

Troubleshoot and Maintain SFP Transceiver Modules

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Introduction

This document describes how to deploy and troubleshoot Cisco Small Form-Factor Pluggable (SFP) Transceiver Modules in Cisco Catalyst Switches.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on the Cisco SFP Transceiver Modules.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Conventions

Refer to [Cisco Technical Tips Conventions](#) for more information on document conventions.

Background Information

This document provides information about the deployment and troubleshooting of Cisco Small Form-Factor Pluggable (SFP) Transceiver Modules in Cisco Catalyst Switches. Cisco Transceiver Modules support Ethernet, Sonnet/SDH and Fibre Channel applications across all Cisco switching and routing platforms. Cisco pluggable transceivers offer a convenient and cost effective solution for the adoption in data centers, campuses, metropolitan area access and ring networks, and storage area networks.

Cisco SFP Transceiver Modules

The Cisco portfolio of hot pluggable interfaces offers a rich set of choices in terms of speeds, protocols, reaches and supported transmission media.

Cisco Fast Ethernet SFP Modules



Fast Ethernet SFP

The Cisco 100BASE-X SFP comes in six configurations:

| Cisco 100M Ethernet SFP | | Part Number | Description |
|-------------------------|--|----------------|--|
| Cisco 100BASE-FX SFP | | GLC-FE-100FX | Operates on ordinary multimode fiber-optic (MMF) link spans up to 2 kilometers long. For 100 Mbps Ethernet ports |
| | | GLC-GE-100FX | Operates on ordinary multimode fiber-optic (MMF) link spans up to 2 kilometers long. For Gigabit Ethernet ports |
| Cisco 100BASE-LX10 SFP | | GLC-FE-100LX | Operates on ordinary single-mode fiber-optic (SMF) link spans up to 10 kilometers long. |
| Cisco 100BASE-BX10 SFP | | GLC-FE-100BX-D | Operates on ordinary SMF single-strand link spans up to 10 kilometers long. |
| | | GLC-FE-100BX-U | |
| Cisco 100BASE-EX SFP | | GLC-FE-100EX | Operates on ordinary single-mode fiber-optic (SMF) link spans up to 40 kilometers long. |
| Cisco 100BASE-ZX SFP | | GLC-FE-100ZX | Operates on ordinary single-mode fiber-optic (SMF) link spans up to 80 kilometers long. |

Cisco Gigabit Ethernet SFP Modules

SFP Transceiver Module [Fiber-Optic LC Connector]



Optic LC Connector]

1000BASE-T SFP Transceiver Module [RJ-45 Connector]

SFP Transceiver Module [Fiber-



1000BASE-T SFP Transceiver

Module

| Cisco Gigabit Ethernet SFP Part Number | | Description |
|---|--|--|
| Cisco 1000BASE-SX SFP | GLC-SX-MM ¹ SFP-GE-S ² | Operates on 50 m multimode fiber links up to 550 m and on 62.5 m FDDI-grade multimode fibers up to 220 m. |
| Cisco 1000BASE-LX/LH SFP | GLC-LH-SM ¹ SFP-GE-L ² | Operates on standard single-mode fiber-optic links spans of up to 10 km and up to 550 m on any multimode fibers. |
| Cisco 1000BASE-ZX SFP | GLC-ZX-SM ¹ SFP-GE-Z ² | Operates on standard single-mode fiber-optic links spans of up to approximately 70 km in length. |
| Cisco 1000BASE-BX10-D & 1000BASE-BX10-U SFP | GLC-BX-D ² GLC-BX-U ² | Operates on a single strand of standard single-mode fiber. A 1000BASE-BX10-D device is always connected to a 1000BASE-BX10-U device with a single strand of standard single-mode fiber with an operating transmission range up to 10 km. |
| Cisco 1000BASE-T SFP | GLC-T SFP-GE-T ³ | 1000BASE-T SFP Transceiver Module for Category 5 copper wire. |

¹Without Digital Optical Monitoring (DOM)

²With Digital Optical Monitoring (DOM)

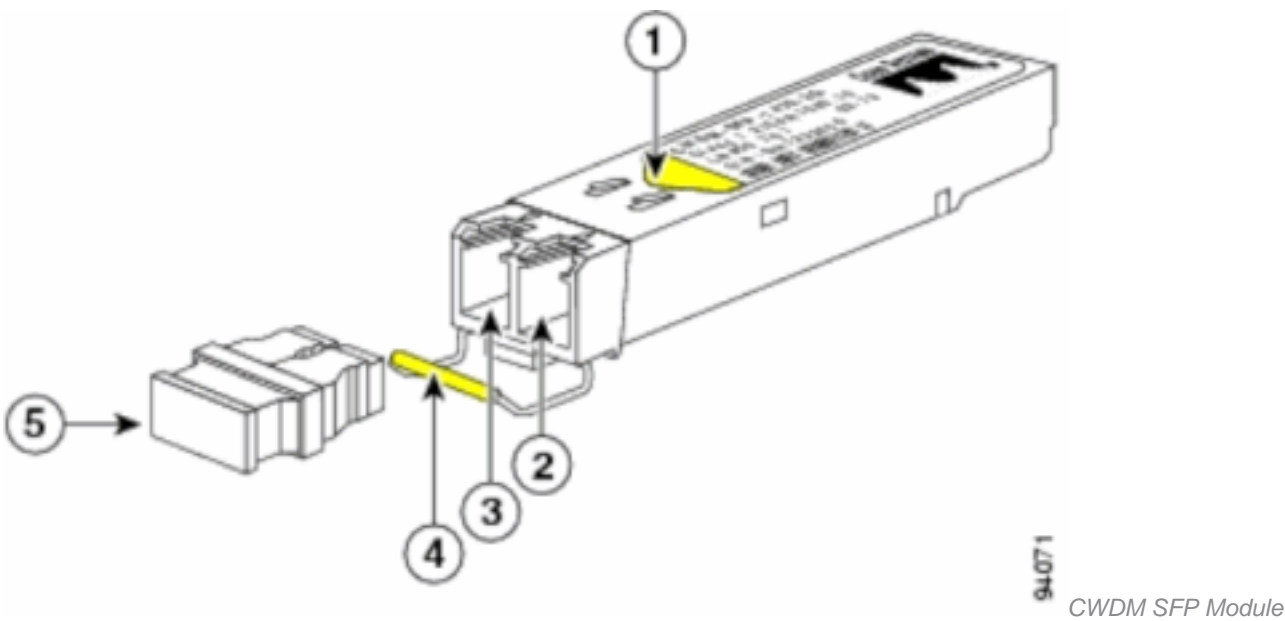
³ NEBS 3 ESD

For more information about support for Gigabit Ethernet installations on links of multimode fibers, refer to [Cisco Support for Gigabit Ethernet Deployments with Multimode Fiber Links up to 2 km](#).

Cisco CWDM Transceiver Modules

A Cisco Coarse Wavelength Division Multiplexing (CWDM) SFP is a hot-swappable input/output device that plugs into an SFP port or slot of a Cisco switch or router and links the port with the fiber-optic network. The Cisco CWDM SFPs are multirate parts that support both Gigabit Ethernet and Fibre Channel (1 Gigabit and 2 Gigabit).

CWDM SFP Module [Yellow-coded CWDM-SFP-1550 shown]



| S. No. | Description |
|--------|------------------------|
| 1 | Color arrow on label |
| 2 | Receive optical bore |
| 3 | Transmit optical bore |
| 4 | Color coded bale clasp |
| 5 | Optical bore dust plug |

CWDM SFPs come in eight wavelengths that range from 1470 nm to 1610 nm. Color markings on the devices identify the wavelength to which the Gigabit Ethernet channel is mapped. This table lists the SFPs with their wavelength and color codes.

| Part Number | Description | Color C |
|---------------|---|---------|
| CWDM-SFP-1470 | Cisco CWDM 1470-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Gray |
| CWDM-SFP-1490 | Cisco CWDM 1490-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Violet |
| CWDM-SFP-1510 | Cisco CWDM 1510-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Blue |
| CWDM-SFP-1530 | Cisco CWDM 1530-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Green |

| | | |
|---------------|---|--------|
| CWDM-SFP-1550 | Cisco CWDM 1550-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Yellow |
| CWDM-SFP-1570 | Cisco CWDM 1570-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Orange |
| CWDM-SFP-1590 | Cisco CWDM 1590-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Red |
| CWDM-SFP-1610 | Cisco CWDM 1610-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel | Brown |

Supported Catalyst Switches

This section lists the Cisco Catalyst Switches that support the Cisco SFP Transceiver Modules.

Note: If a module / device supports both 100M SFP and Gigabit Ethernet SFP transceiver modules, they can be used at the same time on appropriate ports. However, it does not support different types of transceiver modules when grouped together in a port-channel.

Catalyst 6500/6000 Series

| Modules | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|--|---|---|---------------|
| WS-X6148-FE-SFP | GLC-FE-100FX GLC-FE-100LX GLC-FE-100BX-D GLC-FE-100BX-U GLC-FE-100EX GLC-FE-100ZX | | - |
| WS-SUP720 WS-SUP32-8GE-3B WS-SUP32-10GE-3B WS-X6724-SFP WS-X6748-SFP | - | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |

Catalyst 4500 Series

| Modules | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|---|--|--|---------------|
| WS-X4248-FE-SFP | GLC-FE-100FX GLC-FE-100LX GLC-FE-100BX-D GLC-FE-100BX-U | | - |
| WS-X4013+TS GB-T 4 WS-X4506- WS-X4516-10GE | - | GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |
| WS-X4013+10GE | - | GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |
| WS-4448-GB-SFP | - | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | - |
| WS-X45-Sup6-E | - | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM | All CWDM SFPs |

Catalyst 3750 Series

| Switches | 100M SFPs | Gigabit Ethernet | CWDM |
|----------|-----------|------------------|------|
|----------|-----------|------------------|------|

| | SFPs | SFPs |
|---|---|---------------|
| WS-C3750-24PS WS-C3750-24TS WS-C3750-48PS WS-C3750-48TS WS-C3750-24FS-S WS-C3750G-12S WS-C3750G-24PS WS-C3750G-24TS WS-C3750G-48PS WS-C3750G-48TS WS-C3750G-24TS-E1U WS-C3750G-24TS-S1U | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |

Catalyst 3750-E Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|--|--------------|---|---------------|
| WS-C3750E-24TD WS-C3750E-24PD WS-C3750E-48TD WS-C3750E-48PD WS-C3750E-48PD-F | GLC-GE-100FX | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |

Catalyst 3560 Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|---|---|---|---------------|
| WS-C3560-8PC | GLC-FE-100FX GLC-FE-100LX GLC-FE-100BX-D GLC-FE-100BX-U | GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |
| WS-C3560-24PS WS-C3560-48PS WS-C3560-24TS WS-C3560-48TS WS-C3560G-24PS WS-C3560G-24TS WS-C3560G-48PS WS-C3560G-48TS | GLC-GE-100FX | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |

Catalyst 3560-E Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|--|--------------|---|---------------|
| WS-C3560E-24TD WS-C3560E-24PD WS-C3560E-48TD WS-C3560E-48PD WS-C3560E-48PD-F | GLC-GE-100FX | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |

Catalyst 2970 Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|----------------|--------------|-------------------------------------|---------------|
| WS-C2970G-24TS | GLC-GE-100FX | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM | All CWDM SFPs |

Catalyst 2960 Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|--|---|---|---------------|
| WS-C2960-24TC-L WS-C2960-48TC-L WS-C2960G-24TC-L | GLC-GE-100FX GLC-FE-100LX GLC-FE-100BX-D GLC-FE-100BX-U | GLC-SX-MM GLC-LH-SM GLC-ZX-SM GLC-BX-D GLC-BX-U | All CWDM SFPs |

Catalyst 2950 Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM |
|---|-----------|-------------------------------------|---------------|
| WS-C2950ST-8 LRE WS-C2950ST-24 LRE WS-C2950ST-24 LRE997 | - | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM | All CWDM SFPs |

Catalyst 2948G Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|-------------------|-----------|-------------------------------------|---------------|
| WS-C2948G-GE-TX - | | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM | All CWDM SFPs |

Catalyst 2940 Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|------------------|-----------|-------------------------------------|-----------|
| WS-C2940-8TF-S - | | GLC-T GLC-SX-MM GLC-LH-SM GLC-ZX-SM | - |

Catalyst Express 500 Series

| Switches | 100M SFPs | Gigabit Ethernet SFPs | CWDM SFPs |
|--|--|-------------------------------|-----------|
| WS-CE500-24LC WS-CE500-24PC WS-CE500G-12TC | GLC-GE-100FX GLC-FE-100FX GLC-FE-100LX GLC-FE-100BX-D GLC-FE-100BX-U | GLC-SX-MM GLC-LH-SM GLC-ZX-SM | - |

Refer to [Cisco Optics Interoperability Matrix User Manual](#) for other types of devices which support Cisco SFP Transceiver Modules.

Safety Guidelines

Laser Safety

Before you install SFP modules in a Cisco device or attempt to operate or service a Cisco device equipped with SFP modules, you must read and observe the important safety information in this publication. Refer to the Regulatory Compliance and Safety Information publication or the Site Preparation and Safety Guide that supports your Cisco device for the complete list of translated safety warnings and agency approvals that apply to your Cisco device.

The Cisco SFP Transceiver Modules are equipped with a Class 1 Laser, which emits invisible radiation. Do not stare into open optical ports. These warnings apply to the Cisco SFP modules.

Warning: Class 1 laser product.

Warning: Because invisible laser radiation can be emitted from the aperture of the port when no fiber is connected, avoid exposure to laser radiation and do not stare into open apertures.

Warning: Laser radiation is present when the system is open ,and interlocks bypassed.

Warning: Only trained and qualified personnel are allowed to install, replace, or service this equipment.

Guidelines for How to Handle SFPs

Use these guidelines when you work with SFPs:

- Cisco SFP modules are static sensitive. Wear an ESD-preventive wrist strap that is connected to the chassis in order to prevent ESD damage.
- Cisco SFP modules are dust sensitive. Always store the devices with plugs installed in the optical bores.
- Do not remove and insert a Cisco SFP module more often than is necessary. Repeated removals and insertions of a Cisco SFP module can shorten its useful life.

Required Tools

You need these tools in order to install or remove the SFP transceiver:

- Wrist strap or other personal grounding device to prevent ESD occurrences.
- Antistatic mat or antistatic foam to set the transceiver on.
- Fiber-optic end-face cleaning tools and inspection equipment. Refer to these documents for complete information on how to inspect and clean fiber-optic connections: [Inspection and Cleaning Procedures for Fiber-Optic Connections](#) Compressed Air Cleaning Issues for Fiber-Optic Connections

Install and Remove SFP Transceiver Modules

This installation section provides the installation instructions for the Cisco SFP Transceiver Modules. The SFP Transceiver Modules are hot-swappable input/output (I/O) devices that plug into 100BASE and 1000BASE ports, which connects the module port with the fiber-optic or copper network.

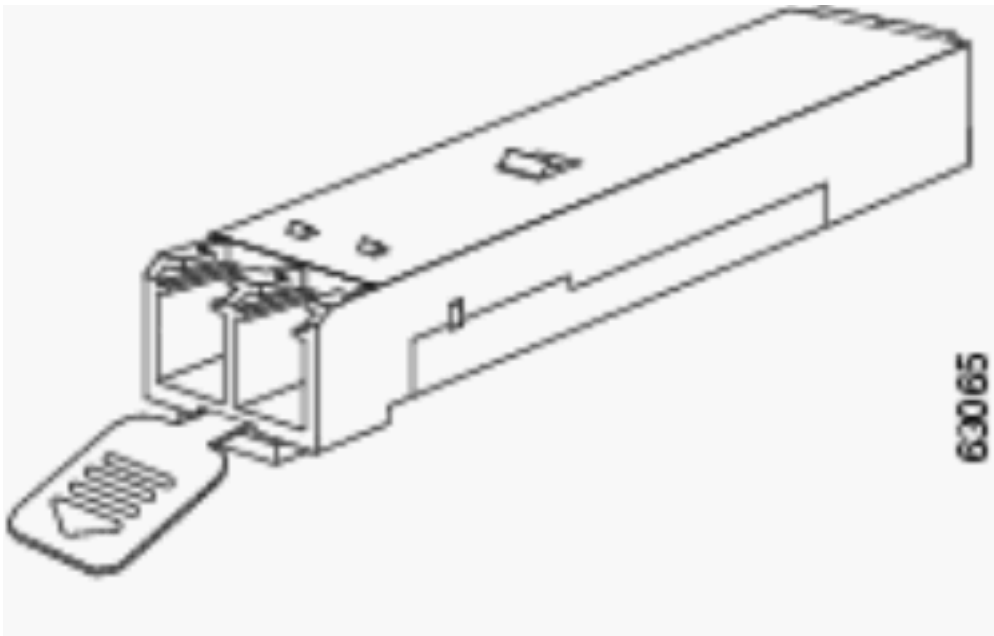
You can use any combination of SFP modules that your Cisco device supports. The only restrictions are each port must match the wavelength specifications on the other end of the cable and the cable must not exceed the stipulated cable length for reliable communications.

Note: Review the [Safety Guidelines](#) section before you install the SFP Transceiver Modules.

Types of SFP Transceiver Latches

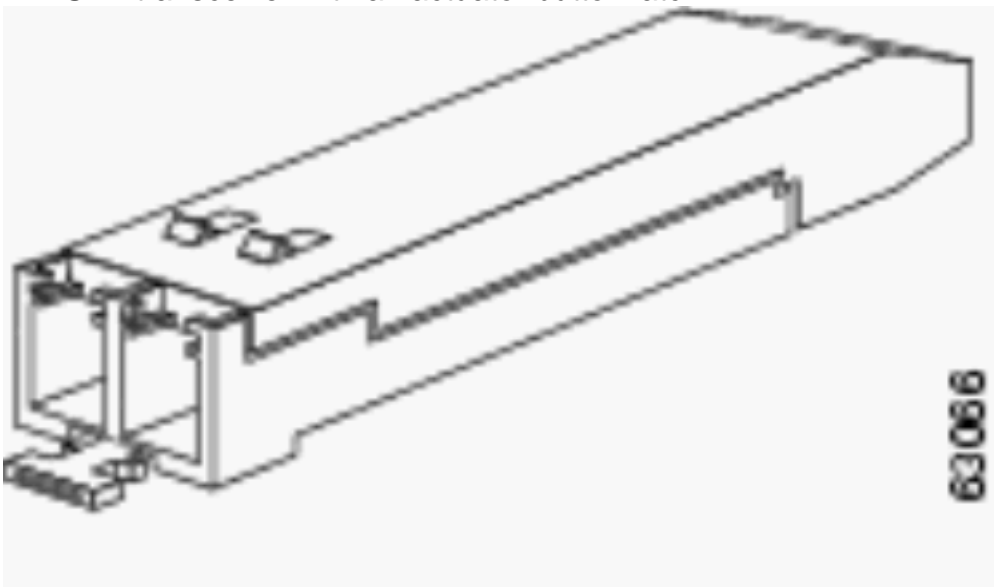
SFP Transceiver Modules can have three types of latching devices to secure an SFP transceiver in a port socket. Determine which type of latch your SFP transceiver uses before you complete the installation and removal procedures:

- SFP transceiver with a Mylar tab latch.



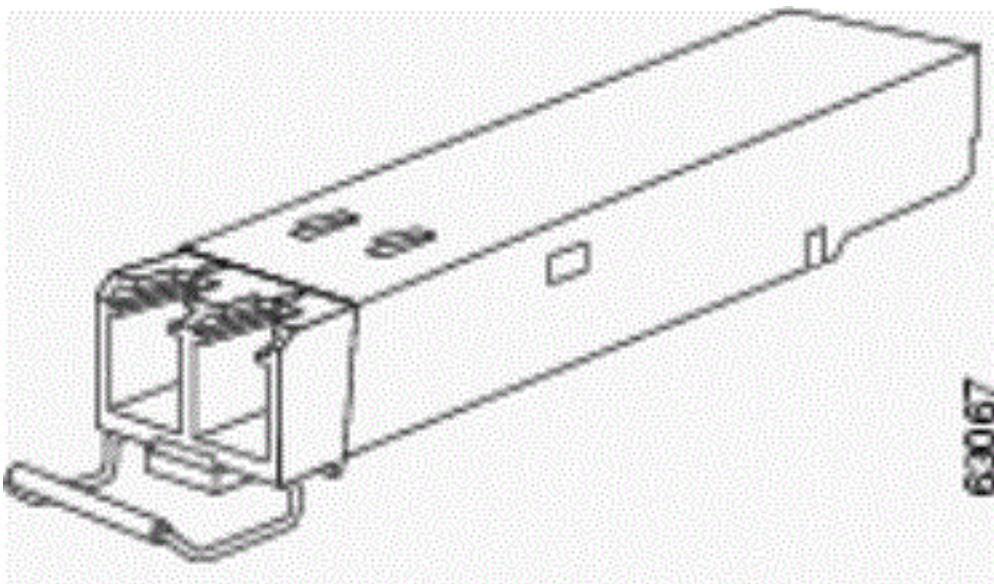
Mylar tab latch

- SFP transceiver with an actuator button latch.



actuator button latch

- SFP transceiver that has a bale-clasp latch.

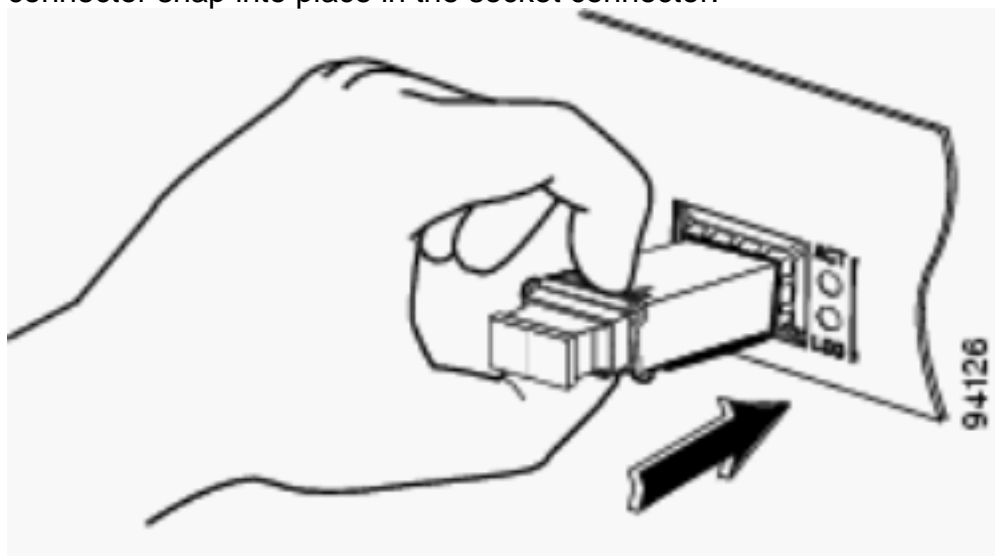


Bale-clasp Latch

Install a SFP Transceiver Module

Complete these steps in order to install a SFP transceiver:

1. Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector or a bare metal surface on your chassis.
2. Remove the SFP Transceiver Module from its protective packaging. **Note:** Do not remove the optical bore dust plugs until directed to do so later in the procedure.
3. Check the label on the SFP transceiver body to verify that you have the correct model for your network.
4. Find the send (TX) and receive (RX) markings that identify the top side of the SFP transceiver. **Note:** On some SFP transceivers, the TX and RX marking can be replaced by arrowheads that point from the SFP transceiver connector (transmit direction or TX) and toward the connector (receive direction or RX).
5. Position the SFP transceiver in front of the socket opening. **Note:** Different Cisco devices have different SFP module socket configurations. Your Cisco device could have either a latch-up or a latch-down orientation. Ensure that you install the SFP transceiver in the correct orientation for your Cisco device. Refer to the hardware installation instructions that came with your Cisco device for more details.
6. Insert the SFP transceiver into the socket until you feel the SFP Transceiver Module connector snap into place in the socket connector.



Insert SFP

Note: For optical SFP transceivers, before you remove the dust plugs and make any optical connections, observe these guidelines: Always keep the protective dust plugs on the unplugged fiber-optic cable connectors and the transceiver optical bores until you are ready to make a connection. Always inspect and clean the LC connector end-faces just before you make any connections. See the [Required Tools](#) section of this document for more information. Always grasp the LC connector housing to plug or unplug a fiber-optic cable.

7. Remove the dust plugs from the network interface cable LC connectors. Save the dust plugs for future use.
8. Remove the dust plugs from the SFP transceiver optical bores.
9. Immediately attach the network interface cable LC connector to the SFP transceiver.
10. Connect the 1000BASE-T SFP transceivers to a copper network. Caution: In order to comply with GR-1089 intra-building lightning immunity requirements, you must use grounded, shielded, twisted-pair Category 5 cabling.
11. Complete these steps in order to connect the transceivers to a copper network: Insert the

Category 5 network cable RJ-45 connector into the SFP transceiver RJ-45 connector. When you connect to a 1000BASE-T-compatible server, workstation, or router, use four twisted-pair, straight-through Category 5 cabling for the SFP transceiver port. When you connect to a 1000BASE-T-compatible switch or repeater, use four twisted-pair, crossover Category 5 cabling. Insert the other end of the network cable into an RJ-45 connector on a 1000BASE-T-compatible target device.

12. Observe the port status LED: The LED turns green when the SFP transceiver and the target device have an established link. The LED turns amber while STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the LED turns green. If the LED is off, the target device is not turned on, there can be a cable problem, or a problem with the adapter installed in the target device. Refer to the Troubleshoot section of your switch hardware guide for solutions to cabling problems. Reconfigure and reboot the target device if necessary.

Remove SFP Transceiver Modules

Complete these steps in order to remove the SFP transceiver:

1. Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector or a bare metal surface on your chassis.
2. Disconnect the network fiber-optic cable or network copper cable from the SFP Transceiver Module connector. For optical SFP transceivers, immediately reinstall the dust plugs in the SFP transceiver optical bores and the fiber-optic cable LC connectors. Tip: For reattachment of fiber-optic cables, notice which connector plug is send (TX) and which is receive (RX).
3. Release and remove the SFP Transceiver Module from the socket connector. If the SFP transceiver has a Mylar tab latch, pull the tab gently in a slightly downward direction until the transceiver disengages from the socket connector, and then pull the SFP transceiver straight out. Do not twist or pull the Mylar tab because you could detach it from the SFP transceiver. If the SFP transceiver has an Actuator button latch, gently press the actuator button on the front of the SFP transceiver until it clicks and the latch mechanism releases the SFP transceiver from the socket connector. Grasp the actuator button between your thumb and index finger, and carefully pull the SFP transceiver straight from the module slot. If the SFP transceiver has a Bale-clasp latch, pull the bale out and down to eject the SFP transceiver from the socket connector. If the bale-clasp latch is obstructed and you cannot use your index finger to open it, use a small flat-blade screwdriver or another long narrow instrument to open the bale-clasp latch. Grasp the SFP transceiver between your thumb and index finger, and carefully remove it from the socket.
4. Place the removed SFP transceiver in an antistatic bag or other protective environment.

Cabling Specifications

This table shows cabling specifications for the Cisco SFP transceivers installed on a FastEthernet / Gigabit Ethernet SFP port. Notice that all SFP ports have LC-type connectors, and the minimum cable distance for all SFPs listed (MMF and SMF [G.652] is 2 meters [6.5 feet]).

| SFP | Wavelength (nm) | Fiber Type | Cable Length |
|--------------|-----------------|------------|-------------------|
| GLC-FE-100FX | 1310 | MMF | 2 km (6562 ft) |
| GLC-GE-100FX | 1300 | MMF | 2 km (6562 ft) |
| GLC-FE-100LX | 1310 | SMF | 10 km (32,810 ft) |

| | | |
|---------------------|-----|---|
| GLC-FE-100BX-U 1310 | SMF | 10 km (32,810 ft) |
| GLC-FE-100BX-D 1550 | SMF | 10 km (32,810 ft) |
| GLC-FE-100EX 1310 | SMF | 40 km (131,240 ft) |
| GLC-FE-100ZX 1550 | SMF | 80 km (262,480 ft) |
| 1000BASE-SX 850 | MMF | From 220 m (722 ft) to 550 m (1,804 ft) |
| 1000BASE-LX/LH 1300 | MMF | 550 m (1,804 ft) |
| | SMF | 10 km (32,8210 ft) |
| 1000BASE-ZX 1550 | SMF | Approximately 70 km, which depends on link loss |
| 1000BASE-BX-D 1310 | SMF | 10 km (32,8210 ft) |
| 1000BASE-BX-U 1490 | SMF | 10 km (32,8210 ft) |

Configure SFPs

Configure Interface Speed and Duplex Mode

Ethernet interfaces on the switch operate at 10, 100, or 1000 Mbps, or 10,000 Mbps and in either full- or half-duplex mode. In full-duplex mode, two stations can send and receive traffic at the same time. Normally, 10 Mbps ports operate in half-duplex mode, which means that stations can either receive or send traffic.

You cannot configure speed on SFP module ports, but you can configure speed to not negotiate if connected to a device that does not support auto-negotiation. However, when a 1000BASE-T SFP module is in the SFP module port, you can configure speed as 10, 100, or 1000 Mbps, or auto.

You cannot configure duplex mode on SFP module ports unless a 1000BASE-T SFP module or a 100BASE-FX MMF SFP module is in the port. All other SFP modules operate only in full-duplex mode.

- When a 1000BASE-T SFP module is in the SFP module port, you can configure duplex mode to auto full.
- When a 100BASE-FX SFP module is in the SFP module port, you can configure duplex mode to half full .

Note: Half-duplex mode is supported on Gigabit Ethernet interfaces. However, you cannot configure these interfaces to operate in half-duplex mode.

In order to display the information about an optical transceiver installed, use this command: `show hw-module subslot <slot/subslot> transceiver <port> idprom` .

Use Third Party SFP Modules

The use of third party SFP transceivers with Cisco devices is not supported by Cisco. Cisco-approved SFP modules have a serial EEPROM that contains the module serial number, the vendor name and ID, a unique security code, and cyclic redundancy check (CRC). When an SFP module is inserted in the switch, the switch software reads the EEPROM to verify the serial number, vendor name and vendor ID, and recomputes the security code and CRC. If the serial number, the vendor name or vendor ID, the security code, or CRC is invalid, the software generates this security error message and places the interface in an error-disabled state:

```
SYS-3-TRANSCEIVER_NOTAPPROVED:Transceiver on port [dec]/[dec] is not supported
```

Connect a SFP Module to a GBIC Module

The SFP and GBIC is just a connection between the actual laser and the chassis. You need to verify these in order to connect a SFP module with a GBIC module:

- The type of fiber optic cable used: Single Mode or Multi Mode.
- The type of physical connection required: SC connector, ST connector, and so on.

Troubleshoot SFPs

Note: Only registered Cisco clients have access to the Bug Search Tool and information.

The WS-X6724-SFP Module with DFC3A Resets in Cisco Catalyst 6500 Switches That Run Cisco IOS Software

The WS-X6724-SFP module with Distributed Forwarding Card (DFC3A), that runs Cisco IOS® Software Release 12.2(18)SXE1 reloads unexpectedly due to a memory allocation failure. Before the reload, the available memory in the module is around 200k. This problem is resolved in Cisco IOS Software Releases 12.2(18)SXE4, 12.2(18)SXF and later.

In order to resolve this problem, upgrade the Cisco IOS Software on the switch to the latest maintenance release, which can be downloaded from the [Software Download](#) page.

Speeds Supported by the 1000BASE-T(GLC-T) SFP Module on the Cisco Catalyst 3750 Series Switch

The 1000BASE-T SFP can support 10/100/1000 speeds only on the Cisco Catalyst 2970, 3560, and 3750 Series Switches. It is also possible to have the port auto-negotiate at a lower speed or force a slower speed. Issue the [show interface](#) command in order to confirm whether a given GLC-T supports 10/100 speed on a switch.

Output from the show interface capabilities command can confirm whether a GLC-T can be run at a lower speed. The output also displays the capabilities of the specified interface, which includes the configurable features and options. For example, issue this command in order to hardcode the speed of the SFP port to 100 Mbps:

```
Switch(config-if)#speed 100
```

Use the 10-Gigabit Ethernet and Gigabit Ethernet SFP Ports of a SupII+10GE or SupV-10GE in a Catalyst 4500 Series Switch

Catalyst 4500 Supervisor II Plus 10GE (WS-X4013+10GE) or Supervisor V 10GE (WS-X4516-10GE) has four GE uplink interfaces and two 10 GE uplink interface per supervisor. The tables in this section illustrate how the uplink provides redundancy in a 4507R or 4510R Chassis in various combinations of the two supervisors in the supervisor slots.

In Cisco IOS Software Release 12.2(25)SG and later on a Catalyst 4507R Series Switch, 10GE and GE uplinks are concurrently usable on the Supervisor Engine V-10GE (WS-X4516-10GE) and the Supervisor Engine II+10GE (WS-4013+10GE). In Cisco IOS Software Releases earlier than 12.2(25)SG, you need to issue the [hw-module uplink select](#) configuration command to select either the 10GE or GE uplinks.

In Cisco IOS Software Release 12.2(25)SG and later, when you use a Supervisor Engine V-10GE (WS-X4516-10GE) on a Catalyst 4510R Series Switch, you can select to use both the 10GE and GE uplinks concurrently, but only with a WS-X4302-GB in slot 10. If either the 10GE or GE uplinks are selected, then any line card is allowed in slot 10. Issue the `hw-module uplink select` configuration command to select the uplinks. In Cisco IOS Software Releases earlier than 12.2(25)SG, you cannot use the 10GE and GE uplinks concurrently.

Note: Redundancy requires that both supervisor engines in the chassis are of the same supervisor engine model, and to use the same Cisco IOS software image.

If only 10GE ports are selected for uplink:

| Uplink Interface | Slot 1: Supervisor II Plus 10GE or V 10 GE Slot 2: Empty | Slot 1:Empty Slot2: Supervisor II Plus 10GE or V 10 GE | Slot1: Supervisor II Plus 10GE or 10 GE Slot2: Supervisor II Plus 10GE or V 10 GE |
|-------------------------|---|---|--|
| 10GE 1/1 | Active | N/A | Active |
| 10GE 1/2 | Active | N/A | Not Active |
| 10GE 2/1 | N/A | Active | Active |
| 10GE 2/2 | N/A | Active | Not Active |

If only GE ports are selected for uplink:

| Uplink Interface | Slot 1: Supervisor II Plus 10GE or V 10 GE Slot 2: Empty | Slot 1:Empty Slot2: Supervisor II Plus 10GE or V 10 GE | Slot1: Supervisor II Plus 10GE or 10 GE Slot2: Supervisor II Plus 10GE or V 10 GE |
|-------------------------|---|---|--|
| GE 1/3 | Active | N/A | Active |
| GE 1/4 | Active | N/A | Active |
| GE 1/5 | Active | N/A | Not Active |
| GE 1/6 | Active | N/A | Not Active |
| GE 2/3 | N/A | Active | Active |
| GE 2/4 | N/A | Active | Active |
| GE 2/5 | N/A | Active | Not Active |
| GE 2/6 | N/A | Active | Not Active |

If both 10GE and GE ports are selected for uplink:

| Uplink Interface | Slot 1: Supervisor II Plus 10GE or V 10 GE Slot 2: Empty | Slot 1:Empty Slot2: Supervisor II Plus 10GE or V 10 GE | Slot1: Supervisor II Plus 10GE or 10 GE Slot2: Supervisor II Plus 10GE or V 10 GE |
|-------------------------|---|---|--|
| 10GE 1/1 | Active | N/A | Active |
| 10GE 1/2 | Active | N/A | Not Active |

| | | | |
|----------|--------|--------|------------|
| 10GE 2/1 | N/A | Active | Active |
| 10GE 2/2 | N/A | Active | Not Active |
| GE 1/3 | Active | N/A | Active |
| GE 1/4 | Active | N/A | Active |
| GE 1/5 | Active | N/A | Not Active |
| GE 1/6 | Active | N/A | Not Active |
| GE 2/3 | N/A | Active | Active |
| GE 2/4 | N/A | Active | Active |
| GE 2/5 | N/A | Active | Not Active |
| GE 2/6 | N/A | Active | Not Active |

Issue these commands in order to enable the 10-Gigabit Ethernet and/or the Gigabit Ethernet SFP uplink ports:

```
Switch#configure terminal
```

```
Switch(config)#hw-module uplink select {tengigabitethernet|gigabitethernet|all}
```

Refer to the [Deploying 10-Gigabit Ethernet and a Gigabit Ethernet SFP Ports](#) section of the Catalyst 4500 Series Switch Cisco IOS Software Configuration Guide for more information.

SPF Ports of the WS-X4506-GB-T Module or the WS-X4948 Chassis Do Not Come Up

The WS-X4506-GB-T module has six ports. These ports are dual-mode capable ports. Each port has one RJ45 based 10/100/1000 Mbps connector and one SFP connector. At a given time, only one of these connectors can be active for a port and the active connector is determined by the interface configuration command `media-type {rj45 | sfp}`.

WS-X4506-GB-T



WS-X4506-GB-T Module

In a WS-X4948 chassis, the last four ports (ports 45 to 48) are dual-mode capable.

```
Switch(config)#interface gigabitethernet 5/5
Switch(config-if)#media-type rj45
```

Enter the `show interface capabilities` command in order to provide the `Multiple Media Types` field, which displays the value `no` if a port is not dual-mode capable and lists the media types (`sfp` and `rj45`) for dual-mode capable ports.

SFP Interfaces of X2/Twin Gigabit Converter Do Not Come Up

The default configuration mode is X2, so, if you plan to deploy 10-Gigabit interfaces, you do not

need to configure anything. If you want to deploy Gigabit interfaces, that is, TwinGig Convertors, you must configure the associated port-group.

First gather the information on how the X2 slots on a module are grouped. Then, to configure the modes of operation for each X2 port group in which you want to deploy Gigabit, enter the `hw-module module m port-group p select gigabitethernet` command. This configuration is preserved across power cycles and reloads.

Refer to [Selecting X2/TwinGig Convertor Mode](#) for more information.

The Link Cannot Come up in Cisco 3800 Series Routers with SPFs and with Connection to Cisco Catalyst Switches

Only registered Cisco clients can access information about bugs or reach internal sites.

When the SFPs are used to connect a Cisco 3800 Series router to a Cisco Catalyst switch, the link cannot come up, and the `show interface` command shows `down/down`.

In order to overcome this issue, enable auto-negotiation on both the router and switch. In order to permanently resolve the issue, upgrade the Cisco IOS software of the router to release 12.4(8) or later, which can be downloaded from the Cisco Software and Download site. This issue is documented in the Cisco bug ID [CSCsc04961](#).

Related Information

- [Cisco 100-Megabit Ethernet SFP Modules Compatibility Matrix](#)
- [Inspection and Cleaning Procedures for Fiber-Optic Connections](#)
- [Compressed Air Cleaning Issues for Fiber-Optic Connections](#)
- [Cisco SFPs Product Support](#)
- [Cisco CWDM GBIC/SFP Product Support](#)
- [Cisco Transceiver Modules Product Support](#)
- [Technical Support & Documentation - Cisco Systems](#)