

HP 870 Unified Wired-WLAN Appliance Installation Guide

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Preparing for installation

⚠ IMPORTANT:

For regulatory identification purposes, the HP 870 Unified Wired-WLAN Appliance and the HP 870 Unified Wired-WLAN TAA-Compliant Appliance are assigned a regulatory model number (RMN) BJNGA-FA0003. This regulatory number should not be confused with the marketing name HP 870, or product code JG723A and JG725A.

Safety recommendations

⚠ WARNING!

Before installation and operation, read all of the safety instructions in the Compliance and Safety Guide supplied with your device.

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

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

- Do not place the device on an unstable case or desk. The device might be severely damaged in case of a fall.
- Make sure the ground is dry and flat and anti-slip measures are in place.
- Keep the chassis and installation tools away from walk areas.
- Keep the chassis clean and dust-free.
- Do not place the device near water or in a damp environment. Prevent water or moisture from entering the device chassis.
- Ensure proper ventilation of the equipment room and keep the air inlet and outlet vents of the device free of obstruction.
- Make sure the operating voltage is in the required range.
- Use a screwdriver to fasten screws.

- To prevent condensation, unpack the device at least half an hour after you move the device from a location below 0°C (32°F) to the equipment room, and power on the device at least 2 hours after you move the device from a location below 0°C (32°F) to the equipment room.

Electrical safety

- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, or missing safety grounds.
- Locate the emergency power-off switch in the room before installation. Shut off the power immediately if an accident occurs.
- Unplug all the external cables (including power cables) before moving the chassis.
- Do not work alone when you operate the device with the device powered on.
- Always check that the power has been disconnected when you perform operations that require the device to be powered off.

Laser safety

 **WARNING!**

Do not stare into any fiber port when the device is powered on. The laser light emitted from the optical fiber might hurt your eyes.

- Before you disconnect the fiber connector, execute the **shutdown** command in interface view to disable the optical source.
- Install the dust covers to the optical fiber connector to avoid connector damage.

Examining the installation site

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

Temperature and humidity

Maintain appropriate temperature and humidity in the equipment room.

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

To ensure correct operation of the device, the equipment room must meet the temperature and humidity requirements listed in [Table 1](#).

Table 1 Temperature/humidity requirements in the equipment room

| Temperature | Relative humidity |
|-----------------------------|--------------------------|
| 0°C to 45°C (32°F to 113°F) | 5% to 95%, noncondensing |

Cleanness

Dust buildup on the chassis can 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. To ensure correct operation, the equipment room must meet the dust concentration requirements listed in [Table 2](#).

Table 2 Dust concentration limit in the equipment room

| Substance | Concentration limit (particles/m ³) |
|----------------|---|
| Dust particles | $\leq 3 \times 10^4$ (No visible dust on desk in three days) |

NOTE:

Dust particle diameter $\geq 5 \mu\text{m}$

To eliminate corrosion and premature aging of components, the equipment room must also meet limits on salts, acids, and sulfides, as shown in [Table 3](#).

Table 3 Harmful gas limits in an equipment room

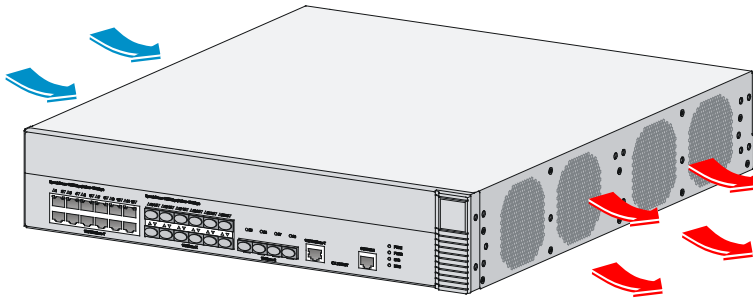
| Gas | Max. (mg/m ³) |
|------------------|---------------------------|
| SO ₂ | 0.2 |
| H ₂ S | 0.006 |
| NH ₃ | 0.05 |
| Cl ₂ | 0.01 |

Cooling

The device uses left to right airflow for heat dissipation. Plan the installation site for adequate ventilation.

- HP recommends that you leave a minimum of 10 cm (3.94 in) of clearance around the air vents.
- Make sure the rack is well ventilated.

Figure 1 Airflow through the device chassis



ESD prevention

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

- Ground the device properly. For how to ground your device, see "[Installing the device](#)".
- Take dust-proof measures for the equipment room. For more information, see "[Cleanness](#)".
- Maintain the humidity and temperature at a proper level. For more information, see "[Temperature and humidity](#)".
- Always wear an ESD-preventive wrist strap. Make sure the wrist strap makes skin contact and is well grounded when installing the transceiver module.

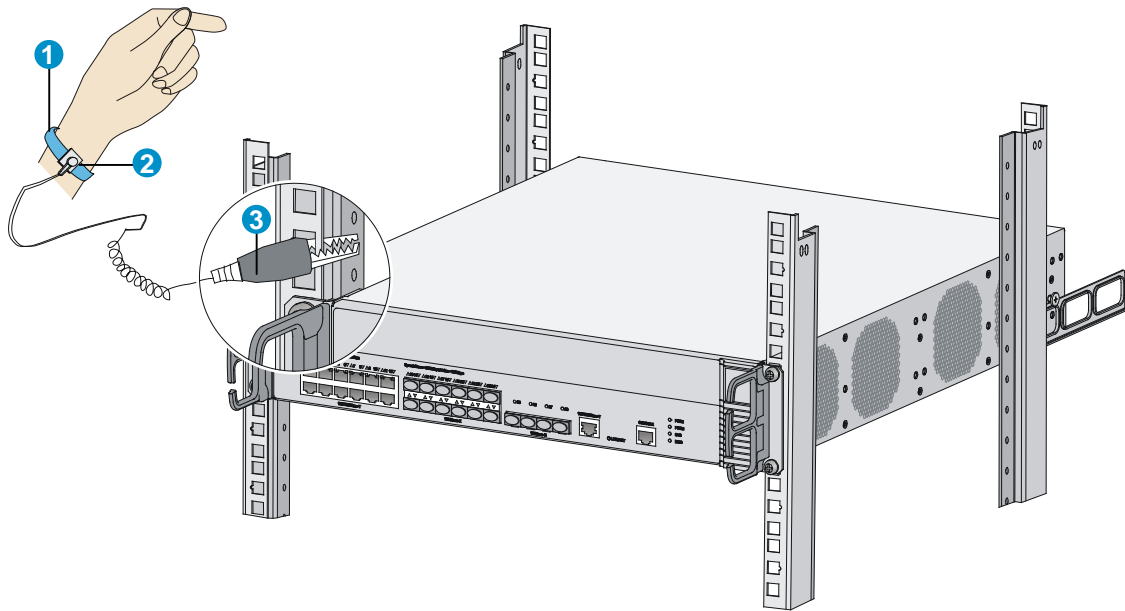
NOTE:

The ESD-preventive wrist strap is not provided with the device. Order it yourself.

To attach an ESD-preventive 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 rack.
5. Make sure the rack is well grounded.

Figure 2 Attaching an ESD-preventive wrist strap



(1) ESD-preventive wrist strap

(2) Lock

(3) Alligator clip

EMI

All electromagnetic interference (EMI) sources, from either outside or inside of the device and application system, adversely affect the device in a conduction pattern of capacitance coupling, inductance coupling, electromagnetic wave radiation, or common impedance (including grounding system) coupling. To prevent EMI, follow these guidelines:

- Use a socket with three pins and PE wire to prevent interference from the power grid.
- Use a grounding system and a lightning protection system for the device separate from those for other electric equipment, and keep them far away as possible.
- Keep the device far away from high-power radio launchers, radars, and equipment with high frequency or high current.
- Use electromagnetic shielding, for example, shielded interface cables, when necessary.

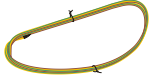

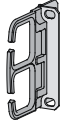
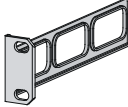
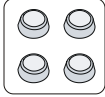
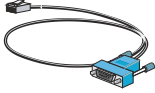




Lightning protection

To better protect the device from lightning, follow these guidelines:

- Make sure the grounding cable of the chassis is well grounded.
- Make sure the grounding terminal of the AC power receptacle is well grounded.

Accessories

Accessories are provided with the device.

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| Grounding cable | M4 screw | Front mounting bracket | Rear mounting bracket | Rubber feet |
|  |  |  |  |  |
| Console cable | AC power cord | Cage nut (user supplied) | M6 screw (user supplied) | Cable tie (user supplied) |

NOTE:

An AC power supply and AC power cord are supplied with the device. The specification of the AC power cord plug varies by country. The AC power cord shown in the figure above is for illustration only.

Installation preparation checklist

Table 4 Installation preparation checklist

| Item | Requirements | Result |
|-------------------|-------------------|---|
| Installation site | Ventilation | <ul style="list-style-type: none"> There is a minimum clearance of 10 cm (3.9 in) around the inlet and exhaust vents for heat dissipation of the device chassis. A ventilation system is available at the installation site. |
| | Temperature | 0°C to 45°C (32°F to 113°F) |
| | Relative humidity | 5% to 95% (noncondensing) |
| | Cleanness | <ul style="list-style-type: none"> Dust concentration $\leq 3 \times 10^4$ particles/m³ No dust on desk within three days |
| | ESD prevention | <ul style="list-style-type: none"> The equipment and rack are well grounded. The equipment room is dust-proof. The humidity and temperature are at a proper level. Wear an ESD-preventive wrist strap. Make sure the wrist strap makes good skin contact and is well grounded when installing FRUs. Place the removed interface card on an antistatic workbench, with the face upward, or put it into an antistatic bag. Touch only the edges instead of electronic components when observing or moving a removed interface card. |

| Item | Requirements | Result |
|----------------------------|---|--------|
| EMI prevention | <ul style="list-style-type: none"> • Take effective measures to protect the power system from the power grid system. • Separate the protection ground of the device from the grounding device or lightning protection grounding device as far as possible. • Keep the device far away from radio stations and radar and high-frequency devices working in high current. • Use electromagnetic shielding when necessary. | |
| Lightning protection | <ul style="list-style-type: none"> • The grounding cable of the chassis is well grounded. • The grounding terminal of the AC power receptacle is well grounded. | |
| Electricity safety | <ul style="list-style-type: none"> • Equip a UPS. • In case of emergency during operation, switch off the external power switch. | |
| Rack-mounting requirements | <ul style="list-style-type: none"> • Install the device in an open rack if possible. If you install the device in a closed cabinet, make sure that the cabinet is equipped with a good ventilation system. • The rack is sturdy enough to support the weight of the device and installation accessories. • The size of the rack is appropriate for the device. • The front and rear of the rack are at least 0.8 m (31.50 in) away from walls or other devices. | |
| Safety precautions | <ul style="list-style-type: none"> • The device is far away from any moist area and heat source. • You have located the emergency power switch in the equipment room. | |
| Accessories | Accessories provided with the device. | |
| Reference | <ul style="list-style-type: none"> • Documents shipped with the device. • Online documents. | |

Installing the device

⚠ WARNING!

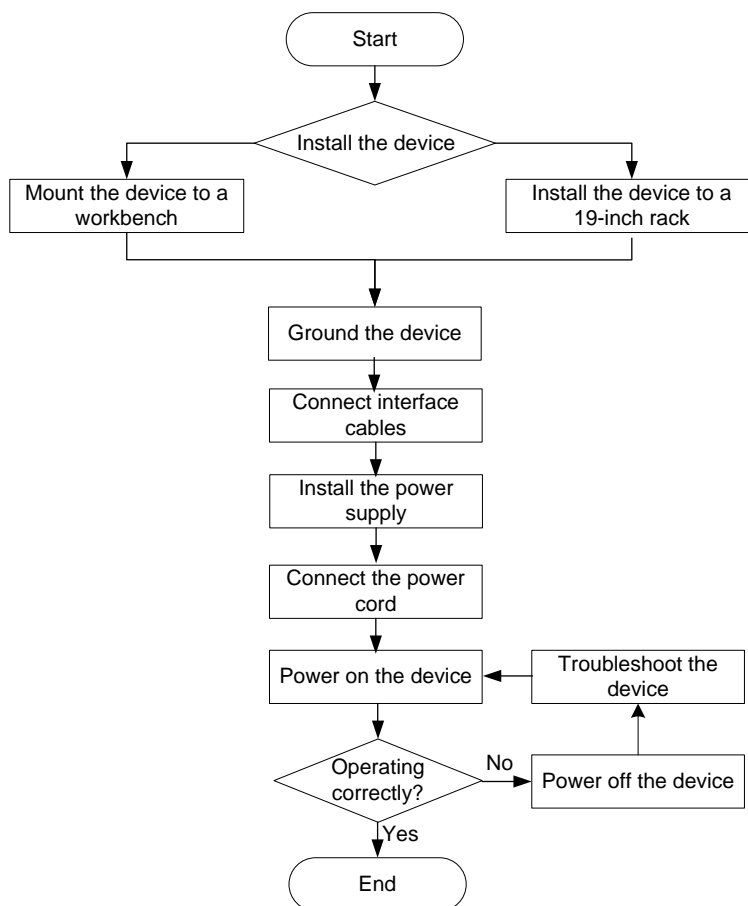
Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact HP Support for permission. Otherwise, HP will not be liable for any consequence caused thereby.

Confirming installation preparations

Before you install the device, verify that you have read "Preparing for installation" carefully and the installation site meets all the requirements.

Installation flow

Figure 3 Installation flow



Mounting the device on a workbench

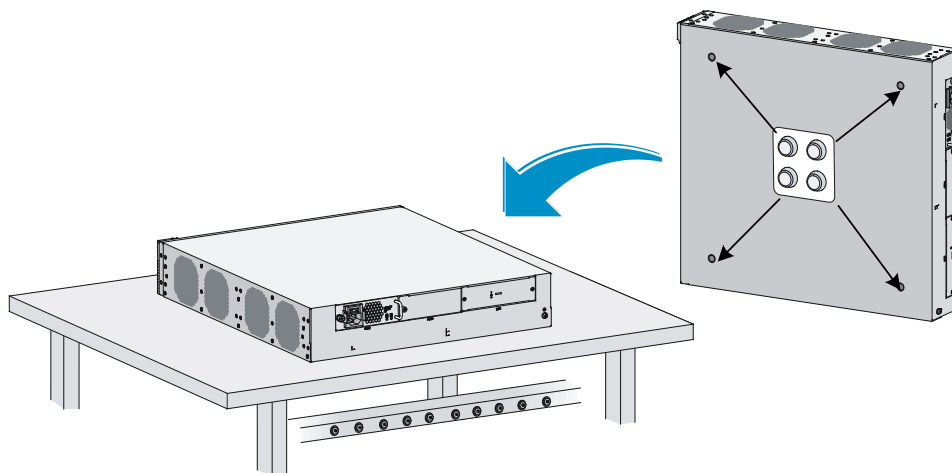
If a standard 19-inch rack is not available, you can place a device on a clean, flat workbench, as follows:

1. Clean the recessed areas on the chassis bottom.
2. Attach the four rubber feet to the recessed areas on the chassis bottom.
3. Place the device on the workbench.

! **IMPORTANT:**

Avoid placing heavy objects on the device.

Figure 4 Mounting the device on a workbench



Installing the device in a 19-inch rack

You can install the device in a 19-inch rack by using the following methods:

- Installing the device by using front and rear mounting brackets.
- Installing the device by using front mounting brackets and a rack shelf.
- Installing the device by using front mounting brackets and slide rails.

Mounting brackets

Figure 5 Front mounting bracket

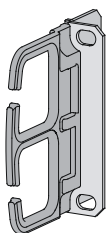
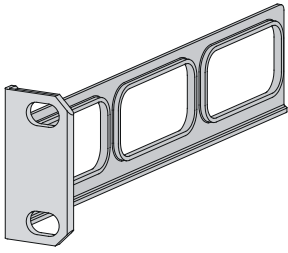


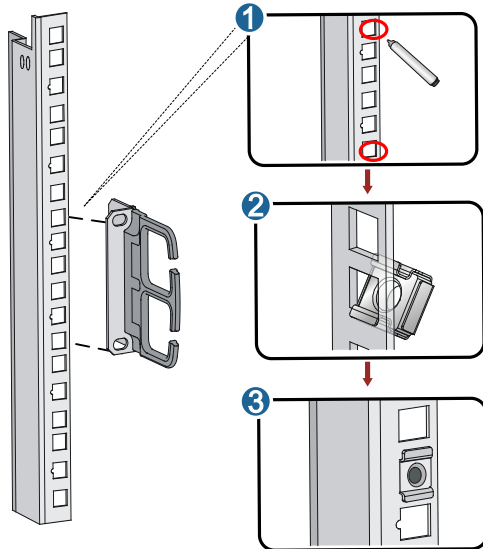
Figure 6 Rear mounting bracket



Installing the device by using front and rear mounting brackets

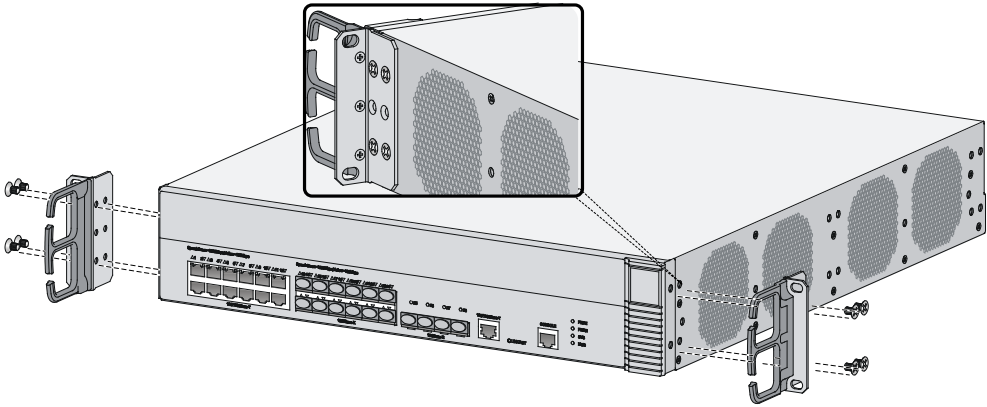
1. Wear the ESD-preventive wrist strap and make sure the rack is well grounded and sturdy enough.
2. Mark the position on the rack for installing the mounting brackets, and install cage nuts.

Figure 7 Installing cage nuts



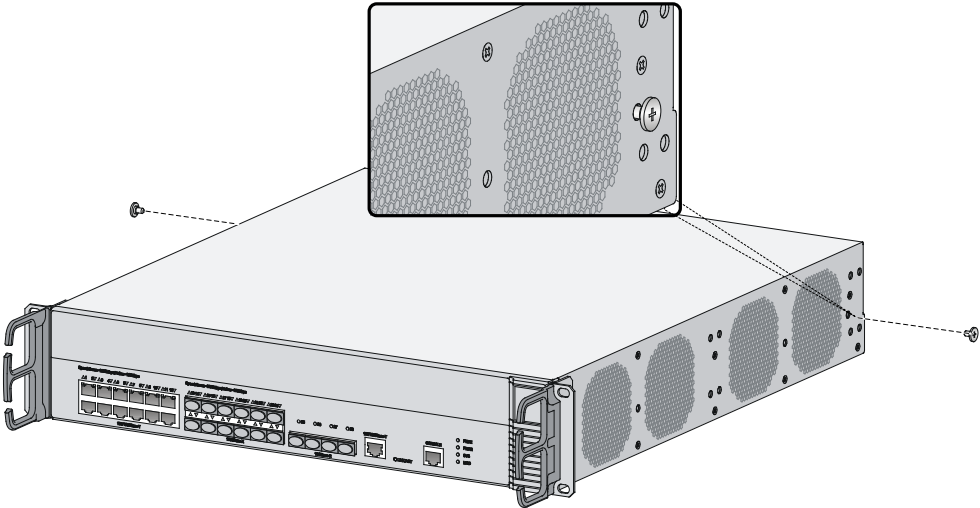
3. Use the screws packed with the front mounting brackets to secure the front mounting brackets to both sides of the device.

Figure 8 Installing the front mounting brackets



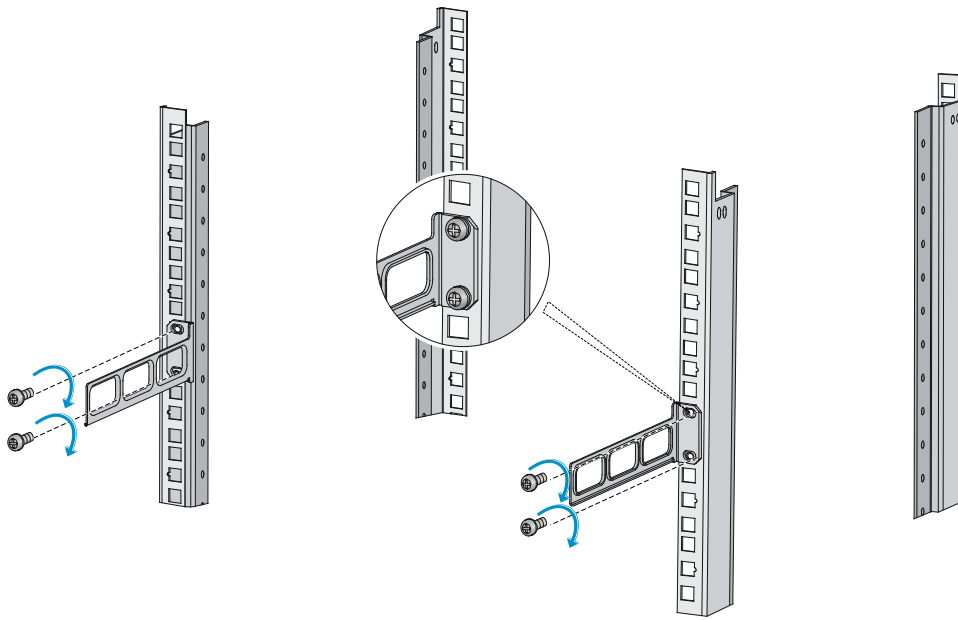
- 4. Attach the weight-bearing screws packed with the rear mounting brackets to both sides of the device.
The rear mounting brackets work with the weight-bearing screws to support the device.

Figure 9 Installing the weight-bearing screws



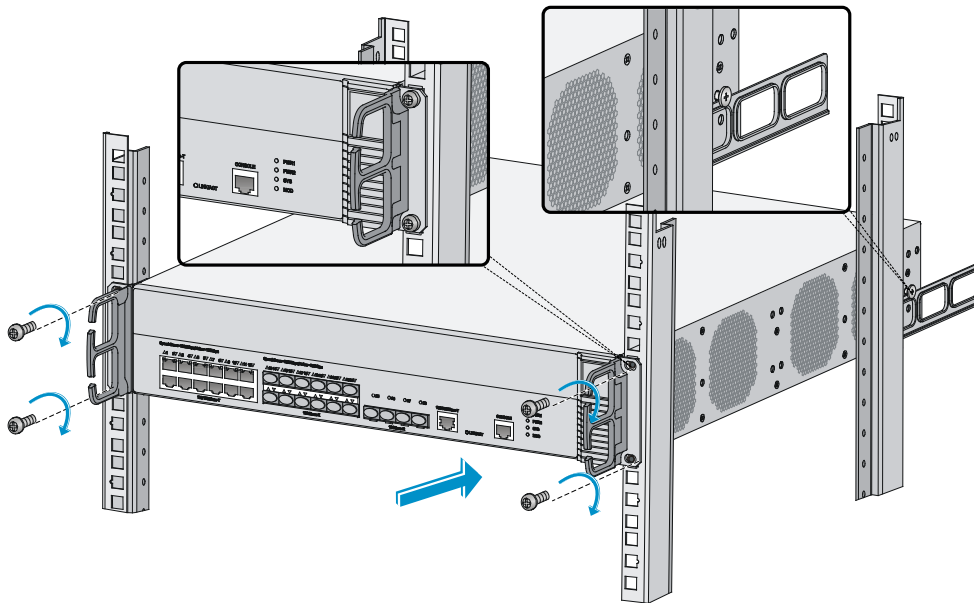
- 5. Determine the device installation position in the rack and use screws and cage nuts to attach the rear mounting brackets to the rear rack posts.

Figure 10 Installing rear mounting brackets



6. Supporting the bottom of the device with one hand, push the device horizontally into the rack. Attach the front mounting brackets on the device to the front rack posts with screws and cage nuts, as shown in [Figure 11](#).

Figure 11 Installing the device to the rack



NOTE:

After pushing the device into the rack, make sure the upper edges of the rear mounting brackets attached to the rack make close contact with the weight-bearing screws on the device.

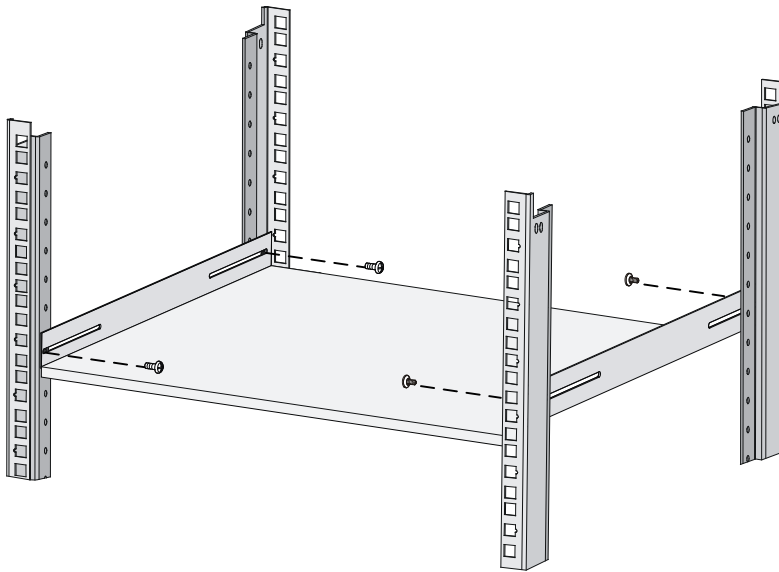
Installing the device by using front mounting brackets and a rack shelf

The rack shelf is an optional component that needs to be separately ordered if needed. The rack shelf in this example is for illustration only.

To install the device by using front mounting brackets and a rack shelf:

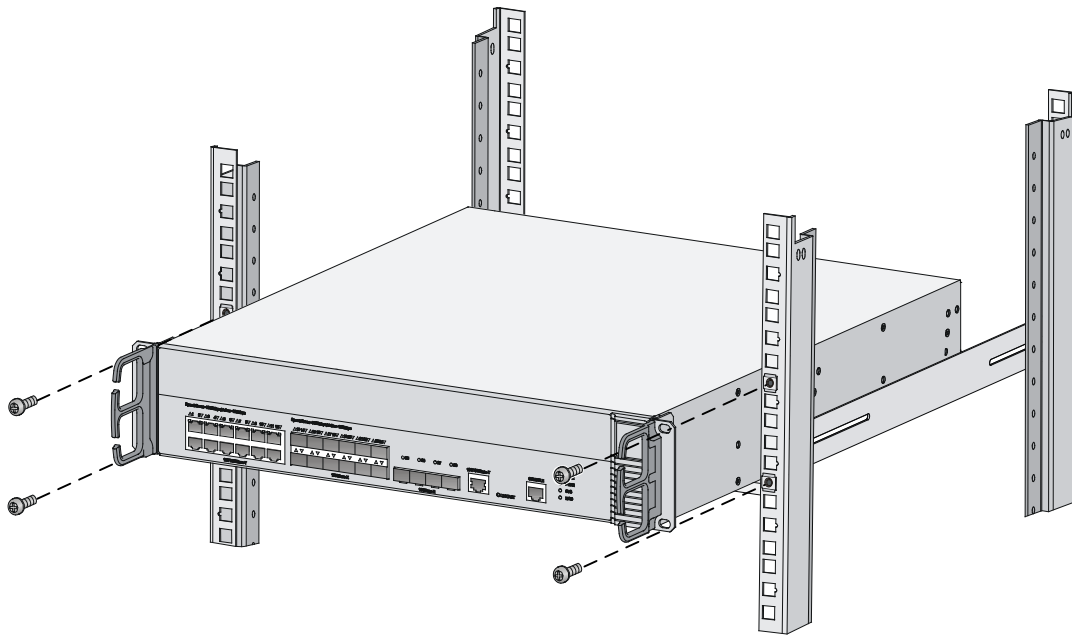
1. Wear the ESD-preventive wrist strap and verify that the rack is well grounded and sturdy enough.
2. Use the screws packed with the front mounting brackets to attach the front mounting brackets to the device, as shown in [Figure 8](#).
3. Attach the rack shelf to the appropriate position of the rack. See [Figure 12](#) for reference.

Figure 12 Installing the rack shelf



4. Push the device to the rack along the rack shelf, and attach the front mounting brackets on the device to the front rack posts by using screws and cage nuts, as shown in [Figure 13](#).

Figure 13 Installing the device to the rack



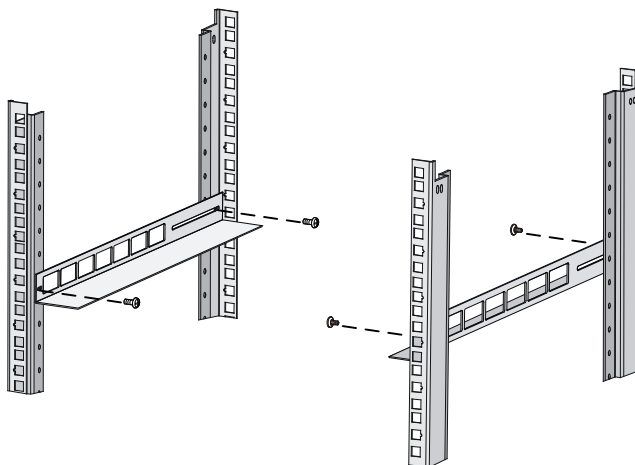
Installing the device by using front mounting brackets and slide rails

The slide rails are optional components that need to be separately ordered if needed. The slide rails in this example are for illustration only.

To install the device by using front mounting brackets and slide rails:

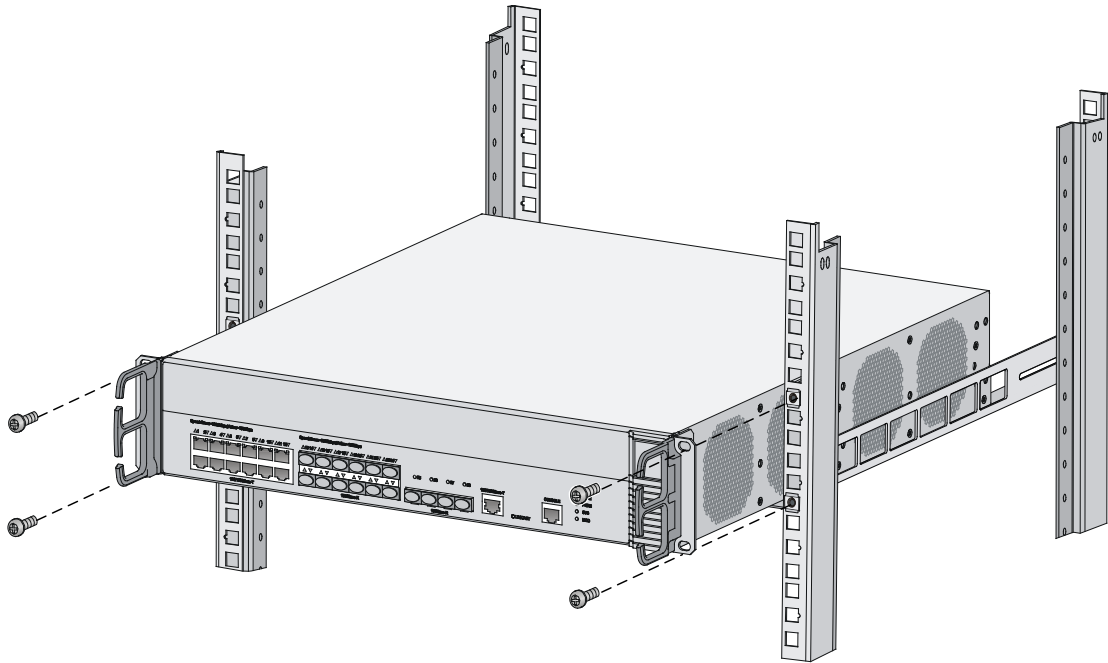
1. Wear the ESD-preventive wrist strap and verify that the rack is well grounded and sturdy enough.
2. Use the screws packed with the front mounting brackets to attach the front mounting brackets to the device, as shown in [Figure 8](#).
3. Install the slide rails to the rack. See [Figure 14](#) for reference.

Figure 14 Installing slide rails



4. Holding both sides of the device, push the device to the rack along the slide rails, as shown in Figure 15. Make sure the chassis bottom makes close contact with the slide rails.

Figure 15 Installing the device to the rack



5. Attach the front mounting brackets on the device to the front rack posts with M6 screws and cage nuts.

NOTE:

Keep at least a distance of 1 U (44.45 mm, or 1.75 in) between devices for proper heat dissipation.

Grounding the device

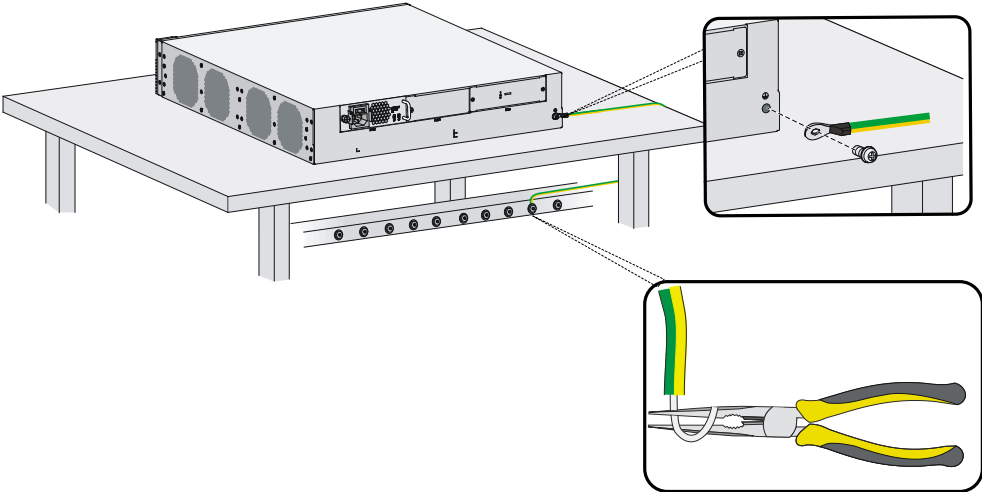
⚠ WARNING!

- Correctly connecting the device grounding cable is crucial to lightning protection and EMI protection.
 - Connect the grounding cable to the grounding system in the equipment room. Do not connect it to a fire main or lightning rod.
-

To ground the device:

1. Use a Phillips screwdriver to remove the grounding screw from the chassis.
2. Use the grounding screw to attach one end (with ring terminal) of the grounding cable to the chassis.
3. Connect the other end of the grounding cable according to the grounding method you use:
 - **Ground the device with a grounding strip**—If a grounding strip is available at the installation site, connect the other end of the grounding cable to the grounding strip and make sure the grounding strip has been correctly grounded.

Figure 16 Grounding the device with a grounding strip



- **Ground the device with the rack**—Connect the other end of the grounding cable to the grounding point on the rack and make sure the rack has been correctly grounded.

Figure 17 Grounding the device with the rack (1)

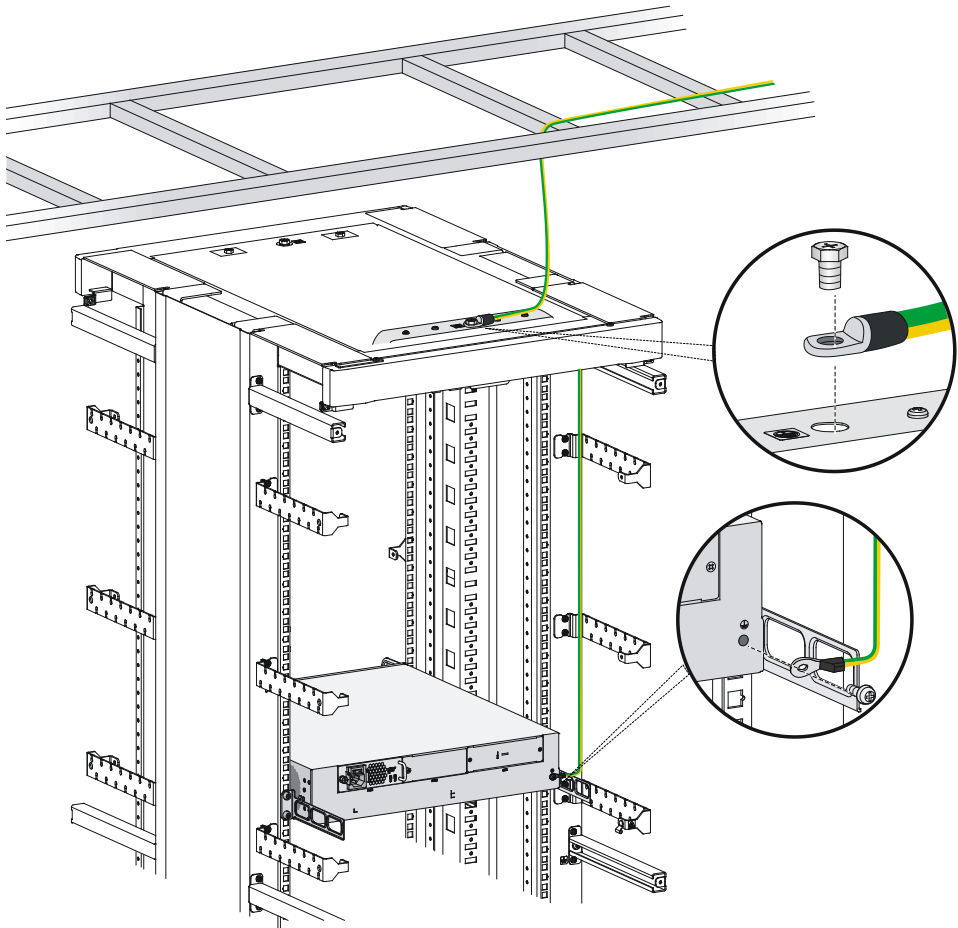
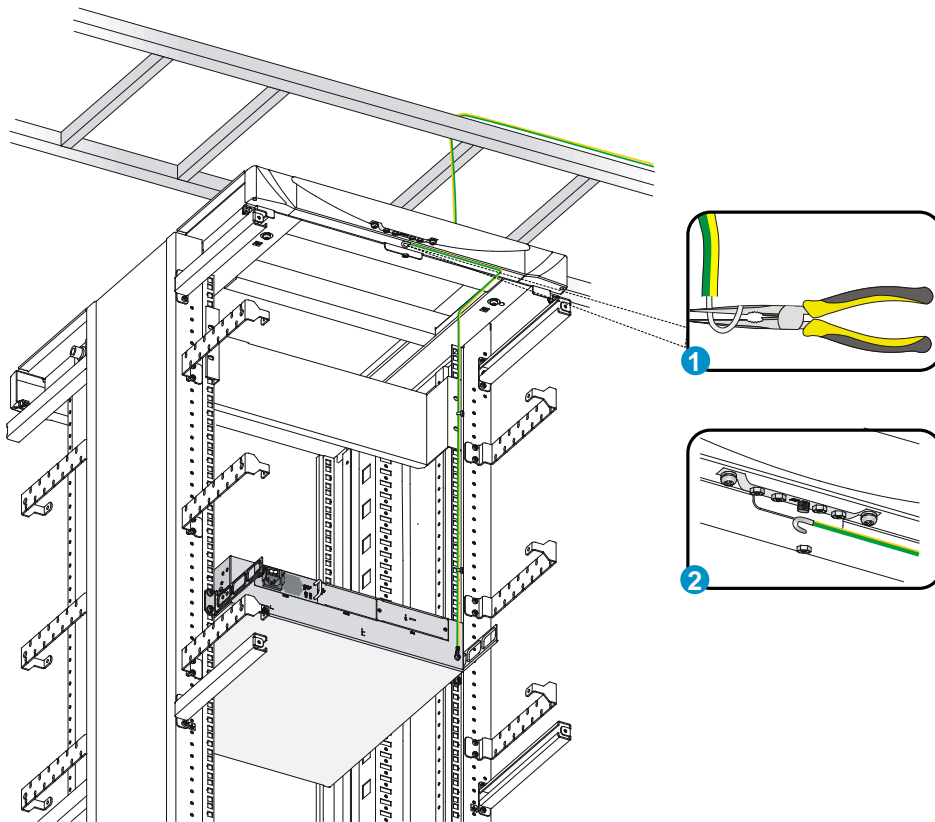
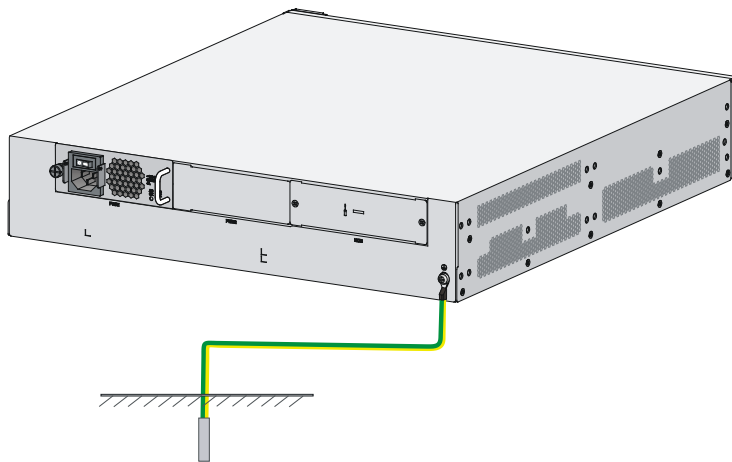


Figure 18 Grounding the device with the rack (2)



- **Grounding the device with a grounding conductor buried in the earth**—If earth is available at the installation site, hammer a 0.5 m (1.64 ft) or longer angle iron or steel tube into the earth to serve as a grounding conductor. Weld the yellow-green grounding cable to the angle iron or steel tube and treat the joint for corrosion protection.

Figure 19 Grounding the device by burying the grounding conductor into the earth

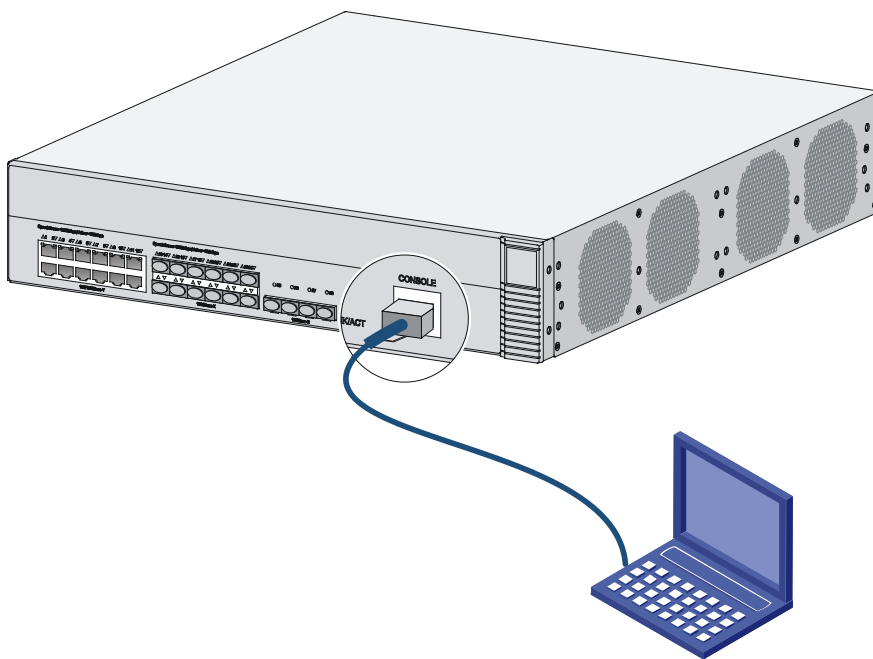


Connecting the console cable and setting terminal parameters

Connecting the console cable

1. Prepare a configuration terminal.
The configuration terminal can be an ASCII terminal with an RS232 serial port or a PC. The description in this section assumes that you use a PC as the configuration terminal.
2. Connect the console cable:
 - a. Plug the DB-9 female connector of the console cable to the serial port of the PC.
 - b. Connect the RJ-45 connector to the console port of the device.

Figure 20 Connecting the console cable



NOTE:

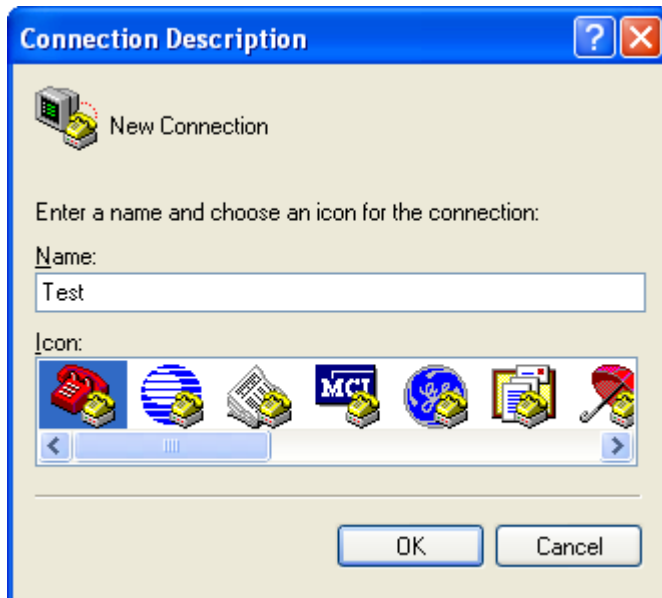
- Identify the mark on the console port and make sure you are connecting to the correct port.
 - If the device has been powered on, connect the console cable to the PC before connecting it to the device. When you disconnect the cable, first disconnect it from the device.
-

Setting terminal parameters

To set terminal parameters, for example, on a Windows 95/98/NT/2000/XP HyperTerminal:

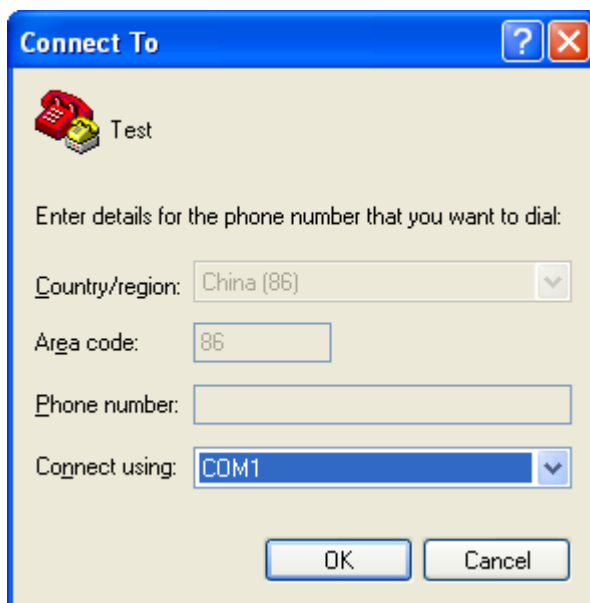
1. Select **Start > All Programs > Accessories > Communications > HyperTerminal**.
The **Connection Description** dialog box appears.
2. Enter a name for the new connection in the **Name** field and click **OK**.

Figure 21 Connection description



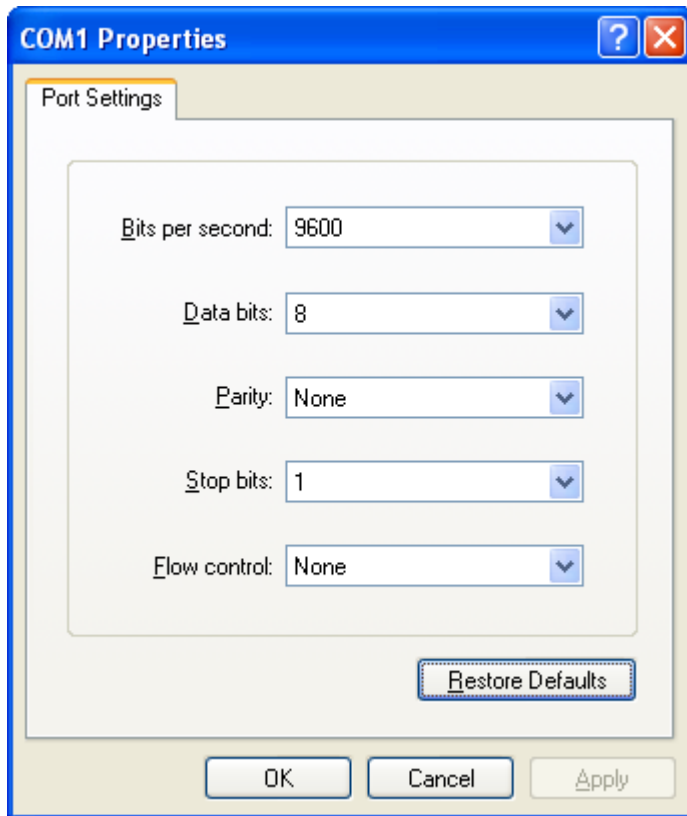
3. Select the serial port to be used from the **Connect using** list, and click **OK**.

Figure 22 Setting the serial port used by the HyperTerminal connection



4. Set **Bits per second** to **9600**, **Data bits** to **8**, **Parity** to **None**, **Stop bits** to **1**, and **Flow control** to **None**, and click **OK**.

Figure 23 Setting the serial port parameters

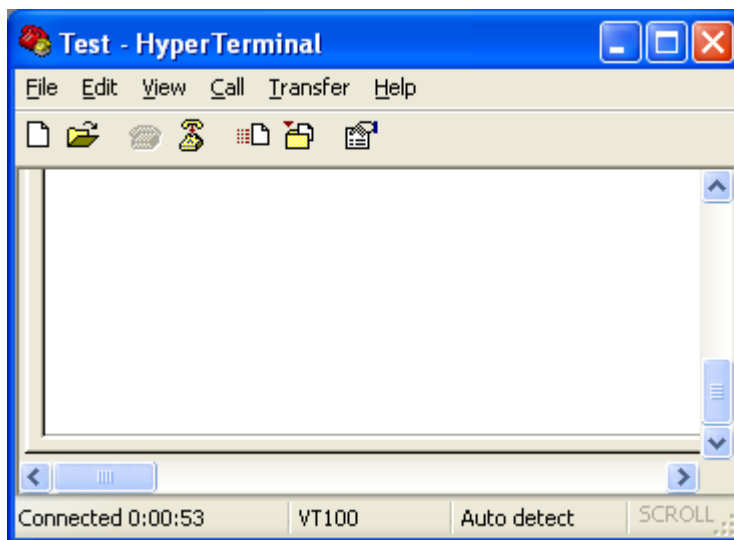


NOTE:

To restore the default settings, click Restore Defaults.

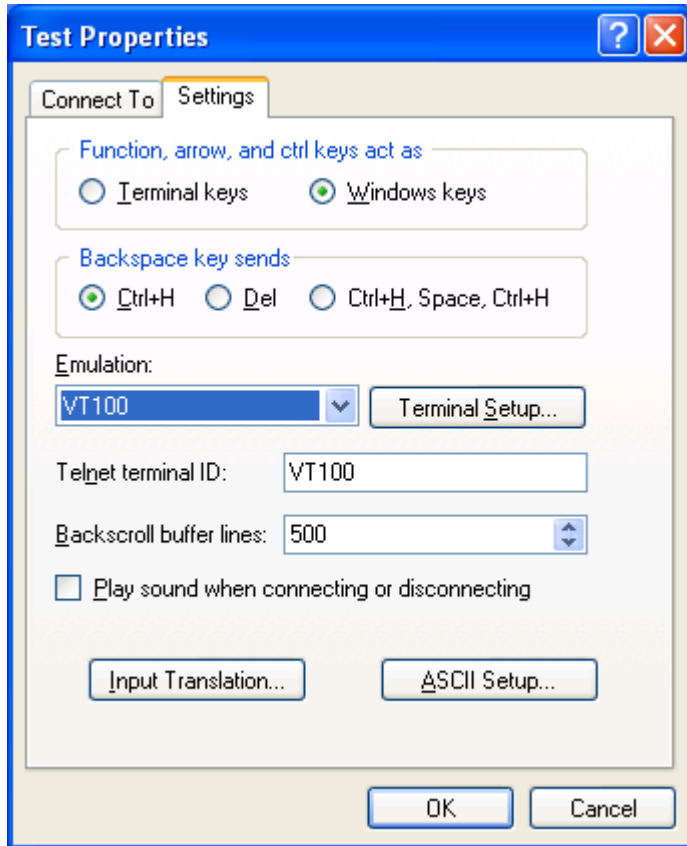
5. Select **File > Properties** in the HyperTerminal window.

Figure 24 HyperTerminal window



6. On the **Settings** tab, set the emulation to **VT100** and click **OK**.

Figure 25 Setting the terminal emulation in Test Properties dialog box



Connecting the Ethernet cables

Connecting a copper Ethernet port

1. Connect one end of the Ethernet cable to the copper Ethernet port of the device, and the other end to the Ethernet port of the peer device.
2. After powering on the device, examine the LEDs of the fixed copper Ethernet port.
For more information about the LED description, see "[Appendix B LEDs.](#)"

Connecting a fiber port

No transceiver module is provided with the device. The device supports only LC-type fiber connectors. For transceiver module specifications, see "[Appendix A Chassis views and technical specifications.](#)"

Follow these guidelines when you connect an optical fiber:

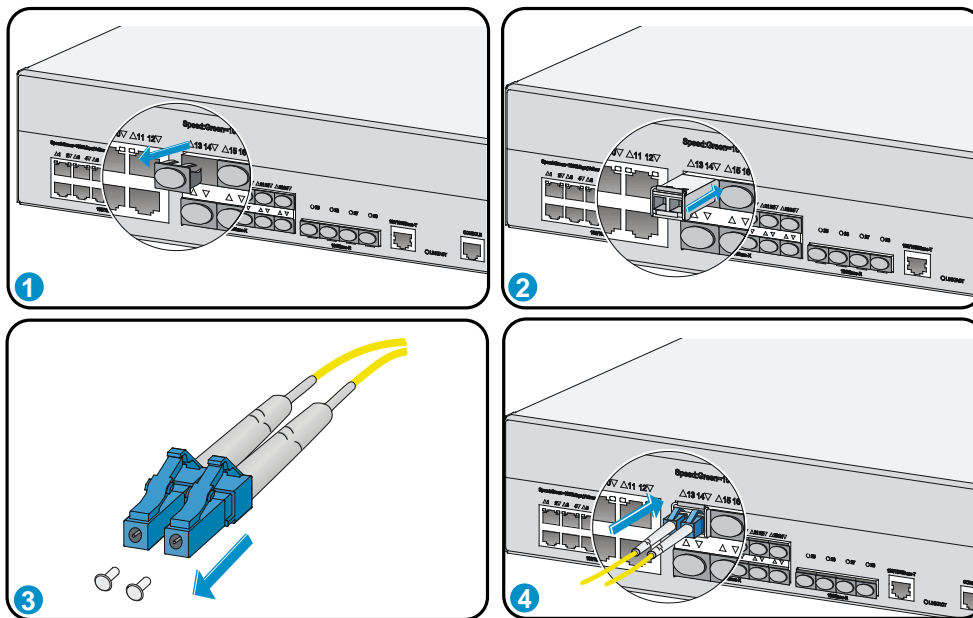
- Never stare into an open fiber port, because invisible rays might be emitted from the fiber port.
- Cover the dust plug if no optical fiber connector is connected to the fiber port.
- Never bend or curve a fiber when connecting it. After a fiber is installed correctly, the bend radius must be not less than 10 cm (3.94 in).
- Keep the fiber end clean.

- Make sure the Tx and Rx ports on a transceiver module are correctly connected.

To connect the device to the network through an optical fiber:

1. Remove the dust plug on the fiber port.
2. Remove the dust cover from the transceiver module, and insert the transceiver module into the fiber port.
3. Remove the dust cover of the optical fiber connector.
4. Identify the Rx and Tx ports on the transceiver module. Plug the LC connectors at one end of the optical fiber into the Rx and Tx ports of the transceiver module and the other end into the Tx and Rx ports of the peer device.

Figure 26 Connecting an optical fiber



5. Power on the device, and examine the SFP port LEDs:
 - If the LED is on, a fiber link has been set up.
 - If the LED is off, no link has been set up. The reason might be wrong connection of the Tx and Rx ends. Connect the Tx and Rx ends at one end of the fiber again.

Installing a power supply

⚠ CAUTION:

Do not install an AC power supply and a DC power supply on the same device. The HP 870 cannot balance the output current between AC and DC power supplies installed in the same chassis, which causes one power supply to be in light-load status and one in heavy-load status. Should the heavy-load power supply fail or be removed, the remaining light-load power supply will immediately switch to heavy-load status and the output voltage will drop. This voltage drop may cause the device to reboot.

1. Remove the filler panel (if any) from the slot where you want to install a power supply with a Phillips screwdriver.
Keep the remove filler panel for future use.

2. Holding the handle of the power supply with one hand and supporting the bottom of the power supply with another hand, push the power supply into the slot along the guide rails until the power supply is completely inserted.
3. Use a Phillips screwdriver to fasten the captive screws on the power supply.

Figure 27 Installing an AC power supply

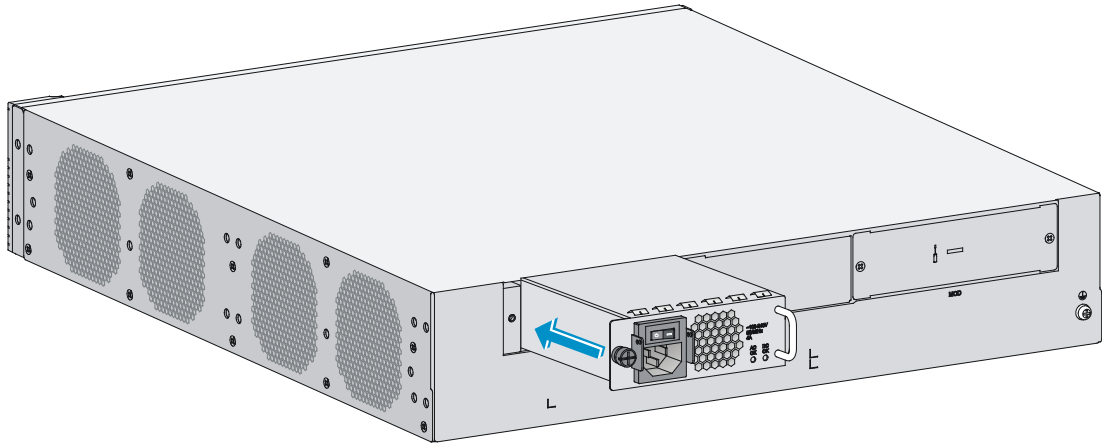
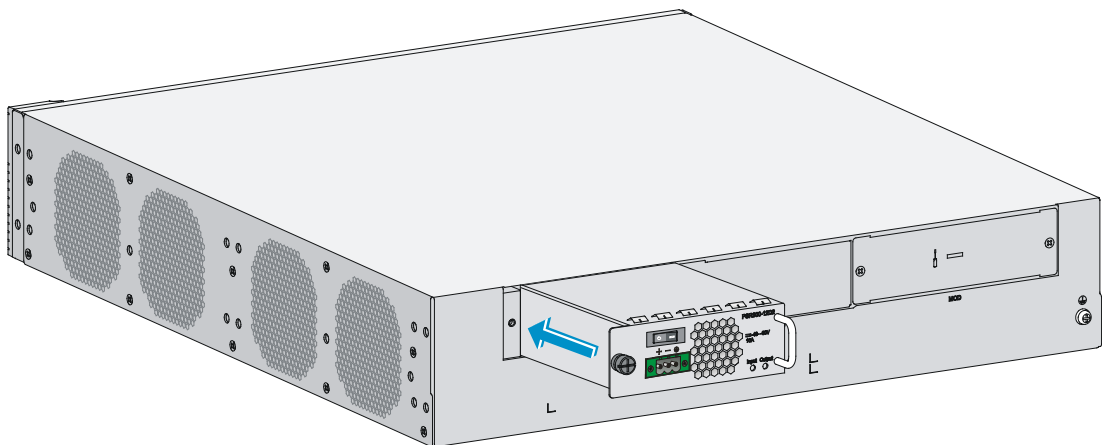


Figure 28 Installing a DC power supply



Connecting the AC power cord

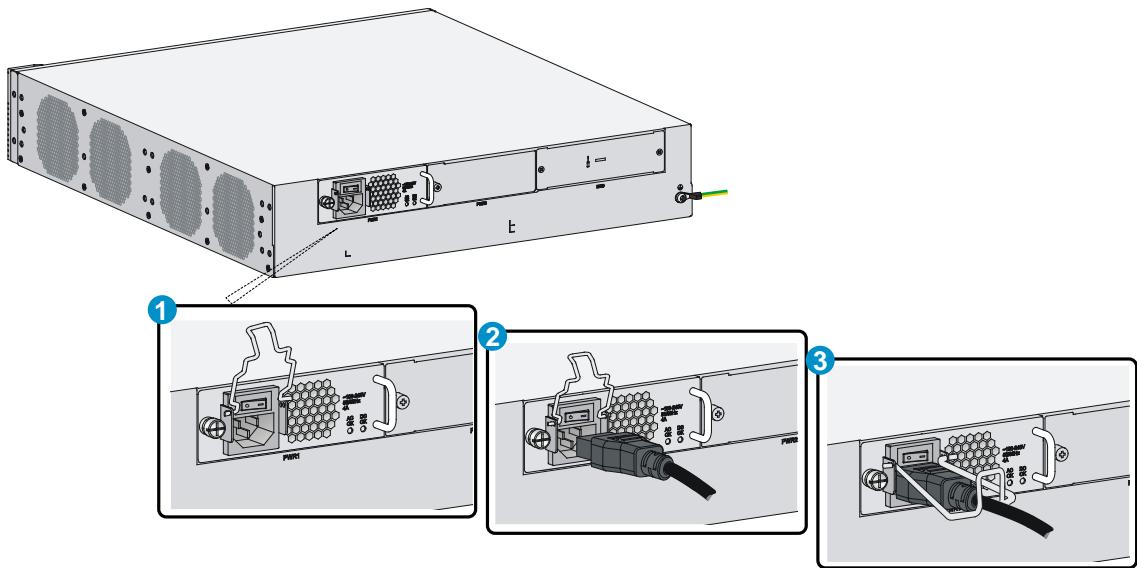
△ CAUTION:

Before powering on the device, connect the grounding cable of the device.

To connect the AC power cord:

1. Pivot the bail latch upward.
2. Connect one end of the AC power cord to the AC-input power receptacle on the device.
3. Pivot the bail latch downward to secure the power cord.
4. Connect the other end of the AC power cord to the AC power source.

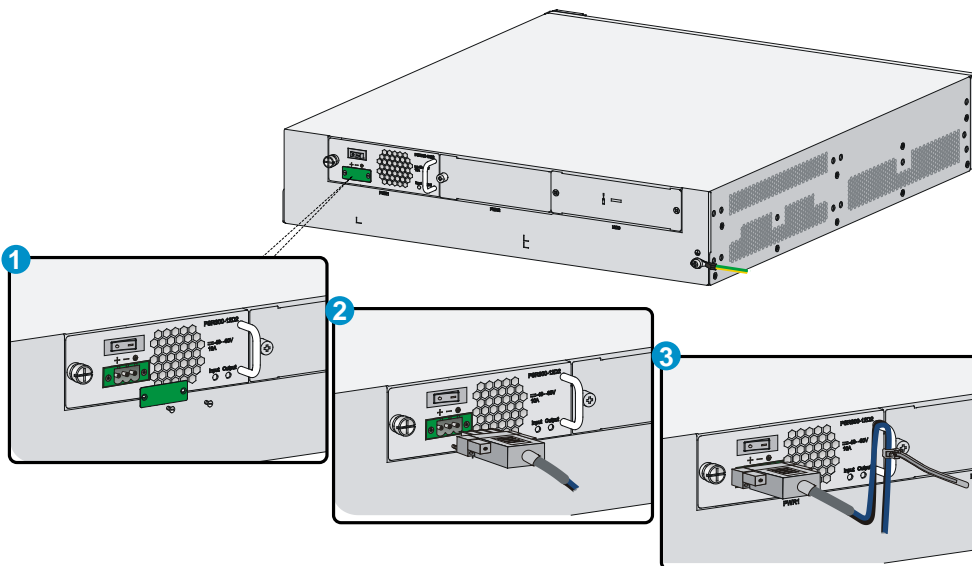
Figure 29 Connecting an AC power cord



Connecting the DC power cord

1. Use a flat-blade screwdriver to remove the protection cover from the DC power supply.
2. Correctly insert the DC plug into the DC power receptacle.
3. Use a flat-blade screwdriver to fasten the screws on the DC plug.
4. Connect the other end of the DC power cord to the DC power source.

Figure 30 Connecting a DC power cord



Verifying the installation

Before powering on the device, verify that:

- The correct power source is used.
- The grounding cable is securely connected.
- The console cable and power cord are correctly connected.

Powering on the device

1. Power on the device. The device initializes its memory and runs the BootWare. The following information appears on the terminal screen:

```
System is starting...
Press Ctrl+D to access BASIC-BOOTWARE MENU
Press Ctrl+T to start heavy memory test
Booting Normal Extend BootWare....
The Extend BootWare is self-decompressing.....Done!

*****
*
*          HP 870 Unified Wired-WLAN JG723A BootWare, Version 1.05          *
*
*****

Compiled Date       : Aug 14 2013
CPU Type           : XLP432
CPU Clock Speed    : 1400MHz
Memory Type        : DDR3 SDRAM
Memory Size        : 8192MB
Memory Speed       : 1333MHz
BootWare Size      : 768KB
Flash Size         : 16MB
cfa0 Size          : 4002MB
CPLD1 Version      : 005
CPLD2 Version      : 004
PCB Version        : Ver.A

BootWare Validating...
Press Ctrl+B to enter extended boot menu...
```

2. Press **Ctrl + B** at the prompt within 4 seconds to access the Boot menu. Otherwise, the system enters the system image file reading and self-compressing process.

To access the Boot menu after the system enters the system image file reading and self-compressing process, restart the device.

```
Starting to get the main application file--cfa0:/main.bin!...
.....
The main application file is self-decompressing.....
```

.....
.....Done!

System application is starting...

Startup configuration file does not exist.

It will take a long time to get configuration file, please wait...

Retrieving configuration file failed!

User interface con0 is available.

Press ENTER to get started.

Press **Enter** at the prompt, and you can configure the device when the prompt **<HP>** appears.

During the startup process, the CPLD is automatically upgraded to the latest version.

Troubleshooting

Power supply failure

If the device cannot be powered on and the system status LED PWR is off, verify the following items:

- The external AC power system is correctly working.
- The AC power cord is securely connected to the device.
- The power cord is in good condition.

NOTE:

If the problem persists, contact HP Support.

Configuration terminal problems

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

No terminal display

If the configuration terminal displays nothing when the device is powered on, verify the following items:

- The power supply is supplying power to the device.
- The console cable is correctly connected.
- The terminal settings are correct.

Garbled terminal display

If terminal display is garbled, verify that the following settings are configured for the terminal, for example, HyperTerminal:

- **Baud rate**—9600
- **Data bits**—8
- **Parity**—none
- **Stop bits**—1
- **Flow control**—none
- **Emulation**—VT100

Login password loss

△ CAUTION:

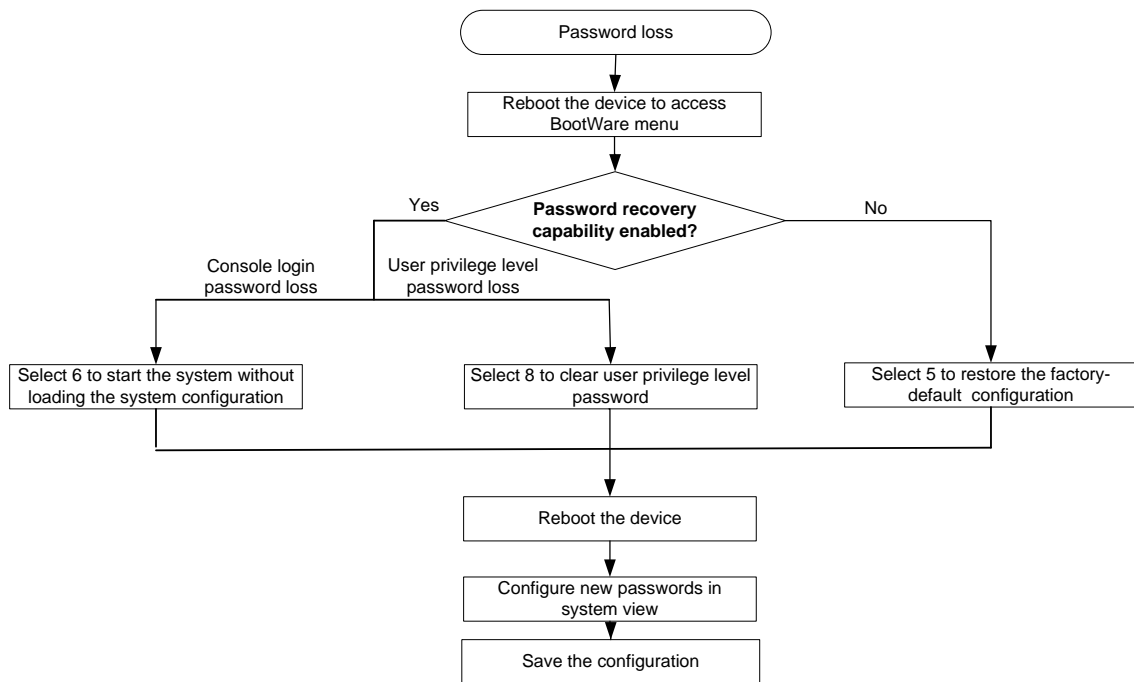
Dealing with console login password loss and user privilege level password loss from BootWare menus is disruptive.

How to deal with console login password loss and user privilege level password loss depends on the state of password recovery capability (see Figure 31). Password recovery capability controls console user access to the device configuration and SDRAM from BootWare menus.

- If password recovery capability is enabled, a console user can access the device configuration without authentication and configure new passwords.
- If password recovery capability is disabled, a console user must restore the factory-default configuration before configuring new passwords. Restoring the factory-default configuration deletes the main and backup next-startup configuration files.

To enhance system security, disable password recovery capability.

Figure 31 Dealing with password loss



Dealing with console login password loss

To set a new password if you forget the console login password:

1. If the password recovery capability is enabled, select **6** from the BootWare menu to start the system without loading the system configuration.

The following information appears:

Flag Set Success.

2. If the password recovery capability is disabled, select **5** from the BootWare menu to start the system with the factory default configuration.

The following information appears:

```
Because the password recovery capability is disabled, this operation can
cause the configuration files to be deleted, and the system will start up
with factory defaults. Are you sure to continue?[Y/N]Y
Setting...Done.
```

3. When the BootWare menu appears again, select **0** to reboot the device.

The following information appears:

```
System start booting...
```

When you start the system without loading the system configuration, follow these steps to set a new login password:

1. After reboot, copy the configuration file to the PC through TFTP or FTP, and modify the configuration file in the text editor. Delete the password from the configuration file.
2. Copy the configuration file to the device to replace the original configuration file.
3. Set the next-startup configuration file.

```
<HP>system-view
<HP>startup saved-configuration startup.cfg
Please wait ...
... Done!
```

4. Restart the device, and set a new password.

```
<HP>system-view
[HP]user-interface aux 0
[HP-ui-aux0]authentication-mode password
[HP-ui-aux0]set authentication password cipher 123456
```

5. Save the new configuration by using the **save** command.

```
<HP> save
```

Dealing with user privilege level password loss

1. Select **8** from the BootWare menu to clear the user privilege level password.
This operation takes effect at next reboot only. The user privilege level password is restored at a second reboot.
2. Reboot the device and you can directly enter system view.

Software loading failure

If software loading fails, the system runs previous software version. To troubleshoot the software loading failure:

- Verify that the physical ports are correctly connected. If the cable of any port is not connected, re-connect the cable to the port, and make sure the physical connection is correct. Load the software again.
- Check for errors in the software loading process displayed on the HyperTerminal. If errors exist, correct them, and load the software again.

For example, the software loading failures might occur in the following situations:

- When you use XMODEM to load software, you select a baud rate other than 9600 bps, but you have not reset the baud rate for the HyperTerminal.
- When you use TFTP to load software, you entered an incorrect IP address, software name, or TFTP serve path.
- When you use FTP to load software, you entered an incorrect IP address, software name, username, or password.

If software loading has failed even if the physical connections are in good condition and the software loading process does not have any input errors, contact HP Support.

Hardware management and maintenance

The CLI and outputs depend on the software version that is running on the device.

Logging in to the switching engine by using OAP

You can log in to the operating system of the switching engine from the controller engine side. Then the command line interface is switched from the controller engine to the switching engine, where you can manage the switching engine's system and application software. To return to the command line interface of the controller engine, press **Ctrl + K**.

To log in to the switching engine by using OAP at the controller engine side:

| Task | Command | Remarks |
|--|---|--------------------------------------|
| Log in to the switching engine by using OAP at the controller engine side. | oap connect slot <i>slot-number</i> | Required. Available in user view. |

Displaying hardware information for the device

Displaying software and hardware version information for the controller engine

Use the **display version** command to display software and hardware version information about the device. The output includes the following information: the current software, the hardware version, and the device operating time. The output depends on the software and hardware version of the device.

- On the controller engine:

```
<HP>display version
HP Comware Platform Software
Comware Software, Version 5.20.109, ESS 2607P10
Copyright (c) 2010-2013 Hewlett-Packard Development Company, L.P.
HP 870 uptime is 0 week, 0 day, 0 hour, 1 minute

HP 870 with 1 RMI XLP 432 1400MHz Processor
8192M bytes DDR3
16M bytes Flash Memory
4002M bytes CFCard Memory

Hardware Version is Ver.A
FPGA1 Hardware Version is Ver.A
FPGA2 Hardware Version is Ver.A
CPLD 1 CPLD Version is 005
CPLD 2 CPLD Version is 004
```

```
FPGA1 Logic Version is 307
FPGA2 Logic Version is 307
Basic Bootrom Version is 1.05
Extend Bootrom Version is 1.05
[Slot 0]870 LSW Hardware Version is NA
[Slot 1]870 Hardware Version is Ver.A
```

- On the switching engine:

```
<HP>display version
HP Comware Platform Software
Comware Software, Version 5.20.105, ESS 2607P09
Copyright (c) 2010-2013 Hewlett-Packard Development Company, L.P.
HP 870 LSW uptime is 0 week, 0 day, 0 hour, 2 minutes
```

```
HP 870 LSW with 2 Processors
1024M bytes DDR3
16M bytes Nor Flash Memory
Config Register points to Nor Flash
```

```
Hardware Version is Ver.A
CPLDA Version is 005, CPLDB Version is 004
BootRom Version is 1.05
[SubSlot 0] 12GE+12SFP+4SFP Plus Hardware Version is Ver.A
```

Displaying operational statistics for the device

When you perform routine maintenance or the system fails, you might need to display the operational information of each feature module to locate failures. Typically, you need to run the **display** commands individually. However, you can use the **display diagnostic-information** command in any view to display or save the operational statistics of multiple feature modules of the device. This command displays the output of the **display clock**, **display version**, **display device**, and **display current-configuration** commands.

- Save the operational statistics for each feature module of the device:

```
<HP>display diagnostic-information
Save or display diagnostic information (Y=save, N=display)? [Y/N]:y
Please input the file name(*.diag)[cfa0:/default.diag]:
The file already exists, overwrite it? [Y/N]:y
Diagnostic information is outputting to cfa0:/default.diag.
Please wait...
Save successfully.
```

Execute the **more default.diag** command in user view, and then press the **Page Up** and **Page Down** keys to view the contents of the file **default.diag**.

- Display the operational statistics for each feature module of the device. (Details not shown.)

```
<HP>display diagnostic-information
Save or display diagnostic information (Y=save, N=display)? [Y/N]:n
=====
=====running CPU usage information=====
=====
===== Current CPU usage info =====
```

```

CPU Usage Stat. Cycle: 10 (Second)
CPU Usage           : 5%
CPU Usage Stat. Time : 2000-04-26 12:14:04
CPU Usage Stat. Tick : 0x19(CPU Tick High) 0x630a8910(CPU Tick Low)
Actual Stat. Cycle   : 0x0(CPU Tick High) 0x5ca8260f(CPU Tick Low)

```

```

TaskName      CPU      Runtime(CPU Tick High/CPU Tick Low)
VIDL          95%      0/5838f781
TICK          0%      0/ 2d0b28
STMR          0%      0/ 59a42
L2X0          0%      0/ 814bf9
bC.0          1%      0/ 13429c7
bLK0          0%      0/ b60514
...

```

Displaying detailed information about the device

Use the **display device verbose** command to display detailed information about the device.

- On the controller engine:

```

<HP>display device verbose
Slot No  Board Type      Status      Max Ports
0        870 LSW           Normal      -
1        870            Normal      5

```

Table 2 Command output (on the controller engine)

| Field | Description |
|------------|--|
| Slot No. | Slot number of the controller engine. |
| Board Type | Controller engine model. |
| Status | Operational status of the controller engine: <ul style="list-style-type: none"> Fault—The controller engine in the slot has failed and cannot boot correctly. Normal—The controller engine in the slot is operating correctly. |
| Max Ports | Maximum number of interfaces that the controller engine supports. |

- On the switching engine:

```

<HP>display device verbose
Slot 1
SubSNo PortNum PCBVer  FPGAVer CPLDVer BootRomVer AddrLM Type      State
0      33      Ver.A  NULL    005 004 1.05      IVL    MAIN    Normal

slot 1 info:
Up Time      : 0 weeks, 0 days, 0 hours, 7 minutes
Board Type   : HP 870 LSW
Board Status : Master
Software Ver : ESS 2607P09
Patch Ver    : None
PCB Ver      : Ver.A
BootRom Ver  : 1.05

```

Table 3 Command output (on the switching engine)

| Field | Description |
|------------|--|
| SubSNo | Slot number of the switching engine. |
| PortNum | Maximum number of interfaces that the switching engine supports. |
| PCBVer | PCB version of the switching engine. |
| FPGAVer | FPGA version of the switching engine. |
| CPLDVer | CPLD version of the switching engine. |
| BootRomVer | Boot ROM version of the switching engine. |
| AddrLM | Address learning mode. |
| Type | Switching engine model. |
| State | Switching engine status. |

Displaying the electronic label data for the device

An electronic label is a profile of a device. It contains the permanent configuration, including the serial number, manufacturing date, MAC address, and vendor name.

Use the **display device manuinfo** command to display the electronic label data for the device.

- On the controller engine:

```
<HP>display device manuinfo
Subslot 0
DEVICE_NAME           : 870 Unified Wired-WLAN JG723A
DEVICE_SERIAL_NUMBER : CN11G5N111
MAC_ADDRESS           : C4CA-D9DE-4FAF
MANUFACTURING_DATE   : 2013-05-08
VENDOR_NAME           : HP
```

- On the switching engine:

```
<HP>display device manuinfo
Slot 1:
DEVICE_NAME           : 870 Unified Wired-WLAN JG723A
DEVICE_SERIAL_NUMBER : CN11G5N111
MAC_ADDRESS           : C4CA-D9DE-4FAE
MANUFACTURING_DATE   : 2013-05-08
VENDOR_NAME           : HP
```

Table 4 Command output

| Field | Description |
|----------------------|------------------------------|
| DEVICE_NAME | Device model. |
| DEVICE_SERIAL_NUMBER | Serial number of the device. |
| MAC_ADDRESS | MAC address of the device. |

| Field | Description |
|--------------------|-----------------------------------|
| MANUFACTURING_DATE | Manufacturing data of the device. |
| VENDOR_NAME | Vendor name. |

Displaying the CPU usage of the device

Use the **display cpu-usage** command to display the CPU usage statistics for the device.

```
<HP>display cpu-usage
Unit CPU usage:
    1% in last 5 seconds
    1% in last 1 minute
    2% in last 5 minutes
```

Table 5 Command output

| Field | Description |
|----------------------|---|
| Unit CPU usage | CPU usage. |
| 1% in last 5 seconds | Average CPU usage in the last 5 seconds (after the device boots, the device calculates and records the average CPU usage at the interval of 5 seconds). |
| 1% in last 1 minute | Average CPU usage in the last minute (after the device boots, the device calculates and records the average CPU usage at the interval of 1 minute). |
| 1% in last 5 minutes | Average CPU usage in the last 5 minutes (after the device boots, the device calculates and records the average CPU usage at the interval of 5 minutes). |

Displaying the memory usage of the device

Use the **display memory** command to display the memory usage statistics for the device.

```
<HP> display memory
System Total Memory(bytes): 1338886000
Total Used Memory(bytes): 379001236
Used Rate: 28%
```

Table 6 Command output

| Field | Description |
|----------------------------|--|
| System Total Memory(bytes) | Physical memory size (in bytes) of the device. |
| Total Used Memory(bytes) | Used memory size (in bytes) of the device. |
| Used Rate | Memory usage of the device. |

Displaying the operational status of the built-in fans

Use the **display fan** command to display the operating states of fans.

```
<HP>display fan
Fan 1 State: Normal
```

```
Fan 2 State: Normal
Fan 3 State: Normal
Fan 4 State: Normal
```

Table 7 Command output

| Field | Description |
|-------|---|
| Fan 1 | Number of the fan. |
| State | Fan state: <ul style="list-style-type: none"> • Normal—The fan is operating correctly. • Absent—The fan is not in position. • Fault—The fan has failed. |

Displaying the operating state of a power supply

Use the **display power** command to display the operating state of a power supply.

```
<HP>display power
Power 1 State: Normal
Power 2 State: Absent
```

Table 8 Command output

| Field | Description |
|------------|---|
| Power 1, 2 | Number of the power supply. |
| State | Power supply state: <ul style="list-style-type: none"> • Normal—The power supply is operating correctly. • Absent—The power supply is not in position. • Fault—The power supply has failed. |

Configuring the exception handling method

Configuration procedure

You can configure the device to handle system exceptions (such as system instruction faults, invalid addresses, data overflow, null pointers, and division by zero operations) by using one of the following methods:

- **Reboot**—The device automatically reboots to recover from the error condition.
- **Maintain**—The device stays in the error condition so you can collect complete data for diagnosis, including error messages. You must manually reboot the device.

To configure the exception handling method:

| Step | Command | Remarks |
|-----------------------|--------------------|---------|
| 1. Enter system view. | system-view | N/A |

| Step | Command | Remarks |
|---|---|---|
| 2. Specify the exception handling method. | system-failure { maintain reboot } | Optional. By default, the device reboots when an exception occurs. |

Displaying the exception handling method

Use the **display system-failure** command to display the exception handling method.

```
<HP> display system-failure
System failure handling method: reboot
```

Rebooting the device

⚠ CAUTION:

- If the main system software image file is corrupted or does not exist, the device cannot reboot. You must re-specify a main system software image file, or power off the device and power it again on so the system can reboot with the backup system software image file.
- Save your configuration before device reboot to avoid data loss. The device displays "REBOOT IN ONE MINUTE" appears one minute before it is rebooted.
- For security purposes, if you are performing file operations at the reboot time, the system does not reboot.

When upgrading and maintaining the system software image file or the configuration file for the device, you must reboot the device. To reboot a device, use one of the following methods:

- Reboot the device immediately at the CLI.
- Schedule a reboot at the CLI to occur at a specific time and date or after a delay.
- Power off and then power on the device again. Because this method can cause data loss, HP recommends that you use one of the CLI methods.

To reboot the device immediately:

| Task | Command | Remarks |
|--------------------------------|---------------|--------------------------------------|
| Reboot the device immediately. | Reboot | Required. Available in user view. |

To schedule a reboot for the device:

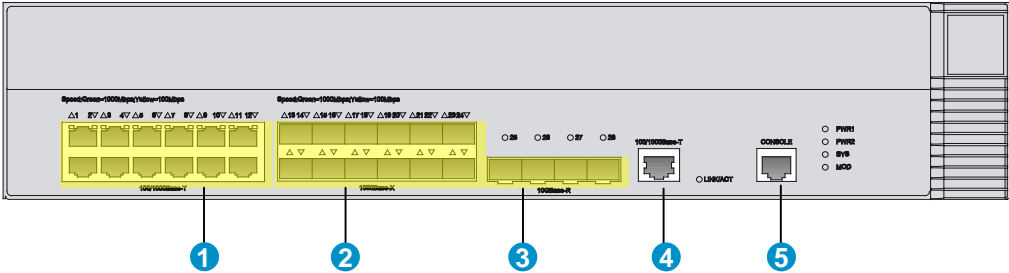
| Task | Command | Remarks |
|--------------------|---|---|
| Schedule a reboot. | <ul style="list-style-type: none"> • Schedule a reboot to occur at a specific time and date: schedule reboot at <i>hh:mm</i> [<i>date</i>] • Schedule a reboot to occur after a delay: schedule reboot delay { <i>hh:mm</i> <i>mm</i> } | Use either command. The scheduled reboot function is disabled by default. Available in user view. |

Appendix A Chassis views and technical specifications

The figures in this document are for illustration only.

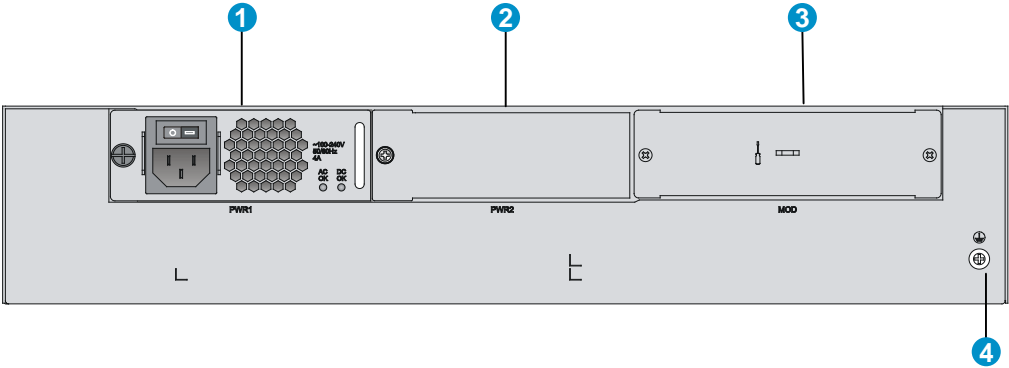
Chassis views

Figure 2 Front view



- (1) 100/1000Base-T autosensing Ethernet ports (1 to 12)
- (2) 100Base-FX/1000Base-X SFP ports (13 to 24)
- (3) 10GBase-R SFP+ ports (25 to 28)
- (4) 100/1000 Base-T management Ethernet ports
- (5) Console port

Figure 3 Rear view

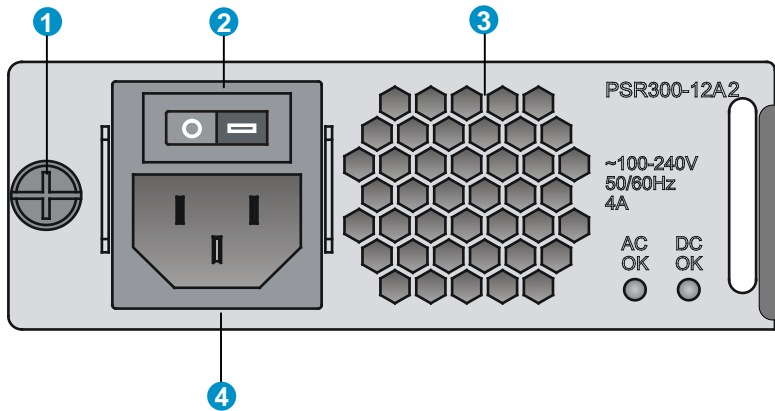


- (1) Power supply slot (PWR1, with an AC power supply installed)
- (2) Power supply slot (PWR2)
- (3) Expansion slot
- (4) Grounding screw

Power supply views

AC power supply

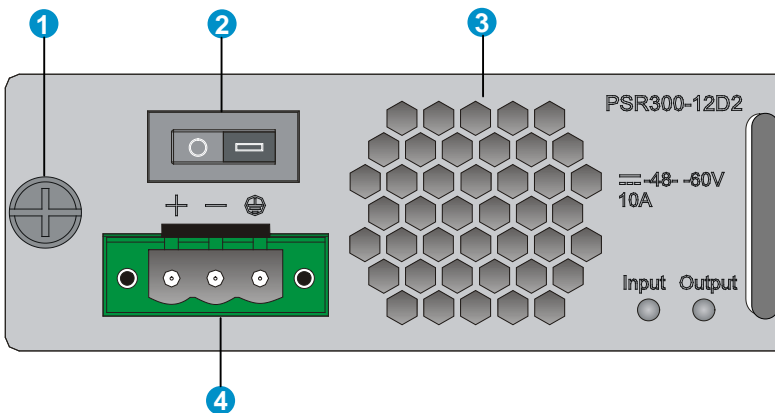
Figure 4 AC power supply



- | | |
|---------------------|----------------------|
| (1) Captive screw | (2) Power switch |
| (3) Air outlet vent | (4) Power receptacle |

DC power supply

Figure 5 DC power supply



- | | |
|---------------------|----------------------|
| (1) Captive screw | (2) Power switch |
| (3) Air outlet vent | (4) Power receptacle |

Transceiver module, fiber connector, and optical fiber views

Use an SFP or SFP+ transceiver module together with an optical fiber with LC-type fiber connector.

Figure 6 SFP transceiver module

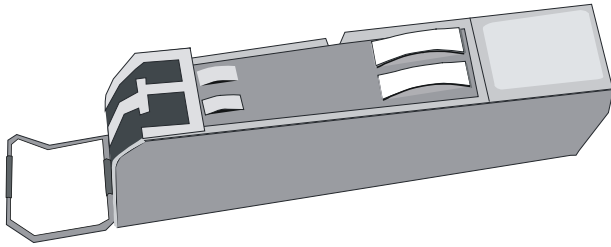


Figure 7 SFP+ transceiver module

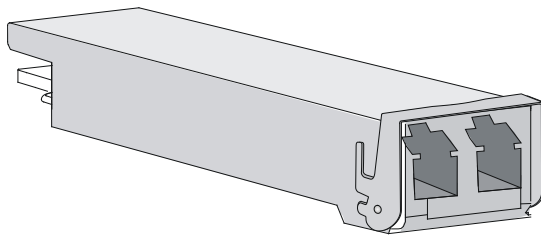
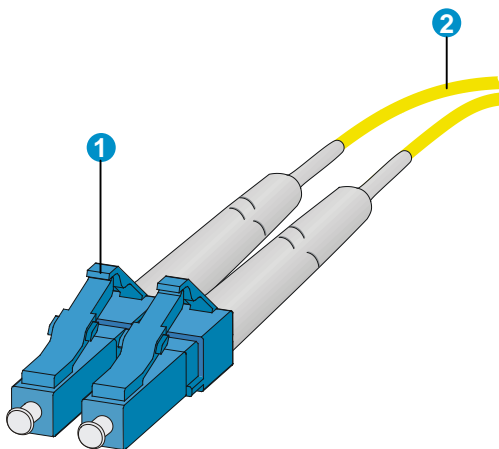


Figure 8 Optical fiber with LC-type connectors



(1) LC-type connector

(2) Optical fiber

Technical specifications

Table 9 Technical specifications

| Item | Specification |
|-----------------------|---|
| Console port | One, 9600 bps (default) to 115200 bps |
| Gigabit Ethernet port | 12 100/1000 Base-T autosensing Ethernet ports |
| SFP port | 12 100Base-FX/1000Base-X SFP ports |
| SFP+ port | Four 10GBase-R SFP+ ports |

| Item | Specification |
|--|---|
| Memory | 4 × 2 GB DDR3 |
| Storage media | 4 GB CF card |
| Dimensions (H × W × D) (without rubber feet and mounting brackets) | 88.1 × 440 × 480 mm (3.47 × 17.32 × 18.90 in) |
| Rate AC voltage range | 100 VAC to 240 VAC @ 50 Hz or 60 Hz |
| Rate DC voltage range | –48 VDC to –60 VDC |
| System power consumption | 160 W to 260 W |
| Weight | 13.3 kg (29.32 lb) (without power supplies) |
| Operating temperature | 0°C to 45°C (32°F to 113°F) |
| Relative humidity (noncondensing) | 5% to 95% |

Table 10 AC power supply specifications

| Item | Specification |
|--------------------------|-------------------------------------|
| Model | PSR300-12A2/PSR300-12A2 |
| Rate input voltage range | 100 VAC to 240 VAC @ 50 Hz or 60 Hz |
| Rated power | 300 W |

Table 11 DC power supply specifications

| Item | Specification |
|--------------------------|--------------------|
| Model | PSR300-12D2 |
| Rate input voltage range | –48 VDC to –60 VDC |
| Rated power | 300 W |

Transceiver module specifications

The transceiver modules whose names contain MM and SM support multi-mode optical fibers and single-mode optical fibers, respectively.

Table 12 SFP-FE-SX-MM1310-A specifications

| Item | Specification |
|-----------------------|-------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 2 km (1.24 miles) |
| Transmission rate | 125 Mbps |
| Connector type | Duplex LC |
| Fiber mode | MMF |
| Fiber diameter | 50 μm |
| Transmit power | –19 to –14 dBm |

| Item | Specification |
|---------------------|----------------|
| Receive sensitivity | ≤ -30 dBm |
| Saturation | ≤ -14 dBm |

Table 13 SFP-FE-LX-SM1310-A specifications

| Item | Specification |
|-----------------------|--------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 15 km (9.32 miles) |
| Transmission rate | 125 Mbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μ m |
| Transmit power | -15 to -8 dBm |
| Receive sensitivity | ≤ -28 dBm |
| Saturation | ≤ -7 dBm |

Table 14 SFP-FE-LH40-SM1310 specifications

| Item | Specification |
|-----------------------|---------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 40 km (24.86 miles) |
| Transmission rate | 125 Mbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μ m |
| Transmit power | -5 to 0 dBm |
| Receive sensitivity | ≤ -34 dBm |
| Saturation | ≤ -9 dBm |

Table 15 SFP-GE-SX-MM850-A specifications

| Item | Specification |
|-----------------------|--------------------|
| Central wavelength | 850 nm |
| Transmission distance | 550 m (1804.46 ft) |
| Transmission rate | 1250 Mbps |
| Connector type | Duplex LC |
| Fiber mode | MMF |
| Fiber diameter | 50 μ m |
| Transmit power | -9.5 to 0 dBm |

| Item | Specification |
|---------------------|----------------|
| Receive sensitivity | ≤ -17 dBm |
| Saturation | ≤ -3 dBm |

Table 16 SFP-GE-LX-SM1310-A specifications

| Item | Specification |
|-----------------------|--------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 10 km (6.21 miles) |
| Transmission rate | 1250 Mbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μ m |
| Transmit power | -9.5 to -3 dBm |
| Receive sensitivity | ≤ -20 dBm |
| Saturation | ≤ -3 dBm |

Table 17 SFP-GE-LH40-SM1310 specifications

| Item | Specification |
|-----------------------|---------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 40 km (24.86 miles) |
| Transmission rate | 1250 Mbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μ m |
| Transmit power | -2 to +5 dBm |
| Receive sensitivity | ≤ -22 dBm |
| Saturation | ≤ -3 dBm |

Table 18 SFP-GE-LH40-SM1550 specifications

| Item | Specification |
|-----------------------|---------------------|
| Central wavelength | 1550 nm |
| Transmission distance | 40 km (24.86 miles) |
| Transmission rate | 1250 Mbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μ m |
| Transmit power | -4 to +1 dBm |

| Item | Specification |
|---------------------|----------------|
| Receive sensitivity | ≤ -21 dBm |
| Saturation | ≤ -3 dBm |

Table 19 SFP-GE-LH70-SM1550 specifications

| Item | Specification |
|-----------------------|---------------------|
| Central wavelength | 1550 nm |
| Transmission distance | 70 km (43.50 miles) |
| Transmission rate | 1250 Mbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μ m |
| Transmit power | -4 to +5 dBm |
| Receive sensitivity | ≤ -22 dBm |
| Saturation | ≤ -3 dBm |

Table 20 SFP-XG-SX-MM850-A specifications

| Item | Specification |
|-----------------------|-------------------|
| Central wavelength | 850 nm |
| Transmission distance | 300 m (984.25 ft) |
| Transmission rate | 10.3125 Gbps |
| Connector type | Duplex LC |
| Fiber mode | MMF |
| Fiber diameter | 50 μ m |
| Transmit power | -7.3 to -1 dBm |
| Receive sensitivity | ≤ -9.9 dBm |
| Saturation | ≤ 0.5 dBm |

Table 21 SFP-XG-LX220-MM1310 specifications

| Item | Specification |
|-----------------------|-------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 220 m (721.78 ft) |
| Transmission rate | 10.3125 Gbps |
| Connector type | Duplex LC |
| Fiber mode | MMF |
| Fiber diameter | 62.5 μ m |
| Transmit power | -6.5 to +0.5 dBm |

| Item | Specification |
|---------------------|---------------|
| Receive sensitivity | ≤ -6.5 dBm |
| Saturation | ≤ 1.5 dBm |

Table 22 SFP-XG-LX-SM1310 specifications

| Item | Specification |
|-----------------------|--------------------|
| Central wavelength | 1310 nm |
| Transmission distance | 10 km (6.21 miles) |
| Transmission rate | 10.3125 Gbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μm |
| Transmit power | -8.2 to +0.5 dBm |
| Receive sensitivity | ≤ -14.4 dBm |
| Saturation | ≤ 0.5 dBm |

Table 23 SFP-XG-LH40-SM1550 specifications

| Item | Specification |
|-----------------------|---------------------|
| Central wavelength | 1550 nm |
| Transmission distance | 40 km (24.86 miles) |
| Transmission rate | 10.3125 Gbps |
| Connector type | Duplex LC |
| Fiber mode | SMF |
| Fiber diameter | 9 μm |
| Transmit power | -4.7 to +4 dBm |
| Receive sensitivity | ≤ -15.8 dBm |
| Saturation | ≤ -1 dBm |

Interface arrangement

The HP 870 Unified Wired-WLAN Appliance provides fixed interfaces GigabitEthernet 1/0/1 through GigabitEthernet 1/0/32:

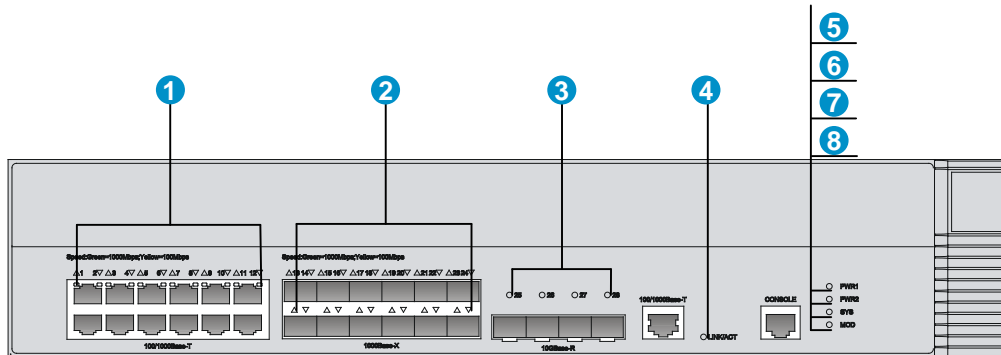
- **GigabitEthernet 1/0/1 through GigabitEthernet 1/0/12**—100/1000 Base-T autosensing Ethernet ports. You can identify an interface by its mark.
- **GigabitEthernet 1/0/13 through GigabitEthernet 1/0/24**—100Base-FX/1000Base-X SFP ports. You can identify an interface by its mark.
- **GigabitEthernet 1/0/25 through GigabitEthernet 1/0/28**—10GBase-R SFP+ ports. You can identify an interface by its mark.

- **GigabitEthernet 1/0/29 through GigabitEthernet 1/0/32**—Internal interfaces that are used to connect the controller engine of the HP 870 Unified Wired-WLAN Appliance.

Appendix B LEDs

Panel LEDs

Figure 9 LEDs



- (1) 100/1000Base-T autosensing Ethernet port status LEDs
- (2) 100Base-FX/1000Base-X SFP port status LEDs (3) 10GBase-R SFP+ port status LEDs
- (4) 100/1000 Base-T out-of-band management Ethernet port status LEDs (LINK/ACT)
- (5) Power supply 1 status LED (PWR1) (6) Power supply 2 status LED (PWR2)
- (7) System status LED (SYS) (8) Expansion slot status LED (MOD)

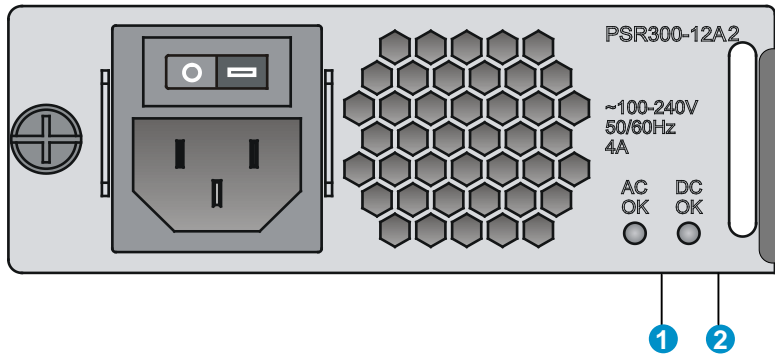
Table 24 LED description

| LED | Mark | Status | Description |
|---------------------------|------|----------------|--|
| Power supply 1 status LED | PWR1 | Steady green | Power supply 1 is operating correctly. |
| | | Steady yellow | Power supply 1 is faulty |
| | | Off | No power supply is installed to the slot. |
| Power supply 2 status LED | PWR2 | Steady green | Power supply 2 is operating correctly. |
| | | Steady yellow | Power supply 2 is faulty. |
| | | Off | No power supply is installed to the slot. |
| System status LED | SYS | Steady green | The system is starting up. |
| | | Flashing green | The system is operating correctly. |
| | | Flashing green | The system is downloading files. |
| | | Steady yellow | The system has failed to pass the power on self test (POST) or has detected a serious fault. |
| | | Off | No power input is present. |

| LED | Mark | Status | Description |
|---|-------------|-----------------|--|
| Expansion slot status LED (green/yellow) | MOD | Steady green | An interface card is present. |
| | | Flashing green | The hard disk is reading or writing data. |
| | | Steady yellow | A failure has occurred. |
| | | Off | No interface card is present. |
| 100/1000 Base-T out-of-band management Ethernet port status LED (green) | LINK/ACT | Off | No link is present. |
| | | Steady green | A link is present. |
| | | Flashing green | The port is receiving or transmitting data. |
| | | Steady yellow | A 100 Mbps link is present on the port. |
| 100/1000 Base-T autosensing Ethernet port status LED | N/A | Flashing yellow | The port is receiving or transmitting data at 100 Mbps. |
| | | Steady green | A 1000 Mbps link is present on the port. |
| | | Flashing green | The port is receiving or transmitting data at 1000 Mbps. |
| | | Off | No link is present on the port. |
| | | Steady yellow | A 100 Mbps link is present on the port. |
| 100Base-FX/1000Base-X SFP port status LED | N/A | Flashing yellow | The port is receiving or transmitting data at 100 Mbps. |
| | | Steady green | A 1000 Mbps link is present on the port. |
| | | Flashing green | The port is receiving or transmitting data at 1000 Mbps. |
| | | Off | No link is present on the port. |
| | | Steady green | A link is present on the port. |
| 10GBase-R SFP+ port status LED | N/A | Flashing green | The port is receiving or transmitting data at 10 Gbps. |
| | | Off | No link is present on the port. |
| | | Steady green | A link is present on the port. |

Power supply LEDs

Figure 10 AC power supply LEDs



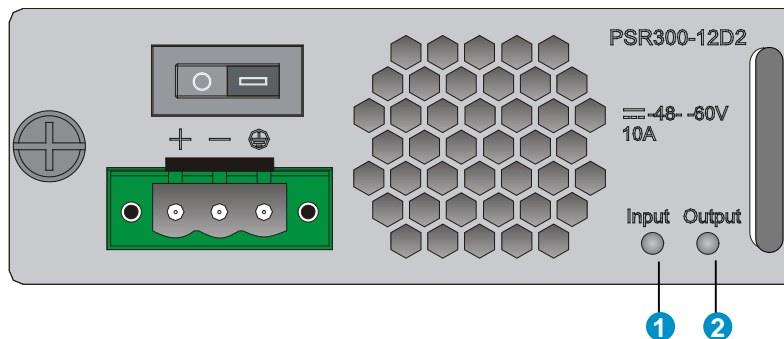
(1) AC power input status LED

(2) AC power output status LED

Table 25 AC power supply LED description

| LED | Status | Description |
|-------|--------------|---|
| AC OK | Off | No power is input or the power supply has an input problem. |
| | Steady green | The power input is normal. |
| DC OK | Off | No power is output or the power supply has an output problem. |
| | Steady green | The power output is normal. |

Figure 11 DC power supply LEDs



(1) DC power input status LED

(2) DC power output status LED

Table 26 DC power supply LED description

| LED | Status | Description |
|--------|--------------|---|
| Input | Off | No power is input or the power supply has an input problem. |
| | Steady green | The power input is normal. |
| Output | Off | No power is output or the power supply has an output problem. |
| | Steady green | The power output is normal. |

Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

<http://www.hp.com/go/wwalerts>

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

Documents

To find related documents, browse to the Manuals page of the HP Business Support Center website:

<http://www.hp.com/support/manuals>

- For related documentation, navigate to the Networking section, and select a networking category.
- For a complete list of acronyms and their definitions, see *HP FlexNetwork Technology Acronyms*.

Websites

- HP.com <http://www.hp.com>
- HP Networking <http://www.hp.com/go/networking>
- HP manuals <http://www.hp.com/support/manuals>
- HP download drivers and software <http://www.hp.com/support/downloads>
- HP software depot <http://www.software.hp.com>
- HP Education <http://www.hp.com/learn>

Conventions

This section describes the conventions used in this documentation set.





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 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 bold text. 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



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 switching engine on a unified wired-WLAN switch.



Represents an access point.

Port numbering in examples

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

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