



# Manual Supplement:

## Power Over Ethernet (PoE) Operation

*for the HP ProCurve Switch 2626 and Switch 2650*

---

This supplement describes Power over Ethernet (PoE) configuration, operation, and monitoring on these HP ProCurve switches:

- HP ProCurve Switch 2626-PWR (J8164A)
- HP ProCurve Switch 2650-PWR (J8165A)

Related HP ProCurve Switch 2600-PWR Series publications include:

- *HP ProCurve Switch 2600 and 2600-PWR Series Installation and Getting Started Guide*
- *HP ProCurve Switch 2600-PWR Series Planning and Implementation Guide*
- *Release Notes: Version H.07.XX for the HP ProCurve Switch 2600 Series and the Switch 6108*
- *Management and Configuration Guide for the HP ProCurve Switch 2600 Series, Switch 2800 Series, Switch 4100 Series, and the Switch 6108*
- *Access Security Guide for the HP ProCurve Switch 2600 Series, Switch 2800 Series, Switch 4100 Series, and the Switch 6108*

---

### Note

For important installation information regarding your Switch 2626-PWR or Switch 2650-PWR, refer to the *HP ProCurve Switch 2600 and 2600-PWR Series Installation and Getting Started Guide* printed and shipped with your HP ProCurve switch. (A copy of the installation guide is also included on the Documentation CD-ROM shipped with the switch.)

Also, HP periodically updates switch software and product manuals, and posts them on the world wide web. For the latest software release and publications for your HP networking product, visit <http://www.hp.com/go/hpprocurve>. Click on **software updates** to check on the latest software releases. Click on **technical support**, then **product manuals** to check on the latest publications.

---

**© Copyright 2001, 2003 Hewlett-Packard Company, LP.  
The information contained herein is subject to change  
without notice.**

### **Publication Number**

5990-6044  
October 2003  
Edition 1

### **Applicable Product**

HP ProCurve Switch 2626-PWR (J8164A)  
HP ProCurve Switch 2650-PWR (J8165A)

### **Trademark Credits**

Microsoft®, Windows®, and Windows NT® are US registered trademarks of Microsoft Corporation. Adobe® and Acrobat® are trademarks of Adobe Systems Incorporated.

### **Disclaimer**

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD COMPANY MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Hewlett-Packard assumes no responsibility for the use or reliability of its software on equipment that is not furnished by Hewlett-Packard.

### **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.

Hewlett-Packard Company  
8000 Foothills Boulevard, m/s 5551  
Roseville, California 95747-5551  
<http://www.hp.com/go/hpprocurve>

# Contents

<b>Applicable Switch Models</b> .....	1
<b>Introduction</b> .....	1
General Operation .....	1
Related Publications .....	2
<b>Terminology</b> .....	2
<b>General PoE Operation</b> .....	3
Configuration Options .....	3
PD Support .....	4
Power Priority .....	5
When Does the Switch Prioritize Power Allocations? .....	5
How Does the Switch Prioritize Power Allocations? .....	6
<b>Configuring PoE Operation</b> .....	7
<b>Viewing PoE Configuration and Status</b> .....	9
Displaying the Switch's Global PoE Power Status .....	9
Displaying an Overview of PoE Status on All Ports .....	10
Displaying the PoE Status on Specific Ports .....	11
<b>Planning and Implementing a PoE Configuration</b> .....	12
Assigning PoE Ports to VLANs .....	12
Applying Security Features to PoE Configurations .....	12
Assigning Port-Based Priority to Incoming Packets .....	13
PoE Event Log Messages .....	13
<b>Downloading Switch Documentation and Software from the Web</b> .....	16
To Download a Software Version: .....	16
To Download Product Documentation: .....	16

— *This page is intentionally unused.* —

## Applicable Switch Models

The Power Over Ethernet (PoE) feature described in this supplement operates on these switches:

- HP ProCurve Switch 2626-PWR (J8164A)
  - HP ProCurve Switch 2650-PWR (J8165A)
- 

## Introduction

PoE technology allows IP telephones, wireless LAN access points, and other appliances to receive power and transfer data over existing LAN cabling.

## General Operation

The Switch 2626-PWR and 2650-PWR provision their 10/100Base-TX ports with 406 watts of power for PoE applications compatible with the IEEE 802.3af standard. On the Switch 2650-PWR, you can optionally provision ports 1-24 with 406 watts of internal power and ports 25-48 with 368 watts of external power by adding an HP ProCurve 600 Redundant and External Power Supply (HP RPS/EPS; J8168A).

---

### Note

The switches support the normal operation of non-PoE devices on ports configured for PoE operation.

Regarding Cat-5 cabling for PoE, the 802.af standard allows either the spare pair or the data pair for PoE power transmission. The Switch 2600-PWR series devices supply PoE power over the data pair.

---

Using the commands described in this chapter, you can:

- Configure a power threshold for SNMP and Event Log reporting of PoE consumption on the switch.
  - Specify the priority you want the switch to use for provisioning PoE in the event that the switch's PoE resources become oversubscribed.
-

- Enable or disable PoE operation on individual ports. (In the default configuration, the switch enables PoE on all 10/100-TX ports, subject to PoE priority in the case of oversubscription of PoE resources.)
- Monitor PoE status and performance on the switch

## Related Publications

This supplement introduces general PoE operation, PoE configuration and monitoring commands, and Event Log messages related to PoE operation on the HP ProCurve Switch 2626-PWR and 2650-PWR devices. The following two manuals provide further information:

- For information on installing the HP ProCurve Switch 2626-PWR and 2650-PWR, refer to the *Installation and Reference Guide* provided with the switch.
- To help you plan and implement a PoE system in your network, refer to the *Planning and Implementation Guide* for the Switch 2600-PWR series, which is available from either of the following sources:
  - The Documentation CD-ROM (version 3.5 or greater) shipped with your Switch Series 2600-PWR device
  - The HP ProCurve website at <http://www.hp.com/go/hpprocurve>. (Click on **technical support**, then **product manuals**.)

---

## Terminology

Term	Use in this Manual
active PoE port	A PoE-enabled port connected to a PD requesting power.
priority class	Refers to the type of power prioritization where the switch uses Low (the default), High, and Critical priority assignments to determine which groups of ports will receive power. Note that power priority rules apply only if PoE provisioning on the switch becomes oversubscribed.
EPS	External Power Supply; for example, an HP 600 RPS/EPS. An EPS device provides power to provision PoE ports on a switch. See also "RPS", below.
MPS	Maintenance Power Signature; the signal a PD sends to the switch to indicate that the PD is connected and requires power. Refer to figure 3 on page 12.

Term	Use in this Manual
PD	Powered Device. This is an IEEE 802.3af-compliant device that receives its power through a direct connection to a 10/100Base-TX PoE RJ-45 port on the switch. Examples of PDs include Voice-over-IP (VoIP) telephones, wireless access points, and remote video cameras.
port-number priority	Refers to the type of power prioritization where, within a priority class, the switch assigns the highest priority to the lowest-numbered port, the second-highest priority to the second lowest-numbered port, and so on. Note that power priority rules apply only if PoE provisioning on the switch becomes oversubscribed.
PoE	Power-Over-Ethernet; the method by which PDs receive power from the switch (in compliance with the IEEE 802.3af standard).
PSE	Power-Sourcing Equipment. A PSE, such as a Switch 2626-PWR or 2650-PWR, provides power to IEEE 802.3af-compliant PDs directly connected to 10/100Base-TX PoE RJ-45 ports on the switch. The Switch 2626-PWR and 2650-PWR are <i>endpoint</i> PSEs.
RPS	Redundant Power Supply; for example, an HP 600 RPS/EPS. An RPS device provides power to a switch if the switch's internal power supply fails. RPS power does not provision PoE ports on a switch whose internal power supply has failed. See also "EPS", above.

---

## General PoE Operation

### Configuration Options

In the default configuration, all 10/100Base-TX ports on the switch are configured to support PoE operation. You can:

- Disable or re-enable per-port PoE operation on some ports to help control power usage and avoid oversubscribing PoE on the switch.
- Configure per-port priority for allocating power in case the switch becomes oversubscribed and must drop power for some lower-priority ports to support the demand on other, higher-priority ports.
- Configure a global power threshold on the switch to act as a trigger for sending a notice when the switch exceeds or goes below a specific level of PoE power consumption.

---

#### Note

The PoE ports on your switch support standard networking links and PoE links. Thus, you can connect either a non-PoE device or a PD to a PoE-enabled port without reconfiguring the port.

---

## PD Support

The switch must have a minimum of 15.4 watts of unused PoE power available when you connect an 802.3af-compliant PD, regardless of how much power the PD actually uses. On the Switch 2626-PWR, there will always be enough power available to connect and support 802.3af PoE operation on all 24 10/100-TX ports. On the Switch 2650-PWR, however, it is possible to oversubscribe the available PoE power. In this case, one or more PoE devices connected to the switch will lose power. That is:

- **Sufficient PoE Power Available:** When a Switch 2650-PWR detects a new PD, and if the switch has a minimum of 15.4 watts of PoE power available, the switch supplies power to the port for that PD.
- **Insufficient PoE Power Available:** When a Switch 2650-PWR detects a new PD, and if the switch does not have a minimum of 15.4 watts of unused PoE power available:
  - If the new PD is connected to a port "X" having a *higher* PoE priority than another port "Y", the switch removes PoE power from port "Y" and delivers it to port "X". In this case the PD on port "X" receives power and the PD on port "Y" is denied power.
  - If the new PD is connected to a port "X" having a *lower* priority than all other PoE ports currently providing power to PDs, then the switch does not deliver PoE power to port "X".

Note that once a PD connects to a port and begins operating, the port retains only enough PoE power to support the PD's operation. Unneeded power becomes available for supporting other PD connections. Thus, while 15.4 watts must be available for the switch to begin supplying power to a port with a PD connected, 15.4 watts per port is not continually required if the connected PD requires less power. For example, with 20 watts of PoE power remaining available on the switch, you can connect one new PD without losing power to any currently connected PDs. If that PD draws only 3 watts, then 17 watts remain available and you can connect at least one more PD without interrupting power to any other devices. If the next PD you connect draws 5 watts, then only 12 watts remain unused. With only 12 watts available, if you connect yet another PD, the lowest-priority port will lose PoE power until the switch once again has 15.4 or more watts available. (For information on power priority, refer to "Power Priority" on page 5.)

Disconnecting a PD from a port causes the switch to stop providing PoE power to that port and makes the power available to other ports configured for PoE operation. If the PoE demand becomes greater than the available power, the switch transfers power from lower-priority ports to higher-priority ports. (Ports not currently providing power to PDs are not affected.)



**Note**

15.4 watts of available power is required for the switch to begin delivering power to a port, such as when a newly connected PD is detected or when power is released from higher priority ports. Depending on power demands, lower-priority ports on a switch with high PoE power demand may occasionally lose power due to the demands of higher-priority ports. (Refer to “Power Priority” on page 5.)

**Table 1. Port-Group Maximum Power Allocations**

PoE Power Sources	PoE for Switch 2626-PWR	PoE for Switch 2650-PWR
Internal Only	406 watts available to support PoE operation on ports 1-24. <sup>1</sup>	406 watts available to support PoE operation on ports 1-48. <sup>1</sup>
Internal and EPS	Redundant 368/184 <sup>2</sup> watts available to ports 1-24. (The switch uses EPS power on ports 1-24 <i>only</i> if the internal power supply fails.)	<ul style="list-style-type: none"> <li>• Ports 1-24: 406 watts available (provided by the internal power supply).</li> <li>• Ports 25-48:               <ul style="list-style-type: none"> <li>– 368 watts available if the EPS connects to only one switch.</li> <li>– 184 watts available if the EPS connects to two switches.</li> </ul> </li> </ul> <p>(If the internal power supply fails, the EPS provides either 368 watts or 184 watts to ports 1-48, depending on whether the EPS connects to one or two switches. Note that 38 watts of this power are always allocated exclusively to ports 25-48.)</p>

<sup>1</sup>The switch uses 38 watts for internal PoE processes, which leaves 368 watts to provision PDs connected to ports 1 - 24 (2626-PWR) or 1 - 48 (2650-PWR).

<sup>2</sup>If both EPS ports on the HP 600 RPS/EPS are connected to switches, each switch can receive 184 watts of PoE power. If only one switch is connected to the EPS port, that switch can receive 368 watts of PoE power.

## Power Priority

**When Does the Switch Prioritize Power Allocations?** If the switch can provide power for all existing PD demands, it does not use its power priority settings to allocate power. However, if the PD power demand oversubscribes the available power, then the switch prioritizes the power allocation to the ports that present a PD power demand. This causes the switch to remove power from one or more lower-priority ports to meet the power demand on other, higher-priority ports. (This operation occurs, regardless of the order in which PDs connect to the switch’s PoE-configured ports.)

**How Does the Switch Prioritize Power Allocations?** The switch simultaneously uses two priority methods:

- The *priority class* method enables port PoE priority class assignments of **Low** (the default), **High**, and **Critical**.
- The *port-number priority* method gives a lower-numbered port priority over a higher-numbered port within the same configured priority class.

Suppose, for example, that you configure PoE priority as shown in table 2.

**Table 2. Example of PoE Priority Operation**

Port	Priority Setting	Configuration Command <sup>1</sup> and Resulting Operation
25 - 48	Critical	<p>This priority class always receives power. If there is not enough power to provision PDs on all of the ports configured for this class, then no power goes to ports configured for High and Low priority. If there is enough power to provision PDs on only some of the "Critical" ports, then power is allocated to the "Critical" ports in ascending order, beginning with the lowest-numbered port in the class, which, in this case, is port 25. For this example, the CLI command to set ports to "Critical" is:</p> <pre>HPswitch(config)# interface e 25-48 power critical</pre>
9 - 12	High	<p>This priority class receives power only if all PDs on ports with a Critical priority setting are receiving full power. If there is not enough power to provision PDs on all ports with a High priority, then no power goes to ports with a Low priority. If there is enough power to provision PDs on only some of the "High" ports, then power is allocated to the "High" ports in ascending order, beginning, in this example, with port 9, until all available power is in use. For this example, the CLI command to set ports to "High" is:</p> <pre>HPswitch(config)# interface e 9-12 power high</pre>
1 - 8	Low	<p>This priority class receives power only if all PDs on ports with High and Critical priority settings are receiving power. If there is enough power to provision PDs on only some Low priority ports, then power is allocated to the ports in ascending order, beginning with the lowest-numbered port in the class (port 1, in this case), until all available power is in use. For this example, the CLI command to set ports to "Low"<sup>2</sup> is:</p> <pre>HPswitch(config)# interface e 1-8 power low</pre>
13 - 24	- n/a -	<p>For this example, PoE is disabled on these ports. The CLI command for this setting is:</p> <pre>HPswitch(config)# no interface e 13-24 power</pre>

<sup>1</sup> For a listing of PoE configuration commands, with descriptions, refer to "Configuring PoE Operation" on page 7.

<sup>2</sup> In the default PoE configuration, the ports are already set to the **low** priority. In this case, the command is not necessary.

---

## Configuring PoE Operation

In its default configuration, PoE support is enabled on the switch's 10/100Base-TX ports, with Priority set to **Low** and the power threshold set to **80** (%).

**Syntax:** power threshold < 1 - 99 >

*The power threshold is a configurable percentage of the **total** PoE power available on the switch. When PoE consumption exceeds the threshold, the switch automatically generates an SNMP trap and also sends a message to the Event Log. For example, if the power threshold is set to 80% (the default), and an increasing PoE power demand crosses this threshold, the switch sends an SNMP trap and generates this Event Log message:*

*PoE usage has exceeded threshold of 80 %.  
If the switch is configured for debug logging, it also sends the same message to the configured debug destination(s).*

*The switch automatically invokes the power threshold at the global configuration level with a default setting of 80%. You can configure the power threshold to a value in the range of 1% to 99%.*

*If an increasing PoE power load (1) exceeds the configured power threshold (which triggers the log message and SNMP trap), and then (2) later begins decreasing and drops below the threshold again, the switch generates another SNMP trap, plus a message to the Event Log and any configured Debug destinations. To continue the above example:*

*PoE usage is below configured threshold  
of 80 %.*

*(Refer to "PoE Event Log Messages" on page 13.)*

**Syntax:** [no] interface [e] < port-list > power

*Re-enables PoE operation on < port-list > and restores the priority setting in effect when PoE was disabled on < port-list >. The [no] form of the command disables PoE operation on < port-list >. (Default: All 10/100Base-TX ports on the switch enabled for PoE operation at **Low** priority.)*

**Syntax:** interface [e] < port-list > power [ critical | high | low ]

*Reconfigures the PoE priority level on < port-list >. For a given level, the switch automatically prioritizes ports by port number (in ascending order). If there is not enough power available to provision all active PoE ports at a given priority level, then the lowest-numbered port at that level will be provisioned first, and so on. The switch invokes configured PoE priorities only when it cannot provision all active PoE ports.*

- **Critical:** *Specifies the first priority PoE support for < port-list >. The switch provisions active PoE ports at this level before PDs connected to any other ports.*
- **High:** *Specifies the second priority PoE support for < port-list >. The switch provisions active PoE ports at this level before PDs connected to Low-priority ports.*
- **Low (the default):** *Specifies the third support priority for < port-list >. The switch provisions active PoE ports at this level only if there is power available after provisioning any active PoE ports at the higher priority levels.*

---

# Viewing PoE Configuration and Status

## Displaying the Switch's Global PoE Power Status

**Syntax:** show power-management

*Displays the switch's global PoE power status, including:*

- **Max Power:** Lists the maximum PoE wattage available to provision active PoE ports on the switch.
- **PowerInUse:** Lists the amount of PoE power presently in use.
- **Operational Status:** Indicates whether PoE power is available on the switch. (Default: **On** ; shows **Off** if PoE power is not available. Shows **Faulty** if internal or external PoE power is oversubscribed or faulty.)
- **Usage Threshold (%):** Lists the configured percentage of available PoE power provisioning the switch must exceed to generate a usage notice in the form of an Event Log message and an SNMP trap. If this event is followed by a drop in power provisioning below the threshold, the switch generates another SNMP trap and Event Log message. Event Log messages are also sent to any optionally configured debug destinations. (Default: **80%**)

For example, in the default PoE configuration, when the switch is running with several ports supporting PD loads, **show power-management** displays data similar to the following on a Switch 2626-PWR device:

```
HPswitch-PWR# show power-management
Status and Counters - System Power Status
Maximum Power      : 406 W           Operational Status : On
Power In Use       : 75 W +/- 6 W    Usage Threshold (%) : 80
```

**Figure 1. Example of Show Power-Management Output**

## Displaying an Overview of PoE Status on All Ports

**Syntax:** show power-management brief

*Displays the following port power status:*

- **Port:** Lists all PoE-capable ports on the switch.
  - Power Enable:** Shows **Yes** for ports enabled to support PoE (the default) and **No** for ports on which PoE is disabled.
- **Priority:** Lists the power priority (**Low**, **High**, and **Critical**) configured on ports enabled for PoE. (For more on this topic, refer to the power command description under “Configuring PoE Operation” on page 7.)
- **Configured Type:** Lists the type of PD connected to each port. For example: Telephone, Webcam, Wireless, Other.
- **Detection Status:**
  - **Searching:** The port is trying to detect a PD connection.
  - **Delivering:** The port is delivering power to a PD.
  - **Disabled:** PoE support is disabled on the port. To re-enable, refer to “Configuring PoE Operation” on page 7.
  - **Fault:** The switch detects a problem with the connected PD.
- **Power Class:** Shows the 802.3af power class of the PD detected on the indicated port. Classes include:

**0:** 0.44w to 12.95w                      **3:** 6.49w to 12.95w  
**1:** 0.44w to 3.84w                        **4:** reserved  
**2:** 3.84w to 6.49w

For example, **show management-brief** displays this output:

```

HPswitch-PWR(config)# show power-management brief
Status and Counters - Port Power Status

```

Port	Power Enable	Priority	Configured Type	Detection Status	Power Class
1	Yes	Critical	Telephone	Delivering	1
2	Yes	Critical	Telephone	Delivering	1
3	Yes	High	Wireless	Delivering	3
4	Yes	High	Wireless	Delivering	3
5	Yes	Low		Searching	0
6	Yes	Low		Searching	0
7	Yes	Low		Searching	0
8	Yes	Low		Searching	0
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

Ports 1 through 4 are delivering power. The remaining ports are available to supply power, but currently do not detect a connected PD.

**Figure 2.** Example of Show Management-Brief Output

## Displaying the PoE Status on Specific Ports

**Syntax:** show power-management [e] < port-list >

*Displays the following PoE status and statistics (since the last reboot) for each port in < port-list >:*

- **Power Enable:** Shows **Yes** for ports enabled to support PoE (the default) and **No** for ports on which PoE is disabled.
- **Priority:** Lists the power priority (**Low, High, and Critical**) configured on ports enabled for PoE. (For more on this topic, refer to the power command description under “Configuring PoE Operation” on page 7.)
- **Detection Status:**
  - **Searching:** The port is available to support a PD connection.
  - **Delivering:** The port is delivering power to a PD.
  - **Disabled:** PoE support is disabled on the port. To re-enable PoE support, refer to “Configuring PoE Operation” on page 7.
  - **Fault:** The switch detects a problem with the connected PD.
- **Over Current Cnt:** Shows the number of times a connected PD has attempted to draw more than 15.4 watts. Each occurrence generates an Event Log message.
- **Power Denied Cnt:** Shows the number of times PDs requesting power on the port have been denied due to insufficient power available. Each occurrence generates an Event Log message.
- **Voltage:** The total voltage, in dV, being delivered to PDs.
- **Power:** The total power, in mW, being delivered to PDs.
- **Configured Type:** Shows the type of PD detected on the port.
- **Power Class:** Shows the power class of the PD detected on the indicated port. Classes include:
  - 0:** 0.44w to 12.95w
  - 1:** 0.44w to 3.84w
  - 2:** 3.84w to 6.49w
  - 3:** 6.49w to 12.95w
  - 4:** reserved
- **MPS Absent Cnt:** This value shows the number of times a detected PD has no longer requested power from the port. Each occurrence generates an Event Log message. (“MPS” refers to the “Maintenance Power Signature”. Refer to “Terminology” on page 2.)
- **Short Cnt:** Shows the number of times the switch provided insufficient current to a connected PD.
- **Current:** The total current, in mA, being delivered to PDs.

For example, if you wanted to view the PoE status of port 5 on a Switch 2626-PWR or Switch 2650-PWR, you would use **show power-management 5** to display the data:

```
HPswitch-PWR# show power-management e 5

Status and Counters - Port Power Status for port 5

Power Enable      : Yes
Priority          : High           Configured Type   :
Detection Status : Delivering    Power Class      : 0
Over Current Cnt : 0             MPS Absent Cnt   : 1
Power Denied Cnt : 0             Short Cnt        : 0
Voltage          : 506 dV        Current           : 298 mA
Power            : 15078 mW
```

**Figure 3. Example of Show Power-Management < port-list > Output**

---

## Planning and Implementing a PoE Configuration

This section provides an overview of some considerations for planning a PoE application. For additional information on this topic, refer to the HP ProCurve Switch 2600-PWR Series *Planning and Implementation Guide*.

### Assigning PoE Ports to VLANs

If your network includes VLANs, you may want to assign various PoE-configured ports to specific VLANs. For example, if you are using PoE telephones in your network, you may want to assign ports used for telephone access to a VLAN reserved for telephone traffic.

### Applying Security Features to PoE Configurations

You can utilize security features built into the switch to control device or user access to the network through PoE ports in the same way as non-PoE ports.



- **MAC Address Security:** Using Port Security, you can configure each switch port with a unique list of up to eight MAC addresses for devices that are authorized to access the network through that port. For more information, refer to the chapter titled "Configuring and Monitoring Port Security" in the *Access Security Guide* for your switch.
- **Username/Password Security:** If you are connecting a device that allows you to enter a username and password that is forwarded to a networked server for authentication, then you can also configure the following security features:
  - TACACS+
  - RADIUS Authentication and Accounting
  - 802.1X Authentication

For more information, refer to the *Access Security Guide* for your switch.

## Assigning Port-Based Priority to Incoming Packets

You can prioritize traffic on the basis of the inbound port on which the switch receives it. If an outbound port is a tagged member of a VLAN, a priority assigned to an inbound packet on the switch determines the outbound port queue for that packet and also causes the packet to carry the assigned priority to the next device. If an outbound port is not a tagged member of a VLAN, a priority assigned to an inbound packet will still determine the outbound port queue for that packet. With the default port-based priority feature, the switch handles untagged, inbound traffic as "Normal" (priority level = 0). You also have the option of configuring the switch to assign a priority level of 0 - 7.

Inbound, tagged VLAN traffic carries a specific 802.1p priority level (0-7) that the switch recognizes and uses to assign packet priority at the outbound port. (The switch can alter the priority of inbound, tagged VLAN traffic carrying a priority level of "0", but does not alter the priority of inbound, tagged VLAN traffic having a priority level of 1 - 7.)

For more information on this topic, refer to "Configuring Port-Based Priority for Incoming Packets" in the *Management and Configuration Guide* for your switch.

## PoE Event Log Messages

PoE operation generates these Event Log messages. You can also configure the switch to send these messages to a configured debug destination (terminal device or SyslogD server).

I 1MM/DD/YY HH:MM:SS chassis:

*Message header, with severity, date, system time, and system module type. For more information on Event Log operation, refer to the "Troubleshooting" appendix in the Management and Configuration Guide for your switch.*

Ext Power Supply connected, supplying <actual-power>W of <avail-power> W max.

*The switch detected an EPS (External Power Supply) and began receiving the wattage indicated by < actual-power >. The < avail-power > field indicates the maximum power (wattage) the detected EPS is capable of delivering*

Ext Power Supply disconnected

*The switch has lost contact with an external power supply.*

POE usage is below configured threshold of <1-99>%  
<slot-#> POE usage is below configured threshold of <1-99>%

*Indicates that POE usage in the switch or indicated slot (if the switch includes module slots) has decreased below the threshold specified by the last execution of the global **power threshold <1-99>** command. This message occurs if, after the last reboot, the PoE demand on the switch exceeded the power threshold and then later dropped below the threshold value.*

Port <port-#> applying power to PD.

*A PoE device is connected to the port and receiving power.*

Port <port-#> PD detected.

*The switch has detected a PoE device connected to the port.*

W MM/DD/YY HH:MM:SS chassis:

*Message header, with severity, date, system time, and system module type. For more information on Event Log operation, refer to the "Troubleshooting" appendix in the Management and Configuration Guide for your switch.*

Ext Power Supply connected but not responding.

*The switch detects an external power supply, but is not receiving power from the device.*

Ext Power Supply failure: < fault-type > Failures:

*Indicates an external power supply failure where < fault-type > is one of the following:*

- *Over Current fault: The HP 600 RPS/EPS reported a fault condition. Contact your HP ProCurve support representative.*
- *Fan fault: A fan in an external power supply has failed.*
- *Temperature fault: The operating temperature in an external power supply has exceeded the normal operating range.*
- *50V fault: The HP 600 RPS/EPS reported a fault condition. Contact your HP ProCurve support representative.*
- *12V fault: The HP 600 RPS/EPS reported a fault condition. Contact your HP ProCurve support representative.*

POE usage has exceeded threshold of < 1-99 > %

< slot-# > POE usage has exceeded threshold of < 1-99 > %

*Indicates that POE usage in the switch or indicated slot (if the switch includes module slots) has exceeded the configured threshold for the switch, as specified by the last execution of the **power threshold < 1 - 99 >** command. (Note that the switch also generates an SNMP trap for this event.)*

Port < port-# > PD Denied power due to insufficient power allocation.

*There is insufficient power available to power the PD on the indicated port and the port does not have sufficient PoE priority to take power from another active PoE port.*

Port < port-# > PD Invalid Signature indication.

*The switch has detected a non 802.3af-compliant load.*

Port < port-# > PD MPS Absent indication.

*The switch no longer detects a device on < port-# >. The device may have been disconnected, powered down, or stopped functioning.*

Port < port-# > PD Other Fault indication.

*There is a problem with the PD connected to the port.*

Port < port-# > PD Over Current indication.

*The PD connected to < port-# > has requested more than 15.4 watts of power. This may indicate a short-circuit or other problem in the PD.*

## Downloading Switch Documentation and Software from the Web


You can download software updates and the corresponding product documentation from HP's ProCurve website as described below.

### To Download a Software Version:

1. Go to HP's ProCurve website at:  
<http://www.hp.com/go/hpprocurve>.
2. Click on **software** (in the sidebar).
3. Under **latest software**, click on **switches**.

### To Download Product Documentation:

You will need the Adobe® Acrobat® Reader to view, print, and/or copy the product documentation.

1. Go to HP's ProCurve website at <http://www.hp.com/go/hpprocurve>.
2. Click on **technical support**, then **product manuals**.
3. Click on the name of the product for which you want documentation.
4. On the resulting web page, double-click on a document you want.
5. When the document file opens, click on the disk icon  in the Acrobat® toolbar and save a copy of the file.

— *This page is intentionally unused.* —



i n v e n t

© 2001, 2003 Hewlett-Packard D  
Company, LP. The information co  
herein is subject to change with

Edition 1, October 2003  
Manual Part Number  
5990-6044