# Hewlett Packard Enterprise

# HPE OfficeConnect 1850 Switch Series Installation and Getting Started Guide

**Abstract**

Use this guide to assist in installing the following HPE OfficeConnect 1850 switches:

HPE OfficeConnect 1850 6XGT 2XGT/SFP+ Switch (JL169A)
HPE OfficeConnect 1850 24G 2XGT Switch (JL170A)
HPE OfficeConnect 1850 48G 4XGT Switch (JL171A)
HPE OfficeConnect 1850 24G 2XGT PoE+ 185W Switch (JL172A)
HPE OfficeConnect 1850 48G 4XGT PoE+ 370W Switch (JL173A)

**Acknowledgments**

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**Applicable Products**

| | |
|---|---|
| HPE OfficeConnect 1850 6XGT 2XGT/SFP+ Switch | (JL169A) |
| HPE OfficeConnect 1850 24G 2XGT Switch | (JL170A) |
| HPE OfficeConnect 1850 48G 4XGT Switch | (JL171A) |
| HPE OfficeConnect 1850 24G 2XGT PoE+ 185W Switch | (JL172A) |
| HPE OfficeConnect 1850 48G 4XGT PoE+ 370W Switch | (JL173A) |

# Contents

# 1. Switch Overview

The Hewlett Packard Enterprise 1850 OfficeConnect Switch Series are multiport switches that can be used to build high-performance switched workgroup networks. These switches are store-and-forward devices that offer low latency for high-speed networking. Two of the switches also support the IEEE 802.3af/at standards for providing PoE+ power to connected devices.

Throughout this manual, these switches will be referred to as the 1850 6XGT 2XGT/SFP+ Switch, 1850 24G 2XGT Switch, 1850 48G 4XGT Switch, 1850 24G 2XGT PoE+ 185W Switch, and the 1850 48G 4XGT PoE+ 370W Switch.

- The 1850 6XGT 2XGT/SFP+ Switch has 6 auto-sensing 100/1000/10000Mbps RJ45 ports and 2 dual personality 100/1000/10000Mbps RJ45/SFP+ ports/slots. Supported Hewlett Packard Enterprise SFP+ fiber-optic transceivers can be plugged into ports 7S and 8S.

- The 1850 24G 2XGT Switch has 24 auto-sensing 10/100/1000Mbps RJ45 ports and two 100/1000/10000Mbps RJ45 ports.

- The 1850 48G 4XGT Switch has 48 auto-sensing 10/100/1000Mbps RJ45 ports and four 100/1000/10000Mbps RJ45 ports.

- The 1850 24G 2XGT PoE+ 185W Switch has 24 auto-sensing 10/100/1000Mbps RJ45 ports and two 100/1000/10000Mbps RJ45 ports. The switch supports the IEEE 802.3af/at standards and is capable of providing PoE power to devices plugged into any of the ports 1 to 12 or PoE+ power to a maximum of 185W per switch.

- The 1850 48G 4XGT PoE+ 370W Switch has 48 auto-sensing 10/100/1000Mbps RJ45 ports and four 100/1000/10000Mbps RJ45 ports. The switch supports the IEEE 802.3af/at standards and is capable of providing PoE power to devices plugged into any of the ports 1 to 24 or PoE+ power to a maximum of 370W per switch.

These switches can be directly connected to computers, printers, and servers to provide dedicated bandwidth to those devices, and you can build a switched network infrastructure by connecting the switch to hubs, other switches, or routers. In addition, these switches offer network management capabilities.

## Switch Hardware Features

**HPE OfficeConnect 1850 6XGT 2XGT/SFP+ Switch (JL169A)**
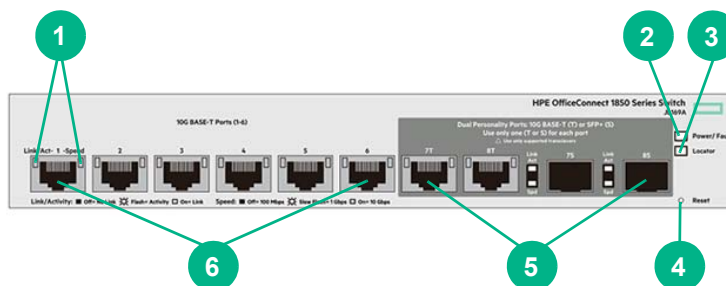


| Number | Description | Number | Description |
|--------|-------------|--------|-------------|
| 1 | Link/Act and Speed LEDs | 2 | Power/Fault LED |
| 3 | Locator LED | 4 | Reset button |

| Number | Description | Number | Description |
|---|---|---|---|
| 5 | Dual Personality 100/1000/10000Mbps RJ45/SFP+ ports/slots (7-8) | 6 | 100/1000/10000Mbps RJ45 ports (1-6) |

### HPE OfficeConnect 1850 24G 2XGT Switch (JL170A)
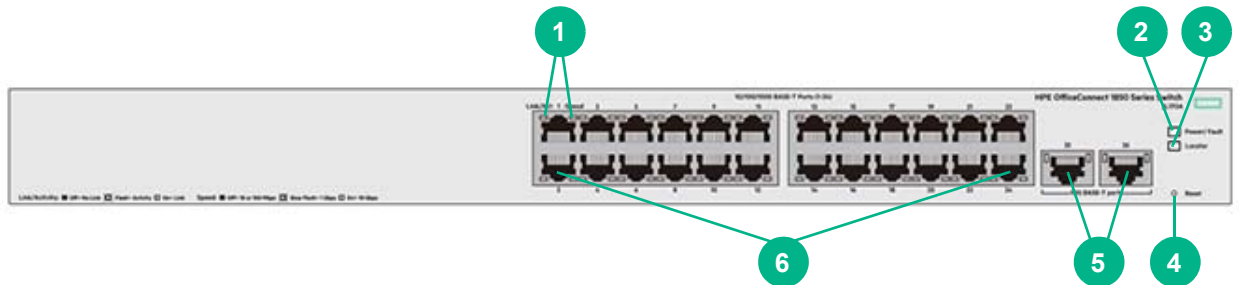


| Number | Description | Number | Description |
|---|---|---|---|
| 1 | Link/Act and Speed LEDs | 2 | Power/Fault LED |
| 3 | Locator LEDs | 4 | Reset button |
| 5 | 100/1000/10000Mbps RJ45 ports (25-26) | 6 | 10/100/1000Mbps RJ45 ports (1-24) |

### HPE OfficeConnect 1850 48G 4XGT Switch (JL171A)
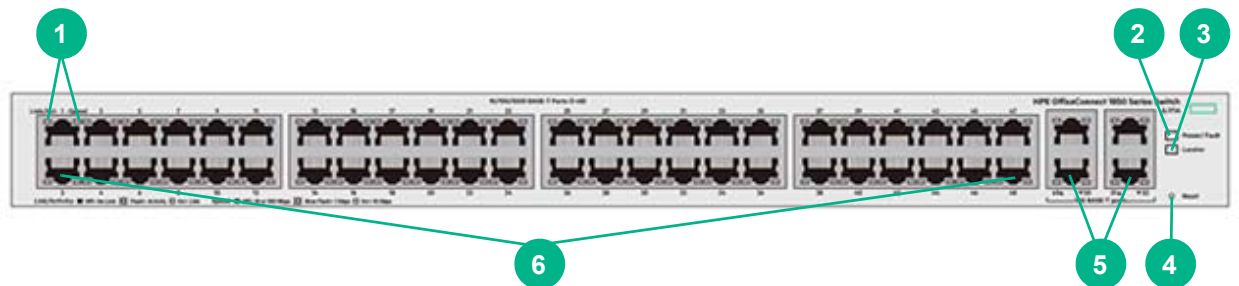


| Number | Description | Number | Description |
|---|---|---|---|
| 1 | Link/Act and Speed LEDs | 2 | Power/Fault LED |
| 3 | Locator LEDs | 4 | Reset button |
| 5 | 100/1000/10000Mbps RJ45 ports (49-52) | 6 | 10/100/1000Mbps RJ45 ports (1-48) |

**HPE OfficeConnect 1850 24G 2XGT PoE+ 185W Switch (JL172A)**
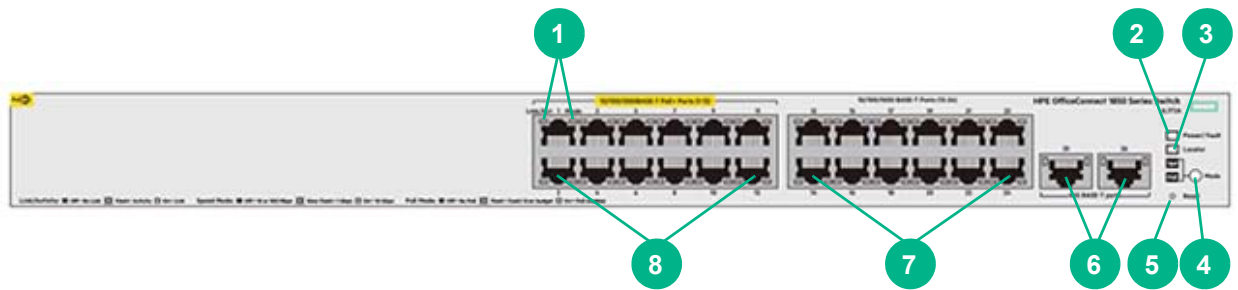


| Number | Description | Number | Description |
|--------|-------------|--------|-------------|
| 1 | Link/Act and Mode LEDs | 2 | Power/Fault LED |
| 3 | Locator LEDs | 4 | Mode button |
| 5 | Reset button | 6 | 100/1000/10000Mbps RJ45 ports (25-26) |
| 7 | 10/100/1000Mbps RJ45 ports (13-24) | 8 | 10/100/1000Mbps RJ45 PoE+ ports (1-12) |

**HPE OfficeConnect 1850 48G 4XGT PoE+ 370W Switch (JL173A)**



| Number | Description | Number | Description |
|--------|-------------|--------|-------------|
| 1 | Link/Act and Mode LEDs | 2 | Power/Fault LED |
| 3 | Locator LEDs | 4 | Mode button |
| 5 | Reset button | 6 | 100/1000/10000Mbps RJ45 ports (49-52) |
| 7 | 10/100/1000Mbps RJ45 ports (25-48) | 8 | 10/100/1000Mbps RJ45 PoE+ ports (1-24) |

## Network Ports

- Auto-sensing 10/100/1000Mbps ports.

  All these ports have the "Auto-MDIX" feature, which means that you can use either straight-through or crossover twisted-pair cables to connect any network devices to the switch.

- Some ports provide Power-over-Ethernet or PoE ports.

  The Hewlett Packard Enterprise 1850 OfficeConnect PoE+ switches support the IEEE 802.3af/at standards, which allows IP telephones, wireless LAN Access Points, and other appliances to receive power as well as data over existing LAN cabling. For further information regarding PoE power, see the Hewlett Packard Enterprise Power over Ethernet (PoE/PoE+) Planning and Implementation Guide, which is on the Hewlett Packard Enterprise website at www.hpe.com/support/hpesc.

- SFP+ slots for fiber uplinks. Only the HPE 1850 6XGT 2XGT/SFP+ Switch include SFP/SFP+ ports.

  Using Hewlett Packard Enterprise SFP+ transceivers, these products support optional network connectivity with the following speeds and technologies:

| Speed | Technology | Cabling | SFP+ Connector |
|---|---|---|---|
| **1 Gbps** | 1000BASE-SX | Fiber (multimode) | LC |
| | 1000BASE-LX | Fiber (multimode or single mode) | LC |
| **10 Gbps** | 10GBASE-SR | Fiber (multimode) | LC |
| | 10GBASE-LR | Fiber (single mode) | LC |
| | 10GBASE-LRM | Fiber (multimode) | LC |
| | 10GBASE-CU | Direct Attach Cable (DAC) | SFP+ to SFP+ |
| | 10GBASE-CU | Direct Attach Cable (DAC) | XFP to SFP+ |

For supported transceivers, visit www.hpe.com/support/hpesc.
- In the first textbox, type **J4858C** (for Gigabit information).
- Select any of the products that display in the drop-down list. Then click **Display selected**.
- Select **Product support information**. Then click **Manuals** and find the **Transceiver Support Matrix**.

For technical details of cabling and technology, see "Cabling and Technology Information Specifications" on page A-4.

## LEDs

The front panel of the switch provides status LEDs for system monitoring.

The following table details the functions of the various indicators.

| LED | State | Meaning |
|---|---|---|
| Power/Fault (green) | On | The switch has passed the self-test and receiving power. |
| | Slow Flashing | The switch self-test and initialization are in progress after a power cycle or reboot. The switch in not operational until the LED stops blinking. |
| | Off | The switch is NOT receiving power. |
| Power/Fault (orange) | On | On briefly after the switch is powered on or rebooted, at the beginning of switch self test. If the LED remains on, it indicates a detected hardware failure during the self test. |
| | Slow Flashing | A fault has occurred on the switch or one of the switch ports. The Link LED for the port with the fault will blink simultaneously. |
| | Off | The switch is NOT receiving power. |

| LED | State | Meaning |
|-----|-------|---------|
| Locator (blue) | Fast Flashing | The LED is used to locate a specific switch in an area with multiple switches. The LED blinks for 30 minutes when activated through the switch software. |
| | Off | Identification is no longer required. The LED has been deactivated through the switch software or the timeout period has expired. |
| Link/Act (green) | On | The port is enabled and receiving a link indication from the connected device. |
| | Flickering | Indicates that there is network activity on the port. |
| | Flashing | If the Link/Act LED is blinking simultaneously with the orange Power/Fault LED, it indicates a fault on the port. |
| | Off | Indicates no physical link or a non-operational physical link. |
| Speed Mode - Spd‡ (green) | On | Indicates the port is operating at 10000 Mbps. |
| | Slow Flashing | Indicates the port is operating at 1000 Mbps. |
| | Off | Indicates the port is operating at 10/100 Mbps. |
| Mode - PoE‡ (green) | On | Indicates the port is providing PoE power to the connected device. |
| | Slow Flashing | If the LED is blinking simultaneously with the orange Power/Fault LED, there is an oversubscription condition (not enough PoE power available) or the port has experienced a fault condition for PoE delivery. |

**Flashing: LED on for 1s, then off for 1s. Repeat until change of state.**

**Slow Flashing: LED on for 800ms, then off for 800ms. Repeat until change of state.**

**Fast Flashing: LED on for 400ms, then off for 400ms. Repeat until change of state.**

**‡ (Hewlett Packard Enterprise 1850 PoE+ switches only) Press the Mode button in for PoE mode, leave the Mode button out for Speed mode.**

## Mode Button

The Hewlett Packard Enterprise 1850 OfficeConnect PoE+ switches have one Mode LED per port. The Mode LED shows either the port speed or the PoE status. In PoE mode, it shows whether the port is configured to provide PoE power. The operation of the Mode LED is controlled by the Mode select button. Press the Mode button in to select the PoE mode, or leave the button in its out position for Spd (speed) mode.

## Reset Button

The Reset button is used to restore Factory Default settings or reset the switch while it is powered on.

- **Reset the Switch** — Press and release the button. This action clears any temporary error conditions that may have occurred and executes the switch self test.

- **Restoring Factory Default Configuration** — Press and hold down for over 5 seconds, the switch will then complete its self test and begin operating with its configuration restored to the factory default settings. Any configuration changes you may have made through the web browser interface are removed.

# Power Connector

The Hewlett Packard Enterprise 1850 OfficeConnect Switch Series do not have a power switch, they are powered on when connected to an active AC power source. The switches automatically adjust to any voltage between 100-127 and 200-240 volts and either 50 or 60 Hz. There are no voltage range settings required.

# Switch Features

The features of the Hewlett Packard Enterprise 1850 OfficeConnect Switches include:

| Switch | Auto-sensing RJ45 ports | | Dual-personality RJ45/SFP+ ports | |
|---|---|---|---|---|
| | Quantity | Speed | Quantity | Speed |
| **1850 6XGT 2XGT/SFP+** | 6 ports | 100/1000/10000 Mbps | 2 ports | 100/1000/10000 Mbps |
| **1850 24G 2XGT** | 24 ports | 10/100/1000 Mbps | - | - |
| | 2 ports | 100/1000/10000 Mbps | - | - |
| **1850 48G 4XGT** | 48 ports | 10/100/1000 Mbps | - | - |
| | 4 ports | 100/1000/10000 Mbps | - | - |
| **1850 24G 2XGT PoE+** | 12 ports | 10/100/1000 Mbps | - | - |
| | 12 PoE+ ports | 10/100/1000 Mbps | - | - |
| | 2 ports | 100/1000/10000 Mbps | - | - |
| **1850 48G 4XGT PoE+** | 24 ports | 10/100/1000 Mbps | - | - |
| | 24 PoE+ ports | 10/100/1000 Mbps | - | - |
| | 4 ports | 100/1000/10000 Mbps | - | - |

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

- IEEE 802.3ab Auto MDI /MDI-X on all twisted-pair ports, 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 a 10/100/1000Mbps switch or hub is connected to the port, it configures the port as MDI; if the switch detects that a 10/100/1000 Mbps end-node device is connected to the port, it configures the port as MDI-X (1850 24G 2XGT, 1850 48G 4XGT, 1850 24G 2XGT PoE+ 185W, and 1850 48G 4XGT PoE+ 370W Switches only).

- all switches support IEEE 802.3az Energy Efficient Ethernet (EEE) features that reduce power consumption when connected with EEE-compliant client devices.

- automatic learning of MAC addresses in each switch's 8K-address (1850 6XGT 2XGT/SFP+ Switch only) or 16K-address (1850 24G 2XGT, 1850 48G 4XGT, 1850 24G 2XGT PoE+ 185W, and 1850 48G 4XGT PoE+ 370W Switches only) forwarding table.

- automatically negotiated full-duplex operation for all 10/100/1000/10000Mbps RJ45 ports when connected to other auto-negotiating devices.

- easy management of the switch through several available interfaces:

- ○ Web browser interface — an easy to use built-in graphical interface that can be accessed from common Web browsers.

- ○ Intelligent Management Center (iMC) — allows network administrators to discover and map the switches within their network and launch the built-in graphical interface from within iMC to configure the switches.

- support for up to 64 IEEE 802.1Q-compliant VLANs so you can divide the attached end nodes into logical groupings that fit your business needs.

- support for up to 16 trunks (48-port switches) so you can assign physical links to one logical link (trunk) that functions as a single, higher-speed link providing dramatically increased bandwidth.

- support for many advanced features to enhance network performance—for a description, see the Management and Configuration Guide.

- download of new switch software for product bug fixes.

# 2. Installing the Switch

The Hewlett Packard Enterprise 1850 OfficeConnect Switches are easy to install. They come with an accessory kit that includes the brackets for mounting the switches in a standard 19-inch telco rack, in an equipment cabinet, and with rubber feet that can be attached so the switches can be securely located on a horizontal surface. The brackets are designed to allow mounting of the switches in a variety of locations and orientations. This chapter shows how to install the switches.

## Included Parts

The following components ship with a Hewlett Packard Enterprise 1850 Switch:

- Documentation kit

    - Quick Setup Guide and Safety/Regulatory Information

    - Software License, Warranty, and Support information

- Accessory kits:

| HPE OfficeConnect 1850 Switch Model | Accessory Kit Part Number | Part Count | Included Parts |
|---|---|---|---|
| JL169A 6XGT 2XGT/SFP+ Switch | 5066-5625 | 4 | Rubber foot pads |
| | | 8 | Machine screws, M4x0.7, 8MM |
| | | 2 | Rack mount brackets, 1.875-in. x 4.5-in., Black |
| | | 2 | Rack mount brackets, 0.75-in. x 1.875-in., Zinc Plated |
| JL170A 24G 2XGT Switch JL171A 48G 4XGT Switch JL172A 24G 2XGT PoE+ 185W Switch | 5066-5626 | 4 | Rubber foot pads |
| | | 8 | Machine screws, M4x0.7, 8MM |
| | | 2 | Rack mount brackets, 0.75-in. x 1.875-in., Zinc Plated |
| JL173A 48G 4XGT PoE+ 370W Switch | 5066-5627 | 4 | Rubber foot pads |
| | | 8 | Machine screws, M4x0.7, 8MM |
| | | 2 | Rack mount brackets, 0.75-in. x 1.875-in., Zinc Plated |
| | | 2 | Rack mount brackets, 0.75-in. x 3.5-in., Zinc Plated |

- Hewlett Packard Enterprise 1850 OfficeConnect Switch AC power cords, one of the following:

| Country/Region | 1850 6XGT 2XGT/SFP+, 1850 24G 2XGT, 1850 24G 2XGT PoE+ 185W, 1850 48G 4XGT | 1850 48G 4XGT PoE+ 370W[1] |
|---|---|---|
| Argentina | 8121-0729 | 8121-1481 |
| Australia/New Zealand | 8121-0837 | 8121-1476 |
| Brazil | 8121-1071 | 8121-1265 |
| Chile | 8121-0735 | 8121-1477 |
| China | 8121-0943 | 8121-1484 |
| Continental Europe | 8121-0731 | 8121-1479 |
| Denmark | 8121-0733 | 8121-1486 |
| India | 8121-0564 | 8121-1483 |
| Israel | 8121-1004 | 8121-1478 |
| Japan | 8121-1143 | 8121-1482 |
| Malaysia | 8121-0739 | 8121-1475 |
| South Africa | 8121-0737 | 8121-1483 |
| South Korea | 8121-0731 | 8121-1479 |
| Switzerland | 8121-0738 | 8121-1480 |
| Taiwan | 8121-0964 | 8121-1511 |
| Thailand | 8121-0734 | 8121-1485 |
| United Kingdom/Hong Kong/Singapore/ Malaysia | 8121-0739 | 8121-1475 |
| United States/Canada/Mexico | 8121-1141 | 8121-0914 |

[1] The cord for the Hewlett Packard Enterprise 1850 48G 4XGT PoE+ 370W Switch supports a higher amperage and uses a C16 connector.

⚠ **JAPAN POWER CORD WARNING:**
製品には、同梱された電源コード をお使い下さい。
同梱された電源コード は、他の製品では使用出来ません。

## Installation Precautions

Follow these precautions when installing the switch.

⚠ **WARNING:**

- 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.

- When wall mounting, to meet national and international safety requirements, wall mount with the network ports facing up. The side vents cannot be placed up or downward.

- Only trained and qualified personnel are allowed to install or to replace this equipment.

⚠ **CAUTION:**

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

- Ensure that the AC power source circuits are properly grounded.

- Use only the AC/DC power adapter and power cord (if applicable), supplied with the switch. Use of other adapters or power cords, including those that came with other Hewlett Packard Enterprise Networking products, may result in damage to the equipment.

  For those switches that use a power cord, 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.

- 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.

- Do not install the switch in an environment where the operating ambient temperature might exceed 40°C (104°F). This includes a fully-enclosed rack. Ensure the air flow around the sides and back of the switch is not restricted. Leave at least 7.6 cm (3 inches) for cooling.

- Ensure all port covers are installed when the port is not in use.

## Installation Procedure

These steps summarize your switch installation. The rest of this chapter provides details on these steps.

1.  **Prepare the installation site (page 2-4).** Make sure the physical environment into which you will be installing the switch is properly prepared, including having the correct network cabling ready to connect to the switch and having an appropriate location for the switch. See page 2-3 for some installation precautions.

2. **Verify the switch passes self test (page 2-4).** Plug the switch into a power source and observe that the LEDs on the switch's front panel indicate correct switch operation.

3. **Mount the switch (page 2-6).** The Hewlett Packard Enterprise 1850 OfficeConnect switches can be mounted in a 19-inch telco rack, in an equipment cabinet, on a wall, under a table, or on a horizontal surface.

4. **Connect power to the switch (page 2-10).** Once the switch is mounted, plug it into the main power source.

5. **Connect the network devices (page 2-11).** Using the appropriate network cables, connect the network devices to the switch ports.

6. **(Optional) Install SFP+ transceivers (page 2-12).** The Hewlett Packard Enterprise 1850 6XGT 2XGT/SFP+ switch have slots for installing SFP+ transceivers. Depending on where you install the switch, it may be easier to install the SFP+ transceivers first. SFP+ transceivers can be hot swapped—they can be installed or removed while the switch is powered on.

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

## 1. Prepare the Installation Site

Be sure to follow the guidelines below to ensure proper operation when installing the switch into a network:

- Verify that copper and fiber cabling meets the requirements of the "Cabling and Technology Information Specifications" on page A-4.

- Protect the switch from radio frequency interference emissions.

- Use electrical surge suppression.

- Use safe connections with no damaged cables, connectors, or shields.

### Installation Space Requirements

| Switch Orientation | Clearance Requirements |
|---|---|
| Front | At least 7.6 cm (3 inches) of space for the twisted-pair and fiber-optic cabling. |
| Back | At least 3.8 cm (1 1/2 inches) of space for the power cord and switch cooling. |
| Sides | At least 7.6 cm (3 inches) for cooling, except if the switch is installed in an open EIA/TIA rack. |

## 2. Verify the Switch Passes Self Test

Before mounting the switch, verify it is working properly by plugging it into a power source and confirming that it passes self test.

1. For the Hewlett Packard Enterprise 1850 OfficeConnect switches, 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.
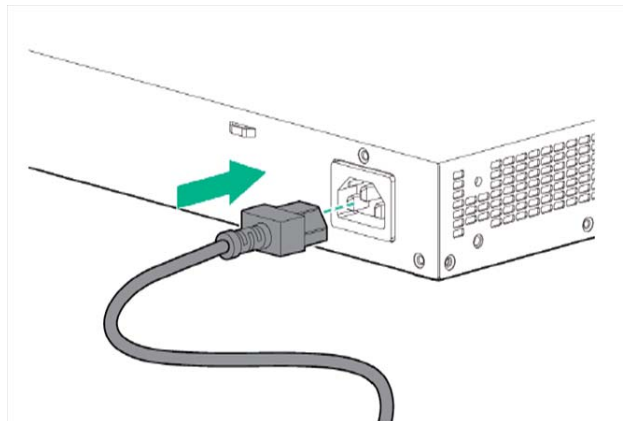
Connect the power cord to the switch and an AC power outlet

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**NOTE:**

The Hewlett Packard Enterprise 1850 OfficeConnect 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.

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

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2. When the switch is powered on, it performs its diagnostic self test. The self test takes approximately 45 seconds to complete. Check the LEDs on the switch as described below.

## Self Test LED Behavior

- **During the self test:**

  ○ Initially, the **Power/Fault**, **Locator**, and all port LEDs turn on.

  ○ After several seconds, the **Power/Fault** and **Locator** LEDs remain on, and the port LEDs turn off. Then each port **Link** LED is sequentially turned on, then off.

  ○ The **Locator** LED turns off when the self test completes.

- **When the self test completes successfully:**

  ○ The **Power/Fault** LED remains on (green).

  ○ The **Locator** LED stays off.

  ○ The port LEDs on the front of the switch go into their normal operational mode:

    - If the ports are connected to active network devices, the **Link/Act** LEDs stay on or may be blinking to indicate port activity. The **Spd** LEDs turn on for 10000 Mbps links, blink for 1000 Mbps links, or stay off for 10/100 Mbps links. On the PoE+ switches, the **Mode** LEDs behave according to the mode selected. In the default mode (**Spd**), the **Mode** LEDs should be on for 10000 Mbps links, blink for 1000 Mbps links, or stay off for 100 Mbps links.

    - If the ports are not connected to active network devices, the **Link/Act** and **Spd** LEDs will stay off.

  If the LED display is different than what is described above, the self test has not completed correctly. Refer to "Troubleshooting" on page 4-1 for diagnostic help.

3. Remove power to the switch before mounting.

# 3. Mount the Switch

The switch can be mounted in these ways:

- on a horizontal surface.
- on a wall.
- under a table.
- in a rack or cabinet.

## Rack or Cabinet Mounting

The switches are designed to be mounted in any EIA-standard 19-inch telco rack or communication equipment cabinet. Note that the mounting brackets have multiple mounting holes and can be rotated allowing for a wide variety of mounting options.

⚠️ **WARNING:**
For safe operation, please read the "Installation Precautions" on page 2-3 before mounting the switch.

**NOTE:**
**Equipment Cabinet** - The 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 screws that are supplied with the switch.

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

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



**HPE 1850 6XGT 2XGT/SFP+ Switch**
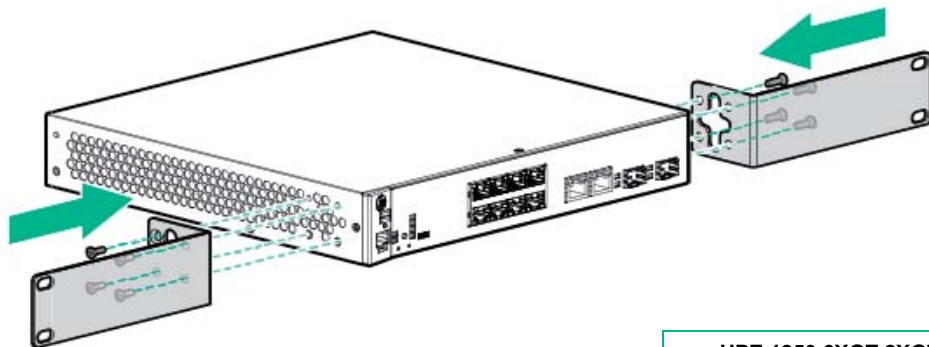
**HPE 1850 24G 2XGT Switch**
**HPE 1850 48G 4XGT Switch**
**HPE 1850 24G 2XGT PoE+ 185W Switch**
**HPE 1850 48G 4XGT PoE+ 370W Switch**
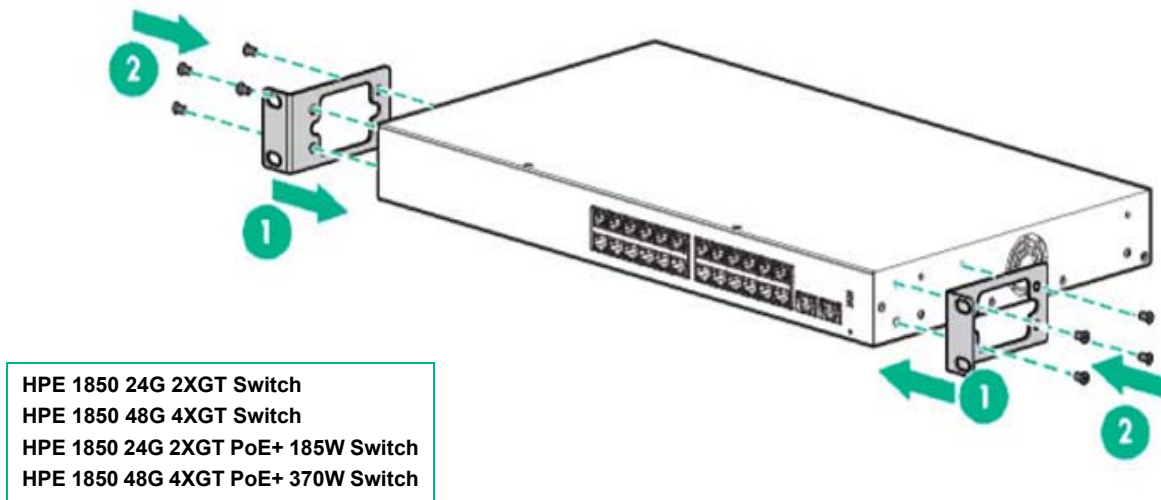
**NOTE:**

The mounting brackets have multiple mounting holes and can be rotated allowing for a wide variety of mounting options. These include mounting the switch so its front face is flush with the face of the rack, as shown in the illustration.

2. Hold the switch with attached brackets in the rack and move it vertically until rack holes line up with the bracket holes, then insert and tighten four 12-24 screws holding the brackets to the rack.
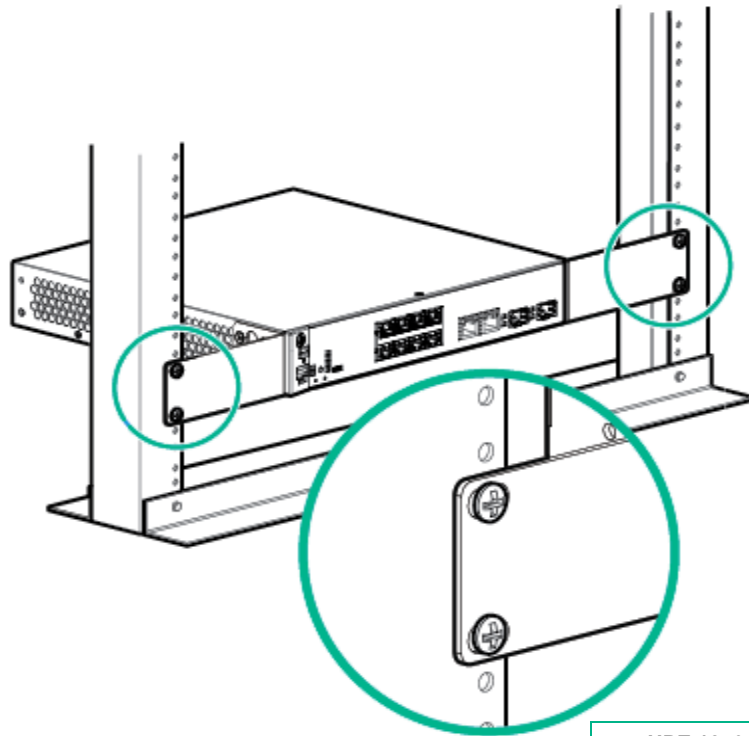
HPE 1850 6XGT 2XGT/SFP+ Switch
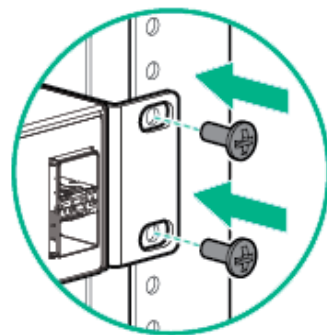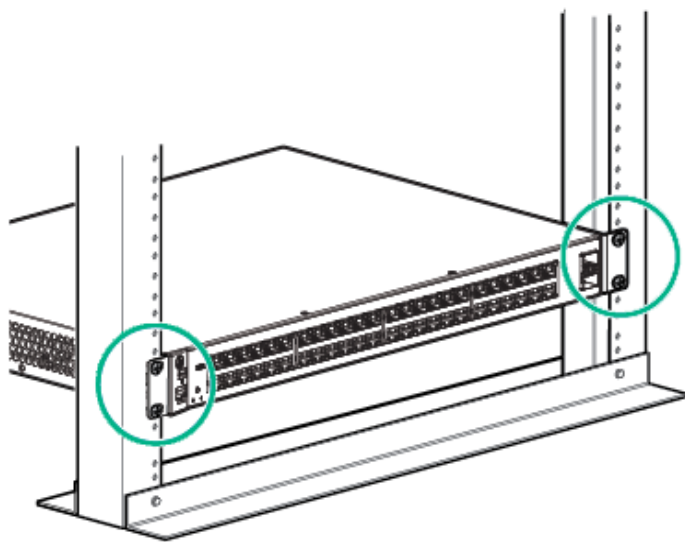


HPE 1850 24G 2XGT Switch
HPE 1850 48G 4XGT Switch
HPE 1850 24G 2XGT PoE+ 185W Switch
HPE 1850 48G 4XGT PoE+ 370W Switch

## Wall or Under-Table Mounting

You can mount the Hewlett Packard Enterprise 1850 OfficeConnect switches on a wall with either the front or rear panel facing up.

⚠ **WARNING:**

For safe operation, please read the "Installation Precautions" on page 2-4 before mounting the switch. Wall mount the switch with the network ports facing up or down.

⚠ **CAUTION:**

The switch should be mounted only to a wall or wood surface that is at least 1/2-inch (12.7 mm) plywood or its equivalent.

To mount the Hewlett Packard Enterprise 1850 OfficeConnect switches, follow these steps:

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

2. Attach the switch to the wall or wood surface with two 5/8-inch number 12 wood screws (not included).
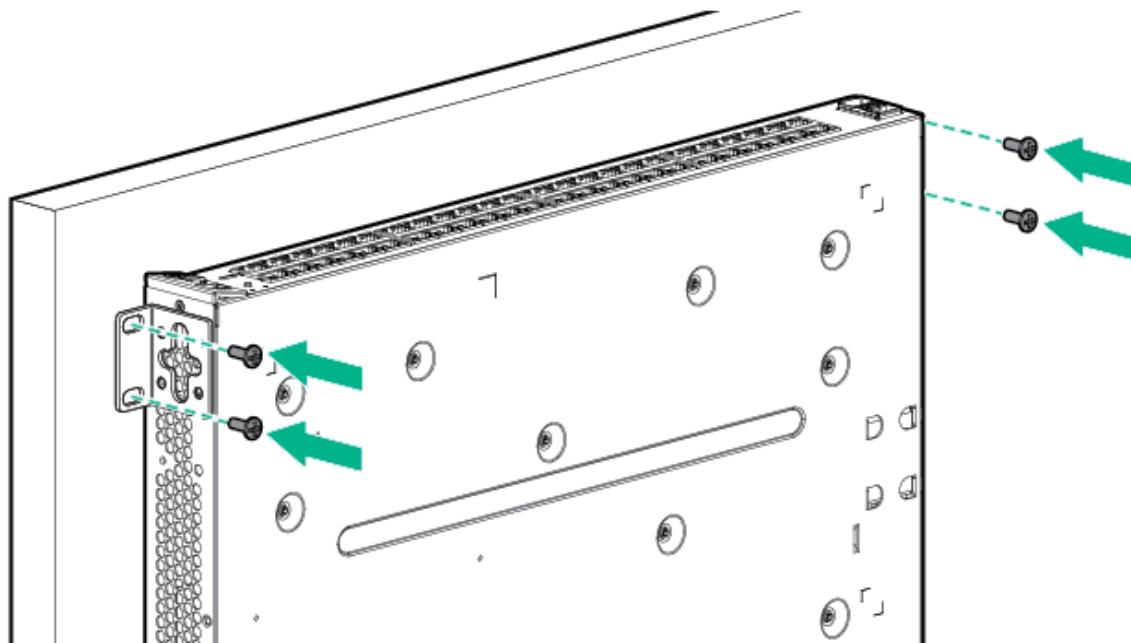


## Horizontal Surface Mounting

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.
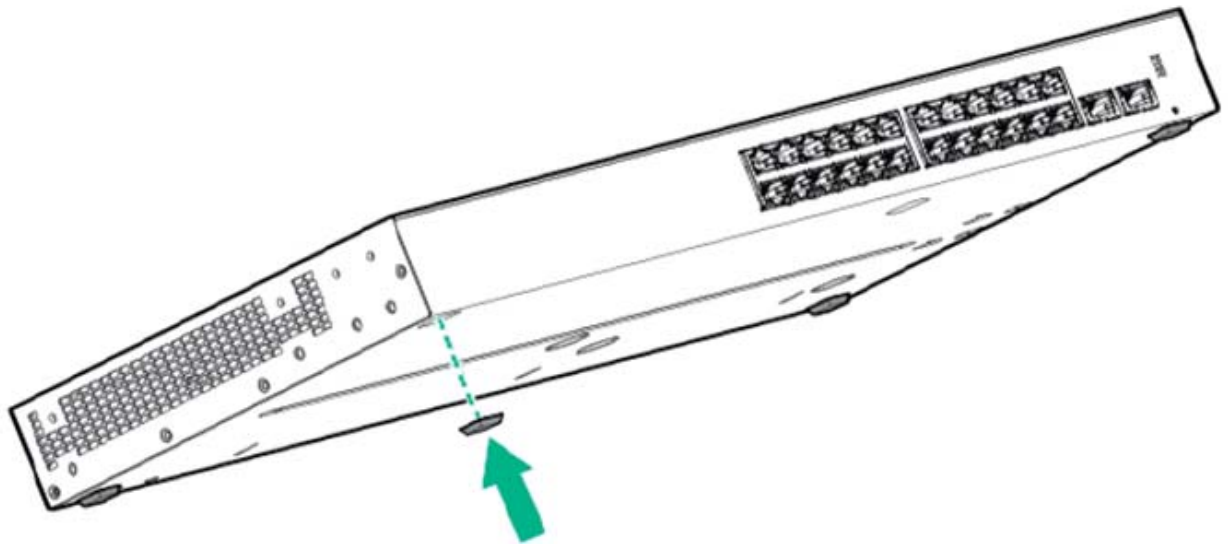
## Using a Kensington Security Cable

To prevent unauthorized removal of the switch, you can use a Kensington Slim MicroSaver security cable (not included) to attach the switch to an immovable object.
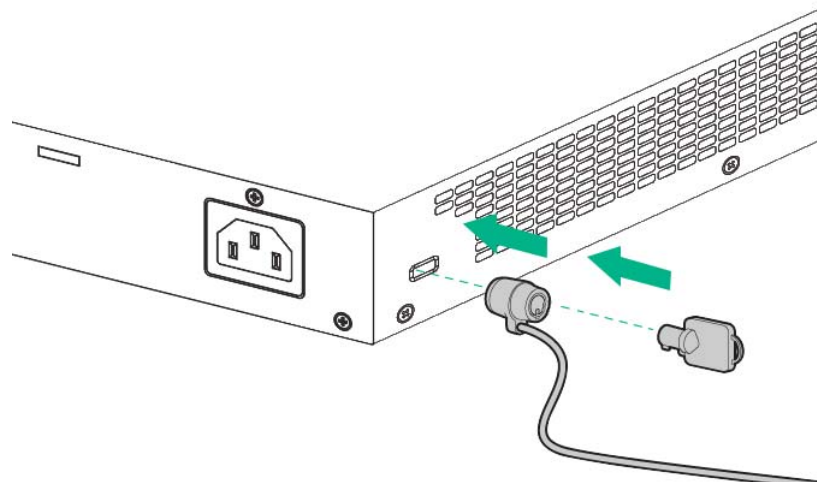


## 4. Connect the Switch to a Power Source

1.  For the Hewlett Packard Enterprise 1850 OfficeConnect switches, plug the included power cord into the switch's power connector and into a nearby AC power source.
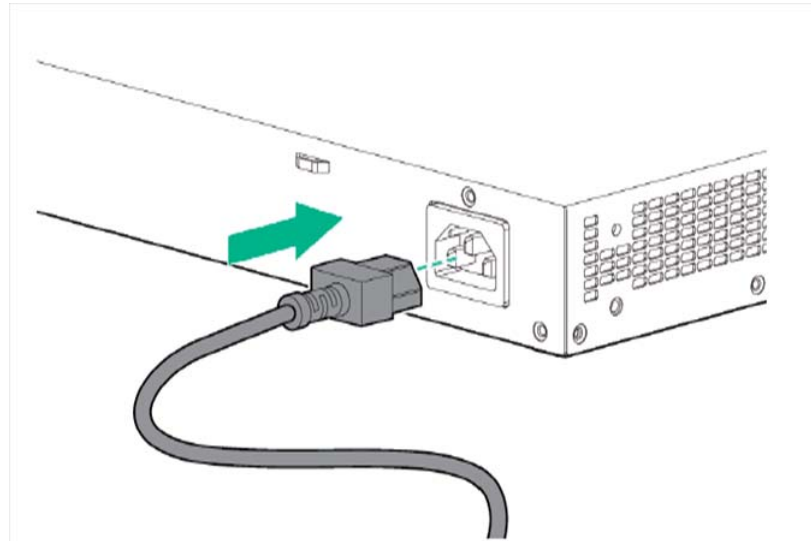
2. Re-check the LEDs during self test. See "Self Test LED Behavior" on page 2-5.

## 5. Connect the Network Cables

Connect the network cables, from the network devices or your patch panels, to the fixed RJ45 ports on the switch or to any SFP+ transceivers you have installed in the switch.



100-ohm unshielded or shielded twisted-pair cable:

- Category 3, 4, or 5 for 10 Mbps ports
- Category 5 only for 100 Mbps ports
- Category 5, 5e, or 6 for 1000 Mbps ports
- Category 6a for 10000 Mbps ports

Maximum distance: 100 meters
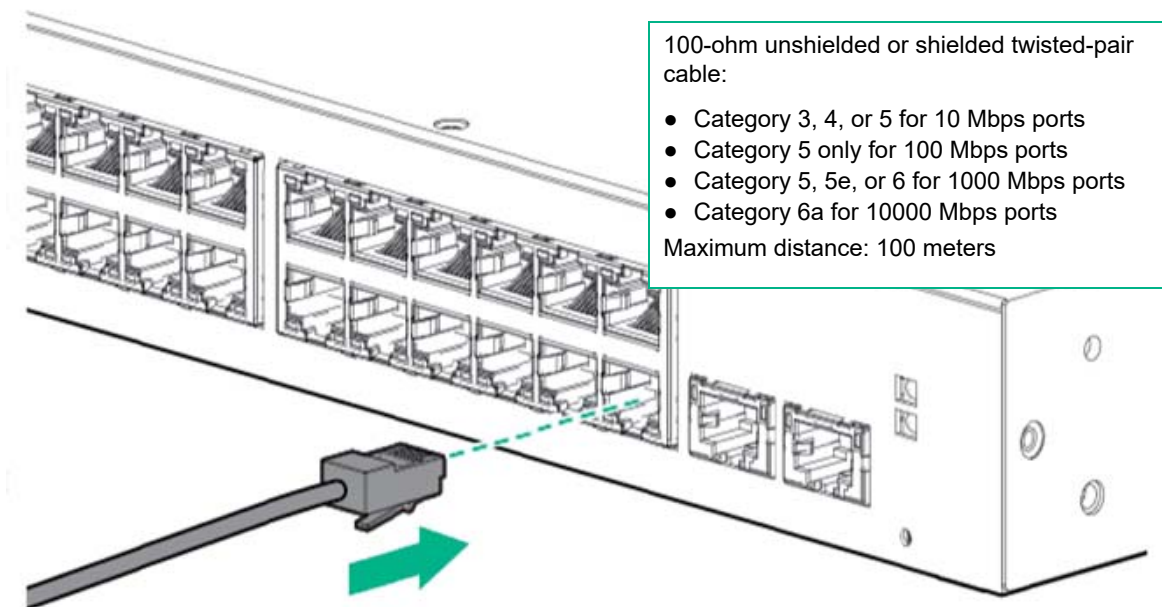
When a network cable from an active network device is connected to the port, the port LEDs for that port should go on. If the port LEDs do not go on when the network cable is connected to the port, see "Diagnosing with the LEDs" on page 4-1.

# 6. Installing or Removing SFP+ transceivers

You can install or remove an SFP+ transceiver from an SFP+ slot without having to power off the switch. Use only Hewlett Packard Enterprise SFP+ transceivers (see table on page 1-4).

> **CAUTION:**
> Hot swapping transceivers is supported. You can install or remove a transceiver with the switch powered on, a reboot will not occur. However, rapid hotswaps are not recommended. Wait a few seconds for the Mode LED to turn on (during initialization), and then turn off.

> **NOTE:**
> Ensure the network cable is NOT connected when you install or remove an SFP+ transceiver.

> **CAUTION:**
> Use only supported genuine Hewlett Packard Enterprise SFP+ transceivers with your switch. Non-HPE SFP+ transceivers are not supported, and their use may result in product malfunction. Should you require additional Hewlett Packard Enterprise SFP+ transceivers, contact your Hewlett Packard Enterprise Networking Sales and Service Office or authorized dealer.

## Installing the SFP+ transceivers

Remove the protective plastic cover and retain it for later use. Hold the SFP+ transceiver by its sides and gently insert it into any of the slots on the switch until the SFP+ transceiver clicks into place.

SFP+ transceivers must meet the following Regulatory Compliance:

- Class 1.
- EN60825-1:2007 2nd Edition or later, European standard.
- FCC 21 CFR Chapter 1, Sub-chapter J in accordance with FDA and CDRH requirements.
- Application of CE Mark in accordance with 2004/108/EEC EMC Directive and the 2006/95/EC Low Voltage Directives.
- UL and/or CSA registered component for North America.
- 47 CFR Part 15, Class A when installed into Alpha products.

> **WARNING:**
> The HPE Aruba SFP+ transceivers are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.
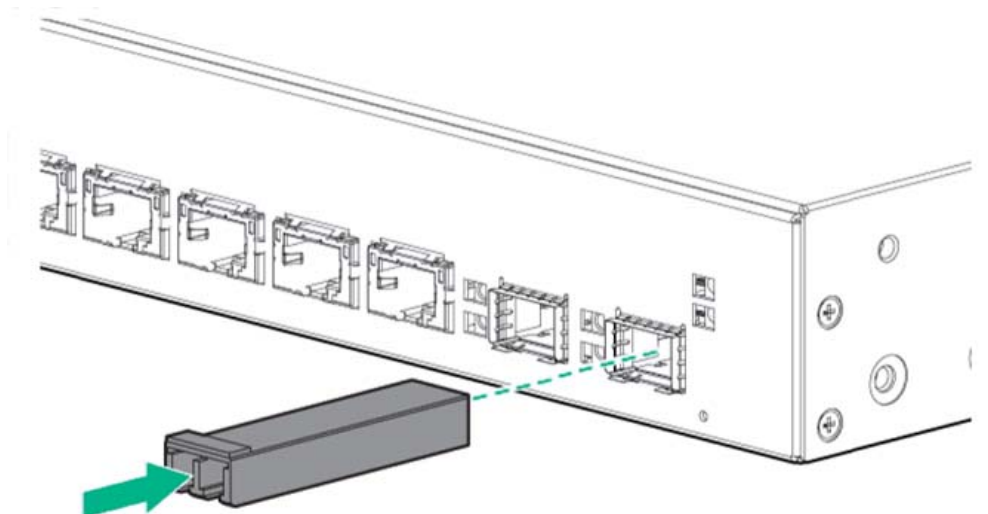
## Removing the SFP+ transceivers

> **NOTE:**
> You should disconnect the network cable from the SFP+ transceiver before removing it from the switch.

Depending on when you purchased your Hewlett Packard Enterprise SFP+ transceiver, it may have either of three different release mechanisms: a plastic tab on the bottom of the SFP+ transceiver, a plastic collar around the SFP+ transceiver, or a wire bail.

To remove the SFP+ transceivers that have the plastic tab or plastic collar, push the tab or collar toward the switch until you see the SFP+ transceiver release from the switch (you can see it move outward slightly), and then pull it from the slot.

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

Replace the protective plastic cover on the SFP+ transceiver.

## Connecting Cables to SFP+ transceivers

If you have any SFP transceivers installed in the switch, the type of network connections you will need to use depends on the type of SFP transceivers you have installed. See the table on page 1-4 and "Switch Specifications" on page A-1, for the SFP+ cabling information.

For SFP+ ports, and in general for all the switch ports, when a network cable from an active network device is connected to the port, the port Link LED for that port should go on. If the port Link LED does not go on when the network cable is connected to the port, see "Diagnosing with the LEDs" on page 4-1.

# 3. Configuring the Switch

## Initial Configuration

The Hewlett Packard Enterprise 1850 OfficeConnect Switch Series can be managed through a Web-browser interface that you can access from any PC or workstation connected to the switch.

To access the Web interface, you must have the switch's Internet Protocol (IP) address. In the factory default configuration, the IP address is automatically acquired from a Dynamic Host Configuration Protocol (DHCP) service that is available on your network or from your Internet Service Provider (ISP). Most routers provide this service. The DHCP service automatically provides a network IP address configuration to devices that request it, such as the Hewlett Packard Enterprise 1850 switches.

Many features are configurable on the Hewlett Packard Enterprise 1850 OfficeConnect Switch Series. Hewlett Packard Enterprise recommends that at minimum, you configure a management password for switch security. Follow these procedures to access the switch's Web interface to perform the switch configuration:

1.  Place the switch close to the PC that you will use for configuration. It helps if you can see the front panel of the switch while working from your PC.

2.  Connect power to the switch, and then start your PC (if it is not already running) and wait until the switch and PC have finished their start-up sequences.

3.  Connect the PC to any port on the switch using a standard Ethernet LAN cable. Verify that there is a link between the switch and PC by checking the LEDs for the network port that you are using. (For more information on LEDs, see "LEDs" on page 1-4.)

4.  If the switch has access to a DHCP service, it automatically acquires an IP address. Determine the IP address of the switch by examining the client IP address table on your router (see the router documentation for how to get this information), or talk to your ISP representative to get the IP address of the switch.

    If a DHCP service is not available in your network, or for some reason the switch does not acquire an IP address from the service, the switch defaults to IP address **192.168.1.1** after 120 seconds of automatically attempting to acquire an IP address.

**NOTE:**

Alternatively, if you cannot determine the switch's IP address, you can force it to use the 192.168.1.1 address by first disconnecting the switch from any router or internet connection and then unplugging and reconnecting power to it.

To communicate with the switch using the 192.168.1.1 address, see "Using the IP Address" on page 3-2 before continuing these steps.

5.  From the PC connected to the switch, open a Web-browser session and enter the switch's IP address as the URL. This opens the login screen for the switch's Web browser interface from which you perform the next steps.

6.  Enter the default username "admin" and click **Login** to start a switch Web-browser interface session. By default, there is no password.

7.  To configure a password on the switch Web interface, click **Maintenance > Password Manager** and enter the **Current Password**. Define a **New Password** and re-enter it in the **Confirm New Password** field. Passwords can be up to 64 alphanumeric and special characters in length, and are case sensitive.

8. Click **Apply** to implement the new password, and then click **Save Configuration** at the top of the browser configuration screen to save your settings and retain them when the switch is rebooted.

See the *Hewlett Packard Enterprise 1850 OfficeConnect Switch Series Management and Configuration Guide* for more switch configuration information.

**NOTE:**

If you cannot remember the switch's IP address or password, you can restore the factory default settings by following the procedure described in "Restoring to Factory Defaults" on page 4-3.

# Using the IP Address

If the switch does not acquire an IP address via the DHCP request, it defaults to the following configuration:

| Parameter | Factory Default Setting |
|---|---|
| Password | <blank> |
| User name | admin |
| IP address | 192.168.1.1 |
| Subnet mask | 255.255.255.0 |
| Default gateway | not set |

To communicate with the switch using the 192.168.1.1 address:

1. Connect a PC directly to any of the switch's network ports using a standard Ethernet cable.

2. Configure the PC's IP Address and Subnet Mask to allow it to communicate with the switch through your PC's Web browser.

   For example, for Windows 7, follow these steps:

   a. Click Start, and then click Control Panel. In the Control Panel, click Network and Internet and then Network and Sharing Center.

   b. Click Local Area Connection, and then click Properties. If you are prompted for an administrator password or for a confirmation, type the password or provide confirmation.

   c. Click Internet Protocol Version 4 (TCP/IPv4) and then click Properties.

**NOTE:**

Record your PC's current IP settings to be able to restore them later, if needed.

3. Click Use the following IP address, and then, in the IP address and Subnet mask fields, type the IP address settings:

   a. For IP address, enter an IP address in the same range as the switch's IP address, for example, enter 192.168.1.12.

   b. For Subnet mask, enter 255.255.255.0, then click OK.

    **c.**    Click Close (or OK) to close the Local Area Connection Properties screen.

**4.**    Open the Web browser on the PC, and enter the switch address, http://192.168.1.1 to access the switch's Web interface. Go back to step 6 on the to configure the switch.

# Where to Go From Here

For more information on the Web browser interface and all the features that can be configured on the Hewlett Packard Enterprise 1850 OfficeConnect Switch Series, see the Hewlett Packard Enterprise 1850 OfficeConnect Switch Series Management and Configuration Guide, which is available on the Hewlett Packard Enterprise website, www.hpe.com/support/hpesc.

# 4. Troubleshooting

This section describes how to troubleshoot the switch. For more information, see the chapter "Troubleshooting" in the Hewlett Packard Enterprise 1850 OfficeConnect Switch Series Management and Configuration Guide, available on the Hewlett Packard Enterprise website, www.hpe.com/support/hpesc.

This chapter describes the following:

● basic troubleshooting tips (page 4-1).

● diagnosing with the LEDs (page 4-1).

● forgotten IP address or password (page 4-3).

● testing the switch by rebooting it (page 4-3).

● Hewlett Packard Enterprise Customer Support Services (page 4-3).

## Basic Troubleshooting Tips

Common problems and their solutions are listed in the following table.

| Problem | Resolution |
|---------|------------|
| Switch fails Power-On Self Test (POST). | Troubleshoot using the LEDs. See "Diagnosing with the LEDs" on page 4-2. |
| Link light does not light when a cable is connected. | 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. |

## Diagnosing with the LEDs

The first section shows LED patterns on the switch that indicate problem conditions for general switch operation troubleshooting.

The second section shows LED patterns that indicate problem conditions for PoE troubleshooting.

### LED Patterns for General Switch Troubleshooting

1. Check in the table below for the LED pattern you see on your switch.

2. Refer to the corresponding diagnostic tip on the next few pages.

| Power (green) | Fault (orange) | Port LED | Diagnostic Tips |
|---------------|----------------|----------|-----------------|
| Off with power cord plugged in | * | * | 1 |
| * | Prolonged On | * | 2 |
| * | Slow Flashing | Slow Flashing | 3 |

| Power (green) | Fault (orange) | Port LED | Diagnostic Tips |
|---|---|---|---|
| On | Off | Off with cable connected | **4** |
| **\* This LED is not important for the diagnosis.** | | | |

## Diagnostic Tips

| Tip | Problem | Solution |
|---|---|---|
| **1** | The switch is not plugged into an active AC power source, the switch's power adapter may have failed, or Port 1 is not receiving power from a PoE power sourcing equipment (PSE). | ● Verify the power cord is plugged into an active power source and to the switch. Make sure these connections are snug.<br>● Try power cycling the switch by unplugging and plugging the power cord back in.<br>● 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.<br><br>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 Hewlett Packard Enterprise-authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance. |
| **3** | The network port for which the Link 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. To confirm, try a different port that appears to be good. Call your Hewlett Packard Enterprise authorized network reseller, or use the electronic support services from Hewlett Packard Enterprise to get assistance.<br><br>If the port is an SFP+ port, verify that the SFP+ transceiver is supported by the switch. Unsupported SFP+ transceivers will be identified with this fault condition. The supported SFP+ transceivers are listed in Chapter 1, "Switch Overview" on page 1-3. The SFP+ transceivers are also tested when they are "hot-swapped"—installed or changed while the switch is powered on.<br><br>To verify that the port has failed, try removing and reinstalling the SFP+ transceiver without having to power off the switch. If the port fault indication reoccurs, you will have to replace the SFP+ transceiver. |
| **4** | The network connection is not working properly. | Try the following procedures:<br>● For the indicated port, verify that both ends of the cabling, at the switch and the connected device, are secure.<br>● Verify the connected device and switch are both powered on and operating correctly.<br>● Verify that the connected devices comply with the appropriate IEEE 802.3 standard, including transmission of the Link signal.<br>● If the other procedures do not resolve the problem, try using a different port or a different cable. |

# LED Patterns for PoE Troubleshooting

Press the LED Mode button to put the switch into PoE mode and the port **Mode** LEDs will show which ports are experiencing the problem. The following tables identify the specific problems that are shown by the LEDs.

1. Check in the table for the LED pattern you see on your switch.

2. Refer to the corresponding diagnostic tip.

| Fault (orange) | Port Link | Port Mode (PoE) | Diagnostic Tips |
|---|---|---|---|
| Off | Flashing Green | Slow Flashing Green | 1 |
| Slow Flashing | Slow Flashing Green | Slow Flashing Green | 2 |

## Diagnostic Tips

| Tip | Problem | Solution |
|---|---|---|
| 1 | PoE oversubscription condition. All available PoE power is already taken by higher-priority ports. | If possible add additional PoE power, or redefine port priorities. |
| 2 | PoE hardware fault. A switch hardware component that is involved with PoE power delivery has failed. | The switch must be replaced. |

# Testing the Switch by Rebooting It

If you believe the switch is not operating correctly, you can reboot the switch to test its circuitry and operating code. To reboot the switch, unplug and plug in the power cord (power cycling).

Power cycling the switch will cause the switch to perform its power-on self test. Rebooting the switch can also be invoked from the Web interface.

# Restoring to Factory Defaults

If you forget the switch IP address or password, you can restore the factory default configuration by pressing the Reset button.

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

1. Using a small, thin tool with blunt ends (such as a paper clip), press the Reset button on the front of the switch.

2. Continue to press the Reset button for more than 5 seconds.

3. Release the Reset button.

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

After completing this procedure, there will be no password, the IP address will be returned to the default 192.168.1.1, and all configuration settings will be returned to factory defaults.

# Hewlett Packard Enterprise Customer Support Services

If you are still having trouble with your switch, Hewlett-Packard offers support through the use of a number of automated electronic services.

See www.hpe.com/networking/warrantysummary for warranty and support information included with your product purchase.

The Hewlett Packard Enterprise website, www.hpe.com/support/hpesc also provides up-to-date support information.

Additionally, your Hewlett Packard Enterprise authorized network reseller can provide you with assistance, both with services they offer and with services offered by Hewlett Packard Enterprise.

# Before Calling Support

Before calling your networking dealer or Hewlett Packard Enterprise Support, to make the support process most efficient, you first should have retrieved the following information:

| Information Item | Information Location |
|---|---|
| ● product identification, including SFP+ transceivers | the front of the switch, and on labels on the SFP+ transceivers |
| ● details about the switch's status including the operating software (OS) version, a copy of the switch configuration, and contents of the Support file | Web interface.<br>For more information on using the Web interface, see the *Management and Configuration Guide* for your switch. |
| ● copy of your network topology map, including network addresses assigned to the relevant devices | your network records |

# A.  Specifications

## Switch Specifications

### Physical

| Switch | Width | Depth | Height | Weight |
|---|---|---|---|---|
| 1850 6XGT 2XGT/SFP+ (JL169A) | 25.3 cm<br>9.96 in | 26.07 cm<br>10.26 in | 4.4 cm<br>1.73 in | 1.74 kg<br>3.84 lb |
| 1850 24G 2XGT (JL170A) | 44.25 cm<br>17.42 in | 24.64 cm<br>9.70 in | 4.4 cm<br>1.73 in | 2.66 kg<br>5.86 lb |
| 1850 48G 4XGT (JL171A) | 44.25 cm<br>17.42 in | 24.64 cm<br>9.70 in | 4.4 cm<br>1.73 in | 3.20 kg<br>7.05 lb |
| 1850 24G 2XGT PoE+ (JL172A) | 44.25 cm<br>17.42 in | 24.64 cm<br>9.70 in | 4.4 cm<br>1.73 in | 3.30 kg<br>7.28 lb |
| 1850 48G 4XGT PoE+ (JL173A) | 44.25 cm<br>17.42 in | 32.26 cm<br>12.70 in | 4.4 cm<br>1.73 in | 4.67 kg<br>10.30 lb |

### Electrical

| Switch | AC voltage | Maximum current | Frequency range |
|---|---|---|---|
| 1850 6XGT 2XGT/SFP+ (JL169A) | 100-127 volts, 200-240 volts | 0.9 A / 0.5 A | 50/60 Hz |
| 1850 24G 2XGT (JL170A) | 100-127 volts, 200-240 volts | 0.6 A / 0.4 A | 50/60 Hz |
| 1850 48G 4XGT (JL171A) | 100-127 volts, 200-240 volts | 1.0 A / 0.6 A | 50/60 Hz |
| 1850 24G 2XGT PoE+ (JL172A) | 100-127 volts, 200-240 volts | 2.5 A / 1.3 A | 50/60 Hz |
| 1850 48G 4XGT PoE+ (JL173A) | 100-127 volts, 200-240 volts | 5.0 A / 2.4 A | 50/60 Hz |

The switch automatically adjusts to any voltage between 100-127 or 200-240 volts and either 50 or 60 Hz.

# Environmental

|  | Operating | Non-Operating |
|---|---|---|
| **Temperature** | 0°C to 40°C (32°F to 104°F) | -40°C to 70°C (-40°F to 158°F) |
| **Relative humidity (non-condensing)** | 15% to 95% at 40°C (104°F) | 15% to 95% at 65°C (149°F) |
| **Maximum altitude** | 3.0 km (10,000 ft) * | 4.57 km (15,000 ft) |
| * The operating maximum altitude should not exceed that of any accessory being connected to any 1850 Switch. | | |

# Acoustics

| Switch | Noise Emission |
|---|---|
| 1850 6XGT 2XGT/SFP+ (JL169A) | Sound Power (LwA) 4.5 Bel<br>Sound Pressure (LpAm) (Bystander) 37.9 dB |
| 1850 24G 2XGT (JL170A) | Sound Power (LwA) 3.6 Bel<br>Sound Pressure (LpAm) (Bystander) 30.5 dB |
| 1850 48G 4XGT (JL171A) | Sound Power (LwA) 3.4 Bel<br>Sound Pressure (LpAm) (Bystander) 30.5 dB |
| 1850 24G 2XGT PoE+ (JL172A) | Sound Power (LwA) 4.4 Bel<br>Sound Pressure (LpAm) (Bystander) 33.6 dB |
| 1850 48G 4XGT PoE+ (JL173A) | Sound Power (LwA) 4.0 Bel<br>Sound Pressure (LpAm) (Bystander) 31.1 dB |

# Safety

Complies with:

- EN60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 / IEC60950-1:2005; Am1:2009;
- CSA22.2 No. 60950-1-07 2nd Ed.; UL60950-1 2nd Ed.
- EN 60825-1:2007 / IEC 60825-1:2007 Class 1

# EMC

- EMC: EN 55032:2015, Class A
- EN 55024:2010
- EN 61000–3–2:2014
- EN 61000–3–3:2013
- FCC CFR 47 Part 15B:2014, Class A

# Standards

| Technology | Compatible with these IEEE standards | EN/IEC standard compliance | SFP+ Lasers Safety Information |
|---|---|---|---|
| **10-T** | IEEE 802.3 10BASE-T | - | - |
| **100-TX** | IEEE 802.3u 100BASE-TX | - | - |
| **-** | IEEE 802.3ab 1000BASE-T | - | - |
| **1000-SX** | IEEE 802.3z 1000BASE-SX | EN/IEC 60825 | Class 1 Laser Product Laser Klasse 1 |
| **1000-LX** | IEEE 802.3z 1000BASE-LX | EN/IEC 60825 | Class 1 Laser Product Laser Klasse 1 |
| **10G-T** | IEEE 802.3an 10GBASE-T | - | - |
| **10G-SR** | IEEE 802.3ae 10GBASE-SR | EN/IEC 60825 | Class 1 Laser Product Laser Klasse 1 |
| **10G-LR** | IEEE 802.3ae 10GBASE-LR | EN/IEC 60825 | Class 1 Laser Product Laser Klasse 1 |
| **10G-LRM** | IEEE 802.3aq 10GBASE-LRM | EN/IEC 60825 | Class 1 Laser Product Laser Klasse 1 |

# Cabling and Technology Information Specifications

| Cable Medium | Operation Speed | Cabling and Technology Information 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 below. |
| | 10 Gbps Operation | Category 6a, 100-ohm, 4-pair UTP or STP cable, complying with IEEE 802.3an 10GBASE-T specifications. |
| **Multimode fiber** | 1/10 Gbps Operation | 62.5/125 mm or 50/125 mm (core/cladding) diameter, low metal content, graded index fiber-optic cables, complying with the ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a standards respectively.[1] |
| **Single mode fiber** | 1/10 Gbps Operation | 9/125 mm (core/cladding) diameter, low metal content fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards. |

**[1] A mode conditioning patch cord may be needed for some Gigabit-LX installations. See "Mode Conditioning Patch Cord" on page A-5 for more information.**

### Note on 1000BASE-T and 10GBASE-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). For 10GBASE-T, only Category 6a cables should be used.

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.

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

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

## Technology Distance Specifications

| Technology | Supported cable type | Multimode fiber modal bandwidth | Supported distances |
|---|---|---|---|
| 1000-T | twisted-pair copper | N/A | up to 100 meters |
| 1000-SX | multimode fiber | 160 MHz*km<br>200 MHz*km<br>400 MHz*km<br>500 MHz*km | 2 - 220 meters<br>2 - 275 meters<br>2 - 500 meters<br>2 - 550 meters |
| 1000-LX | multimode fiber<br><br>single mode fiber | 400 MHz*km<br>500 MHz*km<br>N/A | 2 - 550 meters<br>2 - 550 meters<br>2 - 10,000 meters |
| 10G-T | twisted-pair copper | N/A | up to 100 meters |
| 10G-SR | multimode fiber | 160 MHz*km<br>200 MHz*km<br>400 MHz*km<br>500 MHz*km<br>2000 MHz*km | 2 - 26 meters<br>2 - 33 meters<br>2 - 66 meters<br>2 - 82 meters<br>2 - 300 meters |
| 10G-LR | single mode fiber | N/A | 2 - 10 km |
| 10G-LRM | multimode fiber | 160/500 MHz*km<br>200/500 MHz*km<br>400/500 MHz*km<br>500/500 MHz*km<br>1500/500 MHz*km | 0.5 - 220 meters<br>0.5 - 220 meters<br>0.5 - 100 meters<br>0.5 - 220 meters<br>0.5 - 220 meters |

# Mode Conditioning Patch Cord

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

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

The patch cord consists of a short length of single mode fiber cable coupled to graded-index multimode fiber cable on the transmit side, and only multimode cable on the receive side. The section of single mode fiber is connected in such a way that it minimizes the effects of the differential mode delay in the multimode cable.
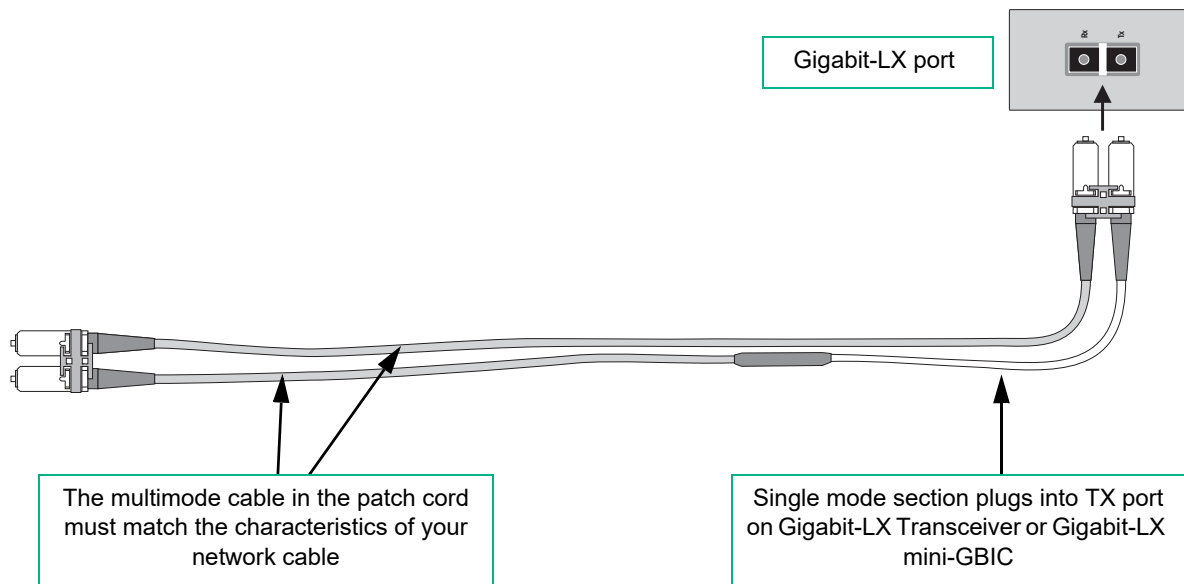
> **NOTE:**
> Most of the time, if you are using good quality graded-index multimode fiber cable that adheres to the standards listed in this appendix, there should not be a need to use mode conditioning patch cords in your network. This is especially true if the fiber runs in your network are relatively short.

## Installing the Patch Cord

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

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

**Figure A-1. Connecting a Mode Conditioning Patch Cord for Gigabit-LX**



Gigabit-LX port

The multimode cable in the patch cord must match the characteristics of your network cable

Single mode section plugs into TX port on Gigabit-LX Transceiver or Gigabit-LX mini-GBIC

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

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

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

If you 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.

---

**NOTE:**

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

---

# Other Wiring Rules

- All twisted-pair wires used for 10BASE-T, and 100BASE-TX operation must be twisted through the entire length of the cable. The wiring sequence must conform to EIA/TIA 568-B (not USOC). See "Twisted-Pair Cable Pin Assignments" later in this appendix for a listing of the signals used on each pin.

- For 1000BASE-T and 10GBASE-T connections, all four pairs of wires in the cable must be available for data transmission.

- For 10BASE-T 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 100BASE-TX 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 1000BASE-T connections, 100-ohm Category 5e or better cabling is recommended.

- For 10GBASE-T connections, 100-ohm Category 6a or better cabling is recommended.

## Straight-through Twisted-Pair Cable for 10/100 Mbps Network Connections

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

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

Cable Diagram
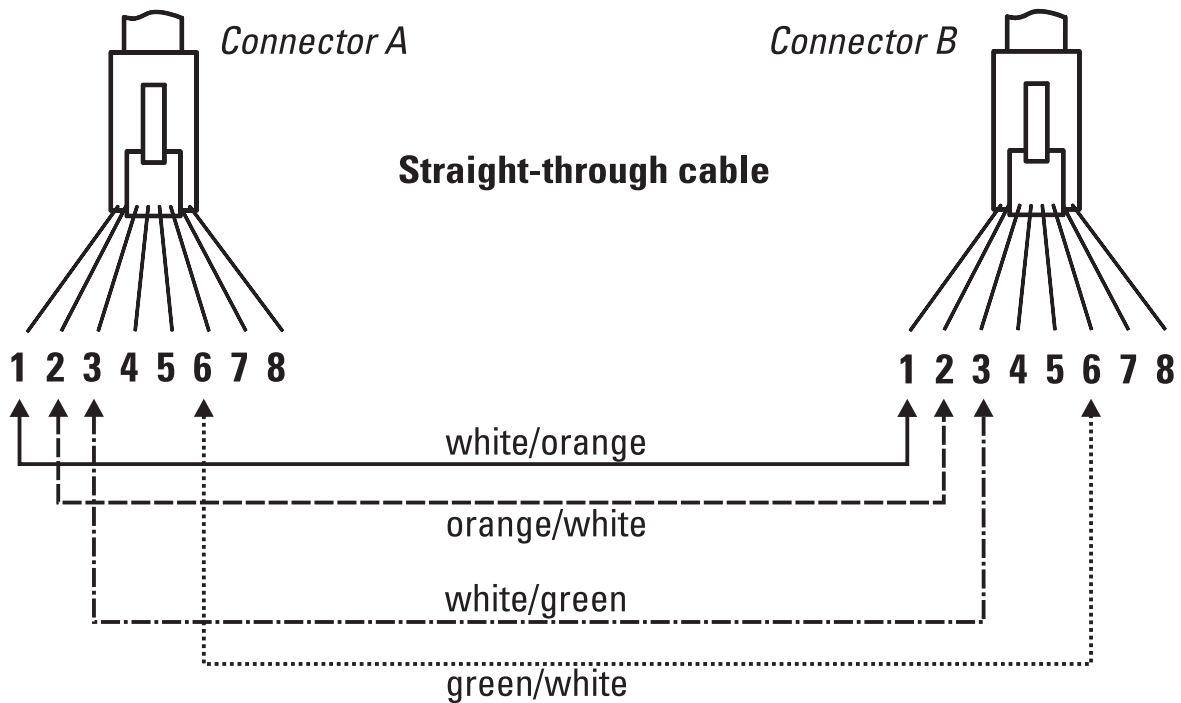


**NOTE:**

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

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

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

## Pin Assignments

| Switch End (MDI-X) | | | Computer, Transceiver, or Other End | |
|---|---|---|---|---|
| **Signal** | **Pins** | | **Pins** | **Signal** |
| receive + | 1 | | 1 | transmit + |
| receive - | 2 | | 2 | transmit - |
| transmit + | 3 | | 3 | receive + |
| transmit - | 6 | | 6 | receive - |

# Crossover Twisted-Pair Cable for 10/100 Mbps Network Connections

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

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

## Cable Diagram

*Connector A* *Connector B*

**Crossover cable**

1 2 3 4 5 6 7 8          1 2 3 4 5 6 7 8

white/orange

orange/white

white/green

green/white

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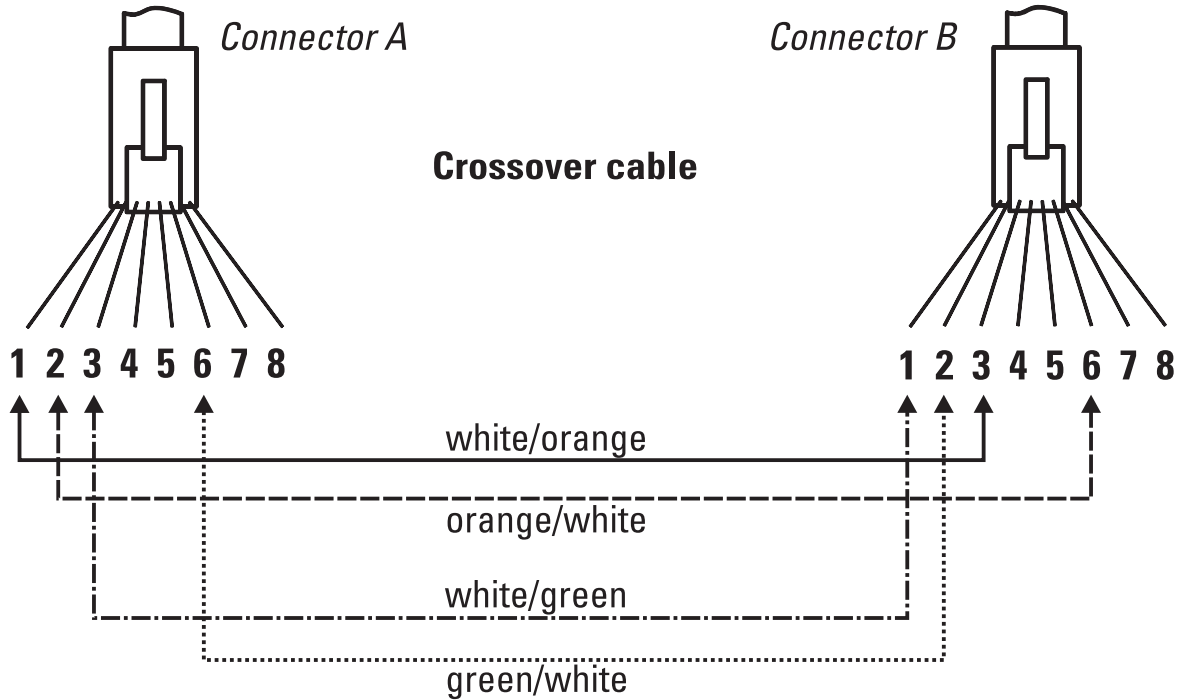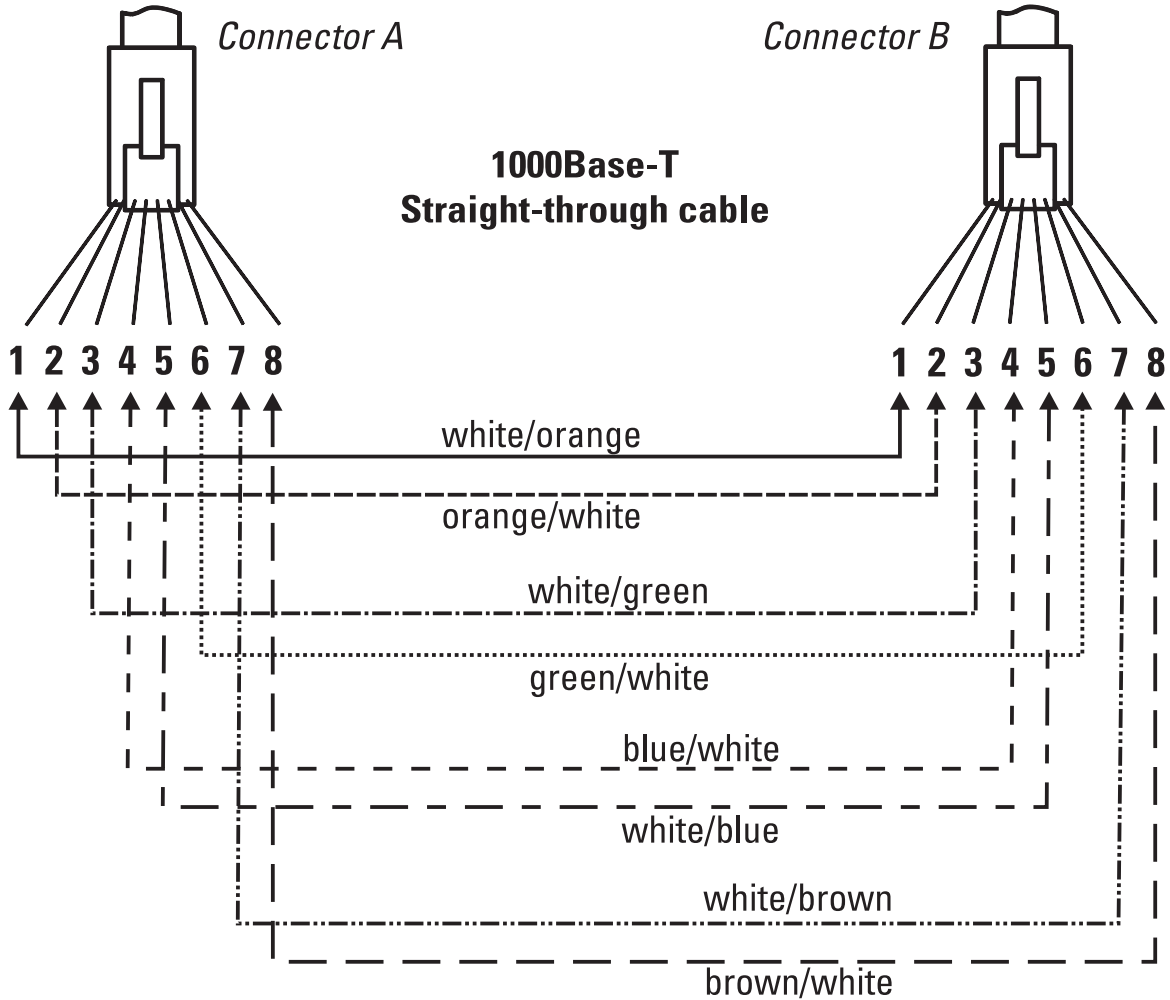
## Pin Assignments

| Switch End (MDI-X) | | | Hub or Switch Port, or Other MDI-X Port End | |
|---|---|---|---|---|
| **Signal** | **Pins** | | **Pins** | **Signal** |
| receive + | 1 | | 6 | transmit - |
| receive - | 2 | | 3 | transmit + |
| transmit + | 3 | | 2 | receive - |
| transmit - | 6 | | 1 | receive + |

# Straight-Through Twisted-Pair Cable for 1000/10000 Mbps Network Connections

1000BASE-T and 10GBASE-T connections require that all four pairs of wires be connected.

## Cable Diagram



**1000Base-T
Straight-through cable**

---

**NOTE:**

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

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

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

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

---

## Pin Assignments

For 1000BASE-T and 10GBASE-T operation, all four pairs of wires are used for both transmit and receive.

# B. Safety and Regulatory Information for the OfficeConnect 1850 Switch Series

For safety and regulatory information for your OfficeConnect 1850 switch, see the HPE OfficeConnect 1850 Switch Series Quick Setup Guide and Safety/Regulatory Information document shipped with your switch. This document is also available on the Hewlett Packard Enterprise Information Library at www.hpe.com/networking/ResourceCenter.

# C. Support and Other Resources

## Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  www.hpe.com/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  www.hpe.com/support/hpesc

### Information to collect

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

## Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates, go to either of the following:
  - Hewlett Packard Enterprise Support Center **Get connected with updates** page:

    www.hpe.com/support/e-updates

  - Software Depot website:

    www.hpe.com/support/softwaredepot

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

  www.hpe.com/support/AccessToSupportMaterials

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

# Registering for software technical support and update service

Insight Management includes one year of 24 x 7 HPE Software Technical Support and Update Service. This service provides access to Hewlett Packard Enterprise technical resources for assistance in resolving software implementation or operations problems.

The service also provides access to software updates and reference manuals in electronic form as they are made available from Hewlett Packard Enterprise. Customers who purchase an electronic license are eligible for electronic updates.

With this service, Insight Management customers benefit from expedited problem resolution as well as proactive notification and delivery of software updates. For more information about this service, see the OneView Services website at **HPE OneView Services**.

Registration for this service takes place following online redemption of the license certificate.

# Websites

| Website | Link |
| --- | --- |
| Hewlett Packard Enterprise Information Library | www.hpe.com/info/enterprise/docs |
| Hewlett Packard Enterprise Support Center | www.hpe.com/support/hpesc |
| Contact Hewlett Packard Enterprise Worldwide | www.hpe.com/assistance |
| Subscription Service/Support Alerts | www.hpe.com/support/e-updates |
| Software Depot | www.hpe.com/support/softwaredepot |
| Customer Self Repair | www.hpe.com/support/selfrepair |
| Insight Remote Support | www.hpe.com/info/insightremotesupport/docs |
| Serviceguard Solutions for HP-UX | www.hpe.com/info/hpux-serviceguard-docs |
| Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix | www.hpe.com/storage/spock |
| Storage white papers and analyst reports | www.hpe.com/storage/whitepapers |

# Customer self repair

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

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

www.hpe.com/support/selfrepair

# Remote support

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

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

www.hpe.com/info/insightremotesupport/docs

# Documentation feedback

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

# D. Warranty Information

For important safety, environmental, and regulatory information, see Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at

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

**HPE ProLiant and x86 Servers and Options**

www.hpe.com/support/ProLiantServers-Warranties

**HPE Enterprise Servers**

www.hpe.com/support/EnterpriseServers-Warranties

**HPE Storage Products**

www.hpe.com/support/Storage-Warranties

**HPE Networking Products**

www.hpe.com/support/Networking-Warranties

**Warranty Information**