Hewlett Packard Enterprise

HPE FlexNetwork MSR954 Routers

Installation Guide

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Preparing for installation

The HPE MSR954 Router Series includes the models in Table 1.

Table 1 HPE MSR954 Router Series models

Product code	HPE description	RMN
JH296A	HPE MSR95X 1GbE+SFP Router	BJNGA-BB0036
JH297A	HPE MSR95X-W 1GbE+SFP (WW) Router	BJNGA-BB0037
JH298A	HPE MSR95X-W 1GbE+SFP LTE (AM) Router	BJNGA-BB0038
JH299A	HPE MSR95X-W 1GbE+SFP LTE (WW) Router	BJNGA-BB0039
JH373A	HPE MSR954 1GbE Dual 4G (WW) Router	BJNGA-BB0042
S0W31A	HPE MSR954-V2 1GbE SFP Router	BJNGA-BB0054

IMPORTANT:

For regulatory identification purposes, every MSR954 router is assigned a regulatory model number (RMN). These regulatory model numbers should not be confused with the marketing name HPE MSR954 or the product codes.

Safety recommendations

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

Safety symbols

When reading this document, note the following symbols:

⚠ **WARNING** means an alert that calls attention to important information that if not understood or followed can result in personal injury.

△ **CAUTION** means 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.

General safety recommendations

- Keep the router and installation tools away from walk areas.
- Place the router in a dry and flat location and make sure anti-slip measures are in place.
- Remove all external interface cables and power cords before moving the router.

Electricity safety

- Locate the external power switch in the room before installation. Shut off the power immediately if an accident occurs.
- Make sure the router is reliably grounded.
- Do not remove and install the chassis cover when the router is operating.

- Connect the interface cables correctly.
- Use an uninterrupted power supply (UPS).
- Do not work alone when the router has power
- Always make sure the power has been disconnected during installation or replacement.

ESD prevention

WARNING!

Check the resistance of the ESD wrist strap for safety. The resistance reading should be in the range of 1 to 10 megohm (Mohm) between a human body and the ground.

To prevent electrostatic discharge (ESD), follow these guidelines:

- Make sure the router and the floor are reliably grounded.
- Keep the equipment room clean to reduce the negative effects of dusts and particles.
- Maintain the humidity and temperature levels in the acceptable range.
- Always wear an ESD wrist strap. Make sure the wrist strap makes good skin contact and is reliably grounded.

  No ESD wrist strap is provided with the router. Prepare it yourself.

To attach an ESD wrist strap:

1. Wear the wrist strap on your wrist.
2. Lock the wrist strap tight around your wrist to maintain good contact with the skin.
3. Secure the wrist strap lock and the alligator clip lock together.
4. Attach the alligator clip to the grounding screw on the router.

Examining the installation site

The router can only be used indoors. To ensure correct operation and a long lifespan for your router, the installation site must meet the requirements in this section.

Temperature and humidity

Maintain the temperature and humidity in the equipment room as described in Table 2.

- Lasting high relative humidity can cause poor insulation, electricity creepage, mechanical property change of materials, and metal corrosion.
- Lasting low relative humidity can cause washer contraction and ESD and bring problems including loose captive screws and circuit failure.
- High temperature can accelerate the aging of insulation materials and significantly lower the reliability and lifespan of the router.

Table 2 Temperature/humidity requirements in the equipment room

Product code	Temperature	Relative humidity
JH296A JH297A JH298A JH299A JH373A	0°C to 45°C (32°F to 113°F)	5% to 90%, noncondensing

S0W31A	0°C to 40°C (32°F to 104°F)	5% to 90%, noncondensing

Cleanliness

Dust buildup on the chassis might result in electrostatic adsorption, which causes poor contact of metal components and contact points, especially when indoor relative humidity is low. In the worst case, electrostatic adsorption can cause communication failure.

Table 3 Dust concentration limit in the equipment room

Substance	Concentration limit (particles/m^3)
Dust particles	≤ 3×10^4 (No visible dust on the tabletop in three days)
NOTE: Dust diameter ≥ 5 μm	

The equipment room must also meet strict limits on salts, acids, and sulfides to eliminate corrosion and premature aging of components, as shown in Table 4.

Table 4 Harmful gas limits in an equipment room

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

Cooling

- Maintain a minimum clearance of 10 cm (3.94 in) around the air vents.
- Make sure the installation site has a good ventilation system.

EMI

All electromagnetic interference (EMI) sources, from outside or inside of the router and application system, adversely affect the router 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, perform the following tasks:

- 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 router far away from radio transmitting stations, radar stations, and high-frequency devices.
- Use electromagnetic shielding, for example, shielded interface cables, when necessary.

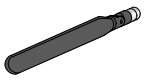
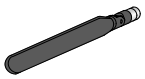
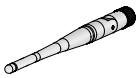
Lightning protection

To protect the router from lightning, follow these guidelines:

- Make sure the router is reliably grounded by using a grounding cable.
- Make sure the AC power receptacle is reliably grounded.
- Install a lightning protector at each power input end.

Installation accessories and tools

Table 5 Installation accessories

Product code	Description	Quantity	Applicable models
JG669A	4G antenna 	2	• JH298A • JH299A
JG669A	4G antenna 	4	• JH373A
5189-9346	WLAN antenna 	2	• JH297A • JH298A • JH299A
5188-9371	Grounding cable 	1	• JH296A • JH297A • JH298A • JH299A • JH373A • S0W31A
N/A	Floating nut 	User supplied	• JH296A • JH297A • JH298A • JH299A • JH373A • S0W31A
N/A	M6 screw 	User supplied	• JH296A • JH297A • JH298A • JH299A • JH373A • S0W31A
N/A	M4 screw 	User supplied	• JH296A • JH297A • JH298A • JH299A • JH373A • S0W31A

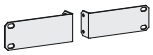
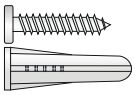
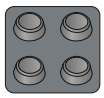
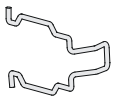
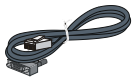
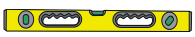
Product code	Description	Quantity	Applicable models
JH316A	Mounting brackets 	User supplied	• JH296A • JH297A • JH298A • JH299A • S0W31A
N/A	Wall anchor and screw 	User supplied	• JH296A • JH297A • JH298A • JH299A • S0W31A
5184-7298	Rubber feet 	1 kit	• JH296A • JH297A • JH298A • JH299A • JH373A • S0W31A
5190-1728	Bail latch 	1 kit	• JH296A • JH297A • JH298A • JH299A
5190-1727	Console cable 	1 kit	• JH296A • JH297A • JH298A • JH299A • JH373A • S0W31A

Figure 1 User-supplied tools and equipment


Ruler


Wire-stripping pliers


Rubber hammer


ESD wrist strap


Flathead screwdriver


Diagonal pliers


Drill


Marker


Phillips screwdriver

Pre-installation checklist

Item		Requirements
Installation site	Ventilation	• There is a minimum clearance of 10 cm (3.9 in) around the air inlet and outlet vents. • An adequate ventilation system is available at the installation site.
	Temperature	• S0W31A: 0°C to 40°C (32°F to 104°F) • JH296A, JH297A, JH298A, JH299A, JH373A: 0°C to 45°C (32°F

Item		Requirements
		to 113°F)
	Relative humidity	5% to 90% (noncondensing)
	Cleanness	Dust concentration ≤ 3×10^4 particles/m^3 (no visible dust on the tabletop over three days)
	ESD prevention	• The router and floor are reliably grounded. • The equipment room is dust-controlled. • Humidity and temperature are maintained at acceptable levels. • An ESD wrist strap is available.
	EMI prevention	• A single-phase three-wire power receptacle with protection earth (PE) is available for filtering interference from the power grid. • The router is far away from radio transmitting stations, radar stations, and high-frequency devices. • Electromagnetic shielding, for example, shielded interface cables, is used as required.
	Lightning protection	• The router is reliably grounded. • The AC power receptacle is reliably grounded. • (Optional.) Port lightning protectors are available. A signal lightning arrester is required at the input end of an external signal cable. • (Optional.) Power lightning protectors are available.
	Electricity safety	• A UPS is available. • The external power switch is located so to shut off the power immediately when an accident occurs.
	Workbench	• The workbench is stable. • The workbench is reliably grounded.
Safety precautions	• The router is far away from any sources of heat or moisture. • The emergency power switch in the equipment room is identified and accessible.	
Tools	• Installation accessories supplied with the router are ready. • User-supplied tools are ready.	
Reference	• Documents shipped with the router are available. • Online documents are available.	

Installing the router

WARNING!

To avoid injury, do not touch bare wires, terminals, or parts with high-voltage hazard signs.

IMPORTANT:

- The barcode on the router chassis contains product information that must be provided to local sales agent when you return a faulty router for repair.
- Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact Hewlett Packard Enterprise for permission. Otherwise, Hewlett Packard Enterprise shall not be liable for any consequence.

Installation prerequisites

- You have read "Preparing for installation" carefully.
- All requirements in "Preparing for installation" are met.

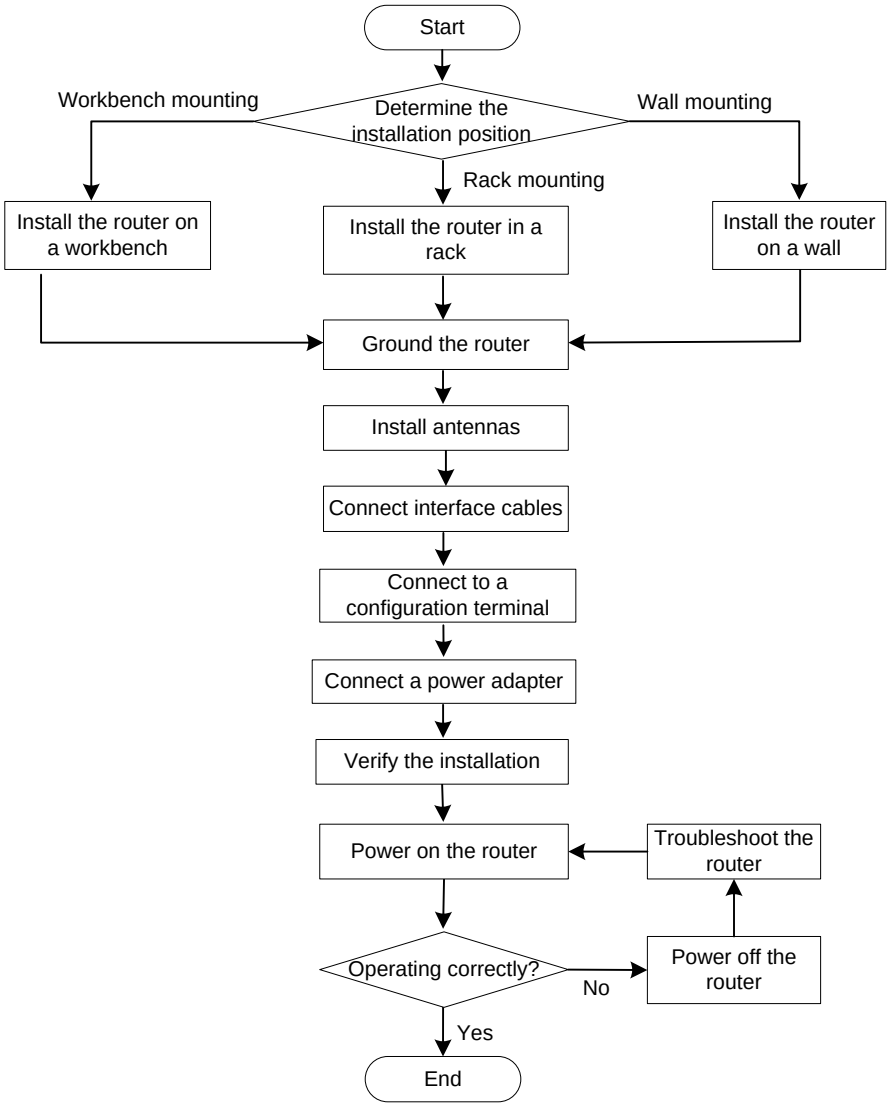
Installation flowchart

The following installation options are available for the router:

- Workbench mounting.
- Wall mounting.
- Rack mounting.

Determine the installation method according to the installation environment. Follow the installation flowchart shown in Figure 2 to install the router.

Figure 2 Installation flowchart



Installing the router

Mounting the router on a workbench

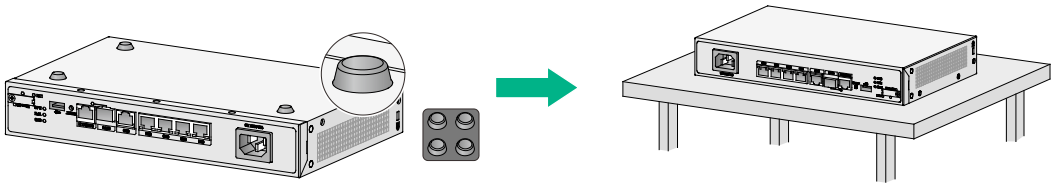
IMPORTANT:

- Make sure the workbench is clean, stable, and reliably grounded.
- Maintain a minimum clearance of 10 cm (3.9 in) around the router for heat dissipation.
- Do not place heavy objects on the router.

To mount the router on a workbench:

1. Place the router upside down on the workbench and attach the rubber feet to the four round holes in the chassis bottom.
2. Place the router with the upside up on the workbench.

Figure 3 Mounting the router on a workbench



Mounting the router on a wall

1. Mark two screw hole locations on the wall. The spacing between the two holes varies by router model as described in Table 6.

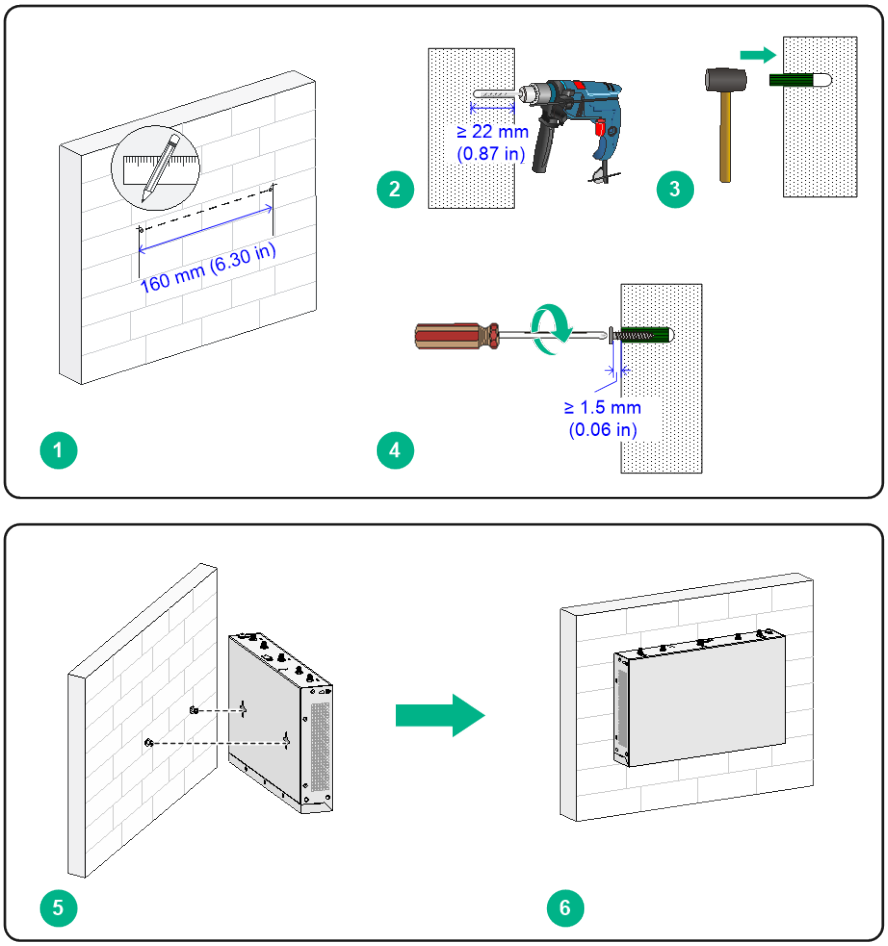
   Table 6 Wall mounting hole spacing

Spacing	Device models
240 mm (9.45 in)	JH373A
160 mm (6.30 in)	JH296A, JH297A, JH298A, JH299A
152 mm (5.98 in)	S0W31A

2. Drill holes with a minimum depth of 22 mm (0.87 in) in the marked locations.
3. Use a hammer to tap an anchor into each hole until the anchor end is flush with the wall.
4. Drive a screw into each anchor and make sure the screw protrudes a minimum of 1.5 mm (0.06 in) from the wall.
5. Hang the router on the screws.

   Position the router with the network interfaces facing downwards and the sides with ventilation openings perpendicular to the ground, as shown in Figure 4.

Figure 4 Wall-mounting the router (JH298A)



Installing the router in a rack

CAUTION:

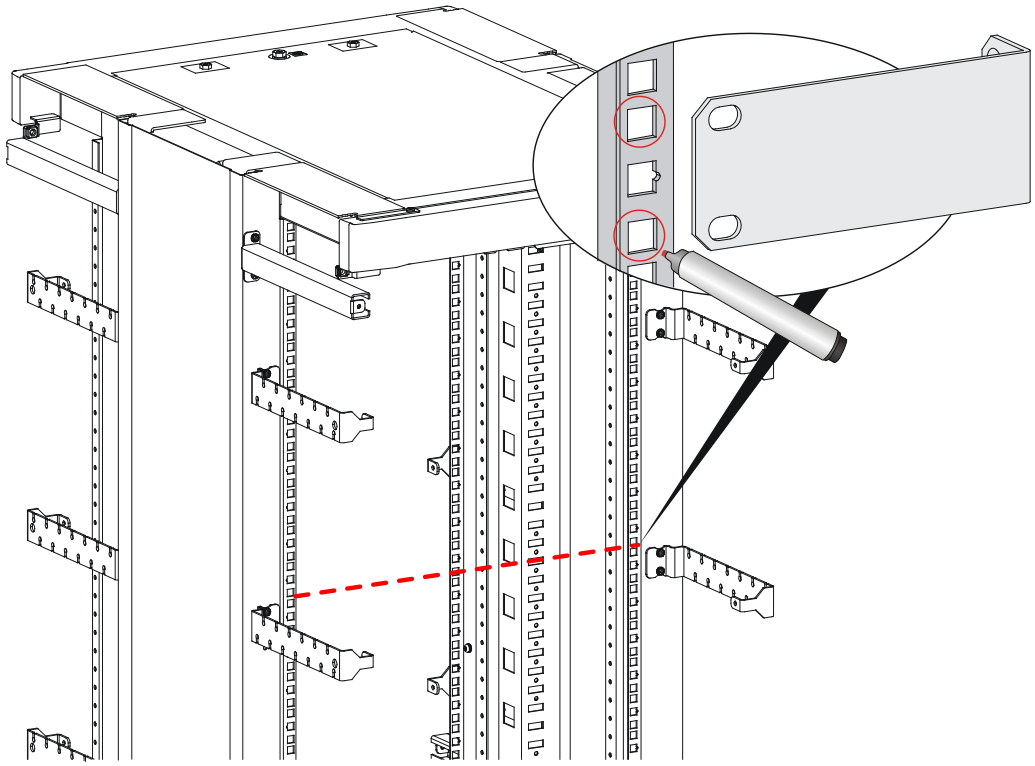
The mounting brackets can support only the weight of the router. Do not place objects on the router.

To install the router in a rack:

1. Use a mounting bracket to mark the cage nut installation holes in the front rack posts, as shown in Figure 5.

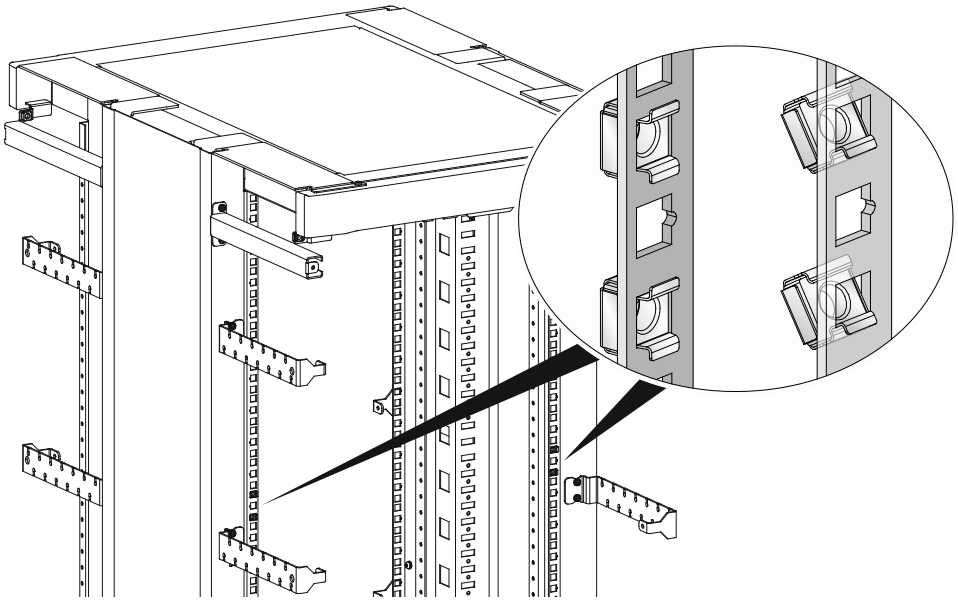
   Make sure the cage nut installation holes on the front rack posts are on a horizontal line.

Figure 5 Marking cage nut installation holes



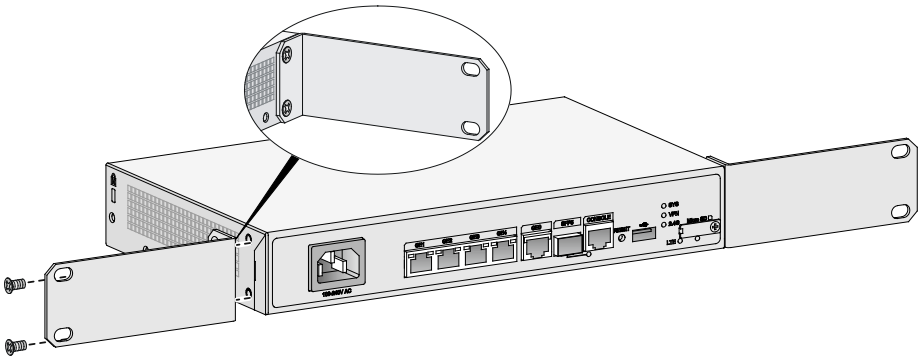
2. Install the cage nuts, as shown in Figure 6.
   a. Insert one ear of a cage nut into the marked installation hole.
   b. Use a flathead screwdriver to push another ear into the same hole.

Figure 6 Installing cage nuts



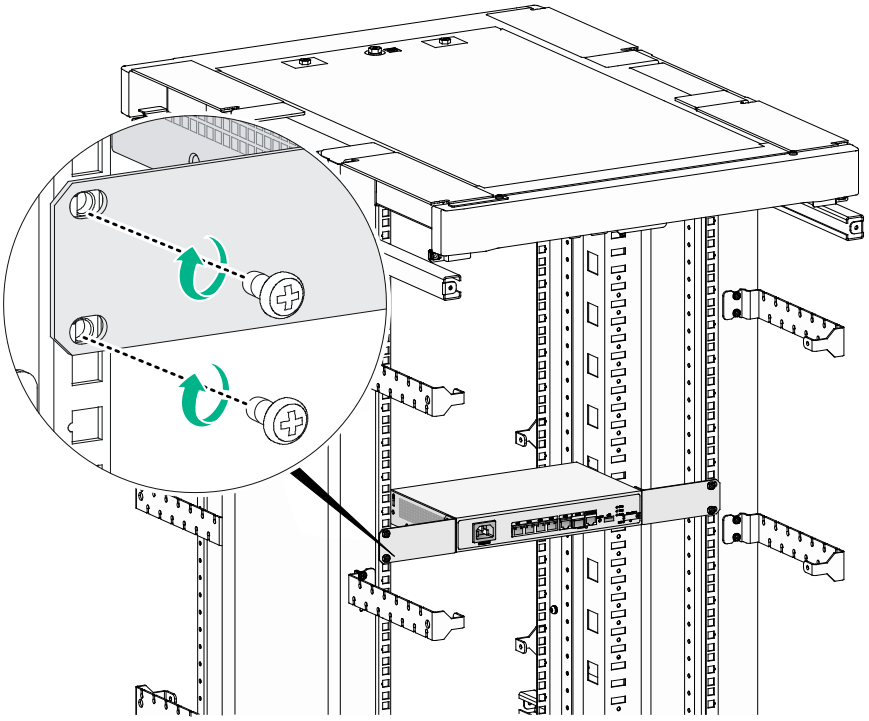
3. Attach mounting brackets to both sides of the router, as shown in Figure 7.

Figure 7 Attaching mounting brackets to the router



4. Use M6 screws to attach the mounting brackets on the router to the front rack posts, as shown in Figure 8.

Figure 8 Securing the router to the rack



Grounding the router

CAUTION:

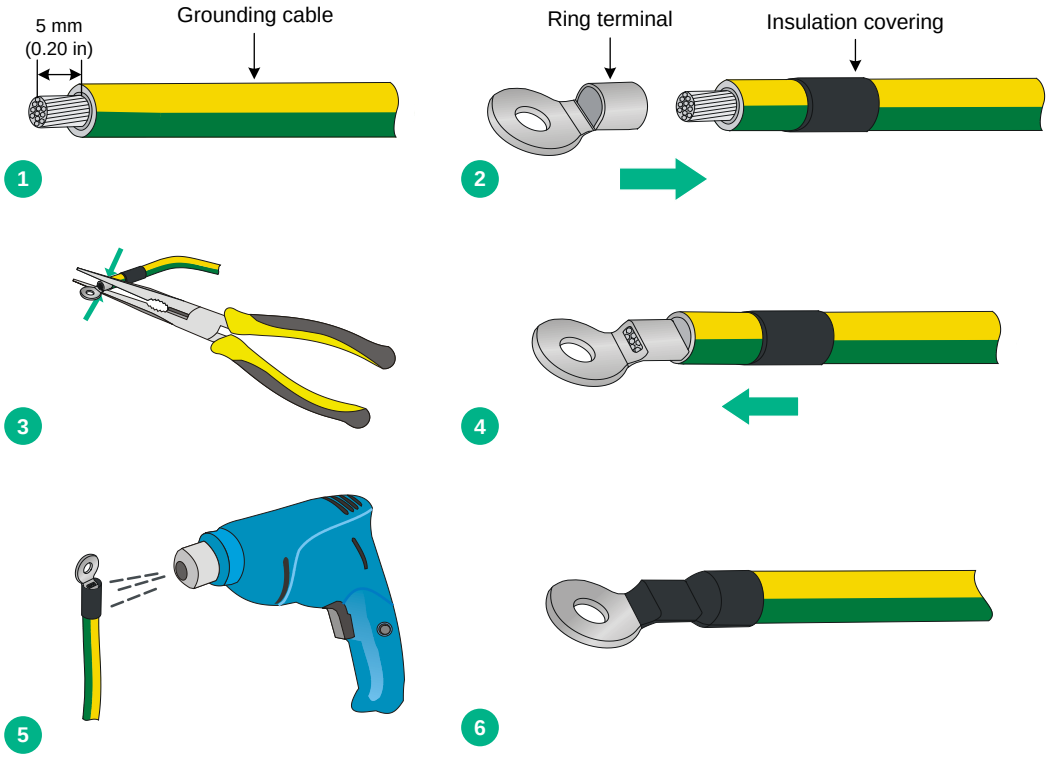
- Correctly connecting the grounding cable is crucial to lightning protection and EMI protection. When you install and use the router, first ground the router reliably.
- Ensure a minimum resistance of 5 ohms between the router and the ground.

A grounding cable is provided with the S0W31A router. The other routers each came only with a ring terminal. Purchase a grounding cable yourself for the routers except the S0W31A.

Attaching a grounding cable to the ring terminal

1. Cut the grounding cable to the desired length.
2. Use wire-stripping pliers to peel 5 mm (0.20 in) of insulation sheath from one end of the grounding cable.
3. Attach heat-shrink tubing on the cable.
4. Insert the bare metal part of the grounding cable into the ring terminal.
5. Use the needle-nose pliers to secure the metal part of the cable in the ring terminal.
6. Cover the joint with the heat-shrink tubing, and use a blow dryer to shrink the tubing around the cable.

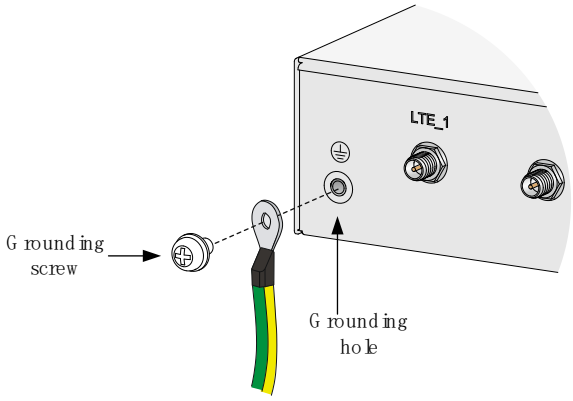
Figure 9 Attaching a grounding cable to the ring terminal



Grounding the router with a grounding strip

1. Remove the grounding screw from the grounding hole in the chassis.
2. Use the grounding screw to attach the ring terminal of the grounding cable to the grounding hole.
3. Use a screwdriver to fasten the grounding screw.
4. Connect the other end of the grounding cable to the grounding strip.

Figure 10 Connecting the grounding cable to the router

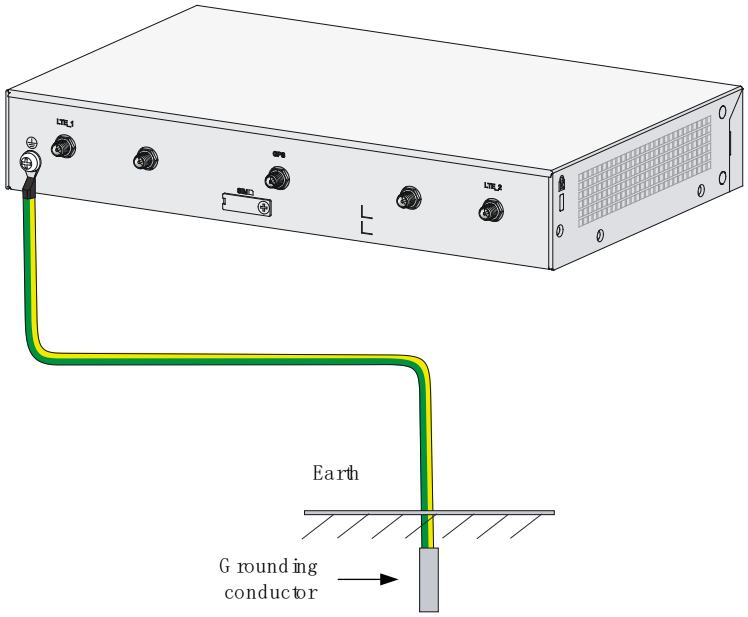


Grounding the router by burying a grounding conductor in the earth ground

If the installation site does not have any grounding strips, but earth ground is available, hammer a 0.5 m (1.64 ft) or longer angle iron or steel tube into the earth ground to act as a grounding conductor.

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

Figure 11 Grounding the router by burying a grounding conductor in the earth ground



Installing a 4G SIM card (JH296A/JH297A/JH298A/JH299A)

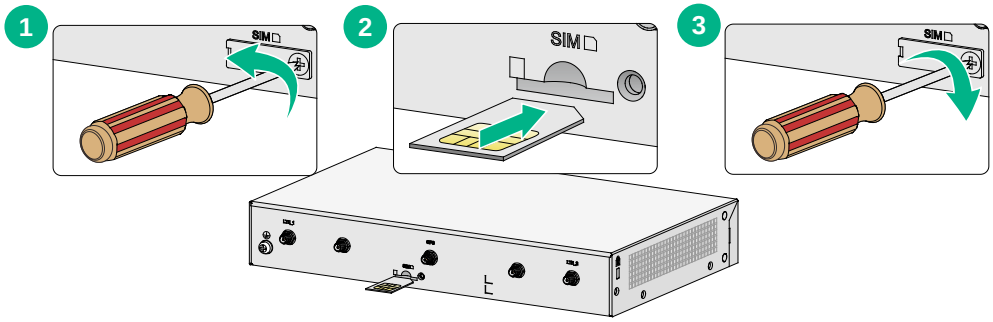
CAUTION:

- Do not hot-swap a 4G SIM card.
- To avoid damaging the SIM card slot, do not use excessive force when installing a 4G SIM card.

To install a 4G SIM card:

1. Remove the screw on the 4G SIM card slot cover and take off the cover.
2. Insert the 4G SIM card into the SIM card slot along the guide rails.
3. Reinstall the cover and fasten the screw on the cover.

Figure 12 Installing a 4G SIM card



Installing a 4G SIM card (JH373A)

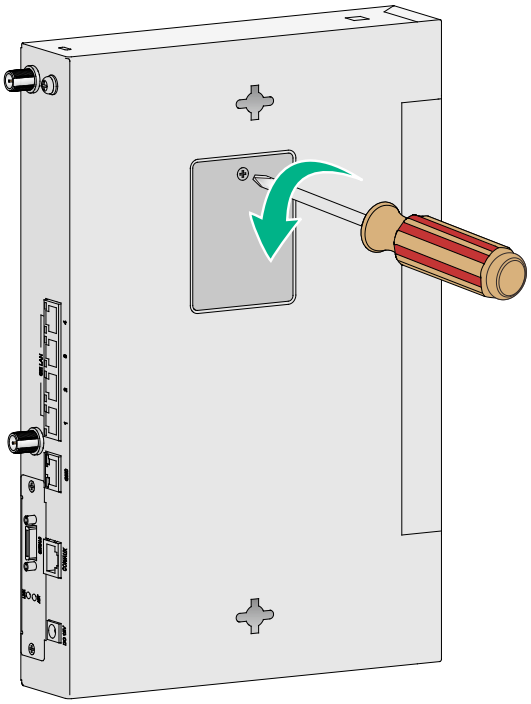
CAUTION:

- To avoid damage to the 4G SIM card holder, do not use excessive force when installing the 4G SIM card.
- Do not hot-swap a 4G SIM card.

To install a 4G SIM card:

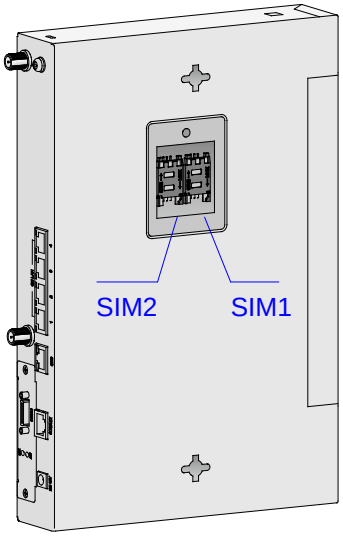
1. Remove the screw of the 4G SIM card socket cover on the router bottom and take off the cover.

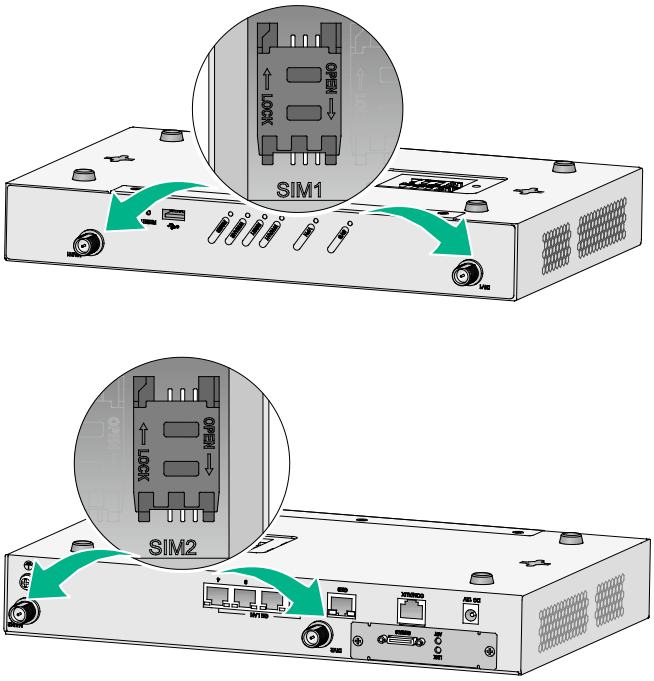
Figure 13 Removing the 4G SIM card socket cover



2. Install SIM 1 and SIM 2.

Figure 14 Install SIM 1 and SIM 2.

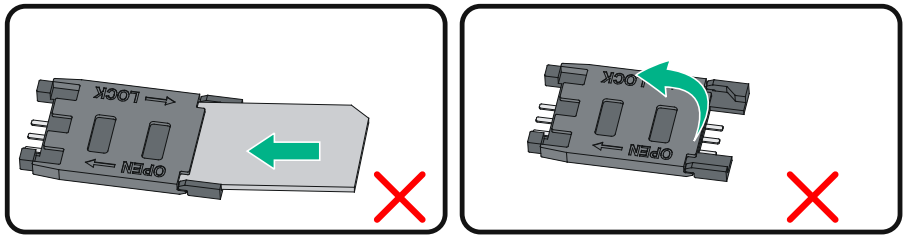




3. Push the 4G SIM card holder in the direction marked "OPEN" so the holder projects upwards.

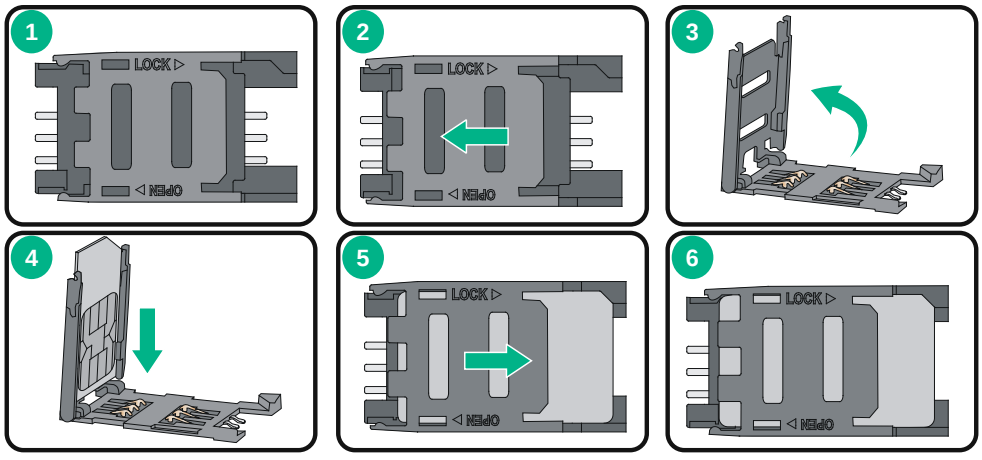
   Do not insert the 4G SIM card to the card holder before projecting the card holder up or lift the holder forcibly.

Figure 15 Incorrect installations



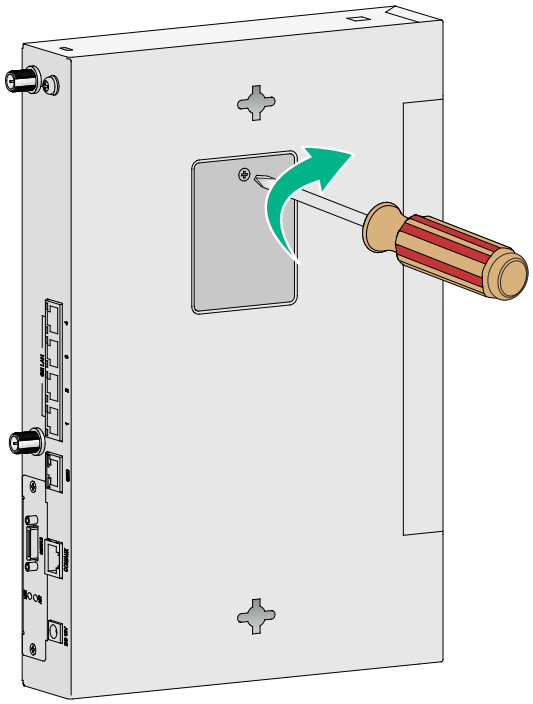
4. Insert the 4G SIM card along the slide rails to the holder.
5. Put down the holder and push the holder in the direction marked "LOCK" to lock the card in position.

Figure 16 Installing the 4G SIM card



6. Position the 4G SIM card socket cover and fasten the screws on the cover.

Figure 17 Installing the 4G SIM card socket cover



Installing a Micro SD card

CAUTION:

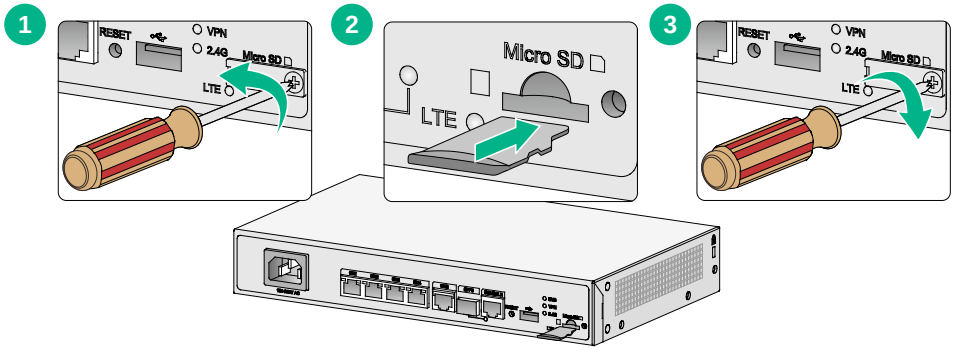
To avoid damaging the Micro SD card slot, do not use excessive force when you install a Micro SD card.

Only the JH296A, JH297A, JH298A , and JH299A routers support Micro SD cards.

To install a Micro SD card:

1. Remove the screw on the Micro SD card slot cover and take off the cover.
2. Insert the Micro SD card into the Micro SD card slot along the guide rails.
3. Reinstall the cover and fasten the screw on the cover.

Figure 18 Installing a Micro SD card



Installing a 4G antenna

Only the JH298A, JH299A, and JH373A routers support 4G antennas.

To install a 4G antenna:

1. Change the angle of the antenna orientation from vertical to horizontal.
2. Attach the 4G antenna to the 4G antenna port on the router. Do not over-tighten the antenna to avoid damage.

   For better signal receiving, change the antenna orientation to vertical.

Figure 19 Installing 4G antennas (JH298A/JH299A)

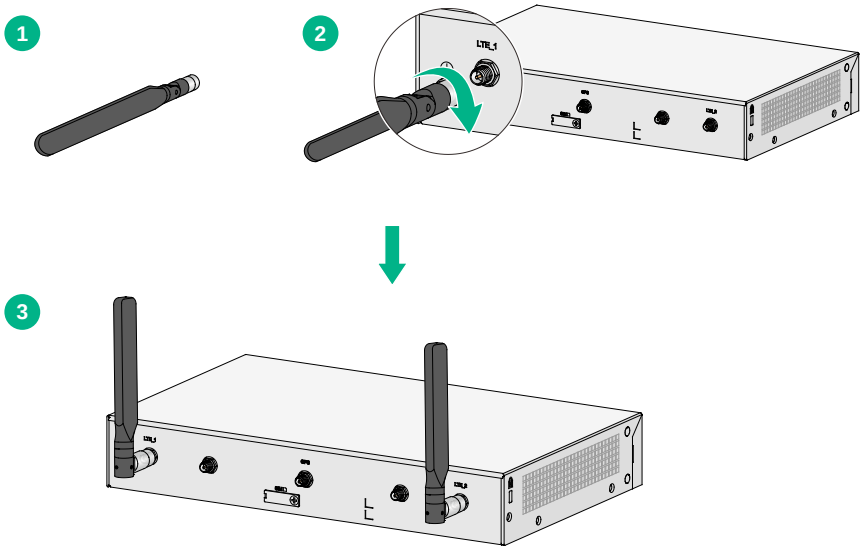
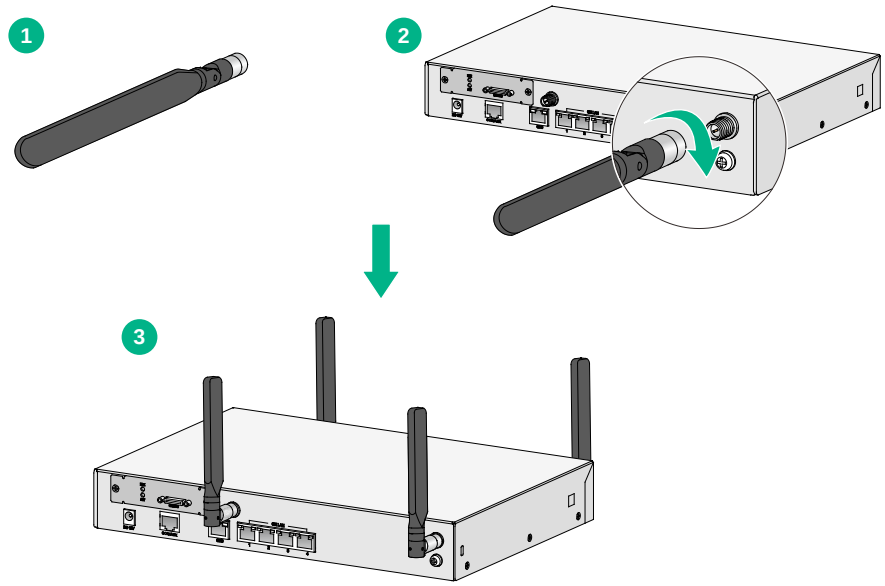


Figure 20 Installing 4G antennas (JH373A)



Connecting a 4G antenna extension cable to a 4G router

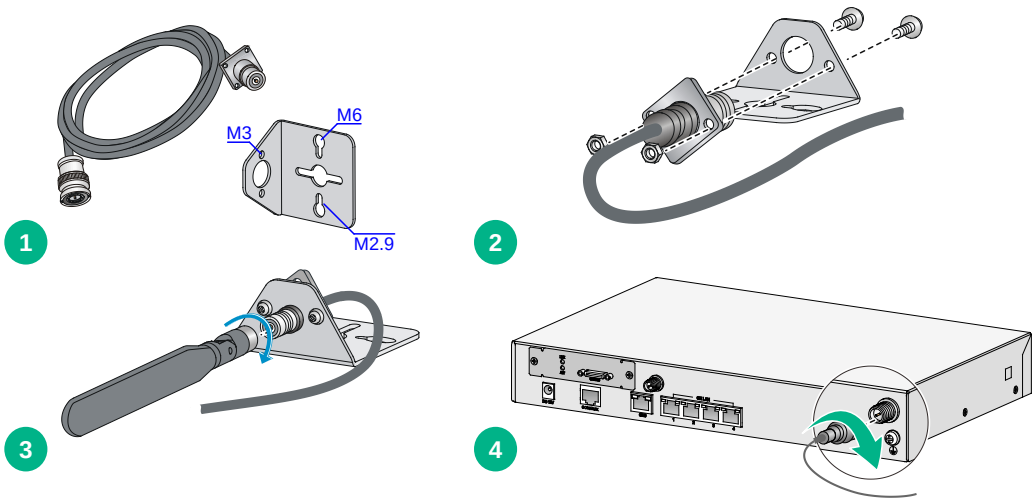
Only the JH373A router support 4G antenna extension cable.

A 4G antenna extension cable is not provided with the router. To use a 4G antenna extension cable, purchase it separately.

To install a 4G antenna extension cable:

1. Thread the male connector of the cable through the hole on the bracket, and use screws (from behind the bracket) to secure the male connector to the bracket.
2. Change the angle of the antenna orientation from vertical to horizontal.
3. Attach the antenna to the male connector of the cable.
4. Attach the female connector of the cable to the router.

Figure 21 Installing the 4G antenna extension cable to a 4G router



Installing a WLAN antenna

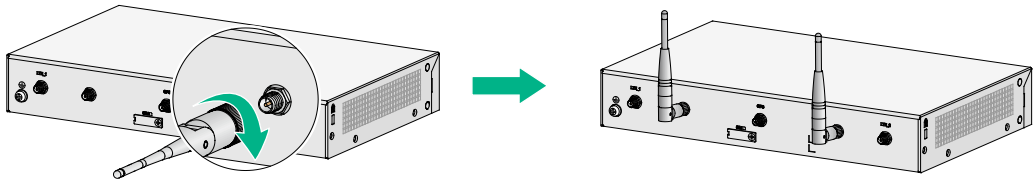
Only the JH297A, JH298A, and JH299A routers support WLAN antennas.

To install a WLAN antenna:

1. Change the angle of the antenna orientation from vertical to horizontal.
2. Attach the antenna to the WLAN antenna port on the router. Do not over-tighten the antenna to avoid damage.

   For better signal receiving, change the antenna orientation to vertical.

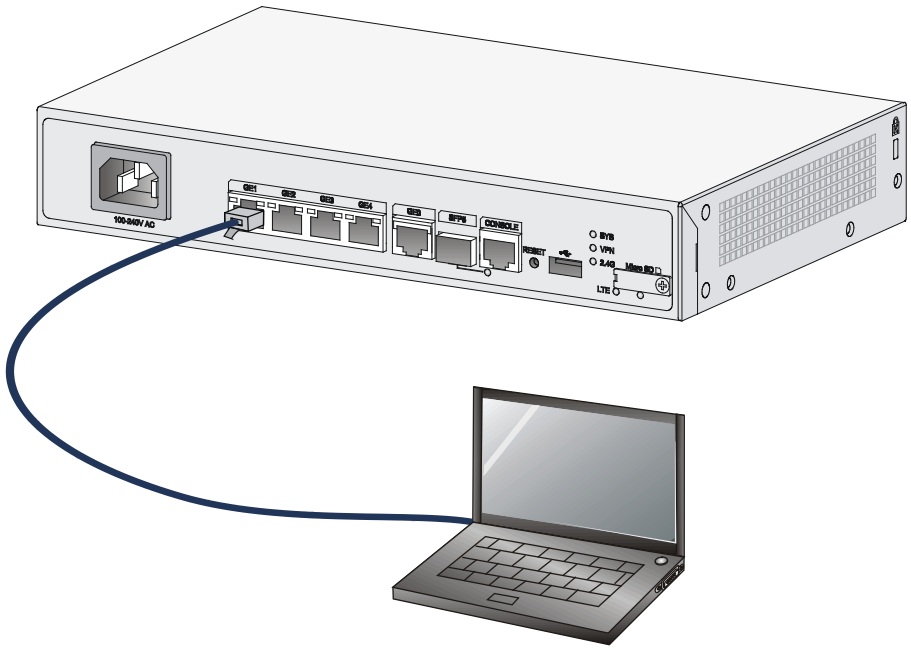
Figure 22 Installing WLAN antennas



Connecting Ethernet interface cables

1. Connect one end of the cable to an Ethernet port on the router.
2. Connect the other end of the cable to the Ethernet port on a host.
3. Examine the port LEDs on the router. For more information about the LEDs, see "LED description."

Figure 23 Connecting an Ethernet cable



Connecting the console cable and setting terminal parameters

Connecting the console cable

CAUTION:

The serial ports on PCs do not support hot swapping. To connect a PC to an operating router, first connect the PC end. To disconnect a PC from an operating router, first disconnect the router end.

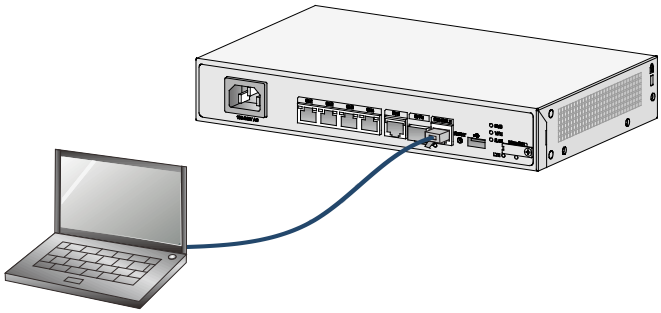
To connect the console cable:

1. Select a configuration terminal, which can be an ASCII terminal with an RS232 serial port or a PC. (A PC is more commonly used.)
2. Connect the DB-9 connector (female) of the console cable to the RS-232 serial port on the configuration terminal and the RJ-45 connector to the console port of the router.

NOTE:

If the configuration terminal does not have an RS-232 serial port, a serial adapter is required to connect the console cable to a USB port on the terminal.

Figure 24 Connecting the console cable



Setting configuration terminal parameters

To access the device through the console port, you must run a terminal emulator program (HyperTerminal, PuTTY, or Tera Term) on the configuration terminal. For information about using a terminal emulator program, see the program's user guide.

The following are the required terminal settings:

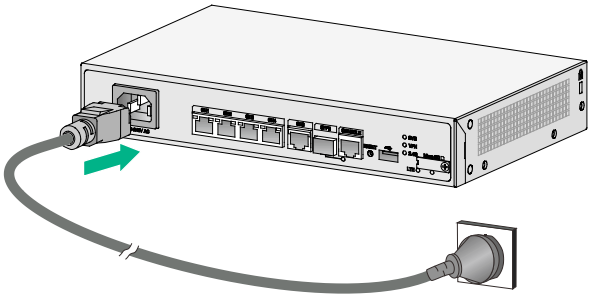
- **Baud rate**—9600.
- **Data bits**—8.
- **Stop bits**—1.
- **Parity**—none.
- **Flow control**—none.

Connecting the power cord

To connect an AC power:

1. Make sure the router is reliably grounded.
2. Connect one end of the AC power cord to the AC power receptacle on the router, and connect the other end to the AC power source.

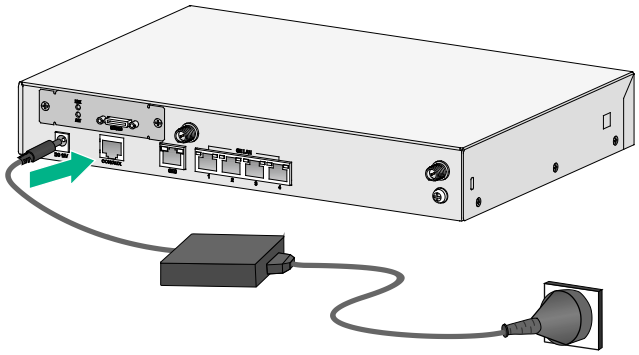
Figure 25 Connecting the power cord



To connect a power adapter:

1. Make sure the router is reliably grounded.
2. Connect the power adapter to an AC power source.
3. Connect the DC plug of the power adapter to the DC-input receptacle on the router.

Figure 26 Connecting a power adapter



Verifying the installation

After you complete the installation, verify the following information:

- There is enough space around the router for heat dissipation.
- The router is securely installed.
- Antennas and USB devices are installed correctly.
- The router and power source are reliably grounded.
- The power source is as required by the router.
- The router is connected correctly to the configuration terminal and other devices. Parameters are configured correctly on the configuration terminal.

Accessing the router for the first time

Powering on the router

WARNING!

Before powering on the router, locate the power source switch so that you can cut off power promptly in case of an emergency.

To power on the router:

1. Turn on the switch for the power source.
2. Turn on the power switch on the router.

Observing the startup process

The router first initializes its memory at startup. Then it runs the extended BootWare. Observe the information displayed on the configuration terminal:

```
System is starting...
Press Ctrl+D to access BASIC-BOOTWARE MENU...
Booting Normal Extended BootWare
The Extended BootWare is self-decompressing....Done.

********************************************************************************
```

```
*                                                                            *
*                    HPE MSR954 BootWare, Version 9.00                       *
*                                                                            *
******************************************************************************
Copyright (c) 2010-2016 Hewlett Packard Enterprise Development LP

Compiled Date       : Jan  2 2016
CPU ID              : 0x1
Memory Type         : DDR3 SDRAM
Memory Size         : 1024MB
Flash Size          : 2MB
Nand Flash size     : 256MB
CPLD Version        : 2.0
PCB Version         : 3.0


BootWare Validating...
Press Ctrl+B to access EXTENDED-BOOTWARE MENU...
Loading the main image files...
Loading file flash:/msr954-cmw710-system-r0305.bin.......................
.....................................Done.
Loading file flash:/msr954-cmw710-security-r0305.bin...Done.
Loading file flash:/msr954-cmw710-voice-r0305.bin.....Done.
Loading file flash:/msr954-cmw710-data-r0305.bin......Done.
Loading file flash:/msr954-cmw710-boot-r0305.bin.........Done.

Image file flash:/msr954-cmw710-boot-r0305.bin is self-decompressing........Done.
System image is starting...

Startup configuration file does not exist.
Performing automatic configuration... Press CTRL_D to break.

Automatic configuration attempt: 1.
Not ready for automatic configuration: no interface available.
Waiting for the next...
Automatic configuration is aborted.
Line aux0 is available.


Press ENTER to get started.
```

Press **Enter** and the system displays the following prompt:

```
<Sysname>
```

This prompt indicates that the router has entered user view and is ready to configure.

Power-on check

After powering on the router, check the following items:

- The LEDs on the front panel are normal, as described in "LED description."

- The configuration terminal displays information correctly. You can see the startup window on the local configuration terminal. For more information, see "Observing the startup process."
- After completing the POST, the system prompts you to press **Enter**. When the command line prompt appears, the router is ready to configure.

Configuring basic settings for the router

After the router is powered on for the first time, configure basic settings for the router. For more information, see *HPE FlexNetwork MSR Router Series Configuration Guides (V7)* and *HPE FlexNetwork MSR Router Series Command References (V7)*.

Troubleshooting

IMPORTANT:

- The barcode on the router chassis contains product information that must be provided to local sales agent when you return a faulty router for repair.
- Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact Hewlett Packard Enterprise for permission. Otherwise, Hewlett Packard Enterprise shall not be liable for any consequence.

Power supply failure

Symptom

The router cannot be powered on and the LEDs on the front panel are off.

Solution

To resolve the problem:

1. Power off the router
2. Verify that the power cord connects the router to the power source correctly.
3. Verify that the power source is operating correctly.
4. Verify that the power cord is in good condition.
5. If the problem persists, contact Hewlett Packard Enterprise Support.

No display on the configuration terminal

Symptom

The configuration terminal does not have display when the router is powered on.

Solution

To resolve the problem:

1. Verify that the power system is operating correctly.
2. Verify that the console cable is connected correctly to the specified serial port on the configuration terminal.
3. Verify that the following settings are configured for the terminal:
   - **Baud rate**—9,600.
   - **Data bits**—8.
   - **Parity**—none.
   - **Stop bits**—1.
   - **Flow control**—none.
   - **Emulation**—VT100.

4. Verify that the console cable is in good condition.
5. If the problem persists, contact Hewlett Packard Enterprise Support.

Garbled display on the configuration terminal

Symptom

The configuration terminal has garbled display when the router is powered on.

Solution

To resolve the problem:

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

No response from the serial port

Symptom

The serial port on the router does not respond

Solution

To resolve the problem:

1. Verify that the serial cable is in good condition and the serial port settings are correct.
2. If the problem persists, contact Hewlett Packard Enterprise Support.

3G/4G SIM card and 4G antenna failures

Symptom

After a 3G/4G SIM card and 4G antennas are installed on the router and the router is powered on, the corresponding LEDs on the front panel indicate operation failure.

Solution

To resolve the problem:

1. Verify that the 3G/4G SIM card has been correctly installed and makes good contact with the card socket.
2. Verify that the 3G/4G SIM card and the card socket use the same wireless standard.
3. Verify that the 4G antenna is correctly installed.
4. Verify that the 3G/4G SIM card, card socket, and 4G antenna are in good condition.
5. Verify that the network provided by NSP is running correctly.

6. If the problem persists, contact Hewlett Packard Enterprise Support.

Restoring the factory settings

Scenario 1

Symptom

When you replace the router, the router password is lost. As a result, you cannot log in to the router and do not know the router configuration.

Solution

Because the router is replaced, you do not need to save the configuration of the router. In this case, you can press the **Reset** button for more than 4 seconds to reboot the router and restore the factory settings. Then, you can use the username and password shipped with the router to log in to the router.

When the router configuration must be saved and you have a console cable, you can log in to the router from the BootWare menu.

Scenario 2

Symptom

After the configuration is modified, the network connectivity is lost. When you check the configuration, the configuration is very complicated and it is hard to locate the errors. In this case, you must configure the router again.

Solution

If you have not saved any configuration, you can reboot the router by pressing the **Reset** button for a short time or power off the router.

If you have saved the configuration, delete the configuration file at the CLI, and press the **Reset** button to restore the factory settings.

Scenario 3

Symptom

The router crashes.

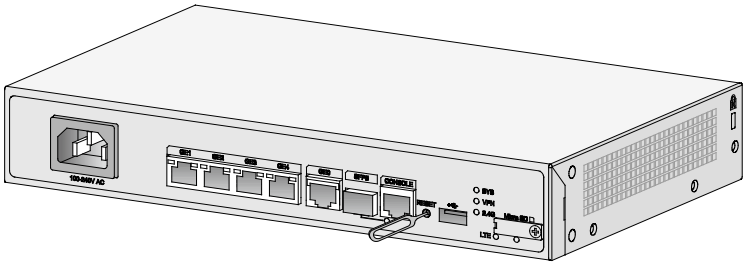
Solution

Press the **Reset** button for a short time to reboot the router.

Reset button usage guidelines

The router provides a **Reset** button. To reboot the router, use a paper clip to press the **Reset** button for a short time. To reboot the router and restore the factory settings, use a paper clip to press the **Reset** button for more than 4 seconds.

Figure 27 Reset button



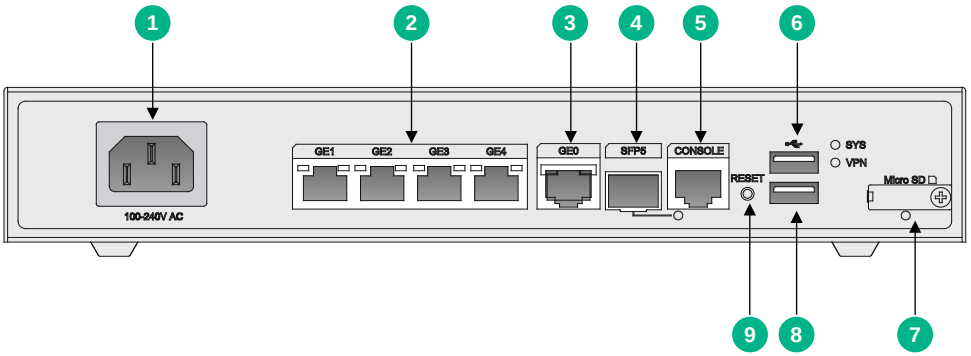
Appendix A Chassis views and technical specifications

Chassis views

The figures in this appendix are for illustration only.

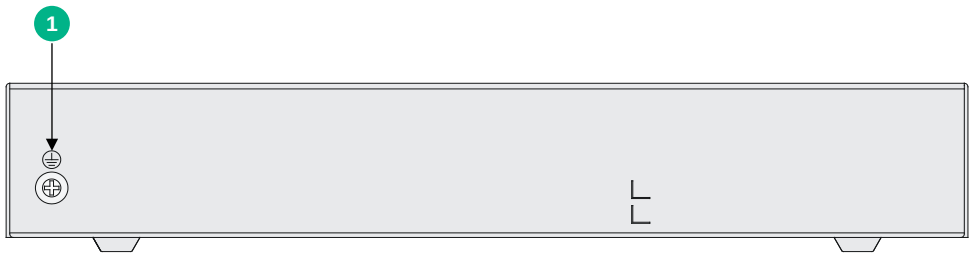
JH296A

Figure 28 Front view



(1) AC power receptacle	(2) Gigabit Ethernet LAN ports (GE1 to GE4)	(3) Gigabit Ethernet WAN port (GE0)
(4) Gigabit fiber port (SFP5)	(5) Console port	(6) USB port
(7) Micro SD card slot	(8) USB port	(9) Reset button (RESET)

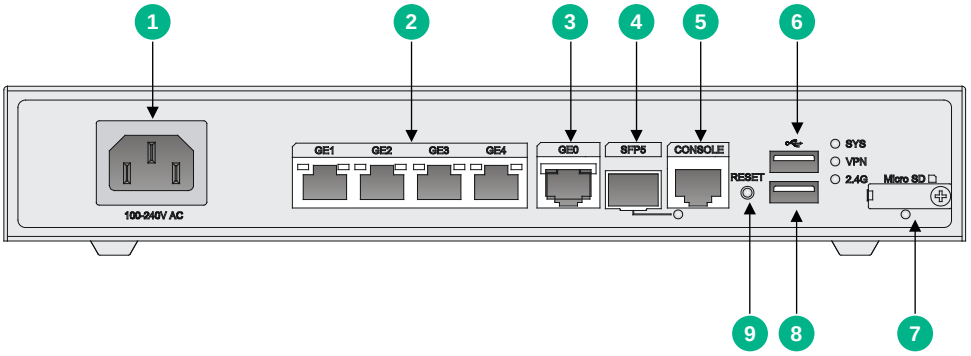
Figure 29 Rear view



(1) Grounding screw

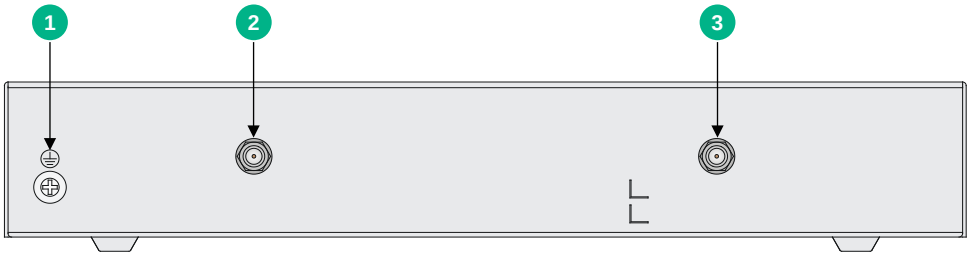
JH297A

Figure 30 Front view



(1) AC power receptacle	(2) Gigabit Ethernet LAN ports (GE1 to GE4)	(3) Gigabit Ethernet WAN port (GE0)
(4) Gigabit fiber port (SFP5)	(5) Console port	(6) USB port
(7) Micro SD card slot	(8) USB port	(9) Reset button (RESET)

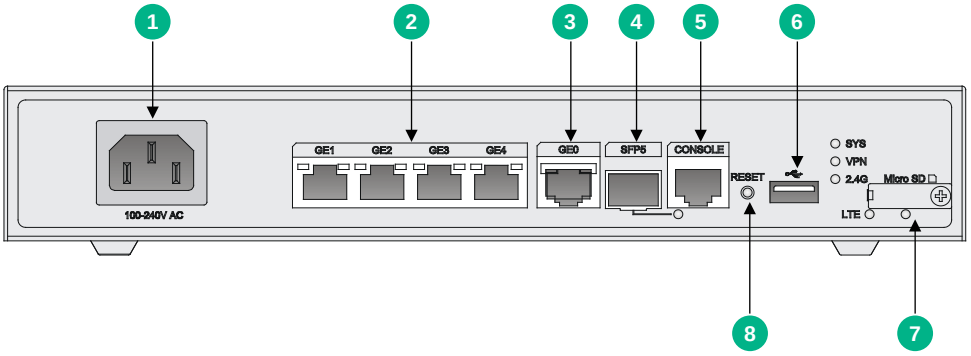
Figure 31 Rear view



(1) Grounding screw	(2) 2.4G WLAN antenna port	(3) 2.4 G WLAN antenna port

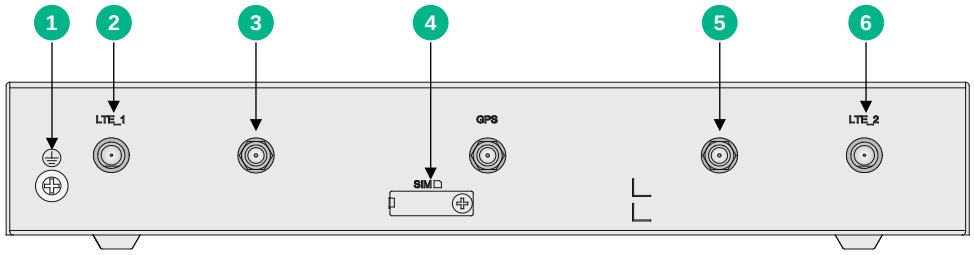
JH298A

Figure 32 Front view



(1) AC power receptacle	(2) Gigabit Ethernet LAN ports (GE1 to GE4)	(3) Gigabit Ethernet WAN ports (GE0)
(4) Gigabit fiber port (SFP5)	(5) Console port	(6) USB port
(7) Micro SD card slot	(8) Reset button (RESET)	

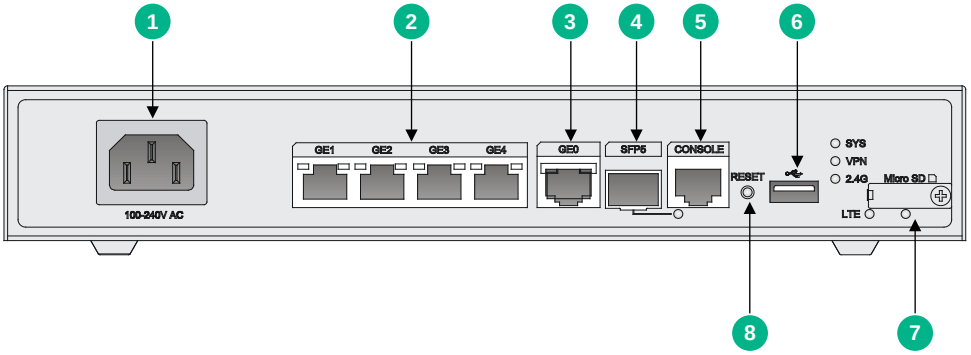
Figure 33 Rear view



(1) Grounding screw	(2) LTE antenna port 1	(3) 2.4G WLAN antenna port
(4) 4G SIM card slot	(5) 2.4G WLAN antenna port	(6) LTE antenna port 2

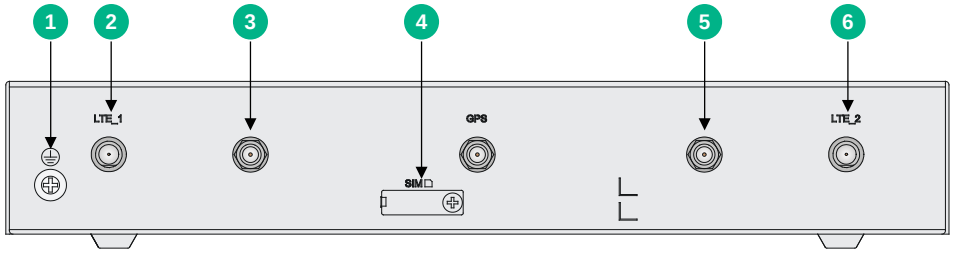
JH299A

Figure 34 Front view



(1) AC power receptacle	(2) Gigabit Ethernet LAN ports (GE1 to GE4)	(3) Gigabit Ethernet WAN port (GE0)
(4) Gigabit fiber port (SFP5)	(5) Console port	(6) USB port
(7) Micro SD card slot	(8) Reset button (RESET)	

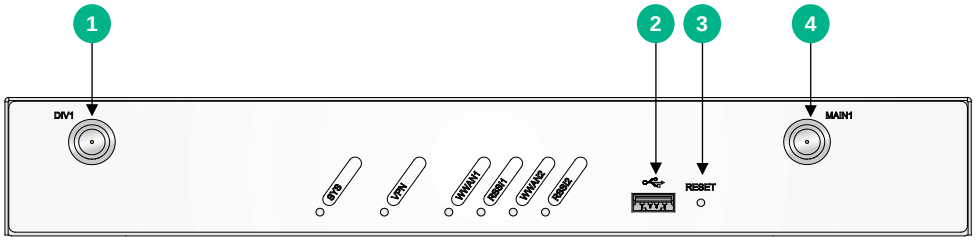
Figure 35 Rear view



(1) Grounding screw	(2) LTE antenna port 1	(3) 2.4G WLAN antenna port
(4) 4G SIM card slot	(5) 2.4G WLAN antenna port	(6) LTE antenna port 2

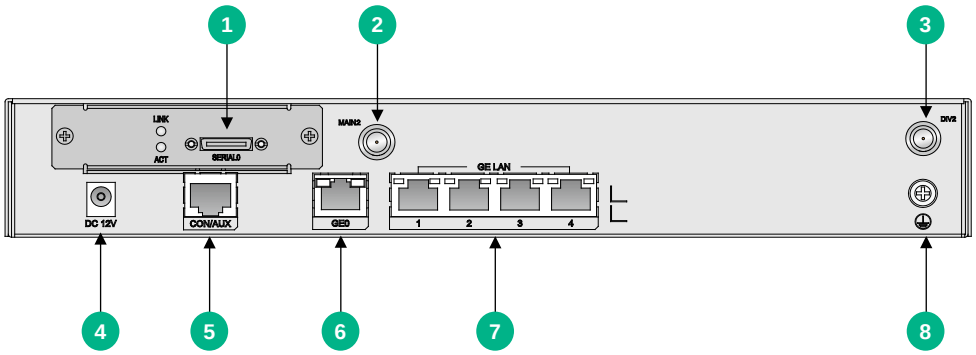
JH373A

Figure 36 Front view



(1) 4G antenna auxiliary connector (DIV1)	(2) USB port
(3) Reset button (RESET)	(4) 4G antenna main connector (MAIN1)

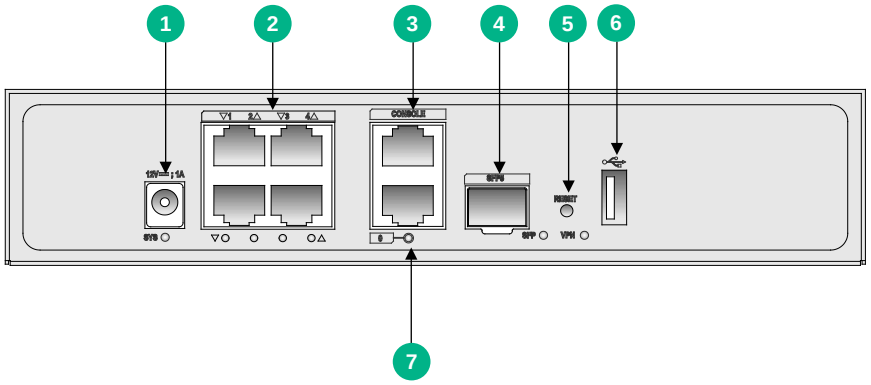
Figure 37 Rear view



(1) Serial port	(2) 4G antenna main connector (MAIN2)	(3) 4G antenna auxiliary connector (DIV2)
(4) Power adapter receptacle	(5) Console/AUX port (CON/AUX)	(6) Gigabit Ethernet WAN port (GE0)
(7) Gigabit Ethernet LAN ports (GE1 to GE4)	(8) Grounding screw	

S0W31A

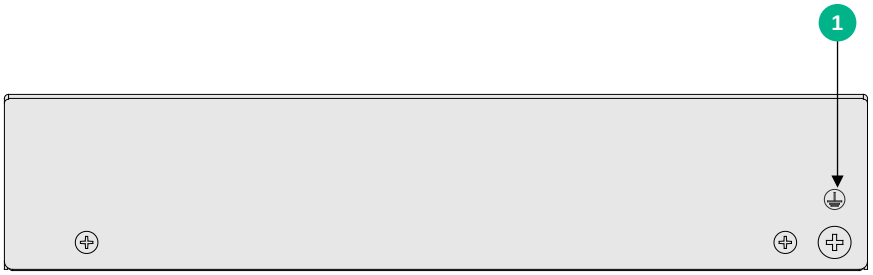
Figure 38 Front view



(1) Power adapter receptacle	(2) Gigabit Ethernet LAN ports (GE1 to GE4)

(3) Console port	(4) Gigabit fiber port (SFP5)
(5) Reset button (RESET)	(6) USB port
(7) Gigabit Ethernet WAN port (GE0)	

Figure 39 Rear view



(1) Grounding screw

Technical specifications

Table 7 Router specifications (1)

Item	JH296A	JH297A	JH298A	JH299A	JH373A
Console port	1	1	1	1	1
USB port	2	2	1	1	1
GE WAN port	1	1	1	1	1
GE SFP port	1	1	1	1	N/A
GE LAN port	4	4	4	4	4
Serial port	N/A	N/A	N/A	N/A	1
Memory	1 GB DDR3	1 GB DDR3	1 GB DDR3	1 GB DDR3	1 GB DDR3
Flash	256 MB	256 MB	256 MB	256 MB	256MB
Dimensions (H × W × D) (excluding rubber feet and mounting brackets)	43.6 × 266 × 161 mm (1.72 × 10.47 × 6.34 in)	43.6 × 266 × 161 mm (1.72 × 10.47 × 6.34 in)	43.6 × 266 × 161 mm (1.72 × 10.47 × 6.34 in)	43.6 × 266 × 161 mm (1.72 × 10.47 × 6.34 in)	44.2 × 300 × 200 mm (1.74 × 11.81 × 7.87 in)
AC input voltage	100 VAC to 240 VAC @ 50 Hz/60 Hz	100 VAC to 240 VAC @ 50 Hz/60 Hz	100 VAC to 240 VAC @ 50 Hz/60 Hz	100 VAC to 240 VAC @ 50 Hz/60 Hz	100 VAC to 240 VAC @ 50 Hz/60 Hz
Max. AC power	15 W	15 W	15 W	15 W	24 W
Operating temperature	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
Relative humidity (noncondensing)	5% to 90%	5% to 90%	5% to 90%	5% to 90%	5% to 90%

Table 8 Router specifications (2)

Item	S0W31A
Console port	1
USB port	1
GE WAN port	1
GE SFP port	1
GE LAN port	4
Serial port	N/A
Memory	1 GB DDR3
Flash	256 MB
Dimensions (H × W × D) (excluding rubber feet and mounting brackets)	44 × 210 × 140 mm (1.73 × 8.27 × 5.51 in)
AC input voltage	100 VAC to 240 VAC @ 50 Hz/60 Hz
Max. AC power	24 W
Operating temperature	0°C to 40°C (32°F to 104°F)
Relative humidity (noncondensing)	5% to 90%

Table 9 4G antenna specifications

Item	Specification
Frequency range	698-960 MHz / 1.71-2.70 GHz
Voltage Standing Wave Ratio (VSWR)	≤ 2.5:1
Input impedance	50 ohms
Gain	2 dBi
Max power	5 W
Input port	TNC male
Length	21.4 cm (8.43 in)
Color	Black
Weight	50 g (1.76 oz)
Operating temperature	–40°C to +85°C (–40°F to +185°F)

Table 10 WLAN antenna specifications

Item	Specification
Frequency range	2.4 to 2.5 GHz
Voltage standing wave ratio (VSWR)	1.92:1
Input impedance	50 ohms
Gain	2 dBi
Max power	1 W
Input port	RSMA
Length	115 mm (4.53 in)

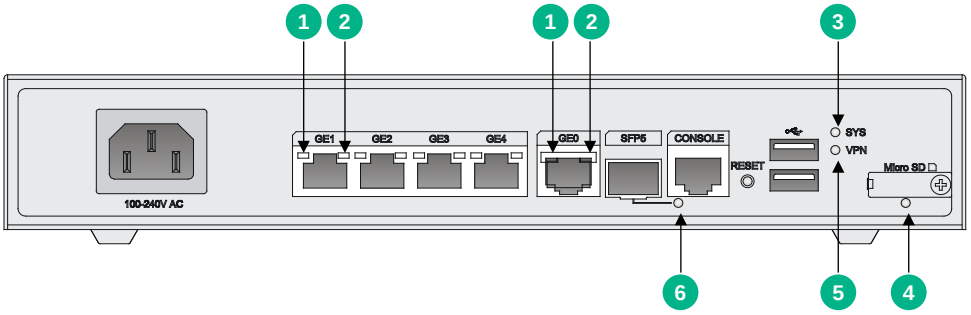
Item	Specification
Color	Black
Weight	25 g (0.88 oz)
Operating temperature	–10°C to +60°C (14°F to 140°F)

Appendix B LEDs

LEDs

JH296A

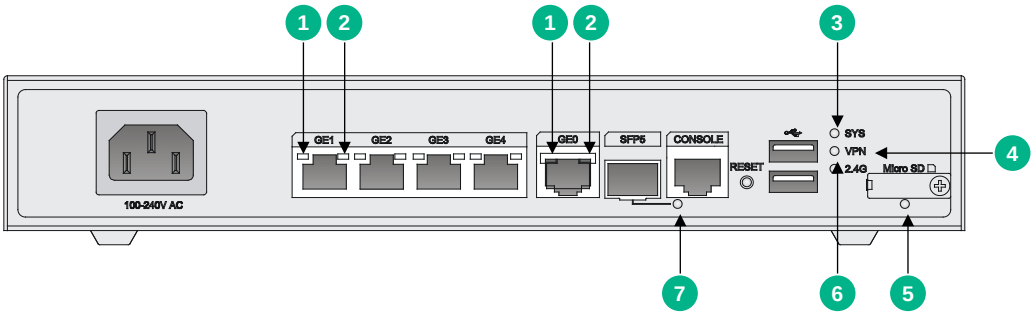
Figure 40 Front panel LEDs



(1) GE port yellow LED	(2) GE port green LED	(3) System status LED (SYS)
(4) Micro SD card LED	(5) VPN status LED	(6) SFP port LED

JH297A

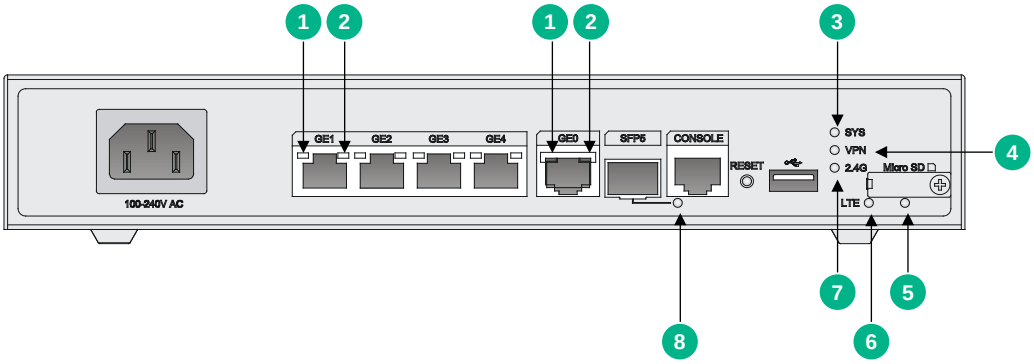
Figure 41 Front panel LEDs



(1) GE port yellow LED	(2) GE port green LED	(3) System status LED (SYS)
(4) VPN status LED	(5) Micro SD card LED	(6) 2.4G WLAN LED
(7) SFP port LED		

JH298A

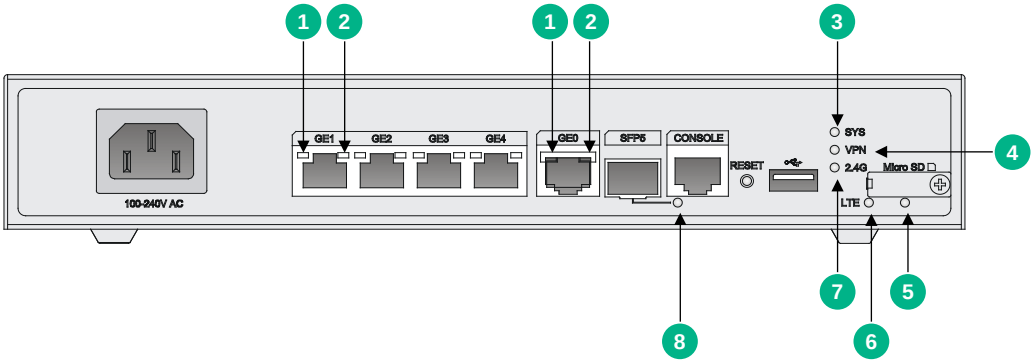
Figure 42 Front panel LEDs



(1) GE port yellow LED	(2) GE port green LED	(3) System status LED (SYS)
(4) VPN status LED	(5) Micro SD card LED	(6) LTE LED
(7) 2.4G WLAN LED	(8) SFP port LED	

JH299A

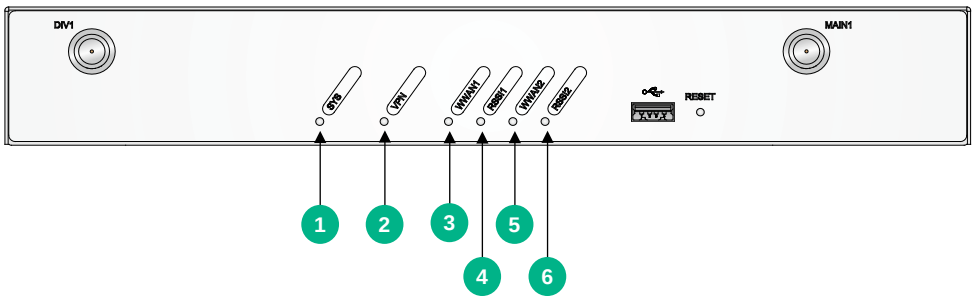
Figure 43 Front panel LEDs



(1) GE port yellow LED	(2) GE port green LED	(3) System status LED (SYS)
(4) VPN LED	(5) Micro SD card LED	(6) LTE LED
(7) 2.4G WLAN LED	(8) SFP port LED	

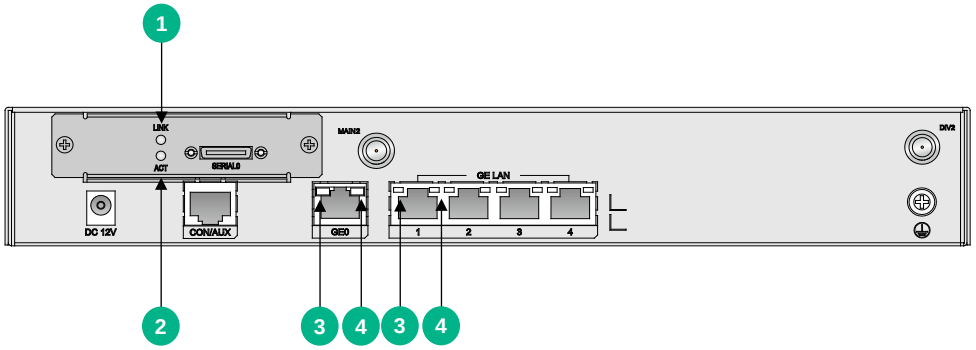
JH373A

Figure 44 Front panel LEDs



(1) System status LED (SYS)	(2) VPN status LED (VPN)	(3) 4G status LED (WWAN1)
(4) Received 4G signal strength indication LED (RSSI1)	(5) 4G status LED (WWAN2)	(6) Received 4G signal strength indication LED (RSSI2)

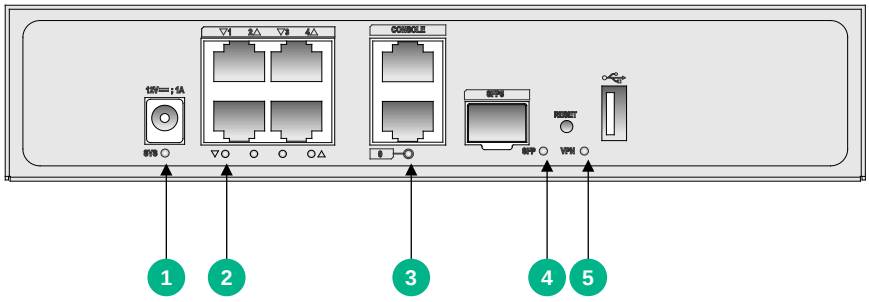
Figure 45 Rear panel LEDs



(1) Serial port link status LED (LINK)	(2) Serial port data transmission status LED (ACT)
(3) GE port status LED (yellow)	(4) GE port status LED (green)

S0W31A

Figure 46 Front panel LEDs



(1) System status LED (SYS)	(2) GE copper port LEDs (GE1 to GE4)
(3) GE copper port LED (GE0)	(4) SFP fiber port LED
(5) VPN status LED	

LED description

LED		Status	Description
GE port LEDs	Green LED	Steady green	A 1000 Mbps link is present.
		Flashing green	Data is being received or transmitted at 1000 Mbps.
		Off	No 1000 Mbps link is present.
	Yellow LED	Steady yellow	A 10/100 Mbps link is present.
		Flashing yellow	Data is being received or transmitted at 10/100 Mbps
		Off	No 10/100 Mbps link is present.
GE copper port LED (for the S0W31A)		Steady green	A 1000 Mbps link is present.
		Flashing green	Data is being received or transmitted at 1000 Mbps.
		Steady yellow	A 10/100 Mbps link is present.
		Flashing yellow	Data is being received or transmitted at 10/100 Mbps
		Off	No 10/100 Mbps link is present.
System status LED (SYS)		Steady green	The SDRAM is performing self-test.
		Flashing green (8 Hz)	The system software image is being copied and decompressed.
		Flashing green (1 Hz)	Comware has started with the configuration file and the router has booted up.
		Flashing yellow (1 Hz)	The SDRAM has failed the self-test.
		Flashing yellow (8 Hz)	The extended segment does not exist.
		Steady yellow	The system software image does not exist.
		Off	No power input, or exceptions have occurred.
VPN status LED (VPN)		Steady on	A minimum of one IPSec VPN tunnel is present.
		Off	No IPSec VPN tunnel is present.
Micro SD card LED		Steady green	The Micro SD card is present and has passed the test.
		Flashing green (8 Hz)	The system is accessing the Micro SD card. Do not remove the card.
		Off	No Micro SD card is inserted or the Micro SD card is installed incorrectly.
LTE LED		Steady green	A 4G link is present.
		Flashing green (8 Hz)	Data is being received or transmitted on a 4G link.
		Steady yellow	A 3G link is present
		Flashing yellow (8 Hz)	Data is being received or transmitted on a 3G link.
		Off	No 3G/4G link is present or no 4G modem is installed.
2.4G WLAN status LED		Steady green	A 2.4G WLAN link is present.
		Flashing green	Data is being received or transmitted on a 2.4G WLAN link.
		Off	No 2.4G WLAN link is present.

LED	Status	Description
SFP port LED	Steady green	A 1000 Mbps link is present.
	Flashing green	Data is being received or transmitted at 1000 Mbps.
	Steady yellow	A 10/100 Mbps link is present.
	Flashing yellow	Data is being received or transmitted at 10/100 Mbps.
	Off	No link is present.
4G status LED (WWAN)	Off	No link is present or the router is operating in 2G mode.
	Steady green	The router has been connected to the wireless network and is operating in 4G mode.
	Flashing green (8 Hz)	Data is being received or transmitted. The router is operating in 4G mode.
	Steady yellow	The router has been connected to the wireless network and is operating in 3G mode.
	Flashing yellow (8 Hz)	Data is being received or transmitted. The router is operating in 3G mode.
Received 4G signal strength indication LED (RSSI)	Off	Weak or no signal.
	Steady green	Strong signal.
	Flashing green (8 Hz)	Middle or low signal.
Serial port data transmission status LED (ACT)	Off	No data is being received or transmitted.
	Flashing green	Data is being received or transmitted.
Serial port link status LED (LINK)	Off	No link is present.
	Steady green	A link is present.

Document conventions and icons

Conventions

This section describes the conventions used in the documentation.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

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 at least 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 appears; 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 card, such as a firewall, load balancing, NetStream, SSL VPN, IPS, or ACG card.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  www.hpe.com/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates, go to either of the following:
  - Hewlett Packard Enterprise Support Center **Get connected with updates** page:

    www.hpe.com/support/e-updates
  - Software Depot website:

    www.hpe.com/support/softwaredepot
- To view and update your entitlements, and to link your contracts, Care Packs, and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

  www.hpe.com/support/AccessToSupportMaterials

IMPORTANT:

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.

Websites

Website	Link
Networking websites	
Hewlett Packard Enterprise Information Library for Networking	www.hpe.com/networking/resourcefinder
Hewlett Packard Enterprise Networking website	www.hpe.com/info/networking
Hewlett Packard Enterprise My Networking website	www.hpe.com/networking/support
Hewlett Packard Enterprise My Networking Portal	www.hpe.com/networking/mynetworking
Hewlett Packard Enterprise Networking Warranty	www.hpe.com/networking/warranty
General websites	
Hewlett Packard Enterprise Information Library	www.hpe.com/info/enterprise/docs
Hewlett Packard Enterprise Support Center	www.hpe.com/support/hpesc
Hewlett Packard Enterprise Support Services Central	ssc.hpe.com/portal/site/ssc/
Contact Hewlett Packard Enterprise Worldwide	www.hpe.com/assistance
Subscription Service/Support Alerts	www.hpe.com/support/e-updates
Software Depot	www.hpe.com/support/softwaredepot
Customer Self Repair (not applicable to all devices)	www.hpe.com/support/selfrepair
Insight Remote Support (not applicable to all devices)	www.hpe.com/info/insightremotesupport/docs

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty, Care Pack Service, or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

For more information and device support details, go to the following website:

www.hpe.com/info/insightremotesupport/docs

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hpe.com). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.

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