Cisco MDS 9000 Series EPLD Release Notes, Release 8.4(2)

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Note Release notes are sometimes updated with new information. Refer to the following website for the most recent version of the *Cisco MDS 9000 Series Release Notes*: http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-release-notes-list.html

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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

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. Table 1 shows the EPLD bundles that are compatible with specific NX-OS releases.

Table 1 Release Compatibility Matrix

NX-OS Release	EPLD Bundle
NX-OS 8.4(2)	m9000-pkg1-8.4.2.epld
	m9000-pkg2-8.4.2.epld
	m9000-pkg3-8.4.2.epld

Table 2 lists the Cisco MDS 9000 components and the EPLD bundle versions that are supported for the components.

Table 2 EPLD Support Matrix

Cisco MDS 9000 EPLD Bundle Versions		
EPLD Bundle	**Cisco MDS 9000 Components**	**Product Identifier (PID)**
m9000-pkg1.8.4.2.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

Table 2 EPLD Support Matrix (continued)

Cisco MDS 9000 EPLD Bundle Versions		
EPLD Bundle	**Cisco MDS 9000 Components**	**Product Identifier (PID)**
m9000-pkg2.8.4.2.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 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
	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 9706 Fan Module	DS-C9706-FAN
	MDS 9710 Fan Module	DS-C9710-FAN
	MDS 9718 Fan Module	DS-C9718-FAN
m9000-pkg3.8.4.2.epld	MDS 9132T Fibre Channel Switch	DS-C9132T-K9-SUP
	MDS 9148T Fibre Channel Switch	DS-C9148T-K9-SUP
	MDS 9396T Fibre Channel Switch	DS-C9396T-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.

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, page 4
- Fan Module EPLD Versions, page 4
- Fabric Module EPLD Versions, page 4
- Displaying EPLD Versions in an EPLD Bundle, page 5

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 stored in bootflash.

Example 4 Displaying EPLD Versions in an EPLD Bundle

```
switch# show version epld bootflash:m9000-pkg2.8.4.2.epld

Retrieving EPLD versions... Please wait.

EPLD image file 8.4.1 built on Sat Jun 15 02:29:42 2019

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  22.000

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

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            0.022
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            0.011
4/8/16/32G 2 RU Fabric Switch     DS-C9396T-K9      MI IO SPI           0.005
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            0.011
4/8/16/32G 1 RU Fabric Switch     DS-C9148T-K9      MI IO SPI           0.005
```

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.

This section includes the following topics:

- Installing EPLD Updates on All Modules in a Director Switch, page 6
- Installing a Director Switch Supervisor Module EPLD Update, page 7
- Installing a Switching Module EPLD Update, page 8
- Installing a Fabric Switch Supervisor EPLD Update, page 8
- Installing a Fan Module EPLD Update, page 9
- Installing a Fabric Module EPLD Update, page 10

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, page 8.

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

```
switch# install all epld bootflash:m9000-pkg2-8.4.2.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-pkg2.8.4.2.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.ht
ml

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, page 7.

Example 7 Updating Supervisor EPLDs on a Fabric Switch

```
switch# install module 1 epld bootflash:m9000-pkg2-8.4.2.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-pkg2.8.4.2.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-pkg2.8.4.2.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
```

EPLD Versions in Cisco MDS 9000 EPLD Bundle for Release 8.4(2)

Each EPLD bundle that you can download from http://www.cisco.com is a bundle of EPLD upgrades. Table 3 lists the EPLD versions for Cisco MDS 9000 series platforms for Cisco MDS NX-OS Release 8.4(2).

Table 3 EPLD Update Versions in Cisco MDS 9000 EPLD Bundle for Release 8.4(2)

Module Type	Model Number	Releases
EPLD Device	**Applicable Models**	**8.4(2)**
Fan		
Fan Controller (1)	DS-C9718-FAN	0.006
Fan Controller (2)		
Fan		
Fan Controller (1)	DS-C9710-FAN	0.006
Fan Controller (2)		

Table 3 EPLD Update Versions in Cisco MDS 9000 EPLD Bundle for Release 8.4(2)

Module Type	Model Number	Releases
EPLD Device	**Applicable Models**	**8.4(2)**
Fan		
Fan Controller (1)	DS-C9706-FAN	0.006
Fan Controller (2)		
Fabric Module 1		
Power Manager	DS-X9718-FAB1	1.002
	DS-X9710-FAB1	1.003
	DS-X9706-FAB1	1.002
Fabric Module 3		
Power Manager	DS-X9706-FAB-3	0.010
	DS-X9710-FAB-3	0.008
Supervisor Module 3		
Power Manager SPI	DS-X97-SF1-K9	22.000
	DS-X97-SF1E-K9	22.000
Supervisor Module 4		
Power Manager SPI	DS-X97-SF4-K9	22.000
10-Gbps FCoE Module		
Power Manager	DS-X9848-480K9	0.006
IO	DS-X9848-480K9	0.005
40-Gbps FCoE Module		
Power Manager SPI	DS-X9824-960K9	1.005
IO SPI 2	DS-X9824-960K9	0.028
IO SPI	DS-X9824-960K9	0.031
16-Gbps Advanced Fibre Channel Module		
Power Manager	DS-X9448-768K9	10.000
IO	DS-X9448-768K9	15.000
96-Port 2/4/8/16-Gbps Fabric Switch		
IO SPI 2	DS-C9396S-K9	1.002
IO SPI	DS-C9396S-K9	1.003
48-Port 2/4/8/16-Gbps Fabric Switch		
Power Manager	DS-C9148S-K9	0x1f
40-Port 2/4/8/16-Gbps Fabric Switch		
Power Manager	DS-C9250I-K9	0x1a
DB Power Manager	DS-C9250I-K9	0x0b
32-Gbps Advanced Fibre Channel Module		

Table 3 EPLD Update Versions in Cisco MDS 9000 EPLD Bundle for Release 8.4(2)

Module Type	Model Number	Releases
EPLD Device	**Applicable Models**	**8.4(2)**
Power Manager SPI	DS-X9648-1536K9	0.002
SFP SPI	DS-X9648-1536K9	0.005
IO SPI	DS-X9648-1536K9	2.000
24/10-Port SAN Extension Module		
Power Manager SPI	DS-X9334-K9	1.001
IO SPI	DS-X9334-K9	2.000
32-Port 4/8/16/32-Gbps 1-RU Fabric Switch		
IO SPI 2	DS-C9132T	0.022
MI IO SPI	DS-C9132T	0.017
LEM IO SPI	DS-C9132T	0.016
96-Port 4/8/16/32-Gbps 2-RU Fabric Switch		
SFP SPI	DS-C9396T-K9	0.007
IO SPI 2	DS-C9396T-K9	0.011
MI IO SPI	DS-C9396T-K9	0.005
LEM-1 SPI	DS-C9396T-K9	0.016
LEM-2 SPI	DS-C9396T-K9	0.016
LEM-3 SPI	DS-C9396T-K9	0.016
48-Port 4/8/16/32-Gbps 1-RU Fabric Switch		
SFP SPI	DS-C9148T-K9	0.007
IO SPI 2	DS-C9148T-K9	0.011
MI IO SPI	DS-C9148T-K9	0.005

Note The values that are provided in Table 3 are in hexadecimal format as seen on the device.

Related Documentation

The documentation set for the Cisco MDS 9000 Series includes the following documents. To find a document online, use the Cisco MDS NX-OS Documentation Locater at:

http://www.cisco.com/c/en/us/td/docs/storage/san_switches/mds9000/roadmaps/doclocater.html

Release Notes

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

Regulatory Compliance and Safety Information

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

Compatibility Information

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

Hardware Installation

http://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

http://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

http://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

http://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

http://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

http://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*

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, 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/c/en/us/td/docs/general/whatsnew/whatsnew.html

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This document is to be along with the documents listed in the "Related Documentation" section.

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