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Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images, Release 4.x

Part Number: OL-17601-05

Release Date: August 23, 2010



Note

Release notes are sometimes updated with new information. Refer to the following website for the most recent version of the *Cisco MDS 9000 Family Release Notes*:
http://www.cisco.com/en/US/products/ps5989/prod_release_notes_list.html

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Introduction

Switches and directors in the Cisco MDS 9000 Family contain several electrical programmable logical devices (EPLDs) that provide hardware functionalities in all of the modules. As of Cisco MDS SAN-OS Release 4.1(1b), EPLD image upgrades are periodically provided to include enhanced hardware functionality or to resolve known issues.

You do not need to update your EPLD image unless otherwise advised by TAC. For detailed functional image upgrade instructions, refer to the *Cisco MDS 9000 NX-OS Fundamentals Configuration Guide*. To download the EPLD image, go to the following URL:

<http://www.cisco.com/kobayashi/sw-center/index.shtml>



Note

As of NX-OS Release 4.1(1b), SAN-OS has been changed to NX-OS. References to SAN-OS releases before 4.1(1b) still apply.



Note

For information on configuring, upgrading, and displaying EPLD images, refer to the *Cisco MDS 9000 NX-OS Fundamentals Configuration Guide* and the *Cisco MDS 9000 Family Command Reference*.



Note

Except for the Cisco MDS 9222i switch, the Cisco MDS 9200 Series switches do not support EPLD upgrades.

Changes Since the Last Release

The EPLD m9000-epld-4.2.7a.img file is a new EPLD image that supports the new Cisco MDS 9500 Series Supervisor-2A module, DS-X9530-SF2A-K9.

There are no caveats associated with the EPLD m9000-epld-4.2.7a.img file .

Determining the EPLD Versions on Your Modules

You can determine the EPLD versions by using CLI commands. This section includes the following topics:

- [Module EPLD Versions, page 2](#)
- [Clock Module EPLD Versions, page 4](#)

Module EPLD Versions

Use the **show version module slot epld** command to view all current EPLD versions on a specified module.

Example 1 Displaying Current EPLD Versions for a Specified Module

```
switch# show version module 2 epld
EPLD Device Version
```

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```
-----
Power Manager      0x07
XBUS IO            0x07
UD Flow Control    0x05
PCI ASIC I/F       0x05
PCI Bridge         0x07
```

Use the **show version epld url** command to view available EPLD versions. The following command output example shows available EPLD versions.

See the EPLD Support Matrix in [Table 1](#) for additional information about the modules supported by EPLD versions.

Example 2 Displaying Module EPLD Versions

```
switch# show version epld bootflash:m9000-epld-4.2.7a.img.S5
Len 3910989, CS 0xf4, string MDS series EPLD image, built on Mon Aug  2 21:16:50
2010
```

Module Type	EPLD Device	Version
MDS 9500 Supervisor 1	XBUS 1 IO	0x09
	XBUS 2 IO	0x0c
	UD Flow Control	0x05
	PCI ASIC I/F	0x04
1/2 Gbps FC Module (16 Port)	XBUS IO	0x07
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
1/2 Gbps FC Module (32 Port)	XBUS IO	0x07
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
Advanced Services Module	XBUS IO	0x07
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
	PCI Bridge	0x07
IP Storage Services Module (8 Port)	Power Manager	0x08
	XBUS IO	0x03
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
	Service Module I/F 0x0a	
	IPS DB I/F	0x1a
IP Storage Services Module (4 Port)	Power Manager	0x08
	XBUS IO	0x03
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
	Service Module I/F	0x1a
Caching Services Module	Power Manager	0x08
	XBUS IO	0x03
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
	Service Module I/F	0x72
	Memory Decoder 0	0x02
	Memory Decoder 1	0x02
MDS 9100 Series Fabric Switch	XBUS IO	0x03
	PCI ASIC I/F	0x40000003
2x1GE IPS, 14x1/2Gbps FC Module	Power Manager	0x08
	XBUS IO	0x05
	UD Flow Control	0x05
	PCI ASIC I/F	0x07

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Storage Services Module	IPS DB I/F	0x1a
	XBUS IO	0x07
	UD Flow Control	0x05
	PCI ASIC I/F	0x05
MDS 9500 Supervisor 2 (Part No: 73-9621-XX)	PCI Bridge	0x07
	Power Manager	0x0e
	XBUS IO	0x0b
	Fabric Controller 1	0x0b
MDS 9500 Supervisor 2 (Part No: 73-12342-XX)	Fabric Controller 2	0x46
	Power Manager	0x0e
	XBUS IO	0x2f
	Fabric Controller 1	0x0b
MDS 9500 Supervisor 2 (Part No: 73-13231-XX)	Fabric Controller 2	0x46
	Power Manager	0x0e
	XBUS IO	0x2f
	Fabric Controller 1	0x0b
10 Gbps FC Module	Fabric Controller 2	0x46
	Power Manager	0x0b
	XBUS IO	0x0b
	Power Manager	0x0b
1/2/4 Gbps FC Module (12 Port)	XBUS IO	0x0b
	Power Manager	0x0b
	XBUS IO	0x0b
	Power Manager	0x0b
1/2/4 Gbps FC Module (24 Port)	XBUS IO	0x0b
	Power Manager	0x0b
	XBUS IO	0x0b
	Power Manager	0x0b
1/2/4 Gbps FC Module (48 Port)	XBUS IO	0x0b
	Power Manager	0x0b
	XBUS IO	0x0b
	Power Manager	0x0b
MDS 9124 Fabric Switch	Power Manager	0x0b
MDS FC Blade Switch (IBM BladeCntr)	Power Manager	0x08
Multiservice Module (18/4 Port)	Power Manager	0x08
	XBUS IO	0x08
	Power Manager	0x08
	XBUS IO	0x03
MDS 9222i Multiservice Switch	Power Manager	0x08
	XBUS IO	0x08
	Power Manager	0x08
	XBUS IO	0x08
Multiservice FIPS Module (18/4 Port)	Power Manager	0x04
	Power Manager	0x11
	Clock Controller	0x05
	Power Manager	0x02
MDS 9124e Blade Switch (HP C-Class)	XBUS IO	0x06
	Power Manager	0x05
	XBUS IO	0x15
	Power Manager	0x05
MDS 9134 Fabric Switch	XBUS IO	0x15
	Power Manager	0x09
	XBUS IO	0x23
	Power Manager	0x01
Clock card		
1/2/4/8 Gbps FC Module (48 Port)		
1/2/4/8 Gbps FC Module (48 Port)		
1/2/4/8 Gbps FC Module (24 Port)		
16x1GE Port		
NEC 24-port 1/2/4G SUP/LC		


Note

Do not upgrade the EPLD on the MDS FC Blade Switch (IBM BladeCntr) module, if the version contained in the EPLD image file for the MDS FC Blade Switch (IBM BladeCntr) module is 0x7.

Clock Module EPLD Versions

Use the **show version clock-module epld** command to view current EPLD versions on the Cisco MDS 9513 clock modules. The following command output example shows available clock module EPLD versions.

Example 3 Displaying Clock Module EPLD Versions

```
switch# show version clock-module epld
```

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EPLD Device	Version
-----	-----
Clock Controller (Clock A)	0x05
Clock Controller (Clock B)	0x05

Installing and Upgrading the EPLD Version

EPLDs can be installed, upgraded, or downgraded using CLI commands. This section includes the following topics:

- [Installing and Upgrading Module EPLDs, page 5](#)
- [Installing or Upgrading Clock Module EPLDs, page 7](#)



Note

When attempting to use USB ports, the following message may be displayed:

Please upgrade Power Management EPLD to version 0xD or higher.

You may need to upgrade the Power Management EPLD for the supervisor modules to version 0xD or higher to use the USB ports. After upgrading the Power Management EPLD, you must power cycle the supervisor modules by power cycling the chassis. This is a disruptive upgrade. To perform a nondisruptive upgrade, see “[Upgrading the Power Management EPLD Nondisruptively](#)”.

Installing and Upgrading Module EPLDs

Use the **install module *module-number* epld** command to upgrade EPLD images for a module. The modules that can be upgraded with this command are the standby supervisor and the switching modules. To upgrade the modules, you must enter the **install module *module-number* epld** command from the active supervisor. The active supervisor cannot be upgraded, only the standby supervisor can be upgraded.

Example 4 Upgrading Module EPLDs

```
switch# install module 9 epld bootflash:m9000-epld.4.2.7a.img
```

EPLD	Curr Ver	New Ver
-----	-----	-----
XBUS IO	0x07	0x07
UD Flow Control	0x05	0x05
PCI ASIC I/F	0x05	0x05
PCI Bridge	0x05	0x07

WARNING: Upgrade process could take upto 15 minutes.

Module 9 will be powered down now!!

Do you want to continue (y/n) ? **y**

\ <-----progress twirl

Module 9 EPLD upgrade is successful

If you forcefully upgrade a module that is not online, all EPLDs are forcefully upgraded. If the module is not present in the switch, an error is returned. If the module is present, the upgrade process continues.

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To upgrade a module that is not online but is present in the chassis, use the **install module module-number epld** command. The switch software prompts you to continue after reporting the module state. When you confirm your intention to continue, the upgrade continues.

```
switch# install module 2 epld bootflash:m9000-epld-2.01b.img
\ <-----progress twirl
Module 2 EPLD upgrade is successful
```



Note

When you upgrade the EPLDs on the Cisco MDS 9100 Family switches or when you upgrade EPLDs for a module in slot 1 of a Cisco MDS 9222i switch, the following message is displayed:

```
Data traffic on the switch will stop now!!
Do you want to continue (y/n) ?
```

When you install a Supervisor-2 module on a Cisco MDS 9513 Director, the external crossbar module will be upgraded with the standby Supervisor-2 module if a new EPLD version for the external crossbar module is available. To upgrade the external crossbar module, you need to have the standby Supervisor-2 module present and run the **install module module-number epld** command from the active supervisor module.

Example 5 Upgrading External Crossbar Modules

```
switch# install module 8 epld bootflash:m9000-epld-4.2.7a.img
EPLD                               Curr Ver    New Ver
-----
Power Manager                      0x0c       0x0e
XBUS IO                            0x0a       0x0b
Fabric Controller 1                0x09       0x0b
WARNING: Upgrade process could take up to 15 minutes.

Module 8 will be powered down now!!
Do you want to continue (y/n) ?y
-
Module 8 EPLD upgrade is successful
```



Note

When a Fabric 2 Module is present on the switch, the Fabric Controller 2 epld will be upgraded and the output will display Fabric Controller 2 and its current and new versions.

Upgrading the Power Management EPLD Nondisruptively

To upgrade the Power Management EPLD on supervisor modules in a nondisruptive manner, follow these steps:

- Step 1** Upgrade the Power Management EPLD on the standby supervisor module. From the active supervisor module, enter the **install module x epld bootflash: epld_image_file_x_x_x** CLI command.
After the EPLD upgrade is complete, the standby supervisor module will reboot.
- Step 2** When the standby Supervisor module is online, physically remove the standby supervisor module and reinstall it.
The standby supervisor module will come up with the new Power Management EPLD version.

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- Step 3** After the standby supervisor module comes online, perform a switchover and wait till the new standby supervisor module comes online.
- Step 4** From the active supervisor module, repeat steps 1 through 3.

Installing or Upgrading Clock Module EPLDs

Use the **install clock-module epld url** command on the active supervisor module to upgrade EPLD images for the clock modules. After upgrading the clock modules, power cycle the entire chassis for the change to take effect. Rebooting the chassis is not enough for the changes to take effect; you must turn off and turn on the chassis.

Example 6 Upgrading Clock Module EPLDs

```
switch# install clock-module epld bootflash:m9000-epld-4.2.7a.img

Len 3910989, CS 0xf4, string MDS series EPLD image, built on Mon Aug  2 21:16:50
2010
EPLD                               Curr Ver    New Ver
-----
Clock Controller                   0x03       0x05
There are some newer versions of EPLDs in the image!
Do you want to continue (y/n) ? y

Proceeding to program Clock Module B.

Do you want to switchover Clock Modules after programming Clock Module B.
System Will Reset! y/n) ?n
|
Clock Module B EPLD upgrade is successful.
```

A Cisco MDS 9513 Director switch has two clock modules that can be upgraded. The EPLD upgrade utility only upgrades the standby clock module. You can check to see which clock module is in standby mode by entering the **show environment** command.

Example 7 Upgrading standby clock module

```
switch# show environment
Clock:
-----
Clock      Model          Hw      Status
-----
A          DS-C9513-CL     0.101   Ok/Standby
B          DS-C9513-CL     0.101   Ok/Active
```

During the upgrade of the standby clock module the EPLD upgrade prompts you for the switchover of the clock modules. If you choose to allow the clock module switchover, the switch will reboot. After the switch reboots, enter the **show environment** command to verify that the previous active clock module is now the standby clock module. You can continue to upgrade the new standby clock module and allow a clock switchover to return the clock modules to their previous active and standby states.

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Guidelines and Limitations

When you upgrade or downgrade the EPLDs, observe the following guidelines and limitations:

- You can upgrade each module individually that is online. The EPLD upgrade is only disruptive to the module being upgraded.
- If you interrupt an upgrade, the module must be upgraded again.
- The upgrade or downgrade can only be executed from the active supervisor module. While the active supervisor module cannot be upgraded, you can upgrade the other modules individually.
- In Cisco MDS 9100 Series fabric switches, be sure to specify one (1) as the module number.
- EPLD upgrades are not allowed for the following modules in slot 2 of the Cisco MDS 9222i Multiservice Modular Switch:
 - MDS 9000 8-port IP Storage Services Module
 - MDS 9000 32-port Fibre Channel Storage Services Module (SSM)

EPLD Support Matrix

Table 1 lists the EPLD images and the Cisco modules they support.

Table 1 *EPLD Support Matrix*

Cisco Modules Supported by the EPLD Images									
Cisco MDS 9000 Modules	m9000-epld-4.2.7a.img and higher versions	m9000-epld-4.1.1a.img, m9000-epld-4.1.3.img, and higher versions	m9000-epld-3.3.5a.img and higher versions	m9000-epld-3.3.2.img, m9000-epld-3.2.2c.img, m9000-epld-3.2.1.img	m9000-epld-3.1.1.img	m9000-epld-3.0.1.img	m9000-epld-2.1.2.img	m9000-epld-2.0.1b.img	m9000-epld-1.2.1a.img
Supervisor-2A module	X		X						
Supervisor-2 module	X	X	X	X	X	X			
Supervisor -1 module	X	X ¹	X ¹	X	X	X	X	X	X
Cisco MDS 9513 external crossbar module	X	X	X	X	X	X			
Cisco MDS 9513 clock module	X	X	X	X	X	X			
48-port 4-Gbps Fibre Channel switching module	X	X	X	X	X	X			

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Table 1 EPLD Support Matrix (continued)

Cisco Modules Supported by the EPLD Images									
Cisco MDS 9000 Modules	m9000-epld-4.2.7a.img and higher versions	m9000-epld-4.1.1a.img, m9000-epld-4.1.3.img, and higher versions	m9000-epld-3.3.5a.img and higher versions	m9000-epld-3.3.2.img, m9000-epld-3.2.2c.img, m9000-epld-3.2.1.img	m9000-epld-3.1.1.img	m9000-epld-3.0.1.img	m9000-epld-2.1.2.img	m9000-epld-2.0.1b.img	m9000-epld-1.2.1a.img
24-port 4-Gbps Fibre Channel switching module	X	X	X	X	X	X			
12-port 4-Gbps Fibre Channel switching module	X	X	X	X	X	X			
4-port 10-Gbps Fibre Channel switching module	X	X	X	X	X	X			
32-Port Fibre Channel Storage Services Module (SSM)	X	X	X	X	X	X	X		
8-port Gigabit Ethernet IP Storage Services module	X	X ¹	X ¹	X	X	X	X	X	
4-port Gigabit Ethernet IP Storage Services module	X	X ¹	X ¹	X	X	X	X	X	
14-port Fibre Channel/2-port Gigabit Ethernet Multiprotocol Services (MPS-14/2) module	X	X	X	X	X	X	X	X	
32-Port Fibre Channel Advanced Services Module (ASM)	X	X	X	X	X	X	X	X	

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Table 1 *EPLD Support Matrix (continued)*

Cisco Modules Supported by the EPLD Images									
Cisco MDS 9000 Modules	m9000-epld-4.2.7a.img and higher versions	m9000-epld-4.1.1a.img, m9000-epld-4.1.3.img , and higher versions	m9000-epld-3.3.5a.img and higher versions	m9000-epld-3.3.2.img, m9000-epld-3.2.2c.img, m9000-epld-3.2.1.img	m9000-epld-3.1.1.img	m9000-epld-3.0.1.img	m9000-epld-2.1.2.img	m9000-epld-2.0.1b.img	m9000-epld-1.2.1a.img
Caching Services Module (CSM)	X	X	X	X	X	X	X	X	
32-Port 1-Gbps/2-Gbps Fibre Channel Switching Module	X	X	X	X	X	X	X	X	X
16-Port 1-Gbps/2-Gbps Fibre Channel Switching Module	X	X	X	X	X	X	X	X	X
Cisco MDS 9124 Fabric Switch	X	X	X	X	X				
Cisco Fabric Switch for HP c-Class BladeSystem	X	X	X	X	X				
Cisco Fabric Switch for IBM BladeCenter	X	X	X	X	X				
Cisco MDS 9134 Fabric Switch	X	X	X	X					
Cisco MDS 9222i Switch	X	X	X	X					
18-port Fibre Channel/4-port Gigabit Ethernet Multiservice Module (MSM-18/4)	X	X	X	X					
48-port 8-Gbps Fibre Channel module	X	X							

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Table 1 *EPLD Support Matrix (continued)*

Cisco Modules Supported by the EPLD Images									
Cisco MDS 9000 Modules	m9000-epld-4.2.7a.img and higher versions	m9000-epld-4.1.1a.img, m9000-epld-4.1.3.img, and higher versions	m9000-epld-3.3.5a.img and higher versions	m9000-epld-3.3.2.img, m9000-epld-3.2.2c.img, m9000-epld-3.2.1.img	m9000-epld-3.1.1.img	m9000-epld-3.0.1.img	m9000-epld-2.1.2.img	m9000-epld-2.0.1b.img	m9000-epld-1.2.1a.img
4/44-port 8-Gbps Host-Optimized Fibre Channel module	X	X							
24-port 8-Gbps Fibre Channel module	X	X							
16-Port Storage Services Node (SSN-16)	X	X							

1. NX-OS 4.x does not support the following modules: the Supervisor-1 module, the 8-port Gigabit Ethernet IP Storage Services module, and the 4-port Gigabit Ethernet IP Storage Services module. Even so, the m9000-epld-4.1.3.img and the m9000-epld-4.1.1a.img contain an EPLD version for these modules. If you wish to use these modules with the newest EPLD version, upgrade to SAN-OS 3.3(2) or higher and its corresponding EPLD image. The EPLD image for SAN-OS 3.3(2) and higher is kept up-to-date with the newest EPLD versions available in NX-OS 4.x.

Table 2 shows the NX-OS and SAN-OS releases that are compatible with specific EPLD images.

Table 2 *Release Compatibility Matrix*

SAN-OS or NX-OS Release	EPLD Image
NX-OS 4.2(7a)	m9000-epld-4.2.7a.img
NX-OS 4.2(1)	m9000-epld-4.1.3.img
NX-OS 4.1(3a)	m9000-epld-4.1.3.img
NX-OS 4.1(3)	m9000-epld-4.1.3.img
NX-OS 4.1(1c)	m9000-epld-4.1.1a.img
NX-OS 4.1(1b)	
SAN-OS 3.3(5a)	m9000-epld-3.3.5a.img
SAN-OS 3.3(3)	m9000-epld-3.3.2.img
SAN-OS 3.3(2)	
SAN-OS 3.3(1c)	m9000-epld-3.2.2c.img
SAN-OS 3.2(3a)	
SAN-OS 3.2(2c)	
SAN-OS 3.2(1a)	m9000-epld-3.2.1.img

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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/doclocator.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 Storage Services Interface Images*
- *Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images*
- *Release Notes for Cisco MDS 9000 Family Fabric Manager*

Regulatory Compliance and Safety Information

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

Compatibility Information

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

Hardware Installation

- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9124 and Cisco MDS 9134 Multilayer Fabric Switch Quick Start Guide*

Software Installation and Upgrade

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

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- *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 Fabric Manager

- *Cisco Fabric Manager Fundamentals Configuration Guide*
- *Cisco Fabric Manager System Management Configuration Guide*
- *Cisco Fabric Manager Interfaces Configuration Guide*
- *Cisco Fabric Manager Fabric Configuration Guide*
- *Cisco Fabric Manager Quality of Service Configuration Guide*
- *Cisco Fabric Manager Security Configuration Guide*
- *Cisco Fabric Manager IP Services Configuration Guide*
- *Cisco Fabric Manager Intelligent Storage Services Configuration Guide*
- *Cisco Fabric Manager High Availability and Redundancy Configuration Guide*
- *Cisco Fabric Manager Inter-VSAN Routing Configuration Guide*
- *Cisco Fabric Manager Online Help*
- *Cisco Fabric Manager Web Services Online Help*

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*

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- *Cisco MDS 9000 Family Data Mobility Manager Configuration Guide*
- *Cisco MDS 9000 Family Storage Media Encryption Configuration Guide*
- *Cisco MDS 9000 Family Secure Erase Configuration Guide*
- *Cisco MDS 9000 Family Cookbook for Cisco MDS SAN-OS*

Troubleshooting and Reference

- *Cisco NX-OS System Messages Reference*
- *Cisco MDS 9000 Family NX-OS Troubleshooting Guide*
- *Cisco MDS 9000 Family NX-OS MIB Quick Reference*
- *Cisco MDS 9000 Family NX-OS SMI-S Programming Reference*
- *Cisco MDS 9000 Family Fabric Manager Server Database Schema*

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Obtaining Documentation, Obtaining Support, and Security Guidelines

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