3Com Switch 4510G Family

Getting Started Guide

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www.3com.com

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About This Manual

Organization

3Com Switch 4510G Family Getting Started Guide is organized as follows:

Chapter	Contents
1 Router Overview	Briefly introduces the appearance, system description, as well as the features and applications of the 3Com Switch 4510G Family.
2 Preparing for Installation	Describes the requirements on installation site, the safety recommendations before and during installation, and the required tools.
3 Installing the Switch	Covers the procedures for installing the 3Com Switch 4510G Family, ground wire connection, power module installation, interface module installation, and so on.
4 Starting and Configuring the Switch	Helps you get familiar with the basic knowledge of how to boot and configure the 3Com Switch 4510G Family, including device startup, power-on, and initialization of system files, and so on.
5 Boot ROM and Host Software Loading	Introduces how to load Boot ROM and host software for the 3Com Switch 4510G Family.
6 Maintenance and Troubleshooting	Introduces the problems that might occur during the installation and the booting of the 3Com Switch 4510G Family and the related solution.

Conventions

The manual uses the following conventions:

Command conventions

Convention	Description
Boldface	The keywords of a command line are in **Boldface**.
italic	Command arguments are in *italic*.
[ ]	Items (keywords or arguments) in square brackets [ ] are optional.
{ x | y | ... }	Alternative items are grouped in braces and separated by vertical bars. One is selected.
[x | y | ...]	Optional alternative items are grouped in square brackets and separated by vertical bars. One or none is selected.
{ x | y | ... } *	Alternative items are grouped in braces and separated by vertical bars. A minimum of one or a maximum of all can be selected.
[x | y | ...] *	Optional alternative items are grouped in square brackets and separated by vertical bars. Many or none can be selected.
&<1-n>	The argument(s) before the ampersand (&) sign can be entered 1 to n times.
#	A line starting with the # sign is comments.

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GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in Boldface. For example, the **New User** window appears; click **OK**.
>	Multi-level menus are separated by angle brackets. For example, **File** > **Create** > **Folder**.

Symbols

Convention	Description
Warning	Means reader be extremely careful. Improper operation may cause bodily injury.
Caution	Means reader be careful. Improper operation may cause data loss or damage to equipment.
Highlight	Means an action or information that needs special attention to ensure successful configuration or good performance.
Note	Means a complementary description.
Tip	Means techniques helpful for you to make configuration with ease.

Related Documentation

In addition to this manual, each 3Com Switch 4510G documentation set includes the following:

Manual	Description
3Com Switch 4510G Family Configuration Guide	Describe how to configure your 4210 Switch using the supported protocols and CLI commands.
3Com Switch 4510G Family Command Reference Guide	Provide detailed descriptions of command line interface (CLI) commands, that you require to manage your switch.

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1 Product Overview

Overview

3Com Switch 4510G Family (hereinafter referred to as the Switch 4510G) are Layer 3 Gigabit Ethernet switching products developed by 3Com Corporation. (Hereinafter referred to as 3Com).

The Switch 4510G are designed as distribution or access devices for intranets and metropolitan area networks (MANs). Supporting IPv4/IPv6 dual stack and 10 GE uplink interfaces, the Switch 4510G provide abundant service features and can also be used for connecting server groups in data centers.

The Switch 4510G support the 3Com-specific cluster management function, which facilitates your network management. And they also support the Intelligent Resilient Framework (IRF) technology. You can connect multiple 4510G switches through 10 GE ports to form a logical entity, thus to establish a new intelligent network with high reliability, expandability and manageability.

The Switch 4510G include two models, and have the system specifications as shown in Table 1-1.

Table 1-1 System specifications of the Switch 4510G

Item	Switch 4510G 24-Port	Switch 4510G 48-Port
Physical dimensions (H × W × D)	43.6 × 440 × 300 mm (1.72 × 17.32 × 11.81 in.)	
Weight	<4.4 kg (9.70 lb)	<4.7 kg (10.36 lb)
Management port	One console port, on the front panel	
Fixed GE ports (on the front panel)	24 × 10/100/1000Base-T auto-sensing Ethernet port 4 × 1000Base-X SFP port	48 × 10/100/1000Base-T auto-sensing Ethernet port 4 × 1000Base-X SFP port
	The last four 10/100/1000Base-T Ethernet ports and the four SFP ports comprise four Combo ports. **Note**: *For each Combo port, either the SFP port or the corresponding Ethernet port can be used at a time. For details about the combo port mapping relationship, please refer to Table 1-4.*	
Interface card models supported (optional)	2, on the rear panel • Short-haul dual-port 10GE CX4 interface module (3C17767, support IRF) • Dual-port 10 GE XFP interface module (3C17766, support IRF) • One-port 10 GE XFP interface module (3C17768, support IRF) • Dual-port 10 GE SFP+ interface module (LSPM2SP2P, support IRF)	
Power socket types and quantity	1 AC power socket and 1 RPS power socket **Note**: *The two power inputs can be simultaneously used, acting as backup for each other. Alternatively, you can use either power input.*	

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Item		Switch 4510G 24-Port	Switch 4510G 48-Port
Input voltage	AC	Rated voltage range: 100 VAC to 240 VAC, 50 Hz or 60 Hz Input voltage range: 90 VAC to 264 VA.C, 47 Hz to 63 Hz	
	RPS	Rated voltage range: 10.8 VDC to 13.2 VDC Adopts RPS500-A3 using its +12 VDC/10.5 A output and the cable suite of 0404A03C **Note***: Please use the external RPS power supply units recommended by 3Com only.*	
Static power consumption		36 W	55 W
Power consumption (full load)		103 W	145 W
Cooling system		Four fans for heat dissipation	
Operating temperature		0°C to 45°C (32°F to 113°F)	
Relative humidity (noncondensing)		10% to 90%	

Caution

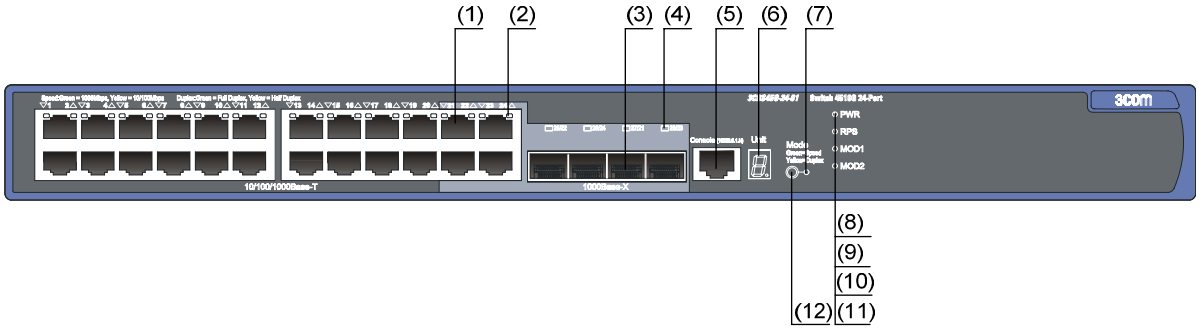
For details about the external RPS power supply units, see the *RPS500-A3 User Manual*.

Introduction to Switch 4510G

Switch 4510G 24-Port

Front Panel

Figure 1-1 Front panel of the Switch 4510G 24-Port Ethernet switch



(1) 10/100/1000 Base-T auto-sensing Ethernet port	
(2) 10/100/1000 Base-T auto-sensing Ethernet port status LED	
(3) 1000 Base-X SFP port	(4) 1000Base-X SFP port status LED
(5) Console port	(6) Seven-segment LED
(7) Port mode LED (Mode)	(8) System status LED (PWR)
(9) RPS status LED (RPS)	(10) Interface module 1 status LED (MOD1)
(11) Interface module 2 status LED (MOD2)	(12) Port status LED mode switching button

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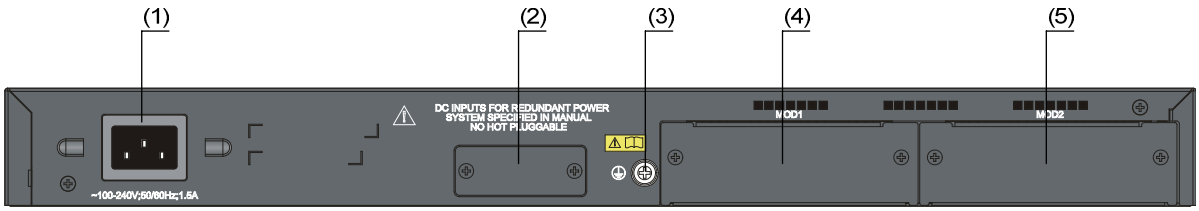
Rear Panel

Figure 1-2 Rear panel of the Switch 4510G 24-Port Ethernet switch



(1) AC power input	(2) RPS power input (shipped with a protective cover)
(3) Grounding screw	(4) Interface module slot 1 (MOD1)
(5) Interface module slot 2 (MOD2)	

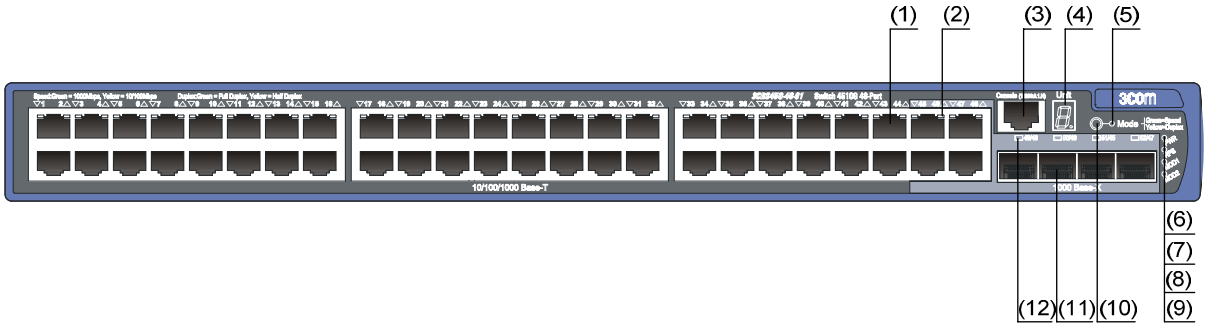
Note

The Switch 4510G 24-Port provides two interface module slots on its rear panel. Each slot is installed with a filler panel when the switch is shipped. You can select one or two interface modules for your switch as needed. See Optional Interface Modules on page 1-9 for the interface module models supported by the Switch 4510G, and see Installing an Interface Module on page 3-9 for the installation of interface modules.

Switch 4510G 48-Port

Front Panel

Figure 1-3 Front panel of the Switch 4510G 48-Port Ethernet switch



(1) 10/100/1000 Base-T auto-sensing Ethernet port	
(2) 10/100/1000 Base-T auto-sensing Ethernet port status LED	
(3) Console port	(4) Seven-segment LED
(5) Port mode LED (Mode)	(6) System status LED (PWR)
(7) RPS status LED (RPS)	(8) Interface module 1 status LED (MOD1)
(9) Interface module 2 status LED (MOD2)	(10) Port status LED mode switching button
(11) 1000 Base-X SFP port	(12) 1000Base-X SFP port status LED

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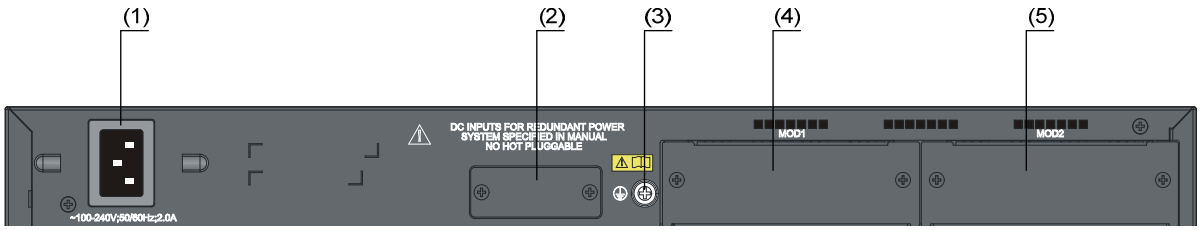
Rear Panel

Figure 1-4 Rear panel of the Switch 4510G 48-Port Ethernet switch



(1) AC power input	(2) RPS power input (shipped with a protective cover)
(3) Grounding screw	(4) Interface module slot 1 (MOD1)
(5) Interface module slot 2 (MOD2)	

Note

The Switch 4510G 48-Port provides two interface module slots on its rear panel. Each slot is installed with a filler panel when the switch is shipped. You can select one or two interface modules for your switch as needed. See Optional Interface Modules on page 1-9 for the interface module models supported by the Switch 4510G, and see Installing an Interface Module on page 3-9 for the installation of interface modules.

Ports

Console Port

Each Switch 4510G provides one console port on the front panel. Table 1-2 describes the console port specifications.

Table 1-2 Console port specifications

Item	Specification
Connector type	RJ-45
Compliant standard	EIA/TIA-232
Transmission baud rate	9600 bps to 115200 bps (defaulting to 19200 bps)
Service	• It can be connected to an ASCII terminal. • It can be connected to a serial port of a local or remote (through a pair of modems) PC running terminal emulation program.

10/100/1000Base-T Ethernet Port

Each Switch 4510G provides 10/100/1000Base-T Ethernet ports on its front panel. Table 1-3 describes the specifications of the 10/100/1000Base-T Ethernet ports.

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Table 1-3 10/100/1000Base-T Ethernet port specifications

Item	Specification
Connector type	RJ-45
Interface standard	• 10 Mbps, full duplex • 100 Mbps, full duplex • 1000 Mbps, full duplex • MDI/MDI-X, auto-sensing
Max transmission distance	100 m (328.08 ft.)
Transmission medium	Category-5 unshielded twisted pair cable
Standard	IEEE 802.3i, 802.3u, 802.3ab

SFP Port

The SFP ports on the front panel of Switch 4510G supports fiber Gigabit Ethernet long-wave (LX), long-haul (LH70) and copper (T), 100BASE-LX10, and 100BASE-FX transceivers in any combination.. All SFP transceivers are hot swappable and optional. Therefore, networking is more flexible.

Note

- You are recommended to use SFP transceivers of 3Com on the Switch 4510G.
- The types of SFP transceivers may update with time. For information about transceivers, contact 3Com technical support or marketing staff.

Combo Port

One SFP port and the corresponding 10/100/1000Base-T Ethernet port form a Combo port. For each Combo port, either the SFP port or the corresponding 10/100/1000Base-T Ethernet port can be used at a time. For details about the combo port mapping relationship, please refer to Table 1-4.

Table 1-4 Combo port mapping relationship

Model	SFP port	10/100/1000Base-T Ethernet port
Switch 4510G 24-Port	25	22
	26	24
	27	21
	28	23
Switch 4510G 48-Port	49	46
	50	48
	51	45
	52	47

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Note

The SFP port and its corresponding 10/100/1000Base-T autosensing Ethernet port cannot be used together at the same time. For details, refer to the *Ethernet Port Configuration* part in the *Access Volume* of the *3Com Switch 4510G Family Configuration Guide.*

LEDs

Table 1-5 LEDs

LED	Device support
System Status LED	All series
RPS Status LED	All series
Port Mode LED	All series
Seven-Segment LED	All series
10/100/1000Base-T Auto-Sensing Ethernet Port Status LED	All series
SFP Port Status LED	All series
Interface Module Status LED	All series

System Status LED

The system status LED helps you determine the working status of the switch. Refer to Table 1-6 for the details.

Table 1-6 System status LED description

LED	Status	Description
PWR	Steady green	The switch is started normally.
	Flashing green (1 Hz)	The system is performing power-on self test (POST).
	Steady red	POST failed.
	Flashing yellow (1 Hz)	POST on some ports failed.
	Off	The switch is powered off.

RPS Status LED

The RPS status LED helps you determine the working status of the RPS of the switch. Refer to Table 1-7 for details.

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Table 1-7 RPS status LED

LED	Mark	Status	Description
RPS status LED	RPS	Steady green	The AC input is normal, and the RPS is in the position or works normally.
		Steady yellow	The RPS input is normal, but the AC input fails or is not connected.
		Off	RPS is not connected.

Port Mode LED

The port mode LED on the Switch 4510G can display the working status of a port for you to obtain more device information. You can use the port mode switching button to change the status of the port mode LED.

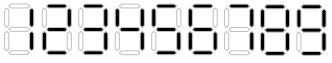
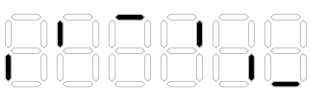
Table 1-8 Port mode LED description

LED	Status	Description
Mode	Steady green	Indicates port rate.
	Steady yellow	Indicates port duplex mode.

Seven-Segment LED

The seven-segment LED and the system status LED together indicate the operating status of the device. For details, refer to Table 1-9.

Table 1-9 Seven-segment LED description (1)

LED	Status		Description
	System status LED (PWR/SYS)	Seven-segment LED	
Unit	Flashing green	The LED displays the specific numbers one by one.	POST running. The LED displays the POST test ID.
	Flashing red	The LED flashes the specific numbers. 	POST failed. The LED flashes the POST test ID of the failed test.
	Flashing green	A bar rotates clockwise around the LED. 	Software loading
	Steady red	The LED flashes **F**.	Fan failure

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LED	Status		Description
	System status LED (PWR/SYS)	Seven-segment LED	
	Steady red	The LED flashes **t**.	Over-temperature alarm
	Steady green	The LED displays **C**.	The current switch is the command switch in the cluster.
		The LED displays **S**.	The current switch is a member switch in the cluster.
		The LED displays **c**.	The current switch is a candidate switch in the cluster.
		The LED displays the specific numbers.	The member ID of the current switch in the IRF system.

10/100/1000Base-T Auto-Sensing Ethernet Port Status LED

The port mode LED and the 10/100/1000Base-T auto-sensing Ethernet port status LED together indicate the port operation status. Refer to Table 1-10 for details.

Table 1-10 10/100/1000Base-T auto-sensing Ethernet port LEDs description

Status		Description
Port mode LED	Ethernet port status LED	
Steady green (rate mode)	Steady green	The port operates at a rate of 1000 Mbps; the LED is fast flashing when data is being sent and/or received on the port.
	Steady yellow	The port operates at a rate of 10/100 Mbps; the LED is fast flashing when data is being sent and/or received on the port.
	Flashing yellow (3 Hz)	POST failed on the port.
	Off	The port is not up.
Steady yellow (duplex mode)	Steady green	The port operates in full-duplex mode; the LED is fast flashing when data is being sent and/or received on the port.
	Steady yellow	The port operates in half-duplex mode; the LED is fast flashing when data is being sent and/or received on the port.
	Flashing yellow (3 Hz)	POST failed on the port.
	Off	The port is not up.

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SFP Port Status LED

The port mode LED and the SFP port status LED together indicate the SFP port operation status. Refer to Table 1-11 for details.

Table 1-11 SFP port status LEDs description

Status		Description
Port mode LED	**Ethernet port status LED**	
Steady green (rate mode)	Steady green	The port operates at a rate of 1000 Mbps; the LED is fast flashing when data is being sent and/or received on the port.
	Steady yellow	The port operates at a rate of 100 Mbps; the LED is fast flashing when data is being sent and/or received on the port.
	Flashing yellow (3 Hz)	POST failed on the port.
	Off	The port is not up.
Steady yellow (duplex mode)	Steady green	The port operates in full-duplex mode; the LED is fast flashing when data is being sent and/or received on the port.
	Flashing yellow (3 Hz)	POST failed on the port.
	Off	The port is not up.

Interface Module Status LED

Table 1-12 Interface module status LED description

Mark	Status	Description
MOD1 MOD2	Green	The interface module is in the slot and operates normally.
	Flashing yellow	The inserted interface module type is incorrect or the interface module fails.
	Off	No interface module is installed.

Optional Interface Modules

The Switch 4510G provide two interface module slots on the rear panel. You can select the interface modules in Table 1-13 as needed.

The Switch 4510G support IRF, requiring physical connections between devices. The 10 GE ports of the supported interface modules support IRF, allowing you to connect the switches through these 10 GE ports for IRF implementation.

Table 1-13 Description of the supported interface modules

Model	Description	Interface quantity and type	Remarks
3C17767	Short-haul Dual-Port 10 GE CX4 Interface Module	2 × 10 Gbps electrical ports	Suitable for short-distance connections using CX4 power cables, and support IRF

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Model	Description	Interface quantity and type	Remarks
3C17766	Dual-Port 10 GE XFP Interface Module	2 × 10 Gbps XFP optical ports	Using XFP optical transceivers and fibers for long-distance connections, and support IRF
3C17768	One-port 10 GE XFP Interface Module	1 × 10 Gbps XFP optical port	
LSPM2SP2P	Dual-Port 10 GE SFP+ Interface Module	2 × 10 Gbps SFP+ optical ports	Using SFP+ power cables for short-distance connections, and support IRF Using SFP+ optical transceivers and fibers for long-distance connections, and support IRF

Short-haul Dual-Port 10 GE CX4 Interface Module

Figure 1-5 Short-haul dual-port 10 GE CX4 interface module

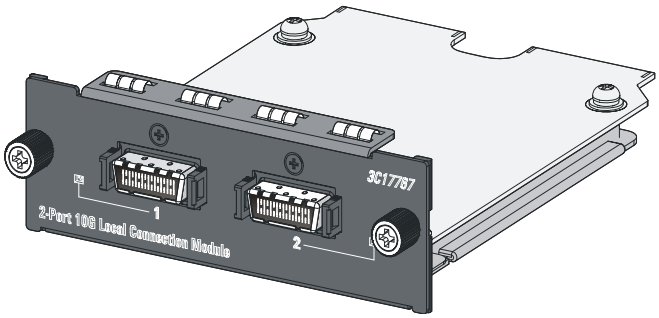
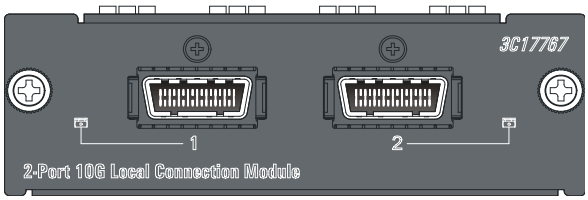


Figure 1-6 Front panel of short-haul dual-port 10 GE CX4 interface module



A short-haul dual-port 10 GE CX4 interface module provides two 10 Gbps electrical ports and supports CX4 electrical and protocol standards. Only 3Com's CX4 power cables can be used for connecting the CX4 ports. A CX4 cable is hot swappable and its maximum transmission distance is 3 m (9.84 ft.), which is suitable for short-distance connections only.

Table 1-14 CX4 cables supported by the short-haul dual-port 10 GE CX4 interface module

CX4 Cable	Connector type	Length
3C17775	4X Infiniband	0.5 m (19.69 in.)
3C17776		1 m (39.37 in.)
3C17777		3 m (118.11 in.)

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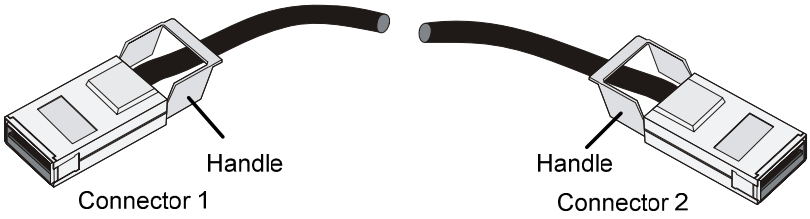
Figure 1-7 CX4 cable



Dual-Port 10 GE XFP Interface Module

Figure 1-8 Dual-port 10 GE XFP interface module

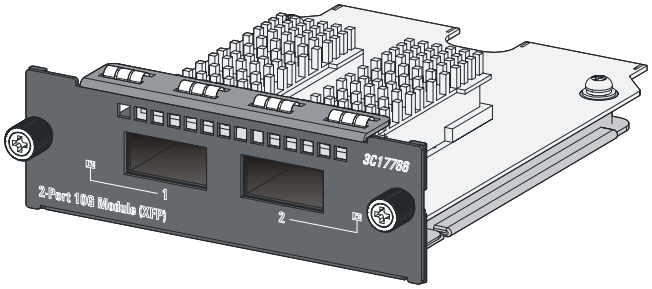
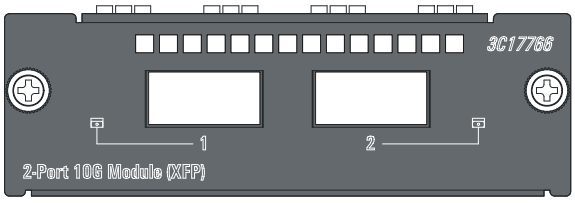


Figure 1-9 Front panel of dual-port 10 GE XFP interface module



A dual-port 10 GE XFP interface module provides two 10 Gbps XFP optical ports. You can insert an XFP transceiver into the port to connect it to another XFP port through an optical fiber. You can select the following XFP transceivers in Table 1-15 as required.

Table 1-15 XFP transceivers supported by 10 GE XFP interface module

Transceiver	Central wavelength	Connector	Fiber	Max transmission distance
XFP-SX-MM850	850 nm	LC	50/125 μm multimode optical fiber	300 m (984.25 ft.)
			62.5/125 μm multimode optical fiber	33 m (108.27 ft.)
XFP-LX-SM1310	1310 nm		9/125 μm single mode optical fiber	10 km (6.21 mi.)
XFP-LH40-SM1550-F1	1550 nm		9/125 μm single mode optical fiber	40 km (24.85 mi.)

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Note

- You are recommended to use XFP transceivers of 3Com on the Switch 4510G.
- The types of XFP transceivers may vary over time. Consult 3Com marketing personnel or technical support personnel to obtain the latest information about XFP transceivers.

One-port 10 GE XFP Interface Module

Figure 1-10 One-port 10 GE XFP interface module

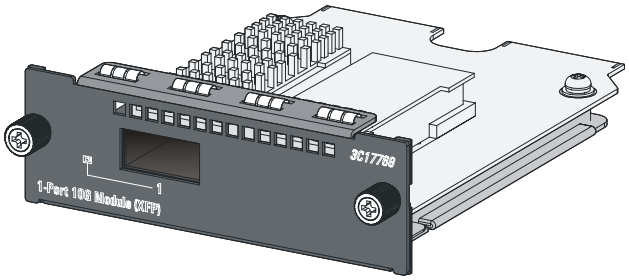
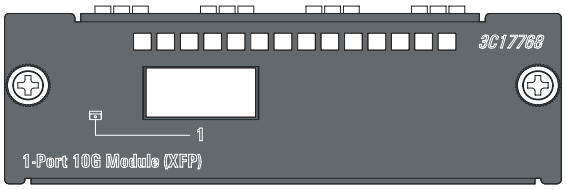


Figure 1-11 Front panel of one-port 10 GE XFP interface module



This module provides one 10 Gbps XFP optical interface. You can select the following XFP transceivers as required. A one-port 10 GE XFP interface module provides one 10 Gbps XFP optical port. You can insert an XFP transceiver into the port to connect it to another XFP port through an optical fiber. You can select the XFP transceivers list in Table 1-15 as required.

Dual-Port 10 GE SFP+ Interface Module

Figure 1-12 Dual-port 10 GE SFP+ interface module

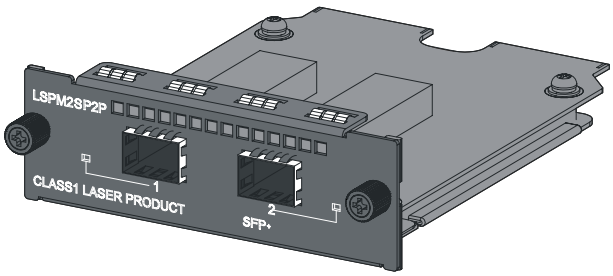


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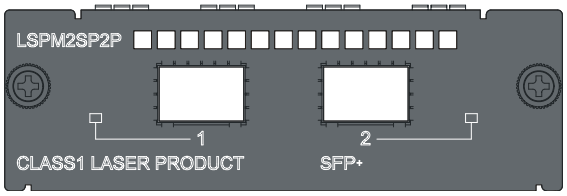
Figure 1-13 Front panel of dual-port 10 GE SFP+ interface module

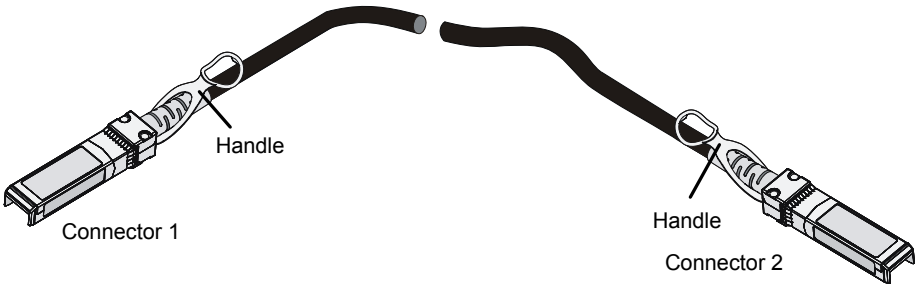


A dual-port 10 GE SFP+ interface module provides two 10 Gbps SFP+ ports. You can insert an SFP+ transceiver into the port to connect it to another SFP+ port through an optical fiber, or an SFP+ cable provided by H3C. For details about the supported SFP+ transceivers and SFP+ cables, refer to Table 1-16.

Table 1-16 SFP+ transceivers and SFP+ cables supported by dual-port 10 GE SFP+ interface module

Transceiver /Cable type	Transceiver/ Cable	Central wavelength	Connector	Fiber	Max transmission distance
10 GE SFP+ transceiver	SFP-XG-SX-MM850-A	850 nm	LC	50/125 μm multimode optical fiber	300 m (984.25 ft.)
	SFP-XG-LX220-MM1310	1310 nm		62.5/125 μm multimode optical fiber	220 m (721.78 ft.)
	SFP-XG-LX-SM1310			9/125 μm single mode optical fiber	10 km (6.21 mi)
Short-haul 10 GE SFP+ cable	LSWM1STK	—	—	SFP+ cable	0.65 m (2.13 ft.)
	LSWM2STK				1.2 m (3.94 ft.)
	LSWM3STK				3 m (9.84 ft.)
	LSWM4STK				10 m (32.81 ft.)

Figure 1-14 SFP+ cable



Note

- You are recommended to use SFP+ transceivers and SFP+ cables of H3C on the switch 4510G.
- The types of SFP+ transceivers and SFP+ cables may update with time. For information about transceivers, contact 3Com technical support or marketing staff.

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Description of LEDs of Interface Modules

There is a LED for each port on the interface module panel. Table 1-17 describes the LEDs.

Table 1-17 Description of LEDs on interface modules

LED	Mark	Status		Description
Port LED of an interface module	—	This LED is not affected by the mode button.	On	The port is normally connected. The LED blinks quickly when the port is sending or receiving data.
			Off	The port is not up.

Note

For details about the port mode switching button, see Port Mode LED.

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2 Preparing for Installation

Safety Precautions

Warning

Before you install or remove any components from the Switch or carry out any maintenance procedures, you must read the *3Com Switch Family Safety and Regulatory Information* document enclosed with your switch.

To avoid damage to human body and devices, please read the following safety recommendations carefully before installing the Switch 4510G. The recommendations do not cover every possible hazardous condition.

- Before cleaning the switch, unplug the power plug of the switch first. Do not clean the switch with wet cloth or liquid.
- Do not place the switch near water or in a damp environment. Prevent water or moisture from entering the switch chassis.
- Do not place the switch on an unstable case or desk. The switch might be damaged severely in case of a fall.
- Ensure proper ventilation of the equipment room and keep the ventilation vents of the switch free of obstruction.
- Make sure that the operating voltage is the same as the voltage labeled on the switch.
- Do not open the chassis while the switch is operating or when electrical hazards are present to avoid electrical shocks.
- When replacing interface modules, wear ESD-preventive gloves to avoid damaging the cards.

Installation Site

The Switch 4510G must be used indoors. You can mount your switch in a rack or on a workbench, but make sure:

- Adequate clearance is reserved at the air inlet/exhaust vents for ventilation.
- The rack or workbench has a good ventilation system.
- The rack is sturdy enough to support the device and its accessories.
- The rack or workbench is well earthed.

To ensure normal operation and long service life of your switch, install it in an environment that meets the requirements described in the following subsections.

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Temperature/Humidity

You must maintain a proper temperature and humidity in the equipment room. Long-term high humidity may lead to bad insulation, electricity leakage, mechanical property changes, and metal corrosion. However, if the relative humidity is two low, captive screws may become loose as the result of contraction of insulation washers and static electricity may be produced in a dry environment to jeopardize the circuits on the device. High temperature is the most undesirable condition, because it accelerates aging of insulation materials and can thus significantly lower reliability and service life of your switch.

For the temperature and humidity requirements of different models, refer to Table 1-1.

Cleanness

Dust is a hazard to the operating safety of your device. The dust accumulated on the chassis can be adsorbed by static electricity and result in poor contact of metal connectors or metal contact points. Especially when the indoor relative humidity is low, electrostatic adsorption is more likely to happen. This can not only shorten the service life of your device but also cause communications failures. The following table lists the dust concentration limit.

Table 2-1 Dust concentration limit in the equipment room

Substance	Unit	Concentration limit
Dust	Particles/m³	≤ 3×10^4 (no visible dust on the tabletop within three days)
Note: The dust particle size ≥ 5 μm.		

Besides dust, there are rigorous limits on the content of harmful substances in the air that can accelerate the corrosion and aging of metals, such as chloride, acid, and sulfide in the equipment room, and the equipment room must be protected against ingression of harmful gases such as SO_2, H_2S, NH_3, and Cl_2. For specific requirements, see the following table.

Table 2-2 Harmful gas limits in the equipment room

Gas	Maximum concentration (mg/m^3)
SO_2	0.2
H_2S	0.006
NH_3	0.05
Cl_2	0.01

Electromagnetic Susceptibility

The operation of your switch can be affected by external interferences, such as conducted emission by capacitance coupling, inductance coupling, electromagnetic wave radiation, and common impedance (including the grounding system) coupling, and leads (power cords, signaling cables and output wires). To eliminate the interferences, pay attention to the following:

- As the AC power system is a TN system, use a single-phase three-wire power socket with Protection Earth (PE) to effectively filter interference from the power grid.

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- Keep the device far from radio transmitting stations, radar stations, and high-frequency devices.
- Use electromagnetic shielding when necessary, for example, use shielded interface cables.
- Route interface cables only indoors to prevent signal ports from getting damaged by overvoltage or overcurrent caused by lightning strikes.

Laser Safety

The Switch 4510G are Class 1 laser devices.

When the optical ports on the Switch 4510G are operating, do not stare into the optical ports because the laser light emitted by the optical fiber may hurt your retina.

Caution

Staring into the laser beam produced by the fiber may hurt your eyes.

Installation Tools

- Flathead screwdriver
- Phillips screwdriver
- ESD-preventive wrist strap

Caution

The installation tools are not shipped with the Switch 4510G.

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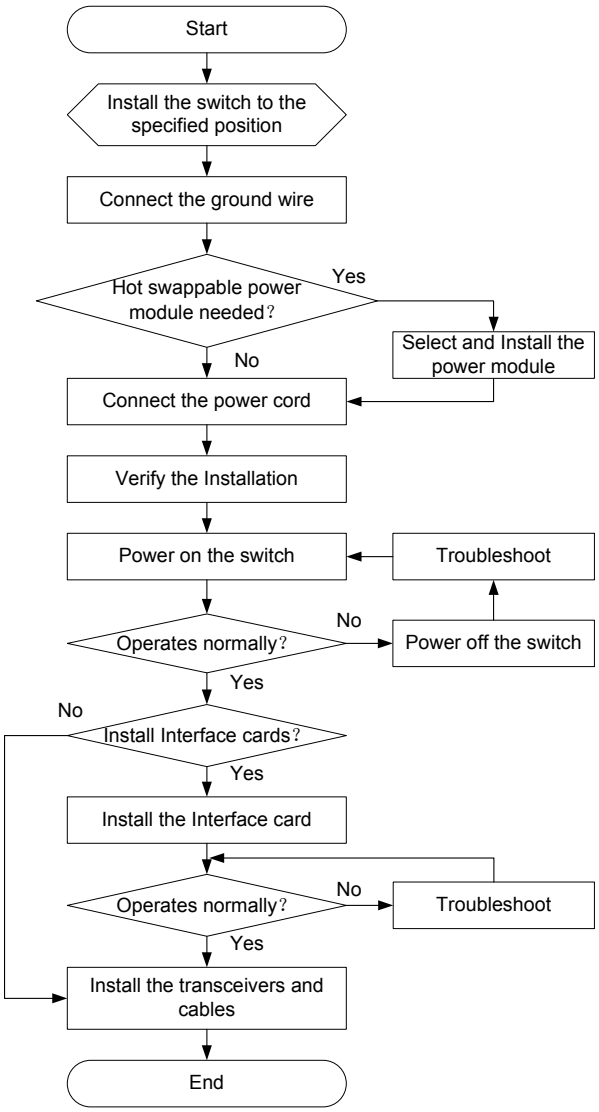
3 Installing the Switch

Caution

When you ask your sales agent to maintain the switch, you must ensure that the dismantlement-preventive seal on a mounting screw of the 3Com switch chassis is intact. If you want to open the chassis, you should contact the agent for permission. Otherwise, you will bear any consequence resulted from your actions without permission.

Installation Flow of the Switch

Figure 3-1 Hardware installation flow of the switch



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Note

The Switch 4510G support IRF. For details about implementation of the IRF system and installation procedures, refer to Installation Flow for an IRF.

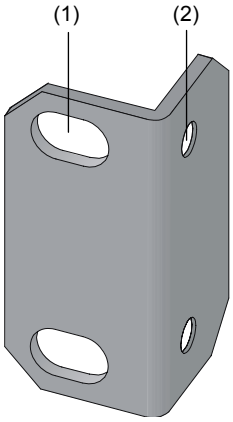
Installing the Switch into a 19-Inch Rack Using Mounting Brackets

You can install a switch into a 19-inch standard cabinet in one of the following two ways:

- Use front mounting brackets
- Use front mounting brackets and a tray

Introduction to Mounting Bracket

Figure 3-2 Appearance of a standard front mounting bracket



(1) Screw hole used to fix the mounting bracket to the cabinet (Use one M6 screw)
(2) Screw hole used to fix the switch to the mounting bracket

Use Front Mounting Brackets to Install a Switch

Follow these steps to mount a switch into a 19-inch standard cabinet:

Step1 Wear an ESD-preventive wrist strap and ensure a good skin contact and grounding.

Step2 Check the grounding and stability of the cabinet.

Step3 Take out the screws which are packed together with the front mounting brackets, and fix one end of mounting brackets to the switch, as shown in Figure 3-3.

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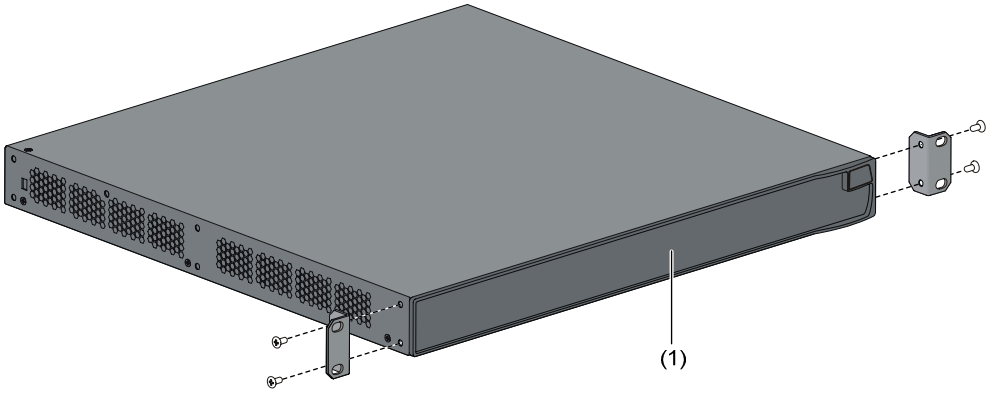
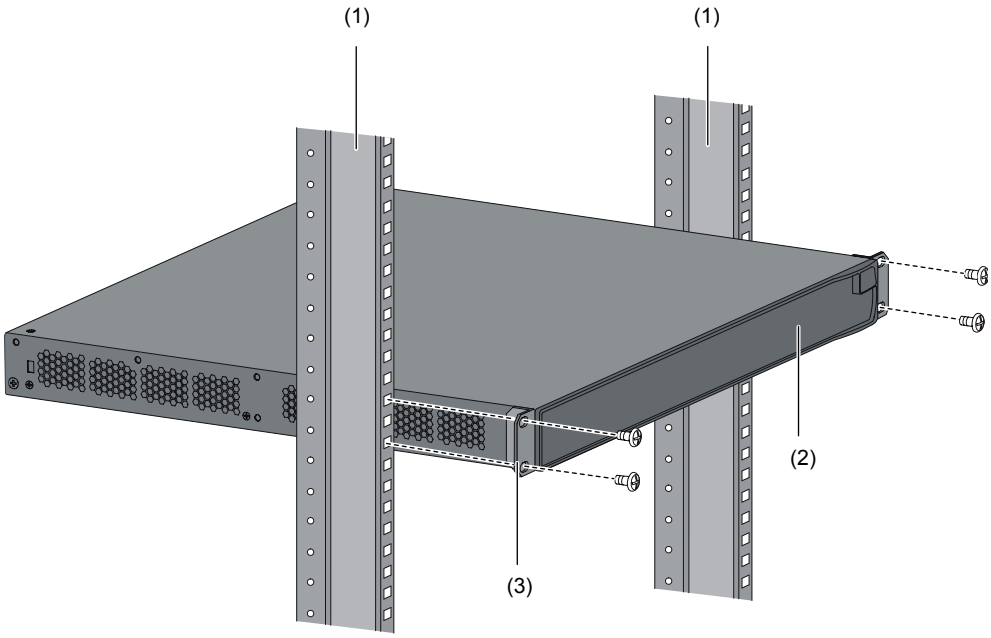
Figure 3-3 Fix front mounting brackets (1)



(1) Front panel of the switch

Step4 Place the switch horizontally in a proper position, and fix the other end of mounting brackets to the front brackets with screws and captive nuts, as shown in Figure 3-4.

Figure 3-4 Fix front mounting brackets (2)



(1) Front square-holed post	(2) Front panel
(3) Front mounting bracket	

Use Front Mounting Brackets and a Tray to Install a Switch

All models of the Switch 4510G support installation using front mounting brackets together with a tray.

Follow these steps to install a switch into a 19-inch standard cabinet:

Step1 Wear an ESD-preventive wrist strap and ensure a good skin contact and grounding.

Step2 Check the grounding and stability of the cabinet.

Step3 Fix the delivered tray horizontally in a proper position.

Step4 Take out the screws which are packed together with the front mounting brackets, and fix one end of mounting brackets to the switch, as shown in Figure 3-3.

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Step5 Place the switch on the tray horizontally, slide the tray into the cabinet, and fix the other end of mounting brackets to the front brackets with crews and captive nuts, as shown in Figure 3-4.

Mounting the Switch on a Workbench

In many cases, standard 19-inch racks are not available. Therefore, switches are often placed on clean workbenches. To place your switch on a workbench, you simply need to:

- Make sure that the workbench is clean, flat, and sturdy.
- Make sure that the environment is well ventilated and allows 10 cm (3.94 in.) of space around the chassis for heat dissipation.
- Do not place heavy objects on your switch.
- The vertical distance between two switches must be at least 1.5 cm (0.59 in).

Connecting the Grounding Cable

Caution

- Correctly connecting the chassis grounding cable is crucial to the lightning protection and electromagnetic susceptibility (EMS) of a switch.
- The power and grounding terminals in this section are for illustration only.

The power input end of the switch is connected with a noise filter, whose central ground is directly connected to the chassis, forming the so-called chassis ground (commonly known as PGND). This chassis ground must be securely connected to the earth so that the faradism and leakage electricity can be safely released to the earth, enhancing the EMS capability of the switch.

When a Grounding Strip is Available

When a grounding strip is available at the installation site, attach one end of the yellow-green grounding cable (PGND cable) of the switch to the grounding screw on the grounding strip (the grounding screw and the grounding hole are on the rear panel of the switch and are marked with a grounding sign). To do this, follow these steps:

Step1 Remove the grounding screw from the rear panel of the switch chassis.

Step2 Put the supplied OT terminal of the PGND cable on the grounding screw.

Step3 Fasten the grounding screw, which is attached with the OT terminal of the PGND cable, into the grounding screw hole with a screwdriver.

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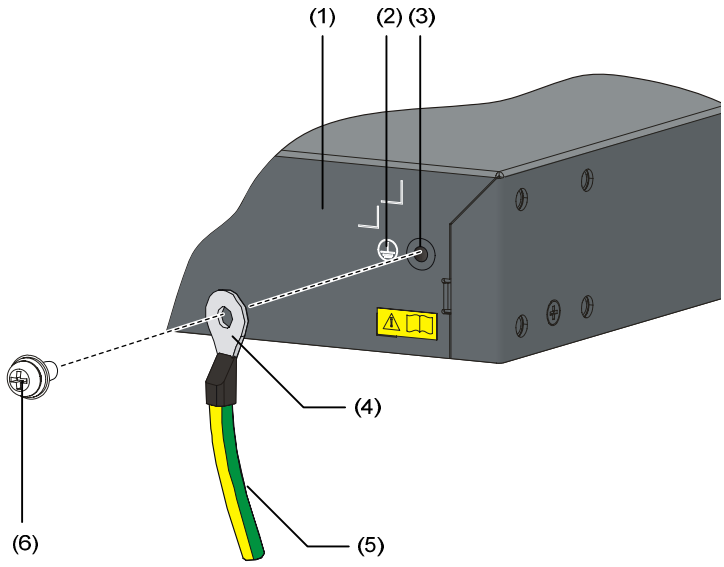
Figure 3-5 Connect the PGND cable to the grounding hole of switch



(1) Rear panel of the switch	(2) Grounding sign
(3) Grounding hole	(4) OT terminal
(5) PGND cable	(6) Grounding screw

To attach the other end of the PGND cable to the grounding strip in the equipment room, follow these steps:

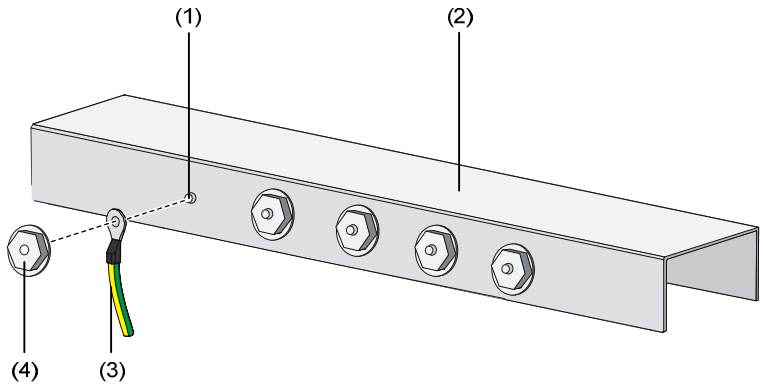
Step1 Cut the PGND cable to a proper length according to the distance between the switch and the grounding strip.

Step2 Peel 5 mm (0.20 in.) of insulation sheath using a wire stripper, and then insert the naked metal part through the black insulation covering into the end of the OT terminal.

Step3 Secure the metal part of the cable to the OT terminal with a crimper, and then cover it with the insulation covering. Then heat the insulation covering with a blowing machine to let it completely cover the metal part.

Step4 Connect the OT terminal to the grounding pole of the grounding strip, and then fasten it with a hex nut.

Figure 3-6 Connect the PGND cable to the grounding strip



(1) Grounding post	(2) Grounding strip
(3) PGND cable	(4) Hex nut

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Caution

The fire main and lightning rod of a building are not suitable for grounding the switch. The ground wire of the switch should be connected to the grounding device for the equipment room.

Where a Grounding Conductor Can be Buried

When there is no grounding strip, but an area with exposed earth is available nearby where a grounding conductor can be buried, hammer a 0.5 m (1.64 ft.) or longer angle iron or steel tube into the earth. The angle iron should have a dimension no less than 50 × 50 × 5 mm (1.97 × 1.97 × 0.20 in.) and the steel tube should have a wall thickness no less than 3.5 mm (0.14 in.) and be zinc-coated. Weld the yellow-green ground wire to the angel iron or steel tube and treat the joint for corrosion protection.

Figure 3-7 Ground the switch by burying the grounding conductor into the earth

(1) Grounding screw	(2) PGND cable	(3) Earth
(4) Joint	(5) Grounding conductor	(6) Switch rear panel

In Other Installation Sites

For an AC-powered switch, if neither of the above-mentioned two conditions is available, ground the switch through the PE wire of the AC power supply. Make sure the PE wire is well connected to the ground at the power distribution room or AC transformer side, the switch PE terminal and the PE wire are well connected, and the three-wire input cable of the PGND cable is used for the power supply cable. If the PE wire of the AC power supply is not grounded at the power distribution room or AC transformer side, report the problem and make reconstructions.

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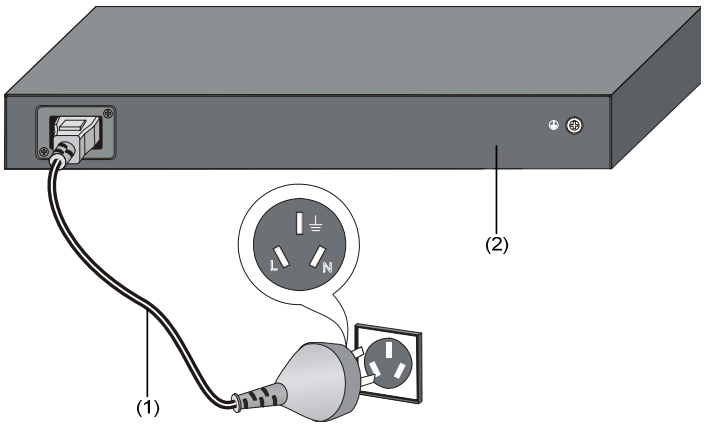
Figure 3-8 Ground through an AC power PE wire



(1) Three-wire AC power input cable	(2) Switch rear panel

Note

Use the PGND cable provided with the switch to connect the grounding strip in the equipment room. Otherwise, the grounding effect may not be ensured, which easily causes damage to the switch.

Connecting the Power Cords

Caution

Make sure that the ground wire has been properly connected before powering on the switch.

Table 3-1 Power cord connection methods of the Switch 4510G

Switch module	Power supply mode	Connection method
Switch 4510G 24-Port Switch 4510G 48-Port	AC power supply	Connecting the AC Power Cord
	RPS power supply	Connecting the RPS Power Cord

Connecting the AC Power Cord

Step1 Wear an ESD-preventive wrist strap, ensure a good skin contact and make sure that the ESD-preventive wrist strap is properly grounded.

Step2 Install the bail latch to prevent the AC power cord from accidentally falling off. Fix the bail latch into the holes located at the two sides of the AC power receptacle. Then pull the bail latch upwards (see in Figure 3-9 or Figure 3-11).

Step3 Connect one end of the AC power cord to the AC receptacle on the switch (see callout 1 in Figure 3-10 or Figure 3-12).

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Step4 Pull the bail latch down to secure the plug to the AC receptacle (see callout 2 in Figure 3-10 or Figure 3-12).

Step5 Connect the other end of the AC power cord to the external AC power supply system.

Step6 Check whether the system status LED (PWR) on the front panel of the switch is ON. If the LED is ON, it shows the power cord is properly connected.

Figure 3-9 Connect an AC power cord to a horizontal AC power socket (1)

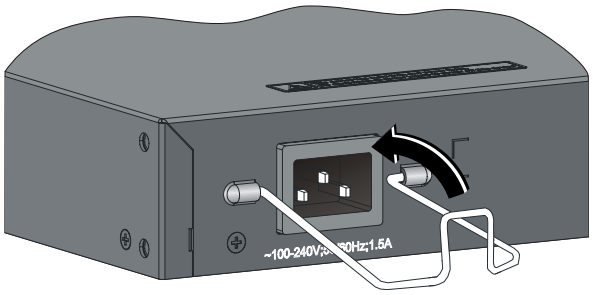


Figure 3-10 Connect an AC power cord to a horizontal AC power socket (2)

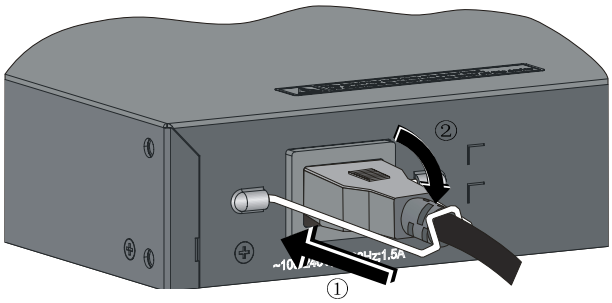


Figure 3-11 Connect an AC power cord to a vertical AC power socket (1)

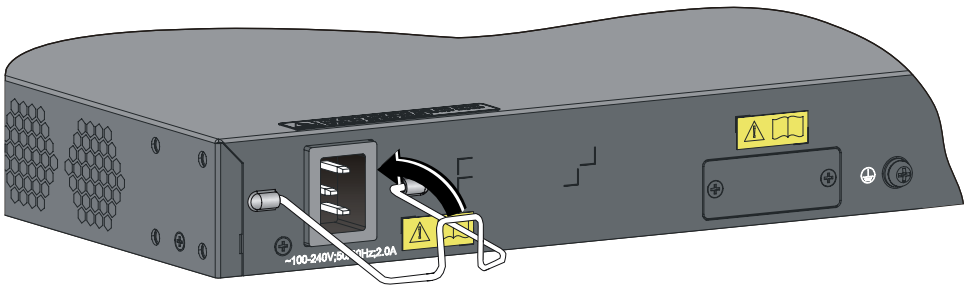
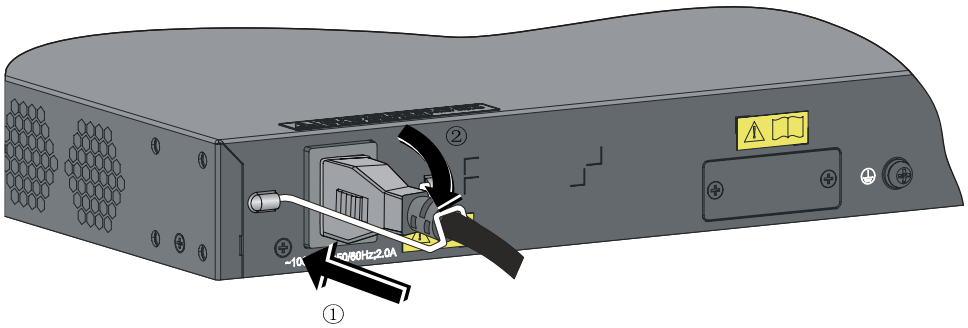


Figure 3-12 Connect an AC power cord to a vertical AC power socket (2)



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Connecting the RPS Power Cord

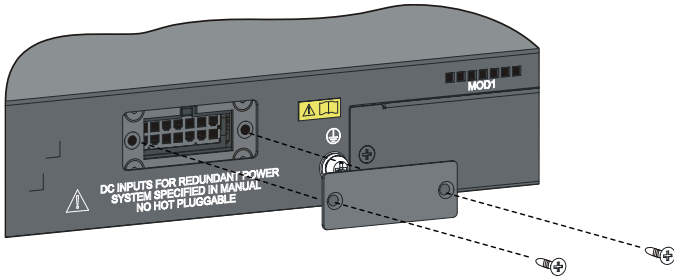
The Switch 4510G 24-Port and Switch 4510G 48-Port can work with RPS500-A3 using its +12 V/10.5 A output and a 0404A03C power cord. Procedures for connecting the RPS power cords are the same for these three models.

Follow these steps to connect an RPS power cord to the switch:

Step1 Wear an ESD-preventive wrist strap, ensure a good skin contact and make sure that the ESD-preventive wrist strap is properly grounded.

Step2 Loosen the captive screws on the RPS receptacle protective cover and remove the protective cover, as shown in Figure 3-13. (If you do not use the +12 VDC RPS interface, install the protective cover.)

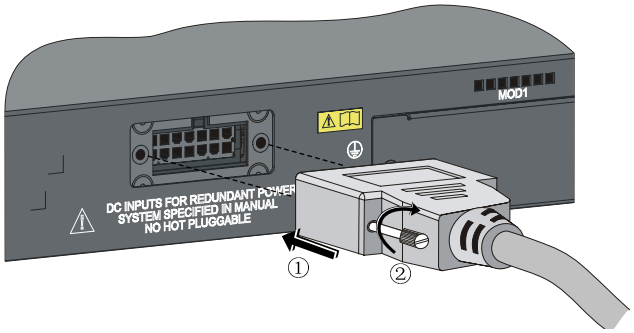
Figure 3-13 Connect an RPS power cord (1)



Step3 Keep the upside of the +12 VDC RPS plug on top and plug it in the RPS DC receptacle (see callout 1 in Figure 3-14). (If you plug it with the upside down, the insertion is not smooth because of the specific structure design of the RPS DC receptacle and the RPS plug.)

Step4 Use a flat-blade screwdriver to fix the two screws on the RPS plug clockwise to secure the plug to the RPS DC receptacle (see callout 2 in Figure 3-14).

Figure 3-14 Connect an RPS power cord (2)



Step5 Connect the other end of the +12 VDC RPS power cord to the external RPS power supply system.

Step6 Check whether the RPS LED on the front panel of the switch is ON. If yes, the power is properly connected.

Installing an Interface Module

The Switch 4510G provide two interface module slots on the rear panel. For details about optional interface modules, refer to Optional Interface Modules on page 1-9.

The installation and removal of various interface modules are similar. This section describes the installation and removal of the Dual-Port 10 GE XFP Interface Module (3C17766) for illustration.

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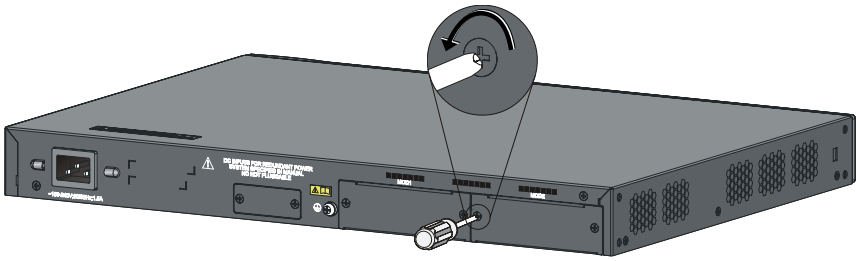
Installing an Interface Card

Step1 Wear an ESD-preventive wrist strap, ensure a good skin contact and make sure that the ESD-preventive wrist strap is properly grounded.

Step2 Loosen the mounting screws of the filler panel on the interface module slot of the switch's rear panel with a Phillips screwdriver and remove the filler panel.

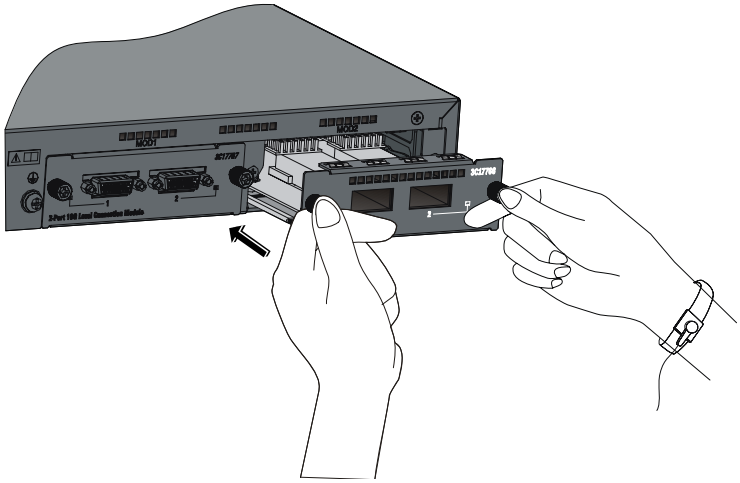
Figure 3-15 Install an interface module (1)



Step3 Hold the fastening screws on the front panel of the XFP interface module, and gently push the interface module in along the slot guide rail until the interface module is in close contact with the switch.

Step4 Tighten the captive screws with a Phillips screwdriver to fix the interface module.

Figure 3-16 Install an interface module (2)



Note

- Keep the removed filler panel properly for future use.
- When tightening the fastening screws at both sides of the optional module with a screwdriver or an electric screwdriver, make sure that the torque is not bigger than 0.4 N-m.

Removing an Interface Module

Step1 Wear an ESD-preventive wrist strap, ensure a good skin contact and make sure that the ESD-preventive wrist strap is properly grounded.

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Step2 Use a Phillips screwdriver to loosen the captive screws at both sides of the interface module until all spring pressure is released.

Step3 Pull the interface module towards you along the guide rails, until it completely comes out of the switch chassis.

Note

When installing or removing an optional interface module, pay attention to the following points:

- Do not touch the surface-mounted components directly with your hands.
- Do not use too much force in the operation.
- After removing an interface module, if no new module is to be installed, install the filler panel as soon as possible to prevent dust and ensure the normal ventilation in the switch.

Installing Dedicated CX4/SFP+ Cable

Installing Dedicated CX4/SFP+ Cable

Note

The installation and removal of dedicated CX4 cables and SFP+ cables are similar. This section describes the installation and removal of the dedicated CX4 cable for illustration.
Make sure that you have installed a CX4/SFP+ interface module before installing CX4/SFP+ cables.

Step1 Put on an ESD-preventive wrist strap and verify the ESD-preventive wrist strap properly grounded. Then take out the dedicated CX4 cable from the package.

Step2 Horizontally plug the plug of the dedicated CX4 cable into the CX4 port of the switch and pay attention to the direction of the plug when plugging it.

Removing Dedicated CX4/SFP+ Cable

Step1 Put on an ESD-preventive wrist strap and verify the ESD-preventive wrist strap properly grounded.

Step2 Hold the plug of the CX4 cable, pull the handle at the end of the plug to horizontally unplug the plug of the CX4 cable from the CX4 port of the switch.

Caution

- Dedicated CX4/SFP+ cable of the Switch 4510G is hot pluggable.
- Make sure that the cable bending radius is no less than eight times of the cable diameter when dedicated CX4/SFP+ cable is connected.

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Installing Switches for an IRF

The Switch 4510G support the IRF function. You can install IRF-capable interface modules to connect multiple switches through the 10 GE ports to form a logical entity, thus to establish a new intelligent network with high reliability, expandability and manageability.

Installation Flow for an IRF

Figure 3-17 Installation flow for an IRF

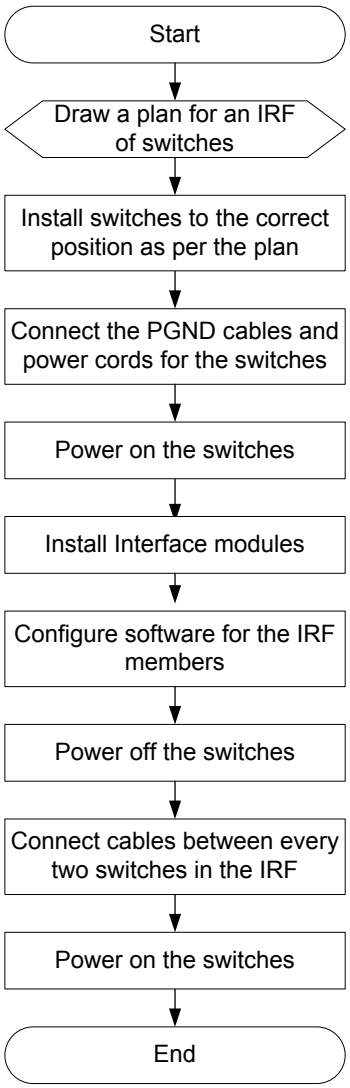

Table 3-2 Description of the installation flow for an IRF of switches

No	Task	Remarks
1	Draw a plan for an IRF with switches	Take the following into consideration: • Number of IRF members and the bandwidth • Interface modules and cables • Physical connection mode(daisy chain connection or ring connection) • Cable connection For details, see Drawing a Plan for an IRF with Switches.

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No	Task	Remarks
2	Install the IRF members to the correct position	For detailed installation procedures, see: • Installing the Switch into a 19-Inch Rack Using Mounting Brackets. • Mounting the Switch on a Workbench.
3	Connect grounding cables and power cords for the switches	For details, see: • Connecting the Grounding Cable • Connecting the Power Cords
4	Power on the IRF members	—
5	Install interface modules	For details, see Installing an Interface Module.
6	Configure software for the IRF members	For details about the IRF function, see *IRF Configuration* in the *System Volume* of the *3Com Switch 4510G Family Configuration Guide*.
7	Power off the switches	—
8	Connect the cables	Use cables to connect 10 G ports of the interface modules: • The given XFP ports work with XFP optical transceivers and fibers • The given SFP+ ports can work with SFP+ optical transceivers and fibers for long-haul transmission; or they can be directly connected through dedicated SFP+ cables for short-haul transmission • The given CX4 ports use dedicated CX4 cables for connection For details about the cable connection, refer to Installing Dedicated CX4/SFP+ Cable.
9	Power on the switches	Finish establishing an IRF

Drawing a Plan for an IRF with Switches

Before implementing an IRF of switches, draw a plan according to actual conditions of the user network and network devices and take the following points into consideration:

Determine the number of IRF members and the bandwidth

You can determine the number of IRF members and the bandwidth according to the network scale.

- The Switch 4510G support two to four switches in a stack.
- The Switch 4510G support aggregation of the 10 GE ports. You can assign the two 10 GE ports of an interface module to an aggregation group to expand the bandwidth for the stack.

Note

10 GE ports of different interface modules cannot join the same aggregation group in the IRF. Therefore, 1-port XFP interface modules do not support port aggregation in the IRF.

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Select the proper interface modules and cables

You can select the interface modules and cables according to the distance between devices in the IRF. For long-distance connections, use XFP or SFP+ transceivers and fibers to connect the devices; for short-distance connections, use 3C17767 or LSPM2SP2P with CX4 or SFP+ cables to connect the devices. For details, see Optional Interface Modules.

Configure the physical connection mode

IRF supports two physical connection modes: daisy chain connection and ring connection.

A ring connection is more reliable than a daisy chain connection. The failure of one link in a ring connection does not affect the function and performance of the IRF, whereas the failure of one link in a daisy chain connection causes the split of the IRF.

Figure 3-18 The daisy chain connection mode

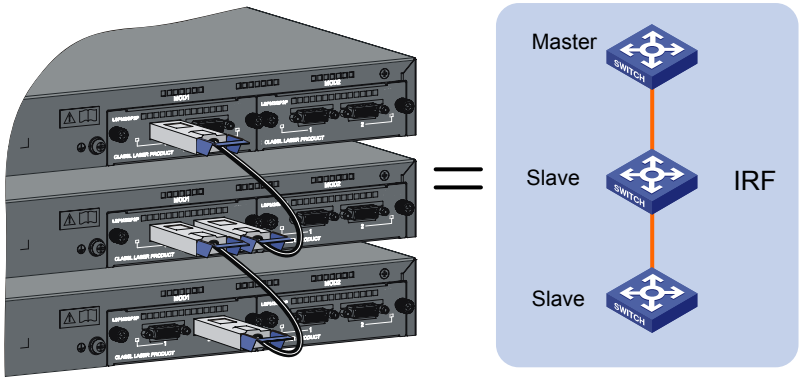
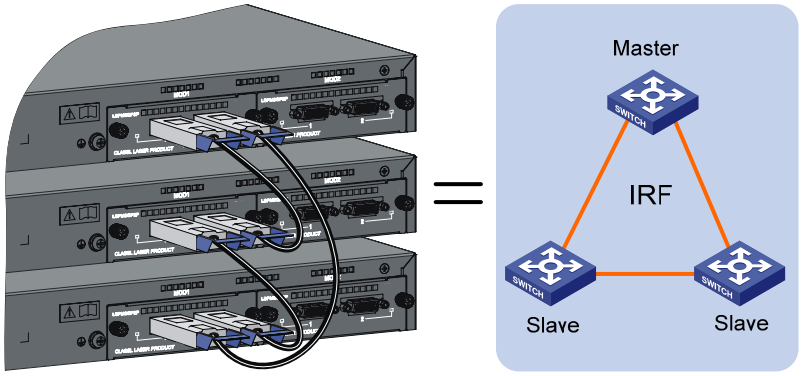


Figure 3-19 The ring connection mode



Note

Each of the devices comprising a ring connection or non-edge devices in a daisy chain connection needs two 10 GE ports to connect other devices; therefore, you need to install two 1-port 10 GE XFP interface modules on such devices.

Connect the cables

Before connecting the cables, determine the actual position of the member devices and the length of the cables, and observe the following:

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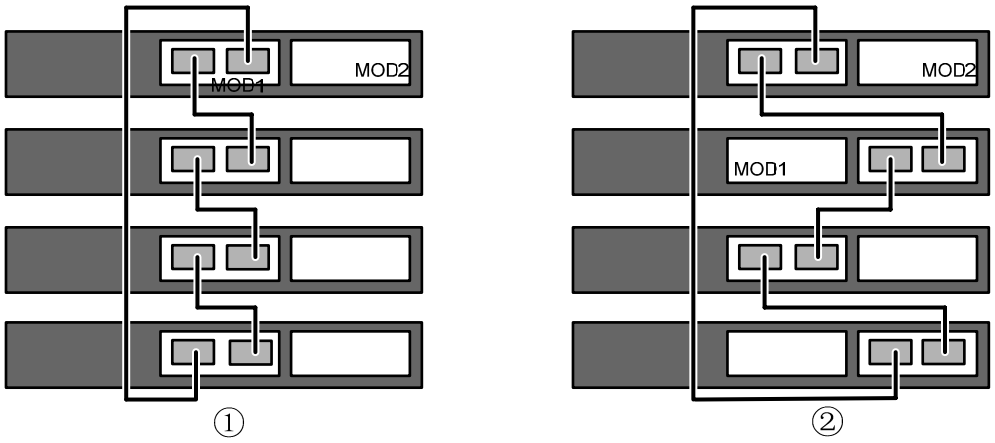
- Understand the neighbor devices for one another
- Install the interface modules in proper slots as needed. Each Switch 4510G provides two expansion slots.
- Determine the ports on different devices to be connected.

Note that:

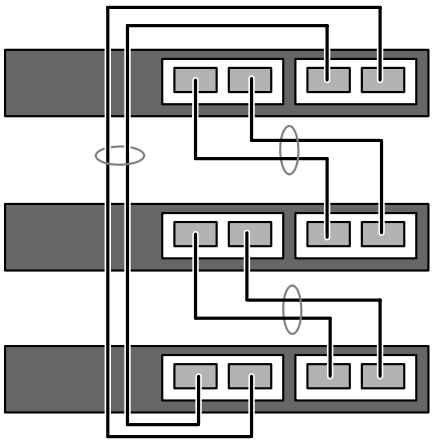
- When 2-port interface modules are used to constitute an IRF of switches and the ports are not assigned to any aggregation group, ports of the interface module in slot 1 (MOD 1) can be connected to ports of MOD 1 or MOD 2. However, the left port can be connected to only the right port of another interface module, that is, two ports at the same side cannot be connected, as shown in Figure 3-20.

Figure 3-20 Cable connections in an IRF in the non-aggregate mode with 2-port interface modules



- When 2-port interface modules are adopted in an IRF with ports operating in the aggregation mode, ports of MOD 1 can only be connected to ports of MOD 2, and the locations of the ports of the interface modules are not limited.

Figure 3-21 Cable connections in an IRF in the aggregation mode with 2-port interface modules



- 1-port interface modules do not support port aggregation in the IRF. When 1-port interface modules are connected for an IRF, the port of MOD 1 can only be connected to the port on MOD 2, as shown by callout 1 in Figure 3-22; when a 1-port interface module is connected to a 2-port interface module for an IRF, the port of MOD 1 can only be connected to the right port of the 2-port interface module, as shown by callout 2 in Figure 3-22.

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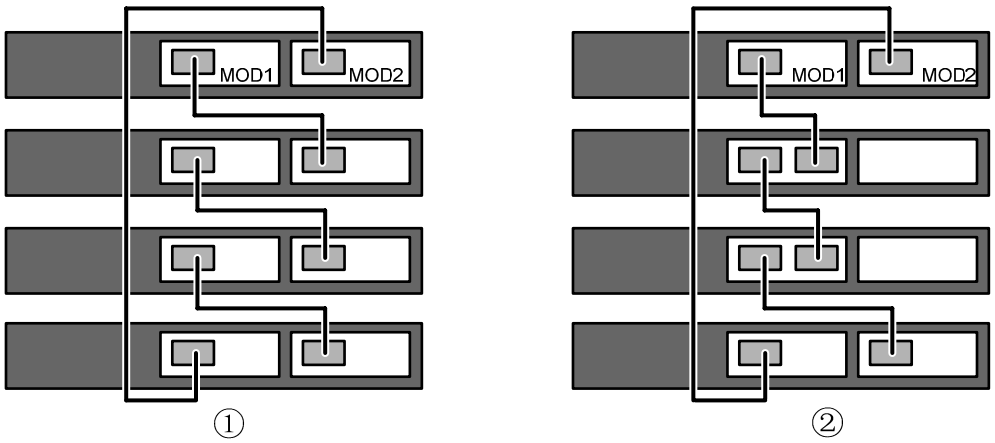
Figure 3-22 Cable connections for an IRF with 1-port interface modules



Verifying the Installation

- Check whether the selected power is the same as the power label on the switch;
- Check whether the ground wire is connected;
- Check whether the power cords are connected correctly;
- Check whether all the interface cables are routed indoors. If there are cables outdoors, check that the socket strip with lightning protection and lightning arresters for network ports have been correctly connected.

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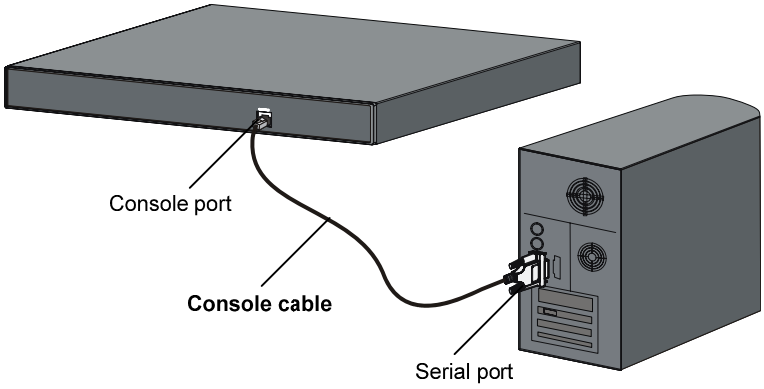
4 Starting and Configuring the Switch

Setting up the Configuration Environment

Set up the configuration environment as follows:

Connect a terminal (a PC in this example) to the console port on the switch with a console cable.

Figure 4-1 Network diagram for configuration environment setup



Connecting the Console Cable

Console Cable

A console cable is an 8-core shielded cable. One end of the cable is a crimped RJ-45 connector, which is connected to the console port of the switch, and the other end is a DB-9 female connector, which is connected to the serial port on the console terminal, as shown below.

Figure 4-2 Console cable

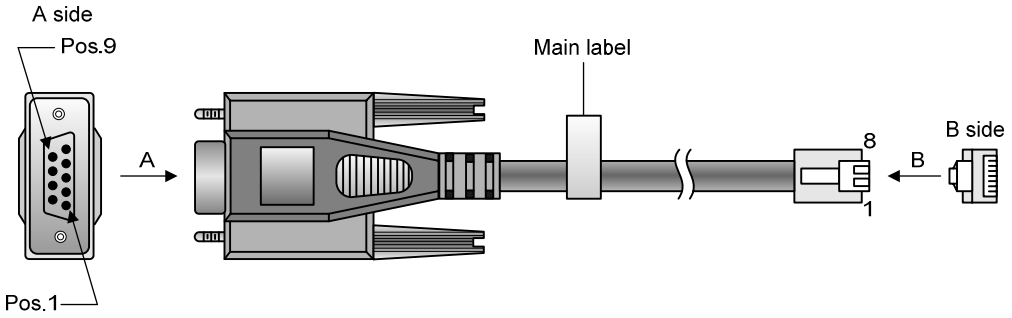


Table 4-1 Console cable pinouts

RJ-45	Signal	Direction	DB-9
1	RTS	←	7
2	DTR	←	4

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RJ-45	Signal	Direction	DB-9
3	TXD	←	3
4	CD	→	1
5	GND	--	5
6	RXD	→	2
7	DSR	→	6
8	CTS	→	8

Connection Procedure

When you want to use the terminal to configure the switch, follow these steps to connect a terminal device to the switch using the console cable:

Step1 Plug the DB-9 female connector of the console cable to the serial port of the console terminal or PC.

Step2 Connect the RJ-45 connector of the console cable to the console port of the switch.

Caution

Pay attention to the mark on the console port and be sure to plug the connector to the correct port.

Note

- When connecting a PC to a powered-on switch, you are recommended to connect the DB-9 connector of the console cable to the PC before connecting the RJ-45 connector to the switch.
- When disconnecting a PC from a powered-on switch, you are recommended to disconnect the DB-9 connector of the console cable from the PC after disconnecting the RJ-45 connector from the switch.

Setting Terminal Parameters

When setting up the configuration environment through the console port, the terminal or PC can use the terminal emulation program to communicate with the switch. You can run the HyperTerminal of the Windows operating system to connect to other PCs, network devices, and Telnet sites. For detailed information and the use of the HyperTerminal, refer to the HyperTerminal Help documentation in Help and Support Center on the PC running the Windows operating system.

In the following configuration procedure, Windows XP HyperTerminal is used to communicate with the switch.

1) Start the PC and run the terminal emulation program.
2) Set terminal parameters as follows:

- Bits per second: 19,200

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- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None
- Emulation: VT100

The specific procedure is as follows:

Step1 Select **Start** > **Programs** > **Accessories** > **Communications** > **HyperTerminal** to enter the HyperTerminal window. The **Connection Description** dialog box appears, as shown below.

Figure 4-3 Connection description of the HyperTerminal

Step2 Type the name of the new connection in the **Name** text box and click **OK**. The following dialog box appears. Select the serial port to be used from the **Connect using** drop-down list.

Figure 4-4 Set the serial port used by the HyperTerminal connection

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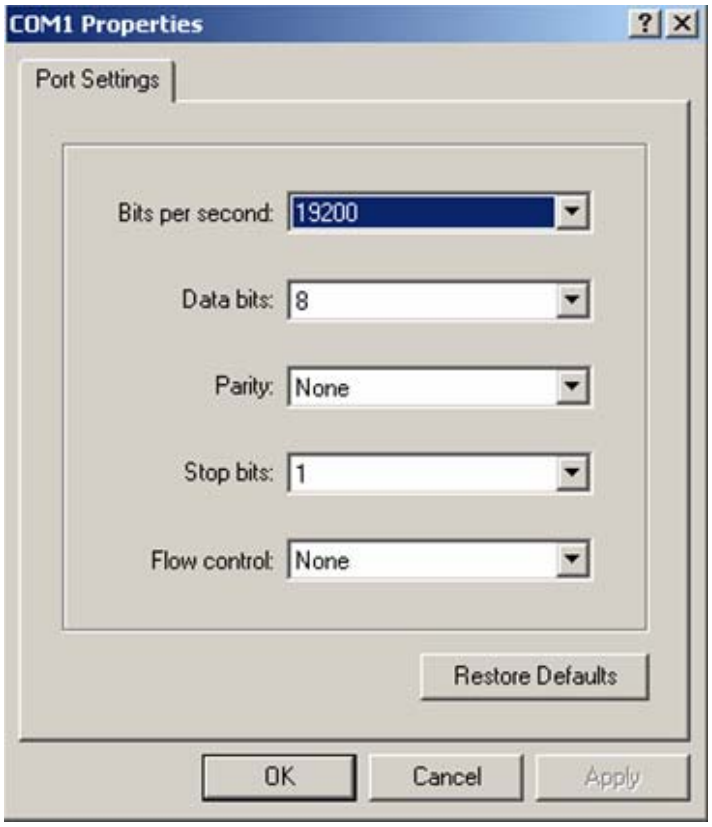
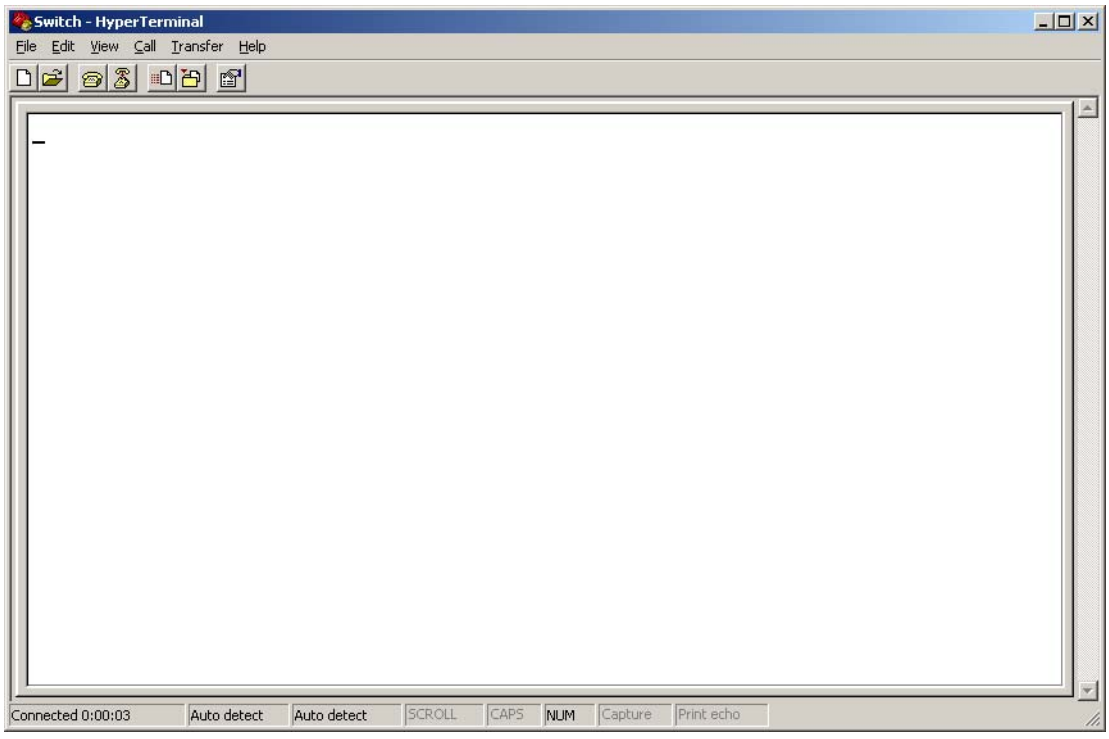
Step3 Click **OK** after selecting a serial port. The following dialog box appears. Set **Bits per second** to **19200**, **Data bits** to **8**, **Parity** to **None**, **Stop bits** to **1**, and **Flow control** to **None**.

Figure 4-5 Set the serial port parameters



Step4 Click **OK** after setting the serial port parameters and the system enters the HyperTerminal window shown below.

Figure 4-6 HyperTerminal window



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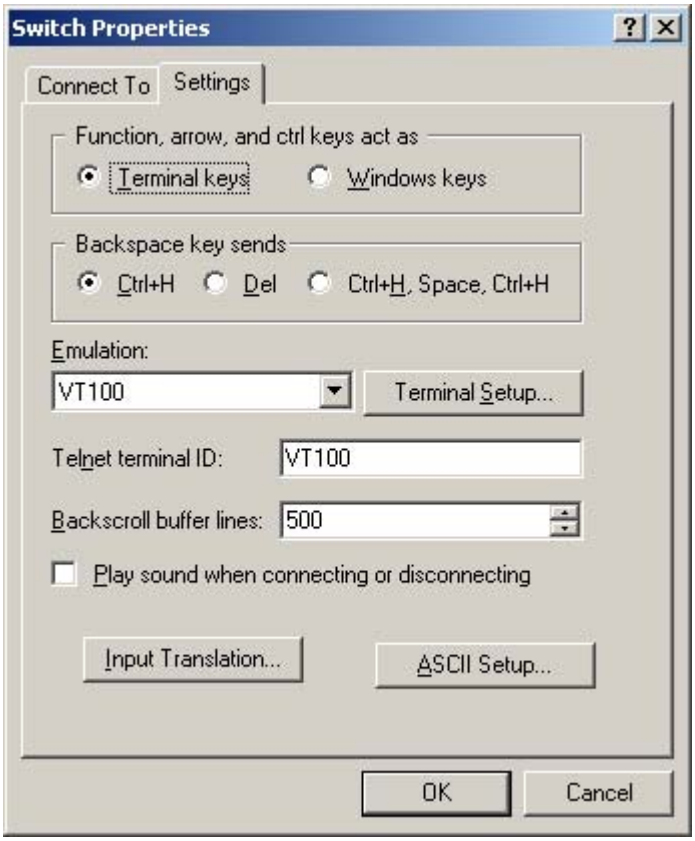
Step5 Click **Properties** in the HyperTerminal window to enter the **Switch Properties** dialog box. Click the **Settings** tab, set the emulation to **VT100**, and then click **OK**.

Figure 4-7 Set terminal emulation in **Switch Properties** dialog box



Booting the Switch

Checking before Powering on the Switch

Before powering on the switch, verify that:

- The power cord and ground cable are properly connected.
- The power supply voltage is consistent with that required by the switch.
- The console cable is properly connected; the terminal (which can be a PC) used for configuration has been started; and the configuration parameters have been set.

Powering on the Switch

All the Switch 4510G have the same Boot ROM display style. This document uses the Boot ROM display of Switch 4510G 24-Port as an example:

```
Starting......


******************************************************************************
*                                                                            *
*              Switch 4510G 24-Port BOOTROM, Version 510                     *
*                                                                            *
******************************************************************************
Copyright (c) 2004-2009 3Com Corporation and its licensors.
```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```
    Creation date   : May 18 2009, 17:01:57
    CPU Clock Speed : 264MHz
    BUS Clock Speed : 33MHz
    Memory Size     : 128MB
    Mac Address     : 001cc5bc3111

Press Ctrl-B to enter Boot Menu... 1
```

The last line asks whether you want to enter the Boot Menu. The system waits one second for your response.

Note

- The system has two startup modes: normal startup and fast startup. The normal startup mode takes a little longer time than the fast startup mode because of more self-test operations.
- By default, the system starts up in fast startup mode and the waiting time here is one second. If you set the startup mode to normal, this waiting time is five seconds. For the setting of the startup mode, refer to the section Changing the Startup Mode.

- If you press **Ctrl** + **B** within 1 second, the system displays:

```
Password :
```

Enter the correct Boot ROM password and click **Enter** to enter the Boot Menu. By default, no password is set and you can click **Enter** directly to enter the Boot Menu.

```
          BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Table 4-2 describes the fields above.

Table 4-2 Description on the fields

Item	Description
1. Download application file to flash	Download the application file to the flash memory
2. Select application file to boot	Select the application file to boot
3. Display all files in flash	Display all files in the flash memory

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Item	Description
4. Delete file from flash	Delete files from the flash memory
5. Modify bootrom password	Modify the Boot ROM password
6. Enter bootrom upgrade menu	Enter the Boot ROM update menu
7. Skip current configuration file	Skip the current configuration file (this configuration is valid once)
8. Set bootrom password recovery	Restore the Boot ROM password
9. Set switch startup mode	Set the startup mode of the switch
0. Reboot	Restart the switch

- If you perform no operation or press a key other than **Ctrl** + **B** within one second, Once the remaining waiting time becomes zero, the system begins to automatically start up and the following information is displayed:

```
Auto-booting...
Decompress Image.....................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................OK!

User interface aux0 is available.



Press ENTER to get started.
```

The appearance of "Press ENTER to get started" indicates that the automatic startup of the switch is complete.

Press **Enter**. The following prompt is displayed:

```
<Sysname>
```

You can configure the switch now.

Changing the Startup Mode

By default, the system starts up in fast mode. If you want to change the startup mode to normal, press **Ctrl** + **B** within one second to enter the Boot Menu showed below:

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```
         BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Enter **9**, and the system prompts you to change the startup mode:

```
The current mode is fast startup mode!
Are you sure you want to change it to full startup mode? Yes or No(Y/N)
```

Enter **Y**. The system displays the following information:

```
Setting startup mode...done!

         BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Enter **0**. The system reboots in normal mode and displays the following information:

```
Starting......


    ******************************************************************************
    *                                                                            *
    *               Switch 4510G 24-Port BOOTROM, Version 510                    *
    *                                                                            *
    ******************************************************************************
    Copyright (c) 2004-2009 3Com Corporation and its licensors.
    Creation date   : May 18 2009, 17:01:57
    CPU Clock Speed : 264MHz
```


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```
    BUS Clock Speed : 33MHz
    Memory Size     : 128MB
    Mac Address     : 001cc5bc3111

Press Ctrl-B to enter Boot Menu... 0
```

In normal startup mode, the waiting time here is five seconds. If you press **Ctrl + B** within five seconds, the Boot Menu is displayed. If you press **Ctrl + B** within five seconds, the Boot Menu is displayed: If you perform no operation or press a key other than **Ctrl + B** within five seconds, the system begins to automatically start up and the following information is displayed:

```
Auto-booting...
Decompress Image.....................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................OK!


            Board checking.....................LSP1LTSUD
            SDRAM fast selftest.....................OK!
            Flash fast selftest.....................OK!
            CPLD selftest...........................OK!
            Switch chip selftest....................OK!
            PHY selftest............................OK!
            Subslot 1 (3CRS45G-24-91) selftest.....OK!
            Please check leds..................FINISHED!

User interface aux0 is available.



Press ENTER to get started.
```

The appearance of "Press ENTER to get started" indicates that the automatic startup of the switch is complete.

Press **Enter**. The following prompt is displayed:

```
<Sysname>
```


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You can configure the switch now.

Note

The *Switch 4510G* provide abundant command views. For detailed descriptions about the configuration commands and CLI, refer to *3Com Switch 4510G Family Configuration Guide*, *3Com Switch 4510G Family Command Reference Guide.*

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5 Boot ROM and Host Software Loading

Introduction to Loading Modes

The switch software consists of Boot ROM software (.btm) and host software (.bin). You can load both the two types of software through the approaches displayed in Table 5-1.

Table 5-1 Approaches for loading software on the switch

Approach	Section
Loading files through the Boot ROM menu	Loading Software Using XMODEM Through Console Port
	Loading Software Using TFTP through Ethernet Port
	Loading Software Using FTP Through Ethernet Port
Loading files through the CLI	Loading Software Using FTP
	Loading Software Using TFTP

Note

The Boot ROM software version must match the host software version when you load the Boot ROM and host software.

Loading Software Through the Boot ROM Menu

If your terminal is directly connected to the switch, you can load Boot ROM and host software locally through the Boot ROM menu.

Before loading the software, make sure that your terminal is correctly connected to the switch to insure successful software loading.

Boot Menu

```
Starting......


********************************************************************************
*                                                                              *
*               Switch 4510G 24-Port BOOTROM, Version 510                      *
*                                                                              *
********************************************************************************
Copyright (c) 2004-2009 3Com Corporation and its licensors.
Creation date    : May 18 2009, 17:01:57
```


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```
    CPU Clock Speed : 264MHz
    BUS Clock Speed : 33MHz
    Memory Size     : 128MB
    Mac Address     : 001cc5bc3111


Press Ctrl-B to enter Boot Menu... 1
```

Press **Ctrl + B**. The system displays:

```
Password :
```

Note

- To enter the Boot Menu, you must press Ctrl + B within one second after the information “Press Ctrl-B to enter Boot Menu...” appears. Otherwise, the system starts to decompress the program; and if you want to enter the Boot Menu at this time, you will have to restart the switch.
- By default, the system starts up in fast startup mode and the waiting time here is one second. If you set the startup mode to normal, this waiting time is five seconds. For the setting of the startup mode, refer to the section Changing the Startup Mode.

Input the correct Boot ROM password (by default, no password is set on the switch and you can click **Enter** directly). The system enters the Boot Menu:

```
          BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

The items in the Boot ROM menu are described in Table 4-2.

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Note

The loading process of the Boot ROM software is the same as that of the host software, except that during the Boot ROM loading process, you must enter the different digit after entering the Boot Menu and the system gives somewhat different prompts. The following text mainly describes the Boot ROM loading process.

Loading Software Using XMODEM Through Console Port

Introduction to XMODEM

XMODEM is a file transfer protocol that is widely used due to its simplicity and good performance. XMODEM transfers files via console port. It supports one type of data packets (128 bytes), two check methods (checksum and CRC), and error packet retransmission mechanism (generally the maximum number of retransmission attempts is ten).

The XMODEM transmission procedure is completed by the cooperation of a receiving program and a sending program. The receiving program sends a negotiation packet to negotiate a packet check method. After the negotiation, the sending program starts to transmit data packets. When receiving a complete packet, the receiving program checks the packet using the agreed method. If the check succeeds, the receiving program sends an acknowledgement packet and the sending program proceeds to send another packet; otherwise, the receiving program sends a negative acknowledgement packet and the sending program retransmits the packet.

Loading Boot ROM software

Complete the following tasks to update the Boot ROM software using XMODEM through the console port (For details about the HyperTerminal, refer to Setting Terminal Parameters on page 4-2):

Task	Remarks
Enter the Boot ROM update menu on the switch	Required Log in to the switch through the HyperTerminal and then configure the protocol used for loading files.
Configure the switch to download files using XMODEM	
Set the download rate of the console port on the switch	Required Log in to the switch through the HyperTerminal and then set the download rate of the console port on the switch.
Change the rate of the serial port on the terminal	Optional Set the baud rate of the serial port on the terminal to be consistent with that of the console port on the switch.
Download the Boot ROM file	Required Transmit a file from the terminal to the switch, and update the Boot ROM file on the switch.
Restore the download rate to the default	Optional Set the baud rate of the serial port on the terminal to be consistent with the default rate of the console port on the switch.

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Task	Remarks
Restart the switch to make the updated Boot ROM file effective	Required

1) Enter the Boot ROM update menu on the switch

Enter the Boot ROM menu, and then enter **6** after the system displays “Enter your choice(0-9):” to enter the Boot ROM update menu.

```
Bootrom update menu:
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3):
```

2) Configure the switch to download files using XMODEM

Enter **3** in the above menu to load the Boot ROM and host software using XMODEM protocol. The system displays the following download baud rate setting menu:

```
Please select your download baudrate:
1.  9600
2.* 19200
3.  38400
4.  57600
5.  115200
0.  Return

Enter your choice (0-5):
```

3) Set the download rate of the console port on the switch

Select an appropriate download rate. For example, if you select 115200 bps, that is, enter **5**, the following information is displayed:

```
Download baudrate is 115200 bps
Please change the terminal's baudrate to 115200 bps and select XMODEM protocol
Press enter key when ready
```

Now that the console communication baud rate of the switch has been changed to 115200 bps while that of the terminal is still 19200 bps, the two sides cannot communicate with each other. According to the prompt, you need to change the baud rate of the terminal to 115200 bps.

Note

- It is recommended to set the download rate to 115200 bps since the software files are generally very large.
- If you have chosen 19200 bps, you do not need to modify the HyperTerminal’s baud rate, and therefore you can skip step 4) below and proceed to step 5) directly.

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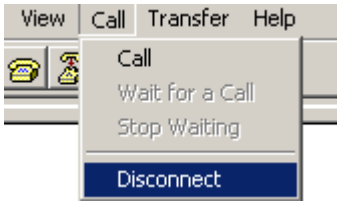
4) Change the rate of the serial port on the terminal

To ensure communication between the terminal and the switch, the baud rate of the serial port on the terminal should be consistent with that of the console port on the switch.

Step1 Select **Call** > **Disconnect** in the HyperTerminal window to disconnect the terminal from the switch.

Figure 5-1 Disconnect the terminal from the switch



Step2 Select **File** > **Properties**. In the **Properties** dialog box, click **Configure** (as shown in Figure 5-2), and then select **115200** from the **Bits per second** drop-down list box (as shown in Figure 5-3).

Figure 5-2 Properties dialog box

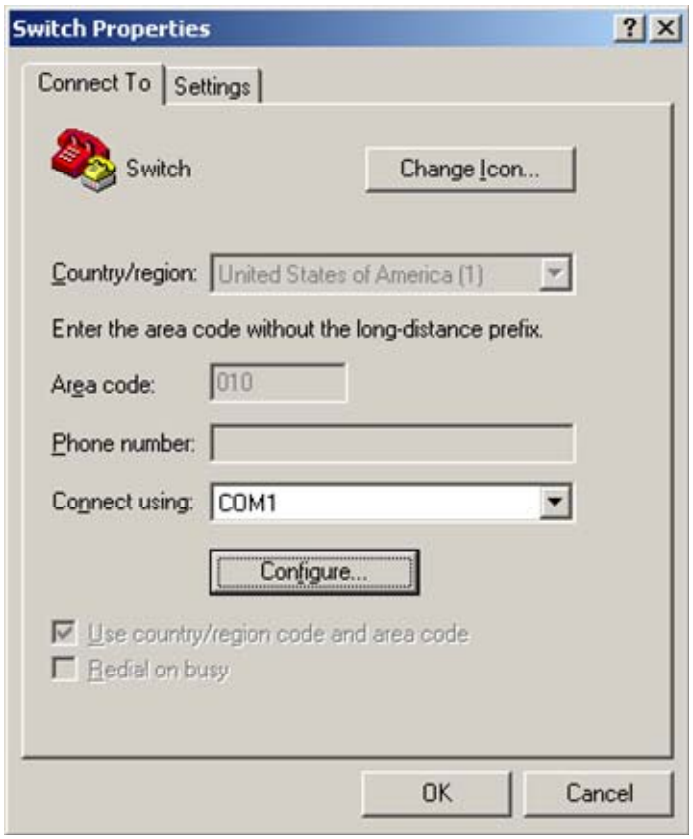


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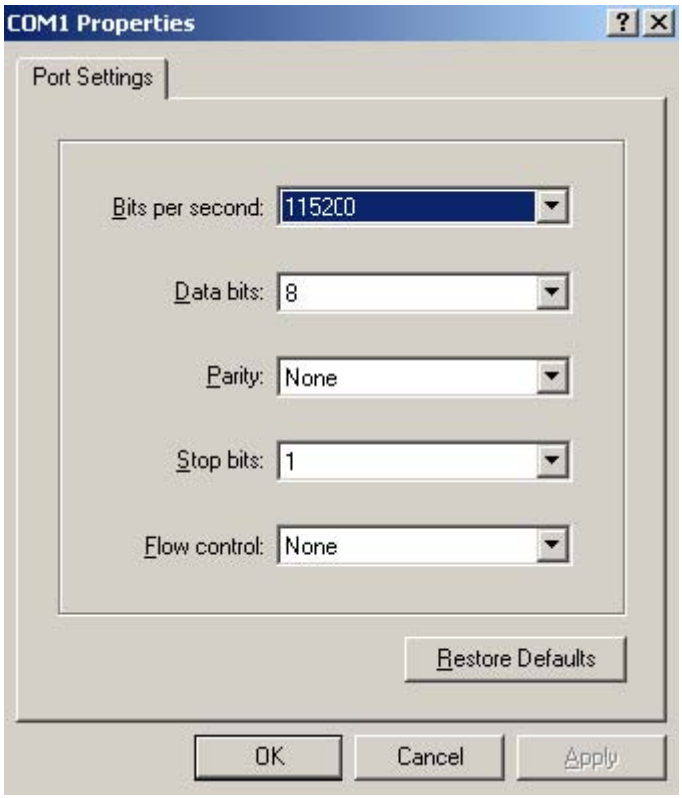
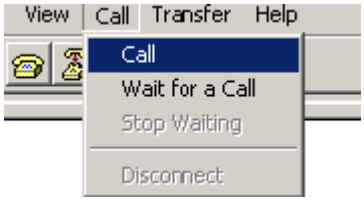
Figure 5-3 Modify the baud rate



Step3 Select **Call** > **Call** to reestablish the connection.

Figure 5-4 Reestablish the connection



Note

The new settings can take effect only after you reestablish the connection.

5) Download the Boot ROM file

Step1 Press **Enter** in the HyperTerminal window to start downloading the program. The system displays the following information:

CCCCCCCCCCCCCCCCC

Note

Press **Ctrl** + **X** to quit downloading files; otherwise, proceed as follows.

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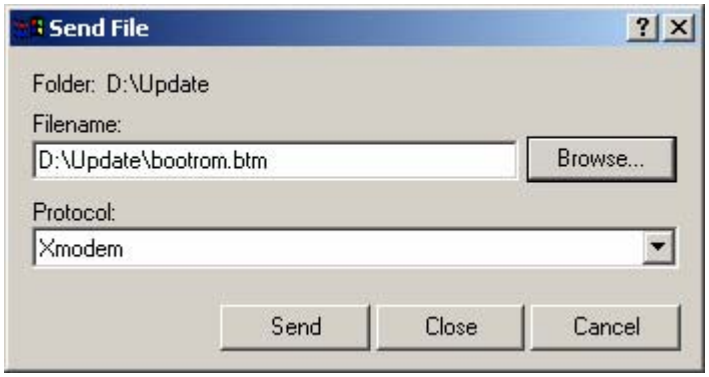
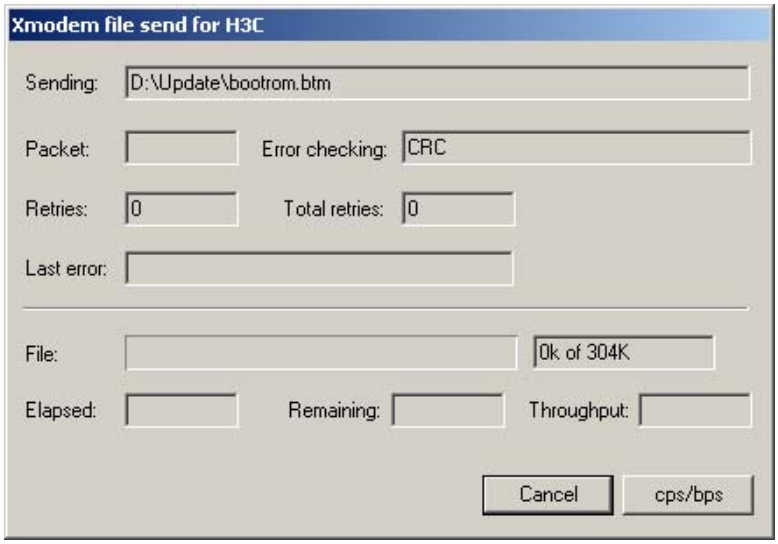
Step2 Select **Transfer** > **Send File** in the HyperTerminal's window. Click **Browse** in the pop-up dialog box (as shown in Figure 5-5) to select the application file to be downloaded (for example, **bootrom.btm**), and select **Xmodem** from the **Protocol** drop-down list.

Figure 5-5 Send file dialog box



Step3 Click **Send**. The following dialog box appears:

Figure 5-6 Page for file sending



After the Boot ROM file is downloaded, the terminal displays the following information:

```
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCdone!
Bootrom updating.........done!

Your baudrate should be set to 19200 bps again!
Press enter key when ready
```

Note

You do not need to reset the HyperTerminal's baud rate and can skip the last step if you have chosen 19200 bps. In this case, the system returns to the Boot ROM update menu directly instead of displaying the prompt "Your baudrate should be set to 19200 bps again! Press enter key when ready".

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6) Restore the download rate to the default

Set the baud rate to 19200 bps (refer to Change the rate of the serial port on the terminal on page 5-5 for detailed operation).

7) Restart the switch to make the updated Boot ROM file effective

Press **Enter** in the HyperTerminal window to return to the Boot ROM update menu.

```
  BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Enter **0** to restart the device. After that, the updated Boot ROM file becomes effective.

Loading host software

Select **1** in Boot Menu to load the host software of the switch. The system displays the following information:

```
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu
Enter your choice(0-3):3
```

To load the host software through XMODEM, select **3**.

The subsequent steps are almost the same as those for loading the Boot ROM software, except that the system gives the prompt for host software loading instead of Boot ROM loading.

Loading Software Using TFTP through Ethernet Port

Introduction to TFTP

Trivial file transfer protocol (TFTP), a protocol in TCP/IP protocol suite, is used for trivial file transfer between client and server. It uses UDP to provide unreliable data stream transfer service.

Loading Boot ROM software

Step1 Connect an Ethernet port (GigabitEthernet 1/0/25, for example) of the switch to the server (whose IP address is available) that provides the file (usually the **.bin** file or the **.btm** file) to be downloaded, and connect the console port of the switch to a PC, as shown in Figure 5-7.

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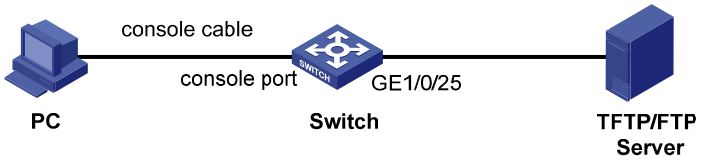
Figure 5-7 Load Boot ROM software through TFTP/FTP



Note

- You can use one PC as both configuration device and TFTP server.
- The TFTP/FTP server program is not provided with the Switch 4510G. Make sure that it is available by yourself.

Step2 Run TFTP Server on the server connected with the switch's Ethernet port, and specify the path of the application file to be downloaded.

Step3 Run the terminal emulation program on the PC connected with the switch's console port. Start the switch and enter the Boot ROM menu. At the prompt "Enter your choice(0-9):" select **6** in the Boot Menu and then press **Enter** to enter the Boot ROM update menu shown below:

```
Bootrom update menu:
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3):
```

Step4 Select **1** in the Boot ROM update menu to download the Boot ROM software using TFTP. Then set the following TFTP-related parameters as required:

```
Load File name          :update.btm
Switch IP address       :1.1.1.2
Server IP address       :1.1.1.1
```

The parameters are described in Table 5-2.

Table 5-2 Description of the TFTP parameters

Item	Description
Load File name :	Name of the file to be downloaded (for example, **update.btm**)
Switch IP address :	IP address of the switch (for example, 1.1.1.2)
Server IP address :	IP address of server (for example, 1.1.1.1)

Step5 Press **Enter** after inputting the information above. The system displays the following information:

```
Are you sure you want to download file to flash? Yes or No(Y/N)
```

Step6 Enter **Y** to start file downloading or **N** to return to the Boot ROM update menu. If you enter **Y**, the system begins to download and update the Boot ROM software. Upon completion, the system displays the following information to show the loading process is completed:

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```
Loading.....................................done
Bootrom updating.........done!

  BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Step7 Enter **0** to restart the device. After that, the updated Boot ROM file becomes effective.

Loading host software

Select **1** in Boot Menu to load the host software of the switch. The system displays the following information:

```
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3):1
```

To load the host software through XMODEM, select **1**.

The subsequent steps are almost the same as those for loading the Boot ROM software, except that the system gives the prompt for host software loading instead of Boot ROM loading.

Loading Software Using FTP Through Ethernet Port

Introduction to FTP

File transfer protocol (FTP) is an application-layer protocol in the TCP/IP protocol suite. It is used for transferring files between server and client, and is widely used in IP networks.

You can use FTP to load software onto the switch through an Ethernet port. In this case, the switch can act as an FTP server or an FTP client. In the following example, the switch acts as an FTP client.

Loading Boot ROM software

Note

When upgrading the Boot ROM program, the switch can serve only as an FTP client.

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Step1 Connect an Ethernet port (GigabitEthernet 1/0/25, for example) of the switch to the server (whose IP address is available) that provides the file (usually the **.bin** file or the **.btm** file) to be downloaded, and connect the console port of the switch to a PC, as shown in Figure 5-7.

Step2 Run FTP Server on the server connected with the switch's Ethernet port, configure the FTP username and password, and specify the path of the application file to be downloaded.

Step3 Run the terminal emulation program on the PC connected with the switch's console port. Start the switch and enter the Boot ROM menu. At the prompt "Enter your choice(0-9):" select **6** in the Boot Menu, and then press **Enter** to enter the Boot ROM update menu shown below:

```
Bootrom update menu:

1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3):
```

Step4 Enter **2** in the above menu to download the Boot ROM software using FTP. Then set the following FTP-related parameters as required:

```
Load File name          :update.btm
Switch IP address       :10.1.1.2
Server IP address       :10.1.1.1
FTP User Name           :4510G
FTP User Password       :123
```

The parameters are described in Table 5-3.

Table 5-3 Description of the FTP parameters

Item	Description
Load File name :	Name of the file to be downloaded
Switch IP address	IP address of the switch
Server IP address :	IP address of the FTP server
FTP User Name	Username for logging in to the FTP server, which should be consistent with that configured on the FTP server.
FTP User Password	Password for logging in to the FTP server, which should be consistent with that configured on the FTP server.

Step5 Press **Enter** after inputting the information above. The system displays the following information:

```
Are you sure you want to download file to flash? Yes or No(Y/N)
```

Step6 Enter **Y** to start file downloading or **N** to return to the Boot ROM update menu. If you enter **Y**, the system begins to download and update the program. Upon completion, the system displays the following information:

```
Loading.....................................done
Bootrom updating.........done!
```


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```
  BOOT  MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Step7 Enter **0** to restart the device. After that, the updated Boot ROM file becomes effective.

Loading host software

Select **1** in Boot Menu to load the host software of the switch. The system displays the following information:

```
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3):2
```

To load the host software through FTP, select **2**.

The subsequent steps are almost the same as those for loading the Boot ROM software, except that the system gives the prompt for host software loading instead of Boot ROM loading.

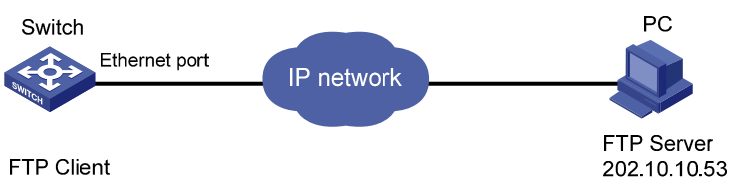
Loading Software Through CLI

You can telnet to the switch, and use FTP or TFTP to load Boot ROM and host software remotely.

Loading Software Using FTP

As shown in Figure 5-8, a PC is used as both configuration device and FTP server. You can telnet to the switch, and then execute the FTP commands to download the host program 4510G.bin and the Boot ROM program 4510G.btm from the remote FTP server (with IP address 202.10.10.53) to the switch.

Figure 5-8 Load software using FTP/TFTP remotely



Step1 Download the software to the switch using FTP commands.

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```
<Sysname> ftp 202.10.10.53
Trying ...
Press CTRL+K to abort
Connected.
220 WFTPD 2.0 service (by Texas Imperial Software) ready for new user
User(none):4510G
331 Give me your password, please
Password:
230 Logged in successfully
[ftp] get 4510G.bin
[ftp] get 4510G.btm
[ftp] bye
```

Step2 Update the Boot ROM program on the switch.

```
<Sysname> bootrom update file 4510G.btm
 This command will update BootRom file, Continue? [Y/N]y
 Updating BootRom, please wait...
Upgrade Bootrom succeeded!
```

Step3 Update the host software on the switch.

```
<Sysname> boot-loader file 4510G.bin
<Sysname> display boot-loader
 The current boot app is:  flash:/ 4510G.bin
 The main boot app is:     flash:/ 4510G.bin
 The backup boot app is:   flash:/ 4510Gbak.bin
```

Step4 Restart the switch to make the updated host software and the Boot ROM file effective.

```
<Sysname> reboot
```

Note

Before restarting the switch, make sure other configurations are all saved to avoid the loss of configuration information.

After the steps above, the Boot ROM and host software loading is completed.

Pay attention to the following points:

- Host software loading takes effect only after you restart the switch with the reboot command.
- If the space of the flash memory is not enough, you can delete the useless files in the flash memory before software downloading.
- Power interruption is not allowed during software loading.

Loading Software Using TFTP

The remote loading by using TFTP is similar to the remote loading by using FTP. The only difference is that it is TFTP that you use when loading software to the switch. In this case, the switch can only be used as a TFTP client.

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6 Maintenance and Troubleshooting

Software Loading Failure

If software loading fails, the system keeps running in original version. In this case, check if the physical ports are properly connected.

- If the ports are not properly connected, reconnect them correctly and restart the loading procedure.
- If the ports are properly connected, check the loading procedure information displayed on the HyperTerminal for input errors. If there is any input error, restart the loading procedure with correct input.

For example, when using XMODEM, verify that you have reset the baud rate of the HyperTerminal to 19,200 bps after loading the software with a baud rate other than 19,200 bps; when using TFTP, verify that you have specified the correct server and switch IP addresses, the correct name of the software to be loaded and the correct working path of TFTP server; when using FTP, verify that you have specified the correct server and switch IP addresses, the correct name of the software to be loaded and the correct username and password.

If software loading fails but there are neither physical connection problems nor input errors, please contact your agent for help. Missing Password

Password Missing Failure

Missing User Password

If you have forgotten your user password, you can enter the Boot Menu:

```
       BOOT  MENU


1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

Select 7, and then restart the switch. After the switch is restarted, the user password is removed.

Missing Boot ROM Password

Please contact with your switch dealer.

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Power Supply Failure

The Switch 4510G use fixed power modules. Each of the Switch 4510G has three input modes, namely, AC input, RPS input and both.

You can check whether the power system of the switch fails by viewing the system status LED (PWR) and RPS status LED (RPS) on the front panel of the switch. For details, refer to Table 6-1.

Table 6-1 Fixed power module failure LEDs description

LED	Mark	Status	Description
System status LED	PWR	Off	The switch is powered off.
RPS status LED	RPS	Steady yellow	The RPS input is normal, but the AC input fails or is not connected.
		Off	RPS is not connected.

AC input

If the system status LED is off, an AC input failure occurs. Then do the following:

- Check whether the AC power cord is well connected to the switch, whether the AC receptacle on the switch and the AC power socket are faulty.
- Check whether the external AC power supply system is normal.
- Check whether the operating temperature of the switch is normal, and whether good ventilation is provided to the power supply (the power module may stop working and enter the protection state due to over-temperature).

RPS input

If the system status LED or RPS status LED is off, an RPS input failure occurs. Then do the following:

- Check whether the switch is well connected to the external RPS power supply.
- Check whether the external RPS power supply works normally.
- Check whether the operating temperature of the switch is normal, and whether good ventilation is provided to the power supply (the power module may stop working and enter the protection state due to over-temperature).

RPS&AC input

When the switch adopts both RPS and AC inputs , you can check the power supply status and the input status of each line by viewing the system status LED and RPS status LED.

1) The system status LED is off.

Both the AC input and RPS input are faulty. Then do the following:

- Check whether the AC power cord is well connected to the switch, whether the AC receptacle on the switch and the AC power socket are faulty.
- Check whether the AC external power supply system is normal.
- Check whether the switch is well connected to the external RPS power supply.
- Check whether the external RPS power supply works normally.

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- Check whether the operating temperature of the switch is normal, and whether good ventilation is provided to the power supply (the power module may stop working and enter the protection state due to over-temperature).

2) The system status LED is on but the RPS status LED is steady yellow.

An AC input failure occurs. Then do the following:

- Check whether the AC power cord is well connected to the switch, whether the AC receptacle on the switch and the AC power socket are faulty.
- Check whether the AC external power supply system is normal.

3) The system status LED is on but the RPS status LED is off.

An RPS input failure occurs. Then do the following:

- Check whether the switch is well connected to the external RPS power supply.
- Check whether the external RPS power supply works normally.

Note

If the cause cannot be located in the preceding steps and the problem persists, you need to contact your local sales agent or service engineer.

Fan Failure

You can check the system status LED and the seven-segment LED of an Switch 4510G to determine whether the fans operate normally. If a fan failure occurs, the two LEDs give an indication, as shown in Table 6-2.

Table 6-2 Fan failure LEDs description

LED	Mark	State
System status LED	PWR/SYS	Steady red
Seven-segment LED	Unit	The LED flashes **F** for fan failure.

Note

Only when the system status LED is steady red and the seven-segment LED is displayed as F does it indicate a fan failure.

The Switch 4510G switches use fixed fans. If a fixed fan failure occurs, you cannot solve the problem by yourself. Please contact your sales agent or service engineer.

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Note

To ensure the normal operation of the switch, you need to contact the local sales agent or service engineer as soon as possible when a fixed fan failure occurs.

Configuration System Failure

After the switch is powered on and the system is normal, the booting information will be displayed on the configuration terminal. If the configuration system has any faults, there will not be any screen display at the configuration terminal or the displayed characters will be totally illegible.

Troubleshooting when there is no terminal display

If there is no output information after the configuration is powered on, please check whether:

- The power supply is normal
- The console cable is properly connected

If no problems are found after the above-mentioned items have been checked, the cause may lie in the console cable or the settings of the terminal (such as hyper terminal) parameters. Please perform the corresponding check.

Troubleshooting when the terminal display is illegible

If there is illegible display at the configuration terminal, the cause might lie in the parameter setting error at the terminal (such as HyperTerminal). Verify the following terminal parameter (such as hyper terminal) settings:

- Baud rate: 19,200
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none
- Terminal emulation: VT100.

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