ProCurve Networking

HP Innovation

Installation and Getting Started Guide

ProCurve Series 6400cl Switches

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ProCurve Series 6400cl Switch

Installation and Getting Started Guide

Applicable Products

ProCurve Switch 10-GbE CX4 6400cl-6XG (J8433A)
ProCurve Switch 10-GbE X2 6410cl-6XG (J8474A)
ProCurve 600 Redundant and External
Power Supply (J8168A)
ProCurve 10-GbE X2-SC SR Optic (J8436A)
ProCurve 10-GbE X2-SC LR Optic (J8437A)
ProCurve 10-GbE X2-SC ER Optic (J8438A)
ProCurve 10-GbE CX4 Media Converter (J8439A)
ProCurve 10-GbE X2 CX4 Transceiver (J8440A)
ProCurve 10-GbE Copper Module (J8434A)
ProCurve 10-GbE Media Flex Module (J8435A)

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Disclaimer

Warranty

See the Customer Support/Warranty booklet included with the product.

A copy of the specific warranty terms applicable to your Hewlett-Packard products and replacement parts can be obtained from your HP Sales and Service Office or authorized dealer.

Safety

Before installing and operating these products, please read the "Installation Precautions" in chapter 2, "Installing the Switch", and the safety statements in appendix B, "Safety and EMC Regulatory Statements".

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Introducing the Switch

The ProCurve Series 6400cl Switch are multiport switches that can be used to build high-performance switched workgroup networks. These switches are store-and-forward devices offering low latency for high-speed networking.

ProCurve Switch 10-Gig CX4 6400cl-6XG (J8433A)

ProCurve Switch 10-Gig 6410cl-6XG (J8474A)

Throughout this manual, this switch will be abbreviated as the Switch 6400cl-6XG or Switch 6410cl-6XG and collectively as the Series 6400cl Switch devices.

The Switch 6400cl-6XG and Switch 6410cl-6XG have respectively, six fixed copper or six flexible media X2 transceiver slots, and one slot is provided in the back of the device to support a two port 10-Gigabit per second Ethernet (10-GbE) module to provide box connectivity to other switch boxes, to a 10-GbE concentrator or to any Ethernet compatible uplink.

The Series 6400cl Switch devices can be connected to a ProCurve 600 Redundant and External Power supply (RPS/EPS (J8168A)) and receive full redundant power if the internal power supply in the switch fails. The RPS/EPS unit will immediately provide all the power necessary to keep the switch running.

These switches are designed to be used primarily in a high-density wiring closet or in a data center. These switches can directly connect computers and servers to provide dedicated bandwidth to those devices, and can build a switched network infrastructure by connecting the switch to other switches and routers that support 10-GbE. In addition, the Series 6400cl Switch devices offer full network management capabilities.

This chapter describes the Series 6400cl Switch devices, including:

■ Front and back of the switches
■ Switch features

Front of the Switch

Power and Fault LEDs

Test, Fan, RPS, and Module Status LEDs

Auxiliary port LED

ProCurve Switch 10-Gig 6400cl-6XG (J8433A)

Network ports

Reset and Clear buttons

Console port

Auxiliary port

Switch port LEDs

Power and Fault LEDs

Test, Fan, RPS, and Module Status LEDs

Auxiliary port LED

ProCurve Switch 10-Gig 6410cl-6XG (J8474A)

Media Flex X2 transceiver slots

Reset and Clear buttons

Console port

Auxiliary port

Switch port LEDs

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Console Port

This port is used to connect a console to the switch by using the serial cable supplied with the switch. This connection is described under "Connect a Console to the Switch" in chapter 2, "Installing the Switch." The console can be a PC or workstation running a VT-100 terminal emulator, or a VT-100 terminal. The console port is located on the front of both 6400cl devices.

Network Ports

■ Six fixed copper ports or six flexible media X2 transceiver 10-GbE slots.

■ One, 10-GbE expansion slot. These switches provide a single slot in the back of the device that can accept a 2 by 10-GbE transceiver module. There are two types of modules:

   • 10-GbE Copper cl Module (J8434A) - provides two CX4 fixed copper ports

   • 10-GbE Media-Flex cl Module (J8435A) - provides two flexible media slots

For more information see the *ProCurve Switch cl Modules Installation Guide*.

Reset Button

This button is used to reset the switch while it is powered on. This action clears any temporary error conditions that may have occurred and executes the switch self test.

Clear Button

This button is used for these purposes:

■ **Deleting Passwords** - When pressed by itself for at least one second, the button deletes any switch console access passwords that you may have configured. Use this feature if you have misplaced the password and need console access.

This button is provided for your convenience, but its presence means that if you are concerned with the security of the switch configuration and operation, you should make sure the switch is installed in a secure location, such as a locked wiring closet.

The Clear button can also be disabled using a CLI command, see your "Access Security Guide, the Configuring Font-Panel Security section," which is on the Documentation CD-ROM that came with your switch.

■ **Restoring Factory Default Configuration** - When pressed with the Reset button in a specific pattern, any configuration changes you may have made through the switch console, the web browser interface, and SNMP management are removed, and the factory default configuration is restored to the switch. For the specific method to restore the factory default configuration, see "Restoring the Factory Default Configuration" on page 9, in chapter 4, "Troubleshooting" of this manual.

LEDs

Table 1-1.   Switch LEDs

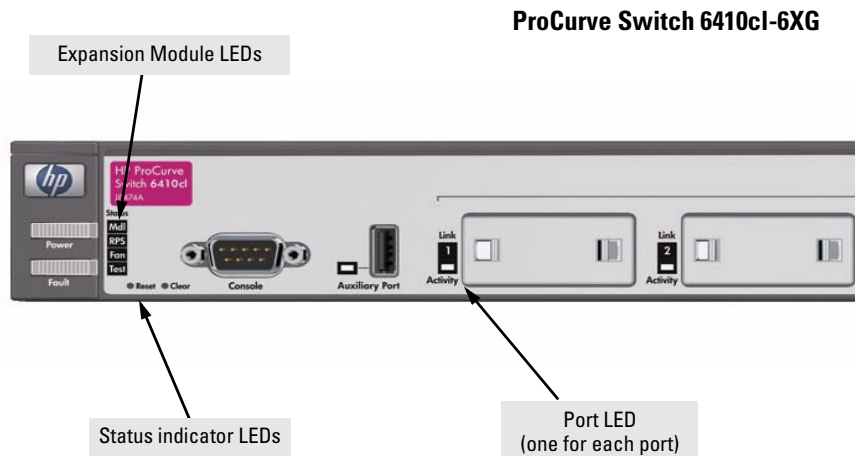| Switch LEDs	State	Meaning
Power (green)	On Off	The switch is receiving power. The switch is NOT receiving power.
Fault (orange)	Off	The normal state; indicates there are no fault conditions on the switch.
	Blinking*	A fault has occurred on the switch, one of the switch ports, or the fan. The Status LED for the component with the fault will blink simultaneously.
	On	On briefly after the switch is powered on or reset, at the beginning of switch self test. If this LED is on for a prolonged time, the switch has encountered a fatal hardware failure, or has failed its self test. See chapter 4, "Troubleshooting" for more information.
Port LEDs (green – over-laid with the port number)	Displays port link information and network activity information.	
(2 green LEDs)	Link	Indicates the port LEDs are displaying link information: • if the port LED is on, the port is enabled and receiving a link indication from the connected device. • if the port LED is off, the port has no active network cable connected, or is not receiving link beat or sufficient light. Otherwise, the port may have been disabled through the switch console, the web browser interface, or ProCurve Manager. • if the port LED is blinking* simultaneously with the Fault LED, the corresponding port has failed its self test.
	Activity	Indicates the port LEDs are displaying network activity information.
Mdl (Module Status, green)	On	Expansion module is plugged into expansion slot and operating correctly
	Blinking	Expansion module is plugged into expansion slot but has experienced a fault
	Off	Expansion module is not plugged into expansion slot

Introducing the Switch

Switch LEDs	State	Meaning
RPS Status (green)	On	Normal operation. RPS is connected and operating correctly. RPS could be powering the unit - see table below.
	Blinking	RPS is connected but has experienced a fault.
	Off	RPS is not connected or is not powered.
Fan Status (green)	On	Normal operation, all fans are ok.
	Blinking*	One of the unit's fans has failed. The switch Fault LED will be blinking simultaneously.
Test (green)	Off	The normal operational state; the switch is not undergoing self test.
	On	The switch self test and initialization are in progress after the switch has been power cycled or reset. The switch is not operational until this LED goes off. The Self Test LED also comes on briefly when you "hot swap" a mini-GBIC into the switch; the mini-GBIC is self tested when it is hot swapped.
	Blinking*	A component of the switch has failed its self test and the switch Fault LED will blink simultaneously.
Auxiliary (green)	On	Port is in use
	Off	Port is not in use
* The blinking behavior is an on/off cycle once every 1.6 seconds, approximately.		

Table 1-2.   RPS LED Behavior

RPS modes	This table describes the behavior of the RPS LED associated with 600 RPS/EPS operation. (Power, RPS/EPS, Fault)		
Power LED	**RPS LED**	**Fault LED**	**Description**
On	Off	Off	Normal operation. 600 RPS/EPS is not connected or not powered.
On	On	Off	Normal operation. 600 RPS/EPS is available.
On	On/Off	Blinking	Unit has experienced a fault and another LED will be blinking to determine fault.
Off	On	Blinking	600 RPS/EPS is running the switch in failover mode. No AC power to the unit, or the internal power supply has failed.
Off	Off	Off	Unit is un-powered by AC input line and the external 600 RPS/EPS
On	Blinking	Blinking	The 600 RPS/EPS unit has experienced a fault.
On	Blinking	Off	The 600 RPS/EPS unit is unavailable to power the Switch in event of an internal power supply failure. The 600 RPS/EPS is designed to provide power to one of its connected switch devices at a time. The Power Status LED on the 600 RPS/EPS unit will also be blinking for this device.

Location of Status Indicator LEDs

ProCurve Switch 6400cl-6XG

Expansion Module LED

Status indicator LEDs

Port LED
(one for each port)

ProCurve Switch 6410cl-6XG

Expansion Module LEDs

Status indicator LEDs

Port LED
(one for each port)
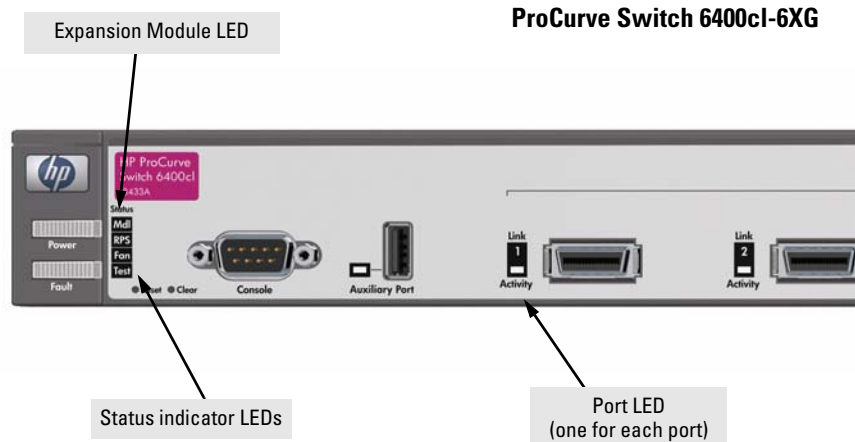
■ If the Link indicator LED is lit, each port LED displays link information for the associated port

■ If the Activity indicator LED is lit, each port LED displays activity information for the associated port—it flickers as network traffic is received and transmitted through the port.

Expansion cl Module LEDs

Expansion cl Module LEDs refer to the LEDs specific to the expansion module. These LEDs are located on the physical expansion module bulkhead. These LEDs are only viewable in the rear of the Switch on the Expansion Module itself.

Table 1-3.   Expansion cl Module LEDs

Name	Color	Mode	Description
Expansion Module LEDs per module			
Module Power (ports A & B)	Green	On	Expansion cl module is plugged into expansion slot and operating correctly
		Off	Expansion cl module's power has been turned OFF, and the card can be removed from the box if necessary.
Module Fault (ports A & B)	Orange	On	Expansion cl module is plugged into expansion slot but has experienced a fault
Expansion Module LEDs per port			
Link	Green	On	Indicates the port LEDs are displaying link information:
			• if the port LED is on, the port is enabled and receiving a link indication from the connected device.
		Off	• if the port LED is off, the port has no active network cable connected, or is not receiving link beat or sufficient light. Otherwise, the port may have been disabled through the switch console, the web browser interface, or ProCurve Manager.
		Blinking	• if the port LED is blinking* simultaneously with the Fault LED, the corresponding port has failed its self test.
Activity	Green	On	Indicates the port LEDs are displaying network activity information.

C a u t i o n   It is recommended the power to the switch be removed before inserting or extracting the expansion module. If the expansion module is inserted or removed with the switch powered on, a reset will occur. Only install or remove these modules during scheduled downtime.

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Back of the Switch

The back of both 6400cl Series switches look the same.

Cooling vents - make sure this is not
obstructed for proper switch operation

ProCurve Series 6400cl Switch

Optional cl module slot

RPS Input Port

AC power connector
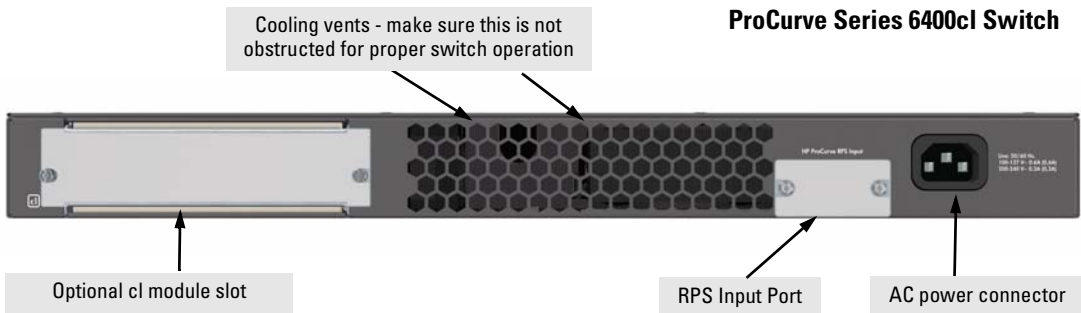
cl Module Slot

This switch supports one of two types of cl modules:

- 10-GbE Copper cl Module (J8434A) - provides two CX4 fixed copper ports
- 10-GbE Media-Flex cl Module (J8435A) - provides two flexible media slots
  that support a number of different transceivers. See the *ProCurve Switch
  cl Modules Installation Guide* for more information on supported
  transceivers.

RPS Input Port

The Series 6400cl Switch supports connectivity to a redundant power supply.
The "ProCurve 600 Redundant and External Power Supply (RPS/EPS)
(J8168A) is an accessory product for the Series 6400cl Switch devices. The
RPS/EPS provides redundant power to any one of up to six switch products,
to back up the power supply in the switch in case of loss of AC power. See
Step 8 of the installation instructions page 2-15 for more information.

Power Connector

The Series 6400cl Switch devices do not have a power switch; they are
powered on when connected to an active AC power source. These switches
automatically adjust to any voltage between 100--240 volts and either 50 or 60
Hz. There are no voltage range settings required.

Switch Features

The features of the Series 6400cl Switch devices include:

- The Switch 6400cl-6XG and Switch 6410cl-6XG have respectively, six fixed copper or six flexible media X2 transceiver slots, to support 10-GbE connectivity to other switch boxes, to a 10-GbE concentrator or to any Ethernet compatible uplink.

- One slot (optional cl module slot) is provided in the back of the device to support a series of transceivers to provide box connectivity to other switch boxes, to a 10-GbE concentrator or to any Ethernet compatible uplink.

- One auxiliary port is provided.

- The Series 6400cl Switch devices can be connected to a ProCurve RPS/EPS (J8168A) and receive full redundant power if the internal power supply in the switch fails. The RPS/EPS unit will immediately provide all the power necessary to keep the switch running.

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

- Easy management of the switch through several available interfaces:

  - **console interface**—a full featured, easy to use, VT-100 terminal interface that is especially good for out-of-band switch management or for Telnet access to the switch.

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

  - **ProCurve Manager**—an SNMP-based, graphical network management tool that you can use to manage your entire network. This product is included with your new switch.

- Support for the Spanning Tree Protocol to eliminate network loops.

- Support for IEEE 802.1Q-compatible VLANs so you can divide the attached end nodes into logical groupings that fit your business needs.

- Support for many advanced features to enhance network performance— for a description, see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that is included with your switch.

- Download of new switch software for product enhancements or bug fixes.

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Installing the Switch

The ProCurve Series 6400cl Switch devices come with an accessory kit that includes the brackets for mounting the switch in a standard 19-inch telco rack, in an equipment cabinet, and with rubber feet that can be attached so the switch can be securely located on a horizontal surface. The brackets are designed to allow mounting the switch in a variety of locations and orientations. This chapter shows how to install the switch.

Included Parts

The Series 6400cl Switch devices have the following components shipped with them:

■ *ProCurve Series 6400cl Switch Installation and Getting Started Guide*, this manual

■ *ProCurve Product Documentation CD ROM*
(contains PDF file copies of the documentation for the Series 6400cl Switch devices, including the *Management and Configuration Guide*, and for most other ProCurve switches)

■ *ProCurve Manager* - CD ROM and booklet

■ *Read Me First*

■ Customer Support/Warranty booklet

■ Console cable

■ Accessory kit (5069-5705)

   • two mounting brackets

   • eight 8-mm M4 screws to attach the mounting brackets to the switch

   • four 5/8-inch number 12-24 screws to attach the switch to a rack

   • four rubber feet

■   Power cord, one of the following:

Australia/New Zealand	8120-6803
China	8120-8377
Continental Europe	8120-6802
Denmark	8120-6806
Japan	8120-6804
Switzerland	8120-6807
United Kingdom/Hong Kong/Singapore	8120-8709
United States/Canada/Mexico	8120-6805

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。

Please use the power cord supplied with your product. This power cord is not to be used with other products.

Installation Procedures

Summary

1. **Prepare the installation site (**page 2-5**).** Ensure the physical environ-
    ment 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 2-4 for some installation precautions.

2. **Install a cl module (optional—**page 2-7**).**

3. **Install a transceiver (optional—**page 2-8**).** If you have installed a media
    flex cl module, you can now install one or two transceivers.

4. **Verify the switch passes self test (**page 2-9**).** Plug the switch into a
    power source and observe that the LEDs on the switch's front panel
    indicate correct switch operation. When self test is complete, unplug the
    switch.

5. **Mount the switch (**page 2-11**).** The Switch can be mounted in a 19-inch
    telco rack, in an equipment cabinet, or on a horizontal surface.

6. **Connect power to the switch (**page 2-13**).** Once the switch is mounted,
    plug it into the nearby main power source.

7. **Connect the network cables (**page 2-14**).** Using the appropriate
    network cables, connect the network devices to the switch ports.

8. **Connect a Redundant Power Supply (RPS), (optional—**page 2-15**).**
    You may wish to use the RPS option with your Switch. Connect the RPS
    using the cables supplied with the RPS, to the back of the switch.

9. **Connect a console to the switch (optional—**page 2-18**).** You may wish
    to modify the switch's configuration, for example, to configure an IP
    address so it can be managed using a web browser, from an SNMP network
    management station, or through a Telnet session. Configuration changes
    can be made easily by using the included console cable to connect a PC
    to the switch's console port.

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

Installing the Switch

Installation Precautions:

Follow these precautions when installing the Series 6400cl Switch devices.

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.**

- **For safe operation, do not install the switch with the back face of the switch (with the fan vents) facing either downward or upward.**

- **Left side vents cannot be placed downward. (That is, the left side of the unit while facing the front.)**

- **For safe operation, use only screws provided with your rack mount kit to secure mounting brackets to the switch. Use of longer or improper screws may damage internal components**

C a u t i o n s

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

- If your installation requires a different power cord than the one supplied with the switch, 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.

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

- Ensure the switch does not overload the power circuits, wiring, and over-current protection. To determine the possibility of overloading the supply circuits, add together the ampere ratings of all devices installed on the same circuit as the switch and compare the total with the rating limit for the circuit. The maximum ampere ratings are usually printed on the devices near the AC power connectors.

- Do not install the switch in an environment where the operating ambient temperature might exceed 55°C (131°F)[1].

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

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

[1] If you are installing either of the Series 6400cl Switch devices using one of the fiber transceivers, the operating ambient temperature should not exceed 40°C (104°F). See transceiver specifications in the *ProCurve Switch cl Modules Installation Guide*.

1. Prepare the Installation Site

Cabling Infrastructure - Ensure the cabling infrastructure meets the necessary network specifications. The copper ports accept CX4 cable with Infiniband-style connectors or fiber cable using a CX4 optical media converter (OMC). The fiber ports accept single-mode fiber optic cable with SC connectors.

Table 2-1.   Fiber-Optic Cables

Port Type	Cable Specifications	Connector Type	Supported Length
10-GbE SR	Multimode fiber-optic cable designed for Gigabit Ethernet: 62.5/125 μm (core/cladding) diameter or 50/125 μm, low metal content, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards. [1]	SC	■ **62.5 μm cable:** • 160 Mhz*km = 2-26 meters • 200 Mhz*km = 2-33 meters ■ **50 μm cable:** • 400 Mhz*km = 2-66 meters • 500 Mhz*km = 2-82 meters • 2000 Mhz*km = 2-300 meters
10-GbE LR	9/125 μm (core/cladding) diameter, low metal content, **single mode** fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards. [1,2]	SC	**single-mode cable:** 2 meters - 10 km
10-GbE ER	9/125 μm (core/cladding) diameter, low metal content, **single mode** fiber-optic cables, complying with the ITU-T G.652 and ISO/IEC 793-2 Type B1 standards. [1,2]	SC	**single-mode cable:** 2 meters - 30 km (40 kilometers, on an engineered fiber optic link that meets standards in the specification).
OMC CX4 Fiber	12 fiber 50/125 μm (core/cladding) diameter, multimode Fiber ribbon cable. 12 fiber 62.5/125 μm (core/cladding) diameter, multimode Fiber ribbon cable is also supported. [1]	MTP	1-300 meters

[1] Conditioning patch cord cables are not supported.
[2] Multimode cables are not supported

Table 2-2.   Copper Cables

| Port Type	Cable Specifications	Connector Type	Supported Length
CX4	Speed 3.125Gbx4 (Cables compatible with the 802.1ak standard)	CX4 Infiniband-style	0.5-15 meters

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

  - In the front of the switch, leave at least 7.6 cm (3 inches) of space for the twisted-pair and fiber-optic cabling.

  - In the back of the switch, leave at least 10.16 cm (4 inches) of space for the cl module cabling.

  - On the sides of the switch, leave at least 7.6 cm (3 inches) for cooling, except if the switch is installed in an open EIA/TIA rack.

2. (Optional) Install or Remove a cl Module

Caution

It is recommended the power to the switch be removed before inserting or extracting the expansion module. If the expansion module is inserted or removed with the switch powered on, a reset will occur. Only install or remove these modules during scheduled downtime.

1. Remove the cover plate

Align the edges of the board with guides
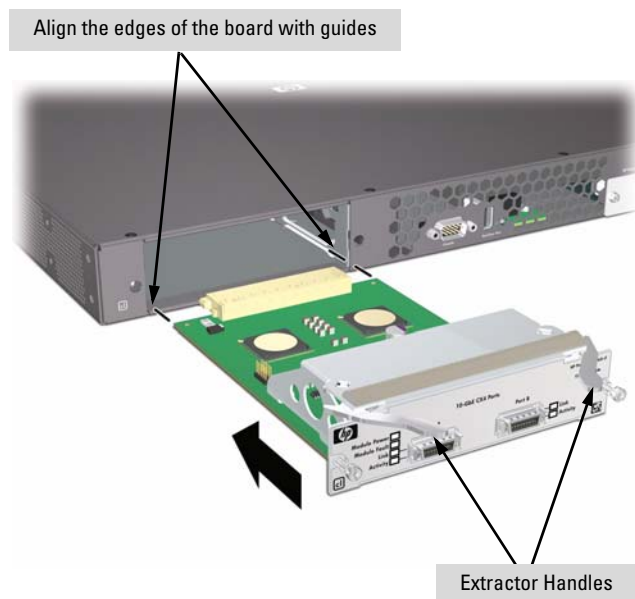
Extractor Handles

2. Insert the module aligning with the guides in the slot.

3. Once the contacts have engaged, use the extractor handles to seat the module completely.

4. Tighten the captive screws.

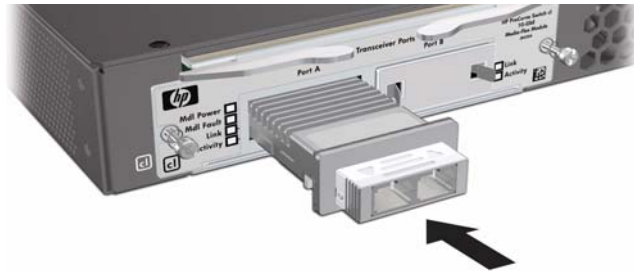Refer to the *ProCurve Switch cl Modules Installation Guide* for more details.

If you have installed a media flex module, you can now install a transceiver. See the following step.

Installing the Switch

3. (Optional) Install or Remove a Transceiver

WARNING **The ProCurve X2 fiber optic transceivers are Class 1 or Class 1M laser devices. Avoid direct eye exposure to the beam coming from the transmit port.**

a. Slide the transceiver in until it stops.[1]

[1] If you are installing either of the Series 6400cl Switch devices using a fiber transceiver, the operating ambient temperature should not exceed 40°C (104°F). See transceiver specifications in the *ProCurve Switch cl Modules Installation Guide*.

b. Push firmly until the gasket seats against the bulkhead.

Bail

Note When switch power is on, the Link and Activity LEDs will come on for approximately two seconds and then go off. This is confirmation the transceiver is installed and seated correctly.

c. If your transceiver has a bail, move the bail up, if not your transceiver is now completely installed. Refer to the *ProCurve Switch cl Module Installation Guide* for more details.

To remove the transceiver:

If your transceiver has a bail, lower the bail until it is approximately horizontal, and then using the bail, pull the transceiver from the slot. If your transceiver does not have a bail, pull the transceiver straight out.

4. Verify the Switch Passes Self Test

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

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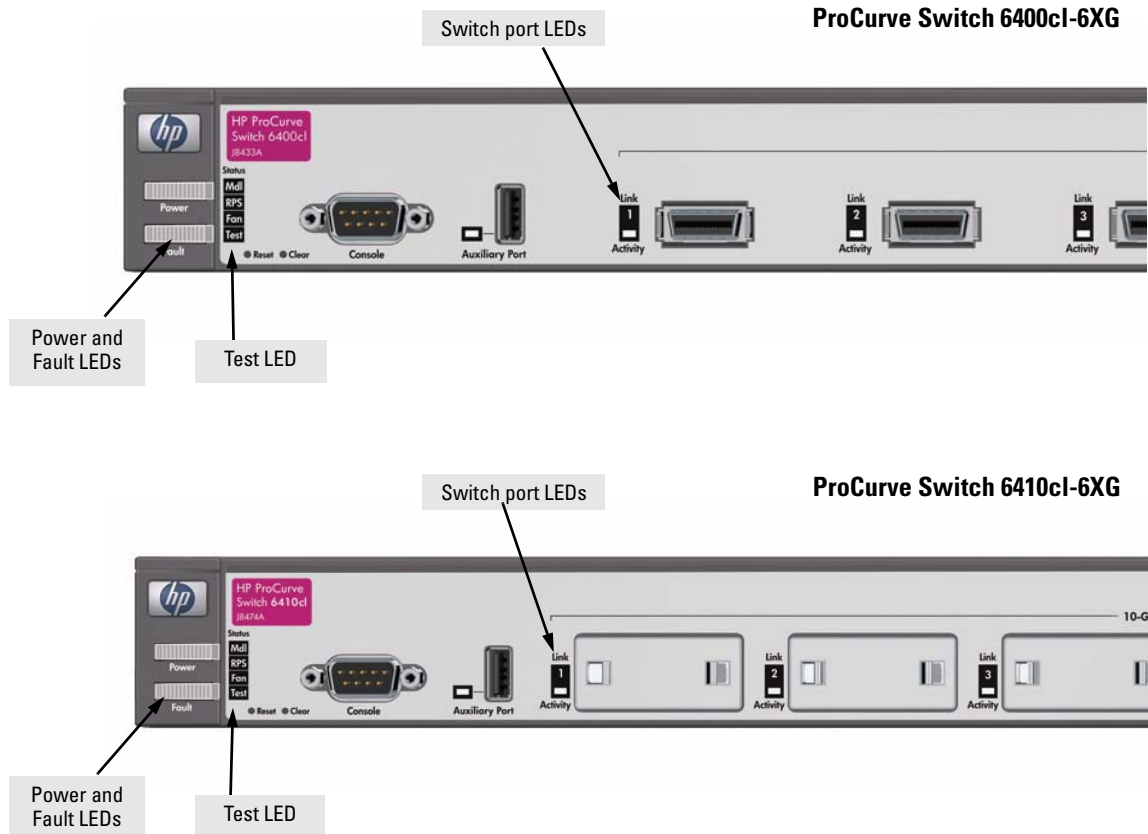

Connect power cord to the power connector
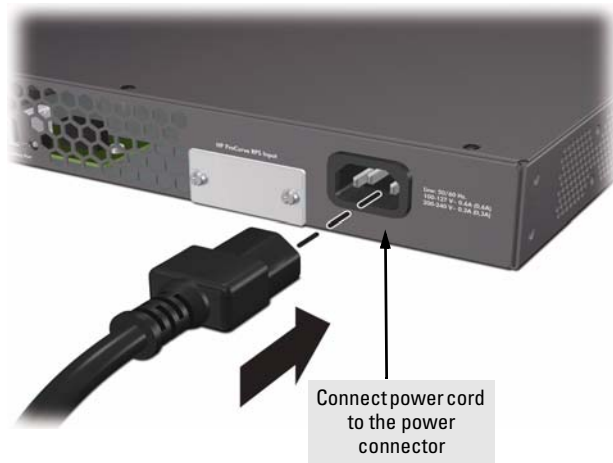
Note

The Series 6400cl Switch devices 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 switch automatically adjusts to any voltage between 100-240 volts and either 50 or 60 Hz. No voltage range settings are required.

If your installation requires a different power cord than the one supplied with the switch, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the switch.

Installing the Switch

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

Switch port LEDs

ProCurve Switch 6400cl-6XG

Power and
Fault LEDs

Test LED

Switch port LEDs

ProCurve Switch 6410cl-6XG

Power and
Fault LEDs

Test LED

When the switch is powered on, it performs a diagnostic self test. Self test takes approximately 50 seconds to complete.

LED Behavior:

During the self test:

• Initially, all the status and port LEDs are on for most of the duration of the test.

• Most of the LEDs go off and then may come on again during phases of the self test. For the duration of the self test, the Test LED stays on.

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When the self test completes successfully:

• The **Power** and **Fan Status** LEDs remain on.

• The **Fault** and **Test LED**s go off.

• The port LEDs (includes the expansion module LEDs) go into their normal operational mode:
  – If the ports are connected to active network devices, the LEDs behave according to their function, Link or Activity.
  – If the ports are not connected to active network devices, the LEDs will stay off.

If the LED display is different than what is described above, especially if the **Fault** and **Test LED**s stay on for more than 60 seconds or they start blinking, the self test has not completed correctly. Refer to chapter 4, "Troubleshooting" for diagnostic help.

3. After the self test has completed successfully disconnect the power cord in preparation for mounting the switch.

5. Mount the Switch

After the switch passes self test, you are ready to mount the switch in a stable location. The Series 6400cl Switch devices can be mounted in these ways:

■ in a rack or cabinet
■ on a horizontal surface

Rack or Cabinet Mounting

The Series 6400cl Switch devices are designed to be mounted in any EIA-standard 19-inch telco rack or communication equipment cabinet.

WARNING **For safe operation, please read the installation precautions on page 2-4, before mounting a switch.**

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

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

Installing the Switch

Installing the Switch

Rack Mounting the Series 6400cl Switch Devices

WARNING   **For safe operation, use only screws provided with your rack mount kit to secure mounting brackets to the switch. Use of longer or improper screws may damage internal components**

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

8 mm
M4 screws

N o t e   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 in the illustration above), or mounting it in a more balanced position.

2-12

2. Hold the switch with attached brackets up to the rack and move it vertically until rack holes line up with the bracket holes, then insert and tighten the four number 12-24 screws holding the brackets to the rack.

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.

C a u t i o n   Make sure the air flow is not restricted around the sides and back of the switch.

6. Connect the Switch to a Power Source

1. Plug the included power cord into the switch's power connector and into a nearby AC power source.

2. Re-check the LEDs during self test. See "LED Behavior" on page 2-10

2-13

7. Connect the Network Cables

Connect the network cables, described under "Cabling Infrastructure" (page 2-5), from the network devices or your patch panels to the fiber or copper ports on the switch.

Connecting a fiber cable

To connect:
1. Remove the dust covers from the cable connectors and the port.

2. Aligning the notches on the cable connectors with the slots of the port, press the cable connector into the port until it snaps into place.

If the Link LED does *not* go on when the network cable is connected to the port, see "Diagnosing with the LEDs" on page 4-3, in chapter 4, "Troubleshooting".
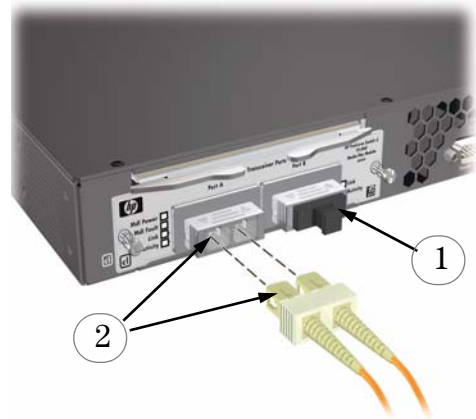
To disconnect:
Pull the cable connector straight out.

Connecting a copper cable

To connect:
1. Push the copper cable connector into the copper port. Ensure the locking device locks the cable connector into place.

To disconnect:
Pull the cable connector straight out.

When a network cable from an active network device is connected to the port, the port LED for that port should go on. If the port LED does *not* go on when the network cable is connected to the port, see "Diagnosing with the LEDs" on page 4-3 in chapter 4, "Troubleshooting".

8. (Optional) Connect a Redundant Power Supply to the Switch

The "ProCurve 600 Redundant and External Power Supply (hereafter referred to as the RPS/EPS)" (J8168A) is an accessory product for the Series 6400cl Switch devices and specific other ProCurve switches. The RPS/EPS provides redundant power to any one of up to six switch products, to back up the power supply in the switch in case of loss of AC power, or a fault condition. The RPS/EPS is an unmanaged power supply that only provides information by way of LEDs or through the port interfaces to attached devices.

Operating Characteristics

The RPS/EPS has six connectors, each of which can provide redundant +12V power to a connected switch, but only one connector can provide this power at a given time. If a switch with no AC power is connected to an operating RPS/EPS, it will NOT immediately power up this new switch. Power can only be provided to a switch if it is first powered on and operating correctly. Then when the power to the switch fails, power will be provided from the RPS/EPS, if it is available, that is, if the RPS/EPS is not already providing power to a higher priority switch. If two or more devices fail, priority goes to the device plugged into the lower numbered port on the RPS/EPS unit. Consequently the most important switch must be plugged into port one on the RPS/EPS. In this state, the "Connected" LED should be ON, and the "Power Status" LED should be BLINKING. (Refer to the documentation that came with your RPS/EPS.)

Connect the RPS/EPS to the switch using one of the 6 supplied RPS cables.

Pin 1 Markings

2 Meters
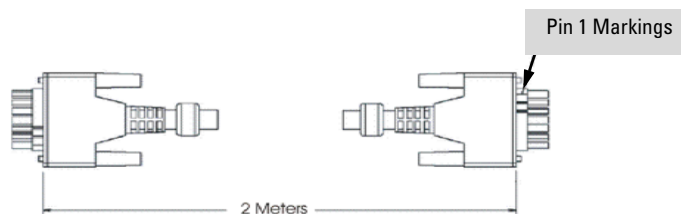
LEDs

The RPS LEDs are located on the back of the RPS/EPS. These LEDs are duplicated on the front of the device. The following graphic shows an example of the back of the RPS/EPS. There are two green LEDs for each RPS port:

■ Device Connected

■ Power Status

**ProCurve 600 RPS/EPS
(J8168A)**

Device Connected LED   Power Status LED
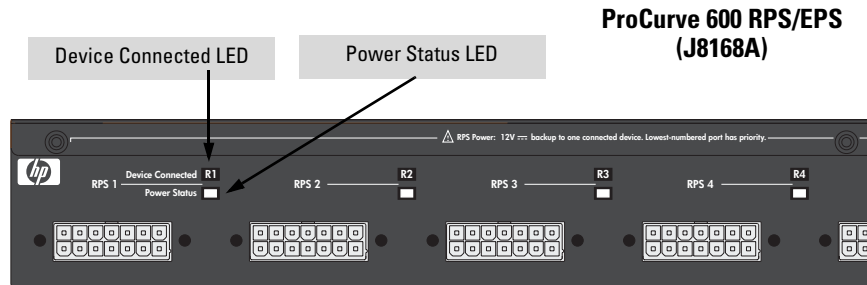
The following states provide status of an RPS/EPS port.

Fault	Device Connected	Power Status	Message
Off	Off	Off	Nothing Connected
On or Off	Off	On	Not a valid state - should never happen
Off	On	Off	Switch is connected, RPS is available but not required
Off	On	On	RPS is powering the connected device
Blinking	Off	Blinking	RPS port is in fault mode
Off	On	Blinking	Switch is requesting power, RPS can not provide it
Blinking	On	Off	Switch is unplugged, but RPS is powering switch

The following picture demonstrates and example of connectivity between an RPS/EPS device and a Switch device.

Switch 6400cl device,
RPS input port

RPS output port
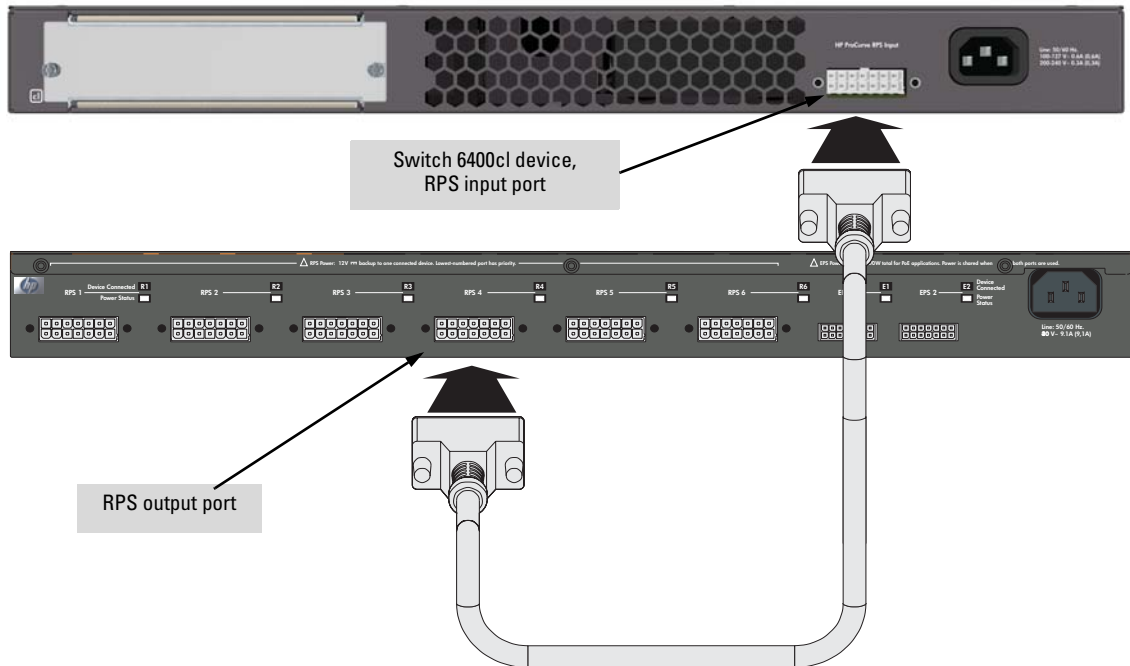
RPS/EPS Operation

The RPS/EPS monitors the power signal from the switch by detecting that the RPS/EPS is connected to a switch with an RPS/EPS cable. When the power from the switch is no longer detected, the RPS/EPS will turn on and provide power to the switch within 1ms.

The RPS/EPS supports hot plugging of the RPS/EPS cable without causing a reboot of the switch or causing the power supply in either the RPS/EPS or switch to shut down temporarily or permanently. For more information refer to the documentation that came with the RPS/EPS.

9.(Optional) Connect a Console to the Switch

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

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

The console can be accessed through these methods:

- **Out-of-band:** The switch comes with a serial cable for connecting a PC or VT-100 terminal, to be used as a console, directly to the switch.
- **In-Band:** Access the console using Telnet from a PC or UNIX station on the network, and a VT-100 terminal emulator. This method requires that you first configure the switch with an IP address and subnet mask by using either out-of-band console access or through DHCP/Bootp. For more information on IP addressing and on starting a Telnet session, see chapter 3, "Getting Started With Switch Configuration", and the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

The Switch can simultaneously support one out-of-band console session through the Console Port and one in-band Telnet console session.

Terminal Configuration

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

- any baud rate from 1200 to 115200 (the switch senses the speed)
- 8 data bits, 1 stop bit, no parity, and flow control set to Xon/Xoff
- For the Windows Terminal program, also disable (uncheck) the "Use Function, Arrow, and Ctrl Keys for Windows" option
- For the Hilgraeve HyperTerminal program, select the "Terminal keys" option for the "Function, arrow, and ctrl keys act as" parameter.

If you want to operate the console using a different configuration, make sure you change the settings on both the terminal and on the switch so they are compatible. Change the switch settings first, save your changes, then change the terminal settings, then reboot the switch and reestablish the console session.

Direct Console Access

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

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

2. Turn on the terminal or PC's power and, if using a PC, start the PC terminal program.

3. Press **[Enter]** two or three times and you will see the

Console port

Console cable supplied with the switch

PC running a terminal emulator program, or a VT-100 terminal

copyright page and the message "Press any key to continue". Press a key, and you will then see the switch console command (CLI) prompt, for example:

ProCurve Switch 6400cl-6XG#

If you want to continue with console management of the switch at this time, see chapter 3, "Getting Started With Switch Configuration" for some basic configuration steps. For more detailed information, refer to the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with the switch.
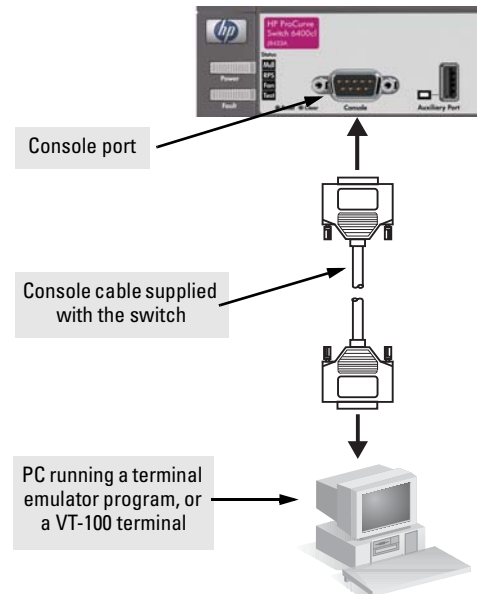
Sample Network Topologies

This section shows a few sample network topologies in which the Switch is implemented. For more topology information, see the ProCurve Networking products Web site, *http://www.procurve.com*.

Three Tier Model
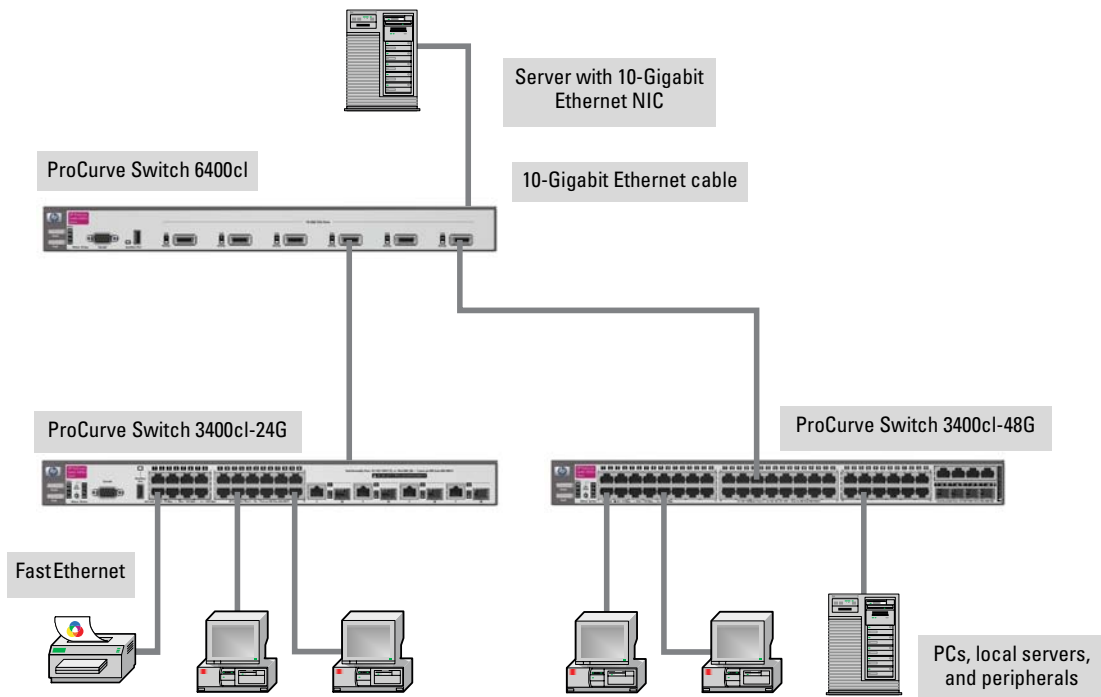
The Switch is designed to be used primarily in a wiring closet or in the data center as a distribution, high speed (10-GbE) switch to which edge switches supporting 10-GbE speeds (such as the ProCurve Switch 3400cl Series) would be connected using fiber or copper cables. The end nodes, printers and other peripherals, are then connected to the edge switch. The end node devices are connected to the edge switch by straight-through or crossover twisted-pair cables. Either cable type can be used because of the "IEEE Auto MDI/MDI-X" features on the Switch.

Remote Campus

Local Site using 10-GbE SR or OMC up to 300m

6400cl

Main Office Data Center

6410cl

Remote Site using 10-GbE LR up to 10 km

6400cl

Remote Site using 10-GbE LR up to 10 km

6400cl

Installing the Switch
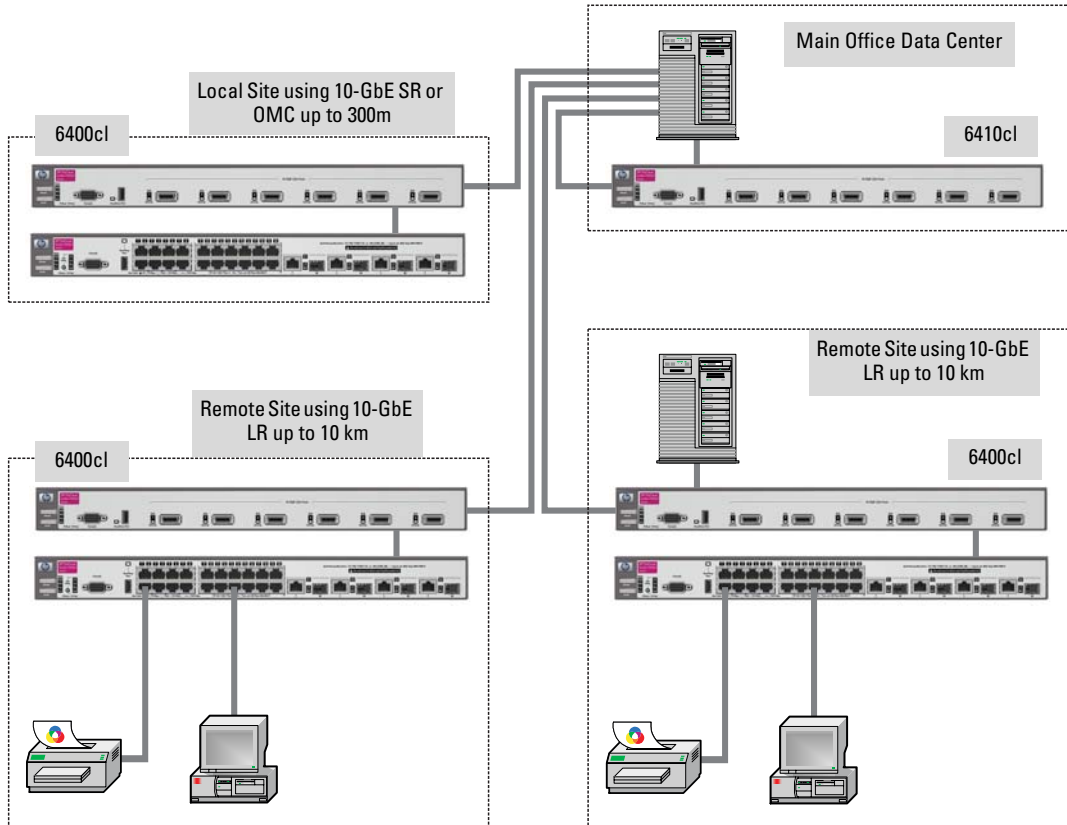
Flexible Stacking

The Series 6400cl Switch devices can be connected together in two configurations depending on your need:

High performance stack

This configuration provides:

■   228 gigabit ports

■   4.8 to 1 over-subscription

In this configuration each 3400cl switch is connected separately to it's own port on the 6400cl providing 10-GbE connectivity to the 6400cl switch and the 6400cl switch is connected to the core using 10-GbE as well.

This topology also demonstrates an example of incorporating the use of a redundant power supply to support the 3400cl switches.
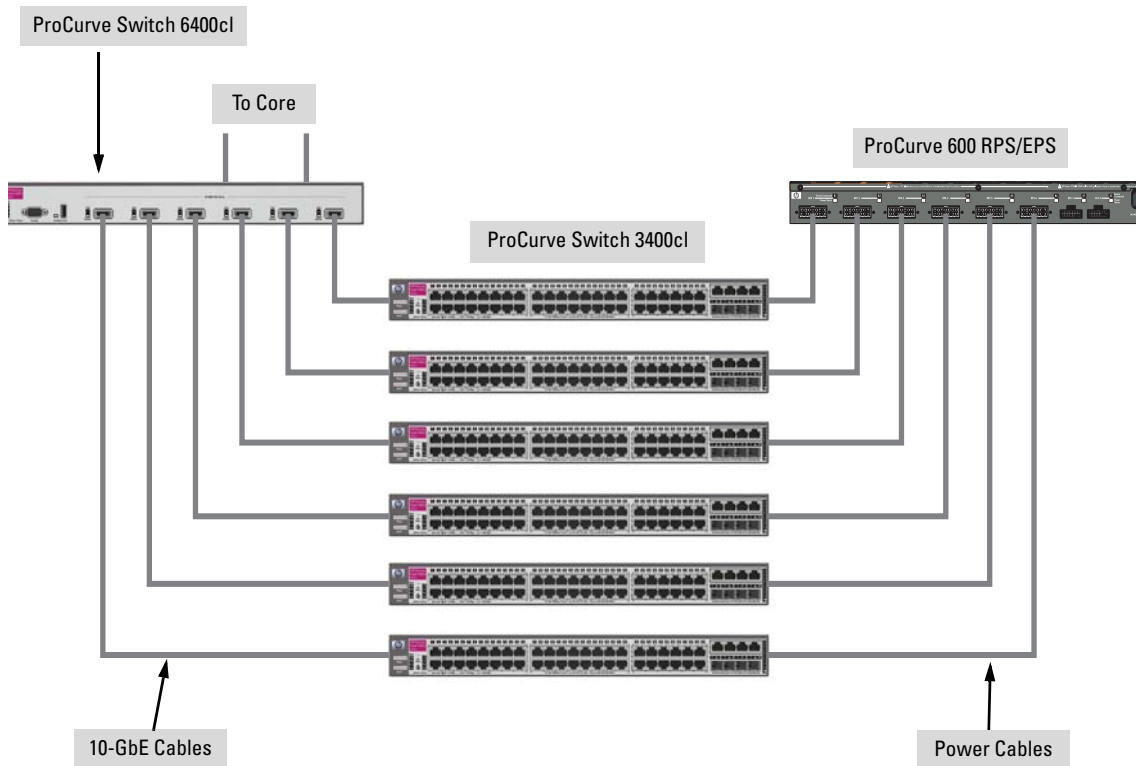
Resiliency Using 6400cl Series as a meshed Cluster

The redundant topology increases the availability of a single switch by protecting against single points of failure. All hardware and paths are redundant and active (versus, Spanning Tree Blocking). If any hardware failure occurs, I/O communications can still be completed through another path.

Installing the Switch

3
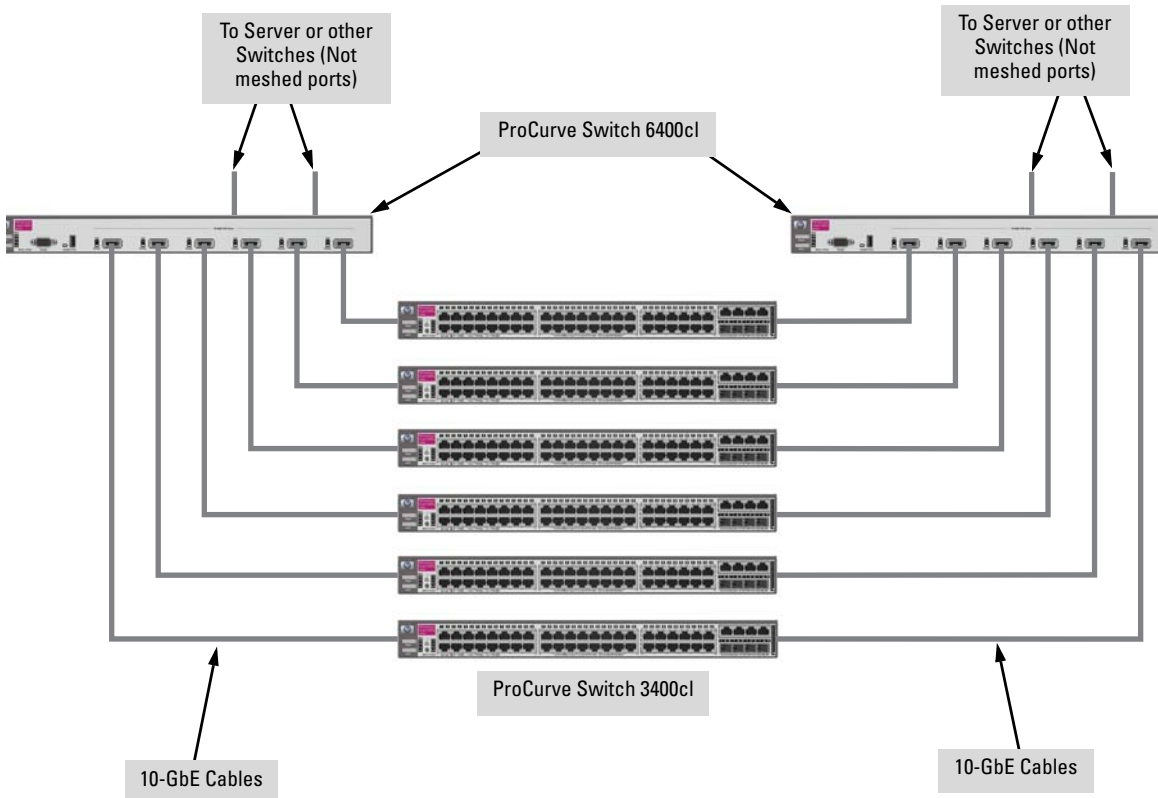
Getting Started With Switch Configuration

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

For more information on using the switch console and the other switch management interfaces: the web browser interface and the SNMP management tool, ProCurve Manager, please see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

Recommended Minimal Configuration

In the factory default configuration, the switch has no IP (Internet Protocol) address and subnet mask, and no passwords. In this state, it can be managed only through a direct console connection. To manage the switch through in-band (networked) access, you should configure the switch with an IP address and subnet mask compatible with your network. Also, you should configure a Manager password to control access privileges from the console and web browser interface. Other parameters in the Switch Setup screen can be left at their default settings or you can configure them with values you enter.

Many other features can be configured through the switch's console interface, to optimize the switch's performance, to enhance your control of the network traffic, and to improve network security. Once an IP address has been configured on the switch, these features can be accessed more conveniently through a remote Telnet session, through the switch's web browser interface, and from an SNMP network management station running a network management program, such as ProCurve Manager. For a listing of switch features available with and without an IP address, refer to "How IP Addressing Affects Switch Operation" in the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

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

N o t e   By default, the switch is configured to acquire an IP address configuration from a DHCP or Bootp server. To use DHCP/Bootp instead of the manual method described in this chapter, see "DHCP/Bootp Operation" in the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

Using the Console Setup Screen

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

1. Using the method described in the preceding section, connect a terminal device to the switch and display the switch console command (CLI) prompt (the default display).

    The CLI prompt appears displaying the switch model number:

    ProCurve Switch 6400cl-6XG#

2. At the prompt, enter the **setup** command to display the Switch Setup screen. The following illustration shows the Setup screen with the default settings.


```
ProCurve Switch 6400cl-6xg                              1-Jan- 2004   2:59:24
==========================- CONSOLE - MANAGER MODE -=========================
                              Switch Setup

 System Name :      Procurve Switch 6400cl-6xg
 System Contact :
 Manager Password :                     Confirm Password :
 Logon Default : CLI                    Time Zone [0] : 0
 Community Name : public                Spanning Tree Enabled [No] : No

 Default Gateway :
 Time Sync Method [None] : TIMEP
 TimeP Mode [Disabled] : Disabled

 IP Config [DHCP/Bootp] : DHCP/Bootp
 IP Address  :
 Subnet Mask :



 Actions->   Cancel     Edit     Save     Help

 Enter System Name - up to 25 characters.
 Use arrow keys to change field selection, <Space> to toggle field choices,
 and <Enter> to go to Actions.
```

3. Use the **[Tab]** key to select the **Manager Password** field and enter a manager password of up to 16 characters.

4. **[Tab]** to the **IP Config (DHCP/Bootp)** field and use the Space bar to select the **Manual** option.

5. **[Tab]** to the **IP Address** field and enter the IP address that is compatible with your network.

6. **[Tab]** to the **Subnet Mask** field and enter the subnet mask used for your network.

7. Press [**Enter**], then [**S**] (for **Save**).

Here is some information on the fields in the Setup screen. For more information on these fields, see the *Management and Configuration Guide,* which is on the Documentation CD-ROM that came with your switch:

Parameter	Default	
System Name	blank	Optional; up to 25 characters, including spaces
System Contact	blank	Optional; up to 48 characters, including spaces
Manager Password	blank	Recommended; up to 16 characters (no blank spaces)
Logon Default	CLI	The default setting selects the command line interface for console access. The alternative is the menu interface.
Time Zone	0 (none)	Optional; 1440 to -1440. The number of minutes your location is to the West (-) or East (+) of GMT.
Community Name	public	Default setting recommended.
Spanning Tree Enabled	No	Default setting recommended unless STP is already running on your network or the switch will be used in complex network topologies.
Default Gateway	blank	Optional; Enter the IP address of the next-hop gateway node if network traffic needs to be able to reach off-subnet destinations.
Time Sync Method	None	Optional; The protocol the switch uses to acquire a time signal. The options are SNTP and TimeP.
TimeP Mode	Disabled	Optional; The method the switch uses to acquire the TimeP server address.
IP Config (DHCP/Bootp)	DHCP/Bootp	Set to Manual unless a DHCP/Bootp server is used on your network to configure IP addressing.
IP Address	xxx.xxx.xxx.xxx	Recommended; If you set IP Config to Manual, then enter an IP address compatible with your network.

Note: The IP address and subnet mask assigned for the switch must be compatible with the IP addressing used in your network. For more information on IP addressing, see the *Management and Configuration Guide,* which is on the Documentation CD-ROM that came with your switch.

Subnet Mask	xxx.xxx.xxx.xxx	Recommended; If you entered an IP address, then enter a subnet mask compatible with your network.

Getting Started With Switch Configuration

Where to Go From Here

The above procedure configures your switch with a Manager password, IP address, and subnet mask. As a result, with the proper network connections, you can now manage the switch from a PC equipped with Telnet, a web browser interface, or from an SNMP-based network management station using a tool such as ProCurve Manager.

Some basic information on managing your switch is included in the next section. For more information on the console, web browser, and SNMP management interfaces and all the features that can be configured on the Switch 6400, please see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

To Recover from a Lost Manager Password: If you cannot start a console session at the manager level because of a lost Manager password, you can clear all passwords and user names by getting physical access to the switch and pressing and holding the Clear button for a full second.

Using the IP Address for Remote Switch Management

With your Switch 6400, you can use the switch's IP address to manage the switch from any PC that is on the same subnet as the switch. You can use either a Telnet session or a standard web browser to manage the switch.

Starting a Telnet Session

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

1. Make sure the switch is configured with an IP address and that the switch is reachable from the PC that is running the Telnet session (for example, by using a Ping command to the switch's IP address).

2. Start the Telnet program on a PC that is on the same subnet as the switch and connect to the switch's IP address.

3. You will see the copyright page and the message "Press any key to continue". Press a key, and you will then see the switch console command (CLI) prompt, for example:

    ProCurve Switch 6400cl#

    Enter **help** or **?** to see a list of commands that can be executed at the prompt. Entering any command followed by **help** provides more detailed context help information about the command. Entering any command followed by **?** displays a list of options that are available at that point in the command entry.

Starting a Web Browser Session

Your Switch 6400 can be managed through a graphical interface that you can access from any PC or workstation on the network by running your web browser and typing in the switch's IP address as the URL. No additional software installation is required to make this interface available; it is included in the switch's onboard software.

The operating systems, web browsers, and Java support required to manage the switch through the browser interface are listed in the following table:

Operating System	Internet Explorer	Java Version
Windows 2000 SP4	5.5 SP2, 6.0 SP1	1.3.1_12 and 1.4.2_05
Windows XP SP1a	6.0 SP1	1.3.1_12 and 1.4.2_05
Windows Server 2003	6.0 SP1	1.3.1_12 and 1.4.2_05

A typical web browser interface screen is shown in the next illustration.
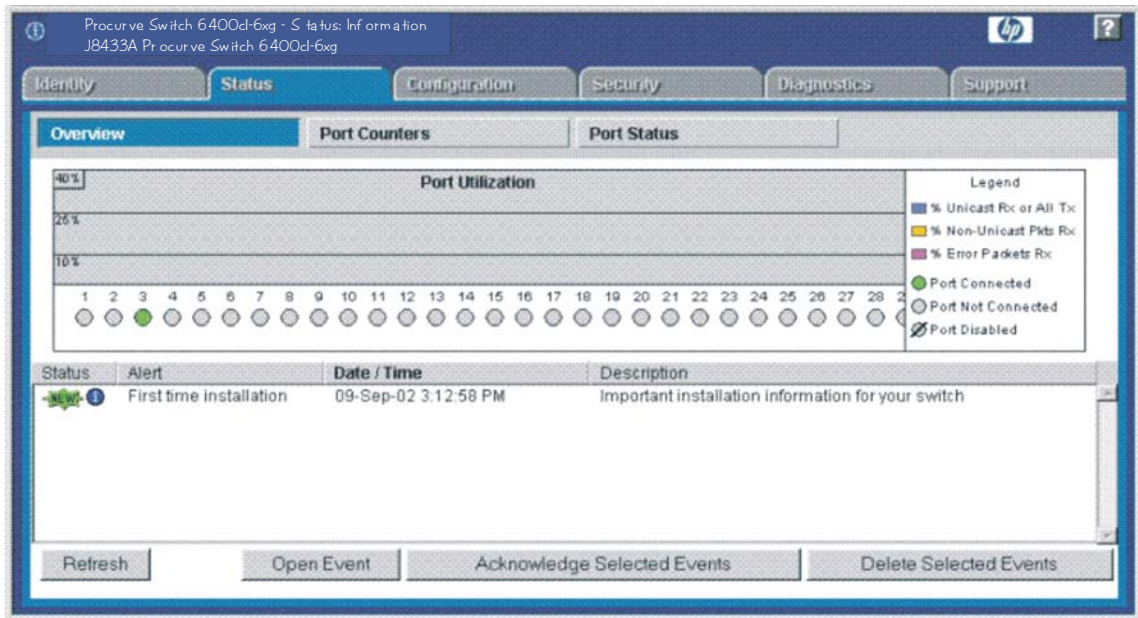
For more information on using the web browser interface, please see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

An extensive help system is also available for the web browser interface. To access the help system though, the subnet on which the switch is installed must have access to the internet, or ProCurve Manager needs to be installed on a network management station that is on the subnet.

4

Troubleshooting

This chapter describes how to troubleshoot your switch. This document describes troubleshooting mostly from a hardware perspective. You can perform more in-depth troubleshooting on the switch using the software tools available with the switch, including the full-featured console interface, the built-in web browser interface, and ProCurve Manager, the SNMP-based network management tool. For more information, see the chapter "Trouble-shooting" in the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

This chapter describes the following:

Basic Troubleshooting Tips

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

- **Faulty or loose cables.** Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.

- **Non-standard cables.** Non-standard and miswired cables may cause network collisions and other network problems, and can seriously impair network performance. Use a new correctly-wired cable or compare your cable to the cable in appendix B, "Cables and Connectors" for pinouts and correct cable wiring.

Troubleshooting

■ **Improper Network Topologies.** It is important to make sure you have a valid network topology. Common topology faults include excessive cable length and excessive repeater delays between end nodes. If you have network problems after recent changes to the network, change back to the previous topology. If you no longer experience the problems, the new topology is probably at fault. Sample topologies are shown at the end of chapter 2 in this book, and some topology configuration guidelines can be found online at the ProCurve Networking Web site, *http://www.procurve.com*.

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

For your switch, if you wish to build redundant paths between important nodes in your network to provide some fault tolerance, you should enable **Spanning Tree Protocol** support on the switch. This ensures only one of the redundant paths is active at any time, thus avoiding data path loops. Spanning Tree can be enabled through the switch console, the web browser interface, or ProCurve Manager.

The Series 6400cl Switch devices also support **Trunking**, which allows multiple network cables to be used for a single network connection without causing a data path loop. For more information on Spanning Tree and Trunking, see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

■ **Check the port configuration.** A port on your switch may not be operating as you expect because it has been put into a "blocking" state by Spanning Tree, meshing, or LACP (automatic trunking). (Note that the normal operation of the Spanning Tree, meshing, and LACP features may put the port in a blocking state.) Or, the port just may have been configured as disabled through software.

Use the switch console to determine the port's configuration and verify that there is not an improper or undesired configuration of any of the switch features that may be affecting the port. For more information, see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

For more information on possible network problems and their solutions, refer to the technical note "Troubleshooting LAN Performance and Intermittent Connectivity Problems", which can be found on the ProCurve Networking Web site, *http://www.procurve.com*, in the Information Library section.

Troubleshooting

Diagnosing with the LEDs

Table 4-1 shows LED patterns on the switch and the switch modules that indicate problem conditions.

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

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

Table 4-1.   LED Error Indicators

LED Pattern Indicating Problems							Diagnostic Tips
Power	**Fault**	**Module (Mdl) Status/ Fault****	**RPS Status**	**Test**	**Fan Status**	**Port LED** (Link)	
Off with power cord plugged in	*	*	*	*	*	*	❶
On	Prolonged On	*	*	Prolonged On	*	*	❷
On	Blinking†	*	*	Blinking†	*	*	❸
On	Blinking†	*	*	Off	Blinking†	*	❹
On	Blinking†	See tip 5	*	Blinking†	*	Blinking†	❺
On	Off	*	*	Off	*	Off with cable connected	❻
On	Off	*	*	Off	*	On, but the port is not communicating	❼
On	Blinking†	*	On	*	*	*	❽
On	Blinking†	F^1 Blinking† B^2 Blinking†	*	Blinking†	*	*	❾
* This LED is not important for the diagnosis. **† The blinking behavior is an on/off cycle once every 1.6 seconds, approximately.** **** The Module Fault LED is located on the module in the rear of the switch.** **^{1} F - Front** **^{2} B - Back**							

Diagnostic Tips:

Tip	Problem	Solution
❶	The switch is not plugged into an active AC power source, or the switch's power supply may have failed.	1. Verify the power cord is plugged into an active power source and to the switch. Make sure these connections are snug. 2. Try power cycling the switch by unplugging and plugging the power cord back in. 3. If the Power LED is still not on, verify that the AC power source works by plugging another device into the outlet. Or try plugging the switch into a different outlet or try a different power cord. If the power source and power cord are OK and this condition persists, the switch power supply may have failed. Call your ProCurve authorized LAN dealer, or use the electronic support services from ProCurve to get assistance. See the Customer Support/Warranty booklet for more information.
❷	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 ProCurve authorized LAN dealer, or use the electronic support services from ProCurve to get assistance. See the Customer Support/Warranty booklet for more information.
❸	The switch has experienced a software failure during self test.	1. Try resetting the switch by pressing the Reset button on the front of the switch, or by power cycling the switch. 2. If the fault indication reoccurs, attach a console to the switch (as indicated in chapter 2) and configure it to operate at 9600 baud. Then, reset the switch. Messages should appear on the console screen and in the console log identifying the error condition. You can view the console log at that point by selecting it from the console Main Menu. If necessary to resolve the problem, contact your ProCurve authorized LAN dealer, or use the electronic support services from ProCurve to get assistance. See the Customer Support/Warranty booklet for more information.
❹	One or more of the switch cooling fans may have failed.	Try disconnecting power from the switch and wait a few moments. Then reconnect the power to the switch and check the LEDs again. If the error indication reoccurs, one or more of the fans has failed. The switch may continue to operate under this condition if the ambient temperature does not exceed normal room temperature, but for best operation, the switch should be replaced. Contact your ProCurve authorized LAN dealer, or use the electronic support services from ProCure to get assistance. See the Customer Support/Warranty booklet for more information.
❺	The network port for which the LED is blinking has experienced a self test or initialization failure. If the Mdl Status LED is blinking, the affected port is on the cl Module.	Try power cycling the switch. If the fault indication reoccurs, the switch port may have failed. Call your ProCurve authorized LAN dealer, or use the electronic support services from ProCurve to get assistance. See the Customer Support/Warranty booklet for more information. If the port is a transceiver, verify it is one of the transceivers supported by the switch. Unsupported transceivers will be identified with this fault condition. The supported transceivers are listed in the *ProCurve Switch cl Modules Installation Guide*. To verify the port has failed, try removing and reinstalling the transceiver without having to power off the switch. If the port fault indication reoccurs, you will have to replace the transceiver.

Troubleshooting

4-4

Tip	Problem	Solution

❻	The network connection is not working properly.	Try the following procedures:
		• For the indicated port, verify both ends of the cabling, at the switch and the connected device, are connected properly.
		• Verify the connected device and switch are both powered *on* and operating correctly.
		• Verify you have used the correct cable type for the connection:
		   – For fiber-optic connections, verify the transmit port on the switch is connected to the receive port on the connected device, and the switch receive port is connected to the transmit port on the connected device.
		• Verify the port has not been disabled through a switch configuration change.
		   You can use the console interface, or, if you have configured an IP address on the switch, use the web browser interface, or ProCurve Manager network management software to determine the state of the port and re-enable the port if necessary.
		• Verify the switch port configuration matches the configuration of the attached device. For example, if the switch port is configured as "Auto", the port on the attached device also MUST be configured as "Auto". Depending on the port type, twisted-pair or fiber-optic, if the configurations do not match, the results could be a very unreliable connection, or no link at all.
		• If the other procedures do not resolve the problem, try using a different port or a different cable.

❼	The port may be improperly configured, or the port may be in a "blocking" state by the normal operation of the Spanning Tree, LACP, or IGMP features.	Use the switch console to see if the port is part of a dynamic trunk (through the LACP feature) or to see if Spanning Tree is enabled on the switch, and to see if the port may have been put into a "blocking" state by those features. The **show lacp** command displays the port status for the LACP feature; the **show spanning-tree** command displays the port status for Spanning Tree. Also check the Port Status screen using the **show interfaces** command to see if the port has been configured as "disabled". Other switch features that may affect the port operation include VLANs and IGMP. Use the switch console to see how the port is configured for these features. For software troubleshooting tips, see the chapter "Troubleshooting" in the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch. Make sure also, the device at the other end of the connection is indicating a good link to the switch. If it is not, the problem may be with the cabling between the devices or the connectors on the cable.
❽	An RPS is connected but the switch has experienced an internal power supply fault.	Refer to the ProCurve 600/610 External Power Supplies documentation. You may have to replace the switch.
❾	Expansion cl module is plugged in but has experienced a fault.	Check the rear of the switch. Check the module LEDs for indications. This condition will only occur during an initialization self test.

Troubleshooting

Proactive Networking

The ProCurve Series 6400cl Switch devices have built-in management capabilities that proactively help you manage your network including:

- finding and helping you fix the most common network error conditions (for example, faulty network cabling, and non-standard network topologies)
- informing you of the problem with clear, easy-to-understand messages
- recommending network configuration changes to enhance the performance of your network

The following interfaces provide tests, indicators, and an event log that can be used to monitor the switch and its network connections and to help you take advantage of these proactive networking features:

- ProCurve Manager - an SNMP-based network management tool that is included with your switch.
- A graphical web browser interface that you can use to manage your switch from a PC running a supported web browser, for example Microsoft Internet Explorer.
- A full-featured easy-to-use console interface that you can access by connecting a standard terminal or PC running a terminal emulator to the switch's console port. The cable to make that connection is provided with your switch. The console interface is also accessible through a Telnet connection.

For more information on using these software tools to diagnose and manage your switch, see the "Troubleshooting" chapter in the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

Hardware Diagnostic Tests

Testing the Switch by Resetting It

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

■ unplug and plug in the power cord (power cycling)

■ press the Reset button on the front of the switch

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

Checking the Switch LEDs

The self test passes if the Fault and Test LEDs on the front of the switch go off after approximately 50 seconds. If these LEDs stay on longer than 60 seconds or begin blinking, there may be a problem with the switch.

See "Diagnosing With the LEDs" on page 4-3 for information on interpreting the LED patterns and LED behaviors in chapter one.

Checking Console Messages

Useful diagnostic messages may be displayed on the console screen when the switch is reset. As described in chapter 2 under step 7, "Connect a Console to the Switch", connect a PC running a VT-100 terminal emulator program or a standard VT-100 terminal to the switch's Console Port and configure it to run at 9600 baud, and with the other terminal communication settings shown on page 2-18. Then, when you reset the switch, note the messages that are displayed. Additionally, you can check the switch event log, which can be accessed from the console using the **show log** command, or from the console Main Menu.

Troubleshooting

Testing Switch-to-Device Network Communications

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

■ Link Test -- a physical layer test that sends IEEE 802.2 test packets to any device identified by its MAC address.

■ Ping Test -- a network layer test used on IP networks that sends test packets to any device identified by its IP address.

These tests can be performed through the switch console interface from a terminal connected to the switch or through a Telnet connection, or from the switch's web browser interface. For more information, see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

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

Testing End-to-End Network Communications

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

Restoring the Factory Default Configuration

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

N o t e This process removes all switch configuration changes you have made from the factory default settings. This includes, for example, configuration of VLANs, Spanning Tree, trunks, and stacking. Returning the configuration of these features to their factory default settings (usually disabling them) may result in network connectivity issues.

If the switch has a valid configuration, and you are restoring the factory default settings for a reason other than configuration problems, you should save the switch configuration prior to performing the factory default reset. Then, after the reset and resolution of the original problem, you can restore the saved configuration to the switch. For both the save and restore processes, you can use the console **copy** command. For more information on this command, see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

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

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

1. Using pointed objects, simultaneously press both the Reset and Clear buttons on the front of the switch.

2. Continue to press the Clear button while releasing the Reset button.

3. When the Test LED begins to blink, release the Clear button.

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

To restore the factory default configuration using the console, execute the **erase startup-config** command from the console command prompt.

Troubleshooting

Downloading New Switch Software

When product enhancements occur for the switch, new software can be downloaded to the switch through several methods, for product enhancements and new features. For more information, see the *Management and Configuration Guide*, which is on the Documentation CD-ROM that came with your switch.

The new switch software would be available on the ProCurve Networking Web site, *http://www.procurve.com*.

ProCurve Customer Support Services

If you are still having trouble with your switch, ProCurve offers support 24 hours a day, seven days a week through the use of a number of automated electronic services. See the Customer Support/Warranty booklet that came with your switch for information on how to use these services to get technical support. The ProCurve Networking Web site, *http://www.procurve.com* also provides up-to-date support information.

Additionally, your ProCurve authorized network reseller can provide you with assistance, both with services that they offer and with services offered by ProCurve.

Before Calling Support

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

Information Item	Information Location
• product identification	the front of the switch, Switch 6400cl (J8433A or J8474A)
• details about the switch's status including the software (OS) 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

Troubleshooting

4-11

Specifications

Physical

Width:	44.3 cm (17.4 in)
Depth:	43.0 cm (16.9 in)
Height:	4.4 cm (1.7 in)

Weight:

6400cl (J8433A)	5.6 kg (12.35 lbs)
6410cl (J8474A)	6.15 kg (13.56 lbs)

Electrical

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

AC voltage:	100-240 volts
Maximum current:	3.0A/1.5A
Frequency range:	50/60 Hz

Environmental

	Operating	Non-Operating
Temperature:	0°C to 55°C (32°F to 131°F) [1]	-40°C to 70°C (-40°F to 158°F)
Relative humidity: (non-condensing)	15% to 95% at 40°C (104°F)	15% to 90% at 65°C (149°F)
Maximum altitude:	4.6 km (15,000 ft)	4.6 km (15,000 ft)

[1] If you are installing either of the Series 6400cl Switch devices using one of the fiber transceivers, the operating ambient temperature should not exceed 40°C (104°F). See transceiver specifications in the *ProCurve Switch cl Modules Installation Guide*.

Acoustic

Geraeuschemission LwA=55 dB am fiktiven Arbeitsplatz nach DIN 45635 T.19

Noise Emission LwA=55 dB at virtual workspace according to DIN 45635 T.19

Connectors

- ■　The copper ports are compatible with the IEEE 802.1ak standards.
- ■　The fiber-optic ports are compatible with the IEEE 802.1ae standards.
- ■　The console port is a standard RS-232, (standard DB-9) connector.

Safety

Complies with:
- ■　EN60950 / IEC60950
- ■　CSA 22.2 No. 60950
- ■　UL 60950

Lasers

The following products are Class 1 Laser Products.
Laser Klasse 1:
- ■　The 10-GbE X2-SC LR transceiver
- ■　The 10-GbE X2-SC ER transceiver

The following products are Class 1 or Class 1m Laser Products.
Laser Klasse 1 or Klasse 1m:
- ■　The 10-GbE X2-SC SR transceiver

The transceivers comply with IEC 60825.

Safety and EMC Regulatory Statements

Safety Information

<table>
<tr><td>⚠
!</td><td>Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.</td></tr>
<tr><td>**WARNING**</td><td>A **WARNING** in the manual denotes a hazard that can cause injury or death.</td></tr>
<tr><td>Caution</td><td>A Caution in the manual denotes a hazard that can damage equipment.</td></tr>
<tr><td></td><td>Do not proceed beyond a **WARNING** or Caution notice until you have understood the hazardous conditions and have taken appropriate steps.</td></tr>
</table>

Grounding

These are safety class I products and have protective earthing terminals. There must be an uninterruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

For LAN cable grounding:

- If your LAN covers an area served by more than one power distribution system, be sure their safety grounds are securely interconnected.

- LAN cables may occasionally be subject to hazardous transient voltages (such as lightning or disturbances in the electrical utilities power grid). Handle exposed metal components of the network with caution.

Servicing

There are no user-serviceable parts inside these products. Any servicing, adjustment, maintenance, or repair must be performed only by service-trained personnel.

These products do not have a power switch; they are powered on when the power cord is plugged in.

Informations concernant la sécurité

<table>
<tr>
<td>⚠ !</td>
<td>Symbole de référence à la documentation. Si le produit est marqué de ce symbole, reportez-vous à la documentation du produit afin d'obtenir des informations plus détaillées.</td>
</tr>
<tr>
<td>**WARNING**</td>
<td>Dans la documentation, un **WARNING** indique un danger susceptible d'entraîner des dommages corporels ou la mort.</td>
</tr>
<tr>
<td>Caution</td>
<td>Un texte de mise en garde intitulé Caution indique un danger susceptible de causer des dommages à l'équipement.</td>
</tr>
<tr>
<td></td>
<td>Ne continuez pas au-delà d'une rubrique **WARNING** ou Caution avant d'avoir bien compris les conditions présentant un danger et pris les mesures appropriées.</td>
</tr>
</table>

Cet appareil est un produit de classe I et possède une borne de mise à la terre. La source d'alimentation principale doit être munie d'une prise de terre de sécurité installée aux bornes du câblage d'entrée, sur le cordon d'alimentation ou le cordon de raccordement fourni avec le produit. Lorsque cette protection semble avoir été endommagée, débrancher le cordon d'alimentation jusqu'à ce que la mise à la terre ait été réparée.

Mise à la terre du câble de réseau local:

■ si votre réseau local s'étend sur une zone desservie par plus d'un système de distribution de puissance, assurez-vous que les prises de terre de sécurité soient convenablement interconnectées.

■ Les câbles de réseaux locaux peuvent occasionnellement être soumis à des surtensions transitoires dangereuses (telles que la foudre ou des perturbations dans le réseau d'alimentation public). Manipulez les composants métalliques du réseau avec précautions.

Aucune pièce contenue à l'intérieur de ce produit ne peut être réparée par l'utilisateur. Tout dépannage, réglage, entretien ou réparation devra être confié exclusivement à un personnel qualifié.

Cet appareil ne comporte pas de commutateur principal ; la mise sous tension est effectuée par branchement du cordon d'alimentation.

Hinweise zur Sicherheit

⚠ (!)	Symbol für Dokumentationsverweis. Wenn das Produkt mit diesem Symbol markiert ist, schlagen Sie bitte in der Produktdokumentation nach, um mehr Informationen über das Produkt zu erhalten.
WARNING	Eine **WARNING** in der Dokumentation symbolisiert eine Gefahr, die Verletzungen oder sogar Todesfälle verursachen kann.
Caution	Caution in der Dokumentation symbolisiert eine Gefahr, die dis Gerät beschädigen kann.
	Fahren Sie nach dem Hinweis **WARNING** oder Caution erst fort, nachdem Sie den Gefahrenzustand verstanden und die entsprechenden Maßnahmen ergriffen haben.

Dies ist ein Gerät der Sicherheitsklasse I und verfügt über einen schützenden Erdungsterminal. Der Betrieb des Geräts erfordert eine ununterbrochene Sicherheitserdung von der Hauptstromquelle zu den Geräteingabeterminals, den Netzkabeln oder dem mit Strom belieferten Netzkabelsatz voraus. Sobald Grund zur Annahme besteht, daß der Schutz beeinträchtigt worden ist, das Netzkabel aus der Wandsteckdose herausziehen, bis die Erdung wiederhergestellt ist.

Für LAN-Kabelerdung:

■ Wenn Ihr LAN ein Gebiet umfaßt, das von mehr als einem Stromverteilungssystem beliefert wird, müssen Sie sich vergewissern, daß die Sicherheitserdungen fest untereinander verbunden sind.

■ LAN-Kabel können gelegentlich gefährlichen Übergangsspannungen ausgesetzt werden (beispielsweise durch Blitz oder Störungen in dem Starkstromnetz des Elektrizitätswerks). Bei der Handhabung exponierter Metallbestandteile des Netzwerkes Vorsicht walten lassen.

Dieses Gerät enthält innen keine durch den Benutzer zu wartenden Teile. Wartungs-, Anpassungs-, Instandhaltungs- oder Reparaturarbeiten dürfen nur von geschultem Bedienungspersonal durchgeführt werden.

Dieses Gerät hat keinen Netzschalter; es wird beim Anschließen des Netzkabels eingeschaltet.

Safety and EMC Regulatory Statements

Considerazioni sulla sicurezza

<table>
<tr>
<td>⚠️ !</td>
<td>Simbolo di riferimento alla documentazione. Se il prodotto è contras-segnato da questo simbolo, fare riferimento alla documentazione sul prodotto per ulteriori informazioni su di esso.</td>
</tr>
<tr>
<td>**WARNING**</td>
<td>La dicitura **WARNING**denota un pericolo che può causare lesioni o morte.</td>
</tr>
<tr>
<td>Caution</td>
<td>La dicituraCaution denota un pericolo che può danneggiare le attrez-zature.</td>
</tr>
<tr>
<td></td>
<td>Non procedere oltre un avviso di **WARNING** o di Cautionprima di aver compreso le condizioni di rischio e aver provveduto alle misure del caso.</td>
</tr>
</table>

Questo prodotto è omologato nella classe di sicurezza I ed ha un terminale protettivo di collegamento a terra. Dev'essere installato un collegamento a terra di sicurezza, non interrompibile che vada dalla fonte d'alimentazione principale ai terminali d'entrata, al cavo d'alimentazione oppure al set cavo d'alimentazione fornito con il prodotto. Ogniqualvolta vi sia probabilità di danneggiamento della protezione, disinserite il cavo d'alimentazione fino a quando il collegaento a terra non sia stato ripristinato.

Per la messa a terra dei cavi LAN:

- se la vostra LAN copre un'area servita da più di un sistema di distribuzione elettrica, accertatevi che i collegamenti a terra di sicurezza siano ben collegati fra loro;

- i cavi LAN possono occasionalmente andare soggetti a pericolose tensioni transitorie (ad esempio, provocate da lampi o disturbi nella griglia d'alimen-tazione della società elettrica); siate cauti nel toccare parti esposte in metallo della rete.

Nessun componente di questo prodotto può essere riparato dall'utente. Qualsiasi lavoro di riparazione, messa a punto, manutenzione o assistenza va effettuato esclusi-vamente da personale specializzato.

Questo apparato non possiede un commutatore principale; si mette scotto tensione all'inserirsi il cavo d'alimentazione.

Consideraciones sobre seguridad

Símbolo de referencia a la documentación. Si el producto va marcado con este símbolo, consultar la documentación del producto a fin de obtener mayor información sobre el producto.

WARNING   Una **WARNING** en la documentación señala un riesgo que podría resultar en lesiones o la muerte.

Caution   Una Caution en la documentación señala un riesgo que podría resultar en averías al equipo.

No proseguir después de un símbolo de **WARNING** o Caution hasta no haber entendido las condiciones peligrosas y haber tomado las medidas apropiadas.

Este aparato se enmarca dentro de la clase I de seguridad y se encuentra protegido por una borna de puesta a tierra. Es preciso que exista una puesta a tierra continua desde la toma de alimentación eléctrica hasta las bornas de los cables de entrada del aparato, el cable de alimentación o el juego de cable de alimentación suministrado. Si existe la probabilidad de que la protección a tierra haya sufrido desperfectos, desenchufar el cable de alimentación hasta haberse subsanado el problema.

Puesta a tierra del cable de la red local (LAN):

■ Si la LAN abarca un área cuyo suministro eléctrico proviene de más de una red de distribución de electricidad, cerciorarse de que las puestas a tierra estén conectadas entre sí de modo seguro.

■ Es posible que los cables de la LAN se vean sometidos de vez en cuando a voltajes momentáneos que entrañen peligro (rayos o alteraciones en la red de energía eléctrica). Manejar con precaución los componentes de metal de la LAN que estén al descubierto.

Este aparato no contiene pieza alguna susceptible de reparación por parte del usuario. Todas las reparaciones, ajustes o servicio de mantenimiento debe realizarlos solamente el técnico.

Este producto no tiene interruptor de potencia; se activa cuando se enchufa el cable de alimentación.

Safety and EMC Regulatory Statements

Safety Information (Japan)

安全性の考慮

安全記号

⚠️ マニュアル参照記号。製品にこの記号がついている場合はマニュアル
を参照し、注意事項等をご確認ください。

WARNING   マニュアル中の「WARNING」は人身事故の原因となる危険を示します。

CAUTION   マニュアル中の「CAUTION」は装置破損の原因となる危険を示します。

「WARNING」や「CAUTION」の項は飛ばさないで必ずお読みください。危険性に関す
る記載事項をよく読み、正しい手順に従った上で次の事項に進んでください。

これは安全性クラス I の製品で保護用接地端子を備えています。主電源から製品の入力
配線端子、電源コード、または添付の電源コード・セットまでの間、切れ目のない安全
接地が存在することが必要です。もしこの保護回路が損なわれたことが推測されるとき
は、接地が修復されるまで電源コードを外しておいてください。

LAN ケーブルの接地に関して:
- もし貴社の LAN が複数の配電システムにより電力を受けている領域をカ
  バーしている場合には、それらのシステムの安全接地が確実に相互に結
  合されていることを確認してください。
- LAN ケーブルは時として危険な過度電圧(例えば雷や、配電設備の電力
  網での障害)にさらされることがあります。露出した金属部分の取扱い
  には十分な注意をはらってください。

本製品の内部にはユーザーが修理できる部品はありません。サービス、調整、保守およ
び修理はサービス訓練を受けた専門家におまかせください。

本製品には電源スイッチがありません。電源コードを接続したとき電源入となります。

**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。

B-6

Safety Information (China)

HP 网络产品使用安全手册

使用须知

欢迎使用惠普网络产品，为了您及仪器的安全，请您务必注意如下事项：

1. 仪器要和地线相接，要使用有正确接地插头的电源线，使用中国国家规定的220V电源。
2. 避免高温和尘土多的地方，否则易引起仪器内部部件的损坏。
3. 避免接近高温，避免接近直接热源，如直射太阳光、暖气等其它发热体。
4. 不要有异物或液体落入机内，以免部件短路。
5. 不要将磁体放置于仪器附近。

警告

为防止火灾或触电事故，请不要将该机放置于淋雨或潮湿处。

安装

安装辅助管理模块，请参看安装指南。

保修及技术支持

如果您按照以上步骤操作时遇到了困难，或想了解其它产品性能，请按以下方式与我们联络。

如是硬件故障：

1. 与售出单位或当地维修机构联系。
2. 中国惠普有限公司维修中心地址：
   北京市海淀区知春路49号希格玛大厦
   联系电话：010-62623888 转 6101
   邮政编码：100080

如是软件问题：

1. 惠普用户响应中心热线电话：010-65645959
2. 传真自动回复系统：010-65645735

B-7

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.

Japan

VCCI Class A

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラス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。

Korea

사용자 안내문 : A 급기기

이기기는 업무용으로 전자파 적합등록을 받은 기기
이오니, 판매자 또는 사용자는 이점을 주의하시기
바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에
서 비업무용으로 교환하시기 바랍니다.

Taiwan

警告使用者：這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻干擾，在這種
情況下，使用者會被要求採取某些適當的對策。

European Community

Recycle Statements

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 Rücknah-mestelle für Elektro- und Elektronik-Altgeräte abzugeben. Die getrennte Sammlung und ordnungs-gemäße 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 szemételtakarító 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 HP 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.

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