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Cisco 10-Gigabit Fibre Channel X2 Transceiver Module Installation Note

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This document provides installation instructions for the 10-Gigabit Fibre Channel X2 transceiver modules listed in [Table 1](#). The X2 transceiver is a hot-swappable input/output (I/O) device that plugs into a 10-Gigabit Fibre Channel port. The X2 transceiver links the switch to a fiber-optic or copper network.

Table 1 10-Gigabit Fibre Channel X2 Transceiver Modules

X2 Transceiver Module Product Number	Description
DS-X2-FC10G-SR	Cisco 10GFC-SR X2 transceiver module for SMF, dual SC connector
DS-X2-FC10G-LR	Cisco 10GFC-LR X2 transceiver module for SMF, dual SC connector
DS-X2-FC10G-ER	Cisco 10GFC-ER X2 transceiver module for SMF, dual SC connector



Note

The dual SC connector on the X2 transceiver supports network interface cables with either Physical Contact (PC) or Ultra-Physical Contact (UPC) polished face types. The dual SC connector on the X2 transceiver does not support network interface cables with an Angle-Polished Connector (APC) face type.



Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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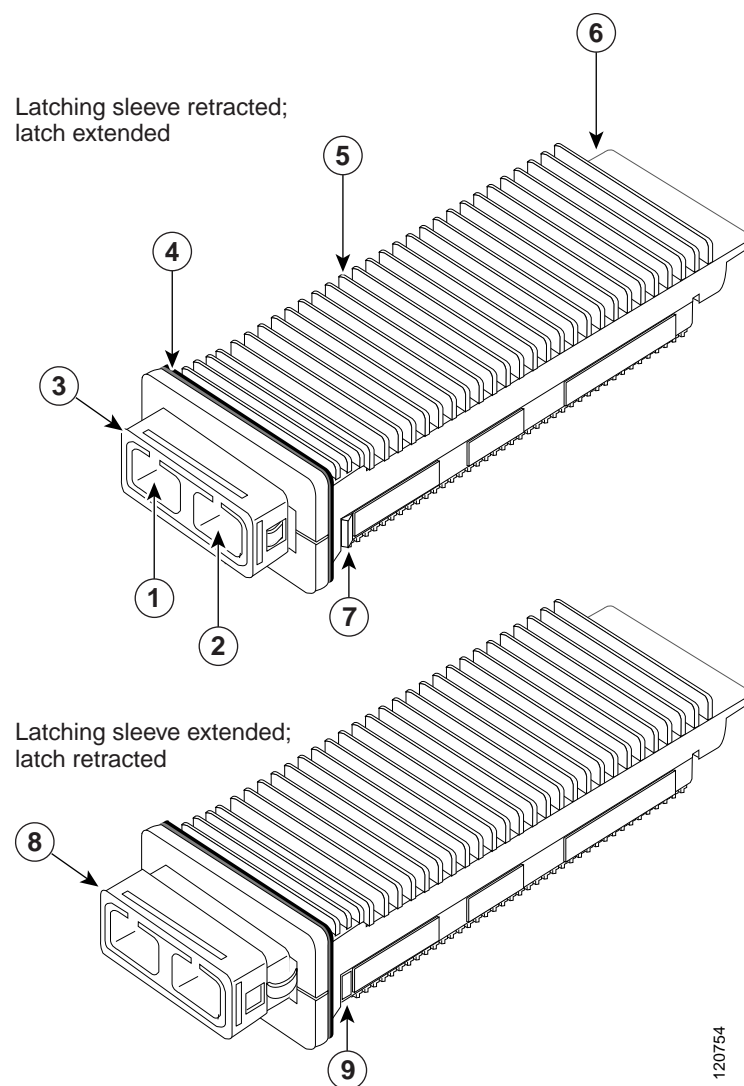
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Overview

The 10-Gigabit Fibre Channel X2 transceiver module is a hot-swappable I/O device that plugs into a 10-Gigabit Fibre Channel port. (See [Figure 1](#).) The X2 transceiver connects the electrical circuitry of the switch to an optical or copper network.

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Figure 1 10-Gigabit Fibre Channel X2 Transceiver Module (Optical)



1	Transmit optical bore	6	Module connector
2	Receive optical bore	7	Latch (extended)
3	Latching sleeve (retracted)	8	Latching sleeve (extended)
4	EMI gasket	9	Latch (retracted)
5	Transceiver heat sink		

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Table 2 lists the port cabling specifications for the 10-Gigabit Fibre Channel X2 transceiver modules.
Table 3 lists the X2 transceiver optical transmit and receive specifications.

Table 2 X2 Transceiver Port Cabling Specifications

X2 Product Number	Wavelength (nm)	Cable Type	Core Size (microns)	Modal Bandwidth (MHz/km)	Maximum Cabling Distance
DS-X2-FC10G-SR	850	SMF	62.5	160	26 m (85.3 ft)
			62.5	200	33 m (108.3 ft)
			50.0	400	66 m (216.5 ft)
			50.0	500	82 m (269 ft)
			50.0	2000	300 m (984.3 ft)
DS-X2-FC10G-LR	1310	SMF	G.652 fiber	—	10 km (6.21 miles)
DS-X2-FC10G-ER	1550	SMF	G.652 fiber	—	40 km (24.8 miles)

Table 3 X2 Transceiver Optical Transmit and Receive Specifications

X2 Product Number	Transceiver Type	Transmit Power (dBm)	Receive Power (dBm)	Transmit and Receive Wavelength (nm)
DS-X2-FC10G-SR	10GFC-SR, 850-nm SMF	— (Max) -7.3 (Min)	-1.0 (Max) -9.9 (Min)	840 to 860
DS-X2-FC10G-LR	10GFC-LR, 1310-nm SMF	0.5 (Max) -8.2 (Min)	0.5 (Max) -14.4 (Min)	1260 to 1355
DS-X2-FC10G-ER	10GFC-ER, 1550-nm SMF	4.0 (Max) -4.7 (Min)	-1.0 (Max) -15.8 (Min)	1550

Required Tools

You need the following tools to install the 10-Gigabit Fibre Channel X2 transceiver module:

- Small flat-blade screwdriver for removing the X2 transceiver socket covers.
- Wrist strap or other personal grounding device to prevent ESD occurrences.
- Antistatic mat or antistatic foam to place the transceiver on.
- Fiber-optic end-face cleaning tools and inspection equipment. For complete information on inspecting and cleaning fiber-optic connections, refer to the white paper at this URL:
http://www.cisco.com/en/US/tech/tk482/tk876/technologies_white_paper09186a0080254eba.shtml

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Installing the 10-Gigabit Fibre Channel X2 Transceiver Module

The 10-Gigabit Fibre Channel X2 transceiver module can have either a spring-loaded latch sleeve or a latch sleeve that is not spring loaded. Both transceiver types are functionally identical.



Note

This installation procedure applies to both the spring loaded and non-spring loaded X2 transceivers.



Caution

The X2 transceiver is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling X2 transceivers or coming into contact with system modules.



Note

Before you install the transceiver module, refer to the [Regulatory Compliance and Safety Information for the Cisco 9000 Family](#) for important safety information.

To install an X2 transceiver, follow these steps:

- Step 1** Use a small flat-blade screwdriver, to carefully pry the X2 transceiver port cover off of the system module faceplate.
- Use the two arrows on the port cover as guides for inserting the screwdriver blade. Save the port cover for future use.
- Step 2** Remove the X2 transceiver from its protective packaging.
- Step 3** Check the label on the X2 transceiver body to verify that you have the correct model for your network.
- Step 4** Follow these steps to install the X2 transceiver:
- Insert the X2 transceiver into the transceiver socket on the system module front panel. (See [Figure 2](#), top view.) Continue sliding the X2 transceiver into the socket until the X2 transceiver EMI gasket is flush against the system module faceplate. The X2 transceiver connector is now mated to the socket connector.
 - Verify that the X2 transceiver latches are fully engaged and secure by sliding the transceiver latching sleeve toward the system module faceplate. (See [Figure 2](#), bottom view.)

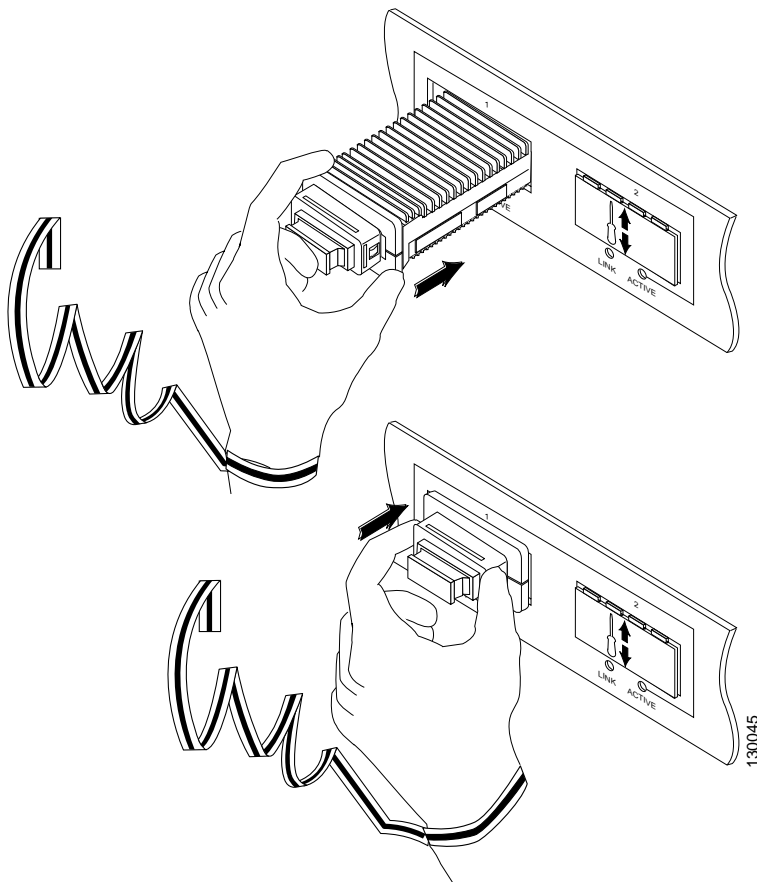


Caution

If the latches are not fully engaged, you may accidentally disconnect the X2 transceiver.

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Figure 2 Installing the 10-Gigabit Fibre Channel X2 Transceiver Module



Note 10-Gigabit Fibre Channel X2 transceivers are keyed to prevent incorrect insertion.

Step 5 Follow these steps to cable an optical X2 transceiver:



Note Before removing the dust plugs and making any optical connections, observe the following 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 SC connector end-faces just before making any connections.
- Always grasp the SC connector housing to plug or unplug a fiber-optic cable.



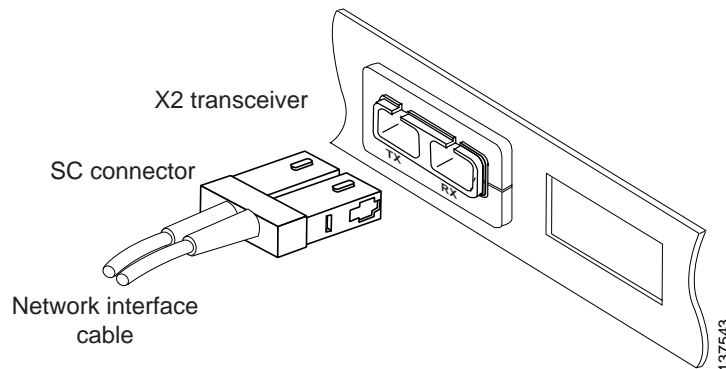
Tip For complete information on inspecting and cleaning fiber-optic connections, refer to the white paper at this URL:

http://www.cisco.com/en/US/tech/tk482/tk876/technologies_white_paper09186a0080254eba.shtml

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- a. Remove the dust plugs from the optical network interface cable SC connectors. Save the dust plugs for future use.
- b. Inspect and clean the SC connector's fiber-optic end-faces.
- c. Remove the dust plugs from the X2 transceiver module optical bores.
- d. Immediately attach the network interface cable SC connectors to the X2 transceiver module. (See [Figure 3](#).)

Figure 3 *Cabling an Optical 10-Gigabit Fibre Channel X2 Transceiver Module*



Removing the 10-Gigabit Fibre Channel X2 Transceiver Module



Note

This removal procedure applies to both the spring loaded and non-spring loaded X2 transceivers.



Caution

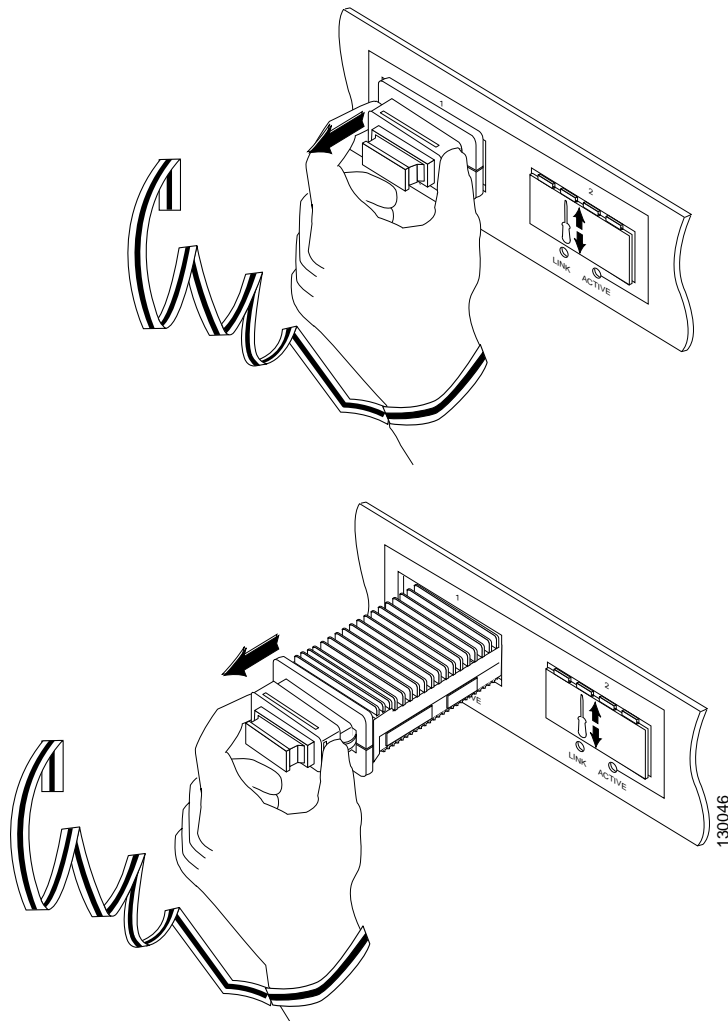
The X2 transceiver is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling X2 transceivers or coming into contact with modules.

To remove an X2 transceiver, follow these steps:

- Step 1** Disconnect the network interface cable from the X2 transceiver connectors. If this is an optical X2 transceiver, immediately reinstall the dust plugs in the X2 transceiver optical bores and the fiber-optic cable SC connectors.
- Step 2** Grip the sides of the X2 transceiver latching sleeve with your thumb and forefinger, and pull the latching sleeve out to release the X2 transceiver from the socket connector. (See [Figure 4](#), top view.)
- Step 3** Slide the X2 transceiver out of the socket. (See [Figure 4](#), bottom view.) Immediately place the X2 transceiver in an antistatic bag.
- Step 4** Reinstall the socket cover if you are not installing an X2 transceiver in the empty socket.
 - a. Position the socket cover in front of the socket opening.
 - b. Snap the socket cover in place.

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Figure 4 Removing the 10-Gigabit Fibre Channel X2 Transceiver



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Related Documentation

The documentation set for the Cisco MDS 9000 Family includes the following documents. To find a document online, use the Cisco MDS SAN-OS Documentation Locator at:

http://www.cisco.com/en/US/products/ps5989/products_documentation_roadmap09186a00804500c1.html.

For information on IBM TotalStorage SAN Volume Controller Storage Software for the Cisco MDS 9000 Family, refer to the IBM TotalStorage Support website:

<http://www.ibm.com/storage/support/2062-2300/>

Release Notes

- *Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Releases*
- *Cisco MDS 9000 Family Release Notes for Storage Services Interface Images*
- *Cisco MDS 9000 Family Release Notes for Cisco MDS SVC Releases*
- *Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images*

Compatibility Information

- *Cisco MDS 9000 SAN-OS Hardware and Software Compatibility Information*
- *Cisco MDS 9000 Family Interoperability Support Matrix*
- *Cisco MDS Storage Services Module Interoperability Support Matrix*
- *Cisco MDS SAN-OS Release Compatibility Matrix for IBM SAN Volume Controller Software for Cisco MDS 9000*
- *Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images*

Regulatory Compliance and Safety Information

- *Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family*

Hardware Installation

- *Cisco MDS 9124 Multilayer Fabric Switch Quick Start Guide*
- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9020 Fabric Switch Hardware Installation Guide*

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Cisco Fabric Manager

- *Cisco MDS 9000 Family Fabric Manager Quick Configuration Guide*
- *Cisco MDS 9000 Family Fabric Manager Configuration Guide*
- *Cisco MDS 9000 Fabric Manager Online Help*
- *Cisco MDS 9000 Fabric Manager Web Services Online Help*
- *Cisco MDS 9000 Family Fabric Manager Database Schema*

Command-Line Interface

- *Cisco MDS 9000 Family Software Upgrade and Downgrade Guide*
- *Cisco MDS 9000 Family Storage Services Module Software Installation and Upgrade Guide*
- *Cisco MDS 9000 Family CLI Quick Configuration Guide*
- *Cisco MDS 9000 Family CLI Configuration Guide*
- *Cisco MDS 9000 Family Command Reference*
- *Cisco MDS 9000 Family Quick Command Reference*
- *Cisco MDS 9020 Fabric Switch Configuration Guide and Command Reference*
- *Cisco MDS 9000 Family SAN Volume Controller Configuration Guide*

Troubleshooting and Reference

- *Cisco MDS 9000 Family Troubleshooting Guide*
- *Cisco MDS 9000 Family MIB Quick Reference*
- *Cisco MDS 9020 Fabric Switch MIB Quick Reference*
- *Cisco MDS 9000 Family SMI-S Programming Reference*
- *Cisco MDS 9000 Family System Messages Reference*
- *Cisco MDS 9020 Fabric Switch System Messages Reference*

Installation and Configuration Note

- *Cisco MDS 9000 Family SSM Configuration Note*
- *Cisco MDS 9000 Family Port Analyzer Adapter Installation and Configuration Note*
- *Cisco 10-Gigabit Fibre Channel X2 Transceiver Module Installation Note*

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Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>


This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

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