Catalyst 3850 Switch Hardware Installation Guide

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Preface

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- Related Documentation, page xi
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Document Conventions

This document uses the following conventions:

Convention	Description
^ or Ctrl	Both the ^ symbol and Ctrl represent the Control (Ctrl) key on a keyboard. For example, the key combination **^D** or **Ctrl-D** means that you hold down the Control key while you press the D key. (Keys are indicated in capital letters but are not case sensitive.)
bold font	Commands and keywords and user-entered text appear in **bold** font.
Italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
`Courier` font	Terminal sessions and information the system displays appear in `courier` font.
`Bold Courier` font	**`Bold Courier`** font indicates text that the user must enter.
[x]	Elements in square brackets are optional.
...	An ellipsis (three consecutive nonbolded periods without spaces) after a syntax element indicates that the element can be repeated.
|	A vertical line, called a pipe, indicates a choice within a set of keywords or arguments.
[x | y]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Convention	Description
{x | y}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Reader Alert Conventions

This document may use the following conventions for reader alerts:

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Tip Means *the following information will help you solve a problem.*

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

Timesaver Means *the described action saves time.* You can save time by performing the action described in the paragraph.

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

Related Documentation

Note Before installing or upgrading the switch, refer to the switch release notes.

- Cisco Catalyst 3850 Series Switches documentation, located at:
  http://www.cisco.com/go/cat3850_docs
- Cisco Catalyst 3650 Series Switchesdocumentation, located at:
  http://www.cisco.com/go/cat3650_docs
- Catalyst 2960-X Switch documentation, located at:
  http://www.cisco.com/go/cat2960x_docs
- Cisco SFP and SFP+ modules documentation, including compatibility matrixes, located at:
  http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html
- Cisco SFP, SFP+, and QSFP+ modules documentation, including compatibility matrixes, located at:
  http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html
- Cisco Validated Designs documents, located at:
  http://www.cisco.com/go/designzone

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http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html

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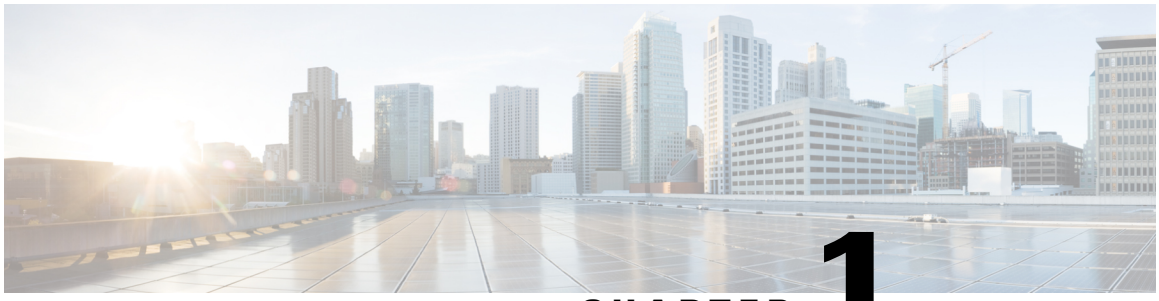


CHAPTER 1

Product Overview

The Catalyst 3850 family of switches are Ethernet switches to which you can connect devices such as Cisco IP Phones, Cisco Wireless Access Points, workstations, and other network devices such as servers, routers, and other switches.

The Catalyst 3850 switches support stacking through Cisco StackWise-480 technology and power management through StackPower. The StackWise technology for the Catalyst 3850 switches is called StackWise-480.

Unless otherwise noted, the term switch refers to a standalone switch and to a switch stack.

This chapter contains these topics:

- Switch Models, page 1
- Front Panel, page 5
- Rear Panel, page 23
- Management Options, page 32

Switch Models

Table 1: Catalyst 3850 Switch Models and Descriptions

Switch Model	Supported Software Image	Description
WS-C3850-24T-L	LAN Base	Stackable 24 10/100/1000 Ethernet ports, 1 network module slot[1], 350 W power supply
WS-C3850-48T-L	LAN Base	Stackable 48 10/100/1000 Ethernet ports, 1 network module slot, 350 W power supply
WS-C3850-24P-L	LAN Base	Stackable 24 10/100/1000 PoE+[2] ports, 1 network module slot, 715 W power supply

Switch Model	Supported Software Image	Description
WS-C3850-48P-L	LAN Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 715 W power supply
WS-C3850-48F-L	LAN Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 1100 W power supply
WS-C3850-24U-L	LAN Base	Stackable 24 10/100/1000 Cisco UPOE[3] ports, 1 network module slot, 1100 W power supply
WS-C3850-48U-L	LAN Base	Stackable 48 10/100/1000 Cisco UPOE ports, 1 network module slot, 1100 W power supply
WS-C3850-12X48U-L	LAN Base	Stackable 12 100M/1G/2.5G/5G/10G and 36 1G UPoE ports, 1 network module slot, 1100 W power supply
WS-C3850-24XU-L	LAN Base	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 network module slot, 1100-W power supply
WS-C3850-24T-S	IP Base	Stackable 24 10/100/1000 Ethernet ports, 1 network module slot, 350 W power supply
WS-C3850-48T-S	IP Base	Stackable 48 10/100/1000 Ethernet ports, 1 network module slot, 350 W power supply
WS-C3850-24P-S	IP Base	Stackable 24 10/100/1000 PoE+ ports, 1 network module slot, 715 W power supply
WS-C3850-48P-S	IP Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 715 W power supply
WS-C3850-48F-S	IP Base	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 1100 W power supply
WS-C3850-24U-S	IP Base	Stackable 24 10/100/1000 Cisco UPOE ports, 1 network module slot, 1100 W power supply
WS-C3850-48U-S	IP Base	Stackable 48 10/100/1000 Cisco UPOE ports, 1 network module slot, 1100 W power supply
WS-C3850-24PW-S	IP Base	Catalyst 3850 24-port PoE IP Base with 5 access points license
WS-C3850-48PW-S	IP Base	Catalyst 3850 48-port PoE IP Base with 5 access points license
WS-C3850-12S-S	IP Base	Stackable 12 SFP module slots, 1 network module slot, 350 W power supply

Switch Model	Supported Software Image	Description
WS-C3850-24S-S	IP Base	Stackable 24 SFP module slots, 1 network module slot, 350 W power supply
WS-C3850-12XS-S	IP Base	Catalyst 3850 12-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 350 W power supply
WS-C3850-16XS-S	IP Base	Catalyst 3850 16-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 350 W power supply. 16 ports are available when the C3850-NM-4-10G network module is plugged into the WS-C3850-12XS-S switch.
WS-C3850-24XS-S	IP Base	Catalyst 3850 24-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 715 W power supply.
WS-C3850-32XS-S	IP Base	Catalyst 3850 32-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 715 W power supply. 32 ports are available when the C3850-NM-8-10G network module is plugged into the WS-C3850-24XS-S switch.
WS-C3850-48XS-S	IP Base	Catalyst 3850 switch with SFP+ transceivers, 48 ports that support up to 10 G, and 4 QSFP ports that support up to 40 G. 750 W power supply.[4] The airflow direction for this switch is from the front panel to the rear panel.
WS-C3850-48XS-F-S	IP Base	Catalyst 3850 switch with SFP+ transceivers, 48 ports that support up to 10 G, and 4 QSFP ports that support up to 40 G. 750 W power supply. The airflow direction for this switch is from the rear panel to the front panel.
WS-C3850-12X48U-S	IP Base	Stackable 12 100M/1G/2.5G/5G/10G and 36 1 G UPoE ports, 1 network module slot, 1100 W power supply
WS-C3850-12X48UW-S	IP Base	Stackable 12 100M/1G/2.5G/5G/10G and 36 1 G UPoE ports, 1 network module slot, 1100 W power supply
WS-C3850-24XU-S	IP Base	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 network module slot, 1100-W power supply
WS-C3850-24XUW-S	IP Base	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 network module slot, 1100-W power supply
WS-C3850-24T-E	IP Services	Stackable 24 10/100/1000 Ethernet ports, 1 network module slot, 350 W power supply

Switch Model	Supported Software Image	Description
WS-C3850-48T-E	IP Services	Stackable 48 10/100/1000 Ethernet ports, 1 network module slot, 350 W power supply
WS-C3850-24P-E	IP Services	Stackable 24 10/100/1000 PoE+ ports, 1 network module slot, 715 W power supply
WS-C3850-48P-E	IP Services	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 715 W power supply
WS-C3850-48F-E	IP Services	Stackable 48 10/100/1000 PoE+ ports, 1 network module slot, 1100 W power supply
WS-C3850-24U-E	IP Services	Stackable 24 10/100/1000 Cisco UPOE ports, 1 network module slot, 1100 W power supply
WS-C3850-48U-E	IP Services	Stackable 48 10/100/1000 Cisco UPOE ports, 1 network module slot, 1100 W power supply
WS-C3850-12S-E	IP Services	Stackable 12 SFP module slots, 1 network module slot, 350 W power supply
WS-C3850-24S-E	IP Services	Stackable 24 SFP module slots, 1 network module slot, 350 W power supply
WS-C3850-12XS-E	IP Services	Catalyst 3850 12-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 350 -W power supply.
WS-C3850-16XS-E	IP Services	Catalyst 3850 16-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 350 W power supply. 16 ports are available when the C3850-NM-4-10G network module is plugged into the WS-C3850-12XS-E switch.
WS-C3850-24XS-E	IP Services	Catalyst 3850 24-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 715 W power supply.
WS-C3850-32XS-E	IP Services	Catalyst 3850 32-port SFP+ transceiver, 1 network module slot, support for up to 10 G SFP+, 715 W power supply. 32 ports are available when the C3850-NM-8-10G network module is plugged into the WS-C3850-24XS-E switch.
WS-C3850-48XS-E	IP Services	Catalyst 3850 switch with SFP+ transceivers, 48 ports that support up to 10 G, and 4 QSFP ports that support up to 40 G. 750 W power supply. The airflow direction for this switch is from the front panel to the rear panel.

Switch Model	Supported Software Image	Description
WS-C3850-48XS-F-E	IP Services	Catalyst 3850 switch with SFP+ transceivers, 48 ports that support up to 10 G, and 4 QSFP ports that support up to 40 G. 750 W power supply. The airflow direction for this switch is from the rear panel to the front panel.
WS-C3850-12X48U-E	IP Services	Stackable 12 100M/1G/2.5G/5G/10G and 36 1 G UPoE ports, 1 network module slot, 1100 W power supply
WS-C3850-24XU-E	IP Services	Stackable 24 100M/1G/2.5G/5G/10G UPoE ports, 1 network module slot, 1100-W power supply

1 For supported network modules, see Network Modules, on page 10 .
2 PoE+ = Power over Ethernet plus (provides up to 30 W per port).
3 UPOE = Universal Power Over Ethernet (provides up to 60 W Cisco UPOE per port)
4 The WS-C3850-48XS switches do not support StackWise-480

Front Panel

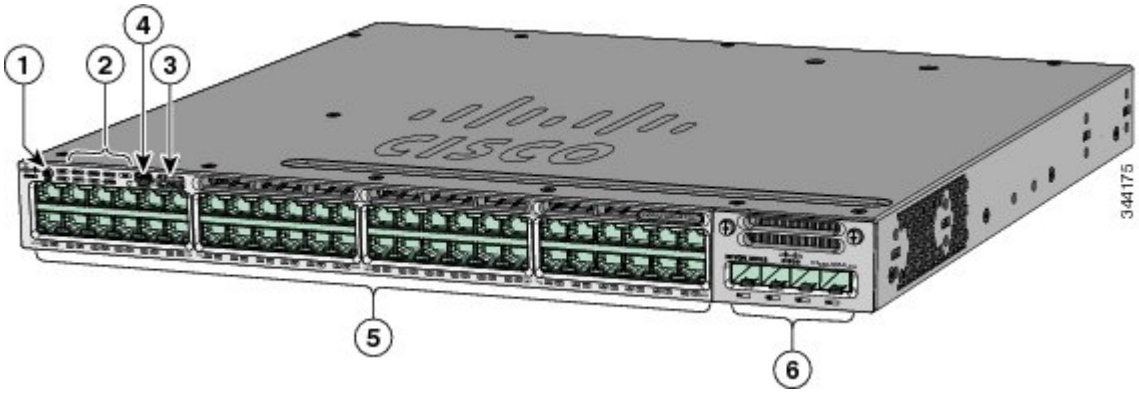
This section describes the front panel components:

- 24 or 48 downlink ports of one of these types:
  - 10/100/1000
  - 10/100/1000 PoE+
  - 10/100/1000 Cisco UPoE
  - 10 G SFP+
- 12 or 24 SFP or SFP+ module downlink slots
- Uplink network modules slot
- USB Type A connector
- USB mini-Type B (console) port
- LEDs
- Mode button

All of the switches have similar components. See the following illustrations for examples.

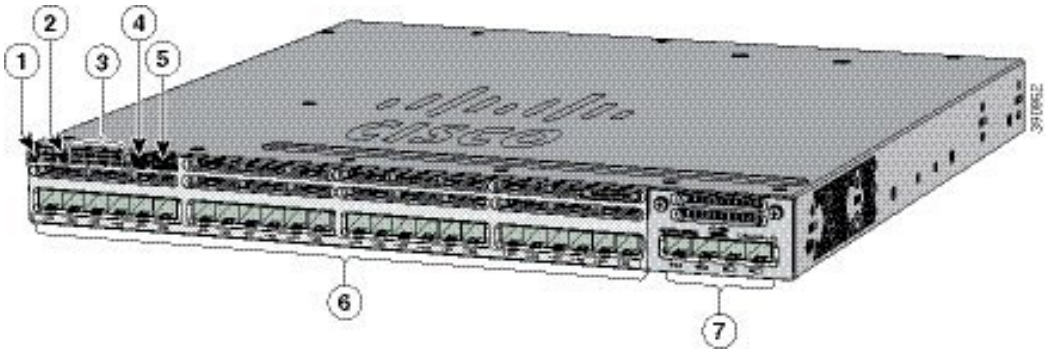
Note The Catalyst 3850 switches might have slight cosmetic differences on the bezels.

Figure 1: WS-C3850-48P-L Switch Front Panel



1	Mode button	4	USB mini-Type B (console) port
2	Status LEDs	5	10/100/1000 PoE+ ports
3	USB Type A storage port	6	Network module

Figure 2: WS-C3850-24S Switch Front Panel

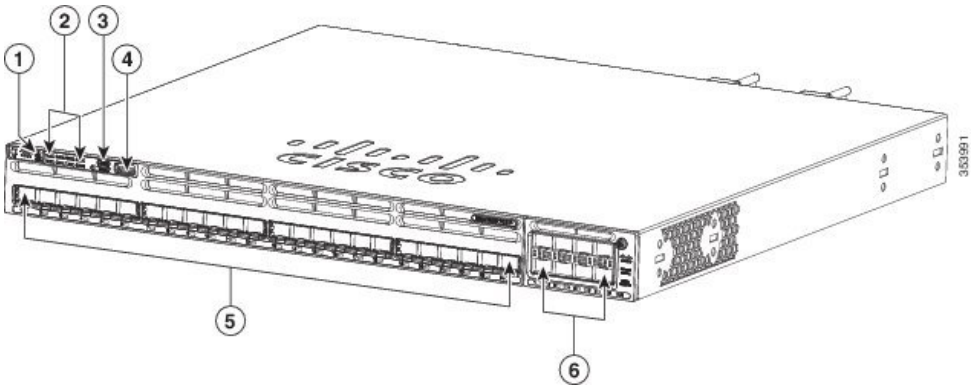


Note The WS-C3850-12S switches have similar front panels.

1	UID button	5	USB Type A storage port
2	Mode button	6	SFP module slots (downlink)

3	Status LEDs	7	Network module
4	USB mini-Type B (console) port		

Figure 3: WS-C3850-24XS-E Switch Front Panel



Note The WS-C3850-24XS-E switches have the following components.

1	Mode button	4	USB mini-Type B (console) port
2	Status LEDs	5	10 G SFP+ ports
3	USB Type A storage port	6	Network module

10/100/1000 Ports

The 10/100/1000 ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5 or Category 5e twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

PoE, PoE+, and Cisco UPoE Ports

The PoE+ and Cisco Universal Power Over Ethernet (Cisco UPoE) ports use the same connectors as described in 10/100/1000 Port Connections, on page 50. They provide:

- PoE+ ports: Support for IEEE 802.3af-compliant powered devices (up to 15.4 W PoE per port) and support for IEEE 802.3at-compliant powered devices (up to 30 W PoE+ per port). The maximum total PoE power in a 1RU switch is 1800 W.
- Support for Cisco-enhanced PoE.

- Support for prestandard Cisco powered devices.
- Configuration for StackPower. When the switch internal power supply module(s) cannot support the total load, StackPower configurations allow the switch to leverage power available from other switches.
- Configurable support for Cisco intelligent power management, including enhanced power negotiation, power reservation, and per-port power policing.

Depending on the installed power supply modules, each port can deliver up to 60 W of Cisco UPOE. See the Power Supply Modules, on page 26 for the power supply matrix that defines the available PoE, PoE+, and Cisco UPOE power per port. The output of the PoE+ circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

Note Restrictions for the WS-C3850-12X48U-L, WS-C3850-12X48U-S and WS-C3850-12X48U-E switch models:

- A maximum of 28 ports are available for UPoE connections. This is because some power from the power supplies is diverted to the switch, and only the remaining power is transmitted to the ports.

SFP and QSFP Module Slots

The uplink and downlink ports for the Catalyst WS-C3850 switch models are as follows.

- The downlink ports on the Catalyst WS-C3850-12S and WS-C3850-24S switch models support standard SFP modules.
- The downlink ports on the Catalyst WS-C3850-12XS and WS-C3850-24XS switch models support standard SFP+ modules.
- The 10G downlink ports on the Catalyst WS-C3850-48XS-S, WS-C3850-48XS-F-S, WS-C3850-48XS-E and WS-C3850-48XS-F-E switch models support standard SFP+ modules.
- The 40G downlink ports on the Catalyst WS-C3850-48XS-S, WS-C3850-48XS-F-S, WS-C3850-48XS-E and WS-C3850-48XS-F-E switch models support standard QSFP modules.

For supported SFP modules, refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

Note For information about the (uplink) SFP module slots on the network modules, see Network Modules, on page 10.

Management Ports

The management ports connect the switch to a PC running Microsoft Windows or to a terminal server.

- Ethernet management port. See Ethernet Management Port, on page 31.
- RJ-45 console port (EIA/TIA-232). See RJ-45 Console Port, on page 32.

- USB mini-Type B console port (5-pin connector).

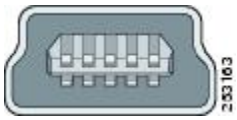
The 10/100/1000 Ethernet management port connection uses a standard RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable. The USB console port connection uses a USB Type A to 5-pin mini-Type B cable. The USB console interface speeds are the same as the RJ-45 console interface speeds.

If you use the USB mini-Type B console port, the Cisco Windows USB device driver must be installed on any PC connected to the console port (for operation with Microsoft Windows). Mac OS X or Linux do not require special drivers.

The 4-pin mini-Type B connector resembles the 5-pin mini-Type B connectors. They are not compatible. Use only the 5-pin mini-Type B.

This illustration shows a 5-pin mini-Type B USB port.

Figure 4: USB Mini-Type B Port



With the Cisco Windows USB device driver, you can connect and disconnect the USB cable from the console port without affecting Windows HyperTerminal operations.

The console output always goes to both the RJ-45 and the USB console connectors, but the console input is active on only one of the console connectors at any one time. The USB console takes precedence over the RJ-45 console. When a cable is connected into the USB console port, the RJ-45 console port becomes inactive. Conversely, when the USB cable is disconnected from the USB console port, the RJ-45 port becomes active.

You can use the command-line interface (CLI) to configure an inactivity timeout which reactivates the RJ-45 console if the USB console has been activated and no input activity has occurred on the USB console for a specified time.

After the USB console deactivates due to inactivity, you cannot use the CLI to reactivate it. Disconnect and reconnect the USB cable to reactivate the USB console. For information on using the CLI to configure the USB console interface, see the software guide.

USB Type A Port

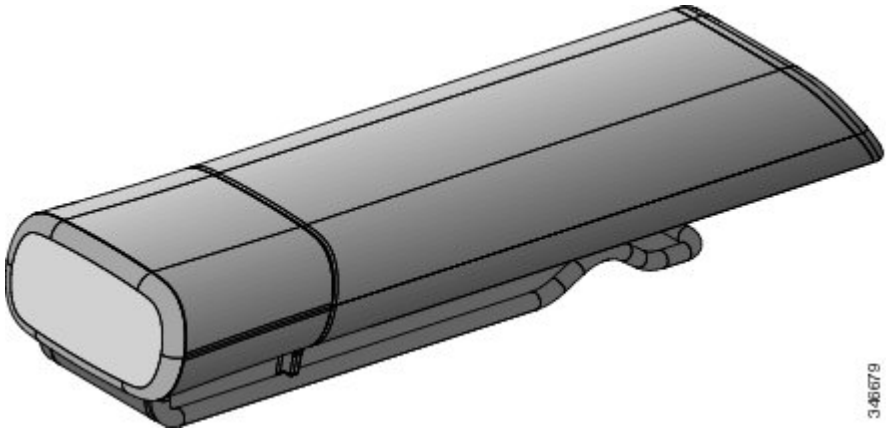
The USB Type A port provides access to external USB flash devices (also known as thumb drives or USB keys) and to specific Cisco USB Bluetooth devices.

The port supports Cisco USB flash drives with capacities from 128 MB to 8 GB (USB devices with port densities of 128 MB, 256 MB, 1 GB, 4 GB, and 8 GB are supported). When combined with stacking, you can upgrade other switches in the stack from an USB key inserted in any switch within the stack. Cisco IOS software provides standard file system access to the flash device: read, write, erase, and copy, as well as the ability to format the flash device with a FAT file system.

It provides you with the ability to automatically upgrade the internal flash with the USB drive's configuration and image for emergency switch recovery using USB auto-upgrade. This feature checks the internal flash for a bootable image and configuration and if either image or the configuration is not available, then the USB drive is checked for boot images and configuration. If the boot image and configuration are available, these are copied to flash for the reboot.

The port supports Cisco USB Bluetooth devices. The USB Bluetooth device acts as a Bluetooth host and serves as either a serial port or a management port connection. You can pair it with your Bluetooth smart phone, laptop, or tablet. If you configure the serial profile on the Bluetooth device, the switch turns the USB port into a serial port. If you configure the Personal Area Network (PAN) profile on the Bluetooth device, the switch turns the USB port into a management interface.

Figure 5: Cisco USB Bluetooth



Network Modules

The switch supports one hot-swappable network module that provides uplink ports to connect to other devices. The switch should only be operated with either a network module or a blank module installed.

The switch generates logs when you insert or remove a network module with SFP ports.

Table 2: Network Modules

Network Module[5]	Description
C3850-NM-4-1G	This module has four 1 G SFP module slots. Any combination of standard SFP modules are supported. SFP+ modules are not supported. If you insert an SFP+ module in the 1 G network module, the SFP+ module does not operate, and the switch logs an error message. **Note** This is supported on the following switch models: • WS-C3850-24T/P/U • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12S • WS-C3850-24S

Network Module[5]	Description
C3850-NM-2-10G	This module has four slots: Two slots (left side) support only 1 G SFP modules and two slots (right side) support either 1 G SFP or 10 G SFP modules. **Note** This is supported on the following switch models: • WS-C3850-24T/P/U • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12S • WS-C3850-24S
C3850-NM-4-10G	This module has four 10 G slots or four 1 G slots. **Note** This is supported on the following switch models: • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12XS • WS-C3850-24XS
C3850-NM-8-10G	This module has eight 10 G slots with an SFP+ port in each slot. Each port supports a 1 G or 10 G connection **Note** This is supported on the following switch models: • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-24XS
C3850-NM-2-40G	This module has two 40 G slots with a QSFP+ connector in each slot. **Note** This is supported on the following switch models: • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-24XS

Network Module[5]	Description
C3850-NM-BLANK	Insert this blank module when the switch has no uplink ports (this is required for sufficient air flow).

5 All network modules are hot-swappable.

For information about the network modules, see the Installing Network Modules, on page 59. For cable specifications, see Cables and Adapters, on page 103.

SFP and SFP+ Modules

The SFP and SFP+ modules provide copper or fiber-optic connections to other devices. These transceiver modules are field-replaceable, and they provide the uplink interfaces (expect in the fixed SFP slots in the WS-C3850-12S and WS-C3850-24S switches) when installed in an SFP module slot. The SFP modules have LC connectors for fiber-optic connections or RJ-45 connectors for copper connections.

Note The downlink ports on the Catalyst WS-C3850-12S and WS-C3850-24S switch models support standard SFP modules, and the downlink ports on the Catalyst WS-C3850-12XS and WS-C3850-24XS switch models support standard SFP+ modules.

Use only Cisco SFP and SFP+ modules on the switch. For the latest information about supported SFP and SFP+ modules, refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

For information about SFP modules, see the documentation at Installing SFP and SFP+ Modules, on page 65.

The Catalyst 3850 switch supports the SFP module patch cable (CAB-SFP-50CM), a 0.5-meter, copper, passive cable with SFP module connectors at each end. This cable is only used with 1-Gigabit Ethernet SFP ports to connect two Catalyst 3850 switches in a cascaded configuration.

For information about QSFP modules, see the documentation at

- QSFP Port Cabling Specifications
- Cisco S-Class 40GBASE QSFP Modules Data Sheet

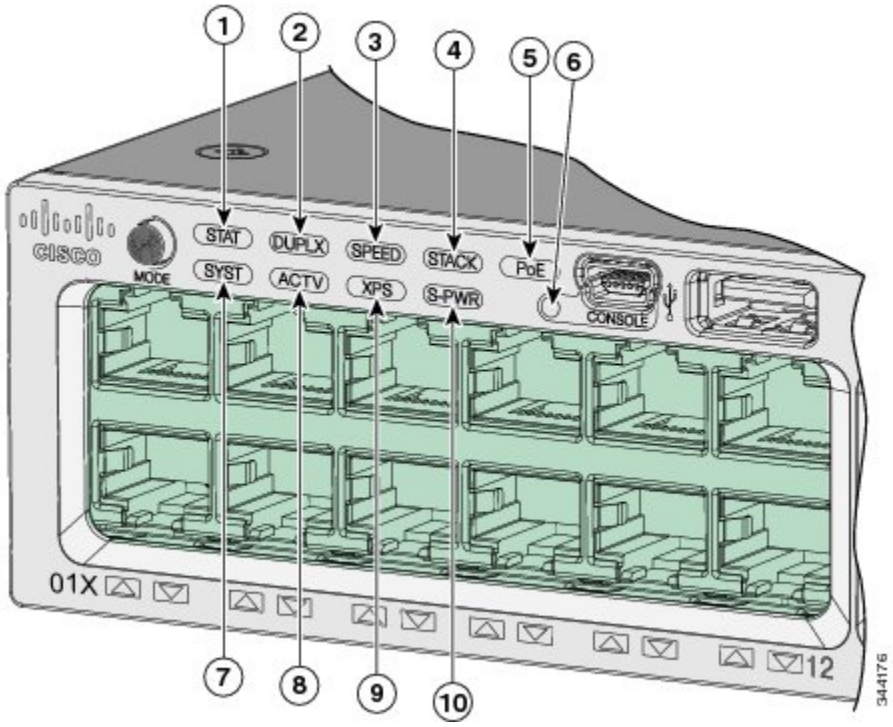
LEDs

You can use the switch LEDs to monitor switch activity and its performance.

Note Catalyst 3850 switches might have slight cosmetic differences on the bezels.

This figure shows the switch LEDs and the Mode button that you use to select a port mode.

Figure 6: Switch Front Panel LEDs

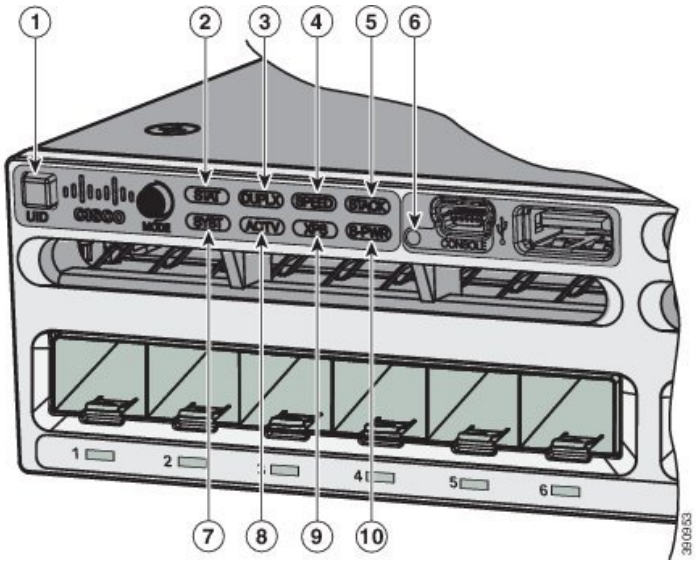


1	STAT (status)	6	USB mini-Type B console port LED
2	DUPLX (duplex)	7	SYST (system)
3	SPEED	8	ACTV (active)
4	STACK	9	XPS [6]
5	PoE [7]	10	S-PWR (StackPower)

6 XPS = expandable power system.

7 Only on switch models that support PoE.

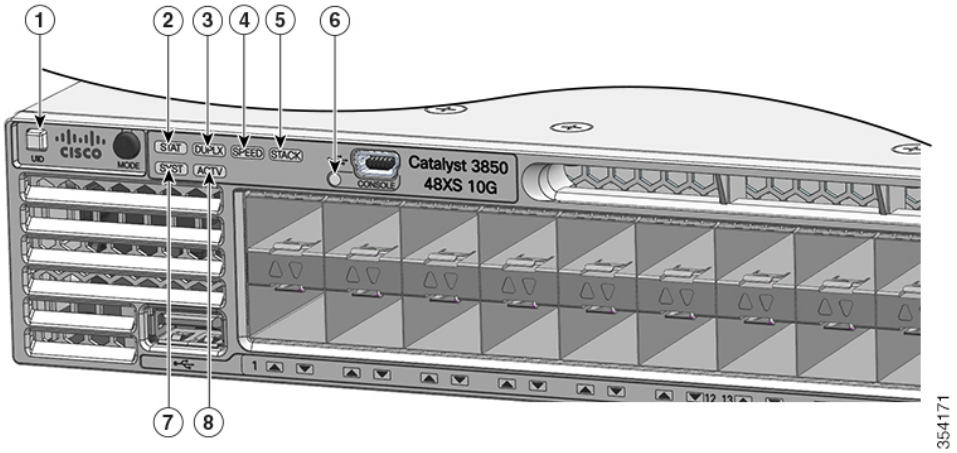
Figure 7: Switch Front Panel LEDs for the WS-C3850-12S, WS-C3850-24S, WS-C3850-12XS, and WS-C3850-24XS Switches



1	UID (blue beacon)	6	USB mini-Type B console port LED
2	STAT (status)	7	SYST (system)
3	DUPLX (duplex)	8	ACTV (active)
4	SPEED	9	XPS [8]
5	STACK	10	S-PWR (StackPower)

8 XPS = expandable power system.

Figure 8: Switch Front Panel LEDs for the WS-C3850-48XS Switches



1	UID (blue beacon)	5	STACK
2	STAT (status)	6	USB mini-Type B console port LED
3	DUPLX (duplex)	7	SYST (system)
4	SPEED	8	ACTV (active)

SYST LED

Table 3: SYST LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Blinking green	POST in progress.
Amber	System is receiving power but is not functioning properly.

Color	System Status
Blinking amber	There is a fault with one of the following: • Network module (non traffic-related) • Power supply • Fan module

XPS LED

Table 4: XPS LED

Color	Description
Off	XPS cable is not installed. Switch is in StackPower mode.
Green	XPS is connected and ready to provide back-up power.
Blinking green	XPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device).
Amber	The XPS is in standby mode or in a fault condition. See the XPS 2200 documentation for information about the standby mode and fault conditions.
Blinking amber	The power supply in a switch has failed, and the XPS is providing power to that switch (redundancy has been allocated to this device).

For information about the XPS 2200, see the *Cisco eXpandable Power System 2200 Hardware Installation Guide* on Cisco.com:

http://www.cisco.com/go/xps2200_hw

Port LEDs and Modes

Each Ethernet port, 1-Gigabit Ethernet module slot, and 10-Gigabit Ethernet 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 mode determines the type of information shown by the port LEDs.

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.

When you press the Mode button on any switch in the switch stack, all the stack switches change to show the same selected mode. For example, if you press the Mode button on the active switch to show the SPEED LED, all the other switches in the stack also show the SPEED LED.

Table 5: Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mb/s.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
ACTV	Active	The active switch status.
STACK	Stack member status StackWise port status	Stack member status. The StackWise port status. See STACK LED, on page 20.
PoE[9]	The PoE+ port status.	The PoE+ port status.

9 Only switches with PoE+ ports.

Table 6: Meaning of Switch LED Colors in Different Modes

Port Mode	Port LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present, no activity.
	Blinking 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 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. After a port is reconfigured, the port LED can be amber for up to 30 seconds as STP checks the switch for possible loops.

Port Mode	Port LED Color	Meaning
SPEED	**10/100/1000/SFP ports**	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Single green flash (on for 100 ms, off for 1900 ms)	Port is operating at 1000 Mb/s.
	Blinking twice	Port is operating at 2500, 5000 or 10000 Mb/s
	Network module slots	
	Off	Port is not operating.
	Blinking green	Port is operating at up to 10 Gb/s.
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
ACTV (data active switch)	Off	The switch is not the active switch. **Note** For a standalone switch, this LED is off.
	Green	The switch is the active switch.
	Amber	Error during active switch election.
	Blinking green	Switch is a standby member of a data stack and assumes active responsibilities if the current active switch fails.
STACK (stack member)	Off	No stack member corresponding to that member number.
	Blinking green	Stack member number.
	Green	Member numbers of other stack member switches.

Port Mode	Port LED Color	Meaning
PoE+[10]	Off	PoE+ is off. If the powered device is receiving power from an AC power source, the port LED is off even if the device is connected to the switch port.
	Green	PoE+ is on. The port LED is green when the switch port is providing power.
	Alternating green-amber	PoE+ is denied because providing power to the powered device will exceed the switch power capacity.
	Blinking amber	PoE+ is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** PoE+ faults occur when noncompliant cabling or powered devices are connected to a PoE+ port. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices to PoE+ ports. You must remove from the network any cable or device that causes a PoE+ fault.
	Amber	PoE+ for the port has been disabled. **Note** PoE+ is enabled by default.

10 Only switches with PoE or PoE+ ports.

USB Console LED

The USB console LED shows whether there is an active USB connection to the port.

Table 7: USB Console LED

LED	Color	Description
USB console port	Green	USB console port is active.
	Off	The USB is disabled.

S-PWR LED

Table 8: S-PWR LED

Color	Description
Off	StackPower cable is not connected, or the switch is in standalone mode.
Green	Each StackPower port is connected to another switch.
Blinking green	This appears on the switch in a StackPower ring configuration that detects an open ring or has only one StackPower cable connected.
Amber	There is a fault: load shedding is occurring, a StackPower cable is defective, or an administrative action is required. See the switch software configuration guide for information about configuring StackPower.
Blinking amber	The StackPower budget is not sufficient to meet current power demands.

ACTV LED

Table 9: ACTV LED

Color	Description
Off	Switch is not the active switch.
Green	Switch is the active switch or a standalone switch.
Slow blinking green	Switch is in stack standby mode.
Amber	An error occurred when the switch was selecting the active switch, or another type of stack error occurred.

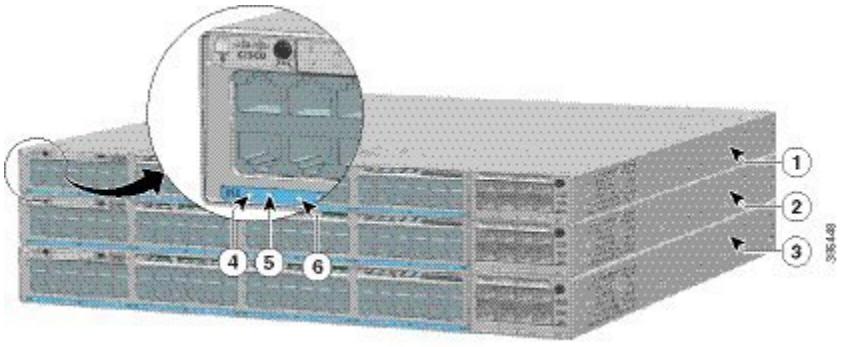
STACK LED

The STACK LED shows the sequence of member switches in a stack. Up to eight switches can be members of a stack. The first eight port LEDs show the member number of a switch in a stack.

This figure shows the LEDs on the first switch, which is stack member number 1. For example, if you press the Mode button and select Stack, the LED for port 1 blinks green. The LEDs for ports 2 and 3 are solid green,

as these represent the member numbers of other switches in the stack. The other port LEDs are off because there are no more members in the stack.

Figure 9: STACK LED



1	Stack member 1	4	LED blinks green to show that this is switch 1 in the stack.
2	Stack member 2	5	LED is solid green to show that switch 2 is a stack member.
3	Stack member 3	6	LED is solid green to show that switch 3 is a stack member.

PoE LED

The PoE LED indicates the status of the PoE mode: either PoE, PoE+, or Cisco UPOE.

Table 10: PoE LED

Color	Description
Off	PoE mode is not selected. None of the 10/100/1000 ports have been denied power or are in a fault condition.
Green	PoE mode is selected, and the port LEDs show the PoE mode status.
Blinking amber	PoE mode is not selected. At least one of the 10/100/1000 ports has been denied power, or at least one of the 10/100/1000 ports has a PoE mode fault.

UID/Beacon LED

The UID and the Beacon LED can be turned on by the administrator to indicate that the switch needs attention. It helps the administrator identify the switch. The beacon can be turned on by either pressing the UID button

on the switch front panel, or by using the CLI. There is a blue beacon on the front and rear panel of the switch. The blue beacon on the front panel is a button labeled UID, and on the back panel it is a LED labeled BEACON.

Table 11: UID/Beacon LED Indicator (Applies Only to the WS-C3850-12S, WS-C3850-24S , WS-C3850-12XS, and WS-C3850-24XS Switches)

Color/State	Description
Solid blue	The operator has indicated that the system needs attention.

Network Module LEDs

Figure 10: Network Module LEDs

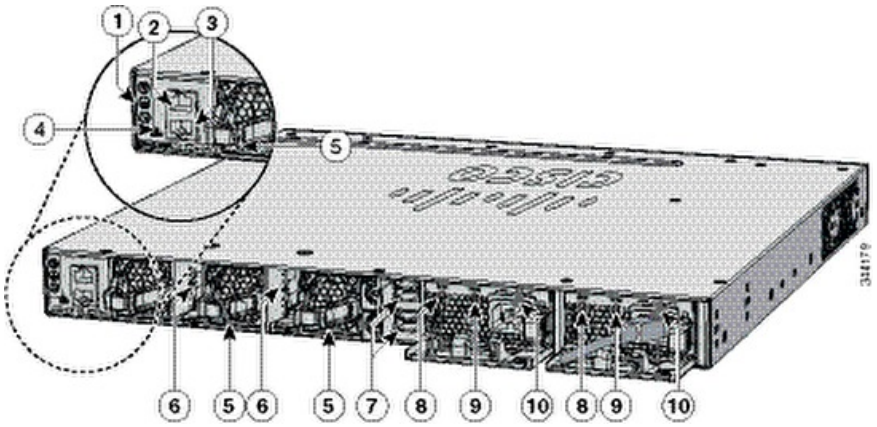
1	G1 LED	3	G3 LED
2	G2 LED	4	G4 LED

Color	Network Module Link Status
Off	Link is off.
Green	Link is on; no activity.
Blinking green	Activity on a link; no faults. **Note** The LED will blink green even when there is very little control traffic.
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** Link faults occur when noncompliant cabling is connected to an SFP or SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP and SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP or SFP+ has been disabled.

Rear Panel

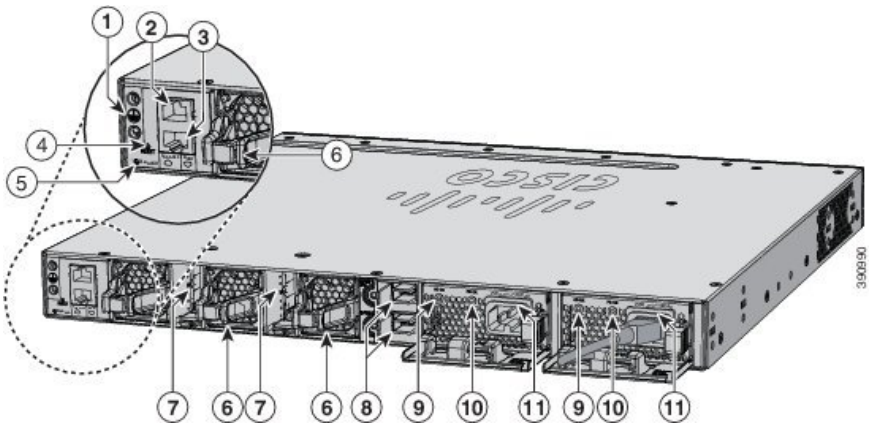
The switch rear panel includes StackWise connectors, StackPower or XPS 2200 connectors, ports, fan modules, and power supply modules.

Figure 11: Catalyst 3850 Switch Rear Panel



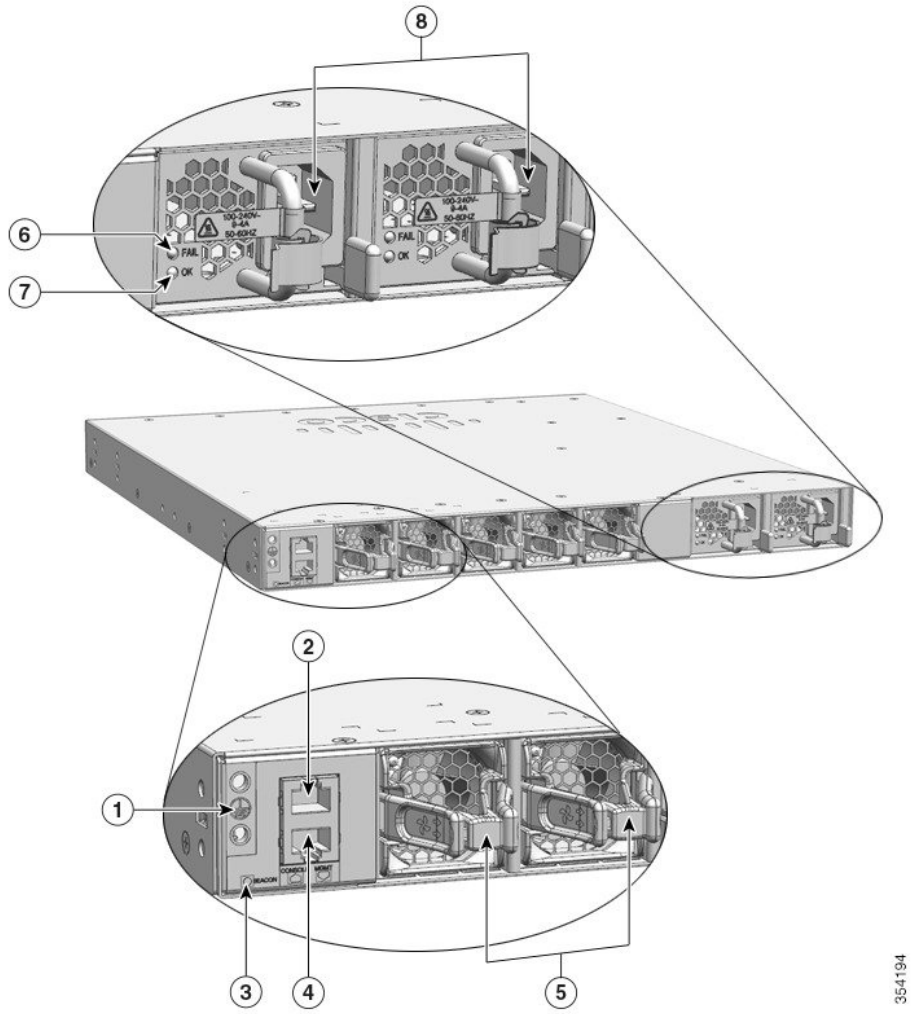
1	Ground connector	6	StackWise port connector
2	CONSOLE (RJ-45 console port)	7	StackPower connector
3	MGMT (RJ-45 10/100/1000 management port)	8	AC OK (input) status LED
4	RESET button	9	PS OK (output) status LED
5	Fan module	10	Power supply modules (AC power supply modules shown)

Figure 12: WS-C3850-12S and WS-C3850-24S Switches Switch Rear Panel



1	Ground connector	7	StackWise port connector
2	CONSOLE (RJ-45 console port)	8	StackPower connector
3	MGMT (RJ-45 10/100/1000 management port)	9	AC OK (input) status LED
4	RESET button	10	PS OK (output) status LED
5	BEACON LED	11	Power supply modules (AC power supply modules shown)
6	Fan module		

Figure 13: WS-C3850-48XS Switches Switch Rear Panel



1	Ground connector	5	Fan module
2	CONSOLE (RJ-45 console port)	6	Power supply FAIL LED
3	BEACON LED	7	Power supply OK LED
4	MGMT (RJ-45 10/100/1000 management 9 AC OK (input) status LED port)	8	Power supply modules

RJ-45 Console Port LED

Table 12: RJ-45 Console Port LED

Color	RJ-45 Console Port Status
Off	RJ-45 console is disabled. USB console is active.
Green	RJ-45 console is enabled. USB console is disabled.

StackWise Ports

StackWise ports are used to connect switches in StackWise stacking configurations. The switch ships with a 0.5-meter StackWise cable that you can use to connect the StackWise ports. For more information on StackWise cables, see Connecting to the StackWise Ports, on page 48.

Caution Use only approved cables, and connect only to similar Cisco equipment. Equipment might be damaged if connected to nonapproved Cisco cables or equipment.

Power Supply Modules

The switches are powered through one or two internal power supply modules.

Supported power supply modules:

- PWR-C1-350WAC
- PWR-C1-715WAC
- PWR-C1-1100WAC
- PWR-C1-440WDC

The following power supply modules are applicable to only the WS-C3850-48XS switches:

- PWR-C3-750WAC-R: This module has red handles to match fans with red handles. Airflow is from the front panel to the rear panel (warm air is 'pulled out of' the switch.)
- PWR-C3-750WAC-F: This module has blue handles to match fans with blue handles. Airflow is from the rear panel to the front panel (cool air is 'pushed into' the switch.)
- PWR-C3-750WDC-R: This module has red handles to match fans with red handles. Airflow is from the front panel to the rear panel (warm air is 'pulled out of' the switch.)
- PWR-C3-750WDC-F: This module has blue handles to match fans with blue handles. Airflow is from the rear panel to the front panel (cool air is 'pushed into' the switch.)

The switch has two internal power supply module slots. You can use two AC modules, two DC modules, a mixed configuration of one AC and one DC power supply module, or one power supply module and a blank module.

The switch can operate with either one or two active power supply modules or with power supplied by a stack. A Catalyst 3850 switch that is in a StackPower stack can operate with power supplied by other switches in the stack.

Switch Models, on page 1 shows the default power supply modules that ship with each switch model. All power supply modules (except the blank modules) have internal fans. All switches ship with a blank power supply module in the second power supply slot.

Caution Do not operate the switch with one power supply module slot empty. For proper chassis cooling, both power supply module slots must be populated with either a power supply or a blank module.

The 350-W and 715-W AC power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The 1100-W power supply module is an autoranging unit that supports input voltages between 115 and 240 VAC. The 440-W DC power supply module has dual input feeds (A and B) and supports input voltages between 36 and 72 VDC. The output voltage range is 51 to 57 V.

Each AC power supply module has a power cord for connection to an AC power outlet. The 1100-W and 715-W modules use a 16-AWG cord (only North America). All other modules use an 18-AWG cord. The DC-power supply module must be wired to a DC-power source.

The following tables show the PoE available and PoE requirements for Catalyst 3850 PoE switch models.

Table 13: Available PoE with AC Power Supply

Models	Default Power Supply	Available PoE
12-port data switch	PWR-C1-350WAC	—
24-port data switch		
48-port data switch		
24-port PoE+ switch	PWR-C1-715WAC	435 W
48-port PoE+ switch		
48-port full PoE+ switch	PWR-C1-1100WAC	800 W
24-port Cisco UPOE switch		
48-port Cisco UPOE switch		

Table 14: Available PoE with DC Power Supply

Models	Number of Power Supplies	Available PoE
24-port PoE+ switch	1	220 W
	2	660 W
48-port PoE+ switch	1	185 W
	2	625 W
24-port Cisco UPOE switch	1	220 W
	2	660 W
48-port Cisco UPOE switch	1	185 W
	2	625 W

Table 15: Switch Power Supply Requirements for PoE, PoE+, and Cisco UPoE

PoE Option	24-Port Switch	48-Port Switch[11]
PoE (up to 15.4 per port)	(1) 715 W	These are the combinations of power supplies: • (1) 1100 W • (1) 715 W + (1) 715 W
PoE+ (up to 30 W per ports)	These are the combinations of power supplies: • (1) 1100 W • (1) 715 W + (1) 715 W	These are the combinations of power supplies: • (1) 1100 W + (1) 715 W • (2) 1100 W
Cisco UPoE (up to 60 W per port)	(2) 1100 W	These are the combinations of power supplies: • (1) 1100 W + (1) 715 W • (2) 1100 W **Note** Up to 30 PoE ports can receive full Cisco UPoE.

11 A 48-port switch with one 715-W power supply provides up to 8.7 W of PoE to all ports.

Note Considerations for the WS-C3850-12X48U-L, WS-C3850-12X48U-S and WS-C3850-12X48U-E switch models:

- The primary power supply for these switch models should be a minimum of 470 W.
- 350 W or 440 W can be used only as secondary power supplies. If the switch draws power from these modules as the primary source, reboot the switch to restore these modules as secondary power supplies.

The power supply modules have two status LEDs.

Table 16: Switch Power Supply Module LEDs

AC OK DC OK	Description	PS OK	Description
Off	No AC input power. No DC input power.	Off	Output is disabled, or input is outside operating range (AC LED is off). Output is disabled, or input is outside operating range (DC LED is off).
Green	AC input power present. DC input power present.	Green	Power output to switch active.
		Red	Output has failed.

For information about replacing a power supply module, wiring a DC power supply module, and module specifications, see the "Power Supply Installation" and "Technical Specifications" chapters.

Fan Module

Depending on the switch model, three or five internal hot-swappable 12-V fan modules (FAN-T1=) are available. The air circulation system consists of the fan modules and the power supply modules. The airflow patterns vary depending on the power supply configuration.

When the fan modules are operating properly, a green LED is on at the top left corner of the fan assembly (viewed from the rear). If the fan fails, the LED turns to amber. The switch can operate with two operational fans, but the failed fan should be replaced as soon as possible to avoid a service interruption due to a second fan fault.

Note The WS-C3850 switches require three fans for proper cooling. The WS-C3850-48XS switches require five fans for proper cooling.

The following illustrations show the airflow patterns for the 24- and 48-port switches. The blue arrow shows cool airflow, and the red arrow shows warm airflow.

Figure 14: 24- and 48-Port Switch Airflow Patterns

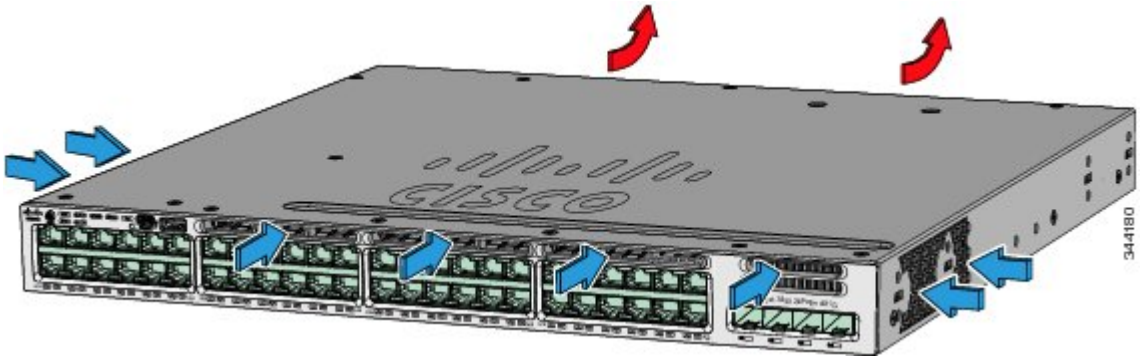


Figure 15: Airflow Patterns for the Catalyst 3850-24S-E and 3850-12S-E Switches

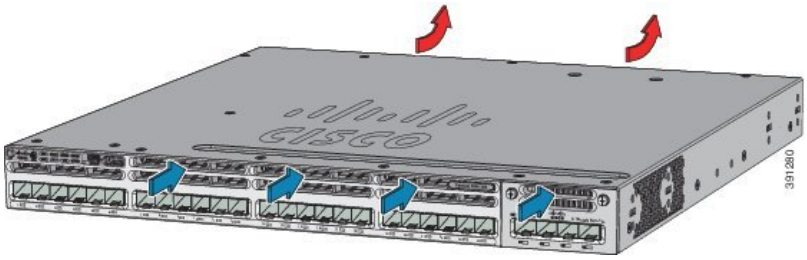


Figure 16: Airflow Patterns for the Catalyst 3850-48XS Switches (using Power Supplies and Fans with Blue Handles)

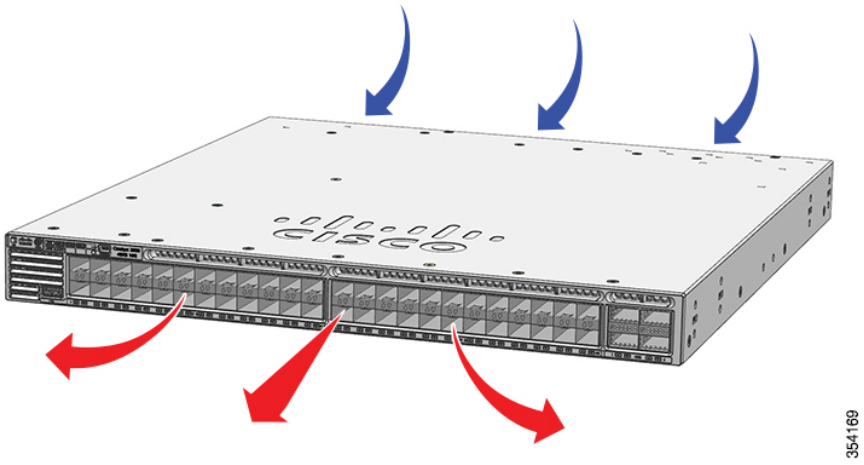
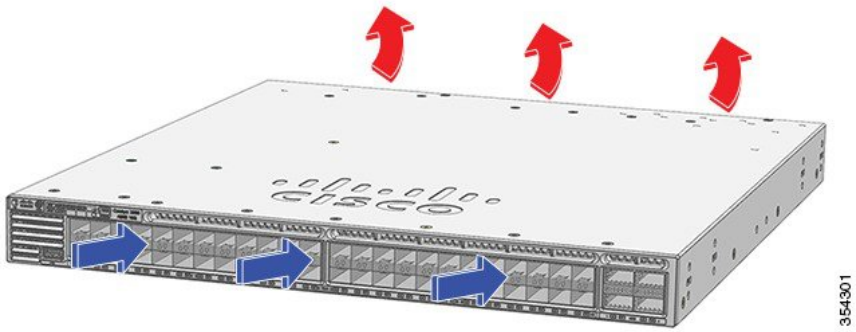


Figure 17: Airflow Patterns for the Catalyst 3850-48XS Switches (using Power Supplies and Fans with Red Handles)



For information about installing a fan module and fan specifications, see the "Technical Specifications" chapter.

StackPower Connector

The switches have a StackPower connector for use with Cisco StackPower cables to configure a switch power stack that includes up to nine switches. A switch power stack can be configured in redundant or power-sharing mode.

You can order these StackPower cables from your Cisco sales representative:

- CAB-SPWR-30CM (0.3-meter cable)
- CAB-SPWR-150CM (1.5-meter cable)

For details about connecting StackPower cables and StackPower guidelines, see Planning a StackPower Stack, on page 41.

Ethernet Management Port

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100/1000 Ethernet management port or one of the console ports. The 10/100/1000 Ethernet management port is a VPN routing/forwarding (VRF) interface and uses a RJ-45 crossover or straight-through cable.

Note The 10/100/1000 Ethernet management port is an RJ-45 connector that should be connected to a Windows workstation or a terminal server. Do not connect this port to another port in the same switch or to any port within the same switch stack.

The following table shows the Ethernet management port LED colors and their meanings.

Table 17: Ethernet Management Port LED

Color	Description
Green	Link up but no activity.

Color	Description
Blinking green	Link up and activity.
Off	Link down.

RJ-45 Console Port

The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable.

The following table shows the RJ-45 console port LED colors and their meanings.

Table 18: RJ-45 Console LED

Color	Description
Green	RJ-45 console port is active.
Off	The port is not active.

Management Options

- Cisco Network Assistant

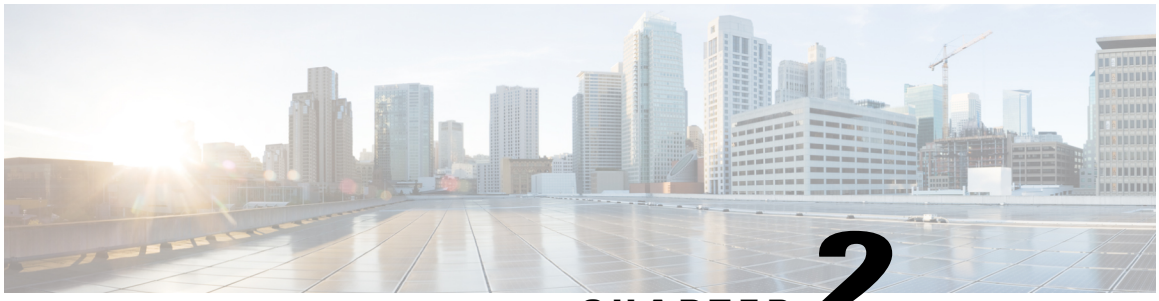
  Cisco Network Assistant is a PC-based network management GUI application for LANs. You can use the GUI to configure and manage switch clusters or standalone switches. Cisco Network Assistant is available at no cost and can be downloaded from this URL: http://www.cisco.com/pcgi-bin/tablebuild.pl/NetworkAssistant

- Cisco IOS CLI

  You can configure and monitor the switch and switch cluster members from the CLI. You can access the CLI by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the switch command reference on Cisco.com for more information.

- Cisco Prime Infrastructure

  Cisco Prime Infrastructure combines the wireless functionality of Cisco Prime Network Control System (NCS) and the wired functionality of Cisco Prime LAN Management Solution (LMS), with application performance monitoring and troubleshooting capabilities of Cisco Prime Assurance Manager. For more information, see the Cisco Prime Infrastructure documentation on Cisco.com: http://www.cisco.com/en/US/products/ps12239/index.html



CHAPTER 2

Switch Installation

For initial switch setup, assigning the switch IP address, and powering on information, see the switch getting started guide on Cisco.com.

This chapter contains these topics:

- Preparing for Installation, page 33
- Planning a Switch Data Stack, page 36
- Data Stack Cabling Configurations, page 38
- Planning a StackPower Stack, page 41
- StackPower Cabling Configurations, page 42
- Installing the Switch, page 44
- Connecting to the StackWise Ports, page 48
- Connecting to the StackPower Ports, page 49
- Installing a Network Module in the Switch, page 50
- Installing and Removing SFP, SFP+ and QSFP+ Modules, page 50
- Connecting Devices to the Ethernet Ports, page 50
- Where to Go Next, page 52

Preparing for Installation

Safety Warnings

This section includes the basic installation caution and warning statements. Read this section before you start the installation procedure. Translations of the warning statements appear in the Regulatory Compliance and Safety Information guide on Cisco.com.

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 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 Class 1 laser product. Statement 1008

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 Use copper conductors only. Statement 1025

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 To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: <113°F (45°C). Statement 1047

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

Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 inches (7.6 cm). Statement 1076

Note The grounding architecture of this product is DC-isolated (DC-I).

Installation Guidelines

When determining where to install the switch, verify that these guidelines are met:

- Clearance to the switch front and rear panel meets these conditions:
  - Front-panel LEDs can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - AC power cord can reach from the AC power outlet to the connector on the switch rear panel.
  - The SFP or SFP+ module minimum bend radius and connector length is met. See the SFP or SFP+ module documentation for more information.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.
- For switches with the optional 1100-W power-supply module (PWR-C1-1100WAC=), first rack-mount the switch before installing the power-supply module.
- Make sure power-supply modules and fan modules are securely inserted in the chassis before moving the switch.
- When connecting or disconnecting the power cord on a switch that is installed above or below a 1100-W power supply-equipped switch, you might need to remove the module from the switch to access the power cord.
- Airflow around the switch and through the vents is unrestricted.
- For copper connections on Ethernet ports, cable lengths from the switch to connected devices can be up to 328 feet (100 meters).

- Temperature around the unit does not exceed 113°F (45°C). If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.
- Humidity around the switch does not exceed 95 percent.
- Altitude at the installation site is not greater than 10,000 feet.
- Cooling mechanisms, such as fans and blowers in the switch, can draw dust and other particles causing contaminant buildup inside the chassis, which can result in system malfunction. You must install this equipment in an environment as free from dust and foreign conductive material (such as metal flakes from construction activities) as is possible.

Box Contents

The switch getting started guide describes the box contents. If any item is missing or damaged, contact your Cisco representative or reseller for support.

Tools and Equipment

Obtain these necessary tools:

- A Number-2 Phillips screwdriver to rack-mount the switch

Verifying Switch Operation

Before you install the switch in a rack, or on a table or shelf, you should power on the switch and verify that the switch passes POST. See the “Running Express Setup” section in the getting started guide for the steps required to connect a PC to the switch and to run Express Setup.

Powering Off the Switch

After a successful POST, disconnect the power cord from the switch. Install the switch in a rack, on a table, or on a shelf as described in Installing the Switch, on page 44.

Planning a Switch Data Stack

Catalyst 3850 switches can share bandwidth by using data stacking.

Note The following switch models do not support StackWise-480:

- WS-C3850-48XS-S
- WS-C3850-48XS-E
- WS-C3850-48XS-F-S
- WS-C3850-48XS-F-E

Switch Stacking and Power Stacking Guidelines

Before connecting the switches in a stack, keep in mind these stacking guidelines:

- Size of the switch and any optional power-supply module. The 1100-W power-supply module is longer than the other modules. Stacking switches with the same power-supply modules together makes it easier to cable the switches.
- Length of cable. Depending on the configurations that you have, you might need different-sized cables. If you do not specify the length of the StackWise cable, the 0.5-meter cable is supplied. If you need the 1-meter cable or the 3-meter cable, you can order it from your Cisco supplier. For cable part numbers, see StackWise Ports, on page 26. The Data Stack Cabling Configurations, on page 38 provides examples of recommended configurations.
- For rack-mounted switch stacks that are members of a StackPower stack as well as a data stack, see Planning a StackPower Stack, on page 41.
- You can create data stacks with up to nine switches in a stack.

Note Special considerations for the following switch models:

- WS-C3850-24XS-E
- WS-C3850-24XS-S
- WS-C3850-24XU-E
- WS-C3850-24XU-L
- WS-C3850-24XU-S
- WS-C3850-12X48U-L
- WS-C3850-12X48U-S
- WS-C3850-12X48U-E

Information:

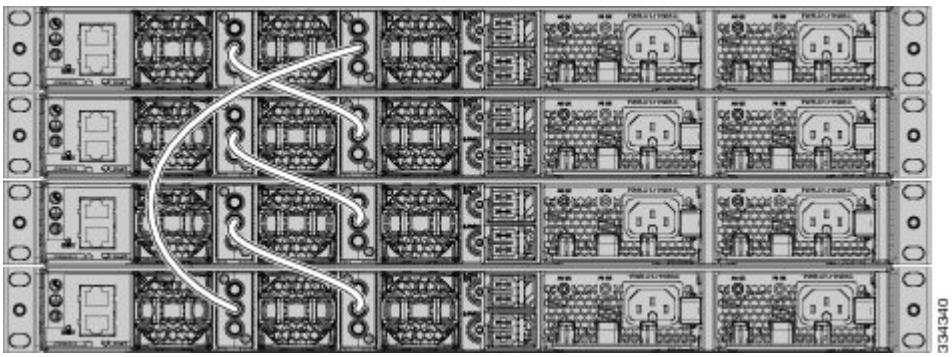
- If you set up a stack with these switches, the stack can have a maximum of 8 switches only. Each of the above switch models have 4 ASIC chips, and the maximum number of ASIC chips per stack cannot exceed 32.
- If you set up a stack that contains the above switches and other Catalyst 3850 switches, ensure that the maximum number of ASIC chips is 32.

Note The Catalyst WS-C3850-48XS switch models do not support power stacking.

Data Stack Cabling Configurations

This is an example of a recommended configuration that uses the supplied 0.5-meter StackWise cable. In this example, the switches are stacked in a vertical rack or on a table. This configuration provides redundant connections. The configuration example uses the supplied 0.5-meter StackWise cable. The example shows the full-ring configuration that provides redundant connections.

Figure 18: Data Stacking the Switches in a Rack or on a Table Using the 0.5-meter StackWise Cables



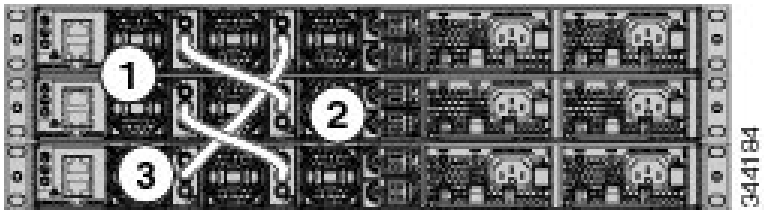
This example shows a recommended configuration when the switches are mounted side-by-side. Use the 1-meter and the 3-meter StackWise cables to connect the switches. This configuration provides redundant connections.

Figure 19: Data Stacking in a Side-by-Side Mounting

Data Stack Bandwidth and Partitioning Examples

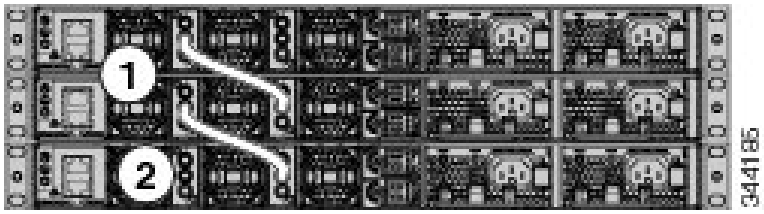
This section provides examples of data stack bandwidth and possible data stack partitioning. The figure shows a data stack of switches that provides full bandwidth and redundant StackWise cable connections.

Figure 20: Example of a Data Stack with Full Bandwidth Connections



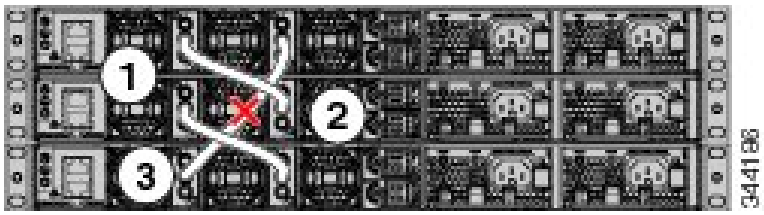
This figure shows an example of a stack of switches with incomplete StackWise cabling connections. This stack provides only half bandwidth and does not have redundant connections.

Figure 21: Example of a Data Stack with Half Bandwidth Connections



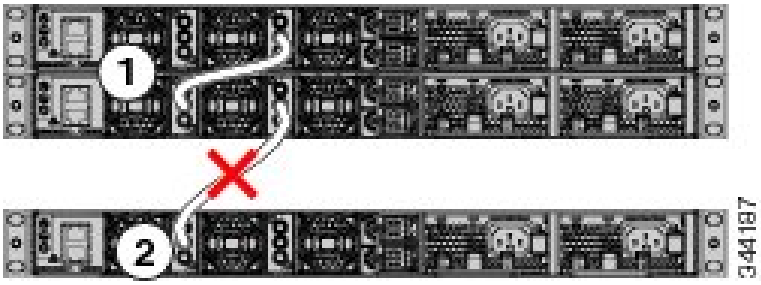
The figures below show data stacks of switches with failover conditions. In this figure, the StackWise cable is bad in link 2. Therefore, this stack provides only half bandwidth and does not have redundant connections.

Figure 22: Example of a Data Stack with a Failover Condition



In this figure, link 2 is bad. Therefore, this stack partitions into two stacks, and the top and bottom switches become the active switch in the stack. If the bottom switch is a member (not active or standby switch), it reloads.

Figure 23: Example of a Partitioned Data Stack with a Failover Condition



Power-On Sequence for Switch Stacks

Consider these guidelines before you power on the switches in a stack:

- The sequence in which the switches are first powered on might affect the switch that becomes the stack master.
- There are two ways to elect an active switch:
  - If you want a particular switch to become the active switch, configure it with the highest priority. Among switches with same priority, the switch with the lowest MAC address becomes the active switch.
  - If you want a particular switch to become the active switch, power on that switch first. This switch remains the active switch until a reelection is required. After 2 minutes, power on the other switches in the stack. If you have no preference as to which switch becomes the active switch, power on all the switches in the stack within 1 minute. These switches participate in the active switch election. Switches powered on after 2 minutes do not participate in the election.

If changes are made to the stack without powering down the switches, the following results can occur:

- If two operating partial ring stacks are connected together using a stack cable, a stack merge can take place. This situation reloads the whole stack (all switches in the stack).
- If some switches in the stack are completely separated from the stack, a stack split can occur.
- A stack split can occur on a full ring stack if:
  - More than one running switch is removed without powering down.
  - More than one stack cable is removed without powering down.
- A stack split can occur in a partial ring stack if:
  - A switch is removed without powering down.
  - A stack cable is removed without powering down.

- In a split stack, depending on where the active and standby switches are located, either two stacks might be formed (with the standby taking over as the new active switch in the newly formed stack) or all the members in the newly formed stack might reload.

Note These results depend on how the switches are connected. You can remove two or more switches from the stack without splitting the stack.

For conditions that can cause a stack reelection or to manually elect the active switch, see the stacking software configuration guide on Cisco.com at this URL: .

Planning a StackPower Stack

StackPower Stacking Guidelines

You can configure a StackPower stack for either power sharing or redundancy. In power-sharing mode, the power of all the power supplies in the stack is aggregated and distributed among the stack members.

In redundant mode, when the total power budget of the stack is calculated, the wattage of the largest power supply is not included. That power is held in reserve and used to maintain power to switches and attached devices when one power supply fails. Following the failure of a power supply, the StackPower mode becomes power sharing.

Note Power-sharing mode is the recommended configuration for Cisco Catalyst 9300 Series SwitchesCisco Catalyst 3850 Series Switches .

For general concepts and management procedures for switch power stacks, see the software stacking configuration guide on Cisco.com.

Before connecting the switches in a power stack, keep in mind these guidelines:

- A switch power stack can include a maximum of four switches in a ring topology and nine switches in a star topology.
- Size of the switch and any optional power supply module. The 1100-W power-supply module is 1.5 inches (3.81 cm) longer than the other modules, and with the attached cable retention clip, it extends 3 inches (7.62 cm) from the switch chassis. Stacking switches with the same power-supply modules together makes it easier to cable the switches. For switch dimensions, see Appendix A, “Technical Specifications.”
- Length of cable. Depending on the configurations that you have, you might need different-sized cables. If you do not specify the length of the StackPower cable, the 0.3 meter cable is supplied. If you need the 1.5 meter cable, you can order it from your Cisco supplier. For cable part numbers, see StackPower Connector, on page 31. The StackPower Cabling Configurations, on page 42 provides examples of recommended configurations.
- For rack-mounted switch stacks that are members of a data stack and a StackPower stack, see Switch Stacking and Power Stacking Guidelines, on page 37.

StackPower Cabling Configurations

This section describes the recommended cabling configurations for a StackPower stack. There are two types of StackPower cables.

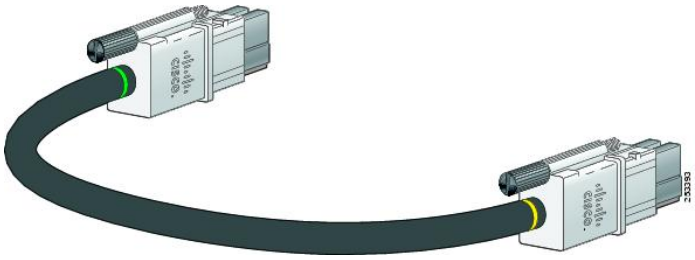
The cable in the figure connects a switch to another switch in a power stack or with an XPS. StackPower cables have color bands on the cable ends:

- The cable end with the green band can connect only to a switch.
- The cable end with the yellow band can connect to a switch or an XPS.

The cable is available in two lengths.

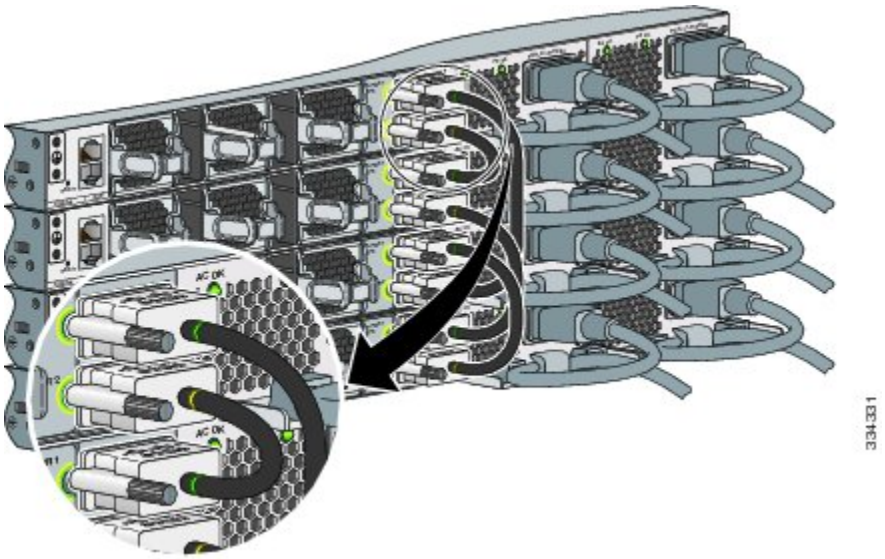
Part Number	Cable Type	Length
CAB-SPWR-30CM	StackPower Cable	0.3 meter
CAB-SPWR-150CM	StackPower Cable	1.5 meter

Figure 24: StackPower Cable for Use with Cisco Catalyst 9300 Series SwitchesCisco Catalyst 3850 Series Switches



This figure shows a ring configuration using both of the supplied 0.3-meter StackPower cables and one 1.5-meter cable. In the examples that follow, the switches are stacked in a vertical rack or on a table.

Figure 25: StackPower Ring Topology



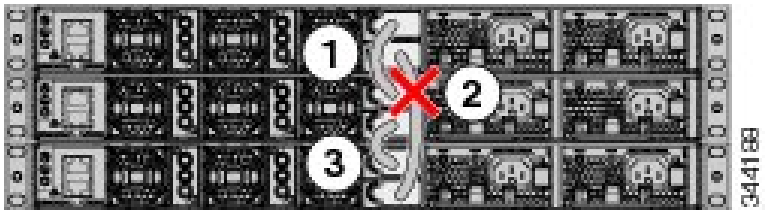
This figure shows nine switches connected in a star topology.

StackPower Partitioning Examples

These figures show StackPower stacks of switches with failover conditions.

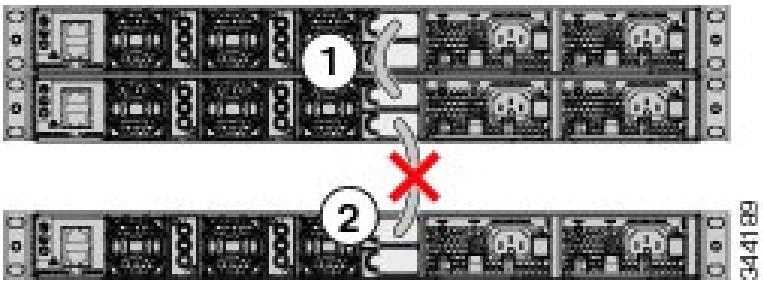
In this figure, the StackPower cable 2 is faulty. Therefore, this stack does not provide redundancy.

Figure 26: Example of a StackPower Stack with a Failover Condition



In this figure, StackPower port B on the center switch has failed and this stack partitions into two stacks. The top two switches share power, and the bottom switch is now a separate stack.

Figure 27: Example of a Partitioned StackPower Stack with a Failover Condition



Installing the Switch

Rack-Mounting

Installation in racks other than 19-inch racks requires a bracket kit not included with the switch.

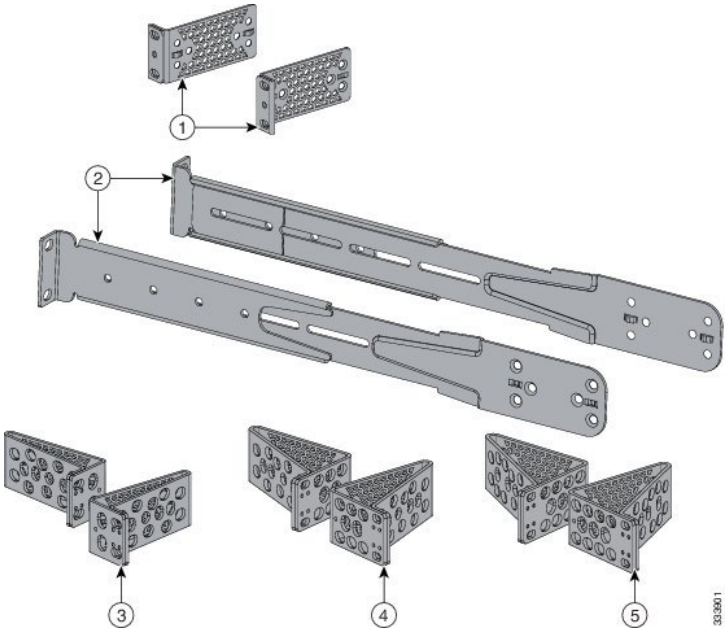
Warning To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- 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

This figure shows the standard 19-inch brackets and other optional mounting brackets. You can order the optional brackets from your Cisco sales representative.

Figure 28: Rack-Mounting Brackets



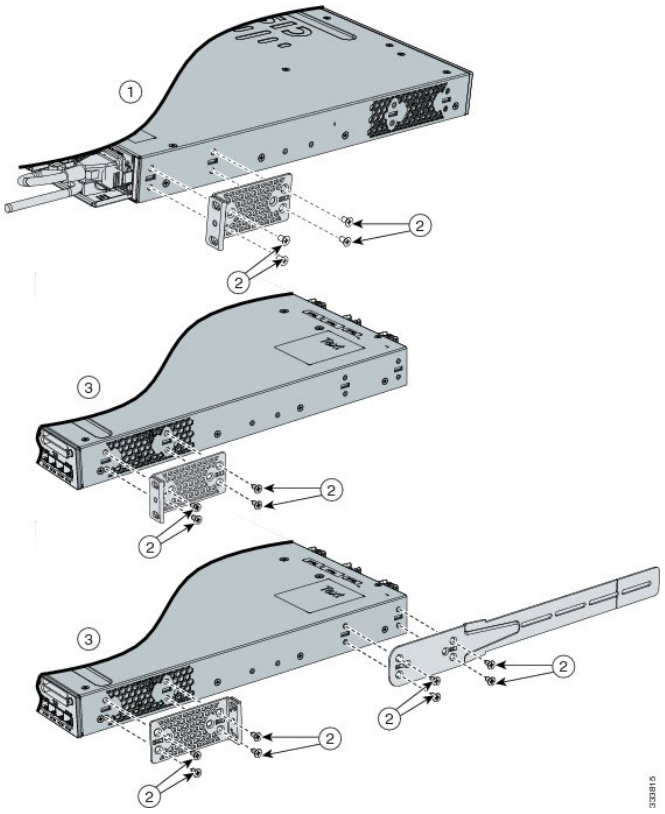
1	19-inch brackets (C3850-RACK-KIT=)	4	23-inch brackets (C3850-RACK-KIT=)
2	Extension rails and brackets for four-point mounting, includes 19-inch brackets. (C3850-4PT-KIT=)	5	24-inch brackets (C3850-RACK-KIT=)
3	ETSI brackets (C3850-RACK-KIT=)		

Attaching the Rack-Mount Brackets

Procedure

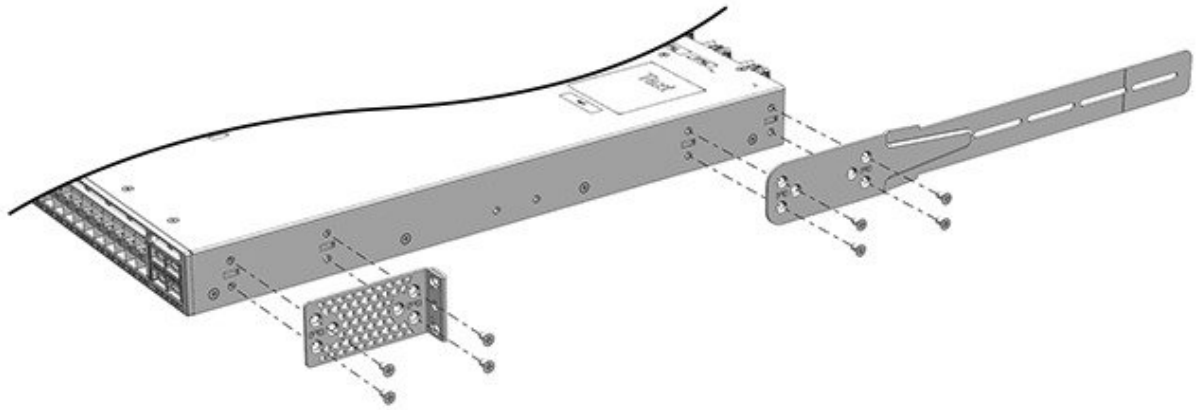
Use four Phillips flat-head screws to attach the long side of the bracket to each side of the switch for the front- or rear-mounting positions.

Figure 29: Attaching Brackets for 19-inch Racks



1	Rear-mounting position	3	Front-mounting position
2	Number-8 Phillips flat-head screws		

Figure 30: Attaching Brackets for Catalyst WS-C3850-48XS Switches

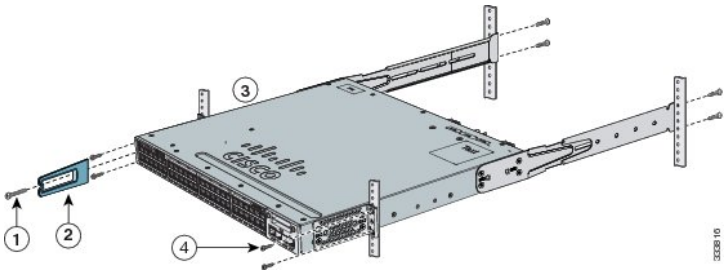


Mounting the Switch a Rack

Procedure

Step 1 Use the four supplied Phillips machine screws to attach the brackets to the rack.

Step 2 Use the black Phillips machine screw to attach the cable guide to the left or right bracket.



1	Phillips machine screw, black	4	Front-mounting position
2	Cable guide	5	Number-12 or number-10 Phillips machine screws

Installing the Switch on a Table or Shelf

Procedure

Step 1 To install the switch on a table or shelf, locate the adhesive strip with the rubber feet in the mounting-kit envelope.

Step 2 Attach the four rubber feet to the four circular etches on the bottom of the chassis.

Step 3 Place the switch on the table or shelf near an AC power source.

Step 4 When you complete the switch installation, see After Switch Installation, on page 48for information on switch configuration.

After Switch Installation

- Configure the switch by running Express Setup to enter the initial switch configuration. See the switch getting started guide on Cisco.com.
- Use the CLI setup program to enter the initial switch configuration.
- Connect to the stack ports.
- Connect to the front-panel ports.

Connecting to the StackWise Ports

Before You Begin

Before connecting the StackWise cables, review the Planning a Switch Data Stack, on page 36. Always use a Cisco-approved StackWise cable to connect the switches.

Procedure

Step 1 Remove the dust covers from the StackWise cables and StackWise ports, and store them for future use.

Step 2 Connect the cable to the StackWise port on the switch rear panel. Align the connector and connect the StackWise cable to the StackWise port on the switch rear panel and finger-tighten the screws (clockwise direction). Make sure the Cisco logo is on the top side of the connector as shown in the figure.

Step 3 Connect the other end of the cable to the port on the other switch and finger-tighten the screws. Avoid overtightening the screws.

Figure 31: Connecting the StackWise Cable in a StackWise Port

1	Cisco logo	3	Connector screw
2	Connector screw		

Caution Removing and installing the StackWise cable can shorten its useful life. Do not remove and insert the cable more often than is absolutely necessary (installing and removing it up to 200 times is supported).

When you need to remove the StackWise cable from the connector, make sure to fully unscrew the correct screws. When the connectors are not being used, replace the dust covers.

Connecting to the StackPower Ports

Before You Begin

Before connecting the StackPower cables, review Planning a Switch Data Stack, on page 36. Always use a Cisco-approved StackWise cable to connect the switches. To prevent misconfiguration, the StackPower ports on the switch are keyed and have colored bands that match the keying and bands on the StackPower cable connectors.

Procedure

Step 1 Remove the dust covers from the StackPower cable connectors.

Step 2 Connect the end of the cable with a green band to either StackPower port on the first switch. Align the connector correctly, and insert it into a StackPower port on the switch rear panel.

Step 3 Connect the end of the cable with the yellow band to another switch (to configure StackPower power sharing).

Step 4 Hand-tighten the captive screws to secure the StackPower cable connectors in place.

Caution Removing and installing the StackPower cable can shorten its useful life. Do not remove and insert the cable more often than is absolutely necessary.

Installing a Network Module in the Switch

See these sections for information on network modules:

• Installing Network Modules, on page 59

Installing and Removing SFP, SFP+ and QSFP+ Modules

See these sections for information on SFP, SFP+ and QSFP+ modules:

• Installing SFP and SFP+ Modules, on page 65
• Removing SFP and SFP+ Modules, on page 67
• Cisco 40-Gigabit QSFP+ Transceiver Modules Installation Note

Connecting Devices to the Ethernet Ports

• 10/100/1000 Port Connections, on page 50
• PoE+ and Cisco UPOE Port Connections, on page 51

10/100/1000 Port Connections

The switch 10/100/1000 port configuration changes to operate at the speed of the attached device. If the attached ports do not support autonegotiation, you can manually set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have the 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 interface speed and duplex parameters on both ends of the connection.

Note Be careful when connecting a “snagless” Ethernet cable to port 1 on a 48-port switch. The protective boot of the cable might inadvertently press the Mode button, which could cause the switch to erase its startup configuration and reboot. See this field notice for more information: http://www.cisco.com/c/en/us/support/docs/field-notices/636/fn63697.html
This issue does not occur if you are using Cisco IOS XE Release 3E or later releases.

Auto-MDIX Connections

The autonegotiation and the auto-MDIX features are enabled by default on the switch.

With autonegotiation, the switch port configurations change to operate at the speed of the attached device. If the attached device does not support autonegotiation, you can manually set the switch interface speed and duplex parameters.

With auto-MDIX, the switch detects the required cable type for copper Ethernet connections and configures the interface accordingly.

If auto-MDIX is disabled, use the guidelines in this table to select the correct cable.

Table 19: Recommended Ethernet Cables (When Auto-MDIX is Disabled)

Device	Crossover Cable[12]	Straight-Through Cable
Switch to switch	Yes	No
Switch to hub	Yes	No
Switch to computer or server	No	Yes
Switch to router	No	Yes
Switch to IP phone	No	Yes

12 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5, Category 5e, or Category 6 cable. 10BASE-T traffic can use Category 3 or Category 4 cable.

PoE+ and Cisco UPOE Port Connections

The 10/100/1000 PoE+ and Cisco UPOE ports have the same autonegotiation settings and cabling requirements that are described in the 10/100/1000 Port Connections, on page 50. These ports can provide PoE, PoE+, or Cisco UPOE inline power.

PoE inline power supports devices compliant with the IEEE 802.3af standard, as well as prestandard Cisco IP Phones and Cisco Aironet Access Points. Each port can deliver up to 15.4 W of PoE. PoE+ inline power supports devices compliant with the IEEE 802.3at standard, by delivering up to 30 W of PoE+ power per port to all switch ports.

See Power Supply Modules, on page 26 for the power supply modules required to support PoE, PoE+, and Cisco UPOE on 24- and 48-port switches.

Warning Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. Statement 1072

Warning Voice over IP (VoIP) service and the emergency calling service do not function if power fails or is disrupted. After power is restored, you might have to reset or reconfigure equipment to regain access to VoIP and the emergency calling service. In the USA, this emergency number is 911. You need to be aware of the emergency number in your country. Statement 371

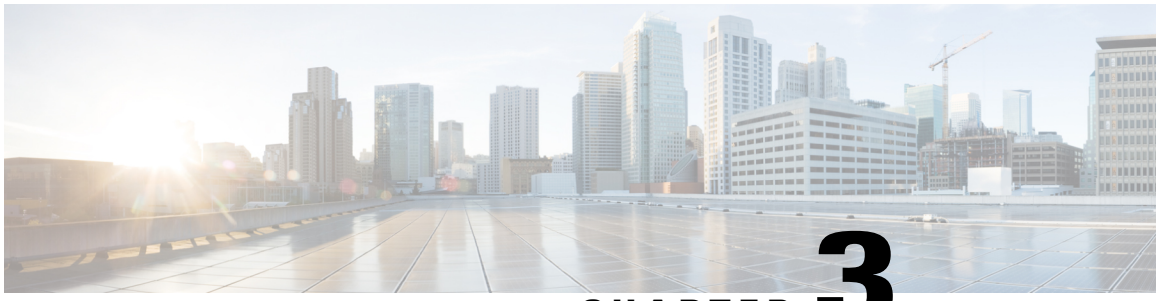
Caution Category 5e and Category 6 cables can store high levels of static electricity. Always ground the cables to a suitable and safe earth ground before connecting them to the switch or other devices.

Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points, IEEE 802.3af, or 802.3at (PoE+)-compliant devices. You must remove any cable or device that causes a PoE fault.

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:

- Start the Network Assistant application, which is described in the getting started guide. Through this GUI, you can configure and monitor a switch cluster or an individual switch.
- Use the CLI to configure the switch as a member of a cluster or as an individual switch from the console.
- Use the Cisco Prime Infrastructure application.



CHAPTER 3

Installing a Network Module

- Network Module Overview, page 53
- Installing a Network Module in the Switch, page 58
- Removing a Network Module, page 64
- SFP and SFP+ Modules, page 65
- Finding the Network Module Serial Number, page 67

Network Module Overview

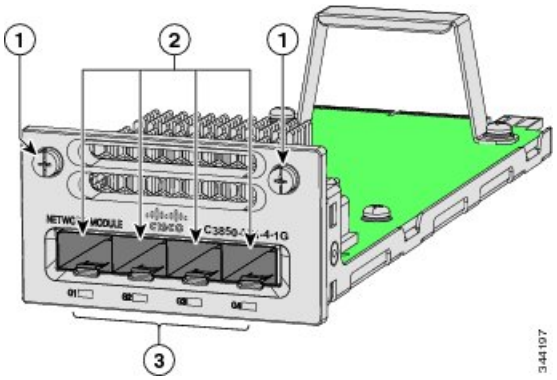
Network Module[13]	Description
C3850-NM-4-1G	This module has four 1 G SFP module slots. Any combination of standard SFP modules are supported. SFP+ modules are not supported. If you insert an SFP+ module in the 1 G network module, the SFP+ module does not operate, and the switch logs an error message. **Note** This is supported on the following switch models: • WS-C3850-24T/P/U • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12S • WS-C3850-24S

Network Module[13]	Description
C3850-NM-2-10G	This module has four slots: Two slots (left side) support only 1 G SFP modules and two slots (right side) support either 1 G SFP or 10 G SFP modules. **Note** This is supported on the following switch models: • WS-C3850-24T/P/U • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12S • WS-C3850-24S
C3850-NM-4-10G	This module has four 10 G slots or four 1 G slots. **Note** This is supported on the following switch models: • WS-C3850-48T/F/P/U • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-12XS • WS-C3850-24XS
C3850-NM-8-10G	This module has eight 10 G slots with an SFP+ port in each slot. Each port supports a 1 G or 10 G connection **Note** This is supported on the following switch models: • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-24XS
C3850-NM-2-40G	This module has two 40 G slots with a QSFP+ connector in each slot. **Note** This is supported on the following switch models: • WS-C3850-12X48U • WS-C3850-24XU • WS-C3850-24XS

Network Module[13]	Description
C3850-NM-BLANK	Insert this blank module when the switch has no uplink ports (this is required for sufficient air flow).

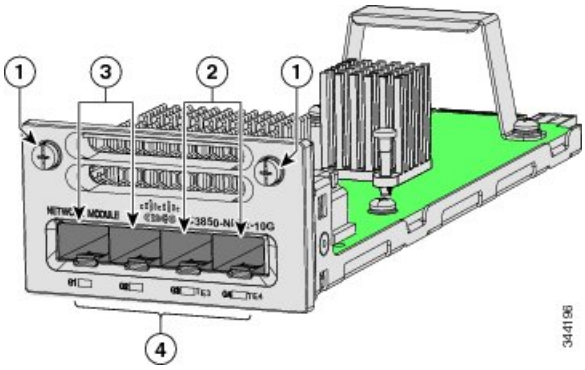
13 All network modules are hot-swappable.

Figure 32: C3850-NM-4-1G Network Module



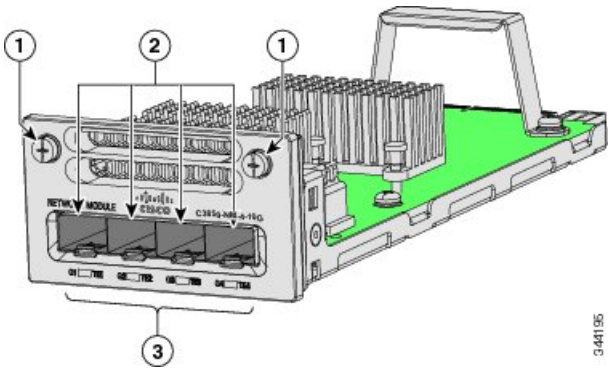
1	Captive screws	3	LEDs
2	1 G Ethernet SFP slots		

Figure 33: C3850-NM-2-10G Network Module



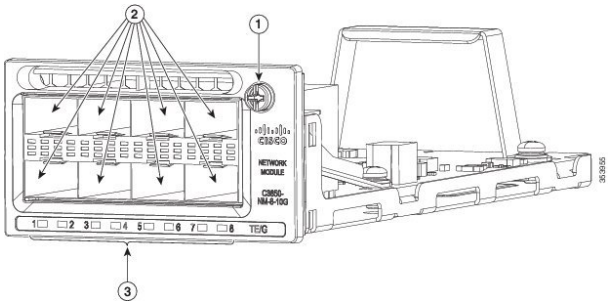
1	Captive screws	3	1 G Ethernet SFP slots
2	1 G or 10 G Ethernet SFP+ slots	4	LEDs

Figure 34: C3850-NM-4-10G Network Module



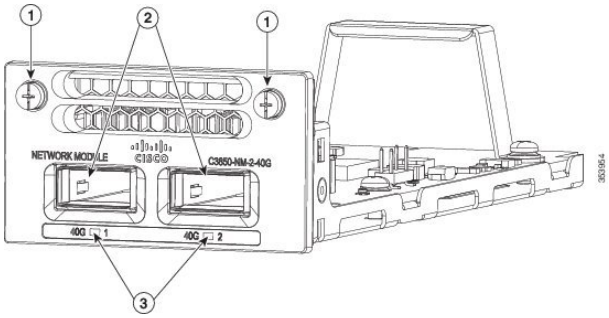
1	Captive screws	3	LEDs
2	10 G slots or 1 G Ethernet SFP slots		

Figure 35: C3850-NM-8-10G Network Module



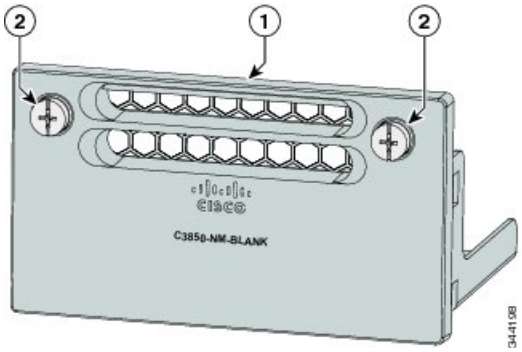
1	Captive screw **Note** This network module has only one screw. You must fasten the screw completely to secure the module, and loosen the screw first so that the module may be removed.	3	LEDs
2	10 G or 1 G SFP+ slots		

Figure 36: C3850-NM-2-40G Network Module



1	Captive screws	3	LEDs
2	40 G QSFP+ slots		

Figure 37: Blank Network Module



1	Blank module	2	Captive screws

Related Topics

Network Module LEDs, on page 22

Network Module LEDs

Figure 38: Network Module LEDs

1	G1 LED	3	G3 LED

2	G2 LED	4	G4 LED

Color	Network Module Link Status
Off	Link is off.
Green	Link is on; no activity.
Blinking green	Activity on a link; no faults. **Note** The LED will blink green even when there is very little control traffic.
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** Link faults occur when noncompliant cabling is connected to an SFP or SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP and SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP or SFP+ has been disabled.

Installing a Network Module in the Switch

Safety Warnings

This section includes the installation cautions and warnings. Translations of the safety warnings appear in the *Regulatory Compliance and Safety Information for the Catalyst 3850 Switches* on Cisco.com: http://www.cisco.com/go/cat3850_hw

Read this section before you install a network module.

Caution Proper ESD protection is required whenever you handle equipment. Installation and maintenance personnel should be properly grounded by grounding straps to eliminate the risk of ESD damage to the equipment. Equipment is subject to ESD damage whenever you remove it.

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

Warning Do not reach into a vacant slot or chassis while you install or remove a module. Exposed circuitry could constitute an energy hazard. Statement 206

Equipment That You Need

- Ratcheting torque screwdriver with a number-2 Phillips head that exerts up to 15 pound-force inches (lbf-in.) of pressure.
- Panduit crimping tool with optional controlled-cycle mechanism (model CT-720, CT-920, CT-920CH, CT-930, or CT-940CH).
- Wire-stripping tools.
- 12-gauge copper ground wire (insulated or not) for the single-hole ground connection.
- 8-gauge copper ground wire (insulated or not) for the dual-hole ground connection.
- Dual-hole ground lug and two screws (included in the DC power supply accessory kit) and single-hole ground lug and screw (included in the switch accessory kit). The dual-hole lug is required for the grounding of the switch in a NEBS installation where the DC supply is the only NEBS compliant power supply option.
- Four leads of 14-gauge copper wire.
- Four fork-type terminals from the DC power supply accessory kit. The terminals must be the proper size for M3 screws in a Dinkle DT-35-B25-style terminal block.

Installing Network Modules

Note The switch can operate without a network module, but a blank module (with no ports or SFP slots) is available and should be installed when uplink ports are not required.

Note The switch generates logs when you insert or remove a network module with SFP slots.

Use only supported network modules and SFP or SFP+ modules. Each module has an internal serial EEPROM that is encoded with security information. For information about supported SFP modules, see SFP and SFP+ Modules, on page 12.

The network module is hot-swappable. If you remove a module, replace it with another network module or a blank module.

Note The switch complies with EMC, safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module.

Before You Begin

When installing network modules, observe these precautions:

- Do not remove the blank module from the slot unless you are installing an SFP or SFP+ module. Either a module or a dust plug must be in the slot at all times.

- Do not remove the dust plugs from the fiber-optic SFP modules or the rubber caps from the fiber-optic cable until you connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.
- Removing and installing a network module can shorten its useful life. Do not remove and insert a network module more often than is necessary.
- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

Procedure

Step 1 Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2 Remove the module from the protective packaging.

Step 3 Remove the blank module from the switch and save it.

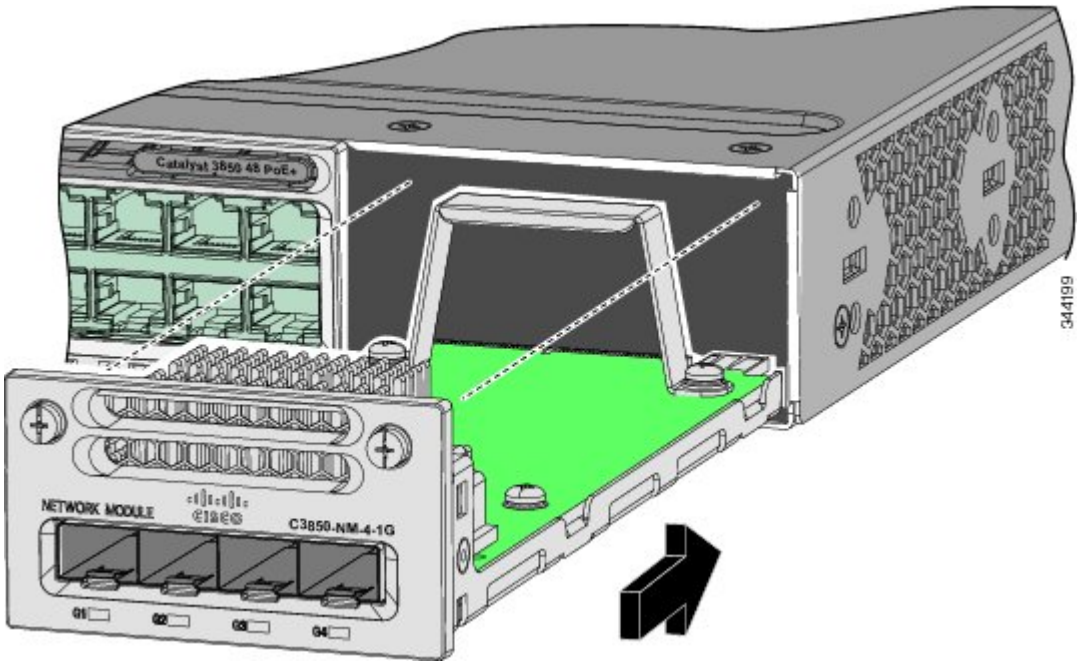
Caution Verify the correct orientation of your module before installing it. Incorrect installation can damage the module.

Caution Do not install the network module with connected cables or installed SFP modules. Always remove any cables and modules before you install the network module.

Caution A module interface might become error-disabled when a network module with connected fiber-optic cables is installed or removed. If an interface is error-disabled, you can reenable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Step 4 Position the module face up to install it in the module slot. Slide the module into the slot until the back of the module faceplate is flush with the switch faceplate. Fasten the captive screws to secure the network module in place.

Figure 39: Installing the Network Module in the Switch



Note Unlike other network modules, the C3850-NM-8-10G cannot be fully inserted and secured until the jackscrew is properly tightened.

1. Push the module into the uplink slot until the jackscrew connects with the rightmost tab.
2. You will feel some light resistance, because a spring-loaded tab inside the slot will push back against the C3850-NM-8-10G module
3. Continue to tighten the jackscrew while gently pushing the front panel of the network module into the slot.

Network Module Port Configurations

C3850-NM-4-1G Module

All ports in the C3850-NM-4-1G module are natively GigabitEthernet and are configured GigabitEthernet1/1/1 though GigabitEthernet1/1/4. There are only four interfaces that are valid, and the other four should not be used even though they still show up in the CLI.

Table 20: C3850-NM-4-1G Module

Interface	Action
GigabitEthernet1/1/1	Configure this interface
GigabitEthernet1/1/2	Configure this interface
GigabitEthernet1/1/3	Configure this interface
GigabitEthernet1/1/4	Configure this interface
TenGigabitEthernet1/1/1	Disregard
TenGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/3	Disregard
TenGigabitEthernet1/1/4	Disregard

C3850-NM-4-10G Module

All ports in the C3850-NM-4-10G module default to 10 G and should be configured as TenGigabitEthernet1/1/1 through TenGigabitEthernet1/1/4, even when you are operating them as 1 G using SFPs. Only four interfaces are valid; the other four should not be used even though they still show up in the CLI.

Table 21: C3850-NM-4-10G Module

Interface	Action
GigabitEthernet1/1/1	Disregard
GigabitEthernet1/1/2	Disregard
GigabitEthernet1/1/3	Disregard
GigabitEthernet1/1/4	Disregard
TenGigabitEthernet1/1/1	Configure this interface
TenGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/3	Configure this interface
TenGigabitEthernet1/1/4	Configure this interface

C3850-NM-2-10G Module

In the C3850-NM-2-10G module, the first two parts are natively 1-G ports and the last two ports are natively 10-G ports. So, you configure the 1-G posts as GigabitEthernet1/1/1 through GigabitEthernet1/1/2, and configure the last two ports as TenGigabitEthernet1/1/3 through TenGigabitEthernet1/1/4, even when you are operating the last two ports as 1-G. Only four interfaces are valid, and the other four should not be used even though they still show up in the CLI.

Table 22: C3850-NM-2-10G Module

Interface	Action
GigabitEthernet1/1/1	Configure this interface
GigabitEthernet1/1/2	Configure this interface
GigabitEthernet1/1/3	Disregard
GigabitEthernet1/1/4	Disregard
TenGigabitEthernet1/1/1	Disregard
TenGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/3	Configure this interface, even when operating as 1-G
TenGigabitEthernet1/1/4	Configure this interface, even when operating as 1-G

C3850-NM-8-10G Module

All ports in the C3850-NM-8-10G module default to 10 G and should be configured as TenGigabitEthernet1/1/1 through TenGigabitEthernet1/1/8, even when you are operating them as 1 G using SFP.

Table 23: C3850-NM-8-10G Module

Interface	Action
TenGigabitEthernet1/1/1	Configure this interface
TenGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/3	Configure this interface
TenGigabitEthernet1/1/4	Configure this interface
TenGigabitEthernet1/1/5	Configure this interface
TenGigabitEthernet1/1/6	Configure this interface
TenGigabitEthernet1/1/7	Configure this interface
TenGigabitEthernet1/1/8	Configure this interface

C3850-NM-2-40G Module

The default port connections for the C3850-NM-2-40G module depends on whether you use a 40 G QSFP module or a 4x10G breakout cable.

If you use a 40 G QSFP module, the ports default to 40 G interfaces. In this case, the 10 G interfaces are displayed but not used.

Table 24: C3850-NM-2-40G Module with 40 G QSFP Module

Interface	Action
FortyGigabitEthernet1/1/1	Configure this interface
FortyGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/1	Disregard
TenGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/3	Disregard
TenGigabitEthernet1/1/4	Disregard

Interface	Action
TenGigabitEthernet1/1/5	Disregard
TenGigabitEthernet1/1/6	Disregard
TenGigabitEthernet1/1/7	Disregard
TenGigabitEthernet1/1/8	Disregard

If you use a 4x10G breakout cable, the ports default to 10 G interfaces.

Table 25: C3850-NM-2-40G Module with 4x10G breakout cable

Interface	Action
FortyGigabitEthernet1/1/1	Disregard
FortyGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/1	Configure this interface
TenGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/3	Configure this interface
TenGigabitEthernet1/1/4	Configure this interface
TenGigabitEthernet1/1/5	Configure this interface
TenGigabitEthernet1/1/6	Configure this interface
TenGigabitEthernet1/1/7	Configure this interface
TenGigabitEthernet1/1/8	Configure this interface

Removing a Network Module

Note The switch complies with EMC, safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module.

Procedure

Step 1 Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface

Caution Do not remove the network module with connected cables or installed SFP modules. Always remove any cables and modules before you remove the network module.

Caution A module interface might become error-disabled when a network module with connected fiber-optic cables is installed or removed. If an interface is error-disabled, you can reenable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Step 2 Disconnect the cables from the SFP modules.

Step 3 Remove the SFP modules from the network module.

Step 4 Loosen the captive screws that hold the network module in place.

Note The C3850-NM-8-10G module is held secure in the switch by only one jackscrew. This screw also helps to eject the module from its connector interface. Before the module can be removed completely, the screw must be unscrewed all the way out. When removing the screw, a spring pushes the module out when the screw is completely disengaged. Ensure that you hold the module securely until it is completely removed.

Step 5 Grasp the captive screws, and carefully slide it out of the slot.

Step 6 Install a replacement network module or a blank module in the slot.

Step 7 Place the module that you removed in an antistatic bag or other protective environment.

SFP and SFP+ Modules

Installing SFP and SFP+ Modules

Before You Begin

You must have an installed network module to use SFP and SFP+ modules (except for the Catalyst WS-C3850-12S and WS-C3850-24S). The downlink ports on the Catalyst WS-C3850-12S and WS-C3850-24S switch models support standard SFP modules, and the downlink ports on the Catalyst WS-C3850-12XS and WS-C3850-24XS switch models support standard SFP+ modules.

See the switch release notes on Cisco.com for the list of supported SFP and SFP+ modules. Use only supported SFP modules on the switch. For the latest information about supported SFP and SFP+ modules, refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

For information about installing, removing, cabling, and troubleshooting SFP modules, see the module documentation that shipped with your device.

Observe these precautions:

Warning Class 1 laser product. Statement 1008

- Do not remove the dust plugs from the SFP modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.
- Removing and installing an SFP module can shorten its useful life. Do not remove and insert any SFP module more often than is necessary.
- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.
- When you insert several SFPs in multiple switch ports, wait for 5 seconds between inserting each SFP. This will prevent the ports from going into error disabled mode. Similarly, when you remove an SFP from a port, wait for 5 seconds before reinserting it.

Procedure

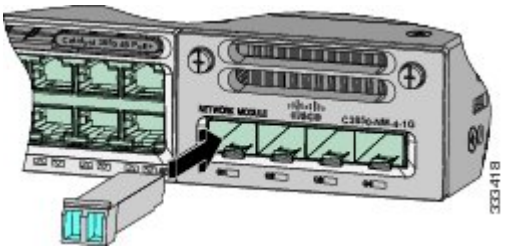
Step 1 Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2 Find the send (TX) and receive (RX) markings that identify the top of the SFP module.
On some SFP modules, the send and receive (TX and RX) markings might be shown by arrows that show the direction of the connection.

Step 3 If the SFP module has a bale-clasp latch, move it to the open, unlocked position.

Step 4 Align the module in front of the slot opening, and push until you feel the connector snap into place.

Figure 40: Installing an SFP Module in the Network Module

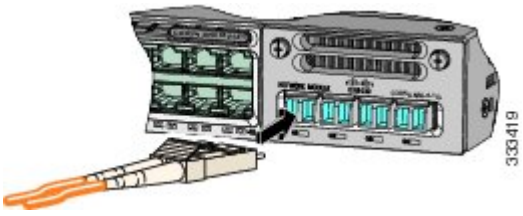


Step 5 If the module has a bale-clasp latch, close it to lock the SFP module in place.

Step 6 Remove the SFP dust plugs and save.

Step 7 Connect the SFP cables.

Figure 41: Network Module with SFP Modules Installed



Removing SFP and SFP+ Modules

Procedure

Step 1 Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2 Disconnect the cable from the SFP module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).

Step 3 Insert a dust plug into the optical ports of the SFP module to keep the optical interfaces clean.

Step 4 If the module has a bale-clasp latch, pull the bale out and down to eject the module. If you cannot use your finger to open the latch, use a small, flat-blade screwdriver or other long, narrow instrument to open it.

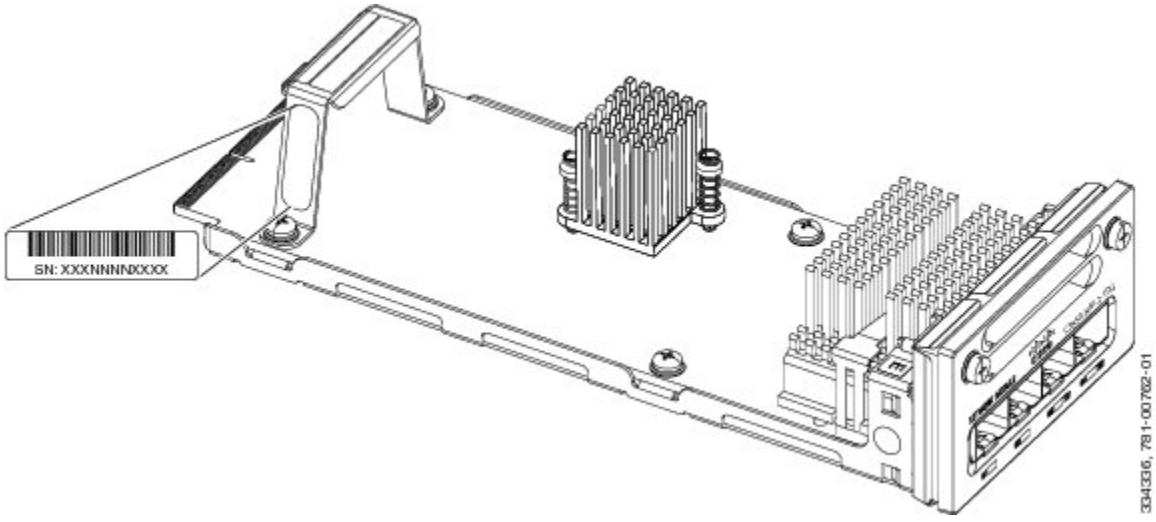
Step 5 Grasp the SFP module, and carefully remove it from the slot.

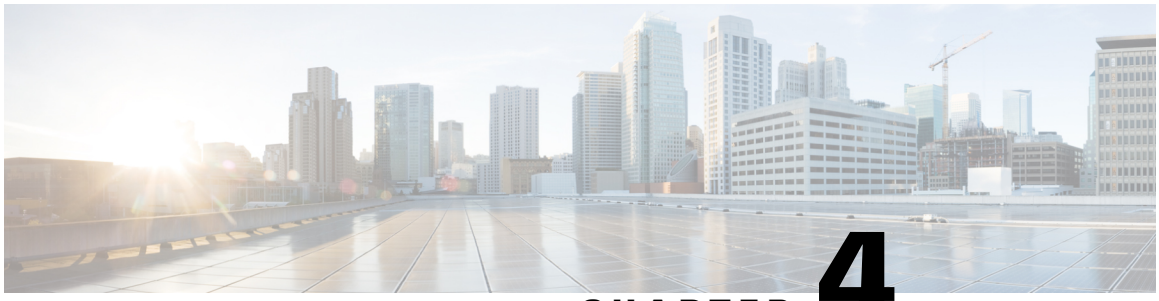
Step 6 Place the SFP module in an antistatic bag or other protective environment.

Finding the Network Module Serial Number

If you contact Cisco Technical Assistance regarding a network module, you need to know its serial number.

Figure 42: Network Module Serial Number Location





CHAPTER 4

Power Supply Installation

- Power Supply Module Overview, page 69
- Installation Guidelines, page 73
- Installing or Replacing an AC Power Supply, page 74
- Installing a DC Power Supply, page 76
- Finding the Power Supply Module Serial Number, page 82

Power Supply Module Overview

The switch operates with either one or two active power supply modules. A Catalyst 3850 switch that is part of a StackPower stack operates with power supplied by other stack switches.

You can use two AC modules, two DC modules, one AC and one DC module, or one module and a blank cover.

Note In a NEBS installation, you can use two DC modules or one DC module and a blank cover.

All power supply modules have internal fans. All switches ship with a blank cover in the second power supply slot.

The following table describes the supported internal power supply modules.

Table 26: Power Supply Module Part Numbers and Descriptions

Part Number	Description
PWR-C1-1100WAC=	1100-W AC power supply module
PWR-C1-715WAC=	715-W AC power supply module
PWR-C1-350WAC=	350-W AC power supply module
CPWR-C1-440WDC=	440-W DC power supply module

Part Number	Description
PWR-C3-750WAC-R	750-W AC power supply module
PWR-C3-750WAC-F	750-W AC power supply module
PWR-C3-750WDC-R	750-W DC power supply module
PWR-C3-750WDC-F	750-W DC power supply module
PWR-C1-BLANK	Blank cover

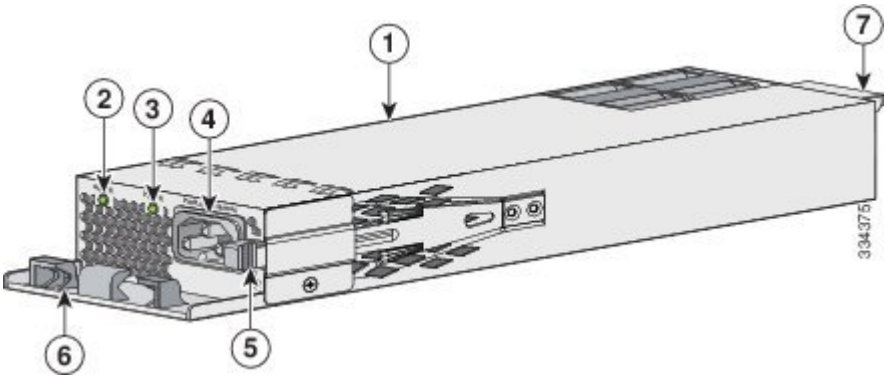
For information on available PoE, PoE+, and UPOE and PoE requirements, see these sections the Power Supply Modules, on page 26.

The 350-W and 715-W AC power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The 1100-W power supply module is an autoranging unit that supports input voltages between 115 and 240 VAC. The 440-W DC power supply module has dual input feeds (A and B) and supports input voltages between 36 and 72 VDC. The output voltage range is 51 to 57 V.

Each AC power supply module has a power cord for connection to an AC power outlet. The 1100-W and 715-W modules use a 16-AWG cord (only North America). All other modules use an 18-AWG cord. The DC power supply module must be wired to a DC power source.

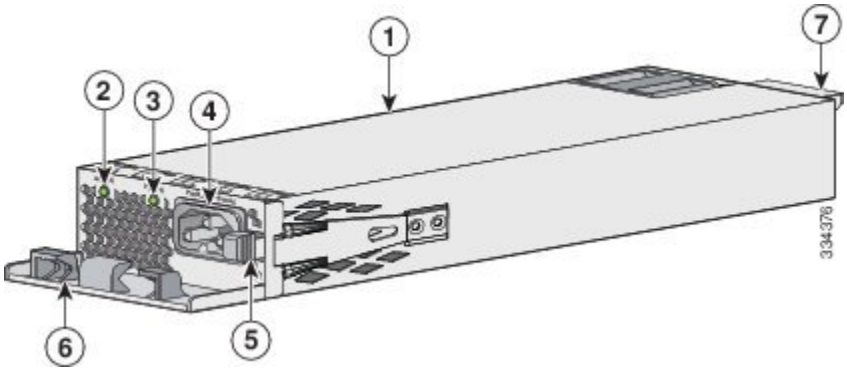
The following illustrations show the power supply modules.

Figure 43: 1100-W AC Power Supply



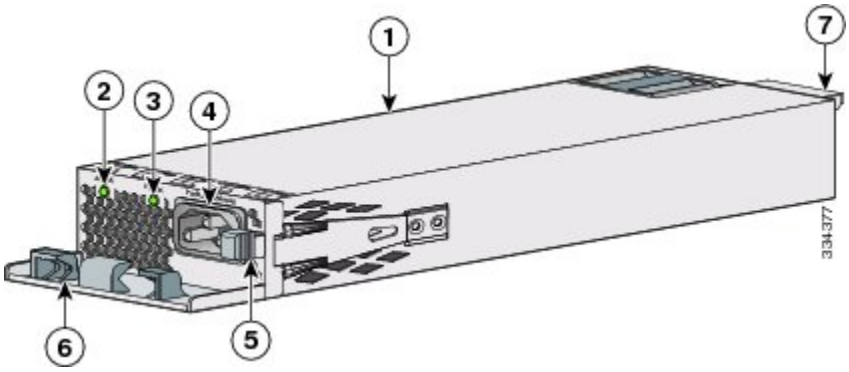
1	1100-W AC power supply module	5	Release latch
2	AC OK LED	6	Power cord retainer
3	PS OK LED	7	Keying feature
4	AC power cord connector		

Figure 44: 715-W AC Power Supply



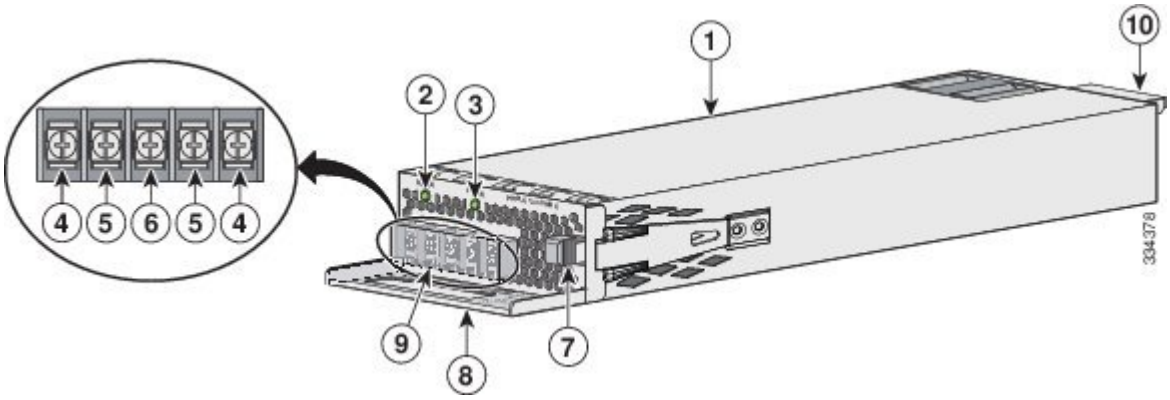
1	715-W AC power supply module	5	Release latch
2	AC OK LED	6	Power cord retainer
3	PS OK LED	7	Keying feature
4	AC power cord connector		

Figure 45: 350-W AC Power Supply



1	350-W AC power supply module	5	Release latch
2	AC OK LED	6	Power cord retainer
3	PS OK LED	7	Keying feature
4	AC power cord connector		

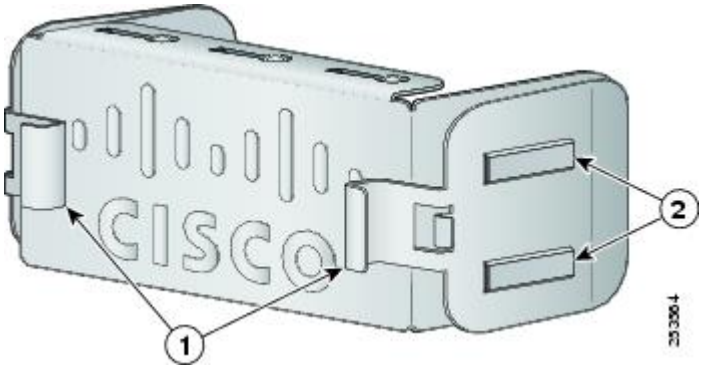
Figure 46: 440-W DC Power Supply



1	440-W DC power supply module	6	Grounding terminal
2	AC OK LED	7	Release latch
3	PS OK LED	8	Extraction handle
4	Input power terminals (positive polarity)	9	Terminal block safety cover
5	Input power terminals (negative polarity)	10	Keying feature

If no power supply is installed in a power supply slot, install a power supply slot cover.

Figure 47: Power Supply Slot Cover



1	Release handles	2	Retainer clips

Table 27: Switch Power Supply Module LEDs

AC OK DC OK	Description	PS OK	Description
Off	No AC input power. No DC input power.	Off	Output is disabled, or input is outside operating range (AC LED is off). Output is disabled, or input is outside operating range (DC LED is off).
Green	AC input power present. DC input power present.	Green	Power output to switch active.
		Red	Output has failed.

Installation Guidelines

Observe these guidelines when removing or installing a power supply or fan module:

- Do not force the power supply or fan module into the slot. This can damage the pins on the switch if they are not aligned with the module.
- A power supply that is only partially connected to the switch can disrupt the system operation.
- Remove power from the power-supply module before removing or installing the module.
- The power supply is hot-swappable. In some configurations, such as full PoE+ or power sharing mode, removing a power supply causes powered devices to shut down until the power budget matches the input power of a single power supply. To minimize network interruption, hot swap the power supply under these circumstances:
  - The switch is in StackPower mode and sufficient power is available.
  - The switch is powered by other switches in a power stack, and no active backup is in progress.

  For the switch commands that display available power budget, see the software configuration guide.

Caution Do not operate the switch with one power-supply module slot empty. For proper chassis cooling, both module slots must be populated, with either a power supply or a blank module.

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 Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Statement 1029

Warning Do not reach into a vacant slot or chassis while you install or remove a module. Exposed circuitry could constitute an energy hazard.

Statement 206

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

Statement 1030

Warning If a Cisco external power system is not connected to the switch, install the provided connector cover on the back of the switch.

Statement 386

Installing or Replacing an AC Power Supply

Procedure

Step 1 Turn off the power at its source.

Step 2 Remove the power cord from the power cord retainer.

Step 3 Remove the power cord from the power connector.

Step 4 Press the release latch at the right side of the power supply module inward and slide the power supply out.

Caution Do not leave the power-supply slot open for more than 90 seconds while the switch is operating.

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

Step 5 Insert the new power supply into the power-supply slot, and gently push it into the slot. When correctly inserted, the 350-W and 715-W power supplies (excluding the power cord retainer) are flush with the switch rear panel. The 1100-W power-supply module extends 1.5 inches from the switch rear panel.

Figure 48: Inserting the AC-Power Supply in the Catalyst WS-C3850 Switch

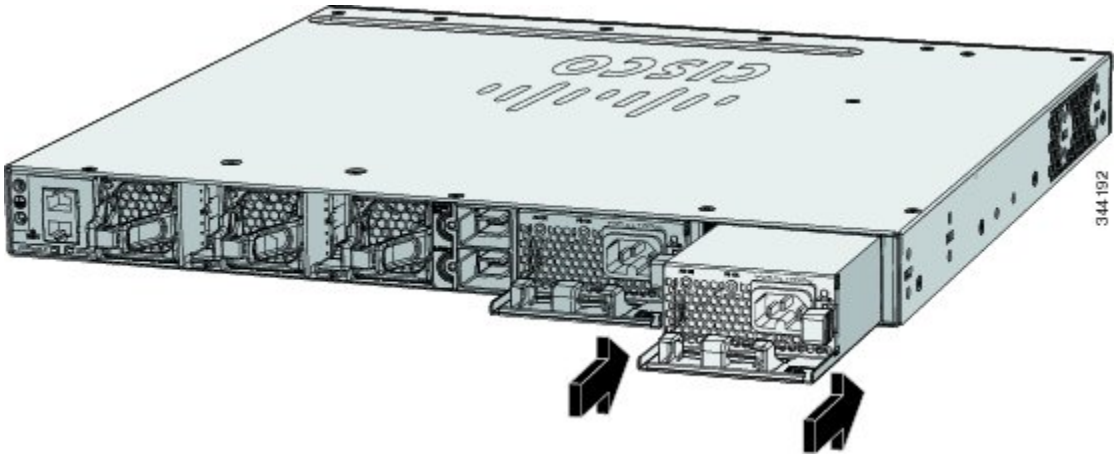
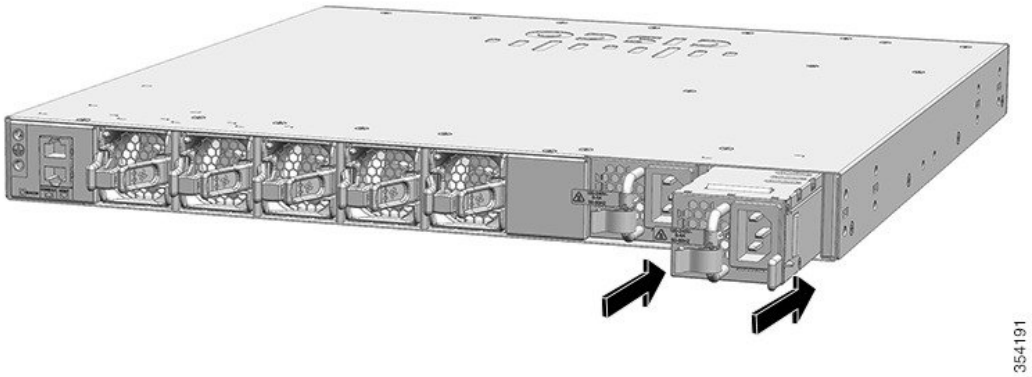


Figure 49: Inserting the AC-Power Supply in the Catalyst WS-C3850-48XS Switch



Step 6 (Optional) Make a loop in the power cord and thread it through the power cord retainer.

Figure 50: AC-Power Supply with Power Cord Retainer

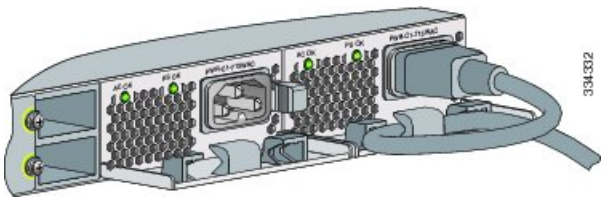
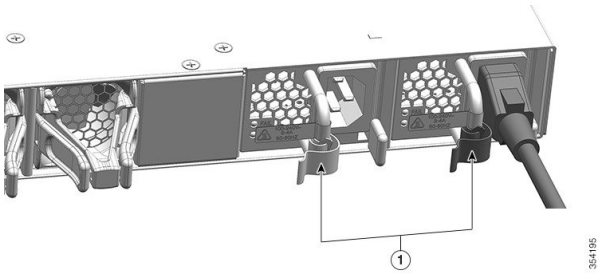


Figure 51: AC-Power Supply with Velcro Strap



1	Velcro strap

Step 7 Connect the power cord to the power supply and to an AC power outlet. Turn on the power at the power source.

Step 8 Confirm that the power supply AC OK and PS OK LEDs are green.

Installing a DC Power Supply

Warning An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug. Statement 122

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: 20 A. Statement 1005

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

Warning Hazardous voltage or energy may be present on power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place. Statement 1086

Note The grounding architecture of this product is DC-isolated (DC-I).

Equipment That You Need

- Ratcheting torque screwdriver with a number-2 Phillips head that exerts up to 15 pound-force inches (lbf-in.) of pressure.
- Panduit crimping tool with optional controlled-cycle mechanism (model CT-720, CT-920, CT-920CH, CT-930, or CT-940CH).
- Wire-stripping tools.
- 12-gauge copper ground wire (insulated or not) for the single-hole ground connection.
- 8-gauge copper ground wire (insulated or not) for the dual-hole ground connection.
- Dual-hole ground lug and two screws (included in the DC power supply accessory kit) and single-hole ground lug and screw (included in the switch accessory kit). The dual-hole lug is required for the grounding of the switch in a NEBS installation where the DC supply is the only NEBS compliant power supply option.
- Four leads of 14-gauge copper wire.
- Four fork-type terminals from the DC power supply accessory kit. The terminals must be the proper size for M3 screws in a Dinkle DT-35-B25-style terminal block.

Grounding the Switch

Follow these steps to install either a single-hole ground lug or a dual-hole ground lug on the switch. Make sure to follow any grounding requirements at your site.

Before You Begin

Follow the grounding procedures at your site and observe these warnings:

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 Follow the grounding procedure instructions, and use a UL-listed lug (included in the accessory kit).

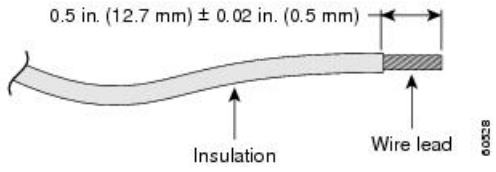
Caution To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the (Management Ethernet) ports only to intra-building or unexposed wiring or cable. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

Procedure

Step 1 Use the ground lug screw and the lug ring for a single-ground connection. Use the dual-hole lug for a ground connection in a NEBS installation.

Step 2 Strip the 12-gauge or 8-gauge ground wire to 0.5 inch (12.7 mm) ± 0.02 inch (0.5 mm). Stripping more than the recommended amount of wire can leave exposed wire from the connector. Use 12-gauge copper ground wire for the single-ground connection. Use 8-gauge copper ground wire for the dual-ground connection.

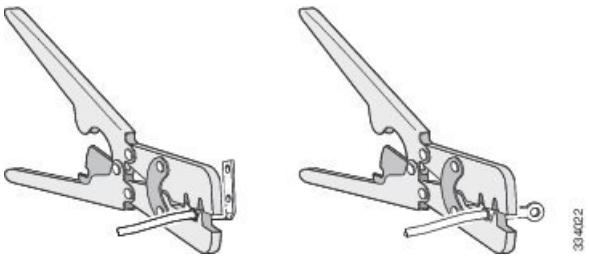
Figure 52: Stripping the Ground Wire



Step 3 Slide the open end of the ground lug over the exposed area of the wire.

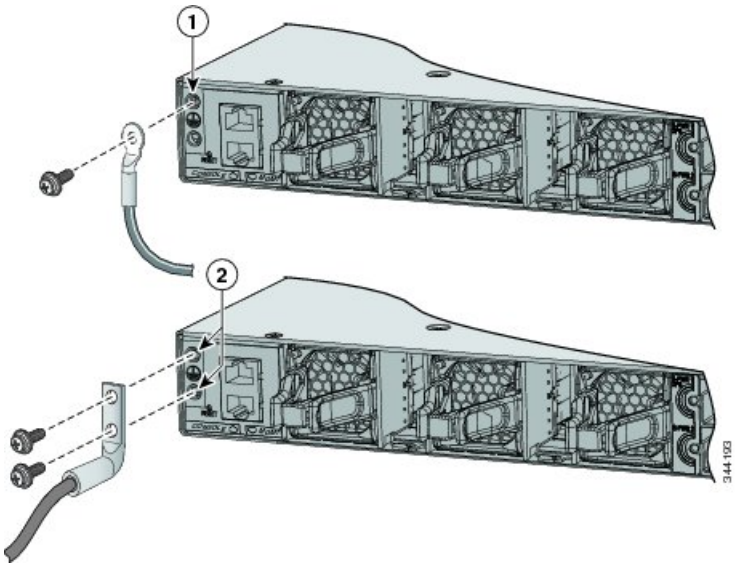
Step 4 Using a Panduit crimping tool, crimp the ground lug to the wire.

Figure 53: Crimping the Ground Lug



Step 5 Use the ground screw to attach the single-ground lug to the switch rear panel. Use two ground screws to attach the dual-hole lug to the switch rear panel.

Figure 54: Attaching the Ground Lug and Wire Assembly



1	Single-hole ground screw and lug ring	2	Dual-hole ground adapter and dual-hole lug

Step 6 Using a ratcheting torque screwdriver, torque the ground-lug screws to 60 lbf-in. (960 ozf-in.).

Step 7 Connect the other end of the grounding wire to an appropriate grounding point at your site or to the rack.

Installing the DC Power Supply in the Switch

Before You Begin

Before installing the power supply, see the Installation Guidelines, on page 73.

Procedure

Step 1 Turn off DC power. To ensure that power is off, change the circuit breakers to the OFF position, and tape the circuit-breaker switches in the OFF position.

Step 2 Remove the plastic safety cover from the power supply terminal blocks.

Note If you are not replacing a DC power supply, go to Step 5.

Step 3 Use a number-2 Phillips screwdriver to remove the DC-input power wires from the power terminals.

Step 4 Press the release latch at the right side of the power supply module inward, and pull the power supply out.

Step 5 Insert the power supply in the power-supply slot, and gently push it into the slot. When correctly installed, the DC power supply (excluding the extraction handle) is flush with the switch rear panel.

Figure 55: Inserting the DC-Power Supplyin the Catalyst WS-C3850 Switch

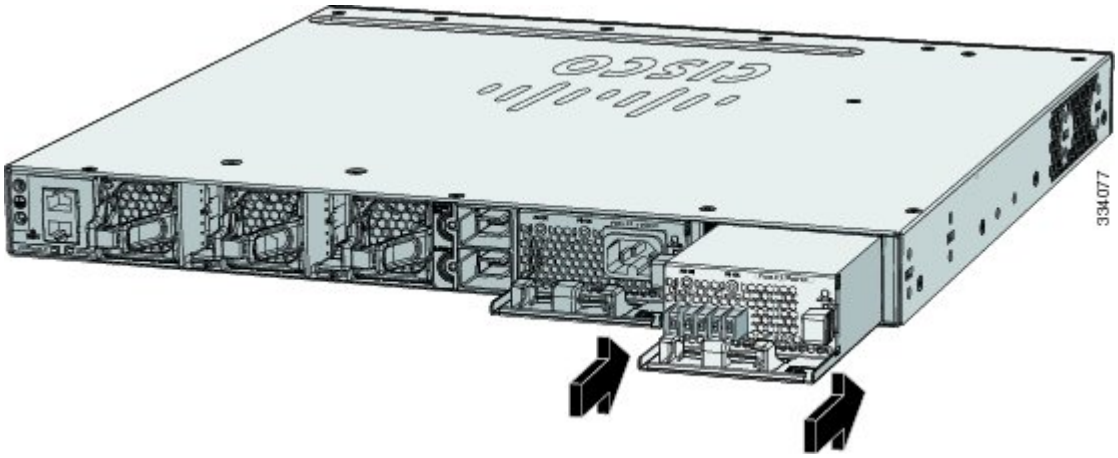
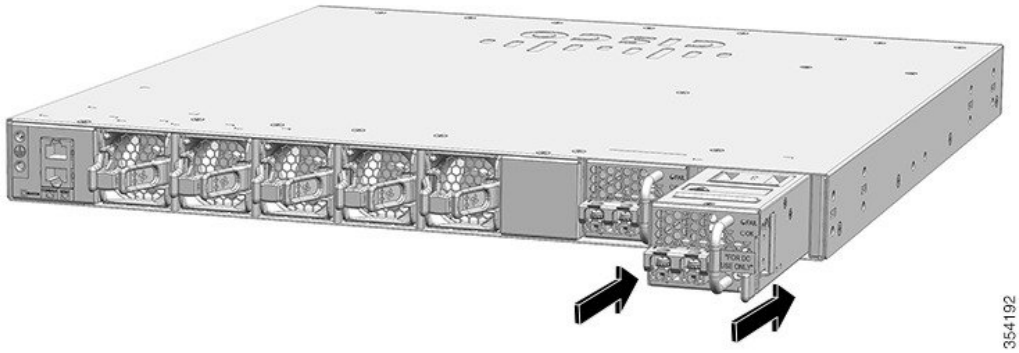


Figure 56: Inserting the DC-Power Supply in the Catalyst WS-C3850-48XS Switch



Step 6 Connect the input power as described in Wiring the DC Input Power Source, on page 81.

Wiring the DC Input Power Source

Procedure

Step 1 Using a wire-stripping tool, strip each of the four wires from the DC-input power source to the appropriate length for the terminals.

Warning Use copper conductors only. Statement 1025

Step 2 Using a Panduit crimping tool, crimp the fork-type terminals to the copper conductor, 90C, 12-AWG DC power input wires.

Step 3 Connect the DC-input power terminals to the terminal blocks. Make sure to match the polarity (negative to negative, positive to positive) when connecting the wires to the terminal blocks. Connect the ground wire to a grounded metal rack or to earth ground if the switch is not in a grounded rack.

Figure 57: DC Source A Isolated From Source B with No Common Ground

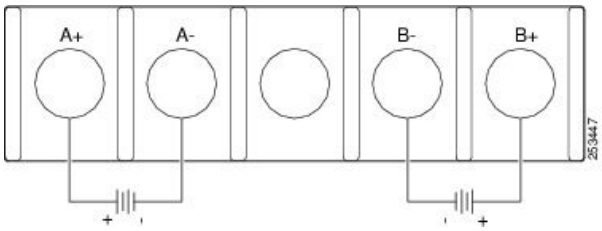
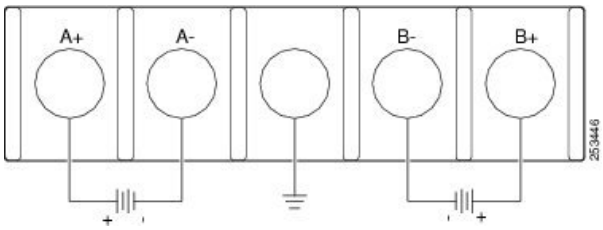


Figure 58: DC Source A and Source B Connections with Common Ground



Step 4 Torque all terminal block screws to 11 lbf-in.

Step 5 Replace the terminal block safety cover.

Step 6 Move the DC power source circuit-breakers to the ON position.

Step 7 Confirm that the power supply DC OK and PS OK LEDs are green.

Finding the Power Supply Module Serial Number

If you contact Cisco Technical Assistance regarding a power supply module, you need to know the serial number. See the following illustrations to find the serial number. You can also use the CLI to find out the serial number.

Figure 59: 1100-W AC Power Supply Serial Number

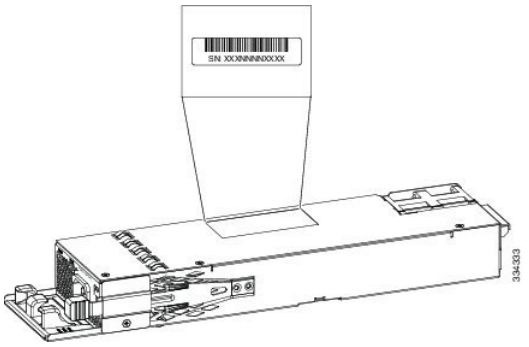
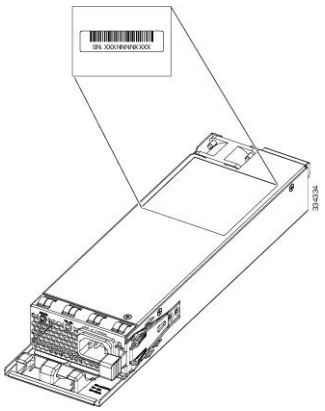
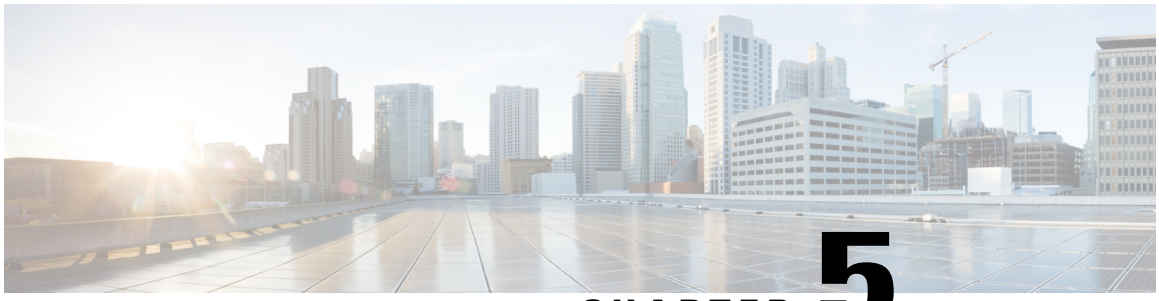


Figure 60: 715-W and 350-W AC Power Supply Serial Number





CHAPTER 5

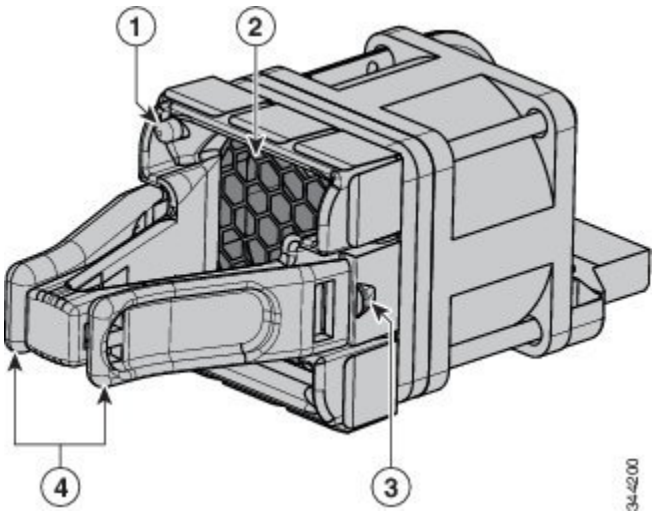
Installing the Fan

- Fan Module Overview , page 83
- Installation Guidelines, page 84
- Installing a Fan Module, page 85
- Finding the Fan Module Serial Number, page 85

Fan Module Overview

Depending on the switch model, three or five internal hot-swappable are available. A powered switch should always have more than one operational fan. The switch can operate with two operational fans and one nonfunctional fan, but the failed fan should be replaced as soon as possible to avoid a service interruption due to a second fan fault.

Figure 61: Fan Module for WS-C3850 Switches

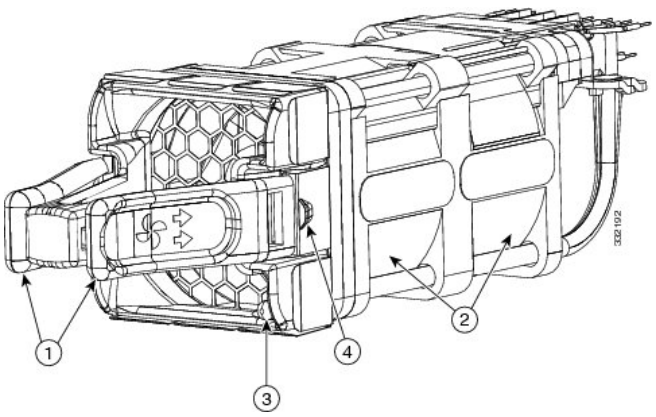


1	Fan LED	3	Retainer clip

2	Exhaust vent	4	Extraction handles

Note The WS-C3850 switches require three fans for proper cooling.

Figure 62: Fan Module for Catalyst WS-C3850-48XS Switch Models



1	Fan assembly levers	3	Fan status LED (red/green)
2	Fans	4	Fan assembly retention latch

Note Ensure that the power supplies are inserted correctly to match the corresponding fans. Power supplies with blue handles correspond to fans with blue handles, and power supplies with red handles correspond to fans with red handles.

Note The WS-C3850-48XS switches require five fans for proper cooling.

Installation Guidelines

Observe these guidelines when removing or installing a fan module:

- Do not force the fan module into the slot. This can damage the pins on the switch if they are not aligned with the module.
- A fan module that is only partially connected to the switch can disrupt the system operation.
- The switch supports hot swapping of the fan module. You can remove and replace the module without interrupting normal switch operation.

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

Installing a Fan Module

Procedure

Step 1 Pinch the fan module release handle, and slide the module out.

Caution You should replace the fan module within 5 minutes to avoid overheating the switch.

Step 2 Install the fan module in the fan slot, and firmly push it into the slot, applying pressure to the end of the module, not the extraction handles. When correctly inserted, the fan module is flush with the switch rear panel. When the fan is operating, a green LED is on in the top left corner of the fan.

Warning Do not reach into a vacant slot when installing or removing a module. Exposed circuitry is an energy hazard. Statement 206

Figure 63: Installing the Fan Module

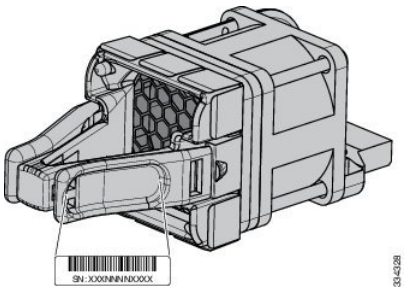
1	Fan LED

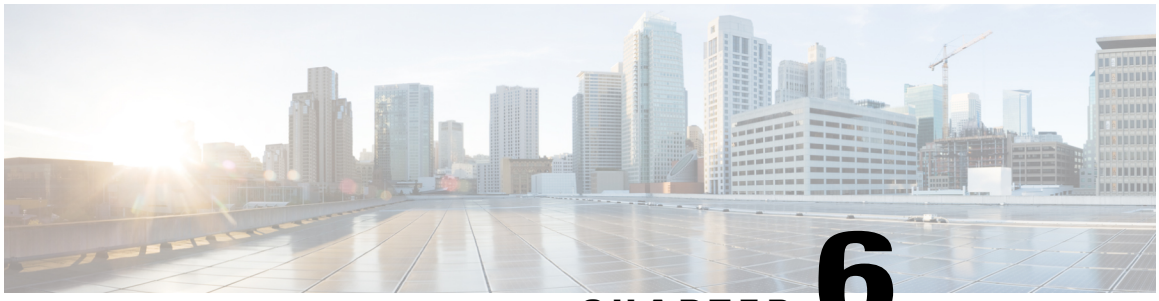
Note Ensure that the fans are inserted correctly to match the corresponding power supplies. Fans with blue handles correspond to power supplies with blue handles, and fans with red handles correspond to power supplies with red handles.

Finding the Fan Module Serial Number

If you contact Cisco Technical Assistance regarding a fan module, you need to know the fan module serial number. See the following illustration to find the serial number.

Figure 64: Fan Module Serial Number





CHAPTER 6

Troubleshooting

- Diagnosing Problems, page 87
- Replacing a Failed Data Stack Member, page 91

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 Device Manager, from the CLI, or from an SNMP workstation.

Switch POST Results

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

Switch LEDs

If you have physical access to the switch, look at the port LEDs for troubleshooting information about the switch. See the LED section for a description of the LED colors and their meanings.

Switch Connections

Bad or Damaged Cable

Always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets as a result of subtle damage to the wiring or connectors. You can identify this situation because the port has many packet errors or the port constantly flaps (loses and regains link).

- Examine or exchange the copper or fiber-optic cable with a known, good cable.

- Look for broken or missing pins on cable connectors.
- Rule out any bad patch panel connections or media convertors between the source and the destination. If possible, bypass the patch panel, or eliminate faulty media convertors (fiber-optic-to-copper).
- Try the cable in another port or interface, if possible, to see if the problem follows the cable.
- Remove and inspect the stack cable and stack port for bent pins or damaged connectors. If the cable is bad, replace it with a known good cable.

Ethernet and Fiber-Optic Cables

Make sure that you have the correct cable for the connection.

- For Ethernet, use Category 3 copper cable for 10 Mb/s UTP connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100/1000 Mb/s connections.
- For fiber-optic cables, verify that you have the correct cable for distance and port type. Ensure that the connected device ports match and use the same type of encoding, optical frequency, and fiber type.
- For copper connections, determine if a crossover cable was used when a straight-through 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 a shutdown port can cause one side to show link even though the other side does not have link.

A port LED that is on 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 port LED does not turn on:

- Connect the cable from the switch to a known good device.
- Ensure 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.
- Check for loose connections. Sometimes a cable appears to be seated, but is not. Disconnect the cable and then reconnect it.

10/100/1000 Port Connections

A port appears to malfunction:

- Use the Mode button to show the status for all ports.
- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shutdown. Reenable the port if necessary.

10/100/1000 PoE+ Port Connections

A powered device connected to a PoE port does not receive power:

- Use the Mode button to show the PoE status for all ports.
- Use the **show interfaces** privileged EXEC command to see if the port is in error-disabled, disabled, or shutdown. Reenable the port if necessary.
- Verify that the power supply installed in the switch meets the power requirements of your connected devices.
- Verify that there is sufficient PoE power budget to provide power to the attached device. Use the **show power inline** global configuration command to check on the available PoE power budget.
- Verify the cable type. Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switch by a crossover cable. Replace the crossover cable with a straight-through cable.

Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices. You must remove any cable or device that causes a PoE fault.

SFP and SFP+ Module

Use only Cisco SFP or SFP+ modules in 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.

- Inspect the SFP module. Exchange the suspect module with a known good module. Verify that the module is supported on this platform. (The switch release notes on Cisco.com list the SFP modules that the switch supports.)
- Use the **show interfaces** privileged EXEC command to see if the port or module is error-disabled, disabled, or shutdown. Reenable the port if needed.
- Make sure that all fiber-optic connections are properly cleaned and securely connected.
- When you insert several SFPs in multiple switch ports, wait for 5 seconds between inserting each SFP. This will prevent the ports from going into error disabled mode. Similarly, when you remove an SFP from a port, wait for 5 seconds before reinserting it.

Interface Settings

Verify that the interface is not disabled or powered off. If an interface is manually shut down on either side of the link, it does not come up until you reenable the interface. Use the **show interfaces** privileged EXEC command to see if the interface is error-disabled, disabled, or shutdown on either side of the connection. If needed, reenable the interface.

Ping End Device

Ping from the directly connected switch first, 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

STP loops can cause serious performance issues that look like port or interface problems.

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

You can enable UniDirectional Link Detection (UDLD) on the switch to help identify unidirectional link problems.

Switch Performance

Speed, Duplex, and Autonegotiation

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

A common issue with speed and duplex occurs when duplex and speed settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. Mismatches can happen when manually setting the speed and duplex or from autonegotiation issues between the two devices.

To maximize switch performance and to ensure a link, follow one of these guidelines when changing the duplex or the speed settings.

- Let both ports autonegotiate both speed and duplex.
- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.
- If a remote device does not autonegotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not autonegotiate.

Autonegotiation and Network Interface Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces autonegotiate. Laptops or other devices are commonly set to autonegotiate, yet sometimes autonegotiation issues occur.

To troubleshoot autonegotiation problems, try manually setting both sides of the connection. If this does not solve the problem, there could be a problem with the firmware or software on your NIC. You can resolve this by upgrading the NIC driver to the latest version.

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.

Clearing the Switch IP Address and Configuration

If you have configured a new switch with a wrong IP address, or if all of the switch LEDs start blinking when you are trying to enter Express Setup mode, you can clear the configured IP address. The switch returns to the factory default settings.

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

Procedure

Step 1 If you are using Cisco IOS XE Release 3E or later releases, enter the **erase startup-config** privileged EXEC command to clear the contents of your startup configuration.

Step 2 Press and hold the **Mode** button. The switch LEDs blink after about 2 seconds. If the switch is not configured, the LEDs above the Mode button turn green. You can omit the next step.

Step 3 Continue holding down the Mode button. The LEDs stop blinking after 8 seconds, and then the switch reboots. You can now configure the switch by using Express Setup as described in the switch getting started guide.

You can also configure the switch by using the CLI setup procedure described in the appendix.

Replacing a Failed Data Stack Member

Procedure

Step 1 The replacement switch must be a Catalyst 3850 switch.

Step 2 Power down the failed switch. Remove AC or DC input power, and if the switch is part of a StackPower stack, remove the StackPower cables.

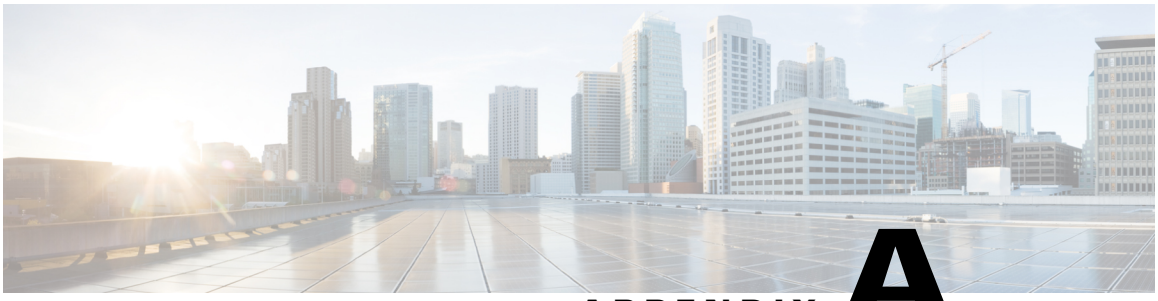
Step 3 Make sure the replacement switch is powered off, and then connect it to the stack. If you had manually set the member numbers for the switch stack, manually assign the member number of the failed switch to the replacement switch. To manually assign the stack member number, see the switch software configuration guide on Cisco.com.

Step 4 Make the same Gigabit Ethernet connections on the replacement switch that were on the failed switch.

Step 5 Reinstall any modules, and make cable connections.

Step 6 Power on the replacement switch.

The replacement switch has the same configuration for all the interfaces as the failed switch and functions the same as the failed switch.



APPENDIX A

Technical Specifications

- Environmental and Physical Specifications, page 93
- Specifications for the Power Supplies, Switches, and Fan, page 95

Environmental and Physical Specifications

This table describes the environmental specifications.

Table 28: Environmental Specifications for the Switch

Environmental Ranges	
Operating temperature [14]	23 to 113°F (–5 to 45°C)
Storage temperature	–40 to 158°F (–40 to 70°C)
Relative humidity	5 to 95% (noncondensing)
Operating altitude	Up to 10,000 ft (3000 m)
Storage altitude	Up to 15,000 ft (4500 m)

14 Minimum ambient temperature for cold start is 32°F (0°C)

This table describes the environmental specifications.

Table 29: Environmental Specifications for the Power Supplies

Environmental Ranges	
Operating temperature	AC power supply: 23 to 113°F (–5 to 45°C) DC power supply: 23 to 131°F (–5 to 55°C)

Environmental Ranges	
Storage temperature	–40 to 158°F (–40 to 70°C)
Relative humidity	10 to 95% (noncondensing)
Altitude	AC power supply: up to 10,000 ft (3,000 m) DC power supply: up to 13,000 ft (4,000 m)

This table describes the physical specifications.

Table 30: Physical Specifications for the Switch

Physical Specifications	
Dimensions (H x W x D)	1.73 x 17.5 x 17.5 in. (4.4 x 44.5 x 44.5 cm) (with the FAN FRUs installed but without the power supplies installed)
Weight (weights do not include the functional network modules, the blank module, or the power supplies).	
Catalyst 3850 24-port PoE switches	13.3 lb (6.0 kg)
Catalyst 3850 24-port non-PoE switches	13.1 lb (6.0 kg)
Catalyst 3850 48-port non-PoE switches	14.2 lb (6.5 kg)
Catalyst 3850 48-port PoE switches	14.4 lb (6.5 kg)
WS-C3850-24S and WS-C3850-12S switches	12.4 lb (5.7 kg)
WS-C3850-12XS switches	12.9 lb (5.8 kg)
WS-C3850-24XS switches	13.5 lb (6.1 kg)
WS-C3850-48XS switches	16.42 lb (7.45 kg)

This table describes the physical specifications.

Table 31: Physical Specifications for the Power Supplies

Weight

PWR-C1-1100WAC	3 lb (1.4 kg)
PWR-C1-715WAC	2.8 lb (1.3 kg)
PWR-C1-350WAC	2.4 lb (1.1 kg)
PWR-C1-440WDC=	2.6 lb (1.2 kg)
PWR-C3-750WAC-R	3.7 lb (1.68 kg)
PWR-C3-750WAC-F	3.7 lb (1.68 kg)
PWR-C3-750WDC-R	3.7 lb (1.68 kg)
PWR-C3-750WDC-F	3.7 lb (1.68 kg)
Dimensions (H x D x W) The dimensions shown include the extraction handle and the keying feature.	
PWR-C1-1100WAC	1.58 X 3.25 X 13.71 in. (40.1 X 82.55 X 348.2 mm)
PWR-C1-715WAC	1.58 X 3.25 X 12.21 in. (40.1 X 82.55 X 310.1 mm)
PWR-C1-350WAC	1.58 X 3.25 X 12.21 in. (40.1 X 82.55 X 310.1 mm)
PWR-C1-440WDC=	1.58 X 3.25 X 12.21 in. (40.1 X 82.55 X 310.1 mm)
PWR-C3-750WAC-R	1.58 X 2.15 X 14.28 in. (40.1 mm X 54.6 mm X 362.7 mm)
PWR-C3-750WAC-F	1.58 X 2.15 X 14.28 in. (40.1 mm X 54.6 mm X 362.7 mm)
PWR-C3-750WDC-R	1.58 X 2.15 X 14.28 in. (40.1 mm X 54.6 mm X 362.7 mm)
PWR-C3-750WDC-F	1.58 X 2.15 X 14.28 in. (40.1 mm X 54.6 mm X 362.7 mm)

Specifications for the Power Supplies, Switches, and Fan

Table 32: Power Specifications for the AC Power

Power Requirements

Maximum output power	• PWR-C1-1100WAC: 1100 W • PWR-C1-715WAC: 715 W • PWR-C1-350WAC: 350 W • PWR-C3-750WAC-R: 750 W • PWR-C3-750WAC-F: 750 W
Input voltage and Frequency	• PWR-C1-1100WAC: 1100-W, 115 to 240 VAC (autoranging) 50-60 Hz • PWR-C1-715WAC: 715 W, 100 to 240 VAC(autoranging) 50-60 Hz • PWR-C1-350WAC: 350 W, 100 to 240 VAC(autoranging) 50-60 Hz • PWR-C3-750WAC-F: 750 W, 90 to 264 VAC(autoranging) 50-60 Hz • PWR-C3-750WAC-F: 750 W, 90 to 264 VAC(autoranging) 50-60 Hz
Input current	• PWR-C1-1100WAC: 12–6 A • PWR-C1-715WAC: 10–5 A • PWR-C1-350WAC: 4–2 A • PWR-C3-750WAC-R: 11 A @ 100 VAC (max), 6 A @ 200 VAC (max) • PWR-C3-750WAC-F: 11 A @ 100 VAC (max), 6 A @ 200 VAC (max)
Output ratings	• PWR-C1-1100WAC: –56 V@19.64 A • PWR-C1-715WAC: –56 V@12.8 A • PWR-C1-350WAC: –56 V@6.25 A • PWR-C3-750WAC-R:12 VDC @ 62 A, 3.3 VDC @ 3 A • PWR-C3-750WAC-F:12 VDC @ 62 A, 3.3 VDC @ 3 A
Total input BTU[15]	• PWR-C1-1100WAC: 4263 BTUs per hour, 1250 W • PWR-C1-715WAC: 2742 BTUs per hour, 804 W • PWR-C1-350WAC: 1357 BTUs per hour, 398 W

Total output BTU[16]	• PWR-C1-1100WAC: 3751 BTUs per hour, 1100 W • PWR-C1-715WAC: 2438 BTUs per hour, 715 W • PWR-C1-350WAC: 1194 BTUs per hour, 350 W • PWR-C3-750WAC-R: 1122 BTU/hour (nominal), 1365 BTU/hour (max) • PWR-C3-750WAC-F: 1122 BTU/hour (nominal), 1365 BTU/hour (max)

15 The total input and total output BTU ratings refer to input power to the power supply and output power to the switch. The BTU ratings are based on 100 VAC for the 350-W and 715-W power supplies and 115 VAC for the 1100-W power supply.

16 The total input and total output BTU ratings refer to input power to the power supply and output power to the switch. The BTU ratings are based on 100 VAC for the 350-W and 715-W power supplies and 115 VAC for the 1100-W power supply.

Table 33: Power Specifications for DC-Power

Power Requirements	
Maximum output power	• PWR-C1-440WDC: 440 W • PWR-C3-750WDC-R: 750 W • PWR-C3-750WDC-F: 750 W
Input current	• PWR-C1-440WDC: 16 –8 A • PWR-C3-750WDC-R: 25 A • PWR-C3-750WDC-F: 25 A
DC input voltage	• PWR-C1-440WDC: –36 to –72 VDC • PWR-C3-750WDC-R: –36 to –72 VDC • PWR-C3-750WDC-F: –36 to –72 VDC
Output ratings	• PWR-C1-440WDC: –56 V@7.86 A • PWR-C3-750WDC-R:62 A @ 12 VDC, 3 A @ 3.3 VDC • PWR-C3-750WDC-F: 62 A @ 12 VDC, 3 A @ 3.3 VDC

Voltage range domestic	• PWR-C1-440WDC: –36 VDC (minimum), –48 VDC (nominal), –72 VDC (maximum) • PWR-C3-750WDC-R: -48 VDC (nominal) (-40.5 VDC to -56 VDC) • PWR-C3-750WDC-F: -48 VDC (nominal) (-40.5 VDC to -56 VDC)
Voltage range international	• PWR-C1-440WDC: –36 VDC (minimum), –48 VDC (nominal), –72 VDC (maximum) • PWR-C3-750WDC-R: -60 VDC (nominal) (-55 VDC to -72 VDC) • PWR-C3-750WDC-F: -60 VDC (nominal) (-55 VDC to -72 VDC)
Total input BTU[17]	PWR-C1-440WDC 1841 BTUs per hour, 540 W
Total output BTU [1]	PWR-C1-440WDC: 1502 BTUs per hour, 440 W
Wire gauge for ground connection	PWR-C1-440WDC: 12 AWG or 8 AWG
Branch circuit protection	PWR-C1-440WDC: 20 A

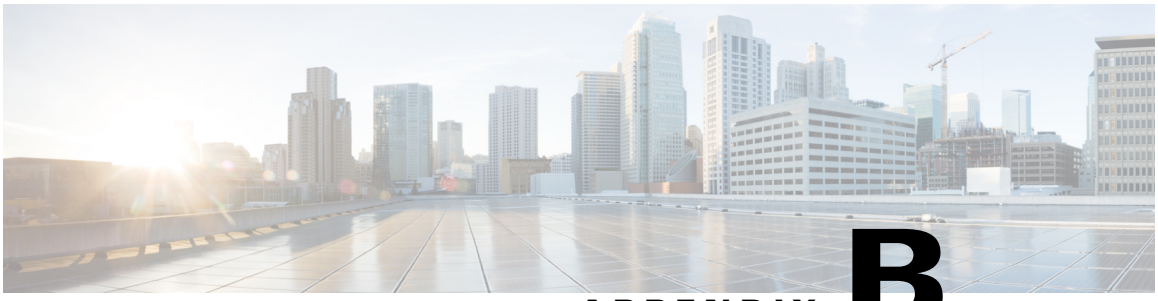
17 The total input and total output BTU ratings refer to input power to the power supply and output power to the switch. The BTU ratings are based on –36 VDC.

Table 34: Fan Module Environmental and Physical Specifications for Catalyst WS-C3850 Switch Models

Environmental Ranges	
Operating temperature	23 to 176°F (–5 to 80°C)
Storage temperature	–40 to 185°F (–40 to 85°C) up to 15,000 ft (4500 m)
Relative humidity	5 to 95% (noncondensing)
Altitude	Up to 13,000 ft (4000 m)
Physical Specification	
Dimensions (H x D x W)	1.62 x 1.73 x 4.24 in. (4.11 x 4.39 x 10.76 cm)
Weight (for three fans)	0.48 lb (0.21 kg)
Operating Specification	
Airflow	20 cfm

Table 35: Fan Module Environmental and Physical Specifications for Catalyst WS-C3850-48XS Switch Models

Environmental Ranges	
Operating temperature	50 to 104°F (10 to 40°C)
Relative humidity	8 to 80% (noncondensing)
Altitude	–50 to 6500 feet (–16 to 1981 meters)
Physical Specification	
Dimensions (H x D x W)	2.25 x 7.00 x 8.50 in (5.72 x 17.78 x 21.59 cm)
Weight	0.7 lb (0.32 kg)



APPENDIX B

Connector and Cable Specifications

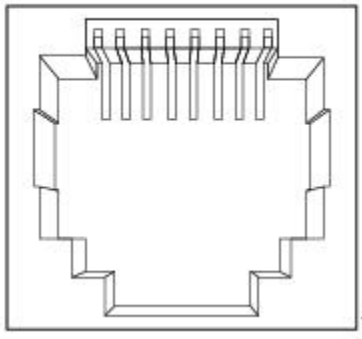
- Connector Specifications, page 101
- Console Port, page 103
- Cables and Adapters, page 103

Connector Specifications

10/100/1000 Ports (Including PoE)

All 10/100/1000 ports use standard RJ-45 connectors and Ethernet pinouts.

Figure 65: 10/100/1000 Port Pinouts

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

SFP Module Connectors

Figure 66: Duplex LC Cable Connector

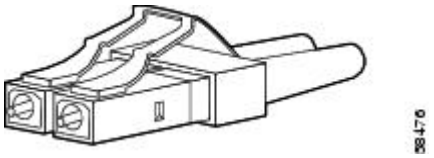


Figure 67: Simplex LC Cable Connector

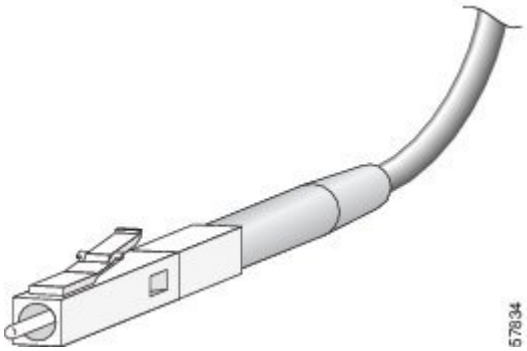


Figure 68: Copper SFP Module LC Connector

Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-

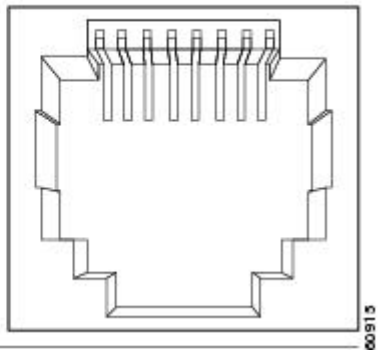
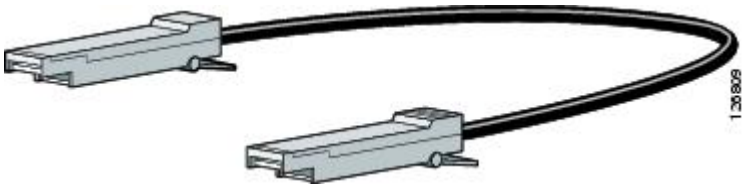


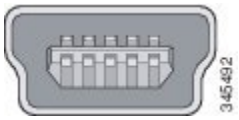
Figure 69: SFP Module Patch Cable



Console Port

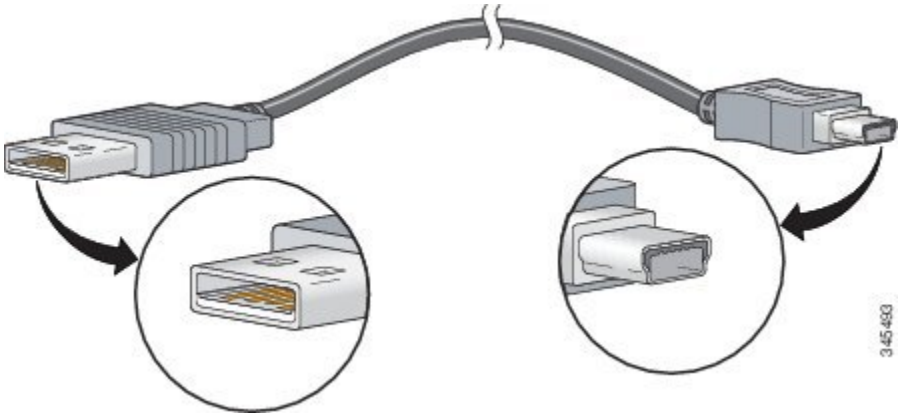
The switch has two console ports: a USB 5-pin mini-Type B port on the front panel and an RJ-45 console port on the rear panel.

Figure 70: USB Mini-Type B Port



The USB console port uses a USB Type A to 5-pin mini-Type B cable. The USB Type A-to-USB mini-Type B cable is not supplied. You can order an accessory kit (part number 800-33434) that contains this cable.

Figure 71: USB Type A-to-USB 5-Pin Mini-Type B Cable



The RJ-45 console port uses an 8-pin RJ-45 connection. 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.

Cables and Adapters

StackWise Cables

You can order these StackWise cables (nonhalogen) from your Cisco sales representative:

- STACK-T1-50CM= (0.5-meter cable)
- STACK-T1-1M= (1-meter cable)
- STACK-T1-3M= (3-meter cable)

SFP Module Cables

For cabling specifications, refer to the following notes:

- Cisco SFP and SFP+ Transceiver Module Installation Notes
- Cisco 40-Gigabit QSFP+ Transceiver Modules Installation Note

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. Copper 1000BASE-T SFP module transceivers use standard four twisted-pair, Category 5 cable at lengths up to 328 feet (100 meters).

Cable Pinouts

Figure 72: Four Twisted-Pair Straight-Through Cable Schematic

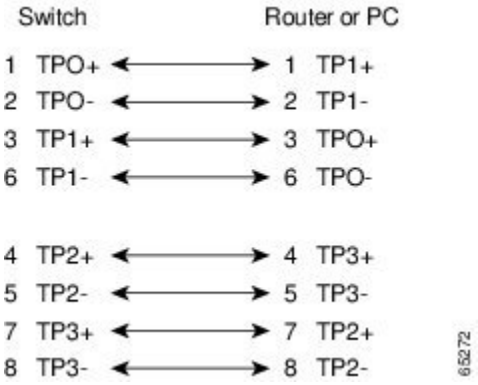


Figure 73: Four Twisted-Pair Semi-Cross Cable Schematic

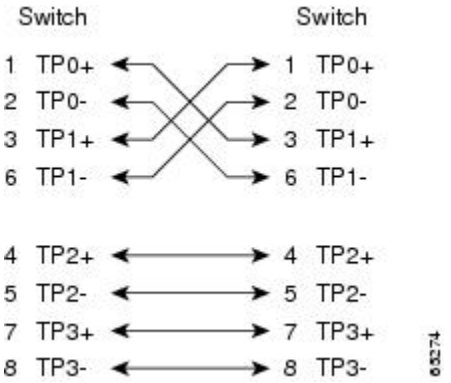


Figure 74: Two Twisted-Pair Straight-Through Cable Schematic

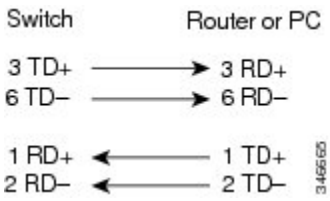
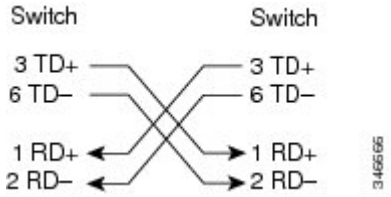


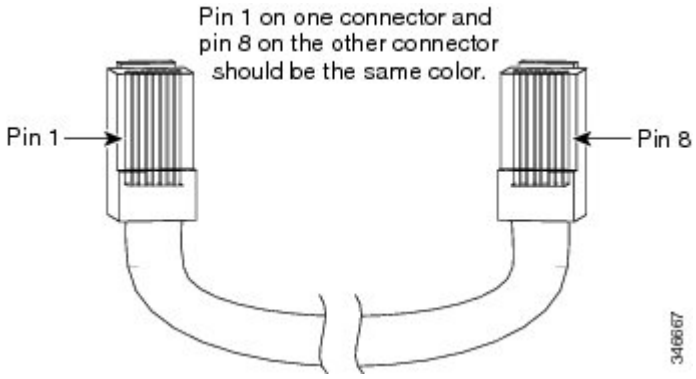
Figure 75: Two Twisted-Pair Crossover Cable Schematic



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 a different color from the wire connected to the pin on the inside of the right plug.

Figure 76: Identifying a Crossover Cable



Console Port Adapter Pinouts

The RS-232 console port uses an 8-pin RJ-45 connector. Use an RJ-45-to-DB-9 adapter cable to connect the switch console port to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter to connect the switch console port to a terminal.

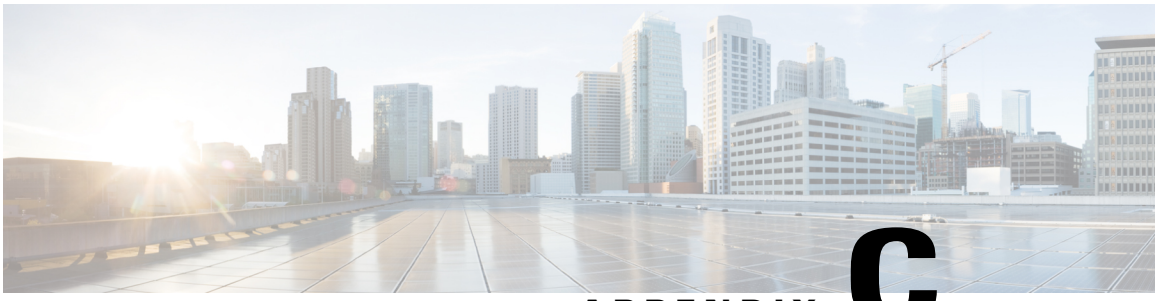
Table 36: Console Port Signaling with a DB-9 Adapter

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

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

Table 37: Console Port Signaling with 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

- Accessing the CLI Through Express Setup, page 109
- Accessing the CLI Through the Console Port, page 109
- Entering the Initial Configuration Information, page 117

Accessing the CLI Through Express Setup

You can access the CLI on an unconfigured switch. Set the switch in Express Setup mode and connect a switch Ethernet port to an Ethernet port on your PC or workstation. Follow the steps described in the getting started guide for turning on the switch and using Express Setup.

When the switch is in Express Setup mode, open a Telnet session to the switch by entering the IP address 10.0.0.1. Enter the **setup** user EXEC command. Enter the information described in IP Settings, on page 117 and Completing the Setup Program, on page 117.

After you have entered the configuration information for the switch, save it to flash memory by using the **write memory** privileged EXEC command.

Note In Express Setup mode, the IP address 10.0.0.1 remains active on the switch until you enter the **write memory** command. You lose the Telnet connection after entering the **write memory** command.

Accessing the CLI Through the Console Port

You can access the CLI on a configured or unconfigured switch by connecting the RJ-45 console port or USB console port of the switch to your PC or workstation and accessing the switch through a terminal emulation program.

Note If you have stacked your switches, connect to the console port of one of the switches in the stack. You can initially configure the entire stack from any member switch.

Connecting the RJ-45 Console Port

Procedure

Step 1 Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.

Step 2 Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 3 Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 4 Power on the switch as described in the switch getting started guide.

Step 5 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in Entering the Initial Configuration Information, on page 117.

Connecting the USB Console Port

Procedure

Step 1 If you are connecting the switch USB console port to a Windows-based PC for the first time, install the USB driver. See Installing the Cisco Microsoft Windows USB Device Driver, on page 114.

Note USB Type A port on the switch provides file system support and is **NOT** a console port. See USB Type A Port, on page 9 section.

Figure 77: Connecting the USB Console Cable to the Switch

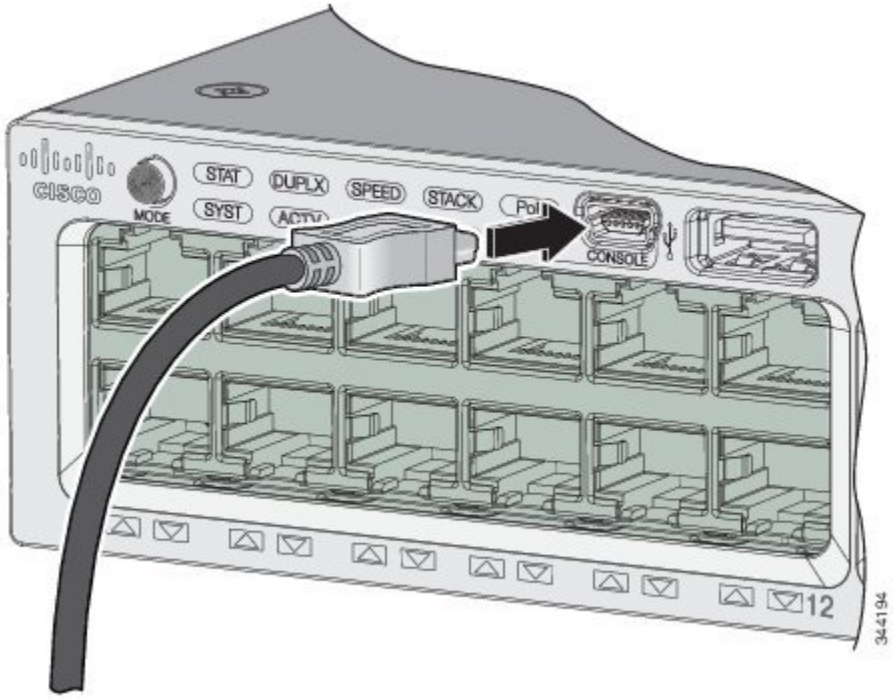
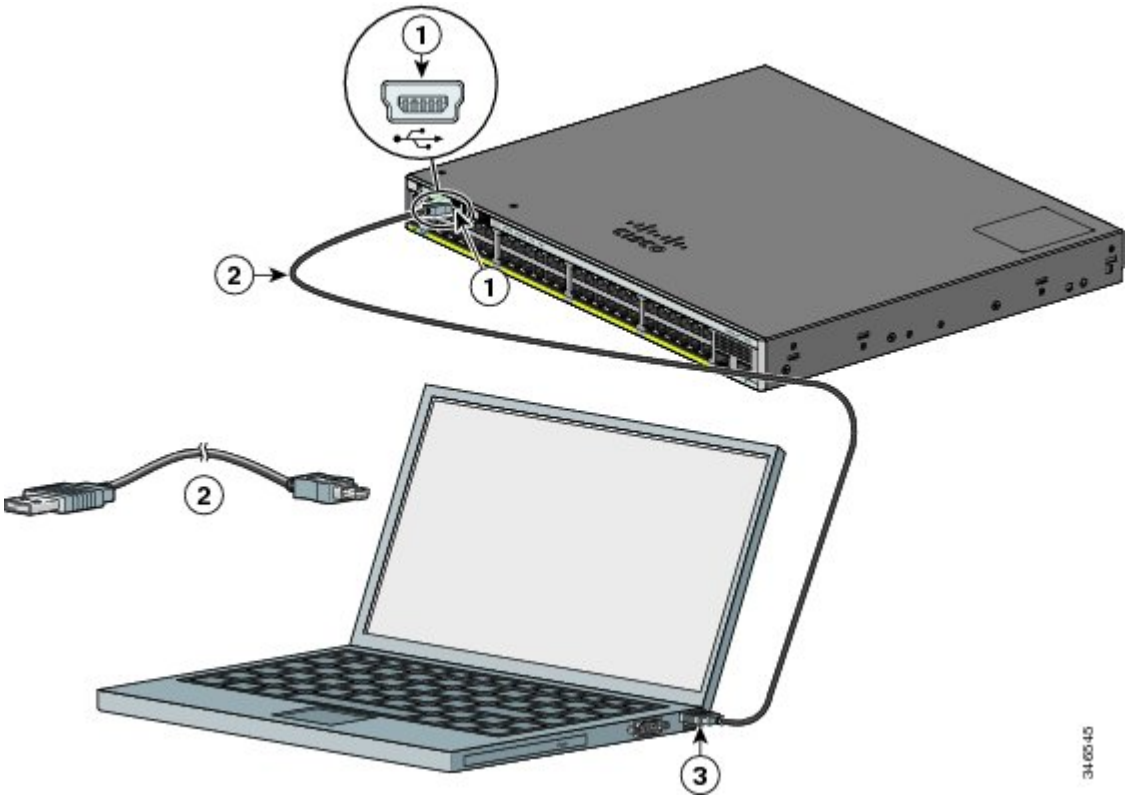
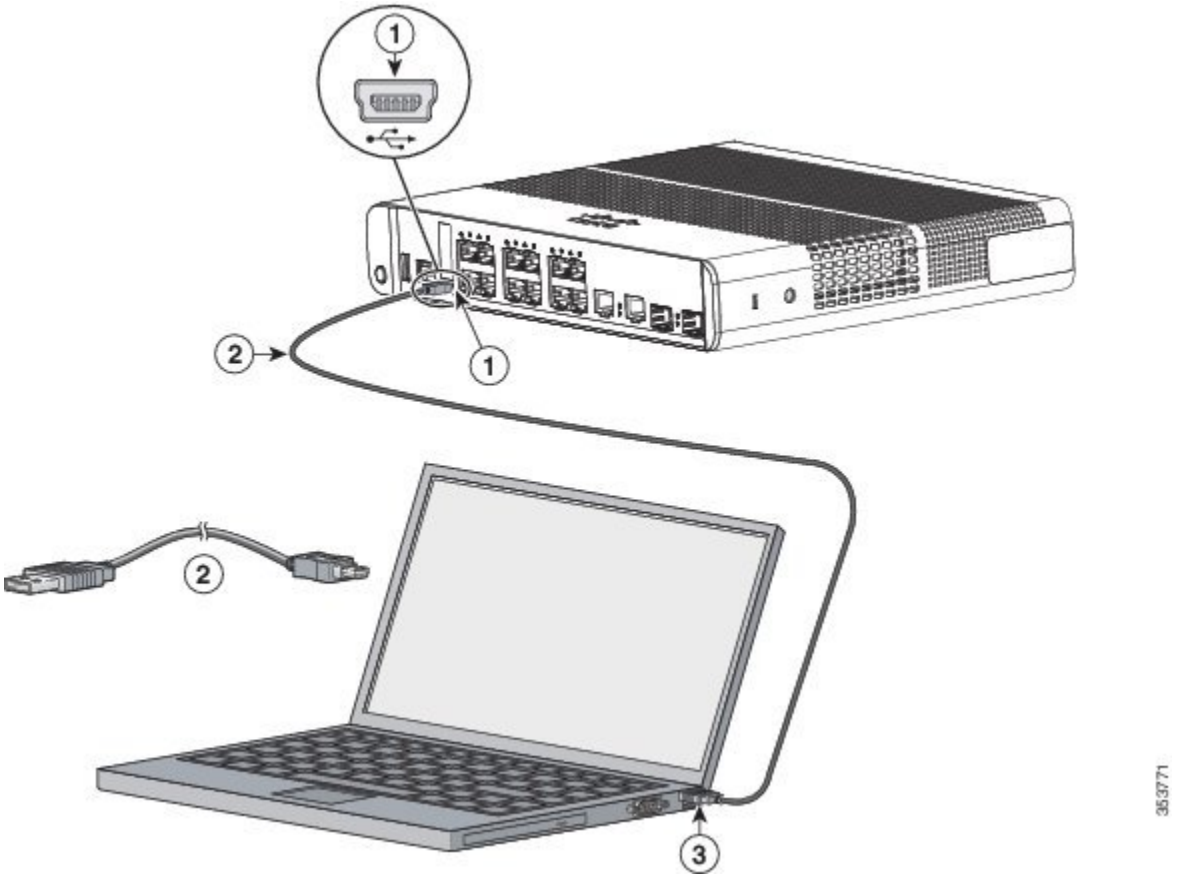


Figure 78: Connecting the USB Console Cable to the Switch





1	USB console port (5-pin mini-Type B)	3	USB Type A connection on the laptop
2	USB Type A to 5-pin mini-Type B cable		

Step 2 Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port.

Step 3 Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 4 Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 5 Power on the switch as described in the switch getting started guide.

Step 6 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the Setup program.

Installing the Cisco Microsoft Windows USB Device Driver

A USB device driver must be installed the first time a Microsoft Windows-based PC is connected to the USB console port on the switch.

- Installing the Cisco Microsoft Windows XP USB Driver
- Installing the Cisco Microsoft Windows 2000 USB Driver
- Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Installing the Cisco Microsoft Windows XP USB Driver

Procedure

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 If using 32-bit Windows XP, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows XP, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3 The Cisco Virtual Com InstallShield Wizard begins.

Step 4 The Ready to Install the Program window appears. Click **Install**.

Step 5 The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows 2000 USB Driver

Procedure

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 Double-click the setup.exe file.

Step 3 The Cisco Virtual Com InstallShield Wizard begins. Click **Next.**

Step 4 The Ready to Install the Program window appears. Click **Install.**

Step 5 The InstallShield Wizard Completed window appears. Click **Finish.**

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Procedure

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 If using 32-bit Windows Vista or Windows 7, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows Vista or Windows 7, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3 The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.

Step 4 The Ready to Install the Program window appears. Click **Install**.

Note If a User Account Control warning appears, click **Allow - I trust this program** to proceed.

Step 5 The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Uninstalling the Cisco Microsoft Windows USB Driver

Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver

Use the Windows Add or Remove Programs utility or the setup.exe file.

Using the Setup.exe Program

Before You Begin

Disconnect the switch console terminal before uninstalling the driver.

Procedure

Step 1 Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
Step 2 The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
Step 3 When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
Step 4 When the Remove the Program window appears, click **Remove.**
Step 5 When the InstallShield Wizard Completed window appears, click **Finish.**

Using the Add or Remove Programs Utility

Before You Begin

Disconnect the switch console terminal before uninstalling the driver.

Procedure

Step 1 Click **Start** > **Control Panel** > **Add or Remove Programs.**
Step 2 Scroll to Cisco Virtual Com and click **Remove.**
Step 3 When the Program Maintenance window appears, select the **Remove** radio button. Click **Next.**

Uninstalling the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Before You Begin

Disconnect the switch console terminal before uninstalling the driver.

Procedure

Step 1 Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
Step 2 The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
Step 3 When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
Step 4 When the Remove the Program window appears, click **Remove.**

Note If a User Account Control warning appears, click **Allow - I trust this program to proceed**.

Step 5 When the InstallShield Wizard Completed window appears, click **Finish.**

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 on. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also needed to use Device Manager or Cisco Network Assistant to configure and manage the switch.

IP Settings

Obtain this information from your network administrator before you start the setup program:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

Completing the Setup Program

If your switches are stacked and there are multiple console connections to individual switches in the stack, the initial setup dialog box appears at the console where you first press **Enter**.

Procedure

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.**

On a command switch, the host name is limited to 28 characters; on a member switch the name is limited to 31 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 To configure the country code, enter **yes** and press **Return**.

```
Do you want to configure country code? [no]: yes
```

Step 7 Enter the country code, and press **Return**.

```
Enter the country code[US]:US
```

Step 8 (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI, Device Manager, or the Network Assistant application. To configure SNMP later, enter **no**.

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

Step 9 Enter the interface name (physical interface or VLAN name) of the connection 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 10 Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown 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 11 Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the Network Assistant GUI. You can configure the switch as a command switch later through the CLI, Device Manager, or the Network Assistant application. To configure it later, enter **no**.

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

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

```
The following configuration command script was created:
hostname switch1
enable secret 5 $1$Ulq8$DlA/OiaEbl90WcBPd9cOn1
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 GigabitEthernet1/0/1
!
interface GigabitEthernet1/0/2

interface GigabitEthernet1/0/3
!
...<output abbreviated>
!


interface GigabitEthernet1/0/23
!
end
```

Step 12 From these choices that appear, make your selection and press **Return.**

```
[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.

Choose (2) to save the configuration to NVRAM to use it the next time the switch reboots.

Enter your selection [2]:2
```

The switch now runs this default configuration. If you want to change this configuration or perform other management tasks, see Management Options, on page 32.