Aruba 6200F Switch Series Installation and Getting Started

aruba

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This document is intended for network administrators and support personnel.

NOTE	The display and command line illustrated in this document are examples and might not exactly match your particular switch or environment.
	The switch and accessory drawings in this document are for illustration only, and may not exactly match your particular switch and accessory products.

Applicable Products

Aruba 6200F 24G 4SFP+ Switch (JL724A)

Aruba 6200F 24G Class4 PoE 4SFP+ 370W Switch (JL725A)

Aruba 6200F 48G 4SFP+ Switch (JL726A) a

Aruba 6200F 48G Class4 PoE 4SFP+ 370W Switch (JL727A)

Aruba 6200F 48G Class4 PoE 4SFP+ 740W Switch (JL728A)

Related Publications

- Start Here: Installation, Safety, and Regulatory Information for the Aruba 6200F Switches and Accessories
- ArubaOS-CX software manuals
- Power Over Ethernet (PoE/PoE+) Planning and Implementation Guide
- Transceiver Guide

To view and download these publications, visit the Aruba Support Portal at: https://asp.arubanetworks.com/downloads.

Aruba multiport switches are store-and-forward devices offering low latency for high-speed networking. Certain switch models also support Power over Ethernet (PoE) technologies and full network management capabilities.

This chapter describes these switches with the following information:

- Front of the switches:
  - Network ports
  - Management ports
  - LEDs
  - Buttons
  - Out-of-Band Management (OOBM)
  - SFP+ support
- Back of the switches and power connectors
- Switch features

Front of the Switches

Figure 1 *Front of all the 6200F Switches*
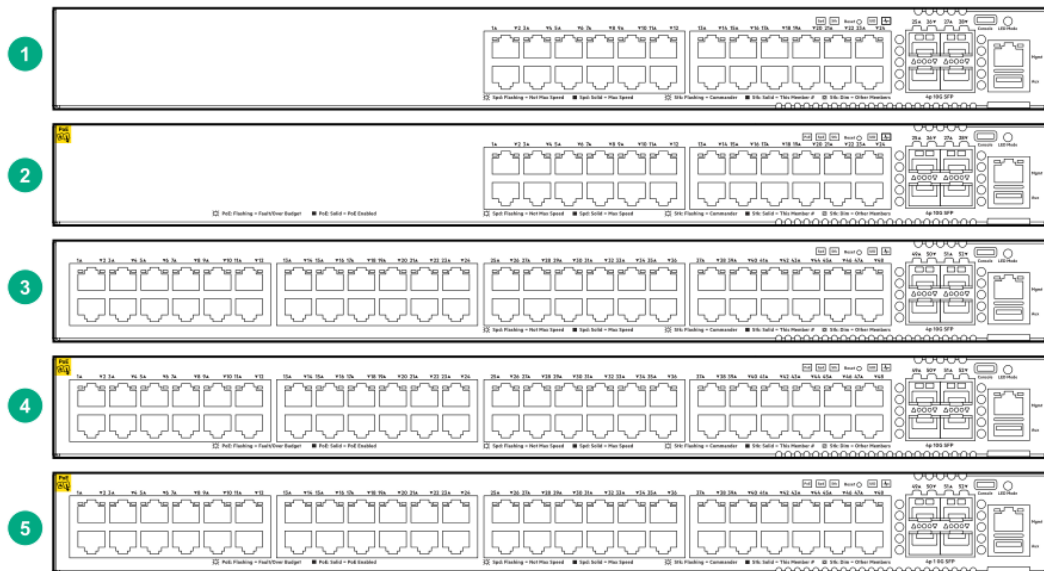
Table 1: *Front of all the 6200F switches: Label and description*

Label	Description
1	**JL724A** Aruba 6200F 24G 4SFP+
2	**JL725A** Aruba 6200F 24G Class4 PoE 4SFP+ 370W
3	**JL726A** Aruba 6200F 48G 4SFP+
4	**JL727A** Aruba 6200F 48G Class4 PoE 4SFP+ 370W
5	**JL728A** Aruba 6200F 48G Class4 PoE 4SFP+ 740W

Network Ports

Table 2: *Network ports*

Switch	10/100/1000 BASE-T PoE Class 4	10/100/1000 BASE-T	SFP+
JL724A	-	24	4
JL725A	24* Network Ports	-	4
JL726A	-	48	4
JL727A	48* Network Ports	-	4
JL728A	48**	-	4

*370W total PoE available
**740W total PoE available

NOTE For supported transceivers, see the latest version of the Transceiver Guide on the Aruba Support Portal.

Management Ports

6200 Series switches contain a console port and an auxiliary port.

Console Port

There is a single serial console port on the switch, using a USB Type-C connector. This port is used to connect a console to the switch. Use a common USB to USB-C cable (must be data capable). A Bluetooth dongle is available to provide an alternative way of managing and configuring your switch using a mobile app.

The console can be a PC or workstation running a VT-100 terminal emulator, or a VT-100 terminal.

Auxiliary (Aux) Port

An auxiliary port is available for downloading switch software code. This port uses a USB Type-A connector.

Switch and Port LEDs

Figure 2 *Switch and Port LEDs*
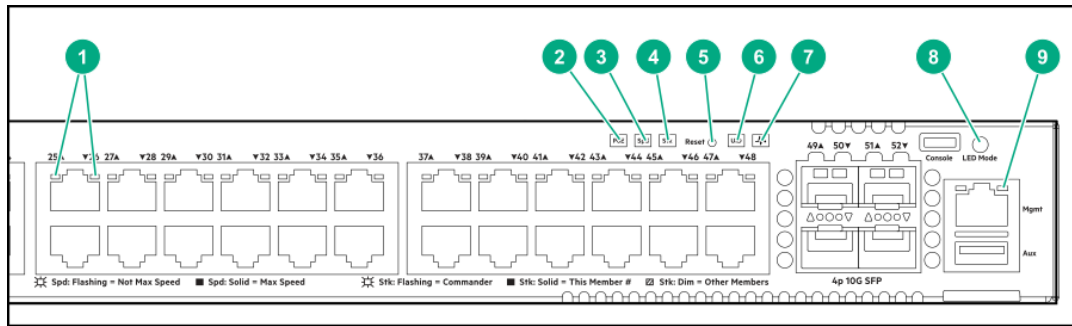
Table 3: *Switch and port LEDs: Labels and description*

Label	Description
1	Switch port LEDs
2	PoE LED*
3	Speed mode selected LED
4	Stk LED
5	Reset button
6	UID (Unit Identification)
7	Global Status LED
8	Mode select button
9	OOBM port LED

Only on switches that support PoE

Table 4: *Front Panel LED Behavior*

Switch LEDs	Function	State	Meaning
PoE LED	Indicates Port LEDs are showing PoE information (not applicable for non PoE switches)	Off	PoE mode not selected
		On - Green	PoE mode selected
		Slow Flash - Amber	One or more ports experiencing PoE failure. PoE mode not selected.
		On - Amber	One or more ports experiencing PoE failure. PoE mode selected.
Spd LED	Indicates Port LEDs are showing speed information	Off	Speed mode not selected
		On - Green	Speed mode selected
		Not Implemented	No fault defined
Stk LED	Indicates Port LEDs are showing stacking mode information	Off	Stacking mode not selected
		On - Green	Stacking mode selected
		On - Amber	One of the switch is experiencing stacking failure. Port LEDs will be used to indicate the number of the stacking member.
		Slow flash Amber	A port has a stacking failure. Stacking mode not selected

Switch LEDs	Function	State	Meaning
UID LED	Locator LED	Off	User configured the located LED : OFF
		On/Flash Blue (for 30 min)	User configured the locator LED: On/Flash
Global Status Indicator LED	Overall status of the product	Flash - Green	Self-test in progress during UBOOT and SVOS
		On - Green	Successfully booted ArubaOS-CX
		Flash - Amber	Recoverable faults (e.g. fans, PSU fault)
		On - Amber	Critical faults (e.g. exceed temperature limit)
		Snoring (Dim - Bright periodically)	System is in hibernation
OOBM Status Indicator LED	Status of OOBM Link connectivity	Off	OOBM port is not connected, no link established
		Half Bright - Green	OOBM port is enabled and established link with partner
		On - Green	Experiencing high bandwidth utilization
		Activity Flicker - Green	% of the time that the LED light up is roughly proportional to the % of full bandwidth utilization of the port
* Press the Mode Select button to switch between PoE, Spd, or Stk Mode.			

LED Mode Select Button and Indicator LEDs

The state of the switch port LEDs is controlled by the LED Mode select button. The current view mode is indicated by the mode LEDs next to the button. To step from one view mode to the next, press the button to cycle through the different modes.

Reset Buttons

The Reset button is recessed from the front panel. (This design protects it from being pushed accidentally.) The button is accessible through small holes on the top of the front panel. Use pointed objects, such as unbent paper clips, to push it.

Table 5: *Reset button actions*

To accomplish this	Action	Result
Soft reset	Press and release the Reset button.	The switch operating system is cleared gracefully. The switch then reboots and runs self-tests.
Hard reset	Press and hold the Reset button for more than 5 seconds, then release.	The switch reboots, similar to a power cycle. A hard reset is used, for example, when the switch CPU is in an unknown state or not responding.

Out-of-Band Management (OOBM) Port

This RJ-45 port is used to connect a dedicated management network to the switch. To use it, connect an RJ-45 network cable to the management port to manage the switch through Telnet from a remote PC or a UNIX workstation.

To use this port, the switch must have an IP address. IP settings can be configured through a console port connection or automatically from a DHCP/Bootp server.

A networked out-of-band connection through the management port allows you to manage data network switches from a physically and logically separate management network.

For more information, see the Fundamentals Guide for your switch, found on the Aruba Support Portal.

Back of the Switches

Figure 3 *Back of 6200F Switch*
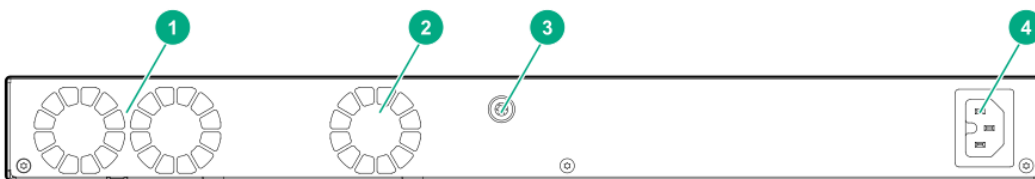

Table 6: *Back of the 6200F Switches LED Labels and Description*

Label	Description
1	System fans (CLI "`show environment fan`" describes these as Fan 1/1 and Fan 1/2)
2	Integrated power supply fan (shown as 1/3)

Label	Description
3	Ground lug
4	AC power inlet

The 6200F switches do not have a power switch. They will power on when they are connected to an active AC power source.

Switch Features

The features of the 6200F switches include:

- Combinations of fixed 10/100/1000-T and SFP+ ports.
- Power over Ethernet (PoE) operation; enabled by default. The following switches power IP phones, wireless access points, indoor web cameras, and more.

Table 7: *Switch Features*

Aruba 6200F Switch	PoE Per Port
Aruba 6200F 24G Class4 PoE 4SFP+ 370W Switch JL725A	Up to 30W, IEEE 802.3af/at 370W available PoE power
Aruba 6200F 48G Class4 PoE 4SFP+ 370W Switch JL727A	Up to 30W, IEEE 802.3af/at 370W available PoE power
Aruba 6200F 48G Class4 PoE 4SFP+ 740W Switch JL728A	Up to 30W, IEEE 802.3af/at 740W available PoE power

- For instructions on using the switch PoE features, see the Monitoring Guide for your switch.
- Plug-and-play networking: All ports are enabled by default. Connect the network cables to active network devices and your switched network is operational.
- Auto MDI/MDI-X on all twisted-pair ports (10/100/1000), meaning that all connections can be made using straight-through twisted-pair cables. Cross-over cables are not required, although they will also work. The pin operation of each port is automatically adjusted for the attached device. If the switch detects that another switch or hub is connected to the port, it configures the port as MDI. If the switch detects that an end node device is connected to the port, it configures the port as MDI-X . (See the appendixes for recommended or required cabling.)
- Automatically negotiated full-duplex operation for the 10/100/1000 RJ-45 ports when connected to other auto-negotiating devices. The SFP+ ports always operate at full duplex.
- Easy management of the switch through several available interfaces:
  - **Console interface**: A full-featured, easy-to-use, VT-100 terminal interface for out-of-band or serial switch management.
  - **Web browser interface**: An easy-to-use built-in graphical interface that can be accessed from common web browsers.

- **Bluetooth dongle and Aruba CX Mobile App**: A convenient way to manage or configure your switch using your mobile device.
- **Aruba AirWave**: A powerful and easy-to-use network operations system that manages wired and wireless infrastructures. For more information, visit https://www.arubanetworks.com/products/networking/management/airwave.
- **Aruba Activate**: Cloud-based service that provides inventory control and facilitates Zero Touch Provisioning.
- **Aruba ClearPass Policy Manager**: Network policy management software for wired and wireless network devices that provide on-boarding and role-based control/security.
- **Aruba Central**: Network management software cloud platform. It offers IT organizations a simple, secure, and cost-effective way to manage and monitor Aruba switches and Aruba instant wireless APs.

- Support for the Spanning Tree Protocol to eliminate network loops.
- Support for up to 2048 IEEE 802.1Q-compliant VLANs so you can divide the attached end nodes into logical groupings that fit your business needs.
- Support for many advanced features to enhance network performance: For a description, see the ArubaOS-CX guides for your switch.
- Ability to update the switch software. To download product updates, go to the Aruba Support Portal.
- An auxiliary port (USB Type-A connector) for updating switch software.
- Switch Hibernation mode to allow the switch to power down for a period each day to save energy.

NOTE The Aruba 6200F Switch Series has a total of 64 destination interfaces.

The following sections shows how to install the switch. The switches come with an accessory kit that includes the brackets for mounting the switch in a standard 19-inch Telco rack or in an equipment cabinet. Also included are rubber feet that can be attached so the switch can be securely positioned on a horizontal surface. The brackets are designed to allow mounting the switch in a variety of locations and orientations. For other mounting options, contact your local Hewlett Packard Enterprise authorized network reseller or Hewlett Packard Enterprise representative.

Shipping the Switch in a Rack

If the switch is to be shipped in a rack, it can be mounted and shipped in a Hewlett Packard Enterprise Universal Rack.

- This method uses the HPE X410 Universal Rack Mounting Kit (J9583A).
- To order the J9583A rack mounting kit, contact your Aruba sales representative.

Included Parts

The 6200F switches have the following components shipped with them:

- Documentation kit
- Bluetooth Dongle (5400-3372): Mounting in the USB Type-A AUX for rapid configuration and deployment, using the Aruba CX Mobile app (found in your phone app store)
- Accessory kit (5300-0103) containing:
  - two mounting brackets
  - eight 8-mm M4 screws to attach the mounting brackets to the switch
  - four 5/8-inch number 12-24 screws to attach the switch to a rack
  - four rubber feet

> **NOTE**
>
> The switch has a USB-C port used to manage the switch. Any compatible USB cable certified for data transfer can be used as a console cable.
>
> J9583A HPE X410 1U Univ 4-post Rack Mount Kit can be ordered separately, or as an accessory to your switch.

- Power cord, one of the following:

Table 8: *Available Power Cords for 6300 PoE Switches*

Aruba 6200F PoE Switches			
North America	8121-0973	Australia	8121-0857
North America high line	8121-0941	Brazil	8121-1265

Aruba 6200F PoE Switches			
South Africa/India	8121-1483	Europe/South Korea	8120-5336
Israel	8121-1009	China	8121-1034
United Kingdom/Hong Kong/Singapore/Malaysia	8120-5334	Argentina	8121-1481
Switzerland	8120-5339	Chile	8120-8389
Danish	8120-5340	Thailand/Philippines	8121-0671
Japan high line	8120-5338 (JL086A, JL087A)	Taiwan 15A	8121-1511 (JL086A, JL087A)
Japan low line	8120-5342 (JL086A)	Taiwan 10A	8121-0967 (JL086A)

Table 9: *Power Cords for 6200 Non-PoE Switches*

Aruba 6200F Non-PoE Switches			
Argentina	8120-6869	Japan	8120-4753
Australia/New Zealand	8121-0834	Switzerland	8120-6815
Brazil	8121-1069	South Africa	8120-6813
Chile	8120-6980	Taiwan	8121-0974
China	8120-8707	Philippines/Thailand	8121-0668
Continental Europe/South Korea	8120-6811	UK/Hong Kong/Singapore/Malaysia	8120-6809
Denmark	8120-6814	US/Canada/Mexico	8121-0973
India	8121-0780	North America high line	8121-0941
Israel	8121-1035		

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

Installation Procedures for 6200F Switches

1. Prepare the installation site.
2. Unpack the switch and verify that you have received the correct parts.
3. Connect power to the switch and wait for the health LED to turn green after the switch passes the self-test, then remove power from the switch.

4. Mount the switch.

> ⚠ **WARNING** Mounting restrictions apply. See the "Warning" under "Installation precautions and guidelines".

5. Connect the switch to a power source.
6. (Optional) Install transceivers.
7. Connect the network cables.
8. Configure the switch for network operation.

Installation Precautions and Guidelines

To avoid personal injury or product damage when installing your switch, read the following installation precautions and guidelines.

> ⚠ **WARNING**
> ■ Mount devices installed in a rack or cabinet as low as possible. Put the heaviest devices at the bottom and progressively lighter devices positioned higher.
> ■ To prevent the rack or cabinet from becoming unstable and/or falling over, ensure that it is adequately secured.
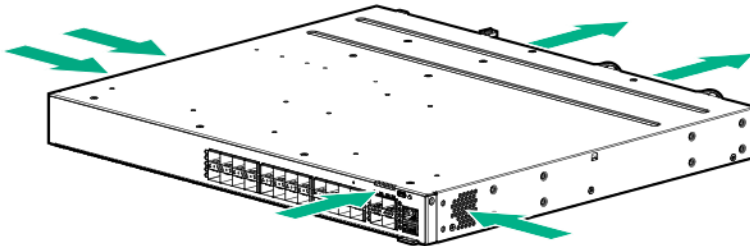
> ⚠ **CAUTION**
> ■ If your installation requires a different power cord than the one supplied with the switch, be sure that the cord is adequately sized for the current switch requirements. In addition, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country/region. The mark is your assurance that the power cord can be used safely with the switch.
> ■ Ensure that the power source circuits are properly grounded. Then connect the switch to the power source by using the power cord supplied with the switch.
> ■ When installing the switch, ensure that the AC outlet is near the switch. Make it easily accessible in case the switch must be powered off.
> ■ Ensure that the power cord and network cables at the switch mounting location do not create a tripping hazard.
> ■ Do not install the switch in an environment where the operating ambient temperature exceeds its specification.
> ■ Ensure that the switch does not overload the power circuits, wiring, and over-current protection at your installation site. To determine the possibility of overloading the supply circuits, add the ampere ratings of all devices installed on the same circuit as the switch. Then compare the total with the rating limit for the circuit. The maximum ampere ratings are printed on the devices near the AC power connectors.
> ■ Ensure that the air flow around the switch is not restricted. Leave at least 3 inches (7.6 cm) for cooling.

To prepare the installation site, ensure the cabling infrastructure meets the necessary network specifications. See Cabling and Technology Information for more information.

Installation Location: Before installing the switch, plan its location and orientation relative to other devices and equipment:

- In the front or the back of the switch, leave at least 7.6 cm (3 inches) of space for the twisted-pair and fiber-optic cabling.
- In the back of the switch, leave at least 7.6 cm (3 inches) of space for the power cord.
- On the sides of the switch, leave at least 7.6 cm (3 inches) for cooling, except if the switch is installed in an open EIA/TIA rack.

Figure 4 *Air Flow Direction of the 6200F Switches*

Verify that the Switch Boots Correctly

Before installing the switch in its network location, plug it into a power source and verify that it boots correctly.

1. Connect the power cord supplied with the switch to the power connector on the back of the switch. Then plug the power cord into a properly grounded electrical outlet.

   > **NOTE**
   >
   > The switches do not have a power switch. They are powered on when the power cord is connected to the switch and to a power source. For safety, locate the power outlet near the switch installation.
   >
   > If your installation requires a different power cord than the one supplied with the switch, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country/region. The mark is your assurance that the power cord can be used safely with the switch.

2. Check the LEDs on the switch to make sure the switch is on and operating.

   When the switch is powered on, it performs its diagnostic self-test and initialization. This boot process, depending on switch model and configuration, takes approximately 1-2 minutes to complete.

Disconnect Power from the Switch

Disconnect the power cord from the switch and from the power source.

Mount the Switch

After the switch passes self-test, it is ready to be mounted in a stable location. Supported mounting options for the switches include:

- Two-post rack mount
- Tabletop or desktop
- Four-post rack mount (Requires the optional J9583A HPE X410 Universal Rack Mounting Kit.)

WARNING   Do not mount the switch on a wall, under a table, or under another horizontal surface.

Mounting a Switch on a Tabletop or Desktop

- Locate the four self-adhesive pads included in the switch accessory kit.
- Select a secure horizontal surface where the network cables and switch power cord will not create a tripping hazard.

    1. Attach the four self-adhesive pads to the bottom corners of the switch.
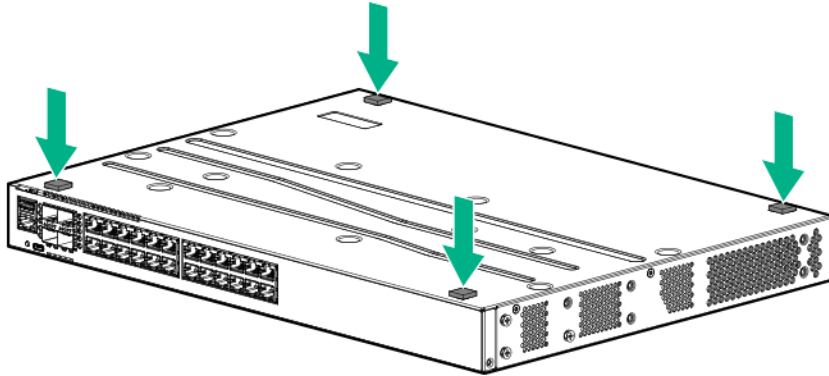
    2. Position the switch with the top panel up on the selected horizontal surface.
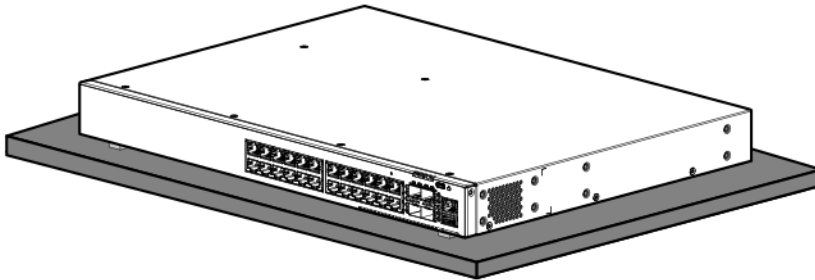
CAUTION   Ensure that the power cord and network cables at switch mounting location will not create a tripping hazard.

                        Avoid blocking any ventilation openings on the sides, rear, or front of the switch.

Mounting the Switch in a Two-Post Rack

Before beginning here, prepare your network data cables (not included) for connecting the switch to the network.

    1. Attach the rack mount brackets to the switch by using a #1 Phillips (cross-head) screwdriver and the supplied eight 8-mm M4 screws.
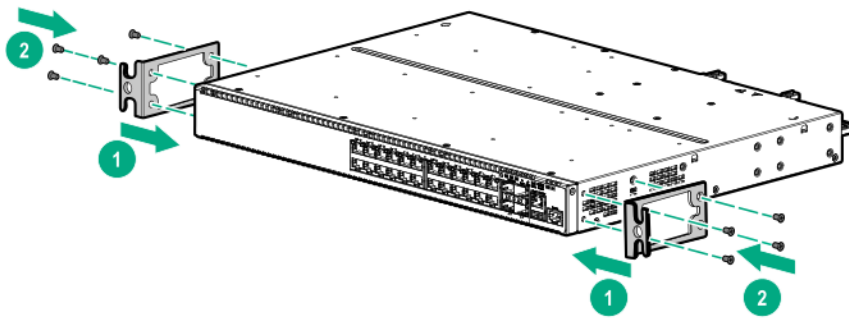
2. Use the four number 12-24 screws to secure the brackets to the rack.
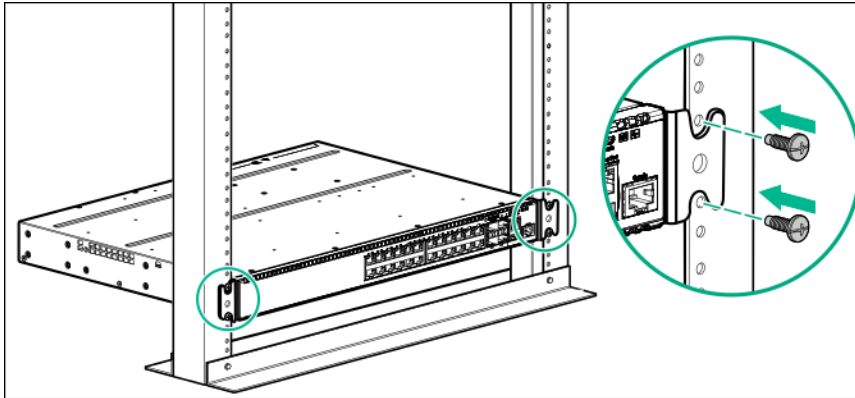
Mounting the Switch in a Four-Post Rack

The four-post rack mount for the switches requires the optional J9583A HPE X410 Universal Rack Mounting Kit. To use this kit to mount a switch, see the installation instructions provided in that kit.

Connect the Switch to a Power Source

1. Plug the included power cord into the power connector on the switch and into a nearby AC power source.
2. Recheck the LEDs during self-test.

(Optional) Install Transceivers

You can install or remove transceivers from the slots on the front of the switch without having to power off the switch.

> **CAUTION**
> - The transceivers operate only at full duplex. Half duplex operation is not supported.
> - Ensure that the network cable is NOT connected when you install or remove a transceiver.

(Optional) Insert up to four SFP or SFP+ transceivers in the fixed transceiver slots on the switch front panel.
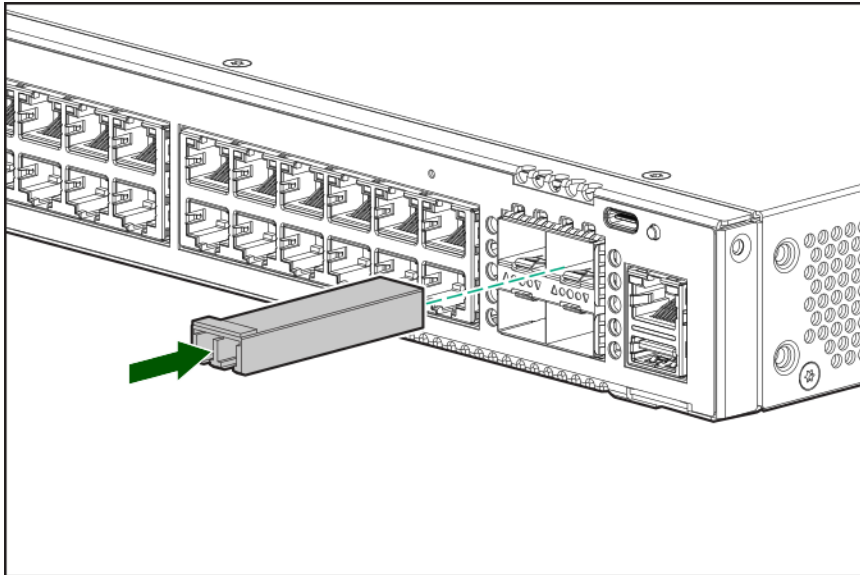
Connect Network Cables

Connect network cables from network devices or your patch panels to the fixed RJ-45 ports and to any installed transceivers.
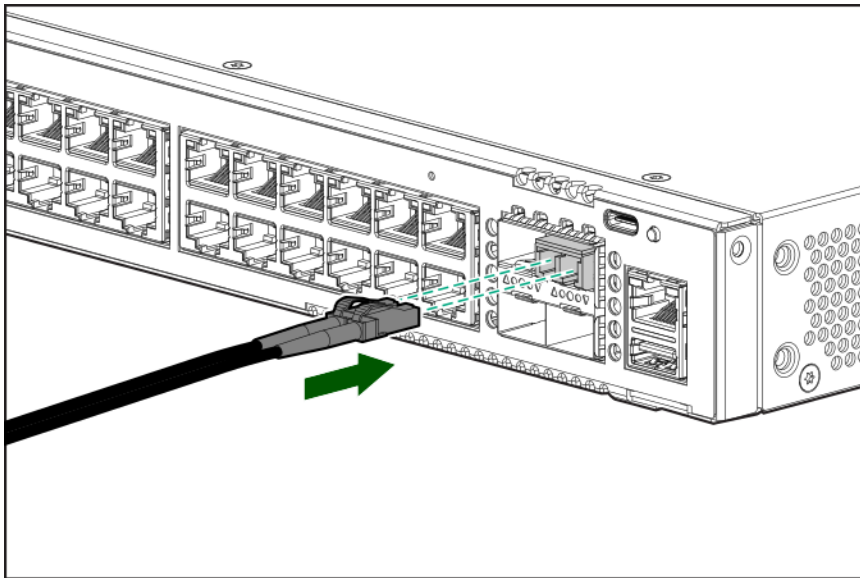
Connect network cables to the RJ-45 data ports and to any optional transceivers installed on the switch front panel.
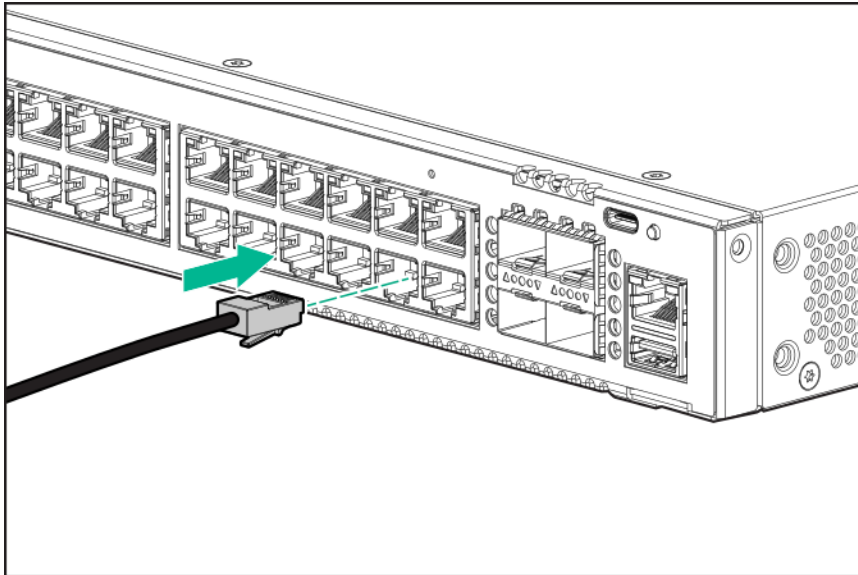
SFP+ Installation Notes

When selecting a fiber SFP+ device, make sure it can function at a maximum temperature that is not less than the recommended maximum operational temperature of the product. Use only an approved Laser Class 1 SFP+ transceiver.

> **NOTE** — To ensure proper operation of your switch, use only the Aruba SFP+ transceivers supported by your switch.

Non-Aruba SFP+ transceivers are not supported. Use of supported Aruba products ensures that your network maintains optimal performance and reliability. If you require additional transceivers, contact an Aruba sales representative or an authorized reseller. The following resources can help you to find transceiver support information for your switch model:

- See the Transceiver Guide.
- See the supported transceivers information in the data sheet for your switch model.

Hot swapping SFP+ Transceivers

Supported SFP+ transceivers that you can install in your Aruba switch can be "hot swapped"– removed and installed while the switch is receiving power. However, disconnect the network cables from the SFP+ transceivers before hot-swapping them.

When you replace a SFP+ transceiver with another transceiver of a different type, the switch may retain selected port-specific configuration settings that were configured for the replaced unit. Be sure to validate or reconfigure port settings as required.

SFP+ Connections to Devices with Fixed Speed/Duplex Configurations

When connecting a device to your switch port that contains a SFP+ transceiver, the speed and duplex settings of the switch port and the connected device must match. Otherwise, the device may not link properly—you may not get a link. For some older network devices, the default speed/duplex settings may be predefined such that they are set differently from the default configuration of your switch. (For

example, 1000 Mbps/Full Duplex.) These setting differences may also apply to some older Hewlett Packard Enterprise devices. Because of these default speed/duplex considerations, make sure that devices connected to your SFP+ ports are properly configured. At a minimum, make sure the configurations match.

Sample Network Topologies

This section shows sample network topologies in which the switch is implemented.

Figure 5 *As a switch implementing PoE (small office)*
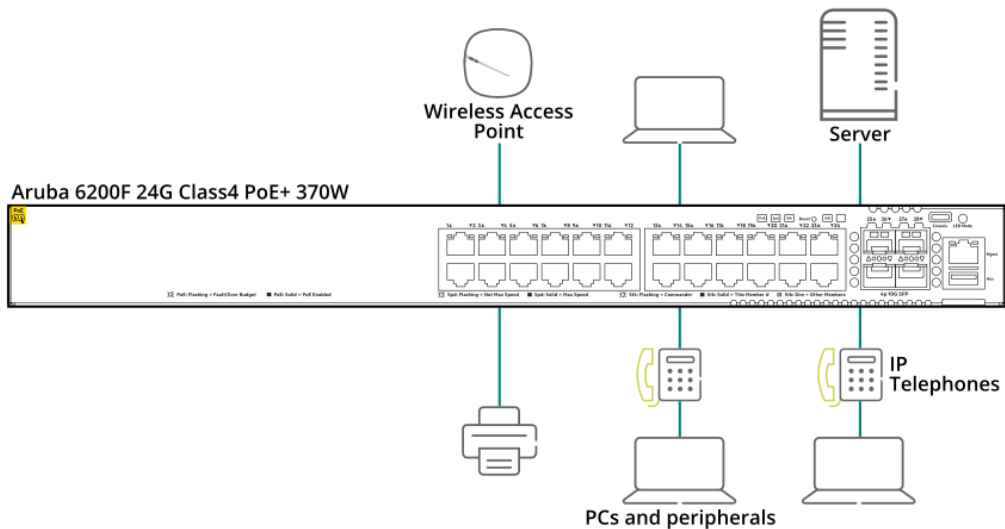
The switch is designed to be used primarily as a desktop switch to which end nodes, printers, wireless access points (APs), and other peripherals and servers are directly connected, as shown in the following illustration. This topology is recommended for a small office or branch. Notice that the end node devices are connected to the switch by straight-through or crossover twisted-pair cables. Either cable type can be used because of the IEEE Auto MDI/MDI-X features on the switch.

This example shows the switch being configured to supply PoE power to end devices such as IP telephones and APs, and any other IoT device.

As shown in this example, the IP telephones can be connected in line, that is, between the switch and the end device, in this case a PC. The IP telephones in this illustration have two ports, one in and one out. Therefore, the phone receives voice and power from the switch, and the PC can send and receive data through the phone to the switch.

NOTE

The switch in this topology can also be a stack of up to eight 6200F switches.

Figure 6 *As an aggregation switch for a medium size office*
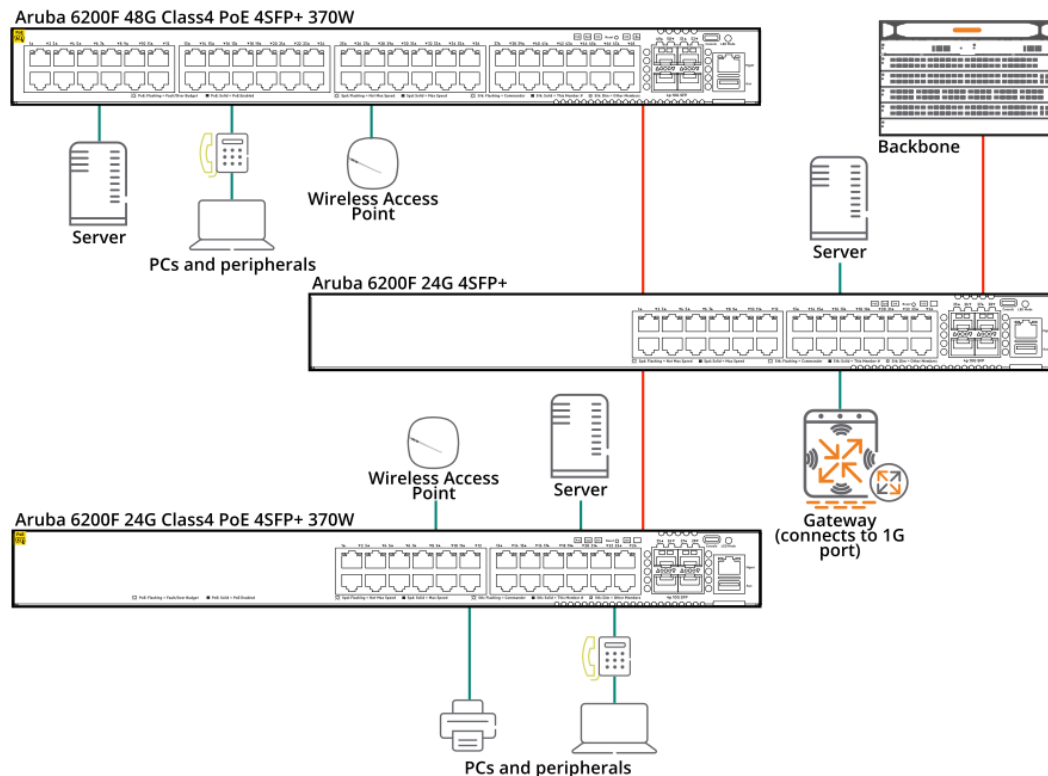
This switch also works well as an aggregation switch in a medium office environment. That is, with its feature set, it can be used for aggregating access switches.

In this example, two 6200F Class4 PoE switches with PCs, printers, APs and local servers are attached, are both connected to a switch. The devices attached to the two 6200F Class4 PoE switches can now communicate with each other through the non-PoE switch. They can also all communicate with the server that is connected to the 1000BASE-T port on the switch.

The IP telephones in this example have been inserted in between the 6200F Class4 PoE switch and the PCs, and an AP has been connected to the 6200F Class4 PoE switch. Only devices directly connected to the PoE switches can receive PoE power. Devices connected to the 6200F non-PoE switch cannot receive PoE power.

Because the 6200F switches have Auto-MDI/MDIX feature, the connections between the switches and end nodes and servers can be through Category 5 straight through or crossover twisted-pair cable. If the connection is 10 Mbps only, then Category 3 or 4 cable can be used. In all cases, the device ports must be configured to auto negotiate the link characteristics for this feature to work.

The switch, in turn, can be connected to a network backbone through fiber-optic cabling connected to a Gigabit or 10 Gigabit transceiver or 10 Gigabit DAC installed in the switch. Now, all the devices on these network switches can access other network resources that are connected elsewhere on the network backbone.

NOTE	Each single switch in this topology can also be a stack of up to eight 6200F switches.

Figure 7 *As a campus access switch*
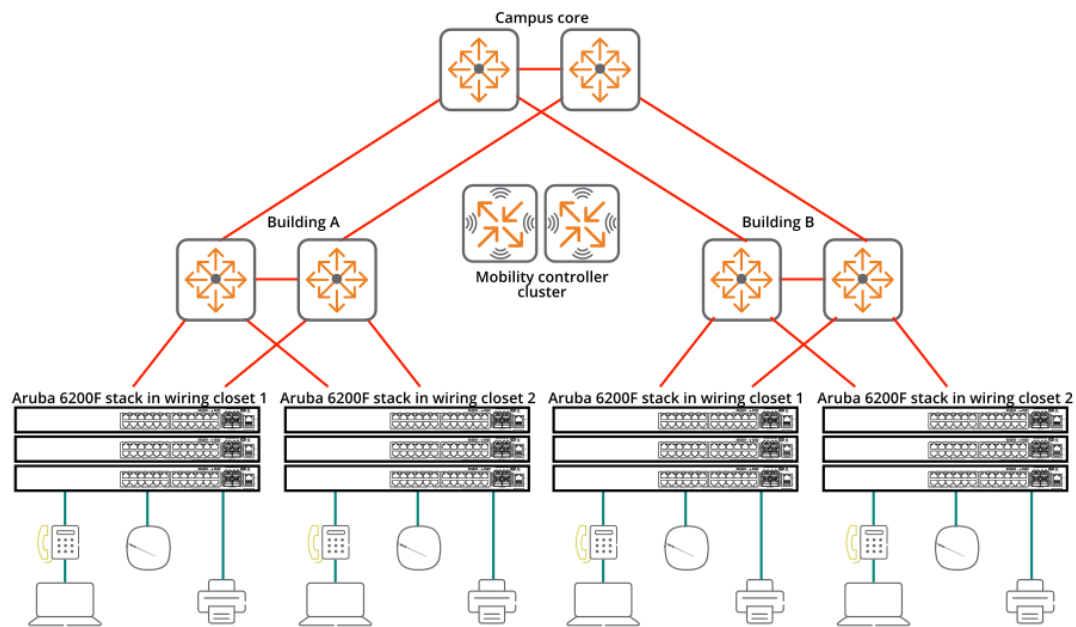
The 6200F Switch Series can also be deployed in the wiring closet of a campus. In this example, a stack of 6200F switches is deployed in each wiring closet and provides network connectivity to APs, wired clients, printers, and IoT. Each stack can be composed of PoE and non-PoE models, depending on the end devices to which they provide connectivity. Each stack is connected to the building aggregation switches by 2 or more 10GbE SFP+ connections, depending on the bandwidth requirements.

NOTE Each stack in this topology can consist of up to eight 6200F switches.

This chapter is a guide for using the console Switch Setup screen to quickly assign an IP address and subnet mask to the switch. You can also set a Manager password and, optionally, configure other basic features.

For more information on using the switch console, see the Fundamentals Guide for your switch model.

Recommended Minimal Configuration

In the factory default configuration, the switch has no IP address and subnet mask, and no passwords. In this state, it can be managed only through a direct console connection. To manage the switch through in-band (networked) access, configure the switch with an IP address and subnet mask compatible with your network. See the Fundamentals Guide for your switch for more information on the various methods that can be used for initial configuration.

Also, configure a Manager password to control access privileges from the console and web browser interface. Other parameters in the Switch Setup screen can be left at either their default settings or settings you manually enter.

Many other features can be configured through the switch console interface to optimize performance, to enhance your control of the network traffic, and to improve network security. Once an IP address has been configured on the switch, these features can be accessed more conveniently through a remote Telnet session, through the switch web browser interface, and from an SNMP network management station running a network management program. For a list of switch features available with and without an IP address, see the latest version of the Fundamentals Guide for your switch.

This chapter describes how to troubleshoot your switch, primarily from a hardware perspective. You can perform more in-depth troubleshooting on the switch using the software tools available with the switch. Included are the console interface and the built-in web browser interface.

Basic Troubleshooting Tips

Most problems are caused by the following situations. Check for these items first when starting your troubleshooting:

- **Connecting to devices that have a fixed full-duplex configuration**: The RJ-45 ports are configured as "Auto". That is, when connecting to attached devices, the switch operates in either half duplex or full duplex to determine the link speed and the communication mode:
  - If the connected device is also configured to Auto, the switch will automatically negotiate both link speed and communication mode.
  - If the connected device has a fixed configuration, for example 1000 Mbps, at half or full duplex, the switch will automatically sense the link speed, but will default to a communication mode of half duplex.

  Because the switch behaves in this way (in compliance with the IEEE 802.3 standard), if a device connected to the switch has a fixed configuration at full duplex, the device will not connect correctly to the switch. The result will be high error rates and inefficient communications between the switch and the device.

  Make sure that all the devices connected to the switch are configured to auto negotiate, or are configured to speed and duplex settings matching the settings configured on the corresponding switch port.

- **Improper network topologies**: It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and excessive repeater delays between end nodes. If you have network problems after recent changes to the network, change back to the previous topology. If you no longer experience the problems, the new topology is probably at fault.

  In addition, make sure that your network topology contains no datapath loops. Between any two end nodes, only one active cabling path is allowed at any time. Data path loops can cause broadcast storms that will severely impact your network performance.

  For your switch, if you want to build redundant paths between important nodes in your network to provide some fault tolerance, enable Spanning Tree Protocol support on the switch. This support ensures that only one of the redundant paths is active at any time, thus avoiding datapath loops. For more information on Spanning Tree, see the Layer 2 Bridging Guide.

- **Faulty or loose cables**: Look for loose or faulty connections. If they appear to be OK, make sure that the connections are snug. If that does not correct the problem, try a different cable.

- **Nonstandard cables**: Nonstandard and incorrectly wired cables may cause network collisions and other network problems, and can seriously impair network performance. A Category 5 or greater cable tester is a recommended tool for every network installation.

- **Check the port configuration**: A port on your switch may not be operating as expected because it is administratively disabled in the configuration. It may also be placed into a "blocking" state by a protocol

operating on the port (dynamic VLANs), or LACP (dynamic trunking). For example, the normal operation of the spanning tree, GVRP, LACP, and other features may put the port in a blocking state.

Use the switch console to determine the port configuration and verify that there is not an improper or undesired configuration of any of the switch features that may be affecting the port.

Diagnosing with the LEDs

Table 10: Front panel LED Behavior

Switch LEDs	Function	State	Meaning
PoE LED	Indicates Port LEDs are showing PoE information (not applicable for non PoE switches)	Off	PoE mode not selected
		On - Green	PoE mode selected
		Slow Flash - Amber	Hardware failure PoE enabled port, PoE mode not selected
		On - Amber	Hardware failure PoE enabled port, PoE mode selected
Spd LED	Indicates Port LEDs are showing speed information	Off	Speed mode not selected
		On - Green	Speed mode selected
		Not Implemented	No fault defined
Stk LED	Indicates Port LEDs are showing stacking mode information	Off	Stacking mode not selected
		On - Green	Stacking mode selected
		On - Amber	A port has a stacking failure. Stacking mode selected
		Slow flash Amber	A port has a stacking failure. Stacking mode not selected

Switch LEDs	Function	State	Meaning
UID LED	User-configurable LED	Off	User defined the located LED : OFF
		On/Flash Blue (for 30 min)	User defined the locator LED: On/Flash
Global Status Indicator LED	Overall status of the product	Flash - Green	Self-test in progress during UBOOT and SVOS
		On - Green	Successfully booted ArubaOS-CX
		Flash - Amber	Recoverable faults (e.g. fans, PSU fault)
		On - Amber	Critical faults (e.g. exceed temperature limit)
OOBM Status Indicator LED	Status of OOBM Link connectivity	Off	OOBM port is not connected, no link established
		Half Bright - Green	OOBM port is enabled and established link with partner
		On - Green	Experiencing high bandwidth utilization
		Activity Flicker - Green	% of the time that the LED light up is roughly proportional to the % of full bandwidth utilization of the port
* Press the Mode Select button to switch between User(default), PoE, Spd, or Stk Mode.			

To use the LEDs for general troubleshooting, check the table for the LED pattern you see then refer to the corresponding diagnostic tip in the next table.

Table 11: LED Error Indicators

Global status	Port LED	Diagnostic tip
Off with power cord plugged in.		1
Solid orange		2
Slow flash orange		3
Slow flash orange	Slow flash orange	4
Solid green	Off with cable connected	5
Solid green	On, but the port is not communicating.	6

Table 12: Diagnostic Tips

Tip	Problem	Solution
1	The switch is not plugged into an active AC power source, or the switch power supply may have failed.	1. Verify that the power cord is plugged into an active power source and to the switch. Make sure that these connections are snug. 2. Try power cycling the switch by unplugging and plugging the power cord back in. 3. If the Global Status LED is still not on, verify that the AC power source works by plugging another device into the outlet. Or try plugging the switch into a different outlet or try a different power cord. If the power source and power cord are OK and this condition persists, the switch power supply may have failed. To get assistance, call your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.
2	A switch hardware failure has occurred. All the LEDs will stay on indefinitely.	Try power cycling the switch. If the fault indication reoccurs, the switch may have failed. To get assistance, either call your Aruba authorized network reseller, or use the electronic support services from Aruba.
3	The switch has experienced a software failure during self-test, or one of the switch cooling fans may have failed.	1. Try resetting the switch by pressing the Reset button on the front of the switch, or by power cycling the switch. 2. If the fault indication reoccurs, attach

Tip	Problem	Solution
		a console to the switch and configure it to operate at 115200 baud. Then, reset the switch. Messages should appear on the console screen and in the console log identifying the error condition. You can view the console log at that point by selecting it from the console Main Menu or by typing `show log` at the Manager command prompt (#). The error may indicate that one of the fans has failed. In switches with multiple fans, the switch may continue to operate under this condition if the ambient temperature does not exceed normal room temperature, but for best operation, replace the switch. If necessary to resolve the problem, contact your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.
4	The network port for which the LED is blinking has experienced a self-test or initialization failure.	Try power cycling the switch. If the fault indication reoccurs, the switch port may have failed. Call your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance. If the port is an SFP, verify it is one of the SFPs supported by the switch. Unsupported SFPs will be identified with this fault condition. The SFPs are also tested when they are "hot-swapped"— installed or changed while the switch is powered on. To verify that the port has failed, try removing and reinstalling the SFP without powering off the switch. If the port fault indication reoccurs, you will have to replace the SFP. Check the event log to see why the SFP failed.
5	The network connection is not working properly.	Try the following procedures: ■ For the indicated port, verify both ends of the cabling, at the switch and the connected device, are connected properly. ■ Verify the connected device and switch are both powered on and operating correctly. ■ Verify that you have used the correct cable type for the connection:

Tip	Problem	Solution
		• For twisted-pair connections to the fixed 10/100/1000 ports, if the port is configured to "Auto" (auto negotiate), either straight-through or crossover cables can be used because of the switch "Auto-MDIX" feature and the Auto MDI/MDI-X feature of the 10/100/1000-T port. **NOTE:** If the switch port configuration is changed to one of the fixed configuration options (for example, 100 Mbps/Full Duplex), then the port operates as MDI-X only and you must use the correct type of cable for the connection. In general, for connecting an end node (MDI port) to the switch, use straight-through cable; for connecting to MDI-X ports on hubs, other switches, and routers, use crossover cable. • For fiber-optic connections, verify that the transmit port on the switch is connected to the receive port on the connected device, and the switch receive port is connected to the transmit port on the connected device. ▪ For 1000BASE-T connections, verify that the network cabling complies with the IEEE 802.3ab standard. Install the cable according to the ANSI/TIA/EIA-568-A-5 specifications. Ensure that the cable testing complies with the stated limitations for Attenuation, Near-End Crosstalk, Far-End Crosstalk, Equal-Level Far-End Crosstalk (ELFEXT), Multiple Disturber ELFEXT, and Return Loss. The cable verification process must include all patch cables from any end devices, including the switch, to any patch panels in the cabling path. ▪ Verify that the port has not been disabled through a switch configuration change. You can use the console interface, or, if you have configured an IP address

Tip	Problem	Solution
		on the switch, use the web browser interface to determine the state of the port and re-enable the port if necessary.
		■ Verify that the switch port configuration matches the configuration of the attached device. For example, if the switch port is configured as "Auto", the port on the attached device also MUST be configured as "Auto". Depending on the port type, twisted-pair or fiber-optic, if the configurations don't match, the results could be a very unreliable connection, or no link at all.
		■ If the other procedures do not resolve the problem, try using a different port or a different cable.
6	The port or remote link partner may be improperly configured, or the port may be in a "blocking" state by the normal operation of protocols, such as Spanning Tree, LACP, or GVRP features.	■ You must ensure that the device at the other end of the connection indicates a good link to the switch. If it does not, the problem may be with the cabling between the devices, the connectors on the cable, or the configuration of the device on the remote end of the cable.
		■ Use the switch console to see if the port is part of a dynamic trunk (through the LACP feature) or to see if Spanning Tree is enabled on the switch, and to see if the port may have been put into a "blocking" state by those features. The show lacp command displays the port status for the LACP feature; the show Spanning Tree command displays the port status for Spanning Tree.
		Check the Port Status using the `show interfaces` command to confirm whether the port is configured as "disabled".
		Other switch features that may affect the port operation include VLANs and IGMP. Use the switch console to see

Tip	Problem	Solution
		how the port is configured for these features. Ensure also, that the device at the other end of the connection is indicating a good link to the switch. If it is not, the problem may be with the cabling between the devices or the connectors on the cable.

The flashing behavior is an on/off cycle once every 1.6 seconds, approximately.

Proactive Networking

The switches have built-in management capabilities that proactively help you manage your network, they include:

- Finding and helping you fix the most common network error conditions (for example, faulty network cabling, and nonstandard network topologies).
- Informing you of the problem with clear, easy-to-understand messages.
- Recommending network configuration changes to enhance the performance of your network.

The following interfaces provide tests, indicators, and an event log that can be used to monitor the switch and its network connections:

- A graphical web browser interface that you can use to manage your switch from a PC running a supported web browser, for example Microsoft Internet Explorer and Google Chrome.
- A full-featured easy-to-use console interface that you can access by connecting a standard terminal or PC running a terminal emulator to the switch console port using an USB-C to USB-A cable (sold separately). The console command-line interface is also accessible through a Telnet or SSH connection.

Hardware Diagnostic Tests

Testing the Switch by Resetting

If you believe the switch is not operating correctly, you can reset the switch to test its circuitry and operating code. To reset a switch, try any of the following:

- Unplug and plug in the power cord (power cycling).
- Press the Reset button on the front of the switch.
- Reboot the switch via the management console's `boot system` command.

Power cycling the switch and pressing the Reset button both cause the switch to perform its power-on self test, which almost always will resolve any temporary operational problems. These reset processes also cause any network traffic counters to be reset to zero, and cause the System Up Time timer to reset to zero.

Checking the Switch LEDs

See for information on interpreting the LED patterns and LED behaviors.

Useful diagnostic messages may be displayed on the console screen when you reset a switch. Connect a PC running a VT-100 terminal emulator program or a standard VT-100 terminal to the switch console port. Configure the terminal to run at 115200 baud, and with the other terminal communication settings.

When you reset the switch, note the messages that are displayed. Additionally, you can check the switch event log, which can be accessed from the console using the `show log` command, or from the console main menu.

Testing Twisted-Pair Cabling

Network cables that fail to provide a link or provide an unreliable link between the switch and the connected network device may not be compatible with the IEEE 802.3 Type 10BASE-T, 100BASE-TX, or 1000BASE-T standards. The twisted-pair cables attached to the switch must be compatible with the appropriate standards. To verify your cable is compatible with these standards, use a qualified cable test device.

Testing Switch-to-Device Network Communications

The following communication tests can verify that the network is operating correctly between the switch and any connected device that can respond correctly to the communication test.

- Link Test: A physical layer test that sends IEEE 802.2 test packets to any device identified by its MAC address.
- Ping Test: A network layer test used on IP networks that sends test packets to any device identified by its IP address.

These tests can be performed through the switch console interface. Use a terminal connected directly to the switch or through a Telnet connection, or from the switch web browser interface. For more information, see the Fundamentals Guide for your switch.

These tests can also be performed from an SNMP network management station running a program that can manage the switch, like AirWave.

Testing End-to-End Network Communications

Both the switch and the cabling can be tested by running an end-to-end communications test. This is a test that sends known data from one network device to another through the switch. For example, if you have two PCs on the network that have LAN adapters between which you can run a link-level test or Ping test through the switch, you can use this test to verify that the entire communication path between the two PCs is functioning correctly. See your LAN adapter documentation for more information on running a link test or Ping test.

Restoring the Factory Default Configuration

As part of your troubleshooting process on the switch, it may become necessary to return the switch configuration to the factory default settings. This process momentarily interrupts the switch operation, clears any passwords, clears the console event log, resets the network counters to zero, performs a complete self-test, and reboots the switch into its factory default configuration, including deleting the IP address, if one is configured.

This process removes all switch configuration changes made from the factory default settings. This operation includes, for example, configuration of VLANs, spanning tree, and trunks. Returning the configuration of these features to their factory default settings (usually disabling them) may result in network connectivity issues.

If the switch has a valid configuration, and you are restoring the factory default settings for a reason other than configuration problems, save the switch configuration prior to performing the factory default reset. After the reset and resolution of the original problem, you can restore the saved configuration to the switch.

To restore the factory default configuration using the console, execute the `erase startup-config` command from the console command prompt.

Downloading New Switch Software

Software updates can be downloaded to the switch through several methods. For more information, see Support and Other Resources

The following specifications apply to the Aruba 6200F Series switches.

Table 13: *Environmental Specifications*

Specification	Value
Operating temperature	32°F to 113°F (0°C to 45°C) up to 5000 ft derate -1°C for every 1000 ft from 5000 ft to 10000 ft
Operating relative humidity	15% to 95% @ 104°F (40°C) non-condensing
Non-operating temperature	-40°F to 158°F (-40°C to 70°C) up to 15000 ft
Non-operating storage relative humidity	15% to 90% @ 149°F (65°C) non-condensing
Max operating altitude	10000 feet (3 km) Max
Max non-operating altitude	15000 feet (4.6 km) Max

Table 14: *Switch dimensions and Weight*

Switch	Dimensions (W x D x H)	Weight
Aruba 6200F 24G 4SFP+ Switch (JL724A)	17.4" x 12.9" x 1.73" (44.2 x 32.7 x 4.4 cm)	4.36 kg
Aruba 6200F 24G Class4 PoE 4SFP+ 370W Switch (JL725A)		4.90 kg
Aruba 6200F 48G 4SFP+ Switch (JL726A)		4.45 kg
Aruba 6200F 48G Class4 PoE 4SFP+ 370W Switch (JL727A)		5.05 kg
Aruba 6200F 48G Class4 PoE 4SFP+ 740W Switch (JL728A)		5.10 kg

Table 15: Electrical Information

Model	Description	AC voltage	Maximum current	Frequency range	Maximum power
JL724A	Aruba 6200F 24G 4SFP+ Switch	100-120V 200-240V	2.5A 1.4A	50-60Hz	200W

Model	Description	AC voltage	Maximum current	Frequency range	Maximum power
JL725A	Aruba 6200F 24G Class4 PoE 4SFP+ 370W Switch	100-127V 200-240V	7.5A 3.5A	50-60Hz	500W
JL726A	Aruba 6200F 48G 4SFP+ Switch	100-120V 200-240V	2.5A 1.4A	50-60Hz	200W
JL727A	Aruba 6200F 48G Class4 PoE 4SFP+ 370W Switch	100-127V 200-240V	7.5A 3.5A	50-60Hz	500W
JL728A	Aruba 6200F 48G Class4 PoE 4SFP+ 740W Switch	100-120V 200-240V	11A 6A	50-60Hz	950W

Acoustics

Table 16: *Acoustics*

Product	Acoustics
JL724A Aruba 6200F 24G 4SFP+ Switch	Sound Power (LWAd) 4.9 Bel Sound Pressure (LpAm) (Bystander) 32.5 dB
JL725A Aruba 6200F 24G Class4 PoE 4SFP+ 370W Switch	Sound Power (LWAd) 5.0 Bel Sound Pressure (LpAm) (Bystander) 32.8 dB
JL726A Aruba 6200F 48G 4SFP+ Switch	Sound Power (LWAd) 4.9 Bel Sound Pressure (LpAm) (Bystander) 33.0 dB
JL727A Aruba 6200F 48G Class4 PoE 4SFP+ 370W Switch	Sound Power (LWAd) 4.9 Bel Sound Pressure (LpAm) (Bystander) 32.7 dB
JL728A Aruba 6200F 48G Class4 PoE 4SFP+ 740W Switch	Sound Power (LWAd) 5.3 Bel Sound Pressure (LpAm) (Bystander) 37.1 dB

Safety

Lasers

EN 60825-1:2007 / IEC 60825-1:2007 Class 1

Class 1 Laser Products / Laser Klasse 1

(Applicable for accessories - Optical Transceivers only)

Information technology equipment safety standards

Europe	EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 + A2:2013 EN 62368-1:2014 +A11:2017
US	UL 60950-1 2nd Ed.
Canada	CAN/CSA-C22.2 No. 60950-1-07

Worldwide	IEC 60950-1:2005 w/all known National Deviations IEC 62368-1:2014 2nd Ed.
Taiwan	CNS-14336-1

Electromagnetic compatibility (EMC)

Europe	EN 55032:2015 +AC:2016, Class A EN 55024:2010 EN 55035:2017 EN 61000-3-2:2014 EN 61000-3-3:2013
US	FCC CFR47 part 15B: 2010, Class A
Canada	ICES-003 Class A
Worldwide	VCCI Class A CISPR 32 Ed 2.0: 2015 + COR1:2016, Class A CISPR 24:2010 CISPR 35:2016

Connectivity Standards

Table 17: Technology Standards and Safety Compliance

		Laser safety information	
Technology	Compatible with these IEEE standards	EN/IEC standard compliance	SFP+Lasers
10-T, 100-TX, 1000-T, 10GBASE-T	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3an 10GBASE-T (with transceiver)		
10-Gig SR	IEEE 802.3ae 10GBASE-SR	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
10-Gig LR	IEEE 802.3ae 10GBASE-LR	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
10-Gig ER	IEEE 802.3ae 10GBASE-ER	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
Power over Ethernet (PoE) over 2-pairs	IEEE 802.3at IEEE 802.3af		

This section includes switch connector information and network cable information for cables used with the Aruba switches.

Incorrectly wired cabling is a common cause of problems for LAN communications. Aruba recommends that you work with a qualified LAN cable installer for assistance with your cabling requirements.

Cabling Specifications

Table 18: Supported Cables

J9281D	Aruba 10G SFP+ to SFP+ 1m Direct Attach Copper Cable
J9283D	Aruba 10G SFP+ to SFP+ 3m Direct Attach Copper Cable

Table 19: Cabling Specifications

Twisted-pair copper	10 Mbps Operation	Category 3, 4 or 5, 100-ohm unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable, complying with IEEE 802.3 10BASE-T specifications.
	100 Mbps Operation	Category 5, 100-ohm UTP, or STP cable, complying with IEEE 802.3u 100BASE-TX specifications.
	1000 Mbps Operation	Category 5, 100-ohm 4-pair UTP or STP cable, complying with IEEE 802.3ab 1000BASE-T specifications; Category 5e or better is recommended.
	10 Gbps Operation (with transceiver)	Category 6 or 6A, 100-ohm 4-pair UTP cable, or Category 6A or 7, 100-ohm 4-pair STP cable, complying with IEEE 802.3an 10GBASE-T specifications.
Twinaxial copper	Direct attach cables	One-piece devices consisting of a cable with SFP+ connectors permanently attached to each end, complying with SFF 8431 SFP+ specifications.
Multimode fiber		62.5/125 µm or 50/125 µm (core/cladding) diameter, low metal content, graded index fiber-optic cables, complying with the ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a standards respectively.
Single mode fiber		9/125 µm (core/cladding) diameter, low metal content fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards.

Note on Multimode and Single Mode Fiber

Attenuators may be required for some transceiver techs and cable length

Note on 1000BASE-T Cable Requirements

The Category 5 networking cables that work for 100BASE-TX connections also work for 1000BASE-T, as long as all four-pairs are connected. But, for the most robust connections, use cabling that complies with the Category 5e specifications. This specification is described in Addendum 5 to the TIA-568-A standard (ANSI/TIA/EIA-568-A-5).

Because of the increased speed provided by 1000BASE-T (Gigabit-T), network cable quality is more important than for either 10BASE-T or 100BASE-TX. Cabling plants being used to carry 1000BASE-T networking must comply with the IEEE 802.3ab standards. In particular, the cabling must pass tests for Attenuation, Near-End Crosstalk (NEXT), and Far-End Crosstalk (FEXT). Additionally, unlike the cables for 100BASE-TX, the 1000BASE-T cables must pass tests for Equal-Level Far-End Crosstalk (ELFEXT) and Return Loss.

When testing your cabling, be sure to include the patch cables that connect the switch and other end devices to the patch panels on your site. The patch cables are frequently overlooked when testing cable and they must also comply with the cabling standards.

Note on 10GBASE-T Cable Requirements (with Transceiver)

The Category 6 networking cables that work for 1000BASE-T connections may work for 10GBASE-T. The distance must be less than 55m, and the cable installation must be tested for compliance to IEEE requirements. But, for the most robust connections, use cabling that complies with the Category 6A or Category 7 specifications, as described in the TIA-568-C (ANSI/TIA-568-C.2) and ISO/IEC 11801 standards. 10GBASE-T is a sophisticated technology that relies upon high-quality cable installations. It is sensitive to Alien Near End Crosstalk (ANEXT). This can affect the cable due to other cables placed close to the data cables. Hewlett Packard Enterprise recommends doing cable dressing carefully and in compliance with recommendations in the TIA TSB-155A.

Like 1000BASE-T, 10GBASE-T requires testing of all the crosstalk and return loss parameters described preceding "Note on 1000BASE-T cable requirements", and also ANEXT.

In addition to ANEXT, 10GBASE-T is more sensitive to external electrical noise in the environment. Hewlett Packard Enterprise recommends keeping radio transmitters and other sources of high frequency continuous wave radio frequency away from LAN cables.

When testing your cabling, be sure to include the patch cables that connect the switch and other end devices to the patch panels on your site. The patch cables are frequently overlooked when testing cable and they must also comply with the cabling standards. For 10GBASE-T, Category 6 patch cables are sensitive to movement once link has been established, and could cause link to drop if moved. Therefore, Hewlett Packard Enterprise recommends using Category 6A patch cables. As an alternative, use cable management options to tie down (dress) the Category 6 patch cables so they cannot move.

For Conducted and Radiated Immunity in accordance with EN55035:2017, the Aruba switches are limited to Performance Criteria A with shielded cables (CAT6/6A).
A mode conditioning patch cord may be needed for some Gigabit-LX and 10-Gigabit LRM installations.

Technology Distance Specifications

Table 20: Technology Distance Specifications

Technology	Supported cable type	Multimode fiber-modal bandwidth	Supported distances
1000-T	twisted-pair copper	N/A	up to 100 meters

| Technology	Supported cable type	Multimode fiber-modal bandwidth	Supported distances
10GBASE-T (uplink ports with transceiver)	twisted-pair copper	N/A	Cat 6A unshielded - up to 30 meters Cat 6A shielded - up to 30 meters
1000-SX	multimode fiber	160 MHz*km 200 MHz*km 400 MHz*km 500 MHz*km	2 - 220 meters 2 - 275 meters 2 - 500 meters 2 - 550 meters
1000-LX	multimode fiber single mode fiber	400 MHz*km 500 MHz*km N/A	2 - 550 meters 2 - 550 meters 2 - 10,000 meters
1000-LH	single mode fiber	N/A	10 - 70,000 meters
1000-BX	single mode fiber	N/A	0.5 - 10,000 meters
10-Gig Direct Attach	twinaxial copper	N/A	(various lengths offered)
10-Gig SR	multimode fiber	160 MHz*km 200 MHz*km 400 MHz*km 500 MHz*km 2000 MHz*km	2 - 26 meters 2 - 33 meters 2 - 66 meters 2 - 82 meters 2 - 300 meters
10-Gig LR	single mode fiber	N/A	2 - 10,000 meters
10-Gig ER	single mode fiber	N/A	2 - 40,000 meters

For distances less than 20km, a 10dB attenuator must be used. For distances between 20km and 40km, a 5dB attenuator must be used. Attenuators can be purchased from most cable vendors.

Installing the Patch Cord

As shown in the illustration below, connect the patch cord to the Hewlett Packard Enterprise transceiver with the section of single mode fiber plugged in to the Tx (transmit) port. Then, connect the other end of the patch cord to your network cabling patch panel, or directly to the network multimode fiber.

If you connect the patch cord directly to the network cabling, you may need to install a female-to-female adapter to allow the cables to be connected together.

Figure 8 *Connecting a Mode Conditioning Patch Cord for Gigabit-LX*
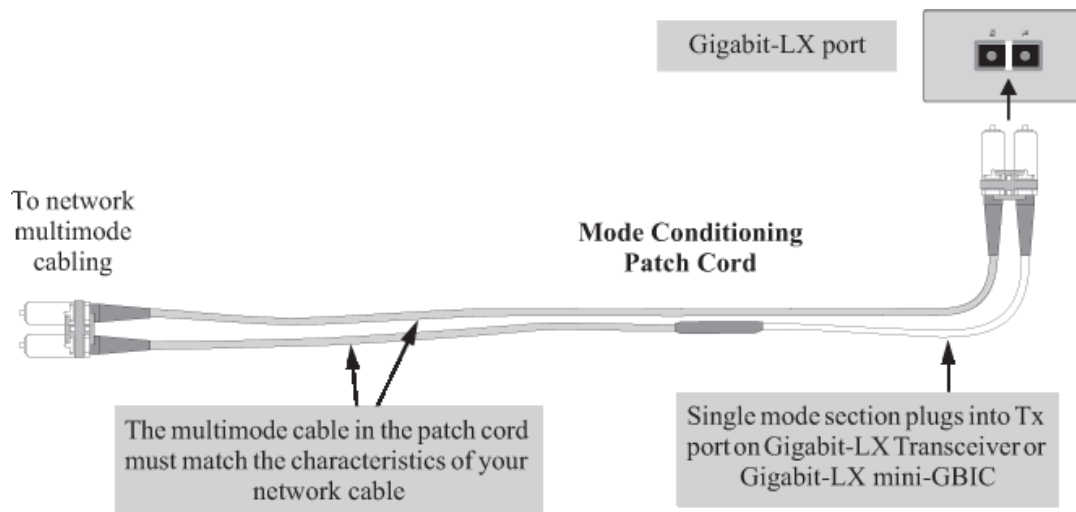
Be sure to purchase a patch cord that has appropriate connectors on each end, and has multimode fibers that match the characteristics of the multimode fiber in your network. Most important, the core diameter of the multimode patch cord must match the core diameter of the multimode cable infrastructure (either 50 or 62.5 microns).

Twisted-Pair Cable/Connector Pin-Outs

The 10/100/1000-T ports support the IEEE 802.3ab standard, which includes the "Auto MDI/MDI-X" feature. In the default configuration, "Auto", the ports on the switch will automatically detect the type of port on the connected device and operate as either an MDI or MDI-X port, whichever is appropriate. So for any connection, a straight-through twisted-pair cable can be used. You no longer have to use crossover cables, although crossover cables can also be used for any of the connections.

If you connect a switch twisted-pair port to another switch or hub, which typically have MDI-X ports, the port automatically operates as an MDI port. If you connect it to an end node, such as a server or PC, which typically have MDI ports, the switch port operates as an MDI-X port. In all cases, you can use standard straight-through cables or crossover cables.

If you use a correctly-wired crossover cable, though, the switch will still be able to automatically detect the MDI/MDI-X operation and link correctly to the connected device.

Other wiring rules:

- All twisted-pair wires used for 10 Mbps, and 100 Mbps operation must be twisted through the entire length of the cable. The wiring sequence must conform to EIA/TIA 568-B (not USOC). See "Pin Assignments" later in this appendix for a listing of the signals used on each pin.
- For 1000BASE-T connections, all four pairs of wires in the cable must be available for data transmission.
- For 10 Mbps connections to the ports, you can use Category 3, 4, or 5 unshielded twisted-pair cable, as supported by the IEEE 802.3 Type 10BASE-T standard.
- For 100 Mbps connections to the ports, use 100-ohm Category 5 UTP or STP cable only, as supported by the IEEE 802.3u Type 100BASE-TX standard.
- For 1000 Mbps connections, 100-ohm Category 5e or better cabling is recommended.

Straight-Through Twisted-Pair Cable for 10 Mbps or 100 Mbps Network Connections

Because of the Aruba Auto-MDIX operation of the 10/100 ports on the switch, you can use straight-through cables for all network connections to PCs, servers, end nodes, or to hubs or other switches.

If any of these ports are given a fixed configuration, for example 100 Mbps/Full Duplex, the ports operate as MDI-X ports, and straight-through cables must be then used for connections to PC NICs and other MDI ports.

Figure 9 *Cable Diagram*
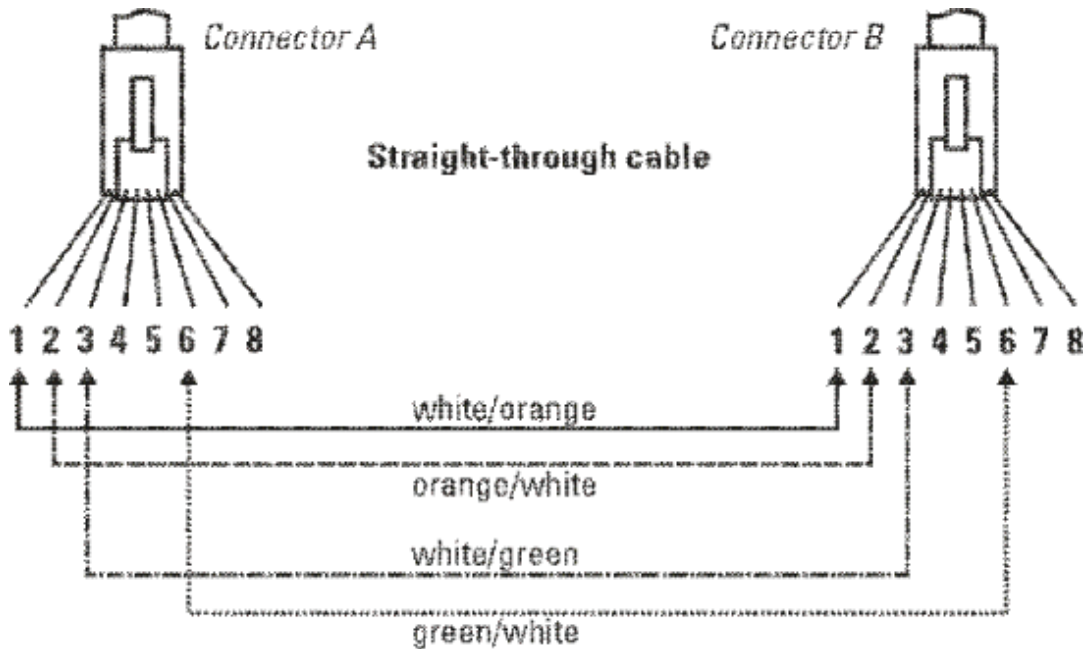
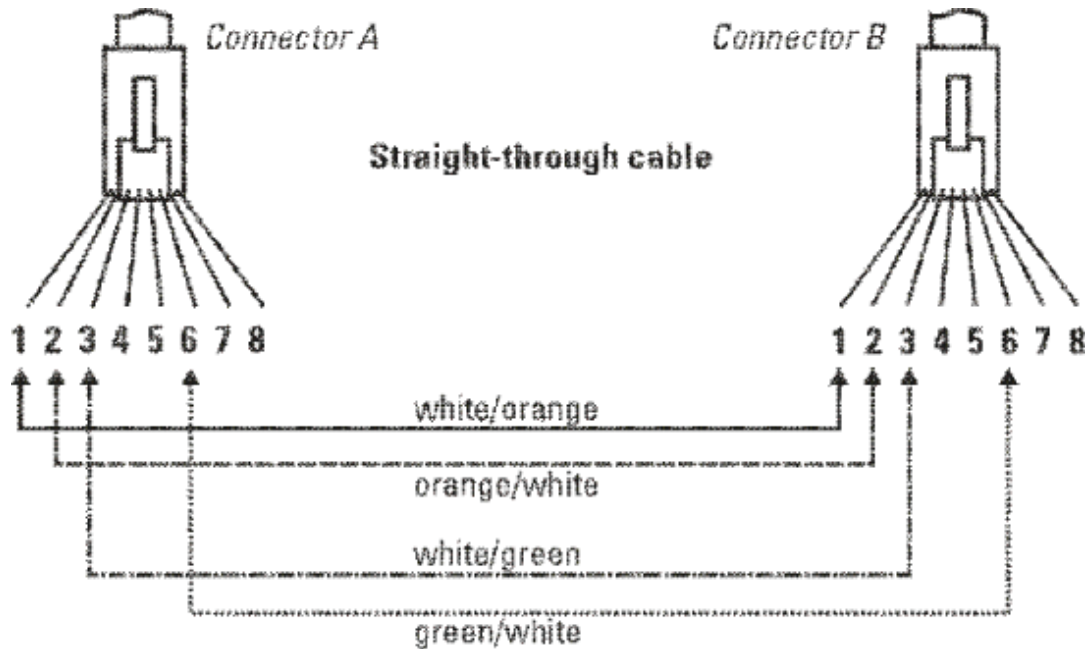|	
NOTE	Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".
	Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".
	Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

Figure 10 *Pin Assignments*

Switch end (MDI-X)			Computer, transceiver, or other end	
Signal	Pins		Pins	Signal
receive +	1	<———————	1	transmit +
receive -	2	<———————	2	transmit -
transmit +	3	———————>	3	receive +
transmit -	6	———————>	6	receive -

Crossover Twisted-Pair Cable for 10 Mbps or 100 Mbps Network Connection

The Auto-MDIX operation of the 10/100 ports on the switch also allows you to use crossover cables for all network connections, to PCs, servers or other end nodes, or to hubs or other switches.

If any of these ports are given a fixed configuration, for example 100 Mbps/Full Duplex, the ports operate as MDI-X ports, and crossover cables must be then used for connections to hubs or switches or other MDI-X network devices.

Figure 11 *Cable Diagram*

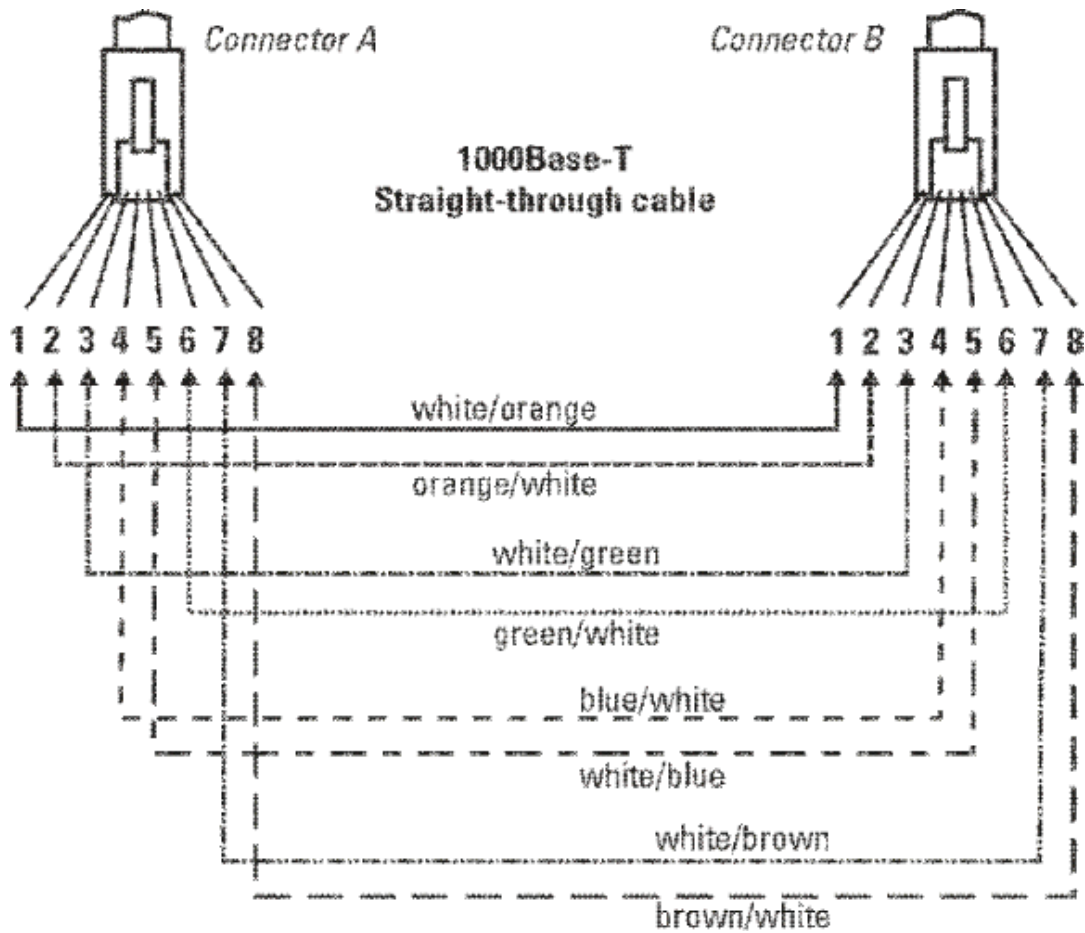|	
NOTE	Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".
	Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".
	Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

Figure 12 *Pin Assignments*

Straight-Through Twisted-Pair Cable for 1000 Mbps Network Connections

1000BASE-T connections require that all four pairs or wires be connected.

Figure 13 *Cable Diagram*

1000Base-T
Straight-through cable

	Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".
NOTE	Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".
	Pins 4 and 5 on connector "A" must be wired as a twisted pair to pins 4 and 5 on connector "B".
	Pins 7 and 8 on connector "A" must be wired as a twisted pair to pins 7 and 8 on connector "B".

Pin Assignments

For 1000BASE-T operation, all four pairs of wires are used for both transmit and receive.

For more information on Aruba 6200 Switches, refer to the following websites.

Table 21: *Networking and General Websites*

Description	URL
Networking Websites	
Aruba Support Portal	asp.arubanetworks.com
Aruba Software and Documentation	asp.arubanetworks.com/downloads
Aruba Security Advisories	www.arubanetworks.com/support-services/security-bulletins
Hewlett Packard Enterprise Networking Software	www.hpe.com/networking/software
Hewlett Packard Enterprise My Net-working website	www.hpe.com/networking/support
Hewlett Packard Enterprise My Net-working Portal	www.hpe.com/networking/mynetworking
Hewlett Packard Enterprise Networking Warranty	www.hpe.com/networking/warranty
General Website	
Hewlett Packard Enterprise Information Library	www.hpe.com/info/EIL

Accessing Aruba Support

To access Aruba Support, go to https://www.arubanetworks.com/support-services/

Be sure to collect the following information before contacting Support:

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

Accessing Updates

To download product updates:

Aruba Support Portal

asp.arubanetworks.com/downloads

If you are unable to find your product in the Aruba Support Portal, you may need to search My Networking, where older networking products can be found:

My Networking

www.hpe.com/networking/software

To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:

www.hpe.com/support/AccessToSupportMaterials

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

Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.

To subscribe to eNewsletters and alerts:

www.hpe.com/support/e-updates

Warranty Information

To view warranty information for your product, go to https://www.hpe.com/support/Networking-Warranties.

Regulatory Information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

https://www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

https://www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

https://www.hpe.com/info/environment

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