H3C S5560X-EI Switch Series

Installation Guide

New H3C Technologies Co., Ltd.
http://www.h3c.com

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Preface

H3C S5560X-EI Switch Series Installation Guide describes the appearance, installation, power-on, maintenance, and troubleshooting of the H3C S5560X-EI Switch Series.

This preface includes the following topics about the documentation:

- Audience.
- Conventions.
- Documentation feedback.

Audience

This documentation is intended for:

- Network planners.
- Field technical support and servicing engineers.
- Network administrators working with the S5560X-EI switch series.

Conventions

The following information describes the conventions used in the documentation.

Command conventions

Convention	Description
Boldface	**Bold** text represents commands and keywords that you enter literally as shown.
Italic	*Italic* text represents arguments that you replace with actual values.
[ ]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x | y | ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x | y | ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x | y | ... } *	Asterisk marked braces enclose a set of required syntax choices separated by vertical bars, from which you select a minimum of one.
[x | y | ...] *	Asterisk marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.

GUI conventions

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

Symbols

Convention	Description
WARNING!	An alert that calls attention to important information that if not understood or followed can result in personal injury.
CAUTION:	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
IMPORTANT:	An alert that calls attention to essential information.
NOTE:	An alert that contains additional or supplementary information.
TIP:	An alert that provides helpful information.

Network topology icons

Convention	Description
	Represents a generic network device, such as a router, switch, or firewall.
	Represents a routing-capable device, such as a router or Layer 3 switch.
	Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.
	Represents an access controller, a unified wired-WLAN module, or the access controller engine on a unified wired-WLAN switch.
	Represents an access point.
	Represents a wireless terminator unit.
	Represents a wireless terminator.
	Represents a mesh access point.
	Represents omnidirectional signals.
	Represents directional signals.
	Represents a security product, such as a firewall, UTM, multiservice security gateway, or load balancing device.
	Represents a security module, such as a firewall, load balancing, NetStream, SSL VPN, IPS, or ACG module.

Examples provided in this document

Examples in this document might use devices that differ from your device in hardware model, configuration, or software version. It is normal that the port numbers, sample output, screenshots, and other information in the examples differ from what you have on your device.

Documentation feedback

You can e-mail your comments about product documentation to info@h3c.com.

We appreciate your comments.

Contents

1 Preparing for installation

This document is applicable to the following Ethernet switches:

- S5560X-30C-EI
- S5560X-30C-PWR-EI
- S5560X-54C-EI
- S5560X-54C-PWR-EI
- S5560X-30F-EI
- S5560X-30F-EIF
- S5560X-54F-EI
- S5560X-34S-EI
- S5560X-54S-EI

Safety recommendations

To avoid any equipment damage or bodily injury caused by improper use, read the following safety recommendations before installation. Note that the recommendations do not cover every possible hazardous condition.

- Before cleaning the switch, remove all power cords from the switch. 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 severely damaged in case of a fall.
- Ensure good ventilation of the equipment room and keep the air inlet and outlet vents of the switch free of obstruction.
- Connect the yellow-green protection grounding cable before powering on the switch.
- Make sure the operating voltage is as required by the power modules.
- To avoid electrical shocks, do not open the chassis while the switch is operating or when the switch is just powered off.
- When replacing field replaceable units (FRUs), including expansion cards, power modules, and fan trays, wear an ESD wrist strap to avoid damaging the units.

Examining the installation environment

To ensure correct operation of your switch, make sure the installation environment meets the requirements listed in Table1-1.

Table1-1 Checking list for the installation environment

Item	Requirements
Ventilation and heat dissipation	△ **CAUTION:** To ensure correct operation of your device, make sure the installation environment is adequately ventilated to prevent the switch from overheating.

Item	Requirements
	• Ensure a minimum clearance of 10 cm (3.94 in) around the chassis. • Do not install the device near a heat source, for example, a stove or heater. • Ensure air ventilation in the installation environment. • Do not block the ventilation holes in the device or power adapter.
Anti-moisture	△ **CAUTION:** Water or moisture might damage the circuits of the device. • Do not place the device near water or in a damp environment. • Install the switch in a clean, dry, and ventilated place where temperature is controlled in a stable range. • Make sure the installation environment is free from water leakage or condensation. If required, install a dehumidification device (such as an air conditioner with a dehumidification function or a dedicated dehumidifier). • Do not operate the device under or near the water source, such as the wash basin, laundry room, or areas with high humidity. • Do not touch the device with wet hands.
Temperature/humidity	For correct operation and long service life of your switch, maintain the temperature and humidity in the equipment room at acceptable ranges. • Lasting high relative humidity can cause poor insulation, electricity leakage, mechanical property change of materials, and metal corrosion. • Lasting low relative humidity can cause washer contraction and ESD and cause issues including loose mounting screws and circuit failure. • High temperature can accelerate the aging of insulation materials and significantly lower the reliability and lifespan of the switch. For the temperature and humidity requirements of the switch, see technical specifications in *S5560X-EI Switch Series Hardware Information and Specifications.*
Lightning protection	△ **CAUTION:** Ground the switch correctly and verify the grounding. For more information, see "Grounding the switch." • If you ground the switch by using a grounding strip, make sure the grounding resistance of the grounding strip in the equipment room is less than 1Ω. • If you ground the switch by using a grounding conductor buried in the earth ground, make sure the grounding resistance of the grounding conductor in the ground is less than 10Ω. • Route the signal cables along indoor walls, bury the cables in the earth ground, or thread the cables through steel tubes. Install a signal lightning arrester with a nominal discharge current for a corresponding network interface. • Keep the signal cables far from power cords and lightning rod down conductors. • As a best practice, route power cords indoors. If an AC power cord is routed from outdoors, connect the AC power cord first to a power lightning arrester before leading it to the AC power port on the switch. Make sure the power lightning arrester has a nominal discharge current and the total length of the power cord from the power lighting arrester to the power port on the switch is less than 5 m (16.40 ft). • Ground the switch, rack, independent power modules, and lightning arresters separately.

Item	Requirements
	• You must ground optical fibers with reinforcing metal stiffener from outdoors on an optical distribution frame (ODF) or fiber splice enclosure.
Cable routing	△ **CAUTION:** Do not run an Ethernet cable and power cord in parallel. • Route different types of cables separately. • Keep power cords a minimum of 5 cm (1.97 in) away from other cables.
ESD prevention	• Ground the switch correctly. • To avoid ESD damage to the device or components, always wear an ESD wrist strap when you install or remove the device or components. • Make sure the wrist strap has good skin contact and is reliably grounded.
Cleanliness	For more information, see "Cleanliness."
Corrosive gas prevention	The installation site must be free from corrosive gases such as acid gases and alkaline gases. For more information, see "Corrosive gas limit."
EMI	• If AC power is used, use a single-phase three-wire power receptacle with protection earth (PE) to filter interference from the power grid. • Keep the device far away from radio transmitting stations, radar stations, and high-frequency devices. • Use electromagnetic shielding, for example, shielded interface cables, when necessary.

Cleanliness

Dust buildup on the chassis might cause electrostatic adsorption and dust corrosion, resulting in poor contact of metal connectors and contact points. This might shorten the device's lifetime and even cause device failure in the worst case. Table1-2 describes the switch requirement for cleanliness.

Table1-2 Switch requirement for cleanliness

Substance	Particle diameter	Concentration limit
Dust particles	≥ 0.5 μm	≤ 1.8×10^7 particles/m^3

To maintain cleanliness in the equipment room, follow these guidelines:

- Keep the equipment room away from pollution sources. Do not smoke, eat, or drink in the equipment room.
- Use double-layer glass in windows and seal doors and windows with dust-proof rubber strips. Use screen doors and window screens for doors and windows open to the outside and make sure the external windows are air tight.
- Use dustproof materials for floors, walls, and ceilings and use wallpaper or matt paint that does not produce powders.
- Clean the equipment room regularly and clean the air filters of the rack each month.
- Wear ESD clothing and shoe covers before entering the equipment room, keep the ESD clothing and shoe covers clean, and change them frequently.

Corrosive gas limit

Corrosive gases can accelerate corrosion and aging of metal components. Make sure the corrosive gases do not exceed the concentration limits as shown in Table1-3.

Table1-3 Corrosive gas concentration limits

Gas	Average concentration (mg/m^3)	Maximum concentration (mg/m^3)
SO_2	0.3	1.0
H_2S	0.1	0.5
Cl_2	0.1	0.3
HCI	0.1	0.5
HF	0.01	0.03
NH_3	1.0	3.0
O_3	0.05	0.1
NO_X	0.5	1.0

CAUTION:

As a best practice, control the corrosive gas concentrations in the equipment room at their average values. Make sure the corrosive gas concentrations do not exceed 30 minutes per day at their maximum values.

To control corrosive gases, use the following guidelines:

- As a best practice, do not build the equipment room in a place with a high concentration of corrosive gases.
- Make sure the equipment room is not connected to sewer, vertical shaft, or septic tank pipelines and keep it far away from these pipelines. The air inlet of the equipment room must be away from such pollution sources.
- Use environmentally friendly materials to decorate the equipment room. Avoid using organic materials that contains harmful gases, such as sulfur or chlorine-containing insulation cottons, rubber mats, sound-proof cottons, and avoid using plasterboards with high sulfur concentration.
- Place fuel (diesel or gasoline) engines separately. Do not place them in the same equipment room with the device. Make sure the exhausted air of the engines will not flow into the equipment room or towards the air inlet of the air conditioners.
- Place batteries separately. Do not place them in the same room with the device.
- Employ a professional company to monitor and control corrosive gases in the equipment room regularly.

Examining the installation site

Before you install the switch, verify that the installation site meets the installation requirements. The switch can operate correctly in an A1 or A2 installation site. Availability issues might occur if you install the switch in an A3, B1, B2, or C installation site.

Table1-4 Installation sites

Category	Definition	Example
A1: indoor controlled	• Indoor environments where temperature and humidity are	Central equipment rooms, IDC equipment rooms, mobile cabins

Category	Definition	Example
environment	controlled. • Completely enclosed or shielded indoor environments.	with air conditioners, outdoor air conditioner cabinets, and heat exchanger cabinets.
A2: indoor partially controlled environment	• Indoor environments where temperature and humidity are partially controlled. • Incompletely enclosed or shielded places. • Places far from pollution sources.	Simple equipment rooms, ordinary houses, garages, corridors, and direct ventilation cabinets far from pollution sources, houses without direct exposure to sunlight or rain, railway station platforms, and stadiums.
A3: indoor uncontrolled environment	• Indoor environments where temperature and humidity are uncontrolled. • Incompletely enclosed or shielded places. • Places near pollution sources.	Simple equipment rooms, ordinary houses, garages, corridors, and direct ventilation cabinets near pollution sources, houses without direct exposure to sunlight or rain, railway station platforms, stadiums, uncleaned rooms after decoration, and rooms under decoration.
B1: outdoor general environment	• Unshielded places where the temperature and humidity are not controlled. • Places far from pollution sources.	Completely exposed outdoor places far from pollution sources.
B2: harsh environment	• Unshielded places where the temperature and humidity are not controlled. • Sea environments or outdoor land environments near pollution sources.	Islands, ships, and completely exposed outdoor places near pollution sources.
C: special environments	Special application environments	Buried, underwater, or undersea environments and manholes.

Table1-5 Pollution sources

Category	Radius range
Saline water areas such as oceans and saline lakes	≤ 3.7 km (2.30 miles)
Serious pollution sources such as metallurgic plants, coal mines, and heat and power plants	≤ 3 km (1.86 miles)
Medium pollution sources such as chemical factories, rubber plants, and electroplating factories	≤ 2 km (1.24 miles)
Light pollution sources, such as food factories, tanneries, and heating boilers	≤ 1 km (0.62 miles)

Checking power distribution or power supply environment

Table1-6 Requirements for power distribution or power supply environment

Item	Requirements
Preparation	The power module must be available before you install the switch.
Voltage	The voltage provided to the switch must be within the operating voltage range.

Item	Requirements
	For the operating voltage range, see *S5560X-EI Switch Series Hardware Information and Specifications*.
Power receptacle and cables	• If the external power supply system provides an AC power outlet, use a country-specific AC power cord. Make sure the PE wire of the AC power supply is grounded reliably. • If the external power supply system provides a DC distribution box, prepare DC power cords yourself. • Do not use the power cord provided with the switch on other devices.

Laser safety

WARNING!

The switch is Class 1 laser device. Do not stare into any fiber port when the switch has power. The laser light emitted from the optical fiber might hurt your eyes.

Installation tools

- Flat-blade screwdriver
- Phillips screwdriver
- ESD wrist strap

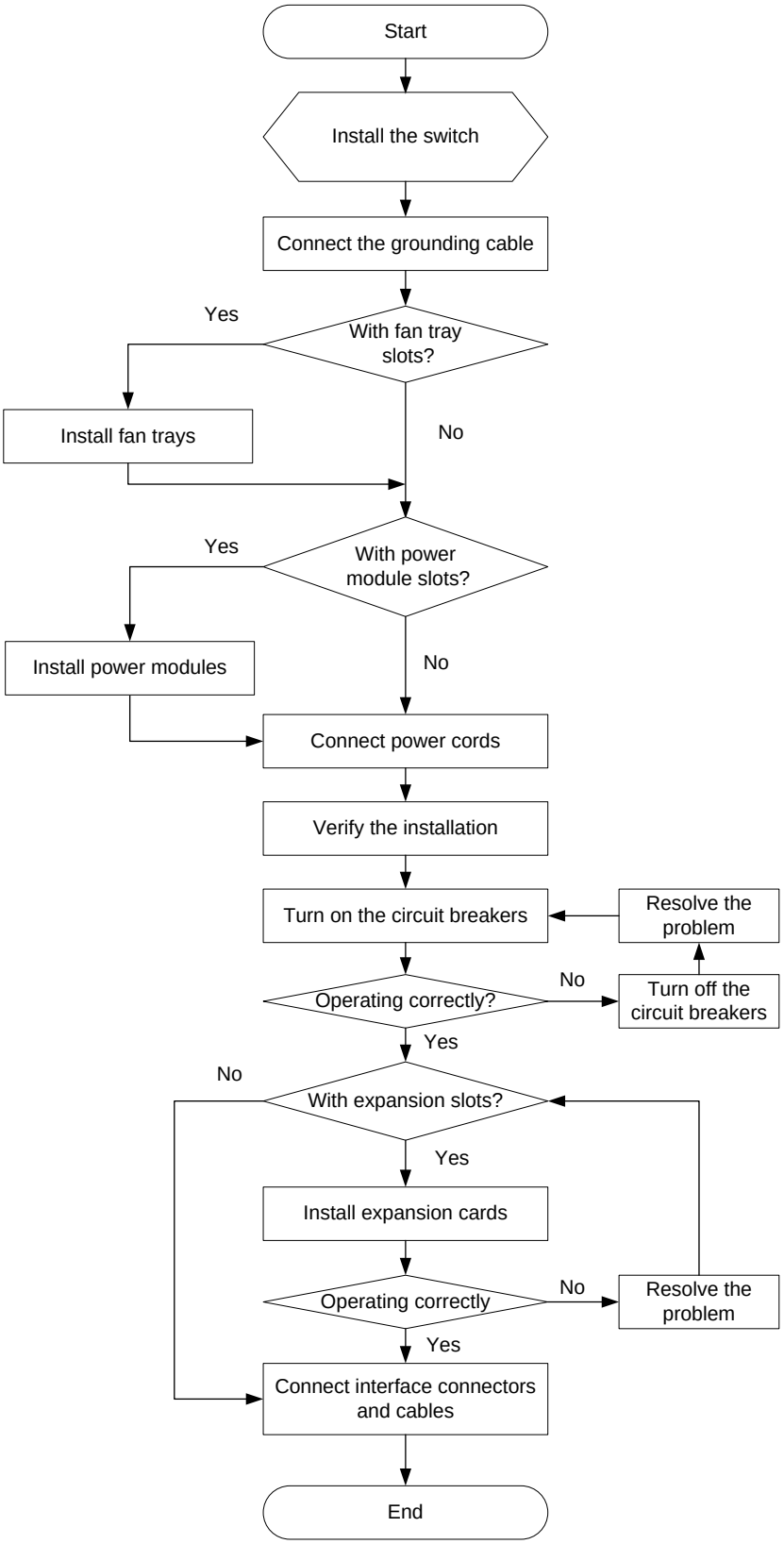
All these installation tools are user supplied.

2 Installing the switch

△ **CAUTION:**

Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact H3C for permission. Otherwise, H3C shall not be liable for any consequence.

Figure2-1 Hardware installation flow



Installing the switch in a 19-inch rack

Installation methods

Table2-2 Installation methods for the S5560X-EI switches

Chassis	Installation methods	Installation requirements	Installation procedure
S5560X-30C-EI S5560X-54C-EI S5560X-30F-EI S5560X-30F-EIF S5560X-54F-EI S5560X-34S-EI S5560X-54S-EI	Using front mounting brackets	Install the front mounting brackets at the port side or power module side.	See "Rack-mounting the switch by using front mounting brackets."

S5560X-30C-PWR-EI
S5560X-54C-PWR-EI
	Using front and rear mounting brackets	• Install the front mounting brackets at the port side or power module side.
		• Install the rear mounting brackets based on the rack depth.
		  ○ If the rack depth is in the range of 429 to 595 mm (16.89 to 23.43 in), orient the bracket with the wide flange inside the rack.
		  ○ If the rack depth is in the range of 274 to 440 mm (10.79 to 17.32 in) and the distance from the rear rack posts to the inner surface of the cabinet door is longer than 153 mm (6.02 in), orient the bracket with the wide flange outside the rack.
		• To install a PSR1110-56A power module, the rack depth must be greater than 600 mm (23.62 in).
			See "Rack-mounting the switch by using front and rear mounting brackets."

Figure2-2 Procedure for rack-mounting the switch by using the front mounting brackets

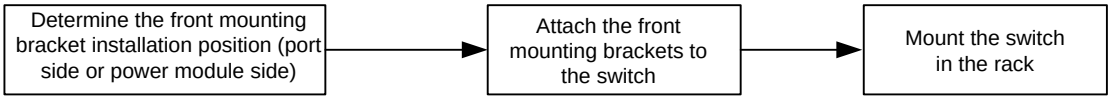
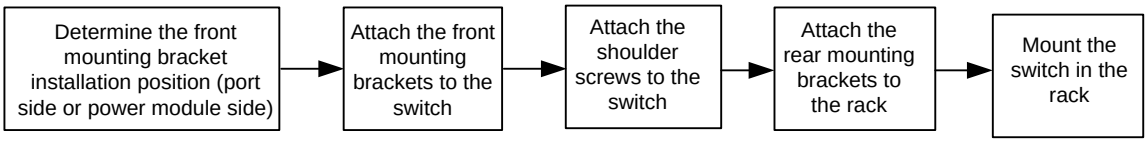


Figure2-3 Procedure for rack-mounting the switch by using the front and rear mounting brackets



NOTE:

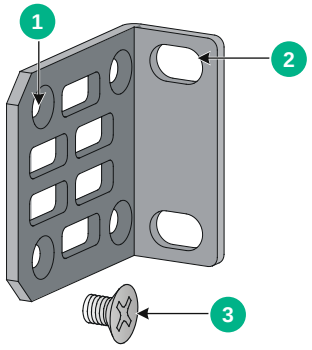
If a rack shelf is available, you can put the switch on the rack shelf, slide the switch to an appropriate location, and attach the switch to the rack by using the mounting brackets.

Installation accessories

Table2-3 Installation accessories for the S5560X-EI switches

Switch model	Front mounting brackets (Figure2-4)	Rear mounting brackets and shoulder screws (Figure2-5)
S5560X-30C-EI S5560X-54C-EI S5560X-30F-EI S5560X-30F-EIF S5560X-54F-EI S5560X-34S-EI S5560X-54S-EI	Provided	N/A
S5560X-30C-PWR-EI S5560X-54C-PWR-EI	Provided	Provided

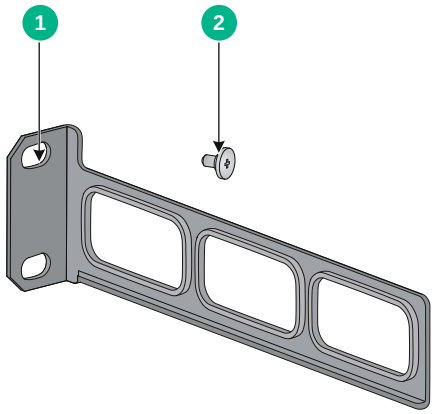
Figure2-4 Front mounting bracket



(1) Screw hole for attaching the bracket to the switch (2) Screw hole for attaching the bracket to the rack

(3) M4 screw

Figure2-5 Rear mounting bracket and shoulder screw



(1) Screw hole for attaching the bracket to the rack (2) Shoulder screw

Rack-mounting the switch by using front mounting brackets

Attaching the front mounting brackets to the switch

The S5560X-30C-EI, S5560X-54C-EI, S5560X-30F-EI, S5560X-30F-EIF, S5560X-54F-EI, S5560X-34S-EI, and S5560X-54S-EI switches provide two installation positions on the side panels for the front mounting brackets. One is near the power module side and one is near the port side.

To attach the front mounting brackets to the switch:

1. Determine the mounting position for the front mounting brackets.
2. Align the round holes in the wide flange of one front mounting bracket with the screw holes in the chassis. See Figure2-6 and Figure2-7.
3. Use M4 screws (provided with the switch) to attach the mounting bracket to the chassis.
4. Repeat the proceeding two steps to attach the other mounting bracket to the chassis.

Figure2-6 Attaching the front mounting bracket to the port side

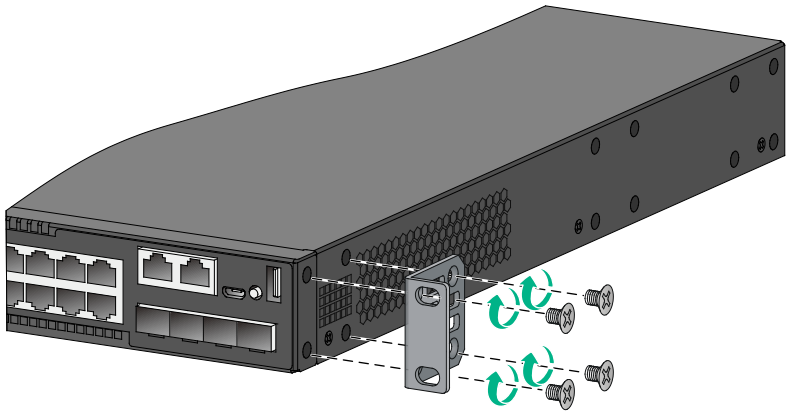
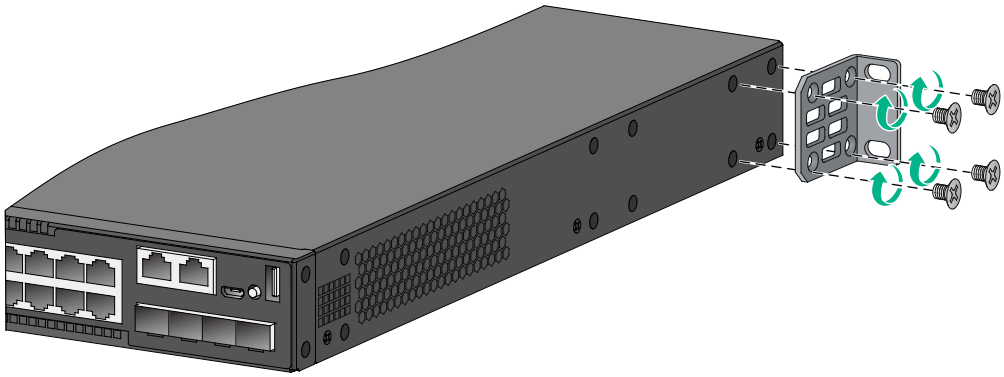


Figure2-7 Attaching the front mounting bracket to the power module side



Mounting the switch in the rack

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Make sure the front mounting brackets have been attached securely to the two sides of the switch.
3. Install cage nuts (user-supplied) in the mounting holes in the rack posts. Make sure the corresponding cage nuts on the left and right front rack posts are at the same height.
4. One person holds the switch chassis and aligns the installation holes on the mounting brackets with the cage nuts on the rack posts.
5. The other person attaches the mounting brackets with M6 screws (user-supplied) to the rack.

Figure2-8 Mounting the switch in the rack (front mounting brackets at the port side)

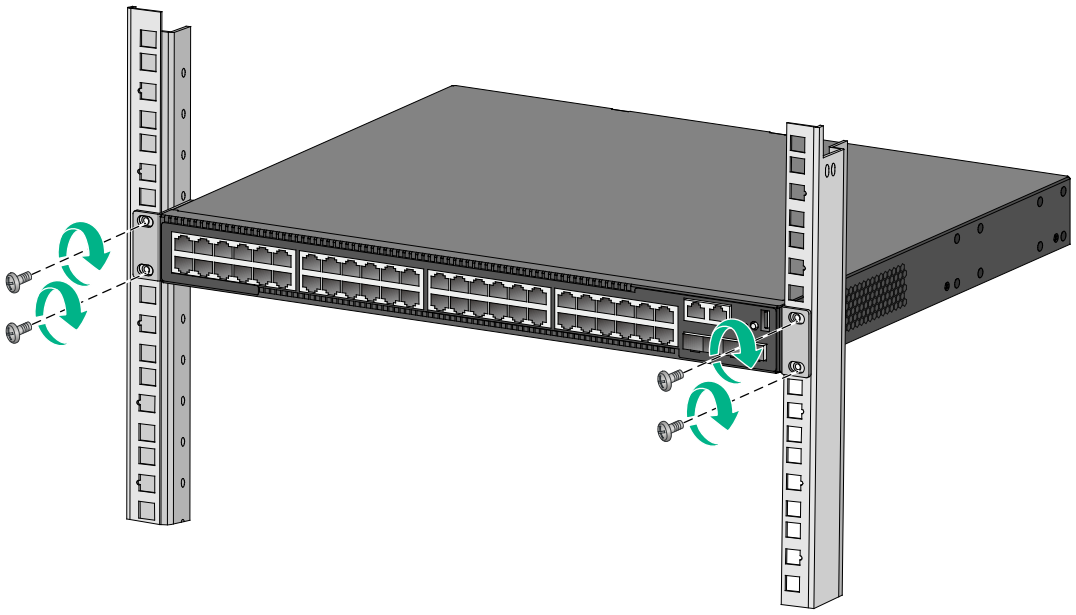
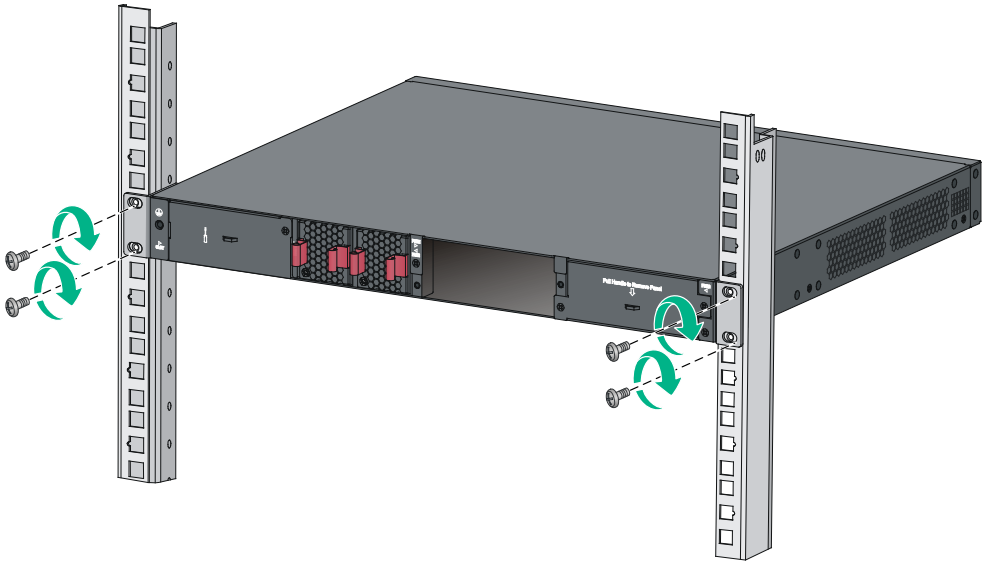


Figure2-9 Mounting the switch in the rack (front mounting brackets at the power module side)



Rack-mounting the switch by using front and rear mounting brackets

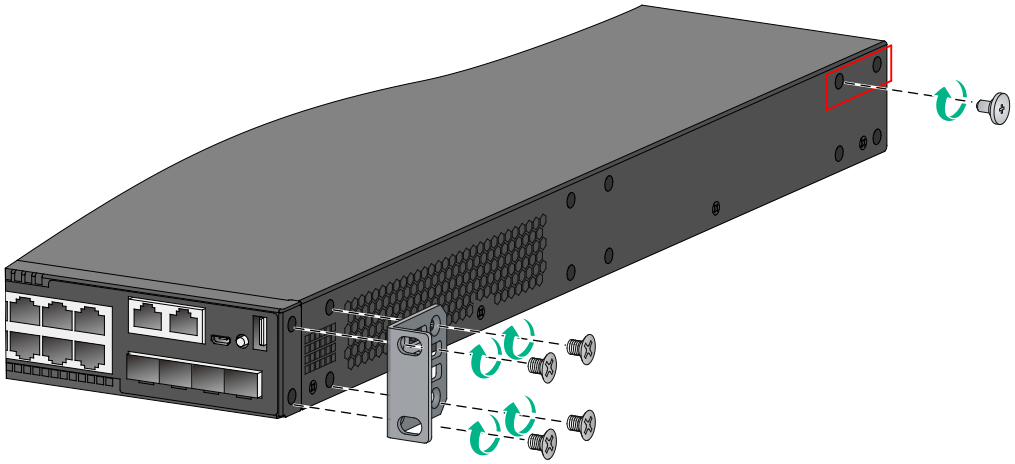
Attaching the front mounting brackets and shoulder screws to the switch

To rack-mount the S5560X-30C-PWR-EI and S5560X-54C-PWR-EI switches by using the front and rear mounting brackets, you can install the front mounting brackets at the port-side or power module-side mounting position. The following uses port-side mounting as an example. The power-side mounting is similar.

To attach the front mounting brackets and shoulder screws to the switch:

1. Align the round holes in the wide flange of one front mounting bracket with the screw holes in the port-side mounting position on one side of the chassis. See Figure2-10.
2. Use M4 screws (supplied with the switch) to attach the mounting bracket to the chassis.
3. Repeat the proceeding two steps to attach the other mounting bracket to the chassis.
4. Unpack the shoulder screws. Attach the shoulder screw to one of the two installation positions as red-marked in Figure2-10.

Figure2-10 Attaching the front mounting brackets and shoulder screws to the chassis



Attaching the rear mounting brackets to the rack

1. Determine the switch installation position in the rack.
2. Install cage nuts in the rack posts. Make sure the corresponding cage nuts on the left and right rear rack posts are at the same height.
3. Orient the rear mounting brackets with the wide flange inside or outside the rack as required.
4. Use M6 screws to attach the rear mounting brackets to the rear posts, as shown in Figure2-11.

   Do not fully tighten the M6 screws before mounting the switch in the rack.

Figure2-11 Attaching the rear mounting brackets to a rack with the wide flange inside the rack

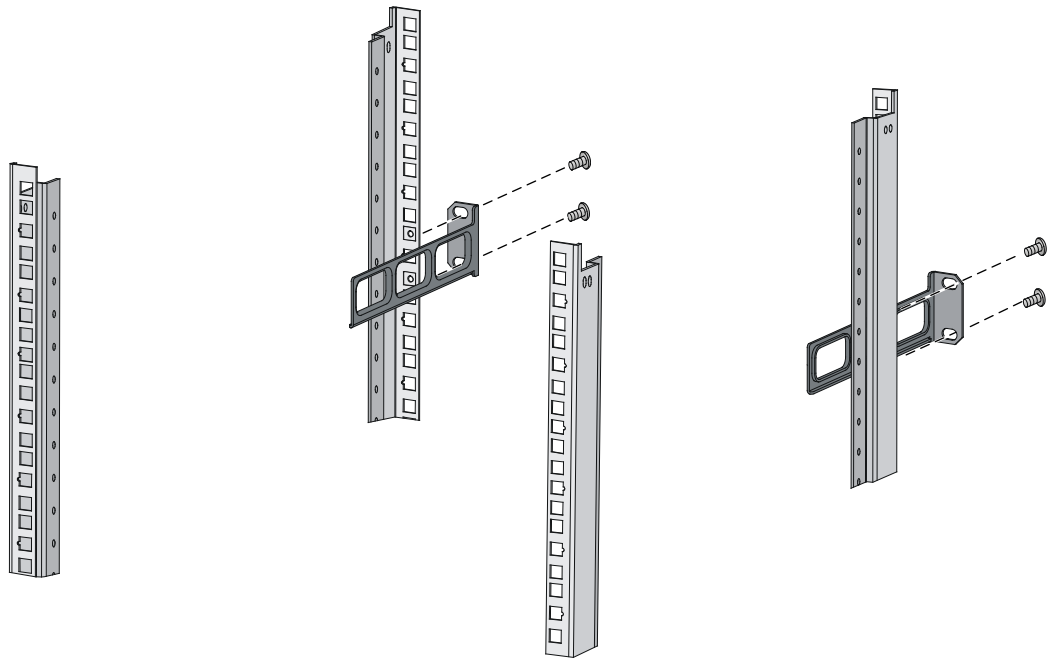
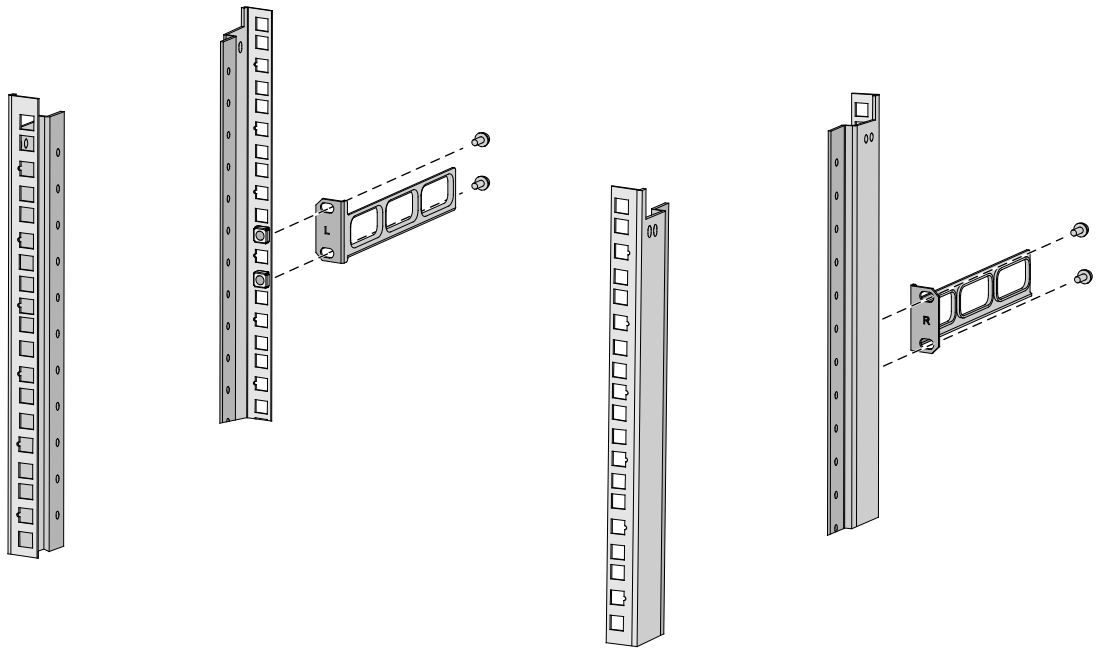


Figure2-12 Attaching the rear mounting brackets to a rack with the wide flange outside the rack



Mounting the switch in the rack

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Make sure the front mounting brackets and shoulder screws are securely attached to the two sides of the switch.
3. Attach cage nuts to the front rack posts. Make sure the corresponding cage nuts on the left and right front rack posts are at the same height.
4. One person supports the chassis bottom with one hand, holds the front part of the chassis with the other hand, and pushes the chassis into the rack gently.

   Make sure the shoulder screws make close contact with the upper edges of the rear mounting brackets, as shown in Figure2-13.
5. The other person attaches the front mounting brackets with M6 screws (user-supplied) to the front rack posts.

   Make sure the switch is installed securely in the rack.

Figure2-13 Mounting the switch in the rack (with the wide flange of the rear mounting brackets inside the rack)

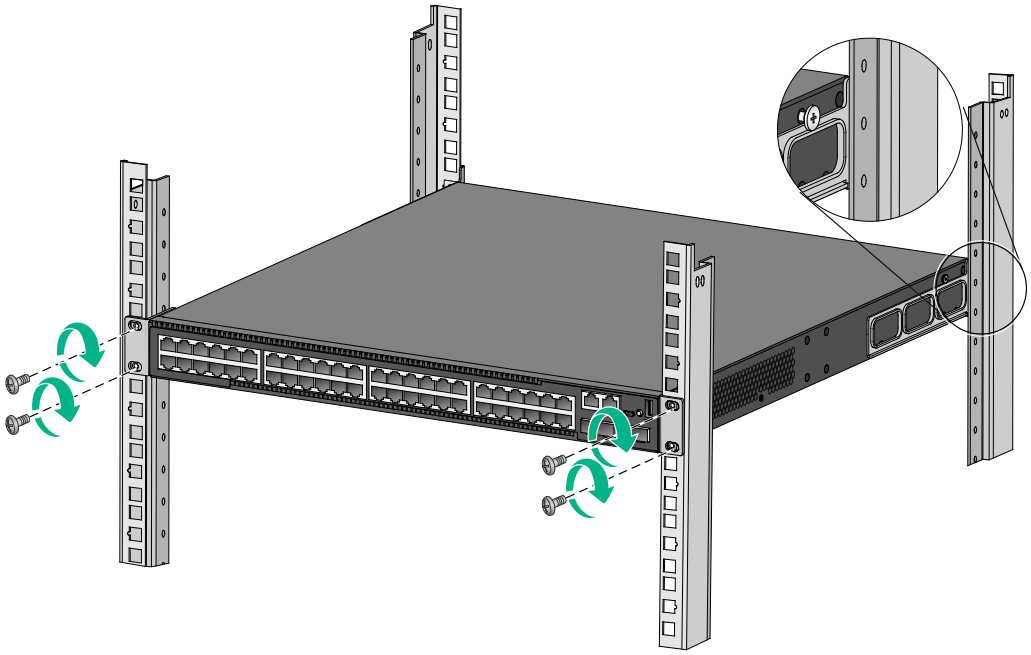
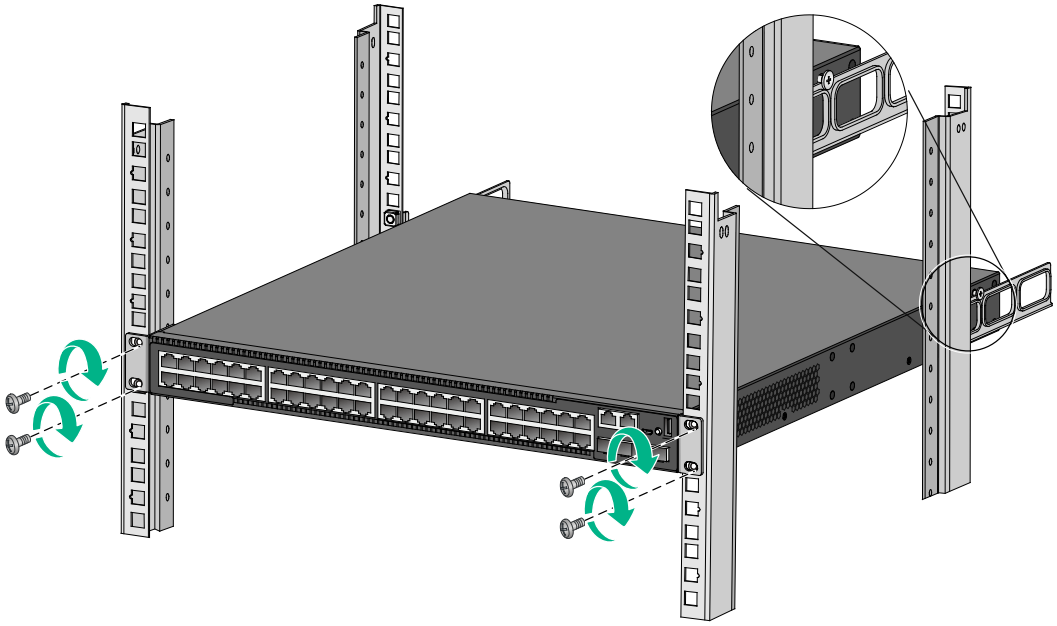


Figure2-14 Mounting the switch in the rack (with the wide flange of the rear mounting brackets outside the rack)



Mounting the switch on a workbench

IMPORTANT:

- Reserve a minimum of 10 cm (3.9 in) of clearance around the chassis for heat dissipation.
- Do not place heavy objects on the switch.

To mount the switch on a workbench:

1. Verify that the workbench is sturdy and reliably grounded.
2. Place the switch with bottom up, and clean the round holes in the chassis bottom with dry cloth.
3. Attach the rubber feet to the four round holes in the chassis bottom.
4. Place the switch with upside up on the workbench.

Grounding the switch

WARNING!

Correctly connecting the switch grounding cable is crucial to lightning protection, ESD, and EMI protection. For information about lightning protection, see *H3C Network Devices Lightning Protection Guide*.

To protect against the following types of issues, use a grounding cable to connect the switch to the earthing facility at the installation site:

- Bodily injury from electric shocks.
- Device and power and data line damages.
- Electrical fires, lightning strokes, electromagnetic coupling interferences, and ESD damages.

You can ground the switch in one of the following ways, depending on the grounding conditions available at the installation site:

- Grounding the switch with a grounding strip
- Grounding the switch with a grounding conductor buried in the earth ground

NOTE:

The power and grounding terminals in this section are for illustration only.

Grounding the switch with a grounding strip

WARNING!

- Connect the grounding cable to the grounding strip in the equipment room. Do not connect it to a fire main or lightning rod.
- To guarantee the grounding effect and avoid switch damage, use the grounding cable provided with the switch to connect the switch to a grounding strip in the equipment room.

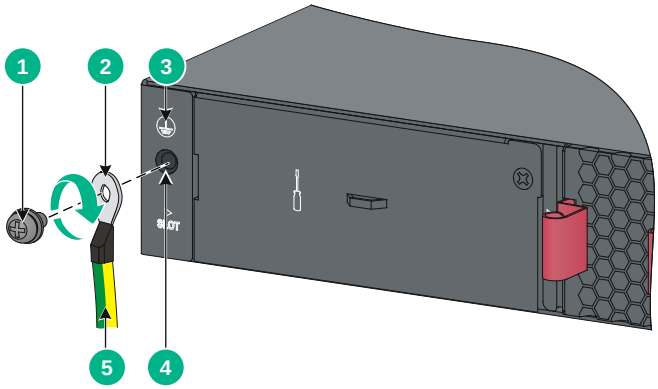
Connecting the grounding cable to the chassis

1. Remove the grounding screw from the grounding hole on the switch.
2. Use the grounding screw to attach the ring terminal of the grounding cable to the grounding screw hole. Fasten the screw.

IMPORTANT:

Orient the grounding cable as shown in Figure2-15 so you can easily install or remove the expansion card.

Figure2-15 Connecting the grounding cable to the chassis



(1) Grounding screw	(2) Ring terminal
(3) Grounding sign	(4) Grounding hole
(5) Grounding cable	

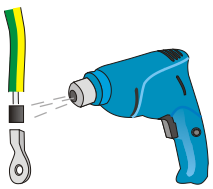
Connecting the grounding cable to a grounding strip (1)

This method is applicable to the S5560X-30C-PWR-EI and S5560X-54C-PWR-EI switches.

To connect the grounding cable to a grounding strip:

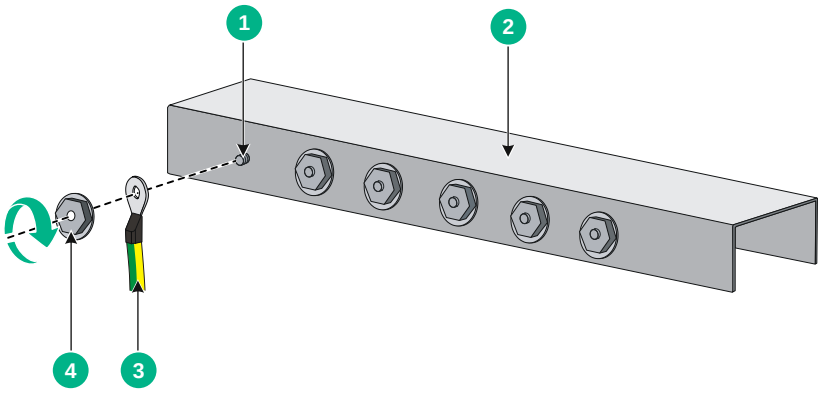
1. Remove the hex nut of a grounding post on the grounding strip.
2. Cut the grounding cable to a length required for connecting to the grounding strip.
3. Attach a ring terminal to the grounding cable:
   a. Use a wire stripper to strip 5 mm (0.20 in) of insulation off the end of the grounding cable.
   b. Slide the heat-shrink tubing onto the cable and insert the bare metal part into the end of the ring terminal.
   c. Use a crimper to secure the metal part of the cable to the ring terminal.
   d. Slide the heat-shrink tubing down the cable until the tube covers the joint.
   e. Use a heat gun to shrink the tubing around the cable.

   Figure2-16 Attaching a ring terminal to the grounding cable



4. Connect the ring terminal of the grounding cable to the grounding post of the grounding strip, and fasten it with the removed hex nut.

Figure2-17 Connecting the grounding cable to a grounding strip



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

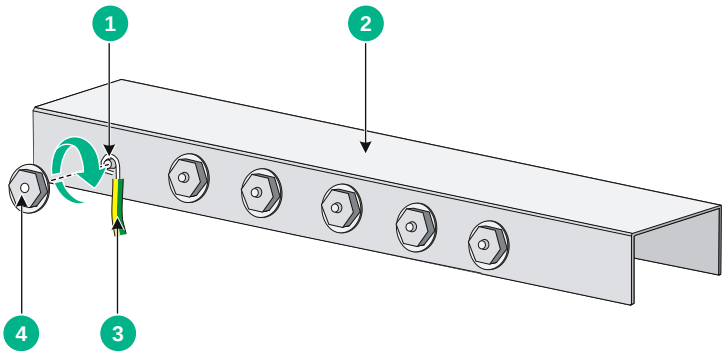
Connecting the grounding cable to a grounding strip (2)

This method is applicable to the S5560X-30C-EI, S5560X-54C-EI, S5560X-30F-EI, S5560X-30F-EIF, S5560X-54F-EI, S5560X-34S-EI, and S5560X-54S-EI switches.

To connect the grounding cable to a grounding strip:

1. Cut the grounding cable to a length required for connecting to the grounding strip.
2. Use a wire stripper to strip 20 mm (0.79 in) of insulation off the end of the grounding cable. Then use needle-nose pliers to bend the bare metal part to the shape as shown in Figure2-18. Make sure the bended part can securely attached to the grounding post on the grounding strip.
3. Attach the bended part of the grounding cable to the grounding post and use the hex nut to fasten the bended part to the post.

Figure2-18 Connecting the grounding cable to the grounding strip



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

Grounding the switch with a grounding conductor buried in the earth ground

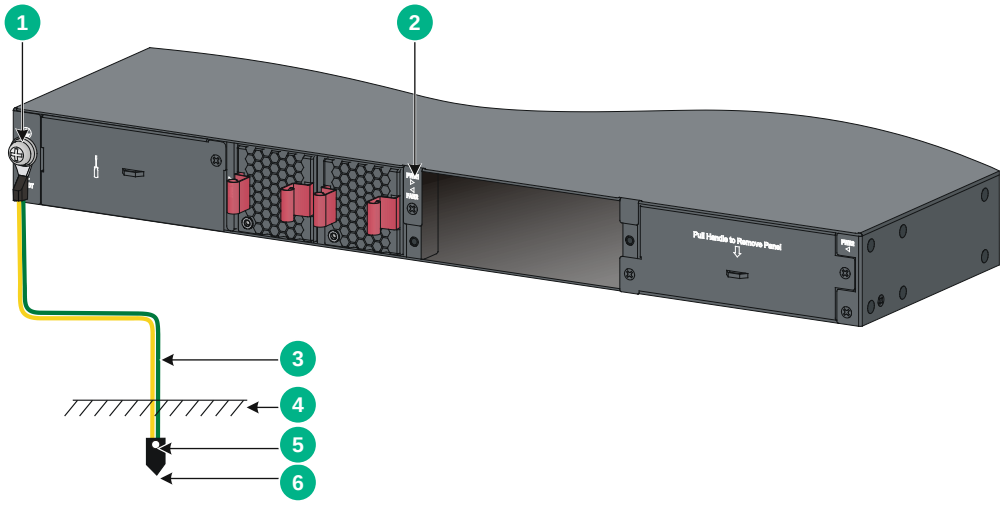
If the installation site does not have grounding strips, but earth ground is available, hammer a 2.5 m (8.20 ft) or longer angle iron or steel tube into the earth ground to act as a grounding conductor. Make sure a minimum of 0.7 m (2.30 ft) is left between the top of the grounding conductor and the ground. In cold areas, bury the grounding conductor below the frozen soil layer. In areas with thin soil or rocky gravel, determine the depth for burying the grounding conductor based on the actual condition.

If zinc-coated steel is used, the following dimensions requirements must be met:

- **Angle iron**—A minimum of 50 × 50 × 5 mm (1.97 × 1.97 × 0.20 in).
- **Steel tube**—A minimum of 3.5 mm (0.14 in) in thickness.
- **Flat steel**—A minimum of 40 × 4 mm (1.57 × 0.16 in).
- **Round steel**—A minimum of 10 mm (0.39 in).

Weld the yellow-green grounding cable to the angel iron or steel tube and treat the joint for corrosion protection.

Figure2-19 Grounding the switch by burying the grounding conductor into the earth ground



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

Verifying the grounding connection

- If you ground the switch by using a grounding strip, perform the following tasks:
  - **a.** Use a multimeter to measure the resistance between the switch grounding terminal and grounding point, and make sure the resistance is less than 0.1Ω.
  - **b.** Use a grounding resistance tester to measure the grounding resistance of the grounding strip, and make sure the grounding resistance is less than 1Ω.
- If you ground the switch by using a grounding conductor buried in the earth ground, perform the following tasks:
  - **a.** Use a multimeter to measure the resistance between the switch grounding terminal and grounding point, and make sure the resistance is less than 0.1Ω.
  - **b.** Use a grounding resistance tester to measure the grounding resistance of the grounding conductor such as an angle iron in the ground, and make sure the grounding resistance is less than 10Ω. For locations with high soil resistivity, sprinkle some resistance reducer to reduce soil resistivity or replace soil around the grounding strip with soil with lower resistance.

For information about grounding resistance measurement, see *H3C Network Devices Lightning Protection Guide*.

Installing/removing a fan tray

CAUTION:

- Install two fan trays of the same model on the switch. Do not power on the switch when it does not have fan trays or has only one fan tray installed.
- Do not leave any slots empty when the switch is operating. Install a module or filler panel in the slots.
- If both fan trays fail while the switch is operating, replace them within 2 minutes while the switch is operating.
- If one fan tray fails while the switch is operating, perform either of the following tasks:
  - If the ambient temperature is not higher than 27°C (80.6°F), replace the fan tray within 24 hours and make sure the failed fan tray is in position before the replacement.
  - If the ambient temperature is higher than 27°C (80.6°F), replace the fan tray immediately.
- If you power cycle the switch after a fan tray fails, the switch will fail to start up.

S5560X-EI switches except the S5560X-34S-EI and S5560X-54S-EI provides fan tray slots and support hot swapping of fan trays.

The switch came with empty fan tray slots. Choose fan tray models for the switch based on the ventilation requirement of the site. The air flow direction varies by fan tray model.

- The LSPM1FANSA fan tray intakes air from the fan tray panel. The fan tray handle is blue.
- The LSPM1FANSB fan tray exhausts air from the fan tray panel. The fan tray handle is red.

For more information about the fan trays, see *S5560X-EI Switch Series Hardware Information and Specifications*.

Installing a fan tray

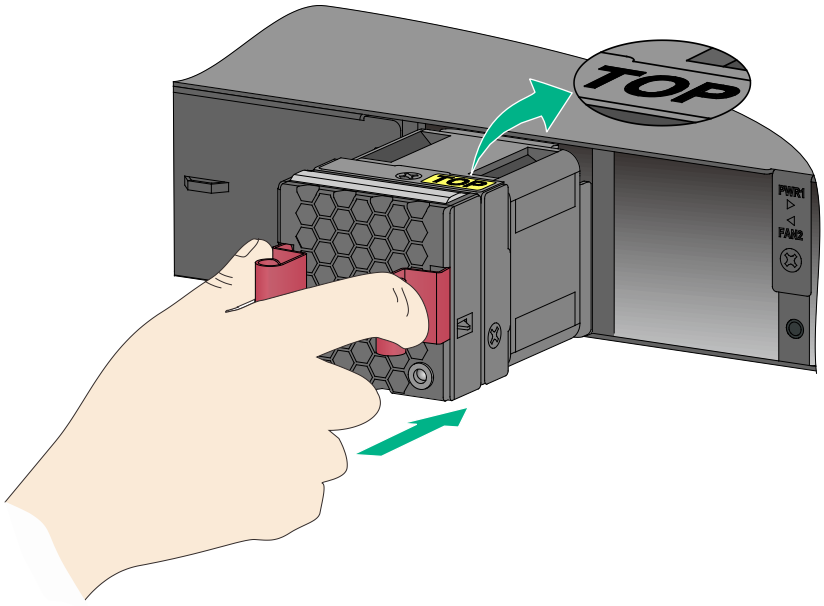
CAUTION:

To prevent damage to the fan tray or the connectors in the chassis, insert the fan tray gently. If you encounter a hard resistance while inserting the fan tray, pull out the fan tray and insert it again.

To install a fan tray:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Unpack the fan tray and verify that the fan tray model is correct.
3. Grasp the two handles of the fan tray with the side marked **TOP** facing up, and slide the fan tray along the guide rails into the slot until the fan tray seats in the slot and has a firm contact with the backplane.

Figure2-20 Installing a fan tray



IMPORTANT:

- In a Release 63xx version earlier than Release 6326 or a Release 65xx version earlier than Release 6522, you must use the **`fan prefer-direction`** command to set the preferred airflow direction of the switch to be consistent with that of the fan trays the first time you log in to the switch. If the fan trays have a different airflow direction than the preferred one, the system outputs traps and logs. By default, the preferred airflow direction of the switch is the same as that of the LSPM1FANSB fan tray, which exhausts air from the fan tray panel. For more information about the **`fan prefer-direction`** command, see the configuration guides and command references for the device.
- In other versions, the switch does not check the preferred airflow direction at system start. You only need to ensure consistent airflow directions of all fan trays on the switch. If the airflow directions of the fan trays are inconsistent, the system outputs traps and logs.

Removing a fan tray

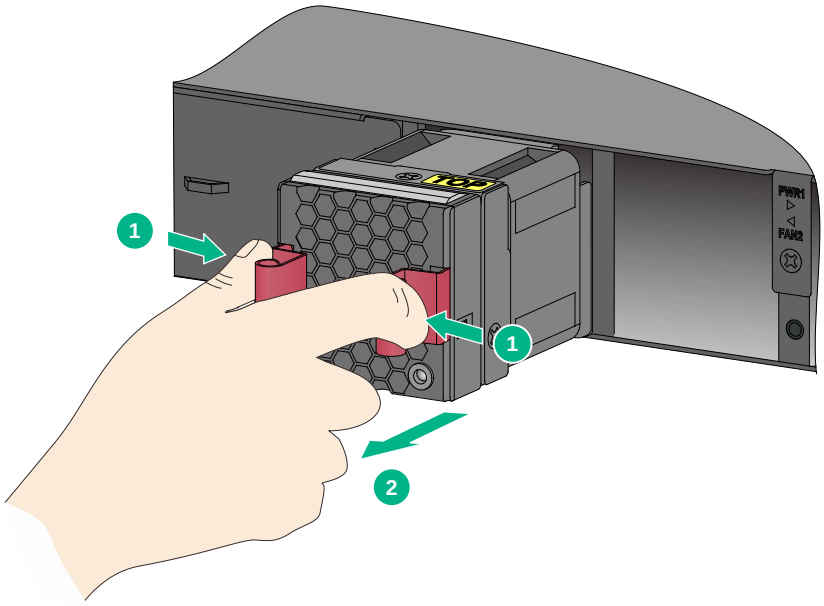
WARNING!

- To avoid bodily injury, disturbing the dynamic balance of the fan tray, and causing loud noises, do not touch the rotation axis, or any bare wires, fan blades, or terminals on the fan tray.
- Do not place the fan tray in a moist place. Prevent liquid from entering the fan tray.
- Fan trays with faulty internal wiring and conductors require maintenance from maintenance engineers. Do not disassemble the faulty fan trays.

To remove a fan tray:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Grasp the two handles of the fan tray, as shown by callout 1 in Figure2-21, and pull out the fan tray slowly along the guide rails.
3. Put the removed fan tray in an antistatic bag.

Figure2-21 Removing a fan tray



Installing/removing a power module

WARNING!

In power redundancy mode, you can replace a power module without powering off the switch but you must strictly follow the installation and removal procedures in Figure2-22 and Figure2-23 to avoid any bodily injury or damage to the switch.

CAUTION:

Provide a circuit breaker for each power module.

Figure2-22 Installation procedure

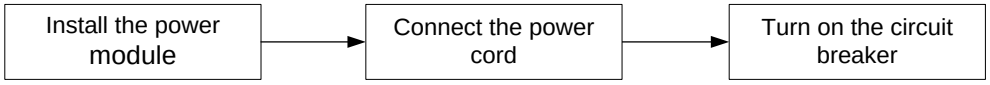
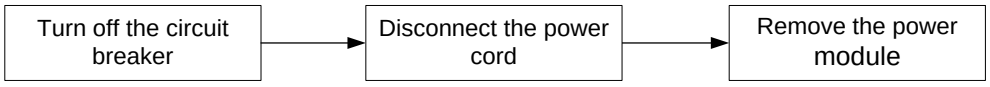


Figure2-23 Removal procedure



S5560X-EI switches except the S5560X-34S-EI and S5560X-54S-EI provide power module slots and came with power module slot 1 empty and power module slot 2 installed with a filler panel. You can install one or two power modules for the switch as required.

For the power modules available for the switch and their specifications, see *S5560X-EI Switch Series Hardware Information and Specifications*.

Installing a PSR150-A1/PSR150-A2/PSR150-D1 power module

CAUTION:

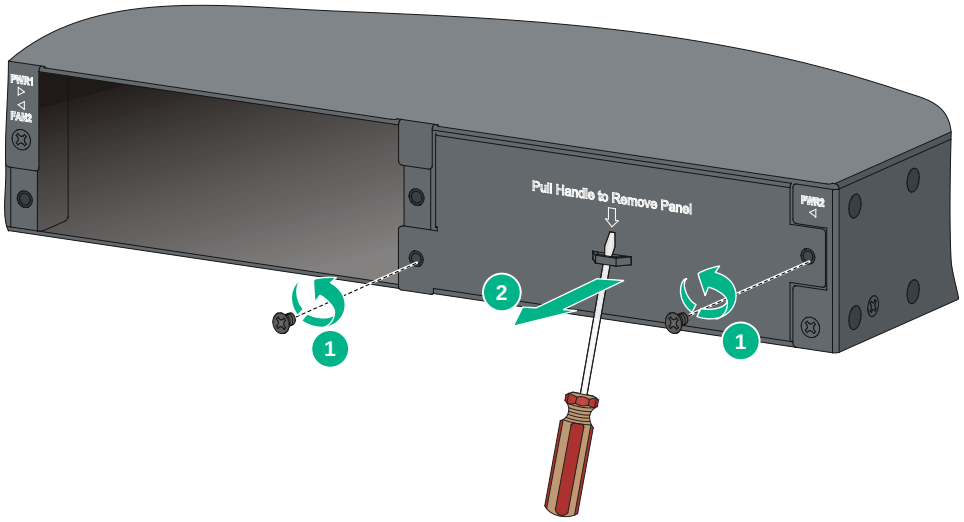
To prevent damage to the power module or the connectors on the backplane, insert the power module gently. If you encounter a hard resistance when inserting the power module, pull out the power module and insert it again.

The installation procedure is the same for PSR150-A1, PSR150-A2, and PSR150-D1 power modules. The following procedure uses the PSR150-A1 power module as an example.

To install a PSR150-A1 power module:

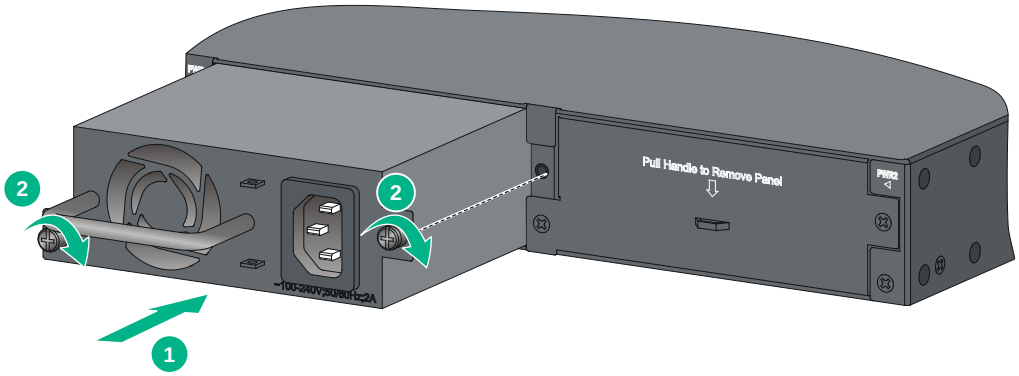
1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Remove the filler panel, if any, from the target power module slot as follows:
   a. Remove the screws on the filler panel.
   b. Use a flathead screwdriver to remove the filler panel.

Figure2-24 Removing the filler panel



3. Unpack the power module and verify that the power module model is correct.
4. Correctly orient the power module with the power module slot (use the letters on the power module faceplate for orientation), grasp the handle of the power module with one hand and support its bottom with the other, and slide the power module slowly along the guide rails into the slot (see callout 1 in Figure2-25).
5. Fasten the captive screws on the power module with a Phillips screwdriver to secure the power module in the chassis (see callout 2 in Figure2-25). If the captive screw cannot be tightly fastened, verify the installation of the power module.
6. Install the filler panel over the empty power module slot to prevent dust and ensure good ventilation if you install only one power module.

Figure2-25 Installing a PSR150-A1 power module



Removing a PSR150-A1/PSR150-A2/PSR150-D1 power module

The removal procedure is the same for PSR150-A1, PSR150-A2, and PSR150-D1 power modules. The following procedure uses the PSR150-A1 power module as an example.

To remove a PSR150-A1 power module:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Disconnect the power cord.
3. Loosen the captive screws of the power module with a Phillips screwdriver until they are completely disengaged.
4. Grasp the handle of the power module with one hand and pull it out a little, support the bottom with the other hand, and pull the power module slowly along the guide rails out of the slot.

   Put away the removed power module in an antistatic bag or the power module package bag for future use.
5. Install the filler panel to prevent dust and ensure good ventilation if no power module is installed in the slot.

Installing a PSR360-56A/PSR560-56D/PSR720-56A/PSR1110-56A power module

CAUTION:

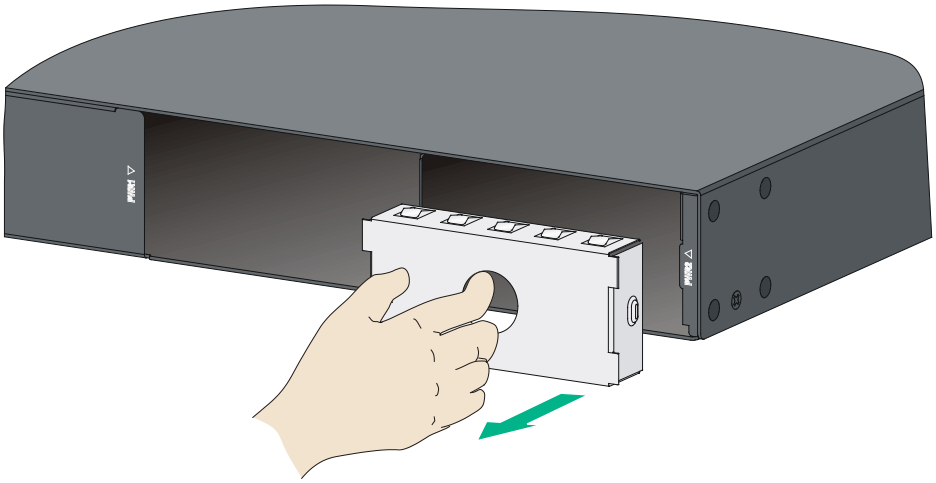
To prevent damage to the power module or the connectors on the backplane, insert the power module gently. If you encounter a hard resistance when inserting the power module, pull out the power module and insert it again.

The installation procedure is the same for the PSR360-56A, PSR560-56D, PSR720-56A and PSR1110-56A power modules. The following procedure uses the PSR720-56A power module as an example.

To install a PSR720-56A power module:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Put your forefinger into the hole in the filler panel, if any, in the target power module slot, and pull out it gently.

Figure2-26 Removing the filler panel



3. Unpack the power module and verify that the power module model is correct.

   Put away the packaging box and packaging bag of the power module for future use.

4. Correctly orient the power module with the power module slot (use the letters on the power module faceplate for orientation), grasp the handle of the power module with one hand and support its bottom with the other, and slide the power module slowly along the guide rails into the slot until you hear that the latch of the power module clicks into the slot.

   When you insert the power module into the slot, you can do that through slight inertia so that the terminals of the power module can have a good contact with the backplane.

5. Install the filler panel over the empty power module slot to prevent dust and ensure good ventilation if you install only one power module.

Figure2-27 Installing the power module

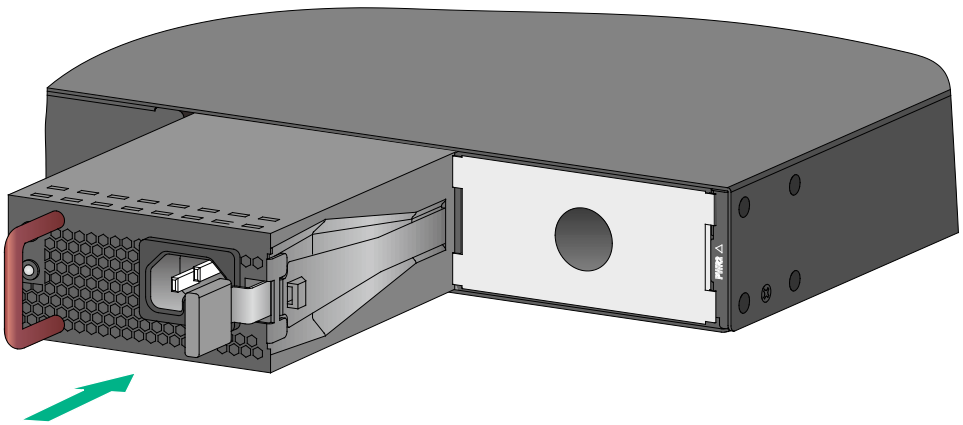
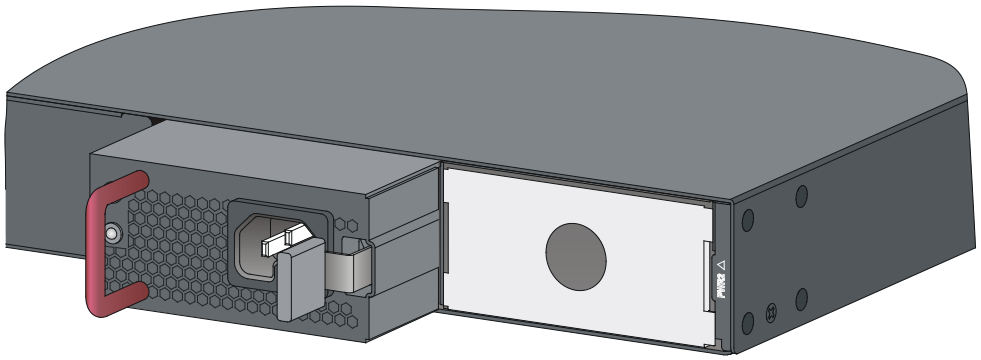


Figure2-28 PSR1110-56A power module installed in the chassis



NOTE:

The PSR1110-56A power module adds 64 mm (2.52 in) to chassis depth, which includes the handle of the power module.

Removing a PSR360-56A/PSR560-56D/PSR720-56A/ PSR1110-56A power module

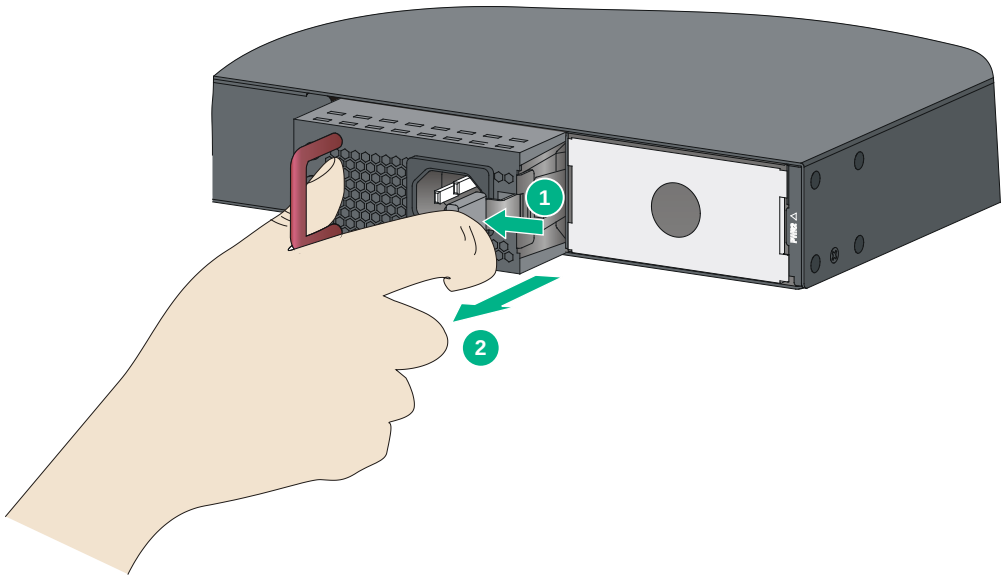
The removal procedure is the same for the PSR360-56A, PSR560-56D, PSR720-56A, and PSR1110-56A power modules. The following procedure uses the PSR720-56A power module as an example.

To remove a PSR720-56A power module:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Disconnect the power cord.
3. Press the latch towards the handle, and pull the power module along the guide rails until it is part-way out.
4. Grasp the handle of the power module with one hand, support the bottom with the other hand, and pull the power module slowly along the guide rails out of the slot.

   Put away the removed power module in an antistatic bag or the power module package bag for future use.
5. Install the filler panel to prevent dust and ensure good ventilation if no power module is installed in the slot.

Figure2-29 Removing the power module



Connecting the power cord

Table2-4 Power source options and power cord connection procedures for the power modules

Power module model	Power source option	Power cord connection procedure
Fixed power module	AC power source	• S5560X-34S-EI and S5560X-54S-EI switches: Connecting the power cord for the built-in AC power module (1) • S5560X-30F-EIF switch: Connecting the power cord for the built-in AC power module (2)
	–48 VDC power source in the equipment room or an RPS (RPS800-A or RPS1600-A)	Connecting a power cord for the built-in DC power module
PSR150-A1/PSR150-A2	AC power source	Connecting the PSR150-A1/PSR150-A2
PSR150-D1	–48 VDC power source in the equipment room or an RPS (RPS800-A or RPS1600-A)	Connecting the PSR150-D1/PSR560-56D
PSR560-56D	–48 VDC power source in the equipment room or an RPS (RPS1600-A)	Connecting the PSR150-D1/PSR560-56D
PSR360-56A/PSR720-56A/PSR1110-56A	AC power source	Connecting the PSR360-56A/PSR720-56A/PSR1110-56A

CAUTION:

- The AC power cord provided with the PSR150-A1/PSR150-A2 power module uses a C13 connector. The AC power cord provided with the PSR360-56A/PSR720-56A/PSR1110-56A power module uses a high-temperature C15 connector. Do not mix them.
- Provide a circuit breaker for each power module and make sure the circuit breaker is off before installation.

Connecting the power cord for the built-in AC power module (1)

The following procedure applies to the S5560X-34S-EI and S5560X-54S-EI switches.

To connect the power cord for the built-in AC power module:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Attach two ends of the bail latch into the holes on the two sides of the AC power receptacle, and pull the bail latch upwards (see Figure2-30).
3. Connect the female connector of the AC power cord to the AC-input power receptacle on the power module (see callout 1 in Figure2-31).
4. Pull the bail latch down to secure the connector to the AC-input power receptacle (see callout 2 in Figure2-31).
5. Connect the other end of the power cord to an AC power source.

Figure2-30 Connecting the power cord for the built-in AC power module (1)

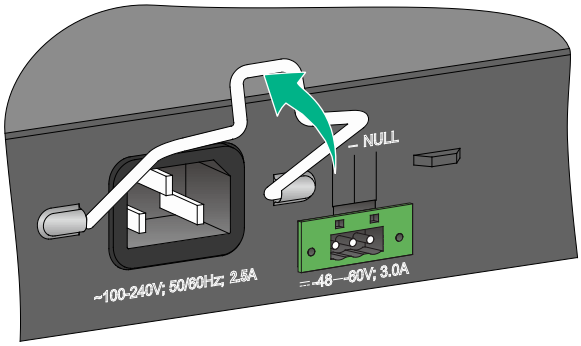
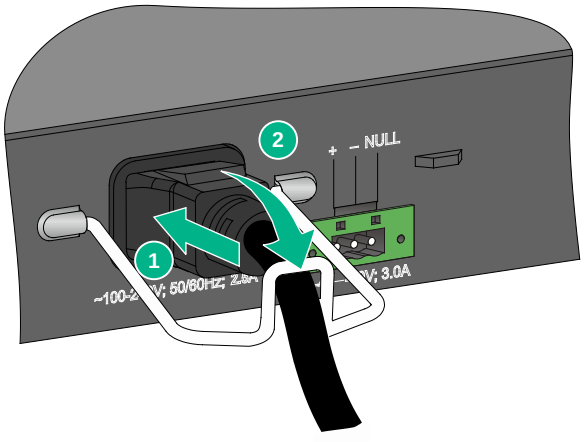


Figure2-31 Connecting the power cord for the built-in AC power module (2)



Connecting the power cord for the built-in AC power module (2)

The following procedure applies to the S5560X-30F-EIF switch.

To connect the power cord for the built-in AC power module:

1. Connect the female connector of the AC power cord to the AC-input power receptacle on the power module, as shown in Figure2-32.
2. Use a cable tie to secure the power cord to the cable holder near the AC-input power receptacle on the power module, as shown in Figure2-33.
3. Connect the other end of the power cord to an AC power source.

Figure2-32 Connecting the power cord for the built-in AC power module

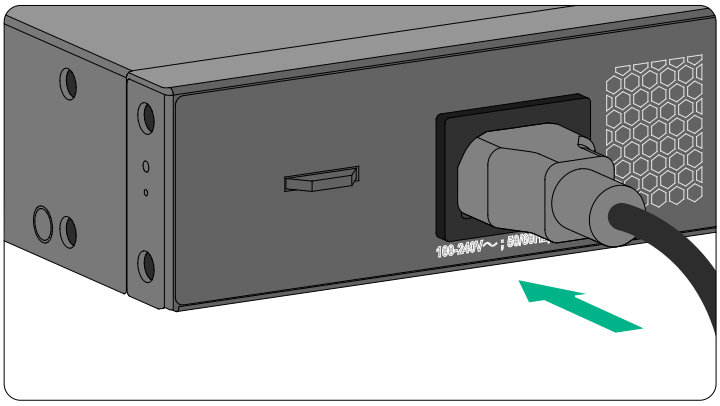
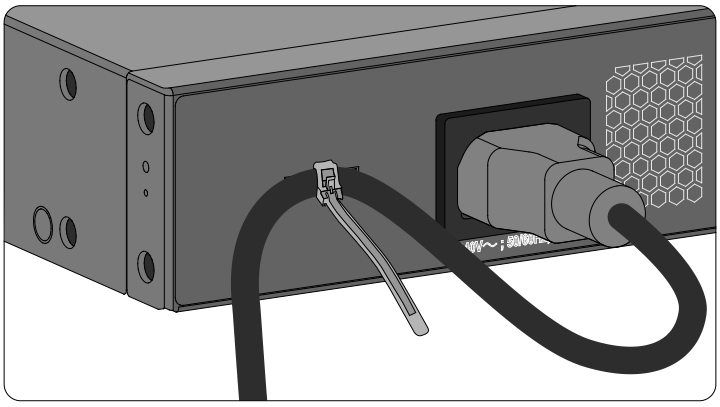


Figure2-33 Securing the power cord



Connecting a power cord for the built-in DC power module

WARNING!

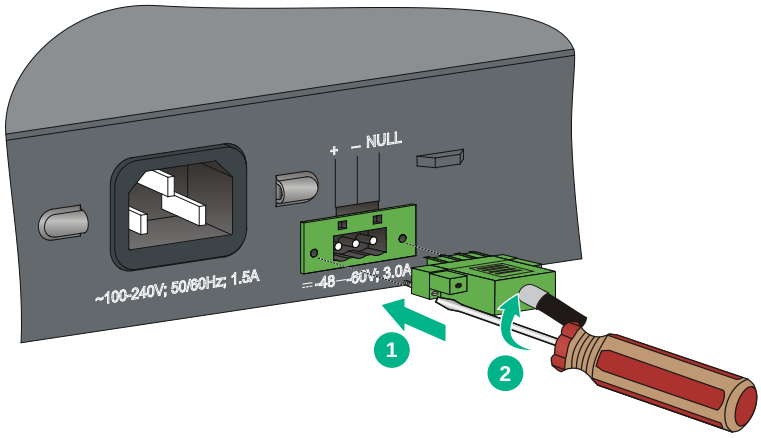
- The DC-input power receptacle on the switch requires a DC power cord with a JD5-A connector.
- To use a –48 VDC power source for power supply, purchase an H3C recommended DC power cord yourself.
- To use an RPS for power supply, purchase a power cord compatible with the RPS yourself.
- To connect a DC power cord to the –48 VDC power source, identify the positive (+) and negative (-) marks on the two wires of the power cord to avoid connection mistakes.

To connect a power cord for the built-in DC power module:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Use a screwdriver to remove the cover from the DC-input power receptacle.
3. Correctly orient the power cord connector and insert the connector into the DC-input power receptacle. See callout 1 in Figure2-34.

   If you cannot insert the connector into the receptacle, re-orient the connector rather than use excessive force to push it in.
4. Tighten the screws on the connector with a flat-blade screwdriver to secure the connector in the DC-input power receptacle. See callout 2 in Figure2-34.
5. Connect the other end of the power cord to the –48 VDC power source or an RPS.

Figure2-34 Connecting a power cord for the built-in DC power module



Connecting the PSR150-A1/PSR150-A2

The power cord connection procedure is the same for the PSR150-A1 and PSR150-A2 power modules. The following procedure uses the PSR150-A1 power module as an example.

To connect the PSR150-A1:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Attach two ends of the bail latch (supplied with the power module) into the two holes next to the AC-input power receptacle on the power module, and pull the bail latch leftwards (see Figure2-35).
3. Connect one end of the AC power cord supplied with the power module to the AC-input power receptacle (see callout 1 in Figure2-36).

4. Pull the bail latch rightwards to secure the connector to the power receptacle (see callout 2 in Figure2-36).
5. Connect the other end of the power cord to an AC power source.

Figure2-35 Connecting the PSR150-A1 (1)

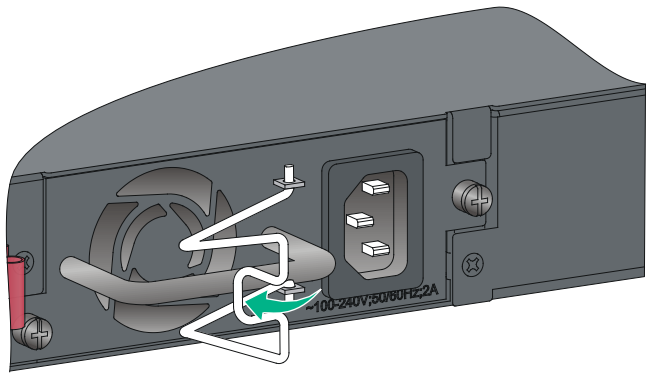
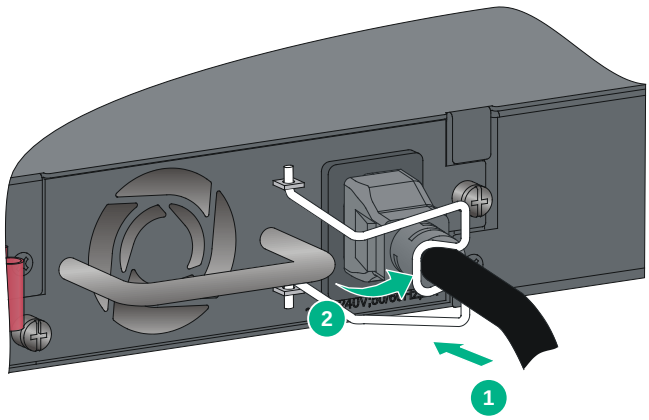


Figure2-36 Connecting the PSR150-A1 (2)



Connecting the PSR150-D1/PSR560-56D

CAUTION:

- To use a –48 VDC power source for power supply, purchase an H3C recommended DC power cord yourself.
- To use an RPS for power supply, purchase a power cord compatible with the RPS yourself.
- To connect the power cord to a –48 VDC power source, identify the positive (+) and negative (-) marks on the two wires of the power cord to avoid connection mistakes.

To connect the PSR150-D1/PSR560-56D:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Use a screwdriver to remove the cover from the DC-input power receptacle.
3. Unpack the DC power cord, correctly orient the connector at one end of the cable with the DC-input power receptacle on the power module, and insert the connector into the power receptacle (see callout 1 in Figure2-37).

   The power receptacle is foolproof. If you cannot insert the connector into the receptacle, re-orient the connector rather than use excessive force to push it in.

4. Tighten the screws on the connector with a flat-blade screwdriver to secure the connector in the DC-input power receptacle (see callout 2 in Figure2-37).
5. Connect the two wires at the other end of the power cord to a –48 VDC power source or an RPS.

Figure2-37 Connecting the PSR150-D1

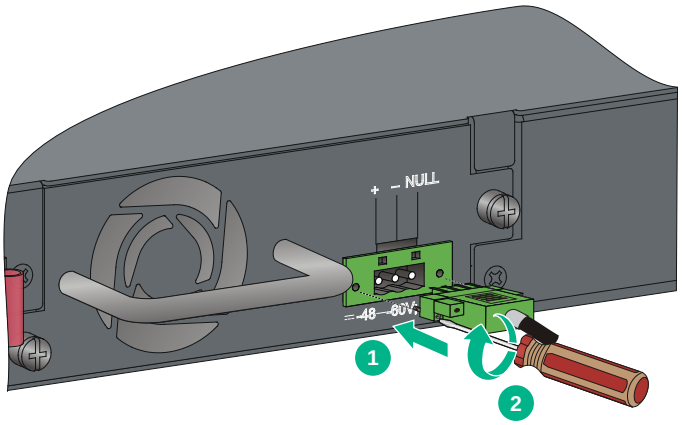
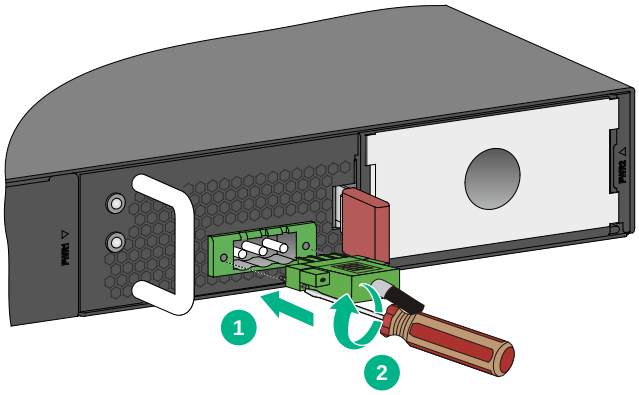


Figure2-38 Connecting the PSR560-56D



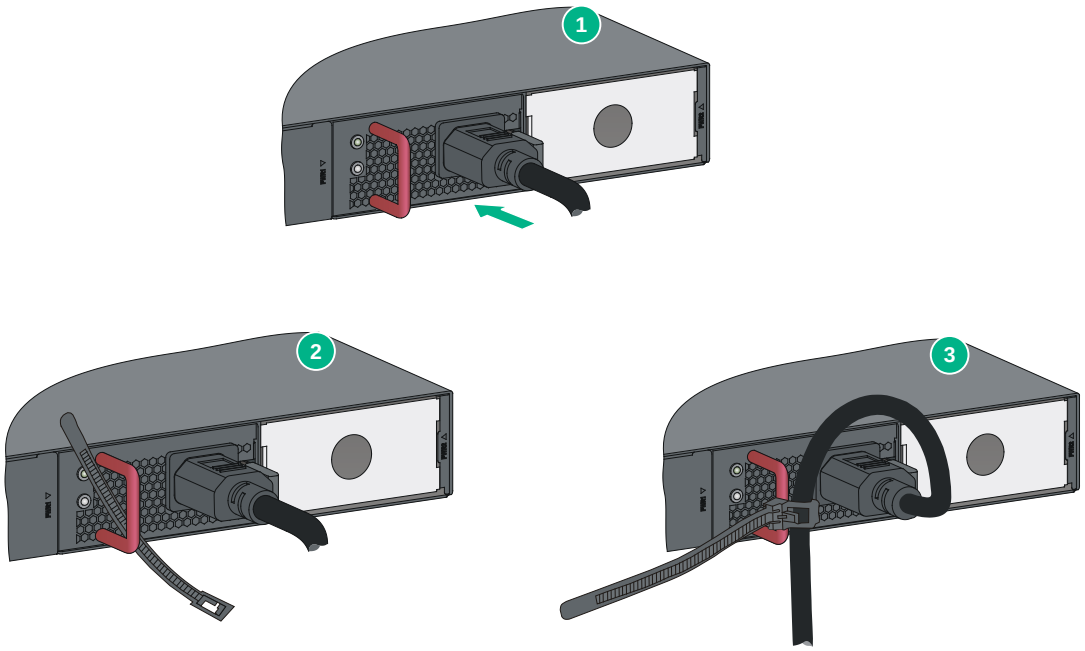
Connecting the PSR360-56A/PSR720-56A/PSR1110-56A

The power cord connection procedure is the same for the PSR360-56A, PSR720-56A, and PSR1110-56A power modules. The following procedure uses the PSR720-56A power module as an example.

To connect the PSR720-56A:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Plug the female connector end of the AC power cord into the AC-input power receptacle of the power module (see callout 1 in Figure2-39).
3. Use a cable tie to secure the power cord to the handle of the power module (see callout 2 and callout 3 in Figure2-39).
4. Connect the other end of the AC power cord to an AC power source.

Figure2-39 Connecting the PSR720-56A



Installing/removing an expansion card

CAUTION:

- Do not touch the surface-mounted components directly with your hands.
- Do not use excessive force when you install or remove an expansion card.
- You can install or remove an expansion card when the switch is operating correctly. Do not install or remove an expansion card on a starting switch.

S5560X-EI switches except the S5560X-34S-EI and S5560X-54S-EI each provide an expansion slot at the rear. For the expansion cards available for the switch, see *S5560X-EI Switch Series Hardware Information and Specifications*.

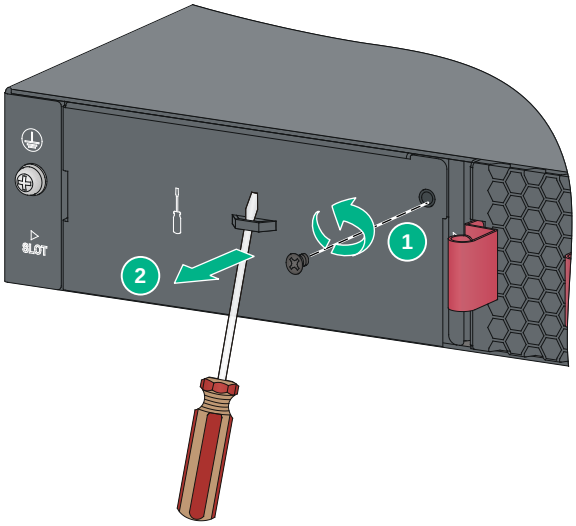
The installation and removal procedure is similar for expansion cards. The following procedure uses the LSWM2SP2PM card (with an ejector lever) and the LSPM6FWD card (without an ejector lever) as examples.

Installing an expansion card

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Use a Phillips screwdriver to remove the mounting screw on the filler panel over the expansion slot. Then remove the filler panel.

   Keep the filler panel for future use.

Figure2-40 Removing the filler panel over the expansion slot



3. Unpack the expansion card.
4. If the expansion card has an ejector lever, follow these steps to install it:
   a. Rotate out the ejector lever, as shown by callout 1 in Figure2-41.
   b. Gently push the expansion card into the slot along the guide rails until the expansion card has good contact with the chassis. See callout 2 in Figure2-41.
   c. Rotate in the ejector lever, as shown by callout 3 in Figure2-41.
   d. Use a Phillips screwdriver to tighten the captive screws on the expansion card to secure it in the slot. See callout 4 in Figure2-41.
5. If the expansion card does not have an ejector lever, follow these steps to install it:
   a. Gently push the expansion card into the slot along the guide rails until the expansion card has good contact with the chassis. See callout 1 Figure2-42.
   b. Use a Phillips screwdriver to tighten the captive screws on the expansion card to secure it in the slot. See callout 2 Figure2-42.

Figure2-41 Installing an expansion card with an ejector lever (LSWM2SP2PM)

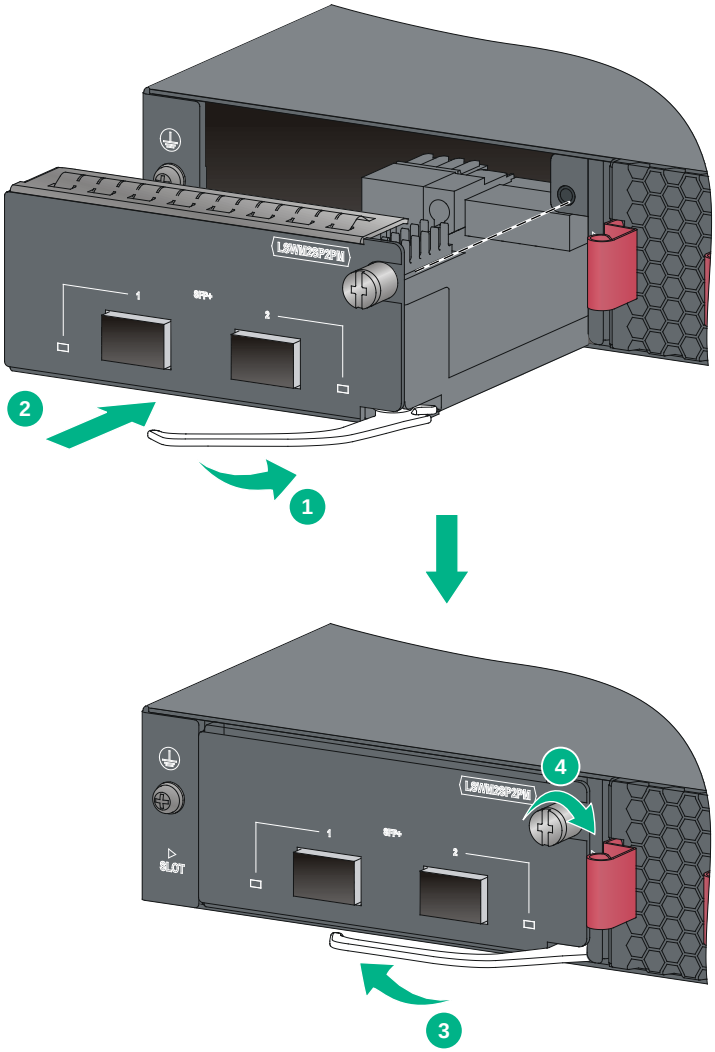


Figure2-42 Installing an expansion card without an ejector lever (LSPM6FWD)

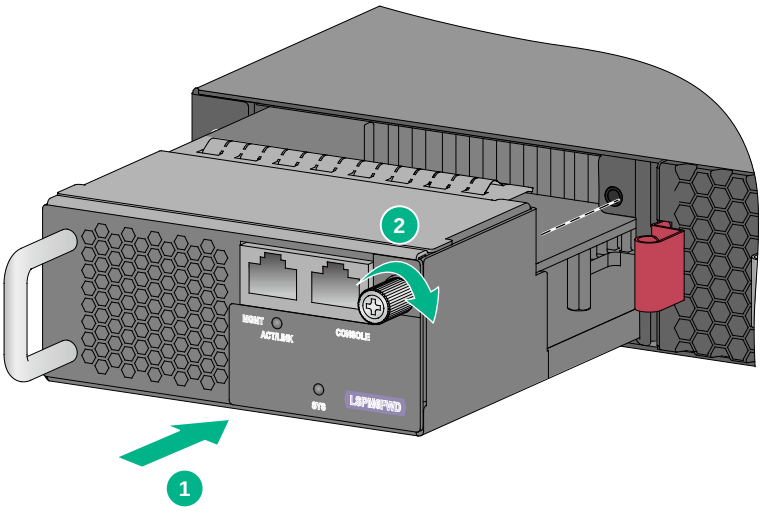
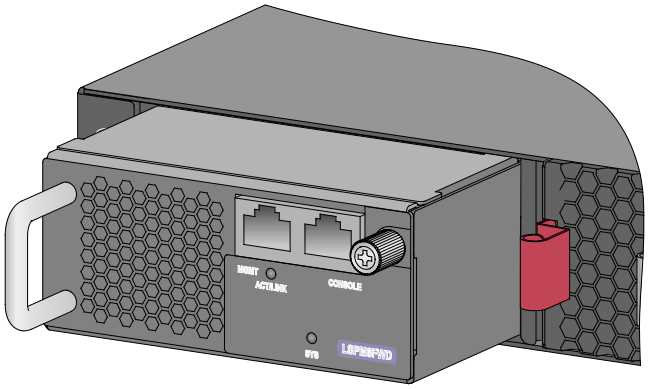


Figure2-43 LSPM6FWD firewall card installed in the switch



NOTE:

An LSPM6FWD or LSPM6FWD8 firewall card (including its handle) adds 75 mm (2.95 in) to the chassis depth when installed on the device.

Removing an expansion card

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Use a Phillips screwdriver to remove the captive screw on the expansion card.
3. (Optional.) If the expansion card has an ejector lever, rotate out the ejector lever.

   Skip this step if the expansion card does not have an ejector lever.
4. Gently pull the expansion card out of the chassis along the guide rails.
5. If you are not to install a new expansion card after removing the original one, install a filler panel in the slot to prevent dust and ensure good ventilation in the switch.

Verifying the installation

After you complete the installation, verify the following information:

- There is enough space for heat dissipation around the switch, and the rack or workbench is stable.
- The grounding cable is securely connected.
- The correct power source is used.
- The power cords are correctly connected.
- All the interface cables are cabled indoors. If any cable is routed outdoors, verify that the socket strip with lightning protection and lightning arresters for network ports have been correctly connected.

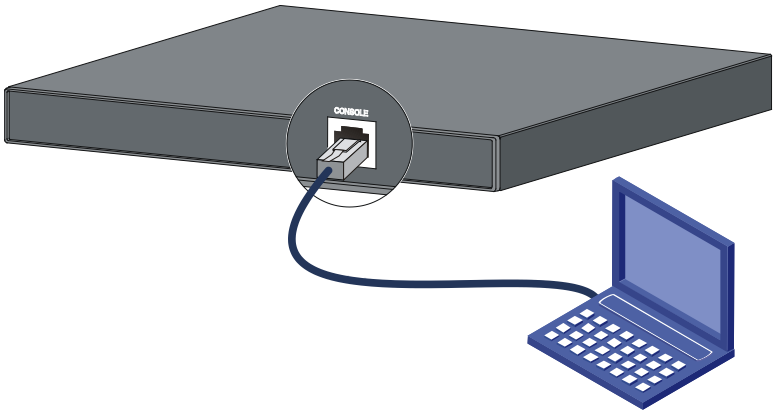
3 Accessing the switch for the first time

Connecting the switch to a configuration terminal

You can connect the switch to a configuration terminal by using the serial console port or the micro USB console port. Only the micro USB console port takes effect if you connect both the serial console port and micro USB console port.

In Figure3-1, the switch is connected to a configuration terminal (PC as an example) from the serial console port.

Figure3-1 Connecting the switch to a configuration terminal



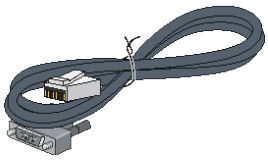
As shown in Table3-1, three types of console cables can be used for connecting the switch to a configuration terminal. The switch is not provided with a serial console cable or a micro USB console cable.

Table3-1 Connection methods and console cables

Connection method	Console cable type	Configuration terminal-side connector	Switch-side connector
Using the serial console port for connection	DB9-to-RJ45 console cable	DB-9 female connector	RJ-45 connector
	USB-to-RJ45 console cable	USB connector	RJ-45 connector
Using the micro USB console port for connection	Micro USB console cable	USB connector	Micro USB connector

The signal pinout for the RJ-45 connector of a serial console cable varies by vendor. To avoid abnormal configuration terminal display, use a serial console cable provided by H3C. For more information, see Table3-2. To prepare a serial console cable yourself, make sure the signal pinout for the RJ-45 connector is the same as that shown in Table3-3.

Table3-2 Console cable views

Console cable type	Console cable view	Product code for the recommended H3C console cable
DB9-to-RJ45 console cable		04042967
USB-to-RJ45 console cable		0404A1EE
Micro USB console cable		User supplied,

Connecting a DB9-to-RJ45 console cable

CAUTION:

Follow these guidelines when you connect a DB9-to-RJ45 console cable:

- Identify the mark on the serial console port and make sure you are connecting to the correct port.
- The serial ports on PCs do not support hot swapping. To connect a PC to an operating switch, first connect the PC end. To disconnect a PC from an operating switch, first disconnect the switch end.

A DB9-to-RJ45 serial console cable is an 8-core shielded cable, with a crimped RJ-45 connector at one end for connecting to the serial console port of the switch, and a DB-9 female connector at the other end for connecting to the serial port on the console terminal.

Figure3-2 DB9-to-RJ45 console cable

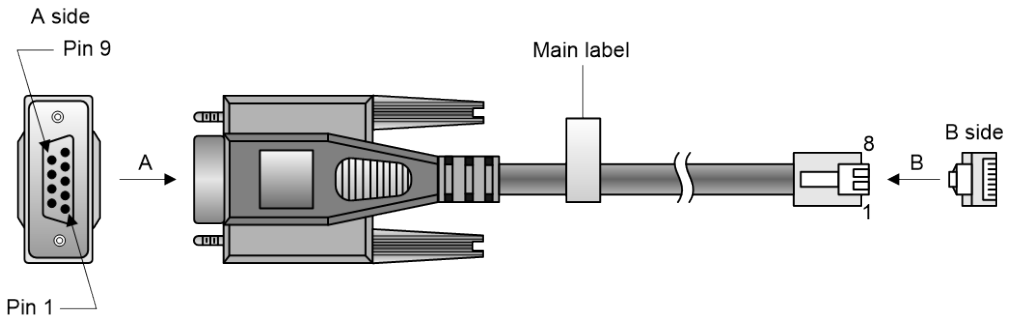


Table3-3 DB9-to-RJ45 console cable signal pinout

RJ-45	Signal	DB-9	Signal
1	RTS	8	CTS
2	DTR	6	DSR

RJ-45	Signal	DB-9	Signal
3	TXD	2	RXD
4	SG	5	SG
5	SG	5	SG
6	RXD	3	TXD
7	DSR	4	DTR
8	CTS	7	RTS

To connect to a configuration terminal (for example, a PC) through a DB9-to-RJ45 console cable:

1. Plug the DB-9 female connector of the DB9-to-RJ45 console cable to the serial port on the PC.
2. Connect the RJ-45 connector to the serial console port on the switch.

Connecting a USB-to-RJ45 console cable

IMPORTANT:

- To use a USB-to-RJ45 console cable to connect the switch to a configuration terminal, first download and install the USB-to-RJ45 console driver on the configuration terminal and then connect the USB-to-RJ45 console cable to the configuration terminal.
- If you have connected a USB-to-RJ45 console cable to the configuration terminal before driver installation, you must remove and reconnect the USB-to-RJ45 console cable to the configuration terminal.

For information about the signal pinout for the RJ-45 connector of a USB-to-RJ45 console cable, see Table3-3.

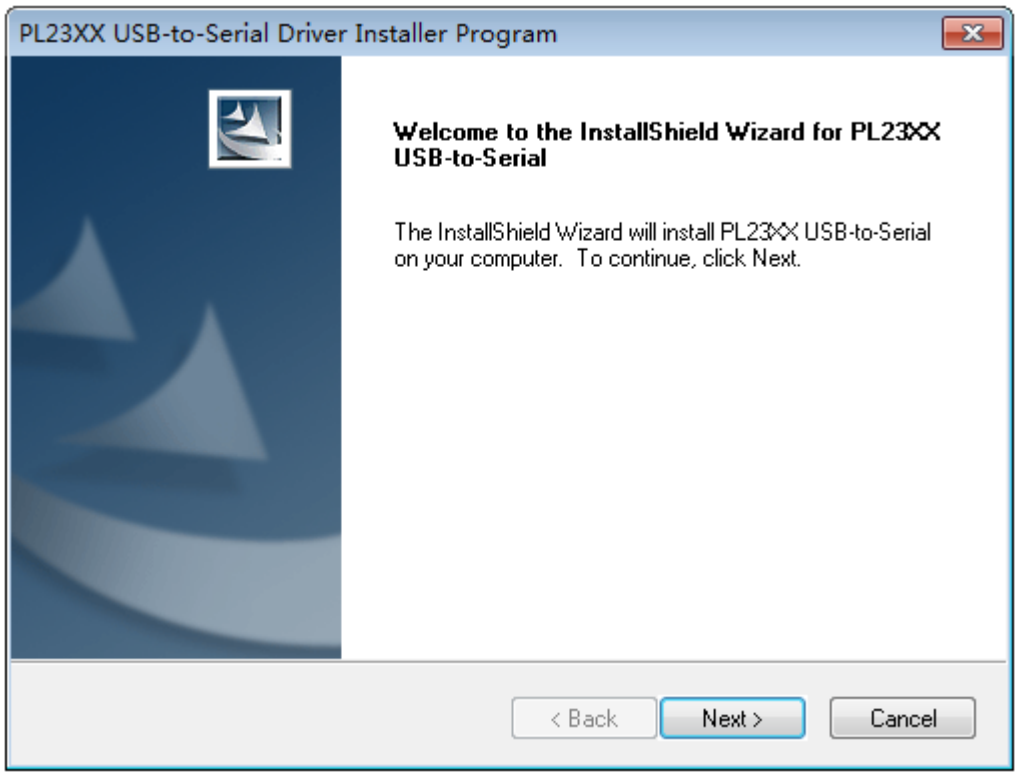
The following procedure describes how to install the driver on the Windows system. To install the driver on other operating systems, see the installation guide in the driver compression package named by the corresponding operating system.

To connect the switch to the configuration terminal through a USB-to-RJ45 console cable:

1. Click the following link, or copy it to the address bar on your browser and download the USB-to-RJ45 console driver.

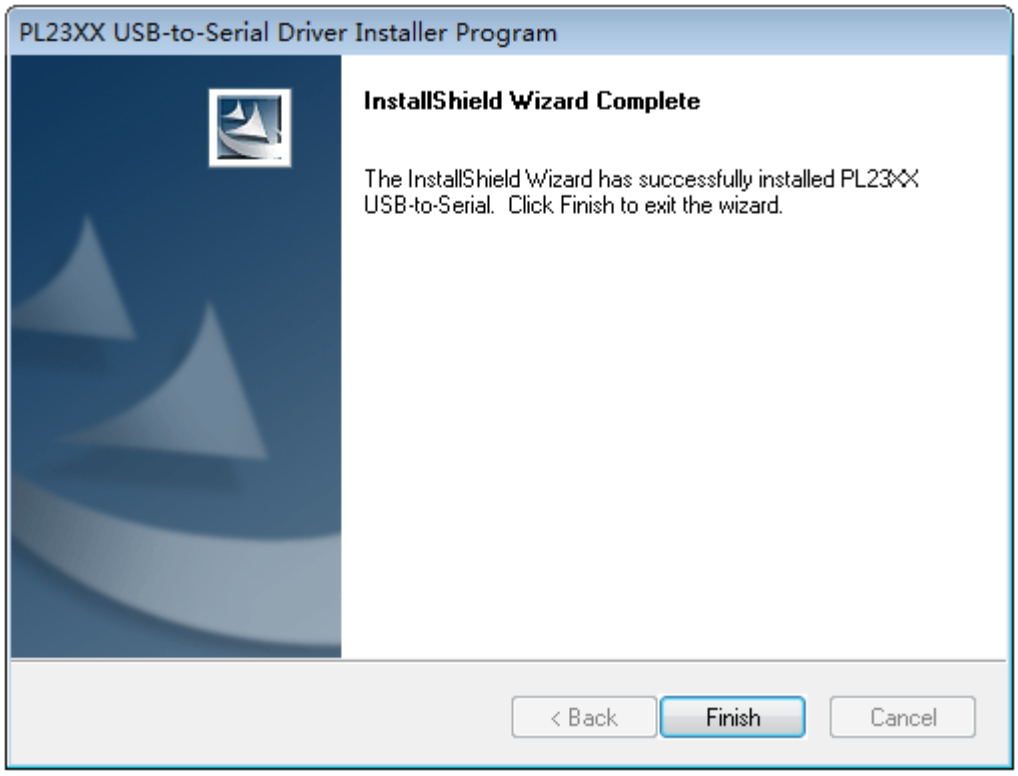
   http://www.h3c.com/en/home/USB_to_RJ45_Console/
2. View the TXT file **Read me** in the Windows folder to check whether the Windows system of the configuration terminal supports the driver.
3. If the Windows system supports the driver, install **PL23XX-M_LogoDriver_Setup_v200_20190815.exe**.
4. Click **Next** on the welcome page of the driver installation wizard.

Figure3-3 Driver installation wizard



5. Click **Finish** after the drive installation is completed.

Figure3-4 Finishing the driver installation



6. Connect the standard USB connector of the cable to the USB port of the configuration terminal.

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

Connecting a micro USB console cable

A micro USB console cable has a micro USB Type B connector at one end to connect to the micro USB console port of the switch, and a standard USB Type A connector at the other end to connect to the USB port on the configuration terminal.

To connect to the PC through the micro USB console cable:

1. Connect the standard USB Type A connector to the USB port of the PC.
2. Click the following link, or copy it to the address bar on the browser to log in to download and install the USB console driver on the configuration terminal.

   http://www.h3c.com/en/home/USB_Console/
3. Run Installer to preinstall the driver. After the preinstallation finishes, the system pops up a dialog box to indicate a successful preinstallation.
4. Connect the USB mini-Type B connector to the Mini USB console port on the switch. The system installs the driver automatically.

Setting terminal parameters

To configure and manage the switch through the console port, you must run a terminal emulator program, such as TeraTermPro, on your configuration terminal. You can use the emulator program to connect a network device, a Telnet site, or an SSH site. For more information about the terminal emulator programs, see the user guides for these programs.

Configure the terminal parameters as follows:

- **Bits per second**—9,600.
- **Data bits**—8.
- **Parity**—None.
- **Stop bits**—1.
- **Flow control**—None.

Powering on the switch

Before powering on the switch, verify that the following conditions are met:

- The power cord is correctly connected.
- The input power voltage meets the requirement of the switch.
- The console cable is correctly connected.
- The PC has started, and its serial port settings are consistent with the console port settings on the switch.

Power on the switch. During the startup process, you can access Boot ROM menus to perform tasks such as software upgrade and file management. The Boot ROM interface and menu options differ with software versions. For more information about Boot ROM menu options, see the software-matching release notes for the device.

After the startup completes, you can access the CLI to configure the switch.

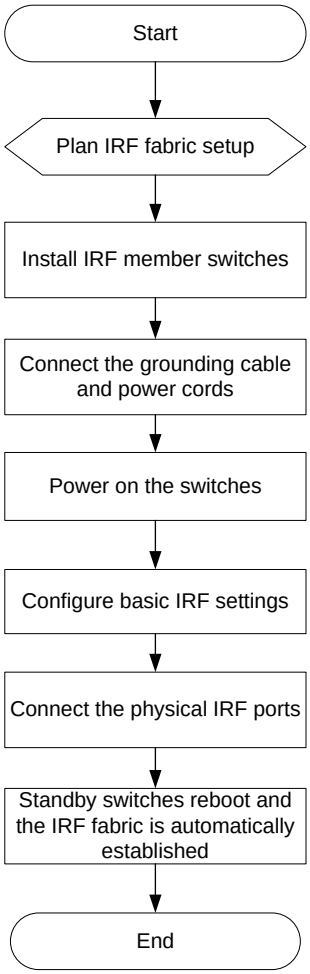
For more information about the configuration commands and CLI, see *H3C S5560X-EI Switch Series Configuration Guides* and *H3C S5560X-EI Switch Series Command References*.

4 Setting up an IRF fabric

You can use H3C IRF technology to connect and virtualize S5560X-EI switches into a large virtual switch called an "IRF fabric" for flattened network topology, and high availability, scalability, and manageability.

IRF fabric setup flowchart

Figure4-1 IRF fabric setup flowchart



To set up an IRF fabric:

Step	Description
1. Plan IRF fabric setup	Plan the installation site and IRF fabric setup parameters: • Planning IRF fabric size and the installation site • Identifying the master switch and planning IRF member IDs • Planning IRF topology and connections • Identifying physical IRF ports on the member switches • Planning the cabling scheme

Step	Description
2. Install IRF member switches	See "Installing the switch in a 19-inch rack" or "Mounting the switch on a workbench."
3. Connect ground wires and power cords	See "Grounding the switch" and "Connecting the power cord."
4. Power on the switches	N/A
5. Configure basic IRF settings	See *H3C S5560X-EI Switch Series IRF Configuration Guide* or *H3C S5560X-EI Switch Series Virtual Technologies Configuration Guide*, depending on the software version.
6. Connect the physical IRF ports	Connect physical IRF ports on switches. All switches except the master switch automatically reboot, and the IRF fabric is established.

Planning IRF fabric setup

This section describes issues that an IRF fabric setup plan must cover.

Planning IRF fabric size and the installation site

Choose switch models and identify the number of required IRF member switches, depending on the user density and upstream bandwidth requirements. The switching capacity of an IRF fabric equals the total switching capacities of all member switches.

Plan the installation site depending on your network solution, as follows:

- Place all IRF member switches in one rack for centralized high-density access.
- Distribute the IRF member switches in different racks to implement the ToR access solution for a data center.

NOTE:

For the maximum IRF member devices supported by the S5560X-EI, see the release notes that come with the switch.

Identifying the master switch and planning IRF member IDs

Determine which switch you want to use as the master for managing all member switches in the IRF fabric.

An IRF fabric has only one master switch. You configure and manage all member switches in the IRF fabric at the CLI of the master switch. IRF member switches automatically elect a master.

You can affect the election result by assigning a high member priority to the intended master switch. For more information about master election, see *H3C S5560X-EI Switch Series IRF Configuration Guide* or *H3C S5560X-EI Switch Series Virtual Technologies Configuration Guide*, depending on the software version.

Prepare an IRF member ID assignment scheme. An IRF fabric uses member IDs to uniquely identify and manage its members, and you must assign each IRF member switch a unique member ID.

Planning IRF topology and connections

You can create an IRF fabric in daisy chain topology or more reliable ring topology. In ring topology, the failure of one IRF link does not cause the IRF fabric to split as in daisy chain topology. Instead, the IRF fabric changes to a daisy chain topology without interrupting network services.

You connect the IRF member switches through IRF ports, the logical interfaces for the connections between IRF member switches. Each IRF member switch has two IRF ports: IRF-port 1 and IRF-port 2. To use an IRF port, you must bind a minimum of one physical port to it.

When connecting two neighboring IRF member switches, you must connect the physical ports of IRF-port 1 on one switch to the physical ports of IRF-port 2 on the other switch.

The S5560X-EI switches provide 5-GE/10-GE/25-GE/40-GE IRF connections through multiple types of ports (see Table4-1 for the port types). You can bind several IRF physical ports to an IRF port for increased bandwidth and availability.

Figure4-2 and Figure4-3 show the topologies of an IRF fabric made up of three S5560X-30C-EI switches. The IRF port connections in the two figures are for illustration only, and more connection methods are available.

Figure4-2 IRF fabric in daisy chain topology

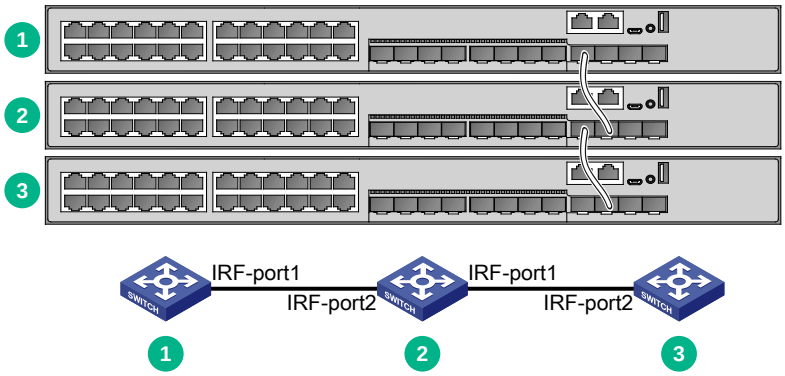
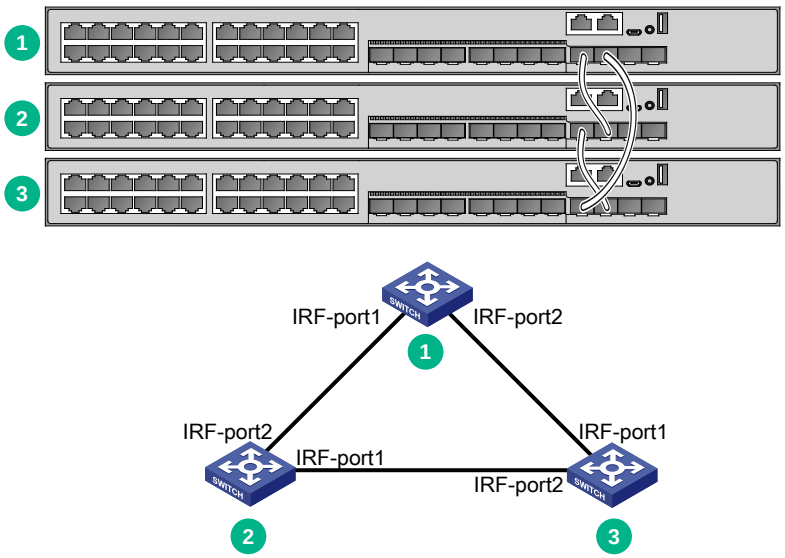


Figure4-3 IRF fabric in ring topology



Identifying physical IRF ports on the member switches

Identify the physical IRF ports on the member switches according to your topology and connection scheme.

Table4-1 shows the physical ports that can be used for IRF connection and the port use restrictions.

Table4-1 Physical IRF port requirements

Chassis	Candidate physical IRF ports	Requirements
S5560X-34S-EI S5560X-54S-EI	• Four SFP+ ports on the front panel • Two QSFP+ ports on the rear panel	• All physical ports to be bound to an IRF port must have the same data rate. • The physical ports must operate at their highest speed. • Physical ports on interface cards and the front panel can be bound to the same IRF port. • If a QSFP+ port is split into four virtual SFP+ ports, the QSFP+ port cannot be used as a physical IRF port.

S5560X-30C-EI
S5560X-30C-PWR-EI
S5560X-54C-EI
S5560X-54C-PWR-EI
S5560X-30F-EI
S5560X-54F-EI
	• Four fixed SFP+ ports on the front panel
	• Ports on the interface cards on the rear panel:
	  ○ 1/10GBASE-T autosensing Ethernet ports
	  ○ 5G/2.5G/1000BASE-T autosensing Ethernet ports
	  ○ 10G/5G/2.5G/1000BASE-T autosensing Ethernet ports
	  ○ SFP+ ports
	  ○ SFP28 ports
	  ○ QSFP+ ports	

S5560X-30F-EIF	All SFP+ ports and QSFP+ ports on the front panel	

Planning the cabling scheme

The cables available for connecting two peer IRF physical ports vary by port type:

- **1/10GBASE-T autosensing Ethernet ports**—Category-6 or above twisted pair cable.
- **5G/2.5G/1000BASE-T and 10G/5G/2.5G/1000BASE-T multi-speed autosensing Ethernet ports**—Category-5e or above twisted pair cable.
- **SFP+ ports**—SFP+ transceiver modules and optical fibers or SFP+ cables. For the available transceiver modules and cables, see ports in *S5560X-EI Switch Series Hardware Information and Specifications*.
- **SFP28 ports**—SFP28 transceiver modules and optical fibers or SFP28 cables. For the available transceiver modules and cables, see ports in *S5560X-EI Switch Series Hardware Information and Specifications*.
- **QSFP+ ports**—QSFP+ transceiver modules and optical fibers or QSFP+ cables. For the available transceiver modules and cables, see ports in *S5560X-EI Switch Series Hardware Information and Specifications*.

For a short-distance IRF connection in an equipment room, use a twisted-pair cable, SFP+ cable, SFP28 cable, or QSFP+ cable.

For a long-distance IRF connection, use transceiver modules and optical fibers.

The following subsections describe several H3C recommended IRF connection schemes. All these schemes use a ring topology.

IMPORTANT:

In these schemes, all physical IRF ports are located on the same side. If physical IRF ports are on different sides, you must measure the distance between them to select an appropriate cable.

Connecting the IRF member switches in one rack

Use twisted pair/SFP+/SFP28/QSFP+ cables to connect the IRF member switches (9 switches in this example) in a rack as shown in Figure4-4. The switches in the ring topology (see Figure4-5) are in the same order as connected in the rack.

Figure4-4 Connecting the switches in one rack

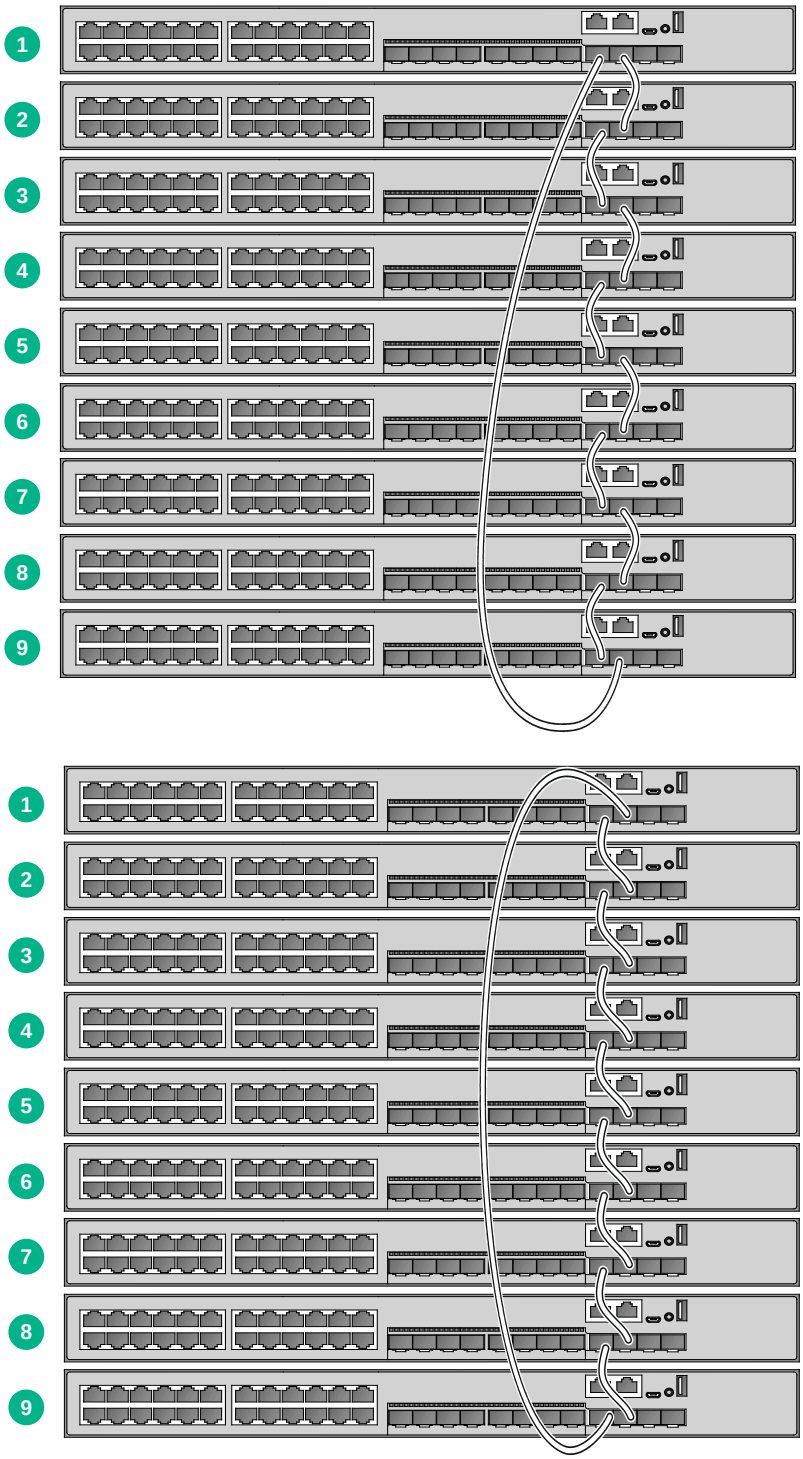
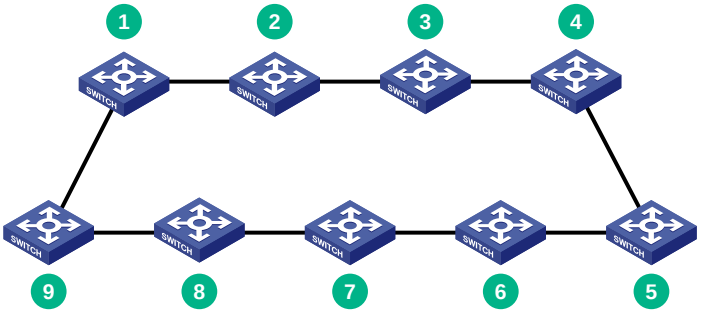


Figure4-5 IRF fabric topology

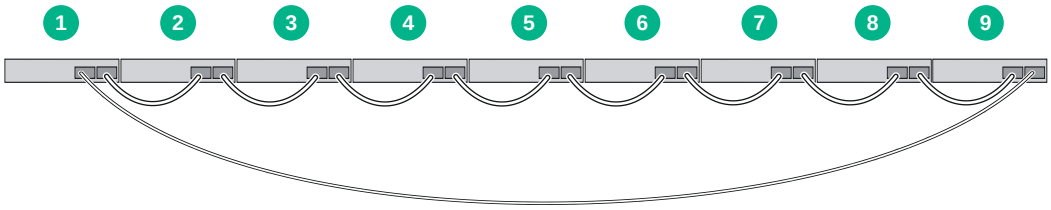


Connecting the IRF member switches in a ToR solution

You can install IRF member switches in different racks side by side to deploy a top of rack (ToR) solution.

Figure4-6 shows an example for connecting 9 top of rack IRF member switches by using transceiver modules and optical fibers. The topology is the same as Figure4-5.

Figure4-6 ToR cabling



Configuring basic IRF settings

After you install the IRF member switches, power on the switches, and log in to each IRF member switch (see *H3C S5560X-EI Switch Series Fundamentals Configuration Guide*) to configure their member IDs, member priorities, and IRF port bindings.

Follow these guidelines when you configure the switches:

- Assign the master switch higher member priority than any other switch.
- Bind physical ports to IRF port 1 on one switch and to IRF port 2 on the other switch. You perform IRF port binding before or after connecting IRF physical ports depending on the software release.
- To bind the ports on an interface card to an IRF port, you must install the interface card first. For how to install an interface card, see *H3C S5560X-EI Switch Series Interface Cards User Guide*.
- Execute the **`display irf configuration`** command to verify the basic IRF settings.

For more information about configuring basic IRF settings, see *H3C S5560X-EI Switch Series IRF Configuration Guide* or *H3C S5560X-EI Switch Series Virtual Technologies Configuration Guide*, depending on the software version.

Connecting the physical IRF ports

CAUTION:

Wear an ESD wrist strap when you connect the IRF physical ports. Make sure the strap makes good skin contact and is reliably grounded.

Connect the IRF member switches based on the network topology and cabling scheme. For information about connecting the transceiver modules and cables, see *H3C Transceiver Modules and Network Cables Installation Guide*.

Verifying the IRF fabric setup

To verify the basic functionality of the IRF fabric after you finish configuring basic IRF settings and connecting IRF ports:

1. Log in to the IRF fabric through the console port of any member switch.
2. Create a Layer 3 interface, assign it an IP address, and make sure the IRF fabric and the remote network management station can reach each other.
3. Use Telnet, web, or SNMP to access the IRF fabric from the network management station. (See *H3C S5560X-EI Switch Series Fundamentals Configuration Guide*.)
4. Verify that you can manage all member switches as if they were one node.
5. Display the running status of the IRF fabric by using the commands in Table4-2.

Table4-2 Displaying and maintaining IRF configuration and running status

Task	Command
Display information about the IRF fabric.	**display irf**
Display all members' IRF configurations that take effect at a reboot.	**display irf configuration**
Display IRF fabric topology information.	**display irf topology**

NOTE:

To avoid IP address collision and network problems, configure a minimum of one multi-active detection (MAD) mechanism to detect the presence of multiple identical IRF fabrics and handle collisions. For more information about MAD detection, see *H3C S5560X-EI Switch Series IRF Configuration Guide* or *H3C S5560X-EI Switch Series Virtual Technologies Configuration Guide*, depending on the software version.

5 Maintenance and troubleshooting

Fixed power module failure

The S5560X-30F-EIF, S5560X-34S-EI, and S5560X-54S-EI switches use fixed power modules and support AC power input, DC power input, and concurrent AC and DC power inputs.

- **S5560X-34S-EI and S5560X-54S-EI switches**—To identify a fixed power module failure, examine the system status LED and the RPS status LED on the switch.
- **S5560X-30F-EIF switch**—To identify a fixed power module failure, examine the system status LED, AC power input status LED, and DC power input status LED.

Table5-1 Description of LEDs for fixed power modules

LED	Mark	Status	Description
System status LED	SYS	Off	The switch is powered off.
RPS status LED	RPS	Steady green	Both the DC input and the AC input are normal.
		Steady yellow	Normal DC input, no or abnormal AC input.
		Off	No or abnormal DC input.
AC input power status LED	AC PWR	Steady green	Normal AC input.
		Off	No or abnormal AC input.
DC input power status LED	DC PWR	Steady green	Normal DC input.
		Off	No or abnormal DC input.

AC input failure

Symptom

The switch uses only AC power input. The system status LED is off.

Solution

To resolve the issue:

1. Verify that the AC power cord connects the switch to an AC power source correctly, and the AC power receptacle on the switch and the AC power outlet are in good condition.
2. Verify that the AC power source is operating correctly.
3. Verify that the ambient temperature of the switch is in the acceptable range and ensure good ventilation for the power module. Overtemperature can cause the power module to stop working and enter the protection state.
4. If the issue persists, contact H3C Support.

DC input failure

Symptom

The switch uses only DC power input. The system status LED is off.

Solution

To resolve the issue:

1. Verify that the switch is connected correctly to the DC power source.
2. Verify that the DC power source is operating correctly.
3. Verify that the ambient temperature of the switch is in the acceptable range and ensure good ventilation for the power module. Overtemperature can cause the power module to stop working and enter the protection state.
4. If the issue persists, contact H3C Support.

AC and DC concurrent input failure

Symptom 1

The switch uses concurrent AC and DC power inputs. The system status LED is off.

Solution

To resolve the issue:

1. Verify that the AC power cord connects the switch to the power source correctly, and the AC-input power receptacle on the switch and the AC power outlet are in good condition.
2. Verify that the AC power source is operating correctly.
3. Verify that the switch is connected correctly to the DC power source.
4. Verify that the DC power source is operating correctly.
5. Verify that the ambient temperature of the switch is in the acceptable range and ensure good ventilation for the power module. Overtemperature can cause the power module to stop working and enter the protection state.
6. If the issue persists, contact H3C Support.

Symptom 2

- On an S5560X-30F-EIF switch that uses concurrent AC and DC power inputs, the system status LED is on, the DC PWR LED is steady green, but the AC PWR LED is off.
- On an S5560X-34S-EI or S5560X-54S-EI switch that uses concurrent AC and DC power inputs, the system status LED is on but the RPS status LED is steady yellow.

Solution

To resolve the issue:

1. Verify that the AC power cord is securely connected to the switch, and the AC-input power receptacle on the switch and the connected AC power outlet are in good condition.
2. Verify that the AC power source is operating correctly.
3. Verify that the ambient temperature of the switch is in the acceptable range.
4. If the issue persists, contact H3C Support.

Symptom 3

- On an S5560X-30F-EIF switch that uses concurrent AC and DC power inputs, the system status LED is on, the AC PWR LED is steady green, but the DC PWR LED is off.
- On an S5560X-34S-EI or S5560X-54S-EI switch that uses concurrent AC and DC power inputs, the system status LED is on but the RPS status LED is off.

Solution

To resolve the issue:

1. Verify that the switch is connected to the DC power source correctly.
2. Verify that the DC power source is operating correctly.

3. Verify that the ambient temperature of the switch is in the acceptable range.
4. If the issue persists, contact H3C Support.

Removable power module failure

Symptom

S5560X-EI switches except the S5560X-34S-EI and S5560X-54S-EI use removable power modules.

- To identify the operating status of a power module on the S5560X-30C-EI, S5560X-54C-EI, S5560X-30F-EI, and S5560X-54F-EI switches, observe the PWR LED on the front panel of the switch. For more information about the power module status LED on the front panel of the switch, see LEDs in *S5560X-EI Switch Series Hardware Information and Specifications*.
- To identify the operating status of a power module on the S5560X-30C-PWR-EI and S5560X-54C-PWR-EI switches, observe the LEDs on the power module and the PWR LED on the front panel of the switch. For more information about the LEDs on a power module, see *H3C PSR360-56A Power Module User Manual, H3C PSR560-56D Power Module User Manual, H3C PSR720-56A Power Module User Manual*, or *H3C PSR1110-56A Power Module User Manual*.

Solution

To resolve the issue:

1. Verify that the power cord is correctly connected.
2. Verify that the power source meets the requirement.
3. Verify that the operating temperature of the switch is in an acceptable range and the power module has good ventilation.
4. If the issue persists, contact H3C Support.

   To replace a removable power module, see "Installing/removing a power module."

Fixed fan tray failure

The S5560X-30F-EIF, S5560X-34S-EI, and S5560X-54S-EI switches each use a fixed fan tray. If the fan tray fails, contact H3C Support.

Removable fan tray failure

WARNING!

- If both fan trays fail during switch operation, replace them within 2 minutes.
- If one fan tray fails, perform either of the following tasks:
  - If the ambient temperature is not higher than 27°C (80.6°F), replace the fan tray within 24 hours and make sure the failed fan tray remains in position before the replacement.
  - If the ambient temperature is higher than 27°C (80.6°F), replace the fan tray immediately.

The S5560X-EI switches except the S5560X-34S-EI and S5560X-54S-EI use removable fan trays. If a fan tray fails, see "Installing/removing a fan tray" to replace the fan tray.

Configuration terminal display problems

If the configuration environment setup is correct, the configuration terminal displays booting information when the switch is powered on. If the setup is incorrect, the configuration terminal displays nothing or garbled text.

No display

Symptom

The PC displays nothing when the switch is powered on.

Solution

To resolve the issue:

1. Verify that the power module is supplying power to the switch.
2. Verify that the console cable is correctly connected.
3. Verify that the console cable does not have any problems and the PC settings are correct.
4. If the issue persists, contact H3C Support.

Garbled display

Symptom

The display on the PC is garbled.

Solution

To resolve the issue:

1. Verify that the following settings are configured for the terminal:
   - **Baud rate**—9,600.
   - **Data bits**—8.
   - **Stop bits**—1.
   - **Parity**—None.
   - **Flow control**—None.
2. If the issue persists, contact H3C Support.