Cisco MDS 9000 Series EPLD Release Notes

Release 9.3(2a)

Contents

Introduction

Switches and directors in the Cisco MDS 9000 Series contain several electrical programmable logical devices (EPLDs) that provide hardware functionalities in all the modules. EPLD upgrades are periodically provided to include enhanced hardware functionality or to resolve known issues.

EPLD bundles are released as part of a Cisco MDS NX-OS release. Therefore, the EPLD bundles have a version number that matches the Cisco MDS NX-OS release they are part of.

An EPLD bundle is a package containing updates for multiple EPLDs. Each EPLD update has its own version number, which is independent of the Cisco MDS NX-OS release. As EPLD changes are infrequent, an EPLD bundle may contain new updates for only some EPLDs. The remaining EPLD updates will be the same version as the previous EPLD bundle.

You need not update switch EPLDs unless otherwise advised by TAC. For detailed functional image upgrade instructions, refer to the Cisco MDS 9000 NX-OS Fundamentals Configuration Guide . To download EPLD bundles, go to the following URL: https://software.cisco.com/download/navigator.html.

Date	Description
May 17, 2023	Initial release.

EPLD Bundle Support Matrix

The version of the EPLD bundle must match the version of Cisco MDS NX-OS release that is running when the EPLD upgrades are installed. This requirement only applies during EPLD code upgrade or downgrade. Cisco MDS NX-OS can be subsequently upgraded or downgraded without changing the EPLD versions. The below table shows the EPLD bundles that are compatible with specific NX-OS releases.

Table 1. Release Compatibility Matrix

NX-OS Release	EPLD Bundle
NX-OS 9.3(2a)	m9000-pkg1-9.3.2a.epld m9000-pkg2-9.3.2a.epld m9000-pkg3-9.3.2a.epld

The below table lists the Cisco MDS 9000 components and the EPLD bundle versions that are supported for the components.

Table 2. Cisco MDS 9000 EPLD Bundle Versions

EPLD Bundle	Cisco MDS 9000 Components	Product Identifier (PID)
m9000-pkg1.9.3.2a.epld	MDS 9148S 48-Port 16-Gbps Fabric Switch	DS-C9148S-K9-SUP
	MDS 9250i 40-Port 16-Gbps Fabric Switch	DS-C9250I-K9-SUP
m9000-pkg2.9.3.2a.epld [1]	MDS 9396S 16-Gbps Multilayer Fabric Switch	DS-C9396S-K9-SUP

[1] Although the **show version epld** command displays Cisco MDS 9132T, MDS 9148T, and MDS 9396T platforms as supported in this bundle, they are not supported. Instead, they are supported in the m9000-pk3 bundle as indicated in this table.

EPLD Bundle	Cisco MDS 9000 Components	Product Identifier (PID)
	MDS 9700 Supervisor Module 1	DS-X97-SF1-K9
	MDS 9700 Supervisor Module 1	DS-X97-SF1E-K9
	MDS 9700 Supervisor Module 4	DS-X97-SF4-K9
	48-Port 16-Gbps Advanced Fibre Channel Module	DS-X9448-768K9
	48-Port 32-Gbps Advanced Fibre Channel Module	DS-X9648-1536K9
	48-Port 64-Gbps Advanced Fibre Channel Module	DS-X9748-3072K9
	24-Port 40-Gbps FCoE Module	DS-X9824-960K9
	48-Port 10-Gbps FCoE Module	DS-X9848-480K9
	MDS 9706 Fabric Module 1	DS-X9706-FAB1
	MDS 9710 Fabric Module 1	DS-X9710-FAB1
	MDS 9718 Fabric Module 1	DS-X9718-FAB1
	MDS 9710 Fabric Module 2	DS-X9710-FAB2
	MDS 9710 Fabric Module 3	DS-X9710-FAB3
	MDS 9718 Fabric Module 3	DS-X9718-FAB3
	MDS 9706 Fan Module	DS-C9706-FAN
	MDS 9710 Fan Module	DS-C9710-FAN
	MDS 9718 Fan Module	DS-C9718-FAN
m9000-pkg3.9.3.2a.epld	MDS 9132T Fibre Channel Switch	DS-C9132T-K9-SUP
	MDS 9124V Fibre Channel Switch	DS-C9124V-K9-SUP
	MDS 9148T Fibre Channel Switch	DS-C9148T-K9-SUP
	MDS 9148V Fibre Channel Switch	DS-C9148V-K9-SUP
	MDS 9220i Fibre Channel Switch	DS-C9220I-K9
	MDS 9396T Fibre Channel Switch	DS-C9396T-K9-SUP

EPLD Versions in Cisco MDS 9000 EPLD Bundle

Each EPLD bundle that you can download from http://www.cisco.com is a bundle of EPLD upgrades. The below table lists the EPLD versions for Cisco MDS 9000 series platforms for Cisco MDS NX-OS Release 9.3(2).

Model Number/Application Models	Module Type	EPLD Device	Version
MDS 9124V Fibre Channel Fabric Switch			
DS-C9124V-K9-SUP	24-Port 8/16/32/64-Gbps 1-RU Fabric Switch	MI IO SPI	0.012
		IO SPI 2	0.014
MDS 9132T Fibre Channel Fabric Switch			
DS-C9132T	32-Port 4/8/16/32-Gbps 1-RU Fabric Switch	IO SPI 2	0.024
		MI IO SPI	0.017
		LEM IO SPI	0.016
MDS 9148S Fibre Channel Fabric Switch			
DS-C9148S-K9	48-Port 2/4/8/16-Gbps Fabric Switch	Power Manager	0x1f
MDS 9148T Fibre Channel Fabric Switch			
DS-C9148T-K9	48-Port 4/8/16/32-Gbps 1-RU Fabric Switch	SFP SPI	0.01
		IO SPI 2	0.01
		MI IO SPI	0.01
MDS 9148V Fibre Channel Fabric Switch			
DS-C9148V-K9-SUP	48-Port 8/16/32/64-Gbps 1-RU Fabric Switch	MI IO SPI	0.012
		IO SPI 2	0.014
MDS 9220i Multiservice Fabric Switch			
DS-C9220I-K9	4/8/16/32-Gbps 1-RU Fabric Switch	IO SPI 2	0.024
		MI IO SPI	0.027
		AKFPGA SPI	1
MDS 9250i Multiservice Fabric Switch			
DS-C9250I-K9	40-Port 2/4/8/16-Gbps Fabric Switch	Power Manager	0x1a
		DB Power Manager	0x0b

Model Number/Application Models	Module Type	EPLD Device	Version
MDS 9396S Fibre Channel Fabric Switch			
DS-C9396S-K9	96-Port 2/4/8/16-Gbps Fabric Switch	IO SPI 2	1.00
		IO SPI	1.00
MDS 9396T Fibre Channel Fabric Switch			
DS-C9396T-K9	96-Port 4/8/16/32-Gbps 2-RU Fabric Switch	SFP SPI	0.007
		IO SPI 2	0.013
		MI IO SPI	0.006
		LEM-1 SPI	0.016
		LEM-2 SPI	0.016
		LEM-3 SPI	0.016
MDS 9700 Series Common Modules			
DS-X97-SF1-K9	Supervisor Module 3	Power Manager SPI	22.00
DS-X97-SF1E-K9	Supervisor Module 3	Power Manager SPI	22.00
DS-X97-SF4-K9	Supervisor Module 4	Power Manager SPI	23.00
DS-X9448-768K9	48-Port 16-Gbps Advanced Fibre Channel Module	Power Manager	10.00
		IO	15.00
DS-X9648-1536K9	48-Port 32-Gbps Fibre Channel Switching Module	Power Manager SPI	0.002
		SFP SPI	0.005
		IO SPI	2.00
DS-X9748-3072K9	48-Port 64-Gbps Fibre Channel Switching Module	SFP SPI	0.008
		IO SPI	0.029
DS-X9824-960K9	40-Gbps FCoE Module	Power Manager SPI	1.01
		IO SPI 2	0.03
		IO SPI	0.03
DS-X9848-480K9	10-Gbps FCoE Module	Power Manager SPI	0.01
		IO	0.01
DS-X9334-K9	24/10-Port SAN Extension	Power Manager SPI	1.001

Model Number/Application Models	Module Type	EPLD Device	Version
	Module	IO SPI	2.00
MDS 9706 Series Specific Modules			
DS-C9706-FAN	Fan	Fan Controller (1)	0.01
		Fan Controller (2)	0.01
DS-X9706-FAB-1	Fabric Module 1	Power Manager	1.00
DS-X9706-FAB-3	Fabric Module 3	Power Manager	0.01
MDS 9710 Series Specific Modules			
DS-C9710-FAN	Fan	Fan Controller (1)	0.01
		Fan Controller (2)	0.01
DS-X9710-FAB-1	Fabric Module 1	Power Manager	1.00
DS-X9710-FAB-3	Fabric Module 3	Power Manager	0.01
MDS 9718 Series Specific Modules			
DS-C9718-FAN	Fan	Fan Controller (1)	0.01
		Fan Controller (2)	0.01
DS-X9718-FAB-1	Fabric Module 1	Power Manager	1.00
DS-X9718-FAB-3	Fabric Module 3	Power Manager	0.01

Resolved Issues

This EPLD release contains minor hardware-related changes that do not change the product specification. For example, handling new versions of hardware electrical components on a new revision of a module. These changes are backward compatible with older hardware, but unnecessary unless specifically documented below.

There are no resolved issues in this release.

Guidelines and Limitations

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

- You can upgrade each module only when it is online. The EPLD upgrade is only disruptive to the module being upgraded.
- If you interrupt an EPLD upgrade or downgrade, the module must be upgraded again.
- In Cisco MDS 9000 Director Switches, EPLD upgrade or downgrade can only be executed from the active supervisor module. To upgrade the supervisor EPLDs nondisruptively, upgrade the standby

supervisor and then switchover. After the new standby supervisor is online, its EPLDs can be upgraded.

- In Cisco MDS 9000 Series Fabric Switches, be sure to specify 1 as the module number. The switch must be power cycled for the EPLDs to start running the new code.

Determining EPLD Versions

You can determine the EPLD versions currently installed in the hardware and also in EPLD images by using CLI commands. This section includes the following topics:

Module EPLD Versions

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

Example 1 Displaying Current EPLD Versions for a Module

```
switch# show version module 1 epld
EPLD Device Version
---------------------------------------
Power Manager SPI 0.002
IO SPI 0.038
SFP SPI 0.005
```

Fan Module EPLD Versions

Use the **show version fan** *slot* **epld** command to view all current EPLD versions on a specific fan module. The following command output shows the currently installed EPLD versions on a fan module.

Example 2 Displaying Current EPLD Versions for a Fan Module

```
switch# show version fan 1 epld
EPLD Device        Version
---------------------------------------
Fan Controller (1) 0.006
Fan Controller (2) 0.006
```

Fabric Module EPLD Versions

Use the **show version xbar** *slot* **epld** command to view all current EPLD versions on a specific fabric module. The following command output shows the currently installed EPLD versions on a fabric module.

Example 3 Displaying Current EPLD Versions for a Fabric Module

```
switch# show version xbar 2 epld
EPLD Device      Version
---------------------------------------
Power Manager    0.008
```

Displaying EPLD Versions in an EPLD Bundle

Use the **show version epld** *uri* command to view all the updates contained in an EPLD package. The following example shows the EPLD versions contained in an EPLD bundle.

Example 4 Displaying EPLD Versions in an EPLD Bundle

```
switch# show version epld m9000-pkg3.9.3.2a.epld
```

```
Retrieving EPLD versions... Please wait.
EPLD image file 9.3.2a built on Fri Apr 16 09:46:41 2023
Module Type Model EPLD Device Version
------------------------------------------------------
Supervisor Module-3 DS-X97-SF1-K9 Power Manager SPI 22.000
Supervisor Module-3 DS-X97-SF1E-K9 Power Manager SPI 22.000
Supervisor Module-4 DS-X97-SF4-K9 Power Manager SPI 23.000

Fabric Module 1 DS-X9718-FAB1 Power Manager 1.002
Fabric Module 1 DS-X9710-FAB1 Power Manager 1.003
Fabric Module 1 DS-X9706-FAB1 Power Manager 1.002

Fabric Module 3 DS-X9706-FAB-3 Power Manager 0.010
Fabric Module 3 DS-X9710-FAB-3 Power Manager 0.008
Fabric Module 3 DS-X9718-FAB-3 Power Manager 0.007

16 Gbps Advanced FC Module DS-X9448-768K9 Power Manager 10.000
16 Gbps Advanced FC Module DS-X9448-768K9 IO 15.000

10 Gbps FCoE Module DS-X9848-480K9 Power Manager 0.006
10 Gbps FCoE Module DS-X9848-480K9 IO 0.005

40 Gbps FCoE Module DS-X9824-960K9 Power Manager SPI 1.005
40 Gbps FCoE Module DS-X9824-960K9 IO SPI 2 0.028
40 Gbps FCoE Module DS-X9824-960K9 IO SPI 0.031

Fan DS-C9718-FAN Fan Controller (1) 0.006
Fan DS-C9718-FAN Fan Controller (2) 0.006

Fan DS-C9710-FAN Fan Controller (1) 0.006
Fan DS-C9710-FAN Fan Controller (2) 0.006

Fan DS-C9706-FAN Fan Controller (1) 0.006
Fan DS-C9706-FAN Fan Controller (2) 0.006

2/4/8/16G Fabric Switch DS-C9396S-K9 IO SPI 2 1.002
2/4/8/16G Fabric Switch DS-C9396S-K9 IO SPI 1.003

32 Gbps Advanced FC Module DS-X9648-1536K9 Power Manager SPI 0.002
32 Gbps Advanced FC Module DS-X9648-1536K9 SFP SPI 0.005
32 Gbps Advanced FC Module DS-X9648-1536K9 IO SPI 2.000
```

```
1/10/40G IPS,2/4/8/10/16G FC ModulDS-X9334-K9 Power Manager SPI 1.001
1/10/40G IPS,2/4/8/10/16G FC ModulDS-X9334-K9 IO SPI 2.000

4/8/16/32G 1 RU Fabric Switch DS-C9132T IO SPI 2 0.024
4/8/16/32G 1 RU Fabric Switch DS-C9132T MI IO SPI 0.017
4/8/16/32G 1 RU Fabric Switch DS-C9132T LEM IO SPI 0.016

4/8/16/32G 2 RU Fabric Switch DS-C9396T-K9 SFP SPI 0.007
4/8/16/32G 2 RU Fabric Switch DS-C9396T-K9 IO SPI 2 0.013
4/8/16/32G 2 RU Fabric Switch DS-C9396T-K9 MI IO SPI 0.006
4/8/16/32G 2 RU Fabric Switch DS-C9396T-K9 LEM-1 SPI 0.016
4/8/16/32G 2 RU Fabric Switch DS-C9396T-K9 LEM-2 SPI 0.016
4/8/16/32G 2 RU Fabric Switch DS-C9396T-K9 LEM-3 SPI 0.016

4/8/16/32G 1 RU Fabric Switch DS-C9148T-K9 SFP SPI 0.007
4/8/16/32G 1 RU Fabric Switch DS-C9148T-K9 IO SPI 2 0.013
4/8/16/32G 1 RU Fabric Switch DS-C9148T-K9 MI IO SPI 0.006

1/10/25/40G IPS, 4/8/16/32G FC SwiDS-C9220I-K9 IO SPI 2 0.024
1/10/25/40G IPS, 4/8/16/32G FC SwiDS-C9220I-K9 MI IO SPI 0.027
1/10/25/40G IPS, 4/8/16/32G FC SwiDS-C9220I-K9 AKFPGA SPI 1.000

8/16/32/64 Gbps Advanced FC ModuleDS-X9748-3072K9 SFP SPI 0.008
8/16/32/64 Gbps Advanced FC ModuleDS-X9748-3072K9 IO SPI 0.029

8/16/32/64G 1 RU Fabric Switch DS-C9148V-K9 IO SPI 2 0.014
8/16/32/64G 1 RU Fabric Switch DS-C9148V-K9 MI IO SPI 0.012

8/16/32/64G 1 RU Fabric Switch DS-C9124V-K9 I O SPI 2 0.014
8/16/32/64G 1 RU Fabric Switch DS-C9124V-K9 MI IO SPI 0.012

switch # show version module 1 epld
EPLD Device Version

MI IO SPI 0.012
IO SPI 2 0.014
```

Installing EPLD Updates

Supervisors, switching, fabric, and fan modules may be upgraded in a switch. For Director switches, modules can be upgraded together or individually. For Fabric switches, modules are upgraded individually. Fabric switches do not require fabric and fan modules to be upgraded.

The modules to be upgraded are specified by the user. If the module number that is specified in the command is not present, the update is aborted. Otherwise, a warning and a prompt to continue is printed. If the user proceeds, the status of each specified module is printed followed by a table of installed and new EPLD versions. If no modules require upgrading, the command exits. If any module EPLD version is different and requires upgrading, the user is prompted to continue. All EPLDs are updated on the first specified module. The update process may take several minutes. After the update, the module is power cycled. For switching modules, this power cycle disrupts traffic on all ports of the module. If the new EPLD version is the same as the installed version or the module is present but not online, no action is taken for that module. If more than one module is specified, the download and power cycle process is repeated for the next module.

Installing EPLD Updates on All Modules in a Director Switch

To update all EPLDs sequentially with a single command, use the **install all epld** command with the **module all fan-module all xbar all** options. After each module is upgraded, it is power cycled to load the EPLD update. Switching module power cycles are disruptive to the traffic passing through them. If the active supervisor requires upgrading, it will be updated last and a supervisor switchover executed. Fan modules do not require to be power cycled.

Installing a Director Switch Supervisor Module EPLD Update

To update the EPLDs on supervisor modules of Director Switches in a nondisruptive manner, follow these steps:

Step 1. Update the EPLD on the standby supervisor module. From the active supervisor module, enter the **install all epld** CLI command, specifying the current standby supervisor module number.

After the EPLD update is complete, the standby supervisor module will be power cycled.

Step 2. After the standby supervisor module reaches 'ha-standby' state, perform a switchover and wait until the new standby supervisor module reaches 'ha-standby' state.

Step 3. From the active supervisor module, repeat steps 1–3.

For information about how to update the EPLDs on supervisor modules of the Fabric switches, see Installing a Switching Module EPLD Update.

Example 5 Updating the Standby Supervisor Module EPLDs on a Cisco MDS 9700 Series Switch

```
switch# install all epld bootflash:m9000-pkg2-9.3.2a.epld parallel module 6
Copy complete, now saving to disk (please wait)...
EPLD image signature verification passed
Compatibility check:
Module Type Upgradable Impact Reason
------ ---- ---------- ---------- ------
6 SUP Yes disruptive Module Upgradable
Retrieving EPLD versions... Please wait.

Images will be upgraded according to following table:
Module Type EPLD Running-Version New-Version Upg-Required
------ ---- ------------ --------------- ----------- ------------
6 SUP Power Manager SPI 18.000 19.000 Yes
The above modules require upgrade.
```

```
Do you want to continue (y/n) ? [n] y
Starting Module 6 EPLD Upgrade
Module 6 : Power Manager SPI [Upgrade Started ]
Module 6 : Power Manager SPI [Erasing ] : 100.00%
Module 6 : Power Manager SPI [Programming ] : 100.00% (6020818 of 6020818 total bytes)
Module 6 Upgrade Done.
Waiting for Module 6 to come online.
Module 6 EPLD upgrade is successful.
EPLD Upgrade Completed.
Module Type Upgrade-Result
------ ---- --------------
6 SUP Success
```

Installing a Switching Module EPLD Update

For Director Switches, use the **install all epld** uri **parallel module** slot command to update the EPLDs on an individual module. Use the **module all** option to update the EPLDs of both supervisors and all switching modules.

Example 6 Updating Module EPLDs on a Director Switch

```
switch# install all epld bootflash:m9000-pkg2.9.3.2a.epld parallel module 1
WARNING!!!: Executing the "install all epld" command
may result in multiple modules going offline and
affect redundant links.
For EPLD upgrade best practices, please refer below link:
http://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/sw/7_3/upgrade/upgrade.html
Do you want to continue (y/n) ? [n] y
Copy complete, now saving to disk (please wait)...
EPLD image signature verification passed
Compatibility check:
Module Type Upgradable Impact Reason
------ ---- ---------- ---------- ------
1 LC Yes disruptive Module Upgradable
Retrieving EPLD versions... Please wait.
Images will be upgraded according to following table:
Module Type EPLD          Running-Version New-Version Upg-Required
------ ---- ------------- --------------- ----------- ------------
1      LC   Power Manager 10.000          10.000      No
1      LC   IO            15.000          15.000      No
All Modules are up to date.
************************************
```

Installing a Fabric Switch Supervisor EPLD Update

Note: An EPLD update of the supervisor module of Fabric Switches (Cisco MDS 9100, Cisco MDS 9200, and Cisco MDS 9300 Series switches) is disruptive since there is no redundant supervisor to take over

while the update is in progress. All traffic through the system is stopped while updating and the switch is power cycled after the upgrade has completed. The update may take up to 30 minutes to complete. The following message is displayed:

```
Data traffic on the switch will be affected!!
The switch will reload after the upgrade process.
Do you want to continue (y/n) ?
```

For more information about upgrading supervisor modules in Director Switches, see Installing a Director Switch Supervisor Module EPLD Update.

Example 7 Updating Supervisor EPLDs on a Fabric Switch

```
switch# install module 1 epld bootflash:m9000-pkg2-9.3.2a.epld
Retrieving EPLD versions... Please wait.
Images will be upgraded according to following table:
Module Type EPLD          Running-Version New-Version Upg-Required
------ ---- ------------- --------------- ----------- ------------
1      SUP  IO SPI        0.034           1.003       Yes
1      SUP  IO SPI 2      0.005           1.002       Yes
Data traffic on the switch will be affected!!
The switch will reload after the upgrade process.
Do you want to continue (y/n) ? [n] y
Module 1 : IO SPI [Programming ] : 100.00% ( 12970 of 12970 total bytes)
Module 1 : IO SPI 2 [Programming ] : 100.00% ( 3137 of 3137 total bytes)
Waiting for Module to come online.
Module 1 EPLD upgrade is successful.
Reconfiguring Active Supervisor EPLDs.
The Supervisor will reset.
Module 1 : IO SPI 2 [Programming ] : 0.70% ( 22 of 3137 total bytes)
Module 1 EPLD upgrade is successful.
```

Installing a Fan Module EPLD Update

Use the **install all epld** *uri* **parallel fan-module** *slot* command to upgrade the EPLDs on the fan modules. The EPLD update for a fan module is nondisruptive and a power cycle is not required after the update.

Example 8 Upgrading Fan Module EPLDs on a Cisco MDS 9700 Series Switch

```
switch# install all epld bootflash:m9000-pkg2.9.3.2a.epld parallel fan-module 1
WARNING!!!: Executing the "install all epld" command may result in multiple
modules going offline and affect redundant links.

It is strongly recommended to use one of the following when EPLD upgrade
is attempted on a system carrying production traffic.or Module EPLDs".
1) "install module <mod#> epld"
2) "install all epld <uri> parallel module <mod#>"
where <mod#> is on a single module
```

```
For EPLD upgrade best practices, please refer to the link-
http://www.cisco.com/en/US/docs/switches/datacenter/
sw/best_practices/cli_mgmt_guide/epld_upgrade.html
Do you want to continue (y/n) ? [n] y
Copy complete, now saving to disk (please wait)...
EPLD image signature verification passed
Retrieving EPLD versions... Please wait.
Images will be upgraded according to following table:
Module Type EPLD              Running-Version New-Version Upg-Required
------ ---- -------------     --------------- ----------- ------------
1      FAN  Fan Controller (1) 0.002           0.006       Yes
1      FAN  Fan Controller (2) 0.002           0.006       Yes
Programming Fan Module 1
Do you want to continue (y/n) ? [n] y
Fan 1 (1 of 2) : Fan Controller [Verifying ] : 100.00% ( 135658 of 135658 total bytes)
Fan 1 (2 of 2) : Fan Controller [Verifying ] : 100.00% ( 135658 of 135658 total bytes)
Waiting for Module to come online.
Fan Module 1 EPLD upgrade is successful.
```

Installing a Fabric Module EPLD Update

The Cisco MDS 9700 Series switches have dedicated fabric modules. These modules contain EPLDs, which can be upgraded as described in this section. All other Cisco MDS switches do not have these modules, so this process is not applicable for them.

For Cisco MDS 9700 Series switches, use the **install all epld** *uri* **parallel xbar-module** *slot* command to update the EPLDs on the fabric modules. This process power cycles the updated module. To ensure that the data traffic performance is not affected while the module is power cycled, check the fabric bandwidth utilization by using the **show hardware fabric-utilization detail** command. If there is adequate reserve fabric bandwidth available before the update starts, then the update will be nondisruptive.

Example 9 Upgrading Fabric Module EPLDs for a Cisco MDS 9700 Series Switch

```
switch# install all epld bootflash:m9000-pkg2.9.3.2a.epld parallel xbar-module 1
WARNING!!!: Executing the "install all epld" command
may result in multiple modules going offline and
affect redundant links.
It is strongly recommended to use one of the following
when EPLD upgrade is attempted on a system carrying
production traffic.
1) "install module <mod#> epld"
2) "install all epld <uri> parallel module <mod#>"
where <mod#> is on a single module
For EPLD upgrade best practices, please refer to the link-
http://www.cisco.com/en/US/docs/switches/datacenter/
sw/best_practices/cli_mgmt_guide/epld_upgrade.html
```

```
Do you want to continue (y/n) ? [n] y
Copy complete, now saving to disk (please wait)...
EPLD image signature verification passed
Compatibility check:
Module Type Upgradable Impact     Reason
------ ---- ---------- ---------- ------
1      Xbar Yes        disruptive Module Upgradable
Retrieving EPLD versions... Please wait.
Images will be upgraded according to following table:
Module Type EPLD          Running-Version New-Version Upg-Required
------ ---- ------------- --------------- ----------- ------------
1      Xbar Power Manager 1.003           1.004       Yes
The above modules require upgrade.
Do you want to continue (y/n) ? [n] y
Starting Xbar Module 1 EPLD Upgrade
Xbar Module 1 EPLD upgrade is successful.
EPLD Upgrade Completed.
Module Type Upgrade-Result
------ ---- --------------
1      Xbar Success
```

Related Documentation

The documentation set for the Cisco MDS 9000 Series includes the following documents.

Release Notes

www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-release-notes-list.html

Licensing Information

www.cisco.com/c/en/us/td/docs/dcn/mds9000/sw/9x/configuration/licensing/cisco-mds-9000-nx-os-licensing-guide-9x.html

Regulatory Compliance and Safety Information

www.cisco.com/en/US/docs/storage/san_switches/mds9000/hw/regulatory/compliance/RCSI.html

Compatibility Information

www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-device-support-tables-list.html

Hardware Installation

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

Software Installation and Upgrade

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

Cisco MDS NX-OS Configuration Guides

www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-installation-and-configuration-guides-list.html

Cisco DCNM-SAN Configuration Guides

www.cisco.com/c/en/us/support/cloud-systems-management/prime-data-center-network-manager/products-installation-and-configuration-guides-list.html

Command-Line Interface

www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-command-reference-list.html

Intelligent Storage Networking Services Configuration Guides

www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-installation-and-configuration-guides-list.html

Troubleshooting and Reference

Cisco MDS 9000 Series and Nexus 7000 Series System Messages Reference

Cisco MDS 9000 Series SAN-OS Troubleshooting Guide

Cisco MDS 9000 Series MIB Quick Reference

Cisco DCNM for SAN Database Schema Reference

Legal Information