

Installing and Starting Up the Switch

This chapter describes how to install and start up your Catalyst 3500 XL switches and to interpret the power-on self-test (POST) that ensures proper operation. Read the topics, and perform the procedures in the order that they are presented:

- Pre-installation information and guidelines
- Installation procedures
- · Power-on procedures
- Connection procedures
- Set up procedures for initial configuration
- Default configuration settings
- · Where to go next

Preparing for Installation

Warnings

These warnings are translated into several languages in Appendix C, "Translated Safety Warnings."





Preparing for Installation

A	
Warning	To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.
A	
Warning	The device is designed to work with TN power systems.
A	
Warning	When installing the unit, the ground connection must always be made first and disconnected last.
А	
Warning	This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 16A international) is used on the phase conductors (all current-carrying conductors).
A	
Warning	This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.
А	
Warning	Care must be given to connecting units to the supply circuit so that wiring is not overloaded.
А	
Warning	Unplug the power cord before you work on a system that does not have an on/off switch.
А	
Warning	Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.

ng	Do not work on the system or connect or disconnect cables during periods of lightning activity.	
ng	Ultimate disposal of this product should be handled according to all national laws and regulations.	
	The following warning applies to the Catalyst 3508, 3512, 3524, and switches:	3548
g	Attach only the Cisco RPS (model PWR600-AC-RPS) to the RPS receptacle.	
	The following warning applies to the Catalyst 3524-PWR XL switch:	
	Attach only the Cisco RPS (model PWR300-AC-RPS) to the RPS	

EMC Regulatory Statements

U.S.A.

U.S. regulatory information for this product is in the front matter of this manual.

Taiwan

警告使用者:	
這是甲類的資訊產品,在居住的環境中使用時,可能會造成射頻	
干擾,在這種情況下,使用者會被要求採取某些適當的對策。	15456



Installation Guidelines

When determining where to place the switch, be sure to observe these guidelines:

- For 10/100 ports, cable lengths from the switch to connected devices are up to 100 meters.
- For 1000BaseX ports, cable lengths from the switch to the connected devices are up to 10,000 meters. For specific cable lengths, refer to the documents that came with your GBICs.
- For the GigaStack GBIC ports, cable lengths from the switch to the connected devices are up to 1 meter. For specific cable lengths, refer to the document that came with the GigaStack GBIC.
- Operating environment is within the ranges listed in Appendix A, "Technical Specifications."
- Clearance to front and rear panels is such that
 - Front-panel indicators can be easily read.
 - Access to ports is sufficient for unrestricted cabling.
 - Rear-panel power connector is within reach of an AC power receptacle.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed $113^{\circ}F(45^{\circ}C)$.



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

• Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures.

Verifying Package Contents



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

The switch is shipped with the following items:

- Quick Start: Catalyst 3500 Series XL Cabling and Setup
- This Catalyst 3500 Series XL Hardware Installation Guide
- Cisco IOS Desktop Switching Software Configuration Guide
- Release Notes for the Catalyst 2900 Series XL and Catalyst 3500 Series XL Cisco IOS Release 12.0(5)XU
- Cisco Documentation CD-ROM
- AC power cord

- Mounting kit containing:
 - Four rubber feet for mounting the switch on a table
 - Two mounting brackets
 - Four Phillips flat-head screws for attaching the brackets to the switch
 - Four Phillips truss-head screws for attaching the brackets to the switch
 - Four Phillips machine screws for attaching the brackets to a rack
 - One cable guide and one black Phillips machine screw for attaching the cable guide to one of the mounting brackets
- One RJ-45-to-RJ-45 rollover cable
- One RJ-45-to-DB-9 female adapter
- Cisco Information Packet, containing warranty, safety, and support information

Installing the Switch in a Rack



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.

The rack-mounting brackets supplied with the switch can be attached to a 19- or 24-inch rack. Figure 2-1 shows which mounting holes attach to the rack.



The illustrations in this section show the Catalyst 3508G XL switch as an example. Other switches in the series (Catalyst 3512, 3524, 3524-PWR, and 3548 XL) can also be installed as shown here.





To install the switch in a 19-inch or a 24-inch standard rack, follow the instructions described in these procedures:

- Removing screws from the switch
- Attaching the brackets to the switch
- Mounting the switch in a rack
- Attaching the optional cable guide

Removing Screws from the Switch

If you plan to install the Catalyst 3548 XL switch in a rack, you must first remove the front side screws in the switch chassis so that the mounting brackets can be attached. Figure 2-2 shows how to remove the chassis screw from one side of the switch. Follow the same procedure for the opposite side.





Attaching the Brackets to the Switch

The bracket orientation and the screws you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. Use two of the supplied screws to attach each bracket, according to the following guidelines:

- For a 19-inch rack, use the supplied number-8 Phillips flat-head screws to attach the long side of the bracket to the switch.
- For a 24-inch rack, use the supplied number-8 Phillips truss-head screws to attach the short side of the bracket to the switch.

Figure 2-3 and Figure 2-4 show how to attach a bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.







Figure 2-4 Attaching Brackets for 19- and 24-Inch Racks (Rear Panel Forward)

24" Configuration

Mounting the Switch in a Rack

After the brackets are attached to the switch, use the four supplied number-12 Phillips machine screws to securely attach the brackets to the rack, as shown in Figure 2-5.

Figure 2-5 Mounting the Switch in a Rack



After the switch is mounted in the rack, attach the power cord to the switch. If you are using the Cisco RPS, see the Cisco RPS documentation for installation instructions.

After the power is connected, the System LED turns amber for 2 seconds, and then it flashes green while the switch completes the series of POST tests described in the "Powering On the Switch and Running POST" section on page 2-15.

Installing the Switch in a Rack

Attaching the Optional Cable Guide

We recommend attaching the cable guides to prevent the cables from obscuring the front panel of the switch and the other devices installed in the rack. If the switch is in a 19-inch or 24-inch rack, use the supplied black screw, as shown in Figure 2-6, to attach the cable guide to the left or right bracket.

Note

The Catalyst 3548 XL switch ships with a special cable guide as shown in Figure 2-7. This cable guide secures up to 48 cables. Use the supplied black screw to mount it on the left bracket.

Figure 2-6 Attaching the Cable Guide to a 3512, 3524, 3524-PWR, or 3508 XL Switch



Figure 2-7 Attaching the Cable Guide to a 3548 XL Switch



Installing the Switch on a Wall

This section describes the steps required to attach the switch to a wall:

- Attaching the brackets to the switch
- Attaching the switch to a wall

Attaching the Brackets to the Switch

Use two of the supplied number-8 Phillips flat-head screws to attach the long side of the bracket to the switch.

Figure 2-8 shows how to attach the brackets to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.



Figure 2-8 Attaching Brackets for Wall-Mounting



Attaching the Switch to a Wall

For best support of the switch and cables, make sure the switch is attached securely to a wall stud or to a firmly attached plywood mounting backboard, as shown in Figure 2-9.



Figure 2-9 Attaching the Switch to a Wall

After the switch is mounted on the wall, attach the power cord to the switch. If you are using the RPS, see the Cisco RPS documentation.

After the power is connected, the system LED turns amber for 2 seconds, and then it flashes green while the switch completes a series of self-tests described in the "Powering On the Switch and Running POST" section on page 2-15.



Installing the Switch on a Table or Shelf

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

- Step 1 Locate the adhesive strip with the rubber feet in the mounting-kit envelope. Attach the four rubber feet to the recessed areas on the bottom of the unit.
- **Step 2** Place the switch on the table or shelf near an AC power source.
- **Step 3** Connect the power cord to the switch rear panel and to the power outlet. If you are using the RPS, see the RPS documentation for installation instructions.

After the power is connected, the system LED turns amber for 2 seconds, and then it flashes green while the switch completes POST.

Powering On the Switch and Running POST

If your configuration has an RPS, see the "Power Connectors" section on page 1-25 and the Cisco RPS documentation.

To power on the switch after you install it, follow these steps:

- Step 1 Make sure that you have started the emulation software program (such as ProComm, HyperTerminal, tip, or minicom) from your management station.
- **Step 2** Connect one end of the AC power cord to the AC power connector on the switch.
- Step 3 Connect the other end of the power cord to an AC power outlet.

As the switch powers on, it begins POST, a series of eight tests that run automatically to ensure that the switch functions properly. When the switch begins POST, the port LEDs turn amber for 2 seconds, and then they turn green. The System LED flashes green, and the RPS LED turns off. As each test runs, the port LEDs, starting with number 1, turn off. The port LEDs for ports 2 to 8 each turn off in turn as the system completes a test.

When POST completes successfully, the port LEDs return to the status mode display, indicating that the switch is operational. If a test fails, the port LED associated with the test turns amber, and the system LED turns amber. If POST fails, refer to Chapter 3, "Troubleshooting," to determine a course of action.

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

Connecting to the 10/100 Ports

The switch 10/100 Ethernet ports configure themselves to operate at the speed of attached devices. If the attached ports do not support autonegotiation, you can explicitly set the speed and duplex parameters.

Connecting devices that do not autonegotiate or that have their speed and duplex parameters manually set can reduce performance or result in no linkage. To maximize performance, choose one of these methods for configuring the 10/100 Ethernet ports:

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

You can configure the 10/100 ports on the Catalyst 3524-PWR XL switch to either automatically provide inline power when a Cisco IP Phone is connected or to never provide inline power even if a Cisco IP Phone is connected. The default setting is Auto.



It takes a Catalyst 3524-PWR XL 10/100 port up to 10 seconds to initially detect, power, and link to a Cisco IP Phone. If you disconnect the Cisco IP Phone before link has been established, you must wait 10 seconds before connecting another network device (other than another Cisco IP Phone) to that switch port. Failure to

do so can result in damage to that network device.



Connecting to the 10/100 Ports

Follow these steps to connect to 10BaseT and 100BaseTX devices:

Step 1 When connecting to workstations, servers, routers, and Cisco IP Phones, connect a straight-through Category 5 cable to an RJ-45 connector on the front panel (Figure 2-10). When connecting to switches or repeaters, use a crossover Category 5 cable. Pinouts for the cables are described in the "Crossover and Straight-Through Cable Pinouts" section on page B-4.







devices to it.

Note The Catalyst 3524-PWR XL switch can connect to a Cisco IP Phone through a straight-through, twisted-pair cable. The rear panel of the Cisco IP Phone might have more than one RJ-45 jack. Use the LAN-to-phone jack to connect the phone to the Catalyst 3524-PWR XL switch. Refer to the documentation that came with your Cisco IP Phone for information about connecting

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Step 2 Connect the other end of the cable to an RJ-45 connector of the other device. The port LED comes on when both the switch and the connected device have established link.

The port LED is amber while Spanning Tree Protocol (STP) discovers the topology and searches for loops. This takes about 30 seconds, and then the port LED turns green.

If the port LED does not come on, the device at the other end might not be turned on, or there might be a cable problem or a problem with the adapter installed in the attached device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

- **Step 3** Reconfigure and reboot the connected device if necessary.
- **Step 4** Repeat steps 1 through 3 to connect each device.



Connecting to the GBIC Module Ports



Note

Install the Gigabit Interface Converters (GBICs) as described in the "GBIC Module Slots" section on page 1-10, and then connect to the 1000BaseX ports.

For detailed instructions on installing, removing, and cabling the GBICs (1000BaseSX module or the 1000BaseLX/LH module), refer to the GBIC documentation.

For detailed instructions on installing and cabling the GigaStack GBICs, see the *Catalyst GigaStack Gigabit Interface Converter Hardware Installation Guide*.

Connecting to a 1000BaseX GBIC Module Port



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



Follow these steps to connect to the 1000BaseX port:

- Step 1 Remove the rubber plugs from the fiber-optic port on the module, and store them for future use.
- Step 2 Insert the SC connector in the fiber-optic receptacle, as shown in Figure 2-11.

Figure 2-11 Connecting to a 1000BaseX Port





The port status is amber while Spanning Tree Protocol discovers the topology and searches for loops. This takes about 30 seconds. The port LED then turns green.



Connecting to a GigaStack GBIC Module Port

Connect the GigaStack cable connector to the GigaStack GBIC as shown in Figure 2-12.



Figure 2-12 Connecting to a GigaStack Port

For more information on the GigaStack GBIC connections and configuration scenarios, see the *Catalyst GigaStack Gigabit Interface Converter Hardware Installation Guide*.

Connecting a PC or Terminal to the Console Port

Use the supplied rollover cable and DB-9 adapter to connect a PC to the switch console port. You need to provide a RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see the "Cable and Adapter Specifications" section on page B-4.

The PC or terminal must support VT100 terminal emulation. The terminal-emulation software—frequently a PC application such as Hyperterminal or Procomm Plus—makes communication between the switch and your PC or terminal possible during the setup program.

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

- **Step 1** Be sure that your PC- or terminal-emulation software is configured to communicate with the switch via hardware flow control.
- **Step 2** Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:
 - 9600 baud
 - 8 data bits
 - 1 stop bit
 - No parity

After you have gained access to the switch, you can change the port baud rate. See the *Cisco IOS Desktop Switching Software Configuration Guide* for instructions.



Step 3 Using the supplied rollover cable, insert the RJ-45 connector into the console port, as shown in Figure 2-13. See the "Identifying a Rollover Cable" section on page B-5 for a description of the pinout.

Figure 2-13 Connecting to the Console Port



- Step 4 Attach the supplied RJ-45-to-DB-9 female DTE adapter to a PC or attach an appropriate adapter to the terminal.
- Step 5 Insert the other end of the supplied rollover cable in the attached adapter.
- Step 6 Boot the terminal-emulation program if you are using a PC or terminal.

Assigning Switch Information

You can assign the switch IP address information, host and cluster names, and passwords by two methods:

- Using the setup program in the switch
- Using a BOOTP server

This section describes each method.

Using the Setup Program

You can use an automatic setup program to assign IP information and to create a default configuration for continued operation. Later, you can use the Cluster Management Suite or the command-line interface (CLI) to customize your configuration. To run the setup program, access the switch from the PC terminal that you connected to the console port. (See the "Connecting a PC or Terminal to the Console Port" section on page 2-22.)



If the switch will be a cluster member, it is not always necessary to assign IP information or a password, as the switch will be managed through the IP address of the command switch. If you are configuring a command switch or standalone switch, you need to assign IP information.

The first time that you access the switch, it runs a setup program that prompts you for IP and other configuration information necessary for the switch to communicate with local routers and the Internet. This information also is required if you plan to use the Cluster Management Suite to configure and manage the switch.



If the switch will be a cluster member managed through the IP address of the command switch, it is not necessary to assign IP information or a password. If you are configuring the switch as a standalone switch or as a command switch, you must assign IP information. Refer to the *Cisco IOS Desktop Switching Software Configuration Guide* for more information.



Assigning Switch Information

	You will need the following information from your system administrator:		
	Switch IP address		
	Subnet mask (netmask)		
	Default gateway (router)		
	Enable secret password		
	Use this procedure to create an initial configuration for the switch:		
Note	Be sure the rollover cable is connecting a PC serial port to the switch console port. The data characteristics are 9600 baud, 8 data bits, 1 stop bit, and no parity. Use the supplied rollover cable and DB-9 adapter to connect a PC to the switch console port. You need to provide a RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see the "Cable and Adapter Specifications" section on page B-4.		
Step 1	Enter Y at the prompt:		
	Continue with configuration dialog? [yes/no]: \mathbf{y}		
	If this prompt does not appear, enter enable , and press Return . Enter setup , and press Return to restart the setup program.		
Step 2	Enter the switch IP address, and press Return :		
	Enter IP address: <i>ip_address</i>		
Step 3	Enter the subnet mask (IP netmask) address, and press Return : Enter IP netmask: <i>ip_netmask</i>		

Step 4	Enter Y	to specify a default gateway (router):
	Would	you like to enter a default gateway address? [yes]: ${f y}$
Step 5	Enter t	he IP address of the default gateway, and press Return :
	IP add	ress of the default gateway: ip_address
Step 6	Enter a	host name for the switch, and press Return :
	Note	On a command switch, the host name is limited to 28 characters; on a member switch to 31 characters. Do not use $-n$, where n is a number, as the last characters in a host name for any switch.
	Enter	host name: host_name
Step 7 Enter a secret password (which ensur		secret password (which ensures switch security), and press Return
	Note	The secret password can be from 1 to 25 alphanumeric characters, can start with a number, is case-sensitive, and allows spaces but ignores leading spaces.
	Enter	enable secret: secret_password
Step 8	Enter Y	to enter a Telnet password:
	Would	you like to configure a Telnet password? [yes]: ${f y}$
Step 9	Enter t	he Telnet password, and press Return :
	Note	The Telnet password can be from 1 to 25 alphanumeric characters, is case-sensitive, allows spaces, but ignores leading spaces.
	Enter	Telnet password: telnet_password
Step 10	Enter Y configu	to configure this switch as the cluster command switch. Enter N taken it as a member switch or as a standalone switch.
	Note	If you enter N to configure the switch as a member switch or as a standalone, it appears as a candidate switch in Cluster
Catalyst 3	500 Series	XL Hardware Installation Guide

Assigning Switch Information

Builder and the Step 11 message is not displayed.

Would you like to enable as a cluster command switch? **y** Step 11 Assign a name to the cluster, and press Return:



Note The cluster name can be 1 to 31 alphanumeric characters, dashes, or underscores.

Enter cluster name: cls_name

Step 12 Verify that the addresses are correct in the initial configuration displayed:

The following configuration command script was created:

```
ip subnet-zero
interface VLAN1
ip address ip_address ip_netmask
ip default-gateway ip_address
hostname host_name
enable secret 5 $1$jJq1$VA6U.6uTjsa56Xx2yy/t30
line vty 0 15
password telnet_password
snmp community private rw
snmp community public ro
cluster enable cls_name
!
end
!
Use this configuration? [yes/no]:
```

Step 13 If the information is correct, enter Y at the prompt, and press Return to use the displayed configuration. When you see the message "Press RETURN to get started," the setup program is complete. You can use your browser and the Cluster Management Suite or use the CLI to manage the switch.

If the information is not correct, enter **N** at the prompt, press **Return**, and begin again at Step 1.

The *Cisco IOS Desktop Switching Software Configuration Guide* describes how to set a password to protect the switch against unauthorized Telnet access and how to access the switch if you forget the password.

Using BOOTP

You can use BOOTP to assign IP information to a Catalyst 3500 XL switch. A database with a list of physical MAC addresses and corresponding IP addresses must be set up on the BOOTP server. Other optional information, such as the corresponding subnet masks and default gateway addresses, can also be stored in the database. The switch must be able to access the BOOTP server through one of its ports.

If the switch starts and no IP address has been assigned, it transmits a BOOTP broadcast request to all of its connected ports, requesting a mapping for its physical MAC address. A valid response includes the IP address, which is mandatory, and the subnet mask and the default gateway, which are optional.

The reception of a valid BOOTP response immediately activates the rest of the system protocol suite, without requiring a system reset. The running configuration is set, but the saved configuration in Flash memory is not automatically updated. To save the IP information, log in to the CLI, and enter the **write memory** command. The IP information is then preserved, and the switch does not issue BOOTP messages the next time it resets.

Default Configuration Settings

After you assign IP information, the switch can operate with the default configuration settings shown in Table 2-1.

Feature	Default Setting	
Management		
Switch IP address, subnet mask, and default gateway	User-assigned values entered in the setup program.	
Cluster command status	Enabled.	
Cluster name	User-assigned value entered in the setup program.	
CDP ¹	Enabled.	
ARP ²	Enabled.	
Static address assignment	None assigned.	
Network View	Always available.	
VLAN ³ membership	All ports are static-access ports in VLAN 1.	
Performance		
Autonegotiation of duplex mode	Enabled.	
Autonegotiation of port speeds	Enabled.	
Flooding Control		
Broadcast storm control	Disabled.	
Flooding unknown unicast and multicast packets	Enabled.	
Network port	Disabled.	
CGMP ⁴	Enabled.	
Network Redundancy		
Spanning Tree Protocol	Enabled.	
Port grouping	None assigned.	

Table 2-1 Default Configuration Settings

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Where to Go Next

Table 2-1 Default Configuration Settings (continued)

Feature	Default Setting	
Diagnostics		
SPAN ⁵ port monitoring	Disabled.	
Console, buffer, and file logging	Disabled.	
Security		
Password	None.	
Addressing security	Disabled.	
Trap manager	0.0.0.0	
Community strings	public.	
Port security	Disabled.	
Inline Power		
Inline power mode	Auto.	

1. CDP = Cisco Discovery Protocol

2. ARP = Address Resolution Protocol

3. VLAN = Virtual Local Area Network

4. CGMP = Cisco Group Management Protocol

5. SPAN = Switched Port Analyzer

Where to Go Next

If the default configuration shown in Table 2-1 is satisfactory, the switch does not need further configuration. You can use any of the following management options to change the default configuration:

- Start the Cluster Management Suite, as described in the *Cisco IOS Desktop Switching Software Configuration Guide*, and configure the switch as a member of a cluster or as an individual switch. Refer to the release notes on CCO for the most current browser requirements.
- Use the CLI to configure the switch from the console. See *Cisco IOS Desktop Switching Command Reference* for information on using the CLI with Catalyst 3500 XL switches.
- Start an SNMP application such as the CiscoView application.

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