



Cisco MDS 9000 Series Release Notes for Cisco MDS NX-OS Release 6.2(9b)

First Published: April 2, 2015

This document describes the caveats and limitations for switches in the Cisco MDS 9000 Series. Use this document in conjunction with documents listed in the “[Obtaining Documentation and Submitting a Service Request](#)” section on page 35.

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

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, page 9](#)
- [Software Download Process, page 12](#)
- [Upgrading Your Cisco MDS NX-OS Software Image, page 16](#)
- [Downgrading Your Cisco MDS SAN-OS Software Image, page 20](#)
- [New Hardware in Cisco MDS NX-OS Release 6.2\(9b\), page 22](#)
- [New Software Features in Cisco NX-OS Release 6.2\(9b\), page 23](#)
- [Licensed Cisco NX-OS Software Packages, page 28](#)
- [Limitations and Restrictions, page 30](#)
- [Caveats, page 31](#)
- [Obtaining Documentation and Submitting a Service Request, page 35](#)



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

Introduction

The Cisco MDS 9000 Series 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 Series 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-OS 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 Series.

Table 1 *Cisco MDS 9000 Series Supported Software and Hardware Components*

Component	Part Number	Description	Applicable Product
Software	M97S3K9-6.2.9b	MDS 9700, NX-OS software	MDS 9700 Series only
	M95S2K9-6.2.9b	MDS 9500, NX-OS software	MDS 9500 Series only
	M92S5K9-6.2.9b	MDS 9250i NX-OS software	MDS 9250i Switch
	M92S2K9-6.2.9b	MDS 9222i, NX-OS software	MDS 9222i Switch
	M91S3K9-6.2.9b	MDS 9148, NX-OS software	MDS 9148 Switch
	M91S5K9-6.2.9b	MDS 9148S, NX-OS software	MDS 9148S Switch

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

Component	Part Number	Description	Applicable Product
Licenses	M9500SSE184K9z	Storage Services Enabler License for one MSM-18/4 module	MDS 9500 Series only
	M9200ENT1K9	Cisco MDS 9200 Series Enterprise Package	MDS 9200 Series only
	DCNM-SAN-M92-K9	Cisco Prime Data Center Network Manager	MDS 9250i Switch only
	M9250IIOA	Cisco MDS 9250i I/O Accelerator Services package	MDS 9250i Switch only
	M9250IDMMK9	Cisco MDS 9250i Data Mobility Manager package	MDS 9250i Switch only
	M9250IDMMT6M	Cisco MDS 9250i DMM License - 6-month period M9200FIC1K9 Cisco MDS 9200 Series Mainframe Package	MDS 9250i Switch only
	M9200XRC	Cisco MDS 9200 XRC Acceleration Package for IBM series z, spare	MDS 9250i Switch 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

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

Component	Part Number	Description	Applicable Product
Chassis	DS-C9710	Cisco MDS 9710 Multilayer Director (10-slot multilayer director with 2 half-width slots for Supervisor modules, with 8 slots available for switching modules — SFPs sold separately)	MDS 9710 switch
	DS-C9706	Cisco MDS 9706 Multilayer Director (6-slot multilayer director with 2 half-width slots for Supervisor modules, with 4 slots available for switching modules — SFPs sold separately)	MDS 9706 switch
	DS-C9513	Cisco MDS 9513 Multilayer Director (13-slot multilayer director with 2 slots for Supervisor 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-C9250I-K9	The Cisco MDS 9250i offers up to forty 16-Gbps Fibre Channel ports, two 10 Gigabit Ethernet IP storage services ports, and eight 10 Gigabit Ethernet Fibre Channel over Ethernet (FCoE) ports in a fixed two-rack-unit (2RU) form factor.	MDS 9250i 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 Series Switching and Services modules)	MDS 9222i Switch
	DS-C9148S-K9	Cisco MDS 9148S 48-Port Multilayer Fabric Switch (1RU fixed-configuration multilayer fabric switch with 48 16-Gbps Fibre Channel ports)	MDS 9148S Switch
	DS-C9148-K9	Cisco MDS 9148 48-Port Multilayer Fabric Switch (1RU fixed-configuration multilayer fabric switch with 48 8-Gbps Fibre Channel ports)	MDS 9148 Switch
Supervisor Modules	DS-X97-SF1-K9	Cisco MDS 9700 Series Supervisor-1 Module	MDS 9700 Series
	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

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

Component	Part Number	Description	Applicable Product
Switching Modules	DS-X9448-768K9	Cisco MDS 9000 48-port 16-Gbps Fibre Channel Switching Module with SFP LC connectors	MDS 9700 Series
	DS-X9848-480K9	Cisco MDS 48-Port 10-Gigabit Fibre Channel over Ethernet (FCoE) Module with SFP LC connectors	MDS 9700 Series
	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 Series 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
	DS-X9708-K9	Cisco MDS 9000 8-port 10-Gbps Fibre Channel over Ethernet (FCoE) Module	MDS 9500 Series
	DS-X9232-256K9	Cisco MDS 9000 32-port 8-Gbps Advanced Fibre Channel Switching Module	MDS 9500 Series
DS-X9248-256K9	Cisco MDS 9000 48-port 8-Gbps Advanced Fibre Channel Switching Module	MDS 9500 Series	
Services Modules	DS-X9316-SSNK9	Cisco MDS 9000 Series 16-Port Storage Services Node (SSN-16) — 16 fixed 1-Gbps Ethernet ports, plus 4 service engines that support 16-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
External crossbar module	DS-X9710-FAB1	Cisco MDS 9710 Crossbar Switching Fabric 1 Module	MDS 9710 Switch
	DS-X9706-FAB1	Cisco MDS 9706 Crossbar Switching Fabric 1 Module	MDS 9706 Switch
	DS-13SLT-FAB2	Cisco MDS 9513 Switching Fabric 2 Module	MDS 9513 Switch
	DS-13SLT-FAB3	Cisco MDS 9513 Switching Fabric 3 Module	MDS 9513 Switch

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

Component	Part Number	Description	Applicable Product
Power Supplies	DS-CAC-300W	300W AC power supply	MDS 9100 Series
	DS-CAC-845W	845W AC power supply for Cisco MDS 9200 Series	MDS9200 Series
	DS-C50I-300AC	300W AC power supply	MDS 9250i Switch
	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
	9700 3000W AC	3000W AC power supply for Cisco MDS 9700 Series	MDS 9700 Series
	DS-CDC97-3KW	3000W DC power supply for Cisco MDS 9700 Series	MDS 9700 Series
CompactFlash	MEM-MDS-FLD512M	External 512-MB CompactFlash memory for supervisor module	MDS 9500 Series
Port Analyzer Adapter	DS-PAA-2, DS-PAA	Standalone Fibre Channel-to-Ethernet adapter that allows for simple, transparent analysis of Fibre Channel traffic in a switched fabric	MDS 9000 Series
Smart Card Reader	DS-SCR-K9	Storage Media Encryption (SME) Smart Card Reader	MDS 9000 Series
Smart Card	DS-SC-K9	SME Smart Card	MDS 9000 Series

Table 2 lists the part numbers and optical components supported by the Cisco MDS 9000 Series.



Note For the latest information about supported transceivers (SFPs), see the [Cisco MDS 9000 Family Pluggable Transceivers](#) data sheet.

Table 2 Cisco MDS 9000 Series Supported Optics and Transceivers

Component	Part Number	Description	Applicable Product
Optics	SFP-10G-SR / DS-SFP-10GE-SR	10GBASE-SR SFP+ Module	MDS 9710, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-10G-SR / DS-SFP-10GE-LR	10GBASE-LR SFP+ Module	MDS 9710, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-10G-ER	10GBASE-ER SFP+ Module	MDS 9710, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-H10GB-CU1M	10GBASE-CU SFP+ cable 1 meter	MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9)
	SFP-H10GB-CU3M	10GBASE-CU SFP+ cable 3 meter	MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9)
	SFP-H10GB-CU5M	10GBASE-CU SFP+ cable 5 meter	MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9)
	SFP-H10GB-ACU7M	10GBASE-CU SFP+ active copper cable 7 meter	MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9)
	SFP-H10GB-ACU10M	10GBASE-CU SFP+ active copper cable 10 meter	MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9)

Table 2 Cisco MDS 9000 Series Supported Optics and Transceivers (continued)

Component	Part Number	Description	Applicable Product
LC-type fiber-optic SFP	DS-SFP-FC16G-SW	SFP+ optics (LC type) for 16-Gbps Fibre Channel for shortwave mode	MDS 9710, 48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), MDS 9250i
	DS-SFP-FC16G-LW	SFP+ optics (LC type) for 10-Gbps Fibre Channel for longwave mode	MDS 9710, 48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), MDS 9250i
	DS-SFP-FC10G-SW	SFP+ optics (LC type) for 10-Gbps Fibre Channel for shortwave mode	48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), 32-port 8-Gbps Advanced Fibre Channel Module (DS-X9232-256K9), 48-port 8-Gbps Advanced Fibre Channel Module (DS-X9248-256-K9)
	DS-SFP-FC10G-LW	SFP+ optics (LC type) for 10-Gbps Fibre Channel for longwave mode	48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), 32-port 8-Gbps Advanced Fibre Channel Module (DS-X9232-256K9), 48-port 8-Gbps Advanced Fibre Channel Module (DS-X9248-256-K9)
	DS-SFP-FC8G-ER	SFP+ optics (LC type) for 2-, 4-, or 8-Gbps Fibre Channel for extended reach (40 km reach)	MDS DS-X9200 Series switching modules, MDS 9148, MDS 9250i
	DS-SFP-FC8G-SW	SFP+ optics (LC type) for 2-, 4-, or 8-Gbps Fibre Channel for shortwave mode	MDS 9710, MDS DS-X9200 Series switching modules, MDS 9250i
	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 9710, MDS DS-X9200 Series switching modules, MDS 9250i
	DS-SFP-FC4G-SW	SFP optics (LC type) for 1-, 2-, or 4-Gbps Fibre Channel for shortwave mode	MDS 9148, 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 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 9222i, DS-X9100, and DS-X9200 Series switching modules

Table 2 Cisco MDS 9000 Series Supported Optics and Transceivers (continued)

Component	Part Number	Description	Applicable Product
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 Series
	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 Series
	CWDM8G1490	1490 nm CWDM 2/4/8-Gbps Fibre Channel SFP+	MDS 9000 Series
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 6061 nm	MDS 9000 Series
	DWDM-SFP10G-xx.xx	10GBASE-DWDM SFP+	MDS 9710 Director
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 Series
	DS-CWDMOADM4B	4-channel CWDM OADM module (Cisco CWDM 1550, 1570, 1590, or 1610 NM Add/Drop Module)	MDS 9000 Series
	DS-CWDM-MUX8A	ADM for 8 CWDM wavelengths	MDS 9000 Series
CWDM Multiplexer Chassis	DS-CWDMCHASSIS	2-slot chassis for CWDM ADMs	MDS 9000 Series

MDS 9000 Chassis and Module Support

Table 3 lists the MDS hardware chassis supported by Cisco MDS NX-OS Release 6.2 9b.

Table 3 Cisco MDS NX-OS 6.2 Chassis Support Matrix

Switch	NX-OS Release 6.2 Support
MDS 9710	Yes
MDS 9706	Yes ¹
MDS 9513	Yes
MDS 9509	Yes
MDS 9506	Yes
MDS 9250i	Yes ²
MDS 9222i	Yes
MDS 9148S	Yes ³
MDS 9148	Yes
Cisco MDS 8-Gb Fabric Switch for HP c-Class Blade System	Yes
MDS 9134	No
MDS 9124	No
Cisco MDS 4-Gbps Fabric Switch for HP c-Class BladeSystem	No
Cisco MDS 4-Gbps Fabric Switch for IBM BladeCenter	No

1. This switch supports Cisco MDS NX-OS Release supports Release 6.2(9) and later.

2. This switch supports Cisco MDS NX-OS Release supports Release 6.2(5) and later.

3. This switch supports Cisco MDS NX-OS Release supports Release 6.2(9) and later.

Table 4 lists the MDS hardware chassis supported by Cisco MDS NX-OS Release 5.x.

Table 4 Cisco MDS NX-OS 5.x Chassis Support Matrix

Switch	NX-OS Release 5.x Support
MDS 9710	No
MDS 9706	No
MDS 9513	Yes
MDS 9509	Yes
MDS 9506	Yes
MDS 9250i	No
MDS 9222i	Yes
MDS 9216i	No
MDS 9148	Yes
MDS 9148S	No
Cisco MDS 8-Gb Fabric Switch for HP c-Class Blade System	Yes

Table 5 lists the MDS hardware modules supported Cisco MDS NX-OS Release 6.2. Table 6 lists the MDS hardware modules supported by Cisco MDS NX-OS 5.x.

Table 5 **Module Support Matrix for Cisco MDS NX-OS Release 6.2**

Module	Description	MDS 9700 Series	MDS 9500 Series	MDS 9200 Series
DS-X97-SF1-K9	MDS 9700 Supervisor-1 Module	Yes	No	No
DS-X9710-FAB1	MDS 9710 Fabric1 Module	Yes ¹	No	No
DS-X9706-FAB1	MDS 9706 Fabric1 Module	Yes ²	No	No
DS-X9448-768K9	48-Port 16-Gbps Fibre Channel Switching Module	Yes	No	No
DS-X9848-480K9	Cisco MDS 48-Port 10-Gigabit FCoE Module	Yes	No	No
DS-X9530-SF2-K9	MDS 9500 Supervisor-2 Module	No	Yes	No
DS-X9530-SF2A-K9	MDS 9500 Supervisor-2A Module	No	Yes	No
DS-13SLT-FAB3	MDS 9513 Fabric Module 3	No	Yes	No
DS-13SLT-FAB2	MDS 9513 Fabric Module 2	No	Yes	No
DS-13SLT-FAB1	MDS 9513 Fabric Module 1	No	Yes	No
DS-X9708-K9	8-port 10-Gbps FCoE Module	No	Yes ^{3, 4}	No
DS-X9232-256K9	32-port 8-Gbps Advanced Fibre Channel Switching Module	No	Yes	No
DS-X9248-256K9	48-port 8-Gbps Advanced Fibre Channel Switching Module	No	Yes	No
DS-X9224-96K9	24-port 8-Gbps Fibre Channel Switching Module	No	Yes	No
DS-X9248-96K9	48-port 8-Gbps Fibre Channel Switching Module	No	Yes	No
DS-X9248-48K9	4/44-port Host Optimized 8-Gbps Fibre Channel Switching Module	No	Yes	Yes
DS-X9316-SSNK9	16-port Storage Services Node (SSN-16)	No	Yes	Yes
DS-X9304-18K9	18/4-Port Multiservice Module (MSM-18/4)	No	Yes	Yes
DS-X9112	12-port 4-Gbps Fibre Channel Switching Module	No	Yes	Yes
DS-X9124	24-port 4-Gbps Fibre Channel Switching Module	No	Yes	Yes
DS-X9148	48-port 4-Gbps Fibre Channel Switching Module	No	Yes	Yes
DS-X9704	4-port 10-Gbps Fibre Channel Switching Module	No	Yes	Yes

1. Supported on Cisco MDS 9710 Director only.

2. Supported on Cisco MDS 9706 Director only.

3. Requires DS-13SLT-FAB3 or DS-13SLT-FAB2 in the MDS 9513.

4. Requires the Supervisor-2A module.

Table 6 Module Support Matrix for Cisco MDS NX-OS 5.x

Module	Description	MDS 9500 Series		MDS 9222i	
		NX-OS 5.2(x)	NX-OS 5.0(x)	NX-OS 5.2(x)	NX-OS 5.0(x)
DS-X9530-SF2-K9	MDS 9500 Supervisor-2 Module	Yes	Yes	No	No
DS-X9530-SF2A-K9	MDS 9500 Supervisor-2A Module	Yes	Yes	No	No
DS-13SLT-FAB3	MDS 9513 Fabric Module 3	Yes	No	No	No
DS-13SLT-FAB2	MDS 9513 Fabric Module 2	Yes	Yes	No	No
DS-13SLT-FAB1	MDS 9513 Fabric Module 1	No	Yes	No	No
DS-X9708-K9	8-port 10-Gbps FCoE Module	Yes ^{1,2}	No	No	No
DS-X9232-256K9	32-port 8-Gbps Advanced Fibre Channel Switching Module	Yes ¹	No	No	No
DS-X9248-256K9	48-port 8-Gbps Advanced Fibre Channel Switching Module	Yes ¹	No	No	No
DS-X9224-96K9	24-port 8-Gbps Fibre Channel Switching Module	Yes ¹	Yes ³	No	No
DS-X9248-96K9	48-port 8-Gbps Fibre Channel Switching Module	Yes ¹	Yes ³	No	No
DS-X9248-48K9	4/44-port Host Optimized 8-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes
DS-X9316-SSNK9	16-port Storage Services Node (SSN-16)	Yes	Yes	Yes	Yes
DS-X9304-18K9	18/4-Port Multiservice Module (MSM-18/4)	Yes	Yes	Yes	Yes
DS-X9112	12-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes
DS-X9124	24-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes
DS-X9148	48-port 4-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes
DS-X9704	4-port 10-Gbps Fibre Channel Switching Module	Yes	Yes	Yes	Yes

1. Requires DS-13SLT-FAB3 or DS-13SLT-FAB2 in the MDS 9513.

2. Requires the Supervisor-2A module.

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

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](#)
- [Selecting the Software Image for an MDS 9148 Switch, page 14](#)
- [Selecting the Software Image for an MDS 9148S Switch, page 14](#)
- [Selecting the Software Image for an MDS 9222i Switch, page 14](#)
- [Selecting the Software Image for an MDS 9250i Switch, page 15](#)
- [Selecting the Software Image for an MDS 9500 Series Switch, page 15](#)
- [Selecting the Software Image for an MDS 9700 Series Switch, page 15](#)
- [NPE Software Images, 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 Series 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 Series switch using Cisco DCNM for SAN, 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 7](#) 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 Series products.

Table 7 *Software Release Compatibility*

Cisco NX-OS Software	Minimum NX-OS or SAN-OS Release	Tested NX-OS and SAN-OS Release
NX-OS Release 6.2(9b)	NX-OS Release 6.2(1) or later	NX-OS Release 6.2(1) or later
	NX-OS Release 5.2(x) or later	NX-OS Release 5.2(x) or later
	NX-OS Release 5.0(1a) and later	NX-OS Release 5.0(1a) and later
	NX-OS Release 4.2(3) and later	NX-OS Release 4.2(3) and later
	SAN-OS Release 3.3(5) and later	SAN-OS Release 3.3(5) and later

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 9700 Directors, 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/cisco/software/navigator.html?a=a&i=rpm>

See the following sections in this release notes for details on how you can nondisruptively upgrade your Cisco MDS 9000 switch. Using the **install all** command from the CLI, or using Cisco DCNM for SAN 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	

The **show incompatibility system bootflash:system image 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 Software Image for an MDS 9148 Switch

The system and kickstart image that you use for an MDS 9148 switch is shown in [Table 8](#).

Table 8 Software Images for MDS 9148 Switches

Cisco MDS 9148 Switch	Naming Convention
MDS 9148, Cisco MDS 8Gb Fabric Switch for HP c-Class BladeSystem	Filename begins with m9100-s3ek9

Selecting the Software Image for an MDS 9148S Switch

The system and kickstart image that you use for an MDS 9148S switch is shown in [Table 9](#).

Table 9 Software Images for MDS 9148S Switches

Cisco MDS 9148S Switch	Naming Convention
MDS 9148S	Filename begins with m9100-s5ek9

Selecting the Software Image for an MDS 9222i Switch

The system and kickstart image that you use for an MDS 9222i switch is shown in [Table 10](#).

Table 10 Software Images for MDS 9222i Switch

Cisco MDS 9222i Switch	Naming Convention
MDS 9222i	Filename begins with m9200-s2ek9

Selecting the Software Image for an MDS 9250i Switch

The system and kickstart image that you use for an MDS 9250i switch is shown in [Table 11](#).

Table 11 Software Images for MDS 9250i Switch

Cisco MDS 9250i Switch	Naming Convention
MDS 9250i	Filename begins with m9250-s5ek9

Selecting the Software Image for an MDS 9500 Series Switch

The system and kickstart image that you use for an MDS 9500 Series switch with a Supervisor-2 or Supervisor-2A module is shown in [Table 12](#). Cisco NX-OS Release 6.x, Release 5.x, and Release 4.x do not support the Supervisor-1 module.

Table 12 Software Images for MDS 9500 Series Switches

Cisco MDS 9500 Series Switch Type	Naming Convention
MDS 9513, 9509, and 9506	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
```

Selecting the Software Image for an MDS 9700 Series Switch

The system and kickstart image that you use for an MDS 9700 Series switch is shown in [Table 13](#).

Table 13 Software Images for MDS 9700 Series Switch

Cisco MDS 9710 Switch	Naming Convention
MDS 9710 and 9706	Filename begins with m9700-sf3ek9

NPE Software Images

No payload encryption (NPE) images are available with Cisco MDS NX-OS Release 6.2(9b) software. The NPE images are intended for countries who have import restrictions on products that encrypt payload data.

To differentiate an NPE image from the standard software image, the letters npe are included in the image name as follows:

- m9100-s3ek9-kickstart-mz-npe.6.2.9b.bin
- m9100-s3ek9-mz-npe.6.2.9b.bin

- m9100-s5ek9-kickstart-mz-npe.6.2.9b.bin
- m9100-s5ek9-mz-npe.6.2.9b.bin
- m9200-s2ek9-kickstart-mz-npe.6.2.9b.bin
- m9200-s2ek9-mz-npe.6.2.9b.bin
- m9250-s5ek9-kickstart-mz-npe.6.2.9b.bin
- m9250-s5ek9-mz-npe.6.2(9b).bin
- m9500-sf2ek9-kickstart-mz-npe.6.2.9b.bin
- m9500-sf2ek9-mz-npe.6.2.9b.bin
- m9700-sf3ek9-kickstart-mz-npe.6.2.9b.bin
- m9700-sf3ek9-mz-npe.6.2.9b.bin

When downloading software, ensure that you select the correct software images for your Cisco MDS 9000 Series switch. Nondisruptive software upgrades or downgrades between NPE images and non-NPE images are not supported.

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](#)
- [Nondisruptive Upgrade Paths, page 17](#)
- [FICON Supported Releases and Upgrade Paths, page 19](#)



Note

Before you begin the upgrade process, review the list of chassis and modules that Cisco MDS NX-OS Release 6.2(9b) supports. See the [“MDS 9000 Chassis and Module Support” section on page 9](#).

For detailed instructions for performing a software upgrade using Cisco DCNM, see the *Cisco DCNM Release Notes, Release 6.2*, which is available from the following website:

<http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-data-center-network-manager/products-release-notes-list.html>

General Upgrading Guidelines

Follow these general guidelines before performing a software upgrade:

- Review the nondisruptive upgrade path to Release 6.2(9b) in [Table 14](#).
- Install and configure dual supervisor modules before the upgrade.
- Issue the **show install all impact upgrade-image** CLI command to determine if your upgrade will be nondisruptive.
- Be aware that some features impact whether an upgrade is disruptive or nondisruptive:
 - **Fibre Channel Ports:** Fibre Channel ports can be nondisruptively upgraded without affecting traffic on the ports. See [Table 14](#) for the nondisruptive upgrade path for all NX-OS and SAN-OS releases.

- **Gigabit Ethernet/IPStorage Ports:** Traffic on Gigabit Ethernet/IPStorage ports is disrupted during an upgrade or downgrade. This includes the Gigabit Ethernet/IPStorage ports on the MSM-18/4 module, SSN-16 module, MDS 9222i, and MDS 9250i 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/IPStorage ports lose connectivity to iSCSI targets while the upgrade is in progress.
- **FICON:** If you have FICON enabled, the upgrade path is different. See the [“FICON Supported Releases and Upgrade Paths”](#) section on page 19.
- **FCoE Ports:** Upgrading to Cisco MDS NX-OS Release 6.2(9b) on a Cisco MDS 9700 Series Director with 48-port 10-Gigabit FCoE module or VSAN configurations require additional steps that must be performed before upgrading. For more information, see the *Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 6.2(x)*.



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



Note Upgrading from Cisco MDS NX-OS Release 6.2(9b) to Cisco MDS NX-OS Release 6.2(11x) is not supported due to the introduction of a new feature to support longer role names (a maximum of 64 characters) in the Cisco MDS NX-OS Release 6.2(9b).

Nondisruptive Upgrade Paths

Use [Table 14](#) to determine your nondisruptive upgrade path to Cisco MDS NX-OS Release 6.2(9b). Find the image release number you are currently using in the “Current Release” column of the table and follow the steps in the order specified to perform the upgrade.



Note The software upgrade information in [Table 14](#) applies only to Fibre Channel switching traffic. Upgrading system software disrupts IP traffic and intelligent services traffic.

Table 14 Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 6.2(9b)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
NX-OS:	
Release 6.2(9a), 6.2(9), 6.2(7), 6.2(5a), 6.2(5), 6.2(3), 6.2(1), 5.2(1), 5.2(2), 5.2(2a), 5.2(2d), 5.2(6), 5.2(6a), 5.2(6b), 5.2(8), 5.2(8a), 5.2(8b), 5.2(8c), 5.2(8d), 5.2(8e), and 5.2(8f)	Upgrade directly to NX-OS Release 6.2(9b).
All 5.0(x) releases	<ol style="list-style-type: none"> 1. Upgrade to NX-OS Release 5.2(8e). 2. Upgrade to NX-OS Release 6.2(9b).
All 4.2(x) releases and 4.1(x) releases	<ol style="list-style-type: none"> 1. Upgrade to NX-OS Release 5.0(8a). 2. Upgrade to NX-OS Release 5.2(8e). 3. Upgrade to NX-OS Release 6.2(9b).
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). 2. Upgrade to NX-OS Release 5.0(8a). 3. Upgrade to NX-OS Release 5.2(8e). 4. Upgrade to NX-OS Release 6.2(9b).
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). 3. Upgrade to NX-OS Release 5.0(8a). 4. Upgrade to NX-OS Release 5.2(8e). 5. Upgrade to NX-OS Release 6.2(9b).
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). 4. Upgrade to NX-OS Release 5.0(8a). 5. Upgrade to NX-OS Release 5.2(8e). 6. Upgrade to NX-OS Release 6.2(9b).

Table 14 *Nondisruptive Upgrade Path to Cisco MDS NX-OS Release 6.2(9b) (continued)*

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
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). 5. Upgrade to NX-OS Release 5.0(8a). 6. Upgrade to NX-OS Release 5.2(x). 7. Upgrade to NX-OS Release 6.2(9b).
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). 6. Upgrade to NX-OS Release 5.0(8a). 7. Upgrade to NX-OS Release 5.2(x). 8. Upgrade to NX-OS Release 6.2(9b).

FICON Supported Releases and Upgrade Paths

Cisco MDS NX-OS Release 6.2(9b) is not a FICON-certified release.

[Table 15](#) lists the SAN-OS and NX-OS releases that are certified for FICON. Refer to the specific release notes for FICON upgrade path information.

Table 15 *FICON Supported Releases*

FICON Supported Releases	
NX-OS	Release 6.2(5b)
	Release 6.2(5a)
	Release 5.2(2s)
	Release 5.2(2)
	Release 4.2(7b)
	Release 4.2(1b)
	Release 4.1(1c)
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 16](#) to determine the nondisruptive upgrade path for FICON-certified releases. Find the image release number you are currently using in the Current Release with FICON Enabled column of the table and follow the recommended path.

Table 16 *FICON Nondisruptive Upgrade Path*

Current Release with FICON Enabled	Upgrade Path
NX-OS Release 5.2(2) or 5.2(2s)	You can nondisruptively upgrade directly to NX-OS Release 6.2(5a) or 6.2(5b).
NX-OS Release 4.2(7b)	You can nondisruptively upgrade directly to NX-OS Release 5.2(2).
NX-OS Release 4.2(1b)	You can nondisruptively upgrade directly to NX-OS Release 4.2(7b).
NX-OS Release 4.1(1c)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b).
SAN-OS Release 3.3(1c)	You can nondisruptively upgrade directly to NX-OS Release 4.2(1b).
SAN-OS Release 3.2(2c), 3.0(3b), 3.0(3), and 3.0(2).	First upgrade to SAN-OS Release 3.3(1c), and then upgrade to NX-OS Release 4.2(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 21](#)
- [FICON Downgrade Paths, page 22](#)

General Downgrading Guidelines

Follow these general guidelines before you perform a software downgrade:

- Issue the system **no acl-adjacency-sharing** execute command to disable ACL adjacency usage on Generation 2 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:** Fibre Channel ports can be nondisruptively downgraded without affecting traffic on the ports. See [Table 17](#) for the nondisruptive downgrade path for all SAN-OS releases.
 - **Gigabit Ethernet/ IPStorage Ports:** Traffic on Gigabit Ethernet/IPStorage ports is disrupted during a downgrade. This includes the Gigabit Ethernet/IPStorage ports on the MSM-18/4 module, the MDS 9222i switch, and the MDS 9000 16-Port Storage Services Node (SSN-16). 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/IPStorage ports lose connectivity to iSCSI targets while the downgrade is in progress.
 - **FICON:** If you have FICON enabled, the downgrade path is different. See the [“FICON Downgrade Paths”](#) section on [page 22](#).
 - **FCoE Ports:** Downgrading from Cisco MDS NX-OS Release 6.2(9b) on a Cisco MDS 9700 Series Director with 48-port 10-Gigabit FCoE module or VSAN configurations require additional steps that must be performed before downgrading. For more information, see the *Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 6.2(x)*.

Use [Table 17](#) to determine the nondisruptive downgrade path from Cisco NX-OS Release 6.2(9b). Find the NX-OS or SAN-OS image that you want to downgrade to in the To SAN-OS Release column of the table and follow the steps in the order specified to perform the downgrade.



Note The software downgrade information in [Table 17](#) applies only to Fibre Channel switching traffic. Downgrading system software disrupts IP and intelligent services traffic.



Note Downgrading from Cisco MDS NX-OS Release 6.2(9b) to Cisco MDS NX-OS Release 6.2(9a), 6.2(9), 6.2(7), 6.2(5a), 6.2(5), 6.2(3), or 6.2(1) on a Cisco MDS 9700 Series Director with 48-port 10-Gigabit FCoE module or VSAN configurations require additional steps that must be performed before downgrading. For more information, see the *Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 6.2(x)*.



Note Downgrading from Cisco MDS NX-OS Release 6.2(11x) to Cisco MDS NX-OS Release 6.2(9b) is not supported due to the introduction of a new feature to support longer role names (a maximum of 64 characters) in the Cisco MDS NX-OS Release 6.2(9b).



Note Before downgrading from Cisco MDS NX-OS Release 6.2(9b) to older releases for Cisco MDS platforms, remove the role name greater than 16 character and disable the role name max-length 64 command.

Table 17 *Nondisruptive Downgrade Path from NX-OS Release 6.2(9b)*

To NX-OS or SAN-OS Release	Nondisruptive Downgrade Path and Ordered Downgrade Steps
NX-OS:	
Release 6.2(9a), 6.2(9), 6.2(7), 6.2(5a), 6.2(5), 6.2(3), 6.2(1), 5.2(1), 5.2(2), 5.2(2a), 5.2(2d), 5.2(6), 5.2(6a), 5.2(6b), 5.2(8), 5.2(8a), 5.2(8b), 5.2(8c), 5.2(8d), 5.2(8e), and 5.2(8f)	Downgrade directly from NX-OS Release 6.2(9b).
All 5.0(x) releases	<ol style="list-style-type: none"> 1. Downgrade from NX-OS Release 6.2(9b). 2. Downgrade to NX-OS Release 5.2(8e). 3. Downgrade to NX-OS Release 5.0(x).
All 4.2(x) and 4.1(x) releases	<ol style="list-style-type: none"> 1. Downgrade from NX-OS Release 6.2(9b). 2. Downgrade to NX-OS Release 5.2(8e). 3. Downgrade to NX-OS Release 5.0(x). 4. Downgrade to NX-OS Release 4.2(x) or 4.1(x).

FICON Downgrade Paths

Table 18 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 18 *FICON Downgrade Path*

To Release with FICON Enabled	Downgrade Path
NX-OS Release 5.2(2) or 5.2(2s)	You can nondisruptively downgrade directly from NX-OS Release 6.2(5a) or 6.2(5b).
NX-OS Release 4.2(7b)	You can nondisruptively downgrade directly from NX-OS Release 5.2(2).
NX-OS Release 4.2(1b)	You can nondisruptively downgrade directly from NX-OS Release 4.2(7b).
NX-OS Release 4.1(1c)	You can nondisruptively downgrade directly from NX-OS Release 4.2(1b).

New Hardware in Cisco MDS NX-OS Release 6.2(9b)

There is no new hardware introduced in Cisco NX-OS Release 6.2(9b).

New Software Features in Cisco NX-OS Release 6.2(9b)

Cisco MDS NX-OS release 6.2(9b) introduces support for longer role names than previous releases. The maximum characters for role name length is increased from 16 to 64 characters using a new command, "role name max-length 64." For more information on Configuring Users and Common Roles, see "Security" section in [Cisco MDS 9000 Family CLI Configuration Guide](#).

New Hardware in Cisco MDS NX-OS Release 6.2(9a)

There is no new hardware introduced in Cisco NX-OS Release 6.2(9a).

New Software Features in Cisco NX-OS Release 6.2(9a)

Cisco MDS NX-OS Release 6.2(9a) is a maintenance release that includes bug fixes. It does not include new features.

New Hardware in Cisco MDS NX-OS Release 6.2(9)

This section briefly describes the new hardware introduced in Cisco NX-OS Release 6.2(9).

Cisco MDS 9706 Director

The Cisco MDS 9706 (DS-C9706) supports up to 192 ports in a 6-slot modular chassis, with up to 768 ports in a single rack. You can configure ports as Fibre Channel (2/4/8-Gbps, 4/8/16-Gbps, or 10-Gbps), FCoE (10-Gbps), or a mix of both Fibre Channel and FCoE. The Cisco MDS 9706 supports the same Fibre Channel and FCoE switching modules as the Cisco MDS 9710 director for a high degree of system commonality.

For detailed information about the Cisco MDS 9706 Director, see the *Cisco MDS 9700 Series Hardware Installation Guide*:

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

Cisco MDS 9148S Multilayer Fabric Switch

The Cisco MDS 9148S Multilayer Fabric Switch (DS-C9148S48PK9) is the next generation of the highly reliable and flexible Cisco MDS 9100 Series switches. It combines high performance with exceptional flexibility and cost-effectiveness. A powerful compact one rack-unit (1RU) form factor can scale from 12 to 48 line-rate 16 Gbps Fibre Channel ports.

For detailed information about the Cisco MDS 9148S Multilayer Fabric Switch, see the *Cisco MDS 9148S Hardware Installation Guide*:

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

New Software Features in Cisco NX-OS Release 6.2(9)

This section briefly describes the new software features introduced in Cisco NX-OS Release 6.2(9).

- Confirm Commit Device Alias
- Confirm Commit Zone
- FC and FCoE scale enhancements
- FCoE long-distance
- Fibre Channel Common Transport (FC-CT) Management Security
- Power on Auto Provisioning (POAP)
- Slow drain enhancements for hardware-based capabilities on Cisco MDS 9700 Series, MDS 9250i, and MDS 9148S switch.
- TrustSec link-encryption for Cisco MDS 9700 Series
- Command-line interface (CLI) command changes:
 - **device-alias confirm-commit** (new)
 - **zone confirm-commit** (new)
 - **fc-management enable** (new)
 - **fc-management database vsan** (new)
 - **priority-flow-control long-distance** (changed) (new)
 - **show fc-management database** (new)
 - **show process creditmon credit-loss-events** (changed) (new)
 - **show process creditmon slowport-monitor-events** (new)
 - **show tech-support fc-management** (new)
 - **system timeout slowport-monitor mode E/F** (new)
 - **show logging onboard slowport-monitor-events** (new)
 - **system timeout no-credit-drop** (changed) (new)
 - **system timeout slowport-monitor** (new)
 - **fcroute** (deprecated)

New Hardware in Cisco MDS NX-OS Release 6.2(7)

This section briefly describes the new hardware introduced in Cisco NX-OS Release 6.2(7). For detailed information about the new hardware, see the *Cisco MDS 9250i Hardware Installation Guide* that is available from this URL:

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

Cisco MDS 48-Port 10-Gigabit Fibre Channel over Ethernet Module Ethernet Module

The Cisco MDS 48-Port 10-Gigabit Fibre Channel over Ethernet Module (DS-X9848-480K9) is designed for the Cisco MDS 9710 Directors. The Cisco MDS 9710 Director supports up to eight 10 Gigabit Ethernet modules. These modules are hot-swappable and they support 10-Gigabit Ethernet ports in SFP+ form factor.

The Cisco MDS 48-Port 10-Gigabit Ethernet module delivers integrated Fibre Channel over Ethernet (FCoE), simplifies the network infrastructure and helps reduce costs. The FCoE module allows you to extend the existing Fibre Channel SANs by using FCoE. The Cisco MDS 48-Port 10-Gigabit Ethernet module supports connectivity to FCoE switching platforms and to FCoE devices. This module also supports connectivity to FCoE initiators and targets that only send FCoE traffic.

New Software Features in Cisco NX-OS Release 6.2(7)

This section briefly describes the new software features introduced in Cisco NX-OS Release 6.2(7).

- Enhanced the scalability for zones, maximum devices in the fabric and maximum devices in the switch.
- Forward Error Correction (FEC) for 16-Gbps ISL connections
- Enhanced scalability for simultaneous FLOGIs for Cisco MDS 9500 Series switches
- Restriction of the number of NPIV logins to not exceed the configuration limits in for Cisco MDS 9500 Series switches
- Command-line interface (CLI) command changes:
 - **fens bulk-notify**
 - **rscn coalesce swrscn vsan**
 - **switchport max-npiv-limit (new)**
 - **switchport trunk-max-npiv-limit (new)**
 - **switchport fec**
 - **system port pacer mode F interface-login-threshold**
 - **show fabric switch information vsan**

New Hardware in Cisco MDS NX-OS Release 6.2(5)

This section briefly describes the new hardware introduced in Cisco NX-OS Release 6.2(5). For detailed information about the new hardware, see the *Cisco MDS 9250i Hardware Installation Guide* that is available from this URL:

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

Cisco MDS 9250i Multiservice Fabric Switch

The Cisco MDS 9250i Multiservice Fabric Switch (DS-C9250I-K9) is an optimized platform for deploying high-performance SAN extension solutions, distributed intelligent fabric services, and cost-effective multiprotocol connectivity for both open systems and mainframe environments.

The Cisco MDS 9250i switch is an ideal solution for local office and remote branch-office SANs and also in large-scale SANs operating the Cisco MDS 9700 and 9500 Series Multilayer director platforms.

The Cisco MDS 9250i switch offers 40 autosensing 2-, 4-, 8-, and 16-Gbps line-rate Fibre Channel ports, eight 10-Gigabit Ethernet Fibre Channel over Ethernet (FCoE) ports, and two 10-Gigabit Ethernet IP storage services ports in a fixed two-rack-unit (2RU) form factor.

New Software Features in Cisco NX-OS Release 6.2(5)

This section briefly describes the new software features introduced in Cisco NX-OS Release 6.2(5).

- DMM support for Cisco MDS 9250i switch
- FCIP support for Cisco MDS 9250i switch
- FCR support for Cisco MDS 9250i switch
- IOA support for Cisco MDS 9250i switch
- Path Trace
- Command-line interface (CLI) command changes:
 - Changed the CLI output for the **show ioa cluster flows** command.
 - Introduced the **ioa-ping** command.
 - Introduced the ability to display IOA engine utilization.
 - Introduced the ability to display hosts and targets by device alias in IOA.

New Software Features in Cisco NX-OS Release 6.2(3)

This section briefly describes the new software features introduced in Cisco NX-OS Release 6.2(3).

- Cisco MDS Data Mobility Manager (DMM) supports logical unit numbers (LUN) sizes that are larger than 2 terabyte. The supported number of sessions per DMM job is more than 255. For more information, see the *Cisco MDS 9000 Family Data Mobility Manager Configuration Guide*.
- FC-Redirect (FCR) support for Cisco MDS 9710 Director. For more information on IOA, see the *Cisco MDS 9000 Family I/O Accelerator Configuration Guide*. For more information on SME, see the *Cisco MDS 9000 Family Storage Media Encryption Configuration Guide*.
- Command-line interface (CLI) command changes, including the following:
 - Changed the CLI output for the **show fcdomain vsan** command.
 - Deprecated the **show interface counters performance** command.

New Hardware in Cisco MDS NX-OS Release 6.2(1)

This section briefly describes the new hardware introduced in Cisco NX-OS Release 6.2(1). For detailed information about the new hardware, see the *Cisco MDS 9710 Hardware Installation Guide* that is available from this URL:

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

This section includes the following topics:

- [Cisco MDS 9710 Director, page 27](#)
- [Cisco MDS 9000 48-Port, 16-Gbps Fibre Channel Switching Module, page 27](#)

Cisco MDS 9710 Director

The Cisco MDS 9710 Director is a high-performance SAN switch that is designed to meet the requirements of enterprise data center storage environments. The Cisco MDS 9710 Director has a ten-slot chassis that supports up to eight 48-port, 16-Gbps switching modules, two supervisor modules, up to six fabric modules, three fan trays, and up to eight power supplies. Airflow is front-to-back in the Cisco MDS 9710 chassis.

Cisco MDS 9000 48-Port, 16-Gbps Fibre Channel Switching Module

Up to eight Cisco MDS 9000 48-Port 16-Gbps Fibre Channel switching modules can be used in the Cisco MDS 9710 Director. These modules are hot-swappable and compatible with 2-, 4-, 8-, 16- and 10-Gbps interfaces, and they support hot-swappable Enhanced Small Form-Factor Pluggable (SFP+) transceivers.

The Fibre Channel switching module has 12 4-port port groups. Each port group is capable of a speed of 64-Gbps in each direction simultaneously. Ports on this switching module support expansion port (E port), fabric port (F port), fabric loop port (FL port), SPAN destination port (SD port), and (TE port) port mode.

- Individual ports can be configured with Cisco 16-Gbps, 8-Gbps or 10-Gbps shortwave or longwave SFP+ transceivers. Each port supports 500 buffer credits with no additional licensing required. With the Cisco Enterprise Package, up to 4095 buffer credits can be allocated to an individual port.

New Software Features in Cisco NX-OS Release 6.2(1)

This section briefly describes the new software features introduced in Cisco NX-OS Release 6.2(1).

- Generic Online Diagnostics

Starting with Cisco NX-OS Release 6.2(1), the Cisco MDS 9000 Series supports the generic online diagnostics (GOLD) feature. With online diagnostics, you can test and verify the hardware functionality of a device while the device is connected to a live network. In particular, the online diagnostics help you verify that hardware and internal data paths are operating as designed so that you can rapidly isolate faults.

For more information about this feature, see the *Cisco MDS 9000 System Management Configuration Guide* at this URL:

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

- Enhancement to map LDAP/AD users to Cisco NX-OS roles and allow both local and remote users to use SSH or Telnet.

For more information about this feature, see the *Cisco MDS 9000 Security Configuration Guide*, at this URL:

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

- Command-line interface (CLI) command changes, including the following:

- Enhance the **clear snmp counters** command.
- Display ISL related information.
- Display a warning messages for a shared port interface when you bring down the port.
- Display throughput information for all ports on a line card or ISL or on a switch or chassis.
- Provide an estimated time for DMM job completion.
- Shorten the **show dmm job job-id 50571379 session session_id (1-20)** command to **show dmm job-id 50571379 session_id 1**
- **hardware ejector enable** (new)

Information about the modified CLI commands can be found in the *Cisco MDS 9000 Command Reference* at this URL:

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

Licensed Cisco NX-OS Software Packages

Most Cisco MDS 9000 Series software features are included in the standard package. However, some features are logically grouped into add-on packages that must be licensed separately, such as the Cisco MDS 9000 Enterprise package, SAN Extension over IP package, Mainframe package, and Data Mobility Manager package. On-demand ports activation licenses are also available for the Cisco MDS 9250i Multiservice Fabric Switch, Cisco MDS 9148 48-Port Multilayer Fabric Switch, Cisco MDS 9148S 48-Port Multilayer Fabric Switch, and the Cisco MDS 8-Gb Fabric Switch for HP c-Class Blade System.

**Note**

A license is not required to use the Cisco MDS 9000 8-port 10-Gbps Fibre Channel over Ethernet (FCoE) module (DS-X9708-K9) and the Cisco MDS 48-Port 10-Gigabit Fibre Channel over Ethernet Module (DS-X9848-480K9).

Additional information about licensed Cisco NX-OS software packages is available at this URL:

<http://www.cisco.com/c/en/us/products/storage-networking/mds-9000-software-licensing/datasheet-listing.html>

Enterprise Package

The standard software package that is bundled at no charge with the Cisco MDS 9000 Series switches includes the base set of features that Cisco believes are required by most customers for building a SAN. The Cisco MDS 9000 Series also has a set of advanced features that are recommended for all enterprise SANs. These features are bundled together in the Cisco MDS 9000 Enterprise package. Refer to the Cisco MDS 9000 Enterprise package 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 Series 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.

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 DCNM for SAN 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 Series switches.

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 the Cisco MDS 9250i Multiservice Fabric Switch, MDS 9148S 48-Port Multilayer Fabric Switch, MDS 9148 48-Port Multilayer Fabric Switch, and the Cisco MDS 8-Gb Fabric Switch for HP c-Class Blade System. 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 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.

Deprecated and Changed Features

Zoning Features

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

- Cisco MDS 9250i Multiservice Fabric Switch
- Cisco MDS 9000 8-port 10-Gbps Fibre Channel over Ethernet (FCoE) Module
- Cisco MDS 9000 48-port 8-Gbps Advanced Fibre Channel Switching Module
- Cisco MDS 9000 32-port 8-Gbps Advanced Fibre Channel Switching Module
- Cisco MDS 9000 48-port 16-Gbps Fibre Channel Switching Module

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

In addition, the following software features are not supported or are changed in Cisco MDS NX-OS Release 6.2(9b):

- Fibre Channel Security Protocol (FC-SP) is currently not supported on Cisco MDS 9250i Multiservice Fabric Switch.
- Local switching is not supported on the Cisco MDS 9700 Series Director, but continues to be supported on the Cisco MDS 9500 Series.

- Online Health Management System (OHMS)—The Generic Online Diagnostics (GOLD) system provides diagnostics for the Cisco MDS 9700 Series Director instead of the OHMS. In Cisco NX-OS Release 6.2, the GOLD system does not provide any support for automation of corrective actions, such as rebooting modules based on error thresholds.

**Note**

OHMS is supported on Cisco MDS 9500 Series directors, Cisco MDS 9250i Multiservice Fabric Switch, Cisco MDS 9148S Multilayer Fabric Switch, and Cisco MDS 9148 Multilayer Fabric Switch.

Cisco NX-OS Release 6.2 does not support the following hardware:

- Cisco MDS 9134 Fabric Switch
- Cisco MDS 9124 Fabric Switch
- Cisco MDS 4-Gbps Fabric Switch for HP c-Class BladeSystem
- Cisco MDS 4-Gbps Fabric Switch for IBM BladeCenter

Limitations and Restrictions

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

- [ASCII File Can Be Copied to the Startup Configuration, page 30](#)
- [Fibre Channel Security Protocol \(FC-SP\) Support, page 30](#)
- [Install Module Command Changes, page 30](#)
- [Fabric Binding Error Message, page 31](#)
- [IOA Scaling Support on Supervisor-2 Module, page 31](#)

ASCII File Can Be Copied to the Startup Configuration

The `copy bootflash:runnig-config.ascii startup-config` command that was deprecated in an earlier Cisco NX-OS release is enabled from Cisco NX-OS Release 6.2(1).

Fibre Channel Security Protocol (FC-SP) Support

From Cisco NX-OS Release 6.2(9) onwards, the FC-SP feature is supported on Cisco MDS 9700 Series.

Install Module Command Changes

The `install module module-number bios` command is not supported on the Cisco MDS 9710 switch in Cisco NX-OS Release 6.2(1) and later releases. Use the `install all` command to upgrade the BIOS during a software upgrade.

The `install module module-number bios` command continues to be supported in Cisco NX-OS Release 6.2(1) on Cisco MDS 9500 Series switches.

Fabric Binding Error Message

When fabric binding is enabled, an error message appears whenever the Mainframe Package license is not installed, and also when the grace period is disabled. There is a functional impact associated with the error message, and the feature is enabled correctly.

IOA Scaling Support on Supervisor-2 Module

In Cisco MDS NX-OS Release 6.2(9b), I/O Accelerator (IOA) scaling is supported only on the Supervisor-2A module and is not supported on the Supervisor-2 module.

Caveats

This section lists the open and resolved caveats for this release. Use [Table 19](#) to determine the status of a particular caveat. In the table, “O” indicates an open caveat, “C” indicates a closed caveat, and “R” indicates a resolved caveat.

Table 19 Open Caveats

DDTS Number	NX-OS Software Release (Open or Resolved)	
	6.2(9a)	6.2(9b)
CSCur97227	O	O
Severity 2		
CSCty82906	O	O
CSCug22090	O	O
CSCui52280	O	O
CSCuj94303	O	O
CSCul12775	O	O
CSCul13809	O	O
CSCun04994	O	O
CSCup18298	O	O
CSCup20559	O	O
CSCup61048	O	O
CSCup66912	O	O
CSCup69479	O	O
CSCuq95516	O	O
CSCur81171	O	O
CSCut26125	—	O
CSCus66119	—	O
CSCut66449	—	O
CSCuq98083	O	O

Table 19 **Open Caveats**

DDTS Number	NX-OS Software Release (Open or Resolved)	
	6.2(9a)	6.2(9b)
CSCUw82693	O	O
CSCUu76450	O	O
CSCvf68489	O	O
Severity 3		
CSCUv76123	O	O
CSCUf64822	O	O
CSCUj68267	O	O
CSCUj99534	O	O
CSCUl65496	O	O
CSCUj42921	O	O
CSCUi21601	O	O
CSCUm00691	O	O
CSCUo80849	O	O
CSCUo53926	O	O
CSCUo73751	O	O
CSCUo94922	O	O
CSCUo96875	O	O
CSCUp29460	O	O
CSCUp41367	O	O
CSCUp65102	O	O
CSCUp65146	O	O
CSCUp64796	O	O
CSCUp66949	O	O
CSCUp70121	O	O
CSCUp85015	O	O
CSCUe31727	O	O
CSCUr52810	O	O
CSCUt64933	—	O
CSCUw06365	O	O
CSCUs46630	O	O
CSCUv42986	O	O
CSCvs57660	O	O
Severity 4		
CSCUf35479	O	O

Table 19 **Open Caveats**

DDTS Number	NX-OS Software Release (Open or Resolved)	NX-OS Software Release (Open or Resolved)
	6.2(9a)	6.2(9b)
CSCup52898	O	O
CSCue48324	O	O
CSCva31989	O	O
Severity 6		
CSCud07594	O	O
CSCuo36418	O	O
CSCuq00007	O	O
CSCus60057	—	O

Resolved Caveats

Table 20 **Resolved Caveats**

Identifier	Description
CSCur95766	Extend support to 64 character role names
CSCuq53698	LDAP user not assigned all roles or not able to log in at all
CSCuq20309	FEC counter error messages may trigger module reload
CSCus26870	December 2014 ntpd CVEs for Nexus 5k/6k/7k/MDS
CSCur26436	Nexus 7000 & MDS 9000 evaluation of SSLv3 vulnerability (POODLE)
CSCus78917	GHOST vulnerability for MDS (CVE-2015-0235)

Related Documentation

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

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

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

http://www.cisco.com/en/US/products/ps9369/tsd_products_support_series_home.html

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*

Hardware Installation

- *Cisco MDS 9700 Series Hardware Installation Guide*
- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9500 Series Supervisor-2A Tech Note*
- *Cisco MDS 9250i Multiservice Switch Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9148S Multilayer Switch Hardware Installation Guide*
- *Cisco MDS 9148S Multilayer Switch Quick Start Guide*

Software Installation and Upgrade

- *Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide*

Cisco NX-OS Configuration Guides

- *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*

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 "Obtaining Documentation and Submitting a Service Request" section.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned 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. (1110R)

© 2014 Cisco Systems, Inc. All rights reserved.

