Cisco MDS 9000 Series EPLD Release Notes

Release 9.4(5a)

Contents

Introduction

Switches and directors in the Cisco MDS 9000 Series contain several Electronic Programmable Logic 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.

Normally, you do not need to update switch EPLDs unless advised by Cisco TAC. However, for 64 Gbps capable platforms—specifically the MDS 9124V, 9148V, and 9396V—it is important to update the EPLD to at least version 9.4(5). Upgrading to this EPLD version improves the non-disruptive upgrade (NDU) process for these switches. For more details, see the Release Notes for Cisco MDS 9000 Series EPLD Firmware, Release 9.4(5) and the Cisco MDS 9000 NX-OS Software and Firmware Upgrade and Downgrade Guide, Release 9.x. For detailed functional image upgrade instructions, refer to the Cisco MDS 9000 NX-OS Fundamentals Configuration Guide, Release 9.x. To download EPLD bundles, refer to the Cisco Software Download page.

Date	Description
September 1, 2026	Initial Release

EPLD bundle support matrix

The EPLD bundle version must match the Cisco MDS NX-OS release version running on the switch when the EPLD upgrade is installed. This requirement only applies during EPLD code upgrades or downgrades. Cisco MDS NX-OS can be subsequently upgraded or downgraded without changing the EPLD versions.

The following table lists the EPLD bundles compatible with specific Cisco MDS NX-OS releases.

Table 1. Release Compatibility Matrix

NX-OS Releases	EPLD Bundle
NX-OS 9.4(5a)	m9000-pkg1-9.4.5a.epld m9000-pkg2-9.4.5a.epld m9000-pkg3-9.4.5a.epld

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

Table 2. EPLD Support Matrix

EPLD Bundle	Cisco MDS 9000 Components	Product Identifier (PID)
m9000-pkg1.9.4.5a.epld	MDS 9250i 40-Port 16-Gbps Fabric Switch	DS-C9250I-K9-SUP
m9000-pkg2.9.4.5a.epld 1	MDS 9396S 16-Gbps Multilayer Fabric Switch	DS-C9396S-K9-SUP
	MDS 9700 Supervisor Module 1	DS-X97-SF1-K9
	MDS 9700 Supervisor Module 1E	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
	24/10 SAN Extension Module	DS-X9334-K9
	MDS 9706 Fabric Module 1	DS-X9706-FAB1
	MDS 9706 Fabric Module 3	DS-X9706-FAB3
	MDS 9710 Fabric Module 1	DS-X9710-FAB1
	MDS 9710 Fabric Module 3	DS-X9710-FAB3
	MDS 9718 Fabric Module 1	DS-X9718-FAB1
	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-pkg3.9.4.5a.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 Bundle	**Cisco MDS 9000 Components**	**Product Identifier (PID)**
	MDS 9396V Fibre Channel Switch	DS-C9396V-K9

EPLD versions in Cisco MDS 9000 EPLD bundle

Each EPLD bundle is a bundle of EPLD upgrades. The following table lists the EPLD versions for Cisco MDS 9000 series platforms for Cisco MDS NX-OS Release

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	0.018
		IO SPI 2	0.015
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	0.007
		IO SPI 2	0.013
		MI IO SPI	0.006
MDS 9148V Fibre Channel Fabric Switch			
DS-C9148V-K9-SUP	48-Port 8/16/32/64-Gbps 1-RU Fabric Switch	MI IO SPI	0.015
		IO SPI 2	0.018
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	1.000
MDS 9250i Multiservice Fabric Switch			
DS-C9250I-K9	40-Port 2/4/8/16-Gbps Fabric Switch	Power Manager	0x1a
		DB Power Manager	0x0b

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 9396V Fibre Channel Fabric Switch			
DS-C9396V-K9	96-Port 8/16/32/64-Gbps 2-RU Fabric Switch	SPI 2	0.016
		MI SPI	0.011
		SFP SPI	0.006
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	2.000
		IR3570	0.001

DS-X9748-3072K9	48-Port 64-Gbps Fibre Channel	SFP SPI	0.008
Model Number/Application Models	**Module Type**	**EPLD Device**	**Version**
	Switching Module	IO SPI	0.029
DS-X9824-960K9	40-Gbps FCoE Module	Power Manager SPI	1.05
		IO SPI 2	1.028
		IO SPI	1.031
DS-X9848-480K9	10-Gbps FCoE Module	Power Manager SPI	1.06
		IO	1.005
DS-X9334-K9	24/10-Port SAN Extension Module	Power Manager SPI	1.001
		IO SPI	2.000
MDS 9706 Series Specific Modules			
DS-C9706-FAN	Fan	Fan Controller (1)	1.06
		Fan Controller (2)	1.06
DS-X9706-FAB-1	Fabric Module 1	Power Manager	1.02
DS-X9706-FAB-3	Fabric Module 3	Power Manager	0.010
MDS 9710 Series Specific Modules			
DS-C9710-FAN	Fan	Fan Controller (1)	1.06
		Fan Controller (2)	1.06
DS-X9710-FAB-1	Fabric Module 1	Power Manager	1.003
DS-X9710-FAB-3	Fabric Module 3	Power Manager	0.008
MDS 9718 Series Specific Modules			
DS-C9718-FAN	Fan	Fan Controller (1)	1.06
		Fan Controller (2)	1.06
DS-X9718-FAB-1	Fabric Module 1	Power Manager	1.002
DS-X9718-FAB-3	Fabric Module 3	Power Manager	0.007

Resolved issues
None

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

This section covers topics that explain how to identify the EPLD version on MDS 9000 series switches.

Module EPLD versions

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

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 **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.

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.

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.

Displaying EPLD versions in an EPLD bundle

```
switch# show version epld m9000-pkg3.9.4.5.epld

Retrieving EPLD versions... Please wait.
EPLD image file 9.4.5 built on Fri Feb 20 09:46:41 2026
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

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
```

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 EPLD updates on supervisor module in a director switch

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

Step 1. Update the EPLD on the standby supervisor module. On the active supervisor module, enter the **install all epld** <*filename*> **parallel module** <*module-number*> 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 the 'ha-standby' state, perform a switchover and wait until the new standby supervisor module reaches the 'ha-standby' state.

Step 3. From the active supervisor module, repeat the above steps.

Installing EPLD updates on a switching module in a director switch

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.

Installing EPLD updates on a supervisor module in a fabric switch

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 been 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) ?
```

Installing EPLD updates on a fan module

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.

Installing EPLD updates on a fabric module in a director switch

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 to 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.

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