

Upgrading Transceiver Firmware

Cisco MDS NX-OS Release 9.4(1) introduces transceiver firmware upgrade capability for supported transceivers on Cisco MDS 9000 platforms. The firmware upgrades are provided to enhance the performance of the transceivers and to resolve known issues. Transceiver firmware upgrade bundles are provided with each NX-OS release. For more information on list of the transceivers supported, the list of issues resolved and open as well as other important information pertaining to transceiver upgrades, see, Cisco MDS 9000 Series Transceiver Firmware Release Notes

A transceiver firmware bundle is a file containing updates for multiple transceiver types. Each transceiver firmware update bundle has its own version number. A transceiver firmware bundle may contain new updates for only some transceivers. Firmware for some transceivers may be the same version as the previous firmware bundle.

Optionally, a subset of modules to be upgraded can be specified by the user using the **module** keyword. Use comma (,) or range separator (-) to specify a subset of modules. If a specified module number is not present or not supported, it will be ignored and the remaining valid modules will be upgraded. To update firmware on all supported transceivers in a Fabric switch, use the command without the **module** keyword.

Save any pending configuration before starting a transceiver upgrade. The upgrade process may need to reload a Fabric switch after the transceiver upgrades are completed. This depends on which component of the transceiver firmware has been updated. Some transceiver hardware components will utilize the update immediately, however, other transceiver hardware components must be restarted to start using the update. If any of these are updated then the upgrade process will automatically reload the switch. The upgrade will not proceed if there is any pending configuration in the **show running-config diff** command output.

If none of the transceivers require upgrading, the command exits. Otherwise, any transceivers with firmware version lower than the packaged version will be listed in a table and a prompt. The table displays the following details:

- Interface number
- Current firmware version
- New firmware version
- If reload is required

If you choose to continue, all the interfaces in the corresponding modules are shut down, and all listed transceivers are upgraded in the listed order. The upgrade process may take several minutes to complete. After the upgrade, the status of each upgraded transceiver module is again displayed in a table. If any transceivers must be power cycled, on a Director switch the corresponding modules are reloaded automatically. For a

Fabric switch, the whole switch will reload automatically. After the modules or switch become online, the interfaces are left in the same state that they were in, prior to the firmware upgrade.

Transceiver firmware cannot be upgraded when transceiver power control feature is enabled as it is necessary for a transceiver to be powered on to be upgraded. If a transceiver upgrade is attempted with this feature enabled the user is notified and must confirm to proceed. Transceiver power control will be disabled during the upgrade and then re-enabled when the upgrade has completed.

For more information about transceiver power control feature refer to the Cisco MDS 9000 Series Interfaces Configuration Guide, Release 9.x.

- Guidelines and Limitations, on page 2
- Determining Transceiver Firmware Versions, on page 2
- Upgrading Transceivers in Director Switches, on page 3
- Updating the Transceiver Firmware on a Fabric Switch, on page 5
- Cleaning a Previously Terminated Upgrade, on page 7

Guidelines and Limitations

When you upgrade the transceiver firmware, consider the following guidelines and limitations:

- Transceiver firmware can only be upgraded. After the transceiver firmware is upgraded, it is compatible with all versions of Cisco MDS NX-OS.
- Transceiver firmware upgrade is supported only for the transceiver models that are listed in the transceiver firmware versions packaged in the transceiver firmware bundle table.
- Transceiver firmware upgrade is supported only on Cisco MDS 9000 platforms that are listed in the transceiver firmware Support Matrix table.
- Transceiver upgrade is a disruptive procedure. All interfaces, including those in the same module or fabric switch which are not undergoing upgrade will be shut down during the upgrade.
- Do not run interface commands or open another upgrade session on the module or switch while the transceiver is upgrading. This may result in permanent damage to the transceivers.
- Ensure the transceiver power control feature is disabled, so that all transceivers are powered up while the transceiver firmware upgrade proceeds. The status of this feature is automatically checked as part of the transceiver firmware upgrade process.

Determining Transceiver Firmware Versions

Use the **show interface fcx/y transceiver details** command to view the current version of firmware on a specific transceiver module. The version of firmware currently running on the transceiver is displayed on the `Firmware version is` line.

Example if displaying current version of transceiver firmware on a transceiver module:

```
switch# show interface fc1/1 transceiver details
fc1/1 sfp is present
    Name is CISCO-ACCELINK
    Manufacturer's part number is RTXM520-571-C99
    Hardware revision is 1.0
    Serial number is ACW27150L32
```

```
    Nominal bit rate is 57800 Mb/s
    Link length supported for 50/125um OM3 fiber is 70 m
    FC Transmitter type is short wave laser w/o OFC (SN)
    FC Transmitter supports short distance link length
    Transmission medium is multimode laser with 50 um aperture (M5)
    Supported speeds are - Min speed: 16000 Mb/s, Max speed: 64000 Mb/s
    Cisco extended id is none (0x0)
    Cisco vendor id is (0x1f)
    Cisco part number is 10-3538-01
    Cisco pid is DS-SFP-FC64G-SW
    Cisco version id is V01
    Firmware version is 1.1

    No tx fault, no rx loss, in sync state, diagnostic monitoring type is 0x68
    SFP Diagnostics Information:
-------------------------------------------------------------------------------
                                    Alarms                  Warnings
                                High        Low         High          Low
-------------------------------------------------------------------------------
  Temperature   46.80 C          75.00 C     -5.00 C     70.00 C        0.00 C
  Voltage        3.28 V           3.63 V      2.97 V      3.46 V        3.13 V
  Current        7.30 mA         12.00 mA     3.00 mA    11.20 mA       3.60 mA
  Tx Power      -0.16 dBm         7.00 dBm  -10.50 dBm    4.00 dBm     -7.50 dBm
  Rx Power       0.58 dBm         5.00 dBm  -10.00 dBm    4.00 dBm     -7.00 dBm
  Transmit Fault Count = 0
-------------------------------------------------------------------------------
  Note: ++  high-alarm; +  high-warning; --  low-alarm; -  low-warning
switch#
```

Upgrading Transceivers in Director Switches

Example: Upgrading transceiver firmware in specified line cards in a Cisco MDS 9700 Series Switch.

```
switch# install transceiver bootflash:nxos-transceiver-firmware.mds.9.4.1a.bin module 3-7,12

Locking current install transceiver session
2024 Jan 15 04:10:38 Starting transceiver firmware upgrade image file
/bootflash/nxos-transceiver-firmware.mds.9.4.1.bin
2024 Jan 15 04:10:38 Extracting transceiver firmware(s) from package
357+1 records in
357+1 records out
234649 bytes (235 kB) copied, 0.00379426 s, 61.8 MB/s

Version (CISCO-ACCELINK)    : 1.1
Version (CISCO-FINISAR)     : 1.1

Upgrading transceivers on module(s): [3, 6, 7, 12]
Collecting interface configuration and transceiver information, please wait.
Transceivers will be upgraded according to following table:
Interface    Transceiver Type   Running Version    New Version   Upg Required   Reload
Required
---------    ----------------   ---------------    -----------   ------------   ------------

fc6/18      CISCO-ACCELINK               1.0            1.1            yes
yes
fc7/3      CISCO-ACCELINK              1.0           1.1           yes               yes
-------------------------------------------------------------------------------------------
Transceiver firmware upgrade is a disruptive operation and all interfaces, including those
 interfaces that do not need upgrading in the respective line card(s), will be shutdown
during the process. This will take approximately 00 hrs 08 mins to complete.
```

```
Any module with transceivers upgraded will be reloaded after the upgrade is finished.
------------------------------------------------------------------------------------------
Do you want to proceed (y/n)?[n]: y

Proceeding with upgrade. Do not attempt any operations on the line card(s) where transceiver
 modules are undergoing upgrade.

Upgrading transceiver firmware on interface fc6/18.
Firmware upgrade of transceiver on interface fc6/18 is successful.

Upgrading transceiver firmware on interface fc7/3.
Firmware upgrade of transceiver on interface fc7/3 is successful.

Bringing up the interfaces after the upgrade.

Transceiver firmware upgrade status is as follows:
Interface    Transceiver Type   Old Version   Current Version             Result
---------    ----------------   -----------   ---------------   -----------------
   fc6/18      CISCO-ACCELINK           1.0               1.1            Success
    fc7/3      CISCO-ACCELINK           1.0               1.1            Success

Reloading module(s) [6, 7] to complete the upgrade process. Please check the module status
 using `show module` command.

2024 Jan 15 04:21:55 Transceiver firmware upgrade completed
switch#
```

To update transceiver firmware on all supported modules in a Director switch, use the install transceiver command without the module keyword.

Example: Updating the transceiver firmware on all supported transceivers in a Cisco MDS 9700 Series Switch

```
switch# install transceiver nxos-transceiver-firmware.mds.9.4.1a.bin
Locking current install transceiver session
2024 Jan 15 02:27:10 Starting transceiver firmware upgrade image file
/bootflash/nxos-transceiver-firmware.mds.9.4.1.bin
2024 Jan 15 02:27:10 Extracting transceiver firmware(s) from package
357+1 records in
357+1 records out
234660 bytes (235 kB) copied, 0.00289415 s, 81.1 MB/s

Version (CISCO-ACCELINK)    : 1.1
Version (CISCO-FINISAR)     : 1.1

Upgrading transceivers on module(s): [1, 8, 18]
Collecting interface configuration and transceiver information, please wait.
Transceivers will be upgraded according to following table:

Interface    Transceiver Type   Running Version    New Version   Upg Required   Reload
Required
---------    ----------------   ---------------    -----------   ------------   ------------
fc1/1       CISCO-FINISAR             0.126            1.1            yes               yes
fc1/15      CISCO-ACCELINK             0.188            1.1              yes
yes
fc8/4      CISCO-ACCELINK             0.188            1.1            yes               yes
fc18/31       CISCO-FINISAR             0.126            1.1              yes
yes
------------------------------------------------------------------------------------------
Transceiver firmware upgrade is a disruptive operation and all interfaces, including those
 interfaces that do not need upgrading in the respective line card(s), will be shutdown
during the process. This will take approximately 00 hrs 15 mins to complete.

Any module with transceivers upgraded will be reloaded after the upgrade is finished.
------------------------------------------------------------------------------------------
```

```
Do you want to proceed (y/n)?[n]: y

Proceeding with upgrade. Do not attempt any operations on the line card(s) where transceiver
 modules are undergoing upgrade.

Upgrading transceiver firmware on interface fc1/1.
Firmware upgrade of transceiver on interface fc1/1 is successful.

Upgrading transceiver firmware on interface fc1/15.
Firmware upgrade of transceiver on interface fc1/15 is successful.

Upgrading transceiver firmware on interface fc8/4.
Firmware upgrade of transceiver on interface fc8/4 is successful.

Upgrading transceiver firmware on interface fc18/31.
Firmware upgrade of transceiver on interface fc18/31 is successful.

Bringing up the interfaces after the upgrade.

Transceiver firmware upgrade status is as follows:
Interface    Transceiver Type   Old Version   Current Version             Result
---------    ----------------   -----------   ---------------   ----------------
    fc1/1       CISCO-FINISAR         0.126              1.1            Success
   fc1/15      CISCO-ACCELINK         0.188              1.1            Success
    fc8/4      CISCO-ACCELINK         0.188              1.1            Success
  fc18/31       CISCO-FINISAR         0.126              1.1            Success

Reloading module(s) [1, 8, 18] to complete the upgrade process. Please check the module
status using `show module` command.

2024 Jan 15 02:44:16 Transceiver firmware upgrade completed
switch#
```

Updating the Transceiver Firmware on a Fabric Switch

```
switch# install transceiver bootflash:nxos-transceiver-firmware.mds.9.4.1a.bin
Locking current install transceiver session
2024 Jan 15 01:57:26 Starting transceiver firmware upgrade image file
/bootflash/nxos-transceiver-firmware.mds.9.4.1a.bin
2024 Jan 15 01:57:26 Extracting transceiver firmware(s) from package
357+1 records in
357+1 records out
234649 bytes (235 kB, 229 KiB) copied, 0.00224521 s, 105 MB/s

Version (CISCO-ACCELINK)    : 1.1
Version (CISCO-FINISAR)     : 1.1

Upgrading transceivers on module(s): [1]
Collecting interface configuration and transceiver information, please wait.
Transceivers will be upgraded according to following table:

Interface    Transceiver Type   Running Version    New Version   Upg Required   Reload
Required
---------    ----------------   ---------------    -----------   ------------   ------------

fc1/18      CISCO-ACCELINK               1.0            1.1            yes
yes
fc1/19       CISCO-FINISAR             0.101            1.1            yes
yes
-----------------------------------------------------------------------------------------------
Transceiver firmware upgrade is a disruptive operation and all interfaces, including those
 interfaces that do not need upgrading in the switch, will be shutdown during the process.
```

```
 This will take approximately 00 hrs 04 mins to complete.

This switch will be reloaded after the upgrade is finished.
--------------------------------------------------------------------------------
Do you want to proceed (y/n)?[n]: y

Proceeding with upgrade. Do not attempt any operations on the switch where transceiver
modules are undergoing upgrade.

Upgrading transceiver firmware on interface fc1/18.
Firmware upgrade of transceiver on interface fc1/18 is successful.

Upgrading transceiver firmware on interface fc1/19.
Firmware upgrade of transceiver on interface fc1/19 is successful.

Bringing up the interfaces after the upgrade.

Transceiver firmware upgrade status is as follows:
Interface    Transceiver Type   Old Version   Current Version             Result
---------    ----------------   -----------   ---------------   -----------------
   fc1/18      CISCO-ACCELINK           1.0               1.1            Success
   fc1/19       CISCO-FINISAR         0.101               1.1            Success

Reloading this switch to complete the upgrade process
switch#
```

Example: Upgrading transceiver firmware when the transceiver power control feature is enabled.

```
switch# install transceiver bootflash:nxos-transceiver-firmware.mds.9.4.2.bin module 7
Locking current install transceiver session
2024 May 06 14:32:53 Starting transceiver firmware upgrade image file
/bootflash/nxos-transceiver-firmware.mds.9.4.2.bin
2024 May 06 14:32:53 Extracting transceiver firmware(s) from package
613+1 records in
613+1 records out
402271 bytes (402 kB, 393 KiB) copied, 0.00298808 s, 135 MB/s
Version (CISCO-ACCELINK, DS-SFP-FC64G-SW)    : 1.2
Version (CISCO-FINISAR, DS-SFP-FC64G-SW)     : 1.1
Version (CISCO-INNOLIGHT, DS-SFP-FC64G-LW)   : 0.24
Upgrading transceivers on module(s): [7]
Transceiver power-control is ON, which will be turned OFF to perform firmware upgrade.
Do you want to proceed (y/n)?[n]: y
Collecting interface configuration and transceiver information, please wait.
Transceivers will be upgraded according to following table:
Interface    Transceiver Type   Running Version    New Version   Upg Required   Reload
Required
---------    ----------------   ---------------    -----------   ------------   ------------
fc7/1      CISCO-ACCELINK              1.1           1.2           yes              yes
fc7/17     CISCO-INNOLIGHT             0.23           0.24           yes
yes
--------------------------------------------------------------------------------
Transceiver firmware upgrade is a disruptive operation and all interfaces, including those
 interfaces that do not need
upgrading in the respective line card(s), will be shutdown during the process. This will
take approximately 00 hrs 09
mins to complete.
Any module with transceivers upgraded will be reloaded after the upgrade is finished.
--------------------------------------------------------------------------------
Do you want to proceed (y/n)?[n]: y
Proceeding with upgrade. Do not attempt any operations on the line card(s) where transceiver
 modules are undergoing
upgrade.
Upgrading transceiver firmware on interface fc7/1.
Firmware upgrade of transceiver on interface fc7/1 is successful.
Upgrading transceiver firmware on interface fc7/17.
```

```
Firmware upgrade of transceiver on interface fc7/17 is successful.
Bringing up the interfaces after the upgrade.
Transceiver firmware upgrade status is as follows:
Interface    Transceiver Type   Old Version   Current Version             Result
---------    ----------------   -----------   ---------------   ----------------
    fc7/1      CISCO-ACCELINK           1.1               1.2            Success
   fc7/17     CISCO-INNOLIGHT          0.23              0.24            Success

Reloading module(s) [7] to complete the upgrade process. Please check the module status
using `show module` command.
```

Cleaning a Previously Terminated Upgrade

Accessing transceivers during an upgrade can cause permanent damage to them. To prevent any damage, only one upgrade session is permitted at a time. The following message is displayed when an attempt is made to start parallel upgrades.

```
switch# install transceiver bootflash:nxos-transceiver-firmware.mds.9.4.1a.bin
Already one active install transceiver session is in progress. Running parallel install
transceiver session(s) are not allowed.
If you want to re-run install transceiver due to previously aborted session(if any), please
 run 'install transceiver clean' first to do clean up and try running install transceiver
again.
switch#
```

If there are no parallel upgrade sessions are running, and the above message is from a previously terminated upgrade, use the **install transceiver clean** command to clear the session and run the install command again.

Example: Cleaning previously terminated transceiver upgrade

```
switch# install transceiver clean
Warning: Running this command clears the lock on any ongoing upgrade. The original upgrade
 process is not stopped and a subsequent upgrade will then be allowed, making the upgrade
process likely to fail and cause transceiver damage. It is advised to use the install
transceiver clean command only after an upgrade fails or terminates.
If an upgrade is terminated, wait for a few minutes for any ongoing upgrade to complete
before attempting again. The approximate time required to complete each transceiver install
 session is displayed in the banner text before any upgrade process starts.
-----------------------------------------------------------------------------------------
Transceiver firmware upgrade is a disruptive operation and all interfaces, including those
 interfaces that do not need upgrading in the respective line card(s), will be shutdown
during the process. This will take approximately 00 hrs 15 mins to complete.

Any module with transceivers upgraded will be reloaded after the upgrade is finished.
-----------------------------------------------------------------------------------------
```