

# Configuring ATM, Ethernet, and POS Ports

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## SYSTEM ADMINISTRATOR GUIDE

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# 1 Overview

This document describes how to configure, monitor, and administer the following types of ports: Asynchronous Transfer Mode (ATM), Ethernet, and Packet over SONET/SDH (POS).

This document applies to both the Ericsson SmartEdge® and SM family routers. However, the software that applies to the SM family of systems is a subset of the SmartEdge OS; some of the functionality described in this document may not apply to SM family routers.

For information specific to the SM family chassis, including line cards, refer to the SM family chassis documentation.

For specific information about the differences between the SmartEdge and SM family routers, refer to the Technical Product Description *SM Family of Systems* (part number 5/221 02-CRA 119 1170/1) in the **Product Overview** folder of this Customer Product Information library.

The SmartEdge® router supports ATM, Ethernet, Gigabit Ethernet (GE), and Packet over SONET/SDH (POS) ports on the following traffic cards, controller cards and media interface cards (MICs):

- ATM traffic cards
- ATM line cards and MICs
- POS traffic cards
- Ethernet traffic cards and MICs—10/100 Ethernet and Fast-Ethernet-Gigabit Ethernet (FE-GE)
- Gigabit Ethernet traffic cards and MICs
- DDR Gigabit Ethernet traffic cards
- Ethernet management port on a controller card
- Gigabit Ethernet native ports

## 1.1 Terminology

- *Controller card*

Any version of the Cross-Connect Route Processor (XCRP4) Controller card, including the controller carrier card, unless otherwise noted.

- *Controller carrier card*



Refers to the controller functions on the circuit board within the SmartEdge 100 chassis.

- *I/O carrier card*

Refers to the traffic card functions on the circuit board; these functions are compatible with the similar functions that are implemented on all SmartEdge 400, 600, 800, 1200, and 1200H traffic cards.

- *Chassis*

Any SmartEdge router chassis.

- *Traffic card*

A SmartEdge 100 media interface card (MIC) or a SmartEdge 400, 600, 800, 1200, or 1200H traffic card.

- *Gigabit Ethernet*

Any Ethernet traffic card that supports a port speed of 1 Gbps or greater; unless explicitly stated, the speed of any Gigabit Ethernet port is 1 Gbps.

- *Gigabit Ethernet DDR*

Any Ethernet DDR traffic card that supports a port speed of 10 Gbps or greater; unless explicitly stated, the speed of any 10 Gigabit Ethernet port is 10 Gbps.

- *WAN-PHY*

The Ethernet port supports WAN Interface Sublayer (WIS) on the physical layer. A WAN-PHY port can transmit and receive IEEE 802.3 MAC frames directly in the payload envelope of a SONET STS-192c/SDH VC-4-64c frame. WIS is described in IEEE 802.3ae. WAN-PHY complies with 802.3ae with some exceptions as described Section 1.2 on page 2.

The Ether-WIS MIB is supported by the SmartEdge router.

- *LAN-PHY*

A 10 Gigabit Ethernet port using Ethernet framing in the physical layer as described in *IEEE Std 802.3ae-2002*.

## 1.2

### WAN-PHY Requirements and Restrictions

- WAN-PHY is supported only on the 1-port 10 Gigabit Ethernet card (10ge-1-port) and 1-port 10 Gigabit Ethernet/OC-192c DDR card (10ge-oc192-1-port).
- Bit error-rate tests (BERT) restrictions:



- Generation of the PRBS-23 data pattern (IEEE 802.3ae) is not supported, although errors can be detected when that pattern is received.
- Generation of free-running PRBS-31 data pattern (IEEE 802.3ae) is not supported, although errors can be detected when that pattern is received. The PRBS-31 data bit pattern can be generated for limited lengths of time.
- Generation of a square wave test pattern (IEEE 802.3ae) consisting of between 4 and 11 bits of alternating all ones and zeros) is not supported.
- The mixed-frequency data pattern consists of the PRBS-23 pattern inserted into the SPE payload, and is bit-inverted every second frame. This mixed-frequency data pattern does not interoperate with SONET equipment.
- The IEEE 802.3ae section trace message is not supported.
- The IEEE 802.3ae Path Enhanced Remote Defect Indication (ERDI-P) is not supported. Instead, the existing Path remote defect indication (RDI-P) is supported.
- IEEE 802.3ae performance monitoring counters are not supported.
- The IEEE 802.3ae Path Loss of Code-Group Delineation (LCD-P) alarms and counters is not supported.
- Outside of IEEE 802.3ae

Features outside of IEEE 802.3ae should be assumed to be not supported. Among these non-supported features are the following:

- SONET Automatic Protection Switching (APS) is not supported on WAN-PHY configured ports.
- Payload loopback is not supported.
- SNMP MIBs
  - The ETHER-WIS-MIB is supported for WAN-PHY.
  - The IF-INVERTED-STACK-MIB is supported for WAN-PHY.
  - The ETHERLIKE-MIB is supported for WAN-PHY.



## 1.3 Related Information

Other documents with related tasks and commands include:

- Configuration tasks and commands for traffic cards are described in *Configuring Cards*.
- Configuration tasks and commands for circuits are described in *Configuring Circuits*.



## 2 Configuration and Operations Tasks

### 2.1 Configuring ATM Ports

ATM ports are of two types: those on an ATM OC traffic card or MIC. You configure ATM OC ports in ATM OC configuration mode. Not all configuration tasks apply to all types of cards and ports; in the task descriptions that follow, the configuration mode indicates the type of port to which the task applies.

#### 2.1.1 Configure Operational Features for an ATM Port

You configure operational features to support normal operations. If you intend to configure the port as a working or protect Automatic Protection Switching (APS) port, review the configuration guidelines for ATM ports in the document, *Configuring APS MSP*, before proceeding. To configure operational features for an ATM port, perform the tasks described in Table 1. Unless otherwise noted, enter all commands in either ATM OC configuration mode, depending on the type of port you are configuring.

Table 1 Configure Operational Features for an ATM Port

Step	Task	Root Command	Notes
1.	Select (begin the configuration of) an ATM port and access either ATM OC configuration mode.	<i>port atm</i>	Enter this command in global configuration mode.
2.	Specify general attributes for the port: (All attributes are optional.)		
	Associate a description with the port.	<i>description (port)</i>	
	Specify the framing.	<i>framing (ATM, POS, WAN-PHY)</i>	
	Enable subscribers to maintain a steady state.	<i>link-dampening</i>	This command dampens link-state detection to reduce port flaps.
	Specify the MTU payload size without fragmentation.	<i>mtu (ATM)</i>	
	Assign a different MAC address.	<i>mac-address (ATM)</i>	The default MAC address is assigned based on the MAC address extracted from the EEPROM of the card.
	Disable ATM cell payload scrambling.	<i>atm scramble</i>	Use the <code>no</code> form to disable this feature.



Table 1 Configure Operational Features for an ATM Port

Step	Task	Root Command	Notes
	Specify the over-subscription rate allowed on an ATM OC port.	<i>over-subscription-rate</i>	
	Apply an existing bulkstats schema profile to the port.	<i>bulkstats schema</i>	
3.	Specify port-type specific attributes for the port: (All attributes are optional.)		
	Enable port to remain up after desired path alarms reception.	<i>alarm-report-only</i>	Enter this command in ATM OC configuration mode.
	Specify the clock source.	<i>clock-source (port)</i>	This command is for second-generation ATM OC ports only.
	Enable port listening mode.	<i>ccod-mode port-listen</i>	This command is for second-generation ATM OC ports only.
	Specify the SONET/SDH SD-BER or SF-BER threshold for a SONET/SDH port.	<i>threshold</i>	This command is for first- and second-generation ATM OC ports only. Enter this command for each threshold to be specified.
4.	Enable the port (begin operations on it).	<i>shutdown</i>	Use the <code>no</code> form to enable the port.

You are now ready to add the port to an APS group or configure ATM virtual paths (VPs) and permanent virtual circuits (PVCs) on the port. After you add an ATM port to an APS group as a working port, you can configure its VPs and PVCs. For information about configuring ATM VPs and PVCs, see *Configuring Circuits*.

### 2.1.2 Configure Maintenance Features for an ATM Port

You configure maintenance features only if the port is experiencing problems. To configure maintenance features for an ATM port, perform one or both of the tasks described in Table 2.



*Table 2 Configure Maintenance Features for an ATM Port*

<b>Task</b>	<b>Root Command</b>	<b>Notes</b>
Specify the text string to be traced on a port on a second-generation ATM OC line card.	<i>path-trace (ATM OC, POS, WAN-PHY)</i>	Enter this command in ATM OC configuration mode. This command is available only for ports on second-generation ATM OC line cards.
Change to a loopback state on a port to test port operation.	<i>loopback (ATM, POS, Ethernet, WAN-PHY)</i>	Enter this command in ATM OC configuration mode.

### 2.1.3 Configure RADIUS NAS-Port Features for an ATM Port

To configure RADIUS-Port features for an ATM port, perform one or both of the tasks described in Table 3.

*Table 3 Configure RADIUS NAS-Port Features for an ATM Port*

<b>Task</b>	<b>Root Command</b>	<b>Notes</b>
Configure RADIUS NAS-Port-ID attribute.	<i>radius attribute nas-port-id</i>	
Configure RADIUS-NAS-Port Type attribute.	<i>radius attribute nas-port-type</i>	

## 2.2 Configuring Ethernet Ports

### 2.2.1 Configure Operational Features for an Ethernet Port

You configure operational features to support normal operations. Enter all commands in port configuration mode, unless otherwise noted.



Table 4 Configure Operational Features for an Ethernet Port

Step	Task	Root Command	Notes
1.	Select an Ethernet port and enter port configuration mode.	<i>port ethernet</i>	<p>Enter this command in global configuration mode.</p> <p>The default configuration of an 10 Gigabit Ethernet port is LAN-PHY.</p> <p>If the port of the 1-port 10 Gigabit Ethernet card (10ge-1-port) or 1-port 10 Gigabit Ethernet/OC-192c DDR card (10ge-oc192-1-port) is currently configured as WAN-PHY, to change its configuration back to LAN-PHY, you must first delete the existing configuration -- Enter the <code>no port ethernet slot/port wan-phy</code> command, which deletes WAN-PHY operation, then enter the command <code>port ethernet slot/port</code> to enable LAN-PHY.</p> <p>Similarly, if the port of a 10ge-1-port or 10ge-oc192-1-port is currently configured as LAN-PHY (default), to change its configuration to WAN-PHY, you must first delete the existing configuration -- Enter the <code>no port ethernet slot/port</code> command, which deletes LAN-PHY operation, then enter the command <code>port ethernet slot/port wan-phy</code> to enable WAN-PHY.</p>
2.	Specify attributes for the port. (All attributes are optional.)		
	Not all configuration tasks apply to all types of Ethernet ports. In the task descriptions that follow, the description applies to all types of ports unless otherwise noted.		
	Configure auto-negotiation parameters for this GE port.	<i>auto-negotiate</i>	<p>Use the <code>no</code> form to disable this feature. Auto-negotiation is required for copper-based GE ports.</p> <p>This command is for GE ports, but does not apply to ports on 10GE traffic cards.</p>
	Bind the port to an existing interface in an existing context.	<i>bind interface</i>	Use this command only if you have not added the port to a link group, or if you do not intend to create 802.1Q PVCs on it.



Table 4 Configure Operational Features for an Ethernet Port

Step	Task	Root Command	Notes
	Configure bridge parameters.	<i>bridge</i>	
	Apply an existing bulkstats schema profile to the port.	<i>bulkstats schema</i>	Use this command only if you are not adding the port to a link group
	Associate a description with the port.	<i>description (port)</i>	
	Specify the encapsulation for the port.	<i>encapsulation (Ethernet Port)</i>	
	Configure flows on this circuit.	<i>flow apply admission-control profile</i>	
	Configure flows on this circuit.	<i>flow apply ip profile</i>	
	Explicitly set the flow control mode.	<i>flow-control</i>	This command is for any GE port.
	Configure forward policy or output.	<i>forward</i>	The use and configuration of the <i>forward output (circuit)</i> , <i>forward policy</i> , and other <i>forward</i> commands are found in the <i>Configuring Forward Policies</i> document.
	Configure SONET/SDH framing.	<i>framing (ATM, POS, WAN-PHY)</i>	Applies to Ethernet card only when configured for WAN-PHY.
	Configure IGMP related parameters.	<i>igmp maximum bandwidth</i>	
	Apply an existing IP access control List (ACL) to the untagged Ethernet circuits on this port.	<i>ip access-group (circuits)</i>	
	Associate the port with the IP address and MAC address of the remote host on the circuit.	<i>ip host (port)</i>	This command is for an IPoE encapsulated or 802.1Q encapsulated Ethernet port.
	Enable L2VPN on this Ethernet port.	<i>l2vpn (context-name)</i>	
	Specify the LACP priority for aggregation.	<i>lacp priority</i>	
	Dampen the line state detection to reduce port flaps.	<i>link-dampening</i>	This command dampens link-state detection to reduce port flaps.



Table 4 Configure Operational Features for an Ethernet Port

Step	Task	Root Command	Notes
	Add the port to an existing link group.	<i>link-group (Global, DS-1, E1, Port Configuration Modes)</i>	
	Specify the speed and duplex mode for an FE port.	<i>medium (fast-ethernet)</i>	This command is for a port on a FE-GE line card only.
	Specify the MTU payload size without fragmentation.	<i>mtu (port)</i>	
	Configure QoS parameters.	<i>qos</i>	See the <i>qos</i> commands described in <i>Configuring Circuits for QoS</i> .
	Configure RADIUS NAS-Port-ID attribute.	<i>radius attribute nas-port-id</i>	
	Configure RADIUS NAS-Port-Type attribute.	<i>radius attribute nas-port-type</i>	
	Configure QoS rate parameters.	<i>rate circuit</i>	
	Set CLIPS DHCP parameters.	<i>service clips dhcp</i>	
	Set CLIPS DHCP parameters.	<i>service clips-group</i>	
	Enable static CLIPS.	<i>service clips (static)</i>	
	Configure Rapid Spanning-Tree Profile (RSTP) parameters.	<i>spanning-tree profile</i>	
3.	Enable the port (begin operations on it).	<i>shutdown (Card)</i>	Enter this command in the mode matching the type of port you are configuring, or in port configuration mode. Use the <i>no</i> form to enable the port.

You are now ready to use the port or configure 802.1Q PVCs on it. For information about configuring 802.1Q PVCs, see *Configuring Circuits*.

### 2.2.2 Configure a Maintenance Feature for an Ethernet Port

You configure a maintenance feature only if the port is experiencing problems.



Table 5 Configure a Maintenance Feature for an Ethernet Port

Task	Root Command	Notes
Change to a loopback state on a port to test port operation.	<i>loopback</i> ( <i>ATM, POS, Ethernet, WHY-PHY</i> )	Enter this command in port configuration mode.  Applies to all supported Ethernet types including WAN-PHY.
Specify the text string to be traced on a WAN-PHY port.	<i>path-trace</i> ( <i>ATM OC, POS, WAN-PHY</i> )	Applies to Ethernet cards only when configured for WAN-PHY.
Set bit error-rate test (BERT) Thresholds	<i>threshold</i>	Applies to Ethernet cards only when configured for WAN-PHY.

### 2.2.3 show port detail Command for an Ethernet WAN-PHY Port

The following output fields of the `show port detail` command have information for Ethernet WAN-PHY ports. For additional information see *show port detail*:

- `Physical Layer`  
  
Displays `wan-phy` or `lan-phy`. Applies only to 10 Gigabit Ethernet.
- `framing`  
  
Displays the configured value which can be either `SONET` or `SDH`.
- `Path Alarms`  
  
These alarms won't cause the WAN-PHY port link state to go down when they occurred.  
  
For a complete list of conditions that can cause an alarm, see *Alarms and Probable Causes*.
- `Tx Path Trace and Rx Path Trace`
- `Media type`  
  
Displays type of Ethernet and transceiver (`10000Base-transceiver`). For a list of transceivers matched to WAN-PHY and LAN-PHY requirements, see the *show port detail* command reference description.



## 2.3 Configuring POS Ports

A POS port is a port on an OC-3c/STM-1c, OC-12c/STM-4c, OC-48c/STM-16c, or OC-192c/STM-64c traffic card. You configure a POS port on any of these cards in port configuration mode.

### 2.3.1 Configure Operational Features

You configure operational features to support normal operations. If you intend to configure the port as a working or protect APS port, review the configuration guidelines for POS ports in the document, *Configuring APS MSP*, before proceeding. To configure operational features for a POS port, perform the tasks described in Table 6. Enter the commands in port configuration mode, unless otherwise noted.

Table 6 Configure Operational Features for a POS Port

Step	Task	Root Command	Notes
1.	Select (begin the configuration of) a POS port and access port configuration mode.	<i>port pos</i>	Enter this command in global configuration mode.
2.	Specify general attributes for the port. (All attributes are optional.)		
	Enable port to remain up after desired path alarms reception.	<i>alarm-report-only</i>	
	Associate a description with the port.	<i>description (port)</i>	
	Specify the clock source.	<i>clock-source (port)</i>	This command is for second-generation POS OC-48c/STM-16c ports only.
	Specify the SONET/SDH framing mode.	<i>framing (ATM, POS, WAN-PHY)</i>	This command is to specify the SONET/SDH framing mode.
	Enable subscribers to maintain a steady state.	<i>link-dampening</i>	This command dampens link-state detection to reduce port flaps.
	Specify the MTU payload size without fragmentation.	<i>mtu (card)</i>	Use by the IP packet packs under encapsulation type (cisco-hdlc, ppp, or frame-relay).
	Specify the exponent of the SD-BER and SF-BER thresholds.	<i>threshold</i>	Enter this command for each threshold to be specified.
	Disable SPE scrambling.	<i>scramble</i>	Use the <code>no</code> form to disable this feature.
	Define the value for the C2 byte.	<i>c2byte</i>	Use for the Optical SONET/SDH layer.



**Table 6** *Configure Operational Features for a POS Port*

Step	Task	Root Command	Notes
	Specify a 16-bit CRC.	<i>crc16</i>	We recommend the 32-bit CRC.
	Apply an existing bulkstats schema profile to the port.	<i>bulkstats schema</i>	
4	Bind the port to an existing interface in an existing context.	<i>bind interface</i>	Use this command only if you do not intend to create Frame Relay PVCs on it.
5.	Enable the port (begin operations on it).	<i>shutdown (POS)</i>	Use the <b>no</b> form to enable the port.

You are now ready to add the port to an APS group, use the port, or configure Frame Relay PVCs on it. For information about configuring Frame Relay PVCs, see *Configuring Circuits*.

### 2.3.2 Configure a POS Port for APS

To configure a POS port for APS, perform the tasks described in Table 7.

**Table 7** *Configure a POS Port for APS*

Step	Task	Root Command	Notes
1.	Enable the port (begin operations on it).	<i>shutdown (POS)</i>	Enter this command in port configuration mode. Use the <b>no</b> form to enable the port.
2.	Assign the port as a working or protect port in an APS group.	<i>aps</i>	Enter this command in port configuration mode.
	Specify the encapsulation type.	<i>encapsulation (POS)</i>	
3.	Specify the parameters for the Cisco HDLC keepalive function.	<i>keepalive (POS)</i>	
3.	Bind the port to an existing interface in an existing context.	<i>bind interface</i>	Enter this command in port configuration mode. You bind only the working port after you assign it to an APS group; you do not bind the protect port.

### 2.3.3 Configure Maintenance Features for a POS Port

You configure the maintenance features only if the port is experiencing problems. To configure the maintenance features for a POS port, perform



one or both of the tasks described in Table 8. Enter all commands in port configuration mode.

Table 8 Configure Maintenance Features for a POS Port

Task	Root Command	Notes
Specify a path trace message.	<i>path-trace (ATM OC, POS, WAN-PHY)</i>	Use for the Optical SONET/SDH layer.
Change to a loopback state on a port to test port operation.	<i>loopback (ATM, POS, Ethernet, WAN-PHY)</i>	

### 2.3.4 Configure RADIUS NAS-Port Features for an POS Port

To configure RADIUS-Port features for an POS port, perform one or both of the tasks described in Table 9.

Table 9 Configure RADIUS NAS-Port Features for an POS Port

Task	Root Command	Notes
Configure RADIUS NAS-Port-ID attribute.	<i>radius attribute nas-port-id</i>	
Configure RADIUS-NAS-Port Type attribute.	<i>radius attribute nas-port-type</i>	

## 2.4 Port and Channel Monitoring, Operating, and Diagnostic Commands

You can display various types of information about ATM, Ethernet, Packet over SONET/SDH (POS), WAN-PHY, clear-channel ports and channels, and channelized ports and channels; clear port counters; and test port and channel operation by performing the appropriate task listed in Table 10. Enter the `clear` commands in exec mode; enter the `show` commands in any mode.

Table 10 Port and Channel Operations

Task	Root Command
Clear counters associated with the specified port or channel.	<i>clear port counters</i>
Clear performance-monitoring statistics for the specified port, a specific channel, all channels on a channelized port, or all channels in the system.	<i>clear port perf-monitor</i>
Display the current status of one or more ports or channels, and provide continuous updates to the status.	<i>monitor port</i>



*Table 10 Port and Channel Operations*

<b>Task</b>	<b>Root Command</b>
Display the bindings for one or more interfaces and the ports to which they are bound.	<i>show ip interface</i>
Display a list of the ports in the system.	<i>show port</i>
Display general counters and counters specific to the port or channel type.	<i>show port counters</i>
Display the medium access control (MAC) address and other lower-layer settings of a single port, all ports on a card, or all ports in the system; display configuration information and other lower-layer settings, including channels, for a single port, all ports on a card, or all ports in the system.	<i>show port detail</i>
Display configuration information and performance monitoring (PM) statistics for a specific port or channel.	<i>show port perf-monitor</i>
Display detailed information about the transceivers installed in the SmartEdge router, including their current status	<i>show port transceiver</i>





## 3 Configuration Examples

### 3.1 ATM Port Examples

The follow example shows how to configure port **1** on a 2-port ATM OC-3c/STM-1c traffic card in slot **4**. ATM cell payload scrambling and Synchronous Optical Network (SONET) framing are enabled by default. The port is not bound to an interface because it will have ATM PVCs configured on it.

```
[local]Redback(config)#port atm 4/1
[local]Redback(config-atm-oc)#description 2-port ATM OC-3c/STM-1c port
[local]Redback(config-atm-oc)#alarm-report-only plm-p
[local]Redback(config-atm-oc)#mtu 4000
[local]Redback(config-atm-oc)#threshold sd-ber 6
[local]Redback(config-atm-oc)#threshold sf-ber 5
[local]Redback(config-atm-oc)#over-subscription-rate 100
[local]Redback(config-atm-oc)#no shutdown
```

### 3.2 Ethernet Port Examples

The following example shows how to configure port parameters for port **1** on an Ethernet traffic card in slot **2**. The port is not bound to an interface because it will have 802.1Q PVCs configured on it:

```
[local]Redback(config)#port ethernet 2/1
[local]Redback(config-port)#description SNMP port
[local]Redback(config-port)#mtu 1000
[local]Redback(config-port)#medium auto
[local]Redback(config-port)#no shutdown
```

### 3.3 POS Port Examples

The following example shows how to configure port parameters for port **1** on a 4-port POS OC-12c/STM-4c traffic card in slot **3**. Payload scrambling is enabled (by default) with the default value for the C2 byte along with the default CRC32. The port is not bound to an interface because it has Frame Relay PVCs configured on it:

```
[local]Redback(config-card)#port pos 3/1
[local]Redback(config-port)#description POS OC-12c/STM-4c port
[local]Redback(config-port)#framing sdh
[local]Redback(config-port)#encapsulation frame-relay
[local]Redback(config-port)#no shutdown
```



## 3.4 WAN-PHY Example

The following example illustrates the configuration of the 1-port 10 Gigabit Ethernet card (10ge-1-port) for WAN-PHY operation.

### 3.4.1 WAN-PHY Configuration

```
[local]Redback(config)#card 10ge-1-port 12
[local]Redback(config-card)#no shutdown
[local]Redback(config-card)#exit
[local]Redback(config)#port ethernet 12/1 wan-phy
Note: Creating a port may cause the card to reload. Commit to continue; abort to exit without change
[local]Redback(config-port)#no shutdown
[local]Redback(config-port)#commit
Marking PTD channel DEAD for slot 12
Feb 10 17:11:13: %CSM-6-CARD: Card in slot 12 entering In Service state.
Feb 10 17:11:13: %CSM-6-CARD: card 10ge-1-port REMOVED in slot 12
Transaction committed. //See Note 1

Feb 10 17:11:23: %CSM-6-CARD: card 10ge-1-port INSERTED in slot 12
Feb 10 17:11:27: %PPAINFRA-6-ISTART_INFO: 1d891d12/0000000001/201800000:12/IPPA/EU00:Ready to receive packets
Feb 10 17:11:27: %PPAINFRA-6-ISTART_INFO: 1f7ca31f/0000000001/289200000:12/EPPA/EU00:Ready to receive packets
Feb 10 17:11:27: %CSM-6-CARD: Card in slot 12 entering In Service state.
Feb 10 17:11:27: %CSM-6-CARD: card 10ge-1-port INSERTED in slot 12 READY
Feb 10 17:11:34: %CSM-6-PORT: ethernet 12/1 link state UP, admin is UP
```

**Note 1:** The initial configuration for WAN-PHY causes the 10GE card to momentarily go out of service while it reloads due to the port mode change from default LAN-PHY to WAN-PHY (applies to the entire card).

```
!
!comment: WAN-PHY ATM options are configured:
!
[local]Redback#configure
Enter configuration commands, one per line, 'end' to exit
[local]Redback(config)#port ethernet 12/1 wan-phy
[local]Redback(config-port)#framing sdh
[local]Redback(config-port)#path-trace Ericsson Path
[local]Redback(config-port)#no loopback
[local]Redback(config-port)#threshold sd-ber 9
[local]Redback(config-port)#threshold sf-ber 5
[local]Redback(config-port)#commit
Transaction committed.
[local]Redback(config-port)#Feb 10 17:14:13: %CSM-6-PORT: ethernet 12/1 link state UP, admin is UP
[local]Redback(config-port)#end
```

### 3.4.2 WAN-PHY Status

The Ethernet WIS MIB is supported by the SmartEdge router.

Use the following commands to check WAN-PHY status:

- `on-demand-diagnostic` — Check the operation of a card configured for WAN-PHY.



- `show port counters` — Show statistics of traffic passing through the WAN-PHY port.
- `show port detail` — Display information about the physical layer of a WAN-PHY port:
  - The `Path Alarms` field shows the SONET/SDH path alarms, if any.
  - The `Tx path-trace` and `Rx path-trace` fields provide the transmitted and received path-trace messages.
  - The `Loopback` field shows which loopbacks, if any, are in place—either line or internal.
  - The `Active Alarms` field displays any active alarms on the port. `Port facility` indicates an active line loopback, and `Port terminal` indicates an active internal loopback.
- The `show port perf-monitor` command displays the performance monitoring data for the WAN-PHY link.

```
[local]Redback#show port 12/1 detail
ethernet 12/1 state is Up
Description                :
Line state                  : Up
Admin state                 : Up
Link Dampening              : disabled
Undampened line state      : Up
Dampening Count            : 0
Encapsulation               : ethernet
MTU size                    : 1500 Bytes
MAC address                 : 00:30:88:13:31:a0
Physical layer              : wan-phy
Media type                  : 10000Base-SW
Flow control                : on
Speed                       : 10 Gbps
Duplex mode                 : full
Clock-Source                : local
Link Distance               : N/A
Loopback                    : none
Framing                     : SDH
Line SF BER                 : 10E-5
Line SD BER                 : 10E-9
XFP Transceiver Status
  Wavelength                 : 850.00 nm
  Diag Monitor               : Yes
  Tx Fault                   : No Fault
  Rx Fault                   : No Fault
  Tx Pwr measured[dbm]       : -1.60
  Rx Pwr measured[dbm]       : -10.79
  Temperature                : 33 C
Active Alarms                : NONE
Path Alarms                 : NONE
Tx path-trace               :
  45726963 73736f6e 20506174 68000000 Redback Path...
Rx path-trace               :
  45726963 73736f6e 20506174 68000000 Redback Path...
!
```

```
[local]Redback#show port counters 12/1 detail

Counters for port ethernet 12/1 - Interval: 00:00:11

PPA Port Counters
packets sent      : 133449940          bytes sent      : 8006996400
packets recvd    : 133452256          bytes recvd     : 8007135360
send packet rate : 0.00                    send bit rate   : 0.00
```



```
recv packet rate : 0.00          recv bit rate      : 0.00
IP mcast pkts rcv : 0           IP mcast bytes rcv : 0
IP mcast pkts sent : 0         IP mcast bytes sent : 0
rate refresh interval : 60 seconds

PPA Input Error Counters
idc other errors : 0           crc port errors   : 0
idc overrun errors : 0        idc abort errors  : 0
no cct packets : 0           no cct bytes      : 0
cct down pkts : 0           cct down bytes   : 0
unknown encap pkts : 0       unknown encap byte : 0
unreach pkts : 0           unreach bytes    : 0
media filter pkts : 0       media filter bytes : 0

PPA Output Error Counters
WRED drop pkts : 0           tail drop pkts   : 0
adj drop pkts : 0           adj drop bytes   : 0

Packet Drop Counters
not IPv4 drop pkts : 0       bad IP checksum  : 0
unhandled IP optns : 0       link layer bcast : 0
bad IP length : 0

Policing Counters
conform pkts : 0           conform bytes    : 0
conform drop pkts : 0       conform drop bytes : 0
exceed pkts : 0           exceed bytes    : 0
exceed drop pkts : 0       exceed drop bytes : 0
violate pkts : 0          violate bytes   : 0
violate drop pkts : 0       violate drop bytes : 0

General Counters
packets sent : 135335078     packets recvd    : 135335018
bytes sent : 8661444992     bytes recvd     : 8120101080
mcast pkts sent : 0         mcast pkts recvd : 0
bcast pkts sent : 0         bcast pkts recvd : 0
dropped pkts out : 0       dropped pkts in  : 0
pending pkts out : 0       pending pkts in  : 0
port drops out : 0         port drops in    : 0

Transmit Counters
underflow : 0           eth 64 octets    : 0
late collision : 0       eth 65-127 octs : 135335078
regular collision : 0     eth 128-255 octs : 0
single collision : 0     eth 256-511 octs : 0
multiple colls : 0       eth 512-1023 octs : 0
excessive colls : 0      eth 1024-1518 octs : 0
deferred : 0           eth > 1518 octs : 0
error pkts sent : 0       flow control     : 0
error bytes sent : 0

Receive Counters
jabber : 0           eth 64 octets    : 135335018
false carrier : 0      eth 65-127 octs : 0
runt frames : 0       eth 128-255 octs : 0
undersized frames : 0   eth 256-511 octs : 0
oversized frames : 0   eth 512-1023 octs : 0
crc errors : 0       eth 1024-1518 octs : 0
alignment errors : 0    eth > 1518 octs : 0
symbol errors : 0     flow control     : 0
error pkts rcvd : 0    overflows       : 0
error bytes rcvd : 0   overflow bytes   : 0

Packet-Over-Sonet physical layer statistics
Active Alarms : NONE

Sonet Section
  LOS : 1           LOF : 2           BIP-B1 : 0

Sonet Line
  AIS : 2           RDI : 1           BIP-B2 : 0
  FEBE : 0

Sonet Path
  AIS : 2           RDI : 1           BIP-B3 : 0
  FEBE : 0           LOP : 0
```



### 3.4.3 Insertion of WAN-PHY Line Loopback

In the following example, a line loopback is enabled and normal packet traffic cannot pass through the WAN-PHY port. A port fault is detected and the port shows an active line loopback.

The Active Alarms field shows a facility loopback is active, which is the same as a line loopback.

```
[local]Redback#config
Enter configuration commands, one per line, 'end' to exit
[local]Redback(config)#port ethernet 12/1 wan-phy
[local]Redback(config-port)#loopback line
[local]Redback(config-port)#end
Feb 10 17:13:37: %CSM-6-PORT: ethernet 12/1 link state DOWN, admin is UP
Feb 10 17:13:37: %CSM-6-PORT: ethernet 12/1 link state down, trigger source: [V] Port fault detected
!
!comment: A Port fault is reported when normal packet traffic cannot pass through the port.
!

[local]Redback#show port 12/1 detail
[local]Redback#show port 12/1 detail
ethernet 12/1 state is Down
Description                :
Line state                  : Down
Admin state                 : Up
Link Dampening              : disabled
Undampened line state      : Down
Dampening Count             : 0
Encapsulation               : ethernet
MTU size                    : 1500 Bytes
MAC address                 : 00:30:88:13:31:a0
Physical layer              : wan-phy
Media type                  : 10000Base-SW
Flow control                : on
Speed                       : 10 Gbps
Duplex mode                 : full
Clock-Source                : loop
Link Distance               : N/A
Loopback                   : line
Framing                     : SDH
Line SF BER                 : 10E-5
Line SD BER                 : 10E-9
XFP Transceiver Status
  Wavelength                : 850.00 nm
  Diag Monitor              : Yes
  Tx Fault                  : No Fault
  Rx Fault                  : No Fault
  Tx Pwr measured[dbm]      : -1.60
  Rx Pwr measured[dbm]      : -10.78
  Temperature               : 32 C
Active Alarms               : Port facility loopback enabled
Path Alarms                 : NONE
Tx path-trace               :
  45726963 73736f6e 20506174 68000000 Redback Path...
Rx path-trace               :
  52656462 61636b00 00000000 00000000 Redback.....
```