

# Aruba 2930F Switch Series Installation and Getting Started Guide



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The Aruba 2930F multiport switches can be used to build high performance switched networks. These switches are store-and-forward devices offering low latency for high-speed networking. 2930F switches support full network management capabilities. Most models also provide Power over Ethernet (PoE/PoE+) technologies.

This guide applies to the following switch products:

Non-PoE switches	PoE+ switches
Aruba 2930F 24G 4SFP+ Switch (JL253A)	Aruba 2930F 24G PoE+ 4SFP+ Switch (JL255A)
Aruba 2930F 48G 4SFP+ Switch (JL254A)	Aruba 2930F 48G PoE+ 4SFP+ Switch (JL256A)
Aruba 2930F 24G 4SFP Switch (JL259A)	Aruba 2930F 24G PoE+ 4SFP Switch (JL261A)
Aruba 2930F 48G 4SFP Switch (JL260A)	Aruba 2930F 48G PoE+ 4SFP Switch (JL262A)
	Aruba 2930F 8G PoE+ 2SFP+ Switch (JL258A)
	Aruba 2930F 8G PoE+ 2SFP+ TAA Switch (JL692A)
	Aruba 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A)
	Aruba 2930F 24G PoE+ 4SFP+ TAA Switch (JL263A)
	Aruba 2930F 48G PoE+ 4SFP+ TAA Switch (JL264A)
	Aruba 2930F 48G PoE+ 4SFP 740W Switch (JL557A)
	Aruba 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A)
	Aruba 2930F 48G PoE+ 4SFP+ 740W TAA Switch (JL559A)
	15W AC Power Adapter (5066-5063) <sup>1</sup>

<sup>1</sup> Included and used only with the Aruba 2930F 8G JL258A and JL692A switches. All other 2930F switches operate with internal power supplies only.

This chapter describes these switches with the following information:

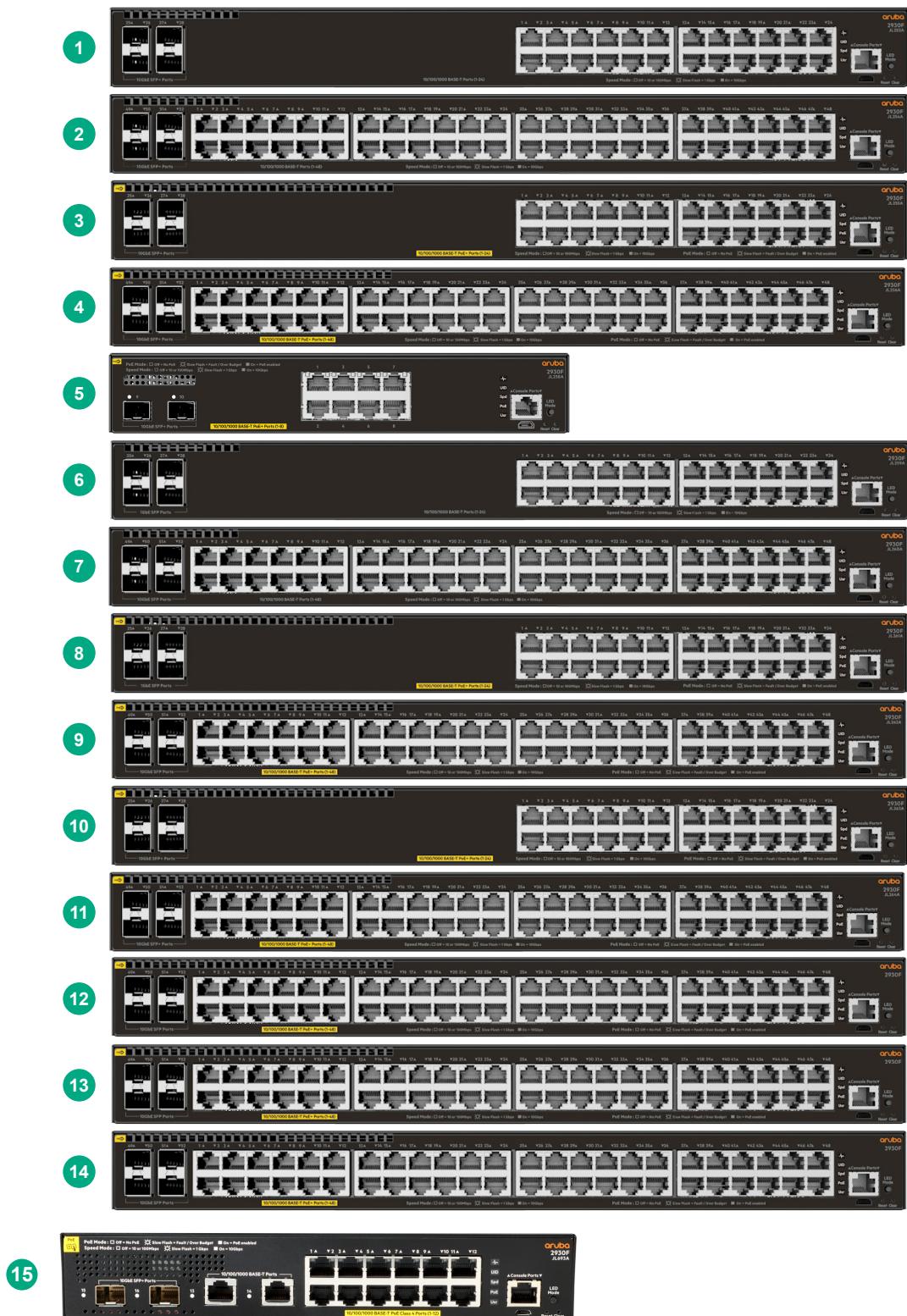
- Front of the switches:
  - Network ports
  - Management ports
  - LEDs
  - Buttons
- Back of the switches:
  - Power connectors
- Switch features



**NOTE:** The drawings in this publication are for illustration only and may not match your particular 2930F switch model.

# Front of the 2930F switches

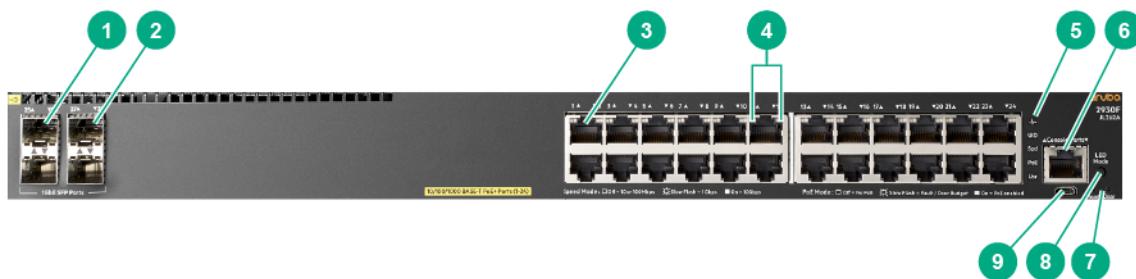
**Figure 1:** 2930F Switch front panels



**Table 1:** 2930F switch fronts

Label	Description
1	Aruba 2930F 24G 4SFP+ Switch (JL253A)
2	Aruba 2930F 48G 4SFP+ Switch (JL254A)
3	Aruba 2930F 24G PoE+ 4SFP+ Switch (JL255A)
4	Aruba 2930F 48G PoE+ 4SFP+ Switch (JL256A)
5	Aruba 2930F 8G PoE+ 2SFP+ Switch (JL258A) Aruba 2930F 8G PoE+ 2SFP+ TAA Switch (JL692A)
6	Aruba 2930F 24G 4SFP Switch (JL259A)
7	Aruba 2930F 48G 4SFP Switch (JL260A)
8	Aruba 2930F 24G PoE+ 4SFP Switch (JL261A)
9	Aruba 2930F 48G PoE+ 4SFP Switch (JL262A)
10	Aruba 2930F 24G PoE+ 4SFP+ TAA Switch (JL263A)
11	Aruba 2930F 48G PoE+ 4SFP+ TAA Switch (JL264A)
12	Aruba 2930F 48G PoE+ 4SFP 740W Switch (JL557A)
13	Aruba 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A)
14	Aruba 2930F 48G PoE+ 4SFP+ 740W TAA Switch (JL559A)
15	Aruba 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A)

**Figure 2:** Example of 2930F switch front labels and descriptions



**Table 2:** Front of the 2930F switches labels and descriptions

Label	Description
1	SFP/SFP+ ports
2	SFP/SFP+ port LEDs
3	10/100/1000 Base-T RJ-45 ports
4	Switch port LEDs
5	Global Status, Unit Identification, Speed, PoE <sup>1</sup> , Usr LEDs
6	RJ Serial Console
7	Reset, Clear buttons
8	LED Mode button
9	Micro USB Console

<sup>1</sup> PoE Mode LED is present only on switch models that support PoE.

## Network ports

**Table 3:** Network ports

Product number	Model name	10/100/1000 non-PoE RJ-45 ports <sup>1</sup>	10/100/1000 PoE/PoE+ RJ-45 ports <sup>1</sup>	SFP ports <sup>2</sup>	SFP+ ports <sup>3</sup>
JL253A	Aruba 2930F 24G 4SFP+ Switch	24	-	-	4
JL254A	Aruba 2930F 48G 4SFP+ Switch	48	-	-	4
JL255A	Aruba 2930F 24G PoE+ 4SFP+ Switch	-	24	-	4
JL256A	Aruba 2930F 48G PoE+ 4SFP+ Switch	-	48	-	4
JL258A	Aruba 2930F 8G PoE+ 2SFP+ Switch	-	8	-	2
JL692A	Aruba 2930F 8G PoE+ 2SFP+ TAA Switch	-	8	-	2
JL693A	Aruba 2930F 12G PoE+ 2G/2SFP+ Switch	2	12	-	2

Table Continued

Product number	Model name	10/100/1000 non-PoE RJ-45 ports <sup>1</sup>	10/100/1000 PoE/PoE+ RJ-45 ports <sup>1</sup>	SFP ports <sup>2</sup>	SFP+ ports <sup>3</sup>
JL259A	Aruba 2930F 24G 4SFP Switch	24	-	4	-
JL260A	Aruba 2930F 48G 4SFP Switch	48	-	4	-
JL261A	Aruba 2930F 24G PoE+ 4SFP Switch	-	24	4	-
JL262A	Aruba 2930F 48G PoE+ 4SFP Switch	-	48	4	-
JL263A	Aruba 2930F 24G PoE+ 4SFP+ TAA Switch	-	24	-	4
JL264A	Aruba 2930F 48G PoE+ 4SFP+ TAA Switch	-	48	-	4
JL557A	Aruba 2930F 48G PoE+ 4SFP 740W Switch	-	48	4	-
JL558A	Aruba 2930F 48G PoE+ 4SFP + 740W Switch	-	48	-	4
JL559A	Aruba 2930F 48G PoE+ 4SFP + 740W TAA Switch	-	48	-	4

**Notes:**

<sup>1</sup> All RJ-45 ports support "Auto-MDIX", which means you can use either straight-through or crossover twisted-pair cables to connect network devices to the switch.

<sup>2</sup> SFP ports support 100Mb (100-FX) and 1G SFP transceivers.

<sup>3</sup> SFP+ ports support 100Mb (100-FX), 1G SFP, and 10G SFP+ transceivers.

1000-T	Copper (twisted-pair)	RJ-45
1000-SX	Fiber (multimode)	LC
1000-LX	Fiber (multimode or single mode)	LC
1000-LH	Fiber (single mode)	LC
1000-BX	Fiber (single mode)	LC

These products also support optional network connectivity:

**Table 4:** Optional network connectivity, speeds, and technologies

			Transceiver Form-Factor and Connector <sup>1</sup>	
Speed	Technology	Cabling	SFP ("mini-GBIC") Connector	SFP+ Connector
<b>100 Mbps</b>	100-FX	Fiber (multimode)	LC	-
<b>1000 Mbps</b>	1000-T	Copper (twisted-pair)	RJ-45	-
	1000-SX	Fiber (multimode)	LC	-
	1000-LX	Fiber (multimode or single mode)	LC	-
	1000-LH	Fiber (single mode)	LC	-
	1000-BX	Fiber (single mode)	LC	-
<b>10 Gbps</b>	10-Gig Direct Attach	Copper (twinaxial)	-	Not Applicable
	10-Gig SR	Fiber (multimode)	-	LC
	10-Gig LR	Fiber (single mode)	-	LC
	10-Gig ER	Fiber (single mode)	-	LC

<sup>1</sup> For supported transceivers, see the latest version of the *ArubaOS-Switch and ArubaOS-CX Transceiver Guide* on the Aruba Support Portal.

- Go to the Aruba Support Portal at <https://asp.arubanetworks.com/downloads>.
- Filter for (1) Product Family, (2) Product Series, (3) Document File Contents.
- Select the *ArubaOS-Switch and ArubaOS-CX Transceiver Guide* link.

For technical details of cabling and technologies, see [Cabling and technology information](#) on page 72.

## Management ports

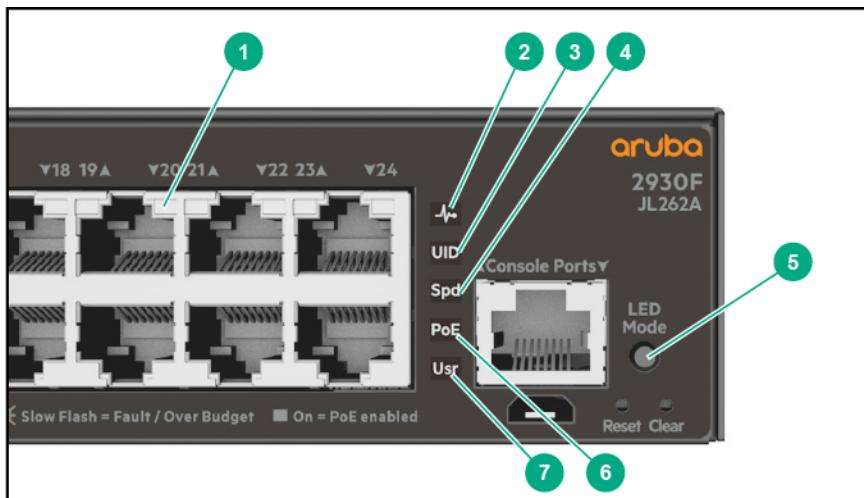
### Console Ports

There are two serial console port options on the switch, an RJ-45 or Micro USB. These ports are used to connect a console to the switch. You can use either an RJ-45 serial cable or a standard Micro USB cable. (Either option must be ordered separately). The Micro USB connector has precedence for input. If both cables are plugged in, the console output is echoed to both the RJ-45 and the Micro-USB ports. However, the input is only accepted from the Micro-USB port.

For more information on the console connection, see [\(Optional\) Connect a management console](#) on page 47. The console can be a PC or workstation running a VT-100 terminal emulator, or a VT-100 terminal.

## Switch and port LEDs on front of the switches

**Figure 3:** Switch and port LEDs



**Table 5:** Switch and port LEDs: Labels and description

Label	Description
1	Switch port LEDs
2	Global status LED
3	Unit identification LED
4	Speed LED
5	LED Mode button
6	PoE LED <sup>1</sup>
7	Usr LED

<sup>1</sup> PoE Mode LED is present only on switch models that support PoE.

On green	The switch has passed self-test and is powered up normally.
Slow flash green*	The switch self-test and initialization are in progress after the switch has been power cycled or reset. The switch is not operational until this LED stops blinking green.
Slow flash orange*	A fault or self-test failure has occurred in the switch, one of the switch ports, or a fan. The Status LED for the component with the fault will flash simultaneously.
On orange	If this LED is on orange for a prolonged time, the switch has encountered a fatal hardware failure, or has failed its self-test.
Off	The unit is not receiving power.

**Table 6:** Front of switch status and mode LED behavior

Switch LEDs	Function	State	Meaning
Global status	Internal power status of the switch. Self-test status Switch/port fault status.	On green	The switch has passed self-test and is powered up normally.
		Slow flash green*	The switch self-test and initialization are in progress after the switch has been power cycled or reset. The switch is not operational until this LED stops blinking green.
		Slow flash orange*	A fault or self-test failure has occurred in the switch, one of the switch ports, or a fan. The Status LED for the component with the fault will flash simultaneously.
		On orange	If this LED is on orange for a prolonged time, the switch has encountered a fatal hardware failure, or has failed its self-test.
		Off	The unit is not receiving power.
UID (Unit identification)	The Unit Identification LED is used to help you to identify a particular unit in a rack or collection of products.	On or slow flash*	The "chassislocate" command allows you to blink or turn on the LED for a specified number of minutes (1-1440). The default is 30 minutes.
		Off	LED will turn off after the timeout period has expired.
Speed mode selected	Indicates when the Port LEDs are showing port speed information.	On	Speed mode is selected. Port LEDs indicate port speed.
		Off	Speed mode not selected.
Power over Ethernet (PoE) mode selected**	Indicates when the Port LEDs are showing PoE status information.	On green	PoE mode is selected. Port LEDs show PoE information.
		On orange	PoE mode is selected and a port also has a PoE error. The Global Status LED and the LED corresponding to the port with the error will be flashing orange. The rest of the port LEDs will display normal PoE status.

*Table Continued*

Switch LEDs	Function	State	Meaning
		Slow flash orange*	PoE mode has NOT been selected and a port has a PoE error. LED will be flashing orange simultaneously with the Global Status LED and the LED corresponding to the port with the error. The rest of the port LEDs will display normal PoE status.
		Off	PoE mode is not selected.
User mode selected	This mode is reserved for future use.	On green	User mode is selected.
		Off	User mode not selected.

\* The slow blink behavior is an on/off cycle once every 1.6 seconds, approximately.

\*\* Applies only to switches that support PoE/PoE+.

**Table 7: Port LEDs and mode behavior**

Switch LEDs	Function	State/Mode	Meaning
Port LEDs	To display the information for the port as selected by the LED Mode select button.  When transceivers and SFPs are installed, this LED is also used to indicate that the installation has occurred by going on for two seconds then off.	Activity/Link	Shows port Activity and Link status.  This is the DEFAULT. There is no dedicated mode LED indicating this mode.  The Mode LED function should return to this selection 10 minutes after the last press of the LED Mode button.
		Speed	Shows port speed configuration.
		PoE***	Shows PoE information.
		User	Shows user-selectable behavior.
Activity/Link mode selected	Port LEDs are displaying link status and network activity information simultaneously.  Activity/Link mode is the default mode and is in effect unless another	Half-bright green	The port is enabled and receiving a link indication from the connected device.

*Table Continued*

Switch LEDs	Function	State/Mode	Meaning
	LED mode has been selected.	Activity flicker green	The percentage of time that the LED is full-bright is roughly proportional to the percentage of full-bandwidth utilization of the port.  Half-bright green port link indication remains on as activity flickers from half-bright to full-bright.
		Slow flash orange*	The corresponding port has failed its self-test. Flashes simultaneously with the Global Status LED flashing orange.
		Off	The port is disabled, not connected, or not receiving a link.
Speed mode selected	Port LEDs are displaying the connection speed at which each port is operating.	On green	The port is operating at 10 Gbps.
		Slow flash green*	The port is operating at 1 Gbps.
		Off	The port is not linked, or is operating at 10 or 100 Mbps.
PoE mode selected***	Port LEDs are displaying PoE information.	On green	The port is providing PoE power.
		On orange	PoE is disabled on the port.
		Fast flash orange**	The port is denied power or is detecting an external PD fault.
		Slow flash orange*	The port has an internal hardware failure. Flashes simultaneously with the Global Status LED flashing orange.
		Off	The port is not providing PoE power.

\* The slow blink behavior is an on/off cycle once every 1.6 seconds, approximately.

\*\* The fast blink behavior is an on/off cycle once every 0.8 seconds, approximately.

\*\*\* Applies only to switches that support PoE/PoE+.

## LED mode select button and indicator LEDs

The state of the Mode LEDs is controlled by the LED Mode select button. The current view mode is indicated by the Mode LEDs next to the button. Press the button to step from one view mode to the next. See **Table 6: Front of switch status and mode LED behavior** on page 12.

## Reset and Clear buttons

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

The Reset and Clear buttons are used singly or in combination, as follows:

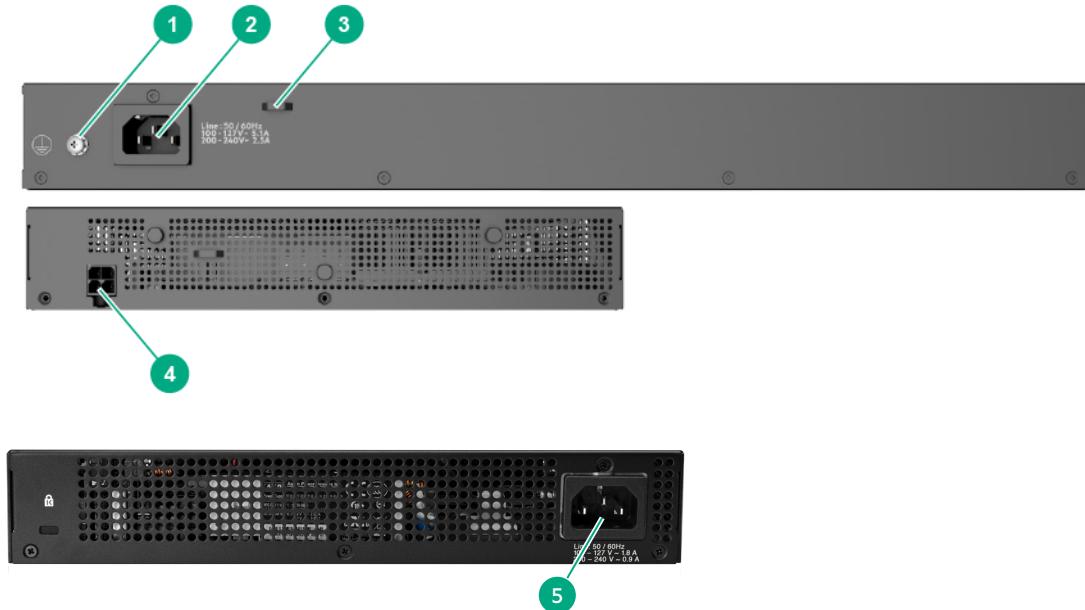
To accomplish this:	Do this:	This will happen:
Soft reset	Press and release the Reset button.	The switch operating system is cleared gracefully. (Items such as data transfer completion and temporary error conditions are cleared.) The switch then reboots and runs self-tests.
Hard reset	Press and hold the Reset button for more than 5 seconds (until all LEDs turn on), then release.	The switch reboots, similar to a power cycle. A hard reset is used, for example, when the switch CPU is in an unknown state or not responding.
Delete console and management access passwords.	Press Clear button for more than 5 seconds, but within 15 seconds (in between 5 - 15 seconds)	Clears all passwords. Will flash Global Status Green LED, after 5 seconds has expired to indicate that passwords have cleared.
Turn off UID LED	Press Clear button and release within 5 seconds (in between 0.5 - 5 seconds)	Clears the UID LED.
Restore the factory default configuration.	1. Press Clear and Reset simultaneously. 2. While continuing to press Clear, release Reset. 3. When the Global Status LED begins to fast flash orange (after approximately 5 seconds), release Clear.	The switch removes all configuration changes, restores the factory default configuration, and runs self-test.

 **NOTE:** These buttons are provided for your convenience. If you are concerned with switch security, make sure that the switch is installed in a secure location, such as a locked wiring closet. You can also disable these buttons by using the `front-panel-security` command. For a description of that command, see the latest *Access Security Guide* for your switch at <https://asp.arubanetworks.com/downloads>.

## Back of the switches

The back of all the 24-port and 48-port switches are the same. The back of both 8-port and 12-port switches are different.

**Figure 4:** Back of the 8-port 2930F switches



**Table 8:** Back of the 2930F switches labels and descriptions

Label	Description
1	Ground point
2	AC power connector
3	Cable tie eyelet
4	DC power jack (JL258A and JL692A)
5	AC power connector (JL693A)

### Power connector

The 2930F 12-port, 24-port and 48-port switches do not have a power switch; they are powered on when connected to an active AC power source. The switches 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.

The Aruba 2930F 8-port switches (JL258A) do not have a power switch; they are powered on when the external AC/DC power adapter is connected to the switch and to a power source. The external AC/DC power adapter supplies 54 volts DC to the switch and automatically adjusts to any AC voltage between 100-240 volts and either 50 or 60 Hz. No voltage range settings are required. Be sure to release the latch on the DC plug before removing the adapter power cord. (See [Figure 31: Aruba 2930F 8G \(JL258A, JL692A\) switch power plug latch](#) on page 46.)

### Switch features

The features of the 2930F switches include:

- Combinations of fixed 10/100/1000-T and SFP/SFP+ ports, as described under **Network ports** on page 8.
- Power over Ethernet (PoE+) operation (JL255A, JL256A, JL258A, JL692A, JL693A, JL261A, JL262A, JL263A, JL264A, JL557A, JL558A, JL559A)—The PoE+ switches are IEEE 802.3at standard compliant. They provide up to 30W per port to power IP phones, wireless access points, indoor web cameras, and more. For more information, see the latest version of the *HPE Power over Ethernet (PoE/PoE+) Planning and Implementation Guide*, available from <https://asp.arubanetworks.com/downloads>.

The switches support 802.3af and 802.3at standard devices and some prestandard PoE devices. For a list of these devices, see the FAQs (Frequently Asked Questions) for your switch model. PoE is enabled by default. (For more information, see the *2930F Management and Configuration Guide* for your switch at <https://asp.arubanetworks.com/downloads>.)

- Plug-and-play networking. All ports are enabled by default. Connect the network cables to active network devices and your switched network is operational.
- Auto MDI/MDI-X on all twisted-pair ports (10/100/1000Base-T), meaning that all connections can be made using straight-through twisted-pair cables. Cross-over cables are not required, although they will also work. The pin operation of each port is automatically adjusted for the attached device: if the switch detects that another switch or hub is connected to the port, it configures the port as MDI; if the switch detects that an end node device is connected to the port, it configures the port as MDI-X. See **Cabling and technology information** for recommended or required cabling.
- Automatic learning of the network addresses in the 64000-address forwarding table in each switch (with configurable address aging value).
- Automatically negotiated full-duplex operation for the 10/100/1000 RJ-45 ports when connected to other auto-negotiating devices. The SFP/SFP+ ports always operate at full duplex.
- Easy management of the switch through several available interfaces:
  - **Console interface:** A full-featured, easy-to-use, VT-100 terminal interface for out-of-band or in-band switch management.
  - **Web browser interface:** An easy-to-use built-in graphical interface that can be accessed from common web browsers.
  - **Aruba AirWave:** A powerful and easy-to-use network operations system that manages wired and wireless infrastructures.
  - **IMC (Intelligent Management Center):** An SNMP-based, graphical network management tool that you can use to manage your entire network. Free trials of IMC can be downloaded at <http://www.hpe.com/networking/imc>.
- Support for the Spanning Tree Protocol to eliminate network loops.
- Support for up to 4096 IEEE 802.1Q-compliant VLANs so you can divide the attached end nodes into logical groupings that fit your business needs.
- Support for many advanced features to enhance network performance: For a description, see the *2930F Management and Configuration Guide* and other software guides at <https://asp.arubanetworks.com/downloads>.
- To download product updates, go to Aruba Networking Software at <https://asp.arubanetworks.com>
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Aruba Support Portal at <https://asp.arubanetworks.com>.
- Low-power operation:

- Ports on a switch or stack member may be set to operate at reduced power.
- Port status LEDs may be turned off.
- If the port is not connected (link partner is not detected), RJ-45 ports will operate at reduced power.

This chapter shows how to install your switch. The 2930F switches come with an accessory kit that includes the brackets for mounting the switch in a standard 19-inch telco rack or an equipment cabinet. Included also are rubber feet that can be attached so the switch can be securely positioned on a horizontal surface. The brackets are designed to allow mounting the switch in a variety of locations and orientations. The Aruba 2930F 8G switches (JL258A and JL692A) also include brackets that enable mounting on a wall or under a table. For other mounting options, contact your Aruba authorized network reseller or Aruba representative.



**NOTE:** If an Aruba 2930F 24G or 48G switch is to be shipped in a rack, it can be mounted and shipped in a Hewlett Packard Enterprise 10K rack using the HPE X410 Universal Rack Mounting Kit (J9583A). Additionally, it can also be mounted in any four post rack using the HPE X410 Universal Rack Mounting Kit (J9583A).



**NOTE:** Aruba 2930F 8G and 12G switches (JL258A, JL692A and JL693A) are not designed for shipping in a rack.

## Included parts

The 2930F switches have the following components shipped with them:

- Documentation kit
- Accessory kits for mounting hardware

Aruba 2930F switch model	Part number	Count	Included items
JL255A 24G PoE+ Switch	5092-0727	2	Rack mount brackets
JL261A 24G PoE+ 4SFP Switch		4	Rubber foot pads
JL263A 24G PoE+ TAA Switch		1	Cable tie
JL256A 48G PoE+ 4SFP+ Switch		8	Small screws; bracket-to-switch
JL262A 48G PoE+ 4SFP+ Switch		4	Large screws; bracket-to-rack
JL264A TAA 48G PoE+ 4SFP+ TAA Switch			
JL557A 48G PoE+ 4SFP 740W Switch			
JL558A 48G PoE+ 4SFP+ 740W Switch			
JL559A 48G PoE+ 4SFP+ 740W TAA Switch			
JL253A 24G 4SFP+ Switch	5092-0769		
JL259A 24G 4SFP Switch			
JL254A 48G 4SFP+ Switch			
JL260A 48G 4SFP+ Switch			
JL258A 8G PoE+ 2SFP+ Switch	5189-6934	2	Rack mount brackets (long)
JL692A 8G PoE+ 2SFP+ TAA Switch		4	Large screws; bracket-to-rack
		8	Small screws; bracket-to-switch
	5300-0140	2	Wall/under-table brackets
		8	Small screws; bracket-to-switch
		1	Cable tie
		4	Rubber foot pads
JL693A 12G PoE+ 2G/2SFP+ Switch	5300-1028	2	Mounting brackets (short)
		2	Mounting brackets (long)
		1	Screw kit

- There are two warranty documents. One is the HPN warranty and the other is the EG warranty.
  - 5998-5984 Warranty Statement and Software License
  - 703828-0nn EG Safety, Compliance, and Warranty Information
- Power cord, one of the following:

<b>Country/Region (# option)</b>	<b>370W and non-PoE switches<sup>1</sup></b>	<b>740W switches<sup>2</sup></b>
Argentina (#ARM)	J9891A (8121-0729) HPE 1.9m C13 to IRAM 2073 Power Cord	J9960A (8121-1481) HPE 2.5m C15 to IRAM 2073 250V Power Cord
Australia/New Zealand (#ABG)	J9883A (8121-0837) HPE 1.9m C13 to SAA/3 Power Cord	J9941A (8121-1476) HPE 2.5m C15 to SAA/3 250V Power Cord
Brazil (#AC4)	J9894A (8121-1071) HPE 1.9m C13 to BR3 10Amp Power Cord	J9951A (8121-1265) HPE 2.5m C15 to BR3 10Amp 250V Power Cord
Chile (#A1X)	J9886A (8121-0735) HPE 1.9m C13 to CEI 23-50 Power Cord	J9946A (8121-1477) HPE 2.5m C15 to CEI 23-50 3-pole 250V Power Cord
China (#AKM)	J9890A (8121-0943) HPE 1.9m C13 to GB 1002 Power Cord	J9949A (8121-1484) HPE 2.5m C15 to PRC/3 250V Power Cord
Denmark (#ACE)	J9888A (8121-0733) HPE 1.9m C13 to DK 2 5Amp Power Cord	J9948A (8121-1486) HPE 2.5m C15 to DK 2-5A 250V Power Cord
Europe (#ABB) / South Korea (#AC6)	J9885A (8121-0731) HPE 1.9m C13 to CEE 7-xvi Power Cord	J9945A (8121-1479) HPE 2.5m C15 to CEE 7-VIIG 250V Power Cord
India (#AC1) / South Africa (#ACQ)	J9892A (8121-0564) HPE 1.9m C13 to IS 1293 250V Power Cord	J9956A (8121-1483) HPE 2.5m C15 to ZA/3 250V Power Cord
	India (8121-0564)	India (8121-0564)
	South Africa (8121-0737)	South Africa (8121-0737)
Israel (#AKJ)	J9899A (8121-1004) HPE 1.9m C13 to IL-3 90 Degree 250V Power Cord	J9958A (8121-1478) HPE 2.5m C15 to IL-3 90 Degree 250V Power Cord
Japan (#ACF)	J9893A (8121-1143) HPE 1.9m C13 to 498GJ JP 3-pole 125V Power Cord	J9950A (8121-1482) HPE 2.5m C15 to 498GJ JP 3-pole 125V Power Cord
UK (#ACC) / Hong Kong / Singapore / Malaysia (#ARE)	J9884A (8121-0739) HPE 1.9m C13 to BS 1363/A Power Cord	J9942A (8121-1475) HPE 2.5m C15 to BS 1363/A 250V Power Cord
Switzerland (#ACD)	J9898A (8121-0738) HPE 1.9m C13 to SEV 6534-2 Type 12G 250V Power Cord	J9957A (8121-1480) HPE 2.5m C15 to SEV 6534-2 Type 12G 250V Power Cord

*Table Continued*

Country/Region (# option)	370W and non-PoE switches <sup>1</sup>	740W switches <sup>2</sup>
Taiwan (#ARB)	J9887A (8121-0964) HPE 1.9m C13 to CNS 10917-3 Power Cord	J9947A (8121-1511) HPE 2.5m C15 to TW15CS3 125V Power Cord
Thailand (#AKL)	J9895A (8121-0734) HPE 1.9m C13 to NEMA 5-15P Power Cord	J9952A (8121-1485) HPE 2.5m C15 to NEMA 5-15P TH 250V Power Cord
US / Canada / Mexico (#ABA)	J9896A (8121-1141) HPE 1.9m C13 to NEMA 5-15P NA Power Cord	J9953A (8121-0914) HPE 2.5m C15 to NEMA 5-15P Power Cord

<sup>1</sup> JL253A, JL254A, JL259A, JL260A, JL255A, JL256A, JL261A, JL262A, JL263A, JL264A

<sup>2</sup> JL557A, JL558A, JL559A

PDU Jumper Cord (NA/Japan/Taiwan) J9943A (8121-1091) HPE 2.5m C15 to C14 PDU NA/JP/TW Power Cord.

PDU Jumper Cord (other country/regions) J8844A (8121-1094) HPE 2.5m C15 to C14 PDU Rest of World Power Cord.

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

## Installation procedures

### Procedure

#### 1. Prepare the installation site on page 24.

Ensure the physical environment into which you will be installing the switch is properly prepared. This includes having the correct network cabling ready to connect to the switch and having an appropriate location for the switch. See **Installation precautions** on page 23 for some installation precautions.

#### 2. Self-test.

Plug the switch into a power source and observe that the LEDs on the switch front panel indicate correct switch operation. When self-test is complete, unplug the switch.

#### 3. Mount the switch on page 27.

The switch can be mounted in a 19-inch telco rack, in an equipment cabinet, or on a horizontal surface. The eight and twelve-port switches (JL258A, JL692A and JL693A) can also be mounted on a wall or under a table.

#### 4. Install or remove SFP/SFP+ transceivers on page 43.

The switch has two or four slots for installing SFP/SFP+ transceivers. Depending on where you install the switch, it may be easier to install the transceivers first. Transceivers can be hot-swapped—they can be installed or removed while the switch is powered on.

#### 5. Connect the switch to a power source on page 45.

Once the switch is mounted, plug it into the main power source.

#### 6. (Optional) Connect a management console on page 47.

You may want to modify the switch configuration. For example, you may want to configure an IP address so it can be managed through a Telnet session or by using a web browser from an SNMP network management station. Configuration changes can be made by using the optionally ordered console cable to connect a PC to the switch console port.

## 7. **Connect the network cables** on page 49.

Using the appropriate network cables, connect the network devices to the switch ports.

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

## Installation precautions

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### **WARNING:**

- The rack or cabinet must be adequately secured to prevent it from becoming unstable and/or falling over.
  - Mount devices installed in a rack or cabinet as low as possible, with the heaviest devices at the bottom, and progressively lighter devices installed above.
  - For a wall-mounted Aruba 2930F 8G and 12G switches (JL258A, JL692A and JL693A), face the network ports up, that is, away from the floor. Do not wall-mount the switch with the network ports facing down (towards the floor).
-

**CAUTION:**

- When installing the switch, select an AC outlet near the switch to enable easy accessibility in case the switch must be powered off.
- Before connecting the switch to the power source, ensure that the power source circuits are properly grounded.
- Use only approved power cords with your Aruba Networking Product. See the power cord information in the section titled **Included parts** on page 19 “Included parts” (page 17) of this guide for acceptable power cords that are appropriate for this product. Failure to use approved power cords can result in personal injury and product damage, and may void your product warranty.
- Use only the AC/DC power adapter and power cord (if applicable), supplied with the switch. Use of other adapters or power cords, including those that came with other Aruba products, may result in damage to the equipment.
- If your installation requires a different power cord than the one supplied with the switch or power supply, be sure that the cord is adequately sized for the switch current requirements. In addition, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country/region. The mark is your assurance that the power cord can be used safely with the switch and power supply.
- 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 together the ampere ratings of all devices installed on the same circuit as the switch and compare the total with the rating limit for the circuit. The maximum ampere ratings are usually printed on the devices near the AC power connectors.
- Do not install the switch in an environment where the operating ambient temperature might exceed its specification. This caution includes a fully enclosed rack. Ensure the air flow around the sides and back of the switch is not restricted. Leave at least 3 inches (7.6 cm) for cooling for the 24- and 48-port switch models when installed in a fully-enclosed rack.

**NOTE:** Normal operating temperature for Aruba 2930F 8G and 12G switches (JL258A, JL692A and JL693A) require wider spacing minimums than described earlier for the 24- and 48-port switch models. For rack installation, maintain at least 1U space as a minimum above the product. Also, installing this switch in an enclosed, confined space such as a small bookshelf or unventilated cabinet, is not recommended.

## Prepare the installation site

**Cabling Infrastructure:** Ensure that the cabling infrastructure meets the necessary network specifications. See **Cabling and technology information** for more information.

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

- In the front of the switch, leave at least 3 inches (7.6 cm) of space for the twisted-pair and fiberoptic cabling.
- In the back of the switch, leave at least 1 1/2 inches (3.8 cm) of space for the power cord.
- On the sides of the switch, leave at least 3 inches (7.6 cm) for cooling.



**NOTE:** The Aruba 2930F 8G switches (JL258A and JL692A) require more front and back space when used with the optional Aruba JL312A power adapter shelf and Aruba JL311A cable guard. (To attach the cable guard, see the printed instructions included with the cable guard unit.)

## Verify that the switch passes self-test

Before mounting the switch in its network location, first verify it is working properly by plugging it into a power source and verifying it passes its self-test.

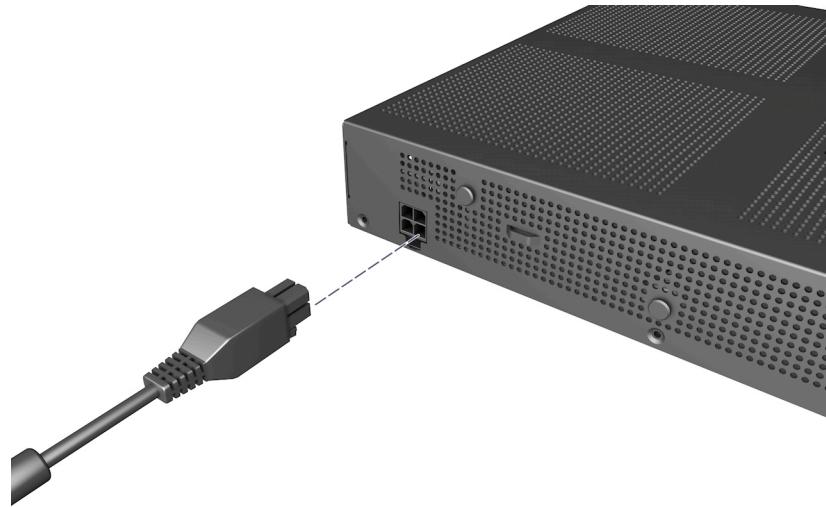
1. For the Aruba 2930F 24-port and 48-port switches, connect the power cord supplied with the switch to the power connector on the back of the switch. Then plug the cord into a properly grounded electrical outlet.

For the Aruba 2930F 8G and 12G switches (JL258A, JL692A and JL693A), connect the AC/DC power cord to the power connector on the back of the switch, Then plug the AC/DC power cord into a nearby properly grounded electrical outlet.

**Figure 5:** Connecting the power cord on Aruba 2830F switches



**Figure 6:** Connecting the power cord on Aruba 2930F 8-port switches (JL258A and JL692A)





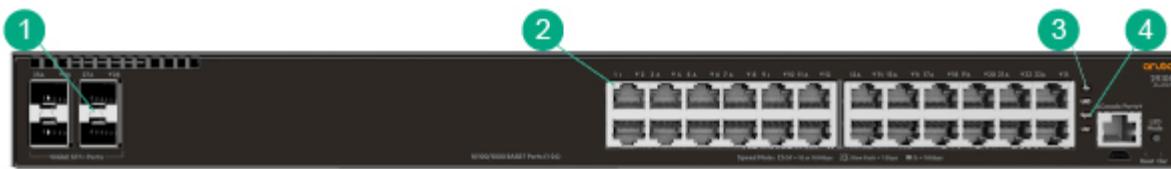
**NOTE:** The 2930F 12-port, 24-port and 48-port switches do not have a power switch. They are powered on when the power cord is connected to the switch and to a power source. For safety, select a power outlet located near the switch installation.

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

The Aruba 2930F 8-port (JL258A, JL692A) switches also have no power switch. They are powered on when the external AC/DC power adapter is connected to the switch and the power adapter cord to a power source. The external AC/DC power adapter automatically adjusts to any voltage between 100-240 volts and either 50 Hz or 60 Hz. Be sure to release the latch on the DC plug before removing the adapter power cord. (See [Figure 31: Aruba 2930F 8G \(JL258A, JL692A\) switch power plug latch](#) on page 46.)

- Check the LEDs on the switch as described in this example.

**Figure 7: Example of LEDs on the 2930F switches**



**Table 9: Example of LEDs on the 2930F switches labels and descriptions**

Label	Description
1	SFP/SFP+ port LEDs
2	RJ-45 port LEDs
3	Global Status and UID LEDs
4	Mode LEDs

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

## LED behavior:

During the switch boot:

- The Global Status, UID, other status, and mode LEDs, will initially turn green, and bi-color LEDs will change to orange, then back to green.
- The Global Status LED will start blinking green, indicating that the switch is going through its self-test and will continue to blink green until the switch is fully booted.
- The port LEDs will initially turn green, then turn orange, turn back to green, and then may blink on and off during phases of the boot.

When the switch boots successfully, the following LEDs display:

- Global Status will be solid green.
- UID LED is off.

- Other status LEDs may be on or off depending on the switch configuration and the hardware installed.
- The port LEDs go into their normal operational mode:
  - If the ports are connected to active network devices, the port LED may be on and behaves according to the LED mode selected. In the default LED mode (Activity/Link), the LED should show half-bright green to indicate link and be flickering full-bright green to show network traffic.
  - If the ports are not connected to active network devices, the port LED will stay off.

If the LED display is different than what is described above, especially if the Global Status LED continues to blink green for more than 120 seconds or blinks orange continually, the switch boot has not completed correctly. Refer to [Troubleshooting](#) on page 58 for diagnostic help.

## Mount the switch

### Mounting a 24-port or 48-port Aruba 2930F switch

The supported mounting options for the 24-port and 48-port Aruba 2930F switches include:

- Rack mount
- Horizontal surface mount

#### Rack mount option

The switch is designed to be mounted in any EIA-standard 19-inch telco rack or communication equipment cabinet.

The Aruba 2930F 24-port and 48-port switches can also be mounted in 4-post racks and cabinets by using the X410 Switch Rail Kit (J9583A). For instructions on using the kit, see the documentation that is included with the kit.



**NOTE:** If an Aruba 2930F 24G or 48G switch is to be shipped in a rack, it can be mounted and shipped in a Hewlett Packard Enterprise 10K rack using the HPE X410 Universal Rack Mounting Kit (J9583A). Additionally, it can also be mounted in any four post rack using the HPE X410 Universal Rack Mounting Kit (J9583A).

Some mounting brackets have multiple mounting holes and can be rotated, allowing for a wide variety of mounting options. Secure the rack in accordance with the manufacturer's safety guidelines.



#### WARNING:

For safe operation, please read the mounting precautions in [Installation precautions](#) on page 23, before mounting a switch.



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

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

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

**Figure 8:** Attaching mounting brackets to the 2930F 24- and 48-port switches



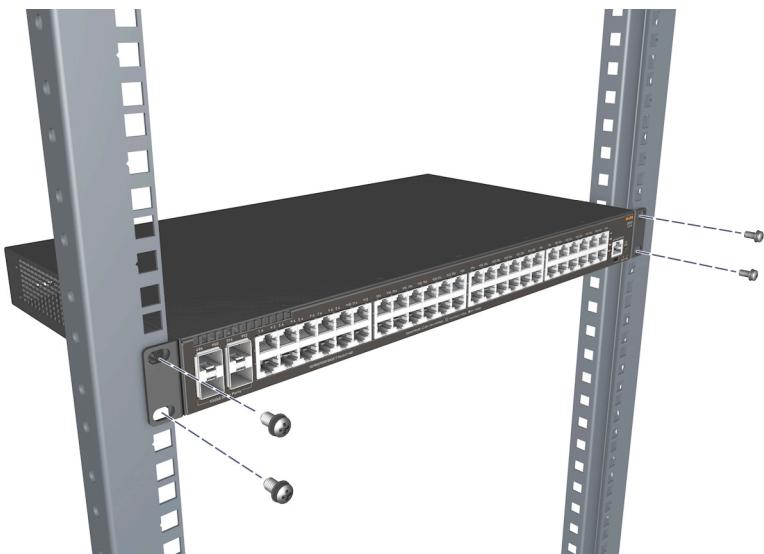
**WARNING:** For safe reliable installation, only use the screws provided in the accessory kit to attach the mounting brackets to the switch.



**NOTE:** The mounting brackets have multiple mounting holes and can be rotated allowing for a wide variety of mounting options. These include mounting the switch so that its front face is flush with the face of the rack, or mounting it in a more balanced position.

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 holding the brackets to the rack.

**Figure 9:** Mounting the 2930F 24- and 48-port switches in a rack

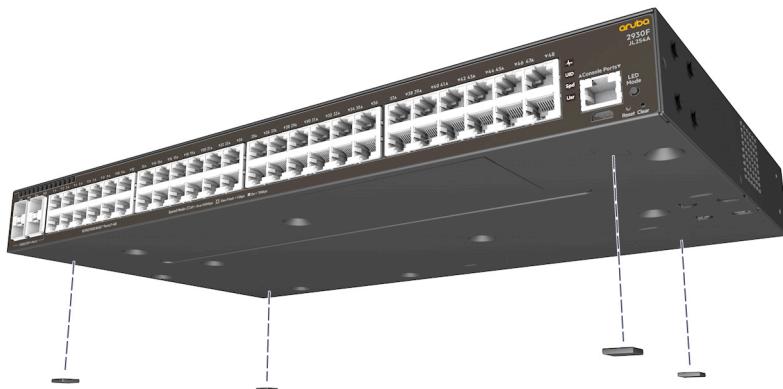


## Horizontal surface mount option

Place the switch on a table or other horizontal surface. The switch comes with rubber feet in the accessory kit that can be used to help keep the switch from sliding on the surface.

Attach the rubber feet to the four corners on the bottom of the switch within the embossed angled lines. Use a sturdy surface in an uncluttered area. You may want to secure the networking cables and switch power cord to the table leg or other part of the surface structure to help prevent tripping over the cords.

**Figure 10:** Mounting the 2930F 24- and 48-port switches on a horizontal surface



## Mounting the Aruba 2930F 8G switches (JL258A and JL692A)

The supported mounting options for the Aruba 2930F 8G switches include:

- Rack mount
- Horizontal surface mount
- Under-table mount
- Wall mount



**NOTE:** To mount the Aruba 2930F 8G switches with the optional JL312A Power Adapter Shelf, use the printed instructions provided with the shelf, then continue with the next section in this guide.



**NOTE:** To mount the Aruba 2930F 8G switches with the optional JL311A Cable Guard, see the printed instructions included with the cable guard unit to attach the cable guard and mount the switch.

## Aruba 2930F 8G switches warm product and other mounting information

- If you are mounting the Aruba 2930F 8G switches (JL258A or JL692A) in a rack with other products, the preferred position for the switch is at the base of the rack (for optimal cooling), or underneath as many of the other products as can be accommodated.
- When mounted in a rack, ensure that a 1U (44.45 mm / 1.75-inch) vertical space is left between the Aruba 2930F 8G switch and the device above it.

- When mounting the Aruba 2930F 8G switches on a wall, under a table, or on a horizontal surface, ensure that the supplied four rubber mounting feet are placed on the bottom of the switch. This provision is required to provide the proper thermal spacing between the switch and the mounting surface.
- Avoid obstructing the ventilation holes on the top, sides, and back of the switch.
- Do not install the Aruba 2930F 8G switches in a confined space that prevents a free air flow.
- When installing the switch in an enclosed space containing free air flow, ensure that any adjacent surfaces are at least 15.3 cm (6 inches) from the top, sides, and back of the switch.

### **Aruba 2930F 8G switches (JL258A or JL692A) rack mount option**

These switches are designed to be mounted in any EIA-standard two-post 19-inch telco rack or communication equipment cabinet.



**WARNING:** For safe operation, read the mounting precautions in [Installation precautions](#) on page 23, before mounting a switch.



**WARNING:** When rack-mounting an Aruba 2930F 8G switch, keep a minimum 1U space open above the switch for proper ventilation.



**NOTE:** The Aruba 2930F 8G (JL258A and JL692A) switches are not designed for shipping in a rack.

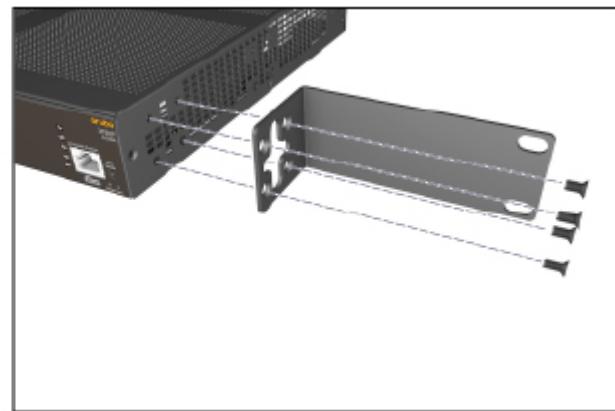
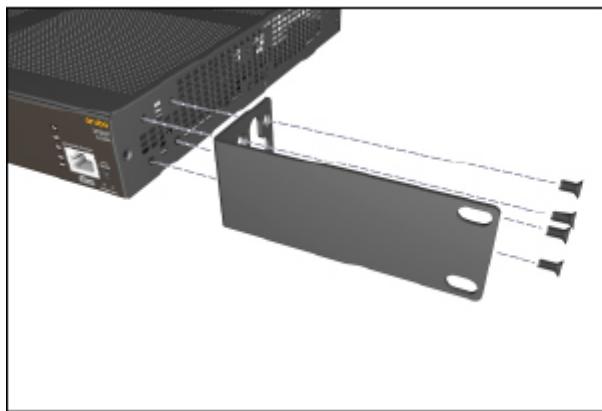


**NOTE:** The 12-24 screws supplied with the switch are the correct threading for standard EIA/TIA open 19-inch racks. If installing the switch in an equipment cabinet such as a server cabinet, use the clips and screws that came with the cabinet in place of the 12- 24 screws that are supplied with the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

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

- Use a #1 Phillips (cross-head) screwdriver and attach the mounting brackets to the switch with the included 10-mm M4 screws.

**Figure 11: Attaching mounting brackets to an Aruba 2930F 8G switch**



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



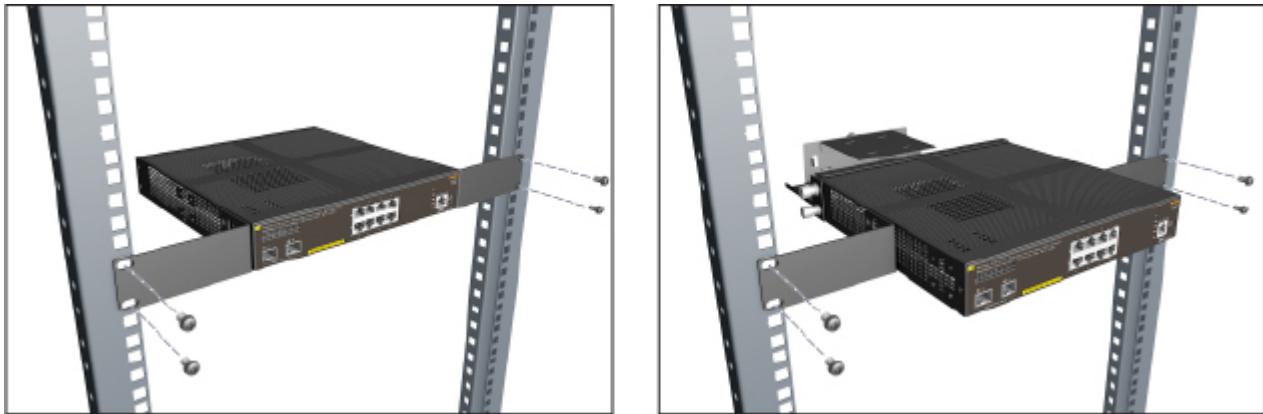
**NOTE:** Brackets can also be rotated 180 degrees from the conventional installation position.



**NOTE:** If you are installing the power adapter shelf on the switch, use the midchassis mounting holes on both sides of the switch to provide better switch support. (See the installation instructions provided with the power adapter shelf.)

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 holding the brackets to the rack.

**Figure 12:** Mounting an Aruba 2930F 8G switch in a two-post rack



#### Horizontal surface mount option

Place the switch on a table or other horizontal surface. The switch comes with rubber feet in the accessory kit that provide the required thermal transfer space (8.5 mm) under the switch.



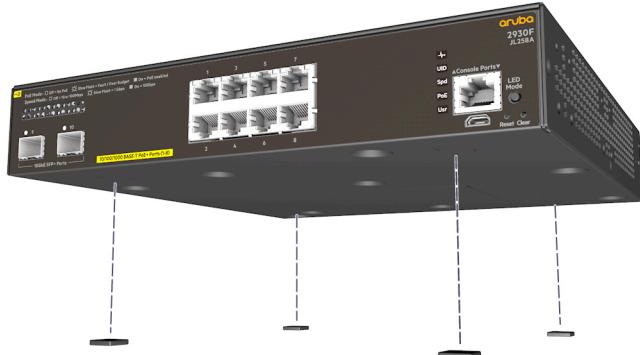
**NOTE:** Attaching the four rubber feet to the bottom of the switch is required to provide the necessary thermal transfer space between the switch bottom and the horizontal surface.

Attach the rubber feet to the four corners on the bottom of the switch within the embossed angled lines. Use a sturdy surface in an uncluttered area. You may want to secure the networking cables and switch power cord to the table leg or other part of the surface structure to help prevent tripping over the cords.



**WARNING:** When mounting the switch on top of a surface, position the switch so that items (papers and other items) are not likely to be put on top of it or next to it, blocking the ventilation holes.

**Figure 13:** Mounting an Aruba 2930F 8G switch (JL258A or JL692A) on a horizontal surface



### Wall and under-table mount options

You can mount an Aruba 2930F 8G switch under a table or on a wall with the network ports facing up.



**WARNING:** For safe operation, do not install the switch with side ventilation facing down. For under table mounting, the top ventilation must be facing down (see the next figure).

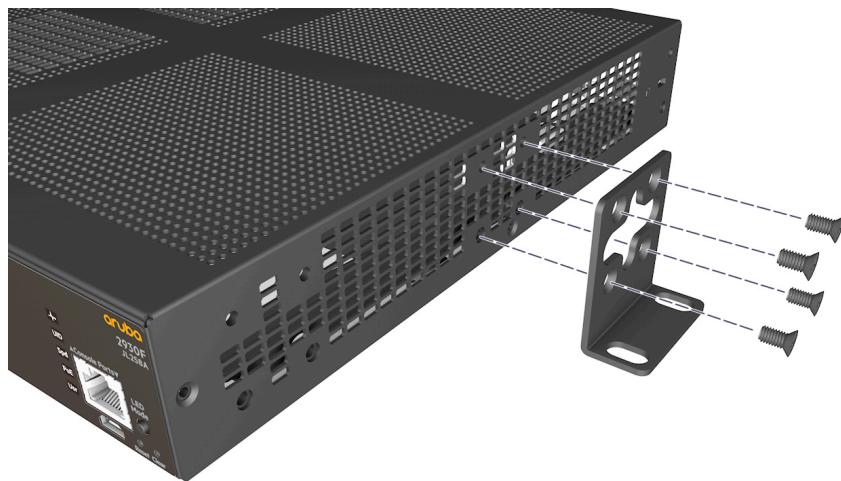


**CAUTION:** When mounting the switch a wall or wood surface, ensure that the wall or wood surface is at least 1/2-inch (12.7 mm) plywood or its equivalent.

To mount an Aruba 2930F 8G switch, follow these steps:

1. Use a #1 Phillips (cross-head) screwdriver and attach the short mounting brackets to the switch with the included 10-mm M4 screws.

**Figure 14:** Attaching short mounting brackets to an Aruba 2930F 8G switch



2. Attach the switch to the wall or under-table location using four 5/8-inch number 12 wood screws (not included).

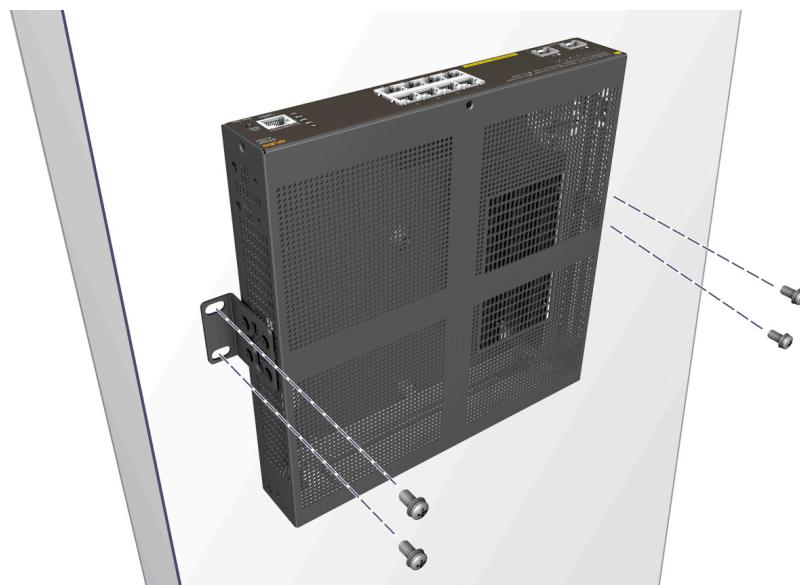
- Under-table mounting:

**Figure 15:** Mounting an Aruba 2930F 8G switch under a table



- Wall-mounting:

**Figure 16:** Mounting an Aruba 2930F 8G switch on a wall



## Mounting the Aruba 12G switch (JL693A)

Supported mounting methods include:

- Two-post rack
- Tabletop or desktop

- Under-table
- Wall or ventilated enclosure

Mounting accessories for the JL693A switch include:

- 2 long (rack/under-table) brackets
- 2 short (wall-mount) brackets
- 8 screws
- 4 self-adhesive pads for tabletop or desktop mounts

### **Aruba 2930F 12G switches warm product and other mounting information**

- If you are mounting the Aruba 2930F 12G switch (JL693A) in a rack with other products, the preferred position for the switch is at the base of the rack (for optimal cooling), or underneath as many of the other products as can be accommodated.
- When mounted in a rack, ensure that a 2U (88.xx mm / 3-inch) vertical space is left between the Aruba 2930F 12G switch and the device above it.
- When mounting the Aruba 2930F 12G switches on a wall or on a horizontal surface, ensure that the supplied four rubber mounting feet are placed on the bottom of the switch. This provision is required to provide the proper thermal spacing between the switch and the mounting surface.
- Avoid obstructing the ventilation holes on the top, sides, and back of the switch.
- Do not install the Aruba 2930F 12G switches in a confined space that prevents a free air flow.
- When installing the switch in an enclosed space containing free air flow, ensure that any adjacent surfaces are at least 15.3 cm (6 inches) from the top, sides, and back of the switch.



**WARNING:** Mounting Aruba 2930F 12G switches (JL693A) with ports facing upward is not supported.



**CAUTION:** Physically stacking any switch model on top of a JL693A switch can interrupt the flow of warm air through the vents in the top of the JL693A switch and is not supported.

### **Aruba 2930F 12G airflow**

Aruba 2930F 12G switches are fan-less and rely on convection to maintain proper operating temperature.

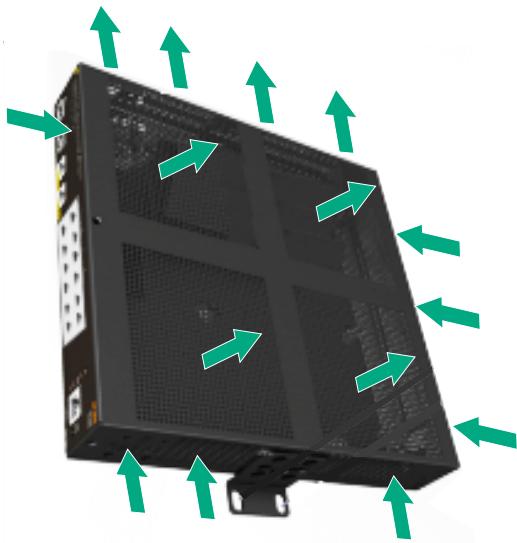


**IMPORTANT:** Aruba 2930F 12G switches (JL693A) can only be mounted with ports facing left, right or downward.

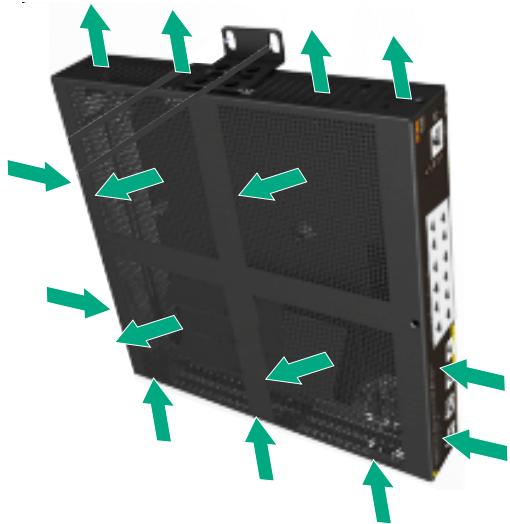


**WARNING:** Mounting Aruba 2930F 12G switches (JL693A) with ports facing upward is not supported.

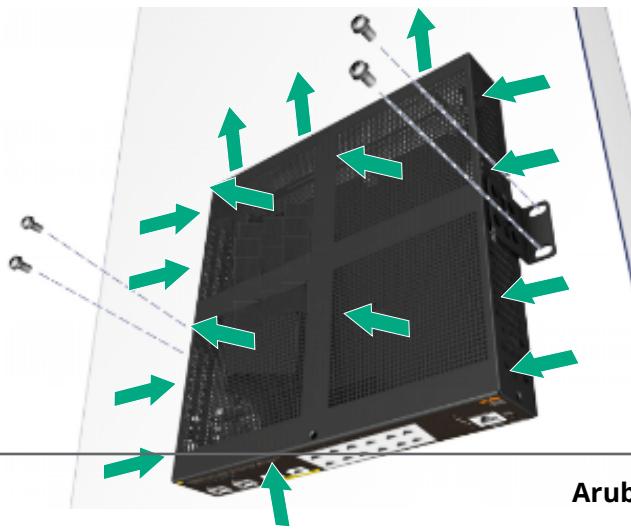
**Figure 17:** Aruba 2930F 12G airflow: Ports facing left



**Figure 18:** Aruba 2930F 12G airflow: Ports facing right



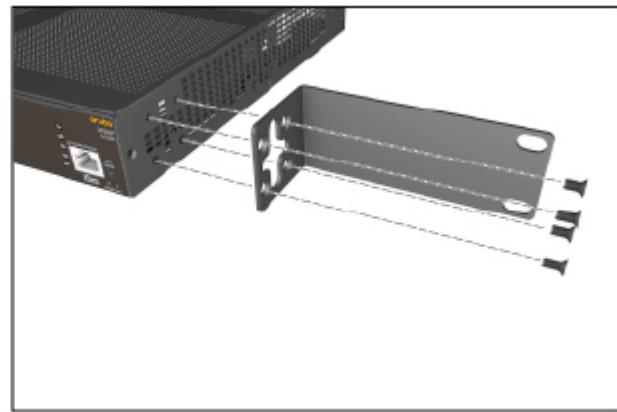
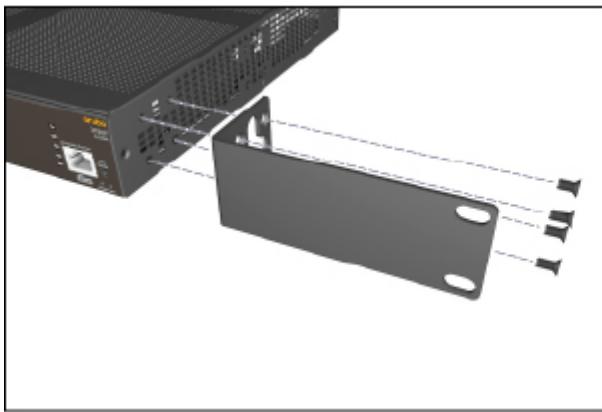
**Figure 19:** Aruba 2930F 12G airflow: Ports facing downward



## Two-post rack mounting

1. Attach the long rack mounting brackets to the switch with the included 10-mm M4 screws. You can orient the brackets to be flush or offset with the switch front panel (as shown in the following illustrations). Mounting brackets can also be attached at the middle of the switch.

**Figure 20:** Attaching mounting brackets to an Aruba 2930F 12G switch





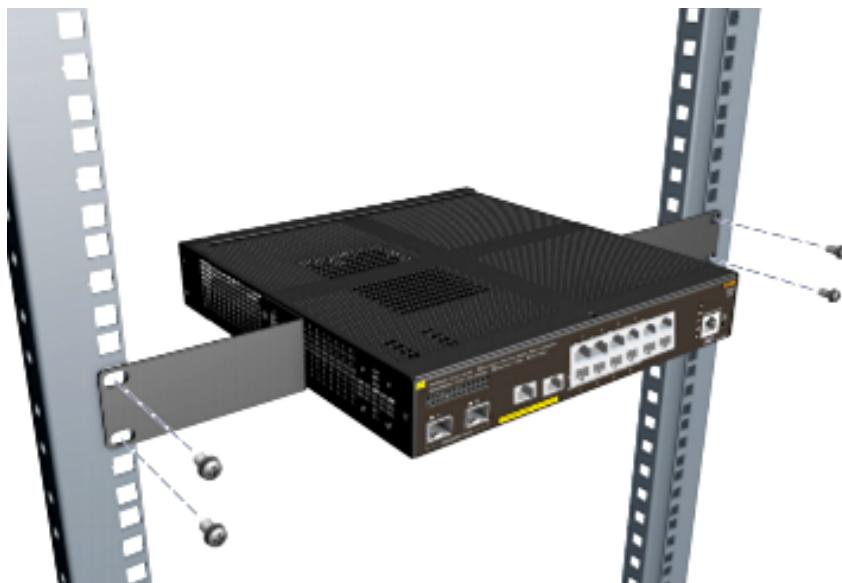
**WARNING:** For safe reliable installation, only use the screws provided in the accessory kit to attach the mounting brackets to the switch.

- Secure the rack mounting brackets to a two-post rack as shown in the following illustrations.

**Figure 21:** Flush Mounting an Aruba 2930F 12G switch in a two-post rack



**Figure 22:** Mounting an Aruba 2930F 12G switch in a two-post rack at switch middle



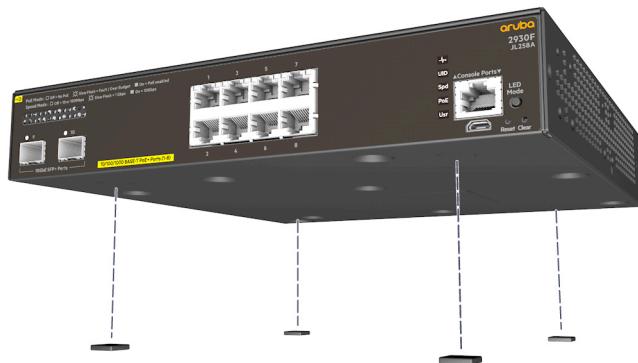
#### Tabletop or desktop mounting



**CAUTION:** Physically stacking any switch model on top of a JL693A switch can interrupt the flow of warm air through the vents in the top of the JL693A switch and is not supported.

1. Attach the four self-adhesive pads (included) to the bottom corners of the switch.

**Figure 23:** Mounting an Aruba 2930F switch on a horizontal surface



2. Position the switch firmly on the tabletop or desktop.



**CAUTION:** Ensure the pathway for power and network cables does not pose a tripping hazard.

### Under-table mounting

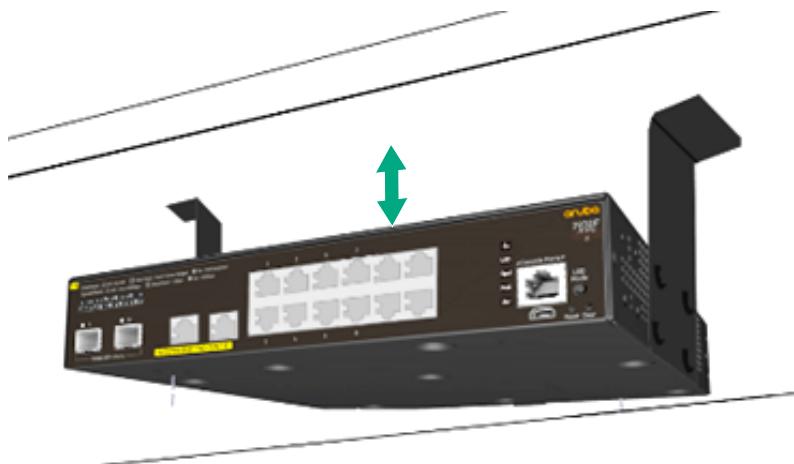


#### **IMPORTANT:**

- Position the switch with its top up. Inverting the switch (top vents facing downward) in an under-table mounting, reduces ventilation from inside the switch and is not supported.
- The switch must be secured using the long rack mount brackets (included) that provide a 3" (76.2 mm) gap between the top of the switch and the underside of the table top.

1. Attach the long (rack/table) mounting brackets to the switch.
2. Secure the rack/table mounting brackets to the underside of table/horizontal surface.

**Figure 24:** Mounting an Aruba 2930F 12G switch under a horizontal surface



### Wall mount or vented enclosed cabinet

#### Wall mounting the switch

1. Attach included short wall-mount brackets to switch at mid-point of switch sides.



**NOTE:** Aruba 2930F 12G switches (JL693A) can be wall mounted without the included wall mount brackets by using the keyhole mounting points on the bottom of the switch. For this mounting method, it is easiest to create a paper or cardboard template to determine mounting screw locations. Ensure screws (not included) and wall location are properly reinforced or rated to support the weight of the switch.

2. Choose mount orientation (ports facing left, ports facing right or ports facing downward). See images below.

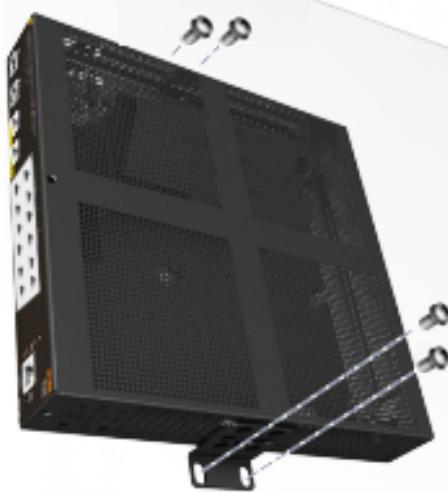


**WARNING:** Do not wall-mount the switch with ports facing up.

3. Determine and mark screw hole locations by positioning the switch where it will be installed.

4. Drill four holes in the wall to receive the four bracket screws.
5. Mount the switch to the wall using the four bracket screws (included).

**Figure 25:** Wall mounting an Aruba 2930F 12G switch with ports facing left



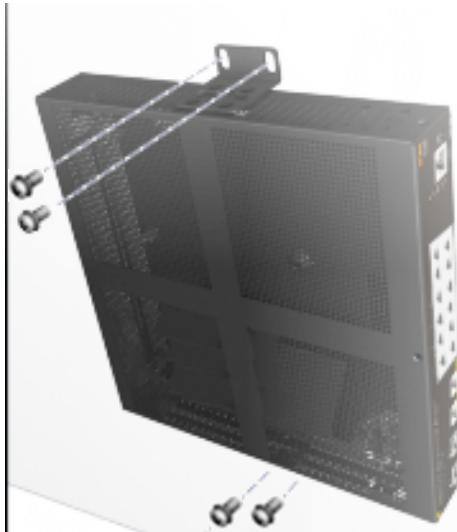
**NOTE:**

- When switch is wall mounted with ports facing left, there is no support for a single transceiver and limitations for two transceivers.
- No support for the following transceiver:
  - J9153D Aruba 10G SFP+ LC ER 40km SMF XCVR
- Max operating temperature = 0-35°C (sea level) for the following two transceivers:

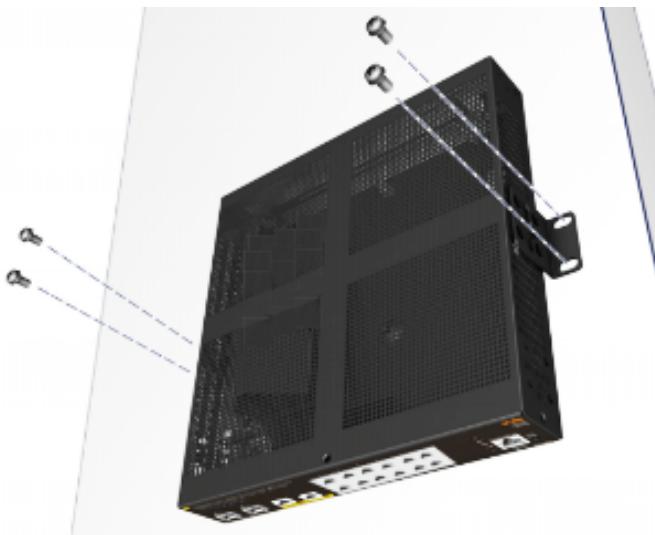
- J9150D Aruba 10G SFP+ LC SR 300m MMF XCVR
- J9151E Aruba 10G SFP+ LC LR 10km SMF XCVR

---

**Figure 26:** Wall mounting an Aruba 2930F 12G switch with ports facing right



**Figure 27:** Wall mounting an Aruba 2930F 12G switch with ports facing downward



**Installing the switch in a vented enclosed cabinet:**

1. Ensure that the enclosed cabinet has at least 40 LFM of natural convection air ventilation.
2. Ensure the space between the switch and cabinet has a minimum air gap of 152mm (6") including 3" of space between the top of the switch and cabinet ceiling.



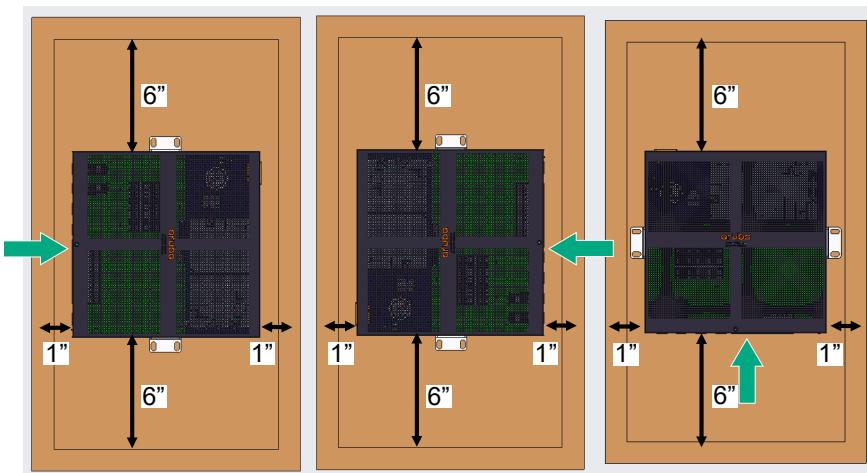
**IMPORTANT:** Supported wall-mount options include:

- Ports facing left
  - Mounting the switch with ports facing upward is not supported.
  - When switch is in this position, there is no support for a single transceiver and limitations for two transceivers.
  - No support for the following transceiver:
    - J9153D Aruba 10G SFP+ LC ER 40km SMF XCVR
  - Max operating temperature = 0-35°C (sea level) for the following two transceivers:
    - J9150D Aruba 10G SFP+ LC SR 300m MMF XCVR
    - J9151E Aruba 10G SFP+ LC LR 10km SMF XCVR
- Ports facing right
- Ports facing downward

**3.** Determine wall mount method:

- a. Short wall-mount brackets
  - b. Keyhole mounting points on bottom of switch (creating a paper or cardboard template is recommended to determine screw hole location, screws not included)
- 4.** Determine and mark screw hole locations by positioning the switch where it will be installed. Consult image below for proper spacing.
- 5.** Drill holes to receive mounting screws.
- 6.** Install switch in vented enclosed cabinet.

**Figure 28:** Mounting an Aruba 2930F 12G switch in a vented enclosed cabinet



## Install or remove SFP/SFP+ transceivers

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

**NOTE:**

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



**CAUTION:** Use only supported genuine Aruba SFP/SFP+ transceivers with your switch. Non-Aruba SFP/SFP+ transceivers are not supported, and their use may result in product malfunction. Should you require additional transceivers, contact your Aruba sales representative or an authorized reseller.

## Installing the transceivers

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



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



**NOTE:** Always disconnect the network cable from a transceiver before installing it in the switch.

**Figure 29:** *Installing a transceiver*



## Removing the transceiver:



**NOTE:** Always disconnect the network cable from the transceiver before removing it from the switch.

Depending on when the transceiver was purchased, it may have either of three different release mechanisms:

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

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

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

## Connect the switch to a power source

### Procedure

1. Depending on your switch model, do one of the following:

- a. For Aruba 2930F 12-port, 24-port and 48-port switches, plug the included power cord into the switch power connector and into a nearby AC power source.

**Figure 30:** Connecting the power cord on 2930F 12-port, 24-port and 48-port switches

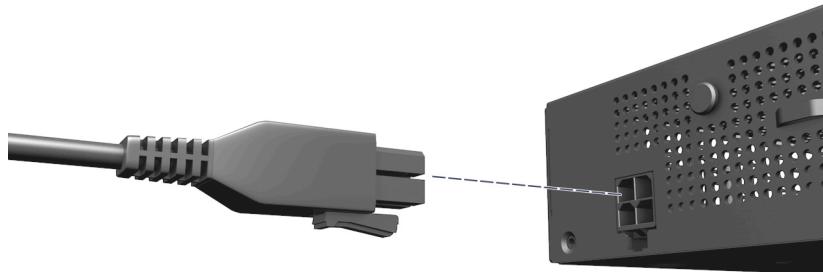


- b. For Aruba 2930F 8G (JL258A, JL692A) switches, plug the power cord for the AC/DC adapter into the switch. Then plug the AC/DC power adapter into a nearby AC power source.



**NOTE:** The Aruba 2930F 8G switch (JL258A, JL692A) power adapter cord includes a latch on its plug. Be sure to release the latch on the plug before removing the power adapter cord.

**Figure 31:** Aruba 2930F 8G (JL258A, JL692A) switch power plug latch



2. Recheck the LEDs during self-test. See [LED behavior](#): on page 26.
3. Use the included cable tie to secure the power cord to the switch.

**Figure 32:** Using the cable tie on the 2930F 12-port, 24-port and 48-port switches



**NOTE:** An optional power shelf (JL312A) can be attached to the Aruba 2930F 8G switches (JL258A and JL692A) to hold the AC/DC power adapter. For instructions on how to install this accessory, see the documentation included with the power shelf.

## (Optional) Connect a management console

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

- Monitor switch and port status and observe network activity statistics.
- Modify the switch configuration to optimize switch performance, enhance network traffic control, and improve network security.
- Read the event log and access diagnostic tools to help in troubleshooting.
- Download new software to the switch.
- Add passwords to control access to the switch from the console, web browser interface, and network management stations.

The console can be accessed through these methods:

- **Out of band:** Connect an Aruba X2C2 RJ45 to DB9 Console Cable (sold separately: JL448A) to the switch's RJ-45 Console Port and a workstation with terminal emulation software.

There is also the option of using a USB cable (not supplied) to connect the Micro USB Console Port on the switch to a PC. To use the USB Console Port, you must first download a USB driver to the PC.



**NOTE: USB Console Port Driver Download.** When using the Micro USB Console Port, the connected PC first requires "virtual COM port" USB drivers to be installed. USB drivers are available for Windows XP, Windows Vista, and Windows 7.

USB console drivers are available at <https://asp.arubanetworks.com>. Type a product name (e.g. 2930F) or product number in the Auto Search textbox. Select one of the switches from the drop-down list. Click the **Display selected** button. From the options that appear, select **Software downloads** (on the right-hand side). Download the "USB Console Port Drivers and Information."

You cannot use both the RJ-45 Console Port and USB Console Port at the same time. When the USB Console Port is connected to a live PC, it has priority over the RJ-45 Console Port.

By default, the RJ-45 console port is active (accepts input). To activate the USB console port, connect it to a live PC. If the USB console session closes because of the inactivity timer, the RJ-45 console port becomes active again to allow remote access through a terminal server. To reactivate the USB console port, unplug it, then reconnect it to a live PC.

- **In-Band:** Access the console using Telnet from a PC or UNIX station on the network, and a VT-100 terminal emulator. This method requires that you first configure the switch with an IP address and subnet mask by using either out-of-band console access or through DHCP/Bootp. For more information on IP addressing and on starting a Telnet session, see **Getting started with switch configuration** on page 53. The switches can simultaneously support one out-of-band console session through a Console Port and in-band Telnet console sessions.

The switches can simultaneously support one out-of-band console session through a Console Port and in-band Telnet console sessions.

## Terminal configuration

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

- Any baud rate from 1200 to 115200 (the switch senses the speed).
- Eight data bits, one stop bit, no parity, and flow control set to off.
- For the Windows Terminal program, also disable (clear) 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, 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 re-establish the console session.

## Direct console access

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

1. Connect the PC or terminal to the switch Console Port using the console cable included with the switch. (If your PC or terminal has a 25-pin serial connector, first attach a 9-pin to 25-pin straight-through adapter at one end of the console cable.)

Alternatively, connect the PC to the switch Micro USB Console Port using a USB cable (not supplied). Use a USB 2.0 high-speed cable with male type A (4-pin) to male micro-B (5-pin) connectors. The maximum allowable length is 5 meters.

To use the USB Console Port, you must first download a USB driver to the PC.

**Figure 33: Connecting a console cable**



2. Turn on the terminal or PC power and, if using a PC, start the PC terminal program.
3. Press [Enter] two or three times and you will see the copyright page and the message “Press any key to continue”. Press a key, and you will then see the switch console command (CLI) prompt, for example:

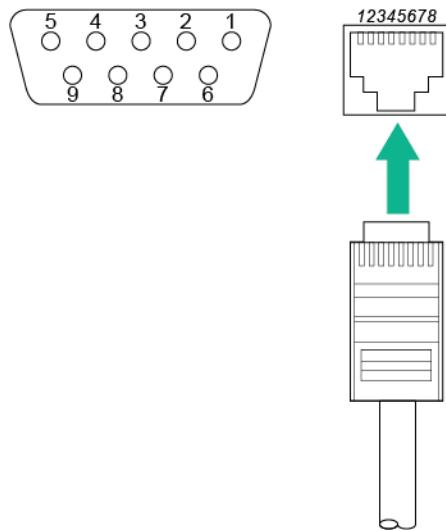
Aruba-2930F-24G-4SFPP#

If you want to continue with console management of the switch at this time, see **Getting started with switch configuration** on page 53 for some basic configuration steps. For more detailed information, see the latest version of the *Basic Operation Guide* and the *Management and Configuration Guide* for your switch. Find these publications on the Aruba Support Portal at <https://asp.arubanetworks.com/downloads>.

## Console cable pinouts

The console cable has an RJ-45 plug on one end and a DB-9 female connector on the other end. The figure below displays the mapping of the RJ-45 to DB-9 pins.

**Figure 34:** RJ-45 to DB-9 pinouts



**Table 10:** Mapping of RJ-45 to DB-9

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

## Connect the network cables

Connect the network cables, described under [Cabling and technology information](#) on page 72, from the network devices or your patch panels to the fixed RJ-45 ports on the switch or to any SFPs you have installed in the switch.

## Using the RJ-45 connectors

To connect, push the RJ-45 plug into the RJ-45 jack until the tab on the plug clicks into place. When power is on for the switch and for the connected device, the port LED lights to confirm a powered-on device (for example, an end node) is at the other end of the cable. If the port LED does not come on when the network

cable is connected, see [Diagnosing with the LEDs](#) on page 59. To disconnect, press the small tab on the plug and pull the plug out of the jack.

**Figure 35:** Connecting an RJ-45



**NOTE:** An optional cable guard (JL311A) can be attached to the Aruba 2930F 8G switches (JL258A and JL692A) to provide security for the attached network cables. For instructions on how to install this accessory, see the included documentation.

## 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.

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 half-bright when the network cable is connected to the port, see [Diagnosing with the LEDs](#) on page 59.

**Figure 36:** Connecting cable to a transceiver



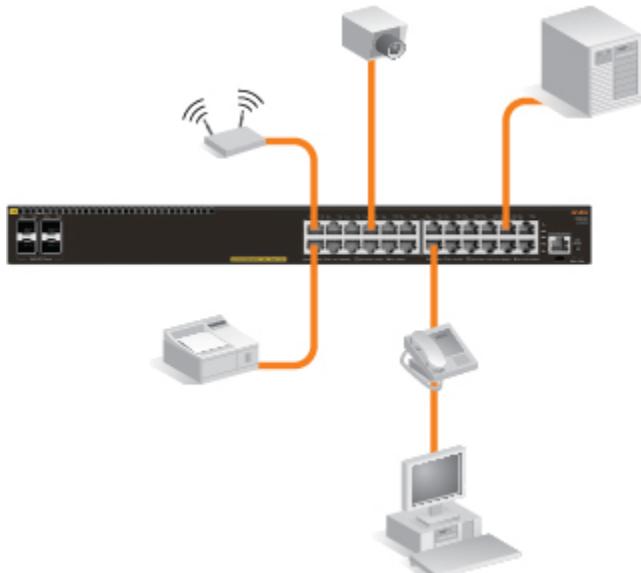
## Sample network topologies

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

### As a desktop switch implementing PoE

The switch is designed to be used primarily as a desktop switch to which end nodes, printers, and other peripherals and servers are directly connected, as shown in the following illustration. Notice that the end node devices are connected to the switch by straight-through or crossover twisted-pair cables. Either cable type can be used because of the IEEE Auto MDI/MDI-X features on the switch.

**Figure 37:** Basic desktop configuration



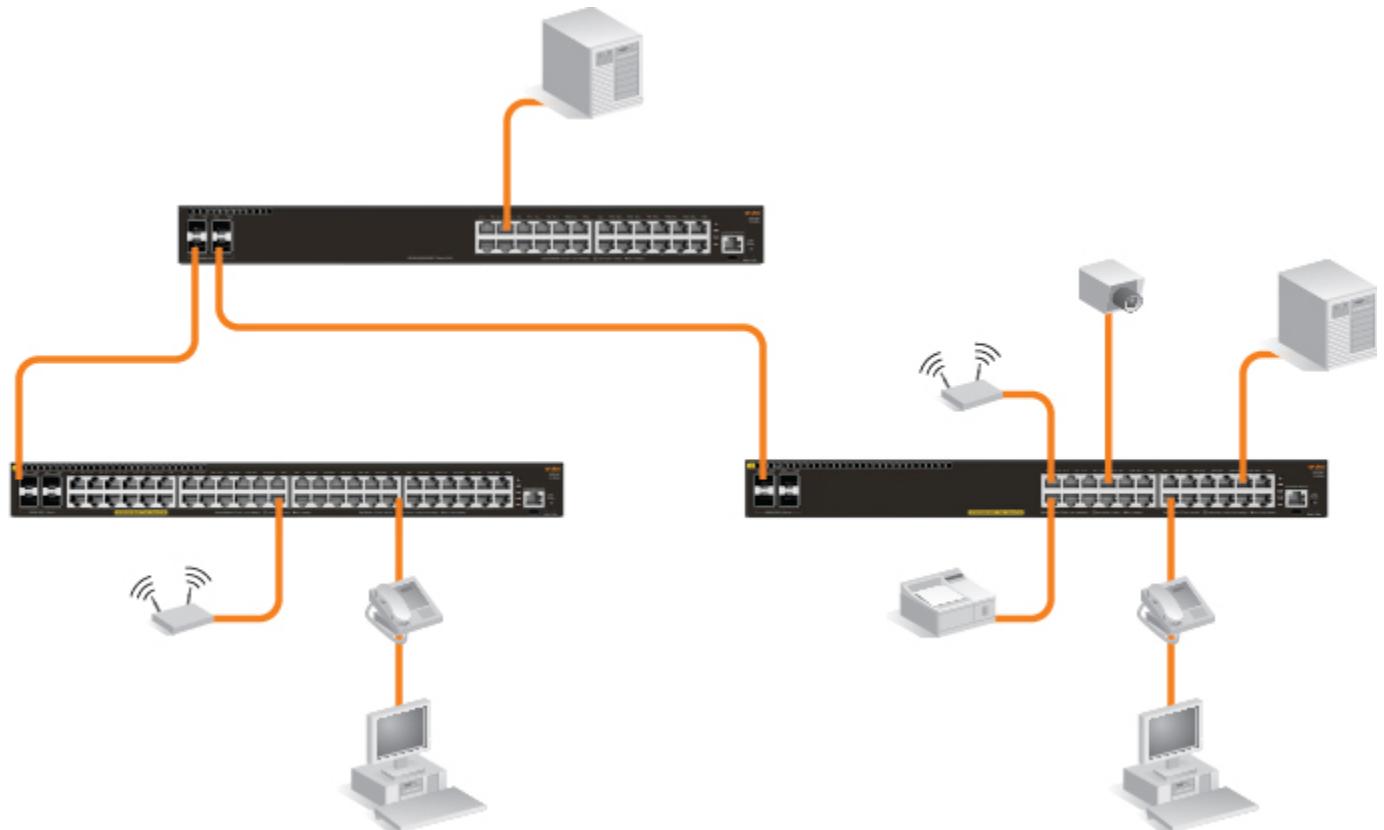
This illustration is an example of the switch being configured to supply PoE/PoE+ power to end devices such as IP telephones and wireless access points (WAPs).

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

The end node devices are connected to the switch by straight-through or crossover twisted-pair cables. Either cable type can be used because of the IEEE Auto MDI/MDI-X features on the switch.

## As a segment switch implementing PoE

**Figure 38:** Segment network configuration with PoE switches



The switch also works well as a segment switch. That is, with its high performance, it can be used for interconnecting network segments. Simply connect the network devices that form those segments to the switch or you can also connect other switches.

In the illustration above, two 2930F PoE+ switches with PCs, printers, and local servers attached, are both connected to a switch. The devices attached to the two 2930F PoE+ switches can now communicate with each other through the non-PoE switch. They can also all communicate with the server that is connected to a 1000Base-T port on the switch.

As shown in the illustration above, the IP telephones have been inserted in between the 2930F PoE+ switch and the PCs, and a wireless access point (WAP) has been connected to the 2930F PoE+ switch. Only devices directly connected to PoE switches can receive PoE power. Devices connected to the non-PoE switch cannot receive PoE power.

Because the 2930F switches have the Auto-MDIX feature, the connections between the switches and end nodes or servers can be through category 5 straight-through or crossover twisted-pair cable. If the connection is 10 Mbps only, then Category 3 or 4 cable can also be used. In all cases, the device ports must be configured to auto negotiate the link characteristics for this feature to work.

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

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

For more information on using the switch console, see the *Basic Operation Guide* and the *Management and Configuration Guide* for your switch model at <https://asp.arubanetworks.com/downloads>.

For information on the Aruba IMC (Intelligent Management Center), contact your Aruba representative.

## Recommended minimal configuration

In the factory default configuration, the switch has no IP (Internet Protocol) address and subnet mask, and no passwords. In this state, it can be managed only through a direct console connection. To manage the switch through in-band (networked) access, configure the switch with an IP address and subnet mask compatible with your network.

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

Many other features can be configured through the switch console interface to optimize performance, to enhance your control of the network traffic, and to improve network security. Once an IP address has been configured on the switch, these features can be accessed more conveniently through a remote Telnet session, through the switch web browser interface, and from an SNMP network management station running a network management program. For a list of switch features available with and without an IP address, see the latest version of the *Aruba Basic Operation Guide for ArubaOS-Switch* at <https://asp.arubanetworks.com/downloads>.



**NOTE:** By default, the switch is configured to acquire an IP address configuration from a DHCP or Bootp server. To use DHCP/Bootp instead of the manual method described in this chapter, see "DHCP/Bootp Operation" in the latest version of the *Aruba Basic Operation Guide for ArubaOS-Switch* at <https://asp.arubanetworks.com/downloads>.

## Using the console setup screen

The quickest and easiest way to minimally configure the switch for management and password protection in your network is to use a direct console connection to the switch, start a console session, and access the Switch Setup screen.

### Procedure

1. Using the method described in [Terminal configuration](#) on page 47, connect a terminal device to the switch and display the switch console command line interface (CLI) prompt (the default display).

The CLI prompt appears, for example:

Aruba-2930F-24G-4SFPP#

2. At the prompt, enter the `setup` command to display the Switch Setup screen.

A sample Setup screen with the default settings.

```
Aruba-2930F-24G-
PoEP-4SFPP
6-Aug-2019 8:23:16
===== CONSOLE - MANAGER MODE =====

Switch Setup

System Name : Aruba-2930F-24G-4SFPP
System Contact :
Manager Password : *****
Confirm Password : *****
Logon Default :
CLI
    Time Zone [0] : 0
    Community Name : public
    Spanning Tree Enabled [No] : No
    Time Sync Method [TIMEP/SNTP] : TIMEP/SNTP
    TIMEP Mode [Disabled] : Disabled
                                            Default Gateway :

IP Config [Manual] : DHCP/Bootp
IP Address : 15.255.133.94
Subnet Mask : 255.255.248.0
Actions-> Cancel Edit Save Help
```

Enter System Name - up to 32 characters.  
Use arrow keys to change field selection, <Space> to toggle field choices,  
and <Enter> to go to Actions.

3. In the Switch Setup screen, use the **Tab** key to select the **Manager Password** field and enter a manager password of up to 16 printable ASCII characters.
4. **Tab** to the **IP Config (DHCP/Bootp)** field and use the Space bar to select the **Manual** option.
5. **Tab** to the **IP Address** field and enter the IP address that is compatible with your network.
6. **Tab** to the **Subnet Mask** field and enter the subnet mask used for your network.
7. Press **Enter**, then **S** (for Save).

The following fields are displayed in the Setup screen. For more information on these fields, see the latest version of the *Aruba Basic Operation Guide for ArubaOS-Switch* at <https://asp.arubanetworks.com/downloads>.

Parameter	Default	
System Name	model name	Optional; up to 25 characters, including spaces
System Contact	blank	Optional; up to 48 characters, including spaces
Manager Password	blank	Recommended; up to 64 characters(no blank spaces)

*Table Continued*

Parameter	Default	
Logon Default	CLI	The default setting selects the command-line interface for console access. The alternative is the menu interface.
Time Zone	0 (none)	Optional; 1440 to -1440. The number of minutes your location is to the West (-) or East (+) of GMT.
Community Name	public	Default setting recommended.
Spanning Tree Enabled	No	Default setting recommended unless STP is already running on your network or the switch will be used in complex network topologies.
Default Gateway	blank	Optional; If network traffic must reach off-subnet destinations, enter the IP address of the next-hop gateway node.
Time Sync Method	None	Optional; The protocol the switch uses to acquire a time signal. The options are NTP, SNTP, TimeP, and TimeP/SNTP.
TimeP Mode	Disabled	Optional; The method the switch uses to acquire the TimeP server address.
IP Config (DHCP/ Bootp)	DHCP/Bootp	Set to Manual unless a DHCP/ Bootp server is used on your network to configure IP addressing.
IP Address	xxx.xxx.xxx.xxx	Recommended; If you set IP Config to Manual, then enter an IP address compatible with your network.
 <b>NOTE:</b> The IP address and subnet mask assigned for the switch must be compatible with the IP addressing used in your network. For more information on IP addressing, see the latest version of the <i>Basic Operation Guide</i> for your switch.		
Subnet Mask	xxx.xxx.xxx.xxx	Recommended; If you entered an IP address, then enter a subnet mask compatible with your network.

## Where to go from here

The above procedure configures your switch with a Manager password, IP address, and subnet mask. As a result, with the proper network connections, you can now manage the switch from a PC equipped with Telnet, and/or a web browser interface.

Some basic information on managing your switch is included in the next section. For more information on the console, web browser, and SNMP management interfaces and all the features that can be configured on the switch, see the latest version of the *Basic Operation Guide* and the *Management and Configuration Guide* for your switch at <https://asp.arubanetworks.com/downloads>.

## Software updates

For software updates, see [Accessing updates](#) on page 81.

## Recovering from a lost manager password

If you cannot start a console session at the manager level because of a lost manager password, you can clear all passwords and user names by getting physical access to the switch and pressing and holding the Clear button for more than 5 seconds. See [Reset and Clear buttons](#) on page 15.

# Using the IP address for remote switch management

The IP address of a switch can be used to manage the switch from any PC on the same or on a different subnet as the switch. In a networked connection, you can use a Telnet session or a standard web browser to manage the switch.

## Starting a Telnet session

To access the switch through a Telnet session, follow these steps:

### Procedure

1. Make sure the switch is configured with an IP address and that the switch is reachable from the PC that is running the Telnet session (for example, by using a Ping command to the switch's IP address).
2. Start the Telnet program on a PC that is on the same subnet as the switch and connect to the switch's IP address.
3. You will see the copyright page and the message "Press any key to continue". Press a key, and you will then see the switch console command (CLI) prompt, for example: Aruba-2930F-24G-4SFPP# Enter **help** or **?** to see a list of commands that can be executed at the prompt. Entering any command followed by **help** provides more detailed context help information about the command. Entering any command followed by **?** displays a list of options that are available at that point in the command entry.

## Starting a web browser session

The Aruba 2930M switches can be managed through a graphical interface. You can access a 2930M switch from any PC or workstation on the network. Do so by running your web browser and entering the switch IP address as the URL. No additional software installation is required to make this interface available; it is included in the switch onboard software.

The following illustration shows a typical web browser interface screen.

**Figure 39: Web browser interface screen**

The screenshot displays the Aruba web-based management interface. The top navigation bar includes the Aruba logo, a search bar, and links for Home, Status, Configuration, and Help. The main content area is organized into several panels:

- Switch Status:** Shows basic system information: System Name (Aruba-2930F-24G-4SFP), System Location, System Contact, System Uptime (1 minute, 30 seconds), System CPU Util (72%), and System Memory (342782464 Bytes).
- Unit Information:** Displays product details: Product Name (Aruba 2930F-24G-4SFP+ Switch (JL253A)), IP Address (192.168.1.1), Base MAC Address (b0 5a d8 95 51 40), Serial Number, Mgmt Server (http://h17007.www1.hpe.com/device\_help), and Version (WC.16.02.0000c, ROM WC.16.X2.0021).
- Alert Log:** A table showing a single alert entry: Date & Time (Mon Jan 1 00:00:24 1990), Status (Info), Alert (First time installation), and Description (Important installation information for your switch).
- Device View:** A port status summary showing 24 ports (labeled 1 through 24) and 2 SFP ports (labeled 25 and 26). Port 1 is highlighted in green. A 'Fan' icon is also present.
- Details:** A detailed table for Port 1 showing traffic statistics and error counts. Key data includes:

Port Name:	1	Totals:	Receive	Transmit	
Enabled:	Down	Bytes:	0	0	
Type:	100/1000T	Unicast:	0	0	
		Broadcast/Mcast:	0	0	
Utilization:	Receive	Transmit	Errors:	Receive	Transmit
Total (bps):	0	0	FCS:	0	0
Unicast (pps):	0	0	Alignment:	0	0
B/Mcast (pps):	0	0	Runts:	0	0
Utilization%:	0	0	Giants:	0	0
Recv Discards:	0		Total Errors:	0	0
Unknown Protos:	0		Drops:	0	0
Out Queue Len:	0		Collisions:	0	0
			Late Collns:	0	0
			Excess Collns:	0	0
			Deferred:	0	0

At the bottom of the interface, a footer note states: "Using this site means you accept its terms. © Copyright 2016 Hewlett Packard Enterprise Development LP".

An extensive help system is also available for the web browser interface. To access the help system, the subnet on which the switch is installed must have one of the following:

- access to the Internet
- Aruba IMC (Intelligent Management Center) or AirWave installed on a network management station that is on the subnet

This chapter describes how to troubleshoot your switch, primarily from a hardware perspective. You can perform more in-depth troubleshooting on the switch using the software tools available with the switch. Included are the console interface and the built-in web browser interface. Other tools include AirWave and the Intelligent Management Center (IMC, which is the SNMP-based network management tool). For more information, see the “Troubleshooting” chapter in the latest version of the *Aruba 2930F / 2930M Management and Configuration Guide for ArubaOS-Switch*, available on the <https://asp.arubanetworks.com/downloads> website.

This chapter describes the following:

- **Basic troubleshooting tips**
- **Diagnosing with the LEDs**
- **Proactive networking**
- **Hardware diagnostic tests**
- **Restoring the factory default configuration**
- **Downloading new switch software**

## Basic troubleshooting tips

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

- **Connecting to devices that have a fixed full-duplex configuration:** The RJ-45 ports are configured as “Auto”. That is, when connecting to attached devices, the switch operates in either half duplex or full duplex to determine the link speed and the communication mode:
  - If the connected device is also configured to Auto, the switch will automatically negotiate both link speed and communication mode.
  - If the connected device has a fixed configuration, for example 100 Mbps, at half or full duplex, the switch will automatically sense the link speed, but will default to a communication mode of half duplex.

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

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

- **Improper network topologies:** It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and excessive repeater delays between end nodes. If you have network problems after recent changes to the network, change back to the previous topology. If you no longer experience the problems, the new topology is probably at fault. Sample topologies are shown at the end of chapter 2 in this book.

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

For your switch, if you want to build redundant paths between important nodes in your network to provide some fault tolerance, enable Spanning Tree Protocol support on the switch. This support ensures that only one of the redundant paths is active at any time, thus avoiding 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 *Advanced Traffic Management Guide* for your switch at <https://asp.arubanetworks.com/downloads>.

The switch also supports Trunking, which allows multiple network cables to be used for a single network connection without causing a data path loop. For more on Trunking, see the *Management and Configuration Guide*, also at <https://asp.arubanetworks.com/downloads>.

- **Faulty or loose cables:** Look for loose or faulty connections. If they appear to be OK, make sure that the connections are snug. If that does not correct the problem, try a different cable.
- **Nonstandard cables:** Nonstandard and incorrectly wired cables may cause network collisions and other network problems, and can seriously impair network performance. A category 5 or greater cable tester is a recommended tool for every 100Base-TX and 1000Base-T network installation.
- **Check the port configuration:** A port on your switch may not be operating as expected because it is administratively disabled in the configuration. It may also be placed into a “blocking” state by a protocol operating on the port (dynamic VLANs), or LACP (dynamic trunking). For example, the normal operation of the spanning tree, GVRP, LACP, and other features may put the port in a blocking state.

Use the switch console to determine the port configuration and verify that there is not an improper or undesired configuration of any of the switch features that may be affecting the port. For more information, see the *Management and Configuration Guide* for your switch at <https://asp.arubanetworks.com/downloads>.

## Diagnosing with the LEDs

### LED patterns for general switch troubleshooting

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

**Table 11: LED error indicators**

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

<sup>1</sup> The flashing behavior is an on/off cycle once every 1.6 seconds, approximately.

**Table 12: Diagnostic tips**

Tip	Problem	Solution
1	The switch is not plugged into an active AC power source, or the switch power supply may have failed.	<ol style="list-style-type: none"><li data-bbox="907 202 1514 304">1. Verify that the power cord is plugged into an active power source and to the switch. Make sure that these connections are snug.</li><li data-bbox="907 325 1514 405">2. Try power cycling the switch by unplugging and plugging the power cord back in.</li><li data-bbox="907 418 1514 572">3. If the Global Status LED is still not on, verify that the AC power source works by plugging another device into the outlet. Or try plugging the switch into a different outlet or try a different power cord.</li></ol> <p data-bbox="907 604 1514 798">If the power source and power cord are OK and this condition persists, the switch power supply may have failed. To get assistance, call your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.</p>
2	A switch hardware failure has occurred. All the LEDs will stay on indefinitely.	Try power cycling the switch. If the fault indication reoccurs, the switch may have failed. To get assistance, either call your Aruba authorized network reseller, or use the electronic support services from Aruba.
3	The switch has experienced a software failure during self-test, or one of the switch cooling fans may have failed.	<ol style="list-style-type: none"><li data-bbox="907 984 1514 1085">1. Try resetting the switch by pressing the Reset button on the front of the switch, or by power cycling the switch.</li><li data-bbox="907 1106 1514 1396">2. If the fault indication reoccurs, attach a console to the switch and configure it to operate at 9600 baud. Then, reset the switch. Messages should appear on the console screen and in the console log identifying the error condition. You can view the console log at that point by selecting it from the console Main Menu or by typing <code>show log</code> at the Manager command prompt (#).</li></ol> <p data-bbox="907 1448 1514 1645">The error may indicate that one of the fans has failed. In switches with multiple fans, the switch may continue to operate under this condition if the ambient temperature does not exceed normal room temperature, but for best operation, replace the switch.</p> <p data-bbox="907 1666 1514 1790">If necessary to resolve the problem, contact your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.</p>

*Table Continued*

Tip	Problem	Solution
4	The network port for which the LED is blinking has experienced a self-test or initialization failure.	<p>Try power cycling the switch. If the fault indication reoccurs, the switch port may have failed. Call your Aruba authorized network reseller, or use the electronic support services from Aruba to get assistance.</p> <p>If the port is an SFP, verify it is one of the SFPs supported by the switch. Unsupported SFPs will be identified with this fault condition. The SFPs are also tested when they are “hot-swapped”—installed or changed while the switch is powered on.</p> <p>To verify that the port has failed, try removing and reinstalling the SFP without powering off the switch. If the port fault indication reoccurs, you will have to replace the SFP. Check the event log to see why the SFP failed.</p>

*Table Continued*

Tip	Problem	Solution
5	The network connection is not working properly.	<p>Try the following procedures:</p> <ul style="list-style-type: none"> <li>• For the indicated port, verify both ends of the cabling, at the switch and the connected device, are connected properly.</li> <li>• Verify the connected device and switch are both powered on and operating correctly.</li> <li>• Verify that you have used the correct cable type for the connection: <ul style="list-style-type: none"> <li>◦ For twisted-pair connections to the fixed 10/100/1000 ports, if the port is configured to "Auto" (auto negotiate), either straight-through or crossover cables can be used because of the switch "Auto-MDIX" feature and the Auto MDI/MDI-X feature of the 10/100/1000-T port.</li> </ul> </li> </ul> <hr/> <p> <b>NOTE:</b> If the switch port configuration is changed to one of the fixed configuration options (for example, 100 Mbps/Full Duplex), then the port operates as MDI-X only and you must use the correct type of cable for the connection. In general, for connecting an end node (MDI port) to the switch, use straight-through cable; for connecting to MDI-X ports on hubs, other switches, and routers, use crossover cable.</p> <hr/> <ul style="list-style-type: none"> <li>◦ For fiber-optic connections, verify that the transmit port on the switch is connected to the receive port on the connected device, and the switch receive port is connected to the transmit port on the connected device.</li> <li>• For 1000Base-T connections, verify that the network cabling complies with the IEEE 802.3ab standard. Install the cable according to the ANSI/TIA/EIA-568-A-5 specifications. Ensure that the cable testing complies with the stated limitations for Attenuation, Near-End Crosstalk, Far-End Crosstalk, Equal-Level Far-End Crosstalk (ELFEXT), Multiple Disturber ELFEXT, and Return Loss.</li> </ul> <p>The cable verification process must include all patch cables from any end devices, including</p>

*Table Continued*

Tip	Problem	Solution
		<p>the switch, to any patch panels in the cabling path.</p> <ul style="list-style-type: none"> <li>Verify that the port has not been disabled through a switch configuration change. You can use the console interface, or, if you have configured an IP address on the switch, use the web browser interface or IMC (Intelligent Management Center) network management software to determine the state of the port and re-enable the port if necessary.</li> <li>Verify that the switch port configuration matches the configuration of the attached device. For example, if the switch port is configured as "Auto", the port on the attached device also MUST be configured as "Auto". Depending on the port type, twisted-pair or fiber-optic, if the configurations don't match, the results could be a very unreliable connection, or no link at all.</li> <li>If the other procedures do not resolve the problem, try using a different port or a different cable.</li> </ul>
6	<p>The port or remote link partner may be improperly configured, or the port may be in a "blocking" state by the normal operation of protocols, such as Spanning Tree, LACP, or GVRP features.</p>	<ul style="list-style-type: none"> <li>You must ensure that the device at the other end of the connection indicates a good link to the switch. If it does not, the problem may be with the cabling between the devices, the connectors on the cable, or the configuration of the device on the remote end of the cable.</li> <li>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 <code>show lacp</code> command displays the port status for the LACP feature; the <code>show Spanning Tree</code> command displays the port status for Spanning Tree.</li> </ul> <p>Check the Port Status using the <code>show interfaces</code> command to confirm whether the port is configured as "disabled".</p> <p>Other switch features that may affect the port operation include VLANs and IGMP. Use the switch console to see how the port is configured for these features.</p> <p>For software troubleshooting tips, see the "Troubleshooting" chapter in the latest version of the <i>Management and Configuration Guide</i> for your switch on the Aruba Support Portal at</p>

Tip	Problem	Solution
		<p><a href="https://asp.arubanetworks.com/downloads"><u>https://asp.arubanetworks.com/downloads</u></a></p> <p>Ensure also, that the device at the other end of the connection is indicating a good link to the switch. If it is not, the problem may be with the cabling between the devices or the connectors on the cable.</p>

## LED patterns for PoE troubleshooting

If the PoE Status LED is flashing, that indicates a problem with the delivery of PoE power out one or more switch ports. Press the LED Mode button to put the switch into PoE mode and the port LEDs will show which ports are experiencing the problem. The following tables identify the specific problems that are shown by the LEDs.

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

**Table 13:** *LED error indicators for PoE*

Global status LED	Port LED (PoE mode)	Diagnostic tip
Solid green	Fast flash orange	1
Slow flash orange	Slow flash orange	2

**Table 14:** *Diagnostic tips*

Tip	Problem	Solution
1	<p>PoE oversubscription condition. All available PoE power is already taken by higher-priority ports.</p> <p>The port may be detecting an external PD fault.</p>	<p>If possible, redefine port priorities.</p> <p>Also, check the external PD for a fault.</p>
2	PoE hardware fault. A switch hardware component that is involved with PoE power delivery has failed.	Check the port for a hardware failure, this may require a reboot of the switch. If a hardware failure is confirmed, replace the switch.

## Proactive networking

The 2930F switches have built-in management capabilities that proactively help you manage your network, they include:

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

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

- Aruba AirWave: A powerful and easy-to-use network operations system that manages wired and wireless infrastructures.
- IMC (Intelligent Management Center): an SNMP-based network management tool that is included with your switch. Free trials of IMC (Intelligent Management Center) can be downloaded at <http://www.hpe.com/networking/imc>.
- A graphical web browser interface that you can use to manage your switch from a PC running a supported web browser such as Microsoft Internet Explorer or Firefox.
- A full-featured console interface. To access the interface, connect a standard terminal or PC running a terminal emulator to the switch console port. Use an Aruba X2C2 RJ45 to DB9 Console Cable (JL448A) (sold separately). The console command line interface is also accessible through a Telnet or SSH connection.

## 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, try any of the following:

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

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

### Checking the switch LEDs

See [Diagnosing with the LEDs](#) on page 59 for information on interpreting the LED patterns and LED behaviors.

### Checking console messages

Useful diagnostic messages may be displayed on the console screen when you reset a switch. Connect a PC running a VT-100 terminal emulator program or a standard VT-100 terminal to the switch's console port and configure it to run at 9600 baud, and with the other terminal communication settings shown in [Terminal configuration](#) on page 47.

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

## Testing twisted-pair cabling

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

## Testing switch-to-device network communications

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

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

These tests can be performed through the switch console interface. Use a terminal connected directly to the switch or through a Telnet connection, or from the switch web browser interface. For more information, see the *Management and Configuration Guide* for your switch at <http://www.hpe.com/support/manuals>.

These tests can also be performed from an SNMP network management station running a program that can manage the switch. Examples include IMC (Intelligent Management Center) and AirWave.

## Testing end-to-end network communications

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

## Restoring the factory default configuration

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



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

If the switch has a valid configuration, and you are restoring the factory default settings for a reason other than configuration problems, save the switch configuration prior to performing the factory default reset. After the reset and resolution of the original problem, you can restore the saved configuration to the switch. For information on saving and restoring the configuration, see the latest edition of the *Basic Operation Guide* for your switch at <https://asp.arubanetworks.com/downloads>.

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

To restore the factory default configuration using the console, execute the `erase startup-config` command from the console command prompt. For stacked switches, reset stacking configurations to factory defaults by executing the `stacking factory-reset` command.

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

#### **Procedure**

1. Using pointed objects, simultaneously press both the Reset and Clear buttons on the front of the switch.
2. Continue to press the Clear button while releasing the Reset button.
3. When the Global Status LED begins to fast flash orange (after approximately 5 seconds), release the Clear button.

The switch will then complete its boot process and begin operating with its configuration restored to the factory default settings.

## **Downloading new switch software**

Software updates can be downloaded to the switch through several methods. For more information, see [\*\*Accessing updates\*\*](#) on page 81.

## Switch specifications

This section includes Physical, Environmental, and Acoustical information. For electrical specifications, Safety and Regulatory information, and other switch information, see the latest version of *START HERE: Installation, Safety, and Regulatory Information for the Aruba 2930F Switches and Accessories*, at <https://asp.arubanetworks.com/downloads>.

### Physical

Product	Width	Depth	Height	Weight
Aruba 2930F 24G 4SFP+ Switch (JL253A)	442.5 mm (17.42 in)	199.9 mm (7.87 in)	43.95 mm (1.73 in)	2.39 kg (5.26 lb)
Aruba 2930F 48G 4SFP+ Switch (JL254A)	442.5 mm(17.42 in)	246.1 mm(9.69 in)	43.95 mm (1.73 in)	3.12 kg (6.88 lb)
Aruba 2930F 24G PoE+ 4SFP+ Switch (JL255A)	442.5 mm(17.42 in)	304.0 mm (11.97 in)	43.95 mm (1.73 in)	4.05 kg (8.93 lb)
Aruba 2930F 48G PoE+ 4SFP+ Switch (JL256A)	442.5 mm(17.42 in)	304.0 mm (11.97 in)	43.95 mm (1.73 in)	4.45 kg (9.82 lb)
Aruba 2930F 8G PoE+ 2SFP+ Switch (JL258A)	254 mm(10 in)	254.0 mm (10 in)	43.95 mm (1.73 in)	2.09 kg (4.60 lb)
Aruba 2930F 8G PoE+ 2SFP+ TAA Switch (JL692A)	254 mm(10 in)	254.0 mm (10 in)	43.95 mm (1.73 in)	2.09 kg (4.60 lb)
Aruba 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A)	254 mm (10 in)	254.0 mm (10in)	43.95 mm (1.73 in)	2.91 kg (6.4 lb)
Aruba 2930F 24G 4SFP Switch (JL259A)	442.5 mm(17.42 in)	199.9 mm (7.87 in)	43.95 mm (1.73 in)	2.39 kg (5.26 lb)
Aruba 2930F 48G 4SFP Switch (JL260A)	442.5 mm(17.42 in)	246.1 mm (9.69 in)	43.95 mm (1.73 in)	3.12 kg (6.88 lb)
Aruba 2930F 24G PoE+ 4SFP Switch (JL261A)	442.5 mm(17.42 in)	304.0 mm (11.97 in)	43.95 mm (1.73 in)	4.05 kg (8.93 lb)

*Table Continued*

Product	Width	Depth	Height	Weight
Aruba 2930F 48G PoE+ 4SFP Switch (JL262A)	442.5 mm(17.42 in)	304.0 mm (11.97 in)	43.95 mm (1.73 in)	4.45 kg (9.82 lb)
Aruba 2930F 24G PoE+ 4SFP+ TAA Switch (JL263A)	442.5 mm(17.42 in)	304.0 mm (11.97 in)	43.95 mm (1.73 in)	4.05 kg (8.93 lb)
Aruba 2930F 48G PoE+ 4SFP+ TAA Switch (JL264A)	442.5 mm(17.42 in)	304.0 mm (11.97 in)	43.95 mm (1.73 in)	4.45 kg (9.82 lb)
Aruba 2930F 48G PoE+ 4SFP 740W Switch (JL557A)	442.5 mm(17.42 in)	324.1 mm (12.76 in)	43.95 mm (1.73 in)	4.79 kg (10.57 lb)
Aruba 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A)	442.5 mm(17.42 in)	324.1 mm (12.76 in)	43.95 mm (1.73 in)	4.79 kg (10.57 lb)
Aruba 2930F 48G PoE+ 4SFP+ 740W TAA Switch (JL559A)	442.5 mm(17.42 in)	324.1 mm (12.76 in)	43.95 mm (1.73 in)	4.79 kg (10.57 lb)

## Environmental

	Operating	Nonoperating
<b>Temperature</b>	0 ° C to 45 ° C (32 ° F to 113 ° F) up to 5,000 ft  0 ° C to 40 ° C (32 ° F to 104 ° F) up to 10,000ft*	-40 ° C to 70 ° C (-40 ° F to 158 ° F) up to 15,000 ft
<b>Relative humidity (noncondensing)</b>	15% to 95% at 40 ° C (104 ° F)	15% to 90% at 65 ° C (149 ° F)
<b>Maximum altitude</b>	3.0 Km (10,000ft)**	4.6 Km (15,000 ft)

\* De-rate -1°C for every 1,000 ft from 5,000 ft onwards.

\*\* The operating maximum altitude must not exceed that of any accessory being connected to any Aruba 2930F switch.

## Acoustics

Switch model	Acoustics
Aruba 2930F 24G 4SFP+ Switch (JL253A)	Sound Power (L WA d) 5.0 Bel  Sound Pressure (LpAm) (Bystander) 37.1 dB
Aruba 2930F 48G 4SFP+ Switch (JL254A)	Sound Power (L WA d) 5.4 Bel  Sound Pressure (LpAm) (Bystander) 40.2 dB

Table Continued

Switch model	Acoustics
Aruba 2930F 24G PoE+ 4SFP+ Switch (JL255A)	Sound Power (L WA d) 5.4 Bel Sound Pressure (LpAm) (Bystander) 40.6 dB
Aruba 2930F 48G PoE+ 4SFP+ Switch (JL256A)	Sound Power (L WA d) 5.6 Bel Sound Pressure (LpAm) (Bystander) 41.7 dB
Aruba 2930F 8G PoE+ 2SFP+ Switch (JL258A)	0 dB (no fans)
Aruba 2930F 8G PoE+ 2SFP+ TAA Switch (JL692A)	0 dB (no fans)
Aruba 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A)	0 dB (no fans)
Aruba 2930F 24G 4SFP Switch (JL259A)	Sound Power (L WA d) 5.0Bel Sound Pressure (LpAm) (Bystander) 37.1 dB
Aruba 2930F 48G 4SFP Switch (JL260A)	Sound Power (L WA d) 5.4Bel Sound Pressure (LpAm) (Bystander) 40.2 dB
Aruba 2930F 24G PoE+ 4SFP Switch (JL261A)	Sound Power (LWAd)5.4Bel Sound Pressure (LpAm) (Bystander) 40.6 dB
Aruba 2930F 48G PoE+ 4SFP Switch (JL262A)	Sound Power (LWAd)5.6Bel Sound Pressure (LpAm) (Bystander) 41.7 dB
Aruba 2930F 24G PoE+ 4SFP+ TAASwitch(JL263A)	Sound Power (L WA d) 5.4 Bel Sound Pressure (LpAm) (Bystander) 40.6 dB
Aruba 2930F 48G PoE+ 4SFP+ TAASwitch(JL264A)	Sound Power (L WA d) 5.6 Bel Sound Pressure (LpAm) (Bystander) 41.7 dB
Aruba 2930F 48G PoE+ 4SFP 740W Switch (JL557A)	Sound Power (LWAd): 5.51 Bel Sound Pressure (LpAm) (Bystander): 41.1 dB
Aruba 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A)	Sound Power (LWAd): 5.51 Bel Sound Pressure (LpAm) (Bystander): 41.1 dB
Aruba 2930F 48G PoE+ 4SFP+ 740W TAA Switch (JL559A )	Sound Power (LWAd): 5.51 Bel Sound Pressure (LpAm) (Bystander): 41.1 dB

## Technology standards and safety compliance

Standards		Laser safety information	
Technology	Compatible with these IEEE standards	EN/IEC standard compliance	SFP Lasers
<b>10-T</b>	IEEE 802.3 10BASE-T	EN/IEC 60825	Class 1 LaserProductLaserKlasse 1
<b>100-TX</b>	IEEE 802.3u 100BASE-TX		
<b>1000-T</b>	IEEE 802.3ab 1000BASE-T		
<b>100-FX</b>	IEEE 802.3u 100BASE-FX	EN/IEC 60825	Class 1 LaserProductLaserKlasse 1
<b>1000-SX</b>	IEEE 802.3z 1000BASE-SX	EN/IEC 60825	Class 1 LaserProductLaserKlasse 1
<b>1000-LX</b>	IEEE 802.3z 1000BASE-LX	EN/IEC 60825	Class 1 LaserProductLaserKlasse 1
<b>1000-LH</b>	(not an IEEE standard)	EN/IEC 60825	Class 1 LaserProductLaserKlasse 1
<b>1000-BX</b>	IEEE 802.3ah 1000BASE-BX10	EN/IEC 60825	Class 1 Laser ProductLaserKlasse 1

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



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

## Cabling specifications

**Table 15: 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.
	100 Mbps Operation	Category 5, 100-ohm UTP or STP cable, complying with IEEE 802.3u 100BASE-TX specifications.
	1000 Mbps Operation	Category 5, 100-ohm 4-pair UTP or STP cable, complying with IEEE 802.3ab 1000BASE-T specifications —Category 5e or better is recommended.
	2.5 Gbps Operation	Category 5e, 100-ohm-4-pair UTP or STP cable, complying with IEEE 802.ab 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.
<b>Twinaxial copper</b>	Direct attach cables	One-piece devices consisting of a cable with SFP+ connectors permanently attached to each end, complying with SFF 8431 SFP + specifications.

*Table Continued*

<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 $\mu\text{m}$ (core/cladding) diameter, low metal content fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards.

<sup>1</sup> A mode conditioning patch cord may be needed for some Gigabit-LX and 10-Gigabit LRM installations.

#### Note on 1000BASE-T cable requirements

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

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

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

## Technology distance specifications

**Table 16:** Technology distance specifications

Technology	Supported cable type	Multimode fiber modal bandwidth	Supported distances
100-FX	multimode fiber	any	up to 2,000 meters
1000-T	twisted-pair copper	N/A	up to 100 meters
1000-SX	multimode fiber	160 MHz*km 200 MHz*km 400 MHz*km 500 MHz*km	2 - 220 meters 2 - 275 meters 2 - 500 meters 2 - 550 meters
1000-LX	multimode fiber single mode fiber	400 MHz*km 500 MHz*km N/A	2 - 550 meters 2 - 550 meters 2 - 10,000 meters
1000-LH	single mode fiber	N/A	10 - 70,000 meters <sup>1</sup>

*Table Continued*

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

<sup>1</sup> For distances less than 20km, a 10dB attenuator must be used. For distances between 20km and 40km, a 5dB attenuator must be used. Attenuators can be purchased from most cable vendors.

## Mode conditioning patch cord

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

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

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



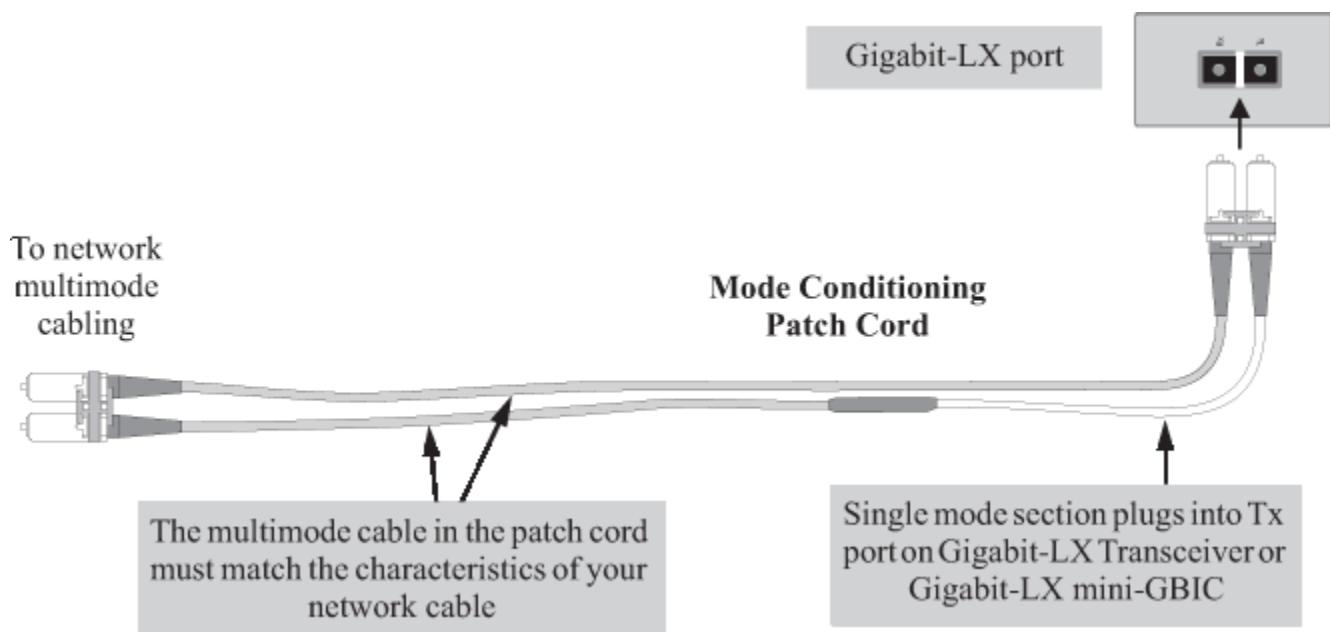
**NOTE:** Most of the time, if you are using good quality graded-index multimode fiber cable that adheres to the standards listed in this section, there should not be a need to use mode conditioning patch cords in your network. This is especially true if the fiber runs in your network are relatively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

## Installing the patch cord

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

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

**Figure 40:** Connecting a mode conditioning patch cord for Gigabit-LX



Be sure to purchase a patch cord that has appropriate connectors on each end, and has multimode fibers that match the characteristics of the multimode fiber in your network. Most important, the core diameter of the multimode patch cord must match the core diameter of the multimode cable infrastructure (either 50 or 62.5 microns).

## Twisted-pair cable/connector pinouts

### Auto-MDIX feature

In the default configuration, "Auto", the fixed 10/100/1000BASE-T ports on the Aruba 2930F Switches all automatically detect the type of port on the connected device and operate as either an MDI or MDI-X port, whichever is appropriate. So for any connection, a straight-through twisted-pair cable can be used. You no longer have to use crossover cables, although crossover cables can also be used for any of the connections. (The 10/100/1000-T ports support the IEEE 802.3ab standard, which includes the "Auto-MDIX" feature.)

If you connect a 2930F switch twisted-pair port to another switch or hub, which typically have MDI-X ports, the 2930F port automatically operates as an MDI port. If you connect it to an end node, such as a server or PC, which typically have MDI ports, the 2930F switch port operates as an MDI-X port. In all cases, you can use standard straight-through cables or crossover cables.

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



#### NOTE: Using fixed configurations

If the port configuration is changed to any of the fixed configurations though, for example 100 Mbps/full duplex, the port operates as MDI-X only and the correct cable type must be used: for connections to MDI ports, such as end nodes, use a straight-through cable; for connections to MDI-X ports, such as on hubs and other switches, use a crossover cable.

## Other wiring rules

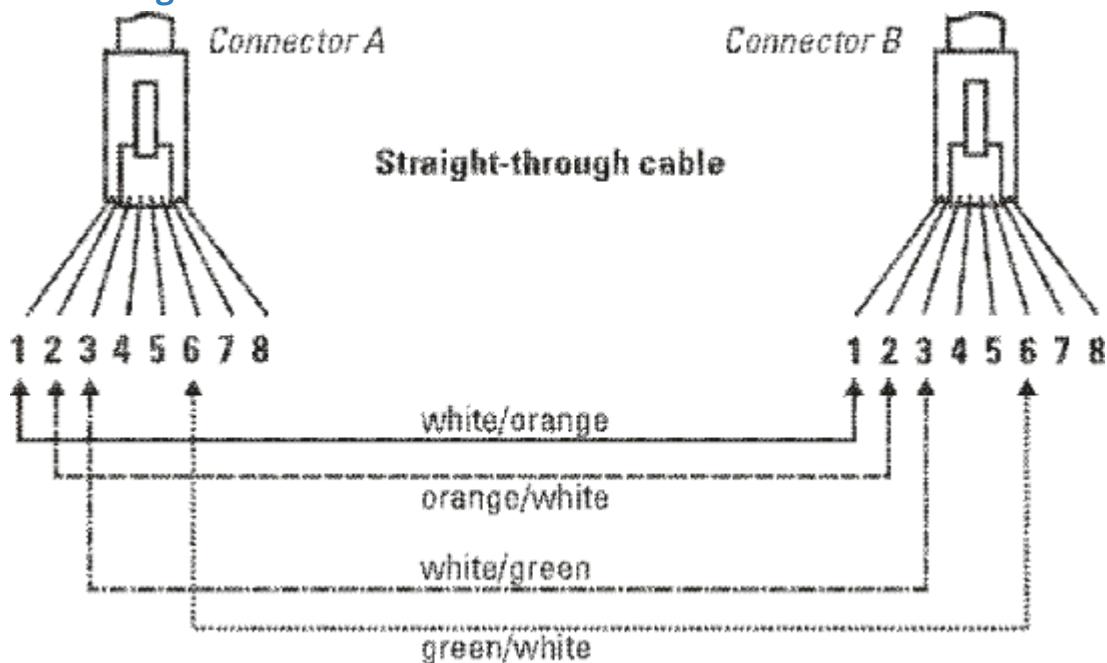
- All twisted-pair wires used for 10 Mbps, and 100 Mbps operation must be twisted through the entire length of the cable. The wiring sequence must conform to EIA/TIA 568-B (not USOC).
- For 1000BASE-T connections, all four pairs of wires in the cable must be available for data transmission.
- For 10 Mbps connections to the ports, you can use Category 3, 4, or 5 unshielded twisted-pair cable, as supported by the IEEE 802.3 Type 10Base-T standard.
- For 100 Mbps connections to the ports, use 100-ohm Category 5 UTP or STP cable only, as supported by the IEEE 802.3u Type 100BASE-TX standard.
- For 1000 Mbps connections, 100-ohm Category 5e or better cabling is recommended.
- To provide Power over Ethernet to the access point, all 4 pairs must be connected for any network cable attached to this port; the cable must meet ISO/DIS 11801 Class D requirements and IEEE 802.3af requirements.

## Straight-through twisted-pair cable for 10 Mbps or 100 Mbps network connections

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

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

### Cable diagram



**NOTE:** Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".

Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

## Pin assignments

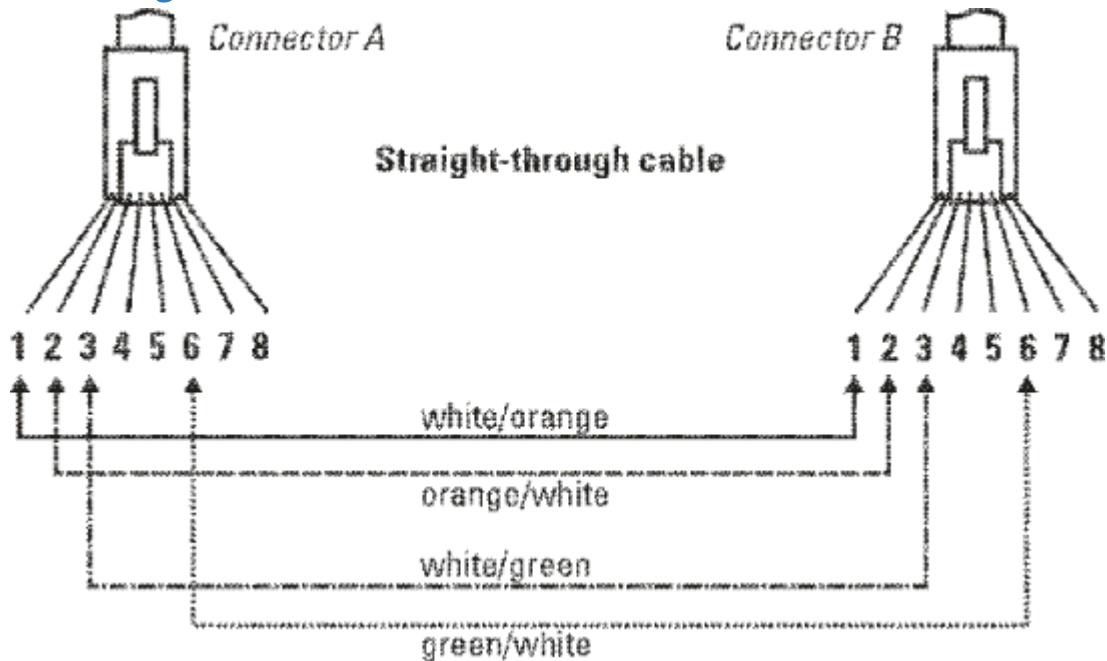
Switch end (MDI-X)			Computer, transceiver, or other end	
Signal	Pins		Pins	Signal
receive +	1	<-----	1	transmit +
receive -	2	<-----	2	transmit -
transmit +	3	----->	3	receive +
transmit -	6	----->	6	receive -

## Crossover twisted-pair cable for 10 Mbps or 100 Mbps network connection

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

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

### Cable diagram



**NOTE:** Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".

Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

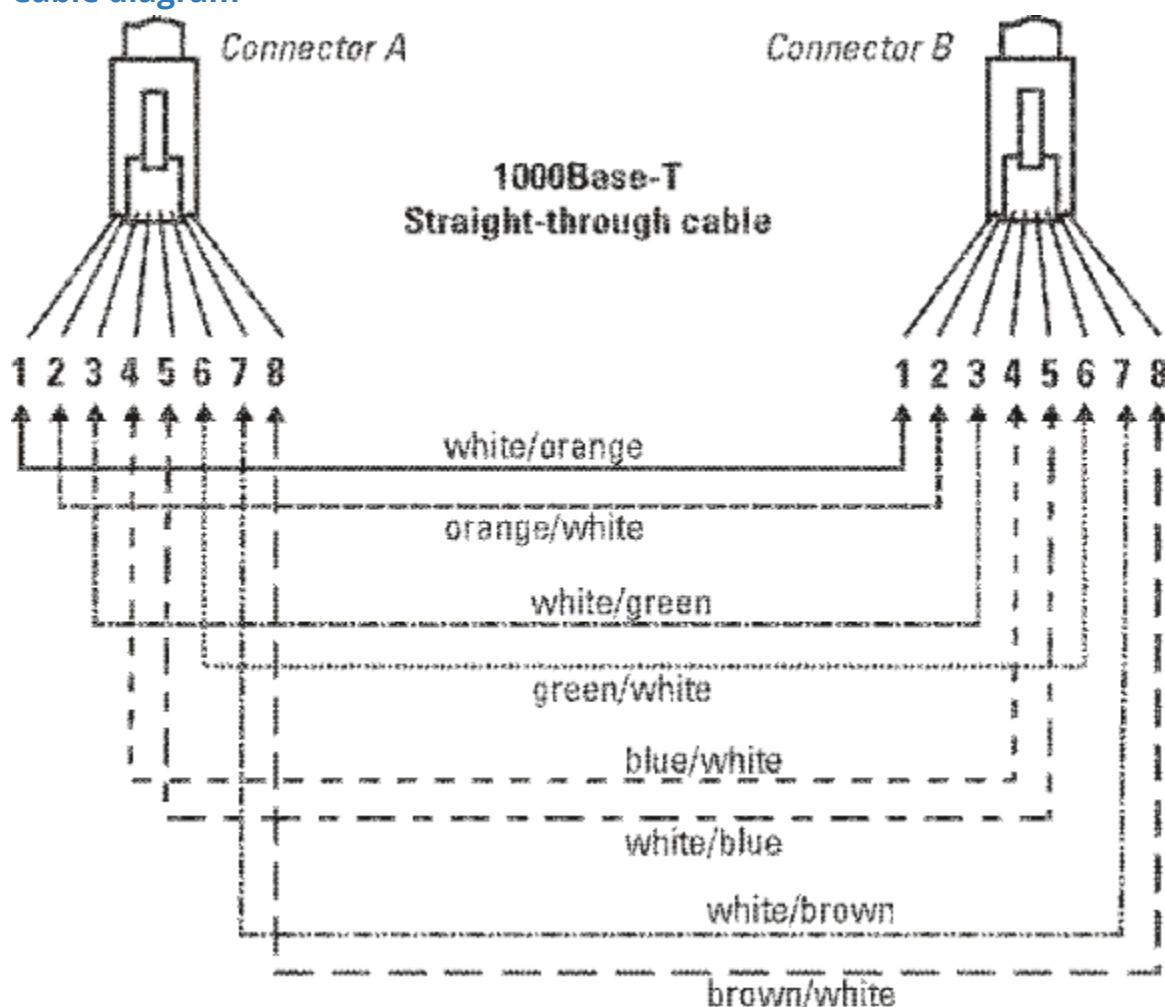
## Pin assignments

Switch end (MDI-X)		Hub or switch port, or other MDI-X port end	
Signal	Pins	Pins	Signal
receive +	1	6	transmit -
receive -	2	3	transmit +
transmit +	3	2	receive -
transmit -	6	1	receive +

## Straight-through twisted-pair cable for 1000 Mbps network connections

1000Base-T connections require that all four pairs of wires be connected.

### Cable diagram





**NOTE:** Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".

Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".

Pins 4 and 5 on connector "A" must be wired as a twisted pair to pins 4 and 5 on connector "B".

Pins 7 and 8 on connector "A" must be wired as a twisted pair to pins 7 and 8 on connector "B".

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## Pin assignments

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

### Networking Websites

Aruba Support Portal

[asp.arubanetworks.com](http://asp.arubanetworks.com)

Aruba Software and Documentation

[asp.arubanetworks.com/downloads](http://asp.arubanetworks.com/downloads)

Hewlett Packard Enterprise Networking Software

[www.hpe.com/networking/software](http://www.hpe.com/networking/software)

Hewlett Packard Enterprise Networking website

[www.hpe.com/info/networking](http://www.hpe.com/info/networking)

Hewlett Packard Enterprise My Networking website

[www.hpe.com/networking/support](http://www.hpe.com/networking/support)

Hewlett Packard Enterprise My Networking Portal

[www.hpe.com/networking/mynetworking](http://www.hpe.com/networking/mynetworking)

Hewlett Packard Enterprise Networking Warranty

[www.hpe.com/networking/warranty](http://www.hpe.com/networking/warranty)

### General websites

Hewlett Packard Enterprise Information Library

[www.hpe.com/info/EIL](http://www.hpe.com/info/EIL)

For additional websites, see [Support and other resources](#).

## Accessing Hewlett Packard Enterprise Support

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

### Information to collect

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

## Accessing updates

- 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 download product updates:

**Hewlett Packard Enterprise Support Center**

[www.hpe.com/support/hpsc](http://www.hpe.com/support/hpsc)

**Hewlett Packard Enterprise Support Center: Software downloads**

[www.hpe.com/support/downloads](http://www.hpe.com/support/downloads)

**Software Depot**

[www.hpe.com/support/softwaredepot](http://www.hpe.com/support/softwaredepot)

- To subscribe to eNewsletters and alerts:

[www.hpe.com/support/e-updates](http://www.hpe.com/support/e-updates)

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

[www.hpe.com/support/AccessToSupportMaterials](http://www.hpe.com/support/AccessToSupportMaterials)



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

## Customer self repair

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

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

<http://www.hpe.com/support/selfrepair>

## Remote support

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

If your product includes additional remote support details, use search to locate that information.

### Remote support and Proactive Care information

#### HPE Get Connected

[www.hpe.com/services/getconnected](http://www.hpe.com/services/getconnected)

#### HPE Proactive Care services

[www.hpe.com/services/proactivecare](http://www.hpe.com/services/proactivecare)

#### HPE Datacenter Care services

[www.hpe.com/services/datacentercare](http://www.hpe.com/services/datacentercare)

#### HPE Proactive Care service: Supported products list

[www.hpe.com/services/proactivecaresupportedproducts](http://www.hpe.com/services/proactivecaresupportedproducts)

#### HPE Proactive Care advanced service: Supported products list

[www.hpe.com/services/proactivecareadvancedsupportedproducts](http://www.hpe.com/services/proactivecareadvancedsupportedproducts)

### Proactive Care customer information

#### Proactive Care central

[www.hpe.com/services/proactivecarecentral](http://www.hpe.com/services/proactivecarecentral)

#### Proactive Care service activation

[www.hpe.com/services/proactivecarecentralgetstarted](http://www.hpe.com/services/proactivecarecentralgetstarted)

## Warranty information

To view the warranty information for your product, see the links provided below:

#### HPE ProLiant and IA-32 Servers and Options

[www.hpe.com/support/ProLiantServers-Warranties](http://www.hpe.com/support/ProLiantServers-Warranties)

#### HPE Enterprise and Cloudline Servers

[www.hpe.com/support/EnterpriseServers-Warranties](http://www.hpe.com/support/EnterpriseServers-Warranties)

#### HPE Storage Products

[www.hpe.com/support/Storage-Warranties](http://www.hpe.com/support/Storage-Warranties)

## **HPE Networking Products**

[www.hpe.com/support/Networking-Warranties](http://www.hpe.com/support/Networking-Warranties)

## **Regulatory information**

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

[www.hpe.com/support/Safety-Compliance-EnterpriseProducts](http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts)

### **Additional regulatory information**

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

[www.hpe.com/info/reach](http://www.hpe.com/info/reach)

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

[www.hpe.com/info/ecodata](http://www.hpe.com/info/ecodata)

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

[www.hpe.com/info/environment](http://www.hpe.com/info/environment)

## **Documentation feedback**

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

For important safety, environmental, and regulatory information, see Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at [Enterprise Safety and Compliance](#).

### **Warranty information**

For warranty information of HPE networking products, see [HPE Networking warranty](#).

### **Regulatory information**

#### **Turkey RoHS material content declaration**

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur.

#### **Ukraine RoHS material content declaration**

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057.