2b)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.1(2b).
SAN-OS 3.1	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.1.
SAN-OS 3.1(2)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.1(2).
SAN-OS 3.1(1)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.1(1).
SAN-OS 3.0(3a)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.0(3a).
SAN-OS 3.0(3)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.0(3).
SAN-OS 3.0(2a)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.0(2a).
SAN-OS 3.0(2)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to 3.0(2).
SAN-OS 3.0(1)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 3.0(1).
SAN-OS 2.1(3)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(3).

Send documentation comments to mdsfeedback-doc@cisco.com

Table 11 *Nondisruptive Downgrade Path from NX-OS Release 4.2(1b) (continued)*

To SAN-OS Release	Nondisruptive Downgrade Path
SAN-OS 2.1(2e)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(2e).
SAN-OS 2.1(2d)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(2d).
SAN-OS 2.1(2b)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(2b).
SAN-OS 2.1(2)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(2).
SAN-OS 2.1(1b)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(1b).
SAN-OS 2.1(1a)	Downgrade to SAN-OS Release 3.3(x) first and then downgrade to Release 2.1(1a).
SAN-OS 2.0(4a)	Downgrade to SAN-OS Release 3.3(x) first, then to Release 2.1(2x), and then downgrade to Release 2.0(4a).
SAN-OS 2.0(4)	Downgrade to SAN-OS Release 3.3(x) first, then to Release 2.1(2x), and then downgrade to Release 2.0(4).
SAN-OS 2.0(3)	Downgrade to SAN-OS Release 3.3(x) first, then to Release 2.1(2x), and then downgrade to Release 2.0(3).
SAN-OS 2.0(2b)	Downgrade to SAN-OS Release 3.3(x) first, then to Release 2.1(2x), and then downgrade to Release 2.0(2b).
SAN-OS 2.0(1b)	Downgrade to SAN-OS Release 3.3(x) first, then to Release 2.1(2x), and then downgrade to Release 2.0(1b).
SAN-OS 1.x	Downgrade to SAN-OS Release 3.3(x) first, then downgrade to SAN-OS to Release 2.1(2b), then to Release 1.3(4a), and then downgrade to your SAN-OS 1.x release.

FICON Downgrade Paths

Table 12 lists the downgrade paths for FICON releases. Find the image release number that you want to downgrade to in the [To Release with FICON Enabled](#) column of the table and follow the recommended downgrade path.

Table 12 *FICON Downgrade Path from NX-OS Release 4.2(1b)*

To Release with FICON Enabled	Downgrade Path
NX-OS 4.1(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
SAN-OS 3.3(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).
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).

Send documentation comments to mdsfeedback-doc@cisco.com

Table 12 *FICON Downgrade Path from NX-OS Release 4.2(1b) (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 Link failure or not-connected, SFP not present, or Error Disabled status in the output of a show interface command. When an interface is administratively shut it will then show as Administratively down. 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.

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

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 13 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(1b)	3.3(x)	Disruptive	Abort. Disruptive after powerdown of 8-Gbps module.
DB mode	MDS 9513 without 8-Gbps module	4.2(1b)	3.3(x)	Disruptive	Disruptive.
BM mode ²	MDS 9513 with 8-Gbps module	4.2(1b)	3.3(x)	Abort	Abort. Nondisruptive after powerdown of 8-Gbps module.
BM mode	MDS 9513 without 8-Gbps module	4.2(1b)	3.3(x)	Nondisruptive	Nondisruptive.
BM mode	MDS 9509 or 9506 with 8-Gbps module	4.2(1b)	3.3(x)	Abort	Abort. Nondisruptive after powerdown of 8-Gbps module.
BM mode	MDS 9509 or 9506 without 8-Gbps module	4.2(1b)	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(1b)

Cisco NX-OS Release 4.2(1b) is a FICON-qualified version of NX-OS Release 4.2(1a). There are no new features in NX-OS Release 4.2(1b). Refer to the [Cisco MDS 9000 Release Notes for Cisco MDS NX-OS Release 4.2\(1a\)](#) for a complete list of features in NX-OS Release 4.2(1a).

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

Send documentation comments to mdsfeedback-doc@cisco.com

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.

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.

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

Send documentation comments to mdsfeedback-doc@cisco.com

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.

Send documentation comments to mdsfeedback-doc@cisco.com

Limitations and Restrictions

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

- [IPv6, page 31](#)
- [User Roles, page 31](#)
- [Red Hat Enterprise Linux, page 32](#)
- [Generation 1 Module Limitation, page 32](#)
- [Schedule Job Configurations, page 32](#)
- [Maximum Number of Zones Supported in Interop Mode 4, page 32](#)
- [Maximum Number of Zones Supported in Interop Mode 4, page 32](#)
- [Maximum Number of Zones Supported in Interop Mode 4, page 32](#)
- [InterVSAN Routing, page 32](#)
- [Java Web Start, page 33](#)
- [VRRP Availability, page 33](#)
- [VRRP Availability, page 33](#)
- [Using a RSA Version 1 Key for SSH Following an Upgrade, page 33](#)
- [CFS Cannot Distribute All Call Home Information, page 34](#)
- [Availability of F Port Trunking and F Port Channels, page 34](#)
- [Reserved VSAN Range and Isolated VSAN Range Guidelines, page 35](#)
- [Applying Zone Configurations to VSAN 1, page 35](#)
- [Running Storage Applications on the MSM-18/4, page 35](#)
- [RSPAN Traffic Not Supported on CTS Ports on 8-Gbps Switching Modules, page 36](#)
- [I/O Accelerator Feature Limitations, page 36](#)
- [Support for FCIP Compression Modes, page 36](#)
- [Saving Copies of the Running Kickstart and System Images, page 36](#)
- [Configuring Buffer Credits on a Generation 2 or Generation 3 Module, page 36](#)

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

Send documentation comments to mdsfeedback-doc@cisco.com

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 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.

Send documentation comments to mdsfeedback-doc@cisco.com

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.

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 4.1(3a), 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(1b).

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.
-

Send documentation comments to mdsfeedback-doc@cisco.com

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
>   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-Gbps 16-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*.

Send documentation comments to mdsfeedback-doc@cisco.com

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 19](#) for details.

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 ... EEFh	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.

Send documentation comments to mdsfeedback-doc@cisco.com

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.

I/O Accelerator Feature Limitations

In NX-OS Release 4.2(1b), IOA does not support the following NX-OS features:

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

Support for FCIP Compression Modes

In Cisco NX-OS Release 4.2(1b), 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(1b), 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:

Send documentation comments to mdsfeedback-doc@cisco.com

- 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.

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

Caveats

This section lists the open and resolved caveats for this release. Use [Table 14](#) to determine the status of a particular caveat. In the table, “O” indicates an open caveat and “R” indicates a resolved caveat.

Table 14 *Open Caveats and Resolved Caveats Reference*

DDTS Number	NX-OS Software Release (Open or Resolved)	NX-OS Software Release (Open or Resolved)
	4.2(1a)	4.2(1b)
Severity 2		
CSCtc36951	O	R
CSCtc41625	O	O
Severity 3		
CSCsq20408	O	O
CSCsy37951	O	O
CSCtc41865	O	O

Resolved Caveats

- [CSCtc36951](#)

Symptom: Under rare conditions, the Cisco MPS-14/2 module might unexpectedly reload during heavy FICON tape write activity if ficon-tape-accelerator is configured on an FCIP link. This issue has been observed only on the MPS-14/2 module when extending connections between the IBM Mainframe and Sun VSM.

Workaround: This issue is resolved.

Open Caveats

- [CSCtc41625](#)

Symptom: If IOA receives a data stream that cannot be compressed, and if the batch of data accumulated by IOA aligns to an internal buffer size, the IOA service engine will reset.

Workaround: None. Because there is no workaround in NX-OS Release 4.2(1a), IOA does not support compression in Cisco NX-OS Release 4.2(1a) and Release 4.2(1b).

- [CSCsq20408](#)

Symptom: The **show startup** command displays aspects of the running configuration when SANTap is configured and/or SANTap objects are created. When a user creates objects such as a CVT or DVT, the configuration is showing in the running-configuration and in the startup-configuration without copying the configuration into the startup-configuration.

Workaround: Issue a **copy running-config startup-config** command whenever you create objects such as a CVT or DVT so that the running-configuration and startup-configuration are synchronized.

Send documentation comments to mdsfeedback-doc@cisco.com

- CSCsy37951

Symptom: The Trunking F PortChannels feature is not available in NX-OS Release 4.1(1x); however, a downgrade from Release 4.1(3a) or later to Release 4.1(1x) is nondisruptive, even when the Trunking F PortChannels feature is enabled (using the **feature fport-channel-trunk** command) while running Release 4.1(3a) or later.

Workaround: If a downgrade to Release 4.1(1x) is performed when the Trunking F PortChannels feature is enabled, the switch will be in an inconsistent state. You must reload the switch after a downgrade to Release 4.1(1x).

- CSCtc41865

Symptom: During a software upgrade or a reload of the Cisco MDS 9000 MSM-18/4 module or the Cisco MDS 9000 SSN-16 module, IOA flows that are bound to the module are migrated to another IOA service engine in the fabric. The migration causes IOA to trigger a re-login of the host to the target. This process takes several seconds to complete. Certain devices do not tolerate the delay and do not re-login to the target. These devices require a manual intervention to re-login.

This issue has been observed only in certain storage arrays involved in remote replication applications. Host drivers involved in tape backup environments do not exhibit this issue.

Workaround: Some applications may require manual intervention for the storage arrays to re-login. The manual intervention should be implemented from the storage array software.

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/partner/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(1)*, which is available from the following website:

http://www.cisco.com/en/US/partner/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*

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

- *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 9200 Series Hardware Installation Guide*
- *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*

Send documentation comments to mdsfeedback-doc@cisco.com

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*
- *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*

Obtaining Documentation and Submitting a Service Request

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

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

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

CCDE, CCENT, CCSI, Cisco Eos, Cisco HealthPresence, Cisco IronPort, the Cisco logo, Cisco Nurse Connect, Cisco Pulse, Cisco SensorBase, Cisco StackPower, Cisco StadiumVision, Cisco TelePresence, Cisco Unified Computing System, Cisco WebEx, DCE, Flip Channels, Flip for Good, Flip Mino, Flipshare (Design), Flip Ultra, Flip Video, Flip Video (Design), Instant Broadband, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn, Cisco Capital, Cisco Capital (Design), Cisco:Financed (Stylized), Cisco Store, Flip Gift Card, and One Million Acts of Green are service marks; and Access Registrar, Aironet, AllTouch, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Lumin, Cisco Nexus, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, Continuum, EtherFast, EtherSwitch, Event Center, Explorer, Follow Me Browsing, GainMaker, iLUNIX, IOS, iPhone, IronPort, the IronPort logo, Laser Link, LightStream, Linksys, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, PCNow, PIX, PowerKEY, PowerPanels, PowerTV, PowerTV (Design), PowerVu, Prisma, ProConnect, ROSA, SenderBase, SMARTnet, Spectrum Expert, StackWise, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0910R)

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

© 2009 Cisco Systems, Inc. All rights reserved.

Send documentation comments to mdsfeedback-doc@cisco.com