Aruba 8320 Switch Series
Installation and Getting Started Guide

Part Number: 5200-4511a
Published: October, 2018
Edition: 2

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Applicable products

Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle	JL479A
Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle	JL579A
Aruba 8320 48p 1G/10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle	JL581A

Related publications

- *Aruba 8320 Switch Quick Setup Guide and Safety/Regulatory Information*
- *ArubaOS-Switch and ArubaOS-CX Transceiver Guide*

To view and download the above publications, visit the Hewlett Packard Enterprise Information Library at **http://www.hpe.com/networking/ResourceCenter**.

Contents

Chapter 1 Introducing the Aruba 8320 Switch 4
Front of the switch 5
Back of the switch 15
Switch features 19

Chapter 2 Installing the switch 20
Included parts 20
Installation procedures 21
Installation precautions 22
1. Prepare the installation site 23
2. Mount the switch 23
3. Install transceivers 27
4. Connect the switch to a power source 28
5. Connect a management console 29
6. Connect the network cables 31

Chapter 3 Replacing components 33
Replacing a power supply 33
Replacing a fan tray 34

Chapter 4 Troubleshooting 35
Basic troubleshooting tips 35
Diagnosing with the LEDs 36
Hardware diagnostic tests 38
Restoring the factory default configuration 39
Downloading new switch software 39
Hewlett Packard Enterprise Customer Support Services 39

Chapter 5 Specifications 40
Switch specifications 40
Standards 42

Chapter 6 Cabling and technology information 43
Cabling specifications 43
Technology distance specifications 44
Mode conditioning patch cord 45

Chapter 7 Support and other resources 47
Accessing Hewlett Packard Enterprise support 47
Before calling support 47
Accessing updates 48
Websites 48
Customer self repair 48
Remote support 49
Documentation feedback 49

The Aruba 8320 switch is a multiport switch that can be used to build high-performance switched networks. The switch is a store-and-forward device offering low latency for high-speed networking. The Aruba 8320 switch also supports full network management capabilities.

These switches are described in this manual:

Switch
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL479A)
Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL579A)
Aruba 8320 48p 1G/10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL581A)

Accessories list:

Accessory	
Power supply	Aruba X371 400W 100-240VAC Power Supply (JL480A)
Fan tray	Aruba X721 Front-to-Back Fan (JL481A)
Rack kit	Aruba X472 2-Post Rack Kit (JL482A)

This chapter describes this switch with the following information:

- Front of the switch:
  - Network ports
  - Console port
  - Out-of-band management (OOBM)
  - LEDs
  - Reset button
- Back of the switch:
  - Power supplies and connectors
  - Fan modules
- Switch features
  - Hardware features
  - Software features
  - Management software

Front of the switch

Figure 1: *Front of the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

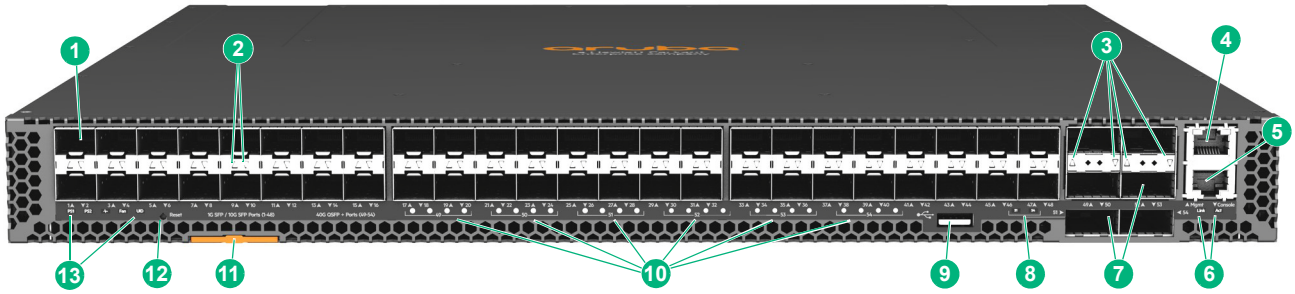


Table 1: *Front of the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A) labels and descriptions*

Label	Description
1	SFP+ ports
2	SFP+ port LEDs
3	QSFP+ port 49, 50, 52, 53 LEDs
4	10/100/1000Base-T RJ-45 Out-of-Band Management (OOBM) port
5	RJ-45 serial console port
6	Management port LEDs
7	QSFP+ ports
8	QSFP+ port 51, 54 LEDs
9	USB auxiliary port (for file management only)
10	QSFP+ port lane LEDs — post boot-up/self-test, these LEDs are not used by the switch, and should remain off.
11	Switch product label. Pull the tab out to view the product label information.
12	Reset button
13	Power 1 and 2, Global Status, Unit Identification, and Fan LEDs

Figure 2: *Front of the Aruba 8320 32 QSFP+ AC switch (JL579A)*

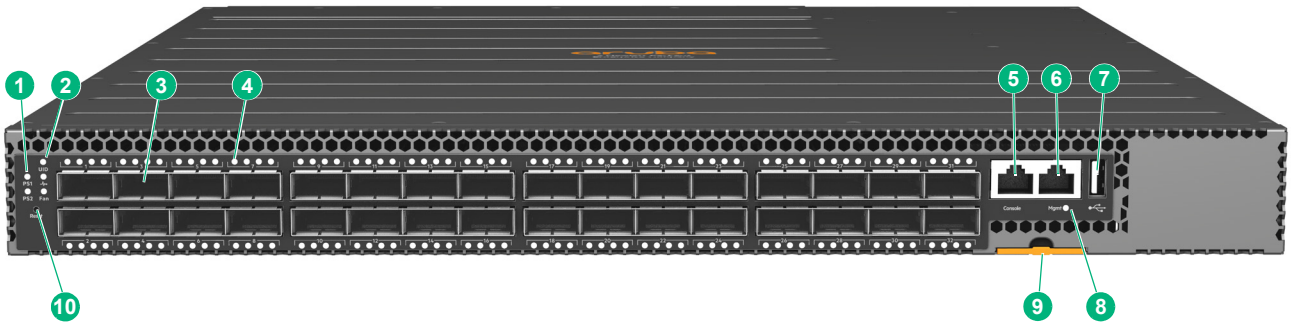


Table 2: *Front of the Aruba 8320 32 QSFP+ AC switch (JL579A) labels and descriptions*

Label	Description
1	Power 1 and 2 LEDs
2	Global Status, Unit Identification, and Fan LEDs
3	QSFP+ ports
4	QSFP+ port LED The first port lane LED (far left) acts as the main port LED in each group of four. Post boot-up/self-test, the remaining three LEDs are not used by the switch, and should remain off throughout the product's operation.
5	RJ-45 serial console port
6	10/100/1000Base-T RJ-45 Out-of-Band Management (OOBM) port
7	USB auxiliary port (for file management only)
8	Management port LED
9	Switch product label. Pull the tab out to view the product label information.
10	Reset button

Figure 3: *Front of the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A)*

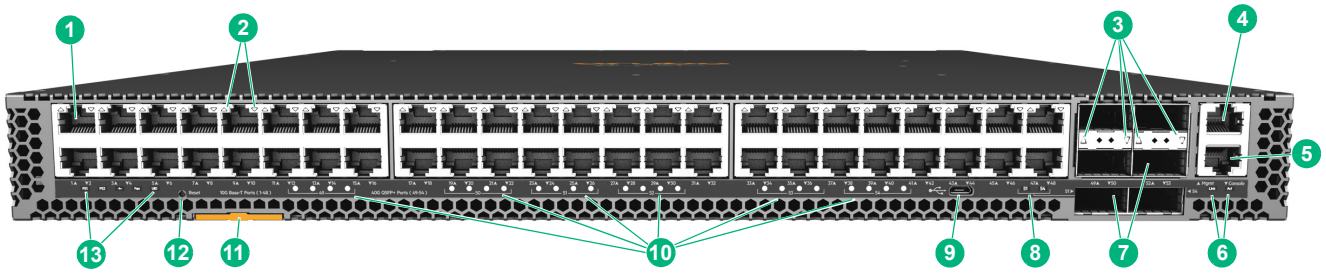


Table 3: *Front of the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A) labels and descriptions*

Label	Description
1	10GBASE-T RJ-45 ports
2	10GBASE-T RJ-45 port LEDs
3	QSFP+ port 49, 50, 52, 53 LEDs
4	10/100/1000Base-T RJ-45 Out-of-Band Management (OOBM) port
5	RJ-45 serial console port
6	Management port LEDs
7	QSFP+ ports
8	QSFP+ port 51, 54 LEDs
9	USB auxiliary port (for file management only)
10	QSFP+ port lane LEDs — post boot-up/self-test, these LEDs are not used by the switch, and should remain off.
11	Switch product label. Pull the tab out to view the product label information.
12	Reset button
13	Power 1 and 2, Global Status, Unit Identification, and Fan LEDs

Network ports

Table 4: *Network ports*

Product number	Model name	10GBASE-T non-PoE RJ-45 ports	SFP+ ports[1]	QSFP+ ports
JL479A	Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle	–	48	6
JL579A	Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle	–	–	32

Table 4: *Network ports (Continued)*

Product number	Model name	10GBASE-T non-PoE RJ-45 ports	SFP+ ports[1]	QSFP+ ports
JL581A	Aruba 8320 48p 1G/10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle	48	–	6
Notes: [1] SFP+ ports support 1G SFP, 1G RJ-45, and 10G SFP+ transceivers.				

This product also supports optional network connectivity:

Table 5: *Optional network connectivity, speeds and technologies*

Speed	Technology	Cabling	Transceiver form-factor and connector[1]		
			SFP ("mini-GBIC") Connector	SFP+ connector	QSFP+ connector
1000 Mbps	1000-T	Copper (twisted-pair)	RJ-45	–	–
	1000-SX	Fiber (multimode)	LC[2]	–	–
	1000-LX	Fiber (multimode or single mode)	LC	–	–
	1000-LH	Fiber (single mode)	LC	–	–
	1000-BX	Fiber (single mode)	LC	–	–
10 Gbps	10-Gig Direct Attach	Copper (twinaxial)	–	–	–
	10-Gig SR	Fiber (multimode)	–	LC	–
	10-Gig LR	Fiber (single mode)	–	LC	–
	10-Gig ER	Fiber (single mode)	–	LC	–
40 Gbps	40-Gig Direct Attach	Copper (twinaxial)	–	–	–
	40-Gig SR4	Fiber (multimode)	–	–	MPO[3]
	40-Gig ESR4	Fiber (multimode)	–	–	MPO
	40-Gig LR4	Fiber (single mode)	–	–	LC

Table 5: *Optional network connectivity, speeds and technologies (Continued)*

Speed	Technology	Cabling	Transceiver form-factor and connector[1]		
			SFP ("mini-GBIC") Connector	SFP+ connector	QSFP+ connector

[1] For supported transceivers, visit **http://www.hpe.com/support/manuals**.

- Go to **www.hpe.com/networking/resourcefinder**.
- Filter for the 8320 switch using the **Models / Subcategories** section.
- Under **User Guides**, select the *ArubaOS-Switch and ArubaOS-CX Transceiver Guide* link.

For technical details of cabling and technologies, see **Cabling and technology information**.

For more information, see the *ArubaOS-Switch and ArubaOS-CX Transceiver Guide* at: **http://www.hpe.com/networking/ResourceCenter**

[2] The Lucent Connector (LC) is a small form factor fiber optic connector.

[3] The Multifiber Push On (MPO) connector is a 12-fiber optical connector.

Management ports

Console port

There is one RJ-45 serial console port on the switch. This port is used to connect a console to the switch by using an RJ-45 serial cable. A DB9-to-RJ-45 console cable can be ordered from HPE: JL448A, Aruba X2C2 RJ45 to DB9 Console Cable.

For more information on the console connection, see **Connect a management console**. The console can be a PC or workstation running a VT-100 terminal emulator, or a VT-100 terminal.

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 SSH from a remote PC or a UNIX workstation.

To use this port, see **Enabling out-of-band management on the management port**.

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.

Auxiliary (Aux) port

An auxiliary port for file management or downloading switch software code. This port uses a USB Type A connector, but does not comply with all USB protocols and standards.

Switch and port LEDs on the front of the switch

- Table 9 on page 11 describes the switch chassis LEDs.
- Table 11 on page 12 describes the switch port LEDs and their different behaviors for the JL479A. Table 13 on page 13 describes the behavior of JL579A. Table 15 on page 14 describes the behavior of JL581A.

Figure 4: *Chassis LEDs for the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

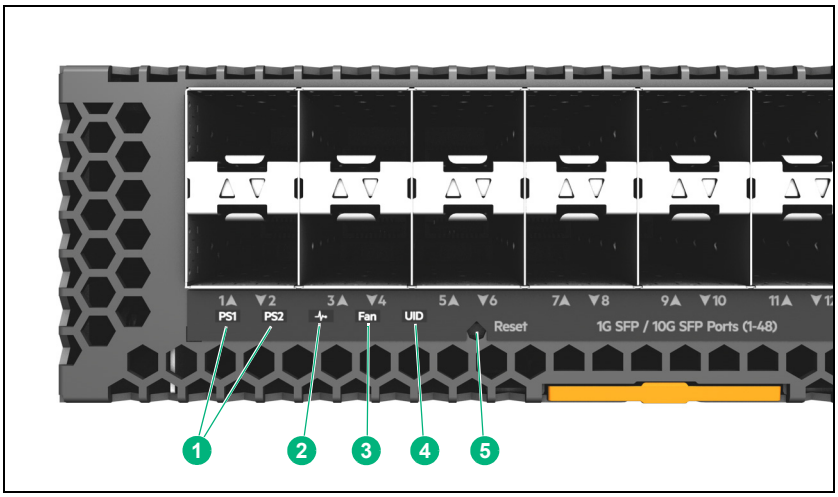


Table 6: *Chassis LED labels for the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

Label	Description
1	Power Supply LEDs
2	Global Status LED
3	Fan LED
4	Unit Identification LED
5	Reset button

Figure 5: *Chassis LEDs for the Aruba 8320 32 QSFP+ AC switch (JL579A)*

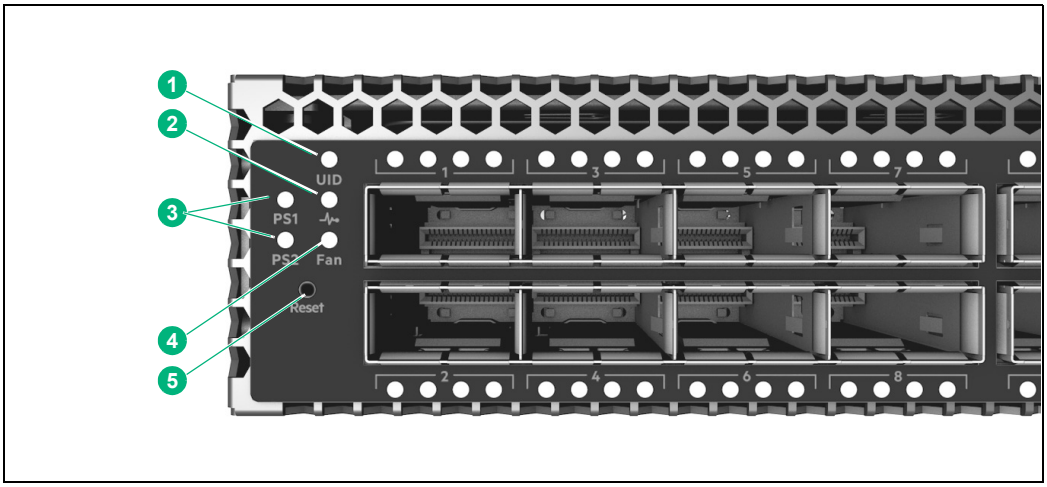


Table 7: *Chassis LED labels for the Aruba 8320 32 QSFP+ AC switch (JL579A)*

Label	Description
1	Unit Identification LED
2	Global Status LED
3	Power Supply LEDs

Table 7: *Chassis LED labels for the Aruba 8320 32 QSFP+ AC switch (JL579A)*

Label	Description
4	Fan LED
5	Reset button

Figure 6: *Chassis LEDs for the* Aruba 8320 48XGT 6 QSFP+ AC Switch *(JL581A)*

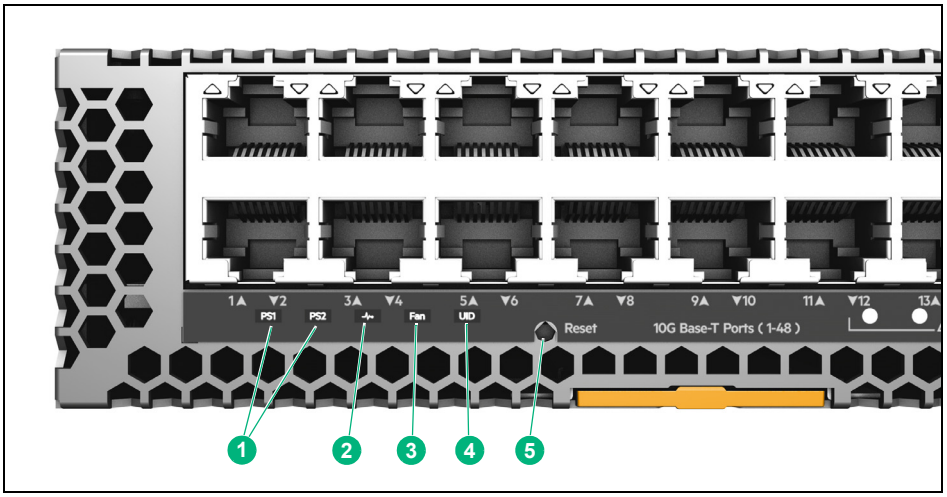


Table 8: *Chassis LED labels for the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A)*

Label	Description
1	Power Supply LEDs
2	Global Status LED
3	Fan LED
4	Unit Identification LED
5	Reset button

Table 9: *Chassis LED behavior*

Chassis LEDs	Function	State	Meaning
PS1/PS2	Power supply status	On green	Power supply is installed and operating normally.
		On amber	Fault detected for installed power supply, or power supply is not receiving power.
		Off	Power supply is not installed.
Fan	Fan tray status	On green	System fans are operating normally.
		On amber	One or more system fans has a fault, or the minimum number of fans are not installed.

Table 9: *Chassis LED behavior (Continued)*

Chassis LEDs	Function	State	Meaning
Global Status	Internal power status of the switch. Self-test status	On amber	The switch has passed self-test and is powered up normally.
		Off	The unit is not receiving power.
UID (Unit Identification)	The Unit Identification LED is used to help you to identify a particular unit in a rack or collection of products.	On amber or flashing amber	The "LED locator on" command allows you to blink or turn on the LED. The default is 30 minutes.
		Off	LED will turn off after the timeout period has expired.

Figure 7: *Port LEDs for the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

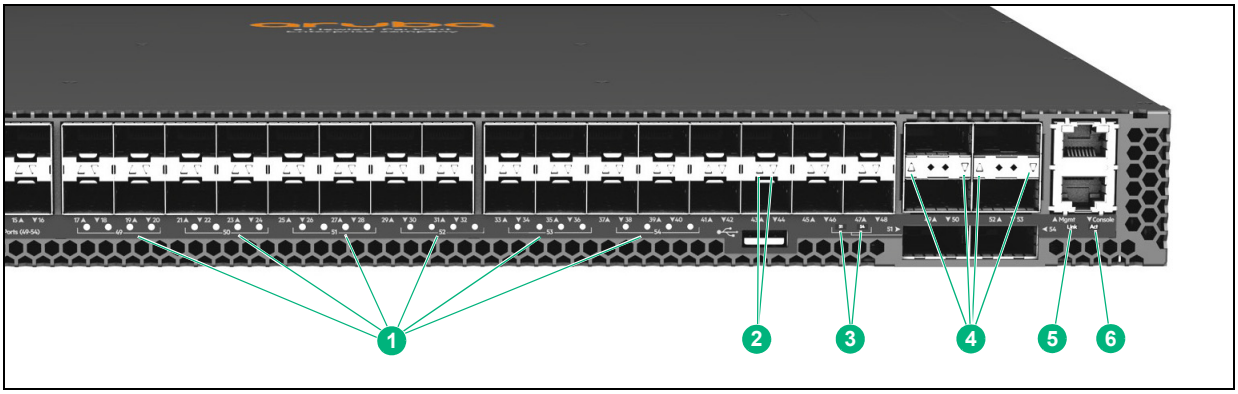


Table 10: *Port LED labels for the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

Label	Description
1	QSFP+ port lane LEDs — post boot-up/self-test, these LEDs are not used by the switch, and should remain off.
2	SFP+ port LEDs
3	QSFP+ port 51, 54 LEDs
4	QSFP+ port 49, 50, 52, 53 LEDs
5	Out-of-band management port Link LED
6	Out-of-band management port Act (activity) LED

Table 11: *Port LED behavior for the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

Chassis LEDs	Function	State	Meaning
SFP+ port LEDs	To display link and activity information for the port.	On/flashing green	Shows a valid link at 1 Gbps or 10 Gbps. Flashing indicates port activity.
		On amber, flashing amber, or off	Indicates an unsupported or faulty transceiver, or a port failure.

Table 11: *Port LED behavior for the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A) (Continued)*

Chassis LEDs	Function	State	Meaning
QSFP+ port LEDs	To display link and activity information for the port.	On/flashing green	Shows a valid link at 40 Gbps. Flashing indicates port activity.
		Off	Indicates an unsupported or faulty transceiver, or a port failure.
Management port Link LED	To display link information for the port.	On green	Shows a valid link.
Management port Act LED	To display activity information for the port.	Flashing green	Flashing indicates port activity.

Figure 8: *Port LEDs for the Aruba 8320 32 QSFP+ AC switch (JL579A)*

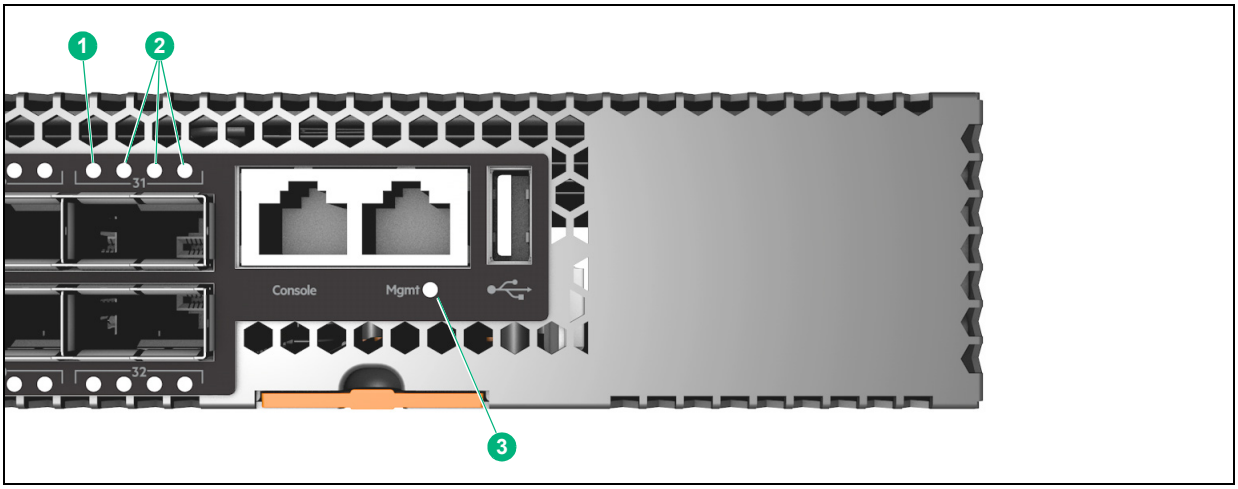


Table 12: *Port LED labels for the Aruba 8320 32 QSFP+ AC switch (JL579A)*

Label	Description
1	QSFP+ port LED
2	QSFP+ port lane LEDs — post boot-up/self-test, these LEDs are not used by the switch, and should remain off.
3	Out-of-band management port link/activity LED

Table 13: *Port LED behavior for the Aruba 8320 32 QSFP+ AC switch (JL579A)*

Chassis LEDs	Function	State	Meaning
QSFP+ port LEDs	To display link and activity information for the port.	On/flashing green	Shows a valid link at 40 Gbps. Flashing indicates port activity.
		Off	Indicates an unsupported or faulty transceiver, or a port failure.
Management port link/ activity LED	To display link information for the port.	On/flashing green	Shows a valid link. Flashing indicates port activity.

Figure 9: *Port LEDs for the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A)*

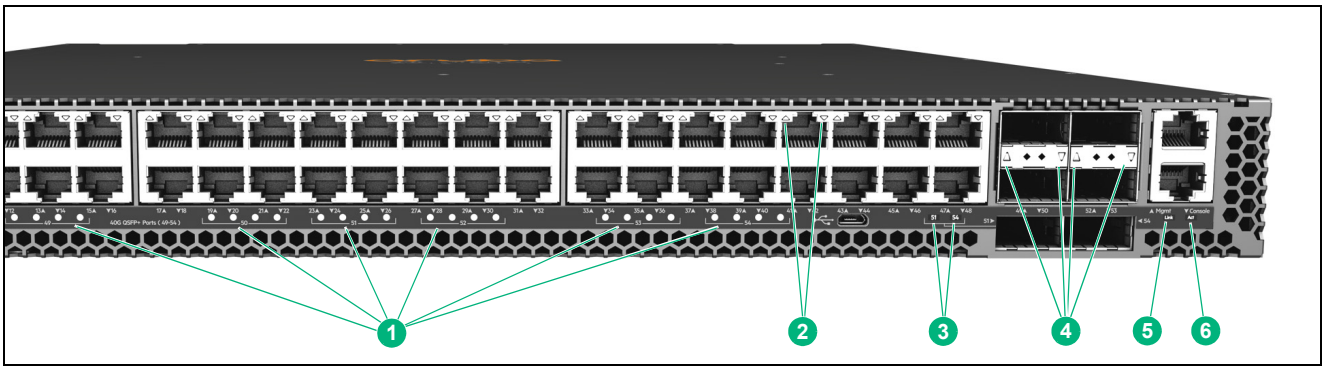


Table 14: *Port LED labels for the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A)*

Label	Description
1	QSFP+ port lane LEDs — post boot-up/self-test, these LEDs are not used by the switch, and should remain off.
2	10GBASE-T RJ-45 port LEDs
3	QSFP+ port 51, 54 LEDs
4	QSFP+ port 49, 50, 52, 53 LEDs
5	Out-of-band management port Link LED
6	Out-of-band management port Act (activity) LED

Table 15: *Port LED behavior for the* Aruba 8320 48XGT 6 QSFP+ AC Switch *(JL581A)*

Chassis LEDs	Function	State	Meaning
RJ-45 port LEDs	To display link and activity information for the port.	On/flashing green	Shows a valid link at 1 Gbps or 10 Gbps. Flashing indicates port activity.
		On amber, flashing amber, or off	Indicates a port failure.
QSFP+ port LEDs	To display link and activity information for the port.	On/flashing green	Shows a valid link at 40 Gbps. Flashing indicates port activity.
		Off	Indicates an unsupported or faulty transceiver, or a port failure.
Management port Link LED	To display link information for the port.	On green	Shows a valid link.
Management port Act LED	To display activity information for the port.	Flashing green	Flashing indicates port activity.

Reset button

The Reset button is recessed from the front panel (to protect it from being pushed accidentally) and is accessible through a small hole on the front panel. Use a pointed object, such as an unbent paper clip, to push the button.

The Reset button is used as follows:

To accomplish this:	Do this:	This will happen:
Soft Reset	Press and release the Reset button	The switch operating system is cleared gracefully (such as data transfer completion, temporary error conditions are cleared), and then reboots.
Hard Reset	Press and hold the Reset button for more than 3 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.
Restore the factory default configuration	Press and hold the Reset button for more than 5 seconds, then release.	The switch removes all configuration changes, and restores the factory default configuration.
Note: The Reset button is provided for your convenience. If you are concerned with switch security, make sure that the switch is installed in a secure location, such as a locked wiring closet.		

If you cannot start a console session at the manager level because of a lost Manager password, you can reset the switch to factory defaults by getting physical access to the switch and pressing and holding the Reset button for more than 5 seconds.

Back of the switch

The back of the switch includes two power supply units and five fan trays.

Figure 10: *Back of the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A)*

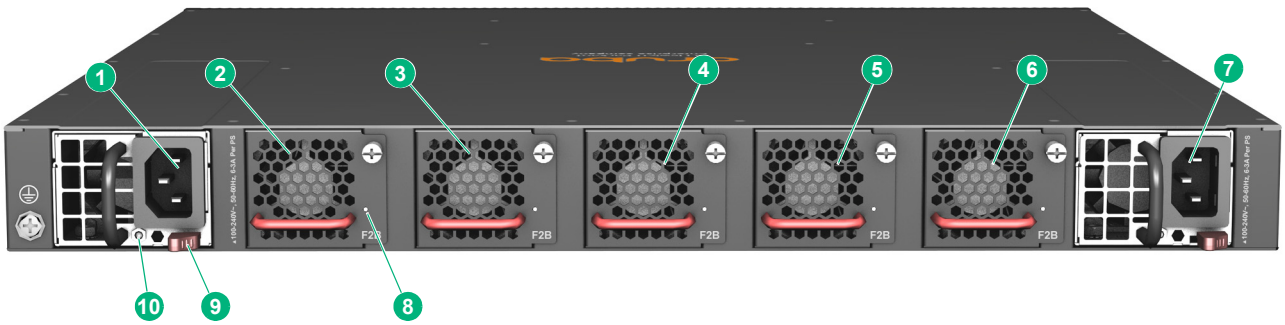


Table 16: *Back of the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A) switch labels and descriptions*

Label	Description
1	AC power connector / power supply 2
2	Fan tray 5

Table 16: *Back of the Aruba 8320 48 SFP/SFP+ 6 QSFP+ AC switch (JL479A) switch labels and descriptions*

Label	Description
3	Fan tray 4
4	Fan tray 3
5	Fan tray 2
6	Fan tray 1
7	AC power connector / power supply 1
8	Fan tray status LED
9	Power supply release latch
10	Power supply status LED

Figure 11: *Back of the Aruba 8320 32 QSFP+ AC switch (JL579A)*

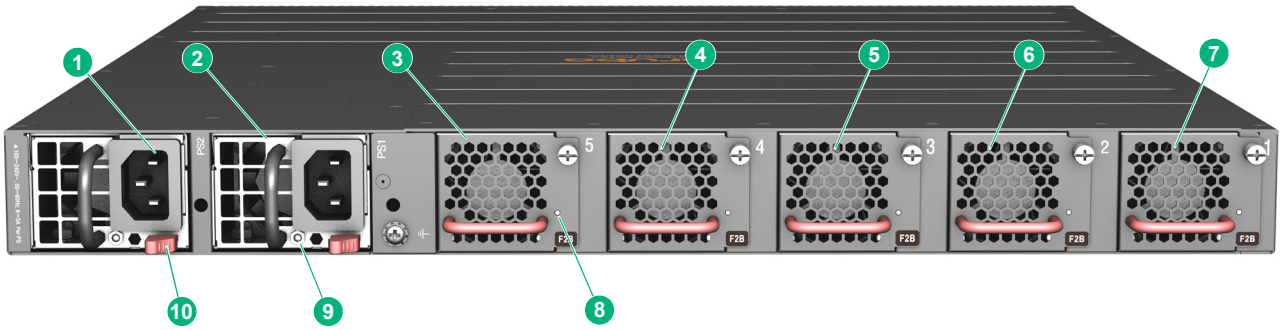


Table 17: *Back of the Aruba 8320 32 QSFP+ AC switch (JL579A) labels and descriptions*

Label	Description
1	AC power connector / power supply 2
2	AC power connector / power supply 1
3	Fan tray 5
4	Fan tray 4
5	Fan tray 3
6	Fan tray 2
7	Fan tray 1
8	Fan tray status LED
9	Power supply status LED
10	Power supply release latch

Figure 12: *Back of the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A)*

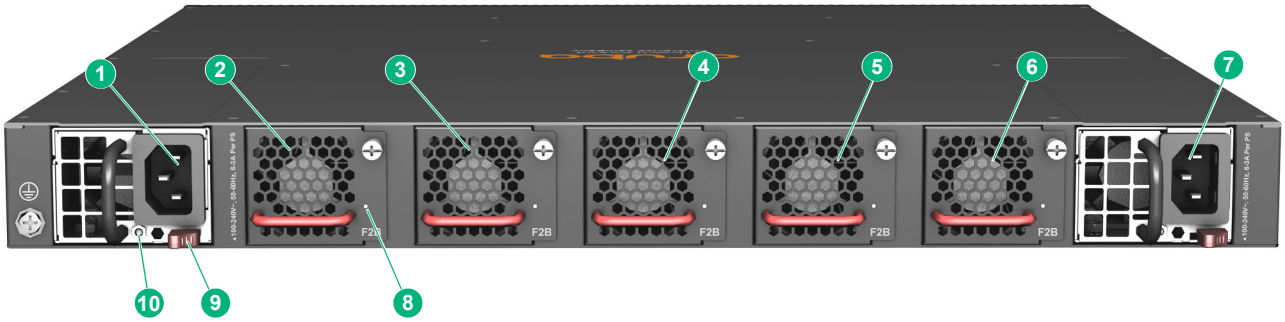


Table 18: *Back of the Aruba 8320 48XGT 6 QSFP+ AC Switch (JL581A) switch labels and descriptions*

Label	Description
1	AC power connector / power supply 2
2	Fan tray 5
3	Fan tray 4
4	Fan tray 3
5	Fan tray 2
6	Fan tray 1
7	AC power connector / power supply 1
8	Fan tray status LED
9	Power supply release latch
10	Power supply status LED

Power supplies

The Aruba 8320 switch does not have a power switch; it is powered on when at least one installed power supply is connected to an active AC power source. The power supplies automatically adjust to any voltage between 100-127 and 200-240 volts and either 50 or 60 Hz. There are no voltage range settings required.

CAUTION

Never insert or remove a power supply while the power cord is connected. Verify that cord has been disconnected from the power supply before installation or removal.

The Aruba 8320 switch power supplies adapt electrical power for use with the switch. The chassis has two slots that can hold individual power supplies to support load sharing, redundancy, and fault tolerance. One power supply is available for use with the Aruba 8320 switch:

Aruba X371 400W 100-240VAC Power Supply (JL480A)

The Aruba 8320 switch is shipped with two hot-swappable, field-replaceable, AC power supplies. Each power supply has a country-specific power cord for connection to an AC power outlet. The switch can operate with one active power supply.

Power supply status LED

Table 19: *Power supply LED behavior*

Power Supply LED	Function	State	Meaning
Status LED	To display power supply status.	On green	The power supply is operating normally.
		On amber	The power supply is in standby mode with AC power connected (power supply is not fully installed in the switch), or the power supply is experiencing a fault.
		Off	AC power is not connected to the power supply or, if AC power is connected, the power supply is in protection mode due to a voltage, current, thermal, or short-circuit condition.

Load Sharing

Load sharing occurs when two power supplies are installed in the switch and turned on. Load sharing divides the total power load of the switch among both power supplies. Since the power supplies work together, the effective power capacity of the switch is increased with the additional power supply.

Redundancy

With power redundancy, the Aruba 8320 switch can continue normal operation even when one power supply fails or is powered off. When two power supplies are installed, if one becomes unavailable (fails, or is powered off or removed) the remaining power supply provides full power for the device.

Hot Swapping

Hot swapping allows you to replace one failed power supply while the other provides full power. This makes it unnecessary to shut down the switch during the replacement procedure.

Fan Trays

The Aruba 8320 switch is equipped with five field-replaceable, hot-swappable fan trays. Each fan tray features individual fans that pull air through the chassis from the front through to the rear. The switch can tolerate the failure of a single fan tray while maintaining a safe operating temperature.

The Aruba 8320 switch is not compatible with fan trays from other Aruba hardware platforms.

Fan tray status LED

Table 20: *Fan tray LED behavior*

Fan Tray LED	Function	State	Meaning
Status LED	To display fan tray status.	On green	The fan tray is operating normally.
		On red or flashing red	The fan tray has an error or has failed.

Switch features

The features of the Aruba 8320 switch includes:

- Combinations of fixed QSFP+ and SFP+ ports, as described under **Network ports**.
- For secure environment, all ports are disabled by default.
- The option to have one or two power supplies: A second power supply supports redundant system power. If one of the power supplies fails, the second power supply immediately provides the power necessary to keep the switch running.
- The QSFP+ and SFP+ ports always operate at full duplex.
- Easy management of the switch through several available interfaces:
  - **Command line interface**—A full featured, easy to use, VT-100 terminal interface for out-of-band switch management.
  - **Web browser interface**—An easy to use built-in graphical interface that can be accessed from common web browsers.
  - **Aruba AirWave**—A powerful and easy-to-use network operations system that manages wired and wireless infrastructures. For more information, go to **www.arubanetworks.com/products/networking/management/airwave**.
  - **IMC (Intelligent Management Center)**—An SNMP-based, graphical network management tool that you can use to manage your entire network. Free trials of IMC can be downloaded at **http://www.hpe.com/networking/imc**.
- Support for the Spanning Tree Protocol to eliminate network loops.
- Support for up to 4096 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.
- To download product updates, go to either of the following:
  - Hewlett Packard Enterprise Support Center **Get connected with updates** page: **www.hpe.com/support/e-updates**
  - HPE Networking Software: **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's **More Information on Access to Support Materials** page: **www.hpe.com/support/AccessToSupportMaterials**

This chapter shows how to install the switch. The Aruba 8320 switch comes with an accessory kit that includes the brackets for mounting the switch in a standard 19-inch telco rack, or in an equipment cabinet.

The Aruba 8320 switch can also be mounted in any four post rack using the Aruba X474 4-Post Rackmount Bracket Kit (JL483A).

Included parts

The Aruba 8320 switch has the following components shipped with it:

- *Aruba Switch Quick Setup Guide and Safety/Regulatory Information*
- Switch Safety and Regulatory sheet
- Warranty notice
- General Safety and Regulatory booklet
- JL482A Aruba X472 2-Post Rackmount Bracket Kit

Part number	Count	Included items
5200-3899	2 8 4	Rack mount brackets Small screws; bracket-to-switch Large screws; bracket-to-rack

- There are two warranty documents. One is the HPN warranty and the other is the EG warranty.
  - 5998-5984 Warranty Statement and Software License
  - 703828-025 EG Safety, Compliance, and Warranty Information
- Power cord, one of the following

Argentina	8121-0729	Israel	8121-1004
Australia/New Zealand	8121-0837	Japan	8121-1143
Brazil	8121-1071	Switzerland	8121-0738
Chile	8121-0735	South Africa	8121-0737
China	8121-0943	Taiwan	8121-0964
Continental Europe/South Korea	8121-0731	Philippines/Thailand	8121-0734
Denmark	8121-0733	UK/Hong Kong/Singapore/ Malaysia	8121-0739
India	8121-0564	US/Canada/Mexico	8121-1141

Installation procedures

Summary

1. **Prepare the installation site (page 23).** Ensure the physical environment into which you will be installing the switch is properly prepared, including having the correct network cabling ready to connect to the switch and having an appropriate location for the switch. See **Installation precautions** for some guidelines on avoiding personal injury or product damage when installing your switch.
2. **Mount the switch (page 23).** The switch can be mounted in a 19-inch telco rack or in an equipment cabinet.
3. **(Optional) Install SFP/SFP+ transceivers (page 27).** The switch has slots for installing SFP/SFP+ and QSFP+ transceivers. Depending on where you install the switch, it may be easier to install the transceivers first. Transceivers can be hot swapped—they can be installed or removed while the switch is powered on.
4. **Connect power to the switch (page 28).** Once the switch is mounted, plug it into the main power source.
5. **Connect a management console to the switch (page 29).** You may want to modify the switch's configuration, so it can be managed using a Web browser or through an SSH session. Configuration changes can be made by using a console cable to connect a PC to the switch's console port.
6. **Connect the network devices (page 31).** Using the appropriate network cables, connect the network devices to the switch ports.

At this point, your switch is fully installed. See the rest of this chapter if you need more detailed information on any of these installation steps.

Installation precautions

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

- Do not mount the switch on a wall, on or under a table, or on or under any other horizontal surface.
- Mount devices installed in a rack or cabinet as low as possible. Put the heaviest devices at the bottom and progressively lighter devices installed above.
- To prevent the rack or cabinet from becoming unstable and/or falling over, ensure that it is adequately secured.

- Ensure the power source circuits are properly grounded. Then connect the switch to the power source by using the power cord supplied with the switch.
- If your installation requires a different power cord than the one supplied with the switch and power supply, be sure the cord is adequately sized for the switch's current 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. The mark is your assurance that the power cord can be used safely with the switch and power supply.
- When installing the switch, the AC outlet should be near the switch and be easily accessible in case the switch must be powered off.
- Do not install the switch in an environment where the operating ambient temperature exceeds its specification. (See the **Environmental** information.)
- Ensure that the switch does not overload the power circuits, wiring, and over-current protection. 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 usually 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.

If a power supply must be removed, and then reinstalled, wait at least 5 seconds before reinstallation. Otherwise, damage to the switch may occur.

The power supply needs this time to bleed off any retained power.

1. Prepare the installation site

Cabling Infrastructure - Ensure the cabling infrastructure meets the necessary network specifications. See chapter 7, **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 of the switch, leave at least 3 inches (7.6 cm) of space for the twisted-pair and fiber-optic cabling.
- In the back of the switch, leave at least 3 inches (7.6 cm) of space for the power cord.
- On the sides of the switch, leave at least 3 inches (7.6 cm) for cooling.

2. Mount the switch

Mounting an Aruba 8320 switch

The supported mounting options for the Aruba 8320 switch includes:

- Two-post rack mount (JL482A; included)
- Four-post rack mount (JL483A; sold separately)

Two-post rack mount option:

The switch is designed to be mounted in any EIA-standard 19-inch telco rack or communication equipment cabinet using the Aruba X472 2-Post Rackmount Bracket Kit (JL482A; included).

The mounting brackets must only be attached for mid-mounting the switch in a two-post rack. Secure the rack in accordance with the manufacturer's safety guidelines.

For safe operation, please read the mounting precautions in **Installation precautions**, before mounting a switch.

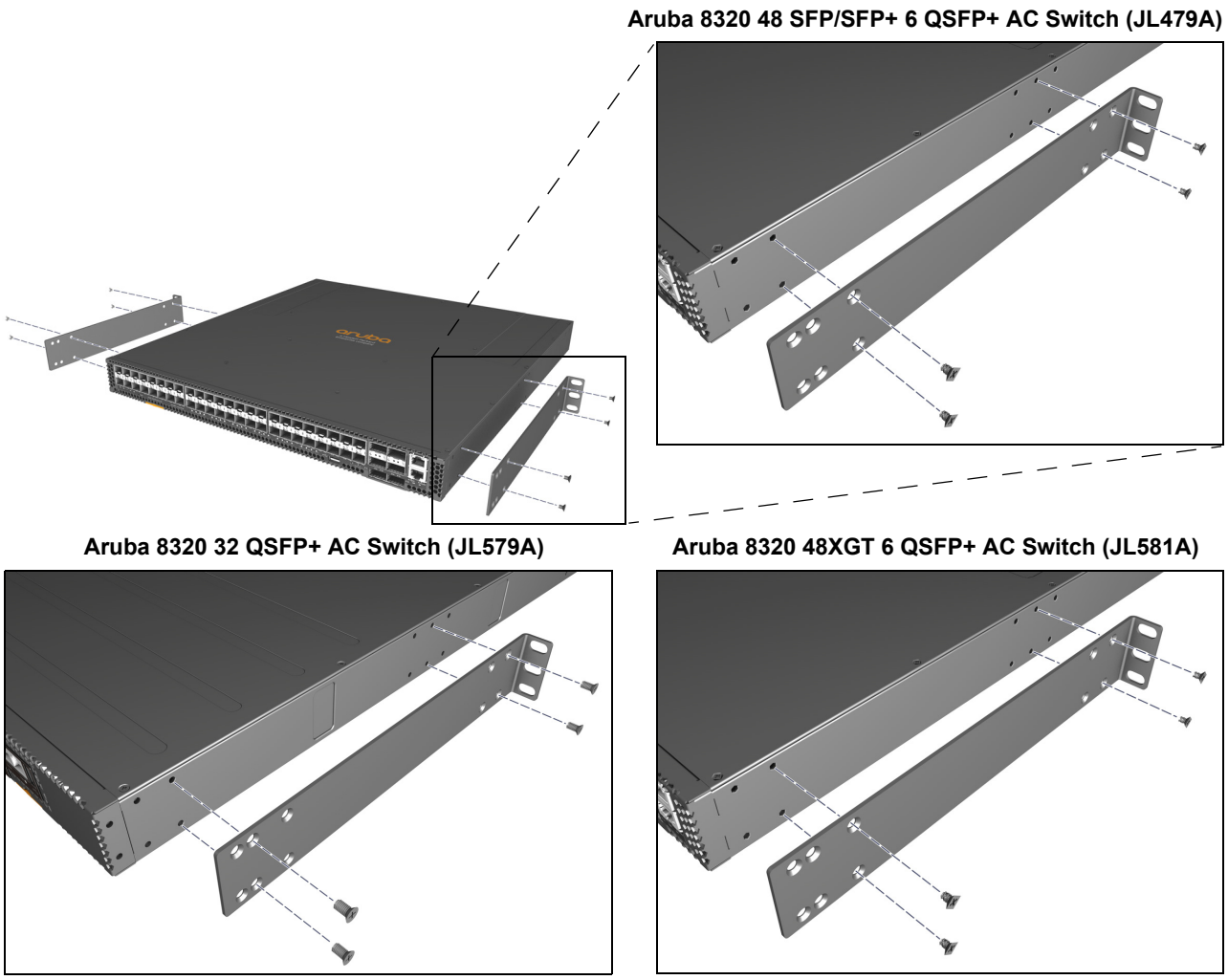
The 12-24 screws supplied with the switch are the correct threading for standard EIA/TIA open 19-inch racks. If installing the switch in an equipment cabinet such as a server cabinet, use the clips and screws that came with the cabinet in place of the 12-24 screws that are supplied with the switch.

Complete step 1, and plan which four holes you will be using in the cabinet and install all four clips. Then proceed to step 2.

1. Use a #1 Phillips (cross-head) screwdriver and attach the mounting brackets to the switch with the included eight 8-mm M4 screws.

   The brackets must only be attached for mid-mounting the switch in a two-post rack. Ensure the holes in the bracket are aligned with the correct holes in the switch, as per the diagram.

Figure 13: *Attaching two-post mounting brackets to the switch*



WARNING

For safe reliable installation, only use the screws provided in the accessory kit to attach the mounting brackets to the switch.

2. Hold the switch with attached brackets up to the rack, move it vertically until rack holes line up with the bracket holes, and then insert and tighten the four number 12-24 screws holding the brackets to the rack.

Figure 14: *Mounting the switch in a two-post rack*

Four-post rack mount option:

The Aruba 8320 switch can be mounted in four-post racks and cabinets by using the Aruba X474 4-Post Rackmount Bracket Kit (JL483A); sold separately.

The JL483A Aruba X474 4-Post Rackmount Bracket Kit includes these items:

- two front-post brackets
- two rear-post brackets with adjustable ears
- twenty 8-mm M4 screws
- eight 5/8-inch number 12-24 screws
- two rear bracket ear position-locking screws

The brackets must only be attached for front-flush mounting the switch in a four-post rack. Secure the rack in accordance with the manufacturer's safety guidelines.

WARNING

For safe operation, please read the mounting precautions in **Installation precautions**, before mounting a switch.

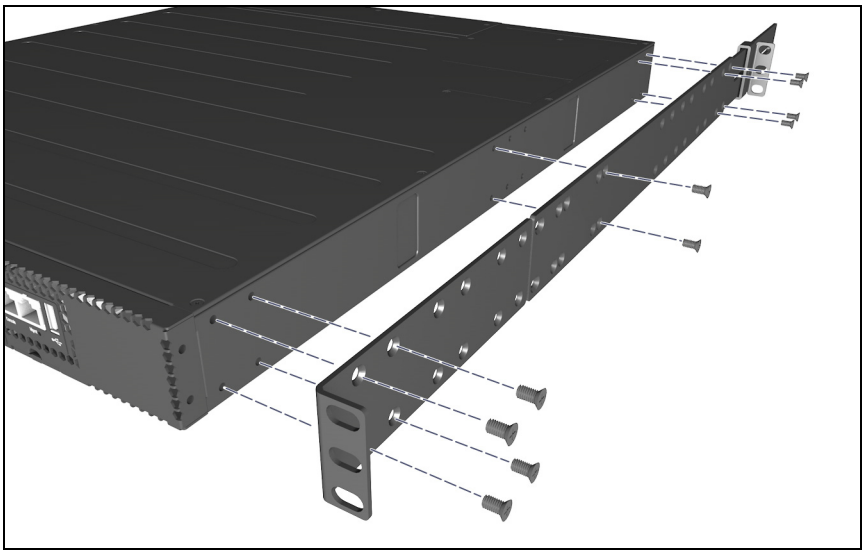
NOTE

The 12-24 screws supplied with the switch are the correct threading for standard EIA/TIA open 19-inch racks. If installing the switch in an equipment cabinet such as a server cabinet, use the clips and screws that came with the cabinet in place of the 12-24 screws that are supplied with the switch.

Complete step 1, and plan which holes you will be using in the cabinet and install all four clips. Then proceed to step 2.

1. Use a #1 Phillips (cross-head) screwdriver and attach the front- and rear-post rack mount brackets to the switch with the included 8-mm M4 screws.

Figure 15: *Attaching four-post mounting brackets to the switch*

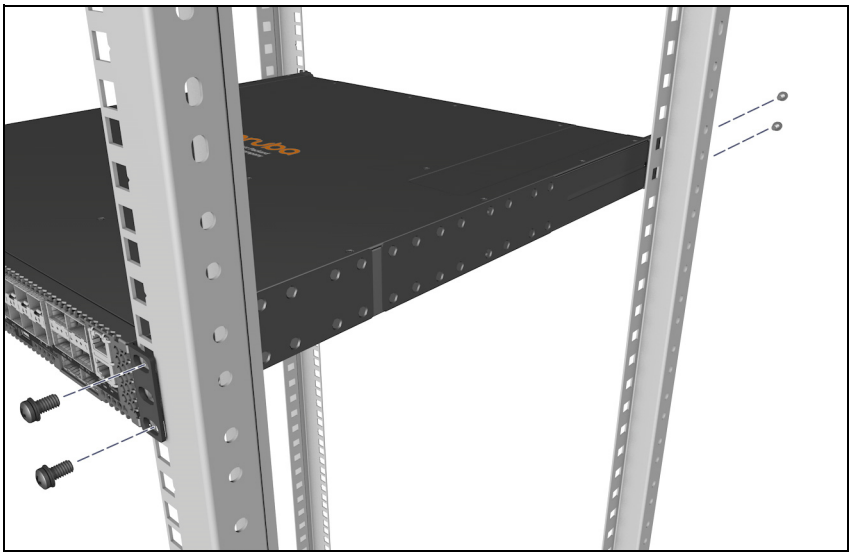


WARNING

For safe reliable installation, only use the screws provided in the accessory kit to attach the mounting brackets to the switch.

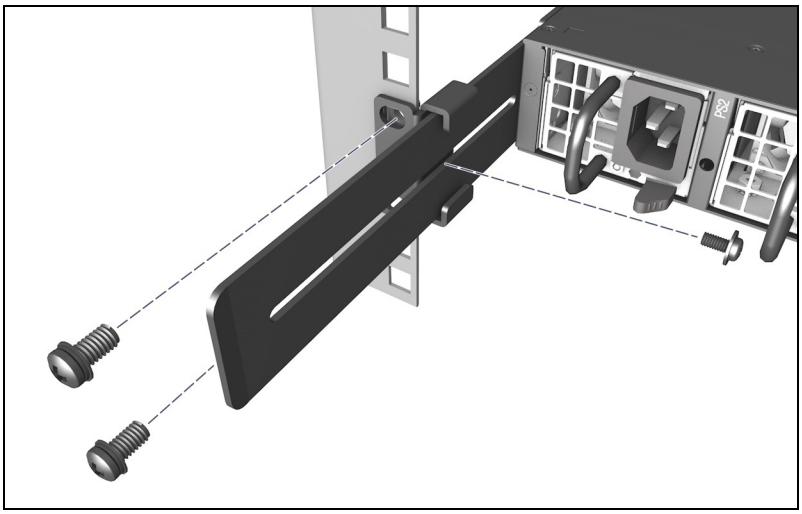
2. For the rear-post brackets, use an additional two 8-mm M4 screws to secure the bracket at the mid-point on the side of the switch.
3. Hold the switch with attached brackets up to the rack, move it vertically until rack holes line up with the front-post bracket holes, and then insert and tighten the four number 12-24 screws holding the brackets to the rack.

Figure 16: *Mounting the switch in a four-post rack*



4. Adjust the rear-post bracket ears to fit the depth of the rack.
5. Secure the rear-post brackets to the rack rear posts using four number 12-24 screws.
6. Lock the position of the rear-post bracket ears using the included position-locking screws.

Figure 17: *Locking the position of rear-post brackets*



3. Install transceivers

You can install or remove a transceiver from an SFP+/QSFP+ slot without having to power off the switch.

NOTE

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

CAUTION

Use only supported genuine Aruba SFP/SFP+/QSFP+ transceivers with your switch. Non-Aruba SFP/SFP+/QSFP+ transceivers are not supported, and their use may result in product malfunction. Should you require additional transceivers, contact your Aruba sales representative or an authorized reseller. The following resources can help you to find transceiver support information for your switch model:

- See the *ArubaOS-Switch and ArubaOS-CX Transceiver Guide* in the Hewlett Packard Enterprise Information Library at **http://www.hpe.com/support/manuals**.
- See the supported transceivers information in the QuickSpecs for your switch model at **http://www.hpe.com/support/manuals**, along with minimum software versions to support the listed transceivers:

  1. Select **Switches**.
  2. Select **Aruba Switches**.
  3. Select a switch model.
  4. Select **Product Details**.
  5. Select an option under QuickSpecs.

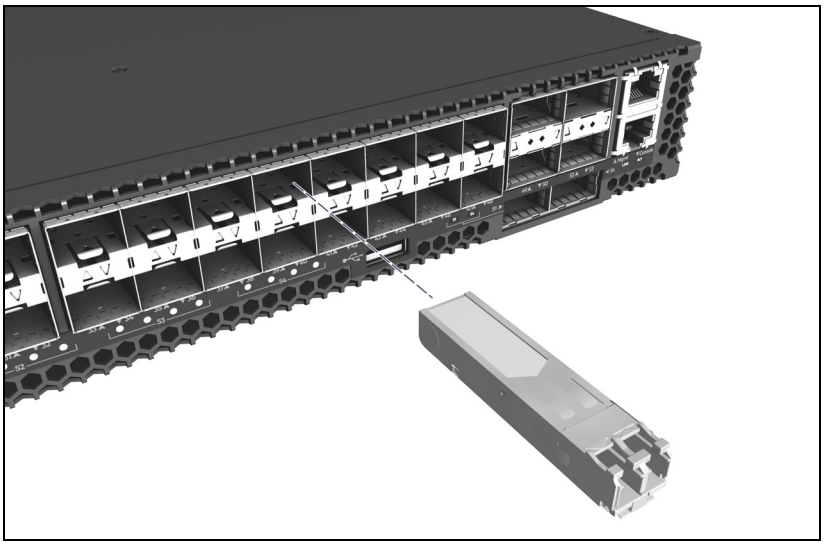
Installing transceivers:

Hold the transceiver by its sides and gently insert it into either of the slots on the switch until it clicks into place. When a transceiver is inserted the switch authenticates it. This can take 1-3 seconds, with the worst case being 5 seconds. If the transceiver is removed before the authentication completes a self test failure will be reported.

WARNING

The fiber Aruba transceivers are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.

Figure 18: *Installing a transceiver*



Removing transceivers:

Depending on the transceiver, it will have either of three different release mechanisms:

- A plastic tab on the bottom of the transceiver
- A plastic collar around the transceiver
- A wire bail

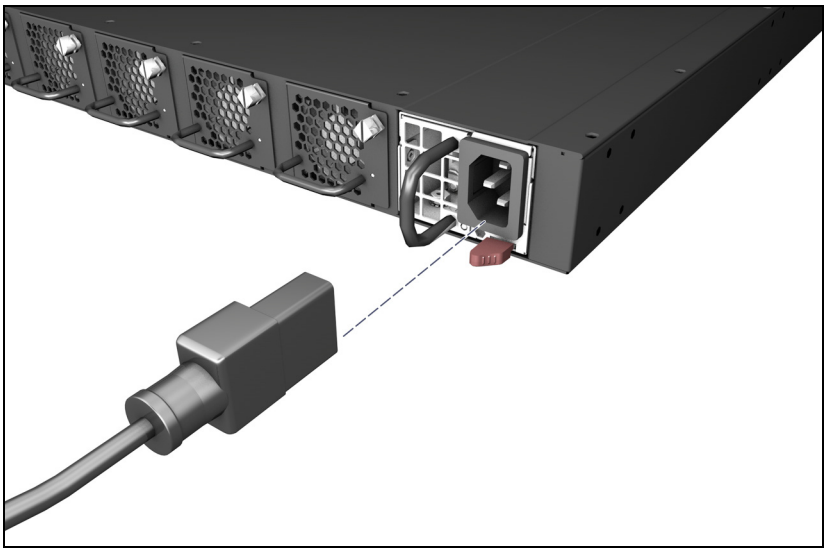
To remove the transceivers that have the plastic tab or plastic collar, push the tab or collar toward the switch until the transceiver releases from the switch (it will move outward slightly), then pull it from the slot.

To remove the transceivers that have the wire bail, lower the bail until it is approximately horizontal, and then using the bail, pull the transceiver from the slot.

4. Connect the switch to a power source

1. If a power supply is not already installed in the switch, install at least one power supply. (See the *Aruba Switch Power Supply Quick Setup Guide and Safety/Regulatory Information* document shipped with your power supply units.) The Aruba 8320 switch uses any of the following power supplies:
   - Aruba X371 400W 100-240VAC Power Supply (JL480A)
2. Plug the included power cord into the power supply's power connector and into a nearby AC power source.

Figure 19: *Connecting a power cord to the switch*



3. Check the LEDs. See **Switch and port LEDs on the front of the switch**.

NOTE

One power supply provides power to operate the switch. Installing a second power supply can provide power to the switch in case the initial power supply fails. If the power supplies are plugged into different AC power sources, redundant power can be supplied in case of loss of one of the AC power sources.

5. Connect a management console

The Aruba 8320 switch has a full-featured, easy to use console interface for performing switch management tasks, including the following:

- Enabling switch ports (ports are disabled by default).
- Monitoring switch and port status and observing network activity statistics.
- Modifying the switch's configuration to optimize switch performance, enhancing network traffic control, and improving network security.
- Reading the event log and accessing diagnostic tools to help in troubleshooting.
- Downloading new software to the switch.
- Adding passwords to control access to the switch from the console, Web browser interface, and network management stations.

The console can be accessed through these methods:

- **Out-of-band serial:** Use a serial cable (not included) for connecting a workstation running suitable VT-100 terminal emulation software directly to the switch's RJ-45 Console Port. A DB9-to-RJ-45 console cable can be ordered from HPE: JL448A, Aruba X2C2 RJ45 to DB9 Console Cable.
- **Out-of-band network:** Access the console using SSH from a PC or UNIX station on the network running suitable VT-100 terminal emulation software. For more information, see chapter 3, **Getting started with switch configuration**.

  The switch can simultaneously support one console session through the Console Port and multiple network SSH sessions.

Terminal configuration

To connect a console to the switch, configure the PC terminal emulator as a DEC VT-100 (ANSI) terminal or use a VT-100 terminal, and configure either one to operate with these settings:

- A baud rate of 115200.
- 8 data bits, 1 stop bit, no parity, and flow control set to off.
- For the Windows Terminal program, also disable (uncheck) the “Use Function, Arrow, and Ctrl Keys for Windows” option.
- For the Hilgraeve HyperTerminal program, select the “Terminal keys” option for the “Function, arrow, and ctrl keys act as” parameter.

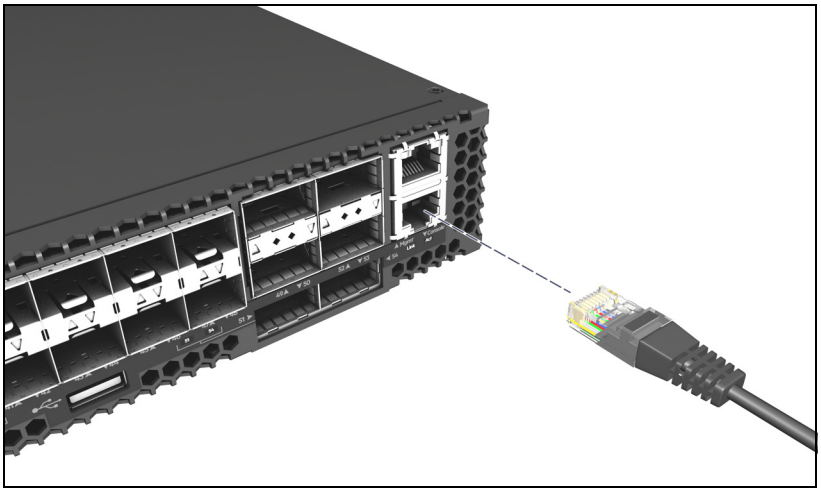
If you want to operate the console using a different configuration, make sure you change the settings on both the terminal and on the switch so they are compatible. Change the switch settings first, then change the terminal settings, then reboot the switch and reestablish the console session.

Direct console access

To connect a console to the switch, follow these steps:

1. Connect the PC or terminal to the switch’s Console Port using a console cable (JL448A; sold separately).

Figure 20: *Connecting a console cable*



2. Turn on the terminal or PC’s power and, if using a PC, start the PC terminal program.
3. Press **[Enter]** two or three times. When prompted to log in specify **admin**. When prompted for the password, press **[Enter]**. (By default, no password is defined.)

   You are placed into the manager command context, which is identified by the prompt: `switch#`. For example:

```
login as: admin
Password:

switch#
```

If you want to continue with console management of the switch at this time, see the *Aruba 8320 Fundamentals Guide for ArubaOS-CX* for initial configuration steps. For more detailed information, refer to the manuals for your switch provided at **www.hpe.com/networking/resourcefinder**.

Console cable pinouts

The Aruba X2C2 RJ45 to DB9 Console Cable (JL448A) has an RJ-45 plug on one end and a DB-9 female connector on the other end. **Table 21** describes the mapping of the RJ-45 to DB-9 pins.

Figure 21: *RJ-45 to DB-9 pinouts*

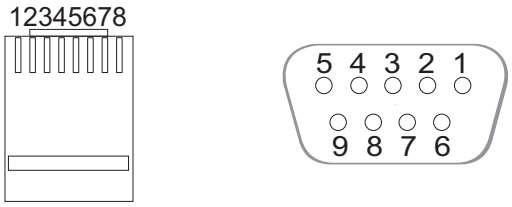


Table 21: *Mapping of RJ-45 to DB-9*

RJ-45 (Signal reference from Chassis)		DB-9 (Signal reference from PC)	
Reserved	1	8	CTS
Reserved	2	6	DSR
TXD	3	2	RXD
Reserved	4	1	DCD
GND	5	5	GND
RXD	6	3	TXD
Reserved	7	4	DTR
Reserved	8	7	RTS
–	–	9	RI

6. Connect the network cables

Connect the network cables, described under “Cabling Infrastructure” (**1. Prepare the installation site**), from the network devices or your patch panels to the RJ-45 out-of-band management port on the switch or to any transceivers you have installed in the switch.

Using the RJ-45 out-of-band management port

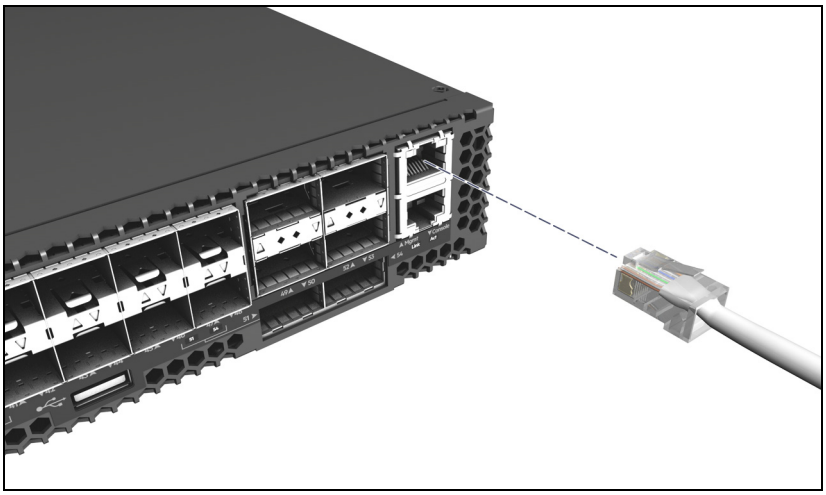
If you plan to manage the switch from a dedicated management network, connect an RJ-45 network cable from the management network to the Mgmt port. The Mgmt port supports 10, 100, and 1000 Mbps connections.

To connect:
Push the RJ-45 plug into the RJ-45 port until the tab on the plug clicks into place. When power is on for the switch and for the connected device, the Link LED for the port should light to confirm a powered-on device (for example, an end node) is at the other end of the cable.

If the Link LED does *not* go on when the network cable is connected to the port, see **Diagnosing with the LEDs** in chapter 5, “Troubleshooting”.

To disconnect:
Press the small tab on the plug and pull the plug out of the port.

Figure 22: *Connecting an RJ-45*

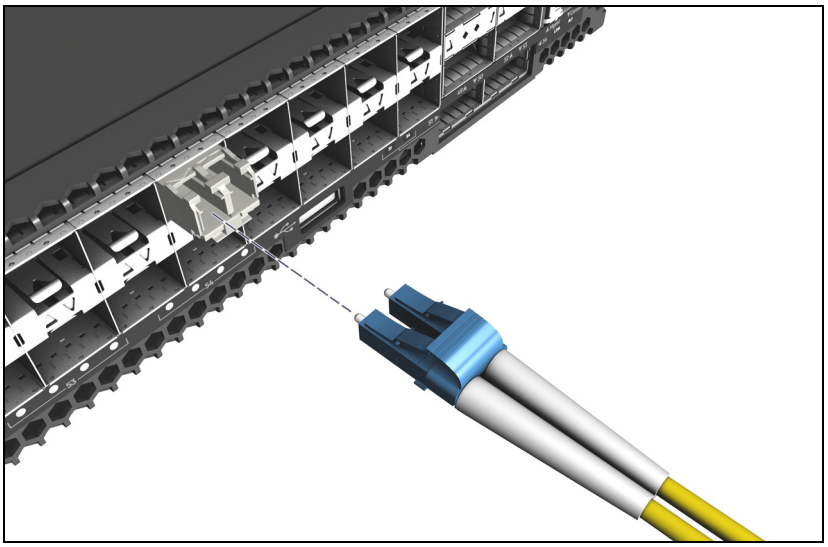


Connecting cables to SFP/SFP+/QSFP+ transceivers

If you have any transceivers installed in the switch, the type of network connections you will need to use depends on the type of transceivers installed. See chapter 6, **Cabling and technology information**, for cabling information.

For transceiver ports, and in general for all the switch ports, a network cable from an active network device is connected to the port. If the port LED does not come on when the network cable is connected to the port, see **Diagnosing with the LEDs** in chapter 5, “Troubleshooting.”

Figure 23: *Connecting cable to a transceiver*



This chapter shows you how to remove and install the following components:

- Power supply
- Fan tray

The power supplies and fan trays are hot swappable. You do not need to power off the switch before installing or replacing a power supply or fan tray.

The Aruba 8320 switch and its components are sensitive to static discharge. Use an antistatic wrist strap and observe all static precautions when replacing components.

If a power supply must be removed and then reinstalled, wait at least 5 seconds before reinstallation. Otherwise, damage to the switch may occur. The power supply needs this time to bleed off any retained power.

Replacing a power supply

If the Aruba 8320 switch is configured with a redundant power supply, the switch will not suffer any loss of traffic or performance if a power supply fails. To maintain system redundancy, a failed power supply should be replaced as soon as possible. The PS1 or PS2 LED will be on amber, indicating a power supply has failed.

One power supply is available for use with the switch: Aruba X371 400W 100-240VAC Power Supply (JL480A)

To remove a power supply:

1. Remove the AC power cable from the failed power supply's connector.
2. Grasping the handle of the failed power supply, release the locking mechanism by squeezing the latch handle while removing the failed power supply.

Figure 24: *Replacing a failed power supply*

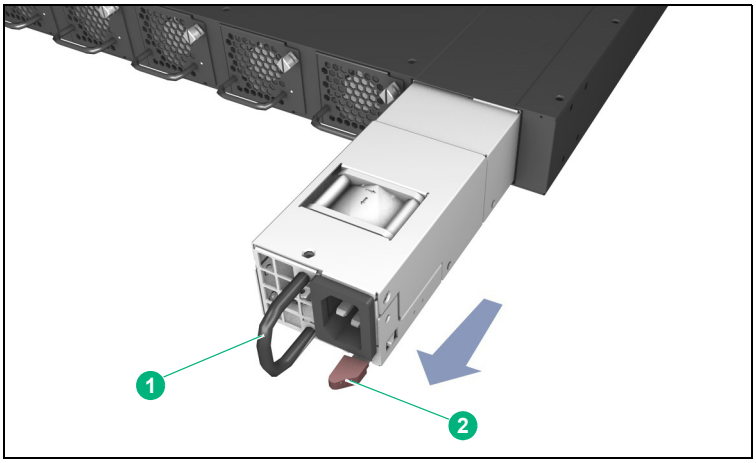


Table 22: *Replacing a failed power supply labels and descriptions*

Label	Description
1	Power supply handle
2	Release latch

3. Insert the new power supply. Slide it in all the way in until the locking mechanism clicks into place.

4. Connect the AC power cable to the new power supply's connector.

Replacing a fan tray

The Aruba 8320 switch is equipped with five field-replaceable, hot-swappable fan trays. The switch can tolerate the failure of a single fan tray while maintaining a safe operating temperature. To maintain system redundancy, a failed fan tray should be replaced as soon as possible. The Fan LED will be on amber, indicating a fan tray has failed.

One fan tray is available for use with the switch: Aruba X721 Front-to-Back Fan (JL481A)

CAUTION

The Aruba 8320 switch is not compatible with fan trays from other Aruba hardware platforms.

To replace a fan tray:

1. Identify the failed fan tray by its status LED. The fan tray LED will be on red, or flashing red.
2. Remove the new fan tray from its packaging, being careful to not touch any of the circuitry on the board.
3. Loosen the retaining screw on the fan tray.
4. Grasping the handle of the failed fan tray, pull it straight out to remove it from its slot.
5. Insert the new fan tray fully into the slot so that its face plate is flush with the back face of the switch. If the switch is connected to an AC power source, the fan tray should immediately start running.
6. Engage the retaining screw and tighten it. Be sure to not over-tighten the screw.

Figure 25: *Replacing a failed fan tray*

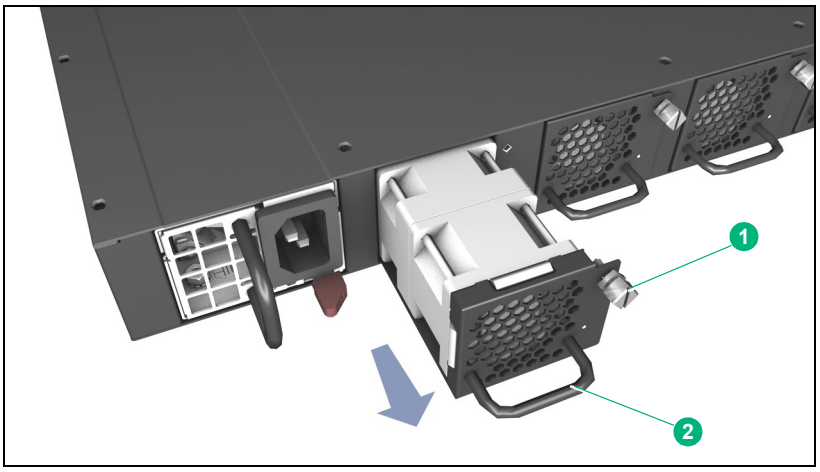


Table 23: *Replacing a failed fan tray labels and descriptions*

Label	Description
1	Fan tray retaining screw
2	Fan tray handle

This chapter describes how to troubleshoot your switch. This document describes troubleshooting mostly from a hardware perspective. You can perform more in-depth troubleshooting on these devices using the software tools available with the switches, including the full-featured console interface, the built-in web browser interface, and IMC, the SNMP-based network management tool, or Aruba AirWave.

This chapter describes the following:

- Basic troubleshooting tips (see **Basic troubleshooting tips**)
- Diagnosing with the LEDs (see **Diagnosing with the LEDs**)
- Hardware diagnostic tests (see **Hardware diagnostic tests**)
- Restoring the factory default configuration (see **Restoring the factory default configuration**)
- Downloading new software to the switch (see **Downloading new switch software**)
- Hewlett Packard Enterprise Customer Support Services (see **Hewlett Packard Enterprise Customer Support Services**)

Basic troubleshooting tips

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

- **Faulty or loose cables.** Look for loose or obviously faulty connections. If the cables appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.
- **Non-standard cables.** Non-standard and miswired cables may cause network collisions and other network problems, and can seriously impair network performance. Use a new correctly-wired cable or compare your cable to the cable in chapter 7, **Cabling and technology information** for pinouts and correct cable wiring. A category 5 cable tester is a recommended tool for every 100BASE-TX and 1000BASE-T network installation.
- **Improper network topologies.** It is important to make sure 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, you should make sure that your network topology contains ***no data path loops***. Between any two end nodes, there should be only one active cabling path 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, you should enable **Spanning Tree Protocol** support on the switch. This ensures that only one of the redundant paths is active at any time, thus avoiding data path loops. Spanning Tree can be enabled through the switch console or the web browser interface. For more information on Spanning Tree, see the *Layer 2 Bridging Guide* for your switch at **www.hpe.com/networking/resourcefinder**.

Diagnosing with the LEDs

Table 24 shows LED patterns on the switch that indicate problem conditions for general switch operation troubleshooting.

LED patterns for general switch troubleshooting

1. Check in the table for the LED pattern you see on your switch.
2. Refer to the corresponding diagnostic tip on the next few pages.

Table 24: *LED error indicators*

LED Pattern Indicating Problems		
Global Status	**Port LED**	**Diagnostic Tip**
Off with power cord plugged in	–	1
Solid amber	Off with cable connected	2
Solid amber	On, but the port is not communicating	3

Diagnostic tips:

Tip	Problem	Solution
1	The switch is not plugged into an active AC power source, or the switch's power supply may have failed.	Verify the power cord is plugged into an active power source and to the switch. Make sure these connections are snug. Try power cycling the switch by unplugging and plugging the power cord back in. If the Global Status LED is still not on, verify 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. Call your Hewlett Packard Enterprise-authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.

Tip	Problem	Solution
2	The network connection is not working properly.	Try the following procedures: For the indicated port, verify that 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 you have used the correct cable type for the connection: For fiber-optic connections, verify 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. 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 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 on the switch, use the Web browser interface to determine the state of the port and re-enable the port if necessary. Verify the switch port configuration matches the configuration of the attached device. For example, if the switch port is configured as “Full-duplex”, the port on the attached device also MUST be configured as “Full-duplex”. If the configurations don’t match, the results could be a very unreliable connection, or no link at all. If the other procedures don’t resolve the problem, try using a different port or a different cable.
3	The port may be improperly configured, or the port may be in a “blocking” state by the normal operation of the Spanning Tree, LACP, or IGMP features.	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 interfaces` command displays the port status for the LACP feature; the `show spanning-tree` command displays the port status for Spanning Tree. Also check the Port Status screen using the `show interfaces` command to see if the port has been configured as “disabled”. Other switch features that may affect the port operation include VLANs and IGMP. Use the switch console to see 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.

Hardware diagnostic tests

Testing the switch by resetting it

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, either:

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

  Power cycling the switch and pressing the Reset button both cause the switch to reset. 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 **Diagnosing with the LEDs** for information on interpreting the LED patterns.

Checking console messages

Useful diagnostic messages may be displayed on the console screen when the switch is reset. As described in chapter 2 under step 6, connect a PC running a VT-100 terminal emulator program to the switch's Console Port and configure it to run at 115200 baud, and with the other terminal communication settings shown in **Terminal configuration**. Then, 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 events` command.

Testing switch-to-device network communications

You can perform the following communication tests to verify 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 from a terminal connected to the switch or through a Telnet connection, or from the switch's web browser interface.

Testing end-to-end network communications

Both the switch and the cabling can be tested by running an end-to-end communications test—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 clears any passwords, clears the console event log, resets the network counters to zero, 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 that you have made from the factory default settings. This includes, for example, configuration of VLANs, Spanning Tree, and LAGs. 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, you should save the switch configuration prior to performing the factory default reset. Then, after the reset and resolution of the original problem, you can restore the saved configuration to the switch.

You can restore the factory default configuration either on the switch itself, or through the switch console.

To execute the factory default reset on the switch, perform these steps:

1. Using a pointed object, press and hold the Reset button on the front of the switch.
2. After 5 seconds, release the Reset button.

   The switch will then begin operating with its configuration restored to the factory default settings. See **Reset button**.

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. See **Accessing updates**.

Hewlett Packard Enterprise Customer Support Services

If you are still having trouble with your product, see **Support and other resources**.

Switch specifications

Physical

Product	Width	Depth	Height	Weight
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL479A)	44.25 cm (17.42 in)	47.15 cm (18.56 in)	4.40 cm (1.73 in)	8.95 kg (19.73 lb)
Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL579A)	43.84 cm (17.26 in)	51.5 cm (20.28 in)	4.395 cm (1.73 in)	9.025 kg (19.9 lb)
Aruba 8320 48p 1G/ 10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL581A)	44.25 cm (17.42 in)	47.3 cm (18.6 in)	4.40 cm (1.73 in)	9.5 kg (20.94 lb)

Electrical

Product	AC Voltage	Maximum current	Frequency range
Aruba X371 400W 100-240VAC Power Supply (JL480A)*	100-240 volts	6 A - 3 A	50-60 Hz

* The power supply automatically adjusts to any voltage between 100-240 volts and either 50 or 60 Hz.

Power Consumption

Product	Power consumption
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL479A)	Max: 336.95 W Idle: 79.42 W
Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL579A)	Max: 349.6 W Idle: 94.07 W
Aruba 8320 48p 1G/10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL581A)	Max: 349.75 W Idle: 97.48 W
Aruba X371 400W 100-240VAC Power Supply (JL480A)	Max: 400 W
Aruba X721 Front-to-Back Fan (JL481A)	Max: 18 W

MTBF

Product	MTBF
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL479A)	314,721 hours
Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL579A)	296,526 hours
Aruba 8320 48p 1G/10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL581A)	275,339 hours
Aruba X371 400W 100-240VAC Power Supply (JL480A)	1,594,754 hours
Aruba X721 Front-to-Back Fan (JL481A)	3,763,636 hours

Environmental

Aruba 8320 Switch Series (JL479A, JL579A, and JL581A)		
	Operating	Non-Operating
Temperature	0°C to 40°C (32°F to 104°F) up to 3.0 km (10,000 ft)	-40°C to 70°C (-40°F to 158°F) up to 4.6 km (15,000 ft)
Relative humidity (non-condensing)	5% to 95% at 40°C (104°F) non-condensing	5% to 95% at 65°C (149°F)
Maximum altitude	3.0 km (10,000 ft)*	4.6 km (15,000 ft)

* The operating maximum altitude should not exceed that of any accessory being connected to any Aruba 8320 switch.

Acoustics

Switch Model	Acoustics
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL479A)	Sound Pressure (LpAm) (Bystander) 61.1 dB
Aruba 8320 32p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL579A)	Sound Pressure (LpAm) (Bystander) 79 dB
Aruba 8320 48p 1G/10GBASE-T and 6p 40G QSFP+ with X472 5 Fans 2 Power Supply Switch Bundle (JL581A)	Sound Pressure (LpAm) (Bystander) 61.1 dB

Safety

- EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
- IEC 60950-1:2005 Ed.2; Am 1:2009+A2:2013
- UL 60950-1, CSA 22.2 No 60950-1
- EN 60825-1:2007 / IEC 60825-1:2007 Class 1

EMC

- EN 55032:2012, Class A

- EN 55024:2010
- EN 61000-3-2:2014, Class A
- EN 61000-3-3:2013
- FCC CFR 47 Part 15:2010, Class A
- VCCI Class A
- CNS 13438

Immunity

- EN 55024:2010
- IEC 61000-4-2/3/4/5/6/8/11

RoHS

EN 50581:2012

Standards

Table 25: *Technology standards and safety compliance*

Technology	Compatible with these IEEE standards	Laser safety information	
		EN/IEC standard compliance	SFP Lasers
1000BASE-T	IEEE 802.3ab 1000BASE-T	–	–
10GBASE-T	IEEE 802.3an 10GBASE-T	–	–
1000BASE-SX	IEEE 802.3z 1000BASE-SX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
1000BASE-LX	IEEE 802.3z 1000BASE-LX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
1000BASE-LH	(not an IEEE standard)	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
1000BASE-BX	IEEE 802.3ah 1000BASE-BX10	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1

This chapter includes switch connector information and network cable information for cables that should be used with the Hewlett Packard Enterprise switches.

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

Cabling specifications

Table 26: *Cabling specifications*

Twisted-pair copper	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. See **Note on 1000BASE-T cable requirements**.
	10 Gbps Operation	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. See **Note on 10GBASE-T cable requirements** below, and see **Technology distance specifications** for distances supported with each cable type.
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.[1]
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.
[1] A mode conditioning patch cord may be needed for some Gigabit-LX installations. See **Mode conditioning patch cord** for more information.		

Note on 1000BASE-T cable requirements

The Category 5 networking cables that work for 100BASE-TX connections should also work for 1000BASE-T, as long as all four-pairs are connected. But, for the most robust connections, you should use cabling that complies with the Category 5e specifications, as 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

The Category 6 networking cables that work for 1000BASE-T connections may work for 10GBASE-T, as long as the distance is less than 55m and the cable installation has been tested for compliance to IEEE requirements. But, for the most robust connections, you should 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) which can arrive upon the cable due to cables placed in close proximity to the data cables. It is recommended that cable dressing be done 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 above, and also ANEXT.

In addition to ANEXT, 10GBASE-T is more sensitive to external electrical noise in the environment. It is recommended that radio transmitters and other sources of high frequency continuous wave radio frequency be kept 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, or using cable management options to tie down (dress) the Category 6 patch cables so they cannot move.

For Conducted and Radiated Immunity in accordance with EN55024, the Aruba switch is limited to Performance Criteria A with shielded cables (CAT6/6A).

Technology distance specifications

Table 27: *Technology distance specifications*

Technology	Supported cable type	Multimode fiber modal bandwidth	Supported distances
1000BASE-T	twisted-pair copper	N/A	up to 100 meters
10GBASE-T	twisted-pair copper	N/A	Cat 6 unshielded - up to 55 meters3 Cat 6 shielded - up to 100 meters3 Cat 6A unshielded - up to 100 meters Cat 6A shielded - up to 100 meters Cat 7 shielded - up to 100 meters
1000BASE-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

Table 27: *Technology distance specifications (Continued)*

Technology	Supported cable type	Multimode fiber modal bandwidth	Supported distances
1000BASE-LX	multimode fiber	400 MHz*km	2 - 550 meters
		500 MHz*km	2 - 550 meters
	single mode fiber	N/A	2 - 10,000 meters
1000BASE-LH	single mode fiber	N/A	10 - 70,000 meters[1]
1000BASE-BX	single mode fiber	N/A	0.5 - 10,000 meters
10GBASE-CR (Direct Attach)	twinaxial copper	N/A	(various lengths offered)
10GBASE-SR	multimode fiber	160 MHz*km	2 - 26 meters
		200 MHz*km	2 - 33 meters
		400 MHz*km	2 - 66 meters
		500 MHz*km	2 - 82 meters
		2000 MHz*km	2 - 300 meters
10GBASE-LR	single mode fiber	N/A	2 - 10,000 meters
10GBASE-ER	single mode fiber	N/A	2 - 40,000 meters

[1] 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.

Mode conditioning patch cord

The following information applies to installations in which multimode fiber-optic cables are connected to a Gigabit-LX port. Multimode cable has a design characteristic called “Differential Mode Delay”, which requires the transmission signals be “conditioned” to compensate for the cable design and thus prevent resulting transmission errors.

Under certain circumstances, depending on the cable used and the lengths of the cable runs, an external Mode Conditioning Patch Cord may need to be installed between the Gigabit-LX transmitting device and the multimode network cable to provide the transmission conditioning. If you experience a high number of transmission errors on those ports, usually CRC or FCS errors, you may need to install one of these patch cords between the fiber-optic port in your switch and your multimode fiber-optic network cabling, at both ends of the network link.

The patch cord consists of a short length of single mode fiber cable coupled to graded-index multimode fiber cable on the transmit side, and only multimode cable on the receive side. The section of single mode fiber is connected in such a way that it minimizes the effects of the differential mode delay in the multimode cable.

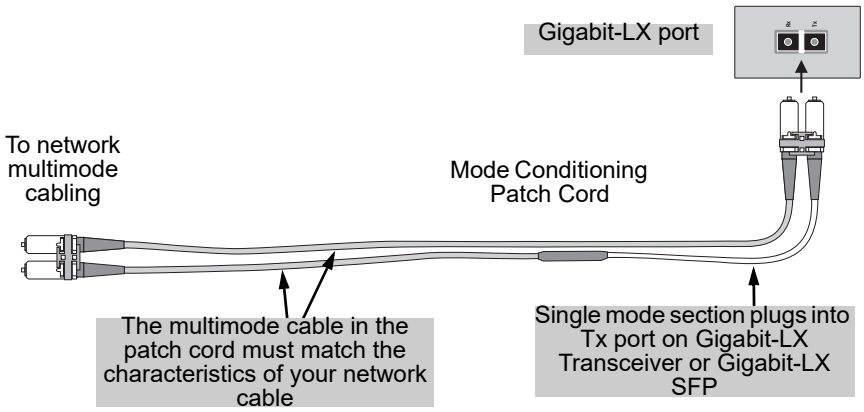
Most of the time, if you are using good quality graded-index multimode fiber cable that adheres to the standards listed in this appendix, there should not be a need to use mode conditioning patch cords in your network. This is especially true if the fiber runs in your network are relatively short.

Installing the patch cord

As shown in the illustration below, connect the patch cord to the 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 26: *Example: Connecting a mode conditioning patch cord for Gigabit-LX*



Make sure you 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).

Accessing Hewlett Packard Enterprise support

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

Information to collect

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

Hewlett Packard Enterprise offers support 24 hours a day, seven days a week through the use of a number of automated electronic services. Hewlett Packard Enterprise provides up-to-date customer care, support and warranty information at **http://www.hpe.com/networking/support**. Additionally, your Hewlett Packard Enterprise authorized network reseller can provide you with assistance, both with services that they offer and with services offered by Hewlett Packard Enterprise.

Before calling support

To make most efficient use of the support process, you must retrieve the following information before calling your authorized network reseller or Hewlett Packard Enterprise Support.

Information item	Information location
• Product identification, including SFP/SFP+ transceivers	The front of the switch and on labels on the SFP/SFP+ transceivers
• Details about the switch's status including the software (OS) version, a copy of the switch configuration, a copy of the switch Event Log, and a copy of the switch status and counters information	Switch console: `show tech` command
• Copy of your network topology map, including network addresses assigned to the relevant devices	Your network records

Accessing updates

- To download product updates, go to either of the following:
  - Hewlett Packard Enterprise Support Center's **Subscription Service/Support Alerts** page:
    www.hpe.com/support/e-updates
  - To view and update your entitlements, and to link your contracts, Care Packs, and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to HP Support Materials** page:
    www.hpe.com/support/AccessToSupportMaterials

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

- Software updates can be downloaded to the switch through several methods. Switch software updates are available at **http://www.hpe.com/networking/software**.
- For information on methods for downloading and installing software, see the appropriate manuals for your switch in the HPE Information Library at **www.hpe.com/info/EIL**.

Websites

Hewlett Packard Enterprise Networking Information Library

www.hpe.com/networking/resourcefinder

Hewlett Packard Enterprise Networking Software

www.hpe.com/networking/software

Hewlett Packard Enterprise Networking website

www.hpe.com/info/networking

Hewlett Packard Enterprise My Networking website

www.hpe.com/networking/support

Hewlett Packard Enterprise My Networking Portal

www.hpe.com/networking/mynetworking

Hewlett Packard Enterprise Networking Warranty

www.hpe.com/networking/warranty

Hewlett Packard Enterprise Information Library

www.hpe.com/info/EIL

Customer self repair

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

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

www.hpe.com/support/selfrepair

Remote support

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

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

www.hpe.com/info/insightremotesupport/docs

Documentation feedback

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