Hewlett Packard
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HP Switch zl2 Modules Installation Guide

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Applicable HP Products

5400R zl2 Management Module	J9827A
HP 24-port Gig-T PoE+ v2 zl Module	J9534A
HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module	J9535A
HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module	J9536A
HP 24-port SFP v2 zl Module	J9537A
HP 8-port 10-GbE SFP+ v2 zl Module	J9538A
HP 8-port 10GBase-T v2 zl Module	J9546A
HP 24-port 10/100 PoE+ v2 zl Module	J9547A
HP 20-port Gig-T / 2-port 10-GbE SFP+ v2 zl Module	J9548A
HP 20-port Gig-T / 4-port SFP v2 zl Module	J9549A
HP 24-port Gig-T v2 zl Module	J9550A
HP 12-port Gig-T / 12-port SFP v2 zl Module	J9637A
HP 5406R zl2 Switch	J9821A
HP 5412R zl2 Switch	J9822A
HP 5406R-44G-PoE+/2SFP+ (No PSU) v2 zl2 Switch	J9823A
HP 5406R-44G-PoE+/4SFP (No PSU) v2 zl2 Switch	J9824A
HP 5412R-92G-PoE+/2SFP+ (No PSU) v2 zl2 Switch	J9825A
HP 5412R-92G-PoE+/4SFP (No PSU) v2 zl2 Switch	J9826A
HP 5406R-8XGT/8SFP+ (No PSU) v2 zl2 Switch	J9868A
HP 5400R zl2 Management Module	J9827A
HP 5400R 700W PoE+ zl2 Power Supply	J9828A
HP 5400R 1100W PoE+ zl2 Power Supply	J9829A
HP 5400R 2750W PoE+ zl2 Power Supply	J9830A

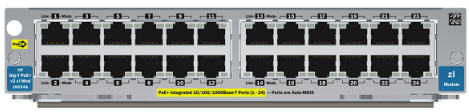
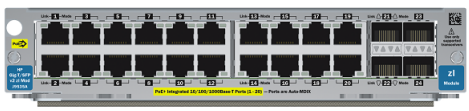
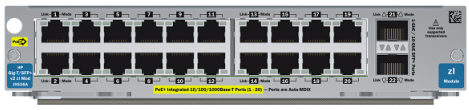
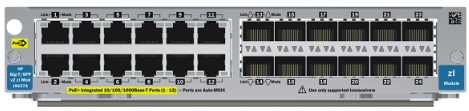
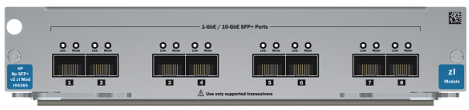
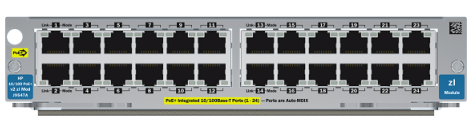
HP 5406R zl2 Switch Fan Tray	J9831A
HP 5412R zl2 Switch Fan Tray	J9832A
HP 5406R zl2 Switch Chassis	J9850A
HP 5412R zl2 Switch Chassis	J9851A
HP X450 4U/7U Universal 4-Post Rack Mounting Kit	J9852A

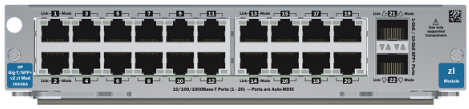
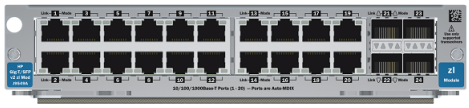
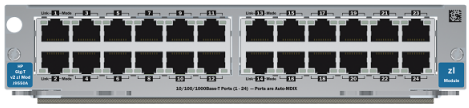
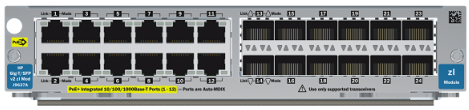
Contents

1 HPE Switch v2 zl Modules

For the HPE 5400R zl2 Switches

Descriptions. The HPE Switch v2 zl Modules are the second generation zl modules and provide a variety of improved network connectivity options for the HPE 5400R zl2 switches. The following modules are currently available.

Module		Description
HPE 24-port Gig-T PoE+v2 zl Module (J9534A) [1]		24 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T operation over Category 5 or better 100-ohm UTP or STP cable (category 5e recommended for Gigabit). All ports have the IEEE802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature and support IEEE 802.3at PoE+.
HPE 20-port Gig-T PoE+ / 4-port SFP v2 zl Module (J9535A) [1]		20 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T ports that support PoE+ and 4 ports for installing any of the supported HPE transceivers. All RJ-45 ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature and support PoE+. The SFP ports do not support IEEE 802.3at PoE+.
HPE 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module (J9536A) [1]		20 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T ports that support PoE+ and 2 ports for installing any of the supported HPE transceivers. All RJ-45 ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature and support PoE+. The SFP+ ports do not support IEEE 802.3at PoE+.
HPE 24-port SFP v2 zl Module (J9537A) [1]		24 SFP ports for connecting any of the supported HPE transceivers. These ports do not support IEEE 802.3at PoE+.
HPE 8-port 10-GbE SFP+ v2 zl Module (J9538A) [1]		8 ports for installing any of the supported HPE transceivers. The SFP+ ports do not support IEEE 802.3at PoE+.
HPE 8-port 10GBase-T v2 zl Module (J9546A)[2]		8 twisted-pair ports with RJ-45 connectors for 10GBase-T operation over Category 6 or better 100-ohm UTP or STP cable. PoE is not supported on this module.
HPE 24-port 10/100 PoE+ v2 zl Module (J9547A) [1]		24 twisted-pair ports with RJ-45 connectors for 10/100 Base-TX integrated operation over Category 5 or better 100-ohm UTP or STP cable. All ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE**

Module		Description
		Auto-MDIX) feature and support IEEE 802.3at PoE+.
HPE 20-port Gig-T / 2-port 10-GbE SFP+ v2 zl Module (J9548A)[1]		20 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T and 2 ports for installing any of the supported HPE transceivers. All RJ-45 ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature. This module does not support IEEE 802.3at PoE+.
HPE 20-port Gig-T / 4-port SFP v2 zl Module (J9549A)[1]		20 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T and 4 ports for installing any of the supported HPE transceivers. All RJ-45 ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature. This module does not support IEEE 802.3at PoE+.
HPE 24-port Gig-T v2 zl Module (J9550A) [1]		24 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T operation over Category 5 or better 100-ohm UTP or STP cable (category 5e recommended for Gigabit). All ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature.This module does not support IEEE 802.3at PoE+.
HPE 12-port Gig-T / 12-port SFP v2 zl Module (J9637A)		12 twisted-pair ports with RJ-45 connectors for 10/100/1000Base-T operation over Category 5 or better 100-ohm UTP or STP cable (category 5e recommended for Gigabit) and 12 ports for installing any of the supported HPE transceivers. All RJ-45 ports have the IEEE 802.3ab Auto MDI/MDI-X (**HPE Auto-MDIX**) feature and support IEEE 802.3at PoE+.
HPE Advanced Services v2 zl Module with HDD (J9857A)		The HPE Advanced Services v2 zl module is a converged networking, computing, and virtualization solution inside the 5400 zl, 8200 zl, and 5400R zl2 switch families that hosts VMware vSphere(R) compatible virtual networking or business applications inside the switch.
HPE 5400R zl2 Management Module (J9827A)		Is a management module for use with HPE 5400R series chassis only. Order module provides a dual, redundant deployment (base system comes with a single module) or for onsite sparing.

Module		Description
HPE Advanced Services v2 zl Module with SSD (J9858A)		The HPE Advanced Services v2 zl module is a converged networking, computing, and virtualization solution inside the 5400 zl, 8200 zl, and 5400R zl2 switch families that hosts VMware vSphere(R) compatible virtual networking or business applications inside the switch.
HPE MSM775 zl Premium Controller Module (J9840A)		The IEEE 802.11ac-ready HPE MSM775 zl Premium Controller module delivers a high-performance networking solution. It is built on the HPE zl module platform and provides centralized wireless LAN configuration.

[1] For supported transceivers, visit **www.hpe.com/networking/support**.

- In the first textbox, type **J4858** (for 100-Mb and Gigabit information), or **J8436** (for 10-Gigabit information).
- Select any of the products that display in the dropdown list.
- Select **Product support information**. Then click on **Manuals** and find the **Transceiver Support Matrix.**

[2] For technical details of cabling and technologies see “Cabling and Technology Information” in “Cabling and Technology Specifications” (page 27).

2 Network Interface Module LEDs

Network Connectivity Modules Port LEDs

There are two LEDs for each port:

- The Link LED lights green with a valid connection and orange if there is a fault or alert condition.
- The Mode LED lights according to the LED mode selected on the chassis.

The LED mode is selected on the Management Module for the 5400R zl2 switches,. The LED mode that is selected is indicated by the following five LEDs that are located near the LED mode selection button.

Network Ports Mode LED Display	Description	
Act	Activity	Transmit or receive traffic present
FDx	Full Duplex	Full duplex mode of operation
Spd	Indicates the Port LEDs are displaying the connection speed at which each port is operating.	• If the Port LED is on continuously, the port is operating faster than 1 Gbps. • If the Port LED is flashing, the port is operating at 1 Gbps. • If the Port LED is off, the port is operating at 10/100 Mbps.
PoE	Power over Ethernet	• If the Mode LED is on, the port is providing PoE power. • If the Mode LED is off, the port is not providing PoE power. • If the Link LED is on, the port is enabled for PoE. • If the Link LED is off, the port is disabled for PoE. • If the Link LED is flashing, the port has an error or the port is denied power due to insufficient power.
Usr	For future development	

3 Features

v2 zl Module Features

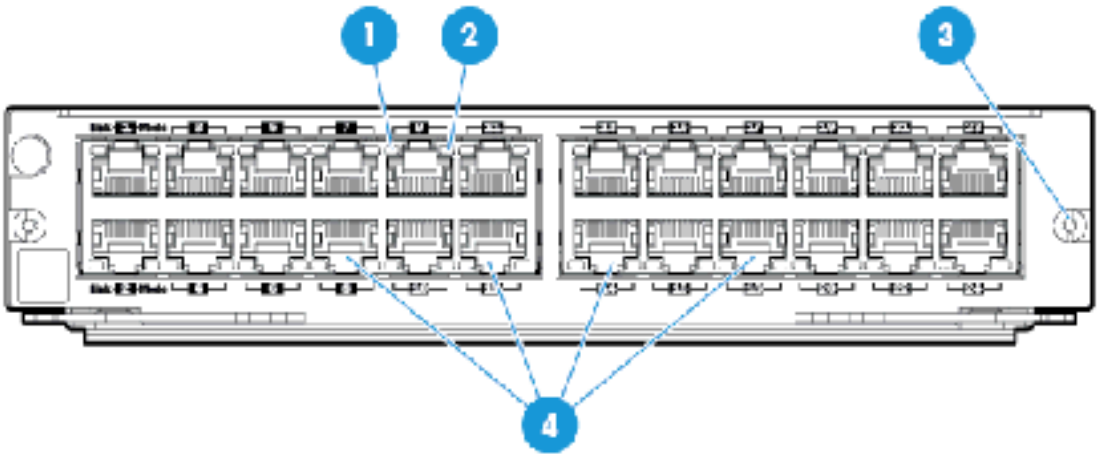


Figure 1. Example: HP 24-port, Gig-T PoE+ v2 zl Module

The following table shows the label and description for HP 24-port Gig-T PoE+ v2 zl Module:

Label	Description
1 and 2	Link and Mode LEDs (one pair per port)
3	Retaining screw
4	Network ports

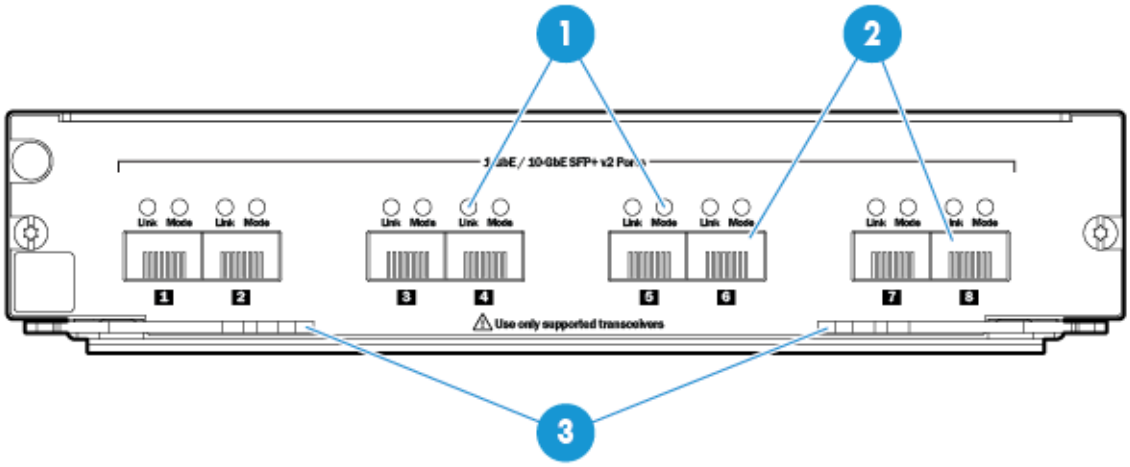


Figure 2. Example: HP 8-port 10-GbE SFP+ v2 zl Module

The following table shows the label and description for HPE 8-port 10-GbE SFP+ v2 zl Module:

Label	Description
1	Link and Mode LEDs (one pair per port)
2	SFP+ ports
3	Extractor handles

The v2 zl Modules have the following features:

- All v2 zl modules share the following features:
  - auto-enabled ports—the ports are all configured to be ready for network operation as soon as a viable network cable is connected
  - auto-configuration—a default configuration is applied to the module when the switch is powered on and the module passes self test; this default configuration works well for most network installations
  - LEDs that provide information for each port on the link status, network activity, connection bandwidth (speed), communication mode (half or full duplex)
  - “hot swap modules” operation—you can add a module or replace a module without having to shut down the switch
  - “hot swap SFPs” operation—you can add, replace, or change the type of any of the SFPs that you use without having to first remove the module, and without having to shut down the switch
  - the RJ-45 ports on all modules have the **HPE Auto-MDIX** and the IEEE 802.3ab **Auto MDI/MDI-X** feature. These features operate the same way and allow you to use either straight-through or crossover twisted-pair cables for all the twisted-pair network connections. (See the note on “Automatic Cable Sensing” in Automatic Cable Sensing on Twisted-Pair Ports.)

4 Installing the Modules

Overview

Before installing any module, ensure you have loaded the most current software for that module onto your switch, see HPE Switch v2 zl Modules for the V2 modules software version. You can install any of the modules into any of the HPE networking chassis zl switches that have compatible module slots.

HPE 5400R zl2 Switches:

- 5406R zl2 and all related bundles
- 5412R zl2 and all related bundles

“Hot Swap” Notes:

The SFPs can be “hot swapped”. That is, they can be installed or removed after the module is installed in the switch and the module is receiving power, see Installing or Removing a SFP transceiver. You can “hot-swap” one module for another; that is, replace one module with another while the switch is still powered on, without interrupting the operation of the rest of the switch ports, see Replacing or Removing a Module. You may have to reconfigure the switch if the modules are not the same type, check your configuration.

You can install the modules into the switch either with the switch powered on or off. The following procedures assume the switch is powered on.

1. Install the modules in a switch slot (Installation Procedures).

   If you have installed any modules into slots that were previously occupied by a different type module, you need not reset the switch, instead run the command “**no module <slot>**” using the CLI to switch the configuration to the new switch.
2. If you are using the zl Module that supports SFPs, install the SFPs in the module. You can install the SFPs before or after installing that module into the switch (Installing or Removing a SFP transceiver).
3. Verify the modules are installed correctly (Verifying the Module is Installed Correctly).
4. Connect the network cabling (Connecting the Network Cables).
5. Verify the network connections are working properly (Verifying the Network Connections Are Working).
6. Optionally, customize the configuration for the modules’ ports (unless the default port configuration is satisfactory for your network application (Default Port Configuration)).

Installing the Module in an Unused Slot

Installation Precautions

- Static electricity can severely damage the electronic components on the modules. When handling and installing the modules in your switch, follow these procedures to avoid damage from static electricity:
  - Handle the module by its bulkhead or edges and avoid touching the components and the circuitry on the board.
  - When installing the module, equalize any static charge difference between your body and the switch by wearing a grounding wrist strap and attaching it to the switch’s metal body, or by frequently touching the switch’s metal body.
- The HPE Switch zl2 Modules have “low-force”, high-performance connectors. High insertion forces are not necessary to install the modules, and should not be used.

- **Ensure you fully insert the modules.** That is, press the module into the slot until the bulkhead on the module is contacting or is very close to contacting the front face of the switch chassis.
- Once the module is fully inserted, make sure you screw in the two retaining screws to secure the module in place.
- For safe operation, proper switch cooling, and reduction of electromagnetic emissions, ensure that a slot cover is installed on any unused module slot. For safety, no more than one slot should be uncovered at a time when the switch is powered on, except when installing a module that requires two slots.
- Ensure you check the temperature specifications for each module that will be installed into the chassis as different modules have different temperature requirements.

Installation Procedures

1. Use a Torx T-10[1] or flat-bladed screwdriver to unscrew the screws in the cover plate over the slot you want to use, and remove the cover. Store the cover plate for possible future use.
2. Hold the module by its bulkhead—taking care not to touch the metal connectors or components on the board.
3. Open the extractor handles.
4. Insert the module aligning with the guides in the slot and slide it into the slot until it stops.
5. Once the contacts have engaged, use the extractor handles to seat the module completely.
6. Tighten the screws.

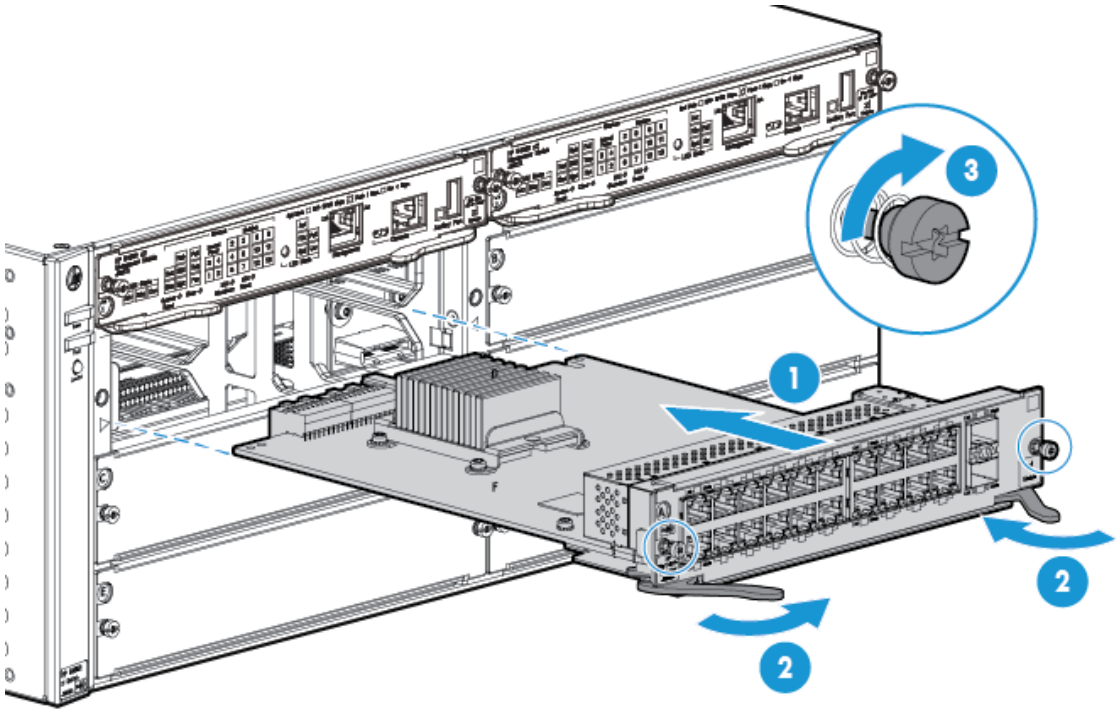


Figure 3. Example: Module being installed

The following table shows label and description on how to install a module:

Label	Description
1, 3	Insert module into the guides and slide it in until it is fully inserted.
2	Close extractor handles

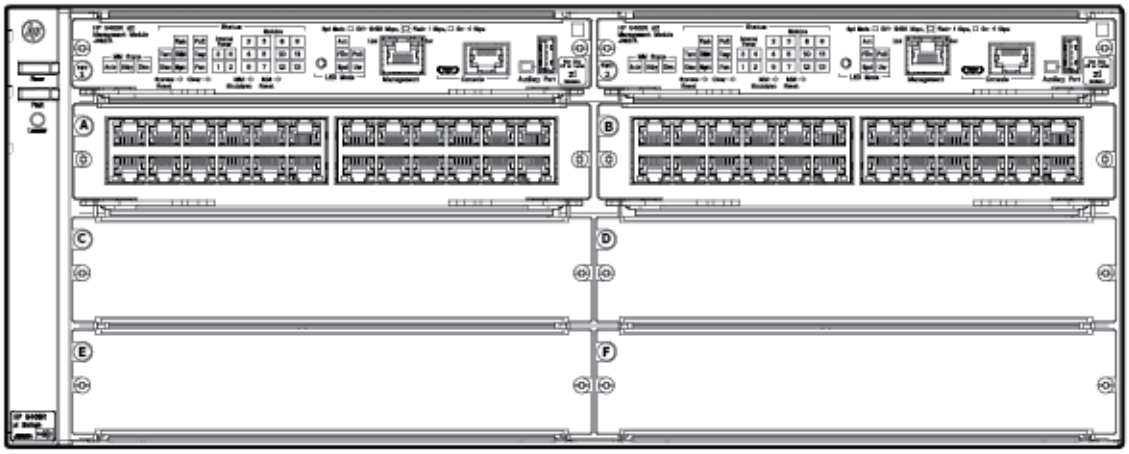


Figure 4. Module fully Installed

Installing or Removing a SFP transceiver

You can install or remove a SFP transceiver from the SFP v2 zl Module without having to power off the switch. Use only SFP transceivers.

⚠ **WARNING!** The HPE SFPs are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.

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

Installing the SFP transceivers:

Hold the transceiver by its sides and gently insert it into any of the slots in the module until it clicks into place.

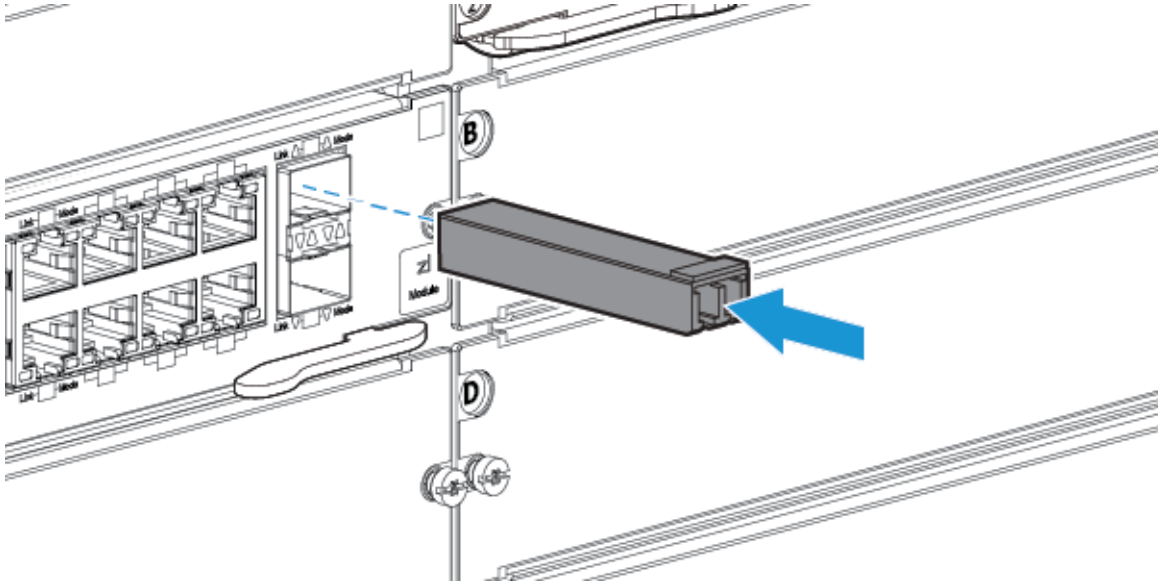


Figure 5. Example: SFP transceiver being installed

Removing the SFP transceivers:

Disconnect the network cable from the transceiver before removing it from the module. Depending on when you purchased your transceiver, it may have either of three different release mechanisms: a plastic tab on the bottom, a wire bail, or a plastic collar.

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

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

Verifying the Module is Installed Correctly

Observe the Module Status LED for the slot in which the module is being installed, and the Test and Fault LEDs on the switch to verify the module is installed properly.

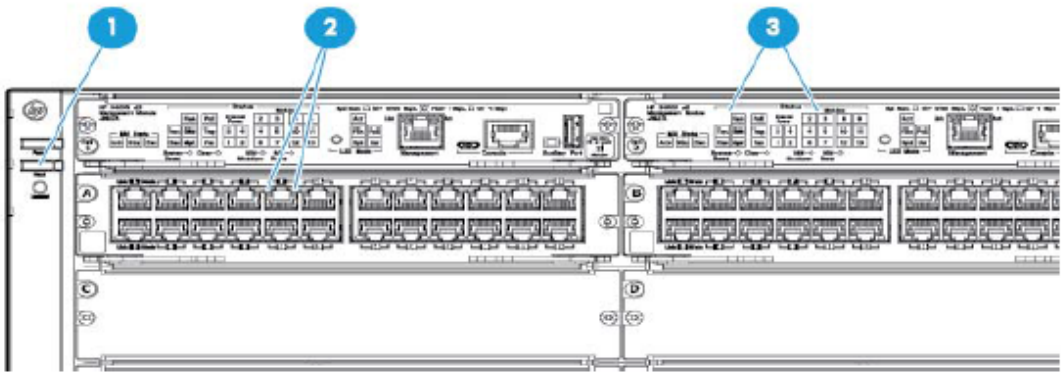


Figure 6. Module Status LEDs on an 5400R zl2 switch

The following table shows the label and description for 5400R zl2 switch with LED status as ON:

Label	Description
1	Fault LED
2	Module Link and Mode LEDs
3	Module Status LEDs

When the module is installed properly and the switch is powered on, or the module is installed when the switch already has power, the module undergoes a self test that takes a few seconds. You can use the LEDs to determine that the module is installed properly and has passed the self test, as described in the “LED Behavior” table below.

Table 1 LED Behavior

LED	Display for a Properly Installed Module
Module Status	(for the slot in which you are installing the module) The LED goes ON as soon as the module is installed and the switch is powered on, and stays ON steadily.
Test	ON briefly while the module is being tested, then OFF. **NOTE:** If the switch was powered off while the module was installed, when the switch is powered on, the Test LED will stay ON for the duration of the whole switch self test.
Fault	OFF
Link and Mode (on the modules)	For a module that is installed when the switch is already powered on (hot swap), all the Link and Mode LEDs on the module go ON for approximately 3 to 10 seconds, then OFF for 5 to 10 seconds depending on the module. Then, the Test LED on the switch goes OFF. If the module is already installed when the switch is powered on or reset, the process described above occurs approximately 30 seconds after the power on or reset, during which the switch is being tested.

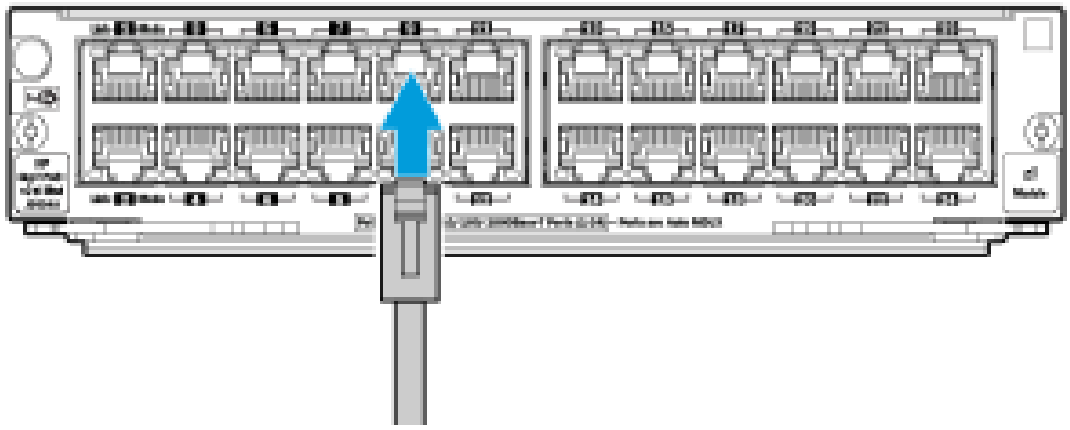
Error Condition

If the Link LED on the module is flashing orange and the Fault LED on the switch is on, then there is a fault condition on the port with the flashing orange LED. The module letter, on the Management Module corresponding to the module with the flashing orange LED will also be flashing simultaneously.

Connecting the Network Cables

Connect the appropriate network cables to the module's ports as shown in the table below. For more information on the cable specifications, see “Cabling and Technology Specifications” in Cabling and Technology Specifications.

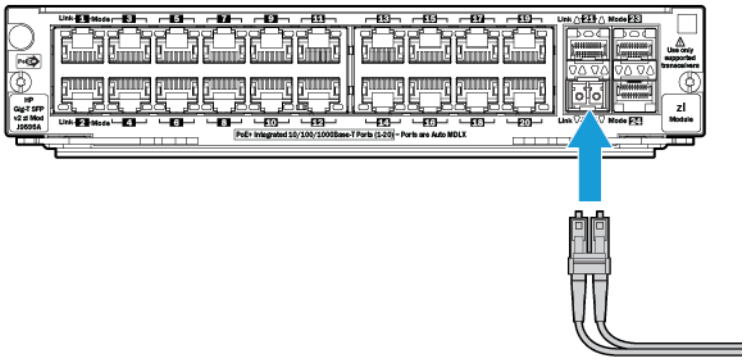
Module
10/100/1000–T PoE zl Module

Module


NOTE:

- *The RJ-45 ports on this module have the Auto-MDIX feature. In the module's default configuration, Auto,* ***either a straight-through or crossover cable can be used*** *to connect the module to any other 100Base-T, or 10Base-TX device. See the Note in* Automatic Cable Sensing on Twisted-Pair Ports
- Since the 10Base-T operation is through the 10/100Base-TX ports, if you ever want to upgrade the ports to 100Base-TX, it would be best to cable the parts initially with category 5 cable.

SFPs on the 10/100/1000-T zl Modules



Automatic Cable Sensing on Twisted-Pair Ports:

When the ports for these v2 zl Modules are in their default configuration, **Auto**, they automatically negotiate whether the ports operate as MDI or MDI-X, depending on the cable type and the connected device's operation. As a result, you can use either straight-through or crossover twisted-pair cable for all network connections to these modules.

Operation of these features depend on the port configurations being kept at **Auto**. If the configuration is changed to one of the available fixed options (for example, 100-Full Duplex), the port operates as an MDI-X port. In that case, to connect the module to another switch or hub, use a crossover cable; to connect to an end node, use a straight-through cable.

Verifying the Network Connections Are Working

Check the port LEDs for the newly-installed module to ensure the port(s) connected in the preceding step are operating correctly. Each port on the switch modules has Link and Mode LEDs near it as shown in the next illustration.

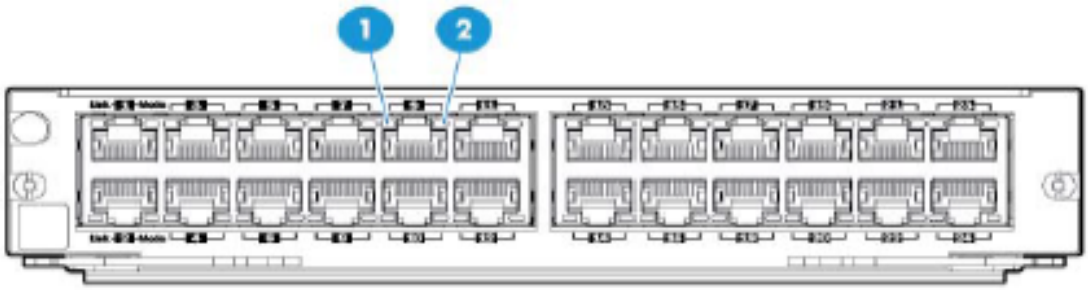


Figure 7. Example: Link and Mode LEDs

The following table lists the label and description of Link and Mode LEDs:

Label	Description
1, 2	Link and Mode LEDs

- The Link LED will be lit for each port that is connected properly to an active network device.

If the Link LED does not go on when an active network cable is connected to the port, there may be something wrong with the cable, the cable connectors, or the device at the other end of the cable. See the troubleshooting information in Troubleshooting.

- If the switch Mode is set to display activity (the Act mode indicator LED is lit), then the Mode LED for each port that is transmitting and/or receiving packets will flicker when traffic is detected on the port.
- If the Mode is set to display full duplex (the FDx mode indicator LED is lit), then the Mode LED will be lit for each port that is operating in full duplex. If the port is in AUTO, the duplex mode LED will be off.
- If the Mode is set to display maximum link speed operation (the Spd mode indicator LED is lit), then the Mode LED will be lit for each port that is operating at its maximum possible link speed:
  - Off = 10 Mbps or 100 Mbps
  - Flashing = 1 Gbps
  - On = >1 Gbps
  - If the port is in AUTO, the spd mode LED will be off.

Default Port Configuration

If the slot in which you installed the module was empty the last time the switch was either rebooted or reset (or the power to the switch was cycled), then the module will use preconfigured default parameter values that will work for most networks.

The default port configurations for connection parameters are:

- **Ports Enabled:** Yes
- **Mode:**
  - **10/100/1000-T v2zl Modules:** Auto — The port auto negotiates speed (10, 100 or 1000 Mbps), communication mode (half or full duplex), and MDI or MDI-X port operation.

NOTE: If you configure the port to one of the fixed 100 Mbps modes, the port will then operate only as an MDI-X port.

Gigabit-SX, Gigabit-LX, and Gigabit-LH ports in SFP v2 zl Module: Auto — The port always operates at 1000 Mbps and full duplex. The setting is Auto for best link establishment with other devices.

- **Flow Control:** Disabled
- **Advanced features** — Spanning Tree, Trunking, Meshing, VLANs, IGMP, LACP, Routing, Class of Service, Security, and so forth: all Disabled

If necessary, configure the port(s) in the module by using the switch console or the web browser interface. For more information, see the *Management and Configuration Guide* for your switch at **www.hpe.com/networking/support**, and the online Help provided in the console and web browser interfaces. If the default port configuration listed above is acceptable for your network, then skip this process.

5 Replacing or Removing a Module

Follow these procedures to replace one module with another, or to remove a module without replacing it:

1. Remove any network cables from the ports on the module.
2. If the module you want to remove has a shutdown button, make sure to shut down the module before removing it either by using the CLI **shutdown** command or by using the shutdown button.
3. On the module you want to remove from the switch, unscrew the retaining screws enough to disconnect them from the threaded holes in the switch.

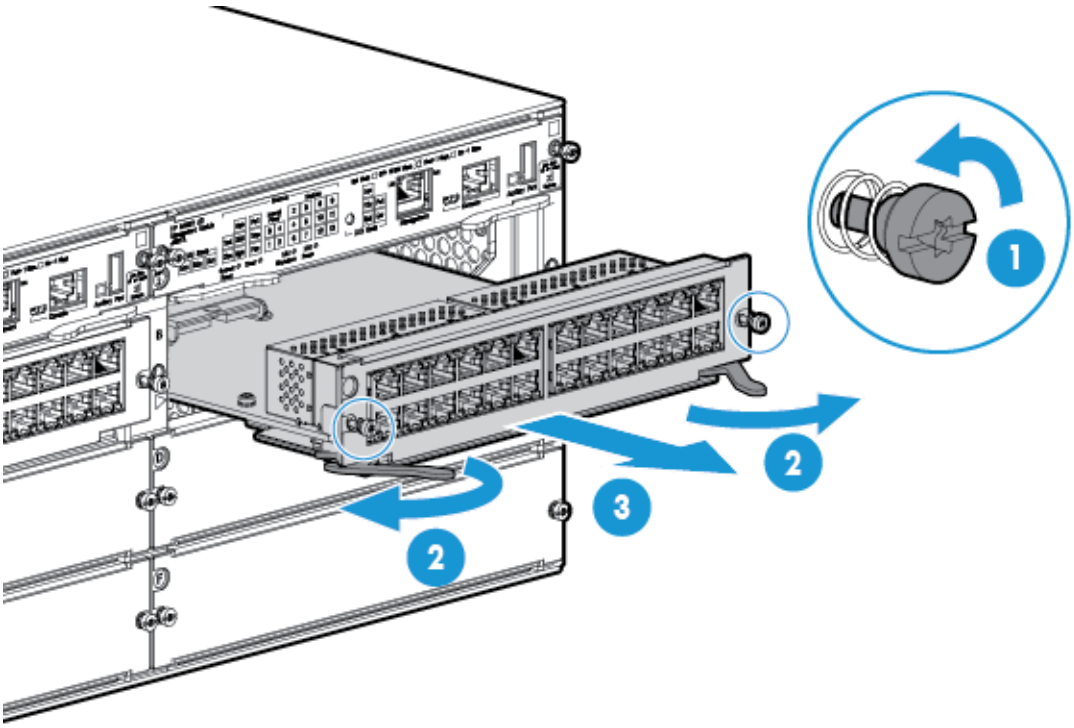


Figure 8. Removing a module

The following table shows label and description on how to remove a module:

Label	Description
1	Unscrew the retaining screws.
2	Open the extractor handles
3	Remove the module

4. Using the extractor handles pull the module out from the slot.
5. Do one of the following:
   - If you will be installing another module in the slot, go to “Installing the Module in an Unused Slot” (page 12) and begin with step 2 before returning here to continue the remaining steps.
   - If you will not install another module in the slot (that is, leave it empty), then re-install a slot cover plate over the empty slot opening.

△ **CAUTION:** For proper cooling and reduction of electromagnetic emissions, ensure a slot cover is installed on any unused slot.

6. Run the command “`no module <slot>`” to switch configuration, if you are exchanging one type of module with a different type of module in the same slot.
7. Issue the “`reload module x`” command, where x is the letter of the slot (A through L). The following warning will be displayed:

⚠ **WARNING!** The `reload module` command will shut down the specified modules and ports on those modules will not send or receive packets while the module is down. Any management traffic for the switch passing through the affected modules will be interrupted, including SSH, TELNET, and SNMP. It may take up to 2 minutes to completely reload the modules. During that time, you can monitor progress by viewing the event log.

Continue (y/n)?

8. Enter ‘y’ to proceed with the swap. It will take a few seconds for the module to become operational.

6 Troubleshooting

One of the primary tools for troubleshooting the switch modules are the LEDs on the front of the switch and on the modules. Refer to “LED Behavior” on LED Behavior for a description of the normal LED behavior. Also, refer to the switch *Installation and Getting Started Guide* for more detailed troubleshooting information for the switch.

7 Customer Support Services

If you are having any trouble with your module or switch, Hewlett-Packard Enterprise offers support 24 hours a day, seven days a week through the use of a number of automated electronic services. For more information, visit **www.hpe.com/networking/support**. Additionally, your HP-authorized network reseller can also provide you with assistance, both with services they offer and with services offered by HPE.

Before Calling Support

Before calling your networking dealer or HPE Support, to make the support process most efficient, retrieve the following information:

Information Item	Information Location
• product identification, including the chassis, modules (for the J9827A module, see the *Installation and Getting Started Guide* that came with the Module), and transceivers	the front of the switch, and on the modules and transceivers
• details about the switch's status including the OS (software) version, a copy of the switch configuration, a copy of the switch Event Log, and a copy of the switch status and counters information	switch console: `show tech` command
• copy of your network topology map, including network addresses assigned to the relevant devices	your network records

8 Specifications

Environmental

Modules Temperature		
Module	**Operating**	**Non-Operating**
J8726A	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
J9051A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9052A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9154A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9534A	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
J9535A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9536A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9537A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9538A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9546A	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
J9547A	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-10°F to 149°F)
J9548A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9549A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9550A	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
J9637A	0°C to 40°C (32°F to 104°F)	-40°C to 70°C (-40°F to 158°F)
J9821A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9822A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9823A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9824A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9825A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9826A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9868A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9827A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9828A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9829A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9830A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9831A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9832A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9850A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9851A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
J9852A	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)

Modules Temperature		
Relative humidity: (non-condensing)	15% to 95% at 40°C (104°F)	15% to 90% at 65°C (149°F)
J9154x only	15% to 90% at 40°C (104°F)	15% to 90% at 65°C (149°F)
Maximum altitude:	3.0 km (10,000 ft)	4.6 km (15,000 ft)

Network Connectivity Speeds and Technologies

Table 2 Optional Network Connectivity, Speeds and Technologies

			Transceiver Form-Factor and Connector[1]		
Speed	**Technology**	**Cabling**	**SFP Connector**	**X2 Connector**	**SFP+ Connector**
100 Mbps	100-FX	Fiber (multimode)	LC		
	100-BX	Fiber (single mode)	LC		
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 CX4	Copper (twinaxial)		Cx4	
	10-Gig Direct Attach	Copper (twinaxial)			Not Applicable
	10-Gig SR	Fiber (multimode)		SC	LC
	10-Gig LRM	Fiber (multimode)		SC	LC
	10-Gig LR	Fiber (single mode)		SC	LC
	10-Gig ER	Fiber (single mode)		SC	LC

[1] For supported transceivers, visit **www.hpe.com/networking/support**

- In the first textbox, type **J4858** (for 100-Mb and Gigabit information), or **J8436** (for 10-Gigabit information).
- Select any of the products that display in the dropdown list.
- Select **Product support information**. Then click on **Manuals** and find the **Transceiver Support Matrix**.

For technical details of cabling and technologies see Cabling and Technology Specifications.

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

Technology Standards and Safety Compliance

Table 3 Technology Standards and Safety Compliance

		Laser safety information				
Technology	**Compatible with these IEEE standards**	**EN/IEC standard compliance**	**SFP Lasers**	**X2 Lasers**	**SFP+Lasers**	**Media Converter Lasers**
10-T	IEEE 802.3 10BASE-T					
100-TX	IEEE 802.3u 100BASE-TX					
1000-T	IEEE 802.3ab 1000BASE-T					
10GBASE-T	IEEE 802.3an 10GBASE-T					
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 CX4	IEEE 802.3ak 10GBASE-CX4					
10-Gig Direct Attach	(not an IEEE standard)					
10-Gig SR	IEEE 802.3ae 10GBASE-SR	EN/IEC 60825		Class 1M Laser Product Laser Klasse 1M	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	Class 1 Laser Product Laser Klasse 1	

Table 3 Technology Standards and Safety Compliance *(continued)*

		Laser safety information				
Technology	**Compatible with these IEEE standards**	**EN/IEC standard compliance**	**SFP Lasers**	**X2 Lasers**	**SFP+Lasers**	**Media Converter Lasers**
10-Gig LR	IEEE 802.3ae 10GBASE-LR	EN/IEC 60825		Class 1 Laser Product Laser Klasse 1	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	Class 1 Laser Product Laser Klasse 1	
CX4 Media Converter	(not an IEEE standard)	EN/IEC 60825				Class 1M Laser Product Laser Klasse 1M

Cabling and Technology Specifications

Table 4 Cabling 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 6 or 6A, 100-ohm 4-pair UTP cable, or Category 6A or 7, 100-ohm 4-pair STP cable, complying with IEEE 802.3an 10GBASE-T specifications. See note on 10GBASE-T Cable Requirements below, and see Table 4 for distances supported with each cable type.
Twinaxial copper	CX4 cables	Twinaxial cables complying with IEEE 802.3ak 10GBASE-CX4 specifications.
	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

Table 4 Cabling Specifications *(continued)*

		and ISO/IEC 793-2 Type A1b or A1a standards respectively. [1]
Single mode fiber		9/125 µm (core/cladding) diameter, low metal content fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards.

[1] A mode conditioning patch cord may be needed for some Gigabit-LX and 10-Gigabit LRM installations.

See Mode Conditioning Patch Cord for more information.

Note on 1000BASE-T Cable Requirements:

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

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

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

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

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

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

Note on 10GBASE-T Cable Requirements:

The Category 6 networking cables that work for 1000BASE-T connections may work for 10GBASE-T, as long as the distance is less than 55m and the cable installation has been tested for compliance to IEEE requirements. But, for the most robust connections, you should use cabling that complies with the Category 6A or Category 7 specifications, as described in the TIA-568-C (ANSI/TIA-568-C.2) and ISO/IEC 11801 standards.

10GBASE-T is a sophisticated technology that relies upon high quality cable installations. It is sensitive to Alien Near End Crosstalk (ANEXT) which can arrive upon the cable due to cables placed in close proximity to the data cables. It is recommended that cable dressing be done carefully and in compliance with recommendations in the TIA TSB-155A.

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

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

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

Technology Distance Specifications

Table 5 Technology Distance Specifications

Technology	Supported cable type	Multimode fiber modal 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
10GBASE-T	twisted-pair copper	N/A	Cat 6 unshielded - up to 55 meters Cat 6 shielded - up to 100 meters[1] 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
1000-LH	single mode fiber	N/A	10 - 70,000 meters[2]
1000-BX	single mode fiber	N/A	0.5 - 10,000 meters
10-Gig CX4	twinaxial copper	N/A	up to 15 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
CX4 Media Converter	12-strand female-female multimode fiber MPO ribbon cable with MTP connectors, in a crossover (key up/key up) configuration	150 MHz*km 500 MHz*km 2000 MHz*km	1 - 50 meters 1 - 100 meters 1 - 300 meters

[1] Cat 6 cabling requires TIA TSB-155A testing for 500 MHz operation and ANEXT.

[2] 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 Gigabit-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 Cabling and Technology Specifications, 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 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.

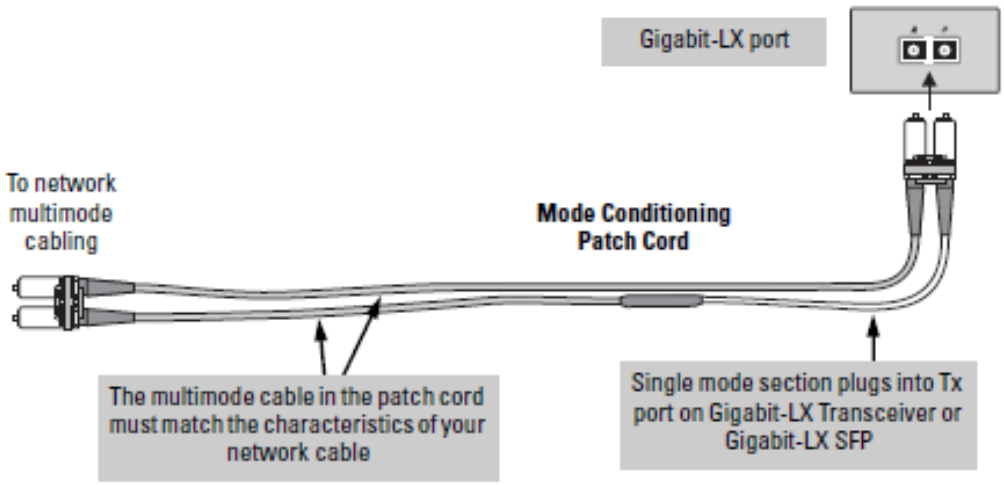


Figure 9. Connecting a Mode Conditioning Patch Cord for Gigabit-LX

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).

9 EMC Regulatory Statements

U.S.A.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area may cause interference in which case the user will be required to correct the interference at his own expense.

Canada

This product complies with Class A Canadian EMC requirements.

Australia/New Zealand

This product complies with Australia/New Zealand EMC Class A requirements.

⚠ **WARNING!** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japan

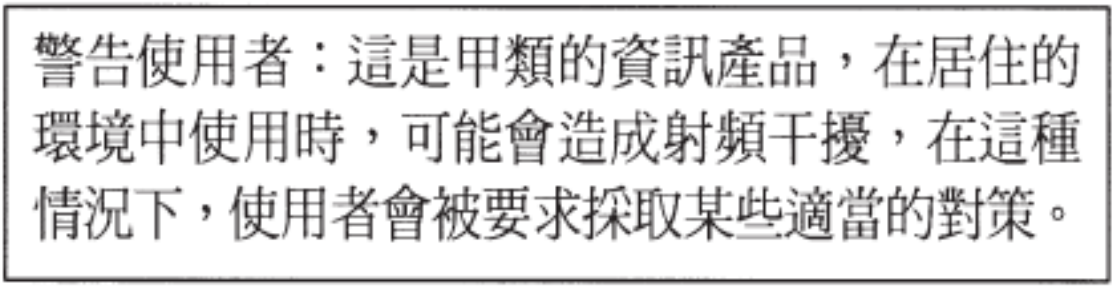
VCCI Class A

この装置は，クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

Korea

A급 기기 (업무용 방송통신기기)	이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Taiwan



European Community Declaration of Conformity

These products are designed for operation with the HPE switches that have zl module slots. Please see the Declarations of Conformity included in the Installation Guides for those products.

NOTE: For Conducted and Radiated Immunity in accordance with EN55024, the HPE 8-port 10GBase-T v2 zl Module (J9546A) is limited to Performance Criteria A with shielded cable (Cat 6/6A).

10 Waste Electrical and Electronic Equipment (WEEE) Statements

Disposal of Waste Equipment by Users in Private Household in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Likvidace zařízení soukromými domácími uživateli v Evropské unii

Tento symbol na produktu nebo balení označuje výrobek, který nesmí být vyhozen spolu s ostatním domácím odpadem. Povinností uživatele je předat takto označený odpad na předem určené sběrné místo pro recyklaci elektrických a elektronických zařízení. Okamžité třídění a recyklace odpadu pomůže uchovat přírodní prostředí a zajistí takový způsob recyklace, který ochrání zdraví a životní prostředí člověka. Další informace o možnostech odevzdání odpadu k recyklaci získáte na příslušném obecním nebo městském úřadě, od firmy zabývající se sběrem a svozem odpadu nebo v obchodě, kde jste produkt zakoupili.

Bortskaffelse af affald fra husstande i den Europæiske Union

Hvis produktet eller dets emballage er forsynet med dette symbol, angiver det, at produktet ikke må bortskaffes med andet almindeligt husholdningsaffald. I stedet er det dit ansvar at bortskaffe kasseret udstyr ved at aflevere det på den kommunale genbrugsstation, der forestår genvinding af kasseret elektrisk og elektronisk udstyr. Den centrale modtagelse og genvinding af kasseret udstyr i forbindelse med bortskaffelsen bidrager til bevarelse af naturlige ressourcer og sikrer, at udstyret genvindes på en måde, der beskytter både mennesker og miljø. Yderligere oplysninger om, hvor du kan aflevere kasseret udstyr til genvinding, kan du få hos kommunen, den lokale genbrugsstation eller i den butik, hvor du købte produktet.

Seadmete jäätmete kõrvaldamine eramajapidamistes Euroopa Liidus

See tootel või selle pakendil olev sümbol näitab, et kõnealust toodet ei tohi koos teiste majapidamisjäätmetega kõrvaldada. Teie kohus on oma seadmete jäätmed kõrvaldada, viies need elektri- ja elektroonikaseadmete jäätmete ringlussevõtmiseks selleks ettenähtud kogumispunkti. Seadmete jäätmete eraldi kogumine ja ringlussevõtmine kõrvaldamise ajal aitab kaitsta loodusvarasid ning tagada, et ringlussevõtmine toimub viisil, mis kaitseb inimeste tervist ning keskkonda. Lisateabe saamiseks selle kohta, kuhu oma seadmete jäätmed ringlussevõtmiseks viia, võtke palun ühendust oma kohaliku linnakantselei, majapidamisjäätmete kõrvaldamise teenistuse või kauplusega, kust Te toote ostsite.

Laitteiden hävittäminen kotitalouksissa Euroopan unionin alueella

Jos tuotteessa tai sen pakkauksessa on tämä merkki, tuotetta ei saa hävittää kotitalousjätteiden mukana. Tällöin hävitettävä laite on toimitettava sähkölaitteiden ja elektronisten laitteiden kierrätyspisteeseen. Hävitettävien laitteiden erillinen käsittely ja kierrätys auttavat säästämään luonnonvaroja ja varmistamaan, että laite kierrätetään tavalla, joka estää terveyshaitat ja suojelee luontoa. Lisätietoja paikoista, joihin hävitettävät laitteet voi toimittaa kierrätettäväksi, saa ottamalla yhteyttä jätehuoltoon tai liikkeeseen, josta tuote on ostettu.

Élimination des appareils mis au rebut par les ménages dans l'Union européenne

Le symbole apposé sur ce produit ou sur son emballage indique que ce produit ne doit pas être jeté avec les déchets ménagers ordinaires. Il est de votre responsabilité de mettre au rebut vos appareils en les déposant dans les centres de collecte publique désignés pour le recyclage des équipements électriques et électroniques. La collecte et le recyclage de vos appareils mis au rebut indépendamment du reste des déchets contribue à la préservation des ressources naturelles et garantit que ces appareils seront recyclés dans le respect de la santé humaine et de l'environnement. Pour obtenir plus d'informations sur les centres de collecte et de recyclage des appareils mis au rebut, veuillez contacter les autorités locales de votre région, les services de collecte des ordures ménagères ou le magasin dans lequel vous avez acheté ce produit.

Entsorgung von Altgeräten aus privaten Haushalten in der EU

Das Symbol auf dem Produkt oder seiner Verpackung weist darauf hin, dass das Produkt nicht über den normalen Hausmüll entsorgt werden darf. Benutzer sind verpflichtet, die Altgeräte an einer Rücknahmestelle für Elektro- und Elektronik-Altgeräte abzugeben. Die getrennte Sammlung und ordnungsgemäße Entsorgung Ihrer Altgeräte trägt zur Erhaltung der natürlichen Ressourcen bei und garantiert eine Wiederverwertung, die die Gesundheit des Menschen und die Umwelt schützt. Informationen dazu, wo Sie Rücknahmestellen für Ihre Altgeräte finden, erhalten Sie bei Ihrer Stadtverwaltung, den örtlichen Müllentsorgungsbetrieben oder im Geschäft, in dem Sie das Gerät erworben haben

Απόρριψη άχρηστου εξοπλισμού από χρήστες σε ιδιωτικά νοικοκυριά στην Ευρωπαϊκή Ένωση

Το σύμβολο αυτό στο προϊόν ή τη συσκευασία του υποδεικνύει ότι το συγκεκριμένο προϊόν δεν πρέπει να διατίθεται μαζί με τα άλλα οικιακά σας απορρίμματα. Αντίθετα, είναι δική σας ευθύνη να απορρίψετε τον άχρηστο εξοπλισμό σας παραδίδοντάς τον σε καθορισμένο σημείο συλλογής για την ανακύκλωση άχρηστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού. Η ξεχωριστή συλλογή και ανακύκλωση του άχρηστου εξοπλισμού σας κατά την απόρριψη θα συμβάλει στη διατήρηση των φυσικών πόρων και θα διασφαλίσει ότι η ανακύκλωση γίνεται με τρόπο που προστατεύει την ανθρώπινη υγεία και το περιβάλλον. Για περισσότερες πληροφορίες σχετικά με το πού μπορείτε να παραδώσετε τον άχρηστο εξοπλισμό σας για ανακύκλωση, επικοινωνήστε με το αρμόδιο τοπικό γραφείο, την τοπική υπηρεσία διάθεσης οικιακών απορριμμάτων ή το κατάστημα όπου αγοράσατε το προϊόν.

Készülékek magánháztartásban történő selejtezése az Európai Unió területén

A készüléken, illetve a készülék csomagolásán látható azonos szimbólum annak jelzésére szolgál, hogy a készülék a selejtezés során az egyéb háztartási hulladéktól eltérő módon kezelendő. A vásárló a hulladékká vált készüléket köteles a kijelölt gyűjtőhelyre szállítani az elektromos és elektronikai készülékek újrahasznosítása céljából. A hulladékká vált készülékek selejtezéskori begyűjtése és újrahasznosítása hozzájárul a természeti erőforrások megőrzéséhez, valamint biztosítja a selejtezett termékek környezetre és emberi egészségre nézve biztonságos feldolgozását. A begyűjtés pontos helyéről bővebb tájékoztatást a lakhelye szerint illetékes önkormányzattól, az illetékes szemeteltakarító vállalattól, illetve a terméket elárusító helyen kaphat.

Smaltimento delle apparecchiature da parte di privati nel territorio dell'Unione Europea

Questo simbolo presente sul prodotto o sulla sua confezione indica che il prodotto non può essere smaltito insieme ai rifiuti domestici. È responsabilità dell'utente smaltire le apparecchiature consegnandole presso un punto di raccolta designato al riciclo e allo smaltimento di apparecchiature elettriche ed elettroniche. La raccolta differenziata e il corretto riciclo delle apparecchiature da smaltire permette di proteggere la salute degli individui e l'ecosistema. Per ulteriori informazioni relative ai punti di raccolta delle apparecchiature, contattare l'ente locale per lo smaltimento dei rifiuti, oppure il negozio presso il quale è stato acquistato il prodotto.

Nolietotu iekārtu iznīcināšanas noteikumi lietotājiem Eiropas Savienības privātajās mājsaimniecībās

Šāds simbols uz izstrādājuma vai uz tā iesaiņojuma norāda, ka šo izstrādājumu nedrīkst izmest kopā ar citiem sadzīves atkritumiem. Jūs atbildat par to, lai nolietotās iekārtas tiktu nodotas speciāli iekārtotos punktos, kas paredzēti izmantoto elektrisko un elektronisko iekārtu savākšanai otrreizējai pārstrādei. Atsevišķa nolietoto iekārtu savākšana un otrreizējā pārstrāde palīdzēs saglabāt dabas resursus un garantēs, ka šīs iekārtas tiks otrreizēji pārstrādātas tādā veidā, lai pasargātu vidi un cilvēku veselību. Lai uzzinātu, kur nolietotās iekārtas var izmest otrreizējai pārstrādei, jāvēršas savas dzīves vietas pašvaldībā, sadzīves atkritumu savākšanas dienestā vai veikalā, kurā izstrādājums tika nopirkts.

Vartotojų iš privačių namų ūkių įrangos atliekų šalinimas Europos Sąjungoje

Šis simbolis ant gaminio arba jo pakuotės rodo, kad šio gaminio šalinti kartu su kitomis namų ūkio atliekomis negalima. Šalintinas įrangos atliekas privalote pristatyti į specialią surinkimo vietą elektros ir elektroninės įrangos atliekoms perdirbti. Atskirai surenkamos ir perdirbamos šalintinos įrangos atliekos padės saugoti gamtinius išteklius ir užtikrinti, kad jos bus perdirbtos tokiu būdu, kuris nekenkia žmonių sveikatai ir aplinkai. Jeigu norite sužinoti daugiau apie tai, kur galima pristatyti perdirbtinas įrangos atliekas, kreipkitės į savo seniūniją, namų ūkio atliekų šalinimo tarnybą arba parduotuvę, kurioje įsigijote gaminį.

Verwijdering van afgedankte apparatuur door privé-gebruikers in de Europese Unie

Dit symbool op het product of de verpakking geeft aan dat dit product niet mag worden gedeponeerd bij het normale huishoudelijke afval. U bent zelf verantwoordelijk voor het inleveren van uw afgedankte apparatuur bij een inzamelingspunt voor het recyclen van oude elektrische en elektronische apparatuur. Door uw oude apparatuur apart aan te bieden en te recyclen, kunnen natuurlijke bronnen worden behouden en kan het materiaal worden hergebruikt op een manier waarmee de volksgezondheid en het milieu worden beschermd. Neem contact op met uw gemeente, het afvalinzamelingsbedrijf of de winkel waar u het product hebt gekocht voor meer informatie over inzamelingspunten waar u oude apparatuur kunt aanbieden voor recycling.

Pozbywanie się zużytego sprzętu przez użytkowników w prywatnych gospodarstwach domowych w Unii Europejskiej

Ten symbol na produkcie lub jego opakowaniu oznacza, że produktu nie wolno wyrzucać do zwykłych pojemników na śmieci. Obowiązkiem użytkownika jest przekazanie zużytego sprzętu do wyznaczonego punktu zbiórki w celu recyklingu odpadów powstałych ze sprzętu elektrycznego i elektronicznego. Osobna zbiórka oraz recykling zużytego sprzętu pomogą w ochronie zasobów naturalnych i zapewnią ponowne wprowadzenie go do obiegu w sposób chroniący zdrowie człowieka i środowisko. Aby uzyskać więcej informacji o tym, gdzie można przekazać zużyty sprzęt do recyklingu, należy się skontaktować z urzędem miasta, zakładem gospodarki odpadami lub sklepem, w którym zakupiono produkt.

Descarte de Lixo Elétrico na Comunidade Européia

Este símbolo encontrado no produto ou na embalagem indica que o produto não deve ser descartado no lixo doméstico comum. É responsabilidade do cliente descartar o material usado (lixo elétrico), encaminhando-o para um ponto de coleta para reciclagem. A coleta e a reciclagem seletivas desse tipo de lixo ajudarão a conservar as reservas naturais; sendo assim, a reciclagem será feita de uma forma segura, protegendo o ambiente e a saúde das pessoas. Para obter mais informações sobre locais que reciclam esse tipo de material, entre em contato com o escritório da HPE em sua cidade, com o serviço de coleta de lixo ou com a loja em que o produto foi adquirido.

Likvidácia vyradených zariadení v domácnostiach v Európskej únii

Symbol na výrobku alebo jeho balení označuje, že daný výrobok sa nesmie likvidovať s domovým odpadom. Povinnosťou spotrebiteľa je odovzdať vyradené zariadenie v zbernom mieste, ktoré je určené na recykláciu vyradených elektrických a elektronických zariadení. Separovaný zber a recyklácia vyradených zariadení prispieva k ochrane prírodných zdrojov a zabezpečuje, že recyklácia sa vykonáva spôsobom chrániacim ľudské zdravie a životné prostredie. Informácie o zberných miestach na recykláciu vyradených zariadení vám poskytne miestne zastupiteľstvo, spoločnosť zabezpečujúca odvoz domového odpadu alebo obchod, v ktorom ste si výrobok zakúpili.

Odstranjevanje odslužene opreme uporabnikov v zasebnih gospodinjstvih v Evropski uniji

Ta znak na izdelku ali njegovi embalaži pomeni, da izdelka ne smete odvreči med gospodinjske odpadke. Nasprotno, odsluženo opremo morate predati na zbirališče, pooblaščeno za recikliranje odslužene električne in elektronske opreme. Ločeno zbiranje in recikliranje odslužene opreme prispeva k ohranjanju naravnih virov in zagotavlja recikliranje te opreme na zdravju in okolju neškodljiv način. Za podrobnejše informacije o tem, kam lahko odpeljete odsluženo opremo na recikliranje, se obrnite na pristojni organ, komunalno službo ali trgovino, kjer ste izdelek kupili.

Eliminación de residuos de equipos eléctricos y electrónicos por parte de usuarios particulares en la Unión Europea

Este símbolo en el producto o en su envase indica que no debe eliminarse junto con los desperdicios generales de la casa. Es responsabilidad del usuario eliminar los residuos de este tipo depositándolos en un "punto limpio" para el reciclado de residuos eléctricos y electrónicos. La recogida y el reciclado selectivos de los residuos de aparatos eléctricos en el momento de su eliminación contribuirá a conservar los recursos naturales y a garantizar el reciclado de estos residuos de forma que se proteja el medio ambiente y la salud. Para obtener más información sobre los puntos de recogida de residuos eléctricos y electrónicos para reciclado, póngase en contacto con su ayuntamiento, con el servicio de eliminación de residuos domésticos o con el establecimiento en el que adquirió el producto.

Bortskaffande av avfallsprodukter från användare i privathushåll inom Europeiska Unionen
Om den här symbolen visas på produkten eller förpackningen betyder det att produkten inte får slängas på samma ställe som hushållssopor. I stället är det ditt ansvar att bortskaffa avfallet genom att överlämna det till ett uppsamlingsställe avsett för återvinning av avfall från elektriska och elektroniska produkter. Separat insamling och återvinning av avfallet hjälper till att spara på våra naturresurser och gör att avfallet återvinns på ett sätt som skyddar människors hälsa och miljön. Kontakta ditt lokala kommunkontor, din närmsta återvinningsstation för hushållsavfall eller affären där du köpte produkten för att få mer information om var du kan lämna ditt avfall för återvinning.

Изхвърляне на отпадъчно оборудване от потребители в частни домакинства в Европейския съюз
Този символ върху продукта или опаковката му показва, че продуктът не трябва да се изхвърля заедно с другите битови отпадъци. Вместо това, трябва да предпазите човешкото здраве и околната среда, като предадете отпадъчното оборудване в предназначен за събирането му пункт за рециклиране на неизползваемо електрическо и електронно борудване. За допълнителна информация се свържете с фирмата по чистота, чиито услуги използвате.

11 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.

Websites

Website	Link
Hewlett Packard Enterprise Information Library	**www.hpe.com/info/enterprise/docs**
Hewlett Packard Enterprise Support Center	**www.hpe.com/support/hpesc**

Website	Link
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.

A Warranty and regulatory information

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

Warranty information

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

Regulatory information

Belarus Kazakhstan Russia marking

Manufacturer and Local Representative Information

Manufacturer information:

- Hewlett Packard Enterprise Company, 3000 Hanover Street, Palo Alto, CA 94304 U.S.

Local representative information Russian:

- **Russia**:

  ООО «Хьюлетт Паккард Энтерпрайз», Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон/факс: +7 495 797 35 00

- **Belarus**:

  ИООО «Хьюлетт-Паккард Бел», Республика Беларусь, 220030, г. Минск, ул. Интернациональная, 36-1, Телефон/факс: +375 17 392 28 20

- **Kazakhstan**:

  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 52

Local representative information Kazakh:

- **Russia**:

  ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171,
  Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон/факс: +7 495 797 35 00

- **Belarus**:

  «HEWLETT-PACKARD Bel» ЖШС, Беларусь Республикасы, 220030, Минск қ.,
  Интернациональная көшесі, 36/1, Телефон/факс: +375 17 392 28 20

- **Kazakhstan**:

  ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к.,
  Бостандық ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 52

Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (serial number format for this product)

Valid date formats include:

- YWW, where Y indicates the year counting from within each new decade, with 2000 as the starting point; for example, 238: 2 for 2002 and 38 for the week of September 9. In addition, 2010 is indicated by 0, 2011 by 1, 2012 by 2, 2013 by 3, and so forth.
- YYWW, where YY indicates the year, using a base year of 2000; for example, 0238: 02 for 2002 and 38 for the week of September 9.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

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