

Connecting the Cisco MDS 9700 Series Switches

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Connection Guidelines

The Cisco MDS 9700 Series switch provides the following types of ports:

- Console port (supervisor modules) —An RS-232 port that you can use to create a local management connection.
- MGMT 10/100/1000 Ethernet port (supervisor module)—An Ethernet port that you can use to access and manage the switch by IP address, such as through Cisco Data Center Network Manager (DCNM).
- Fibre Channel ports (switching modules)—Fibre Channel (FC) ports that you can use to connect to the SAN or for in-band management.
- Fibre Channel over Ethernet ports (switching modules)—Fibre Channel over Ethernet (FCoE) ports that you can use to connect to the SAN or for in-band management.

The Cisco MDS 9700 Series switch has two USB drives (in each Supervisor-1 module). A simple USB interface that allows you to connect to different devices supported by Cisco MDS NX-OS. In the supervisor module, there are two USB drives, Slot 0 and LOG FLASH. The LOG FLASH and Slot 0 USB ports use different formats for their data.

Caution When running power and data cables in overhead or subfloor cable trays, we strongly recommend that power cables and other potential noise sources be located as far away as is practical from network cabling that terminates on Cisco equipment. In situations where long parallel cable runs cannot be separated by at least 3.3 ft (1 m), we recommend shielding any potential noise sources by housing them in a grounded metallic conduit.

Preparing for Network Connections

When preparing your site for network connections to the Cisco MDS 9700 Series switch, consider the following for each type of interface, and obtain all of the required equipment before connecting the ports:

- Cabling required for each interface type
- Distance limitations for each signal type
- Additional interface equipment required

Connecting to the Console Port

To connect the console port to a computer terminal, follow these steps:

Before you begin

- The console port, labeled Console, is an RS-232 port with an RJ-45 interface. It is an asynchronous (async) serial port; any device connected to this port must be capable of asynchronous transmission.

  This port must be used to initially configure the management IP address and other parameters before connecting the switch to the network for the first time.

Caution The console port can be used to connect to a modem, however, we recommend using the COM1 port for this purpose. If you decide to connect the console port to a modem, do not connect it while the switch is booting; connect either before powering the switch on or after the switch has completed the boot process.

- You can use the console port to perform the following functions:
  - Configure the Cisco MDS 9710 Director from the CLI.
  - Monitor network statistics and errors.
  - Configure SNMP agent parameters.
  - Download software updates.

Note To connect the console port to a computer terminal, the computer must support VT100 terminal emulation. The terminal emulation software—frequently an application such as HyperTerminal or Procomm Plus—makes communication between the switch and computer possible during setup and configuration.

Procedure

Step 1 Configure the terminal emulator program to match the following default port characteristics: 9600 baud, 8 data bits, 1 stop bit, no parity.

Step 2 Connect the supplied RJ-45 to DP-25 female adapter. We recommend that you use the adapter and cable provided with the switch.

Step 3 Connect the console cable (a rollover RJ-45 to RJ-45 cable) to the console port or the RJ-45 to DP-25 adapter (depending on your computer) at the computer serial port.

Connecting to the MGMT 10/100/1000 Ethernet Port

To connect the MGMT 10/100/1000 Ethernet port to an external hub, switch, or router, follow these steps:

Before you begin

The Supervisor-1 module supports an autosensing MGMT 10/100/1000 Ethernet port (labeled "MGMT 10/100/1000") and has an RJ-45 interface. You can use this port to access and manage the switch by IP address, such as through DCNM.



Caution To prevent an IP address conflict, do not connect the MGMT 10/100/1000 Ethernet port to the network until the initial configuration is complete. For more information, see the Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide.

Procedure

Step 1 Connect the appropriate modular cable to the MGMT 10/100/1000 Ethernet port:

- Use a modular, RJ-45, straight-through UTP cable to connect the MGMT 10/100/1000 Ethernet port to an Ethernet switch port or hub.
- Use a cross-over cable to connect to a router interface.

Step 2 Connect the other end of the cable to the device.

Note
For high availability, connect the MGMT 10/100/1000 Ethernet port on the active Supervisor-1 module and on the standby Supervisor-1 module to the same network or VLAN. The active supervisor module owns the IP address used by both of these Ethernet connections. On a switchover, the newly activated supervisor module takes over this IP address. This process requires an Ethernet connection to the newly activated supervisor module.

Connecting to a Fibre Channel or Fibre Channel over Ethernet (FCoE) Port

The Fibre Channel ports on the switching modules are compatible with LC-type fiber-optic. For information about configuring the switch for in-band management, see the Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide.

The Cisco MDS 9000 Family supports both Fibre Channel and FCoE protocols for SFP+ and QSFP+ transceivers. Each transceiver must match the transceiver on the other end of the cable, and the cable must not exceed the stipulated cable length for reliable communication. For information on how to get the list of supported SFP+ transceivers for your software release, see the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS.

Warning Class 1 laser product. Statement 1008

Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Caution Wear an ESD wrist strap connected to the chassis when handling transceivers. Keep optical connectors covered when not in use, and do not touch connector ends. The fiber-optic connectors must be free of dust, oil, and other contaminants.

This section provides the following topics:

Removing and Installing SFP+ and QSFP+ Transceivers

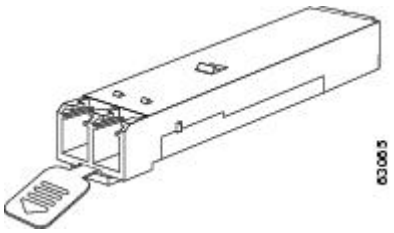
Caution Removing and installing an SFP+ or QSFP+ transceiver can shorten its useful life. Do not remove and insert SFP+ or QSFP+ transceivers more often than is absolutely necessary. We recommend disconnecting cables before installing or removing these transceivers to prevent damage to the cable or transceiver.

Note Use only Cisco SFP+ or QSFP+ transceivers on the Cisco MDS 9700 Series. Each Cisco SFP+ or QSFP+ transceiver is encoded with model information that enables the switch to verify that the SFP+ or QSFP+ transceiver meets the requirements for the switch. For instructions specific to the transceiver type, see the "SFP+ Transceiver Specifications".

The Cisco MDS 9000 Family supports SFP+ and QSFP+ transceivers with the following two types of latching devices:

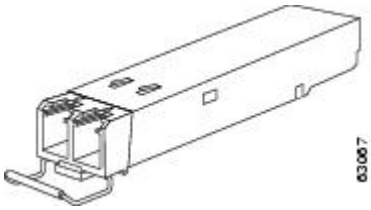
- Mylar tab latch

Figure 1: SFP+ Transceiver with Mylar Tab Latch



- Bale-clasp latch

Figure 2: SFP+ Transceiver with Bale-Clasp Latch



Removing an SFP+ or QSFP+ Transceiver

To remove an SFP+ or QSFP+ transceiver, follow these steps:

Procedure

Step 1 Attach an ESD-preventive wrist strap and follow its instructions for use.

Step 2 If a cable is installed in the transceiver:

a. Record the cable and port connections for later reference.

b. Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.

c. Insert a dust plug into the cable end of the transceiver.

Caution
If the transceiver does not remove easily in the next step, push the transceiver all the way back in and then ensure that the latch is in the correct position before continuing.

Step 3 Remove the transceiver from the port:

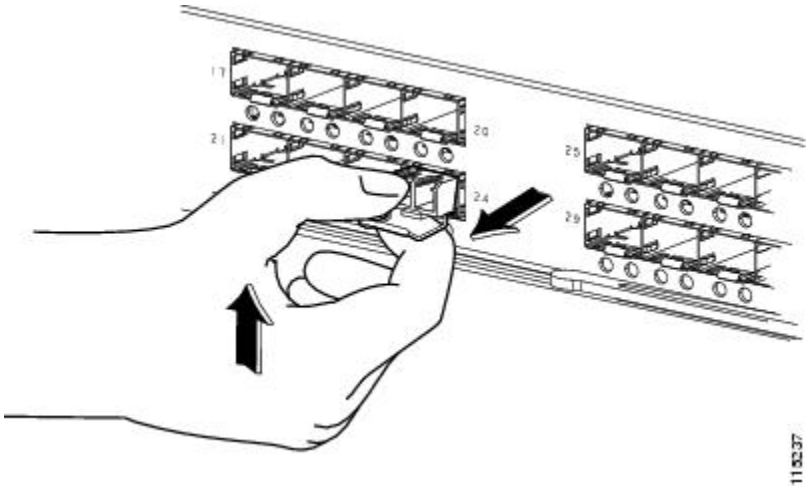
a. If the transceiver has a Mylar tab latch, gently pull the tab straight out (do not twist), and then pull the transceiver out of the port.

b. If the transceiver has a bale clasp latch, open the clasp by pressing it downwards, and then pull the transceiver out of the port.

Note

If you have difficulty removing a bale clasp SFP+ or QSFP+ transceiver, you should reseat the SFP+ or QSFP+ by returning the bale clasp in the up position. Then press the SFP+ or QSFP+ inward and upward into the cage. Next, lower the bale clasp and pull the SFP+ or QSFP+ straight out with a slight upward lifting force (see the following image). Be careful not to damage the port cage during this process.

Figure 3: Alternate Removal Method for Bale Clasp SFP+ or QSFP+ Transceivers



Step 4 Insert a dust cover into the port end of the transceiver and place the transceiver on an antistatic mat or into a static shielding bag if you plan to return it to the factory.

Step 5 If another transceiver is not being installed, protect the optical cage by inserting a clean cover.

Installing an SFP+ Transceiver

To install an SFP+ or QSFP+ transceiver, follow these steps:

Procedure

Step 1 Attach an ESD-preventive wrist strap and follow its instructions for use.

Step 2 Remove the dust cover from the port cage.

Step 3 Remove the dust cover from the port end of the transceiver.

Step 4 Insert the transceiver into the port:

a. If the transceiver has a Mylar tab, orient the transceiver with the tab on the bottom, and then gently insert the transceiver into the port until it clicks into place.

b. If the transceiver has a bale clasp, orient the transceiver with the clasp on the bottom, close the clasp by pushing it up over the transceiver, and then gently insert the transceiver into the port until it clicks into place.

Caution
If the transceiver does not install easily, ensure that it is correctly oriented and the tab or clasp are in the correct position before continuing.

Note
If you cannot install the cable into the transceiver, insert or leave the dust plug in the cable end of the transceiver.

Removing and Installing Cables into SFP+ or QSFP+ Transceivers

Caution To prevent damage to the fiber-optic cables, do not place more tension on them than the rated limit and do not bend to a radius of less than 1 inch if there is no tension in the cable, or 2 inches if there is tension in the cable.

Removing a Cable from an SFP+ or QSFP+ Transceiver

Caution When pulling a cable from a transceiver, grip the body of the connector. Do not pull on the jacket sleeve, because this can compromise the fiber-optic termination in the connector.

Caution If the cable does not remove easily, ensure that any latch present on the cable has been released before continuing.

To remove the cable, follow these steps:

Procedure

Step 1 Attach an ESD-preventive wrist strap and follow its instructions for use.
Step 2 Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.
Step 3 Insert a dust plug into the cable end of the transceiver.
Step 4 Insert a dust plug onto the end of the cable.

Installing a Cable into an SFP+ or QSFP+ Transceiver

Caution To prevent possible damage to the cable or transceiver, install the transceiver in the port before installing the cable in the transceiver.

To install a cable into a transceiver, follow these steps:

Procedure

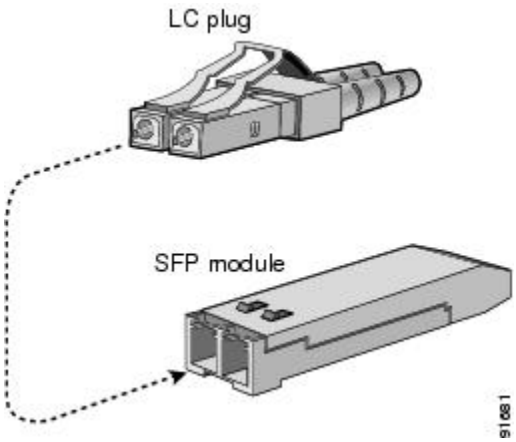
Step 1 Attach an ESD-preventive wrist strap and follow its instructions for use.

Step 2 Remove the dust cover from the connector on the cable.

Step 3 Remove the dust cover from the cable end of the transceiver.

Step 4 Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place (see the following image for reference).

Figure 4: Connecting the LC-Type Cable to a Fibre Channel Port



Caution
If the cable does not install easily, ensure that it is correctly oriented before continuing.

For instructions on verifying connectivity, see the *Cisco MDS 9000 Family NX-OS Fundamentals Configuration Guide*.

Maintaining SFP+ and QSFP+ Transceivers and Fiber-Optic Cables

SFP+ and QSFP+ transceivers and fiber-optic cables must be kept clean and dust-free to maintain high signal accuracy and prevent damage to the connectors. Attenuation (loss of light) is increased by contamination and should be below 0.35 dB.

Follow these maintenance guidelines:

- SFP+ and QSFP+ transceivers are static sensitive. To prevent ESD damage, wear an ESD-preventive wrist strap that is connected to the chassis.
- Do not remove and insert a transceiver more often than is necessary. Repeated removals and insertions can shorten its useful life.
- Keep all optical connections covered when not in use. If they become dusty, clean before using to prevent dust from scratching the fiber-optic cable ends.

- Do not touch ends of connectors to prevent fingerprints and other contamination.
- Clean regularly; the required frequency of cleaning depends upon the environment. In addition, clean connectors if they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques can be effective; refer to your site's fiber-optic connection cleaning procedure.
- Inspect routinely for dust and damage. If damage is suspected, clean and then inspect fiber ends under a microscope to determine if damage has occurred.