HPE Aruba Networking 3810M Switch Series

Installation and Getting Started Guide

Hewlett Packard Enterprise

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Contents

The Aruba 3810M are multiport switches that can be used to build high-performance switched networks. These switches are store-and-forward devices offering low latency for high-speed networking. The 3810M switches also support a field-replaceable Redundant Power Supply and fan tray, Power over Ethernet (PoE/PoE+) technologies, full network management capabilities and a flexible uplink port slot.

In addition, the 3810M switches support the **FlexChassis Mesh** feature for stacking the switches. When 3810M Stacking Modules (JL084A) are installed in the switches, any combination of up to ten 3810M switches can be stacked together via high-speed backplane cables to form a single extended virtual switch. See Stacking Information and Topologies on page 49, and the *Advanced Traffic Management Guide* for more stacking information.

These switches are described in this manual:

Non-PoE Switches	PoE+ Switches
Aruba 3810M 24G 1-slot Switch (JL071A)	Aruba 3810M 24G PoE+ 1-slot Switch (JL073A)
Aruba 3810M 48G 1-slot Switch (JL072A)	Aruba 3810M 48G PoE+ 1-slot Switch (JL074A)
Aruba 3810M 16SFP+ 2-slot Switch (JL075A)	Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)

Accessories List

Stacking Module	Power Supply	Flex port Module
Aruba 3810M 4-port Stacking Module (JL084A)	Aruba X371 12VDC 250W 100-240VAC Power Supply (JL085A)	Aruba 3810M 1QSFP+ 40GbE module (JL078A)
	Aruba X372 54VDC 680W 100-240VAC Power Supply (JL086A)	Aruba 3810M 2QSFP+ 40GbE module (JL079A)
	Aruba X372 54VDC 1050W 110-240VAC Power Supply (JL087A)	Aruba 3810M 4SFP+ module (JL083A)

This chapter describes these switches with the following information:

- Front of the switches:
  - Network Ports
  - Management Ports
  - LEDs
  - Buttons
  - Flex Port Slot
  - Module Support

- Back of the switches:
  - Power Supplies and Power Connectors
  - Fan Tray
  - Out-of-Band Management (OOBM)
- 3810M Stacking Module
- Switch Features

Front of the Switches

Figure 1 *Front of all the 3810M Switches*
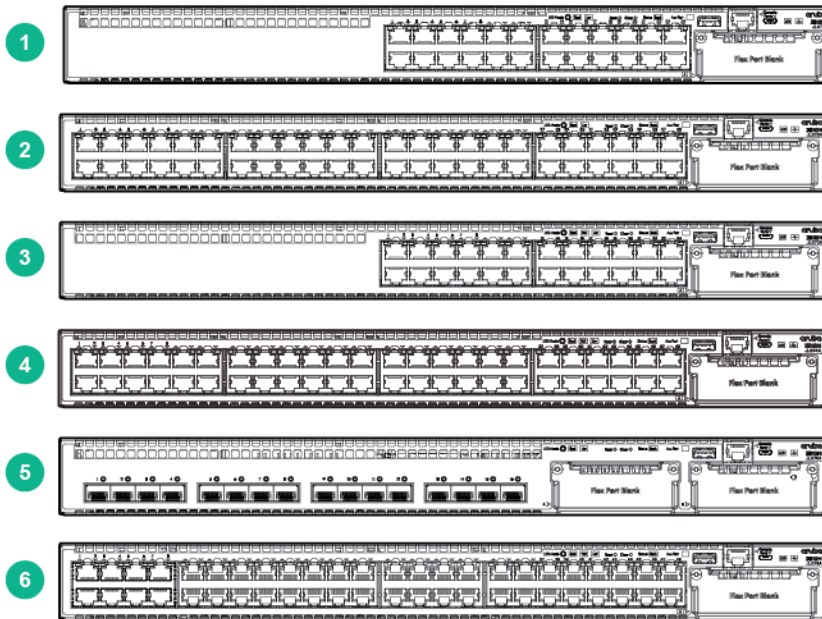
Label	Description
1	Aruba 3810M 24G 1-slot Switch (JL071A)
2	Aruba 3810M 48G 1-slot Switch (JL072A)
3	Aruba 3810M 24G PoE+ 1-slot Switch (JL073A)
4	Aruba 3810M 48G PoE+ 1-slot Switch (JL074A)
5	Aruba 3810M 16SFP+ 2-slot Switch (JL075A)
6	Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)

Figure 2 *Front of 3810M Flex Port Modules*
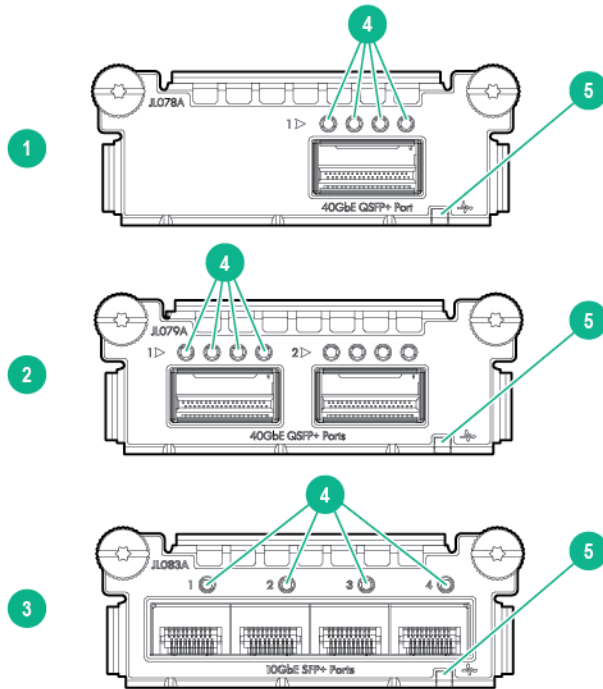
Label	Description
1	Aruba 3810M 1QSFP+ 40GbE Module (JL078A)
2	Aruba 3810M 2QSFP+ 40GbE Module (JL079A)
3	Aruba 3810M 4SFP+ Module (JL083A)
4	Port LEDs
5	Flex Port Module Status LED

Figure 3 *Example of 3810M Switches*
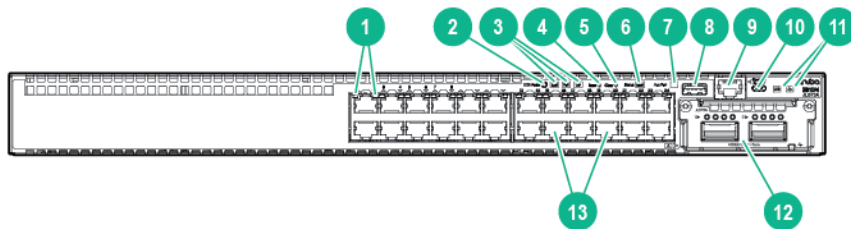
Label	Description
1	Switch Port LEDs

Label	Description
2	LED Mode button
3	Speed, PoE, Usr LEDs
4, 5	Reset, Clear buttons
6	Back Module Status LED
7	Aux port status LED
8	USB/Auxiliary Port
9	RJ Serial Console
10	Micro USB Console
11	Global Status, Unit Identification LEDs
12	Flex port Module expansion slot
13	10/100/1000Base-T RJ-45 Ports

PoE Mode LED is present only on switch models that support PoE.

Network Ports

Table 1: Network Ports

Product number	Model name	10/100/1000 non-PoE RJ-45 ports*	10/100/1000 PoE/PoE+ RJ-45 ports*	SFP+ Ports**	SmartRate	40G
JL071A	Aruba 3810M 24G 1-slot Switch	24				
JL072A	Aruba 3810M 48G 1-slot Switch	48				
JL073A	Aruba 3810M 24G PoE+ 1-slot Switch		24			
JL074A	Aruba 3810M 48G PoE+ 1-slot Switch		48			
JL075A	Aruba 3810M 16SFP+ 2-slot Switch			16		

Product number	Model name	10/100/1000 non-PoE RJ-45 ports*	10/100/1000 PoE/PoE+ RJ-45 ports*	SFP+ Ports**	SmartRate	40G
JL076A	Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch		40		8	
JL078A	Aruba 3810M 1QSFP+ 40GbE module					1
JL079A	Aruba 3810M 2QSFP+ 40GbE module					2
JL083A	Aruba 3810M 4SFP+ module			4		

* 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.
**SFP+ ports support 100Mb (100-FX and 100-BX), 1G SFP and 10G SFP+ transceivers.

These products also support optional network connectivity:

Table 2: Optional Network Connectivity, Speeds and Technologies

				Transceiver Form-Factor and Connector		
Speed	Tech-nology	Cabling	Flex Mod-ule Con-nector	SFP ("mini-GBIC") Connector	SFP+Con-nector	QSFP+Con-nector
100 Mbps	100-FX	Fiber (multimode)		LC		
	100-BX	Fiber (single mode)		LC		

				Transceiver Form-Factor and Connector		
Speed	Tech-nology	Cabling	Flex Mod-ule Con-nector	SFP ("mini-GBIC") Connector	SFP+Con-nector	QSFP+Con-nector
1 Gbps	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		
10 Gbps	10-Gig Direct Attach	Copper (twinaxial)			Not Applicable	
	10-Gig SR	Fiber (multimode)			LC	
	10-Gig LRM	Fiber (multimode)			LC	
	10-Gig LR	Fiber (single mode)			LC	
	10-Gig ER	Fiber (single mode)				
40 Gbps	40-Gig Direct Attach 1/3/5 m	Copper (twinaxial)				Not Applicable
	40-Gig SR4	Fiber (multimode)				MPO
	40-Gig ESR4	Fiber (multimode)				MPO
	40-Gig LR4	Fiber (single mode)				LC
Smart Rate 1/2.5/5/10 Gbps	Smart Rate	Copper (twisted pair)	RJ-45			

For supported transceivers, visit http://www.hpe.com/networking/support .

1. In the first textbox, type **J4858** (for 100-Mb and Gigabit information), **J8436** (for 10-Gigabit information), or **JH23** (for 40–Gigabit information).
2. Select any of the products that display in the dropdown list.
3. Select **Support Center**. Then click on **Manuals**, followed by **View All** to and find the Transceiver Support Matrix.

For technical details of cabling and technologies, see .

Management Ports

The Aruba 3810M switch includes two serial console ports and an auxiliary port.

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 either by using an RJ-45 serial cable or a standard Micro USB cable (neither of which are supplied with the switch). The Micro USB connector has precedence for input, so if both cables are plugged in, the console output is echoed to both the RJ and Micro-USB ports. But, the input is only accepted from the Micro-USB.

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

Auxiliary Port

The switch has an auxiliary port for processing a USB command file or downloading switch software code. This port uses a USB Type A connector, but does not comply with all USB protocols and standards.

Switch and Port LEDs on Front of the Switches

This section describes the various LEDs and their functions.

Figure 4 *Switch and Port LEDs for JL071A, JL072A, JL073A, JL074A, and JL076A*
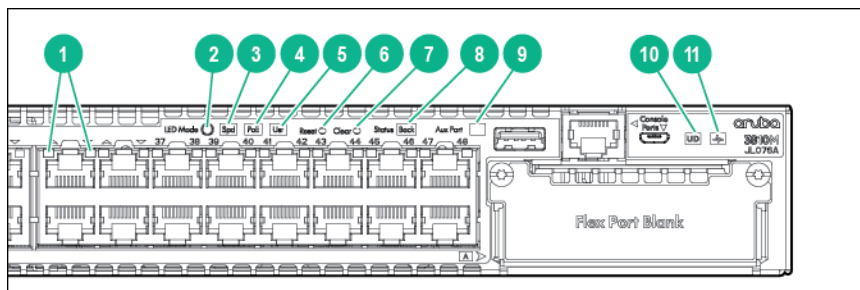
Label	Description
1	Switch Port LEDs
2	LED Mode button
3	Speed LED
4	PoE LED*

Label	Description
5	Usr LED
6	Reset button
7	Clear button
8	Back Module status LED
9	Aux Port status LED
10	Unit Identification LED
11	Global status LED

Only on PoE switches.

Figure 5 *Switch and Port LEDs for JL075A*
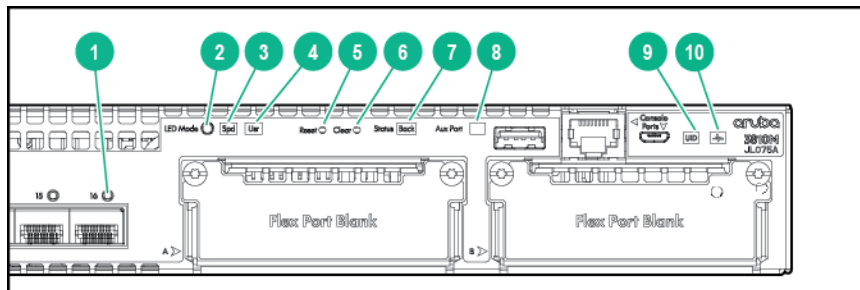
Label	Description
1	Switch Port LEDs
2	LED Mode button
3	Speed LED
4	Usr LED
5	Reset button
6	Clear button
7	Back Module status LED
8	Aux Port status LED
9	Unit Identification LED
10	Global status LED

Table 3: 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 on the switch, one of the switch ports, a module in the rear of the switch, or the fan. The Status LED for the component with the fault will blink 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.
Back Module Status	Status of modular components installed in the back of the unit.	On Green	Normal operation: All modular components installed in the back of the unit are functioning correctly.
		Slow Flash Orange	One of the modules inserted from the back of the chassis (power supply, fan tray, or stacking module) has failed self test or is experiencing a fault condition. Flashes simultaneously with the Global Status LED flashing orange.

Switch LEDs	Function	State*	Meaning
Aux Port Activity	Indicates data transfer on the Aux Port which is used for processing a USB command file or downloading switch software code.	Solid Green	USB installed and successfully initialized, and mounted, but no data transfer.
		Green Flicker	Data transfer is in progress. Do not remove installed device until data transfer is complete
		Slow Flash Orange	The USB device that is installed is unsupported or faulted.
		Off	No USB installed.
Flex Port Module Status	Status of Flex Port module.	On Green	Flex Port module operating correctly.
		Slow Flash Orange	Flex Port module has experienced a fault. The Global Status LED should be flashing synchronously.
		Fast Flash Orange	Flex Port module or one or more of its ports is/are experiencing an alert condition. Alert conditions include that an unsupported cable has been installed in the module or that the Flex Port module has been installed while the switch was powered on (hot-swapped) and the switch needs to be rebooted to support the module.
		Off	No power.
		No Present	No Module
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.

Switch LEDs	Function	State*	Meaning
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.
		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	When stacking is enabled, the Port LEDs are displaying stack information and status. When stacking is disabled, this mode is reserved for future use.	On Green	User Mode is selected.
		Off	User mode not selected.
Save Power Mode Selected			This mode is indicated by ALL the switch indicator LEDs being off, except for the Global Status LED. This display occurs only if the switch has been configured with the `savepower led` command. See the *Management and Configuration Guide* for more information on that command

The slow flash behavior is an on/off cycle approximately once every 1.6 seconds; fast flash behavior is an on/off cycle approximately once every 0.5 seconds.
**Applies only to 3810M switches that support PoE/PoE+*

Table 4: 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.

Switch LEDs	Function	State/Mode*	Meaning
		Speed	Shows port speed configuration.
		PoE	Shows PoE information.
		User	Shows User selectable User 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 LED mode has been selected.	Half-Bright Green	The port is enabled and receiving a Link indication from the connected device.
		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 link.
Speed Mode Selected	Port LEDs are displaying the connection speed at which each port is operating.	Fast Flash Green	The port is operating at 40 Gbps.
		On Green	The port is operating at 10 Gbps.
		Triple Blink Green	The port is operating at 5 Gbps. (HPE SMART RATE ports only)
		Double Blink Green	The port is operating at 2.5 Gbps. (HPE SMART RATE ports only)
		Slow Flash Green	The port is operating at 1 Gbps.
		Off	The port is not Linked, or is operating at 10 or 100 Mbps.

Switch LEDs	Function	State/Mode*	Meaning
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.
User Mode Selected	Mode currently active only in stacked configurations. Used to display the number of members in a stack and their current status. The status information is sticky and if a unit's status changes while in USER mode, you must exit and re-enter USER mode to get the updated status.	On Green	Stack Member exists in the stack and is operational.
		Slow Flash Green	Indicates the Member # of the chassis.
		Fast Flash Green	Indicates the Member # of the Commander of the stack.
		On Orange	Stack Member is currently booting or has a fault that is preventing it from communicating.
		Slow Flash Orange	Stack Member is in a known fault condition (i.e. Fan fault, PSU fault, etc.). The Global Status LED on all stack members will also Slow Flash Orange.
		Fast Flash Orange	Stack Member is in a Alert condition (i.e. Overtemp, PoE Over subscript, etc.). The Global Status LEDs on all stack members will remain in normal operational.
		Off	Stack Member does not exist in the stack configuration.

The slow flash behavior is an on/off cycle approximately once every 1.6 seconds; fast flash behavior is an on/off cycle approximately once every 0.5 seconds.
***Applies only to 3810M switches that support PoE/PoE+*

Example of USER Mode Behavior

Assume you have a 4-member stack, in a ring topology, with member numbers 1, 2, 3 and 5. Member 1 is the commander and member 3 is rebooting. In USER mode, the members will show the following on their port LEDs:

	Port 1 LED	Port 2 LED	Port 3 LED	Port 4 LED	Port 5 LED	Port 6-10 LEDs
Member 1	Fast Flash Green	On Green	On Orange	Off	On Green	Off
Member 2	Fast Flash Green	Slow Flash Green	On Orange	Off	On Green	Off
Member 3	Going through normal boot up sequencing					
Member 5	Fast Flash Green	On Green	On Orange	Off	Slow Flash Green	Off

Looking at any member, you can see that there are 4 members defined in the stack configuration, with member numbers 1, 2, 3, and 5 because these are the LEDs that are lit. The port 4 LED is off, indicating that this member number is not defined in the stack.

On all members, Port 1 LED is fast flashing, indicating that member 1 is the commander of the stack. Port 3 LED is on orange, indicating either that 3 is rebooting or not communicating because of an unknown fault.

When looking at member 1, only Port 1 LED is fast flashing green. This indicates that this unit is member 1 and is the commander.

When looking at member 2, the port 2 LED is slow flashing green, indicating that unit is member number 2. Likewise on member 5, the port 5 LED is slow flashing green, indicating that unit is member 5.

Member 3 will be going through the normal boot LED boot up sequence. When it has completed booting and joined the stack, if you exit and re-enter USER mode, the members show the following on their port LEDs:

	Port 1 LED	Port 2 LED	Port 3 LED	Port 4 LED	Port 5 LED	Port 6-10 LEDs
Member 1	Fast Flash Green	On Green	On Green	Off	On Green	Off
Member 2	Fast Flash Green	Slow Flash Green	On Green	Off	On Green	Off
Member 3	Fast Flash Green	On Green	Slow Flash Green	Off	On Green	Off
Member 5	Fast Flash Green	On Green	On Green	Off	Slow Flash Green	Off

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 the LED information in <u>Switch and Port LEDs on Front of the Switches on page 13</u> for standalone switches.

Stacking Notes

- For 3810M switches that are in a stack, the Mode select button on every switch in the stack controls the LED mode for all the switches in the stack. Using the Mode select button on one switch in the stack changes the LED mode for the entire stack.

- If there is a combination of PoE/PoE+ switches and non-PoE switches in the stack, when any of the Mode select buttons is pressed to put the stack into PoE mode, the non-PoE switches indicate no PoE support by not illuminating any of the Mode indicator LEDs or any of the port LEDs.

- If any of the switches in the stack are configured with the **Save Power LED** feature, then the default LED Mode for the whole stack becomes the Save Power display (all LED Mode indicator LEDs are off), but only the stack members on which that feature is configured display the other characteristics of that feature (all LEDs Off except for the Power LED).

Reset and Clear Buttons

The Reset and Clear buttons are recessed from the front panel (to protect them from being pushed accidentally) and 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 (Standalone switch)	Press and release the Reset button	The switch operating system is cleared gracefully (such as data transfer completion, temporary error conditions are cleared), then reboots and runs self tests.
Hard Reset (Standalone switch)	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.
Soft Reset (Stacked switch)	Press and release the Reset button	Same as a standalone switch, except: - If action happened on the Commander, the Standby switch will become

To Accomplish this:	Do this:	This will happen:
		Commander. ▪ If action happened on the Standby, a new Standby will be elected.
Hard Reset (Stacked switch)	Press and hold the Reset button for more than 5 seconds (until all LEDs turn on), then release.	Same as a standalone switch, except: ▪ If action happened on the Commander, the Standby switch will become Commander. ▪ If action happened on the Standby, a new Standby will be elected.
Delete console and management access passwords	Press Clear button for more than 5 seconds, but within 15 seconds (in btw 5 - 15 seconds)	Clears all passwords. Will flash Global Status Green LED, after 5 seconds has expired to indicate passwords have cleared.
Turn off UID LED	Press Clear button and release within 5 seconds (in btw 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 though, you should 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. See the *Management and Configuration Guide* for a description of that command.

Flex Port Slot and Module Support

The 3810M family of switches features a module slot(s) that allows the user to customize the uplink ports on the switch. Depending on the switch model, the slot supports either 40Gbps or 80Gbps of maximum bandwidth and therefore, not all modules are supported in all slots. See the table, below, for the switch module/support matrix.

Table 5: Switch Module/Support Matrix

	Module Support		
Switch Model	JL078A 1QSFP+	JL079A 2QSFP+	JL083A 4SFP+
JL071A Aruba 3810M 24G 1-slot Switch	Yes	No	Yes
JL072A Aruba 3810M 48G 1-slot Switch	Yes	Yes	Yes
JL073A Aruba 3810M 24G PoE+ 1-slot Switch	Yes	No	Yes
JL074A Aruba 3810M 48G PoE+ 1-slot Switch	Yes	Yes	Yes
JL075A Aruba 3810M 16SFP+ 2-slot Switch	Yes	No	Yes
JL076A Aruba 3810M 40G 8SR PoE+ 1-slot Switch	Yes	Yes	Yes

Back of the Switches

The back of all the 3810M switches is the same.

Figure 6 *Back of the 3810M Switches*
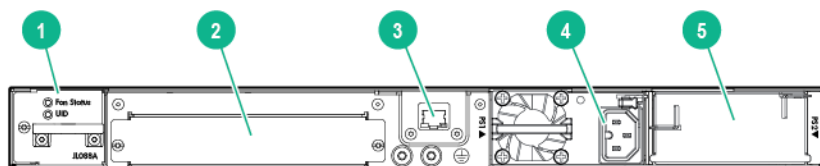
Label	Description
1	Fan Status LED
2	Stacking Module Slot
3	Management/OOBM port
4	AC Power connector/Power Supply slot 1
5	Redundant Power Supply slot 2

Power Supplies

There are three power supplies that can be installed into the 3810M switches:

- **Aruba X371 12VDC 250W 100-240VAC Power Supply (JL085A)**—A 250 watt power supply for the non-PoE switches. This power supply does not provide any PoE power, and is keyed so that it will **not** fit into the power supply slots of 3810M PoE+ switches.
- **Aruba X372 54VDC 680W 100-240VAC Power Supply (JL086A)**—A 680 watt power supply for 3810M PoE+ supported switches. This power supply offers up to 370 watts of PoE+ power, and is keyed so that it does **not** fit into the power supply slots of non-PoE+ 3810M switches.
- **Aruba X372 54VDC 1050W 110-240VAC Power Supply (JL087A)**—A 1050 watt power supply for 3810M PoE+ supported switches. This power supply offers up to 740 watts of PoE+ power, and is keyed so that it does **not** fit into the power supply slots of non-PoE+ 3810M switches.

For more power supply information see .

Power Connector

The 3810M switches do not have a power switch. They will power on when either one or both power supplies are connected to an active AC power source.

Stacking Module Slot

Each of the 3810M switches has one module slot that can accept the 3810M Stacking Module that provides high-speed connectivity to other 3810M switches. Only the 3810M switches support this module.

Fan Tray Assembly

The 3810M switches have a field-replaceable fan tray. If necessary, the fan tray can be replaced while the switch is operating. For more information, see .

Out-of-Band Management Port

This RJ-45 port is used to connect a dedicated management network to the switch.

LEDs on the Back of the Switches

This section describes the LEDs on the back of the switch. When the Back LED on the front of the unit is blinking a fault, the user can then look at the back of the switch to find the corresponding blinking LED for the faulted module.

Figure 7 *LEDs on the Back of Switches*
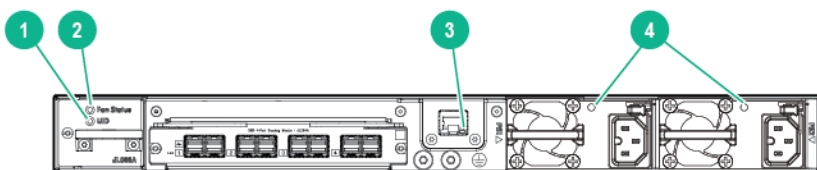
Label	Description
1	Unit Identification LED
2	Fan Status LED
3	OOBM Port LED: Activity/Link
4	Power Supply Status LEDs

Table 6: LEDs on the Back of the Switch

Switch LEDs	Function	State	Meaning
Fan Status	Status of Fan tray.	On Green	Normal operation: Fan tray assembly is functioning correctly.
		Slow Flash Orange	One or more fans in the fan tray is faulted. The Global Status and Back LEDs on the front of unit must also be synchronized and flashing orange.
Unit Identification	Used to assist you to identify a particular unit in a rack or collection of products. This LED is a copy of the UID LED on the front of the chassis.	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	The LED turns off after the timeout period has expired.

Switch LEDs	Function	State	Meaning
OOBM Port LED: Activity/Link	Display Activity/Link and port status of OOBM	Half-Bright Green	The port is enabled and receiving a Link indication from the connected device.
		On Green	The port is experiencing high bandwidth utilization.
		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. Even just one packet will trigger a visible full-bright flicker. Half-Bright Green port Link indication remains on as Activity flickers from half-bright to full-bright.
		Slow Flash Orange	The 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 link.
PSU module Status	Status of PSU Looking at the back of the unit, PSU1 is on the left and PSU2 is on the right.	On Green	The power supply has valid AC input and valid DC outputs.
		Slow Flash Green	Either the power supply has an internal fault, or switch has a fault that is causing power supply to cycle on/off.
		Off	The power supply has an invalid AC input, or invalid DC outputs.

3810M Stacking Module

The 3810M 4-port Stacking Module (JL084A) is a component you can add to a 3810M switch to provide high-speed stacking connections to other 3810M switches. See Stacking Information and Topologies on page 49, and the *Advanced Traffic Management Guide* for more information about stacking configuration and operation.

Figure 8 *Front of 3810M 4-Port Stacking Module*
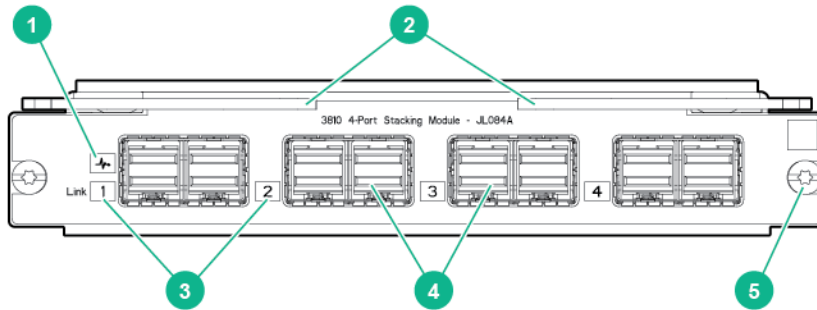
Label	Description
1	Stacking Module Status LED
2	Extractor Handles
3	Link LEDs
4	Stacking Connectors
5	Retaining Screw

The 3810M 4-Port Stacking Module JL084A has the following features:

- Four stacking connectors for connecting the 3810M switch to other 3810Ms in a stacked topology (chain, ring, or mesh). Any of these available stacking cables can be used for these connections:
  - Aruba 3800/3810M 0.5m Stacking Cable (J9578A)
  - Aruba 3800/3810M 3m Stacking Cable (J9579A)
  - Aruba 3800/3810M 1m Stacking Cable (J9665A)
- LEDs, described in .

Stacking Module LEDs

The following LEDs are located on the 3810M Stacking Module itself and are only viewable from the rear of the switch.

Table 7: Stacking Module LEDs

Name	Function	Mode	Description
Stacking Module Status	Status of Stacking module	On Green	Stacking module operating correctly.
		Slow Flash Orange	Stacking module has experienced a fault, or one or more of the module ports has experienced a fault. The 1.6 seconds cycle flash should be synchronized with the switch Global Status LED. The Global Status and Back LED should also be flashing.
		Fast Flash Orange	Stacking module or one or more of its ports is experiencing an alert condition. Alert conditions include that an unsupported cable has been installed in the module or that the stacking module has been installed while the switch was powered on (hot-swapped) and the switch needs to be rebooted to support the module. The BACK LED should be flashing and the Global Status LED should NOT be flashing.
		Off	No Power
Stacking Link Status	The Link LED per stacking port indicates the port is enabled, connected and detects a signal from the attached device.	On Green	The port is enabled and receiving a link indication from the connected device.
		Slow Flash Orange	Port Failed POST or cable fault. Module Status LED on the stacking module and Global Status and Back LED on front of unit should also be synchronized and flashing orange.
		Off	No cable plugged in.

Switch Features

The features of the 3810M switches include:

- Combinations of fixed 10/100/1000-T, HPE SMART RATE and SFP/SFP+ ports, as described under Network Ports on page 10.
- Selected switch models feature HPE SMART RATE ports and provide 1Gbps, 2.5Gbps, 5Gbps and 10Gbs connectivity. See the appendices for cabling recommendations and requirements.
- All switch models feature either 1 or 2 Flex Port Module slots, that allow configuration with either 10G SFP+ or 40G QSFP+ ports, as described in Flex Port Slot and Module Support on page 22.

- One module slot is provided in the back of the switches to support a stacking module to provide connectivity to other 3810M switches with stacking modules. See Stacking Information and Topologies on page 49, and the *Advanced Traffic Management Guide* for more information about stacking.

- Power over Ethernet (PoE+) operation—Aruba 3810M 24G PoE+ 1-slot Switch (JL073A), Aruba 3810M 48G PoE+ 1-slot Switch (JL074A) and Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A) switches are IEEE 802.3at standard compliant and provide up to 30W per port to power IP phones, wireless access points, indoor web cameras, and more. For more information, see the *HPE Power over Ethernet (PoE/PoE+) Planning and Implementation Guide*.

  The switches support 802.3af and 802.3at standard devices and some pre-standard PoE devices. For a list of these devices, see the FAQs (Frequently Asked Questions) for your switch model. PoE is enabled by default. (For instructions, see the *Management and Configuration Guide* for your switch at http://www.hpe.com/networking/resourcefinder.

- The option to have one or two internal power supplies.

  A second power supply supports redundant system power and/or redundant/additional PoE power. If one of the internal power supplies fails, the second power supply immediately provides the power necessary to keep the switch running, including PoE+ power on an allocated basis.

  If maximum PoE+ power is used on the 48 port PoE+ switch, the second power supply is needed for PoE+ power but there is no PoE power redundancy. However, system power is always maintained. On a power supply failure, the system drops the PoE power on ports based on user priority, to maintain system power. For more information on Power Supplies, see Power Supplies on page 23.

- Plug-and-play networking—all ports are enabled by default—just connect the network cables to active network devices and your switched network is operational.

- Auto MDI/MDI-X on all twisted-pair ports (10/100/1000 and 10GBase-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 the appendices for recommended or required cabling.)

- Automatic learning of the network addresses in each switch's 64000-address forwarding table, (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.

  - **IMC**—An SNMP-based, graphical network management tool that you can use to manage your entire network.

- 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 *Management and Configuration Guide* for your switch at http://www.hpe.com/networking/resourcefinder.

- Ability to update the switch software. Software updates are routinely available from Hewlett Packard Enterprise.
- An auxiliary port (USB Type A connector) for processing a USB command file and updating switch software.
- 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.
  - RJ-45 ports will operate at reduced power if the port is not connected (link partner is not detected).

This chapter shows how to install the switch. The 3810M switches come with an accessory kit that includes the brackets for mounting the switch in a standard 19-inch telco rack, in an equipment cabinet, and with rubber feet that can be attached so the switch can be securely located on a horizontal surface. The brackets are designed to allow mounting the switch in a variety of locations and orientations. For other mounting options contact your local Hewlett Packard Enterprise authorized network reseller or Hewlett Packard Enterprise representative.

> **NOTE**
>
> If the 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/B). It can also be mounted in any four post rack using the HPE X410 Universal Rack Mounting Kit.

Included Parts

The 3810M switches ship with the following components:

Accessory kit

(5069-5705) for Non-PoE+ 3810M switches	(5066-0651) for PoE+ 3810M switches
two mounting brackets	two mounting brackets
eight 8-mm M4 screws to attach the mounting brackets to the switch	eight 8-mm M4 screws to attach the mounting brackets to the switch
four 5/8-inch number 12-24 screws to attach the switch to a rack	four 5/8-inch number 12-24 screws to attach the switch to a rack
four rubber feet	four rubber feet

Power cord (PoE+ switches):

Country	Part Number	Country	Part Number
North America	8121-0973	Australia	8121-0857
North America high line	8121-0941	Brazil	8121-1265
South Africa/India	8121-1483	Europe/South Korea	8120-5336
Israel	8121-1009	China	8121-1034

Country	Part Number	Country	Part Number
United Kingdom/Hong Kong/Singapore/Malaysia	8120-5334	Argentina	8121-1481
Switzerland	8120-5339	Chile	8120-8389
Danish	8120-5340	Thailand/Philippines	8121-0671
Japan high line	8120-5338 (JL086A, JL087A)	Taiwan 15A	8121-1511 (JL086A, JL087A)
Japan low line	8120-5342 (JL086A)	Taiwan 10A	8121-0967 (JL086A)

Power cord (non-PoE+ switches):

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

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

Documentation

- *Aruba 3810M Switch Quick Setup Guide and Safety/Regulatory Information*
- *Switch Safety and Regulatory* sheet
- *Warranty Statement and Software License*
- *EG Safety, Compliance, and Warranty Information*
- *General Safety and Regulatory* booklet
- *Read Me First*

Installation Procedures

1. Prepare the Installation Site on page 34. Ensure the physical environment is properly prepared, including having the correct network cabling ready to connect to the switch and having an appropriate location for the switch. See Installation Precautions on page 33 for some installation precautions.

> **NOTE**
> For steps 2 and 3 below, if an 3810M switch is powered on for the first time without a stacking module installed, stacking will be disabled and that will be saved in the switch's running configuration. For more information, see Stacking Information and Topologies on page 49

2. Verify the Switch Boots Correctly on page 35. Plug the switch into a power source and observe that the LEDs on the switch's front panel indicate correct switch operation. When self test is complete, unplug the switch.
3. Install the Stacking Module on page 37.
4. Installing the Flex Port Module on page 38.
5. Mount the Switch on page 39. The switch can be mounted in the 19-inch telco rack, in an equipment cabinet, or on a horizontal surface.
6. Installing the stacking cables on page 42. If you have installed the module, you can now install up to four stacking cables and connect them to other switches in the desired stacking topology.
7. Installing Transceivers on page 43. Depending on the switch model purchased and optional Flex Port module configuration, the switch can support SFP/SFP+ or QSFP+ transceivers. Depending on where the switch is mounted, it may be easier to install the transceivers first. All transceiver types can be installed or removed while the switch is powered on.
8. Connect the Switch to a Power Source on page 44. Once the switch is mounted, plug it into the nearby main power source.
9. Installing a Second Power Supply on page 44. You may wish to use a second power supply with the switch to provide redundant power or added PoE+ power.
10. Connect a Management Console on page 45. You may wish to modify the switch's configuration, for example, to configure an IP address so it can be managed using a web browser, from an SNMP network management station, or through a Telnet session. Configuration changes can be made easily by using a console cable to connect a PC to the switch's console port.
11. Connect the Network Cables on page 48. Using the appropriate network cables, connect the network devices to the switch ports.

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

Installation Precautions

Follow these precautions when installing the 3810M switches.

- Ensure the power source circuits are properly grounded, then use the power cord supplied with the switch to connect it to the power source.

- If your installation requires a different power cord than the one supplied with the switch and power supply, be sure the cord is adequately sized for the switch's current requirements. In addition, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the switch and power supply.

- When installing the switch, the AC outlet should be near the switch and should be easily accessible in case the switch must be powered off.

- Ensure 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.

- For safe operation, proper switch cooling, and reduction of electromagnetic emissions, ensure that a slot cover is installed on any unused module or power supply slot.

- Do not install the switch in an environment where the operating ambient temperature might exceed 45°C (113°F).

- Ensure the air flow around the sides and back of the switch is not restricted.

- The rack or cabinet should be adequately secured to prevent it from becoming unstable and/or falling over.
- Devices installed in a rack or cabinet should be mounted as low as possible, with the heaviest devices at the bottom and progressively lighter devices installed above.

Prepare the Installation Site

Cabling Infrastructure - Ensure the cabling infrastructure meets the necessary network specifications. See Cabling and Technology Information on page 89 in the appendices 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 7.6 cm (3 inches) of space for the twisted-pair and fiber-optic cabling.
- In the back of the switch, leave at least 3.8 cm (1 1/2 inches) of space for the power cord. If you are stacking the switches, you will need 20 to 23 cm (approximately 8 to 9 inches), depending on the lengths of the stacking cables being used.
- On the sides of the switch, leave at least 7.6 cm (3 inches) for cooling, except if the switch is installed in an open EIA/TIA rack.

Figure 9 *Air flow direction of the 3810M switches*
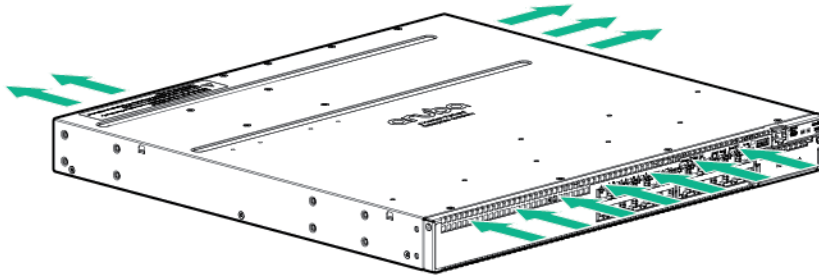
Verify the Switch Boots Correctly

> **NOTE** For steps 2 and 3, if an 3810M switch is powered on for the first time without a stacking module installed, stacking will be disabled and that will be saved in the switch's running configuration. For more information, see Stacking Information and Topologies on page 49.

Before installing the switch in its network location, you should first verify it is working properly by plugging it into a power source and verifying that it boots correctly.

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

2**Figure 10** *Connecting the Power cord*
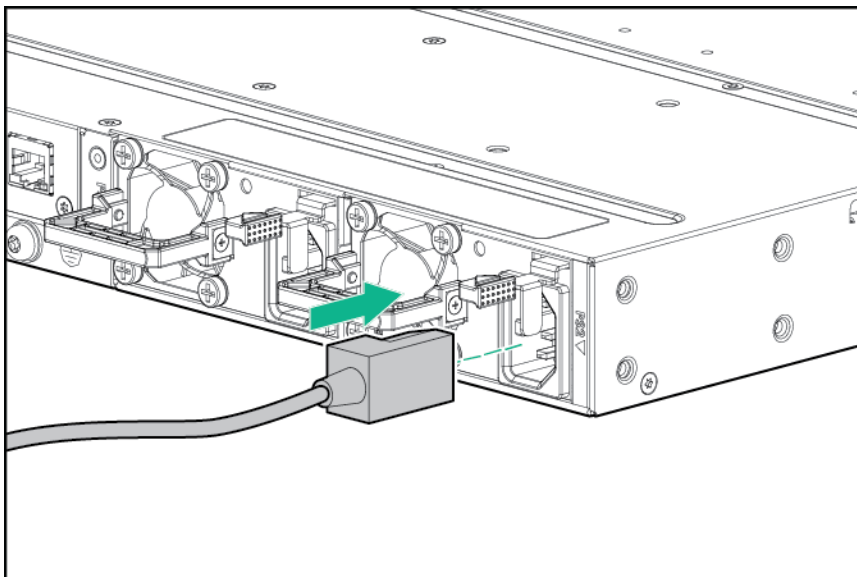
The 3810M switches do not have a power switch. They are powered on when the power cord is connected to the switch and to a power source. For safety, the power outlet should be located near the switch installation.

NOTE	The switch automatically adjusts to any voltage between 100-240 (110–240 for JL087A power supply) and either 50 or 60 Hz. No voltage range settings are required. If your installation requires a different power cord than the one supplied with the switch, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the switch.

3. Check the LEDs on the switch as described below.

Figure 11 *Example of an 3810M-48-port PoE+ switch*
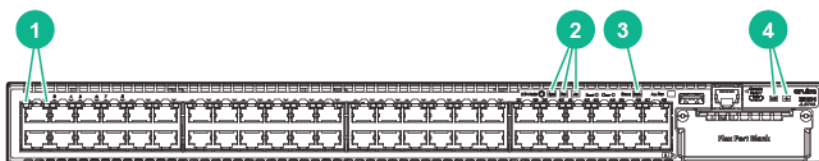
Table 8: Example of an 3810M-48-port PoE+ switch Label and Description

Label	Description
1	Switch Port LEDs
2	Mode LEDs
3	Back LED
4	Global Status and UID 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, and other Status and Mode LEDs will initially turn on green and bi-color LEDs will change to orange, then back to green.
- The Global Status LED will start blinking green, indicating the switch is going thru its self-test and will continue to blink green until the switch if fully booted.
- The Port LEDs will come on green, turn orange, turn back to green, and then may blink on and off during phases of the boot.

When the switch boots successfully, the LEDs display:

- **Global Status** and **Back** LEDs will be on solid green.
- **Locator** 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, then the switch boot has not completed correctly. Refer to for diagnostic help.

Install the Stacking Module

NOTE

Hot swapping the Stacking Module is not supported. If a module is installed with the switch powered on, self-test of the module will not occur, the **Back** LED on the front of the switch and the **Module Status** LED on the module will blink orange. The switch must be reset or power cycled for the module to function. Only insert or remove a module during scheduled downtime with the switch powered off.

1. Remove the cover plate.
2. Insert the module aligning with the guides in the slot.
3. Once the contacts have engaged, use the extractor handles to seat the module completely.
4. Tighten the captive screws until they are snug – do not over-tighten them.

Figure 12 *Installing the Module*
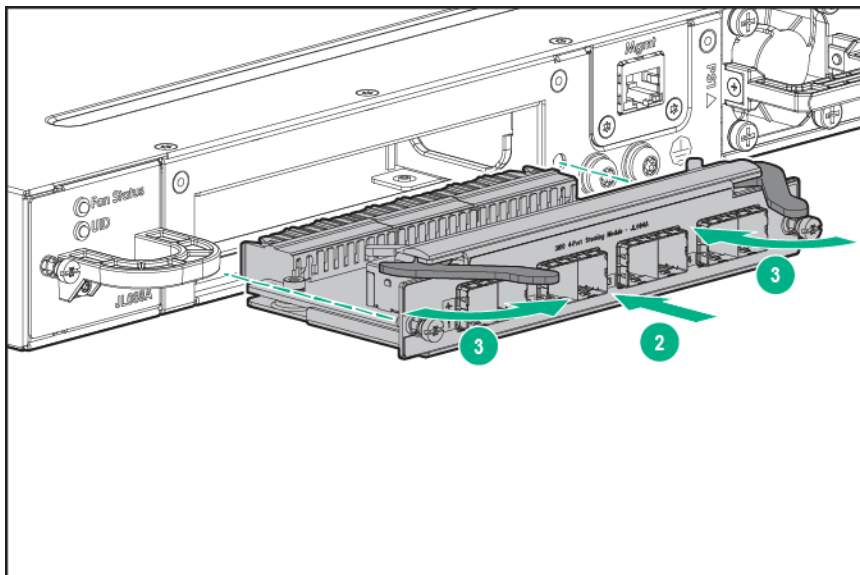
Verifying the Module is Installed Correctly

Observe the Back and Global Status LEDs on front of the switch, and the Module Status LED on the module to verify module is installed properly.

Figure 13 *Location of Module Status LEDs*
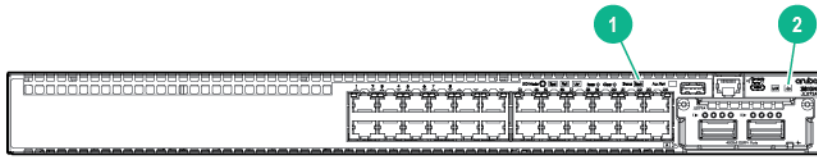
Label	Description
1	Back LED
2	Global Status LED

If the module is installed properly and the switch is powered on, the module undergoes a self test during the normal switch boot up process. You can use the LEDs to determine that the module is installed properly and has passed the self test, as described in the following table.

Table 9: Stacking Module LED Behavior

LED	Display for a Properly Installed Module
Global Status and **Back** LEDs on front of the switch and **Module Status** LED on the stacking module	After boot-up sequencing, LEDs are on steady green.
Link (for each stacking port on the module)	If stacking cables are connected to the module and to a Stacking Module on another powered on 3810M switch, the LED goes ON green to indicate the stacking port is enabled, connected, and detects a signal from the attached switch.

Installing the Flex Port Module

1. Unscrew the two retaining screws on the blank filler and remove it.
2. Remove the new Flex Port module from its packaging, be careful not to touch any of the circuitry on the board.
3. Insert the Flex Port module fully into the slot as shown in the figure, below. The face plate of the module will be flush with the front face of the switch.
4. Engage the retaining screws and tighten them. Be sure to not over-tighten the screws.
5. Power on the switch and make sure the module passes its self test. See Diagnosing with the LEDs on page 70 for the module LED behavior that indicates correct installation.

Figure 14 *Install Flex Port Module*
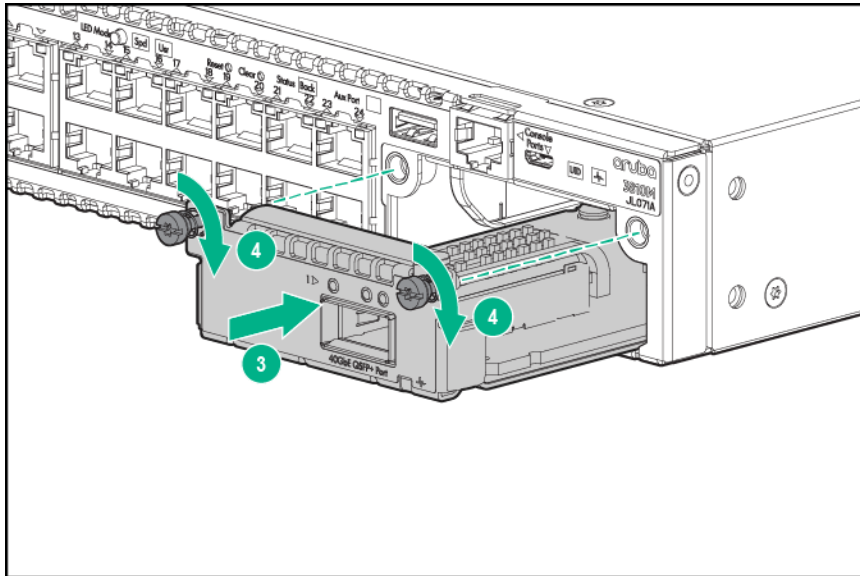
Mount the Switch

After the switch passes self test, the switch is ready to be mounted in a stable location. The 3810M switches can be mounted in these ways:

- in a rack or cabinet
- on a horizontal surface

For other mounting options contact your local Hewlett Packard Enterprise authorized network reseller or Hewlett Packard Enterprise representative.

Rack or Cabinet Mounting

These switches are designed to be mounted in any EIA-standard 2-post 19-inch telco rack or 4-post communication equipment cabinet.

WARNING

For safe operation, please read the mounting precautions on<u>Installation Precautions on page 33</u>, before mounting a switch.

NOTE

Equipment Cabinet Note

The 12-24 screws supplied with the switch are the correct threading for standard EIA/TIA open 19-inch racks. If you are 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.

Rack Mounting the 3810M Switch in a 2-Post Rack

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

Figure 15 *Attaching the Mounting Brackets to the Switch*
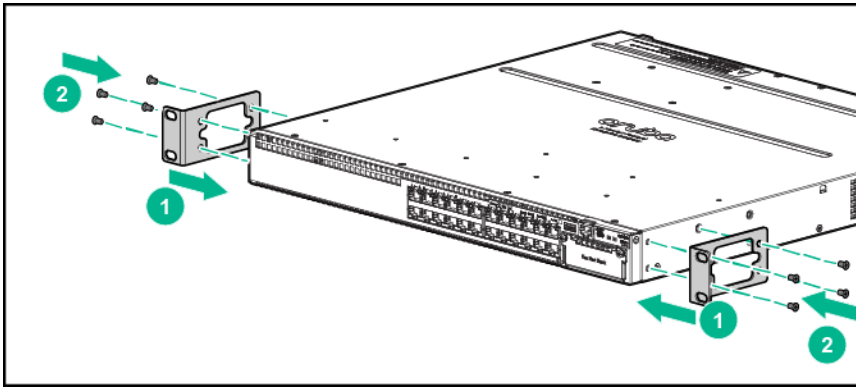
> The mounting brackets have multiple mounting holes and can be rotated allowing for a wide variety of mounting options. These include mounting the switch so its front face is flush with the face of the rack as shown in the illustration, or mounting it in a more balanced position.

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 16 *Mounting the Switch in a Rack*
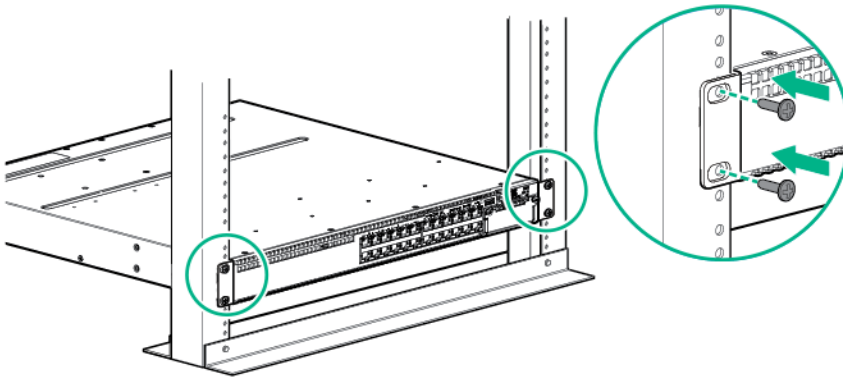
Rack Mounting the 3810M Switch in a 4-Post Rack

1. Using the X410 E-Series 1U Universal Rack Mounting Kit (J9583A/B), use a screwdriver to attach the slider brackets to the switch with the included screws.

Figure 17 *Attaching the Rail Kit Slider Brackets to the Switch*
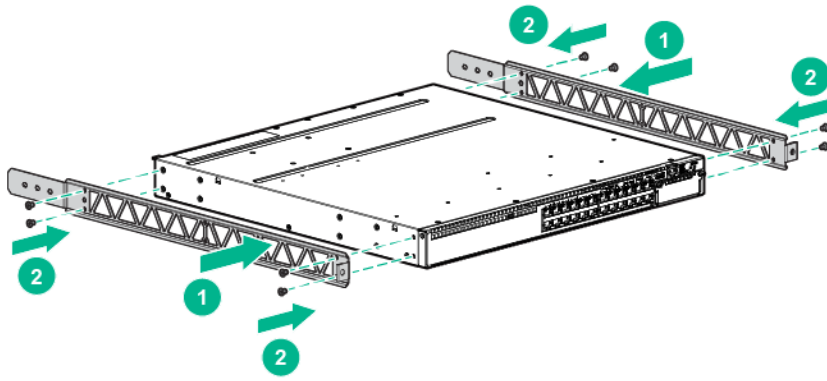
2. Install the rails in the rack.

Figure 18 *Installing the Rails*
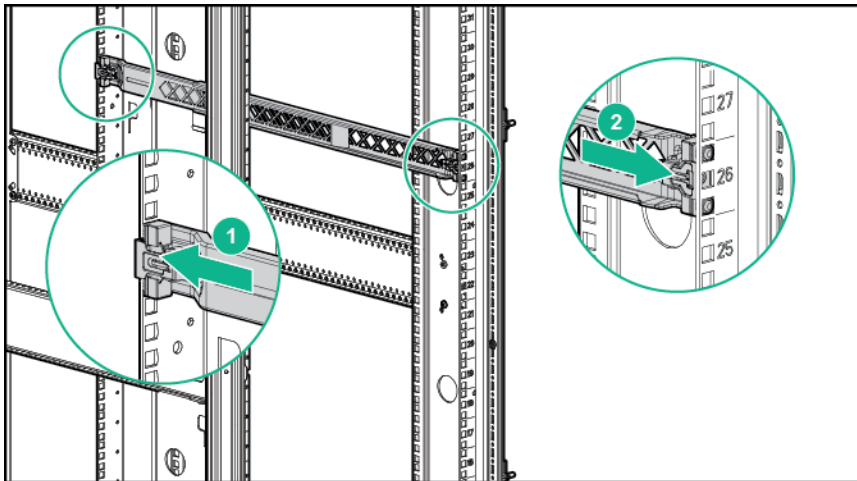
3. Installing the switch into the rails.

Figure 19 *Installing the Switch*
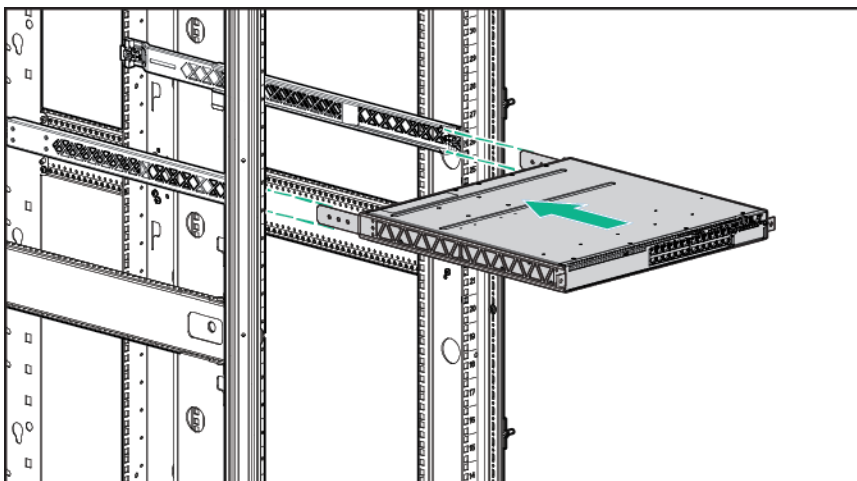
4. Securing the switch in rack after installation.

Figure 20 *Secure the Switch*
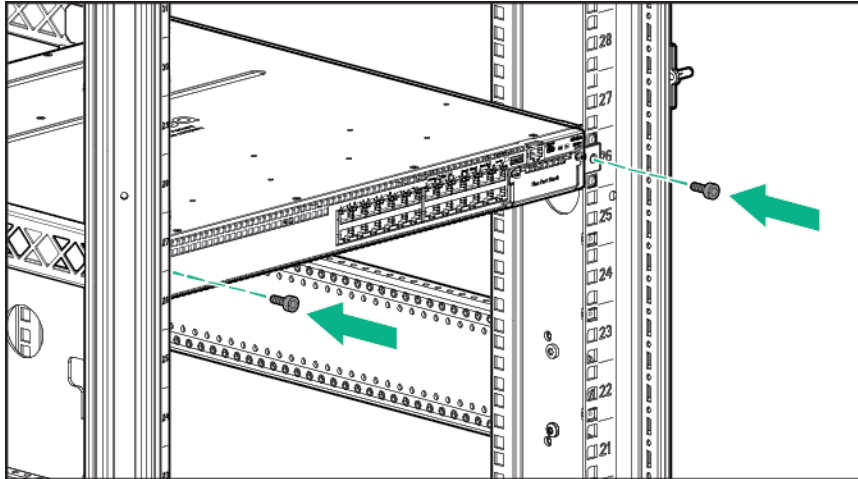
Horizontal Surface Mounting

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.

CAUTION	Make sure the air flow is not restricted around the sides and back of the switch.

Installing the stacking cables

NOTE	Hot swapping stacking cables is supported. You can install or remove a stacking cable with the switch powered on.

1. Slide in the stacking cable connector until it clicks into place. Pull on the cable connector (not the tab) to make sure that it is fully latched.

Installing a stacking cable
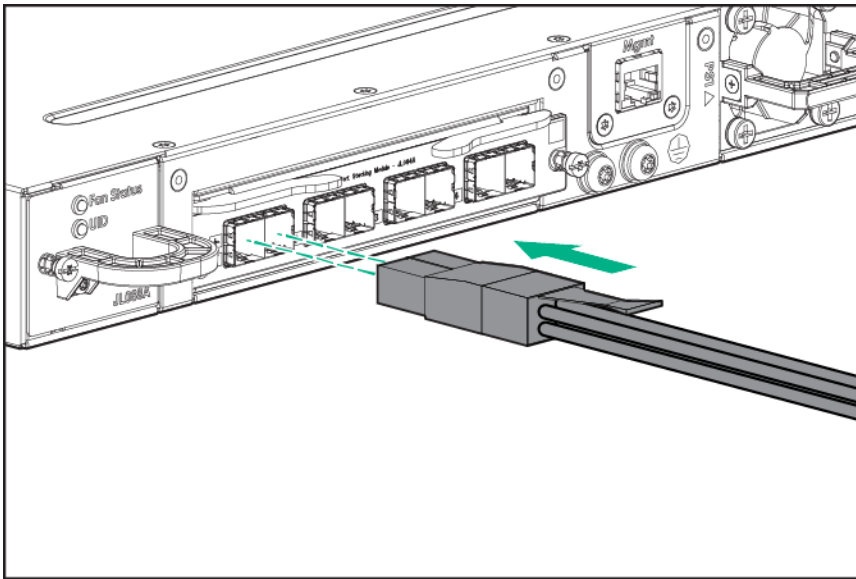
2. Connect the other end of the cable to a Stacking Module in another 3810M switch. See Stacking Information and Topologies on page 49 for connectivity.

> **NOTE**
> When switch power is on and one end of the stacking cable is inserted, the Link and Module Status LEDs on the module, and the Back LED on the front of the switch blinks orange until the other end is connected to another switch stacking module. The LEDs turn solid green when the cable is fully seated at both ends and a link is established.

To remove the stacking cable pull the tab on the stacking cable connector straight out.

Installing Transceivers

You can install or remove transceivers from the slots on the front of the switch 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.

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 will be reported.

> **WARNING**
> The Hewlett Packard Enterprise transceivers are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.

Figure 21 *Installing a transceiver*
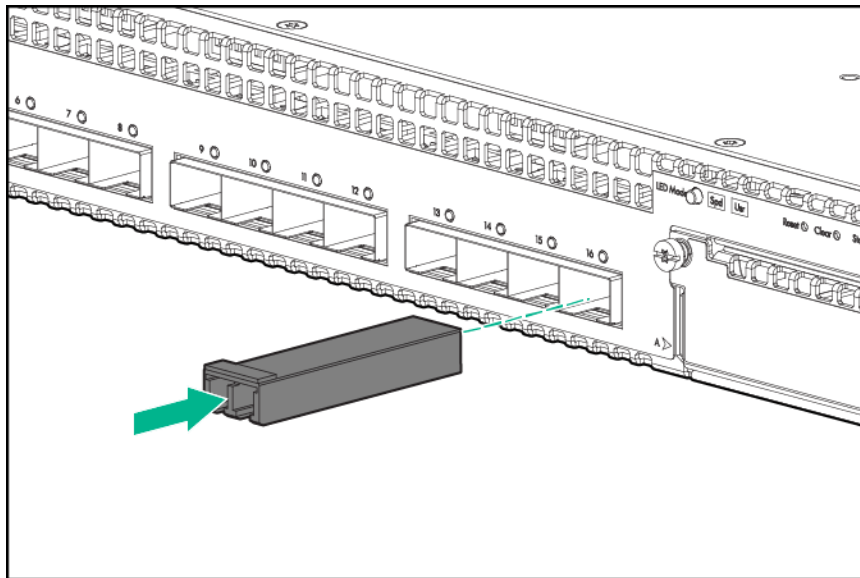
Removing the Transceiver

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

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, or a wire bail.

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

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

Connect the Switch to a Power Source

Procedure

1. Plug the included power cord into the switch's power connector and into a nearby AC power source.
2. Re-check the LEDs during self test. See "LED Behavior" on LED Behavior on page 36.

Stacking Note

	If you are stacking your 3810M switches, then the first switch you should power on is the switch that you want to be the stack Commander. The second switch that you power on should be the one that you want to be the stack Standby. For the other switches in the stack, their member ID will be determined by the order in which they are booted. For more information, see Stacking Information and Topologies on page 49
NOTE	

Installing a Second Power Supply

There are three types of power supplies that can be installed:

- **Aruba 250W Power Supply**, (JL085A, Aruba X371 250W 100-240VAC to 12VDC PS) is used with the non-PoE switches and is keyed so that it cannot be used in the PoE/PoE+ switches. The 250W power supply provides power to operate the switch. Installing a second power supply can provide power to the switch in case the initial power supply fails. If the power supplies are plugged into different AC power sources, then redundant power can be supplied in case of loss of one of the AC power sources.
- **Aruba 680W PoE+ Power Supply**, (JL086A, Aruba X372 680W 100-240VAC to 54VDC PS) used with the PoE/PoE+ switches and is keyed so that it cannot be used in the non-PoE switches.
- **Aruba 1050W PoE+ Power Supply**, (JL087A, Aruba X372 1050W 100-240VAC to 54VDC PS) is used with the PoE/PoE+ switches and is keyed so that it cannot be used in the non-PoE switches.

The 680W and 1050W power supplies provide two types of power to the PoE/PoE+ switches:

- The 680W and 1050W power supplies provide power to operate the switch. Installing a second power supply can provide power to the switch in case the initial power supply fails. If the power supplies are plugged into different AC power sources, then redundant power can be supplied in case of loss of one of the AC power sources.
- Power-over-Ethernet (PoE/PoE+) power. The power supplies, supply PoE/PoE+ power to the switch. Should one of the power supplies fail, the second power supply will supply the needed PoE/PoE+ power to continue PoE operation. For the 48 port switches, the second power supply's PoE/PoE+ power is additional power made available to the switch's ports.

  For further information regarding the power supply's PoE/PoE+ capabilities, see the HPE Power over Ethernet (PoE/PoE+) Planning and Implementation Guide, on the Hewlett Packard Enterprise.

PoE/PoE+ Operation

It is important to understand the PoE/PoE+ power requirements of the switches because if the PoE/PoE+ power is not planned and implemented correctly the end devices connected to the switch ports may not receive power if an internal switch PoE/PoE+ power supply should fail.

For further information regarding the PoE/PoE+ capabilities, see the *HPE Power over Ethernet (PoE/PoE+) Planning and Implementation Guide*.

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's 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.

After you install and power up the Switch, you must use the console port connection to minimally configure the switch with an IP address and subnet mask before you can use a networked (in-band or out-of-band) connection to manage the switch. The minimal switch configuration is described in "Minimal Configuration Through the Out-of-Band Console Connection" on Minimal Configuration through the Console Port Connection on page 60.

To connect a console to the switch, use a console cable and connect a PC or VT-100 terminal to the Console serial port. The PC or terminal then functions as a management console connected directly to the switch.

You can use the Console port only for out-of-band management; it cannot be used for a Telnet connection.

Configuring the Management Console

To set up a console to manage the switch through the console port connection:

1. Configure the PC terminal emulator as a DEC VT-100 (ANSI) terminal or use a VT-100 terminal.
2. Configure the terminal with the following settings:
   - A baud rate from 1200 to 115200 (the switch senses the speed)
   - 8 data bits, 1 stop bit, no parity, and flow control set to Xon/Xoff
   - For the Windows Terminal program, disable (uncheck) the "Use Function, Arrow, and Ctrl Keys for Windows" option.

If you use a management console with different configuration settings, be sure to reconfigure the settings on both the terminal and the switch in the following order so that both configurations are compatible:

1. Reconfigure the switch and save the new settings.
2. Reconfigure the terminal and save the new settings.
3. Reboot the switch and re-establish the console session.

Setting Up a Console Connection

To access the Switch through a Console port (out-of-band) connection, connect an RJ-45 or micro-USB console cable.

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 table below describes the mapping of the RJ-45 to DB-9 pins.

Figure 22 *RJ-45 to DB-9 pinouts*
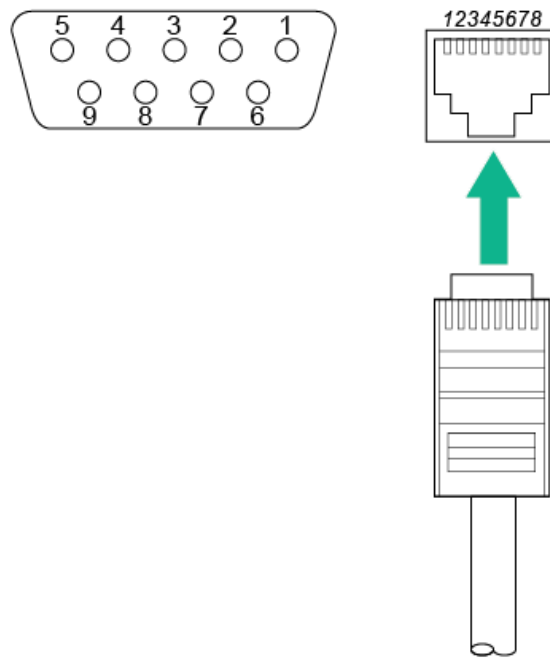
Table 10: Mapping of RJ-45 to DB-9

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 Infrastructure" (Prepare the Installation Site on page 34), from the network devices or your patch panels to the fixed RJ-45 ports on the switch or to any transceivers installed in the switch.

Using the RJ-45 Connectors

Figure 23 *Connecting an RJ-45*
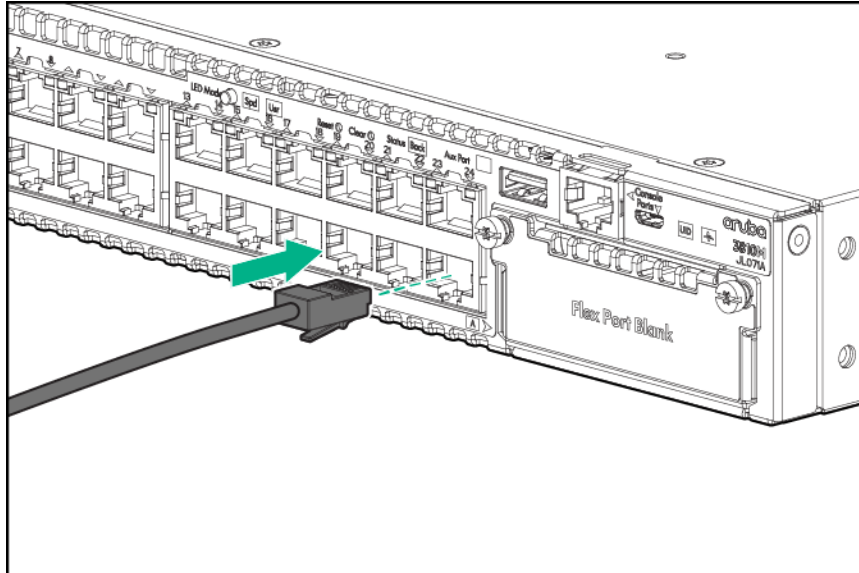
To connect: Push the RJ-45 plug into the RJ-45 jack until the tab on the plug clicks into place. When power is on for the switch and for the connected device, the port LED should come on half-bright to indicate link is established. If the port LED does not come on when the network cable is connected, see Diagnosing with the LEDs on page 70.

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

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 70.

(Optional) Insert transceivers.
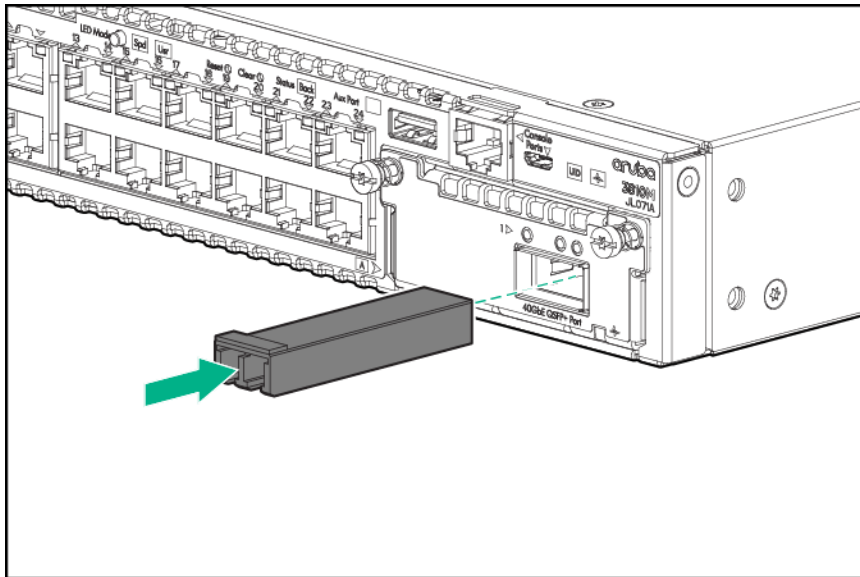
Stacking Information and Topologies

The 3810M switches support the **FlexChassis Mesh** feature for stacking the switches. When 3810M Stacking Modules (JL084A) are installed in the switches, any combination of up to ten 3810M switches can be stacked together via high-speed backplane cables to form a single extended virtual switch. The stacking topologies supported depend on the number of switches being stacked.

The stacking cables and connections operate independently of any layer 2 or layer 3 network protocols and features, including Spanning Tree. When multiple switches are stacked, they behave as a single, virtual switch with additional network ports being supplied by the stack members.

NOTE: If an 3810M switch is powered on for the first time without a stacking module installed, stacking will be disabled and that will be saved in the switch's running configuration. Subsequently, after a stacking module has been installed, stacking must be enabled through the console (CLI) command `stacking enable`.

To set up a stack of 3810M switches, you should:

1. Power off all switches that are going to be stacked.
2. Install Stacking Modules in the switches, and connect the stacking cables to create your stacking topology.
3. Power-on each switch, one at a time. The first switch that you should power on is the one that you want to be the Commander of the stack. The second one will become the stack Standby. For the other stack members, their Member ID is determined by the sequence in which they are booted.

There are additional methods for creating your 3810M stack. For configuration options and other information on stacking, see the *Advanced Traffic Management Guide*.

The supported stacking topologies include the following:

- Chain
- Ring
- Mesh

Chain Topologies

Up to 10 switches may be stacked in an open-ended chain with single cables between each pair of switches.

NOTE

Chain topologies are not recommended because a single failure (switch, stacking module, or cable) will cause switch-to-switch communication failures between switches that are located on opposite sides of the failure. Unless the failure is the switch or stacking module at the very end of the chain, two stack fragments are formed as a result. One of the fragments becomes inactive to make sure that network topology and protocol rules are not violated by the creation of two virtual switches. For the inactive fragment, the switches remain powered on and create a separate stack, but all of network ports on the switches in the inactive fragment become disabled and do not pass network traffic.

For more information and recovery procedures, see the *Advanced Traffic Management Guide*.

A typical chain topology is illustrated in the following figure.

Figure 24 *Typical Chain Topology*
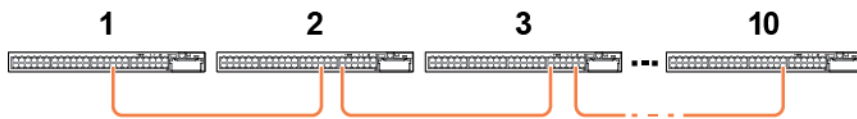
Cable connection examples for stacked chains are illustrated in the following figure.

Figure 25 *Cable Connection Examples for Chain Topologies*
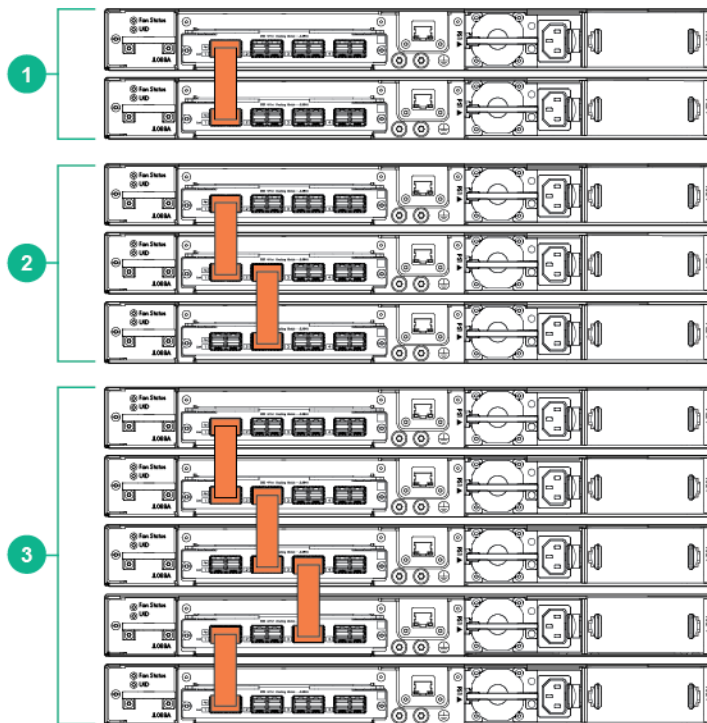
Label	Description
1	2-switch chain
2	3-switch chain
3	5-switch chain

Ring Topologies

Up to 10 switches may also be connected in closed ring topologies. Ring topologies afford some protection from a single failure because communication between the switches continues, in a direction away from the failure.

A typical ring topology is illustrated in the following figure.

Figure 26 *Typical Ring Topology*
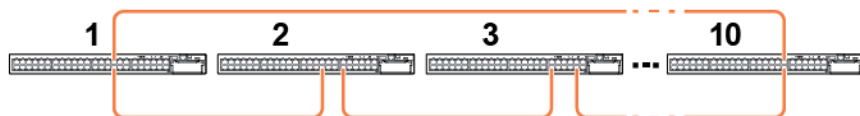
Cable connection examples for stacked rings are illustrated in the following figure.

Figure 27 *Cable Connection Examples for Ring Topologies*
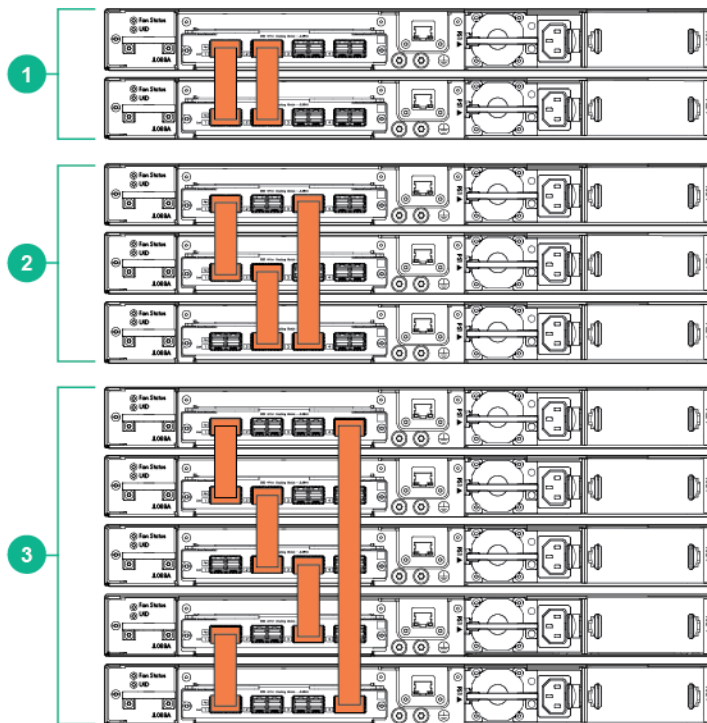
Label	Description
1	2-switch ring
2	3-switch ring
3	5-switch ring

Mesh Topologies

Two to five switches may be stacked using mesh topologies.

In mesh topologies, every switch in the stack is connected to every other switch in the stack. Hence, with four stacking ports on the Stacking Module, the maximum number of switches that can be meshed together is limited to five.

Mesh topologies provide the most protection from stacking failures because communications can be rerouted through multiple paths.

Typical mesh topologies are illustrated in the following figure.

Figure 28 *Meshed Topologies*
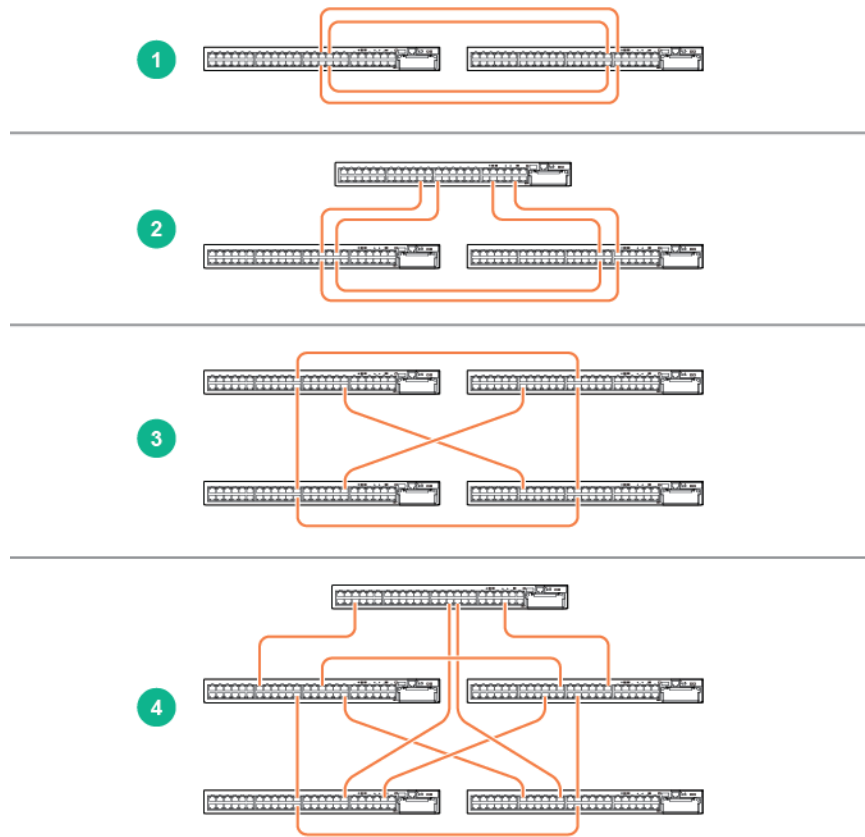
Label	Description
1	2-switch mesh
2	3-switch mesh
3	4-switch mesh
4	5-switch mesh

Cable connection examples for stacked redundant and meshed topologies are illustrated in the following figure.

Figure 29 *Cable Connection Examples for Redundant and Meshed Topologies*
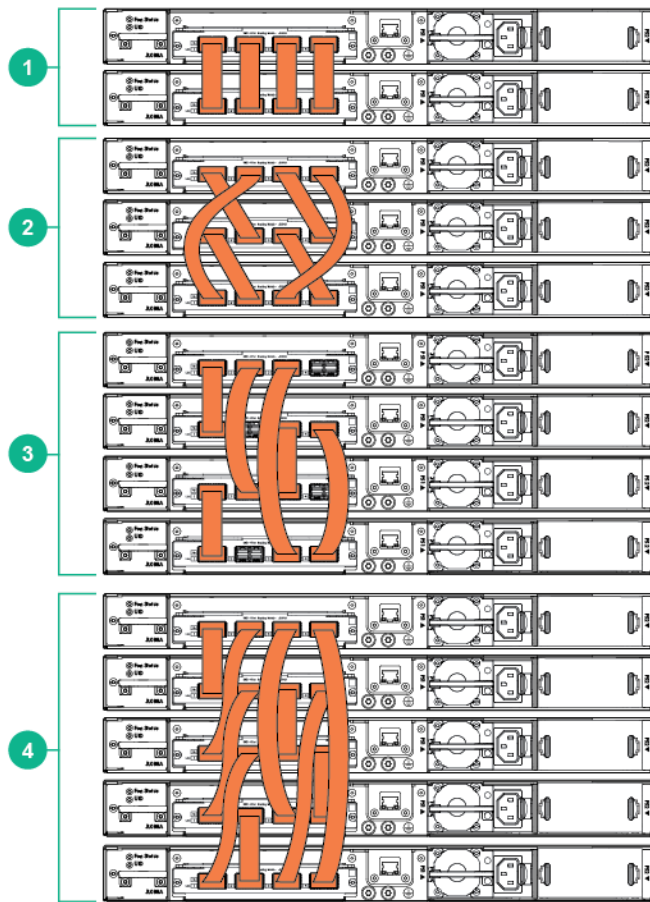
Label	Description
1	2-switch mesh
2	3-switch mesh
3	4-switch mesh
4	5-switch mesh

Sample Network Topologies

This section shows a few sample network topologies in which the switch is implemented. For more topology information, visit the product's website at http://www.hpe.com/networking/support.

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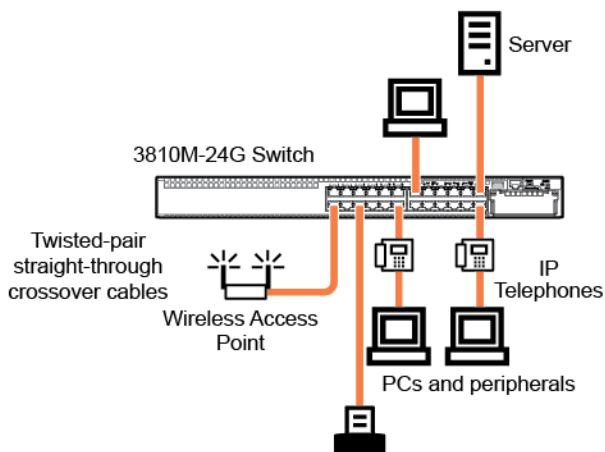
This illustration is an example of the switch being configured to supply PoE/PoE+ power to end devices such as IP telephones and wireless access points (WAPs).

As shown in the figure above, 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.

Figure 31 *Example as a Segment Switch*
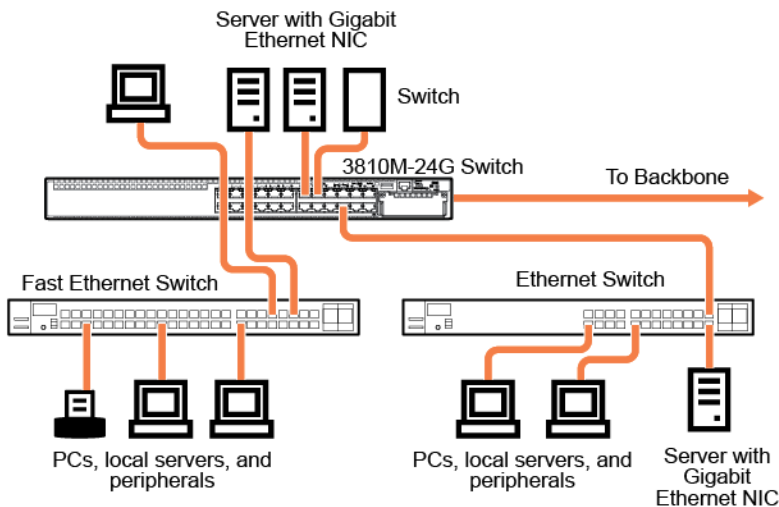
The Switch also works well as a segment switch. That is, with its high performance, it can be used for interconnecting network segments – simply connect the network hubs that form those segments to the switch, or you can also connect other switches.

In the illustration above, two "Fast" Ethernet hubs with PCs, printers, and local servers attached, are both connected to a Switch. The devices attached to the two hubs can now communicate with each other through the switch. They can also all communicate with the server that is connected to a 1000Base-T port on the switch.

Because the Switch has the "IEEE Auto MDI/MDI-X" features, the connections between the switch and the hubs, and between the switch and end nodes or servers can be through category 5 straight-through or crossover twisted-pair cable.

Category 3 or 4 cable can also be used if the connection is 10 Mbps only. 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-SX, -LX, or -LH 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.

Figure 32 *Example as a Segment Switch Implementing PoE/PoE+*
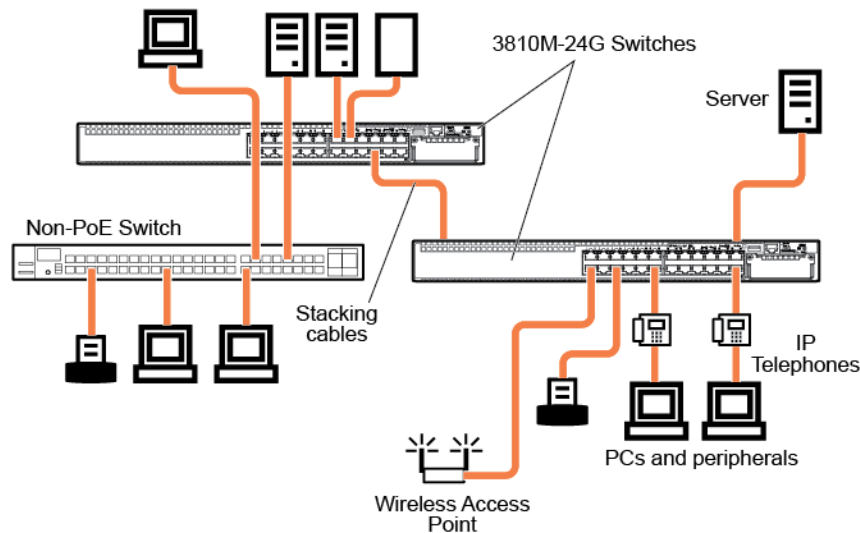
As shown in the figure above, the IP telephones have been inserted in between the 3810M-PoE+ switch and the PCs, and a WAP has been connected to the 3810M-PoE+ switch. Only devices directly connected to the PoE+ switches can receive PoE/PoE+ power. Devices connected to a non-PoE+ switch cannot receive PoE/PoE+ power.

Figure 33 *Example of Connecting to a Backbone Switch*
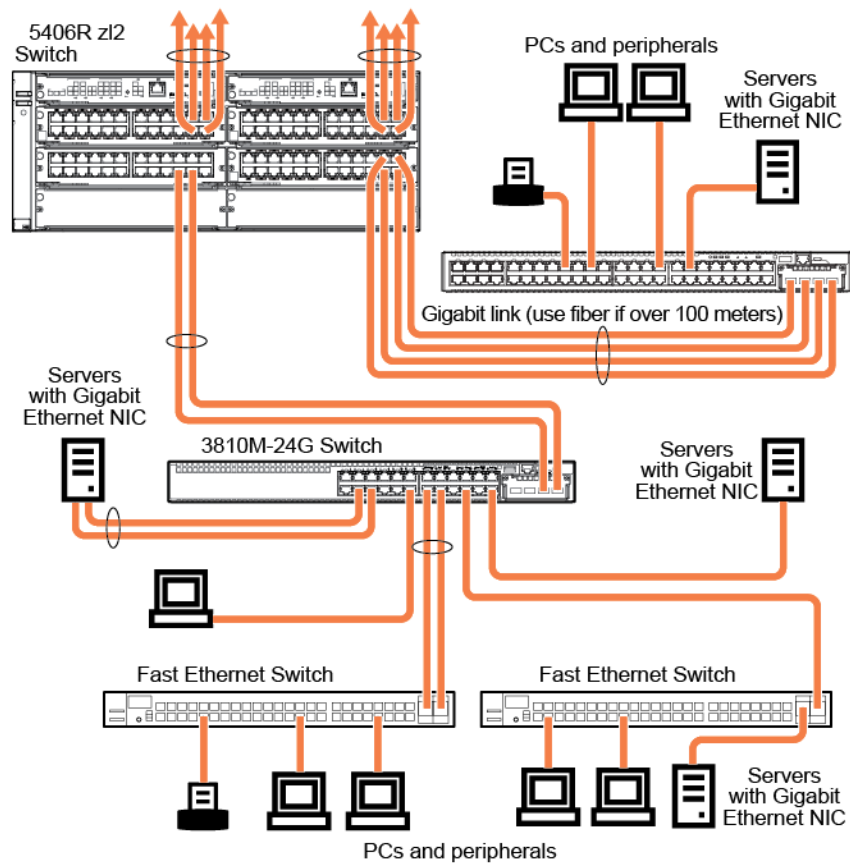
For example, you can use an Aruba 5406R zl Switch to interconnect each of your smaller switched workgroups to form a larger switched network. All the devices in this network can communicate with each other. For example, with 8port 1G/10GbE SFP+ v3 zl2 Modules and associated SFP/SFP+ transceivers in the Aruba 5406R zl switch, the entire switched topology can be connected to a campus backbone as shown in the figure above.

> **NOTE**
>
> In the Backbone Switch illustration, the fiber-optic connection between the 3810M Switch and the 5406R zl Switch is by way of an Aruba 3810M 4SFP+ Module installed in the 3810M Switch, and connected to an 8port 1G/10GbE SFP+ v3 zl2 Module in the 5406R zl Switch. The appropriate SFP+ transceivers are installed into each module.

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

For more information on using the switch console and the other switch management interfaces: the web browser interface and the SNMP management tool, Aruba IMC, see the *Management and Configuration Guide*, which is on the Hewlett Packard Enterprise website at http://www.hpe.com/networking/resourcefinder.

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 a networked (in-band data port or out-of-band management port) connection, you must first configure the switch with an IP address and subnet mask compatible with your network.

Also, you should 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 their default settings or you can configure them with new values.

You can configure many other switch features through the switch's console interface to:

- Optimize switch performance
- Enhance control of network traffic
- Improve network security
- Enable stacking

After you configure an IP address on the switch, you can manage these features more conveniently in any of the following ways:

- A remote Telnet session
- A web browser interface
- An SNMP network management station running a network management program, like IMC.

For a list of switch features available with and without an IP address, refer to "How IP Addressing Affects Switch Operation" in the *Management and Configuration Guide* on the Hewlett Packard Enterprise website.

For more information on IP addressing, refer to "IP Configuration" in the *Management and Configuration Guide*.

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 configuration method described in "Minimal Configuration Through the Console Port Connection", see "DHCP/Bootp Operation" in the *Management and Configuration Guide* on the Hewlett Packard Enterprise website.

Minimal Configuration through the Console Port Connection

The quickest and easiest way to minimally configure the switch for networked management and password protection is to use the direct (out-of-band) connection through the console port to start a console session and access the Switch Setup screen.

Procedure

1. Configure a management console as described in Configuring the Management Console on page 46.
2. Set up a console connection through the Console port by following the procedure described in Setting Up a Console Connection on page 46. The 3810M command-line prompt should be displayed on the console screen, typically with the switch model number; for example: `Aruba 3810M#`
3. At the prompt, enter the **setup** command to display the Switch Setup screen. The following illustration shows the Setup screen with the default settings.

Figure 34 *Example CLI switch setup screen*

4. Use the **Tab** key to select the **Manager Password** field and enter a manager password.
5. Tab to the **IP Config (DHCP/Bootp)** field and use the Space bar to select the **Manual** option.
6. Tab to the **IP Address** field and enter the IP address that is compatible with your network.
7. Tab to the **Subnet Mask** field and enter the subnet mask for your network.
8. Press **Enter**, then **S** (for **Save**).

The following fields are displayed in the Setup screen. For more information on these fields, see the *Management and Configuration Guide*.

Parameter	Default	
System Name	blank	Optional; up to 32 characters, including spaces
System Contact	blank	Optional; up to 48 characters, including spaces
Manager Password	blank	Recommended; up to 64 characters (no blank spaces)

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; Enter the IP address of the next-hop gateway node if network traffic needs to be able to reach off-subnet destinations.
Time Sync Method	None	Optional; The protocol the switch uses to acquire a time signal. The options are SNTP and TimeP.
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.
The IP address and subnet mask assigned for the switch must be compatible with the IP addressing used in your network.		
Subnet Mask	xxx.xxx.xxx.xxx	
Stacking	Stacking is enabled by default, but if the switch was powered on for the first time and a stacking module is not installed, it becomes disabled and that configuration change is saved in the switch's running configuration. In that case, for the stacking feature to operate, stacking must first be enabled. From the config context in the CLI, enter the command stacking enable.	

Where to go from here: Networked Connections

After the Switch is configured with a Manager password, IP address, and subnet mask, you can manage the switch from a networked connection, such as:

- PC equipped with Telnet (see Starting a Telnet Session on page 62).
- Web browser interface (see Starting a Web Browser Session on page 62).
- SNMP-based network management station using a tool like IMC.

For more information on these management interfaces and all the features that you can configure on the switch, refer to the *Management and Configuration Guide* for your switch on the Hewlett Packard Enterprise website.

The following types of networked connections are supported on a 3810M Switch:

- Out-of-band networked connection through the dedicated Management port

  To use: Connect an RJ-45 network cable to the **Mgmt** port to manage a 3810M Switch through Telnet from a remote PC or UNIX workstation.

  To use this port, the switch must have an IP address. IP settings can be configured through a Console port connection (see Minimal Configuration through the Console Port Connection on page 60) or automatically from a DHCP/Bootp server.

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

  For more information, refer to the *Management and Configuration Guide*.

- In-band networked connection through a data port on the switch

  To use: Connect a PC or UNIX workstation with a VT-100 terminal emulator directly to a switch data port. Then access the switch via Telnet from the workstation

  To use Telnet, the switch must have an IP address. IP settings can be configured through a Console port connection (see Minimal Configuration through the Console Port Connection on page 60) or automatically from a DHCP/Bootp server.

  For more information on in-band and out-of-band networked connections for switch management, refer to Using the IP Address for Remote Switch Management on page 62 and the *Management and Configuration Guide*.

> **NOTE**
>
> A 3810M switch can simultaneously support one out-of-band serial console session through the console port and up to six in-band Telnet/TCP (networked) sessions through the dedicated Management port or data ports on the switch.

Using the IP Address for Remote Switch Management

The switch's IP address can be used to manage the switch from any PC on the same or on a different subnet as the switch. In a networked (in-band or out-of-band) 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:

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 3810M#
```

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 3810M Switch can be managed through a graphical interface that you can access from any PC or workstation on the network by running a web browser and typing in the switch's IP address as the URL. No additional software installation is required to make this interface available; it is included in the switch's onboard software.

The following illustration shows a typical web browser interface screen.

Figure 35 *Web Browser Interface Screen*
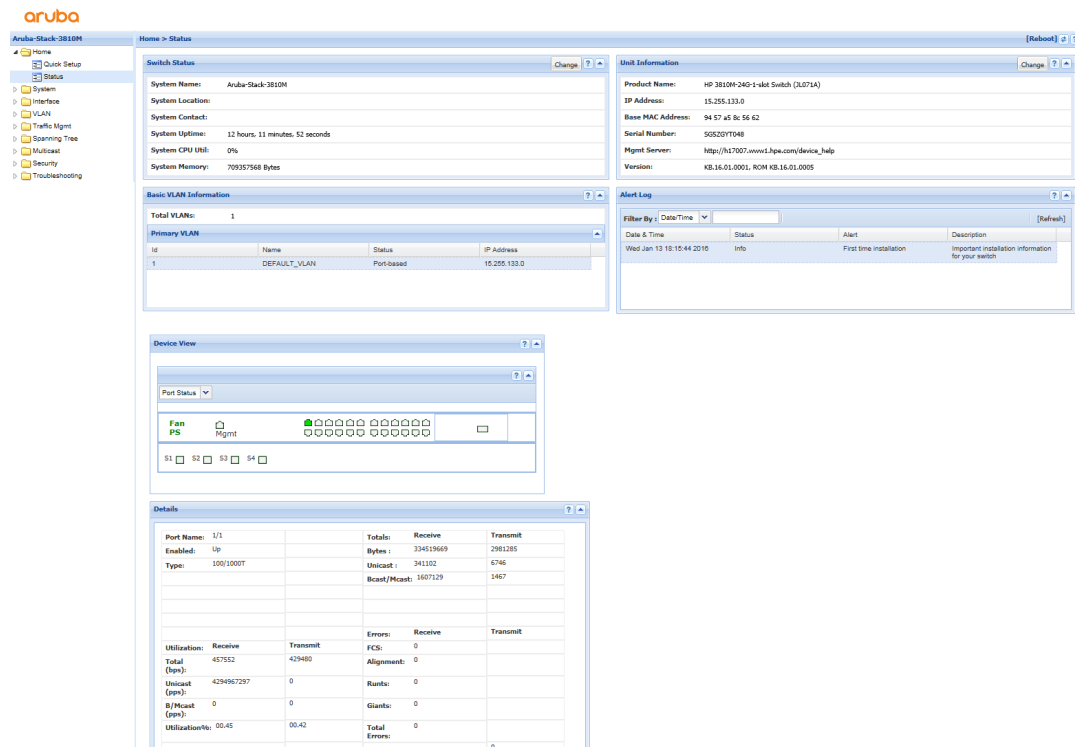
For more information on using the web browser interface, see the *Management and Configuration Guide,*.

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 access to the Internet, or IMC needs to be installed on a network management station that is on the subnet.

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

- Fan tray
- Power Supply
- Stacking Module
- Flex Port Module

Hot Swapping

⚠ CAUTION

- The fan tray can be hot swapped. The switch does not need to be powered off to replace the fan tray. However, it needs to be done quickly before the switch shuts down (within 2 minutes).
- The stacking module is not hot swappable. The switch must be powered off before installing or replacing the module.

⚠ CAUTION

The 3810M switches and its components are sensitive to static discharge. Use an antistatic wrist strap and observe all static precautions when replacing components.

⚠ CAUTION

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

Replacing the Fan Tray

The fan tray is hot swappable. Replacing the fan try can be done with the switch powered on. When a fan fails the Fan Status LED on the switch will blink simultaneously with the switch Fault LED. In this case, the entire fan tray needs to be replaced. Individual fans cannot be replaced.

To replace a fan tray:

1. Remove the new fan tray assembly from it's packaging.
2. Unscrew the retaining screw of the failed fan tray.

3. Holding the handle, pull the failed fan tray assembly straight out.
4. Insert the new fan tray assembly fully. The face plate of the fan tray will be flush with the back face of the switch.
5. Engage the retaining screw and tighten. Be sure to not over tighten the screw.

Figure 36 *Fan Tray Retaining Screw and Handle*
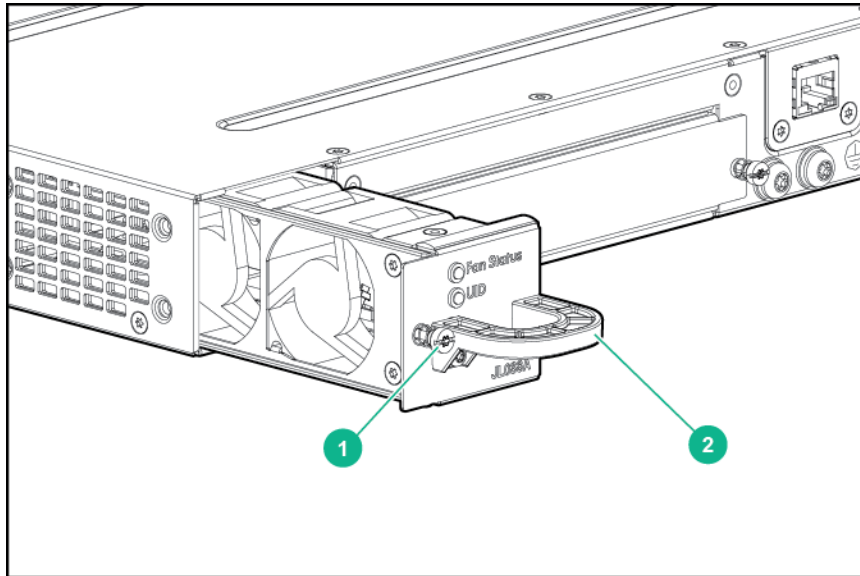
Label	Description
1	Retaining Screw
2	Handle

Replacing the Power Supply

If the 3810M switch is configured with redundant power supplies, the switch will not suffer any loss of traffic or performance if a power supply fails. Replace the failed component as soon as possible. The PS (Power Supply) LED will blink simultaneously with the switch Fault LED indicating a power supply has failed.

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

Figure 37 *Replacing a Failed Power Supply*
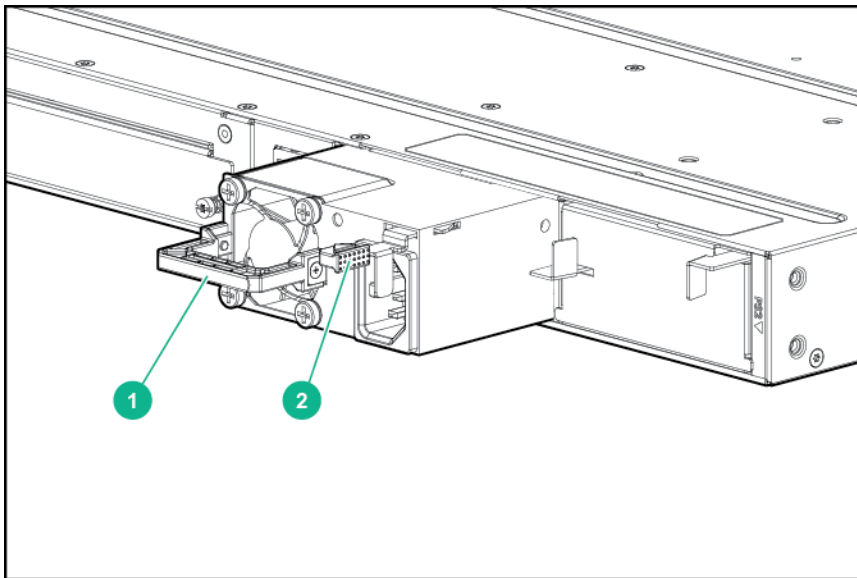
Label	Description
1	Handle
2	Lock Mechanism

3. Insert the new power supply. Slide it in all the way in until the locking mechanism locks.

Replacing the Stacking Module

The 3810M Stacking Module is not hot swappable. The switch must be powered off before replacing the module.

1. Power off the switch for which the stacking module needs to be replaced.
2. Remove the new stacking module from it's packaging, being careful to not touch any of the circuitry on the board.
3. Disconnect the stacking cables from the failed module. You do not need to disconnect the cables from the switches at the other ends of the cables.
4. Unscrew the two retaining screws on the module.
5. Pull the two extractor handles toward you and outward until they stop and then pull the module straight out.
6. Insert the new stacking module fully into the slot as shown in the figure below. The face plate of the module will be flush with the back face of the switch.
7. Close the two extractor handles all the way until they stop.
8. Engage the retaining screws and tighten them. Be sure to not over tighten the screws.
9. Power on the switch and make sure the module passes its self test. See Verifying the Module is Installed Correctly on page 37 for the module LED behavior that indicates correct installation.

Figure 38 *Replace Stacking Module*
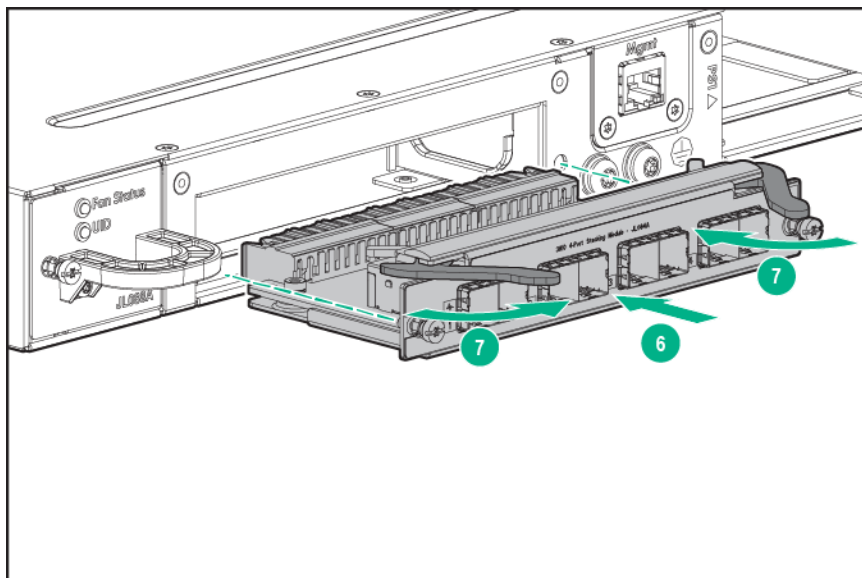
Replacing the Flex Port Module

The 3810M Flex Port Module is not hot swappable.

1. Execute `flexible-module <A/B> remove`, or in case of stacking, `stacking <member Id> flexible-module <A/B> remove`.
2. Remove the new Flex Port module from it's packaging, being careful to not touch any of the circuitry on the board.
3. Disconnect the cables and any installed transceivers from the failed module. You do not need to disconnect the cables from the switches at the other ends of the cables.
4. Unscrew the two retaining screws on the module.
5. Pull on the two retaining screws toward you to disengage the module and pull the module straight out.
6. Insert the new Flex Port module fully into the slot as shown in the figure, below. The face plate of the module will be flush with the front face of the switch.
7. Engage the retaining screws and tighten them. Be sure to not over tighten the screws.
8. Make sure the module passes its self test. See Diagnosing with the LEDs on page 70 for the module LED behavior that indicates correct installation.

Figure 39 *Replace Flex Port Module*
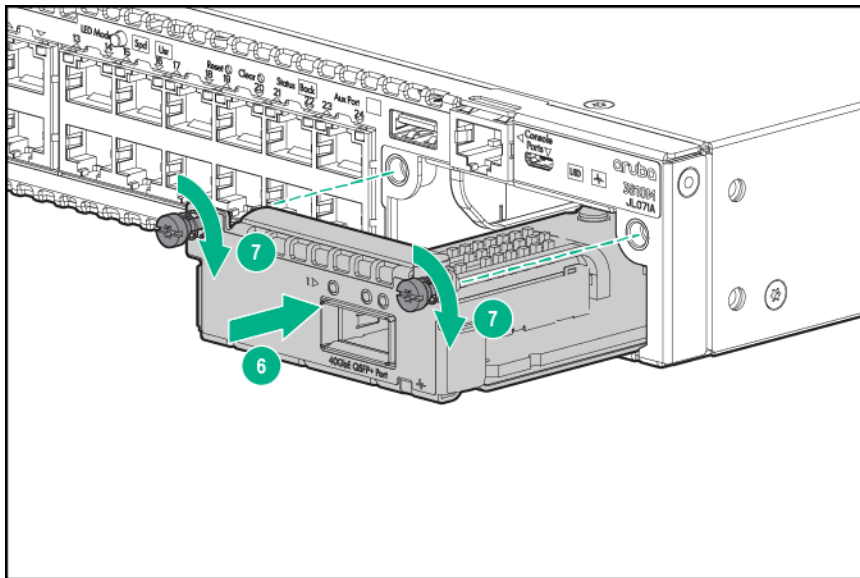
This chapter describes how to troubleshoot your switch. This document describes troubleshooting mostly from a hardware perspective. You can perform more in-depth troubleshooting on the switch using the software tools available with the switch, including the full-featured console interface, the built-in web browser interface, and IMC, the SNMP-based network management tool. For more information, see the chapter "Troubleshooting" in the 3810M *Management and Configuration Guide*. You may want to bookmark this Web page for easy access in the future.

This chapter describes the following:

- Basic Troubleshooting Tips
- Diagnosing with the LEDs
- Proactive Networking Tools
- 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 will operate in one of two ways to determine the link speed and the communication mode (half duplex or full duplex):
    - 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 very 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 those configured on the corresponding switch port.
- **Faulty or loose cables.** Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.
- **Non-standard cables.** Non-standard and miswired cables may cause network collisions and other network problems, and can seriously impair network performance. Use a new correctly-wired cable or compare your cable to the cable in appendix B, "Cables and Connectors" for pinouts and correct cable wiring. 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's 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.

Diagnosing with the LEDs

You can use the LEDs to help diagnosis issues with your switch.

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

Table 11: Switch LED Error Indicators

| Global Status LED | Chassis Status | | Mode/Status | | | FP/IM | Port LED | Back side of chassis | | | | See Diag Tips |
	AUX Port	Back LED	Usr	PoE	Spd			PSU	Fan Status	Stacking Module	Stacking Port	
Off	*	Off	*	*	*	*	*	*	*	*	*	1
Solid Orange	*	Solid Green	*	*	*	*	*	*	*	*	*	2
Slow Flash Orange	*	Solid Green	*	*		Slow Flash Orange **	Slow Flash Orange **	Solid Green	Solid Green	Slow Flash Orange **	Slow Flash Orange **	3
Slow Flash Orange	*	Slow Flash Orange	*	*	*	*	*	*	Slow Flash Orange	*	*	4
Slow Flash Orange	*	Solid Green	*	*	*	*	Slow Flash Orange	*	*	*	*	5
Solid Green	*	Solid Green	*	*	*	*	Off	Solid Green	Solid Green	Solid Green	Solid Green	6
Solid Green	*	Solid Green	*	*	*	*	Half-Bright Solid Green	Solid Green	Solid Green	Solid Green	Solid Green	7
Slow Flash Orange	*	Slow Flash Orange	*	*	*	*	*	Flashing Green	Solid Green	*	*	8
Slow Flash Orange	*	Solid Green	*	*	*	*	*	Solid Green	Solid Green	*	*	9
Slow Flash Orange	*	*	*	Slow Flash Orange	*	*	Slow Flash Orange	*	*	*	*	10

Global Status LED	Chassis Status		Mode/Status			FP/IM	Port LED	Back side of chassis				See Diag Tips
	AUX Port	Back LED	Usr	PoE	Spd			PSU	Fan Status	Stacking Module	Stacking Port	
Slow Flash Orange	*	Slow Flash Orange	*	*	*	*	*	Solid Green ***	*	*	*	11

* This LED is not important for the diagnosis.

**Provided the module is present

***Mode select to PoE mode

****The additional PSU is working properly

Diagnostic Tips:

Tip	Problem	Solution
1	The switch is not plugged into an active AC power source, or the switch's power supply may have failed. The switch will not power up if the top is off.	1. Verify the power cord is plugged into an active power source and to the switch. Make sure these connections are snug. 2. Try power cycling the switch by unplugging and plugging the power cord back in. 3. If the Power LED is still not on, verify that the AC power source works by plugging another device into the outlet. Or try plugging the switch into a different outlet or try a different power cord. If the power source and power cord are OK and this condition persists, the switch power supply may have failed. Call your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.
2	A switch hardware failure has occurred. All the LEDs will stay on indefinitely.	Try power cycling the switch. If the fault indication reoccurs, the switch may have failed. Call your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.
3	The switch has experienced a software failure during self test.	1. Try resetting the switch by pressing the Reset button on the front of the switch, or by power cycling the switch. 2. If the fault indication reoccurs, attach a console to the switch (as indicated in chapter 2) 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.

Tip	Problem	Solution
		If necessary to resolve the problem, contact your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.
4	One or more of the switch cooling fans may have failed.	Try disconnecting power from the switch and wait a few moments. Then reconnect the power to the switch and check the LEDs again. If the error indication reoccurs, one or more of the fans has failed. The switch has four fans and may continue to operate under this condition if the ambient temperature does not exceed normal room temperature, but for best operation, the fan tray should be replaced. See Replacing Components on page 64 for more information on how to replace the fan tray. Call your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.
5	The network port for which the LED is blinking has experienced a self test or initialization failure.	Try power cycling the switch. If the fault indication reoccurs, the switch port may have failed. Call your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance. If the port is a pluggable SFP/SFP+ unit, verify it is one of the pluggables supported by the switch. Unsupported pluggables will be identified with this fault condition. Caution: Use only supported genuine Hewlett Packard Enterprise transceivers with your switch. To verify the port has failed, try removing and reinstalling the SFP/SFP+. You can do that without having to power off the switch. If the port fault indication reoccurs, you will have to replace the SFP/SFP+ unit.
6	The network connection is not working properly.	Try the following procedures: ■ For the indicated port, verify both ends of the cabling, at the switch and the connected device, are connected properly. ■ Verify the connected device and switch are both powered **on** and operating correctly. ■ Verify you have used the correct cable type for the connection: 　○ For twisted-pair connections to the fixed 10/100 or 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's "Aruba Auto-MDIX" feature and the Auto MDI/MDI-X feature of the 10/100/1000-T port. 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

Tip	Problem	Solution
		connection. In general, for connecting an end node (MDI port) to the switch, use straight-through cable; for connecting to MDI-X ports on hubs, other switches, and routers, use crossover cable.
		○ For fiber-optic connections, verify the transmit port on the switch is connected to the receive port on the connected device, and the switch receive port is connected to the transmit port on the connected device. ■ For 1000Base-T connections, verify that the network cabling complies with the IEEE 802.3ab standard. the cable should be installed according to the ANSI/TIA/EIA-568-A-5 specifications. Cable testing should comply with the stated limitations for Attenuation, Near-End Crosstalk, Far-End Crosstalk, Equal-Level Far-End Crosstalk (ELFEXT), Multiple Disturber ELFEXT, and Return Loss. The cable verification process must include all patch cables from any end devices, including the switch, to any patch panels in the cabling path. ■ Verify 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 network management software to determine the state of the port and re-enable the port if necessary. ■ Verify the switch port configuration matches the configuration of the attached device. For example, if the switch port is configured as "Auto", the port on the attached device also MUST be configured as "Auto". Depending on the port type, twisted-pair or fiber-optic, if the configurations don't match, the results could be a very unreliable connection, or no link at all. ■ If the other procedures don't resolve the problem, try using a different port or a different cable.
7	The port or remote link partner may be improperly configured, or the port may be in a "blocking" state by the normal operation of protocols, such as Spanning Tree, LACP, or GVRP features.	■ You must ensure that the device at the other end of the connection indicates a good link to the switch. If it does not, the problem may be with the cabling between the devices, the connectors on the cable, or the configuration of the device on the remote end of the cable. ■ Use the switch console to check the port's configuration to confirm whether the port is administratively disabled or placed in a "blocking" state by the normal operation of one or more protocols.

Tip	Problem	Solution
		○ Check the Port Status using the show interfaces command to confirm whether the port is configured as "disabled". ○ Review the switch configuration to confirm which protocols are operating on the port. Use the appropriate feature show commands to confirm whether the port is put into a "blocking" state. ■ For software troubleshooting tips, see the *Management and Configuration Guide*.
8	A redundant power supply has experienced a fault.	At least one power supply must be operating properly. Check the power supply to make sure it is plugged in to an active power source. If this is ok but the LEDs are still blinking, the power supply may have failed. Unplug the power supply, wait for 5 seconds for residual charge to dissipate, and then plug the power supply. If the fault light is still blinking, replace the power supply.
9	The switch has overheated.	Check to ensure the fans are functioning correctly. See Environmental on page 88 for more information.
10	The port may have an internal hardware failure. The port may be denied PoE power. The port may be detecting an external PD fault.	Check the port for a hardware failure, this may require a reboot of the switch. Check the port for correct PoE configuration and allocation. Also check the external PD for a fault.
11	A redundant power supply is not connected to an active AC power source.	(At least one power supply must be operating properly.) Connect the unplugged power supply to an AC power source, using a supported power cord for your country/region.

Table 12: Stacked Switch and Stacking Module LED Error Indicators

| Global Status LED | Chassis Status | Mode/Status | Port LED | Back side of chassis | | See Diag Tips |
	Back LED	Usr		Stacking Module	Stacking Port	
Solid Green	Off	Solid Green	Off	Solid Green	Off	1
Slow Flash Orange	Slow Flash Orange	Solid Green	Slow Flash Green - Member Fast flash Green - Commander Slow Flash Orange - Member in other fragment	Slow Flash Orange	Off	2

| Global Status LED | Chassis Status | Mode/Status | Port LED | Back side of chassis | | See Diag Tips |
	Back LED	Usr		Stacking Module	Stacking Port	
Slow Flash Orange	Slow Flash Orange	Solid Green	Slow Flash Green - Member Fast flash Green - Commander Solid Green - Member with good stacking connection Slow Flash Orange - Member with poor stacking connection	Slow Flash Orange	Slow Flash Orange	3
Slow Flash Orange	Slow Flash Orange	Solid Green	Off	Slow Flash Orange	Off	4
Slow Flash Orange	Slow Flash Orange	Solid Green	Slow Flash Green - Member Fast Flash Green - Commander Slow Flash Orange - Member in other fragment	Slow Flash Orange, if the link is broken.	Slow Flash Orange, if the link is broken.	5 & 6
Solid Green	Off	Solid Green	Slow Flash Green - Member Fast Flash Green - Commander	Solid Green	Solid Green	7
Solid Green	Off	Solid Green	Slow Flash Green - Member Fast Flash Green - Commander	Solid Green	Solid Green	8

Table 13: Diagnostic Tips for Stack Errors:

Tip	Problem	Solution
1	Stacking is disabled on the switch.	1. Connect a console cable to the switch and establish a console session, as described in Connect a Management Console on page 45

Tip	Problem	Solution
		2. From the CLI config context, enter the command `stacking enable`.
		3. Recheck the switch LEDs:
		■ Stacking Port LED back to Solid green.
		■ Port LED in user mode are all in green color.
		NOTE: ■ Slow green flash LED represent stacking member ID. ■ Fast green flash LED represent commander member ID of that chassis. ■ Other solid green LED represent other stacking members.
2	The Stacking Module was installed in the switch while the switch was powered on. Hot install is not supported.	Reset or power cycle the switch to reboot it. After rebooting, the module will be correctly recognized and supported by the switch, and will be operational. When installing or removing the Stacking Module, the switch should be powered off.

3	One of these problems exists:
	■ The stacking cable connected to the stacking port on which the Link LED is blinking orange is not connected at the far end.
	■ A stacking link failure has occurred on a link that was functioning:
	  ○ the switch at the other end of the stacking cable has been powered off
	  ○ the stacking feature is disabled on the switch at the other end of the stacking cable
	  ○ the stacking module or switch at the other end of the stacking link has failed
	  ○ the stacking cable is faulty
		Make sure that the stacking cable is fully connected at both ends of the link.
		If an equipment failure has occurred, see the LEDs on the device at the other end of the connection.
		If this error occurred on an operational stack, it could result in changes to the stack configuration including election of a new stack Commander, and possibly a new Standby. See the Stack Management chapter in the *Advance Traffic Management Guide* for more information.
		If necessary to resolve the problem, contact your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.

4	The stacking module on this switch has experienced a failure.	1. Try resetting the switch by pressing the Reset button on the front of the switch, or by power cycling the switch.

Tip	Problem	Solution
	Stacking Module LED might be blinking orange slowly.	2. If the fault indication reoccurs, the stacking module may have to be replaced. This error could result in changes to the stack configuration including election of a new stack Commander, and possibly a new Standby. See the Stack Management chapter in the *Advance Traffic Management Guide* for more information. If necessary to resolve the problem, contact your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.
5	A stack link failure has occurred in a chain topology and multiple stack fragments have been created. Each fragment will elect a Commander, so there will be multiple switches with the Cmd LED on.	Repair the cause of the stack link failure and reconnect the switches in their original topology so that the switches can reform the original stack.
6	A stack link failure has occurred in a chain topology and multiple stack fragments have been created. One of the fragments has been made inactive according to the rules of the stack operation. All the network ports on the switches in the inactive fragment are disabled. As a result, all the port LEDs in other than user mode are off for those switches.	Repair the cause of the stack link failure so that the switches can reform the original stack.
7	You have tried to merge two stacks that have different Stack IDs – they were not previously part of the same stack. This is not allowed by the stack operation rules.	1. Select one of the stacks as the one to retain. 2. For the switches in the other stack, erase their stacking configuration by issuing the following config-level CLI command to each switch: `stacking factory-reset` This erases the complete startup configuration for each switch, including the stacking configuration. 3. Add the switches to the stack as described in the Stack Management chapter in the *Advanced Traffic Management Guide*.
8	You have tried to add an eleventh switch to a stack. A maximum of ten switches can be stacked together.	Disconnect the eleventh switch from the stack.

Table 14: Flex Port LED Error Indicators

Global Status LED	Mode/Status			Flex Port Status		See Diag Tips
	Usr	SPD	PoE	Module Status	Port Status	
Slow Flash Orange	Off	Off	Off	Slow Flash Orange	Slow Flash Orange	1
Solid Green	Off	Off	Off	Solid Green	Slow Flash Orange	2
Slow Flash Orange	Off	Off	Off	Slow Flash Orange	Off	3
Slow Flash Orange	Off	Off	Off	Slow Flash Orange	Slow Flash Orange	4

Table 15: Diagnostic Tips for Flex Port Errors

Tip	Problem	Solution
1	Newly inserted Flex Port module does not match with the previous Flex Port module type.	Execute `flexible-module <A/B> remove`.
2	Inserting the unsupported transceiver.	Check the transceiver against the switch peripheral support list.
3	Inserting the unsupported Flex Port module.	Ensure the Flex Port module is genuine.
4	Flex Port module unable to boot up. Usually, it is self-test error.	See Replacing the Flex Port Module on page 67

Proactive Networking

The 3810M 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 non-standard network topologies)
- informing you of the problem with clear, easy-to-and helping you fix the most commonunderstand 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 and to help you take advantage of these proactive networking features:

- IMC - an SNMP-based network management tool that is included with your switch.
- A graphical web browser interface that you can use to manage your switch from a PC running a supported web browser, for example Microsoft Internet Explorer, and Netscape Communicator.

- A full-featured easy-to-use console interface that you can access by connecting a standard terminal or PC running a terminal emulator to the switch's console port. The console interface is also accessible through a Telnet connection.

For more information on using these software tools to diagnose and manage your switch, see the "Troubleshooting" chapter in the *Management and Configuration Guide* for your switch at http://www.hpe.com/networking/resourcefinder.

Hardware Diagnostic Tests

Testing the Switch by Resetting It

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

- unplug and plug in the power cord (power cycling)
- press the Reset button on the front of the switch
- 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 70 for information on interpreting the LED patterns and LED behaviors.

Checking Console Messages

Useful diagnostic messages may be displayed on the console screen when the switch is reset. As described in Connect a Management Console on page 45, 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 on Configuring the Management Console on page 46. Then, when you reset the switch, note the messages that are displayed. Additionally, you can check the switch event log, which can be accessed from the console using the show 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

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

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

These tests can be performed through the switch console interface from a terminal connected to the switch or through a Telnet connection, or from the switch's web browser interface. For more information, see the *Management and Configuration Guide* for your switch.

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

Testing End-To-End Network Communications

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

Restoring the Factory Default Configuration

As part of your troubleshooting process on the switch, it may become necessary to return the switch configuration to the factory default settings. This 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 you have made from the factory default settings. This 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, you should save the switch configuration prior to performing the factory default reset. Then, after the reset and resolution of the original problem, you can restore the saved configuration to the switch. For information on saving and restoring the configuration, see the *Management and Configuration Guide*.

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

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

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

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.

Downloading New Switch Software

Software Updates can be downloaded to the switch through several methods. See .

Physical

Product	Weight	Width	Depth	Height
Aruba 3810M 24G 1-slot Switch (JL071A)	6.5 kg (14.28 lb)	442.5 mm (17.4 in)	430 mm (17.0 in) 467 mm (18.4 in)*	43 mm (1.7 in)
Aruba 3810M 48G 1-slot Switch (JL072A)	6.7 kg (14.7 lb)			
Aruba 3810M 24G PoE+ 1-slot Switch (JL073A)	6.7 kg (14.84 lb)			
Aruba 3810M 48G PoE+ 1-slot Switch (JL074A)	7.0 kg (15.4 lb)			
Aruba 3810M 16SFP+ 2-slot Switch (JL075A)	6.7 kg (14.8 lb)			
Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)	7.0 kg (15.4 lb)			

Includes fan tray and power supply handles, which extend from the back of the switch chassis.

Electrical

Electrical	Aruba 3810M PoE+ Switches (JL073A, JL074A, JL076A)	Aruba 3810M Non-PoE+ Switches (JL071A, JL072A, JL075A)
AC voltage: Maximum current: Frequency range:	Per JL086A power supply: 100V-240V 8A- 3.5A 50 -60 Hz The switch automatically adjusts to any voltage between 100-240 VAC, and either 50 or 60 Hz.	Per JL085A power supply: 100 - 240 VAC 3A -1.2A 50 - 60 Hz
	Per JL087A power supply: 110V-240V 12A- 5A 50 -60 Hz	

Electrical	Aruba 3810M PoE+ Switches (JL073A, JL074A, JL076A)	Aruba 3810M Non-PoE+ Switches (JL071A, JL072A, JL075A)
	The switch automatically adjusts to any voltage between 110-240 VAC, and either 50 or 60 Hz.	

Environmental

Environmental	Aruba 3810M switches
Operating Temperature*	0°C to 45°C (32°F to 113°F)
Relative Humidity	15% to 95% at 40°C (104°F) noncondensing
Non-Operating Temperature	-40°C to 70°C (-40°F to 158°F)
Non-Operating Relative Humidity	15% to 90% at 65°C (149°F)
Maximum Operating Altitude	3.0 km (10,000 ft)
Non-Operating Altitude	4.6 km (15,000 ft)

*If you are installing any transceivers the operating ambient temperature should not exceed 45°C (113°F).

Acoustics

Switch	Acoustics
Aruba 3810M 24G 1-slot Switch (JL071A)	Sound Power (LWAd) 3.9 Bel Sound Pressure (LpAm) (Bystander) 22.8 dB
Aruba 3810M 48G 1-slot Switch (JL072A)	Sound Power (LWAd) 3.8 Bel Sound Pressure (LpAm) (Bystander) 21.8 dB
Aruba 3810M 24G PoE+ 1-slot Switch (JL073A) with JL086A 680W Power Supply	Sound Power (LWAd) 4.8 Bel Sound Pressure (LpAm) (Bystander) 30.7 dB
Aruba 3810M 24G PoE+ 1-slot Switch (JL073A) with JL087A 1050W Power Supply	Sound Power (LWAd) 4.4 Bel Sound Pressure (LpAm) (Bystander) 27.6 dB
Aruba 3810M 48G PoE+ 1-slot Switch (JL074A) with JL086A 680W Power Supply	Sound Power (LWAd) 4.7 Bel Sound Pressure (LpAm) (Bystander) 29.4 dB
Aruba 3810M 48G PoE+ 1-slot Switch (JL074A) with JL087A 1050W Power Supply	Sound Power (LWAd) 4.2 Bel Sound Pressure (LpAm) (Bystander) 26.0 dB
Aruba 3810M 16SFP+ 2-slot Switch (JL075A)	Sound Power (LWAd) 3.9 Bel Sound Pressure (LpAm) (Bystander) 22.3 dB

Switch	Acoustics
Aruba 3810M 40G 8HPE Smart Rate PoE+ 1-slot Switch (JL076A) with JL086A 680W Power Supply	Sound Power (LWAd) 4.9 Bel Sound Pressure (LpAm) (Bystander) 31.5 dB
Aruba 3810M 40G 8HPE Smart Rate PoE+ 1-slot Switch (JL076A) with JL087A 1050W Power Supply	Sound Power (LWAd) 4.5 Bel Sound Pressure (LpAm) (Bystander) 27.9 dB

Safety

Complies with:

- EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013
- EN62368-1, Ed. 2
- IEC60950-1:2005 Ed.2; Am 1:2009+A2:2013
- IEC62368-1, Ed. 2
- IEC60825:2007 (Applies to products with lasers)
- UL60950-1, CSA 22.2 No 60950-1
- UL62368-1 Ed.2
- EN60850-1:2007 / IEC 60825-1: 2007 Class1
- Class 1 Laser Products / Laser Klasse 1

Battery Statements

NOTE

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

Attention	Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Attention	The battery supplied with this product may contain perchlorate material. Special handling may apply in California and certain other states. See http://www.dtsc.ca.gov/hazardouswaste/perchlorate website for more information.

Connectivity Standards

Table 16: Technology Standards and Safety Compliance

Technology	Compatible with these IEEE standards	Laser safety information		
		EN/IEC standard compliance	SFP ("mini-GBIC") Lasers	SFP+Lasers
10-T100-TX1000-T10GBASE-T	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3an 10GBASE-T			
2.5G and 5G Twisted-Pair Copper	HPE Smart Rate			
100-FX	IEEE 802.3u 100BASE-FX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1	
100-BX	IEEE 802.3ah 100BASE-BX10	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1	
1000-SX	IEEE 802.3z 1000BASE-SX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1	
1000-LX	IEEE 802.3z 1000BASE-LX	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1	
1000-LH	(not an IEEE standard)	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1	
1000-BX	IEEE 802.3ah 1000BASE-BX10	EN/IEC 60825	Class 1 Laser Product Laser Klasse 1	
10-Gig Direct Attach	(not an IEEE standard)			

	Laser safety information			
Technology	Compatible with these IEEE standards	EN/IEC standard compliance	SFP ("mini-GBIC") Lasers	SFP+Lasers
10-Gig SR	IEEE 802.3ae 10GBASE-SR	EN/IEC 60825		Class 1 Laser Product Laser Klasse 1
10-Gig LRM	IEEE 802.3aq 10GBASE-LRM	EN/IEC 60825		Class 1 Laser Product Laser Klasse 1
10-Gig LR	IEEE 802.3ae 10GBASE-LR	EN/IEC 60825		Class 1 Laser Product Laser Klasse 1
10-Gig ER	IEEE 802.3ae 10GBASE-ER	EN/IEC 60825		Class 1 Laser Product Laser Klasse 1
40-Gig Direct Attach	(not an IEEE standard)			
40-Gig SR4	IEEE 802.3ba 40GBASE-SR4	EN/IEC 60825		Class 1 Laser Product Laser Klasse 1
40-Gig eSR4	IEEE 802.3ba 40GBASE-SR4	En/IC 60825		Class 1 Laser Product Laser Klasse 1
40-Gig LR4	IEEE 802.3ae 40GBASE-LR4	EN/IC 60825		Class 1 Laser Product Laser Klasse 1

Stacking Module Specifications

Physical

Product	Weight	Width	Depth	Height
Aruba 3810M 24G 1-slot Switch (JL071A)	6.5 kg (14.28 lb)	442.5 mm (17.4 in)	430 mm (17.0 in) 467 mm (18.4 in)*	43 mm (1.7 in)
Aruba 3810M 48G 1-slot Switch (JL072A)	6.7 kg (14.7 lb)			
Aruba 3810M 24G PoE+ 1-slot Switch (JL073A)	6.7 kg (14.84 lb)			
Aruba 3810M 48G PoE+ 1-slot Switch (JL074A)	7.0 kg (15.4 lb)			
Aruba 3810M 16SFP+ 2-slot Switch (JL075A)	6.7 kg (14.8 lb)			
Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)	7.0 kg (15.4 lb)			

Includes fan tray and power supply handles, which extend from the back of the switch chassis.

Environmental

Environmental	Aruba 3810M switches
Operating Temperature*	0°C to 45°C (32°F to 113°F)
Relative Humidity	15% to 95% at 40°C (104°F) noncondensing
Non-Operating Temperature	-40°C to 70°C (-40°F to 158°F)
Non-Operating Relative Humidity	15% to 90% at 65°C (149°F)
Maximum Operating Altitude	3.0 km (10,000 ft)
Non-Operating Altitude	4.6 km (15,000 ft)

If you are installing any transceivers the operating ambient temperature should not exceed 45°C (113°F).

Flex Port Specifications

Physical

Product	Weight	Width	Depth	Height
Aruba 3810M 24G 1-slot Switch (JL071A)	6.5 kg (14.28 lb)	442.5 mm (17.4 in)	430 mm (17.0 in) 467 mm (18.4 in)*	43 mm (1.7 in)
Aruba 3810M 48G 1-slot Switch (JL072A)	6.7 kg (14.7 lb)			
Aruba 3810M 24G PoE+ 1-slot Switch (JL073A)	6.7 kg (14.84 lb)			
Aruba 3810M 48G PoE+ 1-slot Switch (JL074A)	7.0 kg (15.4 lb)			
Aruba 3810M 16SFP+ 2-slot Switch (JL075A)	6.7 kg (14.8 lb)			
Aruba 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)	7.0 kg (15.4 lb)			

Includes fan tray and power supply handles, which extend from the back of the switch chassis.

Environmental

Environmental	Aruba 3810M switches
Operating Temperature*	0°C to 45°C (32°F to 113°F)
Relative Humidity	15% to 95% at 40°C (104°F) noncondensing
Non-Operating Temperature	-40°C to 70°C (-40°F to 158°F)
Non-Operating Relative Humidity	15% to 90% at 65°C (149°F)
Maximum Operating Altitude	3.0 km (10,000 ft)
Non-Operating Altitude	4.6 km (15,000 ft)

If you are installing any transceivers the operating ambient temperature should not exceed 45°C (113°F).

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

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

Cabling Specifications

Table 17: Cabling Specifications

Cable Type	Operation Mode	Specifications
Twisted-pair copper	10 Mbps Operation	Category 3, 4 or 5, 100-ohm unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable, complying with IEEE 802.3 10BASE-T specifications.
	100 Mbps Operation	Category 5, 100-ohm UTP or STP cable, complying with IEEE 802.3u 100BASE-TX specifications.
	1000 Mbps Operation	Category 5, 100-ohm 4-pair UTP or STP cable, complying with IEEE 802.3ab 1000BASE-T specifications—Category 5e or better is recommended. See Note on 1000BASE-T Cable Requirements on page 90 below.
	2.5 Gbps Operation	Category 5e, 100-ohm-4-pair UTP or STP cable, complying with IEEE 802.ab 1000BASE-T specifications. See Note on HPE Smart Rate 2.5 Gb/s Cable Requirements on page 90 below.
	5 Gbps Operation	Category 5e or better, 100-ohm-4-pair UTP or STP cable. Category 6 or better is recommended. See Note on HPE Smart Rate 5Gb/s Cable Requirements on page 90 below.
	10 Gbps Operation	Category 6 or 6A, 100-ohm 4-pair UTP cable, or Category 6A or 7, 100-ohm 4-pair STP cable, complying with IEEE 802.3an 10GBASE-T specifications. See Note on 10GBASE-T cable Requirements on page 90 below, and see Technology Distance Specifications on page 91 for distances supported with each cable type.
Twinaxial copper	Direct attach cables	One-piece devices consisting of a cable with SFP+ connectors permanently attached to each end, complying with SFF 8431 SFP+ specifications.
Multimode fiber		62.5/125 µm or 50/125 µm (core/cladding) diameter, low metal content, graded index fiber-optic cables, complying with the ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a standards respectively.*
Single mode fiber		9/125 µm (core/cladding) diameter, low metal content fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards.

A mode conditioning patch cord may be needed for some Gigabit-LX and 10-Gigabit LRM installations. See Mode Conditioning Patch Cord on page 92" for more information

Note on 1000BASE-T Cable Requirements

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

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

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

Note on HPE Smart Rate 2.5 Gb/s Cable Requirements

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

Note on HPE Smart Rate 5Gb/s Cable Requirements

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

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

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

Note on 10GBASE-T cable Requirements

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

Like 1000BASE-T, 10GBASE-T requires testing of all the crosstalk and return loss parameters described above, and also ANEXT.

In addition to ANEXT, 10GBASE-T is more sensitive to external electrical noise in the environment. It is recommended that radio transmitters and other sources of high frequency continuous wave radio frequency be kept away from LAN cables.

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

For Conducted and Radiated Immunity in accordance with EN55024, the Aruba 3810M switches are limited to Performance Criteria A with shielded cables (CAT6/6A).

Technology Distance Specifications

Table 18: Technology Distance Specifications

Technology	Supported Cable Type	Multimode Fibermodal Bandwidth	Supported Distances
100-FX	multimode fiber	any	up to 2,000 meters
100-BX	single mode fiber	N/A	0.5 - 10,000 meters
1000-T	twisted-pair copper	N/A	up to 100 meters
2.5Gb/s HP Smart Rate	twisted-pair copper	N/A	up to 100 meters
5Gb/s HP Smart Rate	twisted-pair copper	N/A	Cat 5e - up to 100 meters* Cat 6 - up to 100 meters** Cat 6A - up to 100 meters
10GBASE-T	twisted-pair copper	N/A	Cat 6 unshielded - up to 55 meters*** Cat 6 shielded - up to 100 meters*** Cat 6A unshielded - up to 100 meters Cat 6A shielded - up to 100 meters Cat 7 shielded - 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

Technology	Supported Cable Type	Multimode Fibermodal Bandwidth	Supported Distances
1000-LH	single mode fiber	N/A	10 - 70,000 meters****
1000-BX	single mode fiber	N/A	0.5 - 10,000 meters
10-Gig Direct Attach	twinaxial copper	N/A	(various lengths offered)
10-Gig SR	multimode fiber	160 MHz*km 200 MHz*km 400 MHz*km 500 MHz*km 2000 MHz*km	2 - 26 meters 2 - 33 meters 2 - 66 meters 2 - 82 meters 2 - 300 meters
10-Gig LRM	multimode fiber	400 MHz*km 500 MHz*km	0.5 - 100 meters 0.5 - 220 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
40-Gig SR4	single mode fiber	2000 MHz*km 4700 MHz*km	2 - 100 meters 2 - 150 meters
40-Gig ESR4	multimode fiber	2000 MHz*km 4700 MHz*km	2 - 300 meters 2 - 400 meters
40-Gig LR4	single mode fiber	N/A	2 - 10,000 meters

*Cat 5e cabling requires testing to 200 MHz operation and additionally for ANEXT and AELFEXT. The maximum supported distances may be reduced depending on alien crosstalk levels. The support for untested cable installations is best-effort.
**Cat 6 cabling requires testing for ANEXT and AELFEXT. The maximum supported distances may be reduced depending on alien crosstalk levels.
***3Cat 6 cabling requires TIA TSB-155A testing for 500 MHz operation and ANEXT.
****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 or a 10-Gigabit LRM 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 Gigait-LX or 10-Gigabit LRM 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 , 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.

 For 10-Gigabit LRM using OM3 cable (50 μm multimode @ 1500/500 MHz*km), a mode conditioning patch cord is not required. Other multimode cables may require mode conditioning patch cords to achieve the LRM maximum distances.

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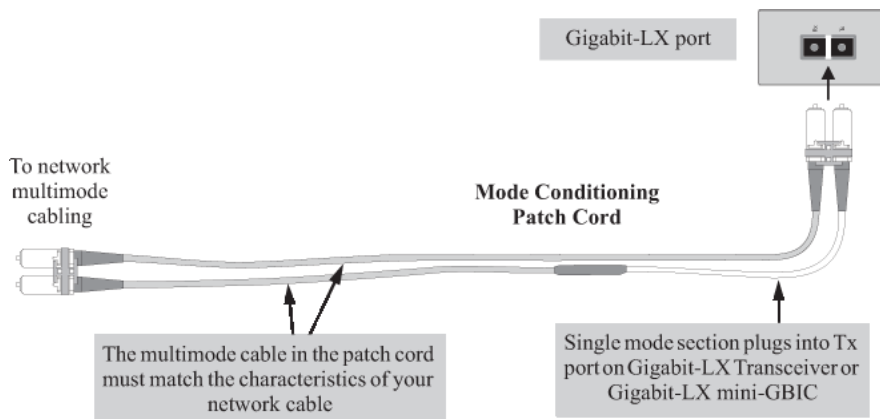
Make sure you purchase a patch cord that has appropriate connectors on each end, and has multimode fibers that match the characteristics of the multimode fiber in your network. Most important, the core diameter of the multimode patch cord must match the core diameter of the multimode cable infrastructure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

Twisted-Pair Cable/Connector Pin-Outs

Auto-MDIX Feature:

The 10/100/1000-T ports support the IEEE 802.3ab standard, which includes the "Auto MDI/MDI-X" feature. In the default configuration, "Auto", the ports on the Switch 3810M 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.

If you connect a 3810M switch twisted-pair port to another switch or hub, which typically have MDI-X ports, the 3810M 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 3810M switch port operates as an MDI-X port. In all cases, you can use standard straight-through cables or crossover cables.

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

Other Wiring Rules:

- All twisted-pair wires used for 10 Mbps, and 100 Mbps operation must be twisted through the entire length of the cable. The wiring sequence must conform to EIA/TIA 568-B (not USOC). See "Pin Assignments" later in this appendix for a listing of the signals used on each pin.
- For 1000Base-T connections, all four pairs of wires in the cable must be available for data transmission. See Note on 1000BASE-T Cable Requirements on page 90 for more information on 1000Base-T cabling.
- For 10 Mbps connections to the ports, you can use Category 3, 4, or 5 unshielded twisted-pair cable, as supported by the IEEE 802.3 Type 10Base-T standard.
- For 100 Mbps connections to the ports, use 100-ohm Category 5 UTP or STP cable only, as supported by the IEEE 802.3u Type 100Base-TX standard.
- For 1000 Mbps connections, 100-ohm Category 5e or better cabling is recommended.

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

Because of the Aruba Auto-MDIX operation of the 10/100 ports on the switch, 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.

Figure 41 *Cable Diagram*
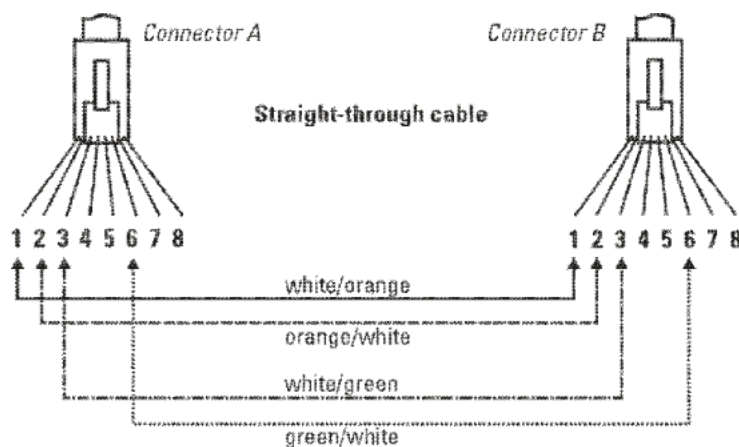
- Pins 1 and 2 on connector "A" must be wired as a twisted pair to pins 1 and 2 on connector "B".
- Pins 3 and 6 on connector "A" must be wired as a twisted pair to pins 3 and 6 on connector "B".
- Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.
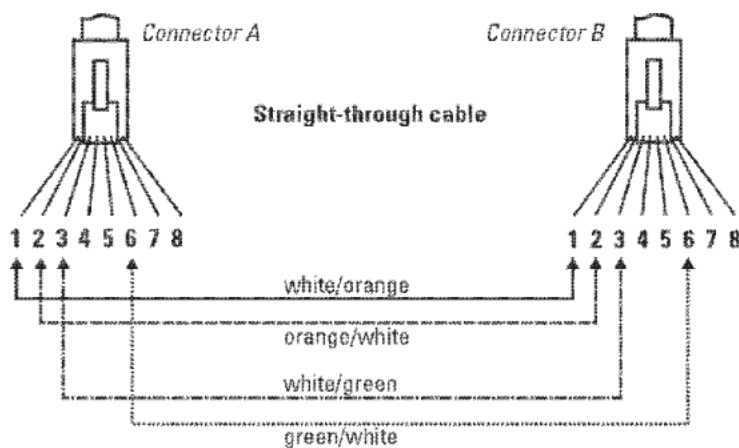
Table 19: *Pin Assignments*

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

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

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

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

Figure 42 *Cable Diagram*

- 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.

Table 20: *Pin Assignments*

Switch end (MDI-X)			Computer, transceiver, or other end	
Signal	Pins	Direction	Pins	Signal
receive +	1	⟵	1	transmit +

Switch end (MDI-X)			Computer, transceiver, or other end	
Signal	Pins	Direction	Pins	Signal
receive -	2	←	2	transmit -
transmit +	3	→	3	receive +
transmit -	6	→	6	receive -

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

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

Figure 43 *Cable Diagram*

- 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.
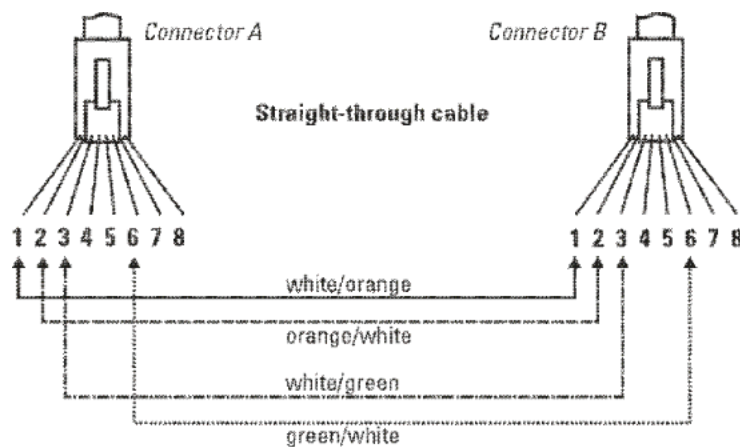
Table 21: *Pin Assignments*

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

For more information on Aruba 381M Switches, refer to the following websites.

Table 22: *Networking and General Websites*

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