



# **HPE Aruba Networking CX 8100 Switch Series**

**Installation and Getting Started Guide**



**Hewlett Packard**  
Enterprise

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## Chapter 2

# About this Document

This document is intended for network administrators and support personnel.



The displays and command lines 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

HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W86A)	HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W87A)	HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W88A)
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W89A)	HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W90A)	HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W91A)
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W92A)	HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W93A)	HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 Switch (R9W94A)
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 Switch (R9W95A)	HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 Switch (R9W96A)	HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 Switch (R9W97A)
Aruba X391 550W Pwr2Prt AC PSU (JL600A)	Aruba X391 550W Pwr2Prt AC PSU (JL712A)	Aruba X412 1U Universal 2-post RM Kit (JL602A)
Aruba X414 1U Universal 4-post RM Kit (J9583B)	Aruba X544 Universal 4-post Duct Kit (JL716A)	Aruba X741 Pwr2Pwr Fan (JL714A)
Aruba X742 Pwr2Prt Fan (JL715A)		



This document includes references of Pwr2Prt, Pwr2Pwr, Power-to-Port, Port-to-Power, FB, BF, Front-to-Back, and Back-to-Front. Refer to the table below to identify terminology equivalents.

Airflow Terminology	Airflow Terminology Equivalent
Port-to-Power (Prt2Pwr)	Front-to-Back (FB)
Power-to-Port(Pwr2Prt)	Back-to-Front (BF)

## Related Publications

- *Start Here: Installation, Safety, and Regulatory Information for the HPE Aruba Networking CX 8100 Switches*
- *Transceiver Guide*
- AOS-CX software manuals

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



HPE Aruba Networking CX 8100 multiport switches are store-and-forward devices offering low latency for high-speed networking with full network management capabilities.

This chapter describes these switches with the following information:

- Front of the switches:
  - Network ports
  - Management ports
  - Chassis and Port LEDs
  - LED Mode Select Button and Mode LEDs
  - LED behavior
  - Switch product label (Pull tab)
- Back of the switches:
  - Management ports
  - Power supplies
  - Fan trays
- Switch features

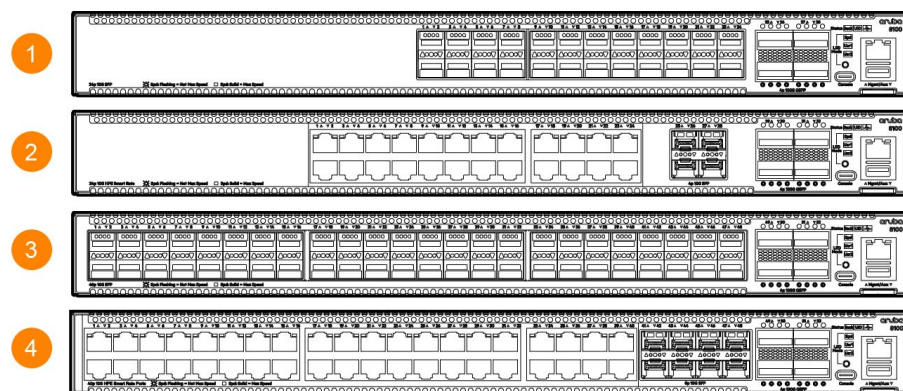
## Overview

The HPE Aruba Networking CX 8100 Switch Series is a family of premium networking switches, ideal for enterprise data centers, network aggregation and core. They provide the foundation for high-performance networks supporting IoT, mobile, and cloud applications.

These switches are intended for indoor use only. They are for use in commercial applications. A typical installation is in an environmentally-controlled data center. The end use environment may or may not be a restricted access location.

## Front of the Switches

**Figure 1** *Front of all HPE Aruba Networking CX 8100 switches*



Label	Description
1	<b>R9W86A/R9W87A/R9W94A</b> HPE Aruba Networking CX 8100-24XF4C
2	<b>R9W88A/R9W89A/R9W95A</b> HPE Aruba Networking CX 8100-24XT4XF4C
3	<b>R9W90A/R9W91A/R9W96A</b> HPE Aruba Networking CX 8100-48XF4C
4	<b>R9W92A/R9W93A/R9W97A</b> HPE Aruba Networking CX 8100-40XT8XF4C

## Network Ports

**Table 1:** Network Port descriptions for HPE Aruba Networking CX 8100 switches

Switch	Model name	SFP+ ports	QSFP28 ports	10G Base-t ports
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W86A)	HPE ANW 8100-24XF4C Switch	24	4	0
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W87A)				
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 Switch (R9W94A)				
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W88A)	HPE ANW 8100-24XT4XF4C Switch	4	4	24
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W89A)				
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 Switch (R9W95A)				
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W90A)	HPE ANW 8100-48XF4C Switch	48	4 QSFP28 ports cannot be split.	0
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W91A)				
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 Switch (R9W96A)				

Switch	Model name	SFP+ ports	QSFP28 ports	10G Base-t ports
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W92A)	HPE ANW 8100 8100--40XT8XF4C Switch	8	4 QSFP28 ports cannot be split.	40
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W93A)				
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 Switch (R9W97A)				



For supported transceivers, see the latest version of the *ArubaOS-Switch and ArubaOS-CX Transceiver Guide*.

## Split Mode (QSFP28)

QSFP ports on the HPE Aruba Networking CX 8100 switch series are capable of operating as:

- 100G ports
- 40G ports
- Split into 4 individual 25G or 10G ports

When operating as a 100G/40G port, all 4 port indicator LEDs will blink in unison for Link/Activity or Mode behavior, see [LED Behavior on page 15](#). When in split mode, each of the 4 LEDs corresponds to one of the split ports, 1-4, left to right, respectively.



QSFP28 ports on the 48XF4C (R9W96A) and 40XT8XF4C (R9W97A) do not support split mode and can only function at 100G or 40G speeds.

## Management Ports

Information about the Console Port.

### Connect to Console Port

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

1. Connect the PC or terminal to the switch's front (USB-C) or rear (RJ-45) Console Port using a console cable (JL448A, R9G48A; sold separately).
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 *Fundamentals Guide* for initial configuration steps. For more detailed information, refer to the switch software manuals for your switch.

## Connect to Console Port

The cables below support the 8100 switches:

1. **For front panel USB-C port:**
  - a. (R9J32A) USB-A to USB-C PC-to-switch cable
  - b. (R9J93A) USB-C to USB-C PC-to-switch cable
2. **For rear panel RJ-45 port**
  - a. (R9G48A) USB-A to RJ-45 PC-to-switch cable
  - b. (JL448A) Aruba X2C2 RJ45 to DB9 Console Cable

Visit the Aruba ordering portal for a full list of supported accessories.

## Out-of-band Management (OOBM) Port

This front panel 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.

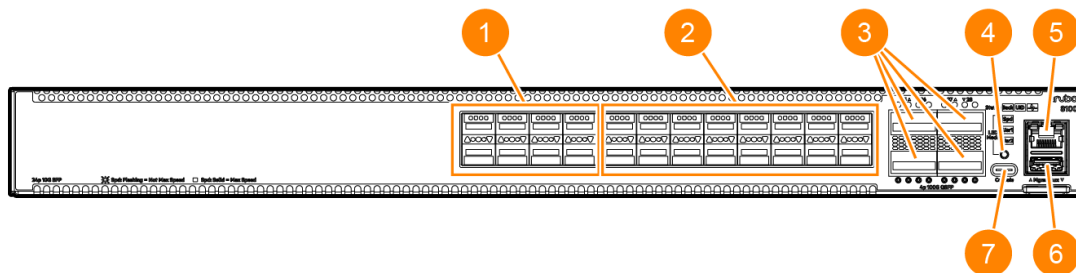
For more information, see the *Fundamentals Guide* for your switch.

## USB-A Aux Port

The USB-A port is used for file management, downloading switch software or use of Aruba accessories. This port uses a USB Type-A connector.

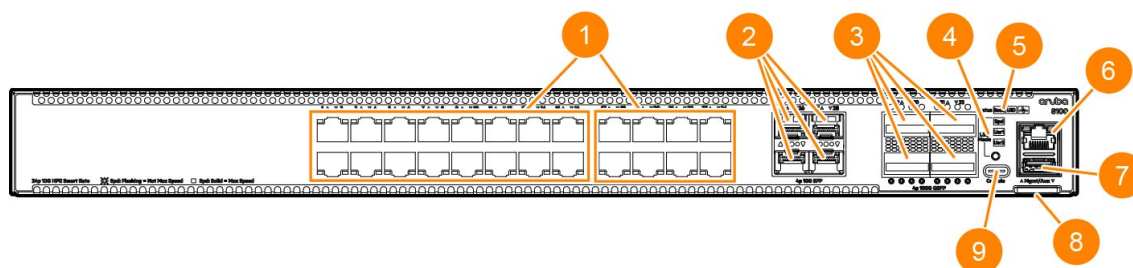
## Chassis and port LEDs

**Figure 1** Chassis and Port LEDs for the HPE Aruba Networking CX 8100-24XF4C (R9W86A/R9W87A/R9W94A)



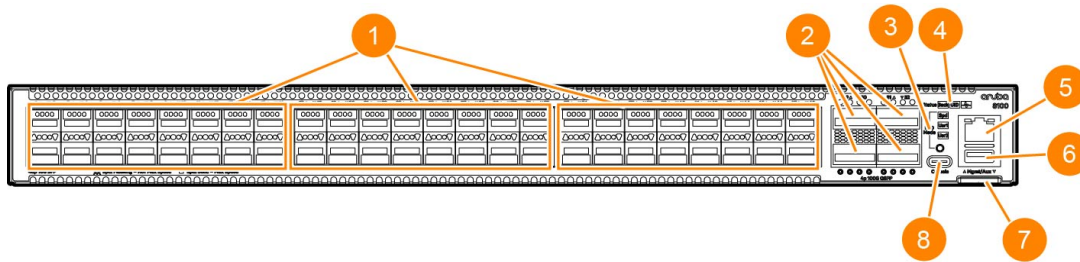
Label	Description
1	(x24) SFP+ Ports
2	(x4) QSFP28 Ports
3	LED Mode Select Button and LED mode LEDs (Spd Mode, Usr1, and Usr2. (Usr2 is reserved for future use.)
4	System LEDs (Back Status, Unit Identification/Locator and Global Status)
5	Out-of-Band Management Port (1000/100/10 Mbps)
6	USB2.0 Type-A Port (Aux)
7	Switch Product Label
8	USB-C Serial Console Port

**Figure 2** Chassis and Port LEDs for the HPE Aruba Networking CX 8100-24XT4XF4C (R9W88A/R9W89A/R9W95A)



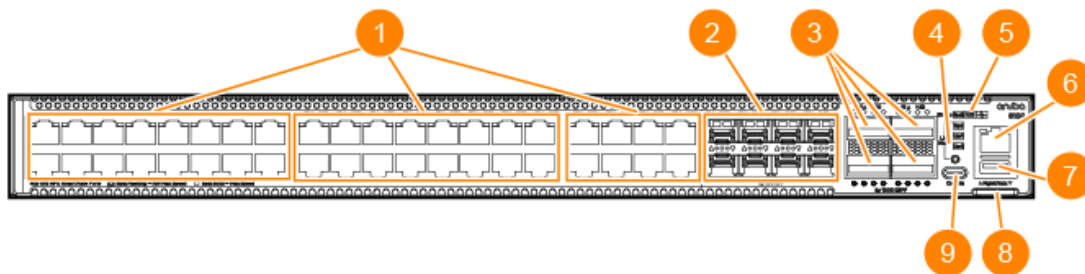
Label	Description
1	(x24) 10Gbase-T HPE SmartRate Ports (10G/5G/2.5G/1G/100M)
2	(x4) SFP+/SFP Ports
3	(x4) QSFP28 Ports
4	LED Mode Select Button and LED mode LEDs (Spd Mode, Usr1, and Usr2. (Usr2 is reserved for future use.)
5	System LEDs (Back Status, Unit Identification/Locator and Global Status)
6	Out-of-Band Management Port (1000/100/10 Mbps)
7	USB2.0 Type-A port (Aux)
8	Switch Product Label
9	USB-C Serial Console Port

**Figure 3** Chassis and Port LEDs for the HPE Aruba Networking CX 8100-48XF4C (R9W90A/R9W91A/R9W96A)



Label	Description
1	(x48) SFP+ Ports
2	(x4) QSFP28 Ports
3	LED Mode Select Button and LED mode LEDs (Spd Mode, Usr1, and Usr2. (Usr2 is reserved for future use.)
4	System LEDs (Back Status, Unit Identification/Locator and Global Status)
5	Out-of-Band Management Port (1000/100/10 Mbps)
6	USB2.0 Type-A Port (Aux)
7	Switch Product Label
8	USB-C Serial Console Port

**Figure 4** Chassis and Port LEDs for the HPE Aruba Networking CX 8100-40XT8XF4C (R9W92A/R9W93A/R9W97A)



Label	Description
1	(x40) 10Gbase-T HPE SmartRate Ports
2	(x8) SFP+/SFP Ports
3	(x4) QSFP28 Ports
4	LED Mode Select Button and LED mode LEDs (Spd Mode, Usr1, and Usr2. (Usr2 is reserved for

Label	Description
	future use.)
5	System LEDs (Back Status, Unit Identification/Locator and Global Status)
6	Out-of-Band Management Port (1000/100/10 Mbps)
7	USB2.0 Type-A Port (Aux)
8	Switch Product Label
9	USB-C Serial Console Port

## LED Mode Select Button and Mode LEDs

The state of the switch port LEDs is controlled by the LED Mode Select Button. The default mode is Activity/Link which does not have a Mode LED. 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.



- **Usr2** LED is reserved for future use and cannot be selected with the LED mode button.

## LED Behavior

LEDs	Function	Switch Behavior	LED State	Meaning
SFP+ port indicator RJ-45 port indicator	Displays Link/Activity or Mode information for the port.	Startup	OFF	OS-CX: No valid link SVOS: Off
		Normal	OFF	No valid link
			Half-Bright Green	Valid link indication
			FLASH Full-Bright Green	Indicator of traffic activity. The blink frequency is roughly proportional to the % of full bandwidth utilization of the port. The more rapid the blinking, the higher the utilization.
		Fault	OFF	No fault
			FLASH Amber Blinks synchronously with Global Status LED.	Fault
QSFP port indicator. In split mode, each LED corresponds to 1 lane of	Displays Link/Activity or Mode	Startup	OFF	OS-CX: No valid link SVOS: Off

LEDs	Function	Switch Behavior	LED State	Meaning
the split. Otherwise, all 4 LEDs are in unison.	information for the port.	Normal	OFF	No valid link
			Half-Bright Green	Valid link indication
			FLASH Full-Bright Green	Indicator of traffic activity. The blink frequency is roughly proportional to the % of full bandwidth utilization of the port. The more rapid the blinking, the higher the utilization.
		Fault	OFF	No fault
			FLASH Amber Blinks synchronously with Global Status LED.	Fault
Out-Of-Band-Management Link/Activity	Displays Link and Activity information for the OOBM port.	Startup Normal	OFF	No valid link OS-CX and SVOS.
			OFF	No valid link
			Half-Bright Green	Valid link indication
			FLASH Full-Bright Green	Indicator of traffic activity. The blink time is roughly proportional to the % of full bandwidth utilization of the port.
Global Status Indicator (located on the front and back of the box)	Displays overall health status for the unit.	Normal	FLASH Green	SVOS: Self test in progress OS-CX: ArubaOS loading
			ON Green	OS-CX: Self test PASS, Fans and PSUs OK
		Fault	FLASH Amber	OS-CX: Fault Indicates Power supply, Fan tray or Port fault by FLASHING synchronously with faulted device. Can also blink alone to indicate thermal or endurance issues. See Event Logs for more detail on all faults. SVOS: Self test failure



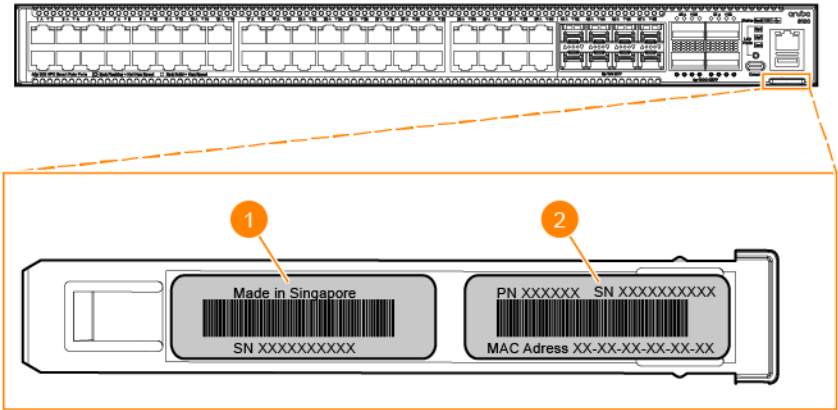
LEDs	Function	Switch Behavior	LED State	Meaning
Unit Identification/Locator (located on the front and back of the box)	Customer selectable through CLI to help ID/Locate unit.	Startup	OFF	-
		Normal	OFF Unless configured by user to be ON Blue or FLASH Blue.	-
			ON Blue	User configured to be ON
			FLASH Blue	User configured to FLASH
Back Status Indicator	Indicates status of modular assemblies on the back of the switch (Power supplies and Fan trays).	Startup	OFF	-
		Normal	ON Green	-
		Fault	FLASH Amber Blinks synchronously with Global Status LED.	PSU, fan fault, or misconfiguration

### Switch Product Label

The switch product label is an Aruba Orange-colored tab on the bottom right side of the switch front panel. Pull the tab out to view the product label information.

The product label information includes the part number, serial number, and MAC address. Serial numbers and MAC address labels are duplicated on the back of the product.

**Figure 1** HPE Aruba Networking CX 8100 switch product label (pull tab)



Label	Description
1	Country of origin and Serial number
2	Part number, Serial number and MAC address

### Back of the Switch

The back of HPE Aruba Networking CX 8100 switches include two power supply units and three fan trays.

**Figure 1** *Back of all Aruba 8100 switch models*

Label	
1	Global Status LED
2	Unit Identification/Locator LED
3	RJ-45 Serial Console Port
4	Fan Trays (1-3)
5	Power Supplies (1-2) Left side is PSU 1 Right side is PSU 2
6	Power Supply Status LED
7	AC Inlet (C14 socket)
8	Power Supply Status LED
9	AC Inlet (C14 socket)
10	Optional Ground Lug mounting location

## Management Ports

Information about the Console Port.

### Console Port

HPE Aruba Networking CX 8100 switches include an RJ-45 serial console port on the rear of the switch. This port is used to connect a console to the switch by using an RJ-45 serial cable (not supplied). The following console cables may be ordered from HPE:

Aruba X2C2 RJ45 to DB9 Console Cable (JL448A)

Aruba USB-A to RJ45 PC-to-Switch Cable (R9G48A)

The 8100 switches also include a USB-C console port on the front of the switch. This port can be used to connect a console to the switch by using a standard USB-C cable (not supplied). The USB-C port has precedence for input. If both cables are plugged in, the console output is echoed to both the RJ-45 and the USB-C ports, but the input is only accepted from the USB-C port.



- 
- Use of the USB-C port may require the installation of a standard USB driver. New Windows installs include the driver by default.
  - USB UART drivers are available here: <https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads>
    - Follow the vendor's instructions for downloading and installing the USB drivers on your Windows and macOS computers. After the updated USB drivers are installed, the USB-C console connection to your HPE Aruba Networking CX8100 Series switches will be successfully established.
- 

For more information on the console connection, see [Setup for Initial Configuration on page 35](#). The console can be a PC or workstation running a VT-100 terminal emulator, or a VT-100 terminal.

The Aruba CX mobile app and the Aruba USB Bluetooth adapter enable you to configure your switch from your mobile device. For information about using the Aruba CX mobile app to configure the switch, see the *Fundamentals Guide* for your switch and software release.

## Console Port (RJ-45)

The rear-panel RJ-45 console port is used for CLI serial port access.



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The rear-panel RJ-45 and front-panel USB-C console ports provide CLI serial port access. The system will output to both consoles simultaneously, but the system will only accept input from one console port. If both RJ-45 and USB-C are connected, USB-C has priority.

---

## Power Supplies

The HPE Aruba Networking CX 8100 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. Two color coded power supplies are available for use with HPE Aruba Networking CX 8100 switches. A red release latch indicates a Port-to-Power cooling air flow. A blue release latch indicates a Power-to-Port cooling air flow.



---

System airflow direction (Port-to-Power or Power-to-Port) is configured automatically at system initialization and cannot be reconfigured by the user. System airflow direction is determined by the power supply type installed in PS1 at initialization time (or PS2 if PS1 is absent or faulted). Any Fan tray or Power supply of conflicting airflow type will be disabled by the system. Ensure only matching fan trays and power supplies are used at any given runtime.

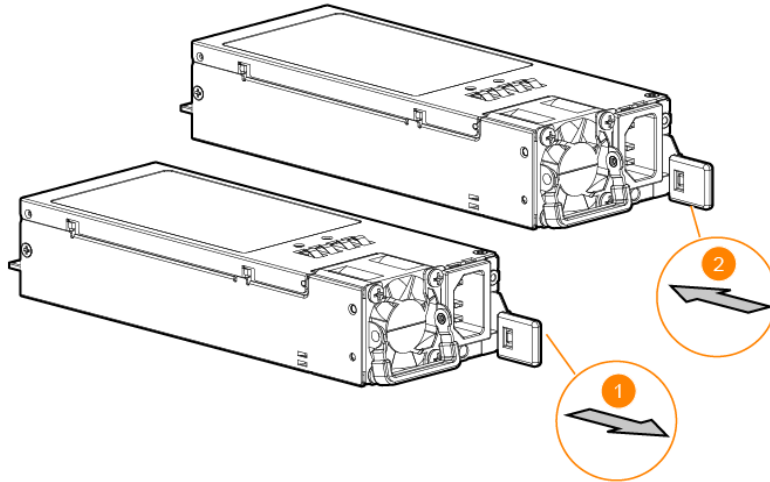
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Power supplies automatically adjust to any voltage between 100-127 and 200-240 volts and either 50 or 60 Hz. There are no voltage range settings required.



**WARNING:** 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.

**Figure 1** HPE Aruba Networking CX 8100 550W power supplies



Label	Description	Color Code
1	Aruba X391 550W Power Supply Unit (JL600A) (FB/Port-to-Power Airflow)	Red
2	Aruba X391 550W Power Supply Unit (JL712A) (BF/Power-to-Port Airflow)	Blue

The HPE Aruba Networking CX 8100 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 Instructions



**WARNING:** For indoor use only. The switch, AC power cord and all connected cables are not designed for outdoor use.



**CAUTION:** During installation, ensure that AC power is NOT connected to the power supply being installed.



**CAUTION:** Shock hazard. To completely remove power from the switch, disconnect all power cords.



For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at <http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>

<b>Brazil Statement</b>	Este equipamento deve ser conectado obrigatoriamente em tomada de rede de energia elétrica que possua aterramento (três pinos), conforme a Norma NBR ABNT 5410, visando a segurança dos usuários contra choques elétricos.)
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## Power Supply Status LED

Chassis LEDs	Function	State	Meaning
Status LED	Displays power supply status	ON green	The power supply is operating normally.
		FLASH green	The power supply is disabled by software which occurs when it does not match System Airflow definition.
		ON or FLASH amber	The power supply is experiencing a fault. After power cord is removed, LED will light amber briefly and then go off.
		OFF	The power supply is unpowered, inserted into switch but no AC power connected.

## Load Sharing

Load sharing occurs when two power supplies are installed in the switch and powered on. Load sharing divides the total power load of the switch among both power supplies.

## Redundancy

With power redundancy, the HPE Aruba Networking CX 8100 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, is powered off or removed) the remaining power supply provides full power for the device.

Even though the switch will run with one power supply removed, for thermal integrity reasons it is highly recommended not to remove a failed power supply until the replacement can be installed.

## 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.



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

## Fan Trays

The HPE Aruba Networking CX 8100 switches are equipped with three field-replaceable, hot-swappable fan trays. Each fan tray features individual fans that pull air through the chassis from Port-to-Power or Power-to-Port.

- Port-to-Power Airflow (Fan Tray): JL714A
- Power-to-Port Airflow (Fan Tray): JL715A



In the event of missing fan trays, misconfigured airflow direction, and/or faulted fans, the switch will try to maintain adequate cooling by increasing fan speeds and/or disabling misconfigured devices. If adequate cooling cannot be maintained, the switch will power off for five minutes before rebooting and assessing cooling capabilities.



Fan trays and power supplies installed in an 8100 switch must have the same cooling air flow direction (port-to-power or power-to-port). Air flow direction in an 8100 switch is not controlled by software. To change the air flow direction, replace the power supplies and fan trays with power and fan tray units supporting the air flow direction required.



For all SKUs, a minimum of two working fan trays is required for operation. If fewer than three working fan trays are detected, both Global status (located on front and back), the Back status (located on the front), and corresponding Fan Tray LEDs will FLASH amber.



**WARNING:** If one fan tray is missing for more than two minutes the system will shutdown for five minutes. If two or more fan trays are missing or failed, the system will shutdown immediately and then reboot after five minutes to reassess cooling capabilities.



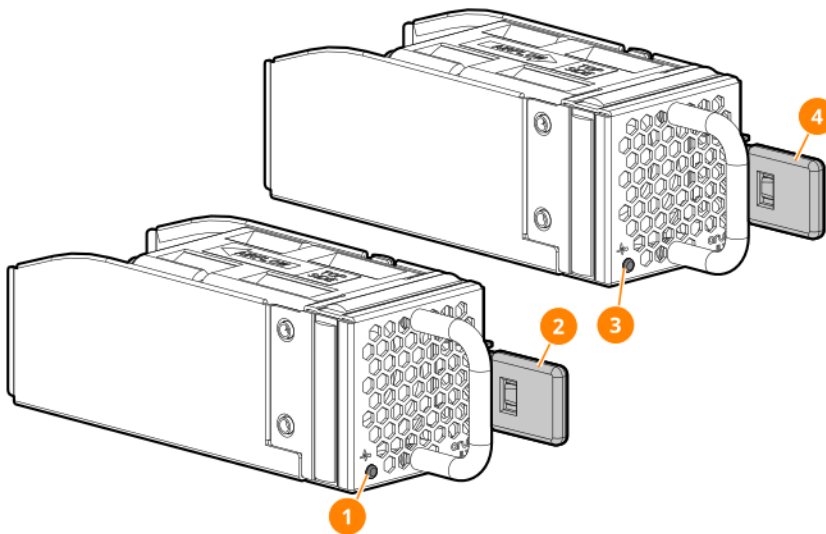
System airflow direction (Front-to-Back or Back-to-Front) is configured automatically at system initialization and cannot be reconfigured by the user. System airflow direction is determined by the power supply type installed in PS1 at initialization time (or PS2 if PS1 is absent or faulted). Any Fan tray or Power supply of conflicting airflow type will be disabled by the system. Ensure only matching Fan trays and Power supplies are used at any given runtime.

Fan trays are color-coded for Port-to-Power or Power-to-Port cooling airflow.

- Red release latch indicates Port-to-Power airflow.
- Blue release latch indicates Power-to-Port airflow.

Fan tray	Color code
Aruba 8100 (FB) Port-to-Power Fan Tray (JL714A)	Red
Aruba 8100 (BF) Power-to-Port Fan Tray (JL715A)	Blue

**Figure 1** HPE Aruba Networking CX8100 fan trays



Label	Description
1	Status LED (JL715A)
2	Release Latch (JL715A)
3	Status LED (JL714A)
4	Release Latch (JL714A)

The switch can tolerate the failure of a single fan tray while maintaining a safe operating temperature. The switch may continue to operate with one failed fan tray as long as the failed fan tray remains installed in the switch. If the switch reaches an overtemp condition, the switch will shut down. For best operation, the failed fan tray should be replaced as soon as possible.

If one fan tray has failed, the Global status, Back status and failed Fan tray LEDs will FLASH amber.

If multiple Fan trays have failed, the switch will power off immediately and reboot after 5 minutes to reassess cooling capabilities.



The HPE Aruba Networking CX 8100 switch is compatible with fan trays from the Aruba 8360 hardware platform.

## Fan Tray Status LED

Fan tray LED	Function	State	Meaning
Status LED	To display fan tray status.	ON green	The fan tray is operating normally
		FLASH amber (OS-CX)	The fan tray has been disabled by the system due to a failed fan, insertion of an illegal fan tray or other fault. All fault events that occur in OS-CX will correspond to a warning available in the Event Log.

Use the **show environment fan** command for fan tray status information. (See the *Fundamentals Guide* for your switch.)

## Switch Features

The features of the 8100 switches include:

- Combinations of QSFP28, QSFP+, SFP, SFP+ and 10GBase-T SmartRate ports.
  - For a secure environment, all ports are disabled by default.
- Dual power supplies: Adding a second power supply provides redundant system power. If one of the power supplies fails, the second power supply continues to provide the power necessary to keep the switch running.
- 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.
  - **REST API:** An accessible interface for managing the switch via Central, AFC, or customized scripts.
- Support for up to 4094 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 OS-CX guides for your switch.
- Ability to update the switch software. To download product updates, go to the [Aruba Support Portal](#).



## Chapter 2

# Installing the switch

The following sections show how to install the switch. For mounting options, refer to the [Mount the Switch on page 30](#) section in this guide or contact your Aruba representative or Aruba authorized reseller.

## Included Parts

The 8100 switch is shipped with the following components:

- Documentation kit
- Power cord: The following (part number or J-number/SKU) are orderable through Aruba purchasing. Two power cords required per switch.
- Aruba X412 1U Universal 2-post RM Kit (JL602A)

Argentina	8121-0729 J9891A	Israel	8121-1004 J9899A
Australia/New Zealand	8121-0837 J9883A	Japan	8121-1143 J9893A
Brazil	8121-1071 J9894A	Switzerland	8121-0738 J9898A
Chile	8121-0735 J9886A	South Africa	8121-0737 J9897A
China	8121-0943 J9890A	Taiwan	8121-0964 J9887A
Continental Europe/South Korea	8121-0731 J9885A	Thailand	5400-4553 S0P44A
Denmark	8121-0733 J9888A	Philippines	8121-0734 J9895A
India	8121-0564 J9892A	UK/Hong Kong/Singapore/Malaysia	8121-0739 J9884A
NA Hi-Voltage (non-locking) C13 to NEMA 6-20	8120-3996 J9936A	US/Canada/Mexico	8121-1141 J9896A
NA Hi-Voltage (locking) C15 to NEMA L6-20	8121-0941 J9955A*	PDU NA/Japan/TW/Rest of World	142263-001 JL697A
PDU India-only	P09371-001 JL671A	PDU Rest of World	8121-1094 J9944A

\*Ordered separately from the switch. To order a switch that will use a J9955A power cord, use the “no power cord” option, #AC3, and specify the J9955A power cord as a separate line item in the order.

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。

## Parts not included



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If you have not already done so, order an Aruba rack mount kit for use with your 8100 switch.

---

- X414 1U Universal 4-Post RM Kit (J9583B)

X544 Universal 4-post Duct Kit (JL716A)

Aruba USB-A to RJ45 PC-to-Switch Cable (R9G48A)

Aruba X2C2 RJ45 to DB9 Console Cable (JL448A)

## Installation Procedures for 8100 Switches

1. [Prepare the Installation Site on page 27](#)
2. [Install Power Supplies on page 28](#)
3. [Install Fan Trays](#)
4. [Power-on the switch and check LEDs on page 30](#)
5. [Power off the switch on page 30](#)
6. [Mount the Switch on page 30](#)
7. [Install Transceivers on page 33](#) (optional)
8. [Connect the Switch to a Power Source on page 34](#)
9. [Setup for Initial Configuration on page 35](#)

## Installation Precautions and Guidelines

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

---


### WARNING:


- Do not mount the switch on a wall, under a table, 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 positioned higher.
  - To prevent the rack or cabinet from becoming unstable and/or falling over, ensure that it is adequately secured.
  - The switch may use more than one power supply cable. To fully power down the switch, you must disconnect all power supply cables from the switch.
- 



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## CAUTION:

- 
- Do not ship any switch in a rack without checking for restrictions in the latest *HPE Aruba Networking CX 8100 Installation and Getting Started Guide*. Otherwise, you may void the switch warranty.
  - 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. For more information on power cords, see the [Power Cords](#) section.
  - When installing the switch, the AC outlet should be near the switch and be 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. See the environmental operating temperature information in the [Environmental Specifications on page 52](#).
  - 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 for a device are usually printed near the device AC power connectors.
  - Do not block any ventilation openings on the front or rear of the switch.
  - Leave a minimum of 6 inches (15.24 cm) for cooling at the front and back of the switch. For the air flow direction, see the [Fan Trays on page 21](#) section of this guide.
  - If a power supply must be removed and 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.
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- It is recommended to use only supported Aruba transceivers. However, HPE Aruba CX switches do support an unsupported transceiver mode which can be used by customers at their own risk. For more information, see the latest version of the [ArubaOS-S and AOS-CX Transceiver Guide](#).
  - The 8100 switch port side transceiver slots support SFP, SFP+, QSFP+ and QSFP28 transceivers.
  - For more information, see the latest version of the [ArubaOS-S and AOS-CX Transceiver Guide](#).
- 

## Prepare the Installation Site

**Cabling Infrastructure:** Ensure the cabling infrastructure meets the necessary network specifications.

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

- In the front of the switch, leave a minimum of 6 inches (15.24 cm) of space for the twisted-pair and fiber-optic cabling.
- In the back of the switch, leave a minimum of 6 inches (15.24 cm) of space for the power cord.

Cooling air flow in HPE Aruba Networking CX 8100 switches is Port-to-Power (front-to-back) or Power-to-Port (back-to-front), depending on which power supply and fan tray options are installed. To reverse the cooling air flow direction in an 8100 switch, you must replace the existing power supplies and fan trays with power supplies and fan trays having the opposite air flow direction. All fan trays and power supplies installed in an 8100 switch must have the same air flow direction. See [Fan Trays](#) for further detail.



To avoid personal injury or product damage, review the [Installation Precautions and Guidelines on page 26](#) before starting installation.

## Install Power Supplies

### Prerequisites

Skip this step if two power supplies are already installed in the switch.

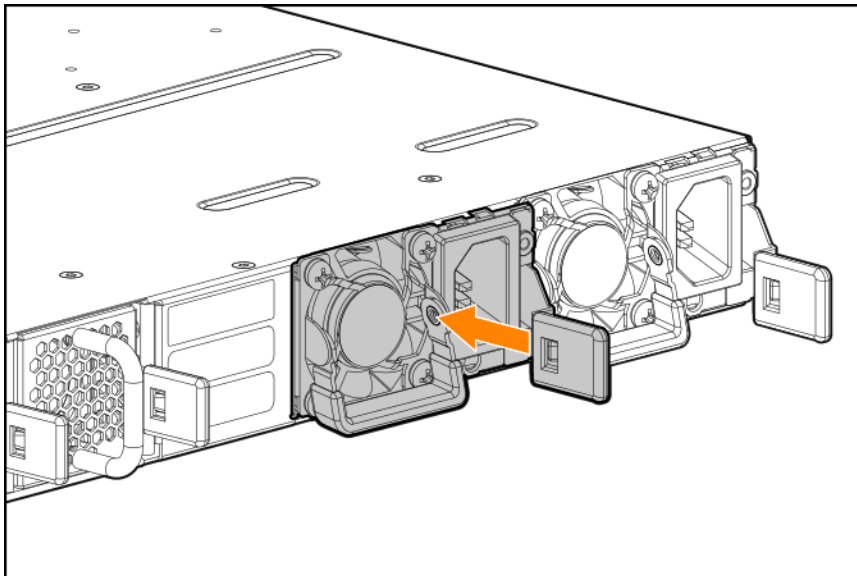
If two power supplies are not already installed in the switch, install power supplies in both slots before proceeding.

- Aruba 8100 550W (JL600A) Port-to-Power Airflow
- Aruba 8100 550W (JL712A) Power-to-Port Airflow



- A red-colored power supply release latch indicates a Front-to-Back air flow. A blue-colored power supply release latch indicates a Back-to-Front air flow.
- Power supply air flow direction must match.

**Figure 1** *Installing a power supply*



## Install Fan Trays

Skip this step if all fan tray slots are already populated with fan trays.

Use the following steps to install a fan tray in any empty fan tray slot.



- Ensure that a replacement fan has the same airflow as other fan trays and power supply units installed in the switch (Front-to-Back or Back-to-Front).
- A red-colored fan handle indicates a Port-to-Power air flow. A blue-colored fan handle indicates a Power-to-Port air flow.



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In the event of missing fan trays, misconfigured airflow direction, and/or faulted fans, the switch will try to maintain adequate cooling by increasing fan speeds and/or disabling misconfigured devices. If adequate cooling cannot be maintained, the switch will power off for five minutes before rebooting and assessing cooling capabilities.

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Fan trays and power supplies installed in an 8100 switch must have the same cooling air flow direction (port-to-power or power-to-port). Air flow direction in an 8100 switch is not controlled by software. To change the air flow direction, replace the power supplies and fan trays with power and fan tray units supporting the air flow direction required.

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For all SKUs, a minimum of two working fan trays is required for operation. If fewer than three working fan trays are detected, both Global status (located on front and back), the Back status (located on the front), and corresponding Fan Tray LEDs will FLASH amber.

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**WARNING:** If one fan tray is missing for more than two minutes the system will shutdown for five minutes. If two or more fan trays are missing or failed, the system will shutdown immediately and then reboot after five minutes to reassess cooling capabilities.

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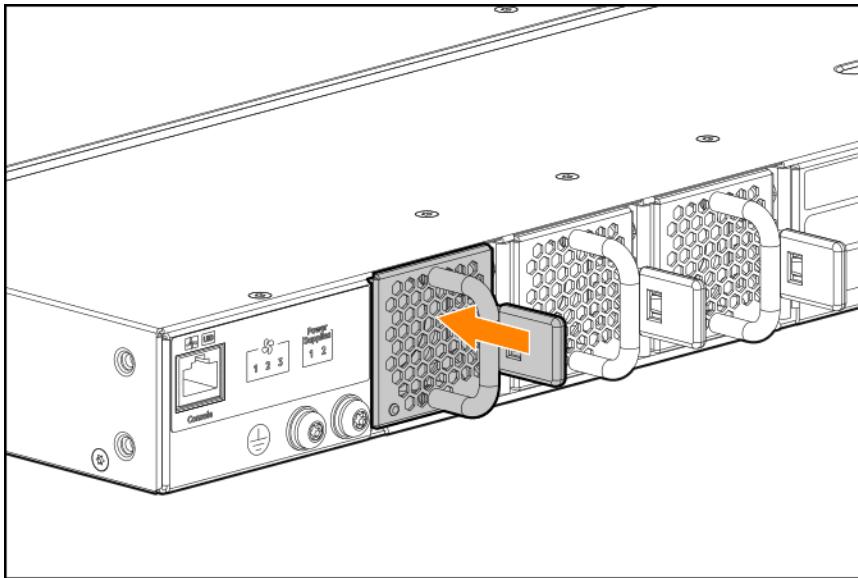
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System airflow direction (Front-to-Back or Back-to-Front) is configured automatically at system initialization and cannot be reconfigured by the user. System airflow direction is determined by the power supply type installed in PS1 at initialization time (or PS2 if PS1 is absent or faulted). Any Fan tray or Power supply of conflicting airflow type will be disabled by the system. Ensure only matching Fan trays and Power supplies are used at any given runtime.

---

1. Remove the new fan tray from its packaging, being careful to not touch any of the circuitry on the board.
2. Insert the new fan tray fully into the slot so that its face plate is flush with the back face of the switch and the latch clicks.

**Figure 1** *Installing a fan tray*



## Power-on the switch and check LEDs

### Prerequisites

The HPE Aruba Networking CX 8100 switch does not contain a power on/off switch. It is turned on by connecting the AC power cord to the switch and an AC power source.

Check LEDs for proper switch operation. For further detail see [Checking the Switch LEDs on page 46](#)

## Power off the switch

### Prerequisites

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

## Mount the Switch

The supported mounting options for the HPE Aruba Networking CX 8100 switch include:

Aruba X414 1U Universal 4-post RM Kit (J9583B)

Aruba X412 1U Universal 2-Post RM Kit (JL602A)

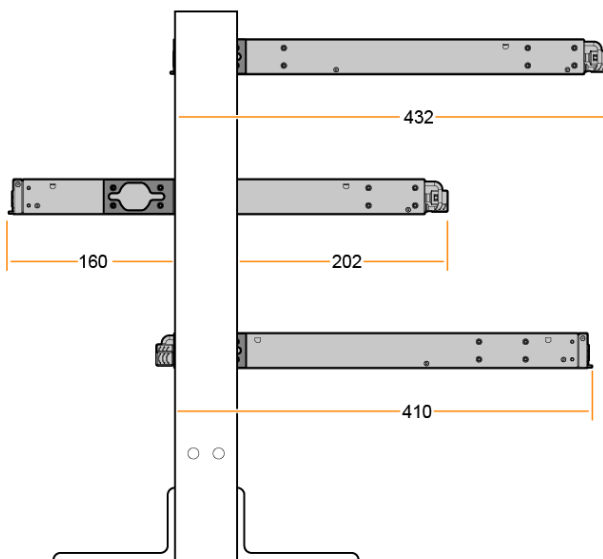
### Two-post Rack Mount Option

The switch is designed to be mounted in any EIA-standard 19-inch telco rack or communication equipment cabinet using the Aruba X412 1U Universal 2-Post Rack Mount Kit.

**Aruba X412 1U Universal 2-Post RM Kit (JL602A)** brackets mount in the following three positions:

- Front position (switch extends 432 millimeters behind rack post)
- Center-of-Gravity (switch protrudes 160 millimeters from the front of the rack post and 202 millimeters behind the rack post)

- Rear position (switch extends 410 millimeters behind the rack post)



CAUTION: For safe operation, please review the mounting precautions in [Installation Precautions and Guidelines](#), before mounting a switch.



The 12-24 screws supplied with the two-post rack mount kit 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 two-post rack mount kit.

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.

To mount the switch using the **Aruba X412 1U Universal 2-Post RM Kit (JL602A)**:

1. Use a T20 drive screwdriver and attach the mounting brackets to the switch with the included 6-mm M4 screws.

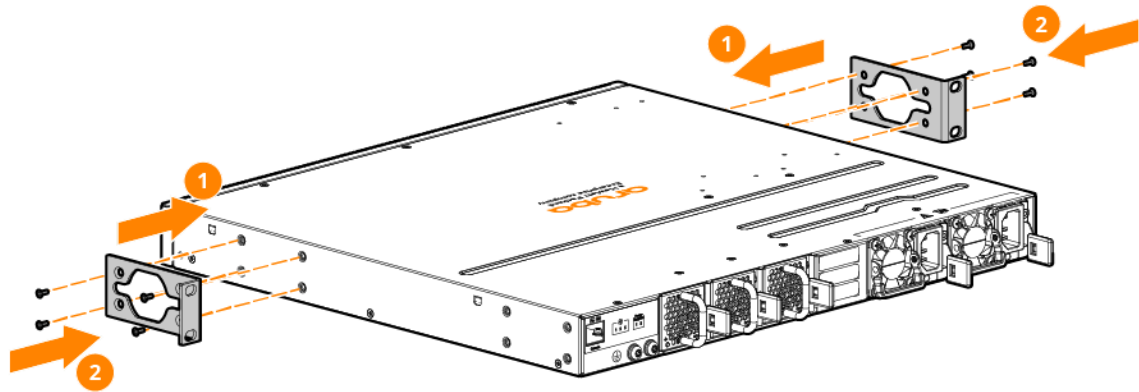
The brackets can be attached in three different positions to achieve the following:

- Front position (front of switch, port side, is flush with front of rack).
- Center-of-Gravity position (switch is centered with weight evenly distributed).
- Rear position (rear of switch, power side, aligns with front of rack - some components protrude, not flush).



See [Mount the Switch](#) for further detail.

**Figure 1** 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 and move it vertically until rack holes line up with the bracket holes, then insert and tighten the four number 12-24 screws, attaching the brackets to the rack.

**Figure 2** Mounting the switch in a two-post rack (Center-of-Gravity position)

## Four-Post Rack Mount Option

The HPE Aruba Networking CX 8100 switches can be mounted in four-post racks and cabinets by using the Aruba X414 1U Universal 4-Post Rack Mount Kit (J9583B).



**CAUTION:** For safe operation, please read the mounting precautions in the [Installation Precautions and Guidelines on page 26](#) section before mounting a switch.



The rack rails are intended for ease of installation only, do not use rails to support the switch in any extended position. Switch must be immediately secured with screws after installation.



The 12-24 screws supplied with the four-post rack mount kit 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 four-post rack mount kit (J9583B).

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 T20 drive screwdriver and attach the front-post and rear-post rack mount brackets to the switch with the included 8-mm M4 screws.

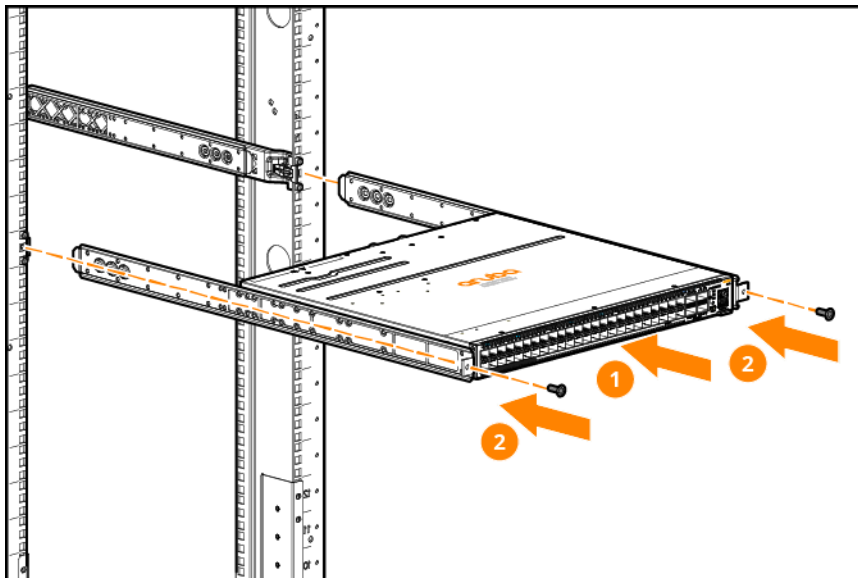
**Figure 1** Attaching four-post mounting brackets to the switch



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

2. Attach the rack slides to the sides of the switch using eight 8-mm M4 screws. Four screws per slide.
3. Install rack rail assemblies to the four-post rack, see the *Start Here* guide for your four-post rack (J9583B).
4. Hold the switch with attached brackets and slides up to the rack and align, then insert the inner rack slides into the rack rail assemblies. Insert and tighten two number 10-32 screws, attaching the rack slides to the rack rail assemblies.

**Figure 2** Mounting the switch in a four-post rack



5. Secure the rear-post brackets to the rack rear posts using two number 10-32 screws.

## Installing the Aruba X544 Universal 4-Post Duct Kit

To install the air duct kit, refer to the Aruba X544 Universal 4-Post Duct Kit Installation guide, available at <https://www.arubanetworks.com/techdocs/hardware/accessories/air-duct/5200-7570.pdf>

## Install Transceivers

Hold the transceiver by its sides and gently insert it into 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.

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## WARNING:

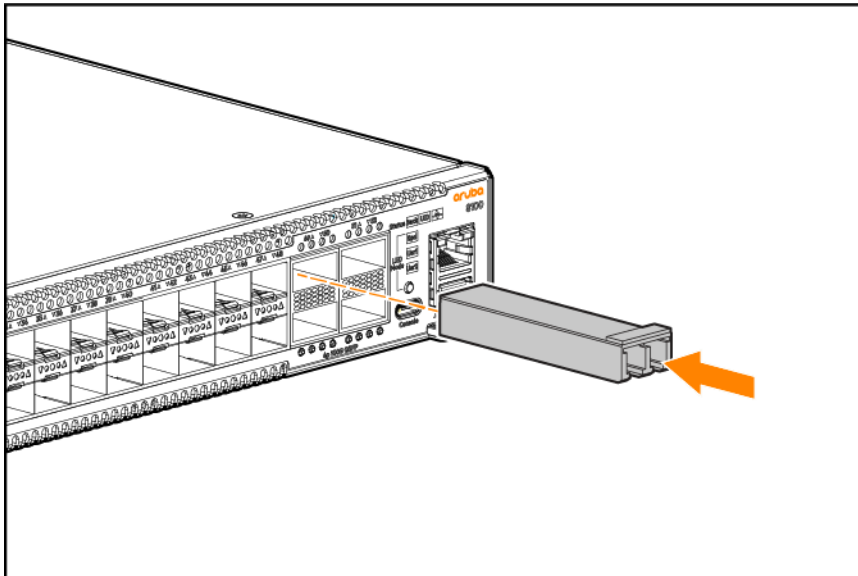


- The Aruba transceivers are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.
  - The transceivers operate only at full duplex. Half duplex operation is not supported.
  - Use of supported genuine Aruba transceivers is always recommended. Non-Aruba SFP28/QSFP+/QSFP28 transceivers are not supported. Non-Aruba SFP/SFP+ transceivers can be used in unsupported transceiver mode, but no support or warranty will be provided. Should you require additional transceivers, contact your Aruba sales representative or an authorized reseller.
- 



- Always disconnect the network cable from a transceiver before installing it in the switch.
  - You can install or remove a transceiver from an SFP/QSFP slot without having to power off the switch.
  - For more transceiver support information for your switch model, see the [ArubaOS-S and AOS-CX Transceiver Guide](#).
- 

## Installing a transceiver



## Connect the Switch to a Power Source

1. If two power supplies are not already installed in the switch, see [Install Power Supplies on page 28](#) for more information.
2. Plug the included power cords into the power supply's power connector and into a nearby AC power source.
3. Check the LEDs. See [Chassis and port LEDs on page 12](#) for more information.



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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.

---

## Setup for Initial Configuration

You can perform the initial configuration of the switch using one of these methods:

- **Using Zero Touch Provisioning (ZTP):** Use ZTP to configure a switch automatically from a remote server. The switch must be in the factory default configuration. If ZTP is to be used, your network administrator or installation site coordinator must provide an RJ-45 cable connected to the appropriate network. Connect the switch to the network using the RJ-45 out-of-band management port and power on the switch (or power off, then power on the switch). The ZTP operation is attempted for the first 10 minutes after the switch is powered on. For more information about ZTP, see the *Fundamentals Guide* for your switch and software release.
- **Using the Aruba CX mobile app:** The Aruba CX mobile app can connect to the switch through the USB Bluetooth adapter. For information about using the Aruba CX mobile app to configure the switch, see the *Fundamentals Guide* for your switch and software release.
- **Using an out-of-band serial console:** Use a workstation configured with suitable VT-100 terminal emulation software and connect the workstation to the switch's USB-C or RJ-45 Console Port. A DB9-to-RJ-45 console cable can be ordered from HPE: JL448A, Aruba X2C2 RJ45 to DB9 Console Cable. A USB-A to RJ45 console cable for PC-to-switch connection can also be ordered from HPE: R9G48A, Aruba USB-A to RJ45 PC-to-Switch Cable. For more information about this method see [Initial Configuration with an Out-of-Band Serial Connection](#).
- **Using connections to the out-of-band dedicated management network:** Use a workstation configured with suitable VT-100 terminal emulation software and SSH software. Connect the workstation and the switch to the same management network. Connect the switch to the network using the RJ-45 out-of-band management port. For more information about using this method, see the *Fundamentals Guide* for your switch and software release. The switch can simultaneously support one console session through the console port and multiple network SSH sessions through the management port.

## Connect Network Cables

Connect the network cables in the following methods:

From the network devices to the RJ-45 out-of-band management port on the switch

- Alternatively, you may connect from the network device to transceivers you have installed to the switch or any RJ-45 Network Port.

From your patch panels to the RJ-45 out-of-band management port on the switch

- Alternatively, you may connect from your patch panels to transceivers you have installed to the switch or any RJ-45 Network Port.

See [Prepare the Installation Site](#) for further detail.

## Using 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 network connection to the 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 turn on when the network cable is connected to the port, see [Diagnosing with the LEDs](#) in the Troubleshooting chapter.

**To disconnect:**

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

**Connecting Cables to 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 [Cabling and Technology 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 the Troubleshooting chapter.



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Ports are disabled by default.

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# Chapter 3

## Initial Configuration with an Out-of-Band Serial Connection

### 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.

### Connect to Console Port

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

1. Connect the PC or terminal to the switch’s front (USB-C) or rear (RJ-45) Console Port using a console cable (JL448A, R9G48A; sold separately).
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 *Fundamentals Guide* for initial configuration steps. For more detailed information, refer to the switch software manuals for your switch.

### Connect to Console Port

The cables below support the 8100 switches:

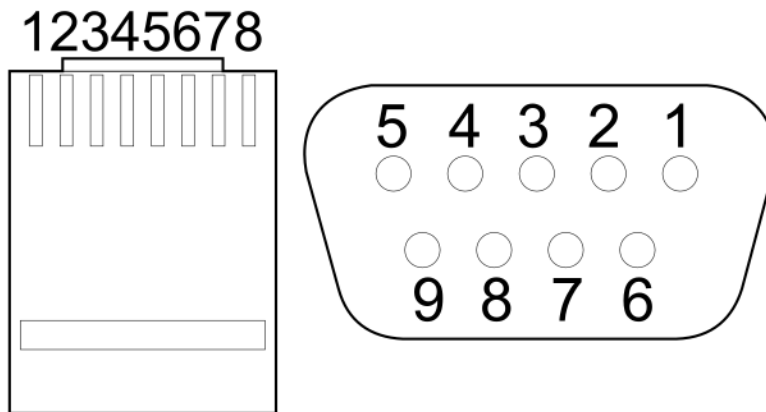
1. **For front panel USB-C port:**
  - a. (R9J32A) USB-A to USB-C PC-to-switch cable
  - b. (R9J93A) USB-C to USB-C PC-to-switch cable
2. **For rear panel RJ-45 port**
  - a. (R9G48A) USB-A to RJ-45 PC-to-switch cable
  - b. (JL448A) Aruba X2C2 RJ45 to DB9 Console Cable

Visit the Aruba ordering portal for a full list of supported accessories.

## Console Cable Pinout

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.

### RJ-45 to DB-9 pinouts



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

This chapter describes 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.

---

### CAUTION:



- The HPE Aruba Networking CX 8100 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



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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.

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If the HPE Aruba Networking CX 8100 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 LED on PSU1 or PSU2 will be on or flashing amber if faulted.

Two power supplies are available for use with the switch:

- Aruba X391 550W (JL600A) (Port-to-Power Airflow)
- Aruba X391 550W (JL712A) (Power-to-Port Airflow)



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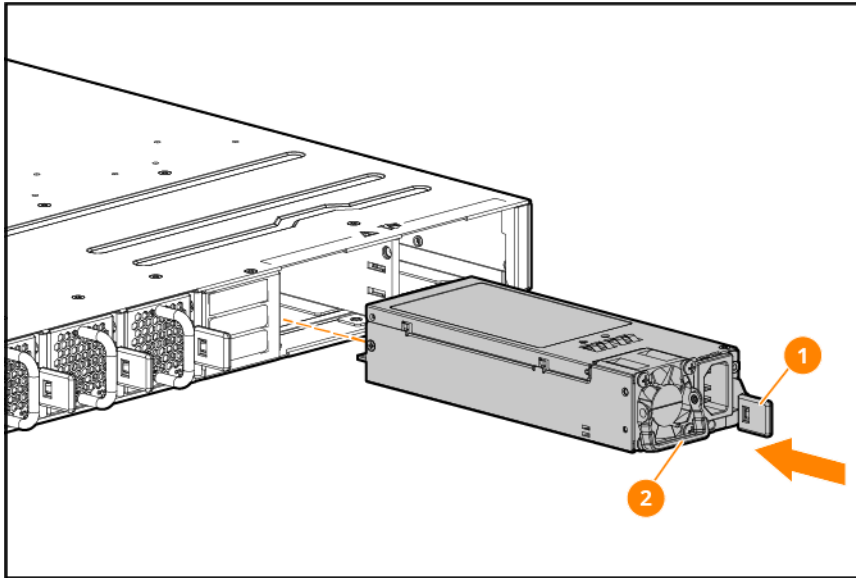
Cooling air flow (Port-to-Power or Power-to-Port) must be the same for both the power supply and the fans installed in the switch.

---

To replace an AC power supply:

1. Remove the AC power cable from the power supply's connector.
2. Grasping the handle of the failed power supply, use the Release Latch to release the locking mechanism and remove the power supply unit.

**Figure 1** *Replacing a failed power supply*



Label	Description
1	Release latch
2	Power supply pull handle

3. Insert the new power supply. Slide it 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 HPE Aruba Networking CX 8100 switch is equipped with three 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 FLASH amber, indicating a fan tray has failed.





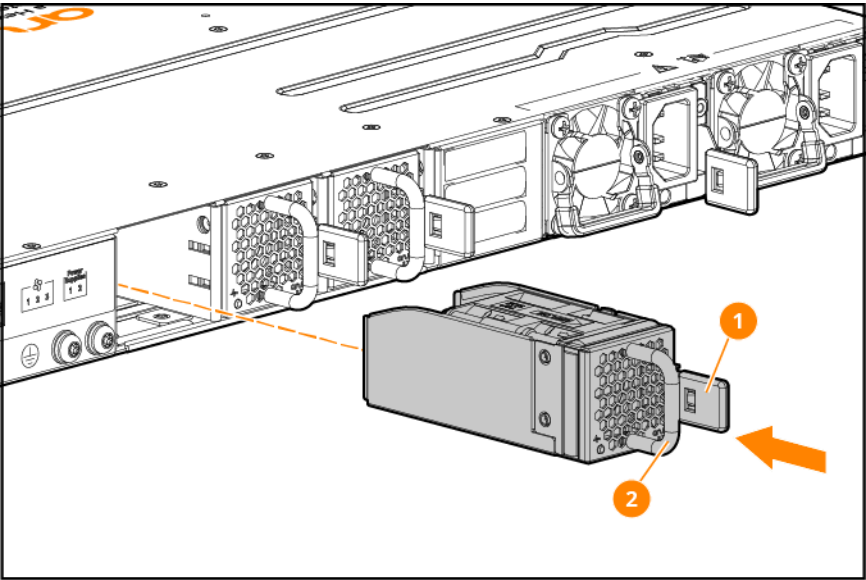
- The HPE Aruba Networking CX 8100 switch is compatible with fan trays from the Aruba 8360 hardware platform.
- After removing a fan tray, wait at least five seconds before inserting a replacement fan tray in the same slot.
- Replace only one fan tray at a time. Removing more than one fan tray at a time compromises system cooling, risks damage to the hardware, and will cause the switch to shut down abruptly.
- If there are fewer than three fan trays installed, a two minute count down timer is triggered. If three fan trays are not present before the countdown expires, the switch will automatically power down for five minutes and then reboot. For this reason, it is not recommended to remove a failed fan tray until you have the replacement fan tray prepared.

Ensure that a replacement fan tray has the same airflow as other fan trays installed in the switch (Port-to-Power or Power-to-Port).

To replace a fan tray:

1. Identify the fan tray by its status LED. The fan tray LED will be FLASHING amber.
2. Remove the new fan tray from its packaging, being careful to not touch any of the circuitry on the board.
3. Grasping the handle of the fan tray, use the Release Latch to release the locking mechanism and pull the fan tray straight out to remove it from its slot.
4. Insert the new fan tray fully into the slot so that its face plate is flush with the back face of the switch and the latch clicks. If the switch is connected to an AC power source, the fan tray should immediately start running.

**Figure 1** *Replacing a fan tray*



Label	Description
1	Fan tray release latch
2	Fan tray handle

This chapter describes how to troubleshoot your switch. This document describes troubleshooting primarily 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, Aruba Central or Aruba AirWave.

This chapter describes the following:

- [Basic Troubleshooting Tips on page 42](#)
- [Diagnosing with the LEDs on page 42](#)
- [Hardware Diagnostic Tests on page 46](#)
- [Accessing Updates on page 60](#)
- [Accessing Aruba Support on page 60](#)

## 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 [Cabling Specifications](#), Cabling and technology information for pinouts and correct cable wiring.
- **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 most likely 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.

To build redundant paths between important nodes in your network that will provide some fault tolerance, 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.



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By default, ports do not run selftest at boot. To enable port selftest on boot, save the **no fastboot** configuration to the switch. See AOS-CX software documentation for further detail.

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## Diagnosing with the LEDs

## 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.

PSU1/PSU2 LEDs	Global Status	Back	Fan tray LED	Port LED	Diagnostic tip
Off with power cords plugged in	-	-	-	-	1
Off. Either the PSU1 or PSU2 LED is off but not both.	Flashing amber	Flashing amber	-	-	2
On or flashing amber. Either the PSU1 or PSU2 LED is on/flashing amber, but not both.	Flashing amber	Flashing amber	-	-	3
Flashing green. Either the PSU1 or PSU2 LED is on/flashing green, but not both.	Flashing amber	Flashing amber	-	-	4
On green	Flashing amber	Flashing amber	Flashing amber	-	5
On green	Flashing amber	-	-	Flashing amber	6
On green	On green	-	-	Off with cable connected	7
On green	On green	-	-	On, but the port is not communicating	8

## Diagnostic Tips

Tip	Problem	Solution
1	Both switch power supplies are not plugged into an active AC power source.	Verify the AC power source works by plugging another device into the outlet. Or try plugging the power supplies into different outlets or try different power cords.  If the problem is still not resolved, both power supplies may be faulty.
2	The PSU with the LED off is not plugged into an active AC power source or has failed.	Verify the power cord is plugged into an active power source and to the power supply. Make sure these connections are snug.  If the PS1/PS2 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.

Tip	Problem	Solution
		<p>If the power source and power cord are OK and this condition persists, the switch power supply may have failed. Call your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.</p>
3	The PSU with the LED on or flashing amber has faulted.	<p>Try power cycling the PSU or removing and re-inserting the PSU. See <a href="#">Replacing a Power Supply on page 39</a> for more information.</p> <p>If the condition persists, the switch power supply has failed. Call your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.</p>
4	The PSU with the LED flashing green has been disabled by software.	<p>This occurs when the power supply does not match the defined system airflow. The PSU release tab should be a different color than the other supply and the fan trays.</p> <p>Replace power supply with one with the correct airflow. See <a href="#">Replacing a Power Supply on page 39</a> for more information.</p>
5	Fan tray with the flashing amber LED may have failed or uses incorrect airflow direction.	<p>Check the airflow direction and replace with the correct fan tray if needed. Otherwise, try removing the fan tray and re-inserting. See <a href="#">Replacing a Fan Tray</a> for more information.</p> <p>If the condition persists, the fan tray has failed.</p>
6	The network port for which the LED is flashing has experienced a self test, initialization failure.	<p>Check the switch Event Log and <b>show interface</b> command output for indication of the fault condition. If a port failed selftest, contact Aruba support.</p> <p>If the port has a transceiver installed, verify the transceiver is a supported Aruba transceiver for SFP+/QSFP+/QSFP28. If using an unsupported SFP+ transceiver, confirm that unsupported transceiver mode is enabled. For a list of supported transceivers, see the <i>ArubaOS-Switch and ArubaOS-CX Transceiver Guide</i>.</p> <p>The transceivers are also tested when they are “hot-swapped”—installed or changed while the switch is powered on.</p> <p>To verify the transceiver has failed, remove and reinstall the transceiver without powering off the switch. If the port fault indication reoccurs, you will have to replace the transceiver. Check the event log to see why the transceiver failed.</p> <p>To get assistance, call your Aruba authorized network reseller, or use the electronic support services from Aruba.</p>
7	The port is not able to establish link.	<p>Try the following procedures:</p> <p>For the indicated port, verify that both ends of the cabling, at the switch and the connected device, are connected</p>

Tip	Problem	Solution
		<p>properly.</p> <p>Verify the connected device and switch are both powered on and operating correctly.</p> <p>Verify you have used the correct cable type for the connection:</p> <p>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.</p> <p>The cable verification process must include all patch cables from any end devices, including the switch, to any patch panels in the cabling path.</p> <p>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.</p> <p>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 <b>MUST</b> be configured as “Full-duplex”. If the configurations don’t match, the results could be a very unreliable connection, or no link at all.</p> <p>Run an internal selftest on the port. For example, to run a selftest on port 1/1/12:</p> <pre> diagnostics diagnostics loopback 1/1/12 </pre> <p>If the command reports fail, contact Support. There may be a hardware fault.</p> <p>If the other procedures don’t resolve the problem, try using a different port or a different cable.</p>
8	The port gets link but does not forward traffic.	<p>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 <b>show lacp interfaces</b> command displays the port status for the LACP feature; the <b>show spanning-tree</b> command displays the port status for Spanning Tree.</p> <p>Other switch features that may affect the port operation include VLANs, IGMP. Use the switch console to see how the port is configured for these features.</p> <p>Also ensure, that the device at the other end of the</p>

Tip	Problem	Solution
		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). Wait a minimum of five seconds after unplugging before plugging the power cord back in.
- Reboot the switch through the CLI with the **boot system** command.




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Power cycling the switch causes the switch to reset. The reset process also causes any network traffic counters and the System Up Time timer to reset to zero.

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### Checking the Switch LEDs

See the [Diagnosing with the LEDs on page 42](#) section 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. 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 on page 37](#). 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 Networking 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.

## Battery Statements



- Where a battery incorporated by Hewlett Packard Enterprise is too small to bear the CE marking, it conforms with applicable **CE** requirements.
- These switches use a lithium battery. Do not attempt to replace the battery. Return the switch to Hewlett Packard Enterprise for battery replacement.
- The only indicator of battery failure is the failure of the switch internal clock to keep the correct time across a reboot or power cycle. If a battery failure occurs, contact your authorized Hewlett Packard Enterprise representative for assistance. Batteries are not customer-serviceable and battery failures should be referred only to service personnel authorized by Hewlett Packard Enterprise.
- For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at <http://www.hpe.com/support/SafetyCompliance-EnterpriseProducts>.

<b>Attention</b>	Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.
<b>Attention</b>	The battery supplied with this product may contain perchlorate material. Special handling may apply in California and certain other states. See <a href="http://www.dtsc.ca.gov/hazardouswaste/perchlorate">http://www.dtsc.ca.gov/hazardouswaste/perchlorate</a> website for more information.



A risk of explosion exists if a battery is replaced by an incorrect type. Dispose of used batteries according to the battery disposal regulations for your country or region.



### Physical

Switch	Width	Depth	Height	Weight
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W86A)	44.25 cm (17.4 in)	43.52 cm (17.1 in)	4.4 cm (1.73 in)	18 lb (8.16 kg)
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W87A)				
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W88A)	44.25 cm (17.4 in)	43.52 cm (17.1 in)	4.4 cm (1.73 in)	18.3 lb (8.3 kg)
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W89A)				
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W90A)	44.25 cm (17.4 in)	43.52 cm (17.1 in)	4.4 cm (1.73 in)	18.5 lb (8.39 kg)
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W91A)				
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W92A)	44.25 cm (17.4 in)	43.52 cm (17.1 in)	4.4 cm (1.73 in)	18.9 lb (8.57 kg)



Switch	Width	Depth	Height	Weight
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle(R9W93A)				
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 Switch (R9W97A)	44.25 cm (17.4 in)	40.64 cm (16.0 in)	4.4 cm (1.73 in)	14.15 lb (6.57 kg)
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 Switch (R9W94A)	44.25 cm (17.4 in)	40.64 cm (16.0 in)	4.4 cm (1.73 in)	13.2 lb (5.98 kg)
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 Switch (R9W95A)	44.25 cm (17.4 in)	40.64 cm (16.0 in)	4.4 cm (1.73 in)	13.55 lb (6.14 kg)
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 Switch (R9W96A)	44.25 cm (17.4 in)	40.64 cm (16.0 in)	4.4 cm (1.73 in)	13.7 lb (6.21 kg)

## Electrical

**Table 1:** *Electrical Information for 8100 Modular Power Supplies*

Switch Model	Power Supplies	Maximum Current	AC Voltage	Frequency range
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W86A)	Aruba X391 550W Prt2Pwr AC PSU (JL600A)	7.1A for 100-127VAC	100-127 / 200-240	47-63Hz
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W88A)		3.4A for 200-240VAC		
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W90A)				

Switch Model	Power Supplies	Maximum Current	AC Voltage	Frequency range
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W92A)				
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R8R87A)	Aruba X391 550W Pwr2Prt AC PSU (JL712A)	7.1A for 100- 127VAC	100-127 / 200-240	47-63 Hz
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W89A)		3.4A for 200- 240VAC		
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle(R9W91A)				
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W93A)				

## Power Cords

Aruba includes the power cord intended for use with your Aruba switch and power supply. Different countries/regions may require different power cords. For a list of the power cords that apply to your switch, see [Included Parts](#).



CAUTION: Only Aruba-approved power cords may be used with Aruba devices. To access power cord information for your switch, see [Included Parts](#). Lost or damaged power cords must be replaced only with Aruba-approved power cords. If your installation requires a different power cord than the one supplied with the switch and/or power supply, be sure that the cord is adequately sized for the current requirements of the switch. 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 and power supply.



**WARNING:** Do not use a damaged or non-recommended power cord with your switch. Using such power cords voids the switch and power supply warranty. It can also cause serious electrical problems, including injury or death to personnel, and damage to the switch and other property. If you cannot verify that you have a power cord approved for use with your switch model, contact your authorized Aruba dealer or sales representative for assistance.



**WARNING:** Remove the power cord from the switch before mounting or dismounting the switch.

## Power Consumption

Switch	Power consumption
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 Switch (R9W94A)	Max: 375W Idle: 120W
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W86A)	
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W87A)	
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 Switch (R9W95A)	Max: 400W Idle: 120W
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W88A)	
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W89A)	
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 Switch (R9W96A)	Max: 450W Idle: 120W
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W90A)	
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W91A)	
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 Switch (R9W97A)	Max: 500W Idle: 120W
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W92A)	
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W93A)	



- Max power measured with maximum traffic, transceivers and fans.
- Idle power measured with no transceivers or cables installed at room temperature.

## Environmental Specifications

	Port to Power airflow (PrtToPwr)	Power to Port airflow (PwrToPrt)
Operating temperature	32°F to 113°F (0°C to 45°C) <sup>1</sup>	32°F to 104°F (0°C to 40°C) <sup>2</sup>
Non-operating temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Operating relative humidity	15% to 95% <sup>3</sup>	15% to 95% <sup>4</sup>
Non-operating storage relative humidity	15% to 95% <sup>5</sup>	15% to 95% <sup>6</sup>
Max operating altitude	10000 ft (3km)	10000 ft (3km)
Max non-operating altitude	15000 ft (4.5km)	15000 ft (4.5km)

<sup>1</sup> Up to 5000 ft. Derate -1°C for every 1000 ft from 5000 ft to 10000 ft

<sup>2</sup> Up to 5000 ft. Derate -1°C for every 1000 ft from 5000 ft to 10000 ft

<sup>3</sup> At 113°F (45°C), non-condensing

<sup>4</sup> At 104°F (40°C), non-condensing

<sup>5</sup> At 149°F (65°C), non-condensing

<sup>6</sup> At 149°F (65°C), non-condensing



Refer to the [ArubaOS-S and AOS-CX Transceiver Guide](#) in the Aruba Support Portal for more information regarding transceiver limitations and derating requirements.



Inlet Air Sensor is used to protect the switch. To protect the switch, the sensor regulates the fan speed based on the ambient air temperature in elevated ambient air conditions. At low workload (QSFP ports either partially populated or populated with low power consumption transceivers), the sensor may under-report compared to the true local ambient temperature.

## Acoustics

Switch	Acoustics
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle	Sound Pressure (LpAm - Bystander): 45.8 dB

Switch	Acoustics
(R9W86A)	Sound Power (LWAd): 6.3 Bel
HPE Aruba Networking CX 8100 24x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W87A)	Sound Pressure (LpAm - Bystander): 41.2 dB Sound Power (LWAd): 5.9 Bel
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W88A)	Sound Pressure (LpAm - Bystander): 48.0 dB Sound Power (LWAd): 6.6 Bel
HPE Aruba Networking CX 8100 24x10GBase-T 4x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W89A)	Sound Pressure (LpAm - Bystander): 47.7 dB Sound Power (LWAd): 6.6 Bel
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W90A)	Sound Pressure (LpAm - Bystander): 46.6 dB Sound Power (LWAd): 6.4 Bel
HPE Aruba Networking CX 8100 48x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W91A)	Sound Pressure (LpAm - Bystander): 44.9 dB Sound Power (LWAd): 6.3 Bel
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 FB 3Fan 2ACPSU SW Bundle (R9W92A)	Sound Pressure (LpAm - Bystander): 47.9 dB Sound Power (LWAd): 6.6 Bel
HPE Aruba Networking CX 8100 40x10GBase-T 8x10GSFP+ 4x40/100G QSFP28 BF 3Fan 2ACPSU SW Bundle (R9W93A)	Sound Pressure (LpAm - Bystander): 49.3 dB Sound Power (LWAd): 6.8 Bel



Acoustics measured in 23± 2°C semi-anechoic chamber with a loading of 50% traffic on all ports. Measured in accordance with ECMA 74. Declared in accordance with ECMA 109. Values presented are the declared A-weighted Sound Power Level (LWAd) and mean bystander A-weighted Sound Pressure Level (LpAm).

## Safety and Regulatory Information



For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at <http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>.

<b>Safety-EU</b>	EN62368-1, Ed.3:2020; EN62368-1, Ed.2:2014
<b>Safety-Worldwide</b>	IEC 62368-1:2014; IEC 62368-1:2018
<b>North American</b>	UL/CUL 62368-1 3rd Edition; CAN/CSA C22.2 No. 62368-1:19

<b>EMC</b>	EN 55032:2015/CISPR 32 Class A EN 55035:2017/CISPR 35 EN 61000-3-2:2014, Class A EN 61000-3-3:2013 FCC CFR 47 Part 15:2010 Class A ICES-003 Class A VCCI Class A CNS 15936 Class A
<b>RoHS</b>	EN IEC 63000:2018



- When selecting a fiber SFP or QSFP device, make sure the device has the same (or better) operating temperature range as the switch.
- Use only an approved Laser Class 1 SFP transceiver.

<b>Japan Power Cord Warning</b>	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。
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## Connectivity Standards



These connectivity standards are general and may not apply to your 8100 series switch.

Technology	Compatible with these IEEE standards	EN/IEC standard compliance	Lasers
100-TX 1000-T 10GBASE-T	IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3an 10GBASE-T		
1000-SX	IEEE 802.3z 1000BASE-SX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
1000-LX	IEEE 802.3z 1000BASE-LX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
1000-LH	(not an IEEE standard)	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
10-Gig Direct Attach	(not an IEEE standard)		
10-Gig SR	IEEE 802.3ae 10GBASE-SR	EN/IEC 60825	Class 1 Laser Product

Technology	Compatible with these IEEE standards	EN/IEC standard compliance	Lasers
			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
40G ER4	IEEE 802.3bm-2015 40GBASE-ER4	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
40Gig Bidi	(not an IEEE standard)	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
40-Gig SR4	IEEE 802.3ba 40GBASE-SR4	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
40-Gig eSR4	IEEE 802.3ba 40GBASE-SR4	En/IC 60825	Class 1 Laser Product Laser Klasse 1
40-Gig LR4	IEEE 802.3ae 40GBASE-LR4	EN/IC 60825	Class 1 Laser Product Laser Klasse 1
100-Gig SR4	IEEE 802.3bm 100GBASE-SR4	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
100-Gig LR4	IEEE 802.3ba 100GBASE-LR4	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
100-Gig DAC	IEEE 802.3bj 100GBASE-CR4		
40-Gig DAC	IEEE 802.3ba 40GBASE-CR4		
25-Gig SR	IEEE 802.3by 25GBASE-SR	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
25-Gig eSR	(not an IEEE standard)	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1
25-Gig LR	IEEE 802.3cc 25GBASE-LR	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1

# Chapter 7

## Cabling and Technology Information

This chapter includes switch connector information and network cable information for cables that should be used with the HPE Aruba Networking CX 8100 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

<b>Twisted-pair copper</b>	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. Used for OOBM port.
	100 Mbps Operation	Category 5, 100-ohm UTP, or STP cable, complying with IEEE 802.3u 100BASE-TX specifications. Used for OOBM port. Used for user ports on 40XT8XF4C and 24XT4XF4C.
	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.
	2.5 Gbps Operation	Category 5e, 100-ohm-4-pair UTP or STP cable, complying with IEEE 802.3ab 1000BASE-T specifications.
	5 Gbps Operation	Category 5e or better, 100-ohm-4-pair UTP or STP cable. Category 6 or better is recommended.
	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. CAT6A F/FTP, S/FTP, SF/FTP highly recommended in noisy environments. Refer to Aruba Support_Advisory_JL563A_10GBaseT_APSC-RS20180403- 01 for more information.
<b>Twinaxial copper</b>	Direct attach cables	One-piece devices consisting of a cable with SFP+ or SFP28 connectors permanently attached to each end, complying with SFF 8431 SFP+ specifications.
<b>Multimode fiber</b>	-	62.5/125 $\mu\text{m}$ or 50/125 $\mu\text{m}$ (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. <sup>1</sup>
<b>Single mode fiber</b>	-	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.

### 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 10 BASE-T or 100 BASE-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.

The 2.5 Gb/s Smart Rate operates on cable installations that are designed to support 1000BASE-T operation. Cabling installation must meet the 1000BASE-T link segment characteristics described in IEEE 802.3-2012 and, additionally, the Category 5e or Class D limits described in the ANSI/TIA/EIA 568-C.2 and ISO/IEC 11801 standards, respectively.

The 5 Gb/s Smart Rate operates on the majority of Category 5e and Category 6 cable installations. Category 5e or Class D installations must meet the ANSI/TIA/EIA 568-C.2 or ISO/IEC 11801 transmission parameter limits extended to 200MHz. Category 6 or Class E installations must meet their respective transmission parameter limits as described in ANSI/TIA/EIA 568-C.2 or ISO/IEC 11801.

The 5 Gb/s Smart Rate can be sensitive to alien noise from other cables in close proximity or background noise from the environment. Therefore, cabling must be tested for Alien Near-End Crosstalk (ANEXT) and Alien Equal-Level-Far-End Crosstalk (AELFEXT). Depending on the cabling installation, the magnitude of alien crosstalk may further limit the maximum supported cabling distance.

It is recommended that cable dressing be done carefully and in compliance with recommendations in the TIA TSB-155-A and ISO/IEC TR-24750.

### 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. 10G BASE-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 frequencies 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, Aruba 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 EN55035, the Aruba switch is compliant to Performance Criteria A with UTP cables (CAT6A).

## Technology Distance Specifications

Technology	Supported cable type	Multimode fiber modal bandwidth	Supported distances
1000BASE-T	Twisted-pair copper	N/A	up to 100 meters
100Base-TX	Twisted-pair copper	N/A	Cat 5 - 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
1000BASE-LX	Single mode fiber	N/A	2 - 10,000 meters
1000BASE-LH	Single mode fiber	N/A	2 - 70,000 meters
10GBASE-T	Twisted-pair copper	N/A	Cat 6A unshielded - up to 100 meters Cat 6A shielded - up to 100 meters Cat 7 shielded - up to 100 meters
10GBASE-CR (Direct Attach)	twinaxial copper	N/A	(various lengths offered)
10GBASE-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
10GBASE-LR	single mode fiber	N/A	2 - 10,000 meters
25GBASE-CR 1	twinaxial copper	N/A	(various lengths offered)

Technology	Supported cable type	Multimode fiber modal bandwidth	Supported distances
25GBASE-SR <sup>1</sup>	multimode fiber	1500 MHz*km 3500 MHz*km	2 - 70 meters 2 - 100 meters
25GBASE-eSR <sup>1</sup>	multimode fiber	1500 MHz*km 3500 MHz*km	2 - 200 meters 2 - 400 meters
25GBASE-LR <sup>1</sup>	single mode fiber	N/A	2 - 10,000 meters
40GBASE-CR4	twiaxial copper	N/A	(various lengths offered)
40GBASE-SR4	multimode fiber	1500 MHz*km 3500 MHz*km	2 - 100 meters 2 - 150 meters
40GBASE-eSR4	multimode fiber	1500 MHz*km 3500 MHz*km	2 - 330 meters 2 - 550 meters
40GBASE-LR4	single mode fiber	N/A	2 - 10,000 meters
40GBASE-ER4	single mode fiber	N/A	2 - 40,000 meters
40GBASE-BiDi	multimode fiber	1500 MHz*km 3500 MHz*km	2 - 100 meters 2 - 150 meters
100GBASE-CR4	twiaxial copper	N/A	(various lengths offered)
100GBASE-SR4	multimode fiber	1500 MHz*km 3500 MHz*km	2 - 100 meters 2 - 150 meters
100GBASE-LR4	single mode fiber	N/A	2 - 10,000 meters

<sup>1</sup> Only supported in QSFP ports with QSFP28-to-SFP28 Adapter

## Accessing Aruba Support

Aruba Support Services	<a href="https://www.arubanetworks.com/support-services/">https://www.arubanetworks.com/support-services/</a>
Aruba Support Portal	<a href="https://asp.arubanetworks.com/">https://asp.arubanetworks.com/</a>
North America telephone	1-800-943-4526 (US & Canada Toll-Free Number) +1-408-754-1200 (Primary - Toll Number) +1-650-385-6582 (Backup - Toll Number - Use only when all other numbers are not working)
International telephone	<a href="https://www.arubanetworks.com/support-services/contact-support/">https://www.arubanetworks.com/support-services/contact-support/</a>

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

Other websites that can be used to find information:

Airheads social forums and Knowledge Base	<a href="https://community.arubanetworks.com/">https://community.arubanetworks.com/</a>
Software licensing	<a href="https://lms.arubanetworks.com/">https://lms.arubanetworks.com/</a>
End-of-Life information	<a href="https://www.arubanetworks.com/support-services/end-of-life/">https://www.arubanetworks.com/support-services/end-of-life/</a>
Aruba software and documentation	<a href="https://asp.arubanetworks.com/downloads">https://asp.arubanetworks.com/downloads</a>

## Accessing Updates

To download product updates:

## Aruba Support Portal

<https://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

<https://www.hpe.com/networking/support>

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:

<https://support.hpe.com/portal/site/hpsc/aae/home/>



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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.

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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:

<https://asp.arubanetworks.com/notifications/subscriptions> (requires an active Aruba Support Portal (ASP) account to manage subscriptions). Security notices are viewable without an ASP account.

## Warranty Information

To view warranty information for your product, go to <https://www.arubanetworks.com/support-services/product-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 <https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>

Aruba is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements, environmental data (company programs, product recycling, energy efficiency), and safety information and compliance data, (RoHS and WEEE). For more information, see <https://www.arubanetworks.com/company/about-us/environmental-citizenship/>.

## Documentation Feedback

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