Connecting the Cisco MDS 9220i Switch

The Cisco MDS 9220i switch provides the following types of ports:

- An RS-232 port that can be used as a serial connection for switch management.

- Management port: An Ethernet port that you can use to access and manage the switch by IP address, such as through the CLI or Fabric Manager.

- Fibre Channel ports: Fibre Channel ports that you can use to connect to the SAN, or for in-band management.

- USB port: USB port for USB flash disk that you can use for configuration file backups, log dumps, report captures, and so on.

This chapter describes how to connect the various components of the Cisco MDS 9220i switch.

Preparing for Network Connections

When preparing your site for network connections to the Cisco MDS 9220i switch, consider the following for each type of interface:

- Cabling required for each interface type

- Distance limitations for each signal type

- Additional interface equipment needed

Before installing the component, have all the additional external equipment and cables available.

Connecting the Console Port

This section describes how to connect the RS-232 console port to a PC. The console port allows you to perform the following functions:

- Configure the switch from the CLI.

- Monitor network statistics and errors.

- Configure SNMP agent parameters.

- Download software updates to the switch or distribute software images residing in flash memory to attached devices.

- Perform initial switch configuration

- Perform password recovery

Connecting the Console Port to a PC

You can connect the console port to a PC serial port for local administrative access to the Cisco MDS 9220i switch.

Note The PC must support VT100 terminal emulation. The terminal emulation software—frequently a PC application, such as HyperTerminal Plus—makes the communication between the Cisco MDS 9220i switch and your PC possible during setup and configuration.

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

Step 1 Configure the baud rate and character format of the PC terminal emulation program to match the following management port default characteristics:

- 9600 baud

- 8 data bits

- 1 stop bit

- No parity

Step 2 Attach the adapter required for your PC to its communication port. It must present an RJ-45 socket towards the switch.

- For a DB-9 serial port, attach the supplied RJ-45-to-DB-9 female adapter.

- For a DB-25 serial port, attach the supplied RJ-45-to-DB-25 female adapter.

- For a USB port, attach a customer supplied USB-to-serial dongle.

Step 3 Connect one end of the supplied console cable (a rollover RJ-45-to-RJ-45 cable) to the console port. Connect the other end to the female RJ-45 adapter attached to the PC communication port.

Connecting the Console Port to a Modem Before Switch is Powered On

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Caution Do not connect the console port to a modem while the switch is booting as it may interrupt the boot process. Connect the console port to a modem either before powering the switch on or after the switch has completed the boot process.

To connect the console port to a modem before the switch is powered on, follow these steps:

Step 1 Connect the supplied console cable (a rollover RJ-45-to-RJ-45 cable) to the console port.

Step 2 Connect the other end of the console cable to the supplied RJ-45-to-DB-25 adapter.

Step 3 Connect the RJ-45-to-DB-25 adapter to the DB-25 port on the modem.

Step 4 Power on the switch. The switch boots automatically, and the following default console port characteristics are applied to the modem connection:

- 9600 baud

- 8 data bits

- 1 stop bit

- No parity

- Default initialization string (ATE0Q1&D2&C1S0=1\015) if previously configured

Note For instructions on how to change these settings, see the Cisco Fabric Manager Fundamentals Configuration Guide.

Connecting the Console Port to a Modem After Switch is Powered On

To connect the console port to a modem after the switch is powered on, follow these steps:

Step 1 Ensure that the system has completed booting and the system image is running.

Step 2 Connect the supplied console cable (a rollover RJ-45-to-RJ-45 cable) to the console port.

Step 3 Connect the other end of the console cable to the supplied RJ-45-to-DB-25 adapter.

Step 4 Connect the RJ-45-to-DB-25 adapter to the DB-25 port on the modem.

Step 5 Initialize and configure the modem as specified in the Cisco Fabric Manager Fundamentals Configuration Guide and the Cisco NX-OS Fundamentals Configuration Guide.

Connecting the Management Port

The autosensing 10/100/1000 Mbps Ethernet management port is located on the left side of the front panel (labeled MGMT ETH0), below the console port. This port is used for out-of-band management of the Cisco MDS 9220i switch. It can also be used for upstream data transferring.

Use a modular, RJ-45, straight-through UTP cable to connect the management port to Ethernet hubs and switches.

Connecting to a Fibre Channel Port

The Fibre Channel ports are compatible with FC LC-type fiber optic SFP or SFP+ transceivers and cables (see the Removing and Installing Cables into SFP, SFP+, or QSFP+ Transceivers, on page 4 section). You can use these ports to connect to the SAN or for in-band management. For information about configuring the switch for in-band management, see the Cisco Fabric Manager Fundamentals Configuration Guide or the Cisco NX-OS Fundamentals Configuration Guide.

Each transceiver must match the transceiver at the other end of the cable, and the cable must not exceed the stipulated cable length for reliable communications. SFP or SFP+ transceivers can be ordered either separately or with the Cisco MDS 9220i switch.

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

Note   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.

Removing and Installing Cables into SFP, 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 one inch (2.5 cm) if there is no tension in the cable, or two inches (5 cm) if there is tension in the cable.

# Installing a Cable into an SFP, SFP+, or QSFP+ Transceiver

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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:

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 plug 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.

Figure 1: Connecting the LC-Type Cable to a Fibre Channel Port
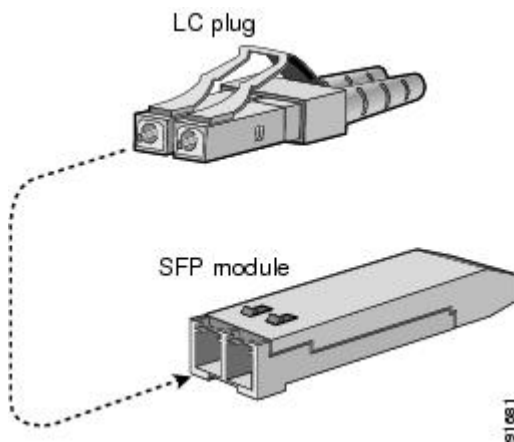
Caution   If the cable does not install easily, ensure that it is correctly oriented before continuing.

For instructions on verifying connectivity, see the Cisco Fabric Manager Fundamentals Configuration Guide and the Cisco NX-OS Fundamentals Configuration Guide.

Removing a Cable from an SFP, SFP+, or QSFP+ Transceiver

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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.

• 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:

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 cover into the end of the cable.

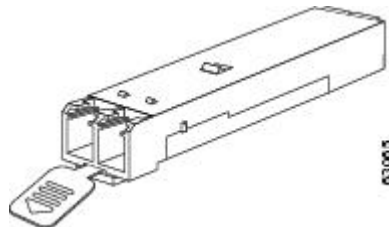# Removing and Installing SFP, SFP+, or QSFP+ Transceivers

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

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Note   Use only Cisco SFP, SFP+, or QSFP+ transceivers on the Cisco MDS 9220i switch. Each Cisco SFP, SFP+, or QSFP+ transceiver is encoded with model information that enables the switch to verify that the SFP, SFP+, or QSFP+ transceiver meets the requirements for the switch.

The Cisco MDS 9220i switch supports SFP, SFP+, or QSFP+ transceivers with the following types of latching devices:

- Mylar tab latch

- Bale clasp latch
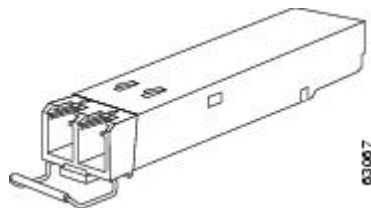
Installing an SFP, SFP+, or QSFP+ Transceiver

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

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

> **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.

Step 2 Remove the dust plug from the switch-port cage.

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

Step 4 Insert the transceiver into the port.

Step 5 Insert or leave the dust plug in the cable-end of the transceiver if a cable is not being installed in the transceiver.

Removing an SFP, SFP+, or QSFP+ Transceiver

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

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

Step 2 Remove attached fibre-optic cables, if any. For more information, see the Removing a Cable from an SFP, SFP+, or QSFP+ Transceiver, on page 5 section.

Step 3 Remove the transceiver from the port:

- 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.

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

Step 4 Insert a dust cover into the cable-end of the transceiver and place the transceiver on an antistatic mat or into a static shielding bag.

Step 5 Protect the switch port by inserting a clean dust plug if another transceiver is not being installed.

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

SFP, SFP+, or 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. Therefore, attenuation should be kept below 0.35 dB.

Follow these maintenance guidelines:

- SFP, SFP+, or QSFP+ transceivers are sensitive to static discharge. To prevent ESD damage, wear an ESD-preventive wrist strap that is connected to the chassis.

- Do not remove and reinsert a transceiver more often than 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 in order to prevent dust from scratching the fiber optic cable ends.

- Do not touch the ends of connectors. This prevents fingerprints and other contamination of the connectors.

- Inspect cables before installation, for dust and damage. If damage is suspected, clean the ends and check for excessive light loss with a light meter.

Connecting Power Supply Units

Before you begin

- To implement N+N redundancy, each PSU must be connected to a separate external power source.

- There must be an earth ground connection to the chassis. Typically, the chassis is grounded by its metal-to-metal connection with a grounded rack. If you need to ground the chassis, see Grounding the Switch.

Connecting a Power Supply Unit

Before you begin

Install the power supply unit. For more information, see Installing Power Supply Units.

Step 1 Attach the power cable to the electrical outlet on the front of the power supply unit.

Step 2 Make sure that the other end of the power cable is attached to the appropriate power source for the power supply unit. If the power source has a switch, slide it to the On position.

> **Note** Depending on the outlet receptacle on your power distribution unit, you might need the optional jumper cable to connect the switch to your outlet receptacle.

Step 3 Verify that the power supply unit is operational by making sure that the power supply unit LED is green. For information on what the power supply unit LEDs indicate, see the Switch LEDs section.

Disconnecting a Power Supply Unit

Step 1 Holding the plug for the power cable, pull the plug out from the power receptacle on the power supply unit.

Step 2 Verify that both the power supply unit LEDs are off.

Powering Up the Switch

This section provides instructions for powering up the switch and verifying component installation.

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> **Caution** During this procedure, wear grounding wrist straps to avoid ESD damage to the switch.

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Note The switch is designed to boot up in less than 30 minutes provided that the neighboring devices are in fully operational state.

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Note The initial switch configuration may be done using the built in setup utility or by POAP.

Ensure the console port is connected to an accessible terminal device if the setup utility will be used for the initial configuration. A console connection is also useful to diagnose any errors reported by software if the system does not have network connectivity. For more information about the setup utility, see the 'Using the Cisco NX-OS Setup Utility' section in the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 8.x.

Ensure the MGMT port is connected to the network (if using network-assisted POAP) or a prepared USB stick is inserted in the USB1 port (if using USB-assisted POAP) if using POAP for the initial configuration. For more information about POAP, see the 'Using PowerOn Auto Provisioning' section in the Cisco MDS 9000 Series Fundamentals Configuration Guide, Release 8.x.

To power up the switch and verify hardware operation, follow these steps:

Step 1 Verify that the power supplies and fan modules are installed, and tighten loose captive screws, if any.

Step 2 Ensure that the switch is adequately grounded, as described in the Grounding the Switch section.

Step 3 Connect a terminal device to the serial console port. For more information, see the Connecting the Console Port, on page 2 section.

Step 4 Plug the power cables into the power supplies and arrange the cables so that they cannot be accidentally pulled out. Connect the other end of the power cables to the site power outlets that have the required power voltages. Turn the site power outlet switches to On. The switch boots automatically.

Note Depending on the outlet receptacle on your power distribution unit, you might need the optional jumper cable to connect the switch to your outlet receptacle.

Step 5 Listen for the fans; they should begin operating when the switch is powered on.

Note Do not operate the switch without a functioning fan module, except briefly during the fan module-replacement procedure. Cisco MDS 9000 Series Switches can operate for only a few minutes without any functioning fan modules before they begin to overheat.

Step 6 Verify that the LED behavior is as follows when the switch has finished booting:

- Fan status LED is green.

- Each power supply LED is green.

- The switch status LED is green. If this LED is orange or red, it indicates that one or more environmental monitors are reporting a problem.

- The Ethernet port link LEDs should not be On unless the cable is connected.

Note The LEDs for the Fibre Channel ports remain orange until the ports are enabled, and the LED for the MGMT port remains Off until the port is connected.

Step 7 If a component is not operating properly, try removing and reinstalling it. If it still does not operate correctly, contact your customer service representative for a replacement.

> **Note** If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support.

Step 8 Verify that the system software has booted and the switch has initialized without error messages. If any problems occur, see the Cisco MDS 9000 Series System Messages Guide. If you cannot resolve an issue, contact your customer service representative.

Step 9 Complete the worksheets that are provided in Site Planning and Maintenance Records for future reference.

> **Note** A setup utility automatically run on the console each time the switch is booted until the initial setup is completed, and guides you through the basic configuration. For instructions about how to configure the switch and check module connectivity, see the Cisco Fabric Manager Fundamentals Configuration Guide.