Cisco MDS 9000 Software Upgrade and Downgrade Guide, Release 6.2(x)

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This document describes how to upgrade to Cisco NX-OS Release 6.2(x) from Release 5.2(x), and how to downgrade from Cisco NX-OS Release 6.2(x) to Release 5.2(x).

This guide includes the following sections:

Note All command-line interface (CLI) session examples provided in this document are only intended for reference. The actual switch output differs based on your switch model.

About Software Images

Each switch is shipped with the Cisco MDS NX-OS operating system for Cisco MDS 9000 Family switches. The Cisco MDS NX-OS software consists of two images: the kickstart image and the system image.

- To select the kickstart image, use the KICKSTART variable.
- To select the system image, use the SYSTEM variable.

The images and variables are important factors in any install procedure. You must specify the variable and the respective image to upgrade or downgrade your switch. Both images are not always required for each install.

Note To download new Cisco MDS 9000 Family software including Cisco NX-OS and Cisco DCNM management software, refer to the Storage Networking Software download site at:
http://www.cisco.com/cisco/software/navigator.html

For Storage Services Interface image compatibility information, refer to the *Cisco MDS NX-OS Release Compatibility Matrix for Storage Service Interface Images*.

Dependent Factors for Software Installation

The software image install procedure is dependent on the following factors:

- Software images—The kickstart and system image files reside in directories or folders that can be accessed from the Cisco MDS 9000 Family switch prompt.
- Image version—Each image file has a version.
- Flash disks on the switch—The bootflash: resides on the supervisor module and the CompactFlash disk is inserted into the slot0: device.
- Supervisor modules—There are single or dual supervisor modules.

Note On switches with dual supervisor modules, both supervisor modules must have Ethernet connections on the management interfaces (mgmt 0) to maintain connectivity when switchovers occur during upgrades and downgrades. Refer to the *Cisco MDS 9500 Series Hardware Installation Guide*.

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	M97S3K9-6.2.33	MDS 9710, MDS 9706[1], NX-OS software	MDS 9700 Series
	M95S2K9-6.2.33	MDS 9500, NX-OS software	MDS 9500 Series

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

Component	Part Number	Description	Applicable Product
	M93S5K9-6.2.33	MDS 9396S[2], NX-OS software	MDS 9396S Switch
	M92S5K9-6.2.33	MDS 9250i[3] NX-OS software	MDS 9250i Switch
	M92S2K9-6.2.33	MDS 9222i, NX-OS software	MDS 9222i Switch
	M91S5K9-6.2.33	MDS 9148S[4], NX-OS software	MDS 9148S Switch
	M91S3K9-6.2.33	MDS 9148, NX-OS software	MDS 9148 Switch

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

Component	Part Number	Description	Applicable Product
Licenses	DCNM-SAN-M97-K9	Cisco Prime Data Center Network Manager	MDS 9700 Series
	M97ENTK9	Enterprise Package for one Cisco MDS 9700 Series Multilayer Director	MDS 9700 Series
	M97FIC1K9	Cisco MDS 9700 Mainframe Package license for one MDS 9700 Switches	MDS 9700 Series
	M9500SSE184K9z	Storage Services Enabler License for one MSM-18/4 module	MDS 9500 Series
	M9300ENT1K9	Cisco MDS 9300 Series Enterprise Package	MDS 9396S Switch
	DCNM-SAN-M93-K9	Cisco Prime Data Center Network Manager	MDS 9396S Switch
	M9200ENT1K9	Cisco MDS 9200 Series Enterprise Package	MDS 9200 Series
	DCNM-SAN-M92-K9	Cisco Prime Data Center Network Manager	MDS 9200 Series
	M9250IIOA	Cisco MDS 9250i I/O Accelerator Services package	MDS 9250i Switch
	M9250IDMMK9	Cisco MDS 9250i Data Mobility Manager package	MDS 9250i Switch
	M9250IDMMT6M	Cisco MDS 9250i DMM License - 6-month period	MDS 9250i Switch
	M9200FIC1K9	Cisco MDS 9200 Series Mainframe Package	MDS 9200 Series
	M9200XRC	Cisco MDS 9200 XRC Acceleration Package for IBM series z, spare	MDS 9200 Series
	M9222ISSE1K9	Storage Services Enabler License	MDS 9222i Switch
	M9200SSE184K9	Storage Services Enabler License for one MSM-18/4 module	MDS 9222i Switch
	M95DMM184K9	Data Mobility Manager License for one MSM-18/4 module	MDS 9500 Series
	M9222IDMMK9	Data Mobility Manager License for Cisco MDS 9222i	MDS 9222i Switch
	M92DMM184K9	Data Mobility Manager License for one MSM-18/4 module	MDS 9222i Switch
	M95DMM184TSK9	Data Mobility Manager for one MSM-18/4 module — Time limited to 180 days only	MDS 9500 Series
	M9222IDMMTSK9	Data Mobility Manager — Time limited to 180 days only	MDS 9222i Switch
	M92DMM184TSK9	Data Mobility Manager for one MSM-18/4 module — Time limited to 180 days only	MDS 9222i Switch
	M92SSESSNK9	Cisco Storage Services Enabler License for SSN-16 (1 engine)	MDS 9222i Switch
	M95SSESSNK9	Cisco Storage Services Enabler License for SSN-16 (1 engine)	MDS 9500 Series
	M92SMESSNK9	Cisco Storage Media Encryption License for SSN-16 (1 engine)	MDS 9222i Switch

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

Component	Part Number	Description	Applicable Product
	M95SMESSNK9	Cisco Storage Media Encryption License for SSN-16 (1 engine)	MDS 9500 Series
	M92IOASSN	Cisco I/O Accelerator License for SSN-16 (1 engine)	MDS 9222i Switch
	M95IOASSN	Cisco I/O Accelerator License for SSN-16 (1 engine)	MDS 9500 Series
	M92IOA184	Cisco I/O Accelerator License for MSM-18/4	MDS 9222i Switch
	M95IOA184	Cisco I/O Accelerator License for MSM-18/4	MDS 9500 Series
	M9222IIOA	Cisco I/O Accelerator License for Cisco MDS 9222i base switch	MDS 9222i Switch
	M92EXTSSNK9	Cisco SAN Extension License for SSN-16 (1 engine)	MDS 9222i Switch
	M95EXTSSNK9	Cisco SAN Extension License for SSN-16 (1 engine)	MDS 9500 Series
	M9200XRC	Cisco XRC Acceleration	MDS 9200 Series
	M9500XRC	Cisco XRC Acceleration	MDS 9500 Series

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-C9396S-K9	Cisco MDS 9396S 96-Port Multilayer Fabric Switch (2RU fixed-configuration multilayer fabric switch with 96 16-Gbps Fibre Channel ports)	MDS 9396S 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
Switching Modules	DS-X9448-768K9	Cisco MDS 9000 48-port 16-Gbps Fibre Channel Switching Module with SFP LC connectors	MDS 9700 Series

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

Component	Part Number	Description	Applicable Product
	DS-X9848-480K9	Cisco MDS 48-Port 10-Gigabit Fibre Channel over Ethernet (FCoE) Module with SFP LC connectors	MDS 9700 Series
	DS-X9112[5]	Cisco MDS 9000 12-port 4-Gbps Fibre Channel Switching Module with SFP LC connectors	MDS 9500 Series MDS 9200 Series
	DS-X9124[6]	Cisco MDS 9000 24-port 4-Gbps Fibre Channel Switching Module	
	DS-X9148[7]	Cisco MDS 9000 48-port 4-Gbps Fibre Channel Switching Module with SFP LC	MDS 9500 Series MDS 9200 Series
	DS-X9224-96K9[8]	Cisco MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	MDS 9500 Series
	DS-X9248-96K9[9]	Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	MDS 9500 Series
	DS-X9248-48K9[10]	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-FAB1[11]	Cisco MDS 9513 Switching Fabric 1 Module	MDS 9513 Switch
	DS-13SLT-FAB2[12]	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 9148 Switch
	DS-C48-300AC	300W AC power supply	MDS 9148 Switch
	DS-C48S-300AC	300W AC power supply	MDS 9148S Switch
	DS-CAC-845W	845W AC power supply	MDS9200 Series
	DS-C50I-300AC	300W AC power supply	MDS 9250i Switch
	DS-CAC-1200W-E	1200W AC power supply	MDS 9396S Switch
	DS-CAC-1200W	1200W AC power supply	MDS 9396S Switch
	DS-CAC-3000W	3000W AC power supply	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	MDS 9513 Switch
	DS-CAC-1900W	1900W AC power supply	MDS 9506 Switch
	DS-CAC97-3KW	3000W AC power supply	MDS 9700 Series
	DS-CDC97-3KW	3000W DC power supply	MDS 9700 Series
	DS-CHV-3.5KW[13]	3500W High Voltage DC power supply	MDS 9700 Series
CompactFlash	MEM-MDS-FLD512M	External 512-MB CompactFlash memory for supervisor module	MDS 9500 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

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

2. This switch supports Cisco MDS NX-OS Release 6.2(13a) and later.

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

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

5. This product has reached End of Support as of February 28, 2015. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9000 Family 4-Gbps Fibre Channel Switching Module statement.

6. This product has reached End of Support as of February 28, 2015. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9000 Family statement.

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

8. This product has reached End of Support as of July 31, 2018. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module statement.

9. This product has reached End of Support as of July 31, 2018. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module statement.

10. This product has reached End of Support as of July 31, 2018. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module statement.

11. This product has reached End of Support as of July 7, 2014. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9513 Crossbar Switching Fabric Module statement.

12. This product has reached End of Support as of April 30, 2018. For more information on the End of Support, see the End-of-Sale and End-of-Life Announcement for the Cisco MDS 9513 Crossbar Switching Fabric Module 2 statement.

13. This product supports Cisco MDS NX-OS Release 6.2(19) and later.

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 Series 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 9700 Series, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i, MDS 9396S
	SFP-10G-LR / DS-SFP-10GE-LR	10GBASE-LR SFP+ Module	MDS 9700 Series, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i, MDS 9396S
	SFP-10G-ER	10GBASE-ER SFP+ Module	MDS 9700 Series, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i, MDS 9396S
	SFP-H10GB-CU1M	10GBASE-CU SFP+ cable 1 meter	MDS 9700 Series, DS-X9848-480K9, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-H10GB-CU3M	10GBASE-CU SFP+ cable 3 meter	MDS 9700 Series, DS-X9848-480K9, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-H10GB-CU5M	10GBASE-CU SFP+ cable 5 meter	MDS 9700 Series, DS-X9848-480K9, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-H10GB-ACU7M	10GBASE-CU SFP+ active copper cable 7 meter	MDS 9700 Series, DS-X9848-480K9, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	SFP-H10GB-ACU10M	10GBASE-CU SFP+ active copper cable 10 meter	MDS 9700 Series, DS-X9848-480K9, MDS 9500 Series, 8-port 10-Gbps FCoE Module (DS-X9708-K9), MDS 9250i
	DS-16G-ER-Dxxx	Smart Optics DWDM 16G LWL SFP	MDS 9700 Series (DS-X9448-768K9), MDS 9148S, MDS 9250i, MDS 9396S
	DS-16G-ER	Smart Optics 16G LWL SFP	MDS 9700 Series (DS-X9448-768K9), MDS 9148S, MDS 9250i, MDS 9396S
	DS-16G-ER-Cxx	Smart Optics CWDM 16G LWL SFP	MDS 9700 Series (DS-X9448-768K9), MDS 9148S, MDS 9250i, MDS 9396S

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

Component	Part Number	Description	Applicable Product
	DS-8G-ZR-Dxxx	Smart Optics DWDM 8G LWL SFP	MDS 9700 Series (DS-X9448-768K9), MDS 9148S, MDS 9250i, MDS 9396S
	DS-8G-ZR	Smart Optics 8G LWLSFP	MDS 9700 Series (DS-X9448-768K9), MDS 9148S, MDS 9250i, MDS 9396S
	DS-8G-ZR-Cxx	Smart Optics CWDM 8G LWL SFP	MDS 9700 Series (DS-X9448-768K9), MDS 9148S, MDS 9250i, MDS 9396S
LC-type fiber-optic SFP	DS-SFP-FC16G-SW	SFP+ optics (LC type) for 16-Gbps Fibre Channel for shortwave mode	MDS 9700 Series, 48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), MDS 9250i, MDS 9148S, MDS 9396S
	DS-SFP-FC16G-LW	SFP+ optics (LC type) for 16-Gbps Fibre Channel for longwave mode (10km reach)	MDS 9700 Series, 48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), MDS 9250i, MDS 9148S, MDS 9396S
	DS-SFP-FC16GELW=	SFP+ optics (LC type) for 16-Gbps Fibre channel for longwave mode; (25km reach).	48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), MDS 9250i, MDS 9148S, MDS 9396S
	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), MDS 9396S
	DS-SFP-FC10G-LW	SFP+ optics (LC type) for 10-Gbps Fibre Channel for longwave mode (10km reach)	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), MDS 9396S
	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, 48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9) MDS 9148 MDS 9250i, MDS 9148S, MDS 9396S
	DS-SFP-FC8G-SW	SFP+ optics (LC type) for 2-, 4-, or 8-Gbps Fibre Channel for shortwave mode	MDS 9700 Series, MDS 9500 Series, MDS DS-X9200 Series switching modules, MDS 9250i, MDS 9148, MDS 9148S, MDS 9396S
	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 9700 Series, MDS 9500 Series, MDS DS-X9200 Series switching modules, MDS 9250i, MDS 9148, MDS 9148S, MDS 9396S

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

Component	Part Number	Description	Applicable Product
	DS-SFP-FC4G-SW	SFP optics (LC type) for 1-, 2-, or 4-Gbps Fibre Channel for shortwave mode	MDS 9134, 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 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 9134, MDS 9222i, DS-X9100, and DS-X9200 Series switching modules
	DS-SFP-FCGE-SW	SFP optics (LC type) for 1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel for shortwave mode; not for use in 4-Gbps-capable ports	DS-X9316-SSNK9, DS-X9304-18K9, MDS 9222i, MDS 9250i
	DS-SFP-FCGE-LW	SFP optics (LC type) for 1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel for longwave mode; not for use in 4-Gbps-capable ports	DS-X9316-SSNK9, DS-X9304-18K9, MDS 9222i, MDS 9250i
	DS-SFP-GE-T	SFP (RJ-45 connector) for Gigabit Ethernet over copper	DS-X9316-SSNK9, DS-X9304-18K9, MDS 9222i, MDS 9250i
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+	DS-X9200 Series switching modules, MDS 9700 Series, 48-port 16-Gbps Fibre Channel Switching Module (DS-X9448-768K9), MDS 9148, MDS 9250i, MDS 9148S, MDS 9396S

Table 2   *Cisco MDS 9000 Series Supported Optics and Transceivers (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 Series
	DWDM-SFP10G-xx.xx	10GBASE-DWDM SFP+	DS-X9848-480K9, MDS 9250i[1]
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

1. Supported in both FCoE and FCIP ports.

Selecting the Correct Software Image for an MDS 9100 Series Switch

lists the image filename for Cisco MDS 9100 Series switches.

Table 1-3   *Software Images for MDS 9100 Series Switches*

Cisco MDS 9100 Series Switch Type	Naming Convention
Cisco MDS 8-Gbps Fabric Switch for HP c-Class BladeSystem	Both of these switches have the same filename that begins with m9100-s3ek9
MDS 9148	
MDS 9148S	Both of these switches have the same filename that begins with m9100-s5ek9

Selecting the Correct Software Image for an MDS 9200 Switch

Table 1-4 lists the image filename for Cisco MDS 9200 switch.

Table 1-4   *Software Image for MDS 9200 Switch*

Cisco MDS 9200 Switch Type	Naming Convention
MDS 9222i	Filename begins with m9200-s2ek9

Selecting the Correct Software Image for an MDS 9250i Switch

Table 1-5 lists the image filename for a Cisco MDS 9250i switch.

Table 1-5   *Software Image for the MDS 9250i Switch*

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

Selecting the Correct Software Image for an MDS 9396S Switch

Table 1-6 lists the image filename for Cisco MDS 9396S switch.

Table 1-6   *Software Image for MDS 9396S Switch*

Cisco MDS 9396S Switch Type	Naming Convention
MDS 9396S	Filename begins with m9300-s1ek9

Selecting the Correct Software Image for an MDS 9500 Series Switch

Table 1-7 lists the image filename for Cisco MDS 9500 Series switches.

Table 1-7   *Software Images for MDS 9500 Series Switches*

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

Use the **show module** command to display the type of supervisor module in the switch. For a Supervisor-1 module, the output might look like this:

```
switch# show module
Mod  Ports  Module-Type                     Model              Status
---  -----  ------------------------------- ------------------ ------------
...
...
5    0      Supervisor/Fabric-1             DS-X9530-SF1-K9    active*
6    0      Supervisor/Fabric-1             DS-X9530-SF1-K9    ha-standby
```

For a Supervisor-2 module, the output might look like this:

```
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 Correct Software Image for an MDS 9700 Series Switch

Table 1-8 lists the image filename for a Cisco MDS 9700 Series switch.

Table 1-8   Software Images for the MDS 9710 Switch

Cisco MDS 9710 Switch Type	Supervisor Module Type	Naming Convention
MDS 9710	Supervisor-3 module	Filename begins with m9700-sf3ek9
MDS 9706	Supervisor-3 module	Filename begins with m9700-sf3ek9

Installing Cisco NX-OS Release 6.2(x) Software on a New Cisco MDS Switch

Note   If the management 10/100/1000 Ethernet port (mgmt0) interface of the Cisco MDS 9700 Series switches has a preconfigured "/0" IPv6 address that cannot be removed, use the **write erase boot** command to clear the complete configuration of the device and reload it. Perform this process before commissioning the device into production as this process is disruptive to user traffic if it is applied to the active supervisor of a system. Ensure an active console connection to the supervisor as this process will remove the IPv4 address of the mgmt0 interface.

To install the latest Cisco NX-OS Release 6.2(x) software images on a new Cisco MDS 9000 Family switch, follow these steps:

Step 1   Log in to Cisco.com to access the links provided in this document. To log in to Cisco.com, go to the URL http://www.cisco.com/ and click **Log In** at the top of the page. Enter your Cisco Systems username and password.

> **Note** Unregistered Cisco.com users cannot access the links provided in this document.

Step 2 Verify the following physical connections for the new Cisco MDS 9000 Family switch:

- The console port is physically connected to a computer terminal (or terminal server).
- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or router.

Information on physical connections can be found in the *Cisco MDS 9000 Series Hardware Installation Guides*.

> **Note** On switches with dual supervisor modules, both supervisor modules must have Ethernet connections on the management interfaces (mgmt 0) to maintain connectivity when switchovers occur during upgrades and downgrades. Refer to the *Cisco MDS 9500 Series Hardware Installation Guide*.

> **Tip** Save the host ID information for future use (for example, to enable licensed features). The host ID information is provided in the Proof of Purchase document that accompanies the switch.

Step 3 Verify that the default console port parameters are identical to the parameters of the computer terminal (or terminal server) attached to the switch console port:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity

Refer to the "ConfiguringTerminal Settings and Sessions" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

Step 4 Power up the Cisco MDS 9000 Family switch. The switch boots automatically and the switch prompt appears in your terminal window.

Step 5 Obtain the IP address, subnet mask, and default gateway information that is required for the Cisco MDS 9000 Family switch to communicate over the supervisor module Ethernet interface. This information is required to configure and manage the switch.

Refer to the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

> **Tip** You have the option to change the default password during the initial setup process. All Cisco MDS 9000 Family switches have the network administrator as a default user (admin) and a default password (admin). You cannot change the default user at any time.

Step 6 Complete the System Admin Account Setup.

> **Tip** If you create a short, easy-to-decipher password, your password is rejected. Be sure to configure a strong password as shown in the sample configuration. Passwords are case sensitive. You must explicitly create a password that meets the requirements listed in the "Characteristics of Strong Passwords" section in the "Configuring Users and Common Roles" chapter in the *Cisco MDS 9000 Family NX-OS Security Configuration Guide*.

```
---- System Admin Account Setup ----

Do you want to enforce secure password standard (yes/no) [y]: y

Enter the password for "admin":

Confirm the password for "admin":
```

Step 7   Enter **yes** to enter the setup mode and assign the information obtained in Step 5.

Refer to the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

> **Note** Press **Ctrl-C** at any prompt to skip the remaining configuration options and proceed with what is configured until that point.

> **Tip** If you do not want to answer a previously configured question, or if you want to skip answers to any questions, press **Enter**. If a default answer is not available (for example, a switch name), the switch uses the previously configured settings and skips to the next question.

The CLI configuration steps (using factory defaults) are as follows:

```
---- Basic System Configuration Dialog ----

This setup utility will guide you through the basic configuration of
the system. Setup configures only enough connectivity for management
of the system.

Press Enter incase you want to skip any dialog. Use ctrl-c at anytime
to skip remaining dialogs.

Would you like to enter the basic configuration dialog (yes/no): yes
```

By default, two roles exist in all switches:

- Network operator (network-operator)—Has permission to view the configuration only. The operator cannot make any configuration changes.

- Network administrator (network-admin)—Has permission to execute all commands and make configuration changes. The administrator can also create and customize up to 64 additional roles. One (of these 64 additional roles) can be configured during the initial setup process.

```
Create another login account (yes/no) [n]: yes
```

![Note icon]

Note While configuring your initial setup, you can create an additional user account (in the network-admin role) besides the administrator's account. The user name must contain non-numeric characters. Refer to the "Configuring User Accounts" section in the "Configuring Users and Common Roles" chapter in the *Cisco MDS 9000 Family NX-OS Security Configuration Guide*.

```
Enter the user login ID: test

Enter the password for "test":
Confirm the password for "test":
Enter the user role [network-operator]:
```

![Tip icon]

Tip If you use SNMPv3, then do not configure the SNMPv2 community string. Refer to the "Configuring SMNP" chapter in the *Cisco MDS 9000 Family NX-OS System Management Configuration Guide*.

```
Configure read-only SNMP community string (yes/no) [n]: yes

SNMP community string: admin
```

![Note icon]

Note The switch name is limited to 32 alphanumeric characters.

```
Enter the switch name: switch

Continue with Out-of-band (mgmt0) management configuration? [yes/no]: yes
```

IP version 6 (IPv6) is supported in Cisco MDS NX-OS Release 4.1(x) and later. However, the setup script only supports IP version 4 (IPv4) for the management interface. For information on configuring IPv6 on the management interface, refer the *Cisco MDS 9000 Family NX-OS IP Services Configuration Guide,* or the *IP Services Configuration Guide, Cisco DCNM for SAN*.

```
Mgmt0 IPv4 address: ip_address

Mgmt0 IPv4 netmask: subnet_mask

Configure the default gateway? (yes/no) [y]: yes

IPv4 address of the default gateway : 209.165.200.225

Configure advanced IP options? (yes/no) [n]: yes

Continue with In-band (vsan1) management configuration? (yes/no) [n]: n

Enable IP routing? (yes/no) [n]: yes

Configure static route? (yes/no) [n]: n
```

![Note icon]

Note Be sure to configure the IP route, the IP default network address, and the IP default gateway address to enable SNMP access. If IP routing is enabled, the switch uses the IP route and the default network IP address. If IP routing is disabled, the switch uses the default gateway IP address.

```
Configure the default-network: (yes/no) [y]: yes
```

> **Note** The default network address is the **Destination prefix: dest_prefix** provided above in **Mgmt0 IPv4 netmask: subnet_mask**.

```
Default network IPv4 address: dest_prefix

Configure the DNS IPv4 address? (yes/no) [y]: yes

DNS IP address: name_server_ip_address

Configure the default domain name? (yes/no) [n]: yes

Default domain name: domain_name
```

> **Note** Refer to the "Configuring Users and Common Roles" chapter in the *Cisco MDS 9000 Family NX-OS Security Configuration Guide*.

```
Enable the ssh service? (yes/no) [y]:

Type of ssh key you would like to generate (dsa/rsa) [rsa]:

Number of rsa key bits <768-2048> [1024]:

Enable the telnet service? (yes/no) [n]: y

Enable the http-server? (yes/no) [y]:

Configure clock? (yes/no) [n]: yes

Clock config format [HH:MM:SS Day Mon YYYY] :

Enter clock config :10:10:10 1 July 2013

Configure timezone? (yes/no) [n]: y

Enter timezone config :pst

Configure summertime? (yes/no) [n]: yes

summer-time config :PDT 2 sunday march 02:00 1 sunday november 02:00 59

Configure NTP server? (yes/no) [n]: yes

NTP server IP address: ntp_server_IP_address

Configure default switchport interface state (shut/noshut) [shut]: shut
```

> **Note** The mgmt0 interface is not shutdown at this point. Only the Fibre Channel, iSCSI, FCIP, and Gigabit Ethernet interfaces are shut down.

```
Configure default switchport trunk mode (on/off/auto) [on]: on

Configure default switchport port mode F (yes/no) [n]: yes
```

```
Configure default zone policy (permit/deny) [deny]: deny

Enable full zoneset distribution (yes/no) [n]: yes

Configure default zone mode (basic/enhanced) [basic]: basic
```

✎

Note Refer to the "Configuring and Managing Zones" chapter in the *Cisco MDS 9000 Family NX-OS Fabric Configuration Guide*.

```
The following configuration will be applied:
username admin password admin_pass role network-admin
  username user_name password user_pass role network-admin
  snmp-server community snmp_community ro
  switchname switch
  interface mgmt0
    ip address ip_address subnet_mask
    no shutdown
  ip routing
  ip route dest_prefix dest_mask dest_address
  ip default-network dest_prefix
  ip default-gateway default_gateway
  ip name-server name_server
  ip domain-name domain_name
  telnet server disable
  ssh key rsa 2048 force
  ssh server enable
  ntp server ipaddr ntp_server
  system default switchport shutdown
  system default switchport trunk mode on
  system default switchport mode F
  system default port-channel auto-create
  zone default-zone permit vsan 1-4093
  zoneset distribute full vsan 1-4093
  system default zone mode enhanced

Would you like to edit the configuration? (yes/no) [n]: no

Would you like to edit the configuration? (yes/no) [n]: no

Use this configuration and save it? (yes/no) [y]: yes
```

⚠

Caution If you do not save the configuration at this point, your changes will not be updated the next time that the switch is rebooted. Type **yes** in order to save the new configuration. This process ensures that the kickstart and system boot images are also automatically configured.

🔎

Tip Up to this point, you can only configure the switch using the CLI. After this step, you can continue configuring the switch using the CLI or switch over to using the Cisco DCNM application. Refer to the *Cisco DCNM Fundamentals Configuration Guide*.

If you continue to use the CLI, the login prompt automatically appears in your terminal window.

Step 8 Log in to the switch using the new user name and password.

Step 9 Verify that the required licenses are installed in the switch using the **show license** command.

✎

Note   The switch is initially shipped with the required licenses installed in the system; however, the
initial license file will not cover unlicensed features that may be used during the grace period.
Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*.

The example CLI output for a valid license follows:

```
switch# show license
license.lic:
SERVER this_host ANY
VENDOR cisco
INCREMENT ENTERPRISE_PKG cisco 1.0 permanent uncounted \
        VENDOR_STRING=MDS HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>0</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=FB454F0A0D40
INCREMENT MAINFRAME_PKG cisco 1.0 permanent uncounted \
        VENDOR_STRING=MDS HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>1</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=0DAE1B086D9E
INCREMENT SAN_EXTN_OVER_IP cisco 1.0 permanent 7 VENDOR_STRING=MDS \
        HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>2</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=D336330C76A6
INCREMENT FM_SERVER_PKG cisco 1.0 permanent uncounted \
        VENDOR_STRING=MDS HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>3</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=AEAEA04629E8
```

Step 10   Verify that the switch is running the latest Cisco NX-OS 6.2(x) software, depending on which you
installed, by issuing the **show version** command.

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2013, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 1.0.10
  loader:    version N/A
  kickstart: version 6.2(5)
  system:    version 6.2(5)
  BIOS compile time:      01/08/09
  kickstart image file is: bootflash:///m9500-sf2ek9-kickstart-mz.6.2.5.bin
  kickstart compile time:  11/25/2013 9:00:00 [01/30/2014 05:33:20]
  system image file is:    bootflash:///m9500-sf2ek9-mz.6.2.5.bin
  system compile time:     11/25/2013 9:00:00 [01/30/2014 07:10:42]


Hardware
  cisco MDS 9509 (9 Slot) Chassis ("Supervisor/Fabric-2a")
  Motorola, 7447A, altivec  with 2071288 kB of memory.
```

```
  Processor Board ID JAF1625BAES

  Device name: switch
  bootflash:    1000944 kB
  slot0:               0 kB (expansion flash)

Kernel uptime is 20 day(s), 12 hour(s), 6 minute(s), 27 second(s)

---
switch#
```

If the latest Cisco NX-OS 6.2(x) software version is displayed, you can continue configuring the switch using one of the following options:

- Refer to the *Cisco MDS 9000 NX-OS and SAN-OS Configuration Guides* for information on configuring further Cisco NX-OS features using the CLI.

- Refer to the *Cisco DCNM for SAN Configuration Guides* for more information on using Cisco DCNM-SAN to configure your switch.

If the latest Cisco NX-OS 6.2(x) software is not displayed, continue with upgrading or downgrading the switch as required to install the correct version. Refer to the appropriate section in this guide for upgrading or downgrading to specific versions.

Step 11 Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------- ------------------ ------------
1    48     1/2/4/8 Gbps 48-Port FC Module    DS-X9248-96K9      ok
2    24     1/2/4/8 Gbps 24-Port FC Module    DS-X9224-96K9      ok
3    48     1/2/4/8 Gbps 48-Port FC Module    DS-X9248-96        ok
4    48     1/2/4/8 Gbps 4/44-Port FC Module  DS-X9248-48K9      ok
5    48     1/2/4 Gbps FC Module              DS-X9148           ok
7    0      Supervisor/Fabric-2               DS-X9530-SF2-K9    active *
8    0      Supervisor/Fabric-2               DS-X9530-SF2-K9    ha-standby
11   4      10 Gbps FC Module                 DS-X9704           ok
12   22     4x1GE IPS, 18x1/2/4Gbps FC Modul  DS-X9304-18K9      ok

Mod  Sw             Hw      World-Wide-Name(s)  (WWN)
---  -------------- ------  ---------------------------------------------------
1    6.2(x)         1.0     20:01:00:0d:ec:24:e8:40 to 20:30:00:0d:ec:24:e8:40
2    6.2(x)         0.6     20:41:00:0d:ec:24:e8:40 to 20:58:00:0d:ec:24:e8:40
3    6.2(x)         0.55    20:81:00:0d:ec:24:e8:40 to 20:b0:00:0d:ec:24:e8:40
4    6.2(x)         0.65    20:c1:00:0d:ec:24:e8:40 to 20:f0:00:0d:ec:24:e8:40
5    6.2(x)         1.5     21:01:00:0d:ec:24:e8:40 to 21:30:00:0d:ec:24:e8:40
7    6.2(x)         0.3     --
8    6.2(x)         1.6     --
11   6.2(x)         0.522   22:81:00:0d:ec:24:e8:40 to 22:84:00:0d:ec:24:e8:40
12   6.2(x)         1.1     22:c1:00:0d:ec:24:e8:40 to 22:d2:00:0d:ec:24:e8:40


Mod  MAC-Address(es)                       Serial-Num
---  ------------------------------------  ----------
1    00-0d-ec-75-3c-d8 to 00-0d-ec-75-3c-dc  XXXXXXXXXX
2    00-0d-ec-75-3c-d0 to 00-0d-ec-75-3c-d4  XXXXXXXXXX
3    00-50-30-02-19-7e to 00-50-30-02-19-82  XXXXXXXXXX
4    00-0d-ec-75-33-dc to 00-0d-ec-75-33-e0  XXXXXXXXXX
5    00-19-56-3e-76-5c to 00-19-56-3e-76-60  XXXXXXXXXX
7    00-05-30-01-d5-e2 to 00-05-30-01-d5-e6  XXXXXXXXXX
8    00-23-5e-99-9f-e8 to 00-23-5e-99-9f-ec  XXXXXXXXXX
11   00-13-1a-e5-f5-66 to 00-13-1a-e5-f5-6a  XXXXXXXXXX
12   00-1b-54-02-e5-08 to 00-1b-54-02-e5-10  XXXXXXXXXX
```

```
Xbar Ports  Module-Type                      Model             Status
---  -----  -------------------------------- ----------------- ------------
1    0      Fabric Module 2                  DS-13SLT-FAB2     ok
2    0      Fabric Module 2                  DS-13SLT-FAB2     ok

Xbar Sw              Hw      World-Wide-Name(s) (WWN)
---  --------------  ------  --------------------------------------------------
1    NA              2.0     --
2    NA              2.0     --

Xbar MAC-Address(es)                      Serial-Num
---  ------------------------------------ ----------
1    NA                                   XXXXXXXXXXX
2    NA                                   XXXXXXXXXXX

* this terminal session
switch#
```

Upgrading to Cisco NX-OS Release 6.2(x) on an Existing Cisco MDS Switch

This section provides information on upgrading your Cisco NS-OS software to Cisco NX-OS Release 6.2(x). It includes the following sections:

If your switch is running software that is earlier than Cisco NX-OS Release 5.2(x), you must upgrade to Release 6.2(x). Follow this upgrade path:

- Release 5.0(x): upgrade to 5.2(x), and then upgrade to 6.2(x).
- Release 4.1(x) or release 4.2(x): upgrade to Release 5.0(x), upgrade to Release 5.2(x) and then upgrade to Release 6.2(x).
- Release 3.3(2), Release 3.3(3), Release 3.3(4x), and Release 3.3(5x), upgrade to release 4.1(x) or Release 4.2(x), then upgrade to Release 5.0(x), and then upgrade to Release 5.2(x), and then upgrade to 6.2(x).
- Release 3.3(1c), all Release 3.2(x), all Release 3.1(x), and all Release 3.0(x), upgrade to release 3.3(5b), then upgrade to release 4.1(x) or release 4.2(x), then upgrade to Release 5.0(x), and then upgrade to Release 5.2(x), and then upgrade to 6.2(x).

Note For a nondisruptive upgrade, the switch must be running Cisco SAN-OS Release 3.3(5b) or later. A disruptive upgrade requires a switch reload.

Upgrading Guidelines

Observe these guidelines when upgrading software on a Cisco MDS 9500 Series Director switch:

- Follow the upgrade path to Cisco NX-OS Release 6.2(x) specified in the Cisco MDS 9000 Series Release Notes for the particular release you intend to install.

- When you replace a linecard with a different type of linecard, the ports revert to VSAN 1 and all the port configurations are lost.

Observe these guidelines when upgrading software on Cisco MDS 9148s, 9250i, 9396s, and 9700 Series Director switches:

- Inserting smartoptics on Cisco MDS 9148s, 9250i, 9396s, and 9700 Series Director switches running an unsupported Cisco MDS NX-OS Release results in the port moving to error-disabled state.

- Upgrading from Cisco MDS NX-OS Release 6.2(19) to any other unsupported release (higher or lower) with smartoptics links that are error disabled will keep the links in the error-disabled state, unless the links are physically removed and inserted to bring the links up.

- Upgrading from Cisco MDS NX-OS Release 6.2(19) to any other unsupported release (higher or lower) with smartoptics links up and trunking will keep the links in trunking state.

- If you copy firmware using the SFTP or SCP clients after enabling the **feature scp-server** or **feature sftp-server** command on your switch, ensure that you close the SFTP or SCP connection before performing ISSU. Otherwise, ISSU will be disruptive. This issue is not seen when you transfer files from the switch using the **copy** command or when using the DCNM client.

Note Parallel In-Service Software Upgrade (ISSU) is not recommended on MDS 9148S, MDS 9250i and MDS 9396S fabric switches when these category of fabric switches are peers to each other.

Upgrade Process for an MDS 9700 Series Director

On the MDS 9710 Director, the high-level process to upgrade to Cisco NX-OS Release 6.2(x) and is as follows:

Step 1 Upgrade to Cisco MDS NX-OS Release 6.2(x) as described in "Upgrading to Cisco NX-OS Release 6.2(x) on an MDS 9700 Series Switch".

Step 2 Install Cisco MDS 48-Port 16-Gbps Fibre Channel Switching Module in the MDS 9710 chassis. For additional information, see the *Cisco MDS 9700 Series Hardware Installation Guide.*

Step 3 Install Cisco MDS 48-Port 10-Gigabit Ethernet module modules in the MDS 9710 chassis. For additional information, see the *Cisco MDS 9700 Series Hardware Installation Guide.*

Step 4 If needed, reload the switch.

Upgrade Process for the MDS 9513 Director Switch

On the MDS 9513 switch, the high-level process to upgrade to Cisco NX-OS Release 6.2(x) and enable the increased bandwidth capabilities of the Generation 4 modules is as follows:

Step 1 Upgrade to Cisco MDS NX-OS Release 6.2(x) as described in "Upgrading to Cisco NX-OS Release 6.2(x) on an MDS 9500 Series Switch".

Step 2 Install Cisco MDS 9513 Fabric 3 modules in the MDS 9513 chassis. For additional information, see the "Migrating to Generation 4 8-Gbps Advanced Fibre Channel Switching Modules" section in the *Cisco MDS 9500 Series Switch Hardware Installation Guide.*

Step 3 If needed, reload the switch to enable increased bandwidth capabilities.

Step 4 Install Generation 4 8-Gbps Advanced Fibre Channel switching modules.

Upgrade Process for the MDS 9506 and MDS 9509 Director Switches

On the MDS 9506 and 9509 Director switches, the high-level process to upgrade to Cisco NX-OS Release 6.2(x) is as follows:

Step 1 Upgrade to a Supervisor-2 or Supervisor-2A module.

Step 2 Upgrade to Cisco MDS NX-OS Release 6.2(x) as described in "Upgrading to Cisco NX-OS Release 6.2(x) on an MDS 9500 Series Switch".

Step 3 Install a 8-Gbps Advanced Fibre Channel module.

Upgrading to Cisco NX-OS Release 6.2(x) on an MDS 9700 Series Switch

✎ **Note** Use the console connection for firmware upgrades. Be aware that if you are upgrading through the management interface, you must have a working connection to both supervisors, as this process causes a switchover and the current standby supervisor will be active after the upgrade

To upgrade your switch to use the latest Cisco MDS NX-OS software on your Cisco MDS 9700 Series switch, follow these steps:

Step 1 Log in to Cisco.com to access the links provided in this document. To log in to Cisco.com, go to the URL http://www.cisco.com/ and click **Log In** at the top of the page. Enter your Cisco Systems user name and password.

✎ **Note** Unregistered Cisco.com users cannot access the links provided in this document.

Step 2 Verify the following physical connections for the new Cisco MDS 9700 Series :

- The console port is physically connected to a computer terminal (or terminal server).

- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or router.

These procedures are specified in the hardware installation guide for the required product. For more information, see the *Cisco MDS 9710 Director Hardware Installation Guide*.

Step 3   Log in to the switch.

Step 4   Issue the **copy running-config startup-config** command to store your current running configuration. You can also create a backup of your existing configuration to a file by issuing the **copy running-config bootflash:backup_config.txt** command. Refer to the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

Step 5   Verify that the requested license files installed in the switch are displayed in response to the **show license usage** command.

✎
Note   The switch is initially shipped with the required licenses installed in the system; however, the initial license file will not cover unlicensed features that may be used during the grace period. Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*. If no license is displayed at this point, perform Step 6 and Step 7 to install the required licenses. If the required licenses are displayed at this point, skip Step 6 and Step 7 and move to Step 8.

The example CLI output for a valid license follows:

```
switch# show license usage
Feature                     Ins  Lic   Status Expiry Date Comments
                                 Count
--------------------------------------------------------------------------------
FM_SERVER_PKG               No   -     Unused              -
MAINFRAME_PKG               No   -     Unused              -
ENTERPRISE_PKG              Yes  -     Unused never        -
--------------------------------------------------------------------------------
```

Step 6   Install licenses (if necessary) to ensure that the required features are available on the switch. Perform the following steps:

   a. Use the **show license host-id** command to obtain the serial number for your switch. The host ID is also referred to as the switch serial number.

```
switch# show license host-id
License hostid: VDH=JAF1721AEQG
```

🔍
Tip   Use the entire ID that appears after the colon (:) sign. In this example, the host ID is VDH=JAF1721AEQG

   b. Obtain your Claim Certificate or the Proof of Purchase document. This document accompanies every Cisco MDS switch.

   c. Locate the Product Authorization Key (PAK) from the Claim Certificate or Proof of Purchase document.

   d. Locate the website URL from the Claim Certificate or Proof of Purchase document.

   e. Access the specified URL that applies to your switch and enter the switch serial number and the PAK. The license key file is sent to you by e-mail. The license key file is digitally signed to only authorize use on the switch for which it was requested. The requested features are also enabled once the NX-OS software on the specified switch accesses the license key file.

⚠️

Caution   Install the license file in the specified Cisco MDS 9000 Family switch without making any modifications.

Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*.

Step 7   Install the license key file when you receive it by e-mail. Perform the following steps:

a. Copy the license file to bootflash using TFTP or SCP.

b. Perform the installation by issuing the **install license** command on the active supervisor module from the switch console.

```
switch# install license bootflash:license_file.lic
Installing license ..done
```

✎

Note   If you provide a target name for the license key file, the file is installed with the specified name. Otherwise, the file name specified in the license key file is used to install the license.

c. Exit the switch console.

Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*.

Step 8   Ensure that the required space is available in the bootflash: directory for the image file(s) to be copied using the **dir bootflash:** command. Use the **delete bootflash:***filename* command to remove unnecessary files.

✎

Note   Before downloading and installing Cisco NX-OS software, verify that the release is supported by your Cisco System MDS reseller. If you purchased support through a Cisco Systems reseller, contact them directly for more information. Otherwise, contact Cisco Technical support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

```
switch# dir bootflash:
241410048    May 19 14:11:03 2014  0x501_eth-qos_core.4690
  239902720    May 19 14:21:14 2014  0x501_eth-qos_core.6054
  236326912    Jun 02 13:11:51 2014  0x501_eth-qos_core.6469
       44946    Jun 02 13:12:08 2014  0x501_eth-qos_log.6469
  196659318    Apr 03 17:15:00 2014  IMG_629_suh.gbin
   37012992    Apr 03 17:12:51 2014  KS_629_suh.gbin
   36800512    May 15 14:43:21 2014  KS_SA.bin
   36800512    May 15 15:44:28 2014  KS_SA.gbin
  196849390    May 15 18:48:29 2014  SUH.bin
   36426752    May 15 18:50:28 2014  SUH_KS.bin
  196852387    May 15 19:11:22 2014  SUH_NW.bin
      212670    Feb 26 14:48:19 2014  ac_log
     5047806    Dec 17 11:43:00 2013  cfs
          92    Dec 18 17:51:39 2013  cfs_test.txt
     3400551    May 30 14:08:06 2014  debug
     3378033    Dec 17 11:40:16 2013  dp627
     3366221    Jan 07 14:32:34 2014  dps
       86850    Jun 02 13:09:38 2014  ethpm_act_logs.log
      491521    Jun 02 13:11:39 2014  ethpm_im_tech.log
         608    Jun 02 13:10:38 2014  ethpm_mts_details.log
          73    Jun 02 13:10:38 2014  ethpm_syslogs.log
      205691    Jun 02 13:11:38 2014  ethpm_tech.log
        4096    Oct 29 17:02:38 2013  fcoe_vdc1/
      819200    Jun 02 13:15:17 2014  hap_reset_show_tech.gz
    12465596    Jun 30 13:29:36 2014  ipqosmgr
    12335635    May 06 18:12:50 2014  ipqosmgr1
```

```
    36426752    Jun 05 12:20:14 2014   kick_628_14.bin
    36226560    Jun 09 16:17:07 2014   kick_629_s4.bin
    12763786    May 13 17:54:24 2014   lc2dce_mds.bin
        4096    May 14 13:29:55 2014   lost+found/
     6442141    Oct 09 14:25:48 2013   m9700-s3-epld.6.2.7.BF.0.9.gimg
    37011968    Apr 30 16:10:28 2014   m9700-sf3ek9-kickstart-mzg.6.2.7.bin
    36423680    Apr 16 16:17:50 2014   m9700-sf3ek9-kickstart-mzg.6.2.9.FM.0.48.bin
    36427264    May 22 11:27:11 2014 m9700-sf3ek9-kickstart-mzg.6.2.9.FM.0.68.bin
   195875124    Apr 30 12:55:14 2014   m9700-sf3ek9-mzg.6.2.7.bin
        2675    Jun 02 16:30:33 2014   pc_pfc.cfg
        3356    Jun 02 16:03:48 2014   pc_pfc_ld.cfg
        3287    Jun 02 12:23:36 2014   pfc_ld.cfg
   197137263    Jun 20 13:44:00 2014   sys_629_s4_v3.bin
   197134994    Jun 20 15:41:53 2014   sys_629_s4_v4.bin
    46425962    May 26 13:18:17 2014   tech_support_xbow
    46710118    May 26 13:57:44 2014   tech_support_xbow1
    10087076    Jan 07 13:59:41 2014   techsupport_621
     7647107    Jan 07 10:47:13 2014   techsupport_January
    10609173    Jan 07 14:52:30 2014   temp_1
        1051    Mar 05 12:54:24 2014   vimrc-cpy

Usage for bootflash://sup-local
 2468593664 bytes used
 1272250368 bytes free
 3740844032 bytes total
```

Step 9 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del m9700-sf3ek9-kickstart-mzg.6.2.7.bin
switch# del m9700-sf3ek9-mzg.6.2.7.bin
```

Step 10 Verify that there is space available on the standby supervisor module bootflash on a Cisco MDS 9700 Series switch.

```
switch# attach mod x (where x is the module number of the standby supervisor)
switch(standby)# dir bootflash:
     12288     Aug 26 19:06:14 2011 lost+found/
  16206848     Jul 01 10:54:49 2011 m9500-sf2ek9-kickstart-mz.6.2.5.bin
  16604160     Jul 01 10:20:07 2011 m9500-sf2ek9-kickstart-mz.6.2.5c.bin
  78337129     Jul 01 10:33:52 2011 m9500-sf2ek9-mz.6.2.1.bin
  78718938     Jul 01 10:18:09 2011 m9500-sf2ek9-mz.6.2.1c.bin

Usage for bootflash://sup-local
  122811392 bytes used
   61748224 bytes free
  184559616 bytes total

switch(standby)# exit (to return to the active supervisor)
```

Step 11 If you need more space on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch, delete unnecessary files to make space available.

```
switch(standby)# del bootflash: m9700-sf2ek9-kickstart-mz.6.2.5.bin.S68
switch(standby)# del m9700-sf3ek9-mz.6.2.5.bin.S68
```

Step 12 Access the Software Download Center using this URL:

http://www.cisco.com/cisco/software/navigator.html

If prompted to log in, use your Cisco system user ID and password.

Step 13 Select the required Cisco MDS NX-OS Release 6.2(x) image file, depending on which you are installing.

You see the Technical Support Encryption Software Export Distribution Authorization form.

Step 14   Complete the required forms to obtain authorization.

Step 15   Download the files to an FTP or TFTP server.

Step 16   Copy the Cisco MDS NX-OS kickstart and system images to the active supervisor module bootflash using FTP or TFTP.

> ✎
>
> **Note**   When you download an image file, change to your FTP environment IP address or DNS name and the path where the files are located.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf3ek9-kickstart-mzg.6.2.9.FM.0.48.bin
bootflash:m9700-sf3ek9-kickstart-mzg.6.2.9.FM.0.48.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf3ek9-mzg.6.2.9.FM.0.48.bin
bootflash:m9700-sf3ek9-mzg.6.2.9.FM.0.48.bin
```

Step 17   Verify that the switch is running the required software version by issuing the **show version** command.

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents:
http://www.cisco.com/en/US/products/ps9372/tsd_products_support_series_home.html
Copyright (c) 2002-2014, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php

Software
  BIOS:      version 3.1.0
  kickstart: version 6.2(7)
  system:    version 6.2(7)
  BIOS compile time:       02/27/2013
  kickstart image file is: bootflash:///m9700-sf3ek9-kickstart-mz.6.2.7.bin
  kickstart compile time:  3/12/2014 18:00:00 [03/30/2014 08:33:12]
  system image file is:    bootflash:///m9700-sf3ek9-mz.6.2.7.bin
  system compile time:     3/12/2014 18:00:00 [03/30/2014 10:17:03]


Hardware
  cisco MDS 9710 (10 Slot) Chassis ("Supervisor Module-3")
  Intel(R) Xeon(R) CPU        with 8120776 kB of memory.
  Processor Board ID JAE1717064T

  Device name: switch
  bootflash:    3915776 kB
  slot0:             0 kB (expansion flash)

Kernel uptime is 0 day(s), 19 hour(s), 43 minute(s), 39 second(s)

Last reset at 254895 usecs after  Sun Mar 30 12:49:01 2014

  Reason: Reset triggered due to Switchover Request by User
  System version: 6.2(7)
  Service: SAP(93): Swover due to install

plugin
  Core Plugin, Ethernet Plugin
```

Step 18 Verify that your switch is running compatible hardware. Refer to the specific version of the *Cisco MDS 9000 Family Release Notes*.

Step 19 Perform the upgrade by issuing the **install all** command.

The following example displays the result of the **install all** command if the system and kickstart files are specified locally. The example shows the command issued on an MDS 9700 Series switch.

```
switch# install all kickstart bootflash:m9700-sf3ek9-kickstart-mz.6.2.9.bin system
bootflash:m9700-sf3ek9-mz.6.2.9.bin

Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9700-sf3ek9-kickstart-mz.6.2.9.bin for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9700-sf3ek9-mz.6.2.9.bin for boot variable "system".
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "slc4xb" version from image bootflash:/m9700-sf3ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9700-sf3ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9700-sf3ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/m9700-sf3ek9-kickstart-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Performing module support checks.


Modules <      > are not supported in target image.
Please, power down the modules before proceeding.
.


Modules <      > are not supported in target image.
Please, power down the modules before proceeding.

Modules <> are not supported in target image.
Please, power down the modules before proceeding.
.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable        Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive       rolling
     5       yes  non-disruptive         reset
     6       yes  non-disruptive         reset
     9       yes  non-disruptive       rolling
```

```
Images will be upgraded according to following table:
Module       Image                    Running-Version(pri:alt)        New-Version
Upg-Required
------  ----------  --------------------------------------  --------------------
------------
    1      slc4xb                                    6.2(1)            6.2(9)
yes
    1       bios   v1.10.21(11/26/12):  v1.10.21(11/26/12)   v1.10.21(11/26/12)
no
    5      system                                    6.2(1)            6.2(9)
yes
    5     kickstart                                  6.2(1)            6.2(9)
yes
    5       bios   v3.1.0(02/27/2013):v3.1.0(02/27/2013)   v3.1.0(02/27/2013)
no
    6      system                                    6.2(1)            6.2(9)
yes
    6     kickstart                                  6.2(1)            6.2(9)
yes
    6       bios   v3.1.0(02/27/2013):v3.1.0(02/27/2013)   v3.1.0(02/27/2013)
no
    9      slc4xb                                    6.2(1)            6.2(9)
yes
    9       bios   v1.10.21(11/26/12):  v1.10.21(11/26/12)   v1.10.21(11/26/12)
no


Additional info for this installation:
-------------------------------------

Modules <      > are not supported in target image.
Please, power down the modules before proceeding.

Modules <> are not supported in target image.
Please, power down the modules before proceeding.


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9700-sf3ek9-kickstart-mz.6.2.9.bin to standby.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9700-sf3ek9-mz.6.2.9.bin to standby.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 5: Refreshing compact flash and upgrading bios/loader/bootrom.
```

Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 6.x

```
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 6: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 9: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
2014 Jun 30 11:55:50 switch %$ VDC-1 %$ %PLATFORM-2-MOD_REMOVE: Module 6 removed (Serial
number JAE171008AY)
2014 Jun 30 11:58:01 switch %$ VDC-1 %$ %USBHSD-STANDBY-2-MOUNT: logflash: online

Module 6: Waiting for module online.
 -- SUCCESS

Notifying services about the switchover.
[####################] 100% -- SUCCESS


"Switching over onto standby".
[ 1811.402498]  writing reset reason 7, SAP(93): Swover due to install
```

> ✎
>
> **Note** At this point, the standby supervisor reboots.

```
NX7k SUP BIOS version ( 3.01 ) : Build - 02/26/2013 14:16:20
PM FPGA Version : 0x00000013
Power sequence microcode revision - 0x00000001 : card type - f10156EEA0
Booting Spi Flash : Primary
  CPU Signature - 0x000106e4: Version - 0x000106e0
  CPU - 1 : Cores - 4 : HTEn - 1 : HT - 2 : Features - 0xbfebfbff
  FSB Clk - 532 Mhz :  Freq - 2150 Mhz - 2128 Mhz
  MicroCode Version : 0x00000002
  Memory - 8192 MB : Frequency - 1067 MHZ
  Loading Bootloader: Done
  IO FPGA Version   : 0x10001
  PLX Version       : 861910b5
Bios digital signature verification - Passed

Reset Reason Registers: 0x0 0x8
 Filesystem type is ext2fs, partition type 0x83


            GNU GRUB  version 0.97

Autobooting bootflash:/m9700-sf3ek9-kickstart-mz.6.2.9.bin bootflash:/m9700-sf3
ek9-mz.6.2.9.bin...
 Filesystem type is ext2fs, partition type 0x83
Booting kickstart image: bootflash:/m9700-sf3ek9-kickstart-mz.6.2.7.bin....
..............................................................................
.......................................
Kickstart digital signature verification Successful
Image verification OK

INIT: version 2
boot device node /dev/sda
obfl flash device node /dev/sdb
log flash device node /dev/sdc
Checking obfl filesystem.r
Checking all filesystems..r.r.r.. done.
Mounting Log Dir /logflash
```

```
mounting Log 0
rrLoading system software
/bootflash//m9700-sf3ek9-mz.6.2.9.bin read done
System image digital signature verification successful.
Uncompressing system image: bootflash:/m9700-sf3ek9-mz.6.2.9.bin Sun Jun 30 11:57:36 UTC
2014
blogger: nothing to do.
C
..done Sun Jun 30 11:57:39 UTC 2014
Load plugins that defined in image conf: /isan/plugin_img/img.conf
Loading plugin 0: core_plugin...
num srgs 1
0: swid-core-sup3dc3mds, swid-core-sup3dc3mds
num srgs 1
0: swid-sup3dc3mds-ks, swid-sup3dc3mds-ks
INIT: Entering runlevel: 3

2014 Mar 30 11:58:01 switch %USBHSD-2-MOUNT: logflash: online

Continuing with installation, please wait

Module 6: Waiting for module online.
 -- SUCCESS
2014 Jun 30 11:59:38 switch Jun 30 11:59:37 %KERN-2-SYSTEM_MSG: [  196.786053] Switchover
started by redundancy driver - kernel
2014 Jun 30 11:59:38 switch %SYSMGR-2-HASWITCHOVER_PRE_START: This supervisor is becoming
active (pre-start phase).
2014 Jun 30 11:59:38 switch %SYSMGR-2-HASWITCHOVER_START: Supervisor 6 is becoming active.
2014 Jun 30 11:59:39 switch %SYSMGR-2-SWITCHOVER_OVER: Switchover completed.
2014 Jun 30 12:01:53 switch %USBHSD-STANDBY-2-MOUNT: logflash: online

Module 1: Non-disruptive upgrading.
[####################] 100% -- SUCCESS

Module 9: Non-disruptive upgrading.
[####################] 100% -- SUCCESS

Install has been successful.

User Access Verification
switch login:
```

If the configuration meets all guidelines when the **install all** command is issued, all modules (supervisor and switching) are upgraded.

Open a new terminal session to view the upgraded supervisor module using the **show module** command. Refer to the "Managing Modules" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

```
switch# show module
Mod   Ports  Module-Type                           Model              Status
---   -----  ----------------------------------    -----------------  ----------
1     48     10 Gbps FCoE Module                    DS-X9848-480K9     ok
3     48     2/4/8/10/16 Gbps Advanced FC Module    DS-X9448-768K9     ok
5     0      Supervisor Module-3                     DS-X97-SF1-K9      active *
6     0      Supervisor Module-3                     DS-X97-SF1-K9      ha-standby

Mod   Sw             Hw
---   -------------  ------
1     6.2(9)         0.110
3     6.2(9)         1.1
5     6.2(9)         1.0
6     6.2(9)         1.0
```

```
Mod  MAC-Address(es)                        Serial-Num
---  -------------------------------------  ----------
1    84-78-ac-1b-7f-90 to 84-78-ac-1b-7f-c3  JAF1718AAAP
3    0c-68-03-28-0d-b4 to 0c-68-03-28-0d-b7  JAE172009W3
5    1c-df-0f-78-d5-98 to 1c-df-0f-78-d5-aa  JAE1714009H
6    0c-68-03-28-6e-b1 to 0c-68-03-28-6e-c3  JAE17240CP3


Mod  Online Diag Status
---  ------------------
1    Pass
3    Pass
5    Pass
6    Pass


Xbar Ports  Module-Type                          Model              Status
---  -----  -----------------------------------  -----------------  ----------
1    0      Fabric Module 1                      DS-X9710-FAB1      ok
2    0      Fabric Module 1                      DS-X9710-FAB1      ok
3    0      Fabric Module 1                      DS-X9710-FAB1      ok


Xbar Sw             Hw
---  -------------- ------
1    NA             1.1
2    NA             1.1
3    NA             1.1

switch#
```

You have now upgraded the Cisco MDS NX-OS software in your existing switch.

Upgrading to Cisco NX-OS Release 6.2(x) on an MDS 9500 Series Switch

Note Use the console connection for firmware upgrades. Be aware that if you are upgrading through the management interface, you must have a working connection to both supervisors, as this process causes a switchover and the current standby supervisor will be active after the upgrade

To upgrade your switch to use the latest Cisco MDS NX-OS software on your Cisco MDS 9500 Series switch, follow these steps:

Step 1 Log in to Cisco.com to access the links provided in this document. To log in to Cisco.com, go to the URL http://www.cisco.com/ and click **Log In** at the top of the page. Enter your Cisco Systems user name and password.

Note Unregistered Cisco.com users cannot access the links provided in this document.

Step 2 Verify the following physical connections for the new Cisco MDS 9500 Family switch:

- The console port is physically connected to a computer terminal (or terminal server).

- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or router.

These procedures are specified in the hardware installation guide for the required product. Refer to the *Cisco MDS 9000 Family Hardware Installation Guides* to obtain more information.

Step 3 Log in to the switch.

Step 4 Issue the **copy running-config startup-config** command to store your current running configuration. You can also create a backup of your existing configuration to a file by issuing the **copy running-config bootflash:backup_config.txt** command. Refer to the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

Step 5 Verify that the requested license files installed in the switch are displayed in response to the **show license usage** command.

> ✎
>
> **Note** The switch is initially shipped with the required licenses installed in the system; however, the initial license file will not cover unlicensed features that may be used during the grace period. Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*. If no license is displayed at this point, perform Step 6 and Step 7 to install the required licenses. If the required licenses are displayed at this point, skip Step 6 and Step 7 and move to Step 8.

The example CLI output for a valid license follows:

```
switch# show license usage
Feature              Insta License Status Expiry Date Comments
                     lled  Count
--------------------------------------------------------------------------------
FM_SERVER_PKG        Yes     -   Unused never      -
MAINFRAME_PKG        Yes     -   Unused never      -
ENTERPRISE_PKG       Yes     -   In use never      -
SAN_EXTN_OVER_IP     Yes     1   Unused never      -
--------------------------------------------------------------------------------
```

The example CLI output for licenses with expiring grace periods follows:

```
switch# show license usage
Feature              Insta License Status Expiry Date Comments
                     lled  Count
--------------------------------------------------------------------------------
FM_SERVER_PKG        No      -   In use            Grace Period 78days 5hrs
MAINFRAME_PKG        No      -   Unused            -
ENTERPRISE_PKG       No      -   In use            Grace Period 88days 5hrs
SAN_EXTN_OVER_IP     No      0   Unused            -
--------------------------------------------------------------------------------
```

Step 6 Install licenses (if necessary) to ensure that the required features are available on the switch. Perform the following steps:

a. Use the **show license host-id** command to obtain the serial number for your switch. The host ID is also referred to as the switch serial number.

```
switch# show license host-id
License hostid: VDH=FOX064317SQ
```

> 🔍
>
> **Tip** Use the entire ID that appears after the colon (:) sign. In this example, the host ID is VDH=FOX064317SQ

b. Obtain your Claim Certificate or the Proof of Purchase document. This document accompanies every Cisco MDS switch.

c. Locate the Product Authorization Key (PAK) from the Claim Certificate or Proof of Purchase document.

d. Locate the website URL from the Claim Certificate or Proof of Purchase document.

e. Access the specified URL that applies to your switch and enter the switch serial number and the PAK. The license key file is sent to you by e-mail. The license key file is digitally signed to only authorize use on the switch for which it was requested. The requested features are also enabled once the NX-OS software on the specified switch accesses the license key file.

⚠️

Caution Install the license file in the specified Cisco MDS 9000 Family switch without making any modifications.

Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*.

Step 7 Install the license key file when you receive it by e-mail. Perform the following steps:

a. Copy the license file to bootflash using TFTP or SCP.

b. Perform the installation by issuing the **install license** command on the active supervisor module from the switch console.

```
switch# install license bootflash:license_file.lic
Installing license ..done
```

✎

Note If you provide a target name for the license key file, the file is installed with the specified name. Otherwise, the file name specified in the license key file is used to install the license.

c. Exit the switch console.

Refer to the *Cisco MDS 9000 Family NX-OS Licensing Guide*.

Step 8 Ensure that the required space is available in the bootflash: directory for the image file(s) to be copied using the **dir bootflash:** command. Use the **delete bootflash:***filename* command to remove unnecessary files.

✎

Note Before downloading and installing Cisco NX-OS software, verify that the release is supported by your Cisco System MDS reseller. If you purchased support through a Cisco Systems reseller, contact them directly for more information. Otherwise, contact Cisco Technical support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

```
switch# dir bootflash:
290     Nov 12 03:16:15 2013  MDS20131111221034113.lic
11361    Feb 05 06:14:55 2014  ioa
      290     Nov 12 03:17:46 2013  ioa_18_4.lic
   21049856    Dec 02 05:47:40 2013  kick_s46
      49152    Feb 03 06:50:00 2014  lost+found/
    1968553    Sep 23 09:30:04 2013  m9500-sf2ek9-dplug-mzg.5.2.6b.bin
    1912246    Sep 02 10:40:58 2013  m9500-sf2ek9-dplug-mzg.6.2.5.bin
    1912440    Nov 17 18:01:45 2013  m9500-sf2ek9-dplug-mzg.6.2.7.FM.0.18.bin.S
   21049344    Feb 05 08:58:34 2014  m9500-sf2ek9-kickstart-mz-npe.6.2.5.bin
   21049344    Jan 31 07:53:54 2014  m9500-sf2ek9-kickstart-mz.6.2.5.bin
   20973056    Feb 03 05:13:24 2014  m9500-sf2ek9-kickstart-mz.6.2.6.27.bin
   20972032    Feb 03 06:45:38 2014  m9500-sf2ek9-kickstart-mz.6.2.6.32.bin
  171299932    Feb 05 09:01:31 2014  m9500-sf2ek9-mz-npe.6.2.5.bin
  171301634    Jan 31 07:55:25 2014  m9500-sf2ek9-mz.6.2.5.bin
  172971570    Feb 03 05:18:23 2014  m9500-sf2ek9-mz.6.2.6.27.bin
  172989526    Feb 03 06:47:53 2014  m9500-sf2ek9-mz.6.2.6.32.bin
```

```
    102339    Feb 05 09:11:08 2014  mts.log
     28940    Nov 25 03:38:32 2013  new
      8453    Nov 25 09:27:26 2013  span.log

Usage for bootflash://sup-local

Usage for bootflash://sup-local
  122811392 bytes used
   61748224 bytes free
  184559616 bytes total
```

Step 9 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del m9500-sf2ek9-kickstart-mz.6.2.6.27.bin
switch# del m9500-sf2ek9-mz-npe.6.2.5.bin
```

Step 10 Verify that there is space available on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch.

```
switch# attach mod x ( where x is the module number of the standby supervisor )
switch(standby)# dir bootflash:
      12288    Aug 26 19:06:14 2011 lost+found/
   16206848    Jul 01 10:54:49 2011 m9500-sf2ek9-kickstart-mz.6.2.5.bin
   16604160    Jul 01 10:20:07 2011 m9500-sf2ek9-kickstart-mz.6.2.5c.bin
   78337129    Jul 01 10:33:52 2011 m9500-sf2ek9-mz.6.2.1.bin
   78718938    Jul 01 10:18:09 2011 m9500-sf2ek9-mz.6.2.1c.bin

Usage for bootflash://sup-local
  122811392 bytes used
   61748224 bytes free
  184559616 bytes total

switch(standby)# exit ( to return to the active supervisor )
```

Step 11 If you need more space on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch, delete unnecessary files to make space available.

```
switch(standby)# del bootflash: m9500-sf2ek9-kickstart-mz.6.2.5.bin
switch(standby)# del bootflash:m9500-sf2ek9-mz.6.2.5.bin
```

Step 12 Access the Software Download Center using this URL:

http://www.cisco.com/cisco/software/navigator.html

If prompted to log in, use your Cisco system user ID and password.

Step 13 Select the required Cisco MDS NX-OS Release 6.2(x) image file, depending on which you are installing.

You see the Technical Support Encryption Software Export Distribution Authorization form.

Step 14 Complete the required forms to obtain authorization.

Step 15 Download the files to an FTP or TFTP server.

Step 16 Copy the Cisco MDS NX-OS kickstart and system images to the active supervisor module bootflash using FTP or TFTP.

> **Note** When you download an image file, change to your FTP environment IP address or DNS name and the path where the files are located.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-kickstart-mz.6.2.x.bin
bootflash:m9500-sf2ek9-kickstart-mz.6.2.x.bin
```

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-mz.6.2.x.bin
bootflash:m9500-sf2ek9-mz.6.2.x.bin
```

Step 17 Verify that the switch is running the required software version by issuing the **show version** command.

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2013, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 1.0.10
  loader:    version N/A
  kickstart: version 6.2(5)
  system:    version 6.2(5)
  BIOS compile time:       01/08/09
  kickstart image file is: bootflash:///m9500-sf2ek9-kickstart-mz.6.2.5.bin
  kickstart compile time:  11/25/2013 9:00:00 [01/30/2014 05:33:20]
  system image file is:    bootflash:///m9500-sf2ek9-mz.6.2.5.bin
  system compile time:     11/25/2013 9:00:00 [01/30/2014 07:10:42]


Hardware
  cisco MDS 9509 (9 Slot) Chassis ("Supervisor/Fabric-2a")
  Motorola, 7447A, altivec  with 2071288 kB of memory.
  Processor Board ID JAF1625BAES

  Device name: switch
  bootflash:   1000944 kB
  slot0:            0 kB (expansion flash)
......
```

Step 18 Verify that your switch is running compatible hardware. Refer to the specific version of the *Cisco MDS 9000 Family Release Notes*.

Step 19 Perform the upgrade by issuing the **install all** command.

The following example displays the result of the **install all** command if the system and kickstart files are specified locally. The example shows the command issued on an MDS 9500 Series switch.

```
switch# install all kickstart m9500-sf2ek9-kickstart-mz.6.2.9.bin system
m9500-sf2ek9-mz.6.2.9.bin ssi m9000-ek9-ssi-mz.6.2.9.bin

Copying image from bootflash:/m9000-ek9-ssi-mz.6.2.9.bin to
modflash://3-1/m9000-ek9-ssi-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Copying image from bootflash:/m9000-ek9-ssi-mz.6.2.9.bin to
modflash://4-1/m9000-ek9-ssi-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Verifying image modflash://3-1/m9000-ek9-ssi-mz.6.2.9.bin for boot variable "ssi".
[####################] 100% -- SUCCESS

Verifying image modflash://4-1/m9000-ek9-ssi-mz.6.2.9.bin for boot variable "ssi".
[####################] 100% -- SUCCESS
```

```
Verifying image bootflash:/m9500-sf2ek9-kickstart-mz.6.2.9.bin for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9500-sf2ek9-mz.6.2.9.bin for boot variable "system".
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "slcdce-mds" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "ips16" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "18_4" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/m9500-sf2ek9-kickstart-mz.6.2.5.bin.
[####################] 100% -- SUCCESS

Extracting "slc4" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc4" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc4" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "slc4" version from image bootflash:/m9500-sf2ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS
```

Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 6.x

```
Compatibility check is done:
Module  bootable         Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive       rolling
     2       yes  non-disruptive       rolling
     3       yes      disruptive       rolling  Hitless upgrade is not supported
     4       yes  non-disruptive       rolling
     6       yes  non-disruptive       rolling
     7       yes  non-disruptive         reset
     8       yes  non-disruptive         reset
     9       yes  non-disruptive       rolling
    10       yes  non-disruptive       rolling
    11       yes  non-disruptive       rolling
    12       yes  non-disruptive       rolling
    13       yes  non-disruptive       rolling


Other miscellaneous information for installation:
Module  info
------  ----------------------------------
     3  Hitless upgrade is not supported
     4  FC ports 1-18 are hitless, GigE 1-4 are hitful, and Intelligent Applications
running are hitful


Images will be upgraded according to following table:
Module      Image                 Running-Version(pri:alt)         New-Version
Upg-Required
------  ----------  --------------------------------------  --------------------
------------
     1  slcdce-mds                                  5.2(8b)              6.2(9)
yes
     1       bios  v1.10.21(11/26/12): v1.10.21(11/26/12)  v1.10.21(11/26/12)
no
     2       slc2                                   5.2(8b)              6.2(9)
yes
     2       bios   v1.0.19(02/01/10): v1.0.19(02/01/10)   v1.0.19(02/01/10)
no
     3       slc2                                   5.2(8b)              6.2(9)
yes
     3      ips16                                   5.2(8b)              6.2(9)
yes
     3        ssi                                   5.2(8b)              6.2(9)
yes
     3       bios   v1.0.19(02/01/10): v1.0.19(02/01/10)   v1.0.19(02/01/10)
no
     4       slc2                                   5.2(8b)              6.2(9)
yes
     4       18_4                                   5.2(8b)              6.2(9)
yes
     4        ssi                                   5.2(8b)              6.2(9)
yes
     4       bios   v1.0.19(02/01/10): v1.0.19(02/01/10)   v1.0.19(02/01/10)
no
     6       slc2                                   5.2(8b)              6.2(9)
yes
     6       bios   v1.0.19(02/01/10): v1.0.19(02/01/10)   v1.0.19(02/01/10)
no
     7     system                                   5.2(8b)              6.2(9)
yes
     7   kickstart                                  5.2(8b)              6.2(9)
yes
```

```
    7       bios    v1.0.10(01/08/09):  v1.0.10(01/08/09)    v1.0.10(01/08/09)
no
    8      system                                 5.2(8b)              6.2(9)
yes
    8   kickstart                                 5.2(8b)              6.2(9)
yes
    8       bios    v1.0.10(01/08/09):  v1.0.10(01/08/09)    v1.0.10(01/08/09)
no
    9       slc4                                  5.2(8b)              6.2(9)
yes
    9       bios    v1.10.21(11/26/12): v1.10.21(11/26/12)   v1.10.21(11/26/12)
no
   10       slc2                                  5.2(8b)              6.2(9)
yes
   10       bios    v1.0.19(02/01/10):  v1.0.19(02/01/10)    v1.0.19(02/01/10)
no
   11       slc4                                  5.2(8b)              6.2(9)
yes
   11       bios    v1.10.21(11/26/12): v1.10.21(11/26/12)   v1.10.21(11/26/12)
no
   12       slc4                                  5.2(8b)              6.2(9)
yes
   12       bios    v1.10.21(11/26/12): v1.10.21(11/26/12)   v1.10.21(11/26/12)
no
   13       slc4                                  5.2(8b)              6.2(9)
yes
   13       bios    v1.10.21(11/26/12): v1.10.21(11/26/12)   v1.10.21(11/26/12)
no


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9500-sf2ek9-kickstart-mz.6.2.9.bin to standby.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9500-sf2ek9-mz.6.2.9.bin to standby.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 2: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 3: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 4: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
```

```
Module 6: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 7: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 8: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 9: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 10: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 11: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 12: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 13: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
2014 Jun 30 10:02:24 sw-6x-9513 %PLATFORM-2-MOD_REMOVE: Module 7 removed (Serial number
JAF1626AKKQ)

Module 7: Waiting for module online.
-- SUCCESS

Notifying services about the switchover.
[####################] 100% -- SUCCESS


"Switching over onto standby".
```

> **Note** At this point, the standby supervisor reboots.

```
Notifying services about the switchover.
[####################] 100% -- SUCCESS
Install has been successful.
```

If the configuration meets all guidelines when the **install all** command is issued, all modules (supervisor and switching) are upgraded.

Open a new terminal session to view the upgraded supervisor module using the **show module** command. Refer to the "Managing Modules" chapter in the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

```
switch# show module
Mod  Ports  Module-Type                          Model              Status
---  -----  ----------------------------------   -----------------  ----------
1    32     1/2/4/8/10 Gbps Advanced FC Module   DS-X9232-256K9     ok
```

```
2    24      1/2/4/8 Gbps FC Module            DS-X9224-96K9    ok
3    22      4x1GE IPS, 18x1/2/4Gbps FC Module DS-X9304-18K9    ok
5    0       Supervisor/Fabric-2a             DS-X9530-SF2AK9   active *
6    0       Supervisor/Fabric-2a             DS-X9530-SF2AK9   ha-standby
7    48      1/2/4/8 Gbps FC Module            DS-X9248-96K9    ok
8    48      1/2/4/8 Gbps FC Module            DS-X9248-48K9    ok
9    8       10 Gbps FCoE Module               DS-X9708-K9      ok


Mod  Sw            Hw      World-Wide-Name(s) (WWN)
---  ------------- ------  --------------------------------------------------
1    6.2(9)        1.1     20:01:54:7f:ee:18:66:00 to 20:20:54:7f:ee:18:66:00
2    6.2(9)        1.6     20:41:54:7f:ee:18:66:00 to 20:58:54:7f:ee:18:66:00
3    6.2(9)        1.7     20:81:54:7f:ee:18:66:00 to 20:92:54:7f:ee:18:66:00
5    6.2(9)        1.4     --
6    6.2(9)        1.4     --
7    6.2(9)        1.6     21:81:54:7f:ee:18:66:00 to 21:b0:54:7f:ee:18:66:00
8    6.2(9)        1.6     21:c1:54:7f:ee:18:66:00 to 21:f0:54:7f:ee:18:66:00
9    6.2(9)        0.109   --


Mod  MAC-Address(es)                       Serial-Num
---  ------------------------------------  ----------
1    50-3d-e5-9e-f2-f8 to 50-3d-e5-9e-f2-fb JAF1539CEQS
2    c8-4c-75-b1-64-04 to c8-4c-75-b1-64-07 JAF1550CCHS
3    00-0d-ec-77-54-dc to 00-0d-ec-77-54-e3 JAF1625BDKN
5    c8-9c-1d-41-a1-ec to c8-9c-1d-41-a1-ef JAF1625BAES
6    d0-d0-fd-1d-e0-58 to d0-d0-fd-1d-e0-5b JAF1625BAET
7    00-0d-ec-77-4c-d8 to 00-0d-ec-77-4c-db JAF1624ASAS
8    c8-4c-75-b1-3d-98 to c8-4c-75-b1-3d-9b JAF1549BMSF
9    68-ef-bd-a8-39-0c to 68-ef-bd-a8-39-1f JAF1444AGNQ
```

You have now upgraded the Cisco MDS NX-OS software in your existing switch.

Upgrading to Cisco NX-OS Release 6.2(9) on the MDS 9250i Switch

To upgrade to Cisco NX-OS Release 6.2(7) on an Cisco MDS 9250i switch, follow these steps:

Step 1 Verify that the system image files for the upgrade are present on the active supervisor module bootflash:.

```
switch# dir bootflash:
      4096    Jan 12 09:05:55 2001  .partner/
       692    Feb 06 18:22:33 2001  abc.lic
   2155240    Apr 17 10:18:30 2001  d
   2155240    Mar 21 15:33:26 2014  d1
   2155240    Mar 18 10:15:41 2014  dplug627
  20090368    Apr 06 05:25:31 2001  m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
  20044800    Mar 30 15:42:05 2014  m9250-s5ek9-kickstart-mz.6.2.5.bin
 107197681    Apr 06 05:26:53 2001  m9250-s5ek9-mz.6.2.5.bin.S68
 107587249    Mar 30 15:42:52 2014  m9250-s5ek9-mz.6.2.5.bin
     29714    Mar 30 16:20:21 2014  mts.log
   2855303    Mar 30 14:14:36 2014  runn-fc
   2855147    Mar 26 15:05:30 2014  runn-mar26
   2777996    Mar 27 07:07:46 2014  runn-mar27
   2855147    Mar 27 04:51:08 2014  runn-mar27-preRel
   2777996    Mar 27 06:22:29 2014  runn-mar27-preRel-wozone
 Usage for bootflash://sup-local
 236338292 bytes used
```

```
          142984076 bytes free
          379322368 bytes total
```

Step 2   If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL: http://www.cisco.com/cisco/software/navigator.html

> **Note**   If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 and Step 4.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9250-s5ek9-kickstart-mz.6.2.9.bin
bootflash:m9250-s5ek9-kickstart-mz.6.2.9.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9250-s5ek9-mz.6.2.9.bin
bootflash:m9250-s5ek9-mz.6.2.9.bin
```

Step 3   Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
        096    Jan 12 09:05:55 2001  .partner/
             692     Feb 06 18:22:33 2001  abc.lic
         2155240     Apr 17 10:18:30 2001  d
         2155240     Mar 21 15:33:26 2014  d1
         2155240     Mar 18 10:15:41 2014  dplug627
        20090368     Apr 06 05:25:31 2001  m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
        20044800     Mar 30 15:42:05 2014  m9250-s5ek9-kickstart-mz.6.2.7.bin
       107197681     Apr 06 05:26:53 2001  m9250-s5ek9-mz.6.2.5.bin.S68
       107587249     Mar 30 15:42:52 2014  m9250-s5ek9-mz.6.2.7.bin
           29714     Mar 30 16:20:21 2014  mts.log
Usage for bootflash://sup-local
  120695976 bytes used
   63863640 bytes free
  184559616 bytes total
```

Step 4   If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del bootflash:m9250-s5ek9-kickstart-mz.6.2.5.bin.S60
switch# del bootflash:m9250-s5ek9-kickstart-mz.6.2.5.bin.S16
```

Step 5   Save the configuration using the **copy running-config startup-config** command.

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

You can also create a backup of your existing configuration to a file by issuing the **copy running-config bootflash:backup_config.txt** command. You might want to add a date reference to the .txt file name to identify the file at a later date.

Step 6   Perform the upgrade by issuing the **install all** command.

```
switch# install all kickstart bootflash:m9250-s5ek9-kickstart-mz.6.2.9.bin system
bootflash:m9250-s5ek9-mz.6.2.9.bin
Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9250-s5ek9-kickstart-mz.6.2.9.bin for boot variable
"kickstart".
[###################] 100% -- SUCCESS

Verifying image bootflash:/m9250-s5ek9-mz.6.2.9.bin for boot variable "system".
[###################] 100% -- SUCCESS

Verifying image type.
```

```
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9250-s5ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:/m9250-s5ek9-kickstart-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9250-s5ek9-mz.6.2.9.bin.
[####################] 100% -- SUCCESS

Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable         Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive         reset


Other miscellaneous information for installation:
Module   info
------  --------------------------------
     1  FC ports 1-40 and FCoE ports 1-8 are hitless, IPS 1-2 are hitful, and
Intelligent Applications running are hitful


Images will be upgraded according to following table:
Module       Image                   Running-Version(pri:alt)          New-Version
Upg-Required
------  ----------  ---------------------------------------  --------------------
------------
    1      system                                6.2(5)             6.2(7)
yes
    1   kickstart                                6.2(5)             6.2(7)
yes
    1      bios    v2.1.16(10/24/13):v2.1.16(10/24/13)    v2.1.16(10/24/13)
no


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS
```

```
Module 1: Refreshing compact flash and Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.
[####################] 100% -- SUCCESS

Loading images into memory.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS

Saving mts state.
[####################] 100% -- SUCCESS

Rebooting the switch to proceed with the upgrade.
All telnet and ssh connections will now be temporarily terminated.


>> NX7--LC-loader-02.01.16 (Oct 24 2013 - 16:00:49), Build: 02.01.16

CPU0:  8572E, Version: 2.1, (0x80e80021)
Core:  E500, Version: 3.0, (0x80210030)
Clock Configuration:
       CPU:1066.672 MHz, CCB:533.336 MHz,
       DDR:266.668 MHz (533.336 MT/s data rate), LBC:33.334 MHz
L1:    D-cache 32 kB enabled
       I-cache 32 kB enabled
Board: 9044, IOFPGA: 0x0000001A, SPROM: 0xAB
Boot flash : Primary
I2C:   ready
DRAM:  Initializing
DDR: dimm type 10, registered 1
DDR: dimm type 10, registered 1
    DDR:  4 GB
L2:    1024 KB enabled
Using default environment

In:    serial
Out:   serial
Err:   serial
Net:   INFO: Net boot mode = 1
INFO: Net boot mode = 1
INFO: Board will come up MGMT interface
INFO: MAC address is: cc:fe:48:4a:5d:f0
 eTSEC2 board phy 3
INFO: Net boot mode = 1
eTSEC2
IDE:   Bus 0: OK
  Device 0: Model: SILICONSYSTEMS UDMA 4GB-4676 Firm: 3.38 Ser#:
CC395293055000066K08
            Type: Hard Disk
            Capacity: 3919.7 MB = 3.8 GB (8027712 x 512)

Booting image bootflash://m9250-s5ek9-kickstart-mz.6.2.9.bin
20044800 bytes read
 NBI at 08000000 size 134217728
```

```
Booting image at addr 0x00800000 ...
Memory <- <0x0 0x0 0x1 0x0> (4096MB)
ethernet0: local-mac-address <- cc:fe:48:4a:5d:f0
ethernet1: local-mac-address <- 00:e0:0c:00:01:fd
ethernet2: local-mac-address <- 00:e0:0c:00:02:fd
CPU clock-frequency <- 0x3f941f80 (1067MHz)
CPU timebase-frequency <- 0x3f941f8 (67MHz)
CPU bus-frequency <- 0x1fca0fc0 (533MHz)

zImage starting: loaded at 0x00800000 (sp: 0x7fedc4d0)
Allocating 0x4d9464 bytes for kernel ...
gunzipping (0x00000000 <- 0x0080f000:0x00ca3b94)...done 0x47a774 bytes
Using loader supplied ramdisk at 0x2700000-0x381de00
initrd head: 0x1f8b0808

Linux/PowerPC load: rw root=/dev/ram0 rdbase=0x7000000 card_index=9044 maxcpus=2
ip=off ramdisk_size=262144 noquiet obfl_type_ide=1 kgdboc=ttyS0,9600,B
softlockup_panic=1 isanimg_loc=0x6000000 isanimg_size=0x400 console=ttyS0,9600n8nn
loader_ver="02.01.16" card_index=9044 quiet bootdev=ide0 server_ip=171.69.21.28
ksimg=/m9250-s5ek9-kickstart-mz.6.2.9.bin isanimg=/m9250-s5ek9-mz.6.2.9.bin
Finalizing device tree... flat tree at 0x80be70
Jumping to kernel at 0
setup_arch: bootmem
mpc85xx_ds_setup_arch()
arch: exit

[    1.523129]  Host controller irq 26
[    1.564310] pci 0000:00:00.0: ignoring class b20 (doesn't match header type 01)
[    1.682586] Assign root port irq 26 for 0000:00:00.0
[    2.013349] Enabling all PCI devices
INIT: Checking all filesystems..... done.
Setting kernel variables done.
Setting the System Clock using the Hardware Clock as reference...System Clock set.
Local time: Sun Mar 30 16:19:10 UTC 2014
Loading system software
Uncompressing system image: bootflash:///m9250-s5ek9-mz.6.2.9.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Load plugins that defined in image conf: /isan/plugin_img/img.conf
Loading plugin 0: core_plugin...
num srgs 1
0: swid-core-s5ek9, swid-core-s5ek9
num srgs 1
0: swid-sup-ali-ks, swid-sup-ali-ks
INIT: Entering runlevel: 3

[   82.969865] clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD
[   83.048376] clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD
2014 Mar 30 16:20:14 switch Mar 30 16:20:14 %KERN-0-SYSTEM_MSG: [    2.013349]
Enabling all PCI devices - kernel
2014 Mar 30 16:20:14 switch Mar 30 16:20:14 %KERN-0-SYSTEM_MSG: [   82.969865]
clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD - kernel
2014 Mar 30 16:20:14 switch Mar 30 16:20:14 %KERN-0-SYSTEM_MSG: [   83.048376]
clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD - kernel
Sysmgr failed to send GET_TIME_OF_DAY Call_cnt= 1 errno= 32
2014 Mar 30 16:20:36 switch %CARDCLIENT-2-REG: OK
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...

Continuing with installation process, please wait.
```

```
The login will be disabled until the installation is completed.

Status for linecard upgrade.
2014 Mar 30 16:21:57 switch %PLATFORM-2-PS_OK: Power supply 1 ok (Serial number
QCS1549K0HU)
2014 Mar 30 16:21:57 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 1 ok
2014 Mar 30 16:21:57 switch %PLATFORM-2-PS_OK: Power supply 2 ok (Serial number
QCS1549K087)
[###################] 100% -- SUCCESS

Performing supervisor state verification.
2014 Mar 30 16:21:57 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 2 ok
2014 Mar 30 16:21:57 switch %PLATFORM-2-PS_OK: Power supply 3 ok (Serial number
QCS1549K0T5)
2014 Mar 30 16:21:57 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 3 ok
2014 Mar 30 16:21:57 switch %PLATFORM-2-FAN_OK_: Fan 1 ok
2014 Mar 30 16:21:57 switch %PLATFORM-2-FAN_OK_: Fan 2 ok
[###################] 100% -- SUCCESS

Install has been successful.

User Access Verification
switch#
```

Step 7   Log in to the switch.

```
MDS Switch
209.165.200.226 login: admin
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2014, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
```

Step 8   Issue the **show version** command.

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents:
http://www.cisco.com/en/US/products/ps9372/tsd_products_support_series_home.html
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other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 2.1.16
  loader:    version N/A
  kickstart: version 6.2(7)
  system:    version 6.2(7)
  BIOS compile time:      10/24/13
  kickstart image file is: bootflash:///m9250-s5ek9-kickstart-mz.6.2.9.bin
  kickstart compile time: 3/12/2014 18:00:00 [03/30/2014 08:26:48]
  system image file is:   bootflash:///m9250-s5ek9-mz.6.2.9.bin
  system compile time:    3/12/2014 18:00:00 [03/30/2014 10:17:45]
```

```
Hardware
  cisco MDS 9250i 40 FC 2 IPS 8 FCoE (1 Slot) Chassis ("40FC+8FCoE+2IPS Supervisor")
  Motorola, e500v2, core 0  with 4155776 kB of memory.
  Processor Board ID JAF1605AMHH

  Device name: switch
  bootflash:    4013856 kB
Kernel uptime is 0 day(s), 16 hour(s), 25 minute(s), 53 second(s)

Last reset at 675523 usecs after  Sun Mar 30 16:18:25 2014

  Reason: Reset due to upgrade
  System version: 6.2(5)
  Service:

plugin
  Core Plugin

switch#
```

Step 9 Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod  Ports  Module-Type                        Model                Status
---  -----  ---------------------------------- -------------------  ----------
1    50     40FC+8FCoE+2IPS Supervisor         DS-C9250I-K9-SUP     active *

Mod  Sw             Hw      World-Wide-Name(s) (WWN)
---  -------------- ------  -------------------------------------------------
1    6.2(7)         0.0     20:01:54:7f:ee:1b:10:20 to 20:28:54:7f:ee:1b:10:20

Mod  MAC-Address(es)                     Serial-Num
---  ----------------------------------- ----------
1    cc-fe-48-4a-5d-f0 to cc-fe-48-4a-5d-ff  JAF1605AMHH

* this terminal session
switch#
```

Upgrading to Cisco NX-OS Release 6.2(x) on the MDS 9222i Switch

To upgrade to Cisco NX-OS Release 6.2(x) on an Cisco MDS 9222i switch, follow these steps:

Step 1 Verify that the system image files for the upgrade are present on the active supervisor module bootflash:.

switch# **dir bootflash**:

```
    12288    Aug 26 19:06:14 2013 lost+found/
  18939904   Jul 01 10:54:49 2013 m9200-sf2ek9-kickstart-mz.6.2.1.bin
  16858624   Jul 01 10:20:07 2013 m9200-sf2ek9-kickstart-mz.6.2.1a.bin
 101756072   Jul 01 10:33:52 2013 m9200-sf2ek9-mz.6.2.1.bin
  95771404   Jul 01 10:18:09 2011 m9200-sf2ek9-mz.5.0.1a.bin
```

Usage for bootflash://sup-local

236338292 bytes used

142984076 bytes free

```
379322368 bytes total
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL:

http://www.cisco.com/cisco/software/navigator.html

> ✎
>
> **Note** If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 and Step 4.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9200-sf2ek9-kickstart-mz.6.2.5.bin
bootflash:m9200-sf2ek9-kickstart-mz.6.2.5.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9200-sf2ek9-mz.6.2.5.bin
bootflash:m9200-sf2ek9-mz.6.2.5.bin
```

Step 3 Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
     12288      Aug 26 19:06:14 2011 lost+found/
   18939904      Jul 01 10:54:49 2011 m9200-sf2ek9-kickstart-mz.5.2.1.bin
  101756072      Jul 01 10:33:52 2011 m9200-sf2ek9-mz.5.2.1a.bin

Usage for bootflash://sup-local
  120695976 bytes used
   63863640 bytes free
  184559616 bytes total
```

Step 4 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del bootflash:m9200-sf2ek9-kickstart-mz.5.2.1a.bin
switch# del bootflash:m9200-sf2ek9-mz.5.2.1a.bin
```

Step 5 Save the configuration using the **copy running-config startup-config** command.

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

You can also create a backup of your existing configuration to a file by issuing the **copy running-config bootflash:backup_config.txt** command. You might want to add a date reference to the .txt file name to identify the file at a later date.

Step 6 Perform the upgrade by issuing the **install all** command.

```
switch# install all system bootflash:m9200-s2ek9-mz.6.2.x.bin.S74 kickstart
bootflash:m9200-s2ek9-kickstart-mz.6.2.x.bin.S74

Verifying image bootflash:/m9200-s2ek9-kickstart-mz.6.2.x.bin.S74 for boot variable
"kickstart".
[###################] 100% -- SUCCESS

Verifying image bootflash:/m9200-s2ek9-mz.6.2.x.bin.S74 for boot variable "system".
[###################] 100% -- SUCCESS
```

```
Verifying image type.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9200-s2ek9-mz.6.2.x.bin.S74.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:/m9200-s2ek9-kickstart-mz.6.2.x.bin.S74.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9200-s2ek9-mz.6.2.x.bin.S74.
[####################] 100% -- SUCCESS

Extracting "slc2" version from image bootflash:/m9200-s2ek9-mz.6.2.x.bin.S74.
[####################] 100% -- SUCCESS

Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable         Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive         reset
     2       yes  non-disruptive       rolling


Other miscellaneous information for installation:
Module  info
------  -----------------------------------
     1  FC ports 1-18 are hitless, GigE 1-4 are hitful, and Intelligent Applications
running are hitful


Images will be upgraded according to following table:
Module       Image                  Running-Version(pri:alt) New-Version  Upg-Required
------  ----------  ---------------------------------------- --------------------------
     1      system                                    5.2(1) 6.2.x       yes
     1   kickstart                                    5.2(1) 6.2.x       yes
     1        bios    v1.0.19(02/01/10): v1.0.19(02/01/10)               no
     2        slc2                                    5.2(1) 6.2.x       yes
     2        bios    v1.0.19(02/01/10): v1.0.19(02/01/10)               no


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS
```

```
Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 2: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.
[####################] 100% -- SUCCESS

Loading images into memory.
[####################] 100% -- SUCCESS

Saving external linecard runtime state.
2011 Aug  1 17:16:56 sw4-qa05 %IMAGE_DNLD-SLOT2-2-IMG_DNLD_STARTED:  Module image download
process. Please wait until completion...
2011 Aug  1 17:17:16 sw4-qa05 %IMAGE_DNLD-SLOT2-2-IMG_DNLD_COMPLETE:  Module image
download process. Download successful.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS

Saving mts state.
[####################] 100% -- SUCCESS

Rebooting the switch to proceed with the upgrade.
All telnet and ssh connections will now be temporarily terminated.
Starting new kernel
Starting kernel...
 Entered kgdb_console_init:1975
INIT: version 2.85 booting
Checking all filesystems..... done.
/etc/rc.d/rcS.d/S30procps: line 34: log_action_begin_msg: command not found
/etc/rc.d/rcS.d/S30procps: line 36: log_action_end_msg: command not found
Setting the System Clock using the Hardware Clock as reference...System Clock set. Local
time: Mon Aug  1 17:17:56 PDT 2011
Loading system software
Uncompressing system image: bootflash:///m9200-s2ek9-mz.6.2.x.bin.S74
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Uncompressing linecard components
INIT: Entering runlevel: 3
Starting NFS servers: nfsd mountd.

2011 Aug  1 17:18:22 sw4-qa05 Aug  1 17:18:22 %KERN-2-SYSTEM_MSG: Starting kernel... -
kernel
2011 Aug  1 17:18:22 sw4-qa05 Aug  1 17:18:22 %KERN-1-SYSTEM_MSG:  Entered
kgdb_console_init:1975 - kernel

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.
2011 Aug  1 17:19:22 sw4-qa05 %PROC_MGR-2-MESG: Entity : (dnld_image) has exited
successfully
```

```
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-PS_FAIL: Power supply 1 failed or shut down
(Serial number )
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-PS_OK: Power supply 2 ok (Serial number
QCS104811U3)
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-PS_FANOK: Fan in Power supply 2 ok
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-FAN_OK: Fan module ok
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-CHASSIS_CLKMODOK: Chassis clock module A ok
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-CHASSIS_CLKMODOK: Chassis clock module B ok
2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-CHASSIS_CLKSRC: Current chassis clock source is
clock-A

Status for linecard upgrade.
[####################] 100% -- SUCCESS

Status for external linecard upgrade.
[####################] 100% -- SUCCESS

Performing supervisor state verification.
[####################] 100% -- SUCCESS

Install has been successful.
```

Step 7   Log in to the switch.

```
MDS Switch
209.165.200.226 login: admin
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2013, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
switch# sh ver
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
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other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.
```

Step 8   Issue the **show version** command.

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_seri
s_home.html
Copyright (c) 2002-2014, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
```

```
  BIOS:      version 1.0.19
  loader:    version N/A
  kickstart: version 6.2(9)
  system:    version 6.2(9)
  BIOS compile time:      02/07/14
  kickstart image file is: bootflash:///m9250-s2ek9-kickstart-mz.6.2.9.bin.S0
  kickstart compile time: 2/3/2014 21:00:00 [02/04/2014 07:07:32]
  system image file is:   bootflash:///m9250-s2ek9-mz.6.2.9.bin.S0
  system compile time: 7/3/2014 21:00:00 [07/04/2014 08:51:15]


Hardware
  cisco MDS 9222i ("4x1GE IPS, 18x1/2/4Gbps FC/Sup2")
  Motorola, e500v2  with 1036300 kB of memory.
  Processor Board ID JAF1643AQJF

  Device name: switch
  bootflash:   1000944 kB
Kernel uptime is 0 day(s), 1 hour(s), 23 minute(s), 46 second(s)

Last reset at 780927 usecs after  Thu Feb  6 08:47:48 2014

  Reason: Reset Requested by CLI command reload
  System version: 6.2(5)
  Service:
switch#
```

Step 9   Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod  Ports  Module-Type                        Model              Status
---  -----  ---------------------------------  -----------------  ------------
1    22     4x1GE IPS, 18x1/2/4Gbps FC/Sup2    DS-C9222I-K9       active *
2    48     1/2/4 Gbps FC Module               DS-X9148           ok

Mod  Sw            Hw      World-Wide-Name(s) (WWN)
---  ------------- ------  ----------------------------------------------------
1    6.2(x)        1.0     20:01:00:0d:ec:34:82:00 to 20:12:00:0d:ec:34:82:00
2    6.2(x)        0.322   20:41:00:0d:ec:34:82:00 to 20:70:00:0d:ec:34:82:00

Mod  MAC-Address(es)                       Serial-Num
---  ------------------------------------  ----------
1    00-17-94-ee-1b-54 to 00-17-94-ee-1b-5c  JAE11430NJM
2    00-14-a9-74-e0-e8 to 00-14-a9-74-e0-ec  JAB093902HZ

* this terminal session
```

Moving From an NPE Image to a non-NPE Image and Vice Versa

The following section describes how to upgrade from a no payload encryption (NPE) image to a non-NPE image and vice versa.

Note
- If the image file name includes *npe* text, the image is an NPE image. If the image file name does not include *npe* text, the image is a non-NPE image.

- If you are moving from using an NPE image to a non-NPE image, we recommend that you use the corresponding non-NPE Cisco MDS NX-OS release image and vice versa.
If you are upgrading from one release of Cisco MDS NX-OS to a newer release, and as part of this activity, you are moving from using an NPE image to a non-NPE image, we recommended that you first upgrade the existing NPE Cisco MDS NX-OS release image and then upgrade to the respective non-NPE Cisco MDS NX-OS release image and vice versa.

- Use the console connection for firmware upgrades. Be aware that if you are upgrading through the management interface, you must have a working connection to both supervisors, as this process causes a switchover and the current standby supervisor will be active after the upgrade.

Step 1 Log in to Cisco.com to access the links provided in this document. To log in to Cisco.com, go to the URL http://www.cisco.com/ and click **Log In** at the top of the page. Enter your Cisco Systems user name and password.

Note Unregistered Cisco.com users cannot access the links provided in this document.

Step 2 Verify the following physical connections for the switch:

- The console port is physically connected to a computer terminal (or terminal server).

- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or router.

- On switches with dual supervisor modules, both supervisor modules must have the management 10/100/1000 Ethernet ports (mgmt0) connected to an external hub, switch, or router.

These procedures are specified in the hardware installation guide for the required product.

Step 3 Log in to the switch.

Step 4 Issue the **copy running-config startup-config** command to store your current running configuration. You can also create a backup of your existing configuration to a file by issuing the **copy running-config bootflash:backup_config.txt** command.

Step 5 Verify that the requested license files installed in the switch are displayed in response to the **show license usage** command.

Note The switch is initially shipped with the required licenses installed in the system; however, the initial license file will not cover unlicensed features that may be used during the grace period. If no license is displayed at this point, perform Step 6 and Step 7 to install the required licenses. If the required licenses are displayed at this point, skip Step 6 and Step 7 and move to Step 8.

The example CLI output for a valid license follows:

```
switch# show license usage
Feature                        Ins  Lic    Status Expiry Date Comments
                                    Count
--------------------------------------------------------------------------------
FM_SERVER_PKG                  No   -      Unused              -
MAINFRAME_PKG                  No   -      Unused              -
ENTERPRISE_PKG                 Yes  -      Unused never        -
--------------------------------------------------------------------------------
```

Step 6 Install licenses (if necessary) to ensure that the required features are available on the switch. Perform the following steps:

   a. Use the **show license host-id** command to obtain the serial number for your switch. The host ID is also referred to as the switch serial number.

```
switch# show license host-id
License hostid: VDH=JAF1721AEQG
```

       Tip Use the entire ID that appears after the colon (:) sign. In this example, the host ID is VDH=JAF1721AEQG.

   b. Obtain your Claim Certificate or the Proof of Purchase document. This document accompanies every Cisco MDS switch.

   c. Locate the Product Authorization Key (PAK) from the Claim Certificate or Proof of Purchase document.

   d. Locate the website URL from the Claim Certificate or Proof of Purchase document.

   e. Access the specified URL that applies to your switch and enter the switch serial number and the PAK. The license key file is sent to you by email. The license key file is digitally signed to authorize its use only on the switch for which it was requested. The requested features are also enabled once the NX-OS software on the specified switch accesses the license key file.

       Caution Install the license file in the specified Cisco MDS 9000 Family switch without making any modifications.

Step 7 Install the license key file when you receive it by email. Perform the following steps:

   a. Copy the license file to bootflash using TFTP or SCP.

   b. Perform the installation by issuing the **install license** command on the active supervisor module from the switch console.

```
switch# install license bootflash:license_file.lic
Installing license ..done
```

       Note If you provide a target name for the license key file, the file is installed with the specified name. Otherwise, the file name specified in the license key file is used to install the license.

   c. Exit the switch console.

Step 8 Ensure that the required space is available in the bootflash: directory for the image file(s) to be copied using the **dir bootflash:** command. Use the **delete bootflash:***filename* command to remove unnecessary files.

> ✎
> **Note**   Before downloading and installing Cisco NX-OS software, verify that the release is supported by your Cisco System MDS reseller. If you purchased support through a Cisco Systems reseller, contact them directly for more information. Otherwise, contact Cisco Technical support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

```
switch# dir bootflash:
37011968    Apr 30 16:10:28 2014  m9500-sf3ek9-kickstart-mz-npe.6.2.1.bin
195875124   Apr 30 12:55:14 2014  m9500-sf3ek9-mz-npe.6.2.1.bin
Usage for bootflash://sup-local
    819736576 bytes used
    75313152 bytes free
    895049728 bytes total
```

Step 9   If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# delete m9500-sf3ek9-kickstart-mz-npe.6.2.1.bin
switch# delete m9500-sf3ek9-mz-npe.6.2.1.bin
```

Step 10   For switches with dual supervisor modules, verify that there is space available on the standby supervisor module bootflash on a switch.

```
switch# attach module x (where x is the module number of the standby supervisor)
switch(standby)# dir bootflash:
      12288     Aug 26 19:06:14 2011 lost+found/

16206848     Jul 01 10:54:49 2011 m9500-sf2ek9-kickstart-mz-npe.6.2.1.bin
   78337129      Jul 01 10:33:52 2011 m9500-sf2ek9-mz-npe.6.2.1.bin

Usage for bootflash://sup-local
  122811392 bytes used
   61748224 bytes free
  184559616 bytes total

switch(standby)# exit (to return to the active supervisor)
```

Step 11   For switches with dual supervisor modules, if you need more space on the standby supervisor module bootflash on a switch, delete unnecessary files to make space available.

```
switch(standby)# delete bootflash:m9500-sf2ek9-kickstart-mz-npe.6.2.1.bin
switch(standby)# delete m9500-sf2ek9-mz-npe.6.2.1.bin
```

Step 12   Access the Software Download Center using this URL:

http://www.cisco.com/cisco/software/navigator.html

If prompted to log in, use your Cisco system user ID and password.

Step 13   Select the same version of the NPE image file or non-NPE image file that the switch is currently running.

You see the Technical Support Encryption Software Export Distribution Authorization form.

Step 14   Complete the required forms to obtain authorization.

Step 15   Download the files to an FTP or TFTP server.

Step 16   Copy the Cisco MDS NX-OS kickstart and system images to the active supervisor module bootflash using FTP or TFTP.

> ✎
> **Note**   When you download an image file, change to your FTP environment IP address or DNS name and the path where the files are located.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-kickstart-mz.6.2.1.bin
bootflash:m9500-sf2ek9-kickstart-mz.6.2.1.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-mz.6.2.1.bin
bootflash:m9500-sf2ek9-mz.6.2.1.bin
```

Step 17 Issue the **boot kickstart bootflash**:*filename* and **boot system bootflash**:*filename* commands to change the boot variables to point to the new image.

```
sw-6x-9509# configure terminal
sw-6x-9509(config)# boot kickstart bootflash:m9500-sf2ek9-kickstart-mz.6.2.1.bin
Performing image verification and compatibility check, please wait....
sw-6x-9509(config)# boot system bootflash:m9500-sf2ek9-mz.6.2.1.bin
Performing image verification and compatibility check, please wait....
```

Step 18 Issue the **show incompatibility-all system** *filename* command to verify any incompatible hardware.

```
sw-6x-9509(config-if)# show incompatibility-all system m9500-sf2ek9-mz.6.2.1.bin
Checking incompatible configuration(s)
No incompatible configurations

Checking dynamic incompatibilities:
----------------------------------
No incompatible configurations
sw-6x-9509(config-if)#
```

Step 19 Save the current running configuration to the startup configuration by issuing the **copy running-config startup-config** command.

```
sw-6x-9509(config)# copy running-config startup-config
[#####################################] 100%
Copy complete.
```

Step 20 Issue the **show boot** command to check the current boot variable.

```
sw-6x-9509(config)# show boot

Current Boot Variables:

sup-1
kickstart variable = bootflash:/ m9500-sf2ek9-kickstart-mz.6.2.1.bin
system variable = bootflash:/ m9500-sf2ek9-mz.6.2.1.bin
sup-2
kickstart variable = bootflash:/ m9500-sf2ek9-kickstart-mz.6.2.1.bin
system variable = bootflash:/ m9500-sf2ek9-mz.6.2.1.bin
No module boot variable set

Boot Variables on next reload:

sup-1
kickstart variable = bootflash:/ m9500-sf2ek9-kickstart-mz.6.2.1.bin
system variable = bootflash:/ m9500-sf2ek9-mz.6.2.1.bin
sup-2
kickstart variable = bootflash:/ m9500-sf2ek9-kickstart-mz.6.2.1.bin
system variable = bootflash:/ m9500-sf2ek9-mz.6.2.1.bin
No module boot variable set
sw-6x-9509(config)#
```

Step 21 Reload the switch by issuing the **reload** command.

```
sw-6x-9509(config)# reload
This command will reboot the system. (y/n)?  [n]
```

You have now upgraded the Cisco MDS NX-OS software in your existing switch.

Downgrading from Cisco NX-OS Release 6.2(x)

Observe these guidelines when downgrading software on Cisco MDS 9148s, 9250i, 9396s, and 9700 Series Director Switches:

- Inserting smartoptics on Cisco MDS 9148s, 9250i, 9396s, and 9700 Series Director Switches running an unsupported Cisco MDS NX-OS Release results in the port moving to error-disabled state.

- Downgrading from Cisco MDS NX-OS Release 6.2(19) to any other unsupported release (higher or lower) on Cisco MDS 9148s, 9250i, 9396s, and 9700 Series Director Switches with smartoptics links that are error disabled will keep the links in the error-disabled state, unless the links are physically removed and inserted to bring the links up.

- Downgrading from Cisco MDS NX-OS Release 6.2(19) to any other unsupported release (higher or lower) on Cisco MDS 9148s, 9250i, 9396s, and 9700 Series Director Switches with smartoptics links up and trunking will keep the links in trunking state.

- If you copy firmware using the SFTP or SCP clients after enabling the **feature scp-server** or **feature sftp-server** command on your switch, ensure that you close the SFTP or SCP connection before performing ISSD. Otherwise, ISSD will be disruptive. This issue is not seen when you transfer files from the switch using the **copy** command or when using the DCNM client.

The following section describes how to downgrade from NX-OS Release 6.2(9) to NX-OS Release 6.2(7), 6.2(5a), 6.2(5), 6.2(3)6.2(1), or 5.2(x).

> **Note** Parallel In-Service Software Downgrade (ISSD) is not recommended on MDS 9148S, MDS 9250i and MDS 9396S fabric switches when these category of fabric switches are peers to each other.

Downgrading from Cisco MDS NX-OS Release 6.2(7) to Cisco MDS NX-OS Release 6.2(5a), 6.2(5), 6.2(3), or 6.2(1)

You must follow these general guidelines before performing a software downgrade from MDS NX-OS Release 6.2(7) to MDS NX-OS Release 6.2(7), 6.2(5a), 6.2(5), 6.2(3), or 6.2(1).

MDS 9700 Series Director with the 48-Port 10-Gigabit Fibre Channel over Ethernet (FCoE) Module and VLAN Configurations

> **Note** You must not perform the Step 2 before Step 1. If you perform Step 2 before Step 1, unexpected events might occur in the switch.

To downgrade from NX-OS Release 6.2(9) from NX-OS Release to Cisco MDS NX-OS Release, 6.2(5a), 6.2(5), 6.2(3), or 6.2(1), follow these steps:

Step 1 You must remove all 48-Port 10-Gigabit FCoE modules from the Cisco MDS 9710 chassis.

Step 2 Use the **purge module running-config** command to remove any FCoE-related configuration from each 48-Port 10-Gigabit FCoE module that is removed.

Step 3 You must remove all VLANs that you have created and verify that no VLAN or VSAN mapping exist on the switch by using the **show vlan** and **show vlan fcoe** command.

Step 4 You must remove all Ethernet Port Channels and verify that no Ethernet Port Channel exists on the switch by using the **show interface brief** and **show ethernet-port-channel database** command.

Step 5   You must remove all virtual Fibre Channels (vFCs) and verify that no vFC exists on the switch by using the **show interface brief** command.

Downgrading from NX-OS Release 6.2(9) to NX-OS Release 6.2(7), 6.2(5a), 6.2(5), 6.2(3), or 6.2(1) on an MDS 9700 Series Director

Use the **install all** command to downgrade the switch and handle configuration conversions. When downgrading any switch in the Cisco MDS 9000 Family, avoid using the **reload** command.

To downgrade from NX-OS Release 6.2(x) from NX-OS Release 6.2(9), follow these steps:

Step 1   Verify that the system image files for the downgrade are present on the active supervisor module bootflash:.

```
switch# dir bootflash:
16384    Mar 13 22:06:41 2014  .fc-pcm-log-5354.swp
  195379283    Mar 29 10:24:59 2014  46_pvt_image.bin
  191117954    Mar 30 11:25:06 2014  47_ps_negative.bin
  195257014    Mar 29 07:30:28 2014  S46_deepak_fib_crash.bin
     4096    Dec 13 07:19:44 2013  _vdc1/
   3383061    Mar 21 04:29:41 2014  d
   3383061    Mar 22 12:20:51 2014  d1
     4096    Feb 11 12:53:22 2014  epld_dir/
   3963713    Mar 22 02:14:25 2014  ethpm.core.gz
   4997021    Mar 21 23:44:53 2014  ethpm.ts
     4096    Dec 26 10:15:18 2013  fcoe_vdc1/
  11870971    Mar 21 23:46:21 2014  lacpa.ts
    284045    Mar 14 15:09:58 2014  libfcscli.so
      232    Sep 10 13:18:19 2013  license.lic
   1718723    Mar 25 19:08:02 2014  logfile.txt
     4096    Mar 30 12:50:24 2014  lost+found/
   3382868    Mar 28 20:56:38 2014  m9700-sf3ek9-dplug-mzg.6.2.9.bin
  36701184    Mar 22 07:14:26 2014  m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60
  36726272    Mar 31 08:16:08 2014  m9700-sf3ek9-kickstart-mz.6.2.3.bin.S16
  36729856    Mar 22 05:53:53 2014  m9700-sf3ek9-kickstart-mz.6.2.5.bin.S68
  36819968    Mar 30 10:24:55 2014  m9700-sf3ek9-kickstart-mz.6.2.9.bin
  36819968    Mar 30 07:26:27 2014  m9700-sf3ek9-kickstart-mz.6.2.9.bin.S47
 180230838    Mar 22 07:19:31 2014  m9700-sf3ek9-mz.6.2.1.bin.S60
 184361989    Mar 31 08:17:24 2014  m9700-sf3ek9-mz.6.2.3.bin.S16
 185116340    Mar 22 05:55:29 2014  m9700-sf3ek9-mz.6.2.5.bin.S68
 191473732    Mar 30 10:27:44 2014  m9700-sf3ek9-mz.6.2.9.bin
 191461839    Mar 30 07:28:01 2014  m9700-sf3ek9-mz.6.2.9.bin.S47
    636324    Mar 21 20:14:53 2014  msgs.log
 191430449    Mar 30 09:37:09 2014  ps_negative.bin
   2887394    Mar 27 20:00:02 2014  runn-fc
   2887386    Mar 29 10:33:51 2014  runn-fc1
   2888147    Mar 30 06:55:55 2014  runn-fc2
   3145515    Mar 24 08:24:36 2014  runn-mar24
   3161689    Mar 26 18:34:36 2014  runn-mar26
    880111    Mar 27 07:07:25 2014  runn-mar27
   3161725    Mar 26 19:47:41 2014  runn-mar27-preRel

Usage for bootflash://sup-local
 2178080768 bytes used
 1562763264 bytes free
 3740844032 bytes total
```

Step 2   If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL:

http://www.cisco.com/cisco/software/navigator.html

> ✎
>
> **Note**   If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 through Step 6.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf3ek9-mz.6.2.5.bin
bootflash:m9700-sf3ek9-kickstart-mz.6.2.7.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf3ek9-mz.6.2.5.bin
bootflash:m9700-sf3ek9-mz.6.2.5.bin
```

Step 3   Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
   3382868    Mar 28 20:56:38 2014  m9700-sf3ek9-dplug-mzg.6.2.7.bin
  36701184    Mar 22 07:14:26 2014  m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60
  36726272    Mar 31 08:16:08 2014  m9700-sf3ek9-kickstart-mz.6.2.3.bin.S16
  36729856    Mar 22 05:53:53 2014  m9700-sf3ek9-kickstart-mz.6.2.5.bin.S68
  36819968    Mar 30 10:24:55 2014  m9700-sf3ek9-kickstart-mz.6.2.5.bin
  36819968    Mar 30 07:26:27 2014  m9700-sf3ek9-kickstart-mz.6.2.7.bin.S47
 180230838    Mar 22 07:19:31 2014  m9700-sf3ek9-mz.6.2.1.bin.S60
 184361989    Mar 31 08:17:24 2014  m9700-sf3ek9-mz.6.2.3.bin.S16
 185116340    Mar 22 05:55:29 2014  m9700-sf3ek9-mz.6.2.5.bin

Usage for bootflash://sup-local
 2178080768 bytes used
 1562763264 bytes free
 3740844032 bytes total
```

Step 4   If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del m9700-sf3ek9-mz.6.2.1.bin.S60
switch# del m9700-sf3ek9-mz.6.2.3.bin.S16
```

Step 5   Verify that there is enough space available for the standby supervisor.

```
switch(standby)# dir bootflash
   3382868    Mar 28 20:56:38 2014  m9700-sf3ek9-dplug-mzg.6.2.7.bin
  36701184    Mar 22 07:14:26 2014  m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60
  36726272    Mar 31 08:16:08 2014  m9700-sf3ek9-kickstart-mz.6.2.3.bin.S16
  36729856    Mar 22 05:53:53 2014  m9700-sf3ek9-kickstart-mz.6.2.5.bin.S68
  36819968    Mar 30 10:24:55 2014  m9700-sf3ek9-kickstart-mz.6.2.7.bin
  36819968    Mar 30 07:26:27 2014  m9700-sf3ek9-kickstart-mz.6.2.7.bin.S47

Usage for bootflash://sup-local
  116188794 bytes used
   68370822 bytes free
  184559616 bytes total
```

Step 6   If you need more space on the standby supervisor module bootflash, delete unnecessary files to make space available.

```
switch(standby)# del m9700-sf3ek9-kickstart-mz.6.2.3.bin.S16
switch(standby)# del m9700-sf3ek9-kickstart-mz.6.2.3.bin.S60
```

Step 7   Issue the **show incompatibility system** *image-filename c*ommand to determine if you need to disable any features not supported by the earlier release.

```
switch# show incompatibility system bootflash:m9700-sf3ek9-dplug-mzg.6.2.7.bin
No incompatible configuration
switch#
```

Step 8 Save the configuration using the **copy running-config startup-config** command.

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

Step 9 Issue the **install all** command to downgrade the software.

```
switch# install all kickstart bootflash:m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60 system
bootflash:m9700-sf3ek9-mz.6.2.1.bin.S60
Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60 for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9700-sf3ek9-mz.6.2.1.bin.S60 for boot variable "system".
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "slc4xb" version from image bootflash:/m9700-sf3ek9-mz.6.2.1.bin.S60.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9700-sf3ek9-mz.6.2.1.bin.S60.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9700-sf3ek9-mz.6.2.1.bin.S60.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:/m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60.
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable         Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive       rolling
     5       yes  non-disruptive         reset
     6       yes  non-disruptive         reset
     9       yes  non-disruptive       rolling



Images will be upgraded according to following table:
Module     Image                 Running-Version(pri:alt)          New-Version
Upg-Required
------  ----------  ----------------------------------------  --------------------
------------
     1    slc4xb                                      6.2(7)               6.2(1)
yes
     1      bios    v1.10.21(11/26/12):v1.10.21(11/26/12)    v1.10.21(11/26/12)
no
```

```
    5       system                                           6.2(7)              6.2(1)
yes
    5   kickstart                                            6.2(7)              6.2(1)
yes
    5        bios     v3.1.0(02/27/2013):v3.1.0(02/27/2013)    v3.1.0(02/27/2013)
no
    6       system                                           6.2(7)              6.2(1)
yes
    6   kickstart                                            6.2(7)              6.2(1)
yes
    6        bios     v3.1.0(02/27/2013):v3.1.0(02/27/2013)    v3.1.0(02/27/2013)
no
    9     slc4xb                                             6.2(7)              6.2(1)
yes
    9        bios     v1.10.21(11/26/12):v1.10.21(11/26/12)    v1.10.21(11/26/12)
no


Do you want to continue with the installation (y/n)?   [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60 to standby.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9700-sf3ek9-mz.6.2.1.bin.S60 to standby.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1:  Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 5:  Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 6:  Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 9:  Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
2014 Mar 30 11:02:48 switch %PLATFORM-2-MOD_REMOVE: Module 5 removed (Serial number
JAE1717064T)

Module 5: Waiting for module online.
 -- SUCCESS

Notifying services about the switchover.
[####################] 100% -- SUCCESS


"Switching over onto standby".
```

> ✎
>
> **Note** At this point, the previously active supervisor module is rebooting after a nondisruptive switchover has taken place. Refer to the *Cisco MDS 9000 Family NX-OS High Availability and Redundancy Configuration Guide*.

> ✎
>
> **Note** At this point, a switchover occurs to the new active supervisor module.

```
>>>
NX7k SUP BIOS version ( 3.01 ) : Build - 02/26/2013 14:16:20
PM FPGA Version : 0x00000013
Power sequence microcode revision - 0x00000001 : card type - f10156EEA0
Booting Spi Flash : Primary
  CPU Signature - 0x000106e4: Version - 0x000106e0
  CPU - 1 : Cores - 4 : HTEn - 1 : HT - 2 : Features - 0xbfebfbff
  FSB Clk - 532 Mhz :  Freq - 2145 Mhz - 2128 Mhz
  MicroCode Version : 0x00000002
  Memory - 8192 MB : Frequency - 1067 MHZ
  Loading Bootloader: Done
  IO FPGA Version    : 0x10001
  PLX Version        : 861910b5
Bios digital signature verification - Passed

Reset Reason Registers: 0x0 0x8
 Filesystem type is ext2fs, partition type 0x83


              GNU GRUB  version 0.97

Autobooting bootflash:/m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60 bootflash:/m9700
-sf3ek9-mz.6.2.1.bin.S60...
 Filesystem type is ext2fs, partition type 0x83
Booting kickstart image: bootflash:/m9700-sf3ek9-kickstart-mz.6.2.1.bin.S60....
.....................................................................
....................................
Kickstart digital signature verification Successful
Image verification OK

INIT: version 2
boot device node /dev/sdb
obfl flash device node /dev/sda
log flash device node /dev/sdc
Checking obfl filesystem.
Checking all filesystems..r.r... done.
Mounting Log Dir /logflash
mounting Log 0
rrLoading system software
/bootflash//m9700-sf3ek9-mz.6.2.1.bin.S60 read done
System image digital signature verification successful.
Uncompressing system image: bootflash:/m9700-sf3ek9-mz.6.2.1.bin.S60 Sun Mar 30 11:04:34
UTC 2014
blogger: nothing to do.
C
..done Sun Mar 30 11:04:37 UTC 2014
Load plugins that defined in image conf: /isan/plugin_img/img.conf
Loading plugin 0: core_plugin...
num srgs 1
0: swid-core-sup3dc3mds, swid-core-sup3dc3mds
num srgs 1
0: swid-sup3dc3mds-ks, swid-sup3dc3mds-ks
```

```
INIT: Entering runlevel: 3

init: MAX_ALLOWED_VDCS= 1

Continuing with installation, please wait

Module 5: Waiting for module online.
 -- SUCCESS
2014 Mar 30 11:06:32 switch %$ VDC-1 %$ Mar 30 11:06:32 %KERN-2-SYSTEM_MSG: [  194.058357]
Switchover started by redundancy driver - kernel
2014 Mar 30 11:06:33 switch %$ VDC-1 %$ %SYSMGR-2-HASWITCHOVER_PRE_START: This supervisor
is becoming active (pre-start phase).
2014 Mar 30 11:06:33 switch %$ VDC-1 %$ %SYSMGR-2-HASWITCHOVER_START: Supervisor 5 is
becoming active.
2014 Mar 30 11:06:34 switch %$ VDC-1 %$ %SYSMGR-2-SWITCHOVER_OVER: Switchover completed.

Module 1: Non-disruptive upgrading.
[####################] 100% -- SUCCESS

Module 9: Non-disruptive upgrading.
[####################] 100% -- SUCCESS

Install has been successful.

User Access Verification
switch# login:
```

Step 10 Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod   Ports   Module-Type                             Model               Status
---   -----   ------------------------------------    ------------------  ----------
1     48      2/4/8/10/16 Gbps Advanced FC Module DS-X9448-768K9      ok
4     48      10 Gbps FCoE Module                     DS-X9848-480K9      ok
5     0       Supervisor Module-3                     DS-X97-SF1-K9       active *
6     0       Supervisor Module-3                     DS-X97-SF1-K9       ha-standby
9     48      2/4/8/10/16 Gbps Advanced FC Module DS-X9448-768K9      ok
10    48      10 Gbps FCoE Module                     DS-X9848-480K9      ok

Mod   Sw             Hw
---   -------------  ------
1     6.2(7)         1.1
4     6.2(7)         0.110
5     6.2(7)         1.0
6     6.2(7)         1.0
9     6.2(7)         1.1
10    6.2(7)         0.110


Mod   MAC-Address(es)                        Serial-Num
---   -------------------------------------  ----------
1     1c-df-0f-79-18-f8 to 1c-df-0f-79-18-fb  JAE17190321
4     84-78-ac-1a-ef-c0 to 84-78-ac-1a-ef-f3  JAF1718AACG
5     1c-df-0f-79-04-cc to 1c-df-0f-79-04-de  JAE1717064T
6     1c-df-0f-78-c4-60 to 1c-df-0f-78-c4-72  JAE171008AY
9     0c-68-03-29-92-e8 to 0c-68-03-29-92-eb  JAE173302WD
10    84-78-ac-1c-1c-2c to 84-78-ac-1c-1c-5f  JAF1718AABT

Mod   Online Diag Status
---   ------------------
1     Pass
4     Pass
5     Pass
6     Pass
```

```
9     Pass
10    Pass

Xbar Ports  Module-Type                         Model              Status
---  -----  ----------------------------------- ------------------ ----------
1    0      Fabric Module 1                     DS-X9710-FAB1      ok
2    0      Fabric Module 1                     DS-X9710-FAB1      ok
4    0      Fabric Module 1                     DS-X9710-FAB1      ok
5    0      Fabric Module 1                     DS-X9710-FAB1      ok

Xbar Sw            Hw
---  ------------- ------
1    NA            1.1
2    NA            1.1
4    NA            1.1
5    NA            1.1


Xbar MAC-Address(es)                        Serial-Num
---  ----------------------------------     ----------
1    NA                                     JAE172008XA
2    NA                                     JAE173407BU
4    NA                                     JAE172008XZ
5    NA                                     JAE171504YJ

* this terminal session
switch#
```

Downgrading from NX-OS Release 6.2(x) to NX-OS Release 5.2(x)

Before performing ISSD from Cisco MDS NX-OS Release 6.2(x) to Cisco MDS NX-OS Release 5.2(x) on Cisco MDS 9500 Series Directors, ensure that the **purge fcdomain fcid vsan** *vsan-id* command is executed on the IOA VSAN.

The following sections describe how to perform downgrades on an MDS 9513 switch:.

To determine whether high bandwidth capability is enabled, issue the **show hardware fabric-mode** command. The following example shows that the higher bandwidth capability has not been activated:

```
switch# show hardware fabric-mode
Fabric mode supports only one configuration of 8G FC modules - 4/44 Host-Optimized 8G FC
module.
switch#
```

The following example shows that the higher bandwidth capability has been activated:

```
switch# show hardware fabric-mode
fabric mode supports FCoE, Gen2 and above linecards
switch#
```

The following sections describe how to perform downgrades on an MDS 9509 and MDS 9506 switch:

The following section describes how to perform a downgrade on an MDS 9250i switch:

- Downgrading from NX-OS Release 6.2(x) to NX-OS Release 5.2(x) on an MDS 9250i Switch, page 84.

For information on supported chassis and modules, refer to "Components Supported" section on page 2. For information on the procedures for installing and upgrading software for Intelligent Storage Services on the Cisco MDS 9000 Family Storage Services Module (SSM), refer to the *Cisco MDS 9000 Family Storage Services Module Software Installation and Upgrade Guide*.

Downgrading from NX-OS Release 6.2(x) to NX-OS Release 5.2(x) on an MDS 9513 Multilayer Director

Use the **install all** command to downgrade the switch and handle configuration conversions. When downgrading any switch in the Cisco MDS 9000 Family, avoid using the **reload** command.

To downgrade from NX-OS Release 6.2(x) from NX-OS Release 5.2(x), follow these steps:

Step 1 Verify that the system image files for the downgrade are present on the active supervisor module bootflash:.

```
switch# dir bootflash:
      12288     Aug 26 19:06:14 2011  lost+found/
   22001152     Jul 01 10:54:49 2011  m9500-sf2ek9-kickstart-mz.5.2.x.bin
   16604160     Jul 01 10:20:07 2011  m9500-sf2ek9-kickstart-mz.5.0.1a.bin
   94175354     Jul 01 10:33:52 2011  m9500-sf2ek9-mz.5.2.x.bin
   78718938     Jul 01 10:18:09 2011  m9500-sf2ek9-mz.5.0.1a.bin

Usage for bootflash://sup-local
  211411892 bytes used
  167810476 bytes free
  379322368 bytes total
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL:

http://www.cisco.com/cisco/software/navigator.html

Note If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 through Step 6.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-kickstart-mz.5.2.1.bin
bootflash:m9500-sf2ek9-kickstart-mz.5.2.1a.bin

switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-mz.5.2.1.bin
bootflash:m9500-sf2ek9-mz.5.2.1.bin
```

Step 3 Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
      12288     Aug 26 19:06:14 2011  lost+found/
   22001152     Jul 01 10:54:49 2011  m9500-sf2ek9-kickstart-mz.5.2.x.bin
   94175354     Jul 01 10:33:52 2011  m9500-sf2ek9-mz.5.2.x.bin

Usage for bootflash://sup-local
  116188794 bytes used
   68370822 bytes free
  184559616 bytes total
```

Step 4   If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del bootflash:m9500-sf2ek9-kickstart-mz.5.0.x.bin
switch# del bootflash:m9500-sf2ek9-mz.5.0.x.bin
```

Step 5   Verify that there is enough space available for the standby supervisor.

```
switch(standby)# dir bootflash:
     12288      Aug 26 19:06:14 2011  lost+found/
  22001152      Jul 01 10:54:49 2011  m9500-sf2ek9-kickstart-mz.5.2.1.bin
  94175354      Jul 01 10:33:52 2011  m9500-sf2ek9-mz.5.2.1.bin

Usage for bootflash://sup-local
  116188794 bytes used
   68370822 bytes free
  184559616 bytes total
```

Step 6   If you need more space on the standby supervisor module bootflash, delete unnecessary files to make space available.

```
switch(standby)# del bootflash:m9500-sf2ek9-kickstart-mz.5.2.x.bin
switch(standby)# del bootflash:m9500-sf2ek9-mz.5.2.x.bin
```

Step 7   Issue the **show incompatibility system** *image-filename* command to determine if you need to disable any features not supported by the earlier release.

```
switch# show incompatibility system bootflash:m9500-sf2ek9-mz.5.2.1.bin
The following configurations on active are incompatible with the system image
1) Service : port-channel , Capability : CAP_FEATURE_AUTO_CREATED_41_PORT_CHANNEL
Description : auto create enabled ports or auto created port-channels are present
Capability requirement : STRICT
Disable command :
1.Disable autocreate on interfaces (no channel-group auto).
2.Convert autocreated port channels to be persistent (port-channel 1 persistent)
...
```

Step 8   Disable any features that are incompatible with the downgrade system image.

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fcip 31
switch(config-if)# no channel-group auto
switch(config-if)# end
switch# port-channel 127 persistent
switch#
```

Step 9   Save the configuration using the **copy running-config startup-config** command.

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

Step 10   Issue the **install all** command to downgrade the software.

```
switch# install all kickstart bootflash:m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74 system
bootflash:m9500-sf2ek9-mz.5.2.1.bin.S74

Verifying image bootflash:/m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74 for boot variable
"kickstart".
[####################] 100% -- SUCCESS
Verifying image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74 for boot variable "system".
[####################] 100% -- SUCCESS
Verifying image type.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
```

```
[####################] 100% -- SUCCESS
Extracting "bios" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "system" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "kickstart" version from image
bootflash:/m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS
Performing module support checks.
[####################] 100% -- SUCCESS
Notifying services about system upgrade.
[####################] 100% -- SUCCESS
Compatibility check is done:
Module  bootable       Impact   Install-type  Reason
------  --------  --------------  ------------  ------
     3      yes  non-disruptive      rolling
     4      yes  non-disruptive      rolling
     5      yes  non-disruptive      rolling
     6      yes  non-disruptive      rolling
     7      yes  non-disruptive        reset
     8      yes  non-disruptive        reset
     9      yes  non-disruptive      rolling
    10      yes  non-disruptive      rolling
    11      yes  non-disruptive      rolling
    12      yes  non-disruptive      rolling
    13      yes  non-disruptive      rolling
Images will be upgraded according to following table:
Module      Image            Running-Version(pri:alt) New-Version Upg-Required
------  ----------  ----------------------------------------- ------------ ------------
     3      slc2                                   6.2(x) 5.2(1)      yes
     3      bios     v1.0.19(02/01/10):  v1.0.19(02/01/10)           no
     4      slc2                                   6.2(x) 5.2(1)      yes
     4      bios     v1.0.17(05/28/09):  v1.0.17(05/28/09)           no
     5      slc2                                   6.2(x)5.2(1)       yes
     5      bios     v1.0.19(02/01/10):  v1.0.19(02/01/10)           no
     6      slc2                                   6.2(x) 5.2(1)      yes
     6      bios     v1.0.19(02/01/10):  v1.0.19(02/01/10)           no
     7    system                                  6.2(x) 5.2(1)      yes
     7  kickstart                                 6.2(x) 5.2(1)      yes
     7      bios     v1.0.10(01/08/09):  v1.0.10(01/08/09)           no
     8    system                                  6.2(x) 5.2(1)      yes
     8  kickstart                                 6.2(x) 5.2(1)      yes
     8      bios     v1.0.10(01/08/09):  v1.0.10(01/08/09)           no
     9      slc2                                   6.2(x) 5.2(1)      yes
     9      bios     v1.0.19(02/01/10):  v1.0.19(02/01/10)           no
    10      slc2                                   6.2(x) 5.2(1)      yes
```

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```
  10       bios    v1.0.19(02/01/10):  v1.0.19(02/01/10)              no
  11       slc2                              6.2(x)  5.2(1)           yes
  11       bios    v1.0.19(02/01/10):  v1.0.19(02/01/10)              no
  12       slc2                              6.2(x)  5.2(1)           yes
  12       bios    v1.0.19(02/01/10):  v1.0.19(02/01/10)              no
  13       slc2                              6.2(x)  5.2(1)           yes
  13       bios    v1.0.15(07/16/08):  v1.0.15(07/16/08)              no
Do you want to continue with the installation (y/n)?  [n] y
Install is in progress, please wait.
Performing runtime checks.
[####################] 100% -- SUCCESS
Syncing image bootflash:/m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74 to standby.
[####################] 100% -- SUCCESS
Syncing image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74 to standby.
[####################] 100% -- SUCCESS
Setting boot variables.
[####################] 100% -- SUCCESS
Performing configuration copy.
[####################] 100% -- SUCCESS
Module 3: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 4: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 5: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 6: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 7: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 8: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 9: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 10: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 11: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 12: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 13: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
2011 Aug  2 00:56:32 sw86 %PLATFORM-2-MOD_REMOVE: Module 8 removed (Serial number
JAF1421FKAS)
Module 8: Waiting for module online.
 -- SUCCESS
```

✎

Note   At this point, the previously active supervisor module is rebooting after a nondisruptive switchover has taken place. Refer to the *Cisco MDS 9000 Family NX-OS High Availability and Redundancy Configuration Guide*.

```
>> MDS-Bootloader-01.00.06 (Jun 14 2011 - 15:04:07) (MPC7447A)

INFO: Booting off primary flash.
CPU:   MPC7447A v1.1 @ 1411 MHz
DRAM: SPD Checksum ok!
SPD Checksum ok!
-- DIMM1 has 1 banks
-- DIMM2 has 1 banks
ECC Initialization of Bank 0: Done
ECC Initialization of Bank 1: Done
CAS Latency = 2.5 tRP = 3 tRAS = 7 tRCD=3
Total SDRAM memory is 1024 MB
40000000
INFO: SDRAM tests PASSED.
PCI 0 bus mode: Conventional PCI
PCI 1 bus mode: Conventional PCI
L2 Cache Initialization.

Internal SRAM ECC Initialization: Done
IDE:   Bus 0: OK Bus 1: OK
  Device 0: Model: TOSHIBA THNCF1G02DG Firm:  Ser#: TSBC1G0207627A79490A
            Type: Hard Disk
            Capacity: 976.9 MB = 0.9 GB (2000880 x 512)
  Device 3: Model: SanDisk SDCFB-64 Firm: Vdg 1.21 Ser#: 02220224946
            Type: Removable Hard Disk
            Capacity: 61.2 MB = 0.0 GB (125440 x 512)

Booting bootflash:/m9500-sf2ek9-kickstart-mz.5.0.1a.bin ...
...............
Automatic boot of image at addr 0x00000000 ...
Starting kernel...
INIT: version 2.78 booting
Checking all filesystems..r.r.r.r. done.


pwck: no changes
Loading system software
Uncompressing system image: bootflash:/m9500-sf2ek9-mz.5.0.1a.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCC
INIT: Entering runlevel: 3
```

✎
Note At this point, a switchover occurs to the new active supervisor module.

```
...
Install has been successful.

User Access Verification

209.165.200.226 login: admin
Password:
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software may be covered under the GNU Public
License or the GNU Lesser General Public License. A copy of
each such license is available at
```

```
http://www.gnu.org/licenses/gpl.html and
http://www.gnu.org/licenses/lgpl.html
```

Step 11 Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------  -----------------  -----------
1    12     1/2/4 Gbps FC Module             DS-X9112           ok
3    16     1/2 Gbps FC Module               DS-X9016           ok
4    48     1/2/4 Gbps FC Module             DS-X9148           ok
7    0      Supervisor/Fabric-2              DS-X9530-SF2-K9    ha-standby
8    0      Supervisor/Fabric-2              DS-X9530-SF2-K9    active *
9    24     1/2/4 Gbps FC Module             DS-X9124           ok
10   16     1/2 Gbps FC Module               DS-X9016           ok
11   4      10 Gbps FC Module                DS-X9704           ok
...
```

Downgrading from NX-OS Release 6.2(x) to NX-OS Release 5.2(x) on an MDS 9509 or MDS 9506 Switch

To downgrade to Cisco NX-OS Release 5.2(x) from Cisco NX-OS Release 6.2(x), on an MDS 9509 or MDS 9506 switch, follow these steps:

Step 1 Verify that the system image files for the downgrade are present on the active supervisor module bootflash:.

```
switch# dir bootflash:
     12288     Aug 26 19:06:14 2011  lost+found/
  22001152     Jul 01 10:54:49 2011  m9500-sf2ek9-kickstart-mz.5.2.x.bin
  16604160     Jul 01 10:20:07 2011  m9500-sf2ek9-kickstart-mz.5.0.1a.bin
  94175354     Jul 01 10:33:52 2011  m9500-sf2ek9-mz.5.2.x.bin
  78718938     Jul 01 10:18:09 2011  m9500-sf2ek9-mz.5.0.1a.bin

Usage for bootflash://sup-local
  211411892 bytes used
  167810476 bytes free
  379322368 bytes total
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL:

http://www.cisco.com/cisco/software/navigator.html

✎

Note If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 through Step 6.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-kickstart-mz.5.2.x.bin
bootflash:m9500-sf2ek9-kickstart-mz.5.2.x.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9500-sf2ek9-mz.5.2.x.bin
bootflash:m9500-sf2ek9-mz.5.2.x.bin
```

Step 3 Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
```

```
      12288     Aug 26 19:06:14 2011  lost+found/
    22001152     Jul 01 10:54:49 2011  m9500-sf2ek9-kickstart-mz.5.2.x.bin
    94175354     Jul 01 10:33:52 2011  m9500-sf2ek9-mz.5.2.x.bin

Usage for bootflash://sup-local
  116188794 bytes used
   68370822 bytes free
  184559616 bytes total
```

Step 4 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del bootflash:m9500-sf2ek9-kickstart-mz.5.0.1a.bin
switch# del bootflash:m9500-sf2ek9-mz.5.0.1a.bin
```

Step 5 Verify that there is enough space available for the standby supervisor.

```
switch(standby)# dir bootflash:
      12288     Aug 26 19:06:14 2011  lost+found/
    22001152     Jul 01 10:54:49 2011  m9500-sf2ek9-kickstart-mz.5.2.x.bin
    94175354     Jul 01 10:33:52 2011  m9500-sf2ek9-mz.5.2.x.bin

Usage for bootflash://sup-local
  116188794 bytes used
   68370822 bytes free
  184559616 bytes total
```

Step 6 If you need more space on the standby supervisor module bootflash, delete unnecessary files to make space available.

```
switch(standby)# del bootflash:m9500-sf2ek9-kickstart-mz.5.2.x.bin
switch(standby)# del bootflash:m9500-sf2ek9-mz.5.2.x.bin
```

Step 7 Issue the **show incompatibility system** *image-filename* command to determine if you need to disable any features not supported by the earlier release.

```
switch# show incompatibility system bootflash:m9500-sf2ek9-mz.5.2.x.bin
The following configurations on active are incompatible with the system image
1) Service : port-channel , Capability : CAP_FEATURE_AUTO_CREATED_41_PORT_CHANNEL
Description : auto create enabled ports or auto created port-channels are present
Capability requirement : STRICT
Disable command :
1.Disable autocreate on interfaces (no channel-group auto).
2.Convert autocreated port channels to be persistent (port-channel 1 persistent)
...
```

Step 8 Disable any features that are incompatible with the downgrade system image.

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fcip 31
switch(config-if)# no channel-group auto
switch(config-if)# end
switch# port-channel 127 persistent
switch#
```

Step 9 Save the configuration using the **copy running-config startup-config** command.

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

Step 10 Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod  Ports  Module-Type                        Model             Status
---  -----  ------------------------------  -----------------  ------------
```

```
2    4       10 Gbps FC Module                DS-X9704        ok
3    48      1/2/4 Gbps FC Module             DS-X9148        ok
5    0       Supervisor/Fabric-2              DS-X9530-SF2-K9 active *
6    0       Supervisor/Fabric-2              DS-X9530-SF2-K9 ha-standby
8    48      1/2/4/8 Gbps 48-Port FC Module   DS-X9248-96     ok
...
```

Step 11   Verify that the switch is running the required software version by issuing the **show version** command.

```
switch# show version
show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2013, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.
Software
BIOS: version 1.0.10
loader: version N/A
kickstart: version 6.2(5)
system: version 6.2(5)
BIOS compile time: 01/08/09
kickstart image file is: bootflash:///m9500-sf2ek9-kickstart-mz.6.2.5.bin
kickstart compile time: 11/25/2013 9:00:00 [01/30/2014 05:33:20]
system image file is: bootflash:///m9500-sf2ek9-mz.6.2.5.bin
system compile time: 11/25/2013 9:00:00 [01/30/2014 07:10:42]
Hardware
cisco MDS 9509 (9 Slot) Chassis ("Supervisor/Fabric-2a")
Motorola, 7447A, altivec with 2071288 kB of memory.
Processor Board ID JAF1625BAES
Device name: switch
bootflash: 1000944 kB
slot0: 0 kB (expansion flash)
Kernel
-----More
```

Step 12   Issue the **install all** command to downgrade the software.

```
switch# install all kickstart bootflash:m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74 system
bootflash:m9500-sf2ek9-mz.5.2.1.bin.S74

Verifying image bootflash:/m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74 for boot variable
"kickstart".
[####################] 100% -- SUCCESS
Verifying image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74 for boot variable "system".
[####################] 100% -- SUCCESS
Verifying image type.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "bios" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "system" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
```

```
[####################] 100% -- SUCCESS
Extracting "kickstart" version from image
bootflash:/m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Extracting "slc2" version from image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74.
[####################] 100% -- SUCCESS
Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS
Performing module support checks.
[####################] 100% -- SUCCESS
Notifying services about system upgrade.
[####################] 100% -- SUCCESS
Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     3       yes  non-disruptive       rolling
     4       yes  non-disruptive       rolling
     5       yes  non-disruptive       rolling
     6       yes  non-disruptive       rolling
     7       yes  non-disruptive         reset
     8       yes  non-disruptive         reset
     9       yes  non-disruptive       rolling
    10       yes  non-disruptive       rolling
    11       yes  non-disruptive       rolling
    12       yes  non-disruptive       rolling
    13       yes  non-disruptive       rolling
Images will be upgraded according to following table:
Module      Image              Running-Version(pri:alt) New-Version Upg-Required
------  ----------  ---------------------------------------- ------------ ------------
     3        slc2                                      6.2(x) 5.2(1)          yes
     3        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
     4        slc2                                      6.2(x) 5.2(1)          yes
     4        bios   v1.0.17(05/28/09):  v1.0.17(05/28/09)                      no
     5        slc2                                      6.2(x)5.2(1)           yes
     5        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
     6        slc2                                      6.2(x) 5.2(1)          yes
     6        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
     7      system                                     6.2(x) 5.2(1)          yes
     7    kickstart                                     6.2(x) 5.2(1)          yes
     7        bios   v1.0.10(01/08/09):  v1.0.10(01/08/09)                      no
     8      system                                     6.2(x) 5.2(1)          yes
     8    kickstart                                     6.2(x) 5.2(1)          yes
     8        bios   v1.0.10(01/08/09):  v1.0.10(01/08/09)                      no
     9        slc2                                      6.2(x) 5.2(1)          yes
     9        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
    10        slc2                                      6.2(x) 5.2(1)          yes
    10        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
    11        slc2                                      6.2(x) 5.2(1)          yes
    11        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
    12        slc2                                      6.2(x) 5.2(1)          yes
    12        bios   v1.0.19(02/01/10):  v1.0.19(02/01/10)                      no
    13        slc2                                      6.2(x) 5.2(1)          yes
    13        bios   v1.0.15(07/16/08):  v1.0.15(07/16/08)                      no
Do you want to continue with the installation (y/n)?  [n] y
Install is in progress, please wait.
Performing runtime checks.
```

```
[####################] 100% -- SUCCESS
Syncing image bootflash:/m9500-sf2ek9-kickstart-mz.5.2.1.bin.S74 to standby.
[####################] 100% -- SUCCESS
Syncing image bootflash:/m9500-sf2ek9-mz.5.2.1.bin.S74 to standby.
[####################] 100% -- SUCCESS
Setting boot variables.
[####################] 100% -- SUCCESS
Performing configuration copy.
[####################] 100% -- SUCCESS
Module 3: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 4: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 5: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 6: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 7: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 8: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 9: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 10: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 11: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 12: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
Module 13: Refreshing compact flash and upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
2011 Aug  2 00:56:32 sw86 %PLATFORM-2-MOD_REMOVE: Module 8 removed (Serial number
JAF1421FKAS)
Module 8: Waiting for module online.
 -- SUCCESS
```

✎

Note   At this point, the previously active supervisor module is rebooting after a nondisruptive switchover has taken place. Refer to the *Cisco MDS 9000 Family NX-OS High Availability and Redundancy Configuration Guide*.

```
>> MDS-Bootloader-01.00.06 (Jun 14 2011 - 15:04:07) (MPC7447A)

INFO: Booting off primary flash.
CPU:   MPC7447A v1.1 @ 1411 MHz
DRAM: SPD Checksum ok!
SPD Checksum ok!
-- DIMM1 has 1 banks
-- DIMM2 has 1 banks
ECC Initialization of Bank 0: Done
```

```
ECC Initialization of Bank 1: Done
CAS Latency = 2.5 tRP = 3 tRAS = 7 tRCD=3
Total SDRAM memory is 1024 MB
40000000
INFO: SDRAM tests PASSED.
PCI 0 bus mode: Conventional PCI
PCI 1 bus mode: Conventional PCI
L2 Cache Initialization.

Internal SRAM ECC Initialization: Done
IDE:   Bus 0: OK Bus 1: OK
  Device 0: Model: TOSHIBA THNCF1G02DG Firm:  Ser#: TSBC1G0207627A79490A
            Type: Hard Disk
            Capacity: 976.9 MB = 0.9 GB (2000880 x 512)
  Device 3: Model: SanDisk SDCFB-64 Firm: Vdg 1.21 Ser#: 02220224946
            Type: Removable Hard Disk
            Capacity: 61.2 MB = 0.0 GB (125440 x 512)

Booting bootflash:/m9500-sf2ek9-kickstart-mz.5.0.1a.bin ...
...............
Automatic boot of image at addr 0x00000000 ...
Starting kernel...
INIT: version 2.78 booting
Checking all filesystems..r.r.r.r. done.


pwck: no changes
Loading system software
Uncompressing system image: bootflash:/m9500-sf2ek9-mz.5.0.1a.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCC
INIT: Entering runlevel: 3
```

✎

Note   At this point, a switchover occurs to the new active supervisor module.

```
...
Install has been successful.

User Access Verification

209.165.200.226 login: admin
Password:
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
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License or the GNU Lesser General Public License. A copy of
each such license is available at
http://www.gnu.org/licenses/gpl.html and
http://www.gnu.org/licenses/lgpl.html
```

Step 13   Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod   Ports   Module-Type                       Model               Status
---   -----   -------------------------------   ------------------  ------------
2     4       10 Gbps FC Module                  DS-X9704            ok
3     48      1/2/4 Gbps FC Module               DS-X9148            ok
5     0       Supervisor/Fabric-2                DS-X9530-SF2-K9     ha-standby
```

```
6    0      Supervisor/Fabric-2          DS-X9530-SF2-K9    active *

Mod  Sw            Hw      World-Wide-Name(s) (WWN)
---  -------------- ------  --------------------------------------------------
2    5.2(1)         1.0     20:41:00:0b:fd:2c:90:c0 to 20:44:00:0b:fd:2c:90:c0
3    5.2(1)         0.302   20:81:00:0b:fd:2c:90:c0 to 20:b0:00:0b:fd:2c:90:c0
5    5.2(1)         1.4     --
6    5.2(1)         1.6     --
...
```

Downgrading from NX-OS Release 6.2(x) to NX-OS Release 5.2(x) on an MDS 9222i Switch

To downgrade from Cisco NX-OS Release 6.2(x) to Cisco NX-OS Release 5.2(x) on an MDS 9222i switch, follow these steps:

Step 1 Verify that the system image files for the downgrade are present on the active supervisor module bootflash:.

```
switch# dir bootflash:
     12288      Aug 26 19:06:14 2011  lost+found/
  18939904      Jul 01 10:54:49 2011  m9200-sf2ek9-kickstart-mz.5.2.x.bin
  16858624      Jul 01 10:20:07 2011  m9200-sf2ek9-kickstart-mz.5.0.1a.bin
 101756072      Jul 01 10:33:52 2011  m9200-sf2ek9-mz.5.2.x.bin
  95771404      Jul 01 10:18:09 2011  m9200-sf2ek9-mz.5.0.1a.bin

Usage for bootflash://sup-local
  236338292 bytes used
  142984076 bytes free
  379322368 bytes total
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL:

http://www.cisco.com/cisco/software/navigator.html

✎
Note If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 and Step 4.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9200-sf2ek9-kickstart-mz.5.2.x.bin
bootflash:m9200-sf2ek9-kickstart-mz.5.2.x.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9200-sf2ek9-mz.5.2.x.bin
bootflash:m9200-sf2ek9-mz.5.2.x.bin
```

Step 3 Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
     12288      Aug 26 19:06:14 2011  lost+found/
  18939904      Jul 01 10:54:49 2011  m9200-sf2ek9-kickstart-mz.5.2.x.bin
 101756072      Jul 01 10:33:52 2011  m9200-sf2ek9-mz.5.2.x.bin

Usage for bootflash://sup-local
  120695976 bytes used
   63863640 bytes free
  184559616 bytes total
```

Step 4   If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del bootflash:m9200-sf2ek9-kickstart-mz.5.0.1a.bin
switch# del bootflash:m9200-sf2ek9-mz.5.0.1a.bin
```

Step 5   Issue the **show incompatibility system** *image-filename c*ommand to determine if you need to disable any features not supported by the earlier release.

```
switch# show incompatibility system bootflash:m9200-sf2ek9-mz.5.2.x.bin
The following configurations on active are incompatible with the system image
1) Service : port-channel , Capability : CAP_FEATURE_AUTO_CREATED_41_PORT_CHANNEL
Description : auto create enabled ports or auto created port-channels are present
Capability requirement : STRICT
Disable command :
1.Disable autocreate on interfaces (no channel-group auto).
2.Convert autocreated port channels to be persistent (port-channel 1 persistent)
...
```

Step 6   Disable any features that are incompatible with the downgrade system image.

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fcip 31
switch(config-if)# no channel-group auto
switch(config-if)# end
switch# port-channel 127 persistent
switch#
```

Step 7   Save the configuration using the **copy running-config startup-config** command.

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

Step 8   Issue the **install all** command to downgrade the software.

```
switch# install all kickstart bootflash:m9200-s2ek9-kickstart-mz.5.2.1.bin.S74 system
bootflash:m9200-s2ek9-mz.5.2.1.bin.S74


Verifying image bootflash:/m9200-s2ek9-kickstart-mz.5.2.1.bin.S74 for boot variable
"kickstart".

[####################] 100% -- SUCCESS

Verifying image bootflash:/m9200-s2ek9-mz.5.2.1.bin.S74 for boot variable "system".

[####################] 100% -- SUCCESS

Verifying image type.

[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9200-s2ek9-mz.5.2.1.bin.S74.

[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:/m9200-s2ek9-kickstart-mz.5.2.1.bin.S74.

[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9200-s2ek9-mz.5.2.1.bin.S74.

[####################] 100% -- SUCCESS
```

```
Extracting "slc2" version from image bootflash:/m9200-s2ek9-mz.5.2.1.bin.S74.

[####################] 100% -- SUCCESS

Performing Compact Flash and TCAM sanity test.

[####################] 100% -- SUCCESS

Performing module support checks.

[####################] 100% -- SUCCESS

Notifying services about system upgrade.

[####################] 100% -- SUCCESS

Compatibility check is done:

Module  bootable          Impact  Install-type  Reason

------  --------  --------------  ------------  ------

    1       yes   non-disruptive         reset

    2       yes   non-disruptive        rolling

Other miscellaneous information for installation:

Module  info

------  ----------------------------------

    1 FC ports 1-18 are hitless, GigE 1-4 are hitful, and Intelligent Applications
running are hitful

Images will be upgraded according to following table:

Module       Image              Running-Version(pri:alt) New-Version  Upg-Required

------  ----------  --------------------------------------  --------------------------

    1     system                                  6.2(x) 5.2(1)      yes

    1   kickstart                                 6.2(x) 5.2(1)      yes

    1      bios    v1.0.19(02/01/10):  v1.0.19(02/01/10)          no

    2      slc2                                   6.2(x) 5.2(1)      yes

    2      bios    v1.0.19(02/01/10):  v1.0.19(02/01/10)          no

Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.

[####################] 100% -- SUCCESS

Notifying services about the upgrade.

[####################] 100% -- SUCCESS

Setting boot variables.
```

```
[####################] 100% -- SUCCESS

Performing configuration copy.

[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and upgrading bios/loader/bootrom.

Warning: please do not remove or power off the module at this time.

[####################] 100% -- SUCCESS

Module 2: Refreshing compact flash and upgrading bios/loader/bootrom.

Warning: please do not remove or power off the module at this time.

[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.

[####################] 100% -- SUCCESS

Loading images into memory.

[####################] 100% -- SUCCESS

Saving external linecard runtime state.

2011 Aug  1 17:16:56 sw4-qa05 %IMAGE_DNLD-SLOT2-2-IMG_DNLD_STARTED:  Module image download
process. Please wait until completion...

2011 Aug  1 17:17:16 sw4-qa05 %IMAGE_DNLD-SLOT2-2-IMG_DNLD_COMPLETE:  Module image
download process. Download successful.

[####################] 100% -- SUCCESS

Saving linecard runtime state.

[####################] 100% -- SUCCESS

Saving supervisor runtime state.

[####################] 100% -- SUCCESS

Saving mts state.

[####################] 100% -- SUCCESS

Rebooting the switch to proceed with the upgrade.

All telnet and ssh connections will now be temporarily terminated.

Starting new kernel

Starting kernel...

 Entered kgdb_console_init:1975

INIT: version 2.85 booting

Checking all filesystems..... done.
```

Cisco MDS 9000 NX-OS Software Upgrade and Downgrade Guide, Release 6.x ■

```
/etc/rc.d/rcS.d/S30procps: line 34: log_action_begin_msg: command not found

/etc/rc.d/rcS.d/S30procps: line 36: log_action_end_msg: command not found

Setting the System Clock using the Hardware Clock as reference...System Clock set. Local
time: Mon Aug  1 17:17:56 PDT 2011

Loading system software

Uncompressing system image: bootflash:///m9200-s2ek9-mz.5.2.1.bin.S74

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Uncompressing linecard components

INIT: Entering runlevel: 3

Starting NFS servers: nfsd mountd.

2011 Aug  1 17:18:22 sw4-qa05 Aug  1 17:18:22 %KERN-2-SYSTEM_MSG: Starting kernel... -
kernel

2011 Aug  1 17:18:22 sw4-qa05 Aug  1 17:18:22 %KERN-1-SYSTEM_MSG:  Entered
kgdb_console_init:1975 - kernel

Continuing with installation process, please wait.

The login will be disabled until the installation is completed.

2011 Aug  1 17:19:22 sw4-qa05 %PROC_MGR-2-MESG: Entity : (dnld_image) has exited
successfully

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-PS_FAIL: Power supply 1 failed or shut down
(Serial number )

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-PS_OK: Power supply 2 ok (Serial number
QCS104811U3)

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-PS_FANOK: Fan in Power supply 2 ok

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-FAN_OK: Fan module ok

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-CHASSIS_CLKMODOK: Chassis clock module A ok

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-CHASSIS_CLKMODOK: Chassis clock module B ok

2011 Aug  1 17:19:29 sw4-qa05 %PLATFORM-2-CHASSIS_CLKSRC: Current chassis clock source is
clock-A

Status for linecard upgrade.

[###################] 100% -- SUCCESS

Status for external linecard upgrade.
[###################] 100% -- SUCCESS
Performing supervisor state verification.

[###################] 100% -- SUCCESS
Install has been successful.
```

Step 9   Issue the **show version** command to verify the successful downgrade.

```
switch# show version

Cisco Nexus Operating System (NX-OS) Software

TAC support: http://www.cisco.com/tac

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http://www.gnu.org/licenses/gpl.html.

Software

  BIOS:      version 1.0.15

  loader:    version N/A

  kickstart: version 5.2(1)

  system:    version 5.2(1)

  BIOS compile time:      07/16/11

  kickstart image file is: bootflash:///m9200-s2ek9-kickstart-mz.5.2.x.bin

  kickstart compile time:  8/22/2011 25:00:00 [08/25/2011 10:00:03]

  system image file is:    bootflash:///m9200-s2ek9-mz.5.2.x.bin

  system compile time:     8/22/2011 0:00:00 [08/25/2011 11:20:26]

Hardware

  cisco MDS 9222i ("4x1GE IPS, 18x1/2/4Gbps FC/Sup2")

  Motorola, e500v2  with 1036340 kB of memory.

  Processor Board ID JAE11430NJM

  Device name: 209.165.200.226

  bootflash:    1000440 kB

Kernel uptime is 0 day(s), 0 hour(s), 4 minute(s), 15 second(s)

Last reset at 913177 usecs after  Wed Aug 27 21:09:20 2011

  Reason: Reset due to upgrade

  System version: 5.2.x

  Service:
```

Step 10 Verify the status of the modules on the switch using the **show module** command.

```
switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------  -----------------  ------------
1    22     4x1GE IPS, 18x1/2/4Gbps FC/Sup2  DS-C9222I-K9       active *
2    48     1/2/4 Gbps FC Module             DS-X9148           ok

Mod  Sw             Hw      World-Wide-Name(s) (WWN)
---  -------------  ------  -------------------------------------------------
1    5.0(1a)        0.610   20:01:00:05:30:00:00:00 to 20:12:00:05:30:00:00:00
2    5.0(1a)        0.302   20:41:00:05:30:00:00:00 to 20:70:00:05:30:00:00:00

Mod     Application Image Description     Application Image Version
------- -----------------------------     ------------------------
1       SSI linecard image (Packaged in SAN-OS) 5.0(1a)


Mod  MAC-Address(es)                      Serial-Num
---  -----------------------------------  ----------
1    00-17-5a-b5-72-80 to 00-17-5a-b5-72-88  JAE1123KANK
2    00-14-a9-74-db-30 to 00-14-a9-74-db-34  JAB093301JZ

* this terminal session
switch#
```

Downgrading from NX-OS Release 6.2(x) to NX-OS Release 5.2(x) on an MDS 9250i Switch

To downgrade from Cisco NX-OS Release 6.2(9) to Cisco NX-OS Release 5.2(x) or lower on an MDS 9250i switch, follow these steps:

Step 1 Verify that the system image files for the downgrade are present on the active supervisor module bootflash:.

```
switch# dir bootflash:
       4096    Jan 12 09:05:55 2001  .partner/
        692    Feb 06 18:22:33 2001  switch.lic
    2155240    Apr 17 10:18:30 2001  d
    2155240    Mar 21 15:33:26 2014  d1
    2155240    Mar 18 10:15:41 2014  dplug627
   20090368    Apr 06 05:25:31 2001  m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
   20044800    Mar 30 15:42:05 2014  m9250-s5ek9-kickstart-mz.6.2.7.bin
  107197681    Apr 06 05:26:53 2001  m9250-s5ek9-mz.6.2.5.bin.S68
  107587249    Mar 30 15:42:52 2014  m9250-s5ek9-mz.6.2.7.bin
      29714    Mar 30 16:20:21 2014  mts.log
    2855303    Mar 30 14:14:36 2014  runn-fc
    2855147    Mar 26 15:05:30 2014  runn-mar26
    2777996    Mar 27 07:07:46 2014  runn-mar27
    2855147    Mar 27 04:51:08 2014  runn-mar27-preRel
    2777996    Mar 27 06:22:29 2014  runn-mar27-preRel-wozone
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash:. You can obtain the software image file from the Cisco.com software download center at the following URL:

http://www.cisco.com/cisco/software/navigator.html

> ✎
>
> **Note** If you need more space on the active supervisor module bootflash:, use the **delete** command to remove unnecessary files and follow Step 3 and Step 4.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
bootflash:m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
switch# copy tftp://tftpserver.cisco.com/MDS/m9250-s5ek9-mz.6.2.5.bin.S68
bootflash:m9250-s5ek9-mz.6.2.5.bin.S68
```

Step 3 Ensure that the required space is available on the active supervisor.

```
switch# dir bootflash:
      12288     Aug 26 19:06:14 2011  lost+found/
   18939904     Jul 01 10:54:49 2011  m9250-sf2ek9-kickstart-mz.6.2.5.bin
  101756072     Jul 01 10:33:52 2011  m9250-sf2ek9-mz.6.2.5.bin

Usage for bootflash://sup-local
  120695976 bytes used
   63863640 bytes free
  184559616 bytes total
```

Step 4 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# del bootflash:m9250-sf2ek9-kickstart-mz.6.2.5.bin
switch# del bootflash:m9250-sf2ek9-kickstart-mz.6.2.5.bin
```

Step 5 Issue the **show incompatibility system** *image-filename c*ommand to determine if you need to disable any features not supported by the earlier release.

```
switch# show incompatibility system bootflash:m9200-sf2ek9-mz.5.2.x.bin
no incompatible configuration
```

Step 6 Save the configuration using the **copy running-config startup-config** command.

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

Step 7 Issue the **install all** command to downgrade the software.

```
switch# install all kickstart bootflash:m9250-s5ek9-kickstart-mz.6.2.5.bin.S68 system
bootflash:m9250-s5ek9-mz.6.2.5.bin.S68
Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68 for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9250-s5ek9-mz.6.2.5.bin.S68 for boot variable "system".
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9250-s5ek9-mz.6.2.5.bin.S68.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9250-s5ek9-mz.6.2.5.bin.S68.
[####################] 100% -- SUCCESS
```

```
Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS


Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive         reset


Other miscellaneous information for installation:
Module  info
------  ----------------------------------
     1 FC ports 1-40 and FCoE ports 1-8 are hitless, IPS 1-2 are hitful, and Intelligent
Applications running are hitful


Images will be upgraded according to following table:
Module      Image                 Running-Version(pri:alt)        New-Version
Upg-Required
------  ----------  --------------------------------------  --------------------
------------
     1     system                                  6.2(7)              6.2(5)
yes
     1   kickstart                                 6.2(7)              6.2(5)
yes
     1      bios     v2.1.16(10/24/13):v2.1.16(10/24/13)     v2.1.16(10/24/13)
no


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Converting startup config.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.
[####################] 100% -- SUCCESS
```

```
Loading images into memory.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS

Saving mts state.
[####################] 100% -- SUCCESS

Rebooting the switch to proceed with the upgrade.
All telnet and ssh connections will now be temporarily terminated.


>> NX7--LC-loader-02.01.16 (Oct 24 2013 - 16:00:49), Build: 02.01.16

CPU0:  8572E, Version: 2.1, (0x80e80021)
Core:  E500, Version: 3.0, (0x80210030)
Clock Configuration:
       CPU:1066.672 MHz, CCB:533.336 MHz,
       DDR:266.668 MHz (533.336 MT/s data rate), LBC:33.334 MHz
L1:    D-cache 32 kB enabled
       I-cache 32 kB enabled
Board: 9044, IOFPGA: 0x0000001A, SPROM: 0xAB
Boot flash : Primary
I2C:   ready
DRAM:  Initializing
DDR: dimm type 10, registered 1
DDR: dimm type 10, registered 1
    DDR:  4 GB
L2:    1024 KB enabled
Using default environment

In:    serial
Out:   serial
Err:   serial
Net:   INFO: Net boot mode = 1
INFO: Net boot mode = 1
INFO: Board will come up MGMT interface
INFO: MAC address is: cc:fe:48:4a:5d:f0
 eTSEC2 board phy 3
INFO: Net boot mode = 1
eTSEC2
IDE:   Bus 0: OK
  Device 0: Model: SILICONSYSTEMS UDMA 4GB-4676 Firm: 3.38 Ser#: CC395293055000066K08
           Type: Hard Disk
           Capacity: 3919.7 MB = 3.8 GB (8027712 x 512)

Booting image bootflash://m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
20090368 bytes read
 NBI at 08000000 size 134217728

Booting image at addr 0x00800000 ...
Memory <- <0x0 0x0 0x1 0x0> (4096MB)
ethernet0: local-mac-address <- cc:fe:48:4a:5d:f0
ethernet1: local-mac-address <- 00:e0:0c:00:01:fd
ethernet2: local-mac-address <- 00:e0:0c:00:02:fd
CPU clock-frequency <- 0x3f941f80 (1067MHz)
CPU timebase-frequency <- 0x3f941f8 (67MHz)
CPU bus-frequency <- 0x1fca0fc0 (533MHz)
```

```
zImage starting: loaded at 0x00800000 (sp: 0x7fedc4d0)
Allocating 0x4d7464 bytes for kernel ...
gunzipping (0x00000000 <- 0x0080f000:0x00ca1b94)...done 0x478774 bytes
Using loader supplied ramdisk at 0x2700000-0x3831a00
initrd head: 0x1f8b0808

Linux/PowerPC load: rw root=/dev/ram0 rdbase=0x7000000 card_index=9044 maxcpus=2 ip=off
ramdisk_size=262144 noquiet obfl_type_ide=1 kgdboc=ttyS0,9600,B isanimg_loc=0x6000000
isanimg_size=0x400 console=ttyS0,9600n8nn loader_ver="02.01.16" card_index=9044 quiet
bootdev=ide0 server_ip=171.69.21.28 ksimg=/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
isanimg=/m9250-s5ek9-mz.6.2.5.bin.S68
Finalizing device tree... flat tree at 0x80be70
Jumping to kernel at 0
setup_arch: bootmem
mpc85xx_ds_setup_arch()
arch: exit

[    1.522927]  Host controller irq 26
[    1.564107] pci 0000:00:00.0: ignoring class b20 (doesn't match header type 01)
[    1.682399] Assign root port irq 26 for 0000:00:00.0
[    1.983375] Enabling all PCI devices
INIT: Checking all filesystems..... done.
Setting kernel variables done.
Setting the System Clock using the Hardware Clock as reference...System Clock set. Local
time: Thu Mar 27 10:19:08 UTC 2014
Loading system software
Uncompressing system image: bootflash:///m9250-s5ek9-mz.6.2.5.bin.S68
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Load plugins that defined in image conf: /isan/plugin_img/img.conf
Loading plugin 0: core_plugin...
num srgs 1
0: swid-core-s5ek9, swid-core-s5ek9
num srgs 1
0: swid-sup-ali-ks, swid-sup-ali-ks
INIT: Entering runlevel: 3

[   81.048355] clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD
[   81.126871] clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD
2014 Mar 27 10:20:10 switch Mar 27 10:20:10 %KERN-0-SYSTEM_MSG: [    1.983375] Enabling
all PCI devices - kernel
2014 Mar 27 10:20:10 switch Mar 27 10:20:10 %KERN-0-SYSTEM_MSG: [   81.048355]
clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD - kernel
2014 Mar 27 10:20:10 switch Mar 27 10:20:10 %KERN-0-SYSTEM_MSG: [   81.126871]
clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD - kernel
Sysmgr failed to send GET_TIME_OF_DAY Call_cnt= 1 errno= 32
2014 Mar 27 10:20:32 switch %CARDCLIENT-2-REG: OK
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.

Status for linecard upgrade.
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_FAIL: Power supply 1 failed or shut down
(Serial number QCS1549K0HU)
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_OK: Power supply 2 ok (Serial number
QCS1549K087)
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 2 ok
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_OK: Power supply 3 ok (Serial number
QCS1549K0T5)
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 3 ok
```

```
2014 Mar 27 10:21:49 switch %PLATFORM-2-ALISHAN_FAN_OK: Fan module 1 ok
2014 Mar 27 10:21:49 switch %PLATFORM-2-ALISHAN_FAN_OK: Fan module 2 ok
[####################] 100% -- SUCCESS

Performing supervisor state verification.
2014 Mar 27 10:21:50 switch %PLATFORM-2-PS_ALI_TWO_POWERSUPPLY: Only two Power supply are
functional, please connect third Power Supply for redundancy
[####################] 100% -- SUCCESS


Install has been successful.

User Access Verification
switch login:
```

Step 8   Issue the **show version** command to verify the successful downgrade.

```
switch# show version
install all kickstart bootflash:m9250-s5ek9-kickstart-mz.6.2.5.bin.S68 system
bootflash:m9250-s5ek9-mz.6.2.5.bin.S68
Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68 for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9250-s5ek9-mz.6.2.5.bin.S68 for boot variable "system".
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9250-s5ek9-mz.6.2.5.bin.S68.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9250-s5ek9-mz.6.2.5.bin.S68.
[####################] 100% -- SUCCESS

Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive         reset


Other miscellaneous information for installation:
Module  info
------  ---------------------------------
     1  FC ports 1-40 and FCoE ports 1-8 are hitless, IPS 1-2 are hitful, and Intelligent
Applications running are hitful
```

```
Images will be upgraded according to following table:
Module      Image                  Running-Version(pri:alt)        New-Version
Upg-Required
------  ----------  ---------------------------------------  --------------------
------------
    1     system                                  6.2(7)              6.2(5)
yes
    1   kickstart                                 6.2(7)              6.2(5)
yes
    1      bios     v2.1.16(10/24/13):v2.1.16(10/24/13)    v2.1.16(10/24/13)
no


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and Upgrading bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Converting startup config.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.
[####################] 100% -- SUCCESS

Loading images into memory.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS

Saving mts state.
[####################] 100% -- SUCCESS

Rebooting the switch to proceed with the upgrade.
All telnet and ssh connections will now be temporarily terminated.


>> NX7--LC-loader-02.01.16 (Oct 24 2013 - 16:00:49), Build: 02.01.16

CPU0:  8572E, Version: 2.1, (0x80e80021)
Core:  E500, Version: 3.0, (0x80210030)
Clock Configuration:
      CPU:1066.672 MHz, CCB:533.336 MHz,
```

```
        DDR:266.668 MHz (533.336 MT/s data rate), LBC:33.334 MHz
L1:    D-cache 32 kB enabled
       I-cache 32 kB enabled
Board: 9044, IOFPGA: 0x0000001A, SPROM: 0xAB
Boot flash : Primary
I2C:   ready
DRAM:  Initializing
DDR: dimm type 10, registered 1
DDR: dimm type 10, registered 1
    DDR:  4 GB
L2:    1024 KB enabled
Using default environment

In:    serial
Out:   serial
Err:   serial
Net:   INFO: Net boot mode = 1
INFO: Net boot mode = 1
INFO: Board will come up MGMT interface
INFO: MAC address is: cc:fe:48:4a:5d:f0
 eTSEC2 board phy 3
INFO: Net boot mode = 1
eTSEC2
IDE:   Bus 0: OK
  Device 0: Model: SILICONSYSTEMS UDMA 4GB-4676 Firm: 3.38 Ser#: CC395293055000066K08
           Type: Hard Disk
           Capacity: 3919.7 MB = 3.8 GB (8027712 x 512)

Booting image bootflash://m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
20090368 bytes read
 NBI at 08000000 size 134217728

Booting image at addr 0x00800000 ...
Memory <- <0x0 0x0 0x1 0x0> (4096MB)
ethernet0: local-mac-address <- cc:fe:48:4a:5d:f0
ethernet1: local-mac-address <- 00:e0:0c:00:01:fd
ethernet2: local-mac-address <- 00:e0:0c:00:02:fd
CPU clock-frequency <- 0x3f941f80 (1067MHz)
CPU timebase-frequency <- 0x3f941f8 (67MHz)
CPU bus-frequency <- 0x1fca0fc0 (533MHz)

zImage starting: loaded at 0x00800000 (sp: 0x7fedc4d0)
Allocating 0x4d7464 bytes for kernel ...
gunzipping (0x00000000 <- 0x0080f000:0x00ca1b94)...done 0x478774 bytes
Using loader supplied ramdisk at 0x2700000-0x3831a00
initrd head: 0x1f8b0808

Linux/PowerPC load: rw root=/dev/ram0 rdbase=0x7000000 card_index=9044 maxcpus=2 ip=off
ramdisk_size=262144 noquiet obfl_type_ide=1 kgdboc=ttyS0,9600,B isanimg_loc=0x6000000
isanimg_size=0x400 console=ttyS0,9600n8nn loader_ver="02.01.16" card_index=9044 quiet
bootdev=ide0 server_ip=171.69.21.28 ksimg=/m9250-s5ek9-kickstart-mz.6.2.5.bin.S68
isanimg=/m9250-s5ek9-mz.6.2.5.bin.S68
Finalizing device tree... flat tree at 0x80be70
Jumping to kernel at 0
setup_arch: bootmem
mpc85xx_ds_setup_arch()
arch: exit

[    1.522927]  Host controller irq 26
[    1.564107] pci 0000:00:00.0: ignoring class b20 (doesn't match header type 01)
[    1.682399] Assign root port irq 26 for 0000:00:00.0
[    1.983375] Enabling all PCI devices
INIT: Checking all filesystems..... done.
Setting kernel variables done.
```

```
Setting the System Clock using the Hardware Clock as reference...System Clock set. Local
time: Thu Mar 27 10:19:08 UTC 2014
Loading system software
Uncompressing system image: bootflash:///m9250-s5ek9-mz.6.2.5.bin.S68
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Load plugins that defined in image conf: /isan/plugin_img/img.conf
Loading plugin 0: core_plugin...
num srgs 1
0: swid-core-s5ek9, swid-core-s5ek9
num srgs 1
0: swid-sup-ali-ks, swid-sup-ali-ks
INIT: Entering runlevel: 3

[   81.048355] clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD
[   81.126871] clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD
2014 Mar 27 10:20:10 switch Mar 27 10:20:10 %KERN-0-SYSTEM_MSG: [    1.983375] Enabling
all PCI devices - kernel
2014 Mar 27 10:20:10 switch Mar 27 10:20:10 %KERN-0-SYSTEM_MSG: [   81.048355]
clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD - kernel
2014 Mar 27 10:20:10 switch Mar 27 10:20:10 %KERN-0-SYSTEM_MSG: [   81.126871]
clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD - kernel
Sysmgr failed to send GET_TIME_OF_DAY Call_cnt= 1 errno= 32
2014 Mar 27 10:20:32 switch %CARDCLIENT-2-REG: OK
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.

Status for linecard upgrade.
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_FAIL: Power supply 1 failed or shut down
(Serial number QCS1549K0HU)
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_OK: Power supply 2 ok (Serial number
QCS1549K087)
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 2 ok
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_OK: Power supply 3 ok (Serial number
QCS1549K0T5)
2014 Mar 27 10:21:49 switch %PLATFORM-2-PS_FANOK: Fan in Power supply 3 ok
2014 Mar 27 10:21:49 switch %PLATFORM-2-ALISHAN_FAN_OK: Fan module 1 ok
2014 Mar 27 10:21:49 switch %PLATFORM-2-ALISHAN_FAN_OK: Fan module 2 ok
[####################] 100% -- SUCCESS

Performing supervisor state verification.
2014 Mar 27 10:21:50 switch %PLATFORM-2-PS_ALI_TWO_POWERSUPPLY: Only two Power supply are
functional, please connect third Power Supply for redundancy
[####################] 100% -- SUCCESS

Install has been successful.

User Access Verification
switch login:
```

Step 9   Verify the status of the modules on the switch using the **show module** command.

```
switch# show module

Mod  Ports  Module-Type                         Model               Status
---  -----  ----------------------------------- ------------------- ----------
1    50     40FC+8FCoE+2IPS Supervisor          DS-C9250I-K9-SUP    active *
```

```
Mod  Sw              Hw      World-Wide-Name(s) (WWN)
---  --------------  ------  ----------------------------------------------------
1    6.2(7)          0.0     20:01:54:7f:ee:1b:10:20 to 20:28:54:7f:ee:1b:10:20


Mod  MAC-Address(es)                      Serial-Num
---  -----------------------------------  ----------
1    cc-fe-48-4a-5d-f0 to cc-fe-48-4a-5d-ff  JAF1605AMHH

* this terminal session

switch#
```

Nondisruptive Upgrades on Fabric and Modular Switches

This section describes how to perform nondisruptive upgrades on the following Cisco fabric switches:

- Cisco MDS 9148 Multilayer Fabric Switch
- Cisco MDS 9222i Multiservice Modular Switch
- Cisco MDS 9250i Multiservice Modular Switch
- Cisco MDS 9396S Multilayer Fabric Switch

This section includes the following topics:

- Preparing for a Nondisruptive Upgrade on Fabric and Modular Switches, page 93
- Performing a Nondisruptive Upgrade on a Fabric Switch, page 96
- Displaying the Status of a Nondisruptive Upgrade on a Fabric Switch, page 97
- Troubleshooting a Nondisruptive Upgrade on a Fabric Switch, page 98

Preparing for a Nondisruptive Upgrade on Fabric and Modular Switches

You can upgrade software on the following switches without any disruptions by using the **install all** command for the system software images:

- Cisco MDS 9148 Multilayer Fabric Switch
- Cisco MDS 9148S Multilayer Fabric Switch
- Cisco MDS 9222i Multiservice Modular Switch
- Cisco MDS 9250i Multiservice Modular Switch

When the installation is completed, the supervisor kickstart image, supervisor system image, line card image, and the system BIOS are all updated.

Nondisruptive upgrades on these fabric switches disrupts the control plane for not more than 80 seconds. The software upgrade might be disruptive if the upgrade progresses beyond when it can be stopped gracefully or if a failure occurs.

✎

Note During the upgrade the control plane is down, but the data plane remains up. New devices are not able to log in to the fabric through the control plane, but existing devices do not experience any disruption of traffic through the data plane.

Before attempting to upgrade any software images on the fabric switches, follow these guidelines:

- During the upgrade, the fabric must be stable. Do not perform these configuration activities during the upgrade:
    - Zoning changes
    - Telnet sessions
    - Schedule changes
    - Switch cabling
    - Addition or removal of physical devices
- Configure the FSPF timers to the default value of 20 seconds.
- If any CFS commits are pending in the fabric, the upgrade is aborted.
- If a zone server merge is in progress, the upgrade is aborted.
- If the upgrade is aborted due to a service not being ready for the upgrade, you are prompted to enter the **show install all failure-reason** command to identify the reason.
- If the system has insufficient space to load the new images, then you will be notified through the compatibility table. At this point, you need to either abort the upgrade or proceed with a disruptive upgrade.
- Check whether sufficient space is available in the system to load the new images by using the Software Install Wizard. Depending on the available space, you need to either abort the upgrade or proceed with a disruptive upgrade.
- Enter the **no logging level all** command before beginning the upgrade. If you do not enter this command, a failure might occur due to the debug system log messages being printed, which potentially can result in the control plane downtime to exceed 80 seconds.
- If VRRP is running on the mgmt0 interface, and the switch being upgraded is the master, then a new master is selected. This situation cannot be avoided because the mgmt0 interface goes down when the control plane goes down.
- On the Cisco MDS 18/4-port multiservice module, upgrades of the 4-Gigabit Ethernet ports for the hybrid Supervisor 18/4 line card will be disruptive.

To ensure that you can view the entire upgrade process, you should perform the upgrade by using the console port. By performing the upgrade this way, you can log your session to a file (in case you need it later for troubleshooting). Telnet sessions are lost when the switch is rebooted, so if you want to view the process in its entirety, be sure to use the console port.

The following section shows an example of the failed nondisruptive upgrade due to insufficient resources.

Example 1-1   Failed Nondisruptive Upgrade Due to Insufficient Resources

```
switch# install all kickstart bootflash:boot-fs9148 system bootflash:isan-164

Verifying image bootflash:/boot-fs9148 for boot variable "kickstart".
[####################] 100% -- SUCCESS
```

```
Verifying image bootflash:/isan-164 for boot variable "system".
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/isan-164.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/boot-fs9148.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/isan-164.
[####################] 100% -- SUCCESS

Compatibility check is done:
Module  bootable   Impact          Install-type  Reason
------  --------   --------------  ------------  ------
     1      yes   disruptive        reset  insufficient resources<----Reason for failure


Images will be upgraded according to following table:
Module  Image       Running-Version(pri:alt)          New-Version  Upg-Required
------  ----------  ----------------------            -----------  --------------------
     1      system  5.2(x)                             6.2(x)          yes
     1   kickstart  5.2(x)                             6.2(x)          yes
     1        bios  v1.0.0(10/04/06):v1.0.0(10/04/06) v1.0.0(10/04/06) no

Do you want to continue with the installation (y/n)?  [n]
```

Before performing an upgrade, you may wish to use the **show install all impact** command to view the effect of updating the system from the running image to another specified image.

```
switch# show install all impact kickstart bootflash:boot-fs9148 system bootflash:isan-164

Verifying image bootflash:/boot-fs9148 for boot variable "kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/isan-164 for boot variable "system".
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/isan-164.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/boot-fs9148.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/isan-164.
[####################] 100% -- SUCCESS




Compatibility check is done:
Module  bootable        Impact  Install-type  Reason
------  --------   --------------  ------------  ------
     1      yes   non-disruptive        reset




Images will be upgraded according to following table:
Module     Image   Running-Version(pri:alt)            New-Version     Upg-Required
------  ----------  ----------------------            -----------     -------------
     1      system  5.2(x)                             6.2(x)          yes
     1   kickstart  5.2(x)                             6.2(x)          yes
     1        bios  v1.0.0(10/04/06): v1.0.0(10/04/06) v1.0.0(10/04/06) no

switch#
```

Performing a Nondisruptive Upgrade on a Fabric Switch

You can perform a nondisruptive software upgrade on any of the following switches by entering the **install all kickstart** command using the console port:

- Cisco MDS 9148 Multilayer Fabric Switch
- Cisco MDS 9148S Multilayer Fabric Switch
- Cisco MDS 9222i Multiservice Modular Switch
- Cisco MDS 9250i Multiservice Modular Switch
- Cisco MDS 9396S Multilayer Fabric Switch

The following is an example of the nondisruptive upgrade on a fabric switch:

```
switch# install all kickstart bootflash:boot-fs9148 system bootflash:isan-164u

Verifying image bootflash:/boot-fs9148 for boot variable "kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/isan-164u for boot variable "system".
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/isan-164u.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/boot-fs9148.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/isan-164u.
[####################] 100% -- SUCCESS

Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
    1       yes   non-disruptive          reset

Images will be upgraded according to following table:
Module      Image  Running-Version(pri:alt)           New-Version          Upg-Required
------  ----------  -------------------------          --------------------  ------------
    1      system  5.2(x)                             6.2(x)                yes
    1   kickstart  5.2(x)                             6.2(x)                yes
    1        bios  v1.0.0(10/04/06): v1.0.0(10/04/06) v1.0.0(10/04/06)        no

Do you want to continue with the installation (y/n)?  [n]

Install is in progress, please wait.

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Converting startup config.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.
```
<---Note that after this point you cannot abort the upgrade.

```
Freeing memory in the file system.
[####################] 100% -- SUCCESS

Loading images into memory.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS

Saving mts state.
[####################] 100% -- SUCCESS

Rebooting the switch to proceed with the upgrade.


Continuing with installation process, please wait.
The login will be disabled until the installation is completed.

Status for linecard upgrade.
[####################] 100% -- SUCCESS

Performing supervisor state verification.
[####################] 100% -- SUCCESS

Install has been successful.
```

You can use the Software Install Wizard to perform nondisruptive upgrades on Cisco MDS 9148 Fabric Switches.

⚠️

Caution   We recommend that you enable PortFast on the Ethernet interface of the Catalyst switch to which the management interface of the fabric switch is connected. This step action avoids spanning tree convergence time on the Catalyst switch, and immediately forwards packets from the fabric switch during the nondisruptive upgrade.

✎

Note   ASM-SFN and SSI images are not supported for upgrades on the Cisco MDS 9148 Multilayer Fabric Switch.

Displaying the Status of a Nondisruptive Upgrade on a Fabric Switch

You can display the status of a nondisruptive upgrade by using the **show install all status** command. The output displays the status only after the switch has rebooted with the new image. All actions preceding the reboot are not captured in this output because when you enter the **install all** command using a Telnet session, the session is disconnected when the switch reboots. When you can reconnect to the switch through a Telnet session, the upgrade might already be complete, in which case, the output will display the status of the upgrade.

```
switch# show install all status
This is the log of last installation.

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.
```

```
Status for linecard upgrade.
 -- SUCCESS

Performing supervisor state verification.
 -- SUCCESS

Install has been successful.
```

Troubleshooting a Nondisruptive Upgrade on a Fabric Switch

When a nondisruptive upgrade begins, the system notifies all services that an upgrade is about to start, and finds out whether or not the upgrade can proceed. If a service cannot allow the upgrade to proceed at this time (for example, FSPF timers are not configured to the default value, or a CFS operation is in progress), then the service aborts the upgrade. If this situation occurs, you are prompted to enter the **show install all failure-reason** command to determine the reason why the upgrade cannot proceed.

```
...
Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Notifying services about the upgrade.
[#                  ]   0% -- FAIL. Return code 0x401E0066 (request timed out).

Please issue "show install all failure-reason" to find the cause of the failure.<---system
prompt to enter the show all failure-reason command.

Install has failed. Return code 0x401E0066 (request timed out).
Please identify the cause of the failure, and try 'install all' again.

switch# show install all failure-reason
Service: "cfs" failed to respond within the given time period.
switch#
```

Once the upgrade is already in progress if any failures occur for whatever reason (for example, a save runtime state failure or line card upgrade failure), then the switch is rebooted disruptively because the changes cannot be rolled back. In this case, the upgrade fails, but you are not prompted to enter the **show install all failure-reason** command; entering it will not yield any useful information.

If you need additional information to determine why an upgrade is unsuccessful, you can obtain the details from the **show tech-support** command output and from the console output from the installation, if available.

Related Documentation

The documentation set for the Cisco MDS 9000 Family includes the following documents. To find a document online, use the Cisco MDS NX-OS Documentation Locator at:

http://www.cisco.com/en/US/docs/storage/san_switches/mds9000/roadmaps/doclocater.htm

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 Cisco MDS 9000 EPLD Images*
- *Cisco DCNM Release Notes*

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 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 9250i Series Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9148S Series Hardware Installation Guide*
- *Cisco MDS 9148S Multilayer Switch Quick Start Guide*
- *Cisco MDS 9396 Series Hardware Installation Guide*

Software Installation and Upgrade

- *Cisco MDS 9000 NX-OS 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*
- *Cisco MDS 9000 Family Cookbook for Cisco MDS SAN-OS*

Cisco DCNM-SAN

- *Cisco DCNM Fundamentals Guide*
- *System Management Configuration Guide, Cisco DCNM for SAN*
- *Interfaces Configuration Guide, Cisco DCNM for SAN*
- *Fabric Configuration Guide, Cisco DCNM for SAN*
- *Quality of Service Configuration Guide, Cisco DCNM for SAN*
- *Security Configuration Guide, Cisco DCNM for SAN*
- *IP Services Configuration Guide, Cisco DCNM for SAN*
- *Intelligent Storage Services Configuration Guide, Cisco DCNM for SAN*
- *High Availability and Redundancy Configuration Guide, Cisco DCNM for SAN*
- *Inter-VSAN Routing Configuration Guide, Cisco DCNM for SAN*
- *SMI-S and Web Services Programming Guide, Cisco DCNM for SAN*

Command-Line Interface

- *Cisco MDS 9000 Family Command Reference*

Intelligent Storage Networking Services Configuration Guides

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

Troubleshooting and Reference

- *Cisco MDS 9000 Family and Nexus 7000 Series System Messages Reference*

- *Cisco MDS 9000 Family NX-OS Troubleshooting Guide*
- *Cisco MDS 9000 Family NX-OS MIB Quick Reference*
- *Cisco DCNM for SAN Database Schema 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.