C H A P T E R **7**

Connecting the Cisco Nexus 7000 Series Switch to the Network

This chapter describes how to connect the Cisco Nexus 7000 Series switch (configure its IP address through a console, set up its management interface, and connect its Ethernet ports to the network) after it has been installed in its rack or cabinet.

This chapter includes the following sections:

Preparing for Connections

When preparing your site for network connections to the Cisco Nexus 7000 Series 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 switch, have all additional external equipment and cables available.

Required Tools and Equipment

- Console cable connector kit—You can find this kit in the accessory kit, which ships with the Cisco Nexus 7000 Series switch.
- Network cabling—You have already routed the network cables to the location of the installed Cisco Nexus 7000 Series switch.

- If you are creating a management connection to the supervisor module, you need to use a modular, RJ-45, UTP straight-through or crossover cable.

Connecting to the Console

Before you create a network management connection for a Cisco Nexus 7000 Series switch or connect the switch to the network, you must create a local management connection through a console terminal and configure an IP address for the switch.

You can also use the console to perform the following functions, each of which can be performed through the management interface after you make that connection later on:

- Configure the switch using the command-line interface (CLI).

- Monitor network statistics and errors.

- Configure Simple Network Management Protocol (SNMP) agent parameters.

- Download software updates.

This local management connection is made between the asynchronous serial port on each Cisco Nexus 7000 Series supervisor module and a console device capable of asynchronous transmission, such as a computer terminal. On the supervisor modules, you use one of the following two asynchronous serial ports:

- CONSOLE SERIAL PORT

  This port is used for direct connections to the console.

- COM1/AUX SERIAL PORT (Supervisor 1 only)

  This port is used for modem connections to the console.

Note   Before you can connect the console port to a computer terminal, make sure that the computer terminal supports VT100 terminal emulation. The terminal emulation software makes communication between the switch and computer possible during setup and configuration.

To connect the Cisco Nexus 7000 Series switch to a computer terminal, follow these steps for each supervisor module installed:

Step 1   Configure the terminal to match the following default port characteristics:

- 9600 baud

- 8 data bits

- 1 stop bit

- No parity

Step 2   Connect an RJ-45 rollover cable to one of the following serial ports on one of the supervisor modules on the Cisco Nexus 7000 Series switch:

- CONSOLE SERIAL PORT—Use this port if you are not using a modem.

- COM1/AUX SERIAL PORT—Use this port if you are using a modem (available with only Supervisor 1).

You can find this cable in the console cable connector kit, which is part of the accessory kit for the Cisco Nexus 7000 Series switch.

Step 3 Route the RJ-45 rollover cable through the center slot in the cable management system and then to the console or modem.

Step 4 Connect the other end of the RJ-45 rollover cable to the console or to a modem that can connect to the console. If the console or modem cannot use an RJ-45 connection, use one of the following adapters from the console cable connector kit:

- RJ-45/DSUB F/F adapter
- RJ-45/DSUB R/P adapter
- DB-9F/RJ-45F PC terminal

Creating an Initial Switch Configuration

After you create the local management connection with a console, you must assign an IP address to the switch management interface so that you can then connect the switch to the network.

As soon as you power up the switch, it boots up and asks you a series of questions to configure the switch. This section explains how to configure the IP address that is required to connect the switch to the network. To enable you to connect the switch to the network, you can use the default choices for each configuration except the IP address. You can perform the other configurations at a later time as described in the *Cisco Nexus 7000 Series NX-OS Fundamentals Configuration Guide, Release 6.x*.

Before you perform the initial switch configuration, you must determine the IP address and netmask needed for the following interfaces:

- Management (Mgmt0) interface
- Connectivity management processor (CMP) for the supervisor module in chassis slot 6 (Supervisor 1 modules only)
- CMP for the supervisor module in chassis slot 5 (Supervisor 1 modules only)

Note You should also know the unique name needed to identify the switch among the devices in the network.

To define the IP addresses required for an initial switch configuration, follow these steps:

Step 1 Power up the switch by turning the power switch from standby (STBY or 0) to on (ON or 1) with each power supply installed in the switch chassis.

The Input and Output LEDs on each power supply light up (green) when the power supply units are sending power to the switch.

The software asks you to specify a password to use with the switch.

Step 2 Enter a new password to use for this switch.

The software checks the security strength of your password and rejects your password if it is not considered to be a strong password. To increase the security strength of your password, make sure that it adheres to the following guidelines:

- At least eight characters
- Minimizes or avoids the use of consecutive characters (such as "abcd")
- Minimizes or avoids repeating characters (such as "aaabbb")

- Does not contain recognizable words from the dictionary
- Does not contain proper names
- Contains both uppercase and lowercase characters
- Contains numbers as well as letters

Examples of strong passwords include the following:

- If2CoM18
- 2004AsdfLkj30
- Cb1955S21

✎

Note Clear text passwords cannot include the dollar sign ($) special character.

🔍

Tip If a password is trivial (such as a short, easy-to-decipher password), the software will reject your password configuration. Be sure to configure a strong password as explained in this step. Passwords are case sensitive.

If you enter a strong password, the software asks you to confirm the password.

Step 3 Enter the same password again.

If you enter the same password, the software accepts the password and begins asking a series of configuration questions.

Step 4 Until you are asked for an IP address, you can enter the default configuration for each question.

Repeat this step for each question until you are asked for the Mgmt0 IPv4 address.

Step 5 Enter the IP address for the management interface.

The software asks for the Mgmt0 IPv4 netmask.

Step 6 Enter a network mask for the management interface.

The software asks if you need to edit the configuration.

Step 7 Enter **no** to not edit the configuration.

The software asks if you need to save the configuration.

Step 8 Enter **yes** to save the configuration.

You can now set up the management interface for each supervisor module on the Cisco Nexus 7000 Series switch.

Setting Up the Management Interface

The Cisco Nexus 7000 Series supervisor management port (MGMT ETH) provides out-of-band management, which enables you to use the CLI or the Data Center Network Manager (DCNM) interface to manage the switch by its IP address. This port uses a 10/100/1000 Ethernet connection with an RJ-45 interface.

Note   In a dual supervisor switch, you can ensure that the active supervisor module is always connected to the network by connecting the management interface on both supervisor modules to the network. That way, no matter which supervisor module is active, the switch automatically has a management interface that is running and accessible from the network.

Caution   To prevent an IP address conflict, do not connect the MGMT 10/100/1000 Ethernet port until the initial configuration is complete. For more information, see the "Creating an Initial Switch Configuration" section on page 7-3.

To connect the supervisor modules to the network, follow these steps for each supervisor module:

Step 1   Connect a modular, RJ-45, UTP cable to the MGMT ETH port on the supervisor module.

Step 2   Route the cable through the central slot in the cable management system.

Step 3   Connect the other end of the cable to a 10/100/1000 Ethernet port on the network device.

Connecting the Supervisor CMP Port

The CMP, which is included on the Cisco Nexus 7000 Series Supervisor 1 module (the CMP is not included on the Supervisor 2 or Supervisor 2E models), is a secondary, lightweight processor that provides a second network interface to the system for use even when the Control Processor (CP) is not reachable. You can access the CMP to perform operations, such as taking over the CP console, restarting the CP, or restarting a particular I/O module.

Caution   To prevent an IP address conflict, do not connect the CMP MGMT 10/100/1000 Ethernet port to the network until the initial configuration is complete. For more information, see the "Connecting to the Console" section on page 7-2.

To connect the CMP to the network, follow these steps for each installed supervisor module:

Step 1   Connect a modular, RJ-45, UTP cable to the CMP MGMT ETH port on the supervisor module.

Step 2   Route the cable through the cable management system and to the networking device.

To configure the port, see the *Cisco Nexus 7000 Series Connectivity Management Processor Configuration Guide*.

Connecting an I/O Module

After you set up an IP address for the switch and create an out-of-band management connection for the switch, you can connect the copper (1000BASE-T) and fiber-optic (SFP, SFP+, FET, and X2) I/O modules to the network. Table 7-1 lists the connectors and cables that you can use with each type of I/O module.

Table 7-1   *Connectors and Cables Supported by I/O Modules*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
F1 Series 32-port 1- /10-Gigabit Ethernet (N7K-F132XP-15)	SFP+	DWDM-SFP10G-xx.xx	SMF
		SFP-H10GB-ACU7M SFP-H10GB-ACU10M	Twinax cable
		SFP-H10GB-CU1M SFP-H10GB-CU1.5M SFP-H10GB-CU2M SFP-H10GB-CU2.5M SFP-H10GB-CU3M SFP-H10GB-CU5M	Twinax cable
		SFP-10G-AOC1M SFP-10G-AOC2M SFP-10G-AOC3M SFP-10G-AOC5M SFP-10G-AOC7M SFP-10G-AOC10M	Active Optical Cable assembly
		SFP-10G-ER SFP-10G-LR SFP-10G-LRM SFP-10G-ZR[2]	SMF
		SFP-10G-SR SFP-10G-LRM	MMF
	SFP	CWDM-SFP-1xxx DWDM-SFP-xxxx GLC-EX-SMD GLC-LH-SM GLC-LH-SMD GLC-ZX-SM GLC-ZX-SMD SFP-GE-L SFP-GE-Z	SMF
		GLC-LH-SM GLC-LH-SMD GLC-SX-MM GLC-SX-MMD SFP-GE-L SFP-GE-S	MMF
	1000BASE-T	GLC-T SFP-GE-T	Category 5

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
F2 Series 48-port 1-/10-Gigabit Ethernet XL (N7K-F248XP-25 and N7K-F248XP-25E)	SFP+	DWDM-SFP10G-xx.xx	SMF
		FET-10G	MMF(OM2) MMF(OM3 and OM4)
		SFP-H10GB-ACU7M SFP-H10GB-ACU10M	Twinax cable , active
		SFP-H10GB-CU1M SFP-H10GB-CU1.5M SFP-H10GB-CU2M SFP-H10GB-CU2.5M SFP-H10GB-CU3M SFP-H10GB-CU5M	Twinax cable, passive
		SFP-10G-AOC1M SFP-10G-AOC2M SFP-10G-AOC3M SFP-10G-AOC5M SFP-10G-AOC7M SFP-10G-AOC10M	Active Optical Cable assembly
		SFP-10G-ER SFP-10G-ER-S SFP-10G-LR SFP-10G-LR-S SFP-10G-LRM SFP-10G-SR SFP-10G-SR-S SFP-10G-ZR[2] SFP-10G-ZR-S SFP-10G-BXD-I SFP-10G-BXU-I	SMF
	SFP	CWDM-SFP-xxxx DWDM-SFP-xxxx GLC-EX-SMD GLC-LH-SM GLC-LH-SMD GLC-SX-MM GLC-SX-MMD GLC-ZX-SM GLC-ZX-SMD SFP-GE-L SFP-GE-S, SFP-GE-Z GLC-BX-D, GLC-BX-U GLC-T, GLC-TE SFP-GE-T, SFP-GE-S SFP-GE-L,SFP-GE-Z	

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
F3 Series 48-port 1-/10-Gigabit Ethernet (N7K-F348XP-25)	SFP+	DWDM-SFP10G-xx.xx	SMF
		FET-10G	MMF(OM2) MMF(OM3 and OM4)
		SFP-H10GB-ACU7M SFP-H10GB-ACU10M	Twinax cable assembly, active
		SFP-H10GB-CU1M SFP-H10GB-CU3M SFP-H10GB-CU5M	Twinax cable assembly, passive
		SFP-10G-AOC1M SFP-10G-AOC2M SFP-10G-AOC3M SFP-10G-AOC5M SFP-10G-AOC7M SFP-10G-AOC10M	Active optical cable assembly
		SFP-10G-ER SFP-10G-ER-S SFP-10G-LR SFP-10G-LR-S SFP-10G-LRM SFP-10G-ZR SFP-10G-ZR-S	SMF
		SFP-10G-LRM SFP-10G-SR SFP-10G-SR-S	MMF
	SFP	CWDM-SFP-xxxx DWDM-SFP-xxxx GLC-BX-U GLC-BX-D GLC-EX-SMD GLC-LH-SMD GLC-SX-MMD GLC-ZX-SMD	SMF
		GLC-LH-SMD	MMF
		GLC-TE	Category 5

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
F3 Series, 12-port 40-Gigabit Ethernet (N7K-F312FQ-25)	QSFP+	FET-40G	MMF
		QSFP-H40G-ACU7M QSFP-H40G-ACU10M	Direct-attach copper, active
		QSFP-H40G-AOC1M QSFP-H40G-AOC2M QSFP-H40G-AOC3M QSFP-H40G-AOC5M QSFP-H40G-AOC7M QSFP-H40G-AOC10M	Active optical cable assembly
		QSFP-4X10G-AC7M QSFP-4X10G-AC10M	Direct-attach breakout copper, active
		QSFP-4X10G-AOC1M QSFP-4X10G-AOC2M QSFP-4X10G-AOC5M QSFP-4X10G-AOC7M QSFP-4X10G-AOC10M	Active Optical breakout Cable assembly
		QSFP-40G-CSR4 QSFP-40G-SR-BD QSFP-40G-SR4 QSFP-40G-SR4-S	MMF
F3 Series 6-port 100-Gigabit Ethernet (N7K-F306CK-25)	CPAK	CPAK-100G-SR10	MMF (OM3) MMF (OM4)
		CPAK-100G-LR4	SMF
M1 Series, 32-port 10-Gigabit Ethernet (N7K-M132XP-12)	SFP+	FET-10G[1]	MMF
		SFP-10G-ER SFP-10G-LR	SMF
		SFP-10G-SR	MMF
		SFP-10G-ACU7M SFP-10G-ACU10M	Twinax cable, active

Table 7-1   Connectors and Cables Supported by I/O Modules (continued)

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M1 Series, 32-port 10-Gigabit Ethernet XL (N7K-M132XP-12L)	SFP+	DWDM-SFP10G-xx.xx	SMF
		FET-10G[1]	MMF
		SFP-10G-AOC1M SFP-10G-AOC2M SFP-10G-AOC3M SFP-10G-AOC5M SFP-10G-AOC7M SFP-10G-AOC10M	Active Optical Cable assembly
		SFP-10G-ER SFP-10G-LR SFP-10G-LRM SFP-10G-SR SFP-10G-ZR[2]	SMF
		SFP-10G-LRM	MMF
		SFP-H10GB-CU1M SFP-H10GB-CU1.5M SFP-H10GB-CU2M SFP-H10GB-CU2.5M SFP-H10GB-CU3M SFP-H10GB-CU5M	Twinax cable, passive
		SFP-H10GB-ACU7M SFP-H10GB-ACU10M	Twinax cable, active
M1 Series, 48-port 1-Gigabit Ethernet (N7K-M148GS-11)	SFP	CWDM-SFP-1xxx DWDM-SFP-1xxx GLC-BX-D GLC-BX-U GLC-EX-SMD GLC-LH-SM GLC-LH-SMD GLC-ZX-SM GLC-ZX-SMD SFP-GE-Z	SMF
		GLC-LH-SM GLC-LH-SMD GLC-SX-MM GLC-SX-MMD SFP-GE-L SFP-GE-S	MMF
		GLC-T SFP-GE-T	Category 5

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M1 Series, 48-port 1-Gigabit Ethernet XL (N7K-M148GS-11L)	SFP	CWDM-SFP-1xxx DWDM-SFP-1xxx GLC-BX-D GLC-BX-U GLC-EX-SMD GLC-LH-SM GLC-LH-SMD GLC-ZX-SM GLC-ZX-SMD SFP-GE-Z	SMF
		GLC-LH-SM GLC-LH-SMD GLC-SX-MM GLC-SX-MMD SFP-GE-L SFP-GE-S	MMF
		GLC-T SFP-GE-T	Category 5
M1 Series, 48-port 10/100/1000 Ethernet (N7K-M148GT-11)	1000BASE-T	RJ-45	
M1 Series, 48-port 10/100/1000 Ethernet (N7K-M148GT-11L)	1000BASE-T	RJ-45	

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M1 Series, 8-port 10-Gigabit Ethernet (N7K-M108X2-12L)	10GBASE-X2	DWDM-X2-xx.xx	SMF
	10GBASE-X SFP+	SFP-10G-LR[3] SFP=10G-LR-S SFP-10G-LRM[3] SFP-10G-SR[3]	
		SFP-10G-SR-S SFP-10G-LRM[3] SFP-10G-SR[3]	MMF
		SFP-H10GB-CU1M[3] SFP-H10GB-CU3M[3] SFP-H10GB-CU5M[3]	Twinax cable, passive
	10GBASE-X X2	X2-10GB-ER X2-10GB-LR X2-10GB-LRM X2-10GB-ZR	SMF
		X2-10GB-LX4 X2-10GB-LRM X2-10GB-SR	MMF
		X2-10GB-CX4	CX4 (Copper)

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M2 Series, 24-port 10-Gigabit Ethernet (N7K-M224XP-23L)	10GBASE-X SFP+	DWDM-SFP10G-xx.xx	SMF
		FET-10G[1]	MMF
		SFP-H10GB-CU1M SFP-H10GB-CU1.5M SFP-H10GB-CU2M SFP-H10GB-CU2.5M SFP-H10GB-CU3M SFP-H10GB-CU5M	Twinax cable, passive
		SFP-H10GB-ACU7M SFP-H10GB-ACU10M	Twinax cable, active
		SFP-10G-AOC1M SFP-10G-AOC2M SFP-10G-AOC3M SFP-10G-AOC5M SFP-10G-AOC7M SFP-10G-AOC10M	Active Optical Cable assembly
		SFP-10G-ER SFP-10G-ER-S SFP-10G-LR SFP-10G-LR-S SFP-10G-LRM SFP-10G-ZR-S SFP-10G-ZR[2]	SMF
		SFP-10G-LRM SFP-10G-SR SFP-10G-SR-S	MMF

Table 7-1 *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M2 Series, 6-Port 40-Gigabit Ethernet (N7K-M206FQ-23L)	QSFP+	FET-40G	MMF
		QSFP-H40G-ACU7M QSFP-H40G-ACU10M	Direct-attache Copper
		QSFP-H40G-AOC1M QSFP-H40G-AOC2M QSFP-H40G-AOC3M QSFP-H40G-AOC5M QSFP-H40G-AOC7M QSFP-H40G-AOC10M	Active Optical Cable Assembly
		QSFP-4X10G-AC7M QSFP-4X10G-AC10M	Direct-attach copper breakout
		QSFP-4X10G-AOC1M QSFP-4X10G-AOC2M QSFP-4X10G-AOC5M QSFP-4X10G-AOC7M QSFP-4X10G-AOC10M	Active Optical Breakout Cable Assembly
		QSFP-40G-CSR4 QSFP-40G-SR-BD QSFP-40G-SR4 QSFP-40G-SR4-S	MMF
M2 Series, 2-Port 100-Gigabit Ethernet (N7K-M202CF-22L)	CFP	CFP-100G-LR4 CFP-40G-LR4	SMF
		CFP-100G-SR10 CFP-40G-SR4	MMF

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M3 Series 48-Port 1-/10-Gigabit Ethernet (N7K-M348XP-25L)	SFP+	SFP-10G-SR SFP-10G-SR-S	MMF
		SFP-10G-LR SFP-10G-LR-S SFP-10G-LRM SFP-10G-ER SFP-10G-ER-S SFP-10G-ZR SFP-10G-ZR-S	SMF
		SFP-10G-BXD-I SFP-10G-BXU-I CWDM-SFP10G-1xxx DWDM-SFP10G-xx.xx	
		SFP-H10GB-ACU7M SFP-H10GB-ACU10M	Twinax cable, active
		SFP-H10GB-CU1M SFP-H10GB-CU1.5M SFP-H10GB-CU2M SFP-H10GB-CU2.5M SFP-H10GB-CU3M SFP-H10GB-CU5M	Twinax cable, passive
		SFP-10G-AOC1M SFP-10G-AOC2M SFP-10G-AOC3M SFP-10G-AOC5M SFP-10G-AOC7M SFP-10G-AOC10M	Active Optical Cable Assembly
	SFP	CWDM-SFP-xxxx DWDM-SFP-xxxx	SMF
		GLC-TE	Category 5
		GLC-SX-MMD GLC-LH-SMD	MMF
		GLC-EX-SMD GLC-LH-SMD GLC-ZX-SMD GLC-BX-D GLC-BX-U	SMF

Table 7-1   *Connectors and Cables Supported by I/O Modules (continued)*

Module	Port Type	Connector/Transceiver	Fiber and Cable Type
M3 Series 24-Port 40-Gigabit Ethernet (N7K-M324FQ-25L)	QSFP+	QSFP-40G-SR4 QSFP-40G-SR4-S QSFP-40G-CSR4 QSFP-40G-SR-BD	MMF
		QSFP-40G-LR4 QSFP-40G-LR4-S QSFP-40G-ER4 QSFP-4X10G-LR-S	SMF
		QSFP-H40G-AOC1M QSFP-H40G-AOC2M QSFP-H40G-AOC3M QSFP-H40G-AOC5M QSFP-H40G-AOC7M QSFP-H40G-AOC10M QSFP-H40G-AOC15M	Active Optical Cable Assembly
		QSFP-4X10G-ACUxM	Direct attach breakout copper, active
		QSFP-4X10G-AOC1M QSFP-4X10G-AOC2M QSFP-4X10G-AOC3M QSFP-4X10G-AOC5M QSFP-4X10G-AOC7M QSFP-4X10G-AOC10M	Active Optical Cable Assembly
		QSFP-4X10G-AC7M QSFP-4X10G-AC10M	Direct-attach copper cable assembly
		QSFP-H40G-ACU7M QSFP-H40G-ACU10M	Direct-attach copper, active

1. FETs are used only when connecting this I/O module to a Fabric Extender (FEX).

2. Requires Version 2 or later version.

3. Requires the CVR-X2-SFP10G OneX Converter Module (X2 to SFP+ adapter)

This section includes the following topics:

- Connecting or Disconnecting a 1000BASE-T Port, page 7-18
- Connecting or Disconnecting an SFP, SFP+, or X2 Port, page 7-18

Connecting or Disconnecting a 1000BASE-T Port

This section includes the following topics:

- Connecting a 1000BASE-T Port to the Network, page 7-18
- Disconnecting a 1000BASE-T Port from the Network, page 7-18

Connecting a 1000BASE-T Port to the Network

You can connect a copper network interface cable with an RJ-45 connector to a port on a 48-port 10/100/1000 Ethernet I/O module (N7K-M148GT-11 and N7K-M148GT-11L).

To connect a 1000BASE-T Ethernet port to the network, follow these steps:

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

Step 2 Route the interface cable through the cable management slot for the I/O module with the port for this cable.

Step 3 Insert the RJ-45 connector on the interface cable into the appropriate port on the I/O module.

Disconnecting a 1000BASE-T Port from the Network

You can disconnect a copper network interface cable from a 48-port 10/100/1000 Ethernet module by unplugging its RJ-45 connector from its port on the module.

To disconnect a 1000BASE-T Ethernet port from the network, follow these steps:

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

Step 2 Unplug the RJ-45 connector on the interface cable from the appropriate port on the Ethernet I/O module.

Step 3 (Optional) If you need to remove the cable from the switch, pull it out of the cable management slot.

Connecting or Disconnecting an SFP, SFP+, or X2 Port

Depending on the I/O module model that you are using, you can use SFP, SFP+, or X2 transceivers. Some of these transceivers work with fiber-optic cables that you attach to the transceivers and other transceivers work with preattached copper cables. When installing fiber-optic cables for a port, you must install SFP transceivers for 1-Gigabit optical ports or install SFP+ or X2 transceivers or Fabric Extender Transceivers (FETs) for 10-Gigabit optical ports before installing the fiber-optic cable in the transceivers. When removing fiber-optic transceivers, you must remove the fiber-optic cables from a transceiver before removing the transceiver from the port.

⚠️

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

This section includes the following topics:

Installing a Transceiver

✎

Note   Use only the transceivers listed in Table 7-1 on page 7-7. Each Cisco transceiver is encoded with model information that enables the switch to verify that the transceiver meets the requirements for the switch.

To install a transceiver, follow these steps:

Step 1   Attach an ESD-preventative 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.

⚠️

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

Step 5   If you are installing fiber-optic cables, connect two optical cables to the installed transceiver (see the "Connecting a Fiber-Optic Cable to a Transceiver" section on page 7-20).

✎

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

Removing a Transceiver

To remove a transceiver, follow these steps:

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

Step 2   If a cable is installed in the transceiver, remove the cable as explained in the "Disconnecting a Fiber-Optic Cable from a Transceiver" section on page 7-21.

Step 3   Remove the transceiver from the port in one of the following ways:

- For SFP or SFP+ transceivers, open the clasp on the front of the transceiver and pull the transceiver out of the port.

- For X2 transceivers, pull on the collar on the transceiver to unlock it from the port and pull the transceiver out of the port.

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 your Cisco representative.

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

Connecting a Fiber-Optic Cable to a Transceiver

⚠

Caution   To prevent damage to the fiber-optic cables, do not place more tension on them than the rated limit and do not bend them to a radius less than 1 inch (2.54 cm) if there is no tension in the cable or 2 inches (5.08 cm) if there is tension in the cable.
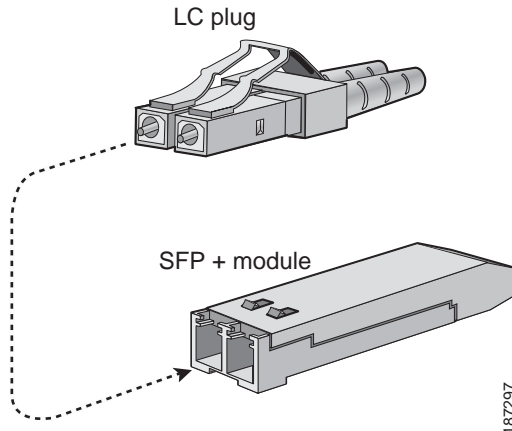
To prevent possible damage to the cable or transceiver, install the transceiver in the port before installing the cable in the transceiver.

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

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

Step 2   Remove the dust cover from the port 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 Figure 7-1 for SFP or SFP+ transceivers).

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

Figure 7-1   *Connecting the LC-Type Cable to an Ethernet SFP or SFP+ Transceiver*

Disconnecting a Fiber-Optic Cable from a Transceiver

⚠️

Caution   When disconnecting fiber-optic cables, be sure to cover any exposed fiber-optic openings with dust plugs.

To remove the cable, follow these steps:

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

Step 2   Record the cable and port connections for later reference.

Step 3   Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.

✎

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

Step 4   Insert a dust plug into the cable end of the transceiver.

Step 5   Insert a dust plug into the end of the cable.

Maintaining Transceivers and Fiber-Optic Cables

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.

Consider the following maintenance guidelines:

- Transceivers are static sensitive. To prevent ESD damage, wear an ESD-preventative wrist strap that is connected to the grounded 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. Clean them before using to prevent dust from scratching the fiber-optic cable ends.

- Do not touch the ends of connectors. Touching the ends can leave fingerprints and cause other contamination.

- Clean the connectors 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 procedures.

- Inspect routinely for dust and damage. If you suspect damage, clean and then inspect fiber ends under a microscope to determine if damage has occurred.