



Catalyst 3750 Metro Switch Hardware Installation Guide

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Preface

Audience

This guide is for the networking or computer technician responsible for installing the Catalyst 3750 Metro switch. We assume that you are familiar with the concepts and terminology of Ethernet and local area networking. If you are interested in more training and education in these areas, learning opportunities including training courses, self-study options, seminars, and career certifications programs are available on the Cisco Training & Events web page:

<http://www.cisco.com/web/learning/index.html>

Purpose

This guide documents the hardware features of the Catalyst 3750 Metro switch. It describes the physical and performance characteristics of the switch, explains how to install it, and provides troubleshooting information.

This guide does not describe system messages that you might receive or how to configure your switch. For more information, see the switch software configuration guide, the switch command reference, and the switch system message guide on the Cisco.com Product Documentation home page. For information about the standard Cisco IOS Release 12.1 or 12.2 commands, see the Cisco IOS documentation set from the Cisco.com home page by choosing **Support > Documentation > Product and Support Documentation/Cisco IOS Software**.

Organization

This guide is organized into these chapters:

[Chapter 1, “Product Overview,”](#) is a physical and functional overview of the switch. This chapter describes the switch ports, the standards they support, and the switch LEDs.

[Chapter 2, “Switch Installation,”](#) includes procedures on how to power on the switch; how to install the switch in a rack, on a wall, on a table, or shelf; and how to make port connections.

[Chapter 3, “Connecting the Power Supply,”](#) describes how to connect the AC and DC power supply units and how to remove the units.

[Chapter 4, “Troubleshooting,”](#) describes how to identify and resolve some of the problems that might arise when you install the switch and how to identify the serial number when it is necessary to call technical support for help.

Appendix A, “[Technical Specifications](#),” lists the physical and environmental specifications for the switch and the regulatory agency approvals.

Appendix B, “[Connector and Cable Specifications](#),” describes the connectors, cables, and adapters that you use to connect to the switch.

Appendix C, “[Configuring the Switch with the CLI-Based Setup Program](#),” provides a quick step-by-step installation and setup procedure for a switch.

Conventions

This document uses these conventions and symbols for notes, cautions, and warnings:



Note

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

The safety warnings for this product are translated into several languages in the *Regulatory Compliance and Safety Information for the Catalyst 3750 Metro Switch* that ships with the product. The EMC regulatory statements are also included in that guide.

Related Publications

These documents provide complete information about the switch and are available from this Cisco.com site:

http://www.cisco.com/en/US/products/hw/switches/ps5532/tsd_products_support_series_home.html

**Note**

Before installing, configuring, or upgrading the switch, see the release notes on Cisco.com for the latest information.

- *Release Notes for the Catalyst 3750 Metro Switch*
- *Catalyst 3750 Metro Switch Getting Started Guide*
- *Regulatory Compliance and Safety Information for the Catalyst 3750 Metro Switch*
- *Catalyst 3750 Metro Switch Software Configuration Guide*
- *Catalyst 3750 Metro Switch Command Reference*
- *Catalyst 3750 Metro Switch System Message Guide*
- *Catalyst 3750 Metro Switch Hardware Installation Guide*

These compatibility matrix documents are available from this Cisco.com site:

http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

- *Cisco Gigabit Ethernet Transceiver Modules Compatibility Matrix*
- *Cisco 100-Megabit Ethernet SFP Modules Compatibility Matrix*
- *Cisco CWDM SFP Transceiver Compatibility Matrix*
- *Cisco Small Form-Factor Pluggable Modules Compatibility Matrix*
- *Compatibility Matrix for 1000BASE-T Small Form-Factor Pluggable Modules*

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, 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>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.



CHAPTER 1

Product Overview

The Catalyst 3750 Metro switch, also referred to as the *switch*, is a stackable metro Ethernet switch that can be used as customer-located equipment (CLE) to connect to enterprise customer routers or switches. You can connect other devices to the switch, including Cisco IP phones, a Cisco Wireless Access Point, workstations, servers, and PCs. This chapter provides a functional overview of the switch.

These topics are included:

- [Features, page 1-1](#)
- [Front Panel Description, page 1-2](#)
- [Rear Panel Description, page 1-7](#)
- [Management Options, page 1-7](#)

Features

You can deploy the switch as an aggregation switch. You can aggregate Ethernet traffic from other network devices with 10BASE-T, 100BASE-TX, and 1000BASE small-form factor pluggable (SFP) modules (1000BASE-T, 1000BASE-BX, 1000BASE-SX, 1000BASE-LX/LH, or 1000BASE-ZX SFP modules). Refer to the switch software configuration guide for examples that show how you might deploy Catalyst 3750 Metro switches in your network.

These are the switch features:

- Hardware
 - 24 10/100 Ethernet ports
 - 4 small form-factor pluggable (SFP) module slots. Two are standard SFP module ports, and two are enhanced-services SFP module ports. The enhanced-services ports support multiprotocol label switching (MPLS), hierarchical quality of service (QoS), and enhanced 802.1Q tunneling. For information about port numbering, see the [“Front Panel Description” section on page 1-2](#).
 - 2 power supply slots that support AC or DC input
For instructions on installing power supply units, see [Chapter 3, “Connecting the Power Supply.”](#)
- The switch supports these SFP modules:
 - 100BASE-FX (only in the standard SFP module ports)
 - 1000BASE-BX
 - 1000BASE-LX

- 1000BASE-SX
- 1000BASE-T
- 1000BASE-ZX
- Coarse wavelength-division multiplexing (CWDM)



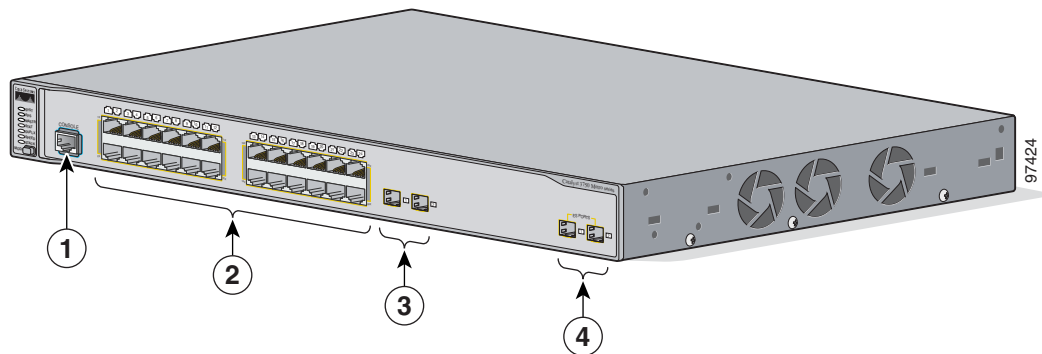
Note When you install 1000BASE-T SFP modules in the standard ports, they can operate at 10, 100, or 1000 Mb/s in full-duplex mode. When you install 1000BASE-T SFP modules in the enhanced-services ports, they operate only at 1000 Mb/s.

- Configuration
 - For 10/100 ports, autonegotiates the speed and the duplex settings
 - For standard ports, autonegotiates the speed and the duplex settings
- Power redundancy through an optional second power supply

Front Panel Description

The switch FastEthernet ports are numbered 1 through 24 (in software they are numbered fastethernet1/0/1 to fastethernet1/0/24). These ports are grouped into pairs. The first member of the pair (port 1) is above the second member (port 2) on the far left, as shown in [Figure 1-1](#). Port 3 is above port 4, and so on.

Figure 1-1 Catalyst 3750 Metro Switch Front Panel



1	Console port	3	Standard SFP module ports
2	10/100 ports	4	Enhanced-services SFP module ports

The standard SFP module ports are numbered 1 and 2 (left to right). In software, they are numbered gigabitethernet1/0/1 and gigabitethernet1/0/2. The enhanced-services SFP module ports are numbered 1 and 2 (left to right). In software, they are numbered gigabitethernet 1/1/1 and gigabitethernet 1/1/2.

Console Port

You can connect the switch to a PC through the console port by using the supplied RJ-45-to-DB-9 female cable. If you want to connect the switch console port to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see [Appendix B, “Connector and Cable Specifications.”](#)

10/100 and 10/100/1000 Ports

You can set the 10/100 ports on the switch to operate in any combination of half duplex, full duplex, 10 Mb/s or 100 Mb/s. You can set the standard 1000BASE-T SFP module ports to operate in 10, 100, or 1000 Mb/s in full duplex. The 1000BASE-T SFP module operates only at 1000 Mb/s in the enhanced-services ports. You can also set these ports for speed and duplex autonegotiation in compliance with IEEE 802.3ab. (The default setting is autonegotiate.)

When you set the port for autonegotiation, it identifies the speed and duplex settings of the attached device and advertises its own capabilities. If the connected device also supports autonegotiation, the switch port negotiates the best connection (that is, the fastest line speed that both devices support and full-duplex transmission if the attached device supports it) and configures itself accordingly. In all cases, the attached device must be within 100 meters (328 feet).

100BASE-TX and 1000BASE-T traffic requires a Category 5 or higher cable. 10BASE-T traffic can use Category 3 or Category 4 cables. When you connect the switch to workstations, servers, routers, and Cisco IP Phones, be sure that the cable is a straight-through cable. When you connect the switch to switches or hubs, use a crossover cable. When you use a straight-through or crossover cable for 1000BASE-T connections, be sure to use a twisted four-pair, Category 5 or higher cable for proper operation. Pinouts for the cables are described in [Appendix B, “Connector and Cable Specifications.”](#)

You can use the **mdix auto** interface configuration command to enable the automatic crossover feature. When the automatic crossover feature is enabled, the switch detects the required cable type and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for all connections to an Ethernet port on the switch.

The automatic crossover feature is disabled by default. For configuration information for this feature, refer to the switch software configuration guide or the switch command reference.

SFP Module Slots

The switch uses Gigabit Ethernet SFP modules to establish fiber-optic connections. These transceiver modules are field-replaceable, providing the uplink interfaces when inserted in an SFP module slot. You can use the SFP modules for Gigabit uplink connections to other switches. You use fiber-optic cables with or MT-RJ LC or MT-RJ connectors to connect to a fiber-optic SFP module. You use Category 5 or higher cable with RJ-45 connectors to connect to a copper SFP module.

When you install 1000BASE-T SFP modules in the standard ports, they can operate at 10, 100, or 1000 Mb/s in full-duplex mode. When you install 1000BASE-T SFP modules in the enhanced-services ports, they operate only at 1000 Mb/s. The switch supports 100BASE-FX SFP modules only in standard ports. See the [“Features” section on page 1-1](#) for a list of SFP modules that the switch supports.

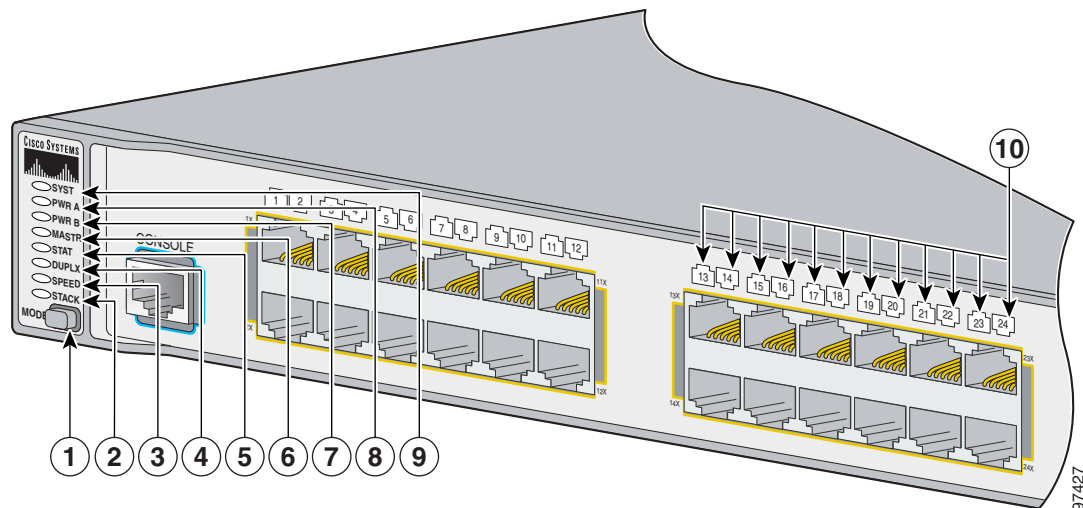
Refer to the *Release Notes for the Catalyst 3750 Metro Switch* for the most current list of Cisco SFP module options that the switch supports. For more information about these SFP modules, refer to your SFP module documentation.

In addition to supporting the features described previously, the enhanced-services SFP modules support autonegotiation. Refer to the software guides for this switch for information about the features of the enhanced-services ports.

LEDs

You can use the switch LEDs to monitor switch activity and performance. [Figure 1-2](#) shows the switch LEDs and the Mode button that you use to select one of the port modes.

Figure 1-2 Catalyst 3750 Metro Switch LEDs



1	Mode button	6	Master LED
2	Stack LED (not used)	7	Power B LED
3	Speed LED	8	Power A LED
4	Duplex LED	9	System LED
5	Status LED	10	Port LED

System LED

The System LED shows whether the system is receiving power and is functioning properly. [Table 1-1](#) lists the LED colors and their meanings.

Table 1-1 System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

Power LEDs

The switch supports up to two power supplies. The PWR A and PWR B LEDs show the status of the power supply in power slot A and power slot B, respectively. [Table 1-2](#) lists the LED colors and their meanings.

Table 1-2 *Power LED Status Indicators*

Color	Status
Off	The power supply is not installed.
Green	The power supply is connected and operating correctly.
Amber	The power supply is installed but is either in a fault condition or is not connected to a valid input power source.

The power LEDs for slot A and slot B work independently of each other.

Master LED

The Master LED is used in stacking. For this product, which does not support stacking, the Master LED is green.

Port LEDs and Modes

Each RJ-45 port and SFP module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port modes determine the type of information that the port LEDs display. [Table 1-3](#) lists the mode LEDs and their associated port modes and meanings.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change. [Table 1-4](#) explains how to interpret the port LED colors in different port modes.

Table 1-3 *Port Mode LEDs*

Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
SPEED	Port speed	The port operating speed: 10 or 100 10, 100, or 1000 Mb/s.
STACK		Not used.

Table 1-4 *Meaning of LED Colors in Different Modes on the Switch*

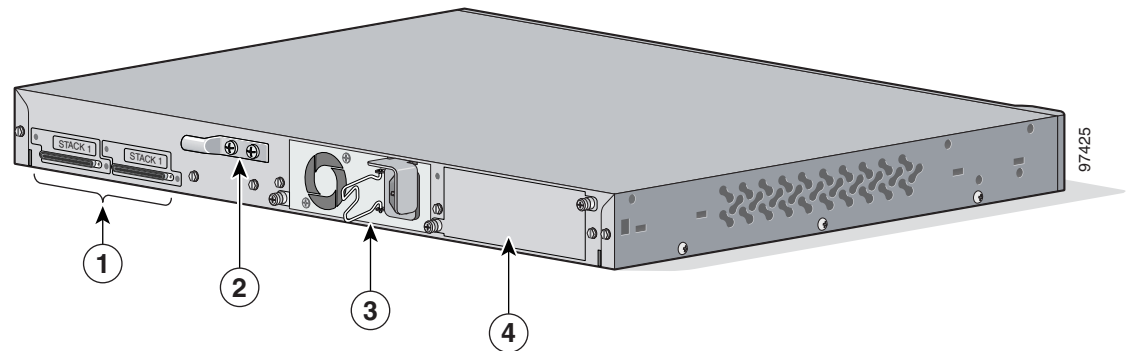
Port Mode	LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present.
	Flashing green	Activity. Port is sending or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC ¹ errors, and alignment and jabber errors are monitored for a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. Note After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.
	Flashing amber	Port is blocked by STP and is sending or receiving packets.
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
SPEED	10/100 ports	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	SFP ports	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Flashing green	Port is operating at 1000 Mb/s. Note 1000BASE-T SFP modules can operate at 10, 100, or 1000 Mb/s in full-duplex mode only in standard SFP ports.
STACK (stack member)		Not used.

1. CRC = cyclic redundancy check

Rear Panel Description

The switch rear panel has two power slots, a grounding lug, and two StackWise ports (not used). (See [Figure 1-3](#).)

Figure 1-3 Catalyst 3750 Metro Switch Rear Panel



1	StackWise ports (not used)	3	Power slot A (shown with an installed AC power supply)
2	Grounding lug (used with a DC power supply)	4	Power slot B

Power Connectors

A power supply that is installed in power slot A powers the switch. This power supply is a field-replaceable unit (FRU). You can connect an optional FRU power supply in slot B to provide backup power if power supply A fails. You can power the switch by using either an AC power supply, a DC power supply, or a combination of the two.

Power Supply Connector

The power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet. See [Chapter 3, “Connecting the Power Supply,”](#) for instructions on how to connect the DC power.

Management Options

The switch offers several management options:

- Cisco IOS command-line interface (CLI)

You can fully configure and monitor the switch from the CLI. You can access the CLI either by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See [Appendix C, “Configuring the Switch with the CLI-Based Setup Program,”](#) and refer to the *Catalyst 3750 Metro Switch Command Reference* on Cisco.com for more information about using the CLI.

- CiscoView application

The CiscoView device-management application displays the switch image that you can use to set configuration parameters and to view switch status and performance information. The CiscoView application, which you purchase separately, can be a standalone application or part of a Simple Network Management Protocol (SNMP) platform. Refer to the CiscoView documentation for more information.

- SNMP network management

You can manage switches from a SNMP-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. Refer to the switch software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

- Cisco Intelligence Engine 2100 (IE2100)

Cisco IE200 Series Configuration Registrar is a network management device that works with embedded CNS agents in the switch software. You can automate initial configurations and configuration updates by generating switch-specific configuration changes, sending them to the switch, executing the configuration change, and logging the results.

Network Configurations

Refer to the switch software configuration guide on Cisco.com for network configuration concepts and examples of using the switch to create dedicated network segments and interconnecting the segments through Gigabit Ethernet connections.



CHAPTER 2

Switch Installation

This chapter describes how to start your switch and how to interpret the power-on self-test (POST) that ensures proper operation. It describes how to install the switch and make connections to the switch. Read the topics and perform the procedures in this order:

- [Preparing for Installation, page 2-1](#)
- [Verifying Switch Operation, page 2-5](#)
- [Installing the Switch, page 2-7](#)
- [Installing and Removing SFP Modules, page 2-14](#)
- [Connecting to the 10/100 Ports, page 2-17](#)
- [Connecting to an SFP Module, page 2-18](#)
- [Where to Go Next, page 2-21](#)

Preparing for Installation

This section covers these topics:

- [Warnings, page 2-1](#)
- [Installation Guidelines, page 2-4](#)
- [Verifying Package Contents, page 2-5](#)
- [Verifying Switch Operation, page 2-5](#)

Warnings

These warnings are translated into several languages in the *Regulatory Compliance and Safety Information Guide for the Catalyst 3750 Metro Switch*, which ships with the switch.



Warning

To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings. Statement 17B

**Warning**

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. Statement 43

**Warning**

Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage. Statement 48

**Warning**

Ethernet cables must be shielded when used in a central office environment. Statement 171

**Warning**

To comply with safety regulations, mount switches on a wall with the front panel facing up. Statement 266

**Warning**

Suitable for mounting on or over concrete or other non-combustible surface only. Statement 345

**Warning**

Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001

**Warning**

Read the installation instructions before connecting the system to the power source. Statement 1004

**Warning**

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:
15 A, 80 Vdc** Statement 1005

**Warning**

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006


Warning

Class 1 laser product. Statement 1008


Warning

Avoid direct exposure to the laser beam. Statement 1012


Warning

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.
Statement 1017


Warning

The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device. Statement 1019


Warning

A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.
Statement 1022


Warning

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024


Warning

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028


Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
Statement 1030


Warning

Ultimate disposal of this product should be handled according to all national laws and regulations.
Statement 1040


Warning

**For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection.
10/100/1000 Ethernet** Statement 1044


Warning

When installing or replacing the unit, the ground connection must always be made first and disconnected last. Statement 1046


Warning

No user-serviceable parts inside. Do not open. Statement 1073

**Warning**

Installation of the equipment must comply with local and national electrical codes. Statement 1074

**Caution**

To comply with the Telcordia GR-1089 Network Equipment Building Systems (NEBS) standard for electromagnetic compatibility and safety, connect the Ethernet cables only to intrabuilding or unexposed wiring or cabling.

**Note**

For a list of EMC regulatory statements, see the *Regulatory Compliance and Safety Information for the Catalyst 3750 Metro Switch*.

Guidelines for Particulate Matter

Cisco Ethernet Switches are equipped with cooling mechanisms, such as fans and blowers. However, these fans and blowers can draw dust and other particles, causing contaminant buildup inside the chassis, which can result in a system malfunction.

You must install this equipment in an environment as free as possible from dust and foreign conductive material (such as metal flakes from construction activities).

These standards provide guidelines for acceptable working environments and acceptable levels of suspended particulate matter:

- Network Equipment Building Systems (NEBS) GR-63-CORE
- National Electrical Manufacturers Association (NEMA) Type 1
- International Electrotechnical Commission (IEC) IP-20

Installation Guidelines

When you determine where to place the switch, be sure to observe these restrictions:

- When you connect cables from 10/100 ports and 1000BASE-T SFP module ports to other devices, you can use cable lengths up to 328 feet (100 meters).
- See [Table B-2 on page B-5](#) for a list of cable specifications for 1000BASE-SX, 1000BASE-LX, 1000BASE-BX, 1000BASE-ZX, and CWDM fiber-optic SFP module connections. Each port must match the wave-length specifications on the other end of the cable, and for reliable communications, the cable must not exceed the stipulated cable length.

**Note**

When you use shorter distances of single-mode fiber cable, you might need to insert an inline optical attenuator in the link to avoid overloading the receiver.

When the fiber-optic cable span is less than 15.5 miles (25 km), you should insert a 5-decibel (dB) or 10-dB inline optical attenuator between the fiber-optic cable plant and the receiving port on the 1000BASE-ZX SFP module at each end of the link.

- Operating environment must be within the ranges listed in [Appendix A, “Technical Specifications.”](#)

- Clearance to front and rear panels should be such that
 - You can easily read the front-panel indicators.
 - Access to ports is sufficient for unrestricted cabling.
Make sure that there is access to the rear of the rack if you are planning to stack the switches. If you do not have access to the rear panel, make sure that you cable the switches before you rack-mount them.
 - The AC power cord can reach from the AC power outlet to the connector on the switch rear panel.
- Cabling must be away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure the cabling is safely away from other devices that might damage the cables.
- Airflow around the switch and through the vents must be unrestricted.
- Temperature around the unit does not exceed 113°F (45°C).



Note If you install the switch in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

Verifying Package Contents

**Note**

Carefully remove the contents from the shipping container, and check each item for damage. If any item is missing or damaged, contact your Cisco representative or reseller for support. Return all packing material to the shipping container, and save it.

The switch is shipped with these items:

- *Catalyst 3750 Metro Switch Getting Started Guide*
- *Regulatory Compliance and Safety Information for the Catalyst 3750 Metro Switch*
- AC power supply (installed) or a DC power supply (installed with ground lug installed)
- AC power cord (AC-powered switches)
- 2 DC terminal block plugs (used with DC-powered switches but shipped with both)
- One RJ-45-to-DB-9 adapter cable
- Mounting kit containing:
 - Four rubber feet for mounting the switch on a table
 - Two 19-inch rack-mounting brackets
 - Four Phillips flat-head screws for attaching the brackets to the switch
 - Four Phillips machine screws for attaching the brackets to a rack
 - Four Phillips truss-head screws and a bracket for mounting the switch on a wall
 - One cable guide and one black Phillips machine screw for attaching the cable guide to one of the mounting brackets
 - Two terminal block plugs
 - One RPS connector cover with 2 number-4 panhead screws (not used with this switch)

Verifying Switch Operation

Before installing the switch in a rack, on a wall, or on a table or shelf, you should power the switch and verify that the switch passes POST. These sections describe the steps required to connect a PC to the switch console port and to power on the switch:

- [Connecting a PC or Terminal to the Console Port](#), page 2-6
- [Powering On the Switch and Running POST](#), page 2-7

Connecting a PC or Terminal to the Console Port

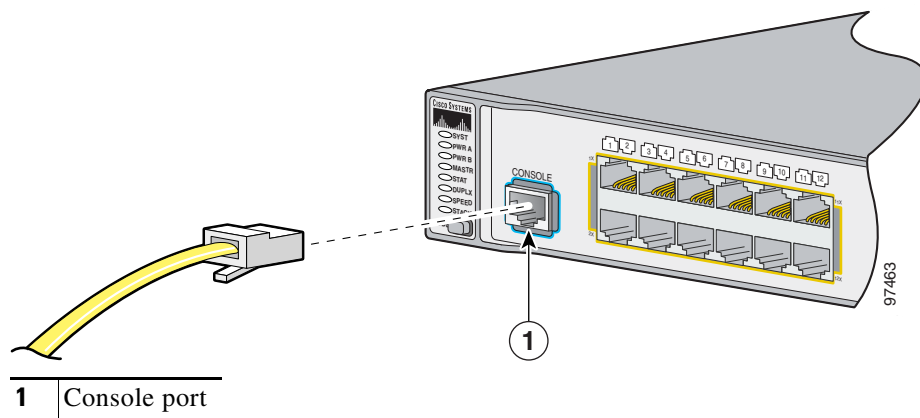
To connect a PC to the console port, use the supplied RJ-45-to-DB-9 adapter cable. To connect the switch console port to a terminal, you need to provide a RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see the [“Cable and Adapter Specifications”](#) section on page B-5.

You can use terminal-emulation software—frequently a PC application such as Hyperterminal or Procomm Plus—to make communication between the switch and your PC or terminal possible.

Follow these steps to connect the PC or terminal to the switch:

-
- Step 1** Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:
- 9600 baud
 - 8 data bits
 - 1 stop bit
 - No parity
 - None (flow control)
- Step 2** Use the supplied RJ-45-to-DB-9 adapter cable to insert the RJ-45 connector into the console port, as shown in [Figure 2-1](#).

Figure 2-1 Connecting to the Console Port



- Step 3** Attach the DB-9 female DTE adapter of the RJ-45-to-DB-9 adapter cable to a PC, or attach an appropriate adapter to the terminal.
- Step 4** Start the terminal-emulation program if you are using a PC or terminal.
-

Powering On the Switch and Running POST

To power on the switch, follow these steps:

- Step 1** Make sure that you have started the terminal emulation software program (such as ProComm, HyperTerminal, tip, or minicom) from your management station. See the [“Connecting a PC or Terminal to the Console Port”](#) section on page 2-6 for information on connecting to the switch console port.
- Step 2** If you are using an AC power supply, connect one end of the AC power cord to the AC power connector on the switch, and then connect the other end of the power cord to an AC power outlet.
- Step 3** If you are using a DC power supply, see the [“Connecting to DC Power”](#) section on page 3-4 for instructions on how to connect the DC power supply.
- Step 4** Secure the power cord with the power cord retainer. For more information, see the [“Connecting to AC Power”](#) section on page 3-1.
-

As the switch powers on, it begins POST, a series of tests that run automatically to ensure that the switch functions properly. When the switch begins POST, the System, the Power A, the Power B, the Master, the Status, the Duplex, the Speed, and the Stack LEDs turn green. The System LED blinks green, and the other LEDs remain continuous green. If POST fails, see [Chapter 4, “Troubleshooting,”](#) to determine a course of action.

When the POST is complete, the System LED remains green. The Power A LED remains green for some time and then resumes operating status. The other LEDs turn off and resume their operating status.

Powering Off the Switch and Disconnecting the Console Port

Disconnect the power cord from the switch. Disconnect the cable from the switch console port. Install the switch in a rack, on a wall, or on a table or shelf as described in the [“Installing the Switch”](#) section on page 2-7.

Installing the Switch

This section describes these installation procedures:

- [Rack-Mounting, page 2-7](#)
- [Wall-Mounting, page 2-12](#)
- [Table- or Shelf-Mounting, page 2-14](#)

Rack-Mounting

To install the switch in a 19-inch or 24-inch rack (24-inch racks require optional mounting hardware), follow the instructions described in these procedures:

- [Removing Screws from the Switch](#), page 2-8
- [Attaching Brackets to the Switch](#), page 2-8
- [Mounting the Switch in a Rack](#), page 2-11
- [Attaching the Cable Guide](#), page 2-12



Warning

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006



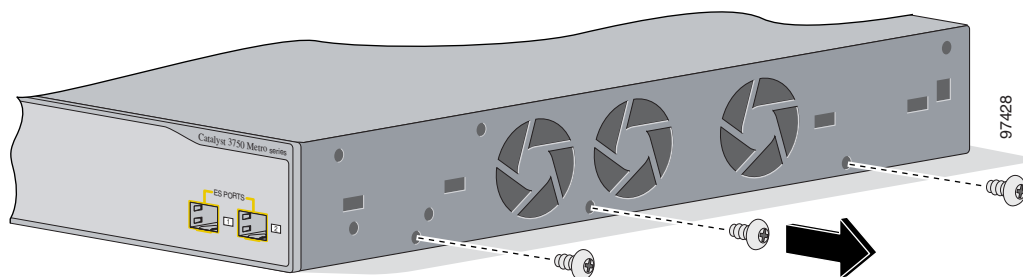
Note

Installing the switch in a 24-inch rack requires an optional bracket kit not included with the switch. You can order a kit containing the 24-inch rack-mounting brackets and hardware from Cisco (part number RCKMNT-1RU).

Removing Screws from the Switch

If you plan to install the switch in a rack, you must first remove the screws in the switch chassis so that you can attach the mounting brackets. [Figure 2-2](#) shows how to remove the chassis screws in a switch.

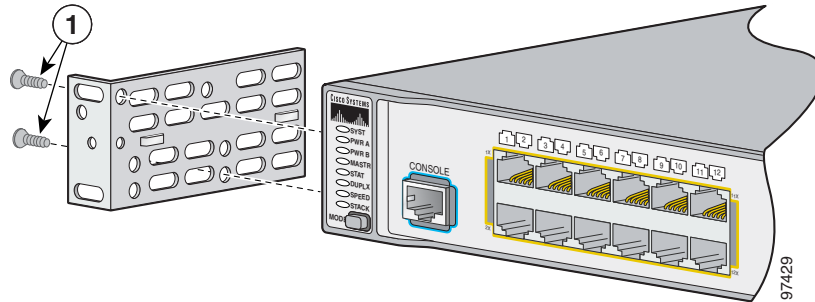
Figure 2-2 Removing Screws from the Switch



Attaching Brackets to the Switch

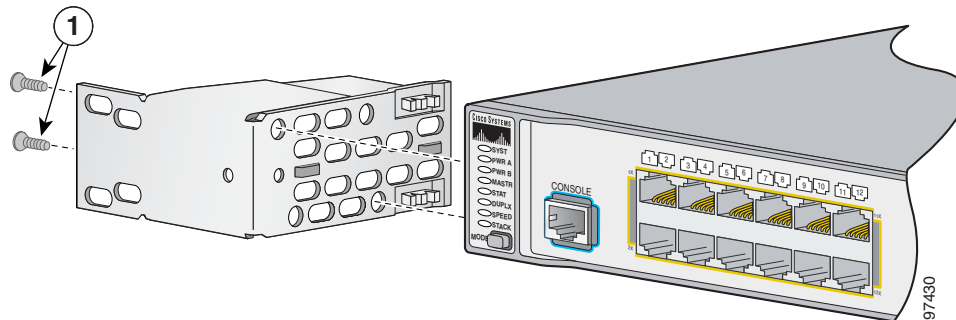
The bracket orientation and the brackets that you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use bracket part number 700-8209-XX; for 24-inch racks, use bracket part number 700-13248-XX. [Figure 2-3](#) through [Figure 2-7](#) show how to attach each type of bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

Figure 2-3 Attaching Brackets for 19-Inch Racks, Front Panel Forward



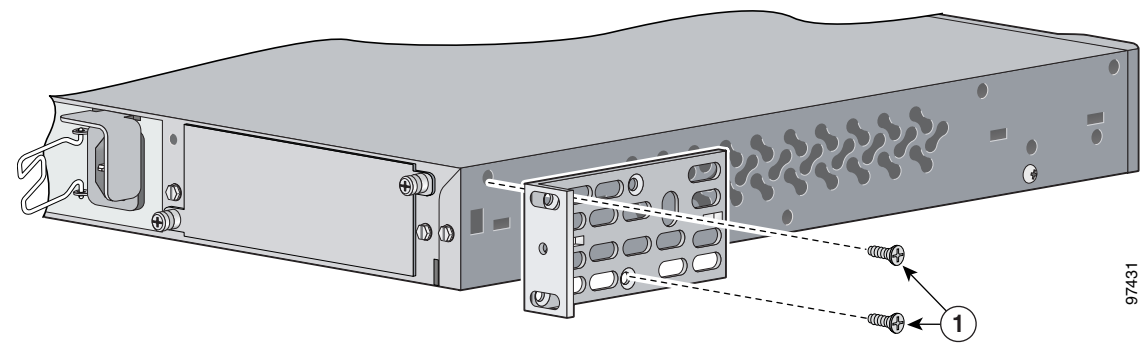
- | | |
|----------|---------------------------|
| 1 | Phillips flat-head screws |
|----------|---------------------------|

Figure 2-4 Attaching Brackets for 24-Inch Racks, Front Panel Forward



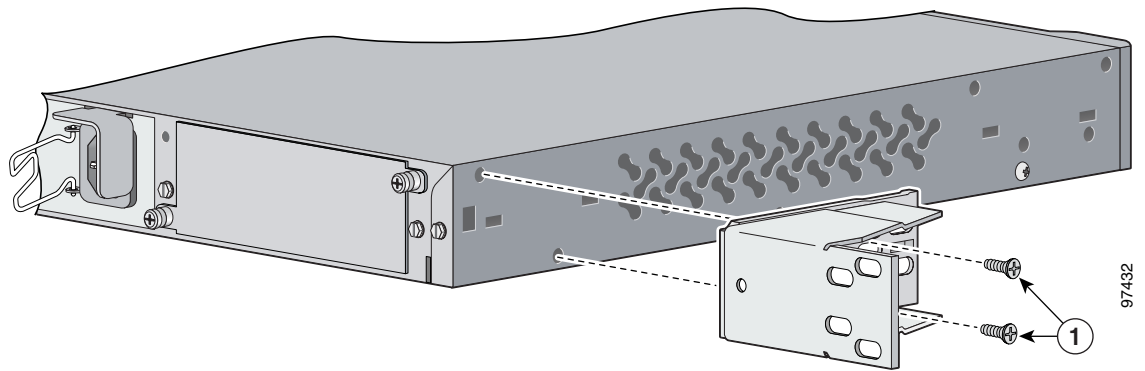
- | | |
|----------|---------------------------|
| 1 | Phillips flat-head screws |
|----------|---------------------------|

Figure 2-5 Attaching Brackets for 19-Inch Racks, Rear Panel Forward



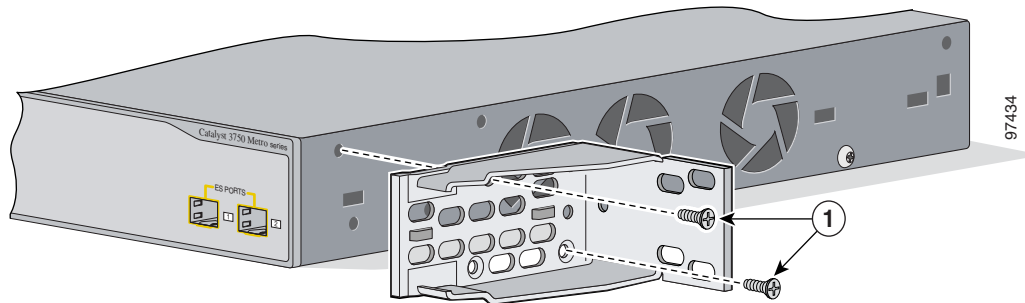
- | | |
|----------|---------------------------|
| 1 | Phillips flat-head screws |
|----------|---------------------------|

Figure 2-6 Attaching Brackets for 24-Inch Racks, Rear Panel Forward



1 Phillips flat-head screws

Figure 2-7 Attaching Brackets for 24-Inch Telco Racks

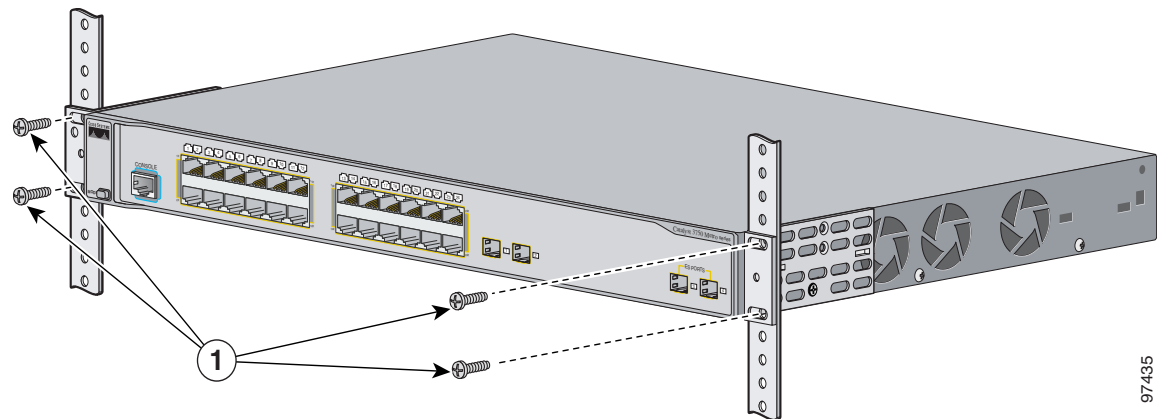


1 Phillips flat-head screws

Mounting the Switch in a Rack

After the brackets are attached to the switch, use the four supplied number-12 Phillips machine screws to securely attach the brackets to the rack, as shown in [Figure 2-8](#).

Figure 2-8 *Mounting the Switch in a Rack*



- | | |
|----------|-------------------------|
| 1 | Phillips machine screws |
|----------|-------------------------|

After the switch is mounted in the rack, perform these tasks to complete the installation, run the setup program, and access the switch:

- Connect to the console port, and start the emulation software. See the [“Connecting to the Console Port”](#) section on page C-3 and the [“Starting the Terminal-Emulation Software”](#) section on page C-3.
- Power on the switch. See the [“Connecting to a Power Source”](#) section on page C-4.
- Run the setup program. See the [“Completing the Setup Program”](#) section on page C-5.
- Connect to the front-panel ports. See the [“Connecting to the 10/100 Ports”](#) section on page 2-17 and the [“Connecting to an SFP Module”](#) section on page 2-18 to complete the installation.

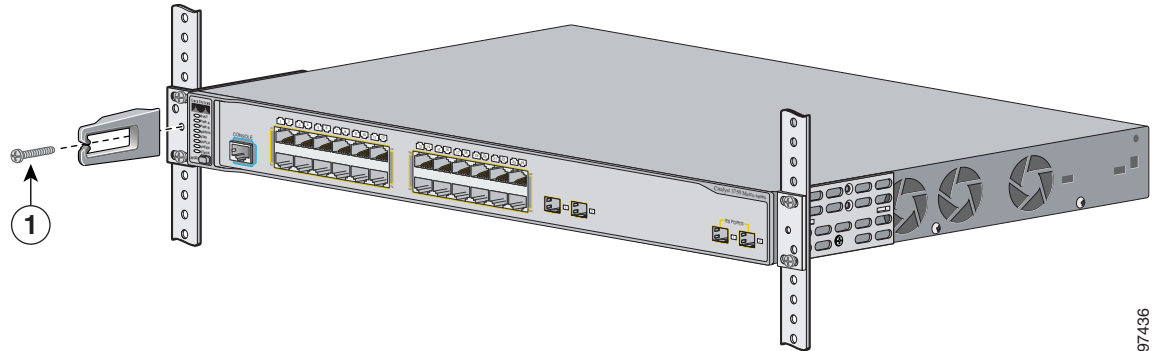
To use the CLI, enter commands at the *Switch>* prompt through the console port by using a terminal program or through the network by using Telnet. For configuration information, refer to the switch software configuration guide or the switch command reference.

97435

Attaching the Cable Guide

We recommend that you attach the cable guide to prevent the cables from obscuring the front panel of the switch and the other devices that are installed in the rack. Use the supplied black screw, as shown in [Figure 2-9](#), to attach the cable guide to the left or right bracket.

Figure 2-9 Attaching the Cable Guide on the Switch



1	Cable guide screw
---	-------------------

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Wall-Mounting

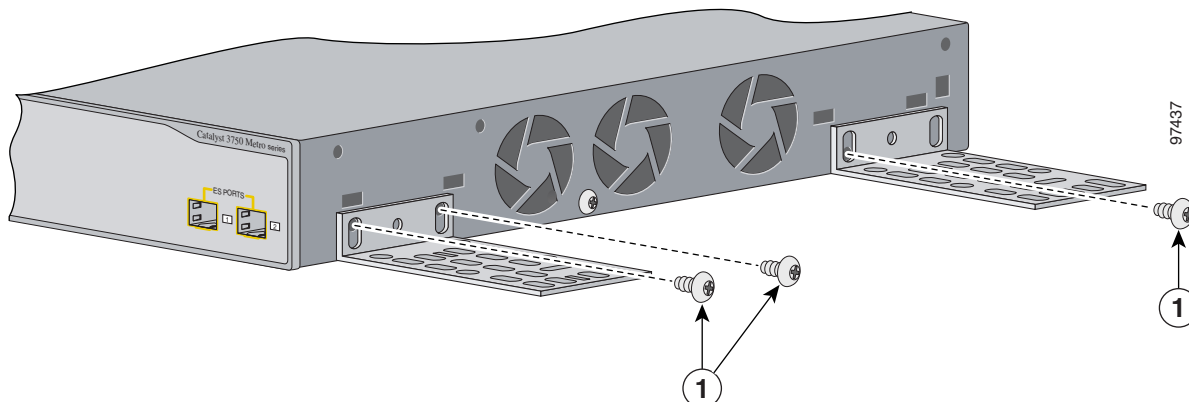
To install the switch on a wall, follow these instructions:

- [Attaching the Brackets to the Switch for Wall-Mounting](#), page 2-12
- [Mounting the Switch on a Wall](#), page 2-13

Attaching the Brackets to the Switch for Wall-Mounting

[Figure 2-10](#) shows how to attach two 19-inch brackets to one side of the switch. Follow the same steps to attach the other two brackets to the opposite side.

Figure 2-10 Attaching the 19-inch Brackets for Wall-Mounting



1	Phillips truss-head screws
---	----------------------------

Mounting the Switch on a Wall

For the best support of the switch and cables, make sure that the switch is attached securely to wall studs or to a firmly attached plywood mounting backboard. Mount the switch with the front panel facing up, as shown in [Figure 2-11](#).



Warning

To comply with safety regulations, mount switches on a wall with the front panel facing up.

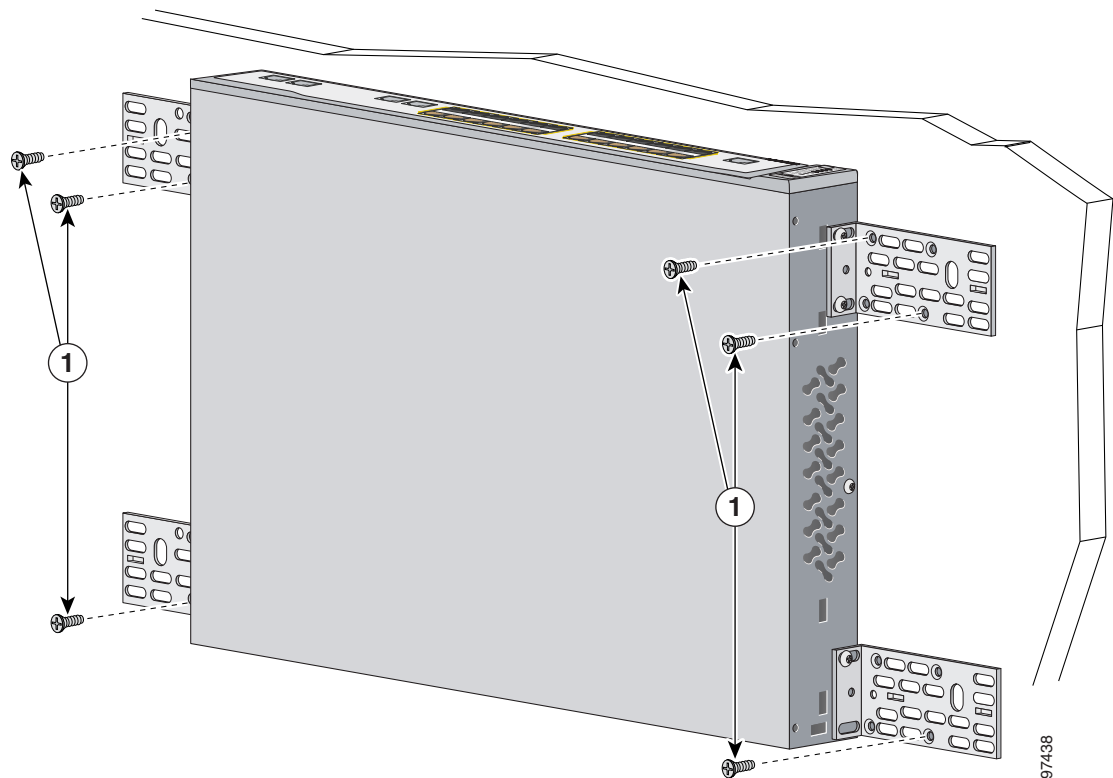
Statement 266



Warning

Suitable for mounting on or over concrete or other non-combustible surface only. Statement 345

Figure 2-11 *Mounting the Switch on a Wall*



1	User-supplied screws
----------	----------------------

After the switch is mounted on the wall, perform these tasks to complete the installation, to run the setup program, and to access the switch:

- Connect to the console port, and start the emulation software. See the [“Connecting to the Console Port”](#) section on page C-3 and the [“Starting the Terminal-Emulation Software”](#) section on page C-3.
- Power on the switch. See the [“Connecting to a Power Source”](#) section on page C-4.

- Run the setup program. See the “[Completing the Setup Program](#)” section on page C-5.
- Connect to the front-panel ports. See the “[Connecting to the 10/100 Ports](#)” section on page 2-17 and the “[Connecting to an SFP Module](#)” section on page 2-18 to complete the installation.

To use the CLI, enter commands at the *Switch*> prompt through the console port by using a terminal program or through the network by using Telnet. For configuration information, refer to the switch software configuration guide or the switch command reference.

Table- or Shelf-Mounting

Follow these steps to install the switch on a table or shelf:

Step 1 Locate the adhesive strip with the rubber feet in the mounting-kit envelope. Attach the four rubber feet to each of the corners on the bottom of the unit.

Step 2 Place the switch on the table or shelf near an AC power source.

After the switch is mounted on the table, you might need to perform these tasks to complete the installation, run the setup program, and access the switch:

- Connect to the console port, and start the emulation software. See the “[Connecting to the Console Port](#)” section on page C-3 and the “[Starting the Terminal-Emulation Software](#)” section on page C-3.
 - Power on the switch. See the “[Connecting to a Power Source](#)” section on page C-4.
 - Run the setup program. See the “[Completing the Setup Program](#)” section on page C-5.
 - Connect to the front-panel ports. See the “[Connecting to the 10/100 Ports](#)” section on page 2-17 and the “[Connecting to an SFP Module](#)” section on page 2-18 to complete the installation.
-

To use the CLI, enter commands at the *Switch*> prompt through the console port by using a terminal program or through the network by using Telnet. For configuration information, refer to the switch software configuration guide or the switch command reference.

Installing and Removing SFP Modules

These sections describe how to install and remove SFP modules. SFP modules are inserted into SFP module slots on the front of the switch. These field-replaceable modules provide uplink interfaces.

You can use any combination of SFP modules. Refer to the release notes for the list of SFP modules that the Catalyst 3750 Metro switch supports. Each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the stipulated cable length for reliable communications. See [Table B-2 on page B-5](#) for cable specifications.

Use only Cisco SFP modules on the Catalyst 3750 Metro switch. Each SFP module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the SFP module meets the requirements for the switch.

For detailed instructions on installing, removing, and cabling the SFP module, refer to your SFP module documentation.

Installing SFP Modules into SFP Module Slots

This section provides instructions for how to install an SFP module that has a bale-clasp latch.

**Caution**

We strongly recommend that you do not install or remove fiber-optic SFP modules with cables attached because of the potential damage to the cables, the cable connector, or the optical interfaces in the SFP module. Disconnect all cables before removing or installing an SFP module.

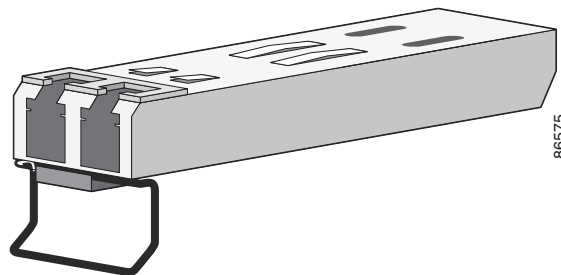
Removing and installing an SFP module can shorten its useful life. Do not remove and insert SFP modules more often than is absolutely necessary.

**Note**

Refer to the *Installation Notes for the Cisco Small Form-Factor Pluggable Modules* on cisco.com for instructions to install SFPs that use other types of latches.

Figure 2-12 shows an SFP module that has a bale-clasp latch.

Figure 2-12 SFP Module with a Bale-Clasp Latch



To insert an SFP module into the SFP module slot, follow these steps:

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface on the chassis.

Step 2 Find the send (TX) and receive (RX) markings that identify the top side of the SFP module.

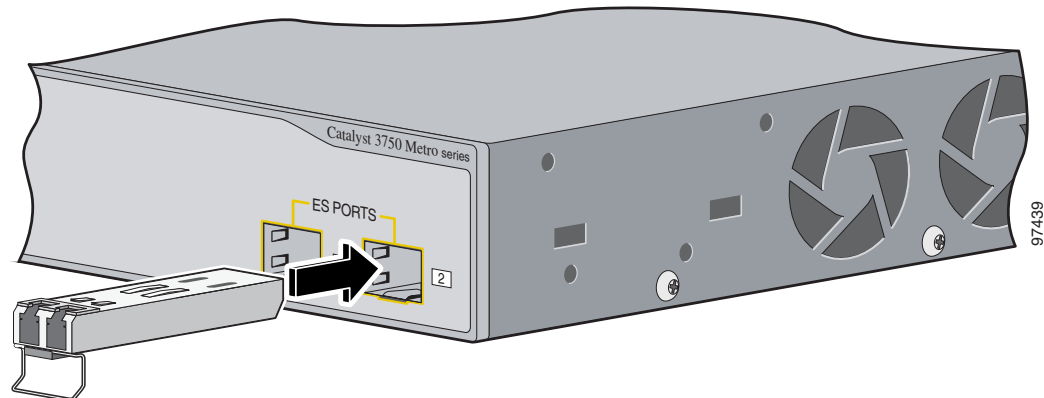


Note On some SFP modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection, either send or receive (TX or RX).

Step 3 Align the SFP module in front of the slot opening.

Step 4 Insert the SFP module into the slot until you feel the connector on the module snap into place in the rear of the slot. (See Figure 2-13.)

Figure 2-13 Installing an SFP Module into an SFP Module Slot



Step 5 For fiber-optic SFP modules, remove the dust plugs from the optical ports and store them for later use.



Caution

Do not remove the dust plugs from the fiber-optic SFP module port or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light.

Step 6 Insert the cable connector into the SFP module:

- For fiber-optic SFP modules, insert the LC or MT-RJ cable connector into the SFP module.
- For copper SFP modules, insert the RJ-45 cable connector into the SFP module.



Note

When you connect to 1000BASE-T SFP modules, be sure to use a twisted four-pair, Category 5 or higher cable.

Removing SFP Modules from SFP Module Slots

To remove an SFP module from a module receptacle, follow these steps:

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface on the chassis.

Step 2 Disconnect the cable from the SFP module.



Tip

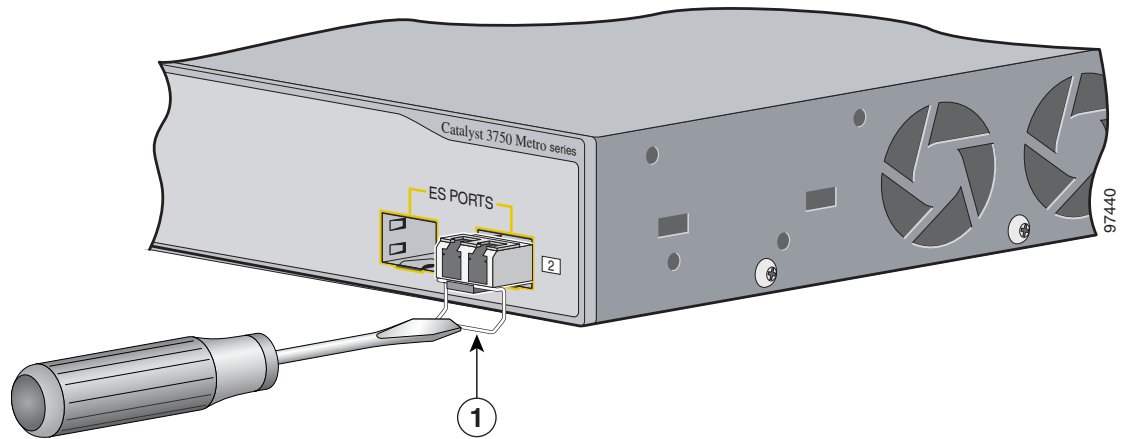
For reattachment, note which cable connector plug is send (TX) and which is receive (RX).

Step 3 For fiber-optic SFP modules, insert a dust plug into the optical ports of the SFP module to keep the optical interfaces clean.

Step 4 Unlock and remove the SFP module, as shown in [Figure 2-14](#).

Pull the bale-clasp latch out and down to eject the module. If the bale-clasp latch is obstructed and you cannot use your index finger to open it, use a small, flat-blade screwdriver or other long, narrow instrument to open the bale-clasp latch.

Figure 2-14 Removing a Bale-Clasp Latch SFP Module by Using a Flat-Blade Screwdriver



1	Bale clasp
----------	------------

- Step 5** Grasp the SFP module between your thumb and index finger, and carefully remove it from the module slot.
- Step 6** Place the removed SFP module in an antistatic bag or other protective environment.

Connecting to the 10/100 Ports

The switch 10/100 ports configure themselves to operate at the speed of attached devices. If the attached ports do not support autonegotiation, you can set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have their speed and duplex parameters manually set can reduce performance or result in no linkage.

To maximize performance, choose one of these methods for configuring the Ethernet ports:

- Let the ports autonegotiate both speed and duplex.
- Set the port speed and duplex parameters on both ends of the connection.

Follow these steps to connect to 10BASE-T or 100BASE-TX devices:



Caution

To prevent electrostatic-discharge (ESD) damage, follow your normal board and component handling procedures.

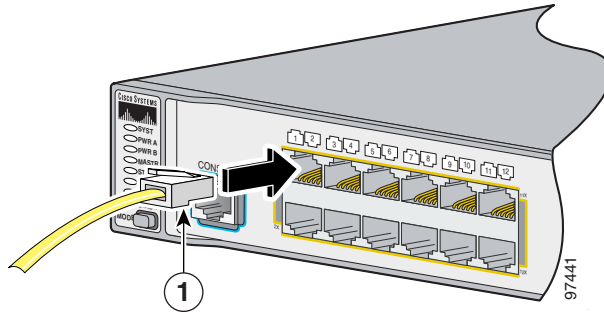
Step 1

When you connect to workstations, servers, routers, and Cisco IP Phones, connect a straight-through cable to an RJ-45 connector on the front panel. (See [Figure 2-15](#).) When you connect to switches or repeaters, use a crossover cable. (See the “[Identifying a Crossover Cable](#)” section on [page B-8](#) for cable-pinout descriptions.)



Note When you connect to 1000BASE-T-compatible devices, be sure to use a twisted four-pair, Category 5 or higher cable. See the [“Four Twisted-Pair Cable Pinouts for 10/100 Ports”](#) section on page B-7 for more information.

Figure 2-15 Connecting to an Ethernet Port



1 Connector cable



Note You can use the **mdix auto** interface configuration command in the CLI to enable the automatic crossover feature. When the automatic crossover feature is enabled, the switch detects the required cable type and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for all connections to an Ethernet port on the switch.

The automatic crossover feature is disabled by default. For configuration information for this feature, refer to the switch software configuration guide or the switch command reference.

Step 2 Connect the other end of the cable to an RJ-45 connector on the other device. Repeat Steps 1 through 3 to connect each device.

Connecting to an SFP Module

This section describes how to connect to SFP modules. For instructions on how to connect to fiber-optic SFP modules, see the [“Connecting to a Fiber-Optic SFP Module”](#) section on page 2-19 section. For instructions on how to connect to 1000BASE-T SFP modules, see the [“Connecting to 1000BASE-T SFP Modules”](#) section on page 2-20 section.

For instructions about how to install or remove an SFP module, see the [“Installing and Removing SFP Modules”](#) section on page 2-14.

Connecting to a Fiber-Optic SFP Module

Follow these steps to connect a fiber-optic cable to an SFP module:



Caution

Do not remove the rubber plugs from the SFP module port or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light.

Before you connect to the SFP module, be sure that you understand the port and cabling stipulations in the “[Installation Guidelines](#)” section on page 2-4 and in the “[SFP Module Slots](#)” section on page 1-3. See [Appendix B](#), “[Connector and Cable Specifications](#),” for information about the LC on the SFP module.

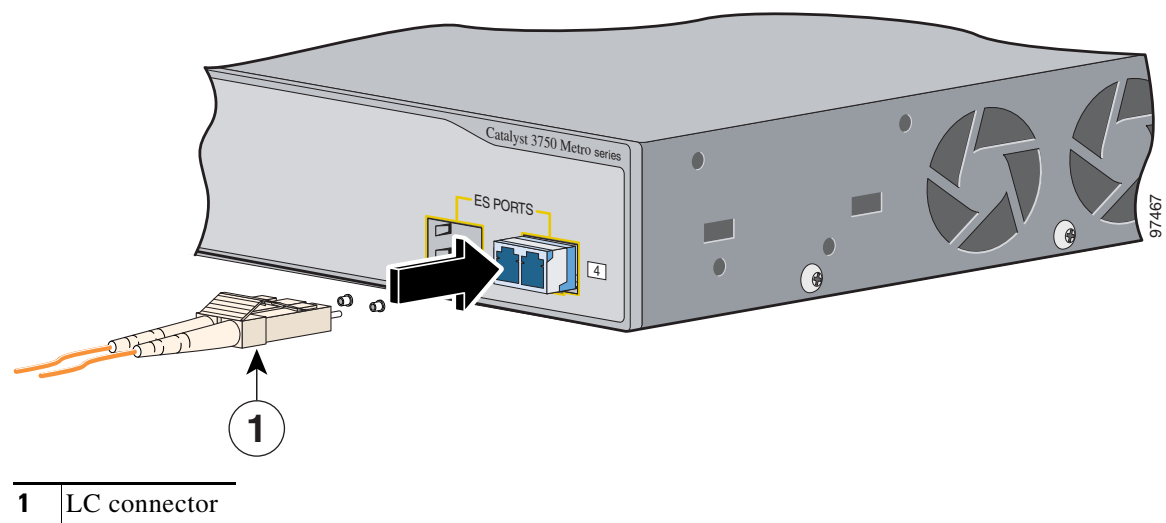
- Step 1** Remove the rubber plugs from the module port and fiber-optic cable, and store them for future use.
- Step 2** Insert one end of the fiber-optic cable into the SFP module port (see [Figure 2-16](#)).
- Step 3** Insert the other cable end into a fiber-optic receptacle on a target device.
- Step 4** Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while the STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See [Chapter 4](#), “[Troubleshooting](#),” for solutions to cabling problems.

Figure 2-16 Connecting to a Fiber Optic SFP Module Port



Step 5 If necessary, reconfigure and restart the switch or target device.



Caution

For detailed instructions on removing the SFP modules, refer to your SFP documentation.

Connecting to 1000BASE-T SFP Modules

Follow these steps to connect a Category 5 or higher cable to a 1000BASE-T SFP module:



Caution

To prevent ESD damage, follow your normal board and component handling procedures.

Step 1

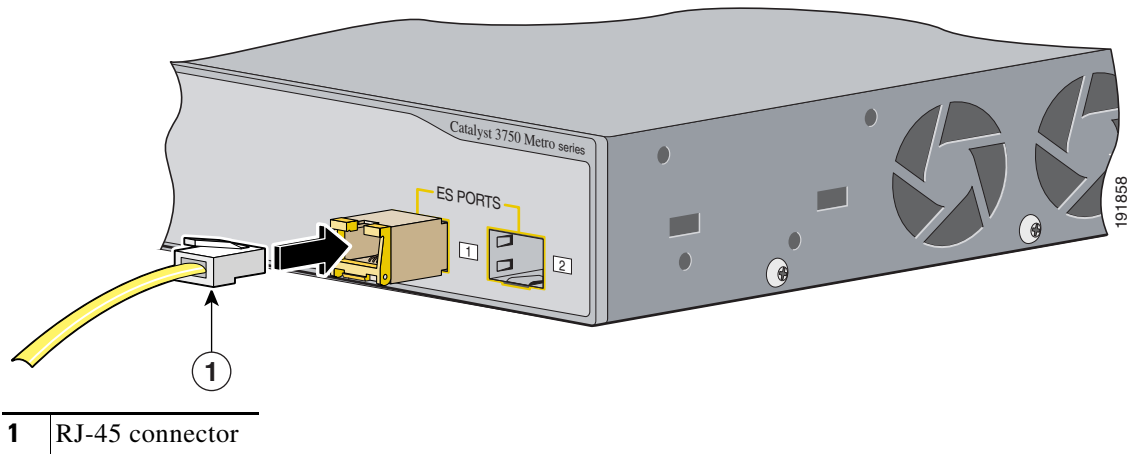
When you connect to servers, workstations, and routers, insert a four twisted-pair, straight-through cable in the RJ-45 connector. When you connect to switches or repeaters, insert a four twisted-pair, crossover cable. (See [Figure 2-17](#).)



Note

When you connect to a 1000BASE-T device, be sure to use a four twisted-pair, Category 5 or higher cable.

Figure 2-17 Connecting to a 1000BASE-T SFP Module Port



Step 2 Insert the other cable end in an RJ-45 connector on a target device.

Step 3 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while the STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See [Chapter 4, “Troubleshooting”](#) for solutions to cabling problems.

Step 4 If necessary, reconfigure and restart the switch or target device.

Where to Go Next

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Use the CLI to configure the switch from the console. See [Appendix C, “Configuring the Switch with the CLI-Based Setup Program,”](#) and refer to the switch command reference on Cisco.com for information on using the CLI with a Catalyst 3750 Metro switch.
- Start an SNMP application such as the CiscoView application.



CHAPTER 3

Connecting the Power Supply

This chapter describes how to connect the AC and DC power supply units and how to remove them. See these sections:

- [Connecting to AC Power, page 3-1](#)
- [Removing the AC Power Supply, page 3-3](#)
- [Connecting to DC Power, page 3-4](#)
- [Removing the DC Power Supply, page 3-12](#)
- [Connecting to Both AC and DC Power in the Switch, page 3-13](#)



Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
Statement 1030



Caution

If you use only one power supply in your switch, always cover the other power slot with the slot cover.

Connecting to AC Power

To connect the switch to an AC-input power source, follow these steps:

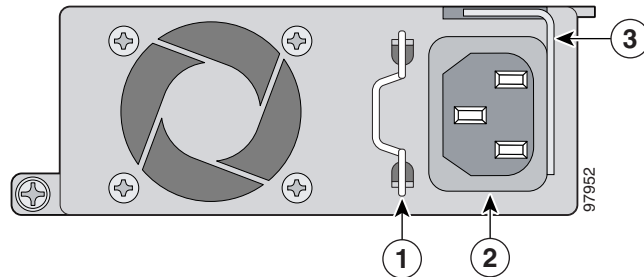


Warning

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.
Statement 1017

Before you start, locate a Phillips screwdriver and your AC power cord. [Figure 3-1](#) shows the location of the AC power supply parts.

Figure 3-1 AC Power Supply

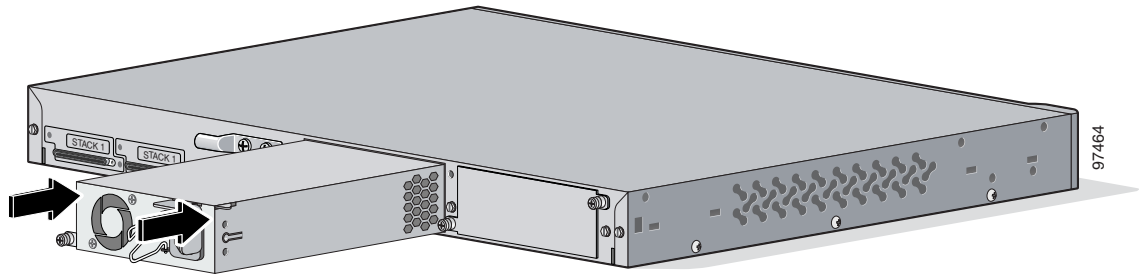


1	AC power cord retainer	3	Power-on restrictor
2	AC power connector	3	

To insert an AC power supply into power supply slot A or B, follow these steps:

-
- Step 1** Insert the power supply partially into the power supply slot (see [Figure 3-2](#)).

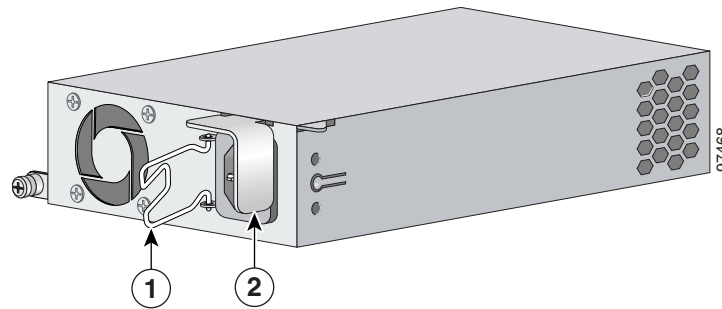
Figure 3-2 Inserting the AC Power Supply



- Step 2** Slide the power-on restrictor to the left, toward the power connector (see [Figure 3-3](#)).



Note The power supply unit will not slide completely into the power slot if the power cord is already inserted into the power connector.

Figure 3-3 AC Power Cord Retainer and Power-On Restrictor

1	AC power cord retainer	2	Power-on restrictor
----------	------------------------	----------	---------------------

- Step 3** Slide the power supply unit the rest of the way into the power slot.
- Step 4** Slide the power-on restrictor to the right in order to access the power connector (see [Figure 3-3](#)).
- Step 5** Use a Phillips screwdriver to attach the screw at the lower-left of the power supply, and secure the power supply unit in the switch chassis.
- Step 6** Insert the power cord into the power connector.
- Step 7** Snap the AC power cord retainer into place to secure the power cord (see [Figure 3-3](#)).
- Step 8** Turn on the power at the power source.

Removing the AC Power Supply

To remove a power supply from power supply slot A or B, follow these steps:

- Step 1** Turn off the power at its source.
- Step 2** Detach the power cord retainer from the power cord.
- Step 3** Remove the power cord from the power connector.
- Step 4** Use a Phillips screwdriver to remove the screw at the lower-left that secures the power supply unit to the switch chassis (see [Figure 3-3](#)).
- Step 5** Slide the power-on restrictor toward the left.
- Step 6** Remove the power supply unit from the power slot by pulling on the power-on restrictor (see [Figure 3-3](#)).

Connecting to DC Power

To connect the switch to a DC-input power source, follow these steps:

1. [Preparing for Installation, page 3-4](#)
2. [Grounding the Switch, page 3-5](#)
3. [Installing the DC Power Supply in the Switch, page 3-7](#)
4. [Wiring the DC-Input Power Source, page 3-9](#)



Warning

Before performing any of the following procedures, ensure that power is removed from the DC circuit.
Statement 1003



Warning

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:
15 A, 80 Vdc** Statement 1005



Note

We recommend that you use 18 AWG copper wiring for Network Equipment Building Systems (NEBS) installation. This guideline follows the standard guidelines for DC power wiring in the Central Office.

Preparing for Installation

Locate the terminal block plug that ships with the DC power supply.

Obtain these necessary tools and equipment:

- Ratcheting torque screwdriver with a Phillips head that exerts up to 15 pound-force inches (lbf-in.) of pressure
- Panduit crimping tool with optional controlled cycle mechanism (model CT-700, CT-720, CT-920, CT-920CH, CT-930, or CT-940CH)
- 6-gauge copper ground wire (insulated or noninsulated)
- Four leads of 18-gauge copper wire. The DC terminal block also accepts 12-28 AWG copper wire (see [Figure 3-11 on page 3-9](#)).



Note

We recommend that you use 18 AWG copper wiring for Network Equipment Building Systems (NEBS) installations. This guideline follows the standard guidelines for DC power wiring in the Central Office.

- Wire-stripping tools for stripping 6- and 18-gauge wires

Grounding the Switch



Warning

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024



Warning

When installing or replacing the unit, the ground connection must always be made first and disconnected last. Statement 1046



Caution

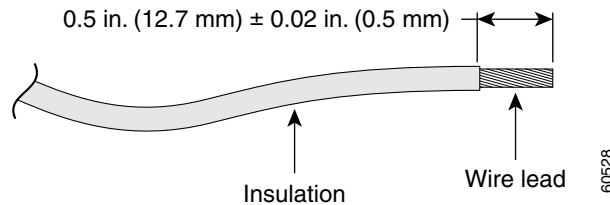
To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed lug suitable for number-6 AWG wire and two number-10-32 ground-lug screws.

Preparing the Ground Wire

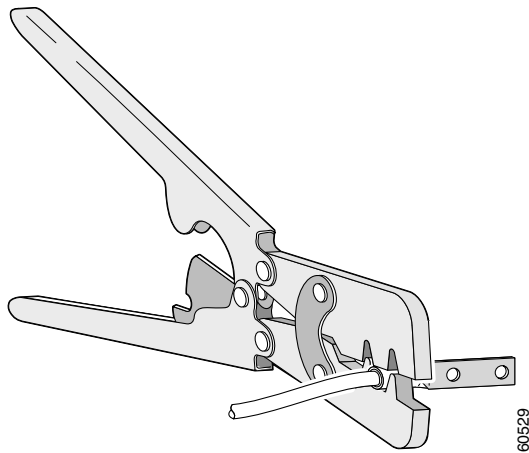
Before you ground the switch to earth ground, you must prepare the ground wire. Follow these steps. Make sure to follow any grounding requirements at your site.

- Step 1** Locate the ground lug and the two number-10-32 screws on the rear panel of the switch. Use a standard Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head to remove the ground lug. Set the screws and the ground lug aside.
- Step 2** If your ground wire is insulated, use a wire stripping tool to strip the 6-gauge ground wire to 0.5 inch (12.7 millimeter [mm]) \pm 0.02 inch (0.5 mm) as shown in [Figure 3-4](#).

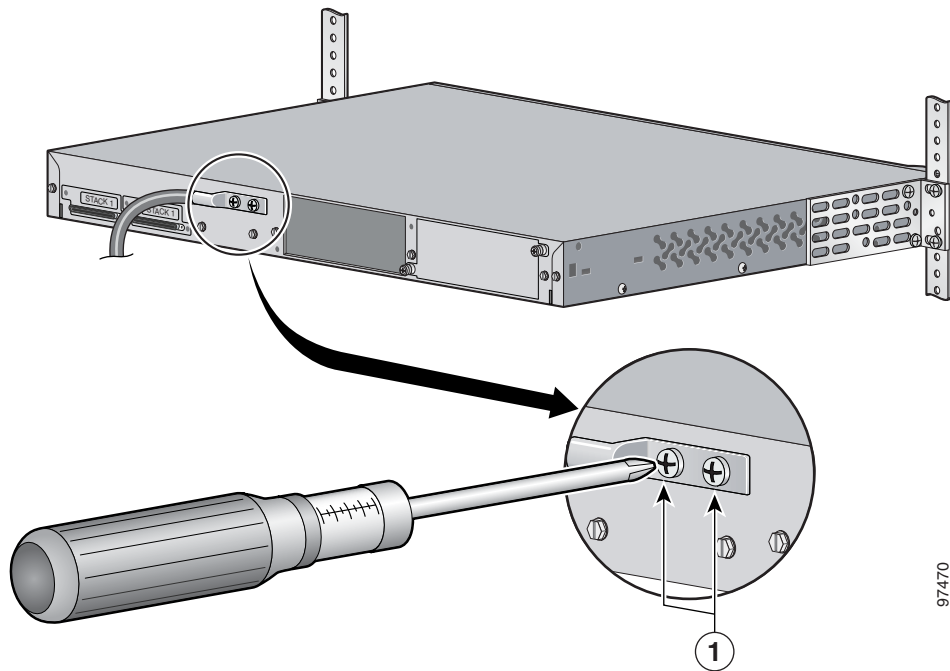
Figure 3-4 Stripping the Ground Wire



- Step 3** Slide the open end of the ground lug over the exposed area of the 6-gauge wire.
- Step 4** Using a Panduit crimping tool, crimp the ground lug to the 6-gauge wire (see [Figure 3-5](#)).

Figure 3-5 Crimping the Ground Lug

- Step 5** Use the two number-10-32 screws to attach the ground lug and wire assembly to the rear panel of the switch.
- Step 6** Using a ratcheting torque screwdriver, torque each grounding-lug screw to 15 lbf-in. (240 ounce-force inches [ozf-in.]). [Figure 3-6](#) shows how to torque the grounding-lug screws on a switch.

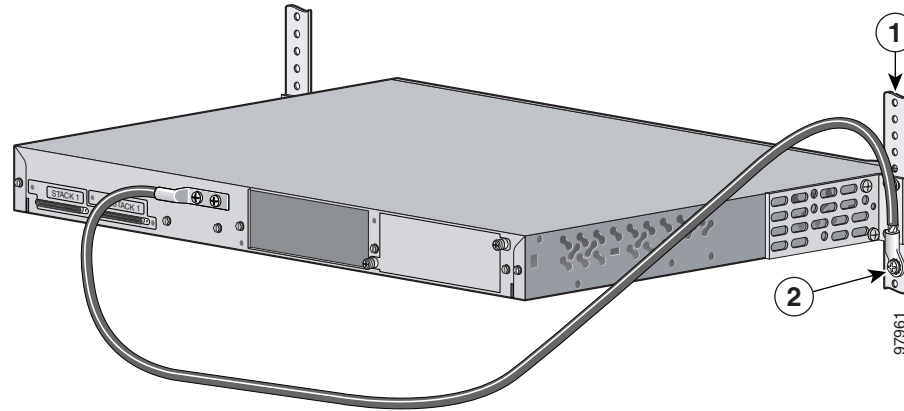
Figure 3-6 Torquing Ground-Lug Screws

1	Grounding-lug screws
----------	----------------------

Connecting the Grounding Wire to Earth Ground

Next you must connect the other end of the grounding wire to an appropriate grounding point at your site or to the telco rack (see [Figure 3-7](#)).

Figure 3-7 Connecting the Grounding Wire to the Rack



1	Telco Rack	2	Grounding wire
----------	------------	----------	----------------

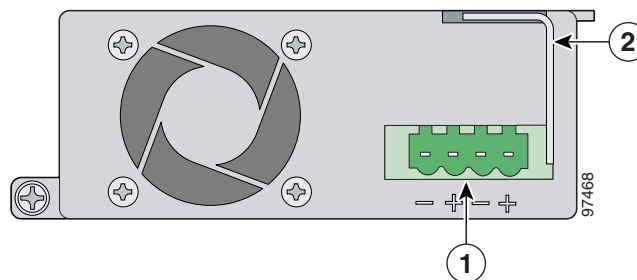
Complete these steps:

-
- Step 1** Remove all paint or oxidation from the rack at the point of the grounding connection.
 - Step 2** Use a 3/16-inch flat-head screwdriver to loosen the grounding screw on the rack.
 - Step 3** Connect the wire to a ring lug (large enough for the rack screw to fit through).
 - Step 4** Use a 3/16-inch flat-head screwdriver and the screw to attach the ring lug to the rack.
 - Step 5** Tighten the grounding screw on the rack over the ring lug.
- Repeat these steps for each switch being installed.

Installing the DC Power Supply in the Switch

[Figure 3-8](#) shows the location of the DC power supply parts.

Figure 3-8 DC Power Supply

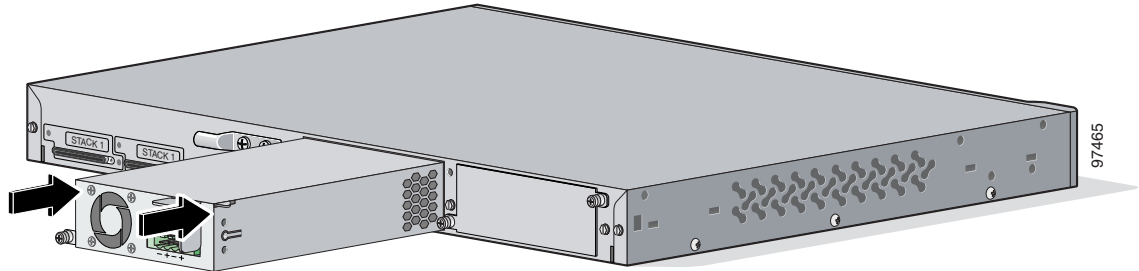


1	Power-on restrictor	2	DC-power connector
----------	---------------------	----------	--------------------

To insert a DC power supply into power supply slot A or B, follow these steps:

- Step 1** Insert the power supply partially into the power slot (see [Figure 3-9](#)).

Figure 3-9 Inserting the DC Power Supply

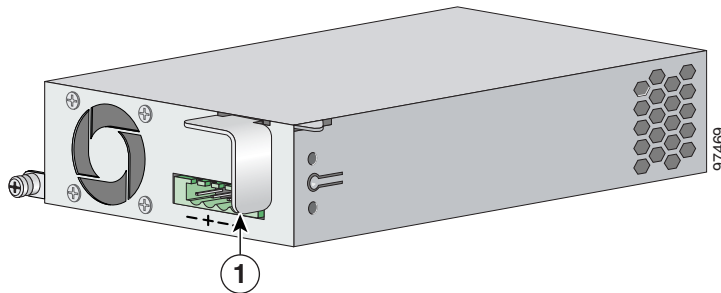


- Step 2** Slide the power-on restrictor to the left, toward the power connector (see [Figure 3-10](#)).



Note The power supply unit will not slide completely into the power slot if the terminal block is already inserted into the terminal block plug.

Figure 3-10 DC Power-On Restrictor



1	Power-on restrictor
----------	---------------------

- Step 3** Slide the power supply unit the rest of the way into the power slot.
- Step 4** Slide the power-on restrictor to the right to access the power connector (see [Figure 3-10](#)).
- Step 5** Use a Phillips screwdriver to attach the screw at the lower-left and secure the power supply unit in the switch chassis.

Wiring the DC-Input Power Source



Warning

A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.

Statement 1022



Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

Statement 1030



Warning

Installation of the equipment must comply with local and national electrical codes. Statement 1074



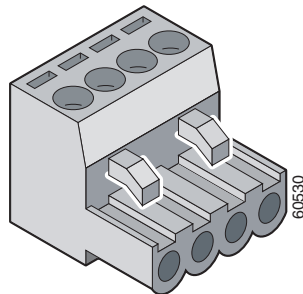
Caution

You must connect the switch only to a DC-input power source that has an input supply voltage from -36 to -72 VDC. If the supply voltage is not in this range, the switch might not operate properly or might be damaged.

To wire the switch to a DC-input power source, follow these steps:

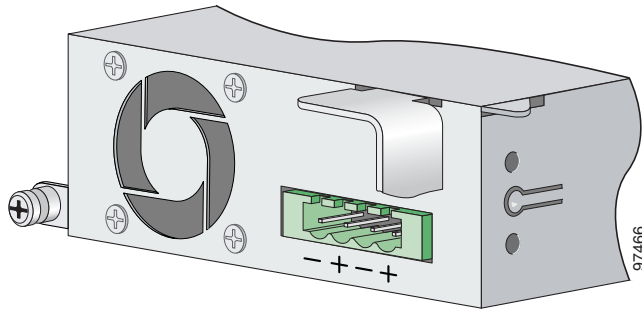
- Step 1** Locate the terminal block plug (see [Figure 3-11](#)).

Figure 3-11 Terminal Block Plug

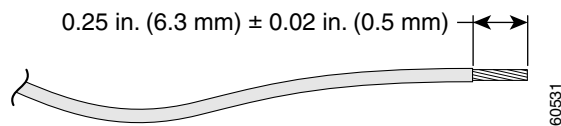


- Step 2** Identify the positive and negative feed positions for the terminal block connection. The wiring sequence is positive to positive and negative to negative for both the A and the B feed wires.

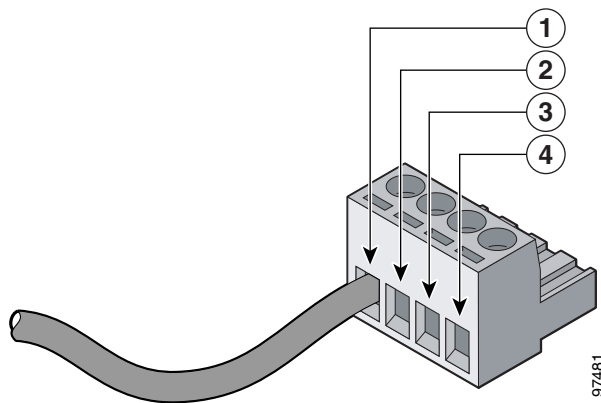
The rear panel of the power supply unit identifies the positive and negative positions for both the A and B feed wires. [Figure 3-12](#) shows the positions on the power supply.

Figure 3-12 Positive and Negative Positions

- Step 3** Using an 18-gauge wire-stripping tool, strip each of the four wires coming from the DC-input power source to 0.27 inch (6.6 mm) \pm 0.02 inch (0.5 mm). Do not strip more than 0.29 inch (7.4 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the terminal block plug after installation. (See [Figure 3-13](#).)

Figure 3-13 Stripping the DC-Input Power Source Wire

- Step 4** Insert the exposed wire of one of the four DC-input power source wires into the terminal block plug, as shown in [Figure 3-14](#). Make sure that you cannot see any wire lead. Only wire *with insulation* should extend from the terminal block.

Figure 3-14 Inserting Wires in the Terminal Block Plug

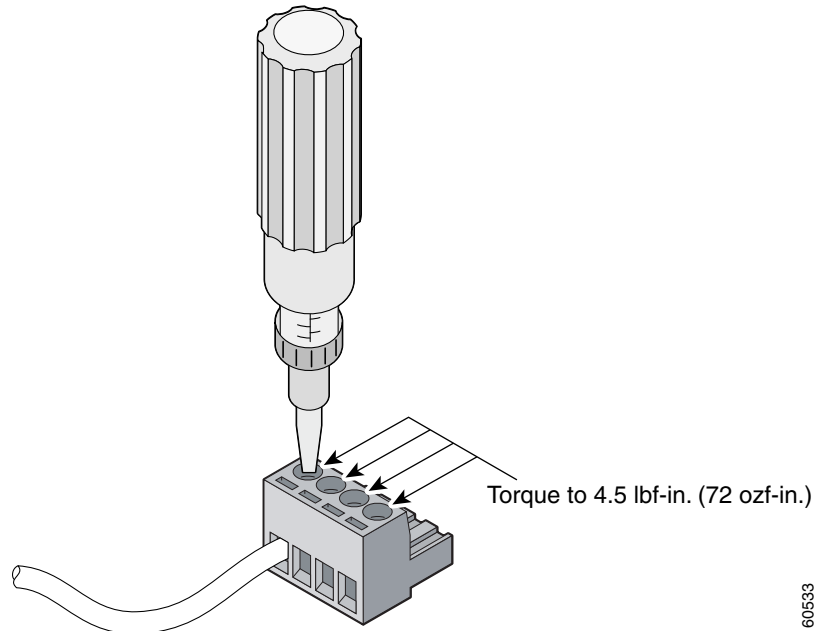
1	Negative	3	Negative
2	Return	4	Return

Step 5 Use a ratcheting torque screwdriver to torque the terminal block captive screw (above the installed wire lead) to 4.5 lbf-in. (72 ozf-in.). (See [Figure 3-15](#).)



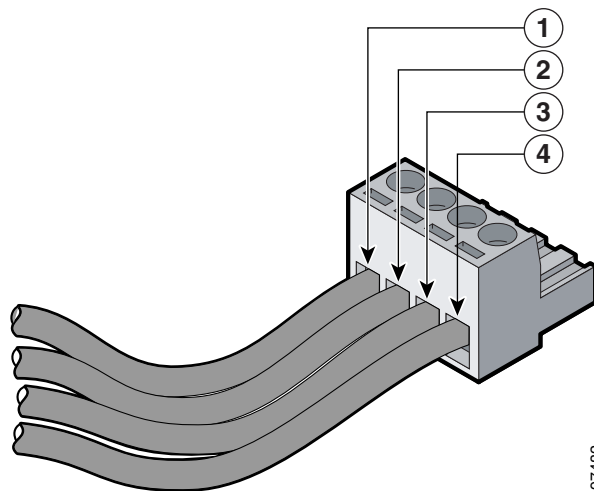
Caution Do not overtorque the terminal-block captive screws. The recommended maximum torque is 4.5 lbf-in.

Figure 3-15 Torquing the Terminal-Block Captive Screws



Step 6 Repeat Steps 4 and 5 for the remaining three DC-input power source wires. [Figure 3-16](#) shows the completed wiring of a terminal block plug.

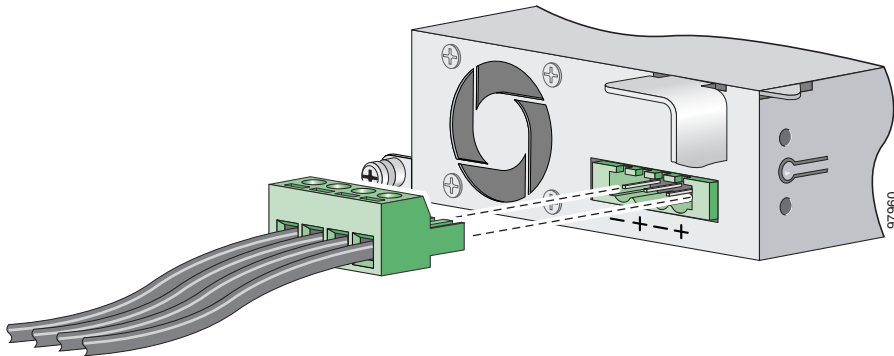
Figure 3-16 Completed Wiring of Terminal Block Plug



1	Feed A Negative	3	Feed B Negative
2	Feed A Return	4	Feed B Return

- Step 7** Insert the terminal block plug in the terminal block header of the power supply (see [Figure 3-17](#)).

Figure 3-17 Inserting the Terminal Block Plug



Caution

Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact. For example, use tie wraps to secure the wires to the rack.

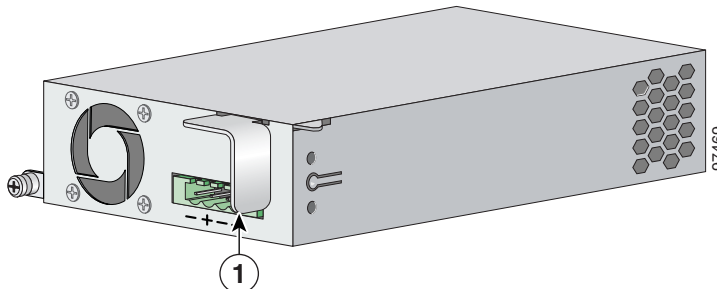
- Step 8** Remove the tape from the circuit-breaker switch handle, and move the circuit-breaker handle to the on position.

Removing the DC Power Supply

To remove a power supply from power supply slot A or B, follow these steps:

- Step 1** Move the circuit-breaker to the off position.
Step 2 Detach the terminal block plug from the terminal block header of the power supply.
Step 3 Slide the power-on restrictor towards the left (see [Figure 3-18](#)).

Figure 3-18 DC Power-On Restrictor



1 Power-on restrictor

- Step 4** Use a Phillips screwdriver to remove the screw at the lower-left that secures the power supply unit to the switch chassis.
- Step 5** Remove the power supply unit from the power slot by pulling on the power-on restrictor (see [Figure 3-18](#)).
-

Connecting to Both AC and DC Power in the Switch

You can install an AC power supply or a DC power supply in either slot. You can also install an AC power supply in one slot and a DC power supply in the other slot.



Caution

If a DC power supply is present in your configuration, you must install a grounding lug on the switch.

See the section that applies to your configuration:

- To install an AC power supply in one of the slots, see the [“Connecting to AC Power”](#) section on [page 3-1](#).
- To install a DC power supply in either slot, see the [“Connecting to DC Power”](#) section on [page 3-4](#).
- To remove an AC power supply, see the [“Removing the AC Power Supply”](#) section on [page 3-3](#).
- To remove a DC power supply, see the [“Removing the DC Power Supply”](#) section on [page 3-12](#).



Warning

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028



CHAPTER 4

Troubleshooting

The LEDs on the front panel provide troubleshooting information about the switch. They show failures in the power-on self-test (POST), port-connectivity problems, and overall switch performance. For a full description of the switch LEDs, see the [“LEDs” section on page 1-4](#).

You can also get statistics from the browser interface, from the command-line interface (CLI), or from a Simple Network Management Protocol (SNMP) workstation. See the software configuration guide, the switch command reference guide on Cisco.com, or the documentation that came with your SNMP application for details.

This chapter describes these topics for troubleshooting problems:

- [Diagnosing Problems, page 4-1](#)
- [Clearing the Switch IP Address and Configuration, page 4-5](#)
- [Finding the Switch Serial Number, page 4-6](#)

Diagnosing Problems

The LEDs on the front panel provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. You can also get statistics from the CLI or from an SNMP workstation. See the software configuration guide and the switch command reference on Cisco.com or the documentation that came with your SNMP application for more information.

This section includes these troubleshooting topics:

- [“Verify Switch POST Results” section on page 4-2](#)
- [“Monitor Switch LEDs” section on page 4-2](#)
- [“Verify Switch Connections” section on page 4-2](#)
- [“Monitor Switch Performance” section on page 4-4](#)

Verify Switch POST Results

As the switch powers on, it begins the POST, a series of tests that runs automatically to ensure that the switch functions properly. It might take several minutes for the switch to complete POST.

When the switch begins POST, the system LED slowly blinks green. When POST completes, the system LED blinks amber. If POST fails, the system LED remains amber. If POST completes successfully, the system LED rapidly blinks green.

**Note**

POST failures are usually fatal. Contact your Cisco technical support representative if your switch does not pass POST.

Monitor Switch LEDs

You must have physical access to the switch to do this. Look at the port LEDs for troubleshooting information about the switch. See the “LEDs” section on page 1-4 for a description of the LED colors and their meanings.

Verify Switch Connections

Review these sections when troubleshooting switch connectivity problems:

- [Bad or Damaged Cable, page 4-2](#)
- [Ethernet and Fiber Cables, page 4-3](#)
- [Link Status, page 4-3](#)
- [Transceiver Module Port Issues, page 4-3](#)
- [Port and Interface Settings, page 4-3](#)
- [Ping the End Device, page 4-4](#)
- [Spanning Tree Loops, page 4-4](#)

Bad or Damaged Cable

Always look at the cable for marginal damage or failure. A cable might connect at the physical layer but then cause packet corruption because of subtle damage to its wiring or connectors. You can identify this situation because the port will have many packet errors, or the port constantly loses and regains link. In these situations:

- Change the copper or fiber-optic cable with a known, good cable if necessary.
- Look for broken or missing pins on cable connectors.
- Rule out any insufficient patch panel connections or media convertors between the source and the destination. If possible, bypass the patch panel or eliminate faulty media convertors, such as fiber-optic-to-copper convertors.
- Try using the cable in another port or interface to see if the problem also exists there.

Ethernet and Fiber Cables

Make sure that you have the correct cable type for the connection:

- For Ethernet, use Category 3 copper cable for 10 Mb/s unshielded twisted pair (UTP) connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100 or 10/100/1000 Mb/s connections.
- For fiber-optic connectors, verify that you have the correct cable for the distance and port type. Make sure that the ports on the connected device match and that they use the same type of encoding, optical frequency, and fiber type. For more information about cabling, see [Appendix B, “Connector and Cable Specifications.”](#)
- For copper connections, determine if a crossover cable was used when a straight-through cable was required or the reverse. Enable auto-MDIX on the switch, or replace the cable.

Link Status

Verify that both sides have link. A single broken wire or one shutdown port can cause one side to show link, but the other side does not have link.

A link LED does not guarantee that the cable is fully functional. The cable might have encountered physical stress that causes it to function at a marginal level. If the link light for the port does not come on:

- Connect the cable from the switch to a known, good device.
- Make sure that both ends of the cable are connected to the correct ports.
- Verify that both devices have power.
- Verify that you are using the correct cable type. See [Appendix B, “Connector and Cable Specifications.”](#) for more information.
- Look for loose connections. Sometimes a cable appears to be seated, but is not. Disconnect and then reconnect the cable.

Transceiver Module Port Issues

Use only Cisco SFP modules on the switch. Each Cisco module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the module meets the requirements for the switch. Check these items:

- Bad or incorrect SFP module. Exchange the suspect module with a known, good module. Verify that this module supports this platform. See the [“Features” section on page 1-1](#) for a list of supported SFP modules.
- Use the **show interfaces** privileged EXEC command to check the port or module error-disabled, disabled, or shutdown status. Re-enable the port if necessary.
- Make sure that all you have properly cleaned and securely connected all fiber-optic connections.

Port and Interface Settings

An obvious but sometimes overlooked cause of port connectivity failure is a disabled port. Verify that the port or interface is not disabled or for some reason powered off. If a port or interface is manually shut down on one or the other side of the link, the link does not come up until you re-enable the port.

Use the **show interfaces** privileged EXEC command to verify the port or interface error-disabled, disabled, or shutdown status on both sides of the connection. If necessary, re-enable the port or the interface.

Ping the End Device

Verify the end device connection by first pinging it from the directly connected switch, and then work your way back port by port, interface by interface, trunk by trunk, until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content-Addressable Memory (CAM) table.

Spanning Tree Loops

Spanning Tree Protocol (STP) loops can cause serious performance issues that might appear to be port or interface problems. In this situation, the switch bandwidth is used repeatedly by the same frames, crowding out legitimate traffic.

A unidirectional link can cause loops. This occurs when the traffic that the switch sends is received by its neighbor, but the switch does not receive the traffic that is sent from the neighbor. A broken fiber-optic cable, other cabling, or a port issue could cause this one-way communication.

You can enable the UniDirectional Link Detection (UDLD) protocol on the switch to help identify difficult-to-find unidirectional link problems. UDLD supports a normal mode of operation (the default) and an aggressive mode. In normal mode, UDLD detects unidirectional links because of incorrectly connected interfaces on fiber-optic connections. In aggressive mode, UDLD also detects unidirectional links caused by one-way traffic on fiber-optic and twisted-pair links and by incorrectly connected interfaces on fiber-optic links. For information about enabling UDLD on the switch, see the “Understanding UDLD” section in the software configuration guide.

Monitor Switch Performance

Review these sections when you troubleshoot switch performance problems:

- [Speed, Duplex, and Autonegotiation, page 4-4](#)
- [Autonegotiation and NIC Cards, page 4-5](#)
- [Cabling Distance, page 4-5](#)

Speed, Duplex, and Autonegotiation

If the port statistics show a large number of alignment errors, frame check sequence (FCS), or late-collisions errors, a speed or duplex mismatch might be the problem.

A common issue with speed and duplex occurs when the duplex settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. This can happen when you manually set the speed and duplex or because of autonegotiation issues between the two devices.

These circumstances can result in a mismatch:

- A manually set speed or duplex parameter is different from the manually set speed or duplex parameter on the connected port.
- A port is set to autonegotiate, and the connected port is set to full duplex with no autonegotiation.

To maximize switch performance and to ensure a link, follow one of these guidelines when you set or change the settings for duplex and speed:

- Let both ports autonegotiate both speed and duplex.
- Manually set the speed and duplex parameters for the ports on both ends of the connection.
- If a remote device does not autonegotiate, configure the duplex settings on the two ports to match. The speed parameter can adjust itself even if the connected port does not autonegotiate.

Autonegotiation and NIC Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces are set to autonegotiate. It is common for devices such as laptop computers or other devices to also be set to autonegotiate, yet sometimes autonegotiation issues occur.

To troubleshoot autonegotiation problems, try to manually set both sides of the connection. If this does not solve the problem, the firmware or software on your NIC card might be causing the problem. Upgrade the NIC card driver to the latest version available from the manufacturer.

Cabling Distance

If the port statistics show excessive FCS, late-collision, or alignment errors, verify that the cable distance from the switch to the connected device meets the recommended guidelines. See the [“Cable and Adapter Specifications” section on page B-5](#) for cabling guidelines.

Clearing the Switch IP Address and Configuration

If you have configured a new switch with an incorrect IP address, you can clear the IP address that is configured on the switch.



Caution

This procedure clears the IP address and all configuration information that is stored on the switch. Do not follow this procedure unless you want to completely reconfigure the switch.

Follow these steps to return your switch to the factory default settings:

1. Press and hold the Mode button.

The switch LEDs begin blinking after about 2 seconds. If the switch is not configured, the LEDs above the mode button turn green. You can omit this step and run Express Setup to configure the switch.

2. Continue holding down the Mode button. The LEDs stop blinking after an additional 8 seconds, and then the switch reboots.

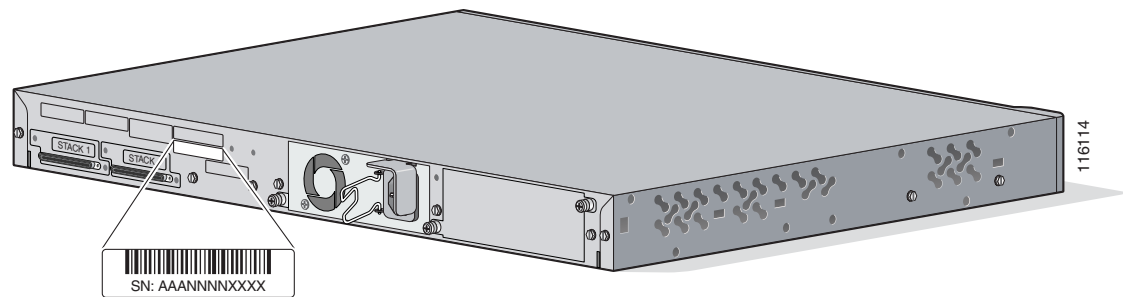
The switch now behaves like an unconfigured switch. You can configure the switch by using Express Setup as described in the switch getting started guide that is included with the switch.

You can also configure the switch by using the CLI setup procedure described in [Appendix C, “Configuring the Switch with the CLI-Based Setup Program.”](#)

Finding the Switch Serial Number

If you contact Cisco Technical Assistance, you need to know the serial number of your switch. Use these figures to locate the serial number on your switch. You can also use the **show version** command to get the serial number.

Figure 4-1 Catalyst 3750 Metro Switch Serial Number Location





APPENDIX **A**

Technical Specifications

This appendix lists the switch technical specifications in [Table A-1](#) and the regulatory agency approvals in [Table A-2](#).

Table A-1 **Specifications for Catalyst 3750 Metro Switch**

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	-13 to 158°F (-25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
AC Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 1.2 A/0.7 A, 50 to 60 Hz
Power consumption	110W, 374 Btus per hour
Power rating	0.110 kVA
DC Power Requirements	
DC input voltage	36 to -72 V, 3 to 1.5A
Power consumption	110W (maximum), 374 Btus per hour
Physical Dimensions	
Weight	Switch with one AC power supply: 12.1 lb (5.5 kg) Switch with two AC power supplies: 14 lb (6.35 kg) Switch with one DC power supply: 12 lb (5.44 kg) Switch with two DC power supplies: 13.8 lb (6.26 kg)
Dimensions (H x D x W)	1.75 x 14 x 17.5 in. (4.44 x 35.6 x 44.45 cm)

Table A-2 **Catalyst 3750 Metro Switch Agency Approvals**

Safety	EMC
UL to UL 60950, Third Edition	FCC Part 15 Class A
c-UL to CAN/CSA -C22.2 No. 60950-00, Third Edition	EN 55022 1998 Class A (CISPR 22)

Table A-2 Catalyst 3750 Metro Switch Agency Approvals (continued)

Safety	EMC
	EN 55024 1998 Class A (CISPR 24)
TUV/GS to EN 60950:2000	VCCI Class A
CB to IEC 60950 with all country deviations	AS/NZS 3548 Class A
NOM to NOM-019-SCFI	CNS13438 Class A
CE Marking	CE
	MIC



APPENDIX **B**

Connector and Cable Specifications

This appendix describes the Catalyst 3750 Metro switch ports and the cables and adapters that you use to connect the switch to other devices, and includes these sections:

- [Connector Specifications, page B-1](#)
- [Cable and Adapter Specifications, page B-5](#)

Connector Specifications

These sections describe the connectors used with the switch, and includes these sections:

- [10/100 Ports, page B-1](#)
- [SFP Module Ports, page B-4](#)
- [Console Port, page B-4](#)

10/100 Ports

The 10/100 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers, as shown by an **X** in the port name. These ports have the transmit (TD) and receive (RD) signals internally crossed so that a twisted-pair straight-through cable and adapter can be attached to the port. [Figure B-1 on page B-2](#) shows the pinouts.

Figure B-1 10/100 Port Pinouts

You can use the **mdix auto** interface configuration command to enable the automatic crossover feature. When the automatic crossover feature is enabled, the switch detects the required cable type and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for all connections to an Ethernet port on the switch.

The automatic crossover feature is disabled by default. For configuration information for this feature, refer to the switch software configuration guide or the switch command reference.

Connecting to 10BASE-T- and 100BASE-TX-Compatible Devices

When you connect the ports to 10BASE-T- and 100BASE-TX-compatible devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and 100BASE-TX. [Figure B-5 on page B-6](#) shows the two twisted-pair, straight-through cable schematics. [Figure B-7 on page B-7](#) shows the four twisted-pair, straight-through cable schematics.

When you connect the ports to 10BASE-T- and 100BASE-TX-compatible devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. [Figure B-6 on page B-6](#) shows the two twisted-pair, crossover cable schematics. [Figure B-8 on page B-7](#) shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T-compatible devices. You must use Category 5 cabling when connecting to 100BASE-TX-compatible devices.

100BASE-FX Ports

The 100BASE-FX ports use MT-RJ connectors, as shown in [Figure B-2](#). The 100BASE-FX ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling.

You can connect a 100BASE-FX port to an SC or ST port on a target device by using one of the MT-RJ fiber-optic patch cables listed in [Table B-1](#). Use the Cisco part numbers in [Table B-1](#) to order the patch cables that you need.

Figure B-2 MT-RJ Connector**Table B-1** MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

Connecting to 1000BASE-T Devices

When you connect the ports to 1000BASE-T devices, such as servers, workstations, and routers, you must use a four twisted-pair, Category 5 or higher, straight-through cable wired for 10BASE-T, 100BASE-TX, and 1000BASE-T. [Figure B-10 on page B-8](#) shows the straight-through cable schematics.

When you connect the ports to other devices, such as switches or repeaters, you must use a four twisted-pair, Category 5, crossover cable. [Figure B-11 on page B-9](#) shows the crossover cable schematics.

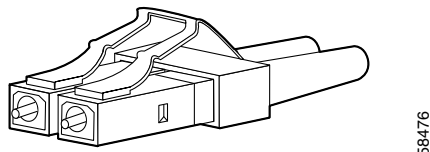
- Be sure to use a four twisted-pair, Category 5 or higher cable when you connect to a 1000BASE-T-compatible device.
- Use a straight-through cable to connect two ports only when one port is designated with an X. Use a crossover cable to connect two ports when both ports are designated with an X or when both ports do not have an X.
- You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T-compatible devices. You must use Category 5 or higher cabling when you connect to 100BASE-TX-compatible devices.

SFP Module Ports

The Catalyst 3750 Metro switch uses SFP modules for fiber-optic and copper uplink ports. The fiber-optic LC connector is shown in [Figure B-3](#). The pin configuration for copper SFP module RJ-45 connectors are shown in [Figure B-4](#).

See the “[Features](#)” section on [page 1-1](#) for a list of the SFP modules that the Catalyst 3750 Metro switch supports.

Figure B-3 *Fiber-Optic LC Connector*



Warning

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

Figure B-4 *Copper SFP Module RJ-45 Connector*



Console Port

The console port uses an 8-pin RJ-45 connector, which is described in [Table B-3 on page B-9](#) and [Table B-4 on page B-10](#). The supplied RJ-45-to-DB-9 adapter cable is used to connect the console port of the switch to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see [Table B-3 on page B-9](#) and [Table B-4 on page B-10](#).

Cable and Adapter Specifications

These sections describe the cables and adapters used with the Catalyst 3750 Metro switch:

- [SFP Module Cable Specifications, page B-5](#)
- [Two Twisted-Pair Cable Pinouts, page B-6](#)
- [Four Twisted-Pair Cable Pinouts for 10/100 Ports, page B-7](#)
- [Identifying a Crossover Cable, page B-8](#)
- [Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports, page B-8](#)
- [Adapter Pinouts, page B-9](#)

SFP Module Cable Specifications

Table B-2 lists the cable specifications for the fiber-optic SFP module connections. Each port must match the wave-length specifications on the other end of the cable, and for reliable communications, the cable must not exceed the required cable length. Copper 1000BASE-T SFP transceivers use standard four twisted-pair, Category 5 or greater cable at lengths up to 328 feet (100 meters).

Table B-2 Fiber-Optic SFP Module Port Cabling Specifications

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km) ¹	Cable Distance
100BASE-BX (GLC-FE-100BX-D GLC-FE-100BX-U)	1310 TX 1550 RX	SMF	G.652 ²	—	32,810 feet (10 km)
100BASE-FX (GLC-GE-100FX)	1310	MMF	50/125 62.5/125	500 500	6,562 feet (2 km) 6,562 feet (2 km)
100BASE-FX (GLC-FE-100FX)	1310	MMF	50/125 62.5/125	500 500	6,562 feet (2 km) 6,562 feet (2 km)
100BASE-LX (100BASE-LX10)	1310	SMF	G.652 ²	—	32,810 feet (10 km)
1000BASE-BX10-D (GLC-BX-D)	1490 TX 1310 RX	SMF	G.652 ²	—	32,810 feet (10 km)
1000BASE-BX10-U (GLC-BX-U)	1310 TX 1490 RX	SMF	G.652 ²	—	32,810 feet (10 km)
1000BASE-SX (GLC-SX-MM)	850	MMF	62.5/125 62.5/125 50/125 50/125	160 200 400 500	722 feet (220 m) 902 feet (275 m) 1640 feet (500 m) 1804 feet (550 m)
1000BASE-LX/LH (GLC-LH-SM)	1310	MMF ³ SMF	62.5/125 50/125 50/125 G.652 ²	500 400 500 —	1804 feet (550 m) 1804 feet (550 m) 1804 feet (550 m) 32,810 feet (10 km)

Table B-2 Fiber-Optic SFP Module Port Cabling Specifications (continued)

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km) ¹	Cable Distance
1000BASE-ZX (GLC-ZX-SM)	1550	SMF	G.652 ²	—	43.4 to 62 miles (70 to 100 km) ⁴
CWDM	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	G.652 ²	—	62 miles (100 km)

1. Modal bandwidth applies only to multimode fiber.
2. A mode-field diameter/cladding diameter = 9 micrometers/125 micrometers
3. A mode-conditioning patch cord is required. Using an ordinary patch cord with MMF, 1000BASE-LX/LH SFP modules, and a short link distance can cause transceiver saturation, resulting in an elevated bit error rate (BER). When using the LX/LH SFP module with 62.5-micron diameter MMF, you must also install a mode-conditioning patch cord between the SFP module and the MMF cable on both the sending and receiving ends of the link. The mode-conditioning patch cord is required for link distances greater than 984 feet (300 m).
4. 1000BASE-ZX SFP modules can send data up to 62 miles (100 km) by using dispersion-shifted SMF or low-attenuation SMF; the distance depends on the fiber quality, the number of splices, and the connectors.

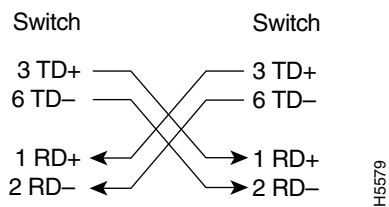
Two Twisted-Pair Cable Pinouts

Figure B-5 and Figure B-6 show the schematics of two twisted-pair cables for 10/100 ports.

Figure B-5 Two Twisted-Pair Straight-Through Cable Schematic



Figure B-6 Two Twisted-Pair Crossover Cable Schematic



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Four Twisted-Pair Cable Pinouts for 10/100 Ports

Figure B-7 and Figure B-8 show the schematics of four twisted-pair cables for 10/100 ports.

Figure B-7 Four Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports

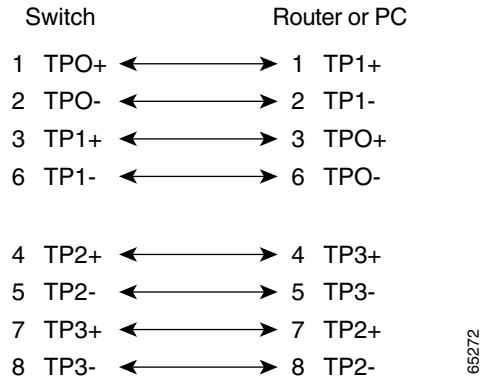
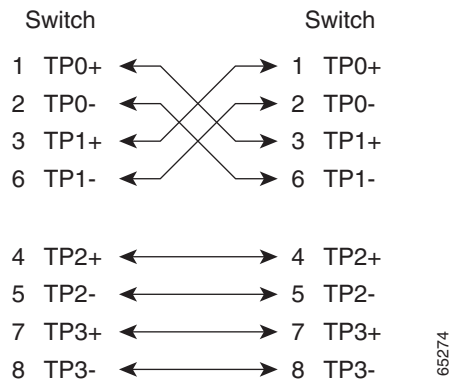


Figure B-8 Four Twisted-Pair Crossover Cable Schematic for 10/100 Ports



Identifying a Crossover Cable

To identify a crossover cable, compare the two modular ends of the cable. Hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See [Figure B-9](#).)

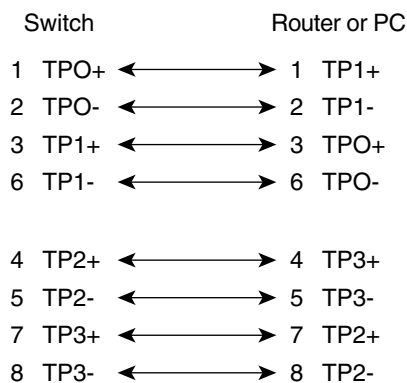
Figure B-9 Identifying a Crossover Cable



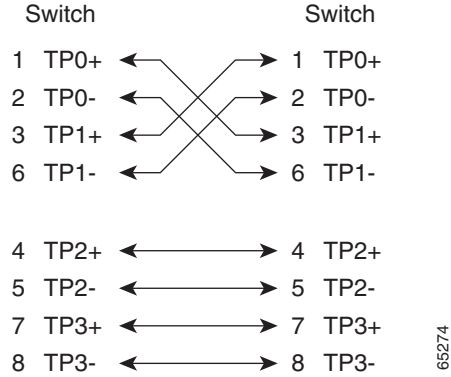
Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports

[Figure B-10](#) and [Figure B-11](#) show the schematics of four twisted-pair cables for 10/100/1000 ports on a Cisco Metro Catalyst 3750 switch.

Figure B-10 Four Twisted-Pair Straight-Through Cable Schematic for 10/100/1000 Ports



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Figure B-11 Four Twisted-Pair Crossover Cable Schematics for 10/100/1000 Ports

Adapter Pinouts

Table B-3 lists the pinouts for the console port, the RJ-45-to-DB-9 adapter cable, and the console device.

Table B-3 Console Port Signaling Using a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	DB-9 Pin	Signal
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
GND	5	GND
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table B-4 lists the pinouts for the console port, RJ-45-to-DB-25 female DTE adapter, and the console device.



Note

The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit (part number ACS-DSBUASYN=) containing this adapter from Cisco.

Table B-4 Console Port Signaling Using a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	DB-25 Pin	Signal
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS



APPENDIX **C**

Configuring the Switch with the CLI-Based Setup Program

This chapter provides a quick step-by-step installation and setup procedure for a switch.



Note

For detailed installation procedures on rack mounting your switch or connecting to the small form-factor pluggable (SFP) modules, see [Chapter 2, “Switch Installation.”](#) For product overview information, see [Chapter 1, “Product Overview.”](#)

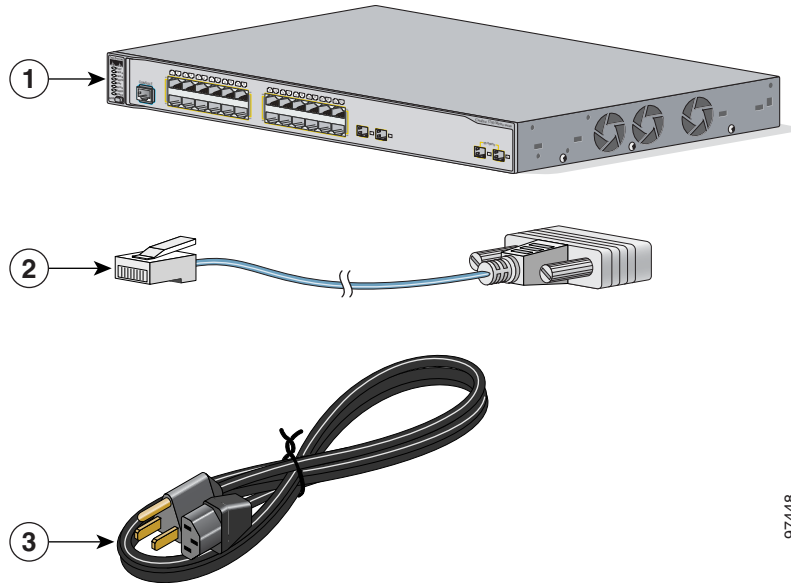
These steps describe how to do a simple installation:

1. [Taking Out What You Need, page C-2](#)
2. [Connecting to the Console Port, page C-3](#)
3. [Starting the Terminal-Emulation Software, page C-3](#)
4. [Connecting to a Power Source, page C-4](#)
5. [Entering the Initial Configuration Information, page C-4](#)
6. [Connecting to an Ethernet Port, page C-7](#)

Taking Out What You Need

Remove the items shown in [Figure C-1](#) from the shipping container:

Figure C-1 The Catalyst 3750 Metro Switch, Adapter Cable, and AC Power Cord



1	Switch	3	AC power cord
2	RJ-45-to-DB-9 adapter cable		



Note

If you are using a DC power supply, see the [“Connecting to DC Power”](#) section on page 3-4 for more information about setting up your switch with a DC power supply.



Note

You need to provide the Category 5 or higher straight-through cables to connect the switch ports to other Ethernet devices.

Connecting to the Console Port

You can use the console port to perform the initial configuration. To connect the switch console port to a PC, use the supplied RJ-45-to-DB-9 adapter cable.

Follow these steps to connect the PC or terminal to the switch:

-
- Step 1** Using the supplied RJ-45-to-DB-9 adapter cable, insert the RJ-45 connector into the console port that is located on the front of the switch, as shown in [Figure C-2](#).
- Step 2** Attach the DB-9 female DTE of the adapter cable to a PC serial port, or attach an appropriate adapter to the terminal.
-

Figure C-2 Connecting a Switch to a PC



1	Switch	2	RJ-45-to-DB-9 adapter cable
---	--------	---	-----------------------------

Starting the Terminal-Emulation Software

Before you power on the switch, start the terminal-emulation session so that you can see the output display from the power-on self-test (POST).

The terminal-emulation software—frequently a PC application such as Hyperterminal or ProcommPlus—makes communication between the switch and your PC or terminal possible.

-
- Step 1** Start the terminal-emulation program if you are using a PC or terminal.
- Step 2** Start a terminal-emulation session.

- Step 3** Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:
- 9600 baud
 - 8 data bits
 - 1 stop bit
 - No parity
 - None (flow control)
-

Connecting to a Power Source

Follow these steps to connect to a power source:

- Step 1** If you are using an AC power supply, connect one end of the supplied AC power cord to the power connector on the switch rear panel, and then connect the other end of the power cable to a grounded AC outlet. (See [Figure C-2](#).)
- Step 2** If you are using a DC power supply, see the [“Connecting to DC Power”](#) section on page 3-4 for instructions on how to install the DC power supply.

As the switch powers on, it begins the POST, a series of tests that runs automatically to ensure that the switch functions properly.

POST lasts approximately 1 minute. After POST is complete, the system and status LEDs remain green. The power and master LEDs might also be green, depending on their functional status (see the [“LEDs”](#) section on page 1-4 for more information).

If the switch fails POST, the system LED turns amber. If the POST fails, see [Chapter 4](#), [“Troubleshooting,”](#) to decide on a course of action.



Note

POST failures are usually fatal. Call Cisco Systems if your switch does not pass POST.

If you started the terminal-emulation program before you powered on your switch, the PC or terminal displays the bootloader sequence. You need to press Enter to display the setup program prompt.

Entering the Initial Configuration Information

To set up the switch, you need to complete the setup program, which runs automatically after the switch is powered up. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet.

IP Settings

You will need this information from your network administrator before you complete the setup program:

- Switch IP address
- Subnet mask (IP netmask)

- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

Completing the Setup Program

Follow these steps to complete the setup program and to create an initial configuration for the switch:

Step 1 Enter **Yes** at these two prompts:

```
Would you like to enter the initial configuration dialog? [yes/no]: yes
```

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '['].

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

```
Would you like to enter basic management setup? [yes/no]: yes
```

Step 2 Enter a host name for the switch, and press **Return**.

The host name is limited to 28 characters. Do not use -n, where n is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

Step 3 Enter an enable secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted and the enable password is in plain text.

```
Enter enable secret: secret_password
```

Step 4 Enter an enable password, and press **Return**.

```
Enter enable password: enable_password
```

Step 5 Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter virtual terminal password: terminal-password
```

Step 6 (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI interface. To configure SNMP later, enter **no**.

```
Configure SNMP Network Management? [no]: no
```

Step 7 Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use **vlan1** as that interface.

```
Enter interface name used to connect to the  
management network from the above interface summary: vlan1
```

- Step 8** Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown below are examples.

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.0.0.0
```

- Step 9** Enter **N** in this step because you cannot configure this switch as the command switch in a cluster.

```
Would you like to enable as a cluster command switch? [yes/no]: no
```

You have now completed the initial configuration of the switch and the switch displays its initial configuration. This is an example of output that appears:

The following configuration command script was created:

```
hostname switch1
enable secret 5 $1$U1q8$D1A/OiaEb190WcBPd9cOn1
enable password enable_password
line vty 0 15
password terminal-password
no snmp-server
!
no ip routing

!
interface Vlan1
no shutdown
ip address 10.4.120.106 255.0.0.0
!
interface FastEthernet1/0/1
!
interface FastEthernet1/0/2

interface FastEthernet1/0/3
!
...<output abbreviated>
!
interface GigabitEthernet1/1/2
!
end
```

These choices are displayed:

```
[0] Go to the IOS command prompt without saving this config.
```

```
[1] Return back to the setup without saving this config.
```

```
[2] Save this configuration to nvram and exit.
```

If you want to save the configuration and use it the next time the switch reboots, save it in NVRAM by selecting option 2.

```
Enter your selection [2]:2
```

- Step 10** Make your selection, and press **Return**.
-

After you complete the setup program, the switch can run the default configuration that you created. If you want to change this configuration or want to perform other management tasks, use the CLI.

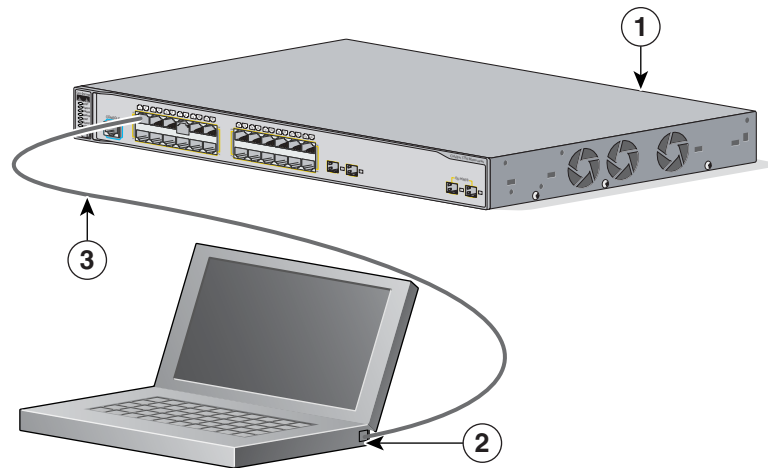
To use the CLI, enter commands at the Switch> prompt through the console port by using a terminal program or through the network by using Telnet. For configuration information, refer to the switch software configuration guide or the switch command reference.

Connecting to an Ethernet Port

Follow these steps to connect to an 10/100 or 10/100/1000 Ethernet port:

-
- Step 1** Connect a Category 5 straight-through cable (not supplied) to a 10/100 port on the front panel of a switch. See [Figure C-3](#).
- Step 2** Connect the other end of the cable to the Ethernet (RJ-45) port of the workstation, PC, server, or router.
-

Figure C-3 Connecting to a Front Panel Port



1	Switch	3	Category 5 straight-through cable
2	PC		

For information on connecting to the SFP ports, see the [“Connecting to an SFP Module”](#) section on page 2-18.



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