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4655 Great America Parkway
Santa Clara, CA 95054

# Using the 8683POSM Module

Passport 8000 Series Switch
Software Release 3.3

NORTEL NETWORKS™

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# Preface

The 8683POSM Module is part of the Nortel Networks* 8000 Series line of communications products. This module is the Packet over SONET (POS) module for the 8000 chassis. This guide describes the features and operations of the 8683POSM Module and provides instructions for installing and managing the module.

For a complete list of the documentation related to the Passport 8000 Switch Series Software Release 3.3, refer to the release notes for that release, or to the documentation CD provided with your software. Note that the *Network Design Guidelines* is a Web-posted document and will not be provided on your CD.

## Before you begin

This guide is intended for network installers and system administrators who are responsible for installing, configuring, or maintaining networks. This guide assumes that you have the following background:

- Understanding of the transmission and management protocols used on your network
- Experience with windowing systems or graphical user interfaces (GUIs)

# Text conventions

This guide uses the following text conventions:

| | |
|---|---|
| angle brackets (< >) | Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command.<br>Example: If the command syntax is `ping <ip_address>`, you enter `ping 192.32.10.12` |
| **`bold Courier text`** | Indicates command names and options and text that you need to enter.<br>Example: Use the **`dinfo`** command.<br>Example: Enter **`show ip`** {**`alerts`**\|**`routes`**}. |
| braces ({}) | Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command.<br>Example: If the command syntax is `show ip {alerts\|routes}`, you must enter either `show ip alerts` or `show ip routes`, but not both. |
| brackets ([ ]) | Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command.<br>Example: If the command syntax is `show ip interfaces [-alerts]`, you can enter either `show ip interfaces` or `show ip interfaces -alerts`. |
| ellipsis points (. . . ) | Indicate that you repeat the last element of the command as needed.<br>Example: If the command syntax is `ethernet/2/1 [<parameter> <value>]...`, you enter `ethernet/2/1` and as many parameter-value pairs as needed. |

| | |
|---|---|
| *italic text* | Indicates new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore.<br>Example: If the command syntax is `show at <valid_route>`, `valid_route` is one variable and you substitute one value for it. |
| `plain Courier text` | Indicates command syntax and system output, for example, prompts and system messages.<br>Example: `Set Trap Monitor Filters` |
| separator ( > ) | Shows menu paths.<br>Example: Protocols > IP identifies the IP command on the Protocols menu. |
| vertical line ( \| ) | Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command.<br>Example: If the command syntax is `show ip {alerts\|routes}`, you enter either `show ip alerts` or `show ip routes`, but not both. |

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# Chapter 1
# 8683POSM Modules concepts

The 8683POSM Module is a 128K records module which allows support for large layer 2 and layer 3 configurations. This module only operates with 8000 Series software release 3.3 and later. For 128K record support the following configurations are required:

- The chassis must include the 8691SF CPU module.
- All modules installed in the chassis must support 128K records running 3.3 and later software.
- MMode (128K records mode) must be enabled. For instructions on enabling MMode (not a POS-specific command), see *Platform and System Management*.

The 8683POSM Module for the 8000 series routing switches provides WAN support to the 8000 Series product line by allowing access to SONET services in the metropolitan area. Where multiple campuses exist in a single metropolitan area, you can connect these campuses without compromising performance or increasing complexity.

The 8683POSM Module is a baseboard with slots for three of the following two optional media dependent adapters (MDAs):

- 1-port OC-12c/STM-4: single-mode fiber (SMF) or multimode fiber (MMF) using SONET/SDH
- 2-port OC-3c/STM-1: SMF or MMF using SONET/SDH

The 8683POSM Module supports up to six input/output (I/O) OC-3c/STM-1 lines and up to three I/O OC-12 lines. You can mix these MDAs on a single 8683POSM Module. For example, you can put an OC-12 MDA into the first slot and OC-3 MDAs into the two remaining slots.

You can put more than one 8683POSM Module in the 8000 series chassis, except slots 5 and 6, which are reserved for the 8691SF (Switch Fabric) modules. The maximum number of modules on a chassis is four.

One 8691SF module acts as the CPU for the chassis, and the other module is the standby CPU, taking over in case of failure. If a CPU failover occurs, all traffic on the chassis stops momentarily while the standby CPU reinitializes all input/output modules.

For a complete discussion on the hardware specifics of your 8683POSM module, or on how to install you module, see *Installing 8600 Switch Modules* or the installation manual specific to your chassis.

# Features

The 8683POSM Module has the following features:

- SONET and SDH compliant, supporting OC-3c/STM-1 and OC-12c/STM-4 framing
- Front-panel LEDs to monitor port activity and module operation
- Ability to remove and install a module (hot-swap) without resetting the switch
- MTBF of 150,000 hours
- Internal and external loopback support on all ports for testing purposes
- Hardware diagnostics
- Brouter port configuration
- Bridging support: RFC 1638-compliant
- Routing support for both unicast and multicast IP and IPX routing
- Support for both single-mode fiber (SMF) and multimode fiber (MMF) cabling
- Support for DVMRP
- Support for IGMP
- Support for MultiLink Trunking (MLT)
- Support for the following VLAN features currently implemented in the 8000 Series switch including:
  - — Port-based VLAN

  - — Policy-based VLANs (protocol-based, IP subnet-based VLANs)
  - — IEEE 802.1Q tagged VLANs
- Support for the following RFCs:
  - — PPP over SONET: RFC 2615
  - — SONET/SDH: RFC 2558
  - — PPP: RFC 1471, RFC 1473, RFC 1474, and RFC 1661
  - — LQM: RFC 1989
  - — SNMP: RFC 1213
  - — IPCP: RFC 1332
  - — IPXCP: RFC1552
  - — BCP: RFC 1638_
- Multiple spanning tree groups - bridge mode only
- Manageable through the CLI or Device Manager, the SNMP-based graphical user interface
- Monitored through a World Wide Web browser from anywhere on the network

## Switch fabric console port

Use the Console port on the switch fabric CPU (8691SF Module) to establish a local CLI or Device Manager session for the 8683POSM Module. For information on connecting to the Console port, refer to the appropriate installation manual for your 8000 Series chassis.

The Diag port on the 8683POSM Module is used *only* by Nortel Networks personnel for debugging purposes. You can see diagnostic messages but you cannot input any text.

The Diag port on the module is an RJ-45 port that allows out-of-band management by Nortel Networks personnel.

A typical application consists of a single 8683POSM Module in an 8000 series switch, but multiple modules are also supported.

A typical network application of the 8683POSM Module is a direct connection between one 8000 series switch with a 8683POSM Module in one campus to an identical module in another 8000 series switch at another campus connected over a SONET ring. Using this connection, you achieve an intercampus link through packet over SONET (POS) technology.

# SONET transmission

You can connect the 8683POSM Module through a Synchronous Optical Network (SONET) termination multiplexor to extend the range of the wide area network (WAN) connections. Or, you can connect the 8683POSM Module, using fiber, directly to a POS interface on another 8000 Series routing switch or on a traditional router.

The SONET frames received from the WAN contain IP packets encapsulated in Point-to-Point Protocol (PPP) that are converted by the 8683POSM Module into an Ethernet format. Similarly, the 8683POSM Module receives Ethernet frames and converts them into PPP packets for transmission over SONET.

## SONET terms and acronyms

This section provides a brief listing of common Synchronous Optical Network (SONET) terms. SONET is a medium for transmitting data that uses fiber-optic cables.

The following terms and acronyms are frequently used with SONET information:

- SONET: Synchronous Optical Network. SONET is a family of fiber optic transmission rates that provides the flexibility to transport many digital signals with different capacities. This ANSI standard provides for transmission from OC-1 to OC-48 and greater.
- SDH: Synchronous Digital Hierarchy. SDH is a standard technology for optical fiber-based synchronous data transmission. SDH is the international equivalent of SONET.
- OC-3c/STM-1: Optical Carrier-level 3 concatenation. OC-3c/STM-1 is an optical fiber transmission system that carries STS-3c/STM-1 frame structures at 155 Mb/s. Concatenation refers to the fact that there is only one logical data stream (rather than supporting a channelized structure).

- OC-12c/STM-4: Optical Carrier-level 12 concatenation. OC-12c/STM-4 is an optical fiber transmission system that carries STS-12c/STM-4 frame structures at 622 Mb/s. Concatenation refers to the fact that there is only one logical data stream (rather than supporting a channelized structure).
- POS: Packet over SONET.
- PPP: Point-to-Point Protocol. PPP encapsulates common network-layer protocols in specialized Network Control protocol packets, such as IP over PPP (IPCP) and IPX over PPP (IPXCP), and BCP. Thus, it enables sending multiprotocol data over point-to-point links.

## SONET/SDH transmission rates

The following transmission rates are commonly used with SONET:

- OC-3c/STM-1: 155.52 Mb/s
- OC-12c/STM-4: 622.08 Mb/s

The SONET specification defines optical both as:

- Single-mode fiber (SMF)
- Multimode fiber (MMF).

**Note:** The estimated maximum transmission distance for OC-3c SMF is 20 kilometers (km); for OC-3c MMF is 2 km; for OC-12c SMF is 15 km; for OC-12c MMF is 500 m.

## Point-to-Point Protocol

The PPP family of protocols is divided into three categories:

- Control protocols control operation and maintenance of the PPP link.
- Network protocols describe the encapsulation methods needed to move multiprotocol network traffic over the PPP interface.
- Network control protocols are used to configure, manage, and control the operation of the network protocols. The 8683POSM Module uses the Link Control Protocol (LCP) and the Link Quality Report to monitor the link.

PPP goes through the following basic initialization phases when bringing up links:

- Link establishment
- Network layer protocol

## Establishing the PPP link

The Link Control Protocol (LCP) of the PPP helps establish a link. LCP generates three types of packets:

- Link configuration packets, including configure-request, configure-ACK, configure-NAK, and configure-reject packets
- Link termination packets, including terminate-request and terminate-ACK packets
- Link maintenance packets, including code-reject, protocol-reject, echo-request, and echo-reply packets

When two devices initialize a PPP dialog, each sends a configure-request packet to the other. Each configure-request packet contains a list of LCP options and corresponding values that the sending device uses to define its end of the link.

For example, a configure-request packet may specify the link's maximum transmission unit (MTU) size. The configure-request packet contains the user-configured values, which the sending device and the receiving device may need to negotiate.

When the receiving device gets a configure-request packet from the sending device, the receiving device responds with one of the following three types of packets:

- configure-ACK (that is, configure acknowledgment),
- configure-reject, or
- configure-NAK (that is, configure negative acknowledgment).

When the receiving device accepts the proposed LCP options, it responds with a configure-ACK packet. When the devices on each side of the link send and receive configure-ACK packets, the LCP advances to an open state, which means that the PPP interface can advance to the next phase. The devices converge.

When the configure-request packet from the sending device contains options that the receiving device is not willing to negotiate, the receiving device sends back a configure-reject packet specifying the nonnegotiable options. From that point on, configure-request packets from the sending device should eliminate the unacceptable options. When the sending device eliminates the offending options, the devices converge.

When the receiving device disagrees with some or all of the values of the proposed options in the configure-request packet, it responds with a configure-NAK packet. The configure-NAK packet notes the values that the receiving device disagrees with, and it includes the corresponding values that the receiving device would like to see in subsequent configure-request packets.

LCP negotiations between sending and receiving devices continue until either:

- Both devices converge (reach an agreement regarding the configure-request).
- The receiving device transmits a specified number of configure-NAK packets before sending a configure-reject packet.
- The convergence timer expires.

## Negotiating network layer protocols

PPP uses various network control protocols to determine the values of parameters during network layer negotiations, which is the final phase of PPP initialization. Similar to the LCP, each network control protocol allows the devices to negotiate various network options over the data link by transmitting configure-request, configure-ACK, configure-NAK, and configure-reject packets.

Networks options include which network addresses to use and which media types to bridge. Once both devices agree upon networks options, the network control protocol reaches the open state. The devices then begin transmitting user data packets for upper-layer protocols over the link.

# Packet-over-SONET

Packet-over-SONET (POS) is a transport system that carries IP packets directly over a SONET/SDH network without any data link facility, such as ATM, in between. POS transmits information at the highest rates possible, because SONET has a smaller packet header overhead than ATM (28 bytes out of an 810-byte frame compared with 5 out of a 53-byte ATM cell).

On a 8683POSM Module, the following features and protocols are supported:

- Three types of VLANs are supported:
  - Port-based VLANs
  - Protocol-based VLANs
  - 802.1q VLANs
- The Spanning Tree Protocol (STP) and FastStart are supported. The Bridge Protocol Data Unit (BPDU) format is enabled by default on the 8683POSM Module. It must be disabled if support for spanning tree groups is required.
- MultiLink Trunking (MLT)
- Internet Group Management Protocol (IGMP)
- Distance Vector Multicast Routing Protocol (DVMRP)
- Point-to-Point Protocol (PPP)

## PPP over SONET

Point-to-point protocol connections over SONET are supported. Because the PPP encapsulation has relatively low overhead, higher throughput can be attained compared to other SONET/SDH payload mapping, at a lower cost for line termination equipment.

Since SONET/SDH is by definition a point-to-point circuit, PPP is appropriate to use over these connections.

### Physical layer requirements

PPP treats SONET/SDH transport as octet-oriented synchronous links. SONET/SDH links are full-duplex mode by definition.

## Interface format

PPP presents an octet interface to the physical layer. There is no provision for suboctets to be supplied or accepted.

The octet stream is mapped into the SONET/SDH Synchronous Payload Envelope (SPE), with the octet boundaries aligned with the SPE octet boundaries.

No scrambling is needed during insertion into the SPE. The Path Signal Label (C2) is intended to indicate the contents of the SPE. The experimental value of 207 is used to indicate PPP.

The Multiframe Indicator (H4) is currently unused, and must be zero.

## Transmission rate

The basic rate for PPP over SONET/SDH is that of STS-3c/STM-1 at 155.520 Mb/s. The available information bandwidth is 149.760 Mb/s, which is the STS-3c/STM-1 SPE with section, line, and path overhead removed.

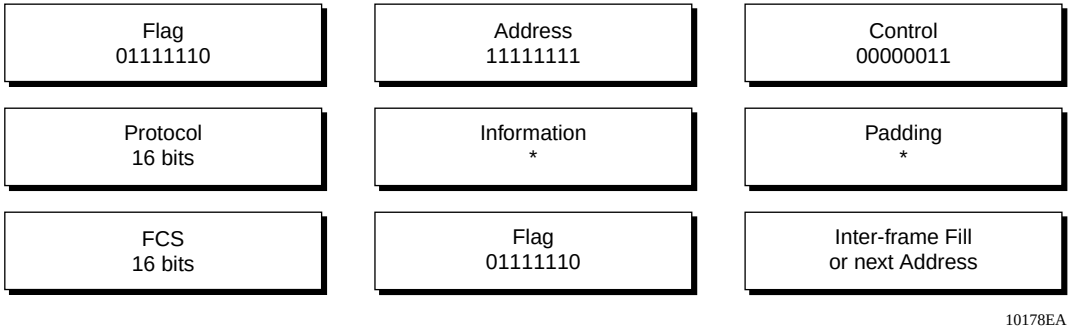
## Control signals

PPP does not require the use of control signals. When available, using such signals can allow greater functionality and performance.

## Frame format

Figure 1 presents a summary of the PPP HDLC frame structure. It does not include start/stop bits (for asynchronous links), nor any bits or octets inserted for transparency. The fields are transmitted from left to right.

**Figure 1** PPP HDLC frame structure




### *Flag Sequence*

The Flag Sequence indicates the beginning or end of a frame and always consists of the binary sequence 01111110 (hexadecimal 0x7e).

The Flag Sequence is a frame separator. Only one Flag Sequence is required between two frames. Two consecutive Flag Sequences constitute an empty frame, which is ignored and not counted as an FCS error.

### *Address field*

The Address field is a single octet and contains the binary sequence 11111111 (hexadecimal 0xff), the All-Stations address. PPP does not assign individual station addresses. The All-Stations address must always be recognized and received. The use of other address lengths and values may be defined at a later time or by prior agreement. Frames with unrecognized addresses should be silently discarded.

### *Control field*

The Control field is a single octet and contains the binary sequence 00000011 (hexadecimal 0x03), the Unnumbered Information (UI) command with the P/F bit set to zero. The use of other Control field values may be defined at a later time or by prior agreement. Frames with unrecognized Control field values should be silently discarded.

### *Frame Check Sequence (FCS) field*

The Frame Check Sequence field is normally 16 bits (two octets). The use of other FCS lengths may be defined at a later time or by prior agreement. The FCS is transmitted with the coefficient of the highest term first.

The FCS field is calculated over all bits of the Address, Control, Protocol, Information and Padding fields, not including any start and stop bits (asynchronous) nor any bits (synchronous) or octets (asynchronous or synchronous) inserted for transparency. This field also does not include the Flag Sequences nor the FCS field itself.

**Note:** When octets are received and flagged in the Async- Control-Character-Map, they are discarded before calculating the FCS.

## Configuration details

The standard LCP sync configuration defaults apply to SONET/SDH links.

The following configuration options are recommended:

- Magic Number
- No Address and Control Field Compression
- No Protocol Field Compression
- 32-bit FCS

## PPP Bridging Control Protocol (BCP)

The PPP BCP is supported. This protocol allows BPDUs to be transmitted over the POS link. When multiple spanning tree groups are used, the STP feature is disabled and BPDUs are bridged using the bridged coding.

# Spanning tree group feature

The BPDU (Bridge Protocol Data Unit) format specified in RFC 1638 is enabled by default on the 8683POSM Module. If support for multiple spanning tree groups is required, the BPDU default format must first be disabled. For information on changing the STG format, see “config pos ppp” on page 79.

# Chapter 2
# Configuration considerations and limitations

This chapter describes configuration limitations and considerations and interoperability issues that you should consider when configuring your 8683POSM Module.

## Device Manager access and passwords

Table 1 shows the security access levels for the 8683POSM Module.

**Table 1** 8683POSM Module access levels

| Level of Access | 8683POSM Module feature |
|---|---|
| Level 1 (read/write) | SONET parameters |
| Level 2 (read/write) | All PPP bridging and Spanning Tree parameters |
| Level 3 (read/write) | All IP and IPX routing parameters |

# Port numbering

You must insert an MDA into the 8683POSM Module in order to have connectivity. The module contains three slots for MDAs, and you can mix and match from among the following MDAs, which are available (SMF and MMF):

- 1-port OC-12c/STM-4
- 2-port OC-3c/STM-1

The management system identifies an interface by its slot number in the 8000 series chassis and its port number, using the syntax slot number/port number (s/p). Because the 8683POSM Module can have up to six ports with three 2-port MDAs inserted, port numbers 1 and 2 are reserved for the MDA in the left slot regardless of the actual physical number of ports. Port numbers 3 and 4 apply to the MDA in the middle slot regardless of the actual physical number of ports; and port numbers 5 and 6 apply to the MDA in the right slot regardless of the physical number of ports.

For example, a 8683POSM Module in the second slot of the 8000 series chassis with an OC-12c/STM-4 MDA in the left slot, an OC-3c/STM-1 MDA in the middle, and an OC-12c/STM-4 MDA in the right slot has the following port numbers for management and configuration:

- 2/1: OC-12c/STM-4
- 2/3: OC-3c/STM-1, left port
- 2/4: OC-3c/STM-1, right port
- 2/5: OC-12c/STM-4

As another example of port numbering, an 8683POSM Module in the second slot of the chassis with an OC-3c/STM-1 MDA in the left slot, the middle slot blank, and an OC-12c/STM-4 installed in the right slot has the following port numbers:

- 2/1: OC-3c/STM-1, left port
- 2/2: OC-3c/STM-1, right port
- 2/5: OC-12c/STM-4

A 8683POSM Module with three OC-3c/STM-1 MDAs installed has ports numbered consecutively 1 through 6, from left to right.

# IPX encapsulation method

When a POS port is configured for IPXCP (IPX routed link), the only encapsulation method that you can use is Ethernet II. For more information, see "Configuring IPX routing" on page 54.

# Rebooting a terminal connected to the diagnostic port

Rebooting a terminal connected to the Diagnostic port on the Passport 8683POS module may cause the module to reset. This port is intended only for debugging operations and should not be used during normal operation.

# Severely Errored Seconds

In a statistics display, a Severely Errored Second (SES) is a second where *x* or more Coding Violations occur. The value of *x* is dependent on the bit rate as follows:

Table 2 shows the value of *x* for the available Bit Rates

**Table 2** Value of *x* for available Bit Rates

| Bit Rate | *x* value for Coding Violations |
|---|---|
| OC-3 | 155 |
| OC-12 | 616 |

# Chapter 3
# Configuring the 8683POSM Module Using Device Manager

Two management tools enable you to configure the 8683POSM Module: Device Manager and command line interface (CLI). You can also use the embedded web-based management feature to monitor the 8683POSM Module. See Chapter 5, “Web management,” on page 115 for information on using the web-based management feature.

Device Manager is an SNMP-based graphical user interface tool designed to manage single devices. In order to use Device Manager, you must have network connectivity to a management station running Device Manager on one of the supported platforms. This section describes Device Manager features that are specific to the 8683POSM Module.

For detailed information on all aspects of installing and running Device Manager, refer to *Getting Started with the 8000 Series Management Software*.

This chapter describes the following topics:


| Topic | Page |
|---|---|
| Configuring and managing POS | 38 |
| Configuring the SONET trap feature | 57 |
| Viewing the Trap Log | 60 |
| SONET loopback test feature | 61 |
| Viewing 8683POSM statistics | 62 |

# Configuring and managing POS

This section describes how to use Device Manager to configure and manage POS, and includes the following topics:


- "Default 8683POSM configuration, next
- "Changing default settings" on page 39," next
- "Resetting the 8683POSM Module" on page 43"
- "Viewing MDA information" on page 45"
- "Enabling or disabling a port" on page 46"
- "Configuring SONET parameters" on page 47"
- "Configuring bridging" on page 50"
- "Configuring routing" on page 50"


You can configure the 8683POSM Module in two basic modes:

- Bridging: Bridging mode is enabled by default. Bridging is configured for connections between two 8683POSM Modules and between 8683POSM Modules and other devices that support PPP bridging.
- Routing: You select routing mode for connections between your 8683POSM Module and other POS-capable routers for IP and IPX routing.

## Default 8683POSM configuration

Table 3describes the default 8683POSM Module configuration.

**Table 3** 8683POSM Module default settings

| Parameter | Default |
|---|---|
| Bridge Admin State (BCP) | Open |
| IP Admin State (IPCP) | Close |
| IPX Admin State (IPXCP) | Close |
| Clock source | Line |
| FCS size | 32 |
| Debug | Disabled |
| Framing | SONET |

**Table 3** 8683POSM Module default settings (continued)

| Parameter | Default |
|---|---|
| Priority | Low |
| Lock | False |
| Lqr interval | 100 |
| Lqr status | Enabled |
| Lqr threshold | 95 |
| Magic number | True |
| Oversize frame | Disabled |
| Perform tagging | Disabled |
| Scramble | Enabled |
| Signal-Label (C2) | 0x16 |
| Section trace (J0) | 1 (0x01) |
| STP RFC 1638 | Enabled |
| Tagged frame discard | Disabled |
| Unknown MAC discard | Disabled |
| Untagged frame discard | Disabled |
| Device Manager interval | 10 seconds |

## Changing default settings

To change the default settings on the 8683POSM Module or to perform any configuration tasks in Device Manager, select the port you want to configure and open the Interface tab.

To open the Interface tab:

➔ Do one of the following:

- Right-click on the port. A shortcut menu opens. Choose Edit.
- Double-click on the port.

The Port dialog box opens with the Interface tab displayed (Figure 2).

**Figure 2** Port dialog box — Interface tab

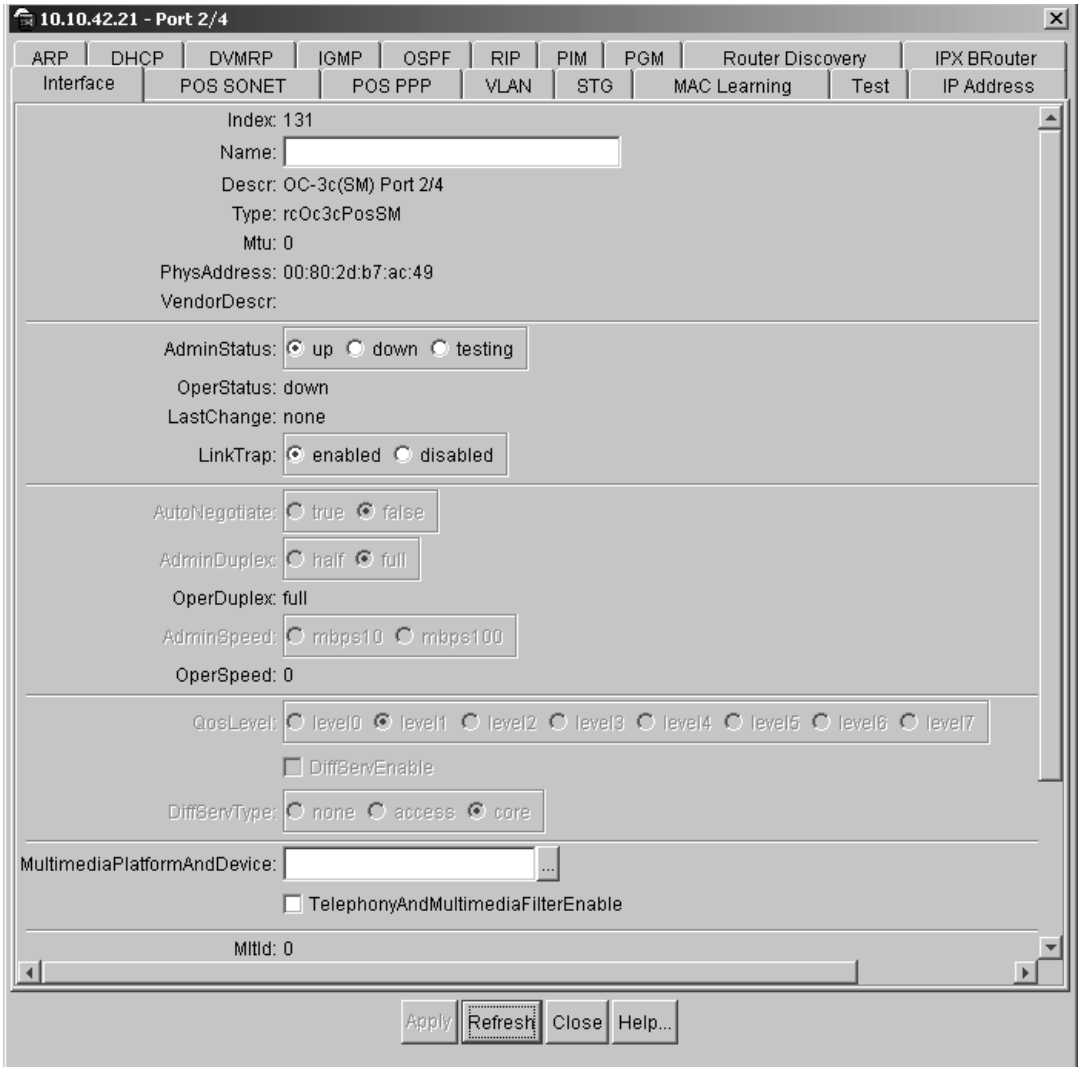


Table 4 describes the Interface tab fields.

**Table 4** Interface tab fields

| Fields | Description |
|---|---|
| Index | Unique value assigned to each interface. The value ranges between 16 and 255. |
| Name | Displays the name of this port. To assign or change a name to the port, highlight the field and enter alphanumeric characters. |
| Descr | Type of interface, either:<br>• OC-3c MMF or SMF<br>• OC-12c MMF or SMF |
| Type | Media type of this interface. This will be ppp for a port on the 8683POSM Module. |
| Mtu | Size (in octets) of the largest packet that can be sent or received on the interface. For IPCP and IPXCP, the maximum is 1936. When BCP is enabled, however, the maximum is 1934. Check which NCP is enabled before configuring the Mtu on a connecting device.<br>Note: The Bridge Control Protocol (BCP) is enabled on the 8683POSM Module by default. |
| PhysAddress | MAC address assigned to a particular interface. |
| VendorDescr | Vendor description. |
| AdminStatus | Sets the port to one of the following states:<br>• up<br>• down<br>• testing<br>When a managed system initializes, all interfaces start with AdminStatus in the down state. As a result of either management or configuration action, the AdminStatus is changed to the up state (or remains in the down state). The testing state indicates that no operational packets can be passed. |

**Table 4** Interface tab fields (continued)

| Fields | Description |
|---|---|
| OperStatus | Operational state of the interface, one of the following:<br>• up<br>• down<br>• testing<br>The testing state indicates that no operational packets can be passed.<br>If AdminStatus is down, then OperStatus should be down.<br>If AdminStatus is changed to up, then OperStatus should change to up if the interface is ready to transmit and receive network traffic.<br>It should remain in the down state if and only if there is a fault that prevents it from going to the up state. |
| LastChange | Value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last reinitialization of the local network management subsystem, the value is zero. |
| LinkTrap | Sets whether or not link Up/link Down traps should be generated for this interface.<br>• enabled—sends traps for link up or down<br>• disabled—does not send traps for link up or down |
| OperDuplex | Current operational duplex of the port (half or full). This will always be full duplex on a POS port. |
| OperSpeed | Current operating speed of the port. It can be either 155 or 622 Mb/s depending on the type of interface installed. |
| MultiMediaPlatformAndDevice | Opens a dialog box that allows you to select the platform and device for multimedia. |
| TelephonyAndMultiMediaFilterEnable | Enables IP telephony and multimedia filters. |
| MltId | Multi-Link Trunk to which the port is assigned (if any). |
| Locked | Displays whether or not the port is locked. When locked, the port configuration cannot be changed. To lock or unlock a port, select Edit > Security > Port Lock. |
| Action | Sets one of the following port-related actions:<br>• none<br>• flushMacFdb—flush MAC forwarding table for port<br>• flushArp—flush ARP table for port<br>• flushIp—flush IP route table for port<br>• flushAll—flush all tables for port<br>• triggerRipUpdate—manually update the RIP table |
| Result | Displays results from the last system action. |

From the Interface tab, select other POS-specific tabs to configure the port or change current or default configurations.

## Resetting the 8683POSM Module

To reset 8683POSM module:

1. Highlight the card.
2. Choose Edit > Card.

   The Card dialog box opens with the Card tab displayed (Figure 3).

**Figure 3** Card tab

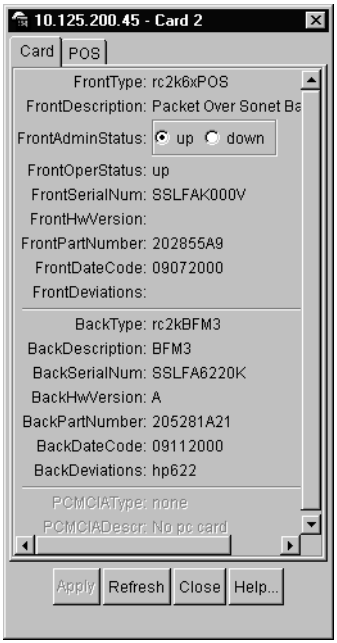



Table 5 describes the fields in the Card tab.

**Table 5** Card tab fields

| Field | Description |
|---|---|
| FrontType | Card type. |
| FrontDescription | Packet Over Sonet. |
| FrontAdminStatus | The administrative status of the card. |
| FrontOperStatus | The operational status of the card. |
| FrontSerialNum | Serial number of card. |
| FrontHwVersion | Hardware version. |
| FrontPartNumer | Part number. |
| FrontDateCode | Date code. |
| FrontDeviations | Deviations. |
| BackType | Card back type. |
| BackDescription | Description. |
| BackSerialNum | Serial Number. |
| BackHwVersion | Hardware version. |
| BackPartNumer | Part number. |
| BackDateCode | Date code. |
| BackDeviations | Deviations. |

**3** Click the POS tab.

The POS tab opens (Figure 4).

**Figure 4** POS tab

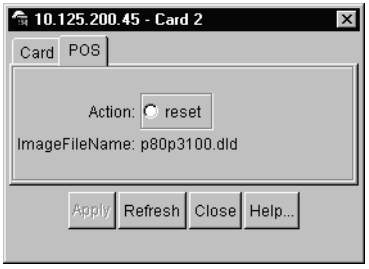



Table 6 describes the fields in the POS tab

.

**Table 6** POS tab fields

| Field | Description |
|---|---|
| Action: reset | Resets the card. |
| ImageFileName | Name of the image file which downloads at initialization. |

4 Click reset.

5 Click Apply.

## Viewing MDA information

To view information on the MDA you are using:

1 Highlight the MDA.

2 Select Edit > Mda.

The MDA dialog box opens (Figure 5).

**Figure 5** MDA dialog box

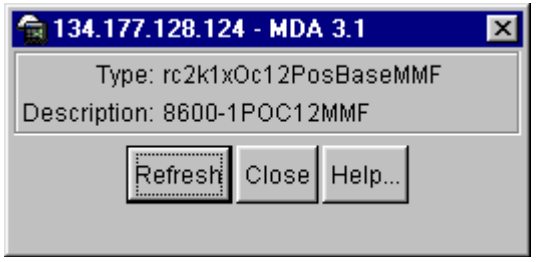


Table 7 describes the fields in the MDA dialog box.

**Table 7** MDA dialog box fields

| Field | Description |
|---|---|
| Type | Media type:<br>• OC-3c SMF MDA<br>• OC-3c MMF MDA<br>• OC-12c SMF MDA<br>• OC-12c MMF MDA |
| Description | MDA description:<br>• OC-3c SMF MDA—Dual port OC-3c SMF<br>• OC-3c MMF MDA—Dual port OC-3c MMF<br>• OC-12c SMF MDA — Single Port OC-12c SMF<br>• OC-12c MMF MDA —Single Port OC-12c MMF |

## Enabling or disabling a port

**Note:** When you change configurations in Device Manager, and click the Apply button, the system will disable and re-enable the port automatically.

You can enable or disable a port by two methods. To enable or disable a port through the Device Manager menu bar:

1. Highlight the port.
2. From the Device Manager menu bar, choose Edit > Port.

   The Port dialog box opens with the Interface tab displayed (Figure 2 on page 40).
3. In AdminStatus area, click up to enable the port, or click down to disable the port.
4. Click Apply.

To enable or disable a port using a shortcut menu:

1. Right-click on the port.

   A shortcut menu opens.

2. Choose Enable or Disable.

## Configuring SONET parameters

To change the default parameters, you configure the values for the Synchronous Optical Network (SONET) media in the POS SONET tab. These values must be configured before you configure POS PPP, VLAN, or any other parameters.

See Table 3 on page 38 for the default SONET parameters.

To change the configuration of the SONET parameters:

1. Highlight the port.
2. Choose Edit > Port.

   The Port dialog box opens with the Interface tab displayed (Figure 2 on page 40).
3. Disable the port as described in "Enabling or disabling a port" on page 46.
4. In the Interface tab, click the POS SONET tab.

   The POS SONET tab opens (Figure 6).

**Figure 6** Port dialog box — POS SONET tab

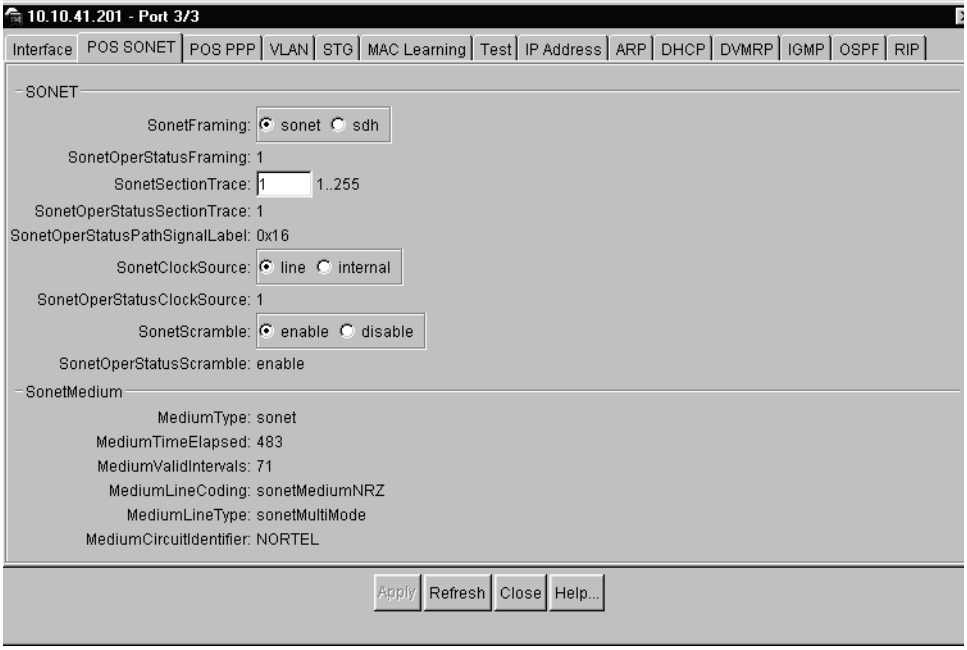



Table 8 describes the fields in the POS SONET tab.

**Table 8** POS SONET tab fields

| Field | Description |
|---|---|
| SonetFraming | Sets the framing for the port to:<br>• SONET—Synchronous Optical Network format; standard format used in North America (default)<br>• SDH—Synchronous Digital Hierarchy clock format; standard format used in Europe. |
| SonetOperStatusFraming | Operational value of SONET framing. |
| SonetSectionTrace | Sets the integer that the section trace flag (j0) is set to, that is an integer between 1 and 255. |
| SonetOperStatusSectionTrace | Operational value of SonetSectionTrace. |
| SonetOperStatusPathSignalLabel | Operational value of Path Signal Label. |
| SonetClockSource | Sets the Clock Source to either line or internal. |

**Table 8** POS SONET tab fields (continued)

| Field | Description |
|---|---|
| SonetOperStatusClockSource | Operational value of ClockSource. |
| SonetScramble | Parameter that enables or disables the scrambling option. |
| SonetOperStatusScramble | Operational value of SonetScramble. |
| SonetMedium | |
| MediumType | Identifies whether a SONET or a SDH signal is used across this interface. |
| MediumTimeElapsed | Number of seconds, including partial seconds, that have elapsed since the beginning of the current measurement period. If, for some reason, such as an adjustment in the system's time-of-day clock, the current interval exceeds the maximum value, the agent will return the maximum value. |
| MediumValidIntervals | Number of previous 15-minute intervals for which data was collected. |
| MediumLineCoding | Line coding for this interface. The Non-Return to Zero (NRZ) line coding is used for optical SONET/ SDH signals. |
| MediumLineType | Line type for this interface. The line types are single mode fiber or multimode fiber interfaces. |
| MediumCircuitIdentifier | Transmission vendor's circuit identifier, for the purpose of facilitating troubleshooting. Note that the circuit identifier, if available, is also represented by ifPhysAddress. |

5 Select the SonetClockSource, either line or internal.

If two POSM Modules are operating directly (that is, connected back to back, without any intervening Sonet equipment), one port must provide the clock source. Set the clock source of one port to internal, and the opposite port must be set to line.

6 Select other SONET parameters.

7 Click Apply.

8 Re-enable the port as described in "Enabling or disabling a port" on page 46.

## Configuring bridging

The 8683POSM Module is configured for bridging by default. The configuration is set for bridging between two 8683POSM Modules with one default VLAN. The Bridge Control Protocol (BCP) is enabled on the 8683POSM Module by default.

**Note:** When the POS link is enabled after a parameter change or a chassis reset, some superfluous traffic may initially be sent out of POS ports before any LCP packets go out. This is normal.

You can also configure bridging for the 8683POSM Module for connection to other POS-capable devices.

## Configuring routing

A POS port configured for IPCP and/or IPXCP encapsulation must be the sole member of the VLAN. You cannot add any other port to a VLAN which already has a POS port with IPCP and/or IPXCP encapsulation enabled. You cannot add a POS port which is configured for IPCP and/or IPXCP encapsulation to a VLAN which already has other ports as members.

**Note:** When the 8600 switch is interoperating with a Juniper router, the POS port must have the Juniper IP address configured in the remote IP field. This is necessary because the Juniper routers do not provide their local IP address during PPP negotiation. The 8600 switch requires the Juniper address for IPCP operations.

Note also that for the IP address assigned to the POS port, 30-bit subnet masks may be required for certain JUNOS releases.

### Configuring IP routing

To configure the 8683POSM Module for IP routing using Device Manager:

1. Highlight the port.
2. Choose Edit > port.

The Port dialog box opens with the Interface tab displayed (Figure 2 on page 40).

**3** Click the POS PPP tab.

The POS PPP tab opens (Figure 7).

**Figure 7** Port dialog box — POS PPP tab

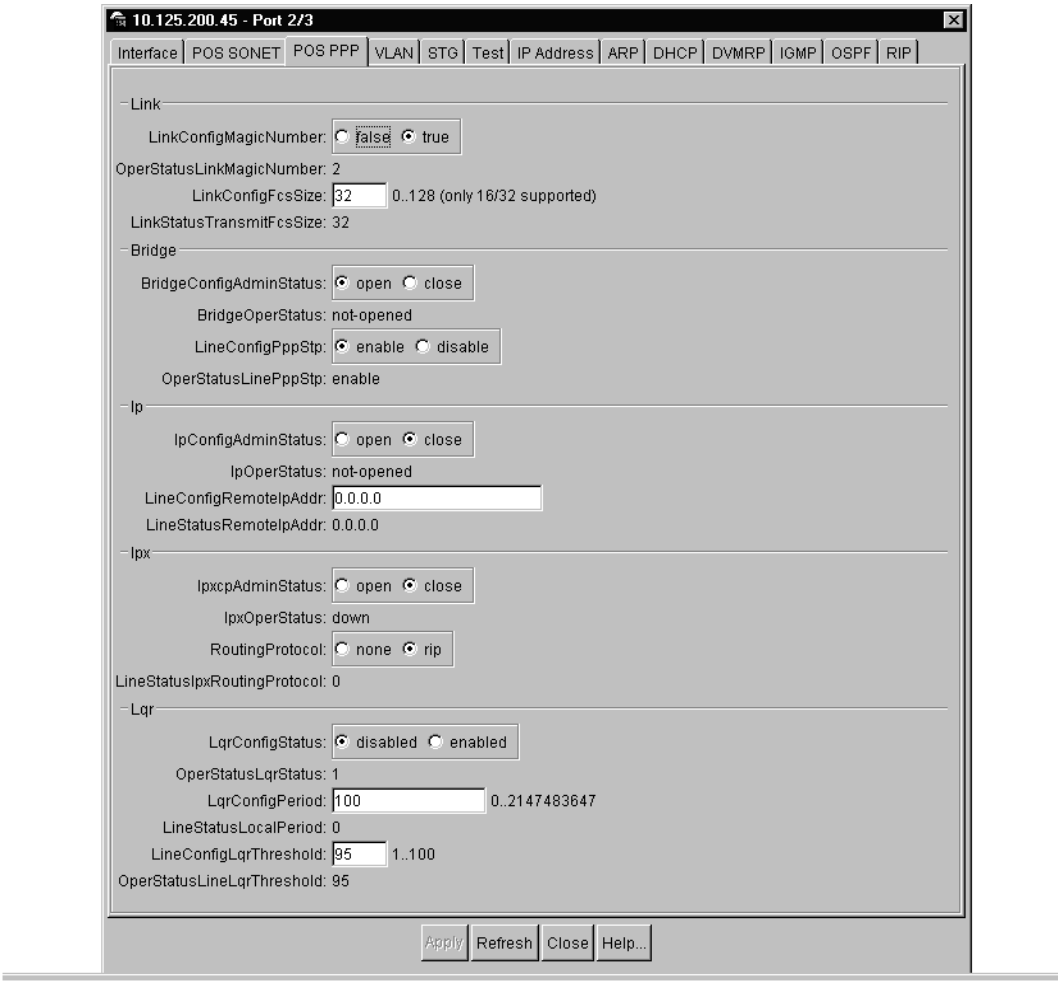


Table 9 describes the POS PPP tab fields.

**Table 9** POS PPP tab fields

| Area | Field | Description |
|---|---|---|
| Link | LinkConfigMagicNumber | If set to enable, selects a random number (“magic number”) used in loopback detection. Enable detects loopback; disable does not detect loopback. |
| | OperStatusLinkMagicNumber | Operational value of LinkConfigMagicNumber. |
| | LinkConfigFcsSize | Configures the size (in bits) of cyclic redundancy check field used in PPP frame. |
| | LinkStatusTransmitFcsSize | Operational value of LinkConfigFcsSize. |
| Bridge | BridgeAdminConfigStatus | This parameter enables or disables bridged traffic with in PPP. |
| | BridgeOperStatus | Operational value of BridgeAdminConfigStatus. |
| | LineConfigPppStp | Enables BPDUs to be received or transmitted with BPDU specific encapsulation. When disabled encapsulated within Ethernet frames. |
| | OperStatusLinePppStp | Operational value of LineConfigPppStp. |
| IP | IpConfigAdminStatus | Enables or disables the IP traffic (link) with in PPP. |
| | IpOperStatus | Operational value of IP link. |
| | LineConfigRemoteIPAddr | Configured value of remote end IP address. |
| | LineStatusRemoteIPAddr | Negotiated value of the remote end IP address. |
| IPX | IpxcpAdminStatus | Enables or disables the IPX traffic (link) with in PPP. |
| | IpxOperStatus | Operational value of IPX link. |
| | RoutingProtocol | Sets the IPX Routing Protocol to none or RIP. |
| | LineStatusIpxRoutingProtocol | Negotiated value of RoutingProtocol. |
| LQR | LqrConfigStatus | Sets the link quality reporting to enabled or disabled. |
| | OperStatusLqrStatus | Negotiated value of LqrConfigStatus. |
| | LqrConfigPeriod | Sets the link quality-reporting interval in 100th of a second. |
| | LineStatusLocalPeriod | Negotiated value of LqrConfigPeriod. |
| | LineConfigLqrThreshold | Sets input quality threshold in percent. |
| | OperStatusLqrThreshold | Operational value of LineConfigLqrThreshold. |

**4** In the BridgeConfigAdminStatus section, click close to disable bridging.

5 To enable IP routing, in the IpConfigAdminStatus field, click open.

6 To configure an IP address for the port:

a Highlight the port.

b Choose Edit > Port.

The Port dialog box opens with the Interface tab displayed (Figure 2 on page 40).

c Click the IP Address tab.

The IP address tab opens (Figure 8).

**Figure 8** Port dialog box — IP Address tab

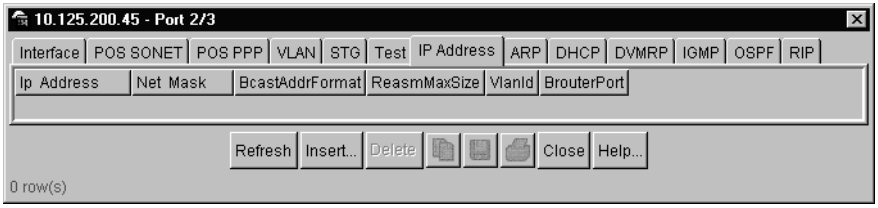



Table 10 describes the fields in the IP Address tab.

**Table 10** IP Address tab fields

| Field | Description |
|---|---|
| IpAddress | IP address to which the entry's addressing information pertains. |
| NetMask | The subnet mask associated with the IP address of the entry. |
| BcastAddrFormat | The IP broadcast address format used on this interface. |
| ReasmMaxSize | The size of the largest IP datagram which this entity can re-assemble from incoming IP fragmented datagrams received on this interface. |
| VlanId | Unique VLAN identifier. |
| BrouterPort | indicates whether this entry corresponds to a brouter port (as oppose to a routable VLAN). This value cannot be changed after the row is created. |

d Click Insert.

The Port, Insert IP Address dialog box opens (Figure 9).

**Figure 9** Port, Insert IP Address dialog box

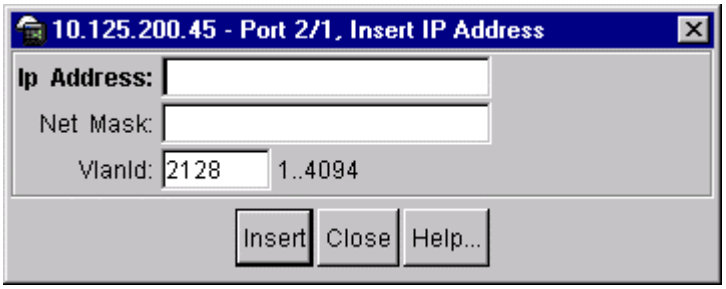



Table 11 describes the Port, Insert IP Address dialog box fields.

**Table 11** Insert IP Address dialog box fields

| Fields | Description |
|---|---|
| Ip Address | IP address to which the entry's addressing information pertains. |
| Net Mask | The subnet mask associated with the IP address of the entry. |
| VlanId | Unique VLAN identifier. |

**e** Type the IP address and click Insert.

The IP address displays in the table in the IP Address tab (Figure 8).

**7** Click Apply.

**8** To enable the port on the 8683POSM Module, click the Interface tab and, in the AdminStatus field, click up.

**9** Click Apply.

## Configuring IPX routing

When you use IPXCP encapsulation, you must select Ethernet II as the MAC encapsulation for the protocol-based VLANs. IPXCP supports only the Ethernet II format.

To configure the 8683POSM Modules for IPX routing using Device Manager, you must configure an Ethernet II protocol-based VLAN.

1. Highlight the port.
2. Choose Edit > port.

   The Port dialog box opens with the Interface tab displayed (Figure 2 on page 40).
3. Disable the port as described in "Enabling or disabling a port" on page 46.
4. To configure the VLAN as an IPX protocol-based VLAN and assign the port to the VLAN:

   a. From the Device Manager menu bar, choose VLAN > VLAN.

      The VLAN dialog box opens with the Basic tab displayed (Figure 10).

**Figure 10** VLAN dialog box — Basic tab

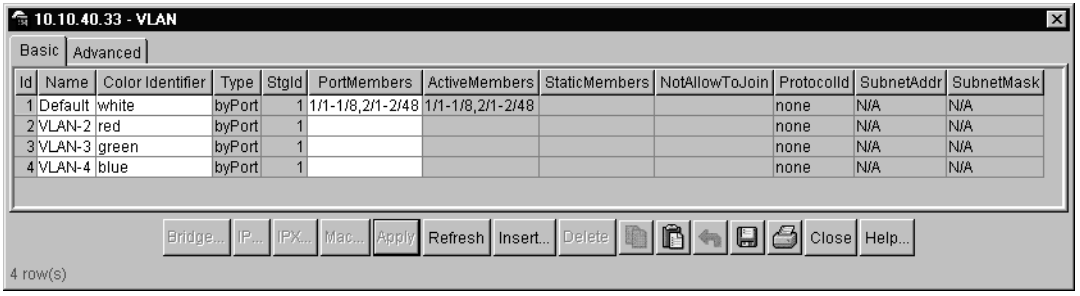



Table 12 describes the fields in the Basic tab.

**Table 12** Basic tab fields

| Field | Description |
|---|---|
| Id | Unique VLAN identifier. |
| Name | An administratively-assigned name for this VLAN. |
| ColorIdentifier | An administratively-assigned color code for this VLAN. The value of this object is used by the VLAN Manager GUI tool to select a color when it draws this VLAN on the screen. |
| Type | Type of VLAN, distinguished according to the policy used to define its port membership. |
| StgId | Spanning Tree Group (STG) used by the VLAN to determine the state of its ports. If the VLAN is not associated with any STG, this value should be set to zero. |

**Table 12** Basic tab fields (continued)

| Field | Description |
|---|---|
| PortMembers | Set of ports that are members (static or dynamic) of this VLAN. |
| ActiveMembers | Set of ports that are currently active in this VLAN. Active ports include all static ports and any dynamic ports where the VLAN policy was met. |
| StaticMembers | Set of ports that are static members of this VLAN. A static member of a VLAN is always active and is never aged out. |
| NotAllowtoJoin | Set of ports that are not allowed to become members of this VLAN. |
| ProtocolId | Protocol identifier of this VLAN. This value is meaningful only if rcVlanType is equal to byProtocolId(3). For other VLAN types it should have the value none(0). |
| SubnetAddr | IP subnet address of this VLAN. This value is meaningful only if rcVlanType is equal to byIpSubnet(2). For other VLAN types it should have the value 0.0.0.0. |
| SubnetMask | IP subnet mask of this VLAN. This value is meaningful only if rcVlanType is equal to byIpSubnet(2). For other VLAN types it should have the value 0.0.0.0. |

**b** To assign the POS ports to the VLAN as static members, enter the ports in the StaticMembers column.

**c** To assign all other ports to the VLAN as active members, enter the ports in the ActiveMembers column.

**d** Click Apply.

**5** To disable bridging:

**a** Click the POS PPP tab.

**b** In the Bridge area, BridgeConfigAdminStatus field, click Close.

**6** To enable IPX routing on each selected port:

**a** Click the POS PPP tab.

**b** In the IPX area, IpxcpAdminStatus field, click Open.

**7** To enable the port on the 8683POSM Module:

**a** Click the Interface tab.

**b** In the AdminStatus field, click Up.

8 Click Apply.

## Configuring the SONET trap feature

The 8600 chassis with a functioning 8683POSM Module automatically transmits SONET-specific traps.

To configure the device for SONET-specific traps:

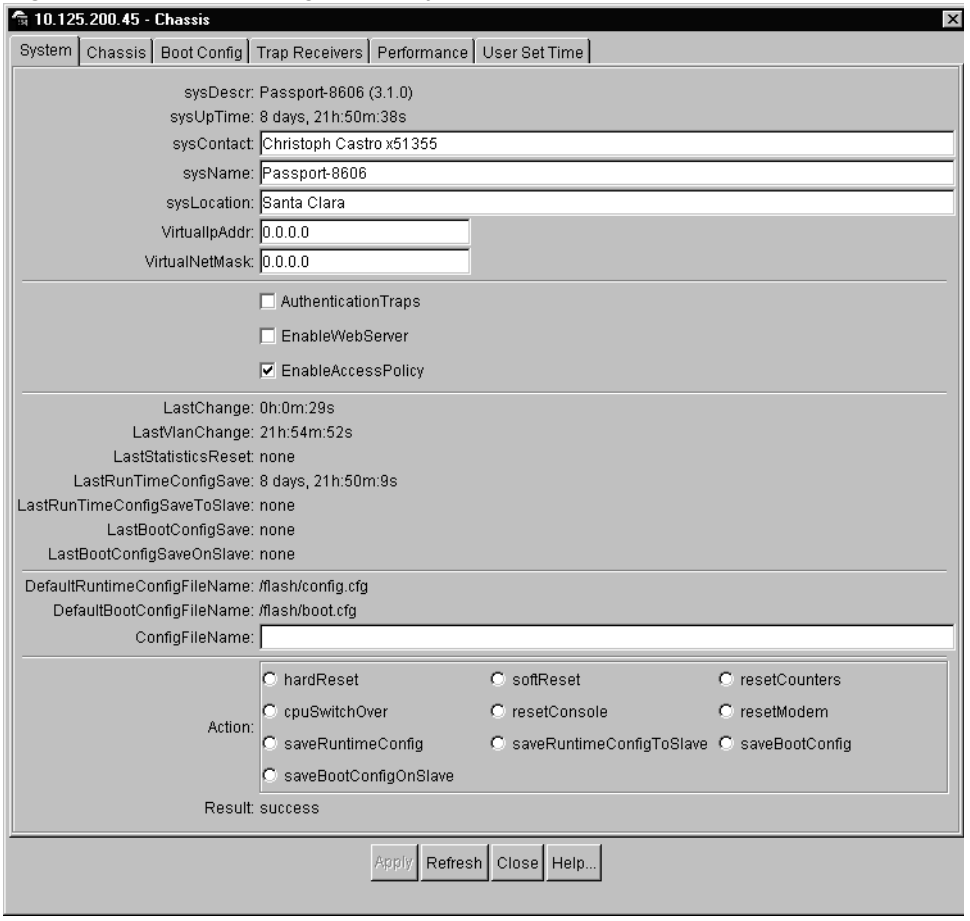
1 In Device Manager, select the chassis.

The frame of the chassis is highlighted.

2 Choose Edit > Chassis.

The Chassis dialog box opens with the System tab displayed (Figure 11).

**Figure 11** Chassis dialog box — System tab




**3** Click the Trap Receivers tab.

The Trap Receivers tab opens (Figure 12).

**Figure 12** Chassis dialog box — Trap Receivers tab

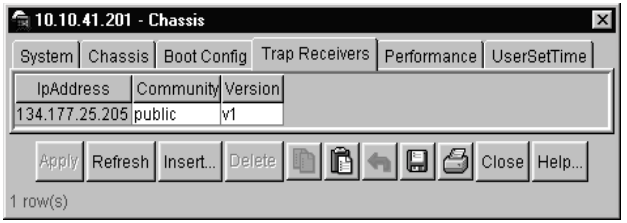


Table 13 describes the fields in the Trap Receivers tab.

**Table 13** Trap Receivers tab fields

| Field | Description |
|---|---|
| IpAddress | IP address of the device used to capture traps. |
| Community | Community string used for trap messages to this trap receiver. |
| Version | Version |

**4** Click Insert.

The Chassis, Insert Trap Receivers dialog box opens (Figure 13).

**Figure 13** Chassis, Insert Trap Receiver dialog box

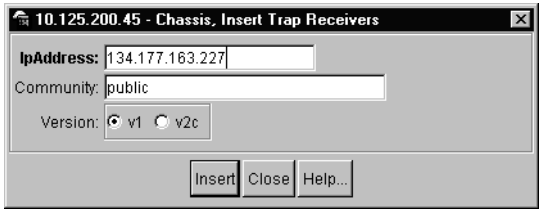



Table 14 describes the fields in the Insert Trap Receiver dialog box.

**Table 14** Insert Trap Receiver dialog box fields

| Field | Description |
|---|---|
| IpAddress | IP address of the device used to capture traps. |
| Community | Community string used for trap messages to this trap receiver |
| Version | Version |

**5** Enter the IP address of the device where traps are to be sent and click Insert.

The dialog box closes and the Trap Receivers tab is redisplayed.

**6** Click Apply.

# Viewing the Trap Log

To view the Trap Log that contains SONET-specific traps:

➔ Click the bell icon on the toolbar.

The Trap dialog box opens (Figure 14).

**Figure 14** Trap Log dialog box

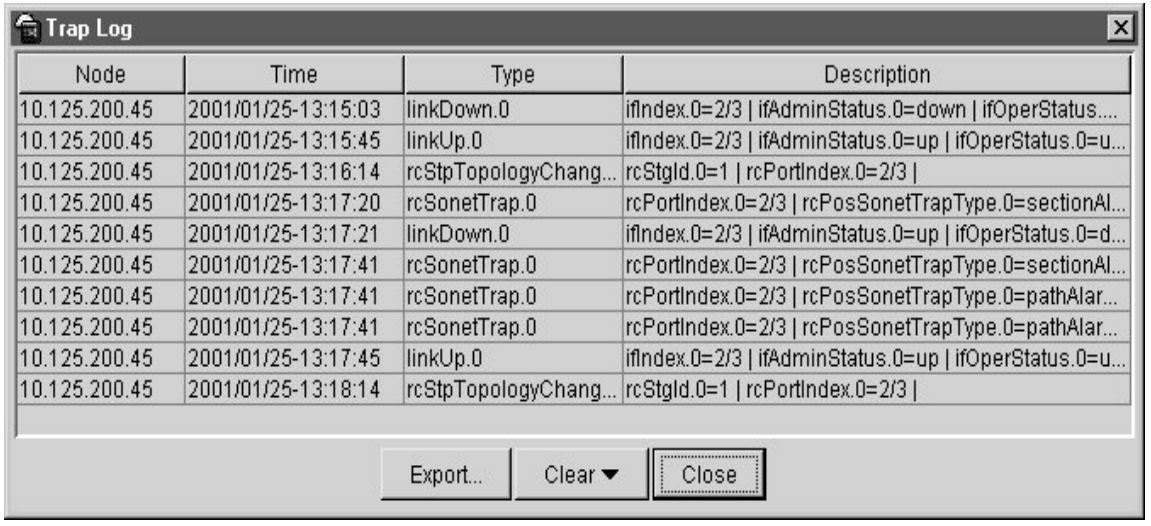



Table 15 describes the fields in the Trap Log dialog box.

**Table 15** Trap Log dialog box fields

| Field | Description |
|---|---|
| Node | IP address of the device sending SONET trap. |
| Time | Timestamp in the trap. |
| Type | Type of SONET trap: Section/Line/Path alarm. |
| Description | Description of the alarm: LOS, LOF, and so forth. |

# SONET loopback test feature

This section describes the loopback test features in Device Manager available for the 8683POSM Module. For information on the CLI test commands, see "Using the test commands" on page 112

**Note:** All ports must be in test mode to conduct any testing.

To test for loopback:

1. Highlight the port.
2. Choose Edit > port.

   The Port dialog box opens with the Interface tab displayed (Figure 2 on page 40).
3. In the AdminStatus field, click testing.
4. Click Apply.
5. Click the Test tab.

   The Test tab opens (Figure 15).

**Figure 15** Port dialog box — Test tab

Table 16 describes the Test tab fields.

**Table 16** Test tab fields

| Field | Description |
|---|---|
| Result | Result of the test. |
| Code | Code used for test. |
| PassCount | Number of events which passed the test. |
| FailCount | Number of events which failed the test. |

6 Click Ext. Loopback to test the external loopback or click Int. Loopback to test the internal loopback.

A dialog box displays the test results.

7 Click Stop to cease testing.

8 Click Close.

9 Click the Interface tab.

10 In the AdminStatus field, click up.

11 Click Apply.

**Note:** To run the external loopback test, you need a loopback cable on that port.

The test statistics are available only when the test has finished, unlike Ethernet ports where the test statistics can be viewed during testing.

# Viewing 8683POSM statistics

Device Manager allows you to graph and display certain read-only statistics for the 8683POSM Module.

The 8683POSM Module provides the following read-only statistics tabs:

- "Viewing POS statistics," next
- "Viewing PPP Link statistics" on page 65
- "Viewing PPP Link Quality Reporting statistics" on page 66

- "Viewing Section statistics" on page 68
- "Viewing Line statistics" on page 69
- "Viewing FE Line statistics" on page 70
- "Viewing Path statistics" on page 71
- "Viewing FE Path statistics" on page 72

Refer to *Reference for the 8000 Series Management Software Switching Operations, Release 3.1* for complete details on graphing statistics.

The values for the POS, PPP Link, and PPP LQR tabs are displayed for absolute, cumulative, average, minimum, maximum, and last values.

The values for the POS, PPP Link, and PPP LQR tabs are updated based on the poll interval.

For information on how to set the poll interval, refer to *System and Platform Management*.

Table 17 describes these values.

**Table 17** Types of statistics

| Field | Description |
|---|---|
| AbsoluteValue | The total count since the last reset of counters. A system reboot resets all counters. |
| Cumulative | The total count since the statistics tab was first opened. The elapsed time for the cumulative counter is displayed at the bottom of the statistics window. |
| Average | The cumulative count divided by the cumulative elapsed time. |
| Minimum | The minimum average for the counter for a given polling interval over the cumulative elapsed time. |
| Maximum | The maximum average for the counter for a given polling interval over the cumulative elapsed time. |
| LastValue | The average for the counter over the last polling period. |

## Viewing POS statistics

To display statistics POS statistics:

1. On the device view, right-click the port.
2. Choose Graph POS.

   The graphSonetPort dialog box opens with the POS tab displayed (Figure 16).

**Figure 16** graphSonetPort dialog box — POS tab

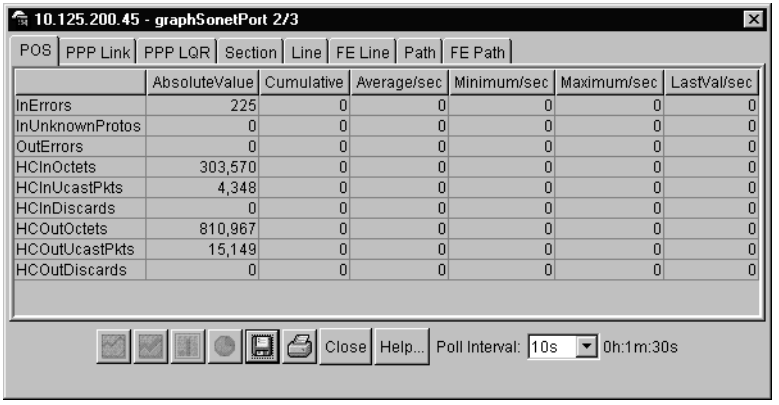



Table 18 describes the fields in the POS tab.

**Table 18** POS tab fields

| Field | Description |
|---|---|
| InErrors | Number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol. |
| InUnknownProtos | Number of packets received via the interface which were discarded because of an unknown or unsupported protocol. |
| OutErrors | Number of outbound packets that contained errors preventing them from being deliverable to a higher-layer protocol. |
| HCInOctets | The total number of octets received on the interface, including framing characters. |

**Table 18** POS tab fields (continued)

| Field | Description |
|---|---|
| HCInUcastPkts | Number of packets delivered by this sub-layer to a higher (sub-)layer, which were not addressed to a multicast or broadcast address at this sub-layer. |
| HCInDiscards | Number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. |
| HCOutOctets | The total number of octets transmitted out of the interface, including framing characters. |
| HCOutUcastPkts | Number of packets that higher-level protocols requested be transmitted, and which were not addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent. |
| HCOutDiscards | Number of outbound packets which were chosen to be discarded. |

## Viewing PPP Link statistics

To display PPP Link statistics:

1. On the device view, right-click the port.
2. Choose Graph Port.

   The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16).
3. Click the PPP Link tab.

   The PPP Link tab opens (Figure 17).

**Figure 17** graphSonetPort dialog box — PPP Link tab

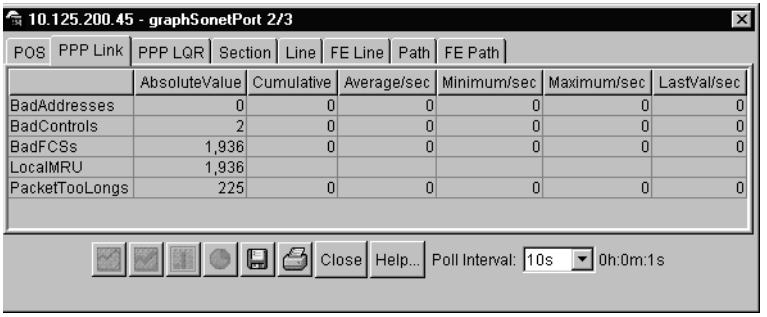



Table 19 describes the fields in the PPP Link tab.

**Table 19** PPP Link tab fields

| Field | Description |
|---|---|
| BadAddresses | Number of packets received with an Incorrect Address Field. This counter is a Component of the ifInErrors variable that is associated with the interface that represents this PPP Link. |
| BadControls | Number of packets received on this link with an incorrect Control Field. This counter is a component of the ifInErrors variable that is associated with the interface that represents this PPP Link. |
| BadFCSs | The number of received packets that have been discarded due to having an incorrect FCS. |
| LocalMRU | This is the current value of the MRU (Maximum Receive Unit) that the remote entity is using when sending packets to the local PPP entity. |
| PacketTooLongs | Number of received packets that have been discarded because their length exceeded the MRU. This counter is a component of the ifInErrors variable that is associated with the interface that represents this PPP Link. NOTE: packets which are longer than the MRU but which are successfully received and processed are NOT included in this count. |

## Viewing PPP Link Quality Reporting statistics

To display PPP Link Quality Reporting (LQR) statistics:

**1** On the device view, right-click the port.

2 Choose Graph Port.

The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16).

3 Click the PPP LQR tab.

The PPP LQR tab opens (Figure 18).

**Figure 18** graphSonetPort dialog box — PPP LQR tab

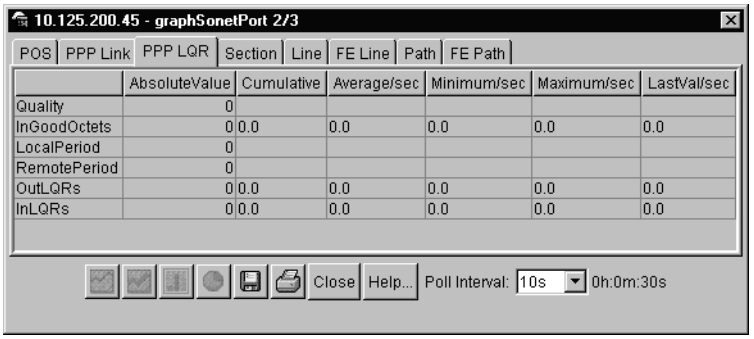



Table 20 describes the fields in the PPP LQR tab.

**Table 20** PPP LQR tab fields

| Field | Description |
|---|---|
| Quality | This is the current quality of the link. It reflects the quality measurements with respect to the quality threshold. |
| InGoodOctets | Number of good octets received on the interface. |
| LocalPeriod | Time interval in 100th of a second between link quality reporting from local end. |
| RemotePeriod | Time interval in 100th of a second between link quality reporting from remote end. |
| OutLQRs | The number of Link Quality Reports transmitted by this node. |
| InLQRs | The number of Link Quality Reports received by this node. |

## Viewing Section statistics

To display Section statistics:

1. On the device view, right-click the port.
2. Choose Graph Port.

   The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16 on page 64).
3. Click the Section tab.

   The Section tab opens (Figure 19).

**Figure 19** graphSonetPort dialog box — Section tab

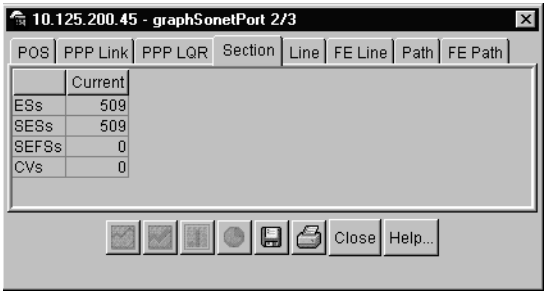


Table 21 describes the fields in the Section tab.

**Table 21** Section tab fields

| Field | Description |
|---|---|
| ESs | Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, LOP. |
| SESs | Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects. |
| SEFSs | Severely Errored Framing Second (SEFS) is a second containing one or more SEF events. |
| CVs | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |

## Viewing Line statistics

To display Line statistics:

1. On the device view, right-click the port.
2. Choose Graph Port.

   The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16 on page 64).
3. Click the Line tab.

   The Line tab opens (Figure 20).

**Figure 20** graphSonetPort dialog box — Line tab

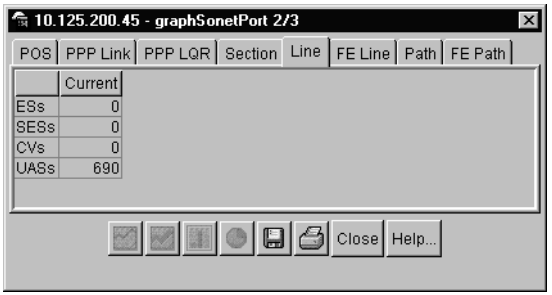



Table 22 describes the fields in the Line tab.

**Table 22** Line tab fields

| Field | Description |
|---|---|
| ESs | Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP. |
| SESs | Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects. |
| CVs | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UASs | Number of seconds that the interface is unavailable. |

## Viewing FE Line statistics

To display FE Line statistics:

1. On the device view, right-click the port.
2. Choose Graph Port.

   The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16 on page 64).
3. Click the FE Line tab.

   The FE Line tab opens (Figure 21).

**Figure 21** graphSonetPort dialog box — FE Line tab

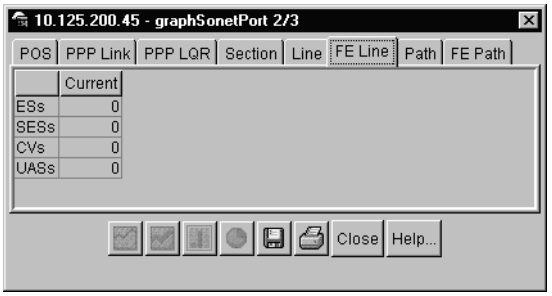



Table 23 describes the fields in the FE Line tab.

**Table 23** FE Line tab fields

| Field | Description |
|---|---|
| ESs | Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP. |
| SESs | Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects. |
| CVs | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UASs | Number of seconds that the interface is unavailable. |

## Viewing Path statistics

To display Path statistics:

1. On the device view, right-click the port.
2. Choose Graph Port.

   The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16 on page 64).
3. Click the Path tab.

   The Path tab opens (Figure 22).

**Figure 22** graphSonetPort dialog box — Path tab

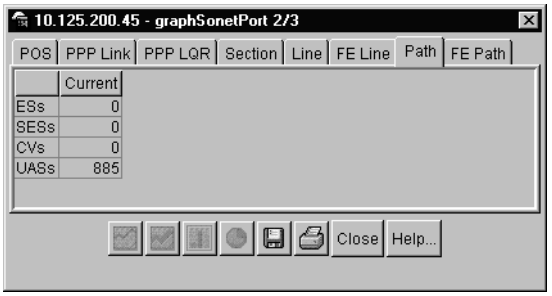



Table 24 describes the fields in the Path tab.

**Table 24** Path tab fields

| Field | Description |
|---|---|
| ESs | Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP. |
| SESs | Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects. |
| CVs | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UASs | Number of seconds that the interface is unavailable. |

## Viewing FE Path statistics

To display Path statistics:

1. On the device view, right-click the port.
2. Choose Graph Port.

   The graphSonetPort dialog box opens with the POS statistics tab displayed (Figure 16 on page 64).
3. Click the FE Path tab.

   The FE Path tab opens (Figure 23).

**Figure 23** graphSonetPort dialog box — FE Path tab

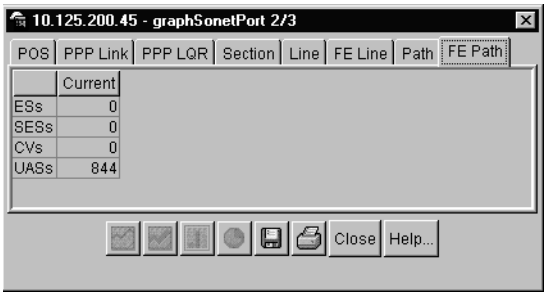



Table 25 describes the fields in the FE Path tab.

**Table 25** FE Path tab fields

| Field | Description |
|---|---|
| ESs | Errored Second (ES) is a second with one or more Coding Violations or one or more incoming defects, for example, SEF, LOS, AIS, or LOP. |
| SESs | Severely Errored Second (SES) is a second with x or more CVs, or a second during which at least one or more incoming defects. |
| CVs | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UASs | Number of seconds that the interface is unavailable. |

# Chapter 4
# Using the CLI

Two management tools enable you to manage the 8683POSM Module: Device Manager and command line interface (CLI). You can also use the embedded web-based management feature to monitor the 8683POSM Module. See Chapter 5, “Web management,” on page 115 for information on using the web-based management feature.

This chapter describes how to use the CLI to configure POS-specific features, and contains the following topics:


| Topic | Page |
|---|---|
| Configuring and managing POS | 75 |
| Using the show commands | 85 |
| Using the monitor commands | 111 |
| Using the test commands | 112 |


## Configuring and managing POS

You can configure the 8683POSM Module in two basic modes:

- Bridging: Bridging mode is enabled by default. Bridging is configured for connections between two 8683POSM Modules and between 8683POSM Modules and other devices that support PPP bridging.
- Routing: You select routing mode for connections between your 8683POSM Module and other POS-capable routers for IP and IPX routing.

This section describes how to use Device Manager to configure and manage POS, and includes the following topics:

- "Default 8683POSM configuration" on page 76"
- "Using the config poscard commands" on page 76"
- "Using the config pos port commands" on page 77"
- "Using the config pos info command" on page 81"
- "Using the config pos sonet command" on page 82
- "Using the config pos stg command" on page 83
- "Configuring routing" on page 83"


## Default 8683POSM configuration

Table 3 on page 38 describes the default 8683POSM module configuration.

## Using the config poscard commands

The `config poscard` command allows you to:

- Reset the module
- Enable trace messages
- Display the image filename for the 8683POSM Module

The syntax is:

`config poscard` *<posslot number>*

where *<posslot number>* is the slot number of the module in the 8600 chassis.

Table 26 describes the parameters and variables for the `config poscard` command.

**Table 26** config poscard command parameters and variables

| Parameters and variables | Description |
|---|---|
| card-reset | Resets the card. |
| debug <enable \| disable> | Enables or disables trace messages on the module to be displayed on the console of the switch. |
| info | Displays the image filename and debug mode for the module. |
| pos-console <enable \| disable> | Prints the trace message POSM card. This is a priv command. When the pos-console is enabled (on the host), POS prints trace messages on the POS console. You can also use this command to query information on the POSM card or port. To use this command, you must be in `priv` mode. The syntax to enter priv mode is: `config/poscard/<port number>/priv` |

## Using the config pos port commands

The port commands allow you to perform general configuration on the 8683POSM Module. The syntax for the `port config` commands is:

- **`config pos <ports>`**
- **`config pos <ports> ip`**
- **`config pos <ports> ppp`**
- **`config pos <ports> sonet`**
- **`config pos <ports> stg`**
- **`config pos <ports> info`**

The port commands, variables and parameters and sub-commands are described in the following sections.

### config pos command

Table 27 describes the parameters and variables for the `config pos <ports>` command.

**Table 27** config pos command parameters and variables

| Parameters and variables | Description |
|---|---|
| default-vlan-id <vid> | Directs the switch to send the untagged frames to a default VLAN if received on a tagged port. `<vid>` is the VLAN ID of the default VLAN to which the discarded frames are sent. |
| info | Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings. |
| linktrap <enable \| disable> | Enables or disables the link up or down trap for a port. |
| lock <true \| false> | Locks a port for exclusive use if the port lock feature is globally enabled with the command `config sys set portlock on` |
| name <name> | Assign or set a name. |
| perform-tagging <enable \| disable> | Enables or disables the IEEE 802.1Q tagging on the port. |
| state <enable \| disable \| test> | Sets the state to enable, disable, or test. |
| tagged-frames-discard <enable \| disable> | Sets a port with tagging disabled to discard tagging frames. |
| untagged-frames-discard <enable \| disable> | Sets a port with tagging enabled to discard untagged frames. |

## config pos ip

Use the `config pos ip` command to configure IP parameters on the 8683POSM Module.

**Note:** When the 8600 switch is interoperating with a Juniper router, the POS port must have the Juniper IP address configured in the remote IP field. This is necessary because the Juniper routers do not provide their local IP address during PPP negotiation. The 8600 switch requires the Juniper address for IPCP operations.

Note also that for the IP address assigned to the POS port, 30-bit subnet masks may be required for certain JUNOS releases.

Table 28 describes the parameters and variables for the `config pos ip` command.

**Table 28** config pos ip command parameters and variables

| Parameters and variables | Description |
|---|---|
| create <ipaddr/mask> <vid> [mac_offset <value>] | Creates an IP address and assigns it to a VLAN, with the VLAN ID. |
| delete <ipaddr> | Deletes the IP address. |
| info | Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings. |

## config pos ppp

Use the `config pos ppp` command to configure Point-to-Point Protocol (PPP) parameters on the 8683POSM Module.

Table 29 describes the parameters and variables for the `config pos ppp` command.

**Table 29** config pos ppp command parameters and variables

| Parameters and variables | Description |
|---|---|
| bridge-admin-status <open \| close> | Enables or disables the bridge control protocol. |
| fcs-size<32 \| 16> | Sets the length of the redundancy check (fcs) to either 32 or 16. |
| info | Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings. |
| ip-admin-status <open \| close> | Enables or disables the IP control protocol. |
| ipx-admin-status <open \| close> | Enables or disables the IPX control protocol. |
| ipx-route-protocol <none \| rip> | Sets the protocol for IPX routing. |
| lqr-period <interval> | Sets the link quality reporting interval. Enter time in ms. |
| lqr-status <enable \| disable> | Enables or disables link quality reporting. |
| lqr-threshold <threshold> | Sets the link quality reporting threshold. Enter %. |
| magic-number <true \| false> | Sets a random number (“magic number”) used in loopback detection. True detects loopback; false does not detect loopback. |

| | |
|---|---|
| ppp-stpmode <enable \| disable> | Encapsulates spanning tree BPDU packets as PPP. When enabled the BPDUs are encapsulated as in RFC 1638. When disabled, the BPDUs travel as bridged data (assuming bridge-admin-status is enabled). |
| remote-ip<ipaddr> | Sets the remote iP address. |

## Using the config pos info command

The `config pos info` command shows the current state of the port. Figure 24 shows a sample of the output from the `config pos info` command.

**Figure 24** config pos info command sample output

```
8610:5/config# pos 10/5 info
Port 10/5 :
                          lock : false
                          name :
          unknown-mac-discard : disable
              default-vlan-id : 1
              perform-tagging : disable
        tagged-frames-discard : disable
      untagged-frames-discard : disable
                        state : up
                     linktrap : enable
                    port-type : OC3-MMF

8610:5/config#
```

## Using the config pos sonet command

Use the `config pos sonet` command to configure SONET parameters on the 8683POSM Module.

Table 30 describes the parameters and variables for the `config pos sonet` command.

**Table 30** config pos sonet command parameters and variables

| Parameters and variables | Description |
|---|---|
| clock-source <internal \| line> | Sets the clock source to:<br>• `<internal>`, which means clocking is derived from on-board clock.<br>• `<line>`, which means clocking is derived from line.<br>Note that if you have two connected modules, you must set both to internal or one to line and one to internal; do not set both to line. |
| framing <sonet \| sdh> | Sets the framing to:<br>• `<sonet>`, which means the Synchronous Optical Network format, the standard format used in North America.<br>• `<sdh>`, which means the Synchronous Digital Hierarchy clock format, the standard format used in Europe. |
| info | Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings. |
| signal label | Operational value of Path Signal Label (C2). The signal label value is reset when the scramble value is changed. |
| scramble <enable \| disable> | Enables or disables scrambling. |
| section-trace <sectiontrace> | Sets the integer that the section trace flag (j0) is set to (1...255). |
| z0-increment | Enables or disables z0 when the framing mode is set to SONET. This is a priv command - to use this command, you must be in privilege mode.The syntax to enter priv mode is: `config/pos/<port number>/sonet priv` |

## Using the config pos stg command

Use the `config pos stg` command to configure STG parameters on the 8683POSM Module.

Table 31 describes the parameters and variables for the `config pos stg` command.

**Table 31** config pos stg command parameters and variables

| Parameters and variables | Description |
|---|---|
| faststart <enable \| disable> | Enables or disables the fast start flag. |
| info | Shows the last saved port settings and the next-level CLI commands. Note that this does not show the current settings, but the last saved settings. |
| pathcost <intval> | Sets the contribution of this port to the path cost. |
| priority <intval> | Sets the priority of this port. |
| stg <enable \| disable> | Enables or disables spanning tree protocol. |

## Configuring routing

A POS port configured for IPCP and/or IPXCP encapsulation must be the sole member of the VLAN. You cannot add any other port to a VLAN which already has a POS port with IPCP and/or IPXCP encapsulation enabled. You cannot add a POS port which is configured for IPCP and/or IPXCP encapsulation to a VLAN which already has other ports as members.

**Note:** When the 8600 switch is interoperating with a Juniper router, the POS port must have the Juniper IP address configured in the remote IP field. This is necessary because the Juniper routers do not provide their local IP address during PPP negotiation. The 8600 switch requires the Juniper address for IPCP operations.

Note also that for the IP address assigned to the POS port, 30-bit subnet masks may be required for certain JUNOS releases.

## Configuring IP routing

To configure the 8683POSM Modules for IP routing using the CLI:

1. To disable the selected port on the 8683POSM Module, enter:

   `config pos <ports> state disable`

2. To disable bridging, enter:

   `config pos <ports> bridge-admin-status close`

3. To configure IP routing, enter:

   `config pos <ports>> ppp ip-admin-status open`

4. To configure an IP address on the selected port on the 8683POSM Module, enter:

   `config pos <ports> ip create <ipaddr/mask> <vid>`

5. To enable the selected port on the 8683POSM Module, enter:

   `config pos <ports> state enable`

## Configuring IPX routing

To configure the 8683POSM Modules for IPX routing using the CLI:

1. Configure a protocol-based VLAN and assign the port to the VLAN as a static member and ensure that no other ports are allowed to join.
2. To disable the selected port on the 8683POSM Module, enter:

   `config pos <ports> state disable`

3. To disable bridging, enter:

   `config pos <ports> bridge-admin-status close.`

4. To configure IPX routing, enter:

   `config pos <ports> ppp ipx-admin-status open.`

**5** To enable the selected port on the 8683POSM Module, enter:

```
config pos <ports> state enable
```

# Using the show commands

This section describes the show commands available with the 8683POSM Module. These commands allow you to view information about the module:

```
show ports info pos [<ports>]
show ports stats pos activealarms [<ports>]
show ports stats pos felinecurrent [<ports>]
show ports stats pos felineinterval <intervalid> [<ports>]
show ports stats pos fepathcurrent [<ports>]
show ports stats pos fepathinterval <intervalid> [<ports>]
show ports stats pos linecurrent [<ports>]
show ports stats pos lineinterval <intervalid> [<ports>]
show ports stats pos linkstatus [<ports>]
show ports stats pos lqrstatus [<ports>]
show ports stats pos pathcurrent [<ports>]
show ports stats pos pathinterval <intervalid> [<ports>>]
show ports stats pos pppiftbl [<ports>]
show ports stats pos sectioncurrent [<ports>]
show ports stats pos sectioninterval <intervalid> [<ports>]
show ports stats pos sonetmediumtbl [<ports>]
```

For a complete list of CLI commands, see the documentation associated with your software release on the Web at http://www.nortelnetworks.com/documentation.

## show ports info pos

The `show ports info pos` command displays information (Figure 25) about the configuration for a specified port on the 8683POSM Module.

The command uses the syntax: `show ports info pos` [`<ports>`] and options: `all, ppp, sonet` in the following syntax:

```
show ports info pos all
show ports info pos ppp
show ports info pos sonet
```

## show ports info pos all

Figure 25 shows sample output for the `show ports info pos all` command, which includes information for the PPP and SONET parameters.

**Figure 25** show ports info pos all command output

```
8610:5/show/ports/info/pos# all
================================================================================
                                SONET Config Info
================================================================================
PORT  FRAMING   CLOCK       SECTION   SIGNAL
NUM   MODE      SOURCE      TRACE     LABEL  SCRAMBLE
--------------------------------------------------------------------------------
10/1   sonet     line  1        0x16  enable
10/3   sonet     internal 1   0x16    enable
================================================================================
                            SONET Local Operational Info
================================================================================
PORT  FRAMING   CLOCK       SECTION   SIGNAL
NUM   MODE      SOURCE      TRACE     LABEL  SCRAMBLE
--------------------------------------------------------------------------------
10/1   sonet     line        1         0x16   enable
10/3   sonet     internal  1         0x16   enable
================================================================================
                                  PPP Config Info
================================================================================
PORT  ADMIN      BRIDGE     IP         IPX        MAGIC  PPP
NUM   STATUS     ADMIN      ADMIN      ADMIN      NUMBERSTPMODE LQSTATUS
--------------------------------------------------------------------------------
10/1   up         open       close      close      false enable enable
10/3   up         open       close      close      false enable enable

PORT                 FCS  IPX ROUTE  LQR-QUAL   LQR-QUAL
NUM   SPEED   MRU    SIZE PROTOCOL   THRESHOLD  PERIOD REMOTE IP
--------------------------------------------------------------------
10/1   OC3-MMF 1936 32   rip          95         100       0.0.0.0 -M
10/3   OC3-MMF 1936 32   rip          95         100       0.0.0.0 -M

PORT IPX NET
NUM  ADDR
--------------------------------------------------------------------
10/1 0000000
10/3 0000000
================================================================================
                                    PPP Local Operational Info
================================================================================
PORT  STATUS        LCP        BRIDGE     IP         IPX        MAGIC
NUM   OPERATE    STATUS     STATUS     STATUS     STATUS     NUMBER     STPMODE
--------------------------------------------------------------------------------
10/1   up         up         down       up         down       false enable
10/3   up         up         down       up         down       false enable
```

**Figure 26** show ports info pos all command output (continued)

```
PORT  PPP               FCS  IPX ROUTE  LQR-QUAL   LQR-QUAL
NUM   LQSTATUS   MRU    SIZE PROTOCOL   THRESHOLD  PERIOD    REMOTE IP
-------------------------------------------------------------------------------
10/1  enable     1936   32   none       95         100       10.32.6.14
10/3   enable     1936   32   none       95         100       10.32.6.10

PORT  IPX NET
NUM   ADDR
-------------------------------------------------------------------------------
10/1   00000000
10/3   00000000
================================================================
                                        Other Info
================================================================
PORT  POS S/W  PLD     FRAMER  CARD
NUM   VERSION  VERSION VERSION VERSION
----------------------------------------------------------------
10/1   51       7       2       POS  7

8610:5/show/ports/info/pos# all
```

Table 32 describes the fields for output of the `show ports info pos all` command

**Table 32** show ports info pos all command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| FRAMING MODE | Indicates whether the framing mode is either:<br>• sonet<br>• sdh |
| CLOCK SOURCE | Indicates whether the clock source is either:<br>• line<br>• internal |
| SECTION TRACE | Indicates the integer that the section trace flag (j0) is set to. |
| SIGNAL LABEL | Operational value of Path Signal Label (C2). The signal label value is reset when the scramble value is changed. |
| SCRAMBLE | Enables or disables the scrambling option. |
| ADMIN STATUS | Sets the port to one of the following states:<br>• up<br>• down<br>• testing |
| BRIDGE ADMIN | This parameter indicates bridged traffic within PPP. |
| IP ADMIN | This parameter indicates the IP traffic (link) within PPP. |
| IPX ADMIN | This parameter indicates the IPX traffic (link) within PPP. |
| MAGIC NUMBER | If set to enable, selects a random number (“magic number”) used in loopback detection. enable detects loopback; disable does not detect loopback. |
| STPMODE | Spanning Tree Protocol mode - This parameter enables BPDUs to be received or transmitted with BPDU specific encapsulation. When disabled, encapsulated within Ethernet frames. |
| PPP LQSTATUS | Sets the link quality reporting interval. |
| SPEED | Displays the current operating speed of the port. It can be either 155 or 622 Mb/s depending on the type of interface installed. |
| MRU | Size (in octets) of the largest packet that can be sent or received on the interface. For IPCP and IPXCP, the maximum is 1936. When BCP is enabled, however, the maximum is 1934. Check which NCP is enabled before configuring the Mru.<br>Note: The Bridge Control Protocol (BCP) is enabled on the 8683POSM Module by default. |

**Table 32** show ports info pos all command parameters (continued)

| Field | Description |
|---|---|
| FCS SIZE | Sets the length of the redundancy check (fcs) to either 32 or 16. |
| IPX ROUTE PROTOCOL | Sets the protocol for IPX routing. |
| LQR-QUAL THRESHOLD | Indicates the link quality reporting threshold. |
| LQR-QUAL PERIOD | Indicates the link quality reporting interval. |
| REMOTE IP | Indicates the remote iP address. |
| IPX NET ADDR | Indicates the IPX net address. |
| STATUS OPERATE | Operational status. |
| LCP STATUS | Link Control Protocol status. |
| BRIDGE STATUS | Bridging status. |
| IP STATUS | Routing (IP) status. |
| IPX STATUS | Routing (IPX) status |
| PPP LQSTATUS | Point-to-Point status |

## show ports stats pos activealarms

This command displays active alarms on the 8683POSM Module port. The command uses the syntax:

`show ports stats pos activealarms` [<*ports*>]

Figure 27 shows output for the `show ports stats pos activealarms` command.

**Figure 27** show ports stats pos activealarms command output

```
8610:5/show/ports# stats pos activealarms
=========================================================
                      Active Alarms
=========================================================
PORT
NUM     ACTIVE ALARM
---------------------------------------------------------
10/5     No Defect
10/6     LOS

8610:5/show/ports/stats/pos#
```

Table 33 describes the information fields for output for the `show ports stats pos activealarms` command.

**Table 33** show ports stats pos activealarms command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ACTIVE ALARM | Displays active alarms on the port. |

Table 34 lists the alarms that are specific to the 8683POSM Module. The alarms are listed in order of priority.

**Table 34** 8683POSM Module alarms

| Name | Description |
|---|---|
| **Section alarms** | |
| LOS | Loss of signal - not enough Rx power or fiber disconnected. |
| LOF | Loss of frame - unable to frame the signal correctly, possibly due to improper timing setup. |
| **Line Alarms** | |
| L-AIS | Alarm Indication Signal - sent out when a port is disabled or indicates another line failure. |
| L-RDI | Remote Defect Indication - the result of a L-AIS or LOS/LOF at the remote end. |

**Table 34** 8683POSM Module alarms (continued)

| Name | Description |
|---|---|
| **Path Alarms** | |
| P-AIS | Path Alarm Indication Signal - indicates a propagation upstream of a downstream L-AIS alarm or another path failure. |
| P-LOP | Path Loss of Pointer - the pointer to the Sonet SPE is not correct; sometimes due to dirty fiber, or timing slips. |
| P-RDI | Path Remote Indicator - the result of a P-AIS alarm at the remote end. |
| P-SLM | Path Signal Label Mismatch - path labels do not match, in particular the C2 label is mismatched. (The C2 label is used to indicate scrambling according to RFC 2615.) |
| P-UNEQ | Unequipped Path Alarm - the path does not have a valid sender. |

## show ports stats pos felinecurrent

This command displays current statistics on the far end line, which is at the receiving end. The command uses the syntax:

`show ports stats pos felinecurrent` [<*ports*>]

Figure 28 shows sample output for the `show ports stats pos felinecurrent` command.

**Figure 28** show ports stats pos felinecurrent command output

```
8610:5/show/ports/stats/pos# felinecurrent
================================================================================
                     POS Far End Line Current Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION UNAVAILABLE
NUM      COUNT (ES)        COUNT (SES)        COUNT (CV-L) SECONDS(UAS)
--------------------------------------------------------------------------------
10/5    0                 0                  0                 0
10/6    0                 0                  0                 0

8610:5/show/ports/stats/pos#
```

Table 35 describes the `show ports stats pos felinecurrent` command parameters.

**Table 35** show ports stats pos felinecurrent command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-L) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS | Number of seconds that the interface is unavailable. |

## show ports stats pos felineinterval

This command displays statistics (Figure 29) on the far end line over a 15-minute interval. You specify which interval, or span of intervals, to display for the command. The command uses the syntax:

`show ports stats pos felineinterval <intervalid> [<ports> ]`

**Figure 29** show ports stats pos felineinterval command output

```
8610:5/show/ports/stats/pos# felineinterval 4
================================================================================
                    POS Far End Line Interval Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION UNAVAILABLE
NUM       COUNT (ES)        COUNT (SES)        COUNT (CV-L) SECONDS(UAS)
--------------------------------------------------------------------------------
10/5    0                 0                  0                 0
10/6    0                 0                  0                 0

INTERVAL ID = 4
8610:5/show/ports/stats/pos#
```

Table 36 describes the `show ports stats pos felineinterval` command

**Table 36** show ports stats pos felineinterval command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-L) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |
| INTERVAL ID | Specified interval. |

## show ports stats pos fepathcurrent

This command displays current statistics (Figure 30) for the far end path, which is at the receiving end. The command uses the syntax:

`show ports stats pos fepathcurrent` [<*ports*>]

**Figure 30** show ports stats pos fepathcurrent command output

```
8610:5/show/ports/stats/pos# fepathcurrent
================================================================================
                     POS Far End Path Current Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION    UNAVAILABLE
NUM      COUNT (ES)        COUNT (SES)        COUNT (CV-P)      SECONDS(UAS)
--------------------------------------------------------------------------------
10/1      0                 0                  0                 0
10/3      0                 0                  0                 527

8610:5/show/ports/stats/pos#
```

Table 37 describes the `show ports stats pos fepathcurrent` command parameters.

**Table 37** show ports stats pos fepathcurrent command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-P) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |

## show ports stats pos fepathinterval

This command displays statistics (Figure 31) on the far end path over a 15-minute interval. You specify the interval or span of intervals to display. The command uses the syntax:

`show ports stats pos fepathinterval <intervalid> [<ports>]`

**Figure 31** show ports stats pos fepathinterval command output

```
8610:5/show/ports/stats/pos# fepathinterval 1

================================================================================
                     POS Far End Path Interval Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION    UNAVAILABLE
NUM      COUNT (ES)        COUNT (SES)        COUNT (CV-P)      SECONDS(UAS)
--------------------------------------------------------------------------------
10/1      0                  0                  0            0
10/3      0                  0                  0                 900

INTERVAL ID = 1
8610:5/show/ports/stats/pos#
```

Table 38 describes the `show ports stats pos fepathinterval` command parameters.

**Table 38** show ports stats pos fepathinterval command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-P) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |
| INTERVAL ID | Specified interval. |

## show ports stats pos linecurrent

This command displays current statistics (Figure 32) for the line. The command uses the syntax:

```
show ports stats pos linecurrent [<ports>]
```

**Figure 32** show ports stats pos linecurrent command output

```
8610:5/show/ports/stats/pos# linecurrent

================================================================================
                            POS Line Current Stats
================================================================================
PORT  ERRORED SECONDS  SEVERELY ERRORED  CODE VIOLATION  UNAVAILABLE
NUM   COUNT (ES)       COUNT (SES)       COUNT (CV-L)    SECONDS (UAS) STATUS
--------------------------------------------------------------------------------
10/1   0                0                 0               277       No Defect
10/3   0                0                 0               787       Line AIS

8610:5/show/ports/stats/pos#
```

Table 39 describes the `show ports stats pos linecurrent` command parameters.

**Table 39** show ports stats pos linecurrent command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-P) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |
| STATUS | Status of defects. |

## show ports stats pos lineinterval

This command displays statistics (Figure 33) for the line over a 15-minute interval. You can specify any interval or span of intervals. The command uses the syntax:

`show ports stats pos lineinterval <intervalid> [<ports>]`

**Figure 33** show ports stats pos lineinterval command output

```
8610:5/show/ports# stats pos lineinterval 1

================================================================================
                                      POS Line Interval Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION    UNAVAILABLE
NUM      COUNT (ES)      COUNT (SES)      COUNT (CV-L)    SECONDS (UAS)
--------------------------------------------------------------------------------
3/5      0                 0                 0                 0
3/6      0                 0                 0                 0
INTERVAL ID = 1
8610:5/show/ports#
```

Table 40 describes the `show ports stats pos lineinterval` command parameters

**Table 40** show ports stats pos lineinterval command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-P) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |
| STATUS | Indicates status of defects. |

## show ports stats pos linkstatus

This command displays current statistics (Figure 34) on the frames coming across the PPP link. The command uses the syntax:

```
show ports stats pos linkstatus [<ports>]
```

**Figure 34** show ports stats pos linkstatus command output

```
8610:5/show/ports/stats/pos# linkstatus

================================================================================
                               POS Link Stats
================================================================================
PORT    BAD ADDR    BAD CNTL    TOO LONG    BAD FCS
NUM     FRAMES      FRAMES      FRAMES      FRAMES      MRU
--------------------------------------------------------------------------------
10/1     0           0           0           1936  1936
10/3     0           0           0           0           0

8610:5/show/ports/stats/pos#
```

Table 41 describes the `show ports stats pos linkstatus` command parameters.

**Table 41** show ports stats pos linkstatus command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| BAD ADDR FRAMES | Number of packets received with an Incorrect Address Field. This counter is a Component of the ifInErrors variable that is associated with the interface that represents this PPP Link. |
| BAD CNTL FRAMES | Number of packets received on this link with an incorrect address field. |
| TOO LONG FRAMES | Number of packets received and discarded because their length exceeded the MRU. |
| BAD FCS FRAMES | Number of packets received with an incorrect FCS size. |
| MRU | Maximum Receive Unit |

## show ports stats pos lqrstatus

This command displays current statistics (Figure 35) on the link quality reporting. The command uses the syntax:

```
show ports stats pos lqrstatus [<ports>]
```

**Figure 35** show ports stats pos lqrstatus command output

```
8610:5/show/ports/stats/pos# lqrstatus

================================================================================
                          POS Link Quality Stats
================================================================================
PORT
NUM      QUALITY   IN GOOD OCTs   LOCAL PERIOD    REMOTE PERIOD OUTLQRs INLQRs
--------------------------------------------------------------------------------
10/5       100       4793094    100             100           40665  40666
10/6       0         0          0               0             0        0

8610:5/show/ports/stats/pos#
```

Table 42 describes the `show ports stats pos lqrstatus` command parameters.

**Table 42** show ports stats pos lqrstatus command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| QUALITY | This is the current quality of the link. It reflects the quality measurements with respect to the quality threshold. |
| IN GOOD OCTs | Number of good octets received at the port. |
| LOCAL PERIOD | Time interval in 100th of a second between link quality reporting from the local end. |
| REMOTE PERIOD | Time interval in 100th of a second between link quality reporting from the remote end. |
| OUT LQRs | The number of Link Quality Reports transmitted by this node. |
| INLQRs | The number of Link Quality Reports received by this node. |

## show ports stats pos pathcurrent

This command displays current statistics (Figure 36) on the path, on the transmitting end. The command uses the syntax:

`show ports stats pos pathcurrent [<ports>]`

**Figure 36** show ports stats pos pathcurrent command output

```
8610:5/show/ports/stats/pos# pathcurrent

================================================================================
                           POS Path Current Stats
================================================================================
PORT  ERRED SECS  SEVERELY ERRED CODE VIOLATION  UNAVAILABLE
NUM   COUNT (ES)  COUNT (SES)    COUNT (CV-P)    SECONDS (UAS)  STATUS WIDTH
--------------------------------------------------------------------------------
10/5   0       0                 0             0          No Defect   2
10/6   0       0                 0             302         Path AIS    2
8610:5/show/ports/stats/pos#
```

Table 43 describes the `show ports stats pos pathcurrent` command parameters.

**Table 43** show ports stats pos pathcurrent command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRED SECS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-P) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |
| STATUSWIDTH | Indicates status and number of defects. |

## show ports stats pos pathinterval

This command displays statistics (Figure 37) on the path for a 15-minute interval. You specify the interval or span of intervals to display. The command uses the syntax:

`show ports stats pos pathinterval <intervalid> [<ports>]`

**Figure 37** show ports stats pos pathinterval command output

```
8610:5/show/ports/stats/pos# pathinterval 4

================================================================================
                          POS Path Interval Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION    UNAVAILABLE
NUM      COUNT (ES)        COUNT (SES)        COUNT (CV-P)      SECONDS(UAS)
--------------------------------------------------------------------------------
10/1      0                 0                  0            0
10/3      0                 0                  0                 900

INTERVAL ID = 4
8610:5/show/ports/stats/pos#
```

Table 44 describes the `show ports stats pos pathinterval` command.

**Table 44** show ports stats pos pathinterval command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-P) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| UNAVAILABLE SECONDS (UAS) | Number of seconds that the interface is unavailable. |
| INTERVAL ID | Specified interval. |

## show ports stats pos pppiftbl

This command displays statistics (Figure 38) on the PPP link. The command uses the syntax:

`show ports stats pos pppiftbl [<ports>]`

**Figure 38** show ports stats pos pppiftbl command output

```
8610:5/show/ports/stats/pos# pppiftbl

================================================================================
                          PPP IF Table Contents
================================================================================
PORT    OCTETS       PACKETS      DROPPED      ERRORED      UNKNOWN
NUM     RECEIVED     RECEIVED     RX PACKETS   RX PACKETS   PROTOCOLS
--------------------------------------------------------------------------------
10/1 4637499        65449      0            0            0
10/3 0              0          0            0            0


PORT    OCTETS       PACKETS      DROPPED      ERRORED
NUM     TRANSMITTED  TRANSMITTED  TX PACKETS   TX PACKETS
--------------------------------------------------------------------------------
10/1    2769051532 4610831        0         0
10/3    20           1            0         0

8610:5/show/ports/stats/pos#
```

Table 45 describes the `show ports stats pos pppiftbl` command parameters.

**Table 45** show ports stats pos pppiftbl command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| OCTETS RECEIVED | Number of octets received at the port. |
| PACKETS RECEIVED | Number of packets received at the port. |
| DROPPED RX PACKETS | Number of RX packets dropped at the port. |
| ERRORED RX PACKETS | Number of RX packet errors at the port. |
| UNKNOWN PROTOCOLS | Number of unknown protocols. |
| OCTETS TRANSMITTED | Number of octets transmitted. |
| PACKETS TRANSMITTED | Number of packets transmitted. |
| DROPPED TX PACKETS | Number of TX packets dropped at the port. |
| ERRORED TX PACKETS | Number of TX packet errors at the port. |

## show ports stats pos sectioncurrent

This command displays the current statistics (Figure 39) on the section. The command uses the syntax:

`show ports stats pos sectioncurrent` [<*ports*>]

**Figure 39** show ports stats pos sectioncurrent command output

```
8610:5/show/ports/stats/pos# sectioncurrent

================================================================================
                          POS Section Current Stats
================================================================================
PORT  ERRORED SECONDS SEVERELY ERRORED CODE VIOLATION  SEVERELY ERRORED
NUM   COUNT (ES)      COUNT (SES)      COUNT (CV-S)    FRAMES (SEF) STATUS
--------------------------------------------------------------------------------
10/1        0       0                0               0            No Defect
10/3      620       620              0               0            LOS

8610:5/show/ports/stats/pos#
```

Table 46 describes the `show ports stats pos sectioncurrent` command parameters.

**Table 46** show ports stats pos sectioncurrent command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-S) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| SEVERELY ERRORED FRAMES (SEF) | Number of seconds that the interface is unavailable. |
| STATUS | Indicates status of defects. |

## show ports stats pos sectioninterval

This command displays statistics (Figure 40) on the section over a 15-minute interval. You specify the interval or span of intervals to display. The command uses the syntax:

```
show ports stats pos sectioninterval <intervalid> [<ports>]
```

**Figure 40** show ports stats pos sectioninterval command output

```
8610:5/show/ports/stats/pos# sectioninterval 3

================================================================================
                          POS Section Interval Stats
================================================================================
PORT     ERRORED SECONDS   SEVERELY ERRORED   CODE VIOLATION SEVERELY ERRORED
NUM       COUNT (ES)        COUNT (SES)        COUNT (CV-S) FRAMES (SEF)
--------------------------------------------------------------------------------
10/1       0                 0                 0                 0
10/3       900               900               0                 0

INTERVAL ID = 10
8610:5/show/ports/stats/pos#
```

Table 47 describes the `show ports stats pos sectioninterval` command parameters.

**Table 47** show ports stats pos sectioninterval command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| ERRORED SECONDS COUNT (ES) | Errored Second (ES) is a second with one or more Coding Violations (CV) or one or more incoming defects (for example, SEF, LOS, AIS, LOP). |
| SEVERELY ERRORED COUNT (SES) | Severely Errored Second (SES) is a second with x or more CVs, or one or more incoming defects. |
| CODE VIOLATION COUNT (CV-S) | Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. |
| SEVERELY ERRORED FRAMES (SEF) | Severely Errored Framing Second (SEFs) is a second containing one or more SEF events. |
| INTERVAL ID | Specified interval. |

## show ports stats pos sonetmediumtbl

This command displays statistics (Figure 41) on the SONET medium. The command uses the syntax:

`show ports stats pos sonetmediumtbl [<ports>]`

**Figure 41** show ports stats pos sonetmediumtbl command output

```
-8610:5/show/ports/stats/pos# sonetmediumtbl

================================================================================
                          POS SONET Medium Table
================================================================================
PORT     MEDIUM    TIME      VALID      LINE      LINE      CIRCUIT
NUM      TYPE      ELAPSED   INTERVALS  CODING    TYPE      ID
--------------------------------------------------------------------------------
10/1      1       816         45      4         4         52689832
10/3      1       816         45      4         4         52689832
```

Table 48 describes the `show ports stats pos sonetmediumtbl` command parameters.

**Table 48** show ports stats pos sonetmediumtbl command parameters

| Field | Description |
|---|---|
| PORT NUM | Port number. |
| MEDIUM TYPE | Identifies whether a sonet or sdh signal is used across the interface. |
| TIME ELAPSED | Number of seconds, including partial seconds, that have elapsed since the beginning of the current measurement period. If the current interval exceeds the maximum value, the agent will return the maximum value. |
| VALID INTERVALS | Number of previous 15-minute intervals for which data was collected. |
| LINE CODING | Line coding for this interface. The B3ZS and CMI are used for electrical SONET/SDH signals (STS-1 and STS-3). The Non-Return to Zero (NZR) and the Return to Zero are used for optical SONET/SDH signals. |
| LINE TYPE | Line type for this interface. The line types are Single Mode fiber or Multi-Mode fiber interfaces. |
| CIRCUIT ID | Transmission vendor's circuit identifier, to facilitate troubleshooting. |

# Using the monitor commands

This section describes the monitor commands available with the 8683POSM Module. The monitor commands are self-updating show commands, set from the CLI for duration and interval. These commands allow you to view constantly updating information about the module. The monitor commands use the following syntax:

```
monitor ports stats pos activealarms [<ports>]
monitor ports stats pos felinecurrent [<ports>]
monitor ports stats pos felineinterval <intervalid>
[<ports>]
monitor ports stats pos fepathcurrent [<ports>]
monitor ports stats pos fepathinterval <intervalid>
[<ports>]
monitor ports stats pos linecurrent [<ports>]
monitor ports stats pos lineinterval <intervalid> [<ports>]
monitor ports stats pos linkstatus [<ports>]
```

```
monitor ports stats pos lqrstatus [<ports>]
monitor ports stats pos pathcurrent [<ports>]
monitor ports stats pos pathinterval <intervalid> [<ports>]
monitor ports stats pos pppiftbl [<ports>]
monitor ports stats pos sectioncurrent [<ports>]
monitor ports stats pos sectioninterval <intervalid>
[<ports>]
monitor ports stats pos sonetmediumtbl [<ports>]
```

# Using the test commands

This section describes the test commands available with the 8683POSM Module. The test commands allow you test the module while the switch is operating. The tests do not interfere with the module's normal switching functions, but they do occupy the CPU. The test commands allow you to test:

- Hardware
- LEDS
- Internal and external loopback

The syntax for the test commands is:

```
test hardware <ports>

test led <ports> <tx|rx> <off|yellow|green>

test loopback <ports> [<int|ext>]
```

**Note:** You must specify a slot and port number with the test commands.

## test hardware

Use the `test hardware` command to run diagnostics on the 8683POSM Module. The command uses the following syntax:

`test hardware <ports>`

The output from the test hardware command is shown in Figure 42.

**Figure 42** test hardware command output

```
8610:test hardware 10/5

Port: 10/5
  IfIndex: 645
   Result: success
```

## test led

Use the `test led` command to see if the lights on the port LEDs are functioning correctly on the 8683POSM Module. The command uses the following syntax:

`test led <ports> <tx|rx> <off|yellow|green>`

**Note:** You must physically inspect the LEDs on the actual 8683POSM Module to view the results of these tests.

Table 49 describes the parameters and variables for the `test led` command.

**Table 49** test led command parameters and variables

| Parameters and variables | Description |
|---|---|
| tx | Tests the LED for transmitting data on each port. |
| rx | Tests the LED for receiving data on each port. |
| off | Tests whether the LEDs go off correctly. |
| yellow | Tests whether the LEDs can light yellow. |
| green | Tests whether the LEDs can light green. |

## test loopback

Use the `test loopback` command to run a loopback test on the port. You can perform either an internal or an external loopback test on the POSM module. The default is internal loopback. The syntax is:

```
test loopback <ports> <int|ext>
```

**Note:** The loopback tests test only the control path; they do not test the data path.

To test for loopback:

1. To configure the port for testing, enter:

   ```
   config pos <ports> test
   ```

2. To test the loopback, either internal or external, enter:

   ```
   test loopback <ports> <int|ext>
   ```

3. To stop the loopback testing, enter:

   ```
   test stop loopback <ports>
   ```

   Figure 43 shows output for the `test loopback` command.

**Figure 43** test loopback command output

```
8610:5/show/test# loopback 10/6

Running an internal loopback test...
Current test results:

     Port: 10/6
  IfIndex: 645
   Result: inProgress
PassCount: 0
FailCount: 0
```

# Chapter 5
# Web management

The Web interface allows you to monitor the 8683POSM Module through a World Wide Web browser from anywhere on your network. The Web interface provides many of the same monitoring features as the Device Manager software.

Refer to *Getting Started with the 8000 Series Management Software* for information on:

- Accessing your switch through the Web interface
- Descriptions of the Web page layout

Use the Web interface to monitor the 8683POSM Module parameters. When you access the Web interface, the System page is displayed. The POS folder is in the navigation pane on the left of the System page (Figure 44).

**Figure 44** System page

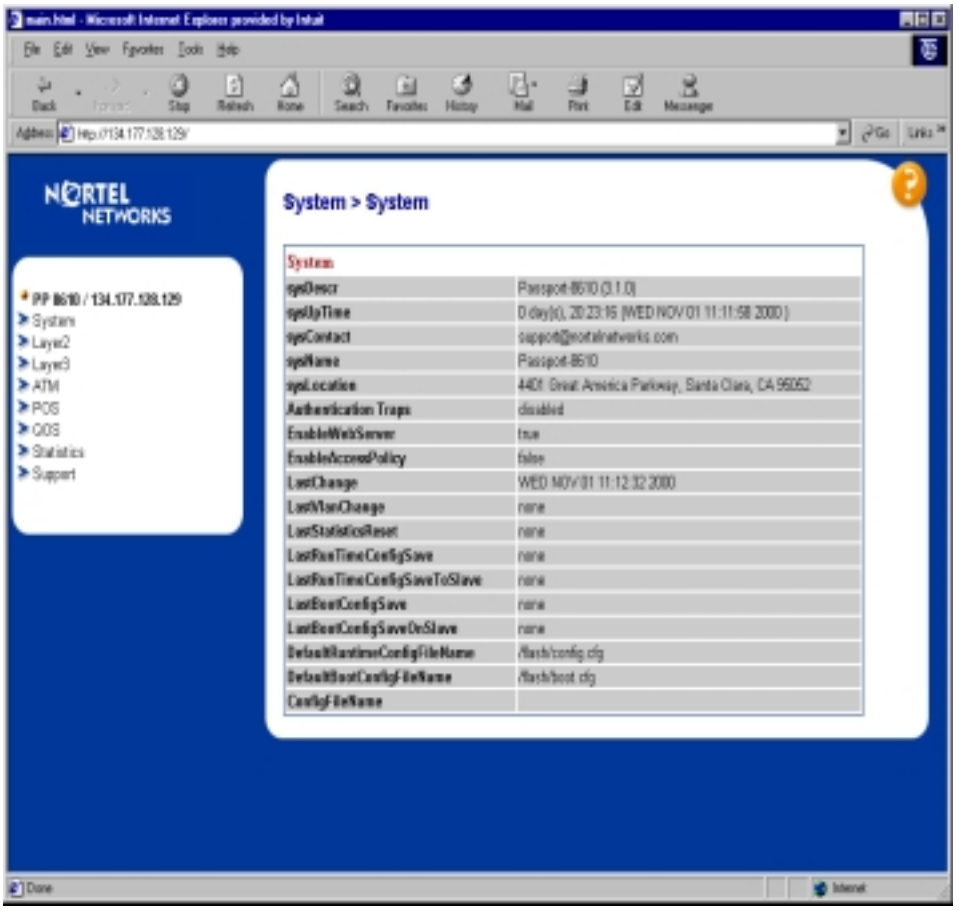


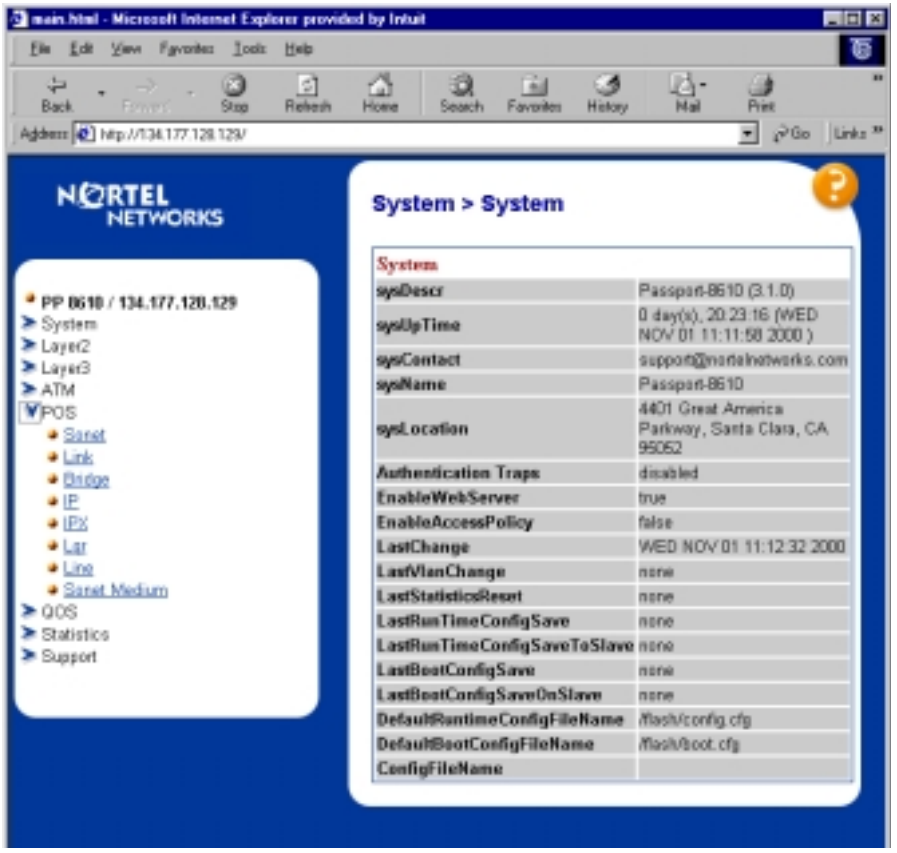

Table 50 describes the System page fields.

**Table 50** System page fields

| Field | Description |
|---|---|
| sysDescr | System description. |
| sysUpTime | Value of system up time. |
| sysContact | Contact name. |
| sysName | Port name. |
| sysLocation | System location. |
| Authentication Traps | Displays whether traps are enabled or disabled. |
| EnableWebServer | Indicates whether the web server has been enabled. |
| EnableAccessPolicy | Indicates whether access policy has been enabled. |
| LastChange | Value of sysUpTime at the time the interface entered its current operational state. |
| LastVlanChange | Value of sysUpTime at the time the VLAN entered its current operational state. |
| LastStatisticsReset | Value of sysUpTime at the time that statistics were enabled. |
| LastRuntimeConfigSave | Value of sysUpTime at the time that configuration was saved. |
| LastRuntimeConfigSavetoSlave | Value of sysUpTime at the time that configuration was saved. |
| LastBootConfigSave | Value of sysUpTime at the time the last reboot occurred. |
| LastBootConfigSaveOnSlave | Value of sysUpTime at the time the last reboot saved configuration changes. |
| DefautlRuntimeConfigFileName | Default runtime configuration file name. |
| DefaultBootConfigFileName | Default configuration file name. |
| ConfigFileName | Configuration file name. |

When you click on POS in the navigation pane, the headings in the POS menu are displayed. The headings provide options for viewing POS parameters (Figure 45).

**Figure 45** System page showing the POS menu




To view the current SONET parameters, in the POS menu, click Sonet. The Sonet page opens (Figure 46).

**Figure 46** SONET page

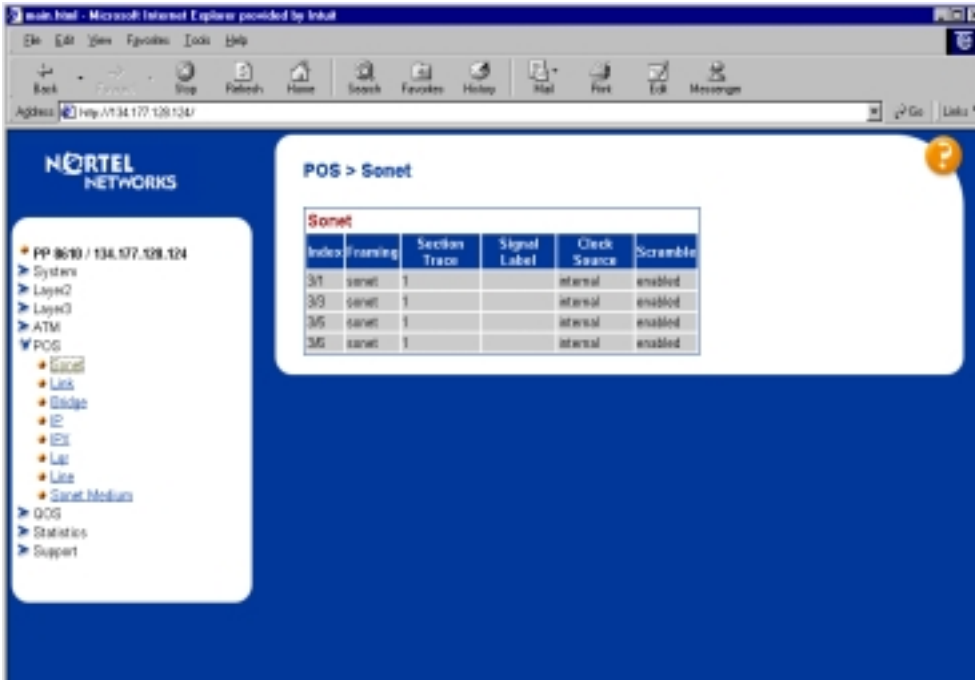



Table 51 describes the SONET page fields.

**Table 51** SONET page fields

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Framing | Indicates if framing is enabled or disabled. |
| Section Trace | Indicates the integer that the section trace is set to. |
| Signal Label | Indicates operational value of Path Signal Label. |
| Clock Source | Indicates setting of the clock source. |
| Scramble | Indicates operational value of SONET scramble. |

To view the current link parameters, in the POS menu, click Link. The Link page opens (Figure 47).

**Figure 47** Link page

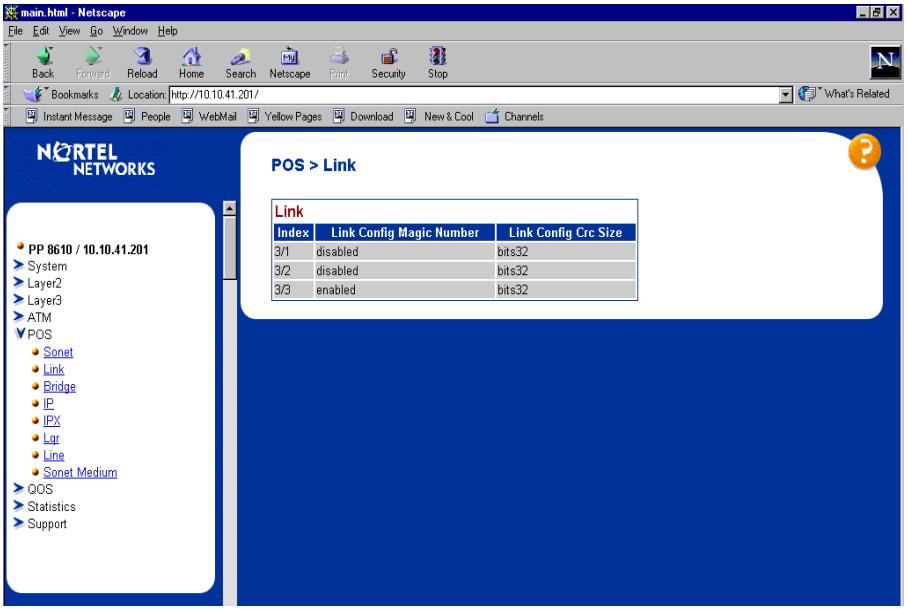



Table 52 describes the Link page fields.

**Table 52** Link page fields

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Link Config Magic Number | If set to enable, selects a random number (“magic number”) used in loopback detection. |
| Link Config Crc Size | Indicates if the size of redundancy check field used in PPP framing has been configured. |

To view the current bridging parameters, in the POS menu, click Bridge. The Bridge page opens (Figure 48).

**Figure 48** Bridge page

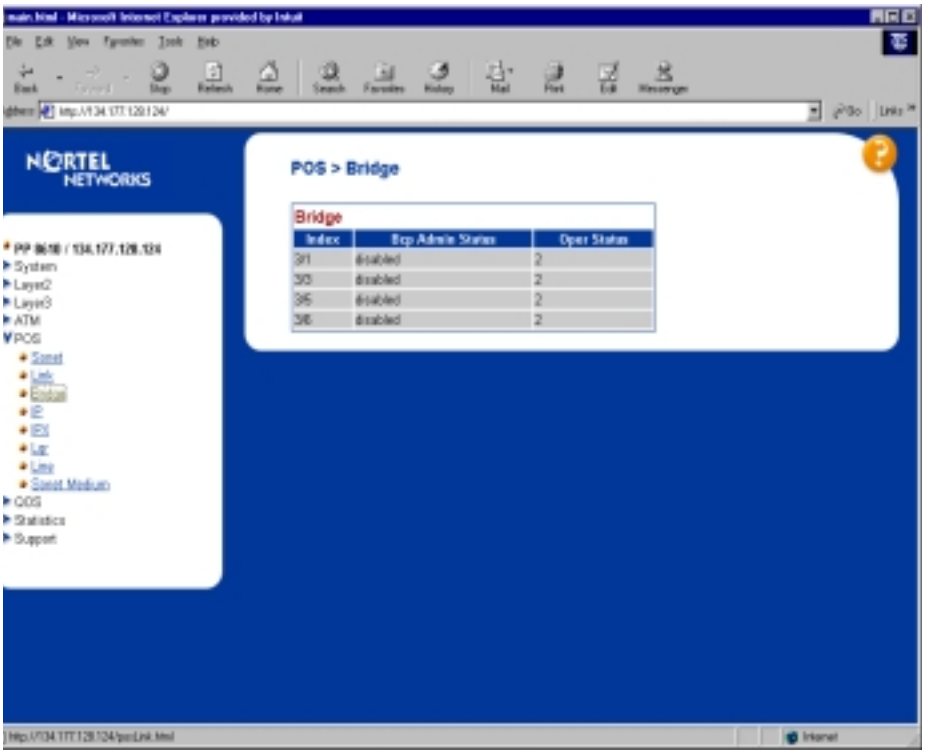



Table 53 describes the Bridge page fields.

**Table 53** Bridge page fields

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Bcp Admin Status | Indicates the status of bridging. |
| Oper Status | Indicates the operational state of bridging. |

To view the current IP parameters, in the POS menu, click IP. The IP page opens (Figure 49).

**Figure 49** IP page

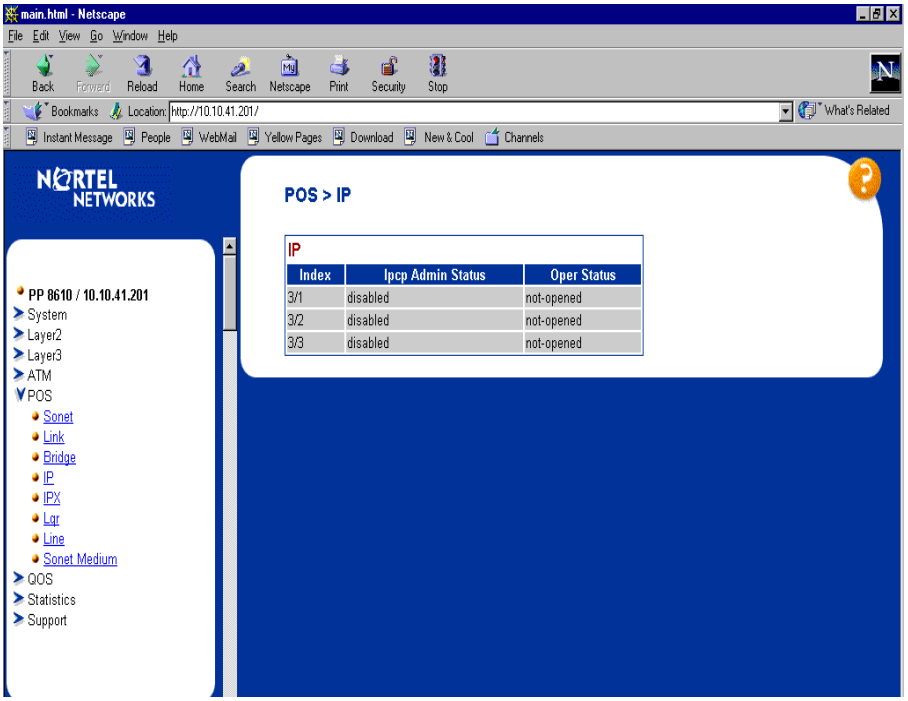



Table 54 describes the IP page fields.

**Table 54** IP page

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Ipcp Admin Status | Indicates the status of IP routing, either enabled or disabled. |
| Oper Status | Indicates the operational value of IP link. |

To view the current IPX parameters, in the POS menu, click IPX. The IPX page opens (Figure 50).

**Figure 50** IPX page

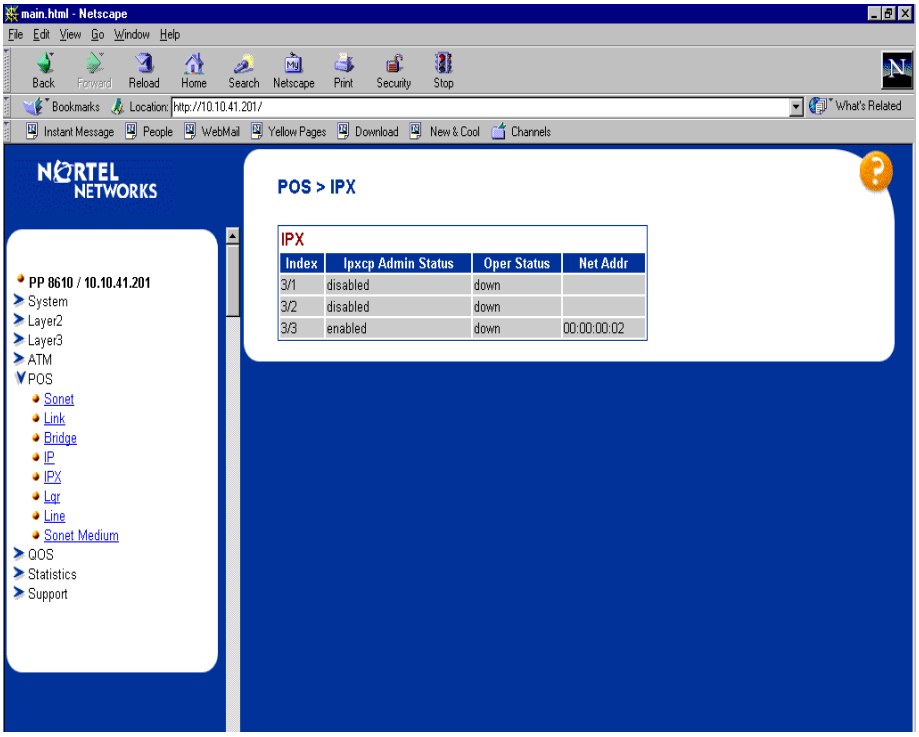



Table 55 describes the fields displayed IPX page fields.

**Table 55** IPX page fields

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Ipxcp Admin Status | Indicates the status of IPX routing, either enabled or disabled. |
| Oper Status | Indicates the operational value of IPX link. |
| Net Addr | Network address. |

To view the current Lqr parameters, in the POS menu, click Lqr. The Lqr page opens (Figure 51).

**Figure 51** Lqr page

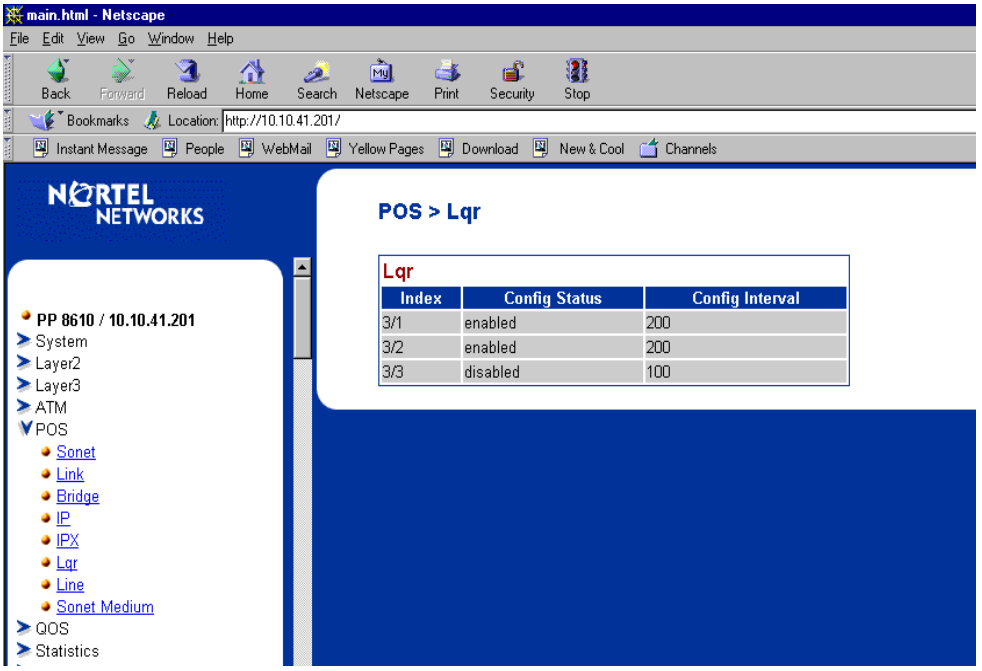



Table 56 describes the Lqr page fields.

**Table 56** Lqr page fields

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Config Status | Status of link quality reporting. |
| Config Interval | Link quality reporting interval. |

To view the current Line parameters, in the POS menu, click Line. The Line page opens (Figure 52).

**Figure 52** Line page

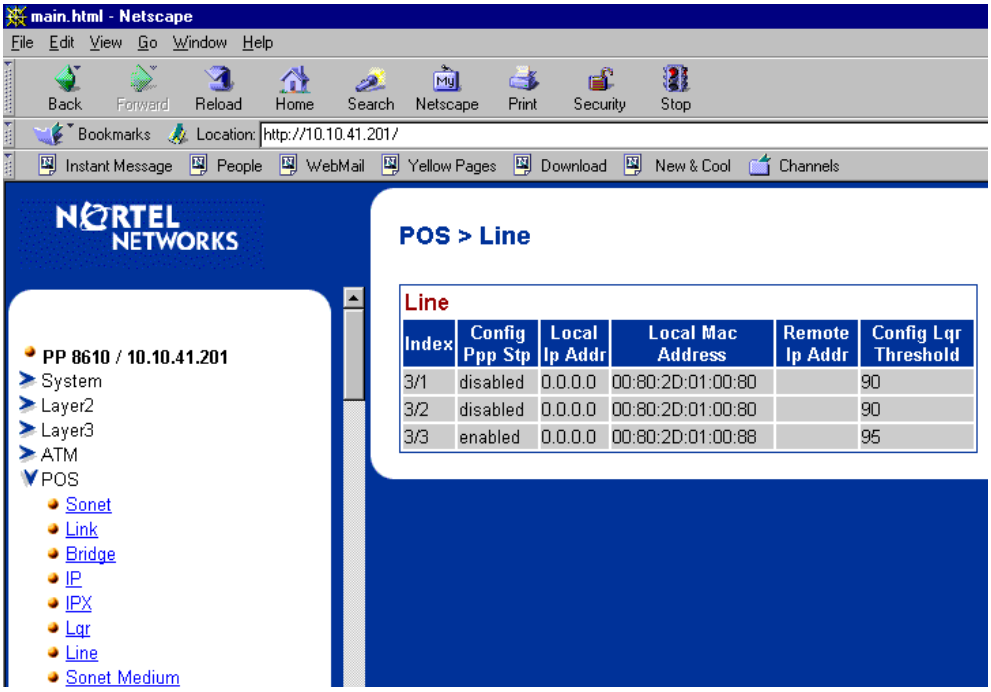



Table 57 describes the Line page fields.

**Table 57** Line page fields

| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Config PPP Stp | Status of PPP bridging. |
| Local Ip Addr | Local Internet Protocol address. |
| Remote IP Addr | Remote Internet Protocol address. |
| Config Lqr Threshold | Link quality reporting threshold. |

To view the current Sonet Medium parameters, in the POS menu, click Sonet Medium. The Sonet Medium page opens (Figure 53).

**Figure 53** SONET Medium page

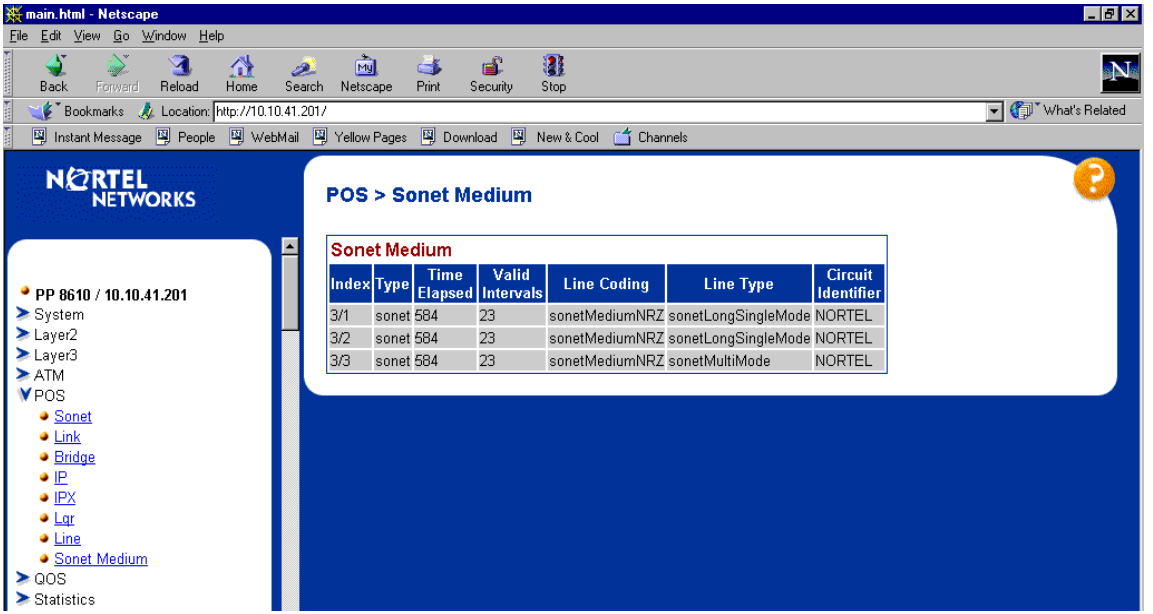



Table 58 describes the SONET Medium page fields.

**Table 58** SONET Medium page fields

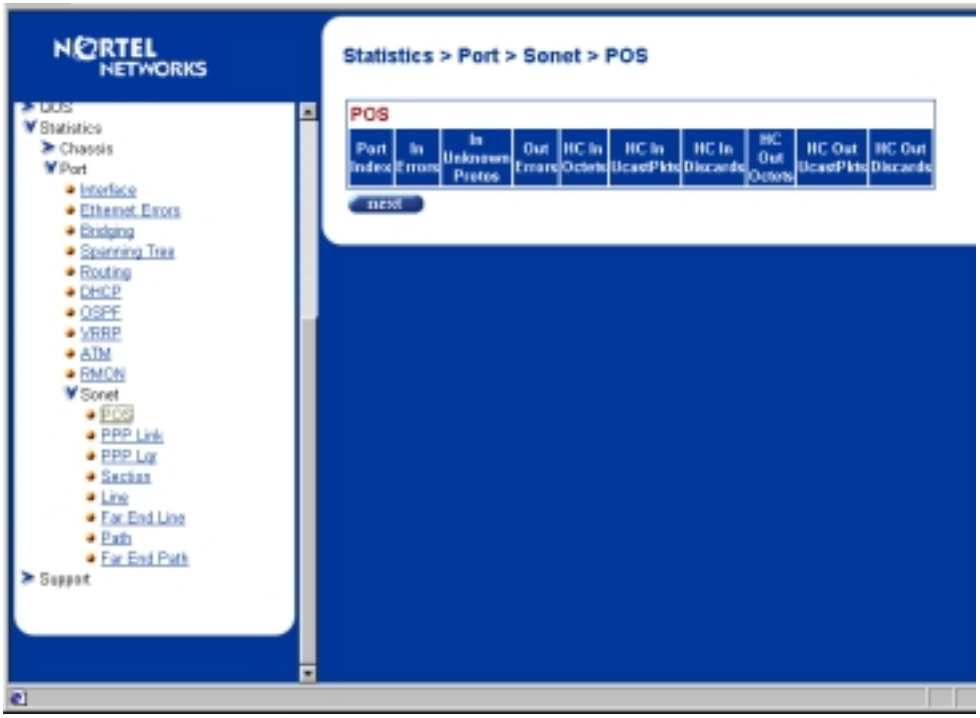
| Field | Description |
|---|---|
| Index | Unique value assigned to each interface. |
| Type | Signal type, whether sonet or sdh. |
| Time Elapsed | Number of seconds that have elapsed since the beginning of the current measurement period. |
| Valid Intervals | Number of previous 15-minute intervals for which data was collected. |
| Line Coding | Line coding for this interface: the B3ZS and CMI are used for electrical SONE/SDH signals (STS-1 and STS-3). The Non-Return to Zero (NZR) and the Return to Zero are used for optical SONET/SDH signals. |
| Line Type | Line type: short and long range single-mode fiber or multimode fiber interfaces, and COAX and UTP for electrical interfaces. |
| Circuit Identifier | Transmission vendor’s circuit identifier, to facilitate troubleshooting. |

# Statistics

Use the Web interface to view the 8683POSM Module statistics. Under the Statistics heading in the navigation pane, there are two options: Chassis and Port. Click Port to view the options. Sonet is the last entry in the Port folder.

The Sonet heading contains the options shown in Figure 54.

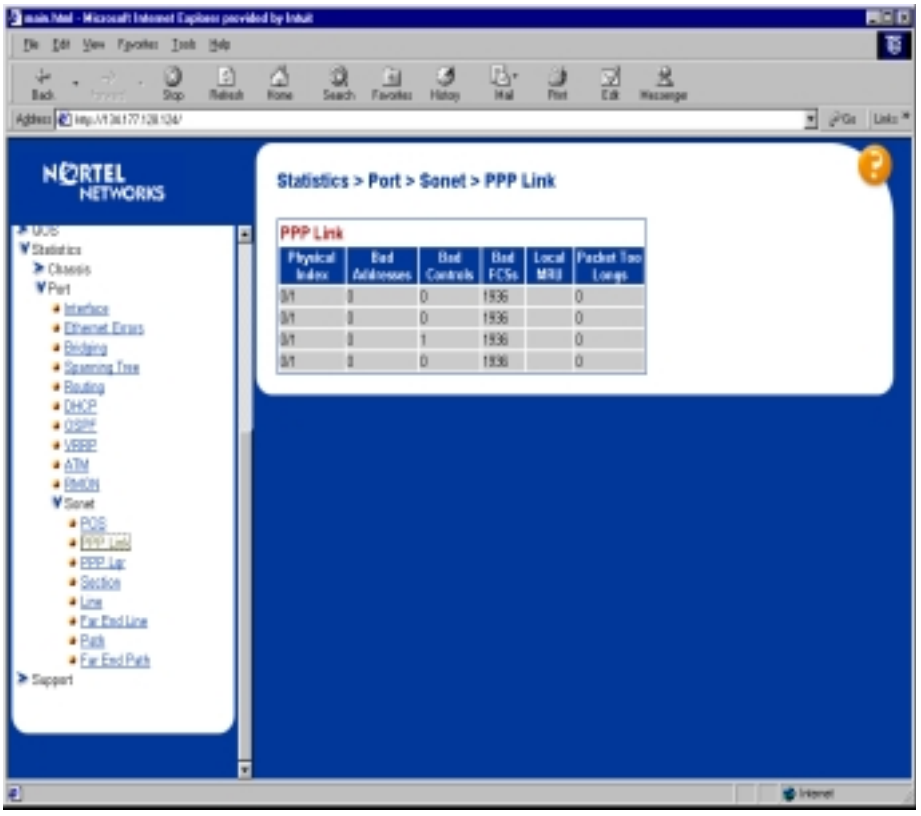
**Figure 54** Sonet options




Click any of the headings to view the relevant statistics.

See Figure 55 for an example of PPP Link statistics.

**Figure 55** PPP Link statistics page



# Appendix A
# Technical Specifications

This appendix lists the technical specifications for the 8683POSM Module.

**Standards supported**

Bell Communications Research, SONET Transport Systems: Common Generic Criteria, GR-253-CORE, January 1999, Revision 2 (partial compliance)

RFC 1213, Network Management of TCP/IP-based internets, March 1991

RFC 1332, PPP Internet Protocol Control Protocol (IPCP), May 1992

RFC 1471, Link Control Protocol of the PPP, June 1993

RFC 1473, IP Network Control Protocol of the PPP, June 1993

RFC 1474, Bridge Network Control Protocol of the PPP, June 1993

RFC 1552, PPP Internetwork packet Exchange Control Protocol (IPXCP), May 1992

RFC 1661, The Point-to-Point Protocol (PPP), July 1994.

RFC 1638, PPP Bridging Control Protocol (BCP), June 1994

RFC 1989, PPP Link Quality Monitoring, August 1996

RFC 2558, SONET/SDH, March 1999

RFC 2615, PPP Over SONET/SDH (obsoletes RFC 1619), June 1999

| | |
|---|---|
| **Environmental specifications** | |
| Operating temperature: | 5° to 40° C (41° to 104° F) |
| Storage temperature: | -25° to 70° C (-13° to 158° F) |
| Operating humidity: | 85% maximum relative humidity, noncondensing |
| Storage humidity: | 95% maximum relative humidity, noncondensing |
| Operating altitude | 3,000 m (10,000 feet) maximum |
| Storage altitude | Up to 9,000 m (30,000 feet) above sea level |
| Free Fall/drop: | ISO 4180-s, NSTA 1A |
| Vibration: | IEC 68-2-6/34 |
| Shock/bump: | IEC 68-2-27/29 |
| **Physical specifications** | |
| Height: | 1.050 inches |
| Width: | 12.968 inches |
| Depth: | 10.950 inches |
| Weight (single module): | 3.12 lbs. |
| **Performance specifications (64-byte packets)** | |
| Mean time between failure (MTBF) | 150,000 hours |
| Frame length: | 64 to 1750 octets |
| **Interface options** | |
| RJ-45 (8-pin modular) connectors for MDI-X interface | |
| **Safety agency approvals** | UL Listed (UL 1950) |
| | CUL CSA 22.2 No. 950 |
| | IEC 950/EN 60950 |
| | CE mark |
| | CB Scheme Test Report and Certification |
| | NOM (NOM-019-SCFI-1994) |

| | |
|---|---|
| **Electromagnetic emissions** | |
| Meets requirements of: | US: FCC, CFR 47, Part 15, Subpart B, Class A |
| | Canada: ICES-003, Issue-2, Class A |
| | Australia/New Zealand: AS/NZS 3548:1995, Class A |
| | Japan: VCCI V-3/97.04, Class A |
| | Taiwan: CNS 13438,Class A |
| | EN 55 022:1998/CISPR22:1997 |
| | CE Mark |
| **Electromagnetic immunity** | Electromagnetic Immunity: EN55024:1998/CISPR24:1997 |

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