

H3C S6860 Switch Series

Installation Guide

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

Document version: 6W103-20220615

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Environmental protection

This product has been designed to comply with the environmental protection requirements. The storage, use, and disposal of this product must meet the applicable national laws and regulations.

Preface

H3C S6860 Switch Series Installation Guide describes the installation, power-on, maintenance, and troubleshooting of the H3C S6860 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 S6860 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.
<i>Italic</i>	<i>Italic</i> 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	1-1
Safety recommendations	1-1
Examining the installation site	1-1
Temperature/humidity	1-2
Cleanliness	1-2
Corrosive gas limit	1-2
EMI	1-3
Laser safety	1-4
Installation tools	1-4
Installation accessories	1-4
2 Installing the switch	2-6
Installing the switch in a 19-inch rack	2-7
Installation accessories	2-7
Rack-mounting procedures at a glance	2-8
Attaching the mounting brackets, chassis rails, and grounding cable to the chassis	2-9
Attaching the slide rails to the rack	2-14
Mounting the switch in the rack	2-15
Grounding the switch by using a grounding strip	2-16
Installing and removing a fan tray	2-17
Installing a fan tray	2-18
Removing a fan tray	2-18
Installing and removing a power supply	2-19
Installing a power supply	2-20
Removing a power supply	2-21
Connecting the power cord	2-23
Connecting the power cord for a PSR250-12A/PSR250-12A1/PSR450-12A/PSR450-12A1 power supply	2-23
Connecting the power cord for a PSR450-12AHD power supply	2-23
Connecting the DC power cord for a PSR450-12D power supply	2-24
Verifying the installation	2-25
3 Accessing the switch for the first time	3-26
Setting up the configuration environment	3-26
Connecting the console cable	3-26
Serial console cable	3-26
USB mini console cable	3-27
Connection procedure	3-27
Setting terminal parameters	3-27
Powering on the switch	3-28
4 Setting up an IRF fabric	4-29
IRF fabric setup flowchart	4-29
Planning IRF fabric setup	4-30
Planning IRF fabric size and the installation site	4-30
Identifying the master switch and planning IRF member IDs	4-30
Planning IRF topology and connections	4-31
Identifying physical IRF ports on the member switches	4-32
Planning the cabling scheme	4-32
Configuring basic IRF settings	4-34
Connecting the physical IRF ports	4-34
Accessing the IRF fabric to verify the configuration	4-34
5 Maintenance and troubleshooting	5-36
Power supply failure	5-36
Symptom	5-36
Solution	5-36

Fan tray failure	5-36
Symptom	5-36
Solution	5-36
Configuration terminal issues.....	5-36
No display on the configuration terminal.....	5-37
Garbled display on the configuration terminal.....	5-37

1 Preparing for installation

The S6860 switch series includes the following models:

- S6860-54HF.
- S6860-54HT.
- S6860-30HF.

Safety recommendations

To avoid any equipment damage or bodily injury caused by incorrect 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 power-on.
- Make sure the operating voltage is in the required range.
- To avoid electrical shocks, do not open the chassis while the switch is operating or when the switch is just powered off.
- When replacing FRUs, including power supplies and fan trays, wear an ESD wrist strap to avoid damaging the units.

Examining the installation site

The S6860 switches must be used indoors.

Mount your switch in a rack and verify the following items:

- Adequate clearance is reserved at the air inlet and outlet vents for ventilation.
- The rack has a good ventilation system.
- Identify the hot aisle and cold aisle at the installation site, and make sure ambient air flows into the switch from the cold aisle and exhausts to the hot aisle.
- Identify the airflow designs of neighboring devices, and prevent hot air flowing out of the bottom device from entering the top device.
- The rack is sturdy enough to support the switch and its accessories.
- The rack is reliably grounded.

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

Temperature/humidity

Maintain appropriate temperature and humidity in the equipment room.

- 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 problems including loose 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, see *H3C S6860 Switch Series Hardware Information and Specifications*.

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. [Table1-1](#) describes the switch requirement for cleanliness.

Table1-1 Switch requirement for cleanliness

Substance	Particle diameter	Concentration limit
Dust particles	$\geq 0.5 \mu\text{m}$	$\leq 1.8 \times 10^7$ 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, and even cause device failure in the worst case. Make sure the corrosive gases do not exceed the concentration limits as shown in [Table1-2](#).

Table1-2 Corrosive gas concentration limits

Gas	Average concentration (mg/m ³)	Maximum concentration (mg/m ³)
SO ₂	0.3	1.0
H ₂ S	0.1	0.5
Cl ₂	0.1	0.3
HCl	0.1	0.5

Gas	Average concentration (mg/m ³)	Maximum concentration (mg/m ³)
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.

EMI

All electromagnetic interference (EMI) sources, from outside or inside of the switch and application system, adversely affect the switch in the following ways:

- A conduction pattern of capacitance coupling.
- Inductance coupling.
- Electromagnetic wave radiation.
- Common impedance (including the grounding system) coupling.

To prevent EMI, use the following guidelines:

- 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 switch far away from radio transmitting stations, radar stations, and high-frequency devices.
- Use electromagnetic shielding, for example, shielded interface cables, when necessary.
- To prevent signal ports from getting damaged by overvoltage or overcurrent caused by lightning strikes, route interface cables only indoors.

Laser safety

⚠ WARNING!

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

The S6860 switches are Class 1 laser devices.

Installation tools

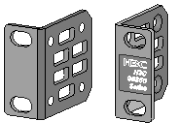
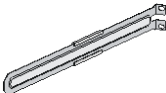
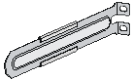
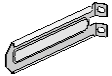

No installation tools are provided with the switch. Prepare the following tools yourself:



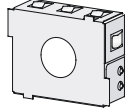

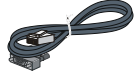


- Phillips screwdriver.
- ESD wrist strap.
- Marker.

Installation accessories

Before installation, make sure you have all the required installation accessories. If any accessory is damaged or missing, use the part number provided in this table to purchase a new one.

Table1-3 Installation accessories

Part number in BOM	Description	Quantity	Applicable switch models
0223A0N7	Mounting brackets 	1 kit (provided)	All S6860 switch models
2150A050	1U rack mounting rail kit (long slide rails) 	1 kit (provided)	All S6860 switch models
2150A05D	1U rack mounting rail kit 	Optional	S6860-54HT
2150A0CP	1U rack mounting rail kit (super-short slide rails) 	Optional	<ul style="list-style-type: none">• S6860-54HF• S6860-30HF
N/A	M6 screw and cage nut 	User supplied	All S6860 switch models

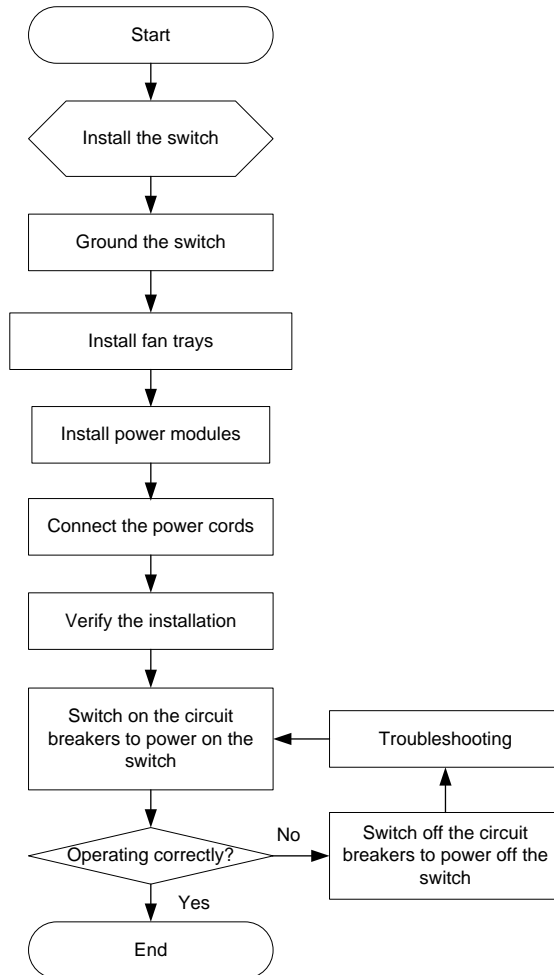
Part number in BOM	Description	Quantity	Applicable switch models
0404A1RB (single-hole grounding lug) or 0404A0KM (two-hole grounding lug)	Grounding cable 	1 (provided)	All S6860 switch models
26010553	Grounding screw 	2 (provided)	All S6860 switch models
2114A09C	Power supply filler panel 	1 (provided)	All S6860 switch models
N/A	Releasable cable tie 	User supplied	All S6860 switch models
04042967	Serial console cable 	1 (provided)	All S6860 switch models
14990101	SFP port dust plug 	Same number as the SFP+ and SPF ports	All S6860 switch models
1499A01G	QSFP port dust plug 	Same number as the QSFP+ ports	All S6860 switch models

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 caused thereby.

Figure2-1 Hardware installation flow



Installing the switch in a 19-inch rack

Installation accessories

Table2-2 Installation accessories

Switch model	Mounting brackets	Rack mounting rail kit
S6860-54HF S6860-30HF	1U high, one pair (provided). See Figure2-2 .	<ul style="list-style-type: none"> 1U high, including one pair of chassis rails and one pair of long slide rails (provided). See Figure2-5. 1U high, including one pair of chassis rails and one pair of super-short slide rails (optional). See Figure2-3.
S6860-54HT	1U high, one pair (provided). See Figure2-3 .	<ul style="list-style-type: none"> 1U high, including one pair of chassis rails and one pair of long slide rails (provided). See Figure2-5. 1U high, including one pair of chassis rails and one pair of slide rails (optional). See Figure2-4.

Figure2-2 Mounting brackets

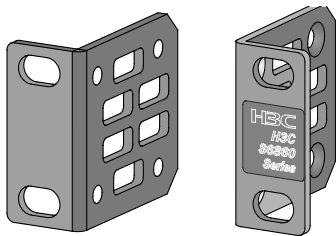
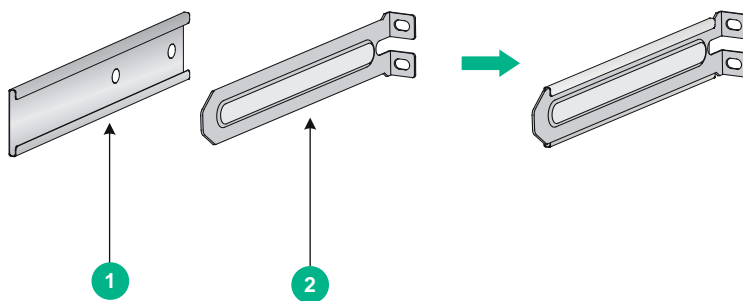


Figure2-3 1U chassis rail and super-short slide rail



(1) Chassis rail

(2) Super-short slide rail

Figure2-4 1U chassis rail and slide rail

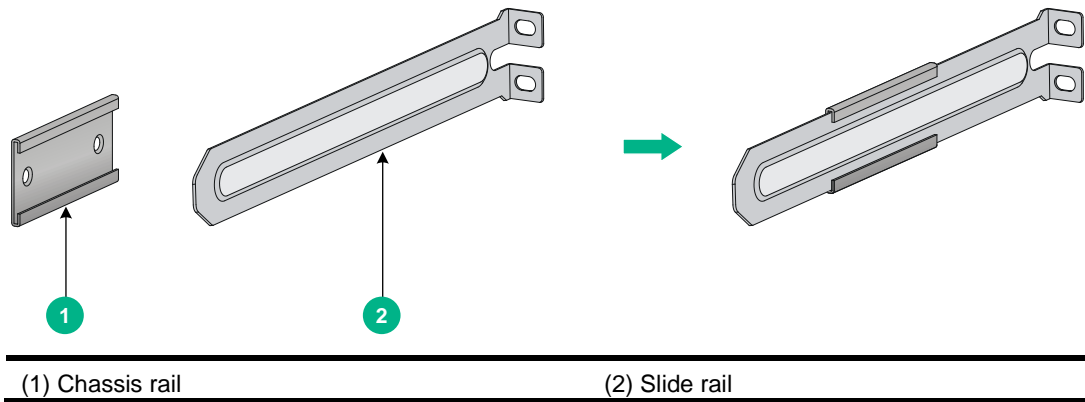
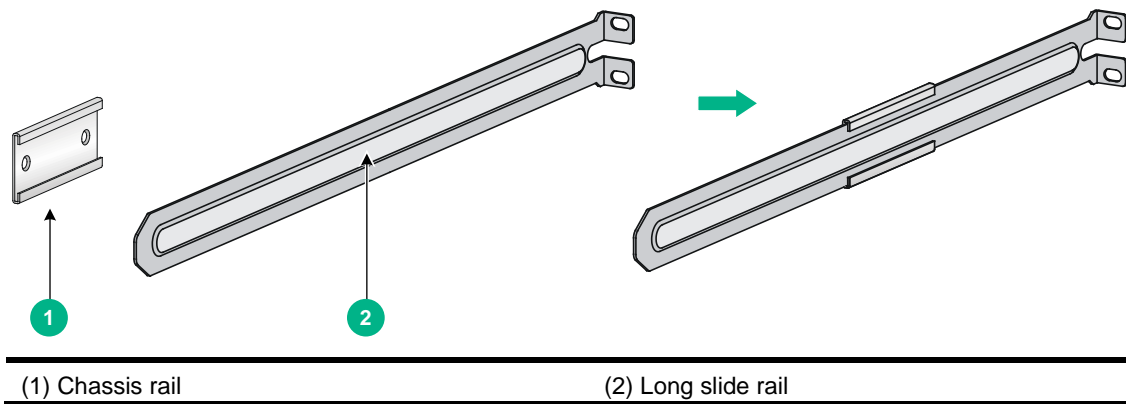
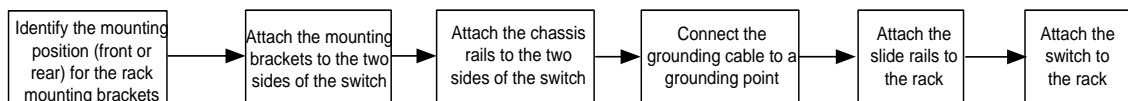


Figure2-5 1U chassis rail and long slide rail



Rack-mounting procedures at a glance

Figure2-6 Rack-mounting procedure



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 with the mounting brackets.

Follow these guidelines when you install the switch in a 19-inch rack:

- The distance between the front and rear posts of the rack must meet the requirements described in [Table2-3](#).
- To secure the switch to the rack, you must install not only mounting brackets, but also chassis rails and slide rails.

Table2-3 Distance requirements between the front and rear rack posts

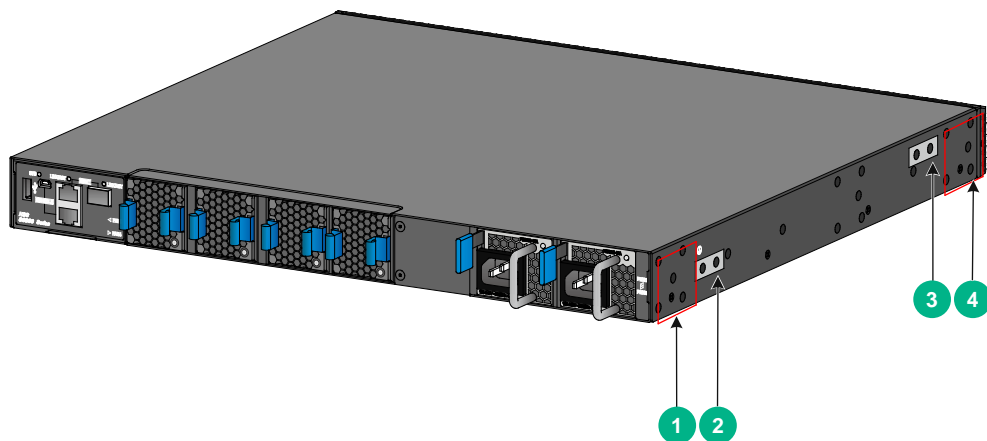
Switch model	Installation method	Minimum distance between the front and rear rack posts	Maximum distance between the front and rear rack posts
S6860-54HF S6860-30HF	Using mounting brackets, chassis rails, and long slide rails	621 mm (24.45 in)	793 mm (31.22 in)
	Using mounting brackets, chassis rails, and super-short slide rails (narrow-spacing installation)	330 mm (12.99 in)	505 mm (19.88 in)
	Using mounting brackets, chassis rails, and super-short slide rails (wide-spacing installation)	438 mm (17.24 in)	632 mm (24.88 in)
S6860-54HT	Using mounting brackets, chassis rails, and long slide rails	621 mm (24.45 in)	854 mm (33.62 in)
	Using mounting brackets, chassis rails, and slide rails	401 mm (15.79 in)	634 mm (24.96 in)

Attaching the mounting brackets, chassis rails, and grounding cable to the chassis

The switch has two mounting bracket installation positions on its two sides: one near the network port side and one near the power supply side.

The switch provides a primary grounding point (with a grounding sign) and an auxiliary grounding point.

Figure2-7 Mounting bracket installation positions and grounding positions on the S6860-54HF and S6860-30HF switches



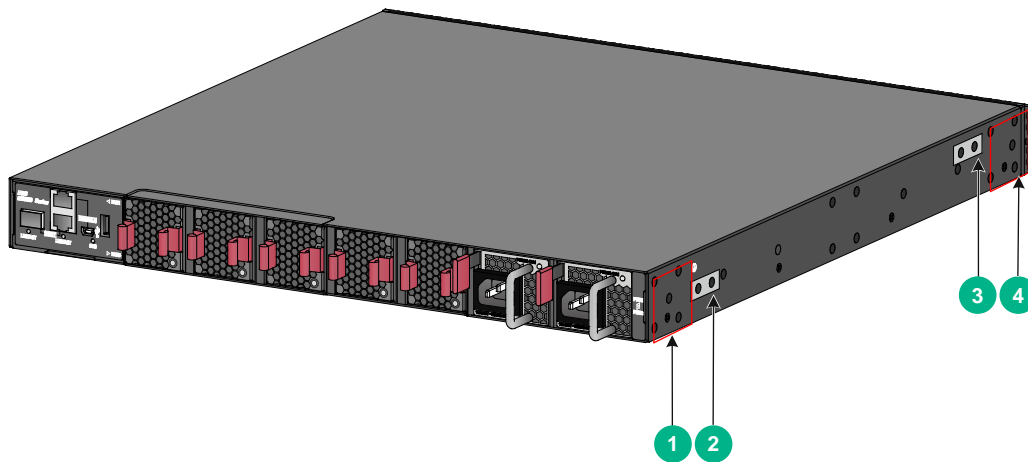
(1) Mounting bracket installation position near the power supply side

(2) Primary grounding point

(3) Auxiliary grounding point

(4) Mounting bracket installation position near the port side

Figure2-8 Mounting bracket installation positions and grounding positions on the S6860-54HT switch



-
- | | |
|---|-------------------------------|
| (1) Mounting bracket installation position near the power supply side | |
| (2) Primary grounding point | (3) Auxiliary grounding point |
| (4) Mounting bracket installation position near the port side | |
-

Attaching the mounting brackets and chassis rails to the chassis

⚠ CAUTION:

M4 screws are used to attach the mounting brackets and chassis rails to the chassis. As a best practice, use a torque of 12 kgf-cm (1.18 Nm) to fasten M4 screws.

The mounting bracket and chassis rail installation methods are the same for the S6860-54HF and S6860-30HF switches.

To attach the mounting brackets and chassis rails to the chassis:

1. Align the mounting brackets with the screw holes in the chassis. Use M4 screws (provided) to attach the mounting brackets to the chassis.
 - To install the mounting brackets at the port side, see [Figure2-9](#), [Figure2-10](#), [Figure2-11](#), and [Figure2-12](#).
 - To install the mounting brackets at the power supply side, see [Figure2-13](#), [Figure2-14](#), [Figure2-15](#), and [Figure2-16](#).
2. Align the chassis rails with the rail mounting holes in the chassis:
 - If the mounting brackets are in the port-side mounting position, align the chassis rails with the screw holes at the rear of the side panels (see [Figure2-9](#), [Figure2-10](#), [Figure2-11](#), and [Figure2-12](#)).
 - If the mounting brackets are in the power supply-side mounting position, align the chassis rails with the screw holes at the front of the side panels (see [Figure2-13](#), [Figure2-14](#), [Figure2-15](#), and [Figure2-16](#)).
3. Use M4 screws (provided) to attach the chassis rails to the chassis.

Secure the mounting brackets and chassis rails to both sides of the chassis in the same way.

To use super-short slide rails for the switch, you can install the chassis rails through narrow-spacing or wide-spacing installation, depending on the distance between the front and rear rack posts, as shown in [Figure2-10](#), [Figure2-11](#), [Figure2-14](#), and [Figure2-15](#).

Figure2-9 Attaching the mounting brackets and chassis rails to an S6860-54HF switch (mounting brackets installed near the port side)

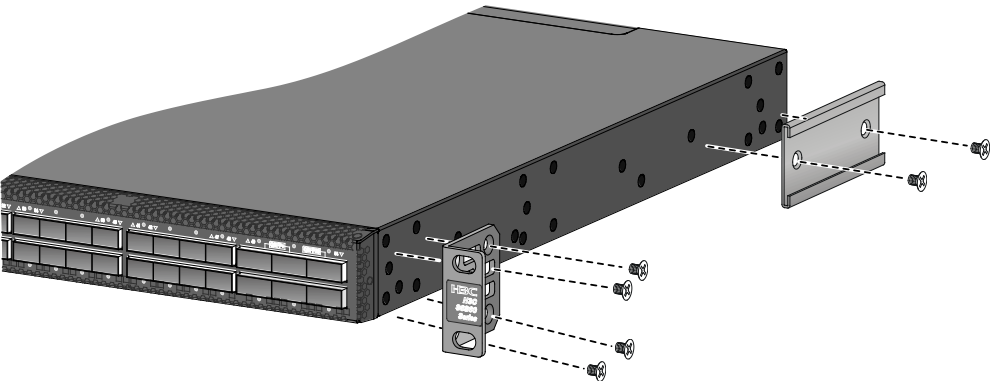


Figure2-10 Attaching the mounting brackets and chassis rails (narrow-spacing installation) to an S6860-54HF switch (mounting brackets installed near the port side)

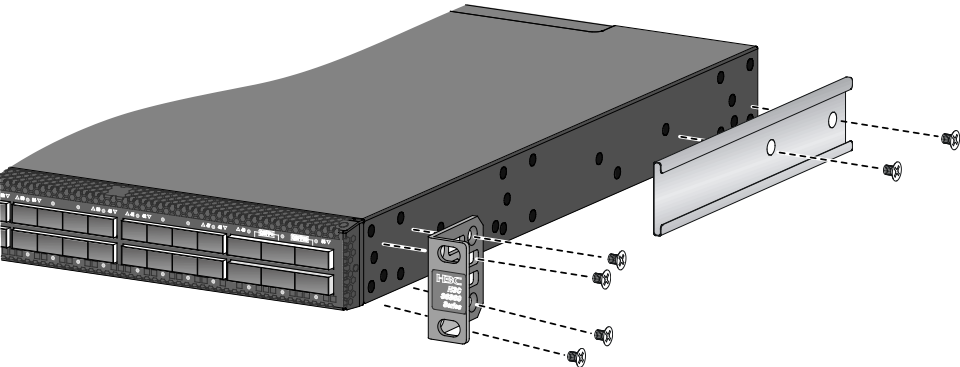


Figure2-11 Attaching the mounting brackets and chassis rails (wide-spacing installation) to an S6860-54HF switch (mounting brackets installed near the port side)

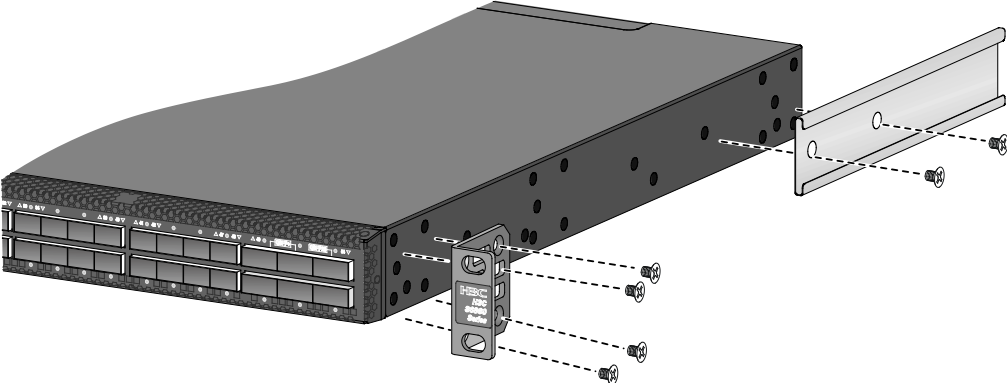


Figure2-12 Attaching the mounting brackets and chassis rails to an S6860-54HT switch (mounting brackets installed near the port side)

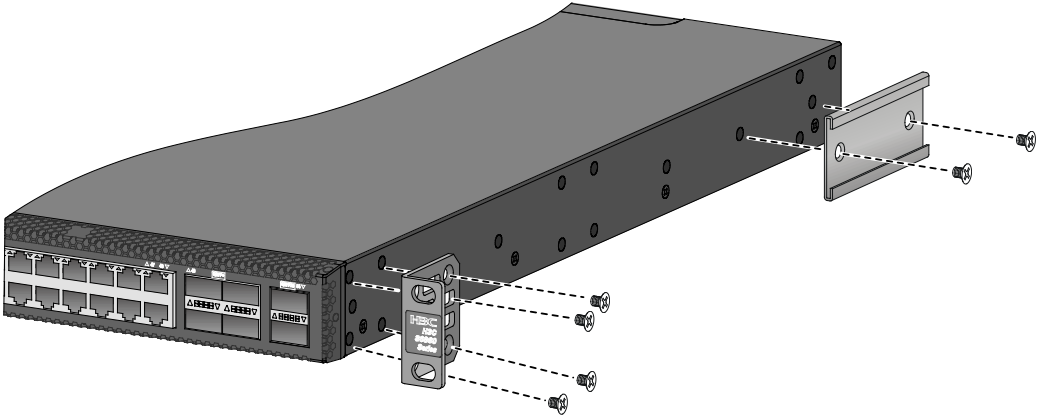


Figure2-13 Attaching the mounting brackets and chassis rails to an S6860-54HF switch (mounting brackets installed near the power supply side)

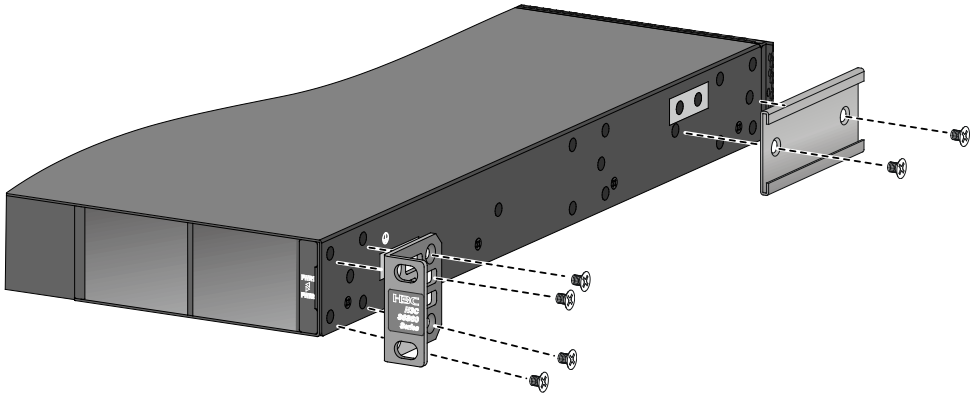


Figure2-14 Attaching the mounting brackets and chassis rails (narrow-spacing installation) to an S6860-54HF (mounting brackets installed near the power supply side)

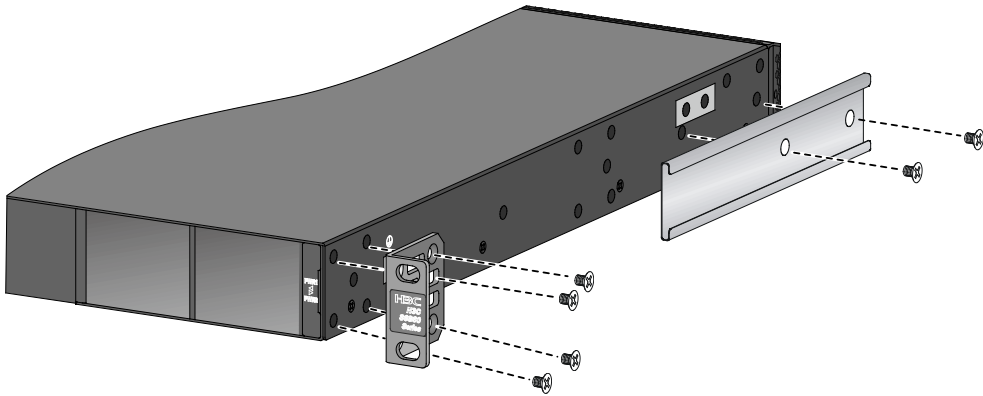


Figure2-15 Attaching the mounting brackets and chassis rails (wide-spacing installation) to an S6860-54HF (mounting brackets installed near the power supply side)

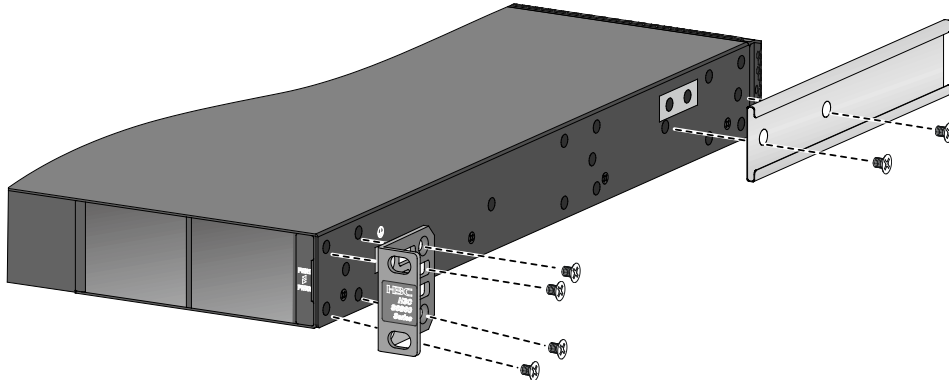
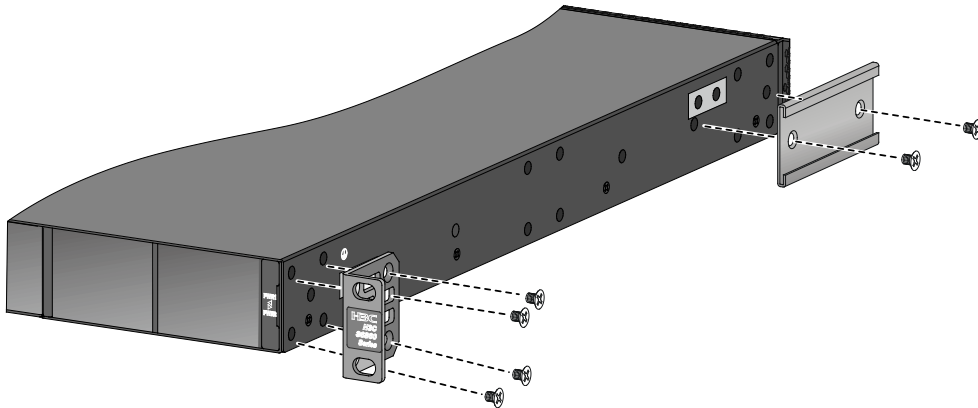


Figure2-16 Attaching the mounting brackets and chassis rails to an S6860-54HT switch (mounting brackets installed near the power supply side)



Connecting the grounding cable to the chassis

⚠ CAUTION:

Select a grounding point as required. The primary grounding point and auxiliary grounding point are located on the left side panel. If you use one of these grounding points, you must connect the grounding cable to the grounding point before you mount the switch in the rack.

Use M5 grounding screws to attach a grounding cable that has a single-hole grounding lug or two-hole grounding lug to the grounding point on the switch. If the grounding cable length or terminal type cannot meet your requirement, make an applicable grounding cable or contact H3C Support.

This section uses the primary grounding point on an S6860-54HF switch as an example.

To connect the grounding cable to a grounding point:

1. Unpack the grounding cable and grounding screws.
You can use the cable and screws shipped with the switch for connecting to the primary grounding point or auxiliary grounding point.
2. Use the grounding screws to attach the single-hole grounding lug or two-hole grounding lug to the grounding point and then fasten the screws, as shown in [Figure2-17](#) and [Figure2-18](#).
As a best practice, use a torque of 30 kgf-cm (2.94 Nm) to fasten the grounding screws.

Figure2-17 Attaching a grounding cable that has a single-hole grounding lug to the grounding point (S6860-54HF)

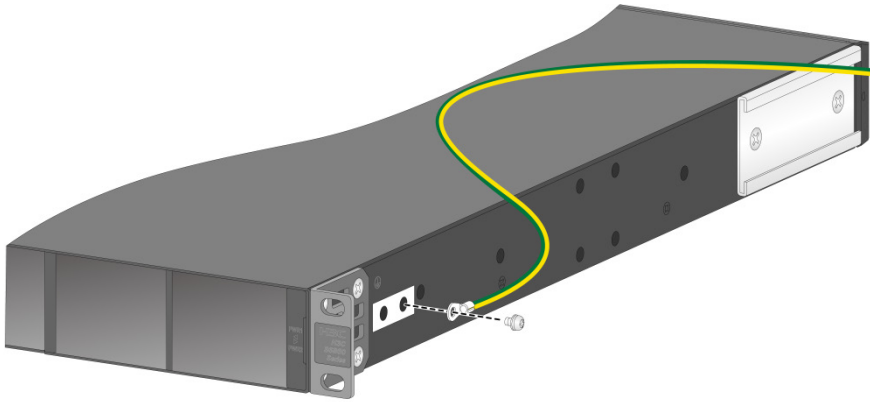
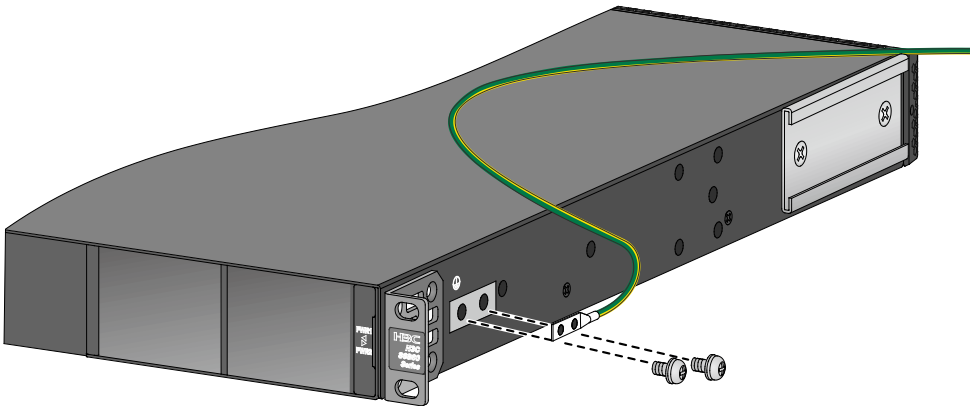


Figure2-18 Attaching a grounding cable that has a two-hole grounding lug to the grounding point (S6860-54HF)



Attaching the slide rails to the rack

△ CAUTION:

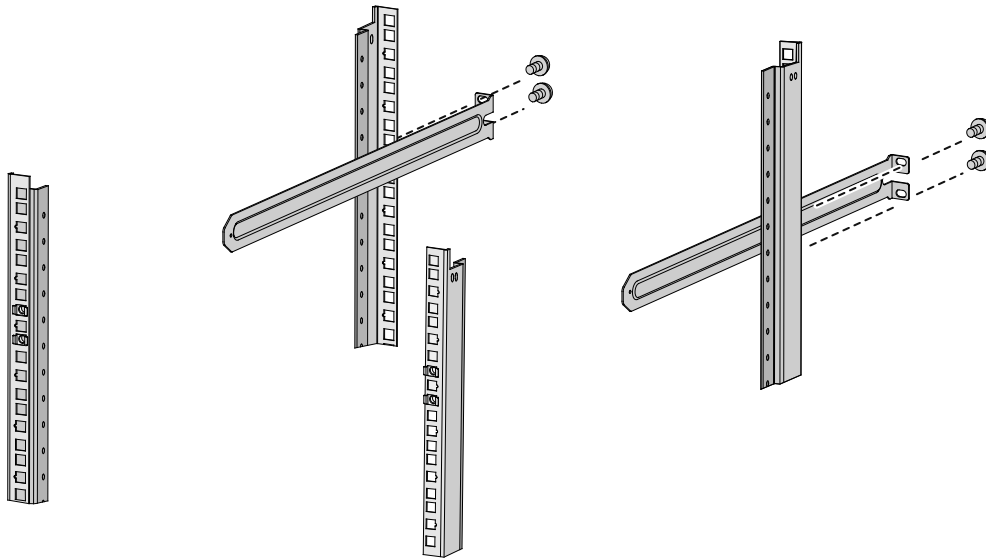
M6 screws and cage nuts are used to attach the slide rails to the rack. Prepare M6 screws and cage nuts yourself. As a best practice, use a torque of 30 kgf-cm (2.94 Nm) to fasten the M6 screws.

The procedures are the same for attaching slide rails to the rack. This section uses the 1U long slide rails as an example.

To attach the slide rails to the rack:

1. Identify the rack attachment position for the slide rails.
2. Install cage nuts (user-supplied) in the mounting holes in the rack posts.
3. Align the screw holes in one slide rail with the cage nuts in the rack post on one side, and use screws matching the cage nuts to attach the slide rail to the rack, as shown in [Figure2-19](#).
4. Repeat the preceding steps to attach the other slide rail to the rack post on the other side.
Keep the two slide rails at the same height so the slide rails can attach into the chassis rails.

Figure2-19 Installing the 1U long slide rails



Mounting the switch in the rack

⚠ IMPORTANT:

M6 screws are used to attach the mounting brackets to the rack. Prepare M6 screws yourself. As a best practice, use a torque of 30 kgf-cm (2.94 Nm) to fasten the M6 screws.

The rack-mounting procedure is similar for the switches. The following procedure mounts an S6860-54HF switch in a rack.

This task requires two people.

To mount the switch in the rack:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Verify that the mounting brackets and chassis rails have been securely attached to the switch chassis.
3. Verify that the slide rails have been correctly attached to the rear rack posts.
4. Install cage nuts (user-supplied) to the front rack posts and make sure they are at the same level as the slide rails.
5. One person performs the following operations:
 - a. Supporting the bottom of the switch, aligns the chassis rails with the slide rails on the rack posts.
 - b. Pushes the switch slowly to slide the chassis rails along the slide rails until the mounting brackets are flush with the rack posts.
6. The other person uses M6 screws to attach the mounting brackets to the rack.

If the slide rails or long slide rails are used, make sure the front ends of the slide rails or long slide rails reach out of the chassis rails. If the super-short slide rails are used, make sure the super-short slide rails slide a minimum length of 90 mm (3.54 in) into the chassis rails.

The rack-mounting procedures are the same for the S6860-54HT and S6860-54HF switches. The following figures use the S6860-54HF switch as an example.

Figure2-20 Mounting an S6860-54HF switch in the rack (mounting brackets installed near the power supply side)

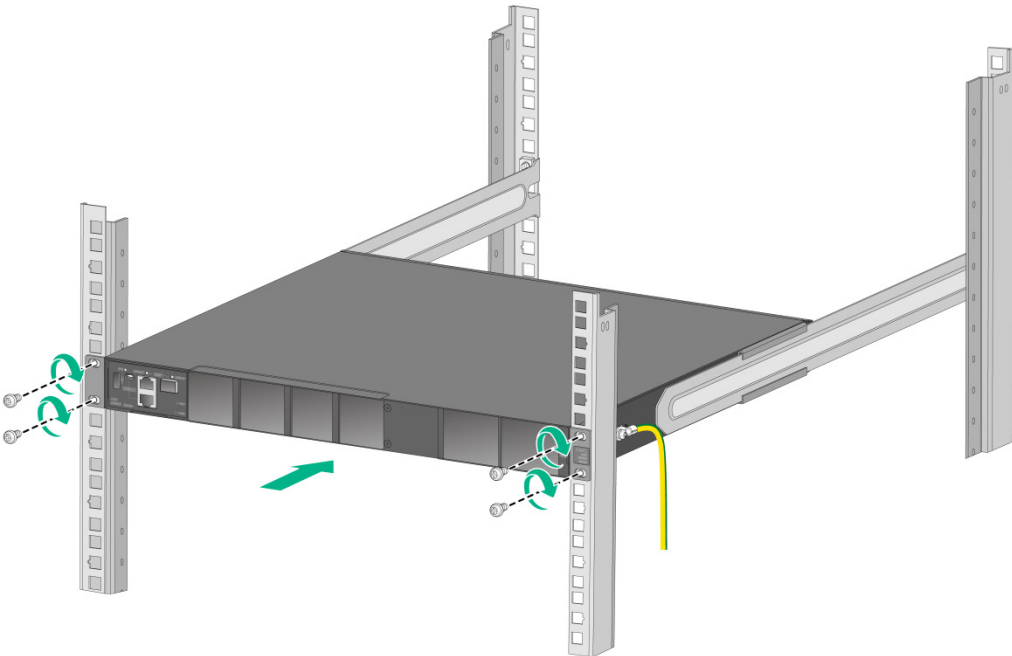
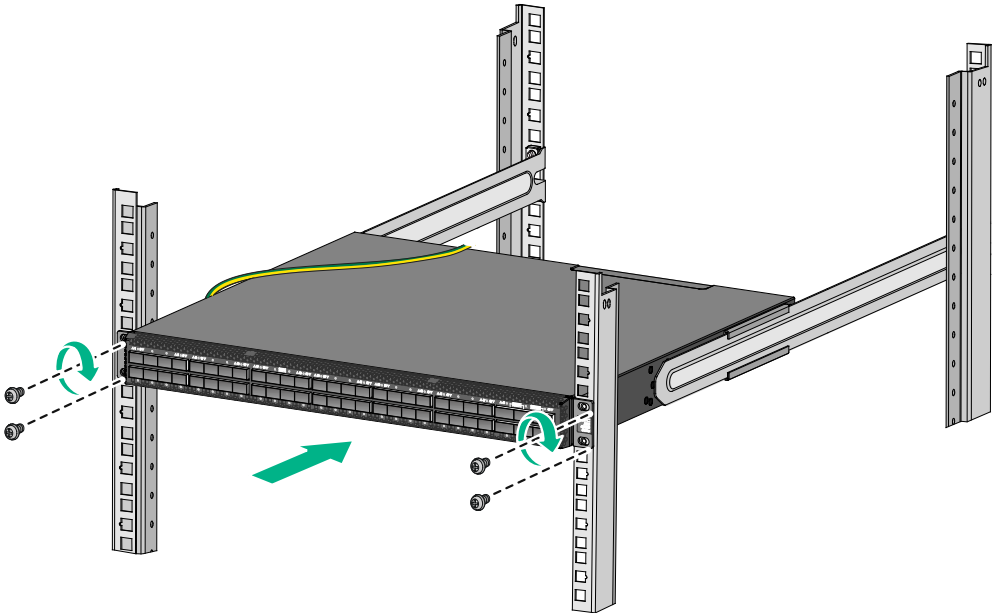


Figure2-21 Mounting an S6860-54HF switch in the rack (mounting brackets installed near the port side)



Grounding the switch by using a grounding strip

△ CAUTION:

- Correctly connecting the grounding cable is crucial to lightning protection and EMI protection.

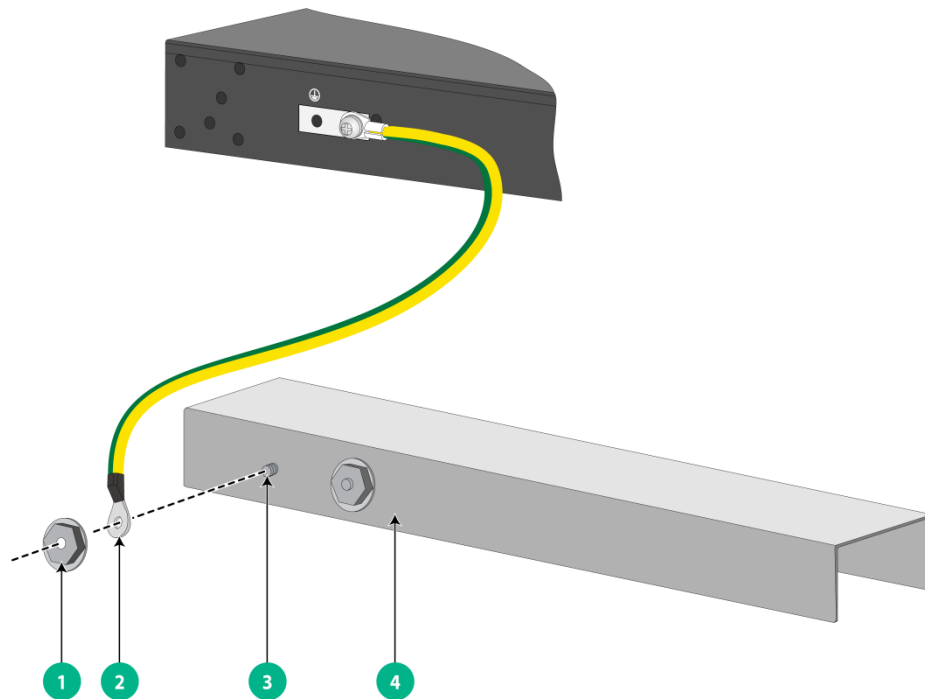
-
- Do not connect the grounding cable to a fire main or lightning rod.
 - To guarantee the grounding effect and avoid switch damage, use the grounding cable provided with the switch to connect the switch to a grounding strip in the equipment room.
-

The power input end of the switch has a noise filter, whose central ground is directly connected to the chassis to form the chassis ground (commonly known as PGND). You must securely connect this chassis ground to the earth so the faradism and leakage electricity can be safely released to the earth to minimize EMI susceptibility of the switch.

To ground the switch by using a grounding strip:

1. Attach the two-hole grounding lug at one end of the grounding cable to a grounding point on the switch chassis. For more information, see "[Connecting the grounding cable to the chassis.](#)"
2. Remove the hex nut of a grounding post on the grounding strip.
3. Attach the ring terminal at the other end of the grounding cable to the grounding post on the grounding strip, and secure the ring terminal to the grounding post with the hex nut.

Figure2-22 Connecting the grounding cable to a grounding strip



(1) Hex nut

(2) Ring terminal

(3) Grounding post

(4) Grounding strip

Installing and removing a fan tray

⚠ CAUTION:

- Do not power on the switch unless all fan tray slots are installed with a fan tray.
- Install fan trays of the same model on the switch.
- Make sure all slots have a module or filler panel installed when the switch is operating.
- If more than one fan tray fail during the switch operation, replace the faulty fan trays one by one

and finish replacing a fan tray within three minutes.

Installing a fan tray

⚠ CAUTION:

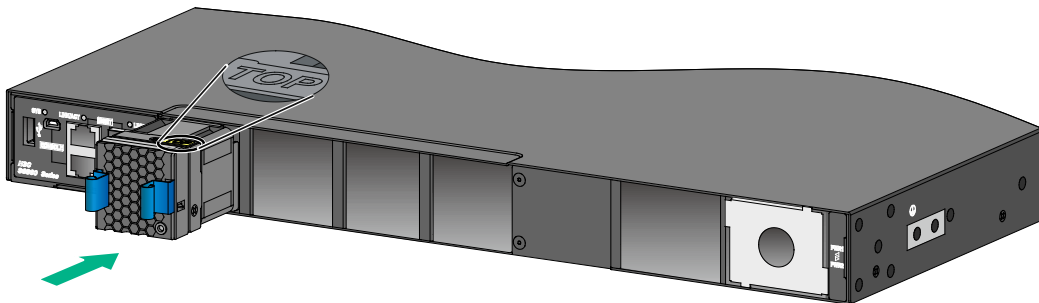
To prevent damage to the fan tray or the connectors on the backplane, insert the fan tray gently. If you encounter a hard resistance while inserting the fan tray, pull out the fan tray and insert it again.

Select appropriate fan trays as needed. For the optional fan trays and their specifications, see *H3C S6860 Switch Series Hardware Information and Specifications*.

To installing an LSPM1FANSA or LSPM1FANSB 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. Orient the fan tray with the "TOP" mark on the top. Grasp the handle of the fan tray with one hand and support the fan tray bottom with the other, and slide the fan tray along the guide rails into the slot until the fan tray is fully seated in the slot and has a firm contact with the backplane.

Figure2-23 Installing an LSPM1FANSA fan tray



Removing a fan tray

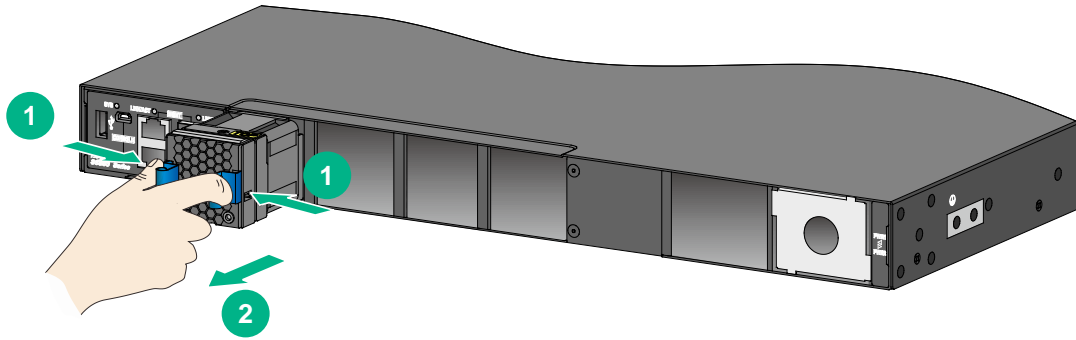
⚠ WARNING!

- Ensure electricity safety and never touch the rotating fans when you hot-swap a fan tray.
 - To prevent an unbalanced fan from causing loud noise, do not touch the fans, even if they are not rotating.
 - Do not touch any bare wires and terminals on a fan tray.
 - Do not place a fan tray in a moist location or let liquid flow into it.
 - Contact H3C Support if the circuits or components on a fan tray are faulty. Do not remove any fan tray components.
-

To remove an LSPM1FANSA or LSPM1FANSB fan tray:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Grasp the fan tray handle and pull out the fan tray slowly along the guide rails.
3. Place the removed fan tray in an antistatic bag.

Figure2-24 Removing an LSPM1FANSA fan tray



Installing and removing a power supply

⚠ WARNING!

- In power redundancy mode, you can replace a power supply without powering off the switch but must strictly follow the installation and procedures in [Figure2-25](#) and [Figure2-26](#) to avoid any bodily injury or damage to the switch.
- Provide a separate circuit breaker for each power supply.

⚠ CAUTION:

Do not install power supplies with different models on the same switch.

The switch comes with power supply slot PWR1 empty and power supply slot PWR2 installed with a filler panel.

For more information about available power supplies and their specifications, see *H3C S6860 Switch Series Hardware Information and Specifications*.

Figure2-25 Installation procedure

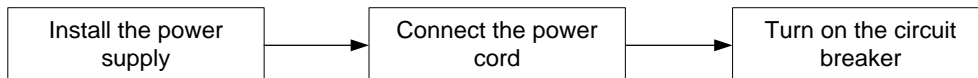
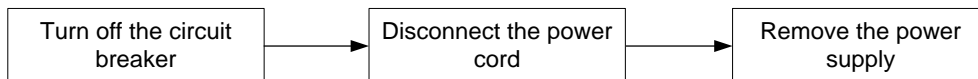


Figure2-26 Removal procedure



Installing a power supply

⚠ CAUTION:

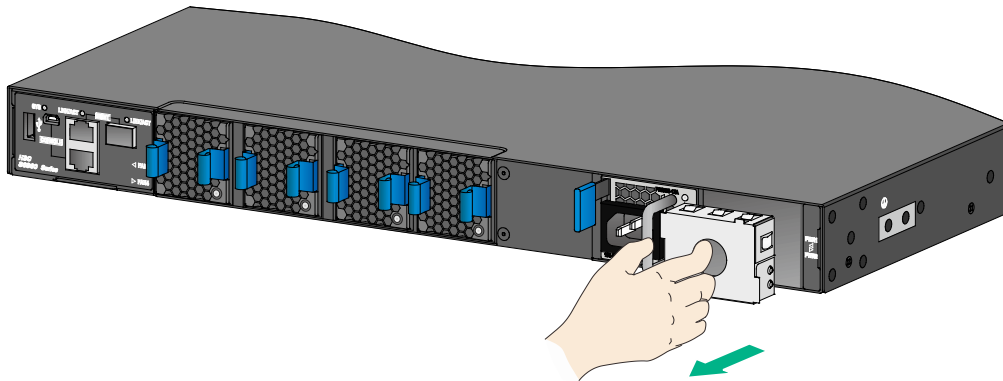
- Follow the forward inertia of the power supply when inserting it into the chassis, and make sure the power supply has firm contact with the connectors on the backplane.
- To prevent damage to the connectors inside the switch chassis, insert the power supply gently. If you encounter a hard resistance while inserting the power supply, pull out the power supply and insert it again.
- As a best practice for heat dissipation, make sure each empty power supply slot is installed with a filler panel.

The installation procedure is the same for power supplies of different models. The following procedure installs a PSR250-12A power supply on an S6860-54HF switch.

To install a power supply:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Remove the filler panel from the target power supply slot, if any, as shown in [Figure2-27](#).

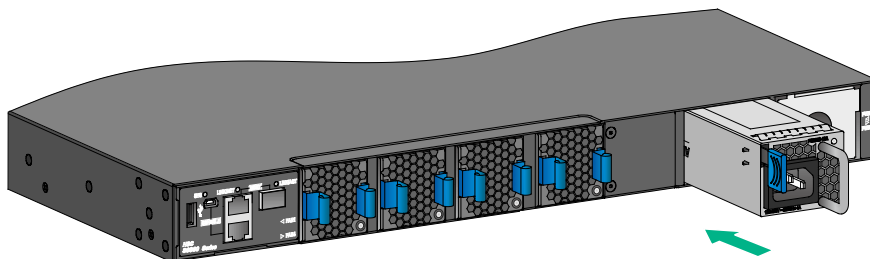
Figure2-27 Removing the filler panel from a power supply slot



3. Unpack the power supply and verify that the power supply model is correct.
4. Correctly orient the power supply with the power supply slot (see [Figure2-28](#)), grasp the handle of the power supply with one hand and support its bottom with the other, and slide the power supply slowly along the guide rails into the slot.

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

Figure2-28 Installing a power supply



Removing a power supply

⚠ CAUTION:

When the switch has two power supplies in 1+1 redundancy mode, removing one power supply does not affect the operation of the switch. When the switch has only one power supply installed, removing the power supply powers off the switch.

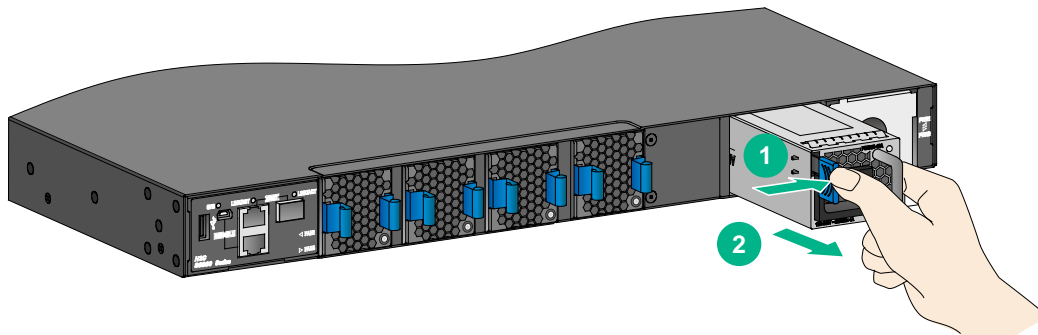
Removing a PSR250-12A/PSR250-12A1 or PSR450-12A/PSR450-12A1 power supply

The removal procedure is the same for the PSR250-12A/PSR250-12A1 and PSR450-12A/PSR450-12A1 power supplies. The following procedure removes a PSR250-12A power supply from an S6860-54HF switch.

To remove a PSR250-12A power supply:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Remove the power cord.
3. Hold the handle on the power supply with one hand, pivot the latch on the power supply to the right with your thumb, and pull the power supply part way out of the slot, as shown in [Figure2-29](#).
4. Supporting the power supply bottom with one hand, slowly pull the power supply out with the other hand.
5. Put away the removed power supply in an antistatic bag for future use.

Figure2-29 Removing a PSR250-12A power supply



(1) Pivot the latch to the right with your thumb

(2) Pull the power supply out

Removing a PSR450-12AHD power supply

The following procedure removes a PSR450-12AHD power supply from an S6860-54HT switch.

To remove a PSR450-12AHD power supply:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Open the cable clamp (see [Figure2-30](#)), and then remove the power cord connector from the power supply (see [Figure2-31](#)).

Figure2-30 Opening the cable clamp

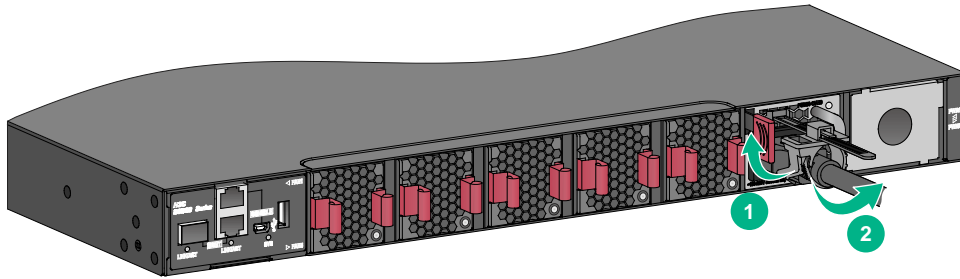
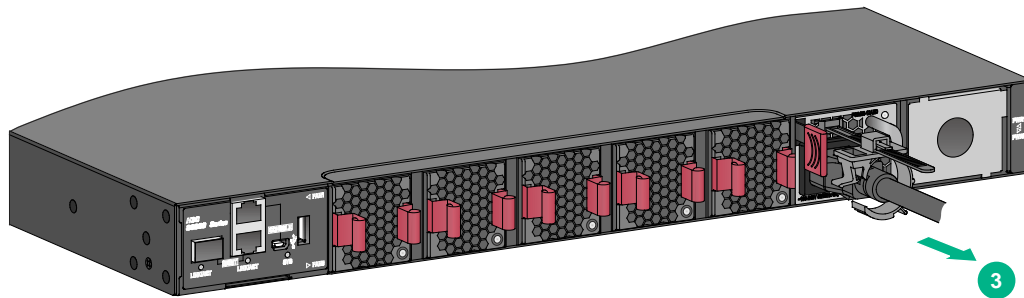


Figure2-31 Removing the power cord from the power supply



3. Hold the handle of the power supply with one hand, press the latch on the power supply to the right with your thumb, and pull the power supply part way out of the slot. Supporting the power supply bottom with one hand, slowly pull the power supply out of the slot along the guide rails with the other.

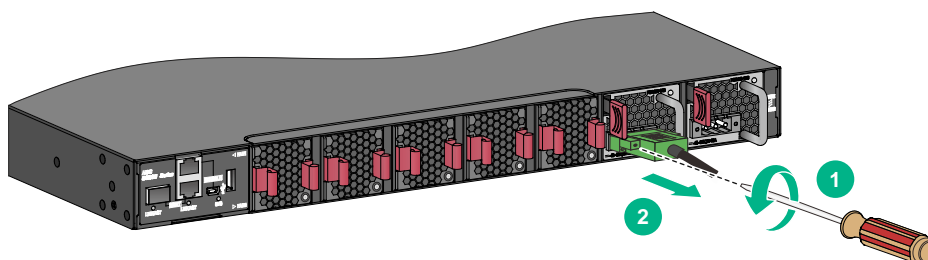
Removing a PSR450-12D DC power supply

The following procedure removes a PSR450-12D power supply from an S6860-54HT switch.

To remove a PSR450-12D power supply:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Use a flat-head screwdriver to loosen the screws on the power cord connector, and then pull the connector out to remove the power cord. See [Figure2-32](#).
3. Hold the handle on the power supply with one hand, pivot the latch on the power supply to the right with your thumb, and pull the power supply part way out of the slot, as shown in [Figure2-29](#).
4. Supporting the power supply bottom with one hand, slowly pull the power supply out with the other hand.
5. Put the removed power supply in an antistatic bag for future use.

Figure2-32 Removing a PSR450-12D power supply



-
- (1) Use a flat-head screwdriver to loosen the screws on the power cord connector
 - (2) Pull the power cord out
-

Connecting the power cord

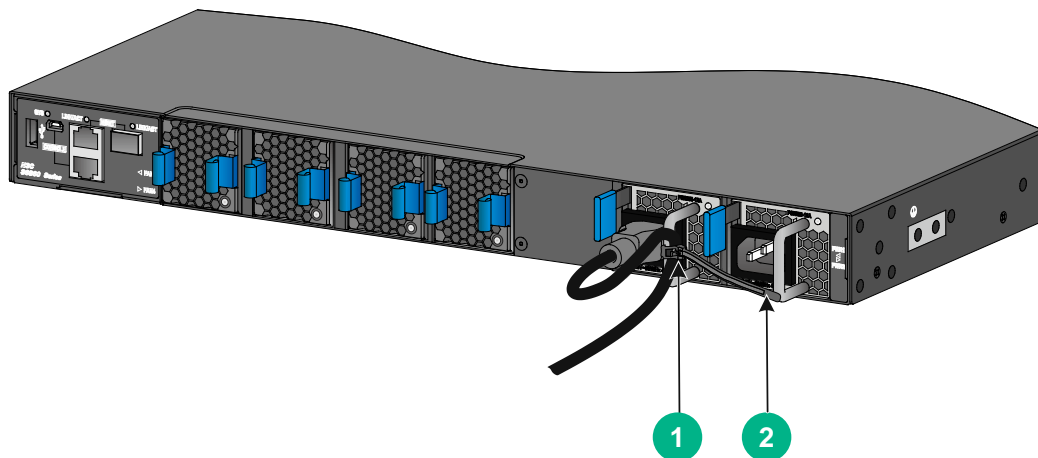
⚠ WARNING!

Provide a circuit breaker for each power input. When you connect a power cord, make sure the circuit breaker is switched off.

Connecting the power cord for a PSR250-12A/PSR250-12A1/PSR450-12A/PSR450-12A1 power supply

1. Insert the female connector of the power cord supplied with the power supply into the power receptacle on the power supply.
2. Use a cable tie to secure the power cord to the handle of the power supply, as shown in [Figure2-33](#).
3. Connect the other end of the power cord to an AC or DC power source.

Figure2-33 Connecting the power cord (PSR250-12A power supply)



(1) Cable tie

(2) Tighten the cable tie to secure the power cord to the handle of the power supply

Connecting the power cord for a PSR450-12AHD power supply

1. Slide the cable clamp onto the tie mount on the power supply, as shown in [Figure2-34](#).
2. Connect the female connector of the power cord to the power receptacle on the power supply, as shown in [Figure2-35](#)
3. Close the cable clamp and slide it forward until it is flush against the edge of the female connector, as shown in [Figure2-36](#).
4. Connect the other end of the power cord to an AC or DC power source.

Figure2-34 Connecting the power cord for a PSR450-12AHD power supply (1)

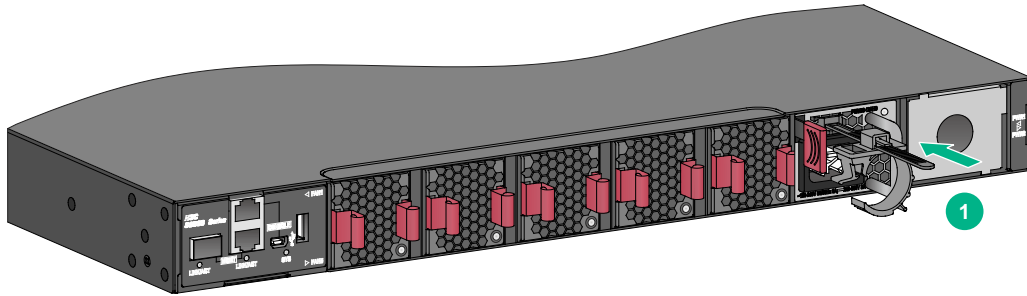


Figure2-35 Connecting the power cord for a PSR450-12AHD power supply (2)

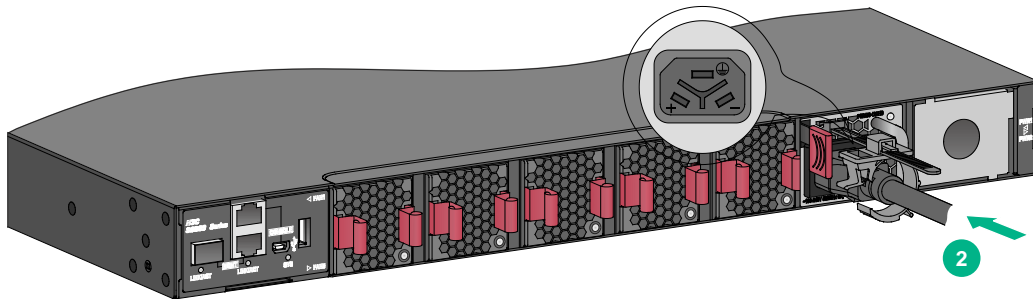
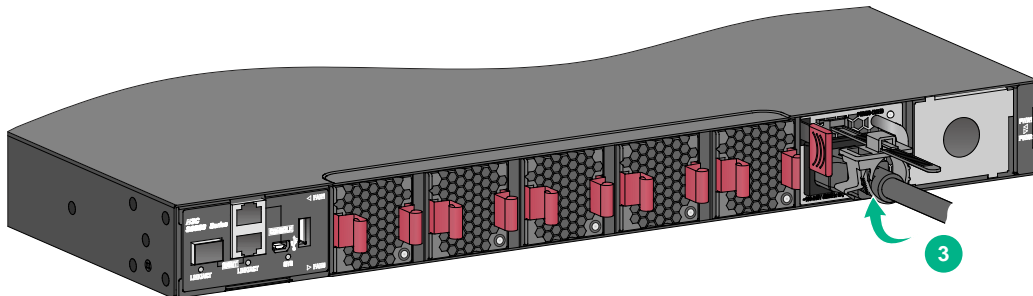


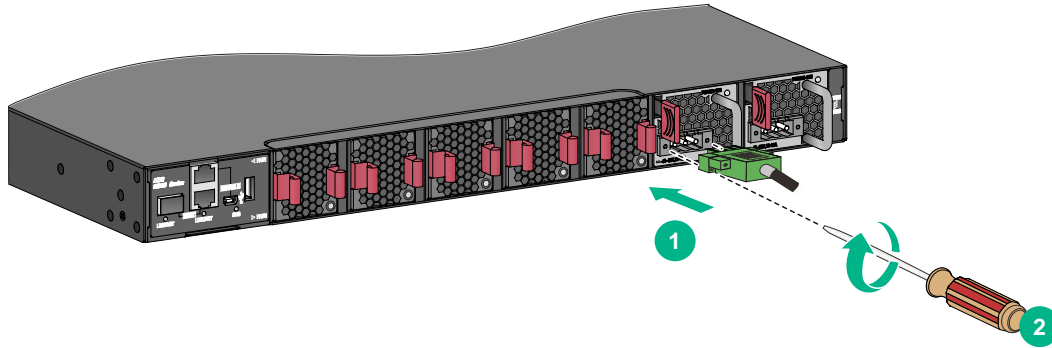
Figure2-36 Connecting the power cord for a PSR450-12AHD power supply (3)



Connecting the DC power cord for a PSR450-12D power supply

1. Correctly orient the DC power cord plug and insert the plug into the power receptacle on the power supply.
If you orient the DC power cord plug upside down, you cannot insert the plug into the power receptacle.
2. Use a flat-head screwdriver to fasten the screws on the power cord connector, as shown in [Figure2-37](#).
3. Connect the other end of the power cord to the DC power source.

Figure2-37 Connecting the DC power cord for a PSR450-12D power supply



If the provided DC power cord cannot meet your connection requirements, use the following table to prepare a suitable copper cable as the DC power cord.

Table2-4 Requirements for a suitable DC power cord

Power supply model	Power cord connector	Minimum cross sectional area of the conductor	Cross sectional area of the provided power cord	Maximum cross sectional area of the conductor
PSR450-12D	Use the connector of the provided power cord	2.1 mm ² or 14 AWG	3.3 mm ² or 12 AWG	3.3 mm ² or 12 AWG

Verifying the installation

After you complete the installation, verify the following items:

- There is enough space for heat dissipation around the switch, and the rack 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 routed indoors. The switch does not support outdoor cable routing.

3 Accessing the switch for the first time

Setting up the configuration environment

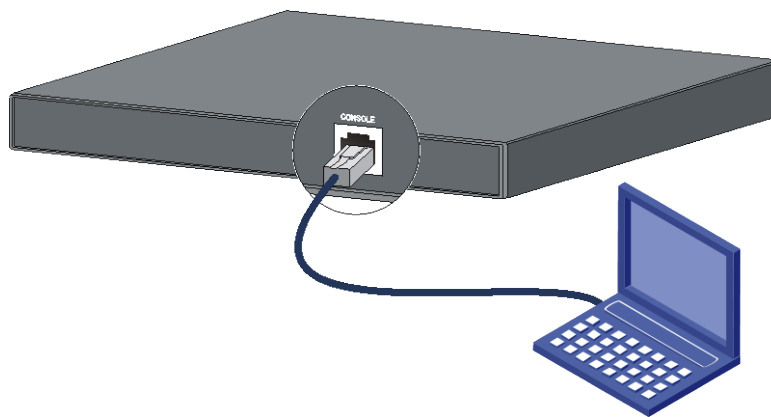
An S6860 switch supports the following ways to connect the configuration terminal:

- Through the console port by using the serial console cable
The switch comes with the serial console cable. This way is preferred.
- Through the Mini USB console port by using the user-supplied USB mini console cable

Do not use the two ways together on the same S6860 switch.

The example uses a console cable to connect a console terminal (PC) to the serial console port on the switch.

Figure3-1 Connecting the serial console port to a terminal



Connecting the console cable

Serial console cable

A serial console cable is an 8-core 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 Serial console cable

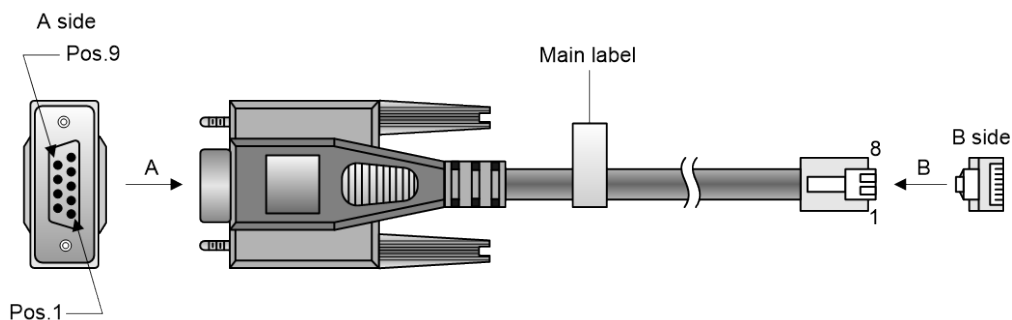


Table3-1 Serial console cable pinout

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

USB mini console cable

A USB mini console cable has a USB mini-Type B connector at one end to connect to the Mini 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.

Connection procedure

To connect a terminal (for example, a PC) to the switch by using the serial console cable:

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

NOTE:

- Identify the mark on the console port and make sure you are connecting to the correct port.
 - The serial ports on PCs do not support hot swapping. If the switch has been powered on, connect the serial console cable to the PC before connecting to the switch, and when you disconnect the cable, first disconnect from the switch.
-

To connect to the configuration terminal through the USB mini console cable:

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

The following are the required terminal settings:

- **Bits per second**—9600.
- **Data bits**—8.
- **Stop bits**—1.
- **Parity**—None.
- **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 configuration terminal (a PC, for example) 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 S6860 Switch Series Configuration Guides* and *H3C S6860 Switch Series Command References*.

4 Setting up an IRF fabric

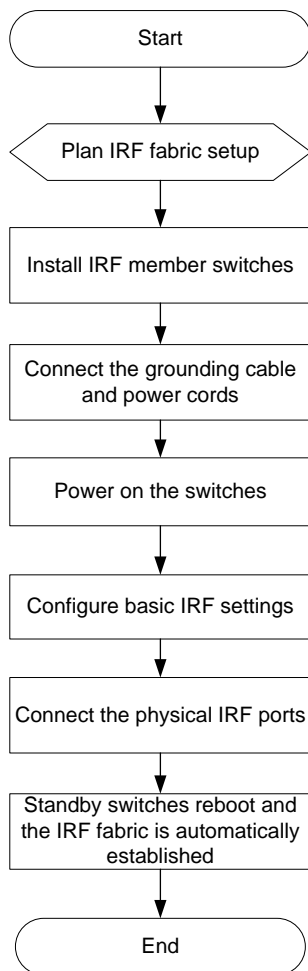
You can use H3C IRF technology to connect and virtualize S6860 switches into a large virtual switch called an "IRF fabric" for flattened network topology, and high availability, scalability, and manageability.

The switch can set up an IRF fabric only with switches from the same switch series.

To set up IRF links between two switches, use the 10-GE, 40-GE, or 100-GE ports.

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: <ul style="list-style-type: none"> • 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
2. Install IRF member switches.	See " Installing the switch in a 19-inch rack. "
3. Connect ground wires and power cords.	See " Grounding the switch by using a grounding strip " and " Connecting the power cord. "
4. Power on the switches.	N/A
5. Configure basic IRF settings.	See <i>H3C S6860 Switch Series IRF Configuration Guide</i> or <i>H3C S6860 Switch Series Virtual Technologies Configuration Guide</i> , depending on the software version.
6. Connect the physical IRF ports.	Connect the physical IRF ports on switches. Use SFP+, QSFP+, or QSFP28 transceiver modules and fibers for long-distance connection. Use twisted pair cables or SFP+, QSFP+, or QSFP28 cables for short-distance connection. 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 top-of-rack (ToR) access solution for a data center.

As your business grows, you can plug H3C S6860 switches into the IRF fabric to increase the switching capacity without any topology change or replacement.

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 command line interface of the master switch.

NOTE:

IRF member switches will 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 S6860 Switch Series IRF Configuration Guide* or *H3C S6860 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 reliably, ring topology. In ring topology, the failure of one IRF link does not cause the IRF fabric to split as in daisy chain topology. Rather, 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 at least 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 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

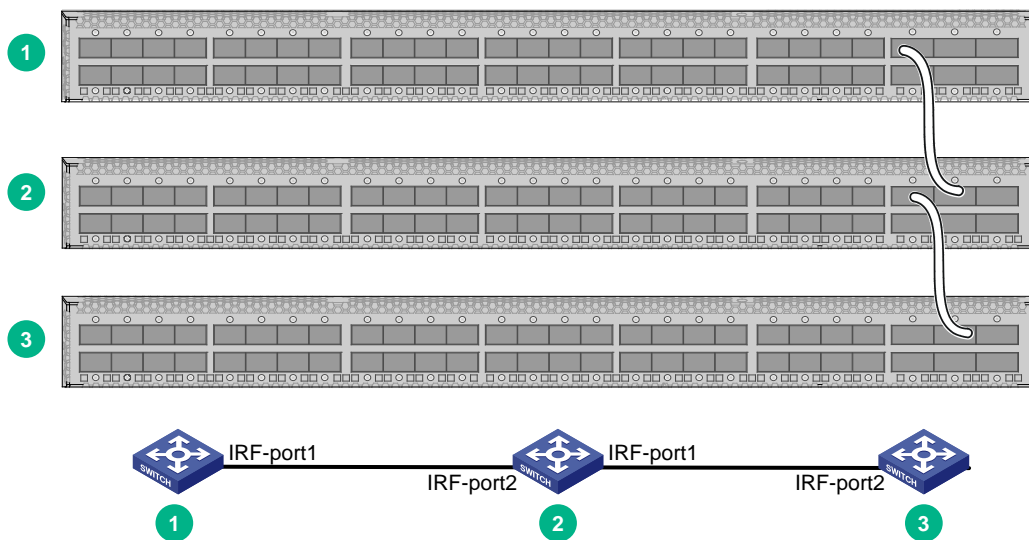
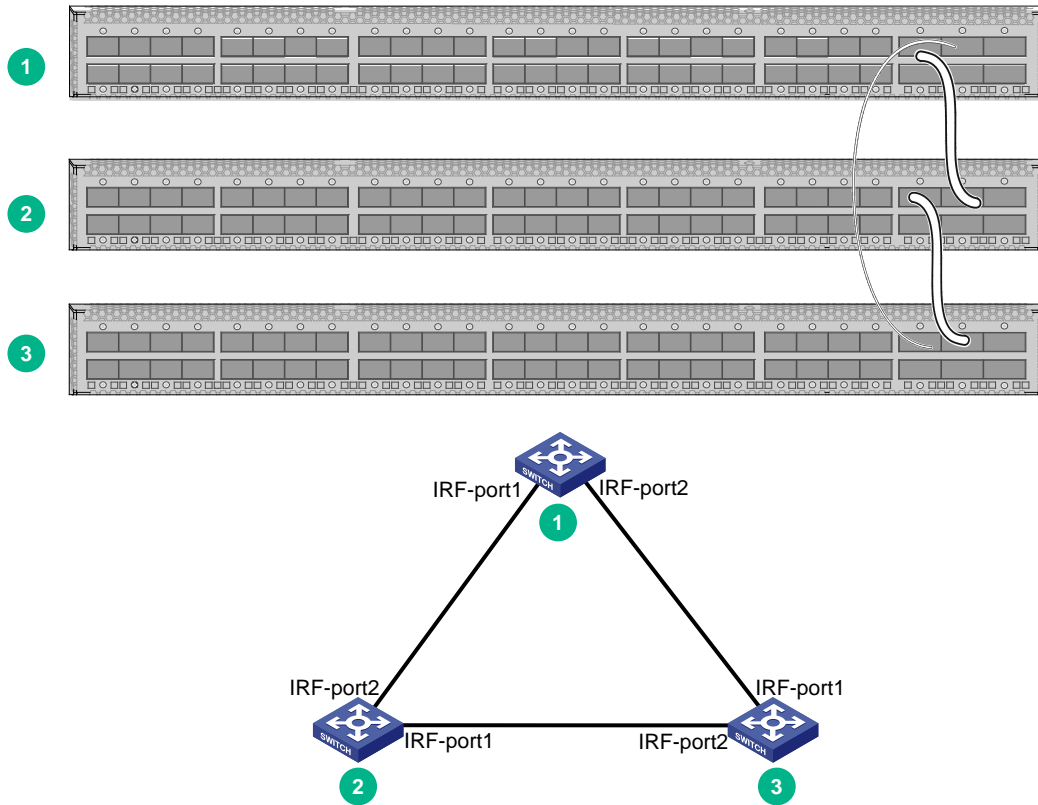


Figure4-3 IRF fabric in ring topology



You can provide the following IRF physical connections between S6860 switches:

- 10-GE IRF physical connection by connecting 10GBASE-T Ethernet ports or SFP+ ports.
- 40-GE IRF physical connection by connecting QSFP+ ports.
- 100-GE IRF physical connection by connecting QSFP28 ports.
- IRF physical connection by using a 40G QSFP+ to 4 x 10G SFP+ cable to connect a QSFP+ port and four SFP+ ports.

You can bind several ports to an IRF port for increased bandwidth and availability.

Identifying physical IRF ports on the member switches

Identify the 10GBASE-T Ethernet ports, SFP+ ports, QSFP+, and QSFP28 ports to be used for IRF connections on the member switches according to your topology and connection scheme.

All the 10GBASE-T Ethernet ports, SFP+ ports, QSFP+ ports, and QSFP28 ports on the S6860 switch can be used for IRF connections.

Planning the cabling scheme

You can use twisted pair cables, SFP+/QSFP+/QSFP28 cables, or SFP+/QSFP+/QSFP28 transceiver modules and optical fibers to connect the switches for IRF connections. If the IRF member switches are far away from one another, choose the SFP+/QSFP+/QSFP28 transceiver modules and optical fibers. If the IRF member switches are all in one equipment room, choose twisted pair cables or SFP+/QSFP+/QSFP28 cables. For more information about available transceiver modules and cables, see *H3C S6860 Switch Series Hardware Information and Specifications*.

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

Connecting the IRF member switches in one rack

Figure4-4 shows an example for connecting four IRF member switches in a rack by using QSFP+ cables and QSFP+ transceiver modules and optical fibers. 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

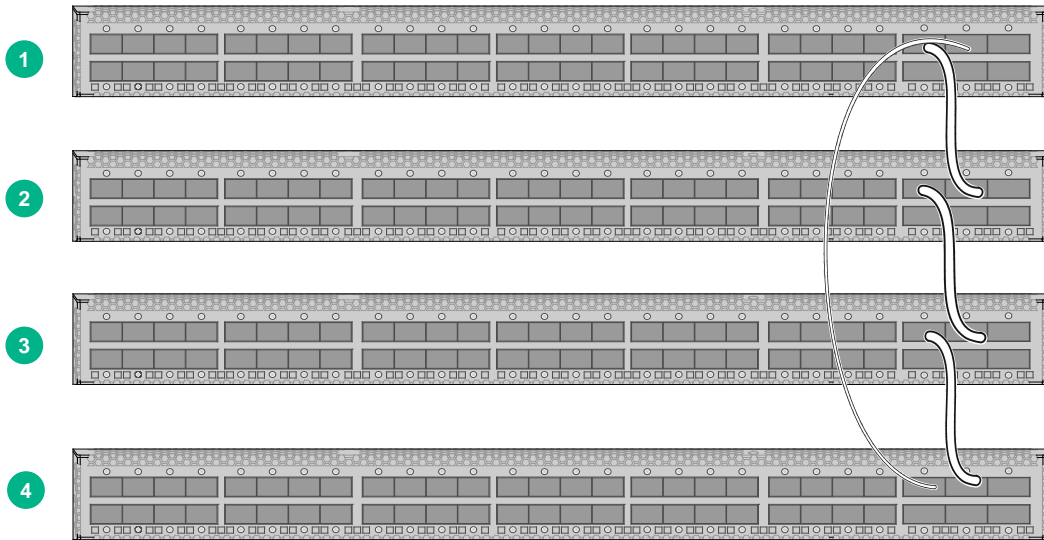
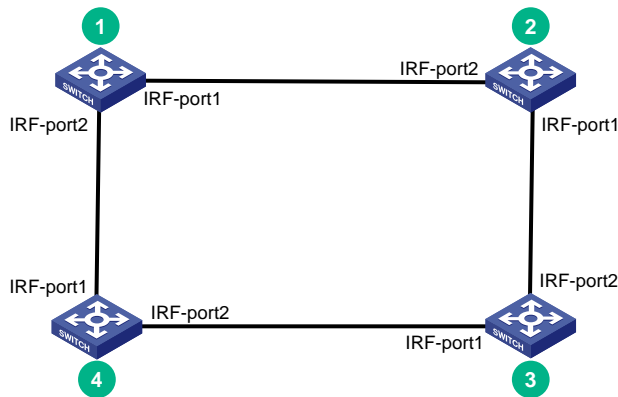


Figure4-5 IRF fabric topology

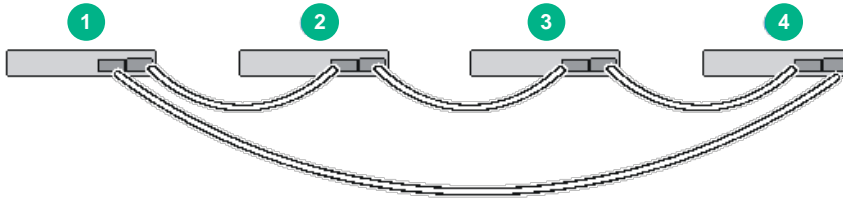


Connecting the IRF member switches in a ToR solution

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 four top of rack IRF member switches by using QSFP+ cables and QSFP+ 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 S6860 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.
- Execute the **display irf configuration** command to verify the basic IRF settings.

For more information about configuring basic IRF settings, see *H3C S6860 Switch Series IRF Configuration Guide* or *H3C S6860 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 cables or transceiver modules and optical fibers. For more information, see the installation guide for the transceiver modules.

Use cables or transceiver modules and optical fibers to connect the IRF member switches as planned.

Accessing the IRF fabric to verify the configuration

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 or SNMP to access the IRF fabric from the network management station. (See *H3C S6860 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 [Table4-1](#).

Table4-1 Displaying and maintaining IRF configuration and running status

Task	Command
Display information about the IRF fabric.	display irf
Display all members' IRF configurations.	display irf configuration
Display IRF fabric topology information.	display irf topology

NOTE:

To avoid IP address collision and network problems, configure at least 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 S6860 Switch Series IRF Configuration Guide* or *H3C S6860 Switch Series Virtual Technologies Configuration Guide*, depending on the software version.

5 Maintenance and troubleshooting

Power supply failure

Symptom

The status LED on a power supply is not steady green (active state) or flashing green (standby state).

You can use the status LED on a power supply to identify a power supply failure. For more information about the status LED on a power supply, see *H3C PSR250-12A & PSR250-12A1 Power Modules User Manual* or *H3C PSR450 Power Module Series User Manual*.

Solution

To resolve the issue:

1. Verify that the power cord is correctly connected.
2. Verify that the power source is as required by the power supply.
3. Verify that the operating temperature of the switch is in an acceptable range and good ventilation is provided for the power supply.
4. If the issue persists, contact the H3C Support

To replace a power supply, see "[Installing and removing a power supply](#)."

Fan tray failure

△ CAUTION:

If more than one fan tray fails during the switch operation, do not remove the failed fan trays simultaneously. Replace the fan trays one by one and finish replacing each fan tray within 3 minutes.

Symptom

The status LED on a fan tray is steady on and the system outputs fan tray alarm messages.

Solution

See "[Installing and removing a fan tray](#)" to replace the failed fan tray.

Configuration terminal issues

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 on the configuration terminal

Symptom

The configuration terminal has no display when the switch is powered on.

Solution

To resolve the issue:

1. Verify that the power system is operating correctly.
2. Verify that the console cable has been connected correctly and no fault occurs on the console cable.
3. Verify that the following settings are configured for the terminal:
 - **Baud rate**—9600.
 - **Data bits**—8.
 - **Stop bits**—1.
 - **Parity**—None.
 - **Flow control**—None.
4. If the issue persists, contact H3C Support.

Garbled display on the configuration terminal

Symptom

The configuration terminal displays garbled text.

Solution

To resolve the issue:

1. Verify that the following settings are configured for the terminal:
 - **Baud rate**—9600.
 - **Data bits**—8.
 - **Stop bits**—1.
 - **Parity**—None.
 - **Flow control**—None.
2. If the issue persists, contact H3C Support.