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# Chapter 8

## Configuring Basic Software Features

This chapter describes how to configure basic, non-protocol software features on the ProCurve 9408sl using the CLI.

This chapter contains procedures for configuring the following parameters:

- Basic system parameters – see “Configuring Basic System Parameters” on page 8-2.
- Basic port parameters – see “Configuring Basic Port Parameters” on page 8-12.
- Basic Layer 2 parameters – see “Configuring Basic Layer 2 Parameters” on page 8-13.
- Basic Layer 3 parameters – see “Enabling or Disabling Routing Protocols” on page 8-17.
- System defaults and table sizes – see “Displaying and Modifying System Parameter Default Settings” on page 8-17.
- Mirror ports (for traffic diagnosis and troubleshooting) – see “Assigning a Mirror Port and Monitor Ports” on page 8-20.

The ProCurve 9408sl is configured at the factory with default parameters that allow you to begin using the basic features of the system immediately. However, many of the advanced features such as VLANs or routing protocols for the Routing Switch must first be enabled at the system (global) level before they can be configured.

If you use the Command Line Interface (CLI) to configure system parameters, you can find these system level parameters at the Global CONFIG level of the CLI.

If you use the Web management interface, you enable or disable the system level parameters on the System configuration panel, which is displayed by default when you start a management session.

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**NOTE:** Before assigning or modifying any Routing Switch parameters, you must assign the IP subnet (interface) addresses for each port.

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**NOTE:** This chapter does not describe how to configure Virtual LANs (VLANs) or link aggregation. For information about these features, see the “Configuring Virtual LANs (VLANs)” and “Configuring Trunk Groups and Dynamic Link Aggregation” chapters, respectively, in the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

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**NOTE:** For information about configuring IP addresses, DNS resolver, DHCP assist, and other IP-related parameters, see the “Configuring IP” chapter of the *Advanced Configuration and Management Guide for ProCurve 9300/9400 Series Routing Switches*.

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For information about the Syslog buffer and messages, see the “Using Syslog” appendix in the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

## Using the Web Management Interface for Basic Configuration Changes

The Web management interface enables you to easily make numerous configuration changes by entering or changing information on configuration panels.

<a href="#">Identification</a>	<b>Policy Based VLANs</b> <input type="checkbox"/> Port <input type="checkbox"/> L3 Protocol <b>Spanning Tree</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <input type="checkbox"/> Single <input checked="" type="checkbox"/> Fast <b>QOS</b> <input type="radio"/> Strict <input checked="" type="radio"/> Weighted <b>L2 Switching</b> <input type="radio"/> Disable <input checked="" type="radio"/> Enable <b>OSPF</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>RIP</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>IPX</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>DVMRP</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>PIM</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>SRP</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>APPLETALK</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <b>BGP</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable Local AS <input type="text" value="0"/> <b>VRRP</b> <input checked="" type="radio"/> Disable <input type="radio"/> Enable <input type="button" value="Advance..."/> <input type="button" value="Apply"/> <input type="button" value="Reset"/>
<a href="#">IP Address</a>	
<a href="#">Clock</a>	
<a href="#">NTP</a>	
<a href="#">MAC Filter</a>	
<a href="#">Module</a>	
<a href="#">Max-Parameter</a>	
<a href="#">RADIUS</a>	
<a href="#">TACACS</a>	
<a href="#">Management</a>	

[\[Home\]](#) [\[Site Map\]](#) [\[Logout\]](#) [\[Save\]](#) [\[Frame Enable\]](#) [\[Disable\]](#) [\[TELNET\]](#)

## Configuring Basic System Parameters

The procedures in this section describe how to configure the following basic system parameters:

- System name, contact, and location – see “Entering System Administration Information” on page 8-2
- SNMP trap receiver, trap source address, and other parameters – see “Configuring Simple Network Management (SNMP) Parameters” on page 8-3
- System time using a Simple Network Time Protocol (SNTP) server or local system counter – see “Specifying a Simple Network Time Protocol (SNTP) Server” on page 8-7 and “Setting the System Clock” on page 8-8
- Broadcast, multicast, or unknown-unicast limits, if required to support slower third-party devices – see “Limiting Broadcast, Multicast, or Unknown-Unicast Rates” on page 8-9
- Banners that are displayed on users’ terminals when they enter the Privileged EXEC CLI level or access the device through Telnet – see “Configuring CLI Banners” on page 8-10.
- Terminal display length – see “Configuring Terminal Display” on page 8-11.

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**NOTE:** For information about the Syslog buffer and messages, see the “Using Syslog” appendix in the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

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## Entering System Administration Information

You can configure a system name, contact, and location for the ProCurve 9408sl and save the information locally in the configuration file for future reference. This information is not required for system operation but is suggested.

When you configure a system name, the name replaces the default system name in the CLI command prompt. For example, the system name you configure replaces “ProCurveRS” in the command prompt.

The name, contact, and location each can be up to 32 alphanumeric characters.

Here is an example of how to configure a name, contact, and location:

```
ProCurveRS(config)# hostname zappa
zappa (config)# snmp-server contact Suzy Q
zappa (config)# snmp-server location Centerville
zappa (config)# end
zappa# write memory
```

**Syntax:** hostname <string>

**Syntax:** snmp-server contact <string>

**Syntax:** snmp-server location <string>

The text strings can contain blanks. The SNMP text strings do not require quotation marks when they contain blanks but the host name does.

## Configuring Simple Network Management (SNMP) Parameters

Use the procedures in this section to perform the following configuration tasks:

- Specify an SNMP trap receiver.
- Specify a source address and community string for all traps sent by the device.
- Change the holddown time for SNMP traps.
- Disable individual SNMP traps. (All traps are enabled by default.)
- Disable traps for CLI access that is authenticated by a local user account, a RADIUS server, or a TACACS/TACACS+ server.

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**NOTE:** To add and modify “get” (read-only) and “set” (read-write) community strings, see the *Security Guide for ProCurve 9300/9400 Series Routing Switches*.

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### Specifying an SNMP Trap Receiver

You can specify a trap receiver to ensure that all SNMP traps sent by the ProCurve 9408sl go to the same SNMP trap receiver or set of receivers, typically one or more host devices on the network. When you specify the host, you also specify a community string. The device sends all the SNMP traps to the specified host(s) and includes the specified community string. Administrators can therefore filter for traps from the ProCurve 9408sl based on IP address or community string.

When you add a trap receiver, the software automatically encrypts the community string you associate with the receiver when the string is displayed by the CLI or Web management interface. If you want the software to show the community string in the clear, you must explicitly specify this when you add a trap receiver. In either case, the software does not encrypt the string in the SNMP traps sent to the receiver.

To specify an SNMP trap receiver and change the UDP port that will be used to receive traps, enter a command such as the following:

```
ProCurveRS(config)# # snmp-server host 2.2.2.2 1 mypublic port 200
ProCurveRS(config)# write memory
```

**Syntax:** snmp-server host <ip-addr> [0 | 1] <string> [port <value>]

The <ip-addr> parameter specifies the IP address of the trap receiver.

The **0 | 1** parameter specifies whether you want the software to encrypt the string (**1**) or show the string in the clear (**0**). The default is **0**.

The <string> parameter specifies an SNMP community string configured on the device. The string can be a read-only string or a read-write string. The string is not used to authenticate access to the trap host but is instead a

useful method for filtering traps on the host. For example, if you configure each of your HP devices that use the trap host to send a different community string, you can easily distinguish among the traps from different HP devices based on the community strings.

The command in the example above adds trap receiver 2.2.2.2 and configures the software to encrypt display of the community string. When you save the new community string to the startup-config file (using the **write memory** command), the software adds the following command to the file:

```
snmp-server host 2.2.2.2 1 <encrypted-string>
```

The **port** <value> parameter allows you to specify which UDP port will be used by the trap receiver. This parameter allows you to configure several trap receivers in a system. HP devices can be configured to send copies of traps to more than one network management application.

### Specifying a Single Trap Source

You can specify a single trap source to ensure that all SNMP traps sent by the ProCurve 9408sl use the same source IP address. When you configure the SNMP source address, you specify the Ethernet port, loopback interface, or virtual interface that is the source for the traps. The device then uses the lowest-numbered IP address configured on the port or interface as the source IP address in the SNMP traps sent by the device.

Identifying a single source IP address for SNMP traps provides the following benefits:

- If your trap receiver is configured to accept traps only from specific links or IP addresses, you can use this feature to simplify configuration of the trap receiver by configuring the device to always send the traps from the same link or source address.
- If you specify a loopback interface as the single source for SNMP traps, SNMP trap receivers can receive traps regardless of the states of individual links. Thus, if a link to the trap receiver becomes unavailable but the receiver can be reached through another link, the receiver still receives the trap, and the trap still has the source IP address of the loopback interface.

To configure the device to send all SNMP traps from the first configured IP address on port 1/1, enter the following commands:

```
ProCurveRS(config)# snmp-server trap-source ethernet 1/1
ProCurveRS(config)# write memory
```

**Syntax:** snmp-server trap-source loopback <num> | ethernet <slot>/<port> | ve <num>

The <num> parameter is a loopback interface or virtual interface number. If you specify an Ethernet interface, the <slot>/<port> parameter specifies the slot and port number of the Ethernet interface.

To specify a loopback interface as the device's SNMP trap source, enter commands such as the following:

```
ProCurveRS(config)# int loopback 1
ProCurveRS(config-lbif-1)# ip address 10.0.0.1/24
ProCurveRS(config-lbif-1)# exit
ProCurveRS(config)# snmp-server trap-source loopback 1
```

The commands in this example configure loopback interface 1, assign IP address 10.0.0.1/24 to the loopback interface, then designate the interface as the SNMP trap source for the device. Regardless of the port the device uses to send traps to the receiver, the traps always arrive from the same source IP address.

### Setting the SNMP Trap Holddown Time

When a ProCurve 9408sl starts up, the software waits for Layer 2 convergence (STP) and Layer 3 convergence (OSPF) before beginning to send SNMP traps to external SNMP servers. Until convergence occurs, the device might not be able to reach the servers, in which case the messages are lost.

By default, a ProCurve 9408sl uses a one-minute holddown time to wait for the convergence to occur before starting to send SNMP traps. After the holddown time expires, the device sends the traps, including traps such as "cold start" or "warm start" that occur before the holddown time expires.

You can change the holddown time to a value from one second to ten minutes.

To change the holddown time for SNMP traps, enter a command such as the following at the global CONFIG level of the CLI:

```
ProCurveRS(config)# snmp-server enable traps holddown-time 30
```

The command in this example changes the holddown time for SNMP traps to 30 seconds. The device waits 30 seconds to allow convergence in STP and OSPF before sending traps to the SNMP trap receiver.

**Syntax:** [no] snmp-server enable traps holddown-time <secs>

The <secs> parameter specifies the number of seconds and can be from 1 – 600 (ten minutes). The default is 60 seconds.

### Disabling SNMP Traps

The ProCurve 9408sl comes with SNMP trap generation enabled by default for all traps. You can selectively disable one or more of the following traps.

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**NOTE:** By default, all SNMP traps are enabled at system startup.

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- Authentication
- Power supply failure
- Fan failure
- Cold start
- Holddown time
- Link up
- Link down
- New root
- Topology change
- Locked address violation
- Metro ring
- Module inserted
- Module removed
- Redundant module
- Temperature
- BGP
- OSPF
- VRRP
- VSRP

To stop link down occurrences from being reported, enter the following:

```
ProCurveRS(config)# no snmp-server enable traps link-down
```

**Syntax:** [no] snmp-server enable traps <trap-type>

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**NOTE:** For a list of the trap values, see the *Command Line Interface Reference for ProCurve 9300/9400 Series Routing Switches*.

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## Disabling Syslog Messages and Traps for CLI Access

The ProCurve 9408sl sends Syslog messages and SNMP traps when a user logs into or out of the User EXEC or Privileged EXEC level of the CLI. The feature applies to users whose access is authenticated by an authentication-method list based on a local user account, RADIUS server, or TACACS/TACACS+ server.

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**NOTE:** The Privileged EXEC level is sometimes called the “Enable” level, because the command for accessing this level is **enable**.

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The feature is enabled by default.

### Examples of Syslog Messages for CLI Access

When a user whose access is authenticated by a local user account, a RADIUS server, or a TACACS/TACACS+ server logs into or out of the CLI's User EXEC or Privileged EXEC mode, the software generates a Syslog message and trap containing the following information:

- The time stamp
- The user name
- Whether the user logged in or out
- The CLI level the user logged into or out of (User EXEC or Privileged EXEC level)

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**NOTE:** Messages for accessing the User EXEC level apply only to access through Telnet. The device does not authenticate initial access through serial connections but does authenticate serial access to the Privileged EXEC level. Messages for accessing the Privileged EXEC level apply to access through the serial connection or Telnet.

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The following examples show login and logout messages for the User EXEC and Privileged EXEC levels of the CLI:

```
ProCurveRS(config)# show logging

Syslog logging: enabled (0 messages dropped, 0 flushes, 0 overruns)
Buffer logging: level ACDMEINW, 12 messages logged
level code: A=alert C=critical D=debugging M=emergency E=error
I=informational N=notification W=warning

Static Log Buffer:
Dec 15 19:04:14:A:Fan 1, fan on right connector, failed

Dynamic Log Buffer (50 entries):
Oct 15 18:01:11:info:dg logout from USER EXEC mode
Oct 15 17:59:22:info:dg logout from PRIVILEGE EXEC mode
Oct 15 17:38:07:info:dg login to PRIVILEGE EXEC mode
Oct 15 17:38:03:info:dg login to USER EXEC mode
```

### **Syntax:** show logging

The first message (the one on the bottom) indicates that user “dg” logged in to the CLI's User EXEC level on October 15 at 5:38 PM and 3 seconds (Oct 15 17:38:03). The same user logged into the Privileged EXEC level four seconds later.

The user remained in the Privileged EXEC mode until 5:59 PM and 22 seconds. (The user could have used the CONFIG modes as well. Once you access the Privileged EXEC level, no further authentication is required to access the CONFIG levels.) At 6:01 PM and 11 seconds, the user ended the CLI session.

For more information about the output displayed by the **show logging** command, see “Displaying the Syslog Configuration and Static and Dynamic Buffers” on page 7-4.

### Disabling the Syslog Messages and Traps

Logging of CLI access is enabled by default. To disable logging of CLI access, enter the following commands:

```
ProCurveRS(config)# no logging enable user-login
ProCurveRS(config)# write memory
ProCurveRS(config)# end
ProCurveRS# reload
```

**Syntax:** [no] logging enable user-login

### Specifying a Simple Network Time Protocol (SNTP) Server

You can configure the ProCurve 9408sl to consult SNTP servers for the current system time and date.

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**NOTE:** The ProCurve 9408sl does not retain time and date information across power cycles. Unless you want to reconfigure the system time counter each time the system is reset, Hewlett-Packard recommends that you use the SNTP feature.

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To identify an SNTP server with IP address 208.99.8.95 to act as the clock reference for the device, enter the following:

```
ProCurveRS(config)# sntp server 208.99.8.95
```

**Syntax:** sntp server <ip-addr> | <hostname> [<version>]

The <version> parameter specifies the SNTP version the server is running and can be from 1 – 4. The default is 1. You can configure up to three SNTP servers by entering three separate **sntp server** commands.

By default, the device polls its SNTP server every 30 minutes (1800 seconds). To configure the device to poll for clock updates from a SNTP server every 15 minutes, enter the following:

```
ProCurveRS(config)# sntp poll-interval 900
```

**Syntax:** [no] sntp poll-interval <1-65535>

To display information about SNTP associations, enter the following command:

```
ProCurveRS# show sntp associations
address          ref clock      st  when  poll  delay  disp
~207.95.6.102    0.0.0.0       16  202   4     0.0    5.45
~207.95.6.101    0.0.0.0       16  202   0     0.0    0.0
* synced, ~ configured
```

**Syntax:** show sntp associations

The following table describes the information displayed by the **show sntp associations** command.

**Table 8.1: Output from the show sntp associations Command**

This Field...	Displays...
(leading character)	One or both of the following: * Synchronized to this peer ~ Peer is statically configured
address	IP address of the peer
ref clock	IP address of the peer's reference clock
st	NTP stratum level of the peer
when	Amount of time since the last NTP packet was received from the peer

**Table 8.1: Output from the show sntp associations Command (Continued)**

This Field...	Displays...
poll	Poll interval in seconds
delay	Round trip delay in milliseconds
disp	Dispersion in seconds

To display information about SNTP status, enter the following command:

```
ProCurveRS# show sntp status
Clock is unsynchronized, stratum = 0, no reference clock
precision is 2**0
reference time is 0      .0
clock offset is 0.0     msec, root delay is 0.0  msec
root dispersion is 0.0  msec, peer dispersion is 0.0 msec
sntp poll-interval is 900 sec
```

**Syntax:** show sntp status

The following table describes the information displayed by the **show sntp status** command.

**Table 8.2: Output from the show sntp status Command**

This Field...	Indicates...
unsynchronized	System is not synchronized to an NTP peer.
synchronized	System is synchronized to an NTP peer.
stratum	NTP stratum level of this system.
reference clock	IP Address of the peer (if any) to which the unit is synchronized.
precision	Precision of this system's clock (in Hz).
reference time	Reference time stamp.
clock offset	Offset of clock to synchronized peer.
root delay	Total delay along the path to the root clock.
root dispersion	Dispersion of the root path.
peer dispersion	Dispersion of the synchronized peer.
sntp poll-interval	Setting of the sntp poll-interval command.

## Setting the System Clock

In addition to SNTP support, the ProCurve 9408sl also allows you to set the system time counter. The time counter setting is not retained across power cycles and is not automatically synchronized with an SNTP server. The counter merely starts the system time and date clock with the time and date you specify.

**NOTE:** You can synchronize the time counter with your SNTP server time by entering the **sntp sync** command from the Privileged EXEC level of the CLI.

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**NOTE:** Unless you identify an SNTP server for the system time and date, you will need to re-enter the time and date following each reboot.

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For more details about SNTP, see “Specifying a Simple Network Time Protocol (SNTP) Server” on page 8-7.

To set the system time and date to 10:15:05 on July 15, 2005, enter the following command:

```
ProCurveRS# clock set 10:15:05 7-15-05
```

**Syntax:** [no] clock set <hh:mm:ss> <mm-dd-yy> | <mm-dd-yyyy>

By default, the device does not change the system time for daylight savings time.

To enable daylight savings time, enter the following command:

```
ProCurveRS# clock summer-time
```

**Syntax:** clock summer-time

Although SNTP servers typically deliver the time and date in Greenwich Mean Time (GMT), you can configure the device to adjust the time for any one-hour offset from GMT or for one of the following U.S. time zones:

- US Pacific (default)
- Alaska
- Aleutian
- Arizona
- Central
- East-Indiana
- Eastern
- Hawaii
- Michigan
- Mountain
- Pacific
- Samoa

The default is US Pacific.

To change the time zone to Australian East Coast time (which is normally 10 hours ahead of GMT), enter the following command:

```
ProCurveRS(config)# clock timezone gmt gmt+10
```

**Syntax:** clock timezone gmt gmt | us <time-zone>

You can enter one of the following values for <time-zone>:

- US time zones (**us**): alaska, aleutian, arizona, central, east-indiana, eastern, hawaii, michigan, mountain, pacific, samoa.
- GMT time zones (**gmt**): gmt+12, gmt+11, gmt+10...gmt+01, gmt+00, gmt-01...gmt-10, gmt-11, gmt-12.

## Limiting Broadcast, Multicast, or Unknown-Unicast Rates

The ProCurve 9408sl can forward all traffic at wire speed. However, some third-party networking devices cannot handle high forwarding rates for broadcast, multicast, or unknown-unicast packets. You can limit the number of broadcast, multicast, or unknown-unicast packets the HP device forwards each second using the following methods.

The limits are individually configurable for broadcasts, multicasts, and unknown-unicasts. You can configure limits globally and on individual ports. The valid range is 1 – 4294967295 packets per second. If you specify 0, limiting is

disabled. By default, the rate for broadcast, multicast, and unknown-unicast packets is 4294967295 packets per second.

### Limiting Broadcasts

To globally limit the number of broadcast packets a ProCurve 9408sl forwards to 100,000 per second, enter the following command at the global CONFIG level of the CLI:

```
ProCurveRS(config)# broadcast limit 100000
ProCurveRS(config)# write memory
```

To limit the number of broadcast packets sent on port 1/3 to 80,000, enter the following commands:

```
ProCurveRS(config)# interface ethernet 1/3
ProCurveRS(config-if-e10000-1/3)# broadcast limit 80000
ProCurveRS(config-if-e10000- 1/3)# write memory
```

### Limiting Multicasts

To globally limit the number of multicast packets a ProCurve 9408sl forwards to 120,000 per second, enter the following command at the global CONFIG level of the CLI:

```
ProCurveRS(config)# multicast limit 120000
ProCurveRS(config)# write memory
```

To limit the number of multicast packets sent on port 3/1 to 55,000, enter the following commands:

```
ProCurveRS(config)# interface ethernet 3/1
ProCurveRS(config-if-e10000-3/1)# multicast limit 55000
ProCurveRS(config-if-e10000-3/1)# write memory
```

### Limiting Unknown Unicasts

To globally limit the number of unknown unicast packets a ProCurve 9408sl forwards to 110,000 per second, enter the following command at the global CONFIG level of the CLI:

```
ProCurveRS(config)# unknown-unicast limit 110000
ProCurveRS(config)# write memory
```

To limit the number of unknown unicast packets sent on port 4/2 to 40,000, enter the following commands:

```
ProCurveRS(config)# interface ethernet 4/2
ProCurveRS(config-if-e10000-4/2)# unknown-unicast limit 40000
ProCurveRS(config-if-e10000-4/2)# write memory
```

## Configuring CLI Banners

You can configure the ProCurve 9408sl to display a greeting message on users' terminals when they enter the Privileged EXEC CLI level or access the device through Telnet. In addition, the device can display a message on the Console when an incoming Telnet CLI session is detected.

### Setting a Message of the Day Banner

You can configure the ProCurve 9408sl to display a message on a user's terminal when he or she establishes a Telnet CLI session. For example, to display the message "Welcome to ProCurve 9408sl!" when a Telnet CLI session is established:

```
ProCurveRS(config)# banner motd $(Press Return)
Enter TEXT message, End with the character '$'.
Welcome to ProCurve 9408sl ! $
```

A delimiting character is established on the first line of the **banner motd** command. You begin and end the message with this delimiting character. The delimiting character can be any character except " (double-quotation mark) and cannot appear in the banner text. In this example, the delimiting character is \$ (dollar sign). The text in between the dollar signs is the contents of the banner. The banner text can be up to 2048 characters long and can consist of multiple lines. To remove the banner, enter the **no banner motd** command.

**Syntax:** [no] banner <delimiting-character> | [motd <delimiting-character>]

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**NOTE:** The **banner** <delimiting-character> command is equivalent to the **banner motd** <delimiting-character> command.

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When you access the Web management interface, the banner is displayed.

### Setting a Privileged EXEC CLI Level Banner



[Login]

You can configure the ProCurve 9408sl to display a message when a user enters the Privileged EXEC CLI level. For example:

```
ProCurveRS(config)# banner exec # (Press Return)
Enter TEXT message, End with the character '#'.
You are entering Privileged EXEC level
Don't foul anything up! #
```

As with the **banner motd** command, you begin and end the message with a delimiting character; in this example, the delimiting character is # (pound sign). To remove the banner, enter the **no banner exec** command.

**Syntax:** [no] banner exec <delimiting-character>

### Displaying a Message on the Console When an Incoming Telnet Session Is Detected

You can configure the ProCurve 9408sl to display a message on the Console when a user establishes a Telnet session. This message indicates where the user is connecting from and displays a configurable text message.

For example:

```
ProCurveRS(config)# banner incoming $ (Press Return)
Enter TEXT message, End with the character '$'.
Incoming Telnet Session!! $
```

When a user connects to the CLI using Telnet, the following message appears on the Console:

```
Telnet from 209.157.22.63
Incoming Telnet Session!!
```

**Syntax:** [no] banner incoming <delimiting-character>

To remove the banner, enter the **no banner incoming** command.

### Configuring Terminal Display

You can configure and display the number of lines displayed on a terminal screen during the current CLI session.

The **terminal length** command allows you to determine how many lines will be displayed on the screen during the current CLI session. This command is useful when reading multiple lines of displayed information, especially those that do not fit on one screen.

To specify the maximum number of lines displayed on one page, enter a command such as the following:

```
ProCurveRS# terminal length 15
```

**Syntax:** terminal length <number-of-lines>

The <number-of-lines> parameter indicates the maximum number of lines that will be displayed on a full screen of text during the current session. If the displayed information requires more than one page, the terminal pauses. Pressing the space bar displays the next page.

The default for <number-of-lines> is 24. Entering a value of 0 prevents the terminal from pausing between multiple output pages.

## Checking the Length of Terminal Displays

The **show terminal** command specifies the number of lines that will be displayed on the screen as specified by the **terminal length**, **page display**, and **skip-page-display** commands. It also shows if the **enable skip-page-display** command has been configured. The **enable skip-page-display** command allows you to use the **skip-page-display** command to disable the configured page-display settings.

```
ProCurveRS# show terminal
Length: 24 lines
Page display mode (session): enabled
Page display mode (global): enabled
```

## Configuring Basic Port Parameters

The procedures in this section describe how to configure the following port parameters:

- Name – see “Assigning a Port Name” on page 8-12.
- Status – see “Disabling or Re-Enabling a Port” on page 8-12.
- Flow control – see “Disabling or Re-Enabling Flow Control” on page 8-13.
- QoS priority – see “Modifying Port Priority (QoS)” on page 8-13.

---

**NOTE:** To modify Layer 2, Layer 3, or Layer 4 features on a port, see the appropriate section in this chapter or in the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*. For example, to modify Spanning Tree Protocol (STP) parameters for a port, see “Modifying STP Bridge and Port Parameters” on page 8-14.

To configure trunk groups or dynamic link aggregation, see the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

---

All ProCurve 9408sl ports are pre-configured with default values that allow the device to be fully operational at initial startup without any additional configuration. However, in some cases, changes to the port parameters may be necessary to adjust to attached devices or other network requirements.

### Assigning a Port Name

A port name can be assigned to help identify interfaces on the network. You can assign a port name to physical ports, virtual interfaces, and loopback interfaces.

To assign a name to a port:

```
ProCurveRS(config)# interface ethernet 3/1
ProCurveRS(config-if-e10000-3/1)# port-name Marsha the Marketing Pro
```

**Syntax:** port-name <text>

The <text> parameter is an alphanumeric string. The name can be up to 255 characters long. The name can contain blanks. You do not need to use quotation marks around the string, even when it contains blanks.

### Disabling or Re-Enabling a Port

The port can be made inactive (disable) or active (enable) by selecting the appropriate status option. The default value for a port is enabled.

To disable port 1 on module 3, enter the following:

```
ProCurveRS(config)# interface ethernet 3/1
ProCurveRS(config-if-e10000-3/1)# disable
```

**Syntax:** disable

**Syntax:** enable

You also can disable or re-enable a management interface. To do so, enter commands such as the following:

```
ProCurveRS(config)# interface management 1
ProCurveRS(config-if-mgmt-1)# disable
```

**Syntax:** disable

To re-enable a management interface, enter the **enable** command at the Interface configuration level. For example, to re-enable management interface 1, enter the following command:

```
ProCurveRS(config-if-mgmt-1)# enable
```

**Syntax:** enable

## Disabling or Re-Enabling Flow Control

You can configure full-duplex ports on a system to operate with or without flow control (802.3x). Flow control is enabled by default.

To disable flow control on full-duplex ports on a system, enter the following:

```
ProCurveRS(config)# no flow-control
```

To turn the feature back on:

```
ProCurveRS(config)# flow-control
```

**Syntax:** [no] flow-control

## Specifying Threshold Values for Flow Control

The 802.3x flow control specification provides a method for slowing traffic from a sender when a port is receiving more traffic than it can handle. Specifically, the receiving device can send out 802.3x PAUSE frames that request that the sender stop sending traffic for a period of time.

The ProCurve 9408sl generates 802.3x PAUSE frames when the number of buffers available to a module's Buffer Manager (BM) drops below a threshold value. A module's BM can start running out of buffers when a port receives more traffic than it can handle. When the number of available buffers returns to a higher level, the device sends out another PAUSE frame that tells the sender to resume sending traffic normally. You can specify values for the threshold.

---

**NOTE:** To use this feature, 802.3x flow control must be enabled globally on the device. By default, 802.3x flow control is enabled on the HP device, but can be disabled with the **no flow-control** command.

---

To specify threshold values for flow control, enter the following command:

```
ProCurveRS(config)# qd-flow sink 75
```

**Syntax:** qd-flow sink <sinking-threshold>

The threshold value is a percentage of the total number of buffers available to a module's Buffer Manager.

When the <sinking-threshold> is reached, the HP device sends out 802.3x PAUSE frames telling the sender to stop sending traffic for a period of time.

## Modifying Port Priority (QoS)

You can give preference to the inbound traffic on specific ports by changing the Quality of Service (QoS) level on those ports. For information and procedures, see the "Configuring Quality of Service" chapter in the *Advanced Configuration and Management Guide for ProCurve 9300/9400 Series Routing Switches*.

## Configuring Basic Layer 2 Parameters

The procedures in this section describe how to configure the following Layer 2 parameters.

- Spanning Tree Protocol (STP) – see "Enabling or Disabling the Spanning Tree Protocol (STP)" on page 8-14.

---

**NOTE:** The procedures in this chapter describe how to configure basic STP parameters. For more information about STP, see the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

---

- Aging time for learned MAC address entries – see “Changing the MAC Age Time” on page 8-15.
- Static, non-aging MAC address entries – see “Configuring Static MAC Entries” on page 8-15.
- Port-based VLANs – see “Enabling Port-Based VLANs” on page 8-16.

## Enabling or Disabling the Spanning Tree Protocol (STP)

The STP (IEEE 802.1d bridge protocol) is supported on the ProCurve 9408sl. STP detects and eliminates logical loops in the network. STP also ensures that the least cost path is taken when multiple paths exist between ports or VLANs. If the selected path fails, STP searches for and then establishes an alternate path to prevent or limit retransmission of data.

STP must be enabled at the system level to allow assignment of this capability on the VLAN level. On the ProCurve 9408sl, STP is disabled by default.

---

**NOTE:** The procedures in this chapter describe how to configure basic STP parameters. For more information about STP, see the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*

---

To enable a single STP for all ports on the HP device, enter the following command:

```
ProCurveRS(config)# spanning-tree single
```

**Syntax:** [no] spanning-tree single

The **single** parameter configures a single STP.

## Modifying STP Bridge and Port Parameters

You can modify the following STP Parameters:

- Bridge parameters – forward delay, maximum age, hello time, and priority
- Port parameters – priority and path cost

### STP Bridge Parameters

You can configure the following STP bridge parameters:

- Forward Delay – The period of time a bridge will wait (the listen and learn period) before forwarding data packets. Possible values: 4 – 30 seconds. Default is 15.
- Maximum Age – The interval a bridge will wait for receipt of a hello packet before initiating a topology change. Possible values: 6 – 40 seconds. Default is 20.
- Hello Time – The interval of time between each configuration BPDU sent by the root bridge. Possible values: 1 – 10 seconds. Default is 2.
- Priority – A parameter used to identify the root bridge in a network. The bridge with the lowest value has the highest priority and is the root. Possible values: 0 – 65,535. Default is 32,768.

### STP Port Parameters

Spanning Tree Protocol port parameters priority and path cost are preconfigured with default values. If the default parameters meet your network requirements, no other action is required.

You can configure the following STP port parameters:

- Port Priority – This parameter can be used to assign a higher (or lower) priority to a port. In the event that traffic is re-routed, this parameter gives the port forwarding preference over lower priority ports within a VLAN or on the Routing Switch (when no VLANs are configured for the system). Ports are re-routed based on their priority. A higher numerical value means a lower priority; thus, the highest priority is 0. Possible values: 0 – 252, in increments of 4. Default is 128.

- **Path Cost** – This parameter can be used to assign a higher or lower path cost to a port. This value can be used to bias traffic toward or away from a certain path during periods of rerouting. For example, if you wish to bias traffic away from a certain port, assign it a higher value than other ports within the VLAN or all other ports (when VLANs are not active on the Routing Switch). Possible values are 1 – 65535. The default values for a 10 Gigabit port is 2.

**EXAMPLE:**

Suppose you want to enable STP on a system in which no port-based VLANs are active and change the hello-time from the default value of 2 to 8 seconds. Additionally, suppose you want to change the path and priority costs for port 3/1 only. To do so, enter the following commands.

```
ProCurveRS(config)# spanning-tree single hello-time 8
ProCurveRS(config)# spanning-tree single ethernet 3/1 path-cost 15 priority 64
```

Here is the syntax for global STP parameters.

**Syntax:** spanning-tree single [forward-delay <value>] | [hello-time <value>] | [max-age <time>] | [priority <value>]

Here is the syntax for STP port parameters.

**Syntax:** spanning-tree single ethernet <slot>/<port-num> path-cost <value> | priority <value>

## Changing the MAC Age Time

This parameter sets the aging period for ports on the device, defining how long a port address remains active in the address table. This parameter value can be 0 or a number from 60 – 65535 seconds. The zero value results in no address aging. The default value for this field is 300 (seconds).

To change the aging period for MAC addresses from the default value of 300 seconds to 600 seconds:

```
ProCurveRS(config)# mac-age-time 600
```

**Syntax:** [no] mac-age-time <age-time>

The <age-time> can be 0 or a number from 60 – 65535.

## Configuring Static MAC Entries

Static MAC addresses can be assigned to the ProCurve 9408sl.

---

**NOTE:** The device also supports the assignment of static IP Routes, static ARP, and static RARP entries. For details on configuring these types of static entries, see the “Configuring Static Routes” and “Creating Static ARP Entries” sections in the “Configuring IP” chapter of the *Advanced Configuration and Management Guide for ProCurve 9300/9400 Series Routing Switches*.

---

You can manually input the MAC address of a device to prevent it from being aged out of the system address table.

This option can be used to prevent traffic for a specific device, such as a server, from flooding the network with traffic when it is down. Additionally, the static MAC address entry is used to assign higher priorities to specific MAC addresses.

You can specify port priority (QoS) and VLAN membership (VLAN ID) for the MAC Address as well as specify device type of either Routing Switch or host.

The default and maximum configurable MAC table sizes can differ depending on the device. To determine the default and maximum MAC table sizes for your device, display the system parameter values. See “Displaying and Modifying System Parameter Default Settings” on page 8-17.

**EXAMPLE:**

To add a static entry for a server with a MAC address of 1145.5563.67FF and a priority of 7 to port 3 of module 1 of a ProCurve 9408sl:

```
ProCurveRS(config)# static-mac-address 1145.5563.67FF ethernet 1/3 priority 7
```

**Syntax:** [no] static-mac-address <mac-addr> ethernet <slot>/<port> priority <number>

The priority can be 0 – 7 (0 is lowest priority and 7 is highest priority).

---

**NOTE:** The location of the **static-mac-address** command in the CLI depends on whether you configure port-based VLANs on the device. If the device does not have more than one port-based VLAN (VLAN 1, which is the default VLAN that contains all the ports), the **static-mac-address** command is at the global CONFIG level of the CLI. If the device has more than one port-based VLAN, then the **static-mac-address** command is not available at the global CONFIG level. In this case, the command is available at the configuration level for each port-based VLAN.

---

### Configuring Static ARP Entries

HP recommends that you configure a static ARP entry to match the static MAC entry. In fact, the software automatically creates a static MAC entry when you create a static ARP entry.

---

**NOTE:** When a static MAC entry has a corresponding static ARP entry, you cannot delete the static MAC entry unless you first delete the static ARP entry.

---

To create a static ARP entry for a static MAC entry, enter a command such as the following:

```
ProCurveRS(config)# arp 1 192.53.4.2 aaaa.bbbb.cccc ethernet 1/1
```

The **arp** command allows you to specify only one port number. To create a static ARP entry for a static MAC entry that is associated with multiple ports, specify the first (lowest-numbered) port associated with the static MAC entry.

**Syntax:** [no] arp <num> <ip-addr> <mac-addr> ethernet <slot>/<port>

The <num> parameter specifies the entry number.

### Enabling Port-Based VLANs

Port and protocol VLANs must first be enabled at the system (global) level before they can be configured at the VLAN level. For details on configuring VLANs, see the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

Port and protocol-based VLANs are created by entering one of the following commands at the global CONFIG level of the CLI.

To create a port-based VLAN, enter commands such as the following:

```
ProCurveRS(config)# vlan 222 by port
ProCurveRS(config)# vlan 222 name Mktg
```

**Syntax:** vlan <num> by port

**Syntax:** vlan <num> name <string>

The <num> parameter specifies the VLAN ID. The valid range for VLAN IDs is 1 – 4095.

The <string> parameter is the VLAN name and can be a string up to 32 characters. You can use blank spaces in the name if you enclose the name in double quotes (for example, "Product Marketing").

---

**NOTE:** The second command is optional and also creates the VLAN if the VLAN does not already exist. You can enter the first command after you enter the second command if you first exit to the global CONFIG level of the CLI.

---

### Assigning IEEE 802.1q Tagging to a Port

When a port is tagged, it allows communication among the different VLANs to which it is assigned. A common use for this might be to place an email server that multiple groups may need access to on a tagged port, which in turn, is resident in all VLANs that need access to the server.

---

**NOTE:** Tagging is disabled by default on individual ports.

---

---

**NOTE:** Tagging does not apply to the default VLAN.

---

For details on configuring port-based VLANs, see the *Installation and Basic Configuration Guide for ProCurve 9300 Series Routing Switches*.

When using the CLI, ports are defined as either tagged or untagged at the VLAN level.

**EXAMPLE:**

Suppose you want to make port 4 on module 1 a member of port-based VLAN 4, a tagged port. To do so, enter the following:

```
ProCurveRS(config)# vlan 4
ProCurveRS(config-vlan-4)# tagged ethernet 1/4
```

**Syntax:** tagged ethernet <port> [to <port> [ethernet <port>]]

## Enabling or Disabling Routing Protocols

The ProCurve 9408sl supports the following protocols:

- BGP4
- DVMRP
- IP
- OSPF
- PIM
- RIP
- VRRP
- VRRPE

By default, IP routing is enabled on the ProCurve 9408sl. All other protocols are disabled, so you must enable them to configure and use them.

---

**NOTE:** The following protocols require a system reset before the protocol will be active on the system: PIM, DVMRP, and RIP. To reset a system, enter the **reload** command at the Privileged EXEC level of the CLI.

---

To enable a protocol on the ProCurve 9408sl, for example, OSPF, enter a command such as the following:

```
ProCurveRS(config)# router ospf
ProCurveRS(config)# end
ProCurveRS# write memory
ProCurveRS# reload
```

**Syntax:** router bgp | dvmrp | ospf | pim | rip | vrrp | vrrpe

## Displaying and Modifying System Parameter Default Settings

The ProCurve 9408sl has default table sizes for the following parameters. The table sizes determine the maximum number of entries the tables can hold. You can adjust individual table sizes to accommodate your configuration needs.

- MAC address entries
- Layer 2 Port VLANs supported on a system
- Layer 3 Protocol VLANs supported on a system
- Layer 4 sessions supported
- IP cache size

- ARP entries
- IP routes
- IP route filters
- IP subnets per port and per device
- Static routes
- IGMP
- DVMRP routes

---

**NOTE:** If you increase the number of subnet addresses you can configure on each port to a higher amount, you might also need to increase the total number of subnets that you can configure on the device.

---

---

**NOTE:** Changing the table size for a parameter reconfigures the device's memory. Whenever you reconfigure the memory on the HP device, you must save the change to the startup-config file, then reload the software to place the change into effect.

---

To display the configurable tables and their defaults and maximum values, enter the following command at any level of the CLI:

```
ProCurveRS# show default values
sys log buffers:50          mac age time:300 sec          telnet sessions:5

ip arp age:10 min          bootp relay max hops:4        ip ttl:64 hops
ip addr per intf:24

when multicast enabled :
igmp group memb.:140 sec   igmp query:60 sec

when ospf enabled :
ospf dead:40 sec           ospf hello:10 sec            ospf retrans:5 sec
ospf transit delay:1 sec

when bgp enabled :
bgp local pref.:100        bgp keep alive:60 sec        bgp hold:180 sec
bgp metric:10              bgp local as:1               bgp cluster id:0
bgp ext. distance:20       bgp int. distance:200        bgp local distance:200

System Parameters      Default      Maximum      Current
mac                    128000      2048000     128000
vlan                   512         4095        512
spanning-tree         32          128         32
rstp                   32          128         32
ip-arp                 8192        64000       8192
ip-static-arp          2048        4096        2048
multicast-route        8192        150000      8192
dvmrp-route            2048        128000      2048
dvmrp-mcache           2048        8192        2048
pim-mcache             2048        8192        2048
igmp-max-group-addr    2048        8192        2048
ip-cache               150000      1024000     150000
ip-route               150000      1024000     150000
ip-subnet-port         24          128         24
virtual-interface      255         4095        255
session-limit          32768       160000      32768
mgmt-port-acl-size     20          100         20
vlan-multicast-flood  0           4095        0
```

Information for the configurable tables appears under the columns that are shown in bold type in this example. To simplify configuration, the command parameter you enter to configure the table is used for the table name. For example, to increase the capacity of the IP route table, enter the following commands:

```
ProCurveRS(config)# system-max ip-route 120000
ProCurveRS(config)# write memory
ProCurveRS(config)# exit
ProCurveRS# reload
```

---

**NOTE:** If you accidentally enter a value that is not within the valid range of values, the CLI will display the valid range for you.

---

## Assigning a Mirror Port and Monitor Ports

You can monitor traffic on ProCurve 9408sl ports by configuring another port to “mirror” the traffic on the ports you want to monitor. By attaching a protocol analyzer to the mirror port, you can observe the traffic on the monitored ports.

Monitoring traffic on a port is a two-step process:

- Enable a port to act as the mirror port. This is the port to which you connect your protocol analyzer.
- Enable monitoring on the ports you want to monitor.

You can monitor input traffic, output traffic, or both. Any port can operate as a mirror port and you can configure more than one mirror port. You can configure up to 64 mirror ports. You can configure the mirror ports on different modules and you can configure more than one mirror port on the same module.

Each mirror port can have its own set of monitored ports. For example, you can configure ports 1/1 and 5/1 as mirror ports, and monitor ports 1/2 – 1/4 on port 1/1 and ports 5/2 – 5/4 on port 5/1. The mirror port and monitored ports also can be on different slots.

### Configuration Guidelines for Monitoring Inbound Traffic

Use the following considerations when configuring mirroring for inbound traffic on the ProCurve 9408sl. The guidelines are applicable whether you configure multiple mirror ports or just one mirror port.

- Configure only one mirror port to monitor input traffic on a given module. If you configure multiple mirror ports on the same module, the inbound traffic for all the monitored ports on the module is sent to all the mirror ports on the same module. For example, if you configure ports 1/1 and 1/4 as mirror ports, then enable monitoring of inbound traffic on ports 1/2 and 1/3, the traffic from both ports is mirrored to both the mirror ports, 1/1 and 1/4. This occurs regardless of the mirror ports you assign to the monitor ports.
- When inbound traffic on a monitored port on one module is switched normally to another module, the switched traffic will be mirrored to the mirror ports on the other module. For example, if inbound traffic on a monitored port on the module in slot 1 is switched to the module in slot 2, mirror ports on the module in slot 2 will receive copies of the traffic. These guidelines do not apply to outbound traffic.

### Notes Regarding Monitoring of Routing Switch Traffic

- For inbound traffic that is routed (not switched), if the traffic is forwarded by the hardware and thus bypasses the CPU, the port that receives the traffic changes the source and destination MAC addresses of the packet before sending the packet to its outbound port and the mirror port.
- For outbound traffic that is routed (not switched), the source MAC address of the traffic that is copied to the mirror port has the MAC address of the mirror port rather than the monitored port's MAC address.

This happens because the routed traffic sent by the router interface must address itself as the sender of the packet, to the neighboring Routing Switch. This behavior cannot be turned off for the monitored traffic, so the mirror port's MAC address is substituted for the mirror copy of the packet. In this case, the source MAC address of the mirror port is equivalent to that of the monitored port.

### Configuring Port Mirroring and Monitoring

Suppose you want to diagnose the in and out traffic on port 3 on a module in slot 4 of a ProCurve 9408sl, and use port 1 in slot 4 as the mirror port. To do so, enter the following commands:

```
ProCurveRS(config)# mirror-port ethernet 4/1
ProCurveRS(config)# interface ethernet 4/3
ProCurveRS(config-if-e10000-4/3)# monitor ethernet 4/1 both
```

**Syntax:** [no] mirror-port ethernet <slot>/<port>

The <slot>/<port> parameter specifies the slot and port numbers. You can configure up to 64 mirror ports on the ProCurve 9408sl.

**Syntax:** [no] monitor ethernet <port> [ethernet <slot>/<port>...] both | input | output

The <slot>/<port> parameter specifies the mirror port(s).

The **both** | **input** | **output** parameter specifies the traffic direction you want to monitor on the mirror port. There is no default.

---

**NOTE:** You can configure multiple mirror ports on the same module. However, if you mirror inbound traffic to any of the mirror ports on the module, the traffic is mirrored to all the mirror ports on the module. If you plan to mirror outbound traffic only, you can use multiple mirror ports on the same module without the traffic being duplicated on the other mirror ports on the module.

---

**NOTE:** If you configure the device to monitor inbound traffic on multiple ports and use a single mirror port for the traffic, disabling monitoring on one of the ports also disables monitoring on the other ports. For example, if you configure the device to monitor inbound traffic on ports 1/1 and 1/2 and to mirror the traffic to port 2/1, if you then disable monitoring of inbound traffic on port 1/2, the software also disables monitoring of inbound traffic on port 1/1.

This guideline does not apply to monitoring outbound traffic. Disabling monitoring for outbound traffic does not affect other ports that use the same mirror port.

If you specify **both** for the traffic direction to be monitored, only the inbound traffic monitoring is disabled on the other ports.

---

The following example configures two mirror ports on the same module and one mirror port on another module. It will illustrate how inbound traffic is mirrored to the two mirror ports on the same module even if the traffic is configured to be mirrored to only one mirror port on the module.

```
ProCurveRS(config)# mirror-port ethernet 1/1
ProCurveRS(config)# mirror-port ethernet 1/2
ProCurveRS(config)# mirror-port ethernet 3/4
ProCurveRS(config)# interface ethernet 1/4
ProCurveRS(config-if-e10000-1/4)# monitor ethernet 3/4 output
ProCurveRS(config-if-e10000-1/4)# interface ethernet 3/1
ProCurveRS(config-if-e10000-3/1)# monitor ethernet 1/1 both
ProCurveRS(config-if-e10000-3/1)# interface ethernet 3/2
ProCurveRS(config-if-e10000-3/2)# monitor ethernet 3/4 both
ProCurveRS(config-if-e10000-3/2)# interface ethernet 3/3
ProCurveRS(config-if-e10000-3/3)# monitor ethernet 1/2 input
```

This example configures two mirror ports (1/1 and 1/2) on the same module. It also configures input and output traffic from port 3/1 to be mirrored to mirror port 1/1 and input traffic from port 3/3 to be mirrored to mirror port 1/2. Because mirror ports 1/1 and 1/2 are configured on the same module, mirror port 1/1 will receive the input traffic from port 3/3 and mirror port 1/2 will receive input traffic from port 3/1 even if they are not explicitly configured to do so. The outbound traffic from port 3/1 is mirrored to port 1/1 only, as configured.

This example also configures one mirror port (3/4) on another module, to which inbound and outbound traffic from port 3/2 and outbound traffic from port 1/4 are mirrored. Because only one mirror port is configured on this module, the traffic is mirrored as configured.

To display the inbound and outbound traffic mirrored to each mirror port as configured in this example, enter the following command at any level of the CLI:

```
ProCurveRS# show monitor config
Port 1/4
  Output mirrored by: 3/4
Port 3/1
  Input mirrored by: 1/1
  Output mirrored by: 1/1
Port 3/2
  Input mirrored by: 3/4
  Output mirrored by: 3/4
Port 3/3
  Input mirrored by: 1/2
```

**Syntax:** show monitor config

This output does not display the input traffic mirrored to mirror port 1/2 from port 3/1 and mirrored to mirror port 1/1 from port 3/3 because the mirroring of this traffic is not explicitly configured.

To display the actual traffic mirrored to each mirror port despite the configuration in this example, enter the following command at any level of the CLI:

```
ProCurveRS# show monitor actual
Mirror port 1/1:
  Input Traffic from port: 3/1 3/3
  Output Traffic from port: 3/1
Mirror port 1/2:
  Input Traffic from port: 3/1 3/3
Mirror port 3/4:
  Input Traffic from port: 3/2
  Output Traffic from port: 1/4 3/2
```

**Syntax:** show monitor actual

This output displays the input traffic mirrored to mirror port 1/2 from port 3/1 and mirrored to mirror port 1/1 from port 3/3, which are not explicitly configured.

## Monitoring an Individual Trunk Port

By default, when you monitor the primary port in a trunk group, aggregated traffic for all the ports in the trunk group is copied to the mirror port. You can configure the device to monitor individual ports in a trunk group. You can monitor the primary port or a secondary port individually.

---

**NOTE:** You can use only one mirror port for each monitored trunk port.

---

To monitor traffic on an individual port in a trunk group, enter commands such as the following:

```
ProCurveRS(config)# mirror ethernet 2/1
ProCurveRS(config)# trunk switch ethernet 4/1 to 4/4
ProCurveRS(config-trunk-4/1-4/4)# config-trunk-ind
ProCurveRS(config-trunk-4/1-4/4)# monitor ethe-port-monitored 5/1 ethernet 2/1 in
```

**Syntax:** [no] config-trunk-ind

**Syntax:** [no] monitor ethe-port-monitored <port> | named-port-monitored <port-name>  
ethernet <port> in | out | both

The **config-trunk-ind** command enables configuration of individual ports in the trunk group. You need to enter the **config-trunk-ind** command only once in a trunk group. After you enter the command, all applicable port configuration commands apply to individual ports only.

---

**NOTE:** If you enter **no config-trunk-ind**, all port configuration commands are removed from the individual ports and the configuration of the primary port is applied to all the ports. Also, once you enter the **no config-trunk-ind** command, the **enable**, **disable**, and **monitor** commands are valid only on the primary port and apply to the entire trunk group.

---

The **monitor ethe-port-monitored** command in this example enables monitoring of the inbound traffic on port 5/1.

- The **ethe-port-monitored** <port> | **named-port-monitored** <port-name> parameter specifies the trunk port you want to monitor. Use **ethe-port-monitored** <port> to specify a port number. Use **named-port-monitored** <port-name> to specify a trunk port name.
- The **ethernet** <port> parameter specifies the port to which the traffic analyzer is attached.
- The **in** | **out** | **both** parameter specifies the traffic direction to be monitored.

