Abstract

This document guides you through installation of HP A Series products, including installing the device, connecting to the network, hardware management, and troubleshooting.
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Preparing for installation

Overview

The HP A10500 Switch Series includes these models: A10504, A10508, and A10508-V.

Safety recommendations

⚠️ WARNING!
Read all of the safety instructions in the Compliance and Safety Guide supplied with your device before installation and operation.

This section provides general recommendations. For more information see the Compliance and Safety Guide included with your device.

- Turn off all the power and remove all the power cables before opening the chassis.
- Unplug all power and external cables before moving the chassis.
- Locate the emergency power off switch before installation and shut off power immediately if necessary.
- Always wear an ESD-preventive wrist strap when installing the device.
- Do not stare into the open optical interface; the high power density light can burn the retina.
- Use a good grounding system to protect your router against lightning shocks, interferences, and ESD; this is essential to the operating reliability of your switch.
- Make sure that the resistance between the chassis and the ground is less than 1 ohm.

Installation site requirements

The following tables provide information about temperature and humidity, cleanness, air quality requirements.

Table 1 Temperature requirements

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>0°C to 45°C (32°F to 113°F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>–40°C to +70°C (–40°F to +158°F)</td>
</tr>
</tbody>
</table>

⚠️ CAUTION:
If condensation appears on the chassis when you move it to a high-temperature environment, dry the chassis before powering it on to avoid short circuits.
Table 2 Humidity requirements

<table>
<thead>
<tr>
<th>Humidity</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating humidity</td>
<td>10% to 95%, noncondensing</td>
</tr>
<tr>
<td>Storage humidity</td>
<td>5% to 95%, noncondensing</td>
</tr>
</tbody>
</table>

Table 3 Dust concentration limit in the equipment room

<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration limit (particles/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust particles</td>
<td>$\leq 3 \times 10^4$</td>
</tr>
<tr>
<td></td>
<td>(No visible dust on desk in three days)</td>
</tr>
</tbody>
</table>

**NOTE:**
Dust particle diameter $\geq 5 \mu m$

Table 4 Limits on harmful gases in the equipment room

<table>
<thead>
<tr>
<th>Gas</th>
<th>Maximum concentration (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO₂</td>
<td>0.2</td>
</tr>
<tr>
<td>H₂S</td>
<td>0.06</td>
</tr>
<tr>
<td>NH₃</td>
<td>0.05</td>
</tr>
<tr>
<td>Cl₂</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**Rack-mounting requirements**

Before rack-mounting a switch, make sure the rack meets the following requirements:

- HP recommends that you mount a switch in an open rack. If you mount a switch in a closed rack, make sure there is a good heat dissipation system.
- The rack is steady enough to support the switch and accessories.
- The switch fits the rack size. Leave some space beside the left and right panels of the switch for chassis heat dissipation.
Tools and equipment

Table 5 lists the tools and equipment that you might use during installation, and all of them are user supplied.

Table 5 Tools and equipment list

<table>
<thead>
<tr>
<th>Category</th>
<th>Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring and marking tools</td>
<td>Long tape, ruler (of 1 meter, or 3.28 ft), gradienter, marker, chalk line, and pencil</td>
</tr>
<tr>
<td>Drills</td>
<td>Percussion drill, electric drill, and several auxiliary drill bits</td>
</tr>
<tr>
<td>Fastening tools</td>
<td>Flat-blade screwdriver P4-75 mm</td>
</tr>
<tr>
<td></td>
<td>Phillips screwdriver P1-100 mm, P2-150 mm, and P3-250 mm</td>
</tr>
<tr>
<td></td>
<td>Socket wrench M5</td>
</tr>
<tr>
<td></td>
<td>Socket wrench M6</td>
</tr>
<tr>
<td>Small tools</td>
<td>Needle-nose pliers, diagonal pliers, combination pliers, wire-stripping pliers, crimping pliers, RJ-45 crimping pliers, file, and handsaw</td>
</tr>
<tr>
<td>Auxiliary tools</td>
<td>ESD-preventive wrist strap, hair brush, tweezers, paper knife, hand bellows, electric iron, solder wire, ladder, cable stripper, vacuum cleaner, crowbar, and rubber hammer</td>
</tr>
<tr>
<td>Tools for fiber-optic cleaning</td>
<td>Lint-free paper and optical fiber microscope</td>
</tr>
<tr>
<td>Equipment</td>
<td>Multimeter, 500 V Megohmmeter for measuring the insulation resistance, error detector, optical power meter, and earth resistance tester</td>
</tr>
</tbody>
</table>
Installing the switch

Figure 1 Hardware installation flow

Table 6 Description of the installation flow

<table>
<thead>
<tr>
<th>Step</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirming installation preparations</td>
<td>Preparations before installation</td>
</tr>
</tbody>
</table>
| Installing slide rails and cage nuts on the rack | • For how to install slide rails, see “Installing slide rails.”  
• For how to install cage nuts, see “Installing cage nuts.” |
| Installing slide rails and cage nuts on the rack | For how to mount brackets and cable management brackets, see “Installing mounting brackets and cable management brackets.” |
| Mounting the switch to the rack     | N/A                                                                     |
| Grounding the switch                | N/A                                                                     |

Confirming installation preparations

Before installing the switch:

- You have read the chapter “Preparing for installation” carefully and the installation site meets all the requirements.
- A 19-inch rack is ready for use. For how to install a rack, see the rack installation guide.
• The rack is sturdy and securely grounded; the installation position on the rack is appropriate for the chassis; no debris exists inside or around the rack.
• The switch is ready for installation and has been carried to a place near the rack and convenient for moving.
• Keep the packages of the switch and the components for future use.

Installing slide rails and cage nuts on the rack

Installing slide rails

If the rack has slide rails, skip this section.

Installation may vary with different rack types.

For the slide rails, HP recommends that you order the HP X421 A-Series Chassis Universal 4-Post Rack Mounting Kit (JC665A). For more information about the kit, see the chapter “Appendix B FRUs and compatibility matrixes.”

To install a slide rail:

1. Read the signs on the slide rail (see Table 7) to avoid making a mistake. Check that the slide rails can support the weight of the switch. For the weights of the switches, see the chapter “Appendix A Technical specifications.”

**Figure 2 Right slide rail**

<table>
<thead>
<tr>
<th></th>
<th>Signs</th>
<th>Guide rail</th>
<th>Installation hole</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1RU (Rack Unit)=44.45mm (1.75 in)
Table 7 Description of signs on the slide rails

<table>
<thead>
<tr>
<th>Sign</th>
<th>Meaning</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/L</td>
<td>Front end of the left slide rail</td>
<td>Mount this end to the front left rack post.</td>
</tr>
<tr>
<td>F/R</td>
<td>Front end of the right slide rail</td>
<td>Mount this end to the front right rack post.</td>
</tr>
</tbody>
</table>

2. Mark the position on the rack for installing the slide rail. To ensure the stability of the rack, mount the switch at the lowest possible position. To mount multiple switches on the rack, mount the heaviest switch at the bottom of the rack.
   a. Position the chassis of the switch according to its height. For specifications, see the chapter “Appendix A Technical specifications.”
   b. Make sure the bottom edge of the slide rail aligns with the middle of the narrower metal area between holes, as shown in Figure 5.
   c. Each rack post requires six screws to attach the slide rail. You only need to mark the uppermost square hole and lowermost square hole for installation.
   d. Mark the square holes at the same height on the other three rack posts.

**NOTE:**
One rack unit has three holes, the middle of which is an auxiliary installation hole, and the other two are standard installation holes. You can distinguish them by the space between each two holes. The space between a standard installation hole and an auxiliary installation hole is larger than that between two adjacent standard installation holes.

**Figure 3 Locating the position on the rack for installing the slide rail**

![Image of rack with slide rails and markings](image)

(1) Middle of the narrower metal area between holes

3. Install six cage nuts on the square holes on each rack post, as shown in Figure 6.
4. Align the installation holes on the front end of the slide rail with the cage nuts on the front rack post, and attach them with screws, as shown in Figure 7.

5. Keep the slide rail horizontally and adjust its length until the installation holes on the rear end of the slide rail touch the cage nuts on the rear rack post. Then attach them with screws.

---

**TIP:**
Attach all installation holes of the slide rail with screws to ensure its weight bearing capacity.

6. Repeat steps 4 and 5 to install the other slide rail. Make sure the two slide rails are at the same height so that the device can be placed on them horizontally.
Installing cage nuts

1. Before mounting the chassis to the rack, install cage nuts to the front square-holed brackets of the rack.
   As shown in Figure 9, determine the positions of the cage nuts according to the holes on the mounting brackets and positions of the slide rails.
2. Install cage nuts on the square holes on each rack post, as shown in Figure 6.
Installing mounting brackets and cable management brackets

Before installing the switch to the rack, install the cable management brackets and mounting brackets shipped with the switch. Cable management brackets (signal cable and power cable management brackets) are used for cabling the switch, and mounting brackets are used for attaching the chassis to the rack.

Installing the cable management brackets

You must install the signal cable management brackets separately for the A10508-V switch. All other A10500 switches come with the signal cable management brackets secured to the mounting brackets. In this step, you only need to install the power cable management brackets for them.

- The A10508-V has two cable management brackets—the signal cable management brackets are installed at the upper part of the switch, and the power cable management brackets are installed at

---

Figure 7 Installing the cage nuts (A10508 as an example)

1. Cage nuts

NOTE:
When preparing for installation, make sure that the total height of the switches to be installed is no higher than the available installation height of the rack, and reserve enough clearance for cable routing.
the lower part of the switch. They are installed in the same way. For more information, see Figure 10.

- The power cable management bracket installation procedure for the A10508 is the same as A10508-V.
- The power cable management brackets of the A10504 have a slightly different structure, and installed in a similar procedure. For more information, see Figure 11.

To install a cable management bracket:

1. Unpack the cable management brackets.
2. Attach the cable management bracket to the chassis, and align the screws with the screw holes on the chassis, as shown in Figure 10.
3. Fasten the screws.

Figure 8 Installing cable management brackets on an A10508-V

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Attach the cable management bracket to the chassis</td>
<td>(2) Screw holes for installing the cable management bracket</td>
<td>(3) Screws for attaching the cable management bracket to the chassis</td>
<td>(4) Signal cable management bracket (installed at the upper part of the chassis)</td>
<td>(5) Power cable management bracket (installed at the lower part of the chassis)</td>
</tr>
</tbody>
</table>
Figure 9 Installing cable management brackets on an A10504

<table>
<thead>
<tr>
<th>(1) Attach the cable management bracket to the chassis</th>
<th>(2) Screw holes for installing the cable management bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3) Screws for attaching the cable management bracket to the chassis</td>
<td>(4) Power cable management bracket (installed at the lower part of the chassis)</td>
</tr>
</tbody>
</table>

**Installing mounting brackets**

Before installing the switch to the rack, install the mounting brackets to the chassis. Marks L and R are printed inside the mounting brackets to distinguish between the left and right mounting brackets. To install the mounting brackets, face the front of the switch, and mount the left and right mounting brackets to the two sides of the switch, as shown in Figure 12.

Figure 10 Installing the mounting brackets (A10508)

<table>
<thead>
<tr>
<th>(1) Screws for attaching the mounting brackets to the chassis</th>
<th>(2) Mounting brackets</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3) Signal cable management brackets</td>
<td></td>
</tr>
</tbody>
</table>
Mounting the switch to the rack

⚠️ **CAUTION:**
- Do not hold the handle of the fan tray, power supply, or the back cover of the chassis, or the air vents of chassis. Any attempt to carry the switch with these parts may cause equipment damage or even bodily injury.
- After placing the switch on the slide rails, do not let go immediately because this may tip the switch, and damage the switch or even cause bodily injury.

To mount the switch to the rack:

1. Move the chassis to face the rear of the chassis towards the front of the rack.
2. Use at least two people to lift the switch by using the handles or supporting the bottom of the chassis until the bottom of the switch is a little higher than the slide rails on the rack. HP recommends using a mechanical lift for moving your switch.
3. Place the switch on the slide rails and slide the switch along the slide rails until the mounting brackets on the switch touch the front rack posts, as shown in callout 1 on Figure 13.
4. Attach the chassis to the rack with mounting screws.

Figure 11 Installing the chassis to the rack (A10508)

<table>
<thead>
<tr>
<th>(1) Slide the chassis into the rack</th>
<th>(2) Mounting brackets</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3) Screws for attaching the mounting brackets to the rack</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
If the screw holes on the mounting brackets cannot align with the cage nuts on the rack, check that the bottom edge of the slide rail aligns with the middle of the narrower metal area between holes and that the cage nuts are installed in the correct holes.
Grounding the switch

⚠️ **CAUTION:**
Before using the switch, connect the grounding cable properly to guarantee lightning protection and anti-interference of the switch.

Grounding the switch with a grounding strip

⚠️ **CAUTION:**
- Use the supplied grounding cable (yellow-green grounding cable).
- Connect the grounding cable to the earthing system in the equipment room. Do not connect it to a fire main or lightning rod.

When a grounding strip is available at the installation site, connect the grounding cable through the grounding strip.

To connect the grounding cable:
1. Unpack the grounding cable. The grounding cable provided with the switch is compliant with the NEBS standards.
2. Remove the grounding screws from the grounding holes at the rear of the chassis, as shown in callout 2 on Figure 14.
3. Fasten the grounding screws, which are attached with the dual-hole terminals of the grounding cable, into the grounding holes of the chassis.
4. Connect the OT terminal of the grounding cable to the grounding post of the grounding strip, and fasten the grounding cable to the grounding strip with the hex nut.

**Figure 12 Connecting the grounding cable to a grounding strip**

| (1) Attach the grounding screws with dual-hole terminals to the grounding holes | (2) Grounding sign |
| (3) Grounding strip | (4) Grounding post |
| (5) OT terminal | (6) Hex nut |
Grounding the switch through the PE wire of an AC power supply

If the switch is AC powered and no grounding strip is available at the installation site, you can ground the switch through the PE wire of the AC power supply, as shown in Figure 15.

Make sure that the AC power supply uses a three-wire cable with a protection wire, and the PE wire of the AC power supply is well grounded at the power distribution room or AC power supply transformer side. In addition, make sure that the PE connector on the switch is well connected to the PE wire of the AC power supply.

Figure 13 Grounding the switch through the PE wire of the AC power supply
Installing modules

There is no required order for installing modules. HP recommends you to install the modules needed, and then connect the power cord.

💡 TIP:
Keep the packages of the switch and the components for future use.

Attaching an ESD-preventive wrist strap

Every switch provides an ESD-preventive wrist strap. To minimize ESD damage to electronic components, wear an ESD-preventive wrist strap and make sure it is well grounded when installing modules.

To use an ESD-preventive wrist strap:
1. Make sure the switch is well grounded. For how to ground your switch, see the chapter “Installing the switch.”
2. Put on the wrist strap.
3. Tighten the wrist strap to keep good skin contact. Make sure that the resistance reading between your body and the ground is between 1 and 10 megohms.
4. As shown in Figure 16, insert the ESD-preventive wrist strap into the ESD port on the switch chassis, or attach it to the grounding screw of the chassis with an alligator clip.
Installing a card

The cards on the switch include MPUs, LPUs, and switching fabric modules, which can be installed in horizontal or vertical slots.

- Horizontal slot—with the PCB board on the card facing up
- Vertical slot—with the PCB board on the card facing left

All the cards are hot swappable, and the installation procedures are similar. The following takes a card installed in a horizontal slot as an example.

To install a card:

1. Before installing a card to the chassis, make sure that the connectors on the card are not broken or blocked in order to avoid damaging the backplane.
2. Wear an ESD-preventive wrist strap, and make sure it makes good skin contact and is well grounded. For more information, see “Attaching an ESD-preventive wrist strap.”
3. As shown in callout 1 on Figure 17, remove the blank panel (if any) from the slot to be used. Keep the blank panel for future use.
4. As shown in callout 2 on Figure 17, hold the card by the front panel with one hand and support the card bottom with the other. Slide the card steadily into the slot along the guide rails.
5. When most part of the card is inserted in the slot, press the ejector levers on the card outward.
6. Push the card until the positioning pin on card touches the hole on the chassis.
7. As shown in callout 3 on Figure 17, press the ejector levers inward until the ejector levers touch the panel tightly and the card seats into the backplane.
8. As shown in callout 4 on Figure 17, fasten the captive screws on the card.

9. When the switch is powered on, check the running status of the card. You can check the running status of a card by referring to the card status LED (SLOT) on the MPU of the switch. If the RUN LED blinks, the card in the slot operates properly. For more information about card status LED (SLOT), see the chapter “Appendix C LEDs.”

NOTE:
- Some card slots do not have a blank panel. The figures in this chapter are for illustration only.
- To ensure ventilation of the switch, install a blank panel (on an empty MPU, LPU, or switching fabric module slot. The blank panel for an MPU slot is the same as that for an LPU slot.

Figure 15 Installing a card

![Diagram of card installation](image)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loosen the captive screws</td>
</tr>
<tr>
<td>2</td>
<td>Insert the card into the slot</td>
</tr>
<tr>
<td>3</td>
<td>Press the ejector levers inward</td>
</tr>
<tr>
<td>4</td>
<td>Fasten the captive screws</td>
</tr>
</tbody>
</table>

Installing a power supply

The switches use N + 1 or N + N power redundancy and supports AC power input.

⚠️ CAUTION:
- Provide a circuit breaker for each power supply and make sure the circuit breaker is off before installation.
- Do not install power supplies of different models on one switch.

The power supplies on the switch can be installed in horizontal or vertical slots.
- Horizontal slot: A10504
- Vertical slot: A10508 and A10508-V

Strictly follow the order shown in Figure 18 to avoid possible danger.
安装步骤

CAUTION:

- 当移动电源时，请支撑电源的底部，而不是握住其手柄，以避免损坏电源。

安装过程

1. 穿上防静电手腕带，并确保它与皮肤良好接触并接地。有关更多信息，请参阅“如何连接防静电手腕带”。
2. 使用十字螺丝刀松开空白面板（如有）上的自锁螺丝以移除空白面板。
3. 打开电源。
4. 跟随附印在空白面板上的安装图以正确方向安装电源。用一只手握持模块的把手，用另一只手支撑模块底部。将电源沿导向轨推入槽中直至其与槽紧密接触。对于垂直槽安装，请参阅图19的注释1。对于水平槽安装，请参阅图20的注释1。
5. 将把手按入，直到把手坐入槽中。
6. 如图19中的注释2所示，使用十字螺丝刀将把手上的自锁螺钉拧紧以将电源安装在机架上。
Figure 17 Installing a power supply in a vertical slot

(1) Install the power supply to the chassis
(2) Fasten the captive screw
Connecting the power cable

⚠️ WARNING!
Before connecting the power cable, make sure that the circuit breaker on the power cable is switched off.

To connect the power cable:

1. Plug the power cable into the power receptacle of the power supply.
2. Use a cable tie to secure the power cable to the cable management bracket.
   a. Figure 21 shows how to connect the power cable for a vertical slot switch (A10508 and A10508-V).
   b. Figure 22 shows how to connect the power cable for a horizontal slot switch (A10504).
3. Plug the other end of the power cable to the AC power receptacle of the power source and switch on the circuit breaker.
4. Check the power supply input status LED. If the LED is on, the power cable is properly connected. For description of power supply status LEDs, see the chapter “Appendix C LEDs.”
Installing a transceiver module (optional)

Installing an XFP/SFP+/SFP module

⚠️ CAUTION:
- To avoid component damage, read this section carefully before installing an XFP/SFP+/SFP module.
- Do not remove the protection cover from the XFP/SFP+/SFP module before connecting an optical fiber.
- Remove the optical fiber, if any, from the XFP/SFP+/SFP module before installing it.

To install an XFP/SFP+/SFP module:
1. Wear an ESD-preventive wrist strap and make sure it makes good skin contact and is well grounded. For more information, see “Attaching an ESD-preventive wrist strap.”
2. Unpack the XFP/SFP+/SFP module. Do not touch the golden finger of the module.
3. Pivot the clasp of the module up so that it catches a knob on the top of the module. Holding the module, gently push the module into the slot until it has firm contact with the slot (when the top and bottom spring tabs catch in the slot), as shown in Figure 23.

**Figure 21 Installing an XFP/SFP+/SFP module**

![Figure 21 Installing an XFP/SFP+/SFP module](image)

**NOTE:**
- When inserting the module to the switch with dense transceiver modules and limited installation space, you can use your finger gently push against the front face of the module into the slot, rather than inserting it by holding the module.
- Press down the SFP+ module a little against the upward force of the bottom spring tab so that you can insert the SFP+ module horizontally.
- For how to connect a fiber, see the chapter “Connecting your switch to the network.”

## Connecting an SFP+ cable

SFP+ cables are hot swappable.

To connect an SFP+ cable to an SFP+ port:

1. Wear an ESD-preventive wrist strap and make sure it makes good skin contact and is well grounded. For more information, see “Attaching an ESD-preventive wrist strap.”
2. Unpack the SFP+ cable.
3. Plug the SFP+ cable into the SFP+ port on the switch. Make sure that the cable plug is the right side up. The bend radius of the SFP+ cable must be at least eight times the cable diameter.
Setting up an IRF fabric

You can use IRF technology to connect and virtualize the switch into a virtual switch called an “IRF fabric” or “IRF virtual device” for flattened network topology, high availability, scalability, and manageability.

For more information about IRF, see HP A10500 Switch Series IRF Configuration Guide.

IRF fabric setup flowchart

The setup flow is shown in Figure 24. For the actual procedure, see HP A10500 Switch Series IRF Configuration Guide for the software release you are using.

Planning IRF fabric setup

Before you set up an IRF fabric, complete the following tasks:

1. Choose switch models for your network. You can establish an IRF fabric that comprises different A10500 switch models.
2. Select LPUs that can provide 10-GE optical ports. The switch requires 10-GE optical ports for IRF connection. For more information about the LPUs, see the chapter “Appendix B FRUs and compatibility matrixes.”
3. Select transceiver modules (XFP or SFP+) and fibers for long-haul IRF connection, or select SFP+ cables for short-haul IRF connection. For more information about transceiver modules and SFP+ cables, see the chapter “Appendix B FRUs and compatibility matrixes.”
4. Plan the installation site.
Planning the IRF network

Plan the IRF network and identify the role, member ID, physical IRF ports of each member switch.

Identifying the master switch

IRF member switches will automatically elect a master. You can affect the election result by assigning a high member priority to the intended master switch. For more information about master election, see HP A10500 Switch Series IRF Configuration Guide.

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

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

Planning member IDs

An IRF fabric uses member IDs to uniquely identify and manage its members.

Assign each IRF member switch a unique member ID before connecting them to form an IRF fabric.

Identifying the physical IRF ports on the member switches

Determine which 10-GE ports to use for IRF connection depending on the bandwidth and reliability requirements.

The switch supports link aggregation and cross-card aggregation for IRF ports. You can bind up to eight physical ports to one IRF port.

Installing IRF member switches

<table>
<thead>
<tr>
<th>Step</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prepare the installation site</td>
<td>Chapter 2 “Preparing for installation”</td>
</tr>
<tr>
<td>2. Mount the IRF member switches to racks</td>
<td>Chapter 3 “Installing the switch”</td>
</tr>
<tr>
<td>3. Install modules on IRF member switches</td>
<td>Chapter 4 “Installing modules”</td>
</tr>
</tbody>
</table>

Configuring basic IRF settings

After you install the IRF member switches, power on the switches, and log in to each IRF member switch (see the chapter “Connecting your switch to the network”) to configure their member IDs, member priorities, and IRF port bindings.

Follow these guidelines when you configure the switches:

- First configure the member IDs, member priorities, and IRF port bindings for the IRF member switches, save the configuration, connect the member switches, and change the operating mode of the switches to IRF mode.
- Assign the master switch higher member priority than any other switch.
• Bind physical ports to IRF port 1 on one switch and to IRF port 2 on the other switch.
• Execute the `display irf configuration` command to verify the basic IRF settings.

For more information about configuring basic IRF settings, see *HP A10500 Switch Series IRF Configuration Guide*.

### Connecting the physical IRF ports

Connect the physical IRF ports of switches using these guidelines:

- Use XFP transceiver modules and fibers to connect 10-Gigabit XFP ports.
- You can use SFP+ transceiver modules and fibers to connect 10-Gigabit SFP+ ports over a long or short distance, and use SFP+ cables to connect 10-Gigabit SFP+ ports over a relatively short distance.
- The transceiver modules at the two ends of an IRF link must be the same type.
- When connecting XFP or SFP+ ports, connect the transmit port of a XFP or SFP+ transceiver module at one end to the receive port of a XFP or SFP+ transceiver module at the other end.

For more information about installing transceiver modules, see the chapter “Installing modules.” For more information about connecting fibers, see the chapter “Connecting your switch to the network.”

*Figure 23 Connecting two IRF member switches*

### Verifying the IRF fabric configuration

After you finish configuring basic IRF settings and connecting IRF ports, verify the basic functionality of the IRF fabric:

1. Log in to the IRF fabric through the console port of any member switch.
2. Create a Layer 3 interface, assign it an IP address, and make sure that the IRF fabric and the remote network management station can reach each other.
3. Use Telnet or SNMP to access the IRF fabric from the network management station. (See *HP A10500 Switch Series Fundamentals Configuration Guide.*)
4. Check that you can manage all member switches as if they were one node.
5. Display the running status of the IRF fabric by using the commands in Table 8.

Table 8 Display and maintain IRF configuration and running status

<table>
<thead>
<tr>
<th>To do …</th>
<th>Use the command…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display information about the IRF fabric</td>
<td>display irf</td>
</tr>
<tr>
<td>Display topology information about the IRF fabric</td>
<td>display irf topology</td>
</tr>
</tbody>
</table>

NOTE:

- An IRF link failure can cause an IRF fabric to split into two IRF fabrics operating with the same Layer 3 configurations, such as the same IP address.
- To avoid IP address collision and network problems, configure at least one MAD mechanism to detect the presence of multiple identical IRF fabrics and handle collisions. For more information about MAD detection, see HP A10500 Switch Series IRF Configuration Guide.
Connecting your switch to the network

This chapter describes how to connect your switch to a network.

The first time you access a switch you must log in through the console port. On the switch, you can configure Telnet or SSH for remote access through Ethernet ports. You manage and control console login users at AUX user interfaces and Telnet and SSH users at VTY user interfaces. For more information about login methods and user interfaces, see HP A10500 Switch Series Fundamentals Configuration Guide.

NOTE:

• A switch with one MPU supports one AUX user and a switch with two MPUs supports up to two concurrent AUX users. The total number of AUX users that an IRF fabric supports equals the number of MPUs in the IRF fabric.

• All switches support up to 16 concurrent VTY users.

Accessing the switch for the first time

The first time you access the switch you must use a console cable (see Figure 26) to connect a console terminal, for example, a PC, to the console port on the switch.

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

Figure 24 Console cable

Setting up the configuration environment

To connect a terminal to the switch (for example, a PC):

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

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

---

**Figure 25 Connecting a console port to a terminal**

---

**Setting terminal parameters**

To configure and manage the switch, you must run a terminal emulator program on the console terminal.

If your PC runs Windows 2003 Server, add the HyperTerminal component before performing the following steps to log in to and manage the switch. If your PC runs Windows 2008 server, Windows 7, Windows Vista, or any other operating system, prepare third-party terminal control software, and follow the software user guide or help to configure the terminal. The following are the required terminal settings:

- **Bits per second**—9600
- **Data bits**—8
- **Parity**—None
- **Stop bits**—1
- **Flow control**—None
- **Emulation**—VT100
To set terminal parameters, for example, on a Windows XP HyperTerminal:

1. Select **Start** > **All Programs** > **Accessories** > **Communications** > **HyperTerminal**. The **Connection Description** dialog box appears.

2. Enter the name of the new connection in the **Name** field and click **OK**.

**Figure 26 Connection description**
3. Select the serial port to be used from the **Connect using** list, and click **OK**.

*Figure 27 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 28 Setting the serial port parameters**
5. Select **File > Properties** in the HyperTerminal window.

*Figure 29 HyperTerminal window*
6. On the Settings tab, set the emulation to VT100 and click OK.

Figure 30 Setting terminal emulation in Switch Properties dialog box

Powering on the switch

Before powering on the switch, confirm the following:
- You know where the emergency power-off switch for the equipment room is located.
- The switch has been securely mounted.
- All the cards have been correctly installed.
- The unused slots have been installed with blank filler panels.
- All the network cables, fibers, power cables, and grounding cables have been correctly connected.
- The input power voltage meets the requirement of the switch.
- The console cable is properly connected, the terminal or PC used for configuration has started, and the configuration parameters have been set.
To power on the switch:

Turn on the power source of the switch to power on the switch.

The following is a sample output you can see on the terminal:

- System is starting...
- Booting Normal Extend BootWare.
- The Extend BootWare is self-decompressing.................................
  .....Done!

*******************************************************************************
*                           BootWare, Version 1.00                        *
*                                                                            *
******************************************************************************

Compiled Date       : Jul  1 2010
CPU Type            : XLS408
CPU L1 Cache        : 32KB
CPU Clock Speed     : 1000MHz
Memory Type         : DDR2 SDRAM
Memory Size         : 1024MB
Memory Speed        : 533MHz
BootWare Size       : 508KB
Flash Size          : 128MB
BASIC CPLD Version  : 0.0
EXTEND CPLD Version : 0.0
PCB Version         : Ver.A

BootWare Validating...
Press Ctrl+B to enter extended boot menu...
Starting to get the main application file--flash:/A10500.bin!
........................................................................
The main application file is self-decompressing............................
............................................................................
............................................................................
  ..Done!
System application is starting...
Starting to get the main application file--flash:/A10500.bin!
........................................................................
The main application file is self-decompressing............................
............................................................................
............................................................................
............................................................................
  ..Done!
System application is starting...
User interface aux0 is available.

Press ENTER to get started.

Press Enter at the prompt. When the prompt <Sysname> appears, you can configure the switch.
After powering on the switch, check the following items:

- The cooling system is working, and you can hear fan rotating noise and feel air being blown out.
- The system status LEDs on the MPUs show that the system is operating normally. For more information about LED behaviors, see the chapter “Appendix C LEDs.”

## Configuring the switch

By default, the switch does not authenticate the console login user at an AUX interface. To increase system security and enable remote management:

- Configure remote access services, for example, Telnet or SSH.
- Configure authentication on each user interface, including the AUX interfaces.

## Configuring authentication on a user interface

You can configure authentication on a user interface to control access to the switch.

Table 9 describes the Telnet login authentication methods available for a VTY user interface.

**Table 9 Telnet login authentication methods**

<table>
<thead>
<tr>
<th>Authentication method</th>
<th>Feature</th>
<th>Application scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Easy to configure, allows any user to Telnet to your switch, and lowest in security</td>
<td>Lab environments and extremely secure network environments</td>
</tr>
<tr>
<td>Password</td>
<td>Easy to configure, secure, and flat user management</td>
<td>Environments that do not need granular privilege management</td>
</tr>
<tr>
<td>Username and password</td>
<td>Complex to configure, secure, and hierarchical user management</td>
<td>Environments where multiple operators cooperate to manage the switch</td>
</tr>
</tbody>
</table>

**NOTE:**

For more information about login methods, see *HP A10500 Switch Series Fundamentals Configuration Guide.*

## Configuring the basic access function

A switch without any configuration can perform basic data forwarding immediately after it is plugged into a network. To implement more forwarding features, configure the basic network settings in Table 10 on the switch.

**Table 10 Basic network settings**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP address</td>
<td>Enables remote switch management, for example, by using Telnet.</td>
</tr>
<tr>
<td>Static routes</td>
<td>Implement static routing.</td>
</tr>
<tr>
<td>VLANs</td>
<td>Divide the LAN into multiple VLANs for data security.</td>
</tr>
<tr>
<td>MSTP</td>
<td>Avoids loops in a dual-homed network.</td>
</tr>
</tbody>
</table>
Configuration example

Configuring Telnet service

# Enter system view.
<Sysname> system-view

# Enable the Telnet server.
<Sysname> telnet server enable

# Enter the user interface view VTY 0.
<Sysname> user-interface vty 0

# Enable password authentication on the user interface.
<Sysname-ui-vty0> authentication-mode password

# Set the password to hello.
<Sysname-ui-vty0> set authentication password cipher hello

# Set the user privilege level to 3 so all Telnet users access VTY 0 can use all commands.
<Sysname-ui-vty0> user privilege level 3

Configuring the basic network settings

- Configure IP addresses
  
  # Create VLAN-interface 1.
  <Sysname> interface vlan-interface 1

  # Assign an IP address, for example, 192.168.0.1, to VLAN-interface 1.
  <Sysname-Vlan-interface1> ip address 192.168.0.1 24
  <Sysname-Vlan-interface1> quit

- Configure static routes
  
  # Configure a static route, with the destination IP address 172.16.1.0 and the next hop IP address 192.168.0.2.
  <Sysname> ip route-static 172.16.1.0 255.255.255.0 192.168.0.2

- Configure VLANs
  
  # Create VLAN 10 and enter its view.
  <Sysname> vlan 10
  <Sysname-vlan10>

  # Assign port GigabitEthernet 1/0/1 to VLAN 10.
  <Sysname-vlan10> port gigabitethernet 1/0/1
  <Sysname-vlan10> quit

- Configure MSTP
  
  # Create an MST region named example, map VLAN 10 to instance 1, and set the MSTP revision level to 0.
  <Sysname> stp region-configuration
  <Sysname-mst-region> region-name example
  <Sysname-mst-region> instance 1 vlan 10
  <Sysname-mst-region> revision-level 0

  # Activate the MST region configuration.
[Sysname-mst-region] active region-configuration
[Sysname-mst-region] quit

# Configure the switch as the primary root bridge of instance 1.
[Sysname] stp instance 1 root primary

# Enable MSTP globally.
[Sysname] stp enable

NOTE:
For more information about these features, see HP A10500 Switch Series Configuration Guides.

Verifying the network configuration

To verify the software version and network configuration, perform the following commands in any view:

<table>
<thead>
<tr>
<th>To do…</th>
<th>Use the command…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display the name, model, and system software version of the switch</td>
<td>display version</td>
</tr>
<tr>
<td>Display the current configuration of the switch</td>
<td>display current-configuration</td>
</tr>
<tr>
<td>Display the interface status and configuration</td>
<td>display interface brief</td>
</tr>
<tr>
<td>Display the IP configuration of Layer 3 interfaces</td>
<td>display ip interface brief</td>
</tr>
<tr>
<td>Display information about active routes in the routing table</td>
<td>display ip routing-table</td>
</tr>
<tr>
<td>Display VLAN settings</td>
<td>display vlan</td>
</tr>
<tr>
<td>Display the spanning tree status and statistics</td>
<td>display stp brief</td>
</tr>
</tbody>
</table>

Connecting the switch to the network

Before you connect the switch to the network, verify that all its basic settings are correct.

Connecting your switch to the network through twisted pair cables

You can use category-5 or above twisted pair cables to connect the 10/100Base-TX and 1000Base-T ports on your switch to the network. These ports use RJ-45 connectors and support MDI/MDI-X auto-sensing. For more information about twisted pair cables, see the chapter “Appendix D Cables.”

To connect a 10/100Base-TX or 1000Base-T port to a peer device:

1. Plug one end of a twisted pair cable into the port.
2. Plug the other end of the twisted pair cable into the RJ-45 Ethernet port of the peer device.
3. Check the port LEDs for incorrect connection.

For more information about the LED status, see the chapter “Appendix C LEDs.”
Connecting your switch to the network through optical fibers

⚠️ WARNING!
To avoid injury to your eyes, do not stare at the optical interfaces and optical fiber connectors when connecting optical fibers.

You can install a transceiver module (see the chapter “Installing modules”) in a fiber port and use optical fibers to connect the port to the network. For more information about optical fibers, see the chapter “Appendix D Cables.”

This section uses connecting an LC fiber connector as an example.

To connect a fiber port to a peer device through optical fibers:

1. Install a transceiver module into the port.
2. Remove the dust cover of the optical fiber connector, and clean the end of the optical fiber.
3. Remove the dust plug of the transceiver module, plug one end of the optical fiber into the transceiver module, and plug the other end into the transceiver module in the peer device, as shown in Figure 33.

   The transmit port on one end must connect to the receive port on the other end.
4. Check the port LEDs for incorrect connection.

   For more information about the LED status, see the chapter “Appendix C LEDs.”

Figure 31 Using LC optical fiber connectors to connect transceiver modules

Testing connectivity

After you plug the switch into the network, use the ping or tracert command to test the network connectivity. For more information about these commands, see HP A10500 Switch Series Command References.
Troubleshooting

This chapter describes how to troubleshoot your switch.

TIP:
Clean your switch periodically because the noncompliant operating environments of switches may cause switch failures. At the same time, check the installation environments against the requirements in the chapter “Preparing for installation.” Make sure the switch operates in a proper environment. Additionally, periodically perform the power-on test for the spare switches.

Troubleshooting methods

When your switch fails, you can use the following methods to troubleshoot the switch:

- At the CLI, you can use the related commands to display the hardware information, and locate the hardware failures.
- The MPU provides the LEDs for the fans and cards. You can locate the failures according to the LED status on the MPU. For more information about the LED status on the MPU, see the chapter “Appendix C LEDs.”
- The MPU or LPU of the switch provides the port status LEDs, with which you can detect port failures. For more information about the LED status on the LPU, see the chapter “Appendix C LEDs.”

NOTE:
If you cannot locate failures by following the guidelines in this chapter, contact HP. For more information, see the chapter “Support and other resources.”

Configuration terminal problems

If the configuration environment setup is correct, the configuration terminal displays boot information when the switch is powered on. If the setup is incorrect, the configuration terminal does not display anything or displays garbled text.

No terminal display

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

- The power supply system works properly.
- The MPU works properly.
- The console cable has been connected to the console port of the MPU.

If no problem is found, the following failure reasons may apply:

- The console cable is connected to an incorrect serial interface (the serial interface in use is not the one set on the terminal). To solve this problem, select a correct serial interface.
- The console cable fails. To solve this problem, replace the console cable.
Garbled terminal display

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

- Baud rate—9,600
- Data bits—8
- Parity—none
- Stop bits—1
- Flow control—none

When you modify the settings for the console port of the switch, configure the same settings for the console terminal.

Troubleshooting the switch during the operation

At the CLI, you can use related commands to display the switch information and locate the failures.

When you detect configuration errors, re-configure the switch or restore the factory settings for the switch.

Power supply system failure

NOTE:

After the power supply to the power supply is turned off, the LEDs stay on for a period of time.

When the switch operates properly, the LEDs on the power supply (AC LED and DC LED) are green. For more information, see the chapter “Appendix C LEDs.”

When the LEDs are off or not green, the power supply does not work properly. To troubleshoot the power supply system:

1. When the DC LED is orange, the power supply is over-temperature and enters the self-protection state. Make sure the switch is well ventilated and operates in a proper environment.
2. When the DC LED is red, the power supply may encounter output short circuit, output over-current, output over-voltage, input under-voltage, or remote disconnection, and enters the self-protection state. Remove the failures mentioned above. The DC LED is also red when the input of the power supply is disconnected and the other power supplies in the chassis work normally. In this case, you can connect the input or keep the input disconnected as needed.
3. Check the power cable connections. If a power cable is loose, re-plug the power cable. If a power cable is broken, replace it.
4. Check the power supply installation. If the power supply is not fully seated, re-install the power supply to make sure it has a close contact with the backplane of the switch.
5. Check the power supply system. Make sure that the power supply system works properly and provides a normal voltage.
6. If the switch has empty power supply slots, unplug the power supply, plug the power supply into an empty power supply slot after all LEDs on the power supply are off, and check whether the power supply can work properly.
7. Plug a new power supply of the same model into the same slot, and connect it to the same power input end. If the new power supply can work properly, the old power supply fails. Contact HP to replace the old power supply.

**Fan failure**

Both the MPU and the fan tray provide the fan tray LEDs, including an OK LED and a FAIL LED. When the fan tray works properly, the OK LED is on, and the FAIL LED is off.

When the OK LED is off or the FAIL LED is on, the fan tray fails. To troubleshoot the fan tray:
1. If both LEDs are off, check whether the power supply works properly. For more information, see “Power supply system failure.”
2. Check whether the air intakes and exhaust vents of the chassis are blocked. If they are blocked, clean them to keep good ventilation.
3. Check whether the fan tray is fully seated. You can unplug the fan tray, plug it again, and then attach the screws.
4. Check that the empty LPU slots and power supply slots are installed with blank panels. If not, install blank panels for them to guarantee good ventilation.
5. If the failure still exists, contact HP.

**MPU failure**

The status LEDs on the MPU show the status of a card in the corresponding slot. According to the slot number of an MPU, you can check the corresponding LEDs for the MPU.

When the MPU works properly, the RUN LED flashes and the ALM LED is off. When the RUN LED is off, the MPU fails. To troubleshoot the MPU:
1. Check that the power supply works properly. For more information, see “Power supply system failure.”
2. Check whether the MPU is fully seated. You can unplug the MPU, plug it again, and make sure that the MPU is fully seated.
3. Press the RESET button of the MPU to reset the MPU. After the MPU is reset, check whether the corresponding RUN LED is on.
4. If the switch has empty MPU slots, plug the MPU into an empty MPU slot, and check that the MPU can work properly.
5. If the failure still exists, contact HP.

**LPU and switching fabric module failure**

The status LEDs on the MPU show the status of a card in the corresponding slot. According to the slot number of an LPU or switching fabric module, you can check the corresponding LEDs for the LPU or switching fabric module.

When the card works properly, the RUN LED flashes and the ALM LED is off. When the RUN LED is off, the card fails. To troubleshoot the card:
1. Check that the MPU works properly. For more information, see “MPU failure.”
2. Check whether the console terminal prompts that the software version is incompatible with the card in the current slot. If the software version is incompatible with the card, upgrade the software to a compatible version.

3. Calculate the overall power consumption, and make sure that your power supplies can provide enough power. For more information, see the chapter “Appendix B FRUs and compatibility matrixes.”

4. Check whether the card is fully seated. You can unplug the card, plug it again, and press the ejector levers inward until the ejector levers touch the panel tightly.

5. If the switch has empty card slots, plug the card into an empty card slot, and check whether the card can work properly.

6. If the failure still exists, contact HP.

**Interface failure**

The interfaces provided by MPUs and LPUs all have corresponding LEDs. When an interface connected to the network works properly, the corresponding LED is on.

---

**NOTE:**

A management Ethernet interface or XFP interface each has two LEDs, LINK and ACT. The LED in this section for such an interface refers to the LINK LED. Each interface of any other type has only one LED.

If the LED of an interface connected to the network is off, the interface or the connecting cable may fail. To troubleshoot the interface:

1. Make sure that the MPU or LPU where the interface resides works properly. For more information, see “MPU failure” or “LPU and switching fabric module failure.”

2. Check the cable connection of the interface. For how to correctly connect the cable to an Ethernet interface with an RJ-45 connector or an optical interface, see the chapter “Connecting your switch to the network.”

3. Check if the cable is broken. Use the cable to connect two interfaces of the same type that work properly. If the LEDs of the two interfaces are on, the cable is normal. Otherwise, the cable fails. Use a compliant cable to connect the interface. For more information about the compliant cables, see the chapter “Appendix D Cables.”

4. If the interface uses a transceiver module, make sure that the interface type is compatible with the transceiver and that the transceiver is compatible with the cable. For more information, see the chapter “Appendix B FRUs and compatibility matrixes.”

5. If the interface uses a transceiver module, make sure that the current transceiver works properly by replacing a normal transceiver.

6. If the interface is a combo interface (which contains a fiber and a copper port), make sure that the port used for connection is activated for the combo interface. Then, use the `combo enable { copper | fiber }` command to activate the port, and check the LED.
NOTE:

- A combo interface is a logical interface that comprises one fiber port (Gigabit/100-Mbps SFP port) and one copper port (10/100/1000Base-T GE port). The two ports share one interface view and cannot work simultaneously. When you use the `combo enable { copper | fiber }` command to enable one port, the other port is disabled automatically.

- If a port is brought down by the `shutdown` command, use the `undo shutdown` command to bring up the interface.

- After an interface fails, if the switch has an idle interface of the same type, you can plug the cable into the idle interface.

7. Check that the speed and duplex settings of the interfaces of a link are the same. Make sure that two interfaces can work together.

8. If the failure still exists, contact HP.
Replacement procedures

⚠️ CAUTION:
When replacing FRUs when the switch is running, be aware of electrical safety.

The switch uses a modular, hot-swappable architecture, and supports FRUs. You can replace any of FRUs when the switch is running.

Replacing a power supply

⚠️ WARNING!
- Power supply replacement involves removal and installation of power supplies and power cables. Strictly follow the procedures shown in Figure 34 and Figure 35 to replace a power supply to avoid device or bodily injury.
- Power supplies with different models cannot be installed on the same switch. When you use multiple power supplies to supply power, and the power supplies to be replaced are of different models, power off the switch before replacement to avoid damage to the switch.
- The power supply may be of high temperature. Remove it with caution.
- Make sure each power supply has a separate circuit breaker. Before replacing a power supply, turn off the circuit breaker on the power supply.
- After removing the power supply, if you do not install a new power supply, install a blank panel.

Figure 32 Power supply removal flow

- Power off the switch
- Remove the power cable
- Remove the power supply

Figure 33 Power supply installation flow

- Install the power supply
- Connect the power cable
- Power on the switch

To replace a power supply:
1. Prepare an antistatic mat to place the removed power supply.
2. Wear an ESD-preventive wrist strap and make sure it makes good skin contact and is well grounded. For more information, see the chapter “Installing modules.”
3. Switch off the circuit breaker on the power supply.
4. Remove the cable ties from the power cable, and remove the power cable from the power supply.
5. Use a Philips screwdriver to loosen the captive screw on the power supply, and then grasp the captive screw between your thumb and index finger to carefully pull out the handle on the power supply, as shown in callout 1 on Figure 36.
6. Holding the power supply handle with one hand and supporting the bottom of the power supply with the other, gently pull the power supply out, as shown in callout 2 on Figure 36.
7. Put the removed power supply on the antistatic mat.
8. Install a new power supply. For the installation procedures, see the chapter “Installing modules.”
9. To install the removed power supply to the chassis again, install it after the status LED on it is off.

Figure 34 Removing the power supply

Replacing a card

The cards can be installed in horizontal or vertical slots, and the replacement procedures are the same. The following takes a card installed in a horizontal slot as an example.

To replace a card:
1. Prepare an antistatic mat to place the removed card.
2. Wear an ESD-preventive wrist strap and make sure it makes good skin contact and is well grounded. For more information, see the chapter “Installing modules.”
3. Remove the cables on an MPU or LPU before removing the MPU or LPU.
4. Use a Philips screwdriver to remove the captive screw on the card, as shown in callout 1 on Figure 37.
5. Move the ejector levers outwards to separate the card from the backplane, as shown in callout 2 on Figure 37.
6. Use one hand to slowly move the card outwards. Supporting the bottom of the card with the other hand, pull the card out of the slot along slide rails, as shown in callout 3 on Figure 37.

7. Put the removed card on the antistatic mat.

8. Install a new card. For the installation procedures, see the chapter “Installing modules.”

Figure 35 Replacing a card

<table>
<thead>
<tr>
<th>(1) Loosen the captive screw</th>
<th>(2) Move the ejector levers outwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3) Take out the card</td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
If no new card is to be installed, install a blank panel to ensure heat dissipation of the switch and prevent dust from entering the switch.

Replacing a fan tray

When the fan tray fails, replace the fan tray to ensure normal operation of the switch.

⚠️ CAUTION:
When replacing the fan tray, do not touch the rotating fans to avoid bodily injury.

The fan trays on the switch can be installed in horizontal or vertical slots.
- Vertical slot: A10504 and A10508
- Horizontal slot: A10508-V

The procedures for installing fan trays in the two types of slots are similar. The following section takes a fan tray installed in a vertical slot on an A10508 as an example.
Removing a fan tray

⚠️ CAUTION:
To ensure normal ventilation of the switch, install a new fan tray within five minutes after removing the old one.

To remove a fan tray:
1. Prepare an antistatic mat to place the fan tray to be removed.
2. Put on an ESD-preventive wrist strap and make sure the wrist strap makes good skin contact and is well grounded. For more information, see the chapter “Installing modules.”
3. Loosen the captive screws on the fan tray, as shown in callout 1 on Figure 38.
4. Hold the handle of the fan tray with one hand to gently pull the fan tray part way out of the chassis. After the fans stop rotating, support the bottom of the fan tray with the other hand, and take out the fan tray from the chassis, as shown in callout 2 on Figure 38.
5. Put the removed fan tray on the antistatic mat.

Figure 36 Removing a fan tray

Installing a fan tray

To install a fan tray:
1. Wear an ESD-preventive wrist strap and make sure the wrist strap makes good skin contact and is well grounded. For more information, see the chapter “Installing modules.”
2. Take out the fan tray from its package.

3. Holding the handle of the fan tray with one hand and supporting bottom with the other, gently slide the fan tray along the guide rails into the slot until it is firmly secured in the slot.

4. Fasten the captive screws on the fan tray.

Reverting a transceiver module

NOTE:
Make sure the optical transceiver modules at the two ends of an optical fiber are of the same model.

Replacing an XFP/SFP+/SFP module

WARNING!
- Do not stare at the fibers to avoid hurting your eyes.
- When installing or removing an XFP/SFP+/SFP module, do not touch the golden finger of the module.

To replace an XFP/SFP+/SFP module:

1. Wear an ESD-preventive wrist strap and make sure it makes good skin contact and is well grounded. For more information, see the chapter “Installing modules.”

2. Remove the optical fibers on the XFP/SFP+/SFP.

3. Pivot the clasp down to the horizontal position.

4. Grasp the clasp on the module and carefully pull the module out of the socket.

5. Put the dust plug on the removed module, and put the remove module into its original shipping materials.

6. Install a new XFP/SFP+/SFP module. For the installation procedures, see the chapter “Installing modules.”

Replacing an SFP+ cable

To replace an SFP+ cable:

1. Wear an ESD-preventive wrist strap and make sure it makes good skin contact and is well grounded. For more information, see the chapter “Installing modules.”

2. Gently press the SFP+ cable plug in, and then pull the handle on the SFP+ cable outward to pull out the SFP+ cable plug.

3. Install a new SFP+ cable. For the installation procedures, see the chapter “Installing modules.”

NOTE:
- Make the bend radius of the SFP+ cable at least eight times of the cable diameter.
- Replace an SFP+ cable with care. If the SFP+ cable cannot be removed or installed, check that the removal or installation procedures are correct.
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 A-Series 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
## Conventions

This section describes the conventions used in this documentation set.

### Command conventions

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boldface</strong></td>
<td><strong>Bold</strong> text represents commands and keywords that you enter literally as shown.</td>
</tr>
<tr>
<td><em>Italic</em></td>
<td><em>Italic</em> text represents arguments that you replace with actual values.</td>
</tr>
<tr>
<td>[ ]</td>
<td>Square brackets enclose syntax choices (keywords or arguments) that are optional.</td>
</tr>
<tr>
<td>{ x</td>
<td>y</td>
</tr>
<tr>
<td>[ x</td>
<td>y</td>
</tr>
<tr>
<td>{ x</td>
<td>y</td>
</tr>
<tr>
<td>[ x</td>
<td>y</td>
</tr>
<tr>
<td>&amp;&lt;1-n&gt;</td>
<td>The argument or keyword and argument combination before the ampersand (&amp;) sign can be entered 1 to n times.</td>
</tr>
<tr>
<td>#</td>
<td>A line that starts with a pound (#) sign is comments.</td>
</tr>
</tbody>
</table>

### GUI conventions

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boldface</strong></td>
<td>Window names, button names, field names, and menu items are in bold text. For example, the <em>New User</em> window appears; click <strong>OK</strong>.</td>
</tr>
<tr>
<td>&gt;</td>
<td>Multi-level menus are separated by angle brackets. For example, <em>File &gt; Create &gt; Folder</em>.</td>
</tr>
</tbody>
</table>

### Symbols

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WARNING</strong></td>
<td>An alert that calls attention to important information that if not understood or followed can result in personal injury.</td>
</tr>
<tr>
<td><strong>CAUTION</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>IMPORTANT</strong></td>
<td>An alert that calls attention to essential information.</td>
</tr>
<tr>
<td><strong>NOTE</strong></td>
<td>An alert that contains additional or supplementary information.</td>
</tr>
<tr>
<td><strong>TIP</strong></td>
<td>An alert that provides helpful information.</td>
</tr>
</tbody>
</table>
Network topology icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Generic Network Device" /></td>
<td>Represents a generic network device, such as a router, switch, or firewall.</td>
</tr>
<tr>
<td><img src="image" alt="Routing-Capable Device" /></td>
<td>Represents a routing-capable device, such as a router or Layer 3 switch.</td>
</tr>
<tr>
<td><img src="image" alt="Generic Switch" /></td>
<td>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.</td>
</tr>
</tbody>
</table>

Port numbering in examples

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

Regulatory model identification number

For regulatory identification purposes, the series are assigned RMN. The RMNs for these products are listed below. These regulatory numbers should not be confused with the marketing name HP A1050X, or product numbers JC611A, JC612A, and JC613A.

<table>
<thead>
<tr>
<th>HPPN</th>
<th>RMN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC611A</td>
<td>BJNGA-AC0003</td>
<td>HP A10508-V Switch Chassis</td>
</tr>
<tr>
<td>JC612A</td>
<td>BJNGA-AC0004</td>
<td>HP A10508 Switch Chassis</td>
</tr>
<tr>
<td>JC613A</td>
<td>BJNGA-AC0005</td>
<td>HP A10504 Switch Chassis</td>
</tr>
</tbody>
</table>

Chassis overview

The series includes these models: A10504, A10508, and A10508-V. This section describes the chassis views of the switches.

Every switch chassis has a MPU section, LPU section, switching fabric module section, power supply module section, and fan tray section. The following figure uses the A10508 as an example.

Figure 37 Front and rear views of the A10508
### Table 11 Chassis structure

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) LPU slots</td>
<td>Both LPUs and LPU slots are purple edged for easy identification.</td>
<td>N/A</td>
</tr>
<tr>
<td>(2) MPU slots</td>
<td>Both MPUs and MPU slots are pink edged for easy identification.</td>
<td>You must install at least one MPU.</td>
</tr>
<tr>
<td>(3) Power supply slots</td>
<td>• The A10504 has four power supply slots.</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>• The A10508 and the A10508-V have six power supply slots.</td>
<td></td>
</tr>
<tr>
<td>(4) Fan tray slot</td>
<td>Location of the fan tray slot:</td>
<td>Every switch comes with one fan tray. You do not need to order fan trays.</td>
</tr>
<tr>
<td></td>
<td>• A10504 and A10508—Left rear of the chassis.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A10508-V—Upper rear of the chassis</td>
<td></td>
</tr>
<tr>
<td>(5) Switching fabric module slots</td>
<td>Both switching fabric modules and switching fabric module slots have silver gray edges.</td>
<td>You must install at least one switching fabric module. You can install up to four switching modules, and one of them must be installed in one of the two lowest numbered switching fabric module slots.</td>
</tr>
<tr>
<td></td>
<td>• For the A10504, you must at least install one switching fabric module in slot 6 or slot 7.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• For the A10508 or A10508-V, you must at least install one switching fabric module in slot 10 or slot 11.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
- The installation procedures for LPUs, MPUs, and switching fabric modules are similar. They are collectively called cards in this installation guide unless otherwise specified.
- For more information about the cards, power supplies, and fan trays, see the chapter “Appendix B FRUs and compatibility matrixes.”

### Switch and FRU aliases

The following tables list the aliases of the switches and FRUs in this installation guide:

- Table 12 for Switch chassis
- Table 13 for MPUs
- Table 14 for switching fabric
- Table 15 for LPUs
- Table 16 for power supplies
- Table 17 for mounting accessories
- Table 18 for fan assemblies
### Table 12 HP A10500 Switch Series

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC613A</td>
<td>HP A10504 Switch Chassis</td>
<td>A10504</td>
</tr>
<tr>
<td>JC612A</td>
<td>HP A10508 Switch Chassis</td>
<td>A10508</td>
</tr>
<tr>
<td>JC611A</td>
<td>HP A10508-V Switch Chassis</td>
<td>A10508-V</td>
</tr>
</tbody>
</table>

### Table 13 MPU models

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC614A</td>
<td>HP A10500 Main Processing Unit</td>
<td>LSU1SUPA0</td>
</tr>
</tbody>
</table>

### Table 14 Switching fabric module

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC615A</td>
<td>HP A10504 320Gbps Type A Fabric Module</td>
<td>LSU1FAB04A0</td>
</tr>
<tr>
<td>JC616A</td>
<td>HP A10508/A10508-V 640Gbps Type A Fabric Module</td>
<td>LSU1FAB08A0</td>
</tr>
</tbody>
</table>

### Table 15 LPU models

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC628A</td>
<td>HP A10500 16-port 10-GbE SFP+ SC Module</td>
<td>LSU1TGS16SC0</td>
</tr>
<tr>
<td>JC631A</td>
<td>HP A10500 8-port 10-GbE SFP+ SE Module</td>
<td>LSU1TGS8SE0</td>
</tr>
<tr>
<td>JC618A</td>
<td>HP A10500 48-port Gig-T SE Module</td>
<td>LSU1GT48SE0</td>
</tr>
<tr>
<td>JC619A</td>
<td>HP A10500 48-port GbE SFP SE Module</td>
<td>LSU1GP48SE0</td>
</tr>
<tr>
<td>JC617A</td>
<td>HP A10500 16-port GbE SFP / 8-port GbE Combo / 2-port 10-GbE XFP SE Module</td>
<td>LSU1GP24TXSE0</td>
</tr>
<tr>
<td>JC620A</td>
<td>HP A10500 4-port 10-GbE XFP SE Module</td>
<td>LSU1TGX4SE0</td>
</tr>
<tr>
<td>JC630A</td>
<td>HP A10500 8-port 10-GbE SFP+ EA Module</td>
<td>LSU1TGS8EA0</td>
</tr>
<tr>
<td>JC623A</td>
<td>HP A10500 48-port Gig-T EA Module</td>
<td>LSU1GT48EA0</td>
</tr>
<tr>
<td>JC622A</td>
<td>HP A10500 48-port GbE SFP EA Module</td>
<td>LSU1GP48EA0</td>
</tr>
<tr>
<td>JC621A</td>
<td>HP A10500 16-port GbE SFP / 8-port GbE Combo / 2-port 10-GbE XFP EA Module</td>
<td>LSU1GP24TXEA0</td>
</tr>
<tr>
<td>JC624A</td>
<td>HP A10500 4-port 10-GbE XFP EA Module</td>
<td>LSU1TGX4EA0</td>
</tr>
<tr>
<td>JC629A</td>
<td>HP A10500 8-port 10-GbE SFP+ EB Module</td>
<td>LSU1TGS8EB0</td>
</tr>
<tr>
<td>JC625A</td>
<td>HP A10500 48-port GbE SFP EB Module</td>
<td>LSU1GP48EB0</td>
</tr>
<tr>
<td>JC626A</td>
<td>HP A10500 16-port GbE SFP / 8-port GbE Combo / 2-port 10-GbE XFP EB Module</td>
<td>LSU1GP24TXEB0</td>
</tr>
<tr>
<td>JC627A</td>
<td>HP A10500 4-port 10-GbE XFP EB Module</td>
<td>LSU1TGX4EB0</td>
</tr>
</tbody>
</table>
Table 16 Power supply models

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC610A</td>
<td>HP A10500 2500W AC Power Supply</td>
<td>2500W AC Power Supply</td>
</tr>
</tbody>
</table>

Table 17 Mounting accessories

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC665A</td>
<td>HP X421 A-Series Chassis Universal 4-Post Rack Mounting Kit</td>
<td>Rack Mounting Kit</td>
</tr>
</tbody>
</table>

Table 18 Fan assembly models

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC632A</td>
<td>HP A10504 Spare Fan Assembly</td>
<td>A10504 FAN</td>
</tr>
<tr>
<td>JC633A</td>
<td>HP A10508 Spare Fan Assembly</td>
<td>A10508 FAN</td>
</tr>
<tr>
<td>JC634A</td>
<td>HP A10508-V Spare Fan Assembly</td>
<td>A10508-V FAN</td>
</tr>
</tbody>
</table>

Weights and dimensions

Table 19 Chassis weights and dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10504</td>
<td>&lt; 85 kg (187.39 lb)</td>
<td>353 mm (13.90 in)</td>
<td>440 mm (17.32 in)</td>
<td>660 mm (25.98 in)</td>
</tr>
<tr>
<td>A10508</td>
<td>&lt; 125 kg (275.57 lb)</td>
<td>620 mm (24.41 in)</td>
<td>440 mm (17.32 in)</td>
<td>660 mm (25.98 in)</td>
</tr>
<tr>
<td>A10508-V</td>
<td>&lt; 145 kg (319.66 lb)</td>
<td>886 mm (34.88 in)</td>
<td>440 mm (17.32 in)</td>
<td>660 mm (25.98 in)</td>
</tr>
</tbody>
</table>

NOTE:
A RU is a measurement of the height of a rack. 1 RU is 44.45 mm (1.75 in).

Table 20 Card weights and dimensions

<table>
<thead>
<tr>
<th>Card model</th>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSU1SUPA0</td>
<td>2.83 kg (6.24 lb)</td>
<td>40 mm (1.57 in)</td>
<td>399 mm (15.71 in)</td>
<td>352 mm (13.86 in)</td>
</tr>
<tr>
<td>LSU1TGS16SC0</td>
<td>3.29 kg (7.25 lb)</td>
<td>40 mm (1.57 in)</td>
<td>399 mm (15.71 in)</td>
<td>352 mm (13.86 in)</td>
</tr>
<tr>
<td>LSU1TGS8SE0</td>
<td>3.03 kg (6.68 lb)</td>
<td>40 mm (1.57 in)</td>
<td>399 mm (15.71 in)</td>
<td>352 mm (13.86 in)</td>
</tr>
<tr>
<td>LSU1GT48SE0</td>
<td>3.31 kg (7.30 lb)</td>
<td>40 mm (1.57 in)</td>
<td>399 mm (15.71 in)</td>
<td>352 mm (13.86 in)</td>
</tr>
</tbody>
</table>
The dimensions of the cards of the switches are expressed in H, W, and D. The following describes them in detail:

- **H**—Height of the front panel of the card
- **W**—Width of the part in the chassis (not the width of the front panel)
- **D**—Depth is the measure from the front panel to the other end of the card (including the handle).

### Table 21 Power supply weights and dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500W AC Power Supply</td>
<td>2.5 kg (5.51 lb)</td>
<td>41 mm (1.61 in)</td>
<td>102 mm (4.02 in)</td>
<td>410 mm (16.14 in)</td>
</tr>
</tbody>
</table>
Table 22 Fan tray weights and dimensions

<table>
<thead>
<tr>
<th>Fan tray</th>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10504 fan tray</td>
<td>4.7 kg (10.36 lb)</td>
<td>106 mm (4.17 in)</td>
<td>255 mm (10.04 in)</td>
<td>643 mm (25.32 in)</td>
</tr>
<tr>
<td>A10508 fan tray</td>
<td>6.95 kg (15.32 lb)</td>
<td>112 mm (4.41 in)</td>
<td>425 mm (16.73 in)</td>
<td>645 mm (25.39 in)</td>
</tr>
<tr>
<td>A10508-V fan tray</td>
<td>8.3 kg (18.30 lb)</td>
<td>80 mm (3.15 in)</td>
<td>440 mm (17.32 in)</td>
<td>654 mm (25.75 in)</td>
</tr>
</tbody>
</table>

Module power consumption and system power consumption

Card power consumption

The power consumption of the cards depends on the card model and state. Table 23 shows the power consumption for different card models.

- The static power consumption of a card refers to the power consumed by the card when the card is running but all ports on the card are down and when no transceiver module is available on the optical interface of the card.
- The dynamic power consumption of a card refers to the power consumed by the card when all the ports on the card are link up and send broadcasts.

Table 23 Card power consumption

<table>
<thead>
<tr>
<th>Model</th>
<th>Minimum static power consumption</th>
<th>Maximum dynamic power consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSU1SUPA0</td>
<td>38 W</td>
<td>50 W</td>
</tr>
<tr>
<td>LSU1TGS16SC0</td>
<td>84 W</td>
<td>115 W</td>
</tr>
<tr>
<td>LSU1TGS8SE0</td>
<td>104 W</td>
<td>135 W</td>
</tr>
<tr>
<td>LSU1GT48SE0</td>
<td>67 W</td>
<td>95 W</td>
</tr>
<tr>
<td>LSU1GP48SE0</td>
<td>44 W</td>
<td>95 W</td>
</tr>
<tr>
<td>LSU1GP24TXSE0</td>
<td>54 W</td>
<td>95 W</td>
</tr>
<tr>
<td>LSU1TGX4SE0</td>
<td>53 W</td>
<td>80 W</td>
</tr>
<tr>
<td>LSU1TGS8EA0</td>
<td>111 W</td>
<td>140 W</td>
</tr>
<tr>
<td>LSU1GT48EA0</td>
<td>67 W</td>
<td>95 W</td>
</tr>
<tr>
<td>LSU1GP48EA0</td>
<td>44 W</td>
<td>95 W</td>
</tr>
<tr>
<td>LSU1GP24TXEA0</td>
<td>54 W</td>
<td>95 W</td>
</tr>
<tr>
<td>LSU1TGX4EA0</td>
<td>53 W</td>
<td>80 W</td>
</tr>
<tr>
<td>LSU1TGS8EB0</td>
<td>117 W</td>
<td>170 W</td>
</tr>
<tr>
<td>LSU1GP48EB0</td>
<td>43 W</td>
<td>110 W</td>
</tr>
<tr>
<td>LSU1GP24TXEB0</td>
<td>51 W</td>
<td>100 W</td>
</tr>
<tr>
<td>Model</td>
<td>Minimum static power consumption</td>
<td>Maximum dynamic power consumption</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>LSU1TGX4EB0</td>
<td>53 W</td>
<td>80 W</td>
</tr>
<tr>
<td>LSU1FAB04A0</td>
<td>41 W</td>
<td>50 W</td>
</tr>
<tr>
<td>LSU1FAB08A0</td>
<td>68 W</td>
<td>85 W</td>
</tr>
</tbody>
</table>

**Fan tray power consumption**

The switch uses fans with the automatic speed adjustment function. The fan speed is automatically adjusted based on the heat dissipation condition of the switch. The power consumed by a fan tray depends on the fan speed. Table 24 shows the power consumption of different fan trays.

**Table 24 Fan tray power consumption**

<table>
<thead>
<tr>
<th>Model</th>
<th>Minimum fan tray power consumption</th>
<th>Maximum fan tray power consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10504</td>
<td>12 W</td>
<td>240 W</td>
</tr>
<tr>
<td>A10508</td>
<td>11 W</td>
<td>234 W</td>
</tr>
<tr>
<td>A10508-V</td>
<td>13 W</td>
<td>329 W</td>
</tr>
</tbody>
</table>

**System power consumption**

The system power consumption of the switch depends on the type and number of cards and the fan tray power consumption.

- The minimum system power consumption is the total static power consumption of all cards plus the minimum fan tray power consumption. For example, for an A10508 switch that has two LSU1SUPA0 MPUs, two LSU1TGX4EB0 LPUs, two LSU1FAB08A0 switching fabric modules, and one fan tray, the minimum system power consumption of the switch is $2 \times 38 + 2 \times 53 + 2 \times 68 + 11 = 329$ W.

- The maximum system power consumption is the total dynamic power consumption of all cards plus the maximum fan tray power consumption. For example, for an A10508 switch that has two LSU1SUPA0 MPUs, two LSU1TGX4EB0 LPUs, two LSU1FAB08A0 switching fabric modules, and one fan tray, the maximum system power consumption of the switch is $2 \times 50 + 2 \times 80 + 2 \times 85 + 234 = 664$ W.

**Heat dissipation**

The heat dissipation of the switch depends on power consumption. To calculate heat dissipation of the switch, assume 90% power consumption is converted to heat, and the efficiency of the power supply is 90%. Heat dissipation/hour of the switch is $0.9 \times (\text{total power consumption of the cards plus power consumption of the fan tray})/0.9 \times 3.4121$. 

---

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NOTE:

- For the power consumption of the cards and fan trays, see "Module power consumption and system power consumption."
- Heat dissipation is measured in the unit of BTU/h. 1 W = 3.4121 BTU/h.

### Environmental specifications

**Table 25 Environmental specifications**

<table>
<thead>
<tr>
<th>Description</th>
<th>Operating</th>
<th>Non-operating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>0°C to 45°C (32°F to 113°F)</td>
<td>-40°C to +70°C (-40°F to +158°F)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10% to 95% (non-condensing)</td>
<td>5% to 95% (non-condensing)</td>
</tr>
<tr>
<td>Altitude</td>
<td>-60 m to +4 km (–196.85 ft to +2.49 miles)</td>
<td>When the altitude is 4 km, the highest operating temperature is 31.8°C (89.24°F). The maximum operating temperature increases 0.33°C (0.59°F)/100 m (328.08 ft) downwards until 45°C (113°F) is reached.</td>
</tr>
</tbody>
</table>

### Noise

The switch uses fans with the automatic speed adjustment function, so the sound pressure levels are different when the fan speeds are different. For more information, see **Table 26**.

**Table 26 Sound pressure levels**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sound pressure level under normal temperature</th>
<th>Sound pressure level when the fan tray operates at full speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10504</td>
<td>62.3 dBA</td>
<td>75.5 dBA</td>
</tr>
<tr>
<td>A10508</td>
<td>63 dBA</td>
<td>75.8 dBA</td>
</tr>
<tr>
<td>A10508-V</td>
<td>61.6 dBA</td>
<td>72.6 dBA</td>
</tr>
</tbody>
</table>
Appendix B FRUs and compatibility matrixes

MPUs

The MPU is the core of the control management plane for the switch. The switch supports the MPU LSU1SUPA0.

Table 27 LSU1SUPA0 supervisor engine specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>LSU1SUPA0 supervisor engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interfaces</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• One console port for local or remote dialup configuration management</td>
</tr>
<tr>
<td></td>
<td>• One 10/100/1000BASE-T interface for management and upgrade</td>
</tr>
<tr>
<td>Interface transmission rate</td>
<td>• Console port: no greater than 115200 bps and defaults to 9600 bps</td>
</tr>
<tr>
<td></td>
<td>• 10/100/1000BASE-T interface: 10/100/1000 Mbps, half/full duplex</td>
</tr>
<tr>
<td>Cables and max transmission distance</td>
<td>• Console port: 15 m (49.21 ft) over common asynchronous serial interface cable</td>
</tr>
<tr>
<td></td>
<td>• 10/100/1000BASE-T interface: 100 m (328.08 ft) over Category-5 twisted pairs</td>
</tr>
</tbody>
</table>

MPUs are ordered separately. A switch requires one MPU to operate normally. You can also install two MPUs in a switch for redundancy.

LPUs

The LPUs in Table 28 apply to all the switches in this series.

Table 28 LPU specifications

<table>
<thead>
<tr>
<th>LPU model</th>
<th>Description</th>
<th>Connector</th>
<th>Number of interfaces</th>
<th>Interface transmission rate</th>
<th>Available transceiver modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSU1TGS16SC0</td>
<td>16-port 10-Gigabit SFP+ optical Ethernet interface card</td>
<td>LC</td>
<td>16</td>
<td>10 Gbps, 1 Gbps</td>
<td>• 10-Gigabit SFP+ module</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 10-Gigabit SFP+ cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Gigabit SFP module</td>
</tr>
<tr>
<td>LPU model</td>
<td>Description</td>
<td>Connector</td>
<td>Number of interfaces</td>
<td>Interface transmission rate</td>
<td>Available transceiver modules</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>-----------</td>
<td>----------------------</td>
<td>----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>LSU1TG8</td>
<td>8-port 10-Gigabit SFP+ optical Ethernet interface</td>
<td>LC</td>
<td>8</td>
<td>10 Gbps, 1 Gbps</td>
<td>• 10-Gigabit SFP+ module</td>
</tr>
<tr>
<td>SE0</td>
<td>card</td>
<td></td>
<td></td>
<td></td>
<td>• 10-Gigabit SFP+ cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Gigabit SFP module</td>
</tr>
<tr>
<td>LSU1GT48</td>
<td>48-port 10/100/1000Base-T Gigabit Ethernet interface card</td>
<td>RJ-45</td>
<td>48</td>
<td>10/100/1000 Mbps, half/full duplex</td>
<td>N/A</td>
</tr>
<tr>
<td>SE0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSU1GP48</td>
<td>48-port Gigabit/100-Mbps SFP Ethernet interface card</td>
<td>LC</td>
<td>48</td>
<td>1000/100 Mbps, full duplex</td>
<td>• Gigabit SFP module</td>
</tr>
<tr>
<td>SE0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 100-Mbps SFP module</td>
</tr>
<tr>
<td>LSU1GP24</td>
<td>16-port Gigabit/100-Mbps SFP + 8-port Combo + 2-port 10-Gigabit XFP Ethernet interface card</td>
<td>LC</td>
<td>24</td>
<td>1000/100 Mbps, full duplex</td>
<td>• Gigabit SFP module</td>
</tr>
<tr>
<td>TXSE0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 100-Mbps SFP module</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RJ-45</td>
<td>8</td>
<td>10/100/1000 Mbps, half/full duplex</td>
<td>N/A</td>
</tr>
<tr>
<td>LSU1TGX4</td>
<td>4-port 10-Gigabit XFP optical Ethernet interface card</td>
<td>LC</td>
<td>4</td>
<td>10 Gbps</td>
<td>10-Gigabit XFP module</td>
</tr>
<tr>
<td>SE0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSU1TG8</td>
<td>8-port 10-Gigabit SFP+ optical Ethernet interface card</td>
<td>LC</td>
<td>8</td>
<td>10 Gbps, 1 Gbps</td>
<td>• 10-Gigabit SFP+ module</td>
</tr>
<tr>
<td>EA0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 10-Gigabit SFP+ cable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Gigabit SFP module</td>
</tr>
<tr>
<td>LSU1GT48</td>
<td>48-port 10/100/1000Base-T Gigabit Ethernet interface card</td>
<td>RJ-45</td>
<td>48</td>
<td>10/100/1000 Mbps, half/full duplex</td>
<td>N/A</td>
</tr>
<tr>
<td>EA0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSU1GP48</td>
<td>48-port Gigabit/100-Mbps SFP Ethernet interface card</td>
<td>LC</td>
<td>48</td>
<td>1000/100 Mbps, full duplex</td>
<td>• Gigabit SFP module</td>
</tr>
<tr>
<td>EA0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 100-Mbps SFP module</td>
</tr>
<tr>
<td>LPU model</td>
<td>Description</td>
<td>Connector</td>
<td>Number of interfaces</td>
<td>Interface transmission rate</td>
<td>Available transceiver modules</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>-----------</td>
<td>----------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
</tbody>
</table>
| LSU1GP24 TXEA0 | 16-port Gigabit/100-Mbps SFP + 8-port Combo + 2-port 10-Gigabit XFP Ethernet interface card | LC | 24 | 1000/100 Mbps, full duplex | • Gigabit SFP module  
• 100-Mbps SFP module  
• 10-Gigabit XFP module |
| | | | | | |
| | | | 2 | 10 Gbps | 10-Gigabit XFP module |
| | | | RJ-45 | 8 | 10/100/1000 Mbps, half/full duplex | N/A |
| LSU1TGX4 EA0 | 4-port 10-Gigabit XFP optical Ethernet interface card | LC | 4 | 10 Gbps | 10-Gigabit XFP module |
| LSU1TG8 EB0 | 8-port 10-Gigabit SFP+ optical Ethernet interface card | LC | 8 | 10 Gbps, 1 Gbps | • 10-Gigabit SFP+ module  
• 10-Gigabit SFP+ cable  
• Gigabit SFP module |
| LSU1GP48 EB0 | 48-port Gigabit/100-Mbps SFP Ethernet interface card | LC | 48 | 1000/100 Mbps, full duplex | • Gigabit SFP module  
• 100-Mbps SFP module |
| LSU1GP24 TXEB0 | 16-port Gigabit/100-Mbps SFP + 8-port Combo + 2-port 10-Gigabit XFP Ethernet interface card | LC | 24 | 1000/100 Mbps, full duplex | • Gigabit SFP module  
• 100-Mbps SFP module  
• 10-Gigabit XFP module |
| | |![](RJ-45_8.png) | 2 | 10 Gbps | 10-Gigabit XFP module |
| | | | RJ-45 | 8 | 10/100/1000 Mbps, half/full duplex | N/A |
| LSU1TGX4 EB0 | 4-port 10-Gigabit XFP optical Ethernet interface card | LC | 4 | 10 Gbps | 10-Gigabit XFP module |

**NOTE:**
- For the transceiver modules that each LPU supports, see “Transceiver modules.”
- A combo interface is a logical port that comprises an SFP port and an RJ-45 Ethernet port. Only one of them can be activated at a time.
Switching fabric modules

A switching fabric module is the core of the switching fabric of a switch. The switch supports switching fabric modules of models LSU1FAB04A0 and LSU1FAB08A0.

⚠️ **CAUTION:**
The switching fabric module of a switch provides a console port, which is designed for the HP technical support staff to maintain the switch. Do not use the console port if you have not been trained for that.

**Table 29 Switching fabric module ordering guide**

<table>
<thead>
<tr>
<th>Chassis model</th>
<th>Available switching fabric module model</th>
<th>Number of switching fabrics per chassis</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10504</td>
<td>LSU1FAB04A0</td>
<td></td>
</tr>
<tr>
<td>A10508</td>
<td>LSU1FAB08A0</td>
<td>1 to 4</td>
</tr>
<tr>
<td>A10508-V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power supplies

The switch supports the 2500W AC Power Supply (JC610A), which is an AC-input, DC-output power supply and provides a maximum DC output power of 2500 W.

**Table 30 2500W AC power supply specifications**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated input voltage range</td>
<td>100 VAC to 240 VAC; 50/60 Hz</td>
</tr>
<tr>
<td>Rated output voltage</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Maximum input current</td>
<td>16 A</td>
</tr>
<tr>
<td>Maximum output current</td>
<td>• 208A (220 VAC)</td>
</tr>
<tr>
<td></td>
<td>• 100A (110 VAC)</td>
</tr>
<tr>
<td>Maximum output power</td>
<td>• 1200 W (110 VAC)</td>
</tr>
<tr>
<td></td>
<td>• 2500 W (220 VAC)</td>
</tr>
<tr>
<td>Temperature requirements</td>
<td>Operating temperature –10°C to +50°C (14°F to 122°F)</td>
</tr>
<tr>
<td></td>
<td>Storage temperature –40°C to +85°C (-40°F to +185°F)</td>
</tr>
</tbody>
</table>

You can select a certain number of power supplies according to the actual power consumption requirements of your switch. Make sure that the total maximum output power of the ordered power supplies is greater than the system power consumption. HP recommends that you reserve 20% of the maximum output power.

Fan trays

**Table 31** shows the fan trays that each switch chassis supports.
### Table 31 Fan tray specifications

<table>
<thead>
<tr>
<th>Fan tray</th>
<th>Number of fans</th>
<th>Fan diameter</th>
<th>Maximum rotating speed</th>
<th>Maximum air flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10504 fan tray</td>
<td>8</td>
<td>92 mm (3.62 in)</td>
<td>6000 RPM</td>
<td>960 CFM</td>
</tr>
<tr>
<td>A10508 fan tray</td>
<td>8</td>
<td>120 mm (4.72 in)</td>
<td>5200 RPM</td>
<td>1440 CFM</td>
</tr>
<tr>
<td>A10508-V fan tray</td>
<td>12</td>
<td>120 mm (4.72 in)</td>
<td>5200 RPM</td>
<td>1152 CFM</td>
</tr>
</tbody>
</table>

The fans trays are shipped with the switch, and have been installed in the switch. If the fan tray of a switch fails, order a compatible fan tray to replace the failed one.

### Mounting accessories

Before installing the switch to the rack, install slide rails to the rack. You can order an HP X421 A-Series Chassis Universal 4-Post Rack Mounting Kit (JC665A).

An HP X421 A-Series Chassis Universal 4-Post Rack Mounting Kit (JC665A) includes cage nuts, screws, and a pair of slide rails. The length of the slide rails is in the range of 500 mm (19.69 in) to 800 mm (31.50 in). A pair of slide rails can bear a maximum weight of 350 kg (771.60 lb). Before you use the slide rails, make sure that the following requirements are satisfied:

- The inside depth of the rack falls into the length range of the slide rail.
- The slide rails can support the total weight of the switch chassis and its accessories.

### Transceiver modules

The switch supports transceiver modules. You can order transceiver modules according to the transceiver modules supported by the LPU interfaces. For more information, see Table 28.

The switch supports the following transceiver modules:

- 10-Gigabit XFP modules listed in Table 32
- 10-Gigabit SFP+ modules listed in Table 33
- 10-Gigabit SFP+ cables listed in Table 34
- Gigabit SFP modules listed in Table 35
- 100-Mbps SFP modules listed in Table 36

### Table 32 XFP module specifications

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Central wavelength (nm)</th>
<th>Fiber diameter (μm)</th>
<th>Multimode fiber modal bandwidth (MHz*km)</th>
<th>Max transmission distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD117B</td>
<td>HP X130 10G XFP LC SR Transceiver</td>
<td>850</td>
<td>50/125</td>
<td>2000</td>
<td>300 m (984.25 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>500</td>
<td>82 m (269.03 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>66 m (216.54 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>62.5/125</td>
<td>33 m (108.27 ft)</td>
</tr>
<tr>
<td>Product code</td>
<td>Description</td>
<td>Central wavelength (nm)</td>
<td>Fiber diameter (μm)</td>
<td>Multimode fiber modal bandwidth (MHz*km)</td>
<td>Max transmission distance</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------------------</td>
<td>---------------------</td>
<td>------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>JD108B</td>
<td>HP X130 10G XFP LC LR Transceiver</td>
<td>1310</td>
<td>9/125</td>
<td>N/A</td>
<td>10 km (6.21 miles)</td>
</tr>
<tr>
<td>JD121A</td>
<td>HP X135 10G XFP LC ER Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>40 km (24.86 miles)</td>
</tr>
<tr>
<td>JD107A</td>
<td>HP X130 10G XFP LC ZR Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG226A</td>
<td>HP X180 10G XFP LC LH 80km 1538.98nm DWDM Transceiver</td>
<td>1538.98</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG227A</td>
<td>HP X180 10G XFP LC LH 80km 1539.77nm DWDM Transceiver</td>
<td>1539.77</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG228A</td>
<td>HP X180 10G XFP LC LH 80km 1540.56nm DWDM Transceiver</td>
<td>1540.56</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG229A</td>
<td>HP X180 10G XFP LC LH 80km 1542.14nm DWDM Transceiver</td>
<td>1542.14</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG230A</td>
<td>HP X180 10G XFP LC LH 80km 1542.94nm DWDM Transceiver</td>
<td>1542.94</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG231A</td>
<td>HP X180 10G XFP LC LH 80km 1558.98nm DWDM Transceiver</td>
<td>1558.98</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG232A</td>
<td>HP X180 10G XFP LC LH 80km 1559.79nm DWDM Transceiver</td>
<td>1559.79</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JG233A</td>
<td>HP X180 10G XFP LC LH 80km 1560.61nm DWDM Transceiver</td>
<td>1560.61</td>
<td>9/125</td>
<td>N/A</td>
<td>80 km (49.71 miles)</td>
</tr>
</tbody>
</table>

**NOTE:**

The 9/125μm single-mode fibers used by modules JG226A through JG233A must conform to ITU-T G.655, and those used by other modules must conform to ITU-T G.652.
### Table 33 SFP+ module specifications

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Central wavelength (nm)</th>
<th>Fiber diameter (μm)</th>
<th>Multimode fiber modal bandwidth (MHz*km)</th>
<th>Maximum transmission distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD092B</td>
<td>HP X130 10G SFP+ LC SR Transceiver</td>
<td>850</td>
<td>50/125</td>
<td>2000</td>
<td>300 m (984.25 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>500</td>
<td>82 m (269.03 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>66 m (216.54 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>33 m (108.27 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>160</td>
<td>26 m (85.30 ft)</td>
</tr>
<tr>
<td>JD093B</td>
<td>HP X130 10G SFP+ LC LRM Transceiver</td>
<td>1310</td>
<td>50/125</td>
<td>1500</td>
<td>220 m (721.78 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>500</td>
<td>40 m (131.23 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>100 m (328.08 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>220 m (721.78 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>160</td>
<td>220 m (721.78 ft)</td>
</tr>
<tr>
<td>JD094B</td>
<td>HP X130 10G SFP+ LC LR Transceiver</td>
<td>1310</td>
<td>9/125</td>
<td>N/A</td>
<td>10 km (6.21 miles)</td>
</tr>
<tr>
<td>JG234A</td>
<td>HP X130 10G SFP+ LC ER 40km Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>40 km (24.86 miles)</td>
</tr>
</tbody>
</table>

### Table 34 SFP+ cable specifications

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Cable length</th>
<th>Cable type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD095B</td>
<td>HP X240 10G SFP+ SFP+ 0.65m DA Cable</td>
<td>0.65 m (2.13 ft)</td>
<td>SFP+ cable</td>
<td>Used for connecting SFP+ ports</td>
</tr>
<tr>
<td>JD096B</td>
<td>HP X240 10G SFP+ SFP+ 1.2m DA Cable</td>
<td>1.2 m (3.94 ft)</td>
<td>SFP+ cable</td>
<td>Used for connecting SFP+ ports</td>
</tr>
<tr>
<td>JD097B</td>
<td>HP X240 10G SFP+ SFP+ 3m DA Cable</td>
<td>3 m (9.84 ft)</td>
<td>SFP+ cable</td>
<td>Used for connecting SFP+ ports</td>
</tr>
<tr>
<td>JG081B</td>
<td>HP X240 10G SFP+ SFP+ 5m DA Cable</td>
<td>5 m (16.40 ft)</td>
<td>SFP+ cable</td>
<td>Used for connecting SFP+ ports</td>
</tr>
</tbody>
</table>

### Table 35 Gigabit SFP module specifications

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Central wavelength (nm)</th>
<th>Fiber diameter (μm)</th>
<th>Multimode fiber modal bandwidth (MHz*km)</th>
<th>Maximum transmission distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD089B</td>
<td>HP X120 1G SFP RJ45 T Transceiver</td>
<td>N/A</td>
<td>Category-5 twisted pair</td>
<td>N/A</td>
<td>100 m (328.08 ft)</td>
</tr>
<tr>
<td>JD118B</td>
<td>HP X120 1G SFP LC SX Transceiver</td>
<td>850</td>
<td>50/125</td>
<td>500</td>
<td>550 m (1804.46 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>500 m (1640.42 ft)</td>
</tr>
<tr>
<td>Product Code</td>
<td>Description</td>
<td>Central wavelength (nm)</td>
<td>Fiber diameter (μm)</td>
<td>Multimode fiber modal bandwidth (MHz*km)</td>
<td>Maximum transmission distance</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>--------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>JD119B</td>
<td>HP X120 1G SFP LC LX Transceiver</td>
<td>1310</td>
<td>50/125</td>
<td>500</td>
<td>550 m (1804.46 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JD061A</td>
<td>HP X125 1G SFP LC LH40 1310nm Transceiver</td>
<td>1310</td>
<td>9/125</td>
<td>N/A</td>
<td>40 km (24.86 miles)</td>
</tr>
<tr>
<td>JD062A</td>
<td>HP X120 1G SFP LC LH40 1550nm Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>40 km (24.86 miles)</td>
</tr>
<tr>
<td>JD063B</td>
<td>HP X125 1G SFP LC LH70 Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD103A</td>
<td>HP X120 1G SFP LC LH100 Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>100 km (62.14 miles)</td>
</tr>
<tr>
<td>JD098B</td>
<td>HP X120 1G SFP LC BX 10-U Transceiver</td>
<td></td>
<td></td>
<td>TX: 1310nm RX: 1490nm</td>
<td>9/125</td>
</tr>
<tr>
<td>JD099B</td>
<td>HP X120 1G SFP LC BX 10-D Transceiver</td>
<td></td>
<td></td>
<td>TX: 1490nm RX: 1310nm</td>
<td>9/125</td>
</tr>
<tr>
<td>JD113A</td>
<td>HP X170 1G SFP LC LH70 1470 Transceiver</td>
<td>1470</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD114A</td>
<td>HP X170 1G SFP LC LH70 1490 Transceiver</td>
<td>1490</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD115A</td>
<td>HP X170 1G SFP LC LH70 1510 Transceiver</td>
<td>1510</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD116A</td>
<td>HP X170 1G SFP LC LH70 1530 Transceiver</td>
<td>1530</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD109A</td>
<td>HP X170 1G SFP LC LH70 1550 Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD110A</td>
<td>HP X170 1G SFP LC LH70 1570 Transceiver</td>
<td>1570</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD111A</td>
<td>HP X170 1G SFP LC LH70 1590 Transceiver</td>
<td>1590</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
<tr>
<td>JD112A</td>
<td>HP X170 1G SFP LC LH70 1610 Transceiver</td>
<td>1610</td>
<td>9/125</td>
<td>N/A</td>
<td>70 km (43.50 miles)</td>
</tr>
</tbody>
</table>
NOTE:
The 100/1000-Mbps SFP port of a combo interface does not support transceiver module JD089B.

Table 36 100-Mbps SFP module specifications

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
<th>Central wavelength (nm)</th>
<th>Fiber diameter (μm)</th>
<th>Maximum transmission distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD102B</td>
<td>HP X110 100M SFP LC FX Transceiver</td>
<td>1310</td>
<td>50/125</td>
<td>2 km (1.24 miles)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>62.5/125</td>
<td></td>
</tr>
<tr>
<td>JD120B</td>
<td>HP X110 100M SFP LC LX Transceiver</td>
<td>1310</td>
<td>9/125</td>
<td>15 km (9.32 miles)</td>
</tr>
<tr>
<td>JD090A</td>
<td>HP X110 100M SFP LC LH40 Transceiver</td>
<td>1310</td>
<td>9/125</td>
<td>40 km (24.86 miles)</td>
</tr>
<tr>
<td>JD091A</td>
<td>HP X110 100M SFP LC LH80 Transceiver</td>
<td>1550</td>
<td>9/125</td>
<td>80 km (49.71 miles)</td>
</tr>
<tr>
<td>JD100A</td>
<td>HP X115 100M SFP LC BX 10-U Transceiver</td>
<td>TX: 1310</td>
<td>9/125</td>
<td>15 km (9.32 miles)</td>
</tr>
<tr>
<td>JD101A</td>
<td>HP X115 100M SFP LC BX 10-D Transceiver</td>
<td>TX: 1550, RX: 1310</td>
<td>9/125</td>
<td>15 km (9.32 miles)</td>
</tr>
</tbody>
</table>
Appendix C LEDs

The LEDs in Table 37 are available for you to monitor module status on the switch.

Table 37 LEDs at a glance

<table>
<thead>
<tr>
<th>LEDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPU LEDs:</td>
</tr>
<tr>
<td>• Management Ethernet port LEDs</td>
</tr>
<tr>
<td>• Fan LEDs</td>
</tr>
<tr>
<td>• Card LEDs</td>
</tr>
<tr>
<td>• MPU active/standby status LED</td>
</tr>
<tr>
<td>LPU LEDs:</td>
</tr>
<tr>
<td>• RJ-45 Ethernet port LED</td>
</tr>
<tr>
<td>• SFP port LED</td>
</tr>
<tr>
<td>• SFP+ port LED</td>
</tr>
<tr>
<td>• XFP port LEDs</td>
</tr>
<tr>
<td>Switching fabric module LEDs</td>
</tr>
<tr>
<td>Fan tray status LEDs</td>
</tr>
<tr>
<td>Power supply LEDs</td>
</tr>
</tbody>
</table>

MPU LEDs

Figure 40 shows the LEDs available on the LSU1SUPA0 MPU.

Figure 38 LEDs on an LSU1SUPA0 MPU

Management Ethernet port LEDs

The LSU1SUPA0 MPU has one LINK LED and one ACT LED to indicate the link status and data forwarding status of the management Ethernet port.

Table 38 Management Ethernet port LED description

<table>
<thead>
<tr>
<th>LINK</th>
<th>ACT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Flashing</td>
<td>A link is present, and the management Ethernet port is receiving or sending data.</td>
</tr>
<tr>
<td>LINK</td>
<td>ACT</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>----------------------</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>A link is present.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>No link is present.</td>
</tr>
</tbody>
</table>

**Fan LEDs**

The LSU1SUPA0 MPU provides two fan LEDs (OK and FAIL) for each fan tray to indicate the status of the fan trays (FAN0 and FAN1).

**NOTE:**
The A10504, A10508, and A10508-V switches have only one fan tray. The LEDs for the fan tray is the FAN0 LEDs on the MPU.

**Table 39 Fan LED description**

<table>
<thead>
<tr>
<th>OK</th>
<th>FAIL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Off</td>
<td>The fan tray is working properly.</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>A fan problem is present or the fan tray is not in position.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>The switch is not powered on.</td>
</tr>
</tbody>
</table>

**Card LEDs**

The LSU1SUPA0 MPU has the LEDs numbered the same as card slots to indicate the status of the active MPU, standby MPU, LPUs, and switching fabric modules in the slots. **Table 40** shows the LED description.

**NOTE:**
Slot numbers are marked on top of the slots on the A10508-V switch and on the right of the slots on other A10500 switches.

**Table 40 Card LED description**

<table>
<thead>
<tr>
<th>RUN</th>
<th>ALM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking</td>
<td>Off</td>
<td>The card is working properly.</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>The card is faulty.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>• The card is not in position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The card is not started (the software version of the switch does not match that of the card).</td>
</tr>
<tr>
<td>On</td>
<td>On</td>
<td>The LPU is starting up. This status combination is available only for LPUs.</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>The MPU is starting up. This status combination is available only for MPUs.</td>
</tr>
</tbody>
</table>

**NOTE:**
- A quick flashing RUN LED indicates that the card is starting up rather than operating properly.
- It is normal that the ALM LED for an LPU lights for a period of time at the initial phase of the system startup.
**MPU active/standby status LED**

The LSU1 SUPA0 MPU has one ACTIVE LED to indicate the active or standby status of the MPU.

<table>
<thead>
<tr>
<th>LED</th>
<th>LED status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVE</td>
<td>On</td>
<td>The MPU is active.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>• The MPU is in standby status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The MPU is faulty. Check the card LED for an MPU problem.</td>
</tr>
</tbody>
</table>

**LPU LEDs**

**RJ-45 Ethernet port LED**

The LPUs provide RJ-45 Ethernet port LEDs to indicate the link status and data receiving/forwarding status of the Ethernet ports.

<table>
<thead>
<tr>
<th>LED</th>
<th>LED status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ-45 Ethernet port LED</td>
<td>Flashing</td>
<td>The Ethernet interface is receiving or sending data.</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>A link is present.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No link is present.</td>
</tr>
</tbody>
</table>

**SFP port LED**

The LPUs provide one SFP port LED for each SFP port to indicate the link status and data receiving/forwarding status of the SFP ports.

<table>
<thead>
<tr>
<th>LED</th>
<th>LED status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP port LED</td>
<td>Flashing</td>
<td>The SFP port is receiving or sending data.</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>A link is present.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No link is present.</td>
</tr>
</tbody>
</table>

**SFP+ port LED**

The LPUs provide one SFP+ port LED for each SFP+ port to indicate the link status and data receiving/forwarding status of the SFP+ ports.

<table>
<thead>
<tr>
<th>LED</th>
<th>LED status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP+ port LED</td>
<td>Flashing</td>
<td>The SFP+ port is receiving or sending data.</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>A link is present.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No link is present.</td>
</tr>
</tbody>
</table>
XFP port LEDs

The LPUs provide two LEDs (LINK and ACT) for each XFP port to indicate the link status and data receiving/forwarding status of the XFP ports.

Table 45 XFP port LED description

<table>
<thead>
<tr>
<th>LINK</th>
<th>ACT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Flashing</td>
<td>A link is present, and the XFP interface is receiving or sending data.</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>A link is present, but no data is being received or sent.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>No link is present.</td>
</tr>
</tbody>
</table>

Switching fabric module LEDs

The switching fabric module has one RUN LED and one ALM LED to indicate its operating status.

Table 46 Switching fabric module LED description

<table>
<thead>
<tr>
<th>RUN LED</th>
<th>ALM LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (0.5 Hz)</td>
<td>Off</td>
<td>The switching fabric module is working properly.</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>The switching fabric module is faulty.</td>
</tr>
<tr>
<td>Flashing (0.5 Hz)</td>
<td>On</td>
<td>The temperature of the switching fabric module has exceeded the upper or lower limit.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>The switching fabric module has not started.</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>The switching fabric module is up.</td>
</tr>
</tbody>
</table>

Fan tray status LEDs

The fan trays for the switch have one OK LED and one FAIL LED to indicate its operating status.

Table 47 Fan tray LED description

<table>
<thead>
<tr>
<th>OK</th>
<th>FAIL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Off</td>
<td>The fan tray is working properly.</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>The fan tray is faulty.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>The fan tray is not powered on.</td>
</tr>
</tbody>
</table>
Power supply LEDs

The 2500W AC Power Supply has one AC LED and one DC LED to indicate its operating status.

Table 48 Power supply LED description

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Off</td>
<td>• The power supply has no power input.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The input voltage is too low, and the power supply is in self-protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>state.</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>The power input is normal.</td>
</tr>
<tr>
<td>DC</td>
<td>Green</td>
<td>The power supply is outputting power normally.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>The power supply is experiencing an output problem, including output short-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>circuit, output overcurrent, output overvoltage, input under-voltage, or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>remote power off, and has entered the self-protection state.</td>
</tr>
<tr>
<td></td>
<td>Orange</td>
<td>The power supply is in an over-temperature condition and has entered the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>self-protection state.</td>
</tr>
</tbody>
</table>
Appendix D Cables

This chapter describes the cables used in connecting ports on different LPUs of the switch.

Table 49 Cable description

<table>
<thead>
<tr>
<th>Cable</th>
<th>Port type</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet twisted pair cable</td>
<td>RJ-45 Ethernet</td>
<td>Connects RJ-45 Ethernet interfaces to transmit data</td>
</tr>
<tr>
<td></td>
<td>interfaces</td>
<td></td>
</tr>
<tr>
<td>Optical fiber</td>
<td>XFP/SFP+/SFP</td>
<td>Connects the optical interfaces to transmit data</td>
</tr>
<tr>
<td></td>
<td>interfaces</td>
<td></td>
</tr>
<tr>
<td>SFP+ cable</td>
<td>SFP+ interfaces</td>
<td>Connects SFP+ interfaces to transmit data</td>
</tr>
</tbody>
</table>

Ethernet twisted pair cable

An Ethernet twisted pair cable consists of four pairs of insulated wires twisted together. It mainly transmits analog signals and is advantageous in transmitting data over shorter distances. The maximum transmission distance is 100 m (328.08 ft).

RJ-45 connector

An Ethernet twisted pair cable connects network devices through the RJ-45 connectors at the two ends. Figure 41 shows the pinouts of an RJ-45 connector.

Figure 39 RJ-45 connector pinout diagram

Cable pinouts

EIA/TIA cabling specifications define two standards: 568A and 568B for cable pinouts.

Cable type

Based on performance

Ethernet cables can be classified into category 3, category 4, category 5, category 5e, category 6, and category 7 cable based on performance. In LANs, category 5, category 5e, and category 6 are commonly used.

Table 50 Description on commonly used Ethernet cables

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5</td>
<td>Transmits data at a maximum speed of 100 Mbps, with a bandwidth of 100 MHz.</td>
</tr>
<tr>
<td>Category 5e</td>
<td>Transmits data at a maximum speed of 1000 Mbps, with a bandwidth of 100 MHz.</td>
</tr>
<tr>
<td>Category 6</td>
<td>Transmits data at a speed higher than 1 Gbps, with a bandwidth of 250 MHz.</td>
</tr>
</tbody>
</table>

NOTE:
The RJ-45 Ethernet interfaces use category 5 or higher Ethernet twisted pair cables for connection.

Based on pinouts

Ethernet twisted pair cables can be classified into straight through and crossover cables based on their pinouts.

- **Straight-through**: The pinouts at both ends comply with standard 568B, as shown in Figure 42.
- **Crossover**: The pinouts at one end comply with standard 568B, and those at the other end comply with standard 568A, as shown in Figure 43.

Figure 40 Straight-through cable

![Straight-through cable diagram](image-url)
Pin assignments

Select an Ethernet twisted pair cable according to the RJ-45 Ethernet interface type on your device. An RJ-45 Ethernet interface can be MDI (for routers and PCs) or MDIX (for switches). For the pinouts of RJ-45 Ethernet interfaces, see Table 51 and Table 52.

Table 51 RJ-45 MDI interface pinouts

<table>
<thead>
<tr>
<th>Pin</th>
<th>10Base-T/100Base-TX</th>
<th>1000Base-T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Signal</td>
<td>Function</td>
</tr>
<tr>
<td>1</td>
<td>Tx+</td>
<td>Send data</td>
</tr>
<tr>
<td>2</td>
<td>Tx-</td>
<td>Send data</td>
</tr>
<tr>
<td>3</td>
<td>Rx+</td>
<td>Receive data</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>Rx-</td>
<td>Receive data</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Table 52 RJ-45 MDI-X interface pinouts

<table>
<thead>
<tr>
<th>Pin</th>
<th>10Base-T/100Base-TX</th>
<th>1000Base-T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Signal</td>
<td>Function</td>
</tr>
<tr>
<td>1</td>
<td>Rx+</td>
<td>Receive data</td>
</tr>
<tr>
<td>2</td>
<td>Rx-</td>
<td>Receive data</td>
</tr>
<tr>
<td>3</td>
<td>Tx+</td>
<td>Send data</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>Tx-</td>
<td>Send data</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
<td>N/A</td>
</tr>
</tbody>
</table>

To ensure normal communication, the pins for sending data on one port should correspond to the pins for receiving data on the peer port. When both of the ports on the two devices are MDI or MDIX, a crossover Ethernet cable is needed. A cross-over cable connects devices of the same type. When one port is MDI and the other is MDIX, a straight-through Ethernet cable is needed. A straight-through cable connects devices of different types.

If an RJ-45 Ethernet interface with MDI/MDIX autosensing enabled can automatically negotiate pin roles. The A10500 RJ-45 Ethernet interfaces support MDI/MDIX. By default, MDI/MDIX is enabled on a port.

Making an Ethernet twisted pair cable

To make an Ethernet twisted pair cable:
1. Cut the cable to length with the crimping pliers.
2. Strip off an appropriate length of the cable sheath. The length is typically that of the RJ-45 connector.
3. Untwist the pairs so that they can lie flat, and arrange the colored wires based on the wiring specifications.
4. Cut the top of the wires even with one another. Insert the wires into the RJ-45 end and make sure the wires extend to the front of the RJ-45 end and make good contact with the metal contacts in the RJ-45 end and in the correct order.
5. Crimp the RJ-45 connector with the crimping pliers until you hear a click.
6. Repeat the above steps with the other end of the cable.
7. Use a cable tester to verify the proper connectivity of the cable.

Optical fiber

⚠️ CAUTION:

Use the same types of transceiver modules, pigtail cords, patch cords, and fiber cables. If you use single-mode optical fibers, the transceiver modules, pigtail cords, patch cords, and fiber cables must be single-mode.
Optical fibers are widely used in fiber-optic communications, which are advantageous for long-distance communications.

Optical fibers can be classified into the following types:

- **Single mode fiber**: It has a core size of 10 μm or smaller, and has a lower modal dispersion. It carries only a single ray of light. It is mostly used for communication over longer distances.
- **Multi-mode fiber**: It has a core size of 50 μm or 62.5 μm or higher, and has a higher modal dispersion than single-mode optical fiber. It is mostly used for communication over shorter distances.

### Table 53 Allowed maximum tensile force and crush load

<table>
<thead>
<tr>
<th>Period of force</th>
<th>Tensile load (N)</th>
<th>Crush load (N/mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short period</td>
<td>150</td>
<td>500</td>
</tr>
<tr>
<td>Long term</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

**Optical fiber cable**

An optical fiber cable is a cable containing one or more optical fibers. The optical fiber elements are typically individually coated with plastic layers and contained in a protective tube. Optical fiber cables fall into single-mode and multi-mode.

**Patch cord**

A fiber that has connectors at both ends is called a patch cord. A patch cord connects one optical device to another for signal routing. Patch cords fall into single-mode and multi-mode patch cords.

- **Single-mode patch cord**: The jacket is yellow. It permits transmission over longer distances.
- **Multi-mode patch cord**: The jacket is orange. It permits transmission over shorter distances.

Patch cords are classified into SC, LC, FC, and so on based on interface type. The length of a patch cord can be 0.5 m (1.64 ft), 1 m (3.28 ft), 2 m (6.56 ft), 3 m (9.84 ft), 5 m (16.40 ft), 10 m (32.81 ft), and so on.

**Pigtail cord**

A pigtail cord is an optical fiber that has an optical connector on one end and a length of exposed fiber on the other. The end of the pigtail is fusion spliced to a fiber, connecting the fiber cable and transceiver.

Pigtail cords fall into single-mode (yellow) and multi-mode (orange), and can also be classified into SC, LC, FC, and so on based on interface type.

**Fiber connector**

Fiber connectors are indispensable passive components in an optical fiber communication system. They allow the removable connection between optical channels, which makes the optical system debugging and maintenance more convenient and the transit dispatching of the system more flexible.
Precautions

- Make sure the fiber connector and fiber type match the transceiver module type.
- The optical interfaces on some cards have shielded covers. Remove the shielded covers before using the optical interfaces. Optical interfaces must be installed with shielded covers when they are not in use. Keep them safely.
- Fiber connectors must be protected under safe and reliable outer packing, and be fitted with dust caps. Fiber connectors must be installed with dust caps when they are not in use. Take care not to scratch their end face. Replace the dust cap if it is loose or polluted.
- Before connecting a fiber, use dust free paper and absolute alcohol to clean the end face of the fiber connector. You can brush the end face only in one direction. You also need to brush the end face of the fiber port.
- Never bend or curve a fiber when connecting it. After a fiber is installed well, the bend radius must be not less than 40 mm (the minimum dynamic bend radius is 20 D, and the minimum static bend radius is 10 D. D indicates the outer diameter of dust caps).
- If the fiber has to pass through a metallic board hole, the hole must have a sleek and fully filleted surface (the filleting radius must be not less than 2 mm). When passing through a metallic board hole or bending along the acute side of mechanical parts, the fiber must wear jackets or cushions.
- Insert and remove a plug with care. Never exert a fierce force to the fiber or plug; otherwise the plug may be damaged or the fiber may be broken. Never pull, press or extrude the fiber fiercely. For the allowed maximum tensile load and crush load, see Table 53.

SFP+ cable

You can use SFP+ cables to connect the SFP+ interfaces for the switch. SFP+ cables support the SFP+ standard and use 10 G SFP+ Cu standard cables.
HP provides five types of SFP+ cables with various lengths.

**Table 54 SFP+ cable description**

<table>
<thead>
<tr>
<th>Model</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSWM1STK</td>
<td>0.65 m (2.13 ft)</td>
<td></td>
</tr>
<tr>
<td>LSWM2STK</td>
<td>1.2 m (3.94 ft)</td>
<td></td>
</tr>
<tr>
<td>LSWM3STK</td>
<td>3 m (9.84 ft)</td>
<td>Dedicated to interconnecting SFP+ interfaces</td>
</tr>
<tr>
<td>LSTM1STK</td>
<td>5 m (16.40 ft)</td>
<td></td>
</tr>
<tr>
<td>LSWM4STK</td>
<td>10 m (32.81 ft)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E Cabling recommendations

When a switch is mounted in a 19-inch standard rack, the interface cables are routed through the cable management brackets, bound at cabling racks on chassis sides, and then routed up or down to pass through the chassis top or the raised floor, depending on the available equipment room condition. The power cables run along the two sides of the chassis and out of the chassis either from the chassis top or the raised floor depending on the equipment room conditions (power distribution cabinet, lightning protection box, and connector strip, etc.) of the exchange office.

General cabling requirements

Minimum curvature radius of cables

- The curvature radius of an attached power cable, communication cable, or ribbon cable should be at least five times the cable’s outer diameter. If the cable is frequently bent, plugged and unplugged, the curvature radius should be at least seven times the cable’s outer diameter.
- The curvature radius of an ordinary attached coaxial cable should be at least seven times of the cable’s outer diameter. If the coaxial cable is frequently bent, plugged and unplugged, the curvature radius should be at least 10 times the cable’s outer diameter.
- The curvature radius of a high-speed cable (for example, SFP+ cable) should be at least five times of the cable’s outer diameter. If the coaxial cable is frequently bent, plugged and unplugged, the curvature radius should be at least 10 times the cable’s outer diameter.

Minimum curvature radius of fibers

- When the fiber is wrapped up around the cabling plate, the diameter of the cabling plate should be at least 25 times the fiber’s diameter.
- When the fiber is being moved, the curvature radius of the fiber should be at least 20 times the fiber’s diameter.
- When the fiber is attached, the curvature radius of the fiber should be at least 10 times the fiber’s diameter.

NOTE:
The fiber’s diameter refers to the outer diameter of the fiber jacket. Typically, the diameter of a single-core fiber is 0.9 mm (0.04 in), 2.0 mm (0.08 in), or 3.0 mm (0.12 in).

Before binding the cables, fill in the labels for them correctly and put them on the cables.
Cable management requirements

Make sure that you meet the following requirements:

- Bind and put the cables inside the rack in an organized manner. Make sure the cables do not have any kinks or sharp bends.

*Figure 45 Cable binding example 1*

- Different cables (power, signal, and grounding cables) should be routed and bound separately rather than together in the rack. If they are close to each other, you can route them in cross-shape. For parallel routing, the space between power cable and signal cable should be no less than 30 mm (1.18 in).
- The cable management bracket and cable routing slot inside and outside the rack should be smooth and without sharp edges or tips.
- The metal cable management hole should have a smooth and fully rounded surface or wear an insulating bush.
- Use the right type of ties to bind the cables. Do not bind cables with joined ties. The following types of ties are available currently: 100 × 2.5 mm (3.94 × 0.10 in), 150 × 3.6 mm (5.91 × 0.14 in), 300 × 3.6 mm (11.81 × 0.14 in), 530 × 9 mm (20.87 × 0.35 in), and 580 × 13 mm (22.83 × 0.51 in).
- Cut the extra parts of the ties neatly after binding the cables, leaving no sharp or angular tips. See the following figure:
• Bind the cables wherever cable bending cannot be avoided. However, the cable ties cannot be placed inside the bending area in case of the likelihood of cable core break due to excessive stress. See the following figure.

Figure 47 Cable binding example 3

• The spare cables or excessive cable parts should be folded and bound and placed at a right place in the rack or on the cable routing slot. A “right place” refers to the place where the cables will not affect the operation of the switch or impair the switch, or be damaged.

• The power cables cannot be tied on the slide rails of any mobile components.

• Reserve some redundancy for the cables connecting to the mobile parts, the grounding cable of the door for example, to free the cables from possible stress. Such a mobile part should be installed in such a way that the extra cable segments will not contact the heat source, sharp points, or edges. Use high temperature cables against the heat sources.

• For the cable terminals attached using screw threads, the screws or nuts should be securely fastened and prevented from loosening. See the following figure:
When using a hard power cable, attach it near its terminal to free the terminal and the cable from stress.

Do not use tapping screws to fasten the connecting terminals.

The power cable of the same type and in the same direction should be bound together and kept organized.

The following table lists the requirements in the binding with cable ties.

**Table 55 Tie-binding parameters**

<table>
<thead>
<tr>
<th>Cable bundle diameter (mm)</th>
<th>Space between bundles (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>80 to 150</td>
</tr>
<tr>
<td>10 to 30</td>
<td>150 to 200</td>
</tr>
<tr>
<td>30</td>
<td>200 to 300</td>
</tr>
</tbody>
</table>

No cable or bundle can tie a knot.

The metal parts of the crimped cold-pressed terminal blocks (such as air switch) cannot stretch beyond the blocks.
Appendix F Repackaging the switch

This chapter describes how to repack the switch chassis, power supply, card, mounting bracket, and cable management bracket.

Removing cables from the switch

Before repackaging the switch, remove all cables such as the power cable, console cable, twisted pair, optical fiber, and grounding cable from the switch.

Removing the power cable

To remove a power cable:

1. Prepare the packing bag of the power cable. Make sure that the bag is clean, dry, and not damaged.
2. Switch off the circuit breakers at the input end of all power cables.
3. Wear an ESD-preventive wrist strap, and make sure that it has a good skin contact and is properly grounded. For more information, see “Installing modules.”
4. Remove the cable tie that secures the power cable, and then pull out the plug.
5. Put the power cable into the bag.

Removing the console cable

To remove a console cable:

1. Prepare the packing bag of the console cable. Make sure that the bag is clean, dry, and not damaged.
2. Pull the RJ-45 connector of the console cable out from the console port of the switch.
3. Pull the DB-9 connector of the console cable out from the serial port of the PC.
4. Put the console cable into the bag.
5. Put the packed console cable into the accessories box.

Removing the grounding cable

To remove a grounding cable:

1. Loosen the two screws at the grounding holes (located at the rear panel and marked with a grounding sign) of the chassis, as shown in callout 2 of Figure 51, and then remove the grounding cable from the chassis.
2. Use a lever to loosen the hex nut on the grounding post of the grounding strip, and remove the other end of the grounding cable (with an OT terminal) from the grounding post, as shown in callout 3 of Figure 51.
Removing the grounding cable

1. Grounding sign
2. Remove the grounding cable from the chassis
3. Loosen the hex nut on the grounding post of the grounding strip

3. Put the grounding cable into the accessories box.

Removing the twisted pair and optical fiber

You must remove twisted pairs and optical fibers from all the interfaces of the switch.

NOTE:
After pulling out an optical fiber from an optical transceiver module, cover the connector of the optical fiber with a dust cap to keep the connector clean.

Repackaging the switch accessories

Repackaging the power supply

⚠️ CAUTION:
Before removing a power supply, switch off the circuit breakers at the input end of all power cables, and remove all the power cables to avoid device damage and bodily injury.

To repackage a power supply:
1. Prepare the packing bag and box of the power supply. Make sure that the bag is clean, dry, and not damaged.
2. Remove all power supplies from the chassis, and then install blank panels to the empty slots. For how to remove a power supply and install a blank panel, see the chapter “Replacement procedures.”
3. Put the power supply into the bag.
4. Put the packed power supply and power cable into the box. Place the power supply in a correct direction onto the foam cushion in the box; otherwise, the power supply cannot be completely seated into the foam cushion.
Repackaging the card

To repackage a card:

1. Prepare the anti-static bag and box of the card. Make sure that the bag is clean, dry, and not damaged.
2. Remove the transceiver modules from the card. If no transceiver module is installed on the card, go to the next step. For how to remove a transceiver module, see the chapter “Replacement procedures.”
3. Remove all cards from the chassis slots, and install blank panels to the empty slots. For how to remove a card and install a blank panel, see the chapter “Replacement procedures.”
4. Put the card into the anti-static bag.
5. Put the packed card into the box, and tape the flaps of the box with packing tape. Place the card in a correct direction onto the foam cushion in the box; otherwise, the power supply cannot be completely seated into the foam cushion.

Repackaging the switch chassis

Removing the chassis from the rack

**IMPORTANT:**
Because the switch is heavy, HP recommends you to move the switch with a mechanical lift.

To remove the chassis from the rack:

1. Prepare the wooden carton and packing bag of the chassis. Make sure that the carton and bag are clean, dry, and not damaged.
2. Remove the top cap and side panels from the wooden carton, and put the pallet base to a proper place.
3. As shown in callout 1 in Figure 52, use a Phillips screwdriver to loosen the screws that attach the mounting brackets to the rack.
4. As shown in callout 2 in Figure 52, use at least two persons to slide the chassis outwards along the slide rails. When most part of the chassis is removed from the slide rails, lift up the chassis by holding the handles at the chassis sides to completely remove the chassis from the rack.
Figure 50 Removing the chassis (A10508) from the rack

1. Loosen the captive screws that attach the mounting brackets to the rack.
2. Slide the chassis outwards along the slide rails.

5. Put the chassis onto the pallet base of the wooden carton.

Removing cable management brackets and mounting brackets

Before repackaging the switch chassis, remove the cable management brackets and mounting brackets from the chassis.

Removing the mounting brackets

To remove the mounting brackets:

1. Prepare the packing box of the mounting brackets. Make sure that the box is clean, dry, and not damaged.

2. As shown in Figure 53, use a Phillips screwdriver to loosen the screws that attach the mounting brackets to the chassis, and then remove the mounting brackets.
3. Put the mounting brackets into the box.

Removing the cable management brackets

The A10508-V has two cable management brackets—the one on the chassis bottom routes power cables, and the one on the chassis top routes signal cables.

The A10504 and A10508 provide a cable management bracket at the chassis bottom to route power cables. The procedure for removing the cable management bracket is similar to that of the A10508-V.

To remove the cable management brackets:
1. Prepare the packing bag of the cable management brackets. Make sure that the bag is clean, dry, and not damaged.
2. Use a Phillips screwdriver to loosen the screws that attach the cable management brackets to the chassis, and then remove the cable management brackets.
3. Put the cable management brackets into the bag.
Figure 52 Removing the cable management brackets from the A10508-V

(1) Loosen the screws that attach the cable management brackets to the chassis
(2) Remove the cable management brackets

Repackaging the switch chassis

To repackage the switch chassis:

1. As shown in Figure 55, align the screw holes on the two sides of the chassis bottom to the L-type brackets on the pallet base of the wooden carton.
2. Attach the screws shipped with your switch to the chassis through the L-type brackets.
3. Cover the chassis with the packing bag, and then tape the bag to the pallet base.
4. Install the side panels to the base pallet.
5. Put the accessories box and mounting bracket box into the wooden carton—at the clearance between the chassis and the wooden panel.
6. Cover the foam cushion to the chassis top, and make sure that the surface of the foam cushion aligns to the upper rims of the wooden carton. Cover the foam cushion in a correct direction; otherwise, the foam cushion cannot be completely placed in the wooden carton.
7. Cover the top cap to the wooden carton, and then connect the panels with corro clips on each seam.
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