Appendix A
Network Monitoring

This chapter provides a general overview of monitoring tools supported on the HP ProCurve 9304M, 9308M, and 6308M-SX routing switches and the 6208M-SX switch. Configuration examples are provided using the CLI and Web management interfaces.

Monitoring a System

RMON

The 9304M, 9308M, and 6308M-SX routing switches and the 6208M-SX switch come standard with an RMON agent that supports the following groups. The group numbers come from the RMON specification (RFC 1757).

- Statistics (RMON Group 1)
- History (RMON Group 2)
- Alarms (RMON Group 3)
- Events (RMON Group 9)

The CLI allows you to make configurations changes to the control data for these groups but you need a separate RMON application to view and display the data graphically.

Statistics (RMON Group 1)

Count information on multicast and broadcast packets, total packets sent, undersized and oversized packets, CRC alignment errors, jabbers, collision, fragments and dropped events is collected for each port on a device.

No configuration is required to activate collection of statistics for the device. This activity is by default automatically activated at system start-up.

USING THE CLI

You can view a textual summary of the statistics for all ports by entering the following CLI command:

syntax: `show rmon statistics`

NOTE: To see RMON statistics for an individual port only, enter the following command noting a specific port entry number: **show rmon statistics <port entry#>**.

USING THE WEB MANAGEMENT INTERFACE

To view the RMON statistics for the system:

1. Select the Show link from the view menu.
2. Select the RMON Statistics link. A panel such as the one shown in Figure A.1 will appear.

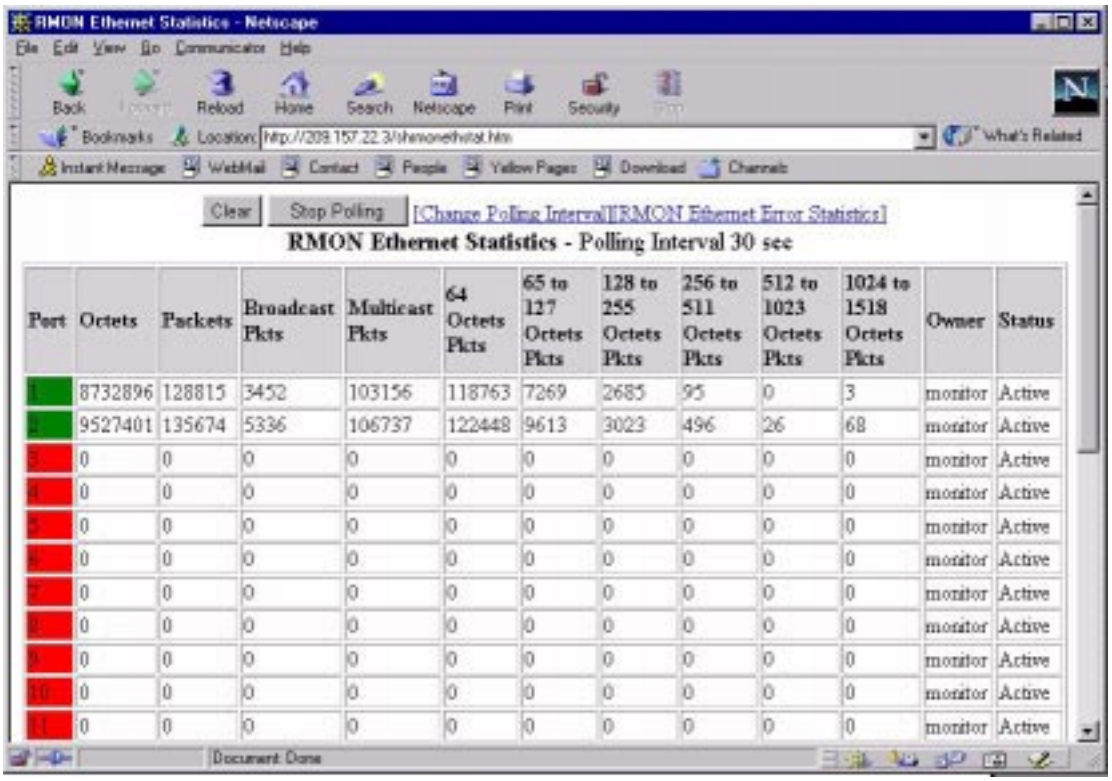

Figure A.1 Show RMON statistics display (partial view)

To see RMON statistics for an individual port only, enter the following command noting a specific port entry number, as shown below.

USING THE CLI

syntax: `show rmon statistics <port entry#>`

NOTE: The number of entries in a RMON statistics table directly corresponds to the number of ports on a system. For example, if the system is a 26 port device, there will be 26 entries in the statistics display.

USING THE WEB MANGEMENT INTERFACE

This display is not supported on the Web management interface.

History (RMON Group 2)

All active ports by default will generate two history control data entries per active port. An active port is defined as one with a link up. If the link goes down the two entries are automatically be deleted.

Two history entries are generated:

- a sampling of statistics every 30 seconds
- a sampling of statistics every 30 minutes

The history data can be accessed and displayed using any of the popular RMON applications

USING THE CLI

A sample RMON history command and its syntax is shown below:

```
HP9300(config)# rmon history 1 interface 1 buckets 10 interval 10 owner nyc02
```

syntax: rmon history <entry number> interface <port #> buckets <number> interval <sampling interval> owner <text string>

You can modify the sampling interval and the bucket (number of entries saved before overwrite) using the CLI. In the above example, owner refers to the RMON station that will request the information.

NOTE: To review the control data entry for each port or interface, enter the **show rmon history** command.

USING THE WEB MANGEMENT INTERFACE

This display is not supported on the Web management interface.

Alarm (RMON Group 3)

Alarm is designed to monitor configured thresholds for any SNMP integer, time tick, gauge or counter MIB object. Using the CLI, you can define what MIB objects are monitored, the type of thresholds that are monitored (falling, rising or both), the value of those thresholds, and the sample type (absolute or delta).

An alarm event is reported each time that a threshold is exceeded. The alarm entry also indicates the action (event) to be taken if the threshold be exceeded.

USING THE CLI

A sample CLI alarm entry and its syntax is shown below:

```
rmon alarm 1 ifInOctets.6 10 delta rising-threshold 100 1 falling threshold 50 1
owner nyc02
```

syntax: rmon alarm <entry number> <MIB object.interface #> <sampling time> <sample type> <threshold type> <threshold value> <event number> <threshold type> <threshold value> <event number> owner <text>

USING THE WEB MANGEMENT INTERFACE

This display is not supported on the Web management interface.

Event (RMON Group 9)

There are two elements to the Event Group—the ***event control table*** and the ***event log table***.

The event control table defines the action to be taken when an alarm is reported. Defined events can be found by entering the CLI command, show event. The Event Log Table collects and stores reported events for retrieval by an RMON application.

USING THE CLI

A sample entry and syntax of the event control table is shown below:

```
rmon event 1 description ‘testing a longer string’ log-and-trap public owner nyc02
```

syntax: rmon event <event entry> description <text string> <log | trap | log -and-trap> owner <RMON station>

USING THE WEB MANGEMENT INTERFACE

This display is not supported on the Web management interface.

SNMP System Log

SNMP traps can be saved locally on a switch or routing switch for later review. Up to 100 entries can be saved and the default setting is 50 entries. This feature must be enabled on the system.

USING THE CLI

To enable system logging and specify a log size of 70, enter the following commands:

```
HP9300(config)# logging on
HP9300(config)# logging buffered 70
```

syntax: logging <on | off >

NOTE: You can later view traps saved locally by entering the **show logging** command. See “Configuring the Syslog Service” on page 15 for more information about the local logging and Syslog options.

USING THE WEB MANAGEMENT INTERFACE

To enable the system log on the system:

1. Select System Log from the main menu. The panel seen in Figure A.2 will appear.
2. Enable logging.
3. Enter the buffer size.
4. Enter the IP address of the server collecting the event log.
5. Select the type of facility from the pulldown menu.
6. Select the type of SNMP traps to be saved to the SNMP log by selecting the boxes next to Accept Severity.

To view the entries in the system log:

1. Select the Show link from the main menu.
2. Select the System Log link from the panel that appears.

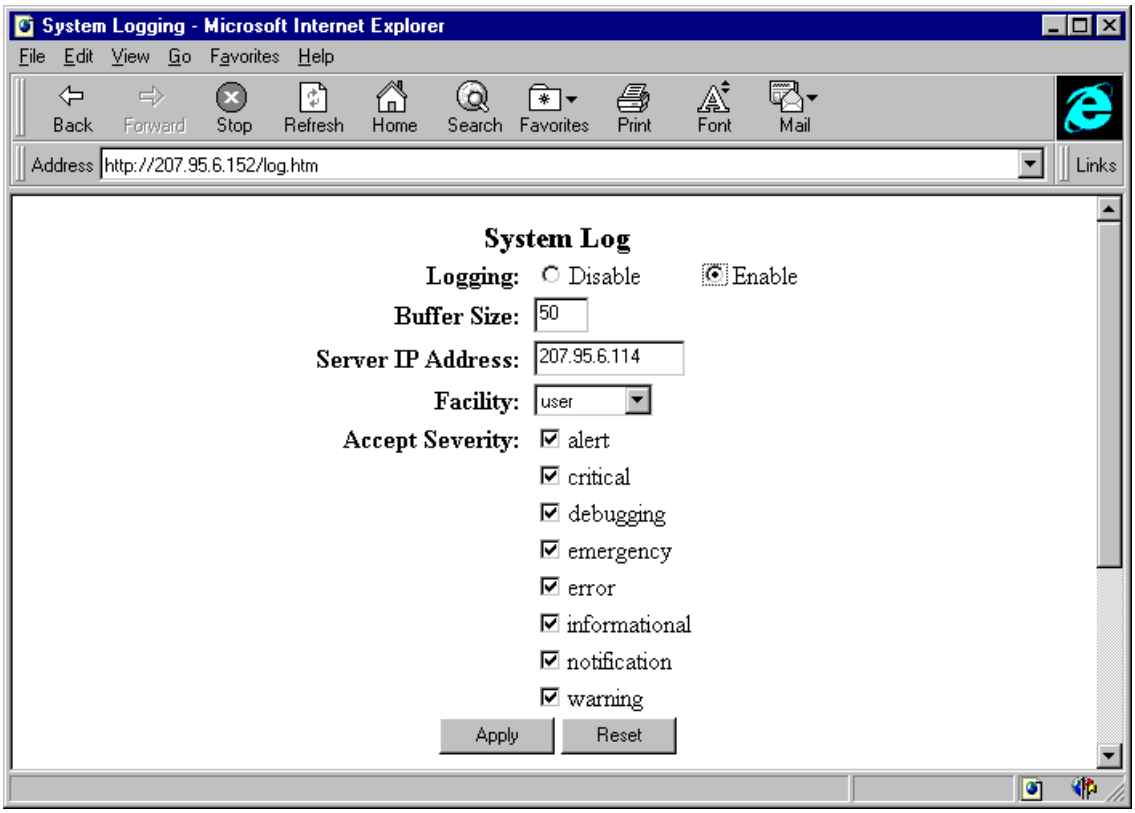

Figure A.2 Enabling and defining the SNMP trap types to be collected

Trace Route and Stop Trace Route

You can initiate and stop a trace of a route on a 9304M, 9308M, 6308M-SX routing switch or 6208M-SX switch. The two CLI commands associated with this feature are listed below:

- **stop-traceroute**
- **traceroute**

Trace Route

You can trace a path from the device to a host address by initiating the trace route option. The maximum and minimum number of hops to be traversed and a time-out value for the route trace can also be defined.

USING THE CLI

```
HP9300> trace-route 192.33.4.7 minttl 5 maxttl 5 timeout 5
```

Syntax: traceroute <host IP address> [minttl <value> maxttl <value> timeout <value>]

The CLI displays trace route information for each hop as soon as the information is received. See “traceroute” on page 68 for information about its command syntax.

Possible and default values:

- Minttl-minimum TTL (hops) value: 1 – 255. The default value is 1 second.
- Maxttl-maximum TTL (hops) value: 1 – 255. The default value is 30 seconds.
- Timeout value: 1 – 120. The default value is 2 seconds.

USING THE WEB MANGEMENT INTERFACE

To initiate a trace:

1. Select the Traceroute link from the main menu.
2. Enter the IP address of the destination device.
3. Enter how long the trace will be in effect by defining the minimum and maximum TTL values.
4. Define a timeout value from 1 – 120.
5. Select the Start button to begin the trace. The results of the trace route will be displayed on the screen.

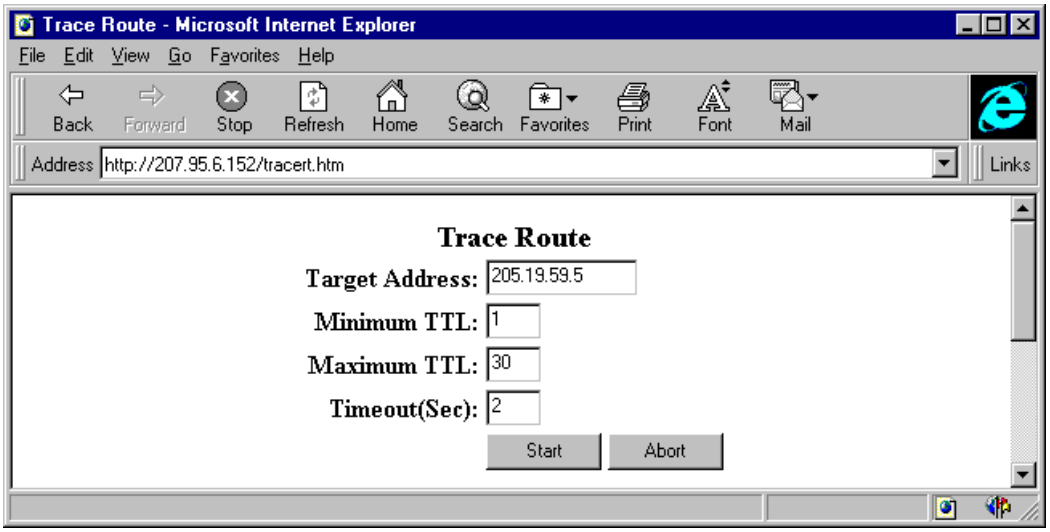

Figure A.3 Trace route entry panel

Stop Trace Route

If you need to stop the trace route before it is completed, use one of the following methods.

USING THE CLI

To stop a trace route, enter the following command:

```
HP3900> stop-traceroute
```

syntax*:* stop-traceroute

USING THE WEB MANGEMENT INTERFACE

To stop a trace route on a system:

1. Select the Trace Route link from the main menu. The trace route panel shown in Figure A.3 will appear.
2. Select the Abort button.

Viewing System Summary Information

There are configuration summaries for switches and routing switches—Configuration and Operation. These summaries display many of the same parameters, yet it is the status of the configuration that is different.

The operation screen displays the configuration that is currently running on the switch or routing switch. It lists all of the parameters seen in the configuration screen plus an expanded Spanning Tree summary showing—root cost, root priority, hold time, and forwarding delay.

The configuration summary screen reflects configuration changes that will become active upon reset of the system. The general configuration data may differ from that displayed in the operation screen if recent changes made to the system configuration have not been saved to flash.

USING THE CLI

To access the operating and configuration information for a switch or routing switch:

- Enter the **write terminal** command to view the configured system configuration.
- Enter the **show configuration** command to view the running (operating) configuration.

USING THE WEB MANAGEMENT INTERFACE

To define what is shown in the system configuration and operation summary screens:

- Select the Summary link from the menu.
- Select the type of summary to display, either Configuration or Operation.
- Check the box next to those items to be displayed in the summary
- Select the Apply button. The information will display on the screen.

NOTE: To display all options, even those that may not be selected, select the Get All button.

Viewing System Information

You can access software and hardware specifics for a switch or routing switch.

USING THE CLI

To view the software and hardware details for the system, enter the **show version** command:

syntax: show version

USING THE WEB MANAGEMENT INTERFACE

1. Verify that the front panel display is visible on the Web management interface display. If not, select the Frame:Enable link from the main menu. This will display the screen with a side panel, front panel and configuration panel.
2. Double-click anywhere on the device's front panel display. The device information panel will appear.

Viewing Configurations

You can view a variety of configuration details and statistics with the show option. The show option provides a convenient way to check configuration changes before saving them to flash.

The show options available will vary for switches and routing switches and by configuration level.

USING THE CLI

To determine the available show commands for the system or a specific level of the CLI, enter the following command:

```
HP9300# show ?
```

syntax: show <option>

You also can enter "show" at the command prompt, then press the TAB key.

NOTE: For a complete summary of all available **show...** CLI commands and their displays, see “Command Line Interface Commands” on page 1.

USING THE WEB MANAGEMENT INTERFACE

1. Select the Show link from the main menu. A panel such as the one shown in Figure A.4 will appear.

NOTE: The panel shown is for a routing switch with all features enabled. Switches do not have the routing-related options. Also, options are not displayed disabled features.

2. Select the link that corresponds to the desired configuration information. A summary panel will appear on the screen.

NOTE: Only the protocols that are active on the routing switch will display options on the show panel.

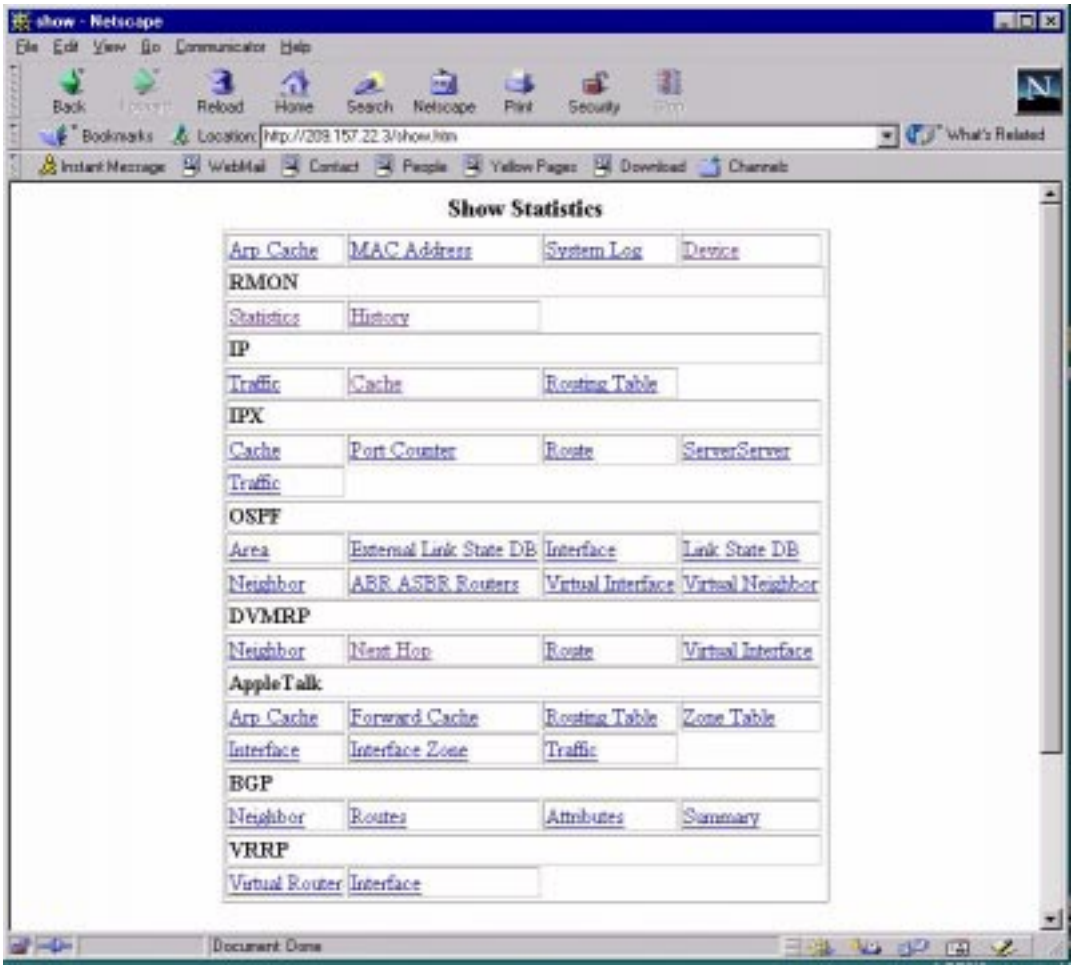

Figure A.4 Show panel for a routing switch

Overview of Show Panel Options

ARP cache: Displays the ARP cache of the switch or routing switch noting port type, aging time and resident port.

MAC address: Displays all MAC addresses resident on a switch or routing switch.

System Log: Displays Syslog messages.

Device: Displays the system up time as well as software and hardware version information.

RMON Statistics: Displays Ethernet statistics for the ports.

RMON History: Displays the Ethernet statistics history for the ports.

IP Traffic: Displays packets sent, received and forwarded: fragmented and re-fragmented packets, and filtered packets.

IP Cache: Displays the contents of the IP forwarding cache.

IP Routing Table: Displays all active IP routes for a routing switch.

IPX Cache: Displays the contents of the IPX forwarding cache.

IPX Port Counter: Displays Ethernet-like statistics for IPX ports.

IPX Route: Displays all active IP routes for a routing switch.

IPX Server: Displays IPX servers defined for the routing switch noting type, network number, node number, socket and name.

IPX Traffic: Displays a port summary of total IPX packets forwarded. It also breaks down the packets by transmit and receive. Totals for dropped and filter packets are also shown.

OSPF Area: Displays the following information for defined OSPF areas:

- type of area—stub or normal
- cost (for stub area only)
- number of times the SPF (shortest path first) calculation is performed for the area
- number of area borders within the area
- number of AS boundary routers within the area
- number of link state advertisements (LSA) in the link state database of the area
- sum of LSA checksums in the area

OSPF External Link State DB: Displays external link state advertisements for an OSPF area

OSPF Interface: Displays the following information about OSPF interfaces: state of the interface and additional parameters such as authentication type, hello and dead interval, priority and retransmission interval.

OSPF Link State DB: Displays the router, network, summary and summary ASBR link state advertisements. Status will display a detailed summary and advertise will display a short form.

OSPF Neighbor: Displays information about all neighbor routers or a specific neighbor router:

- neighbor router ID
- neighbor IP address
- neighbor state
- number of times the neighbor state changed
- count of packets retransmitted to the neighbor router will be shown.

OSPF ABR ASBR Routers: Displays information about Area Border Routers (ABRs) and Autonomous System Border Routers (ASBRs).

OSPF Virtual Interface: Displays virtual interfaces on the system noting parameter settings.

OSPF Virtual Neighbor: Displays the virtual neighbor value for the specified index on a routing switch. This command is not supported on the 6208M-SX switch.

DVMRP Neighbor: Displays information about the configured DVMRP neighbors.

DVMRP Next Hop: Displays next hop information for DVMRP.

DVMRP Route: Displays the DVMRP route table.

DVMRP Virtual Interface: Displays the DVMRP virtual interfaces.

PIM Neighbor: Displays information about the configured PIM neighbors.

PIM Virtual Interface: Displays the PIM virtual interfaces.

AppleTalk ARP Cache: Displays the ARP table for the AppleTalk routing protocol.

AppleTalk Forward Cache: Displays the forwarding table for the AppleTalk routing protocol.

AppleTalk Routing Table: Displays the global configuration parameters for the AppleTalk routing protocol.

AppleTalk Zone Table: Displays the network numbers and zones learned on the network.

AppleTalk Interface: Displays the AppleTalk configuration for an individual interface or all interfaces.

AppleTalk Interface Zone: Displays the zones defined on all AppleTalk interfaces.

AppleTalk Traffic: Displays statistical information for RTMP, ZIP, AEP, DDP and AARP packets.

BGP Neighbor: Displays information about the configured BGP4 neighbors.

BGP Routes: Displays the BGP4 route table.

BGP Attributes: Displays the table of BGP4 route attributes.

BGP Summary: Displays summary BGP4 configuration information.

VRRP Virtual Router: Displays configuration information for the virtual router.

VRRP Interface: Displays error statistics for VRRP interfaces.

Viewing Port Statistics

Port statistics are polled by default every 10 seconds.

USING THE CLI

You can view statistics for ports by entering the following **show** commands:

- **show interfaces**
- **show configuration**

USING THE WEB MANAGEMENT INTERFACE

To view the port statistics for all ports on a switch or routing switch:

1. Select the Port link from the menu.
2. Select the Port Statistics link to display a panel such as the one shown in Figure A.5.

NOTE: The polling rate can be modified by selecting the Preference link from the main menu, and modifying the port statistic field. To disable polling, enter zero in that field.

NOTE: To clear all port statistics, select the Clear button (not shown) on the port statistic summary panel.

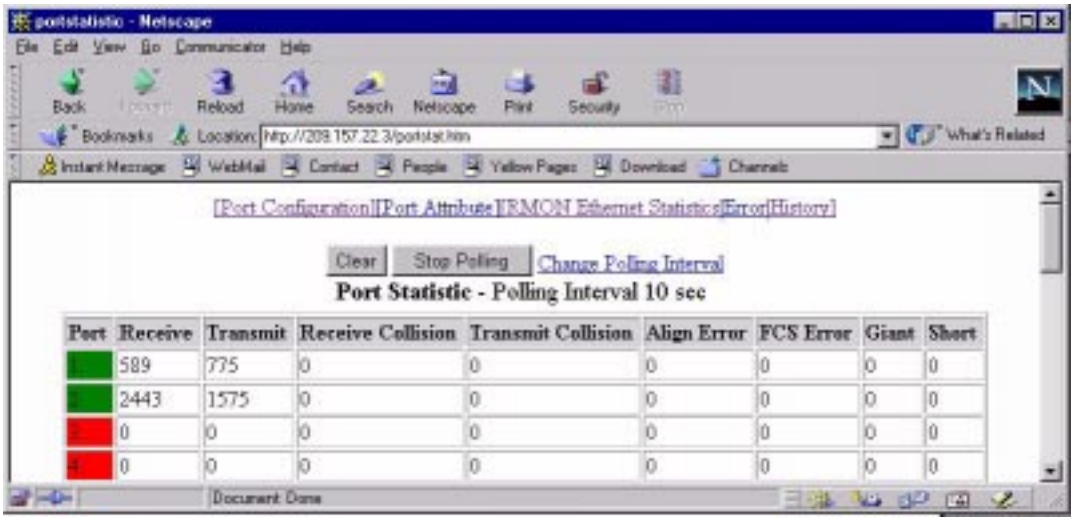

Figure A.5 Port statistics summary panel

Viewing STP Statistics

You can view a summary of STP statistics for switches and routing switches. STP statistics are by default polled every 10 seconds.

To modify this polling rate (when using the Web management interface), select the Preferences link from the main menu, and modify the STP field. You can disable polling by setting the field to zero.

USING THE CLI

To view spanning tree statistics, enter the **show span** command. To view STP statistics for a VLAN, enter the **span vlan** command.

USING THE WEB MANAGEMENT INTERFACE

To view a summary of spanning tree statistics, select the STP link from the menu. The screen shown in Figure A.6 or Figure A.7 will appear.

STP statistics are by default polled every 10 seconds. To modify this polling rate, select the Preferences link from the main menu, and modify the STP field. You can disable polling by setting the field to zero.

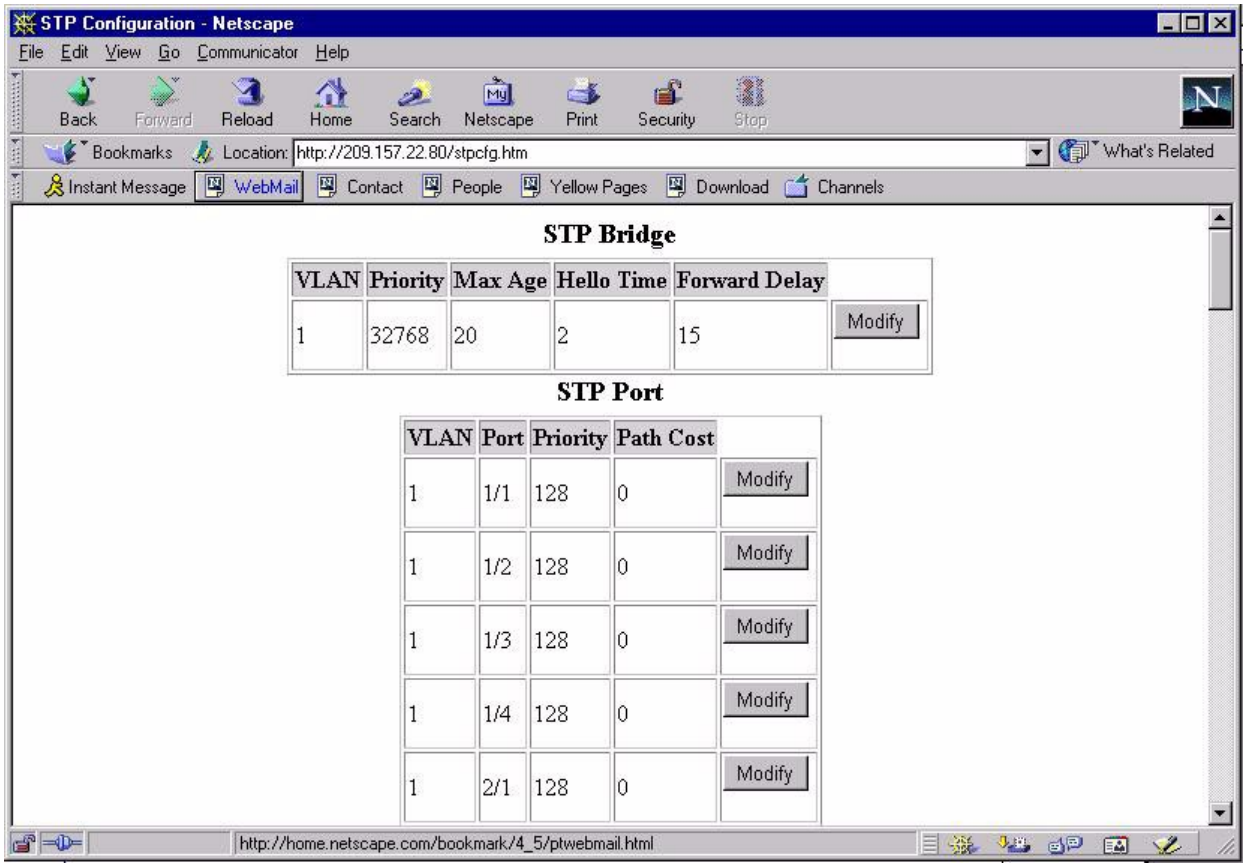

Figure A.6 Spanning tree protocol summary showing operation with VLANs enabled

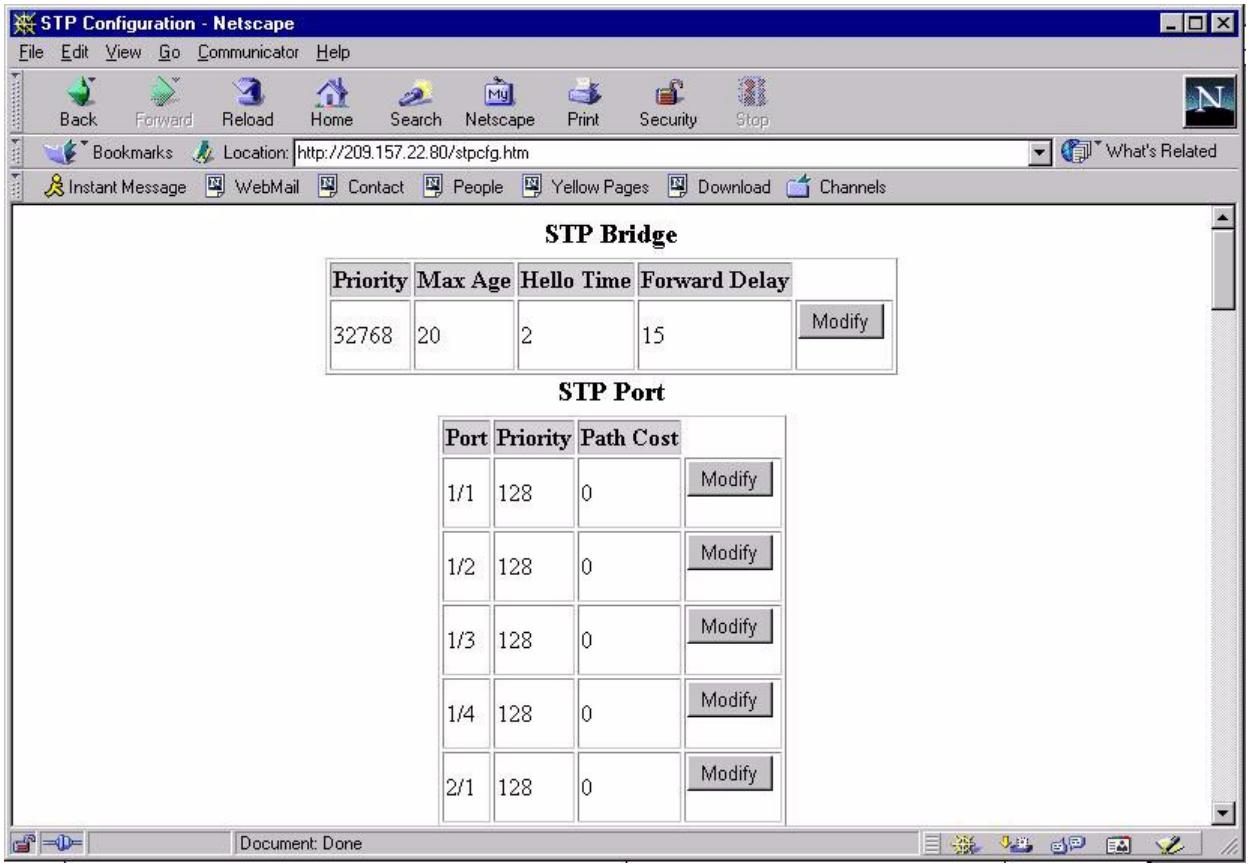

Figure A.7 Spanning tree protocol summary showing operation without VLANs enabled

Clearing Statistics

You can clear statistics for many parameters with the clear option.

USING THE CLI

To determine the available **clear** commands for the system, enter the following commands:

```
HP9300# clear ?
```

syntax: clear <option>

You also can enter "clear" at the command prompt, then press the TAB key.

For a complete summary of all available **clear...** CLI commands and their displays, see “Command Line Interface Commands” on page 1.

NOTE: Clear commands are found at the Privileged EXEC level.

USING THE WEB MANAGEMENT INTERFACE

You can clear statistics by doing the following:

1. Select the Clear link from the main menu to display a panel such as the one shown in Figure A.8.

   NOTE: Clear options are displayed only for enabled features.

2. Select all items to be cleared.

3. Select the Apply button to initiate the information removal.

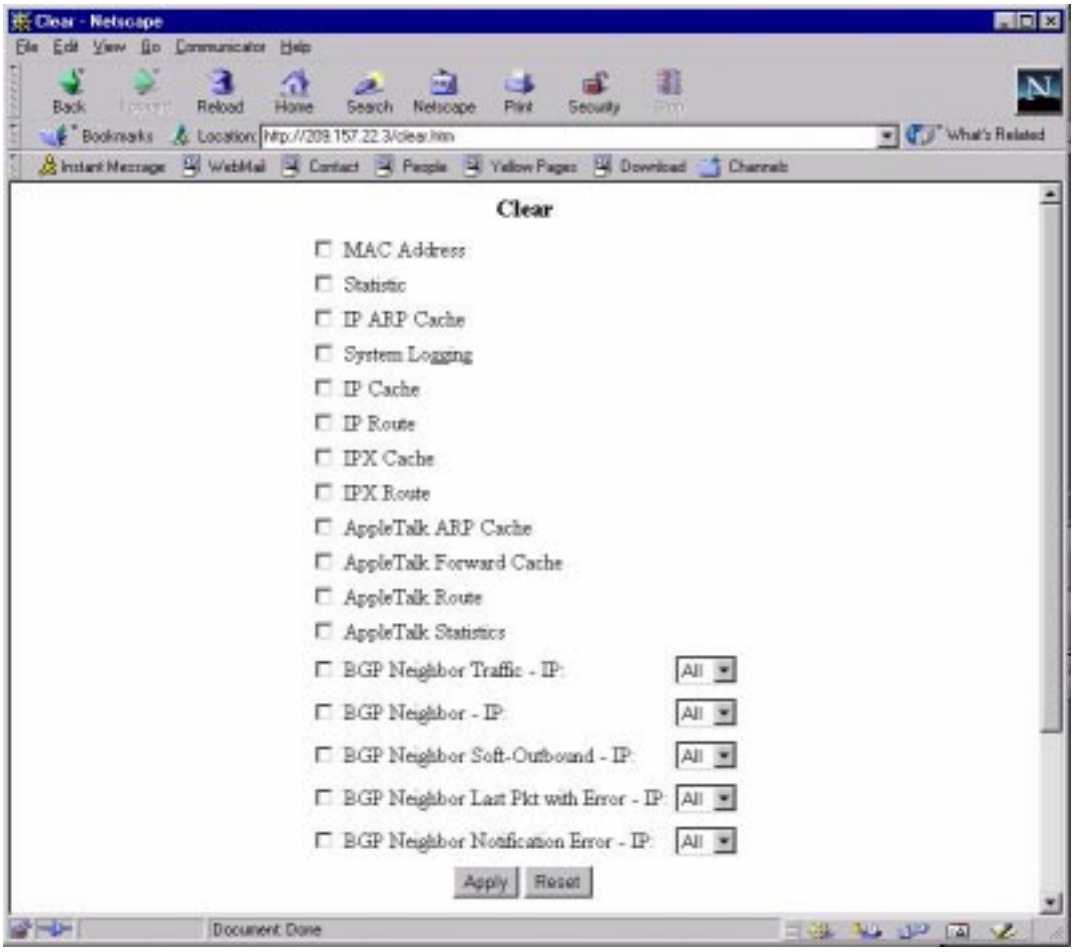

Figure A.8 Clear panel