



## **PL-1000RO 3.3 INSTALLATION AND CONFIGURATION MANUAL**

*PL-1000RO 3.3 Installation and Configuration Manual*

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# 1 Introduction

This chapter provides an overview of the PL-1000RO.

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## 1.1 Overview

The PL-1000RO provides reconfigurable Optical Add-Drop Multiplexer (ROADM) functionality based on the wavelength-selective switch (WSS) technology.

ROADM based network architecture simplifies configuration and management of complex DWDM network infrastructure. PL-1000RO's ROADM solution offers flexible wavelength routing capabilities suitable for ring, linear add/drop, core and edge DWDM network topologies.

The PL-1000RO ROADM can be configured dynamically to add/drop selected wavelengths at any site in the network and seamlessly change the network node capacity as needed. In addition, it automatically maintains the equalization and power balance of the added and bypassed wavelengths. It can integrate Erbium Doped Fiber Amplifier (EDFA) modules for amplifying the wavelengths and delivering effective long distance DWDM solutions.

The PL-1000RO is a highly integrated device that can incorporate a DWDM MUX/DEMUX module in addition to the EDFA modules.

The PL-1000RO is fully interoperable with PacketLight's family of products.

### 1.1.1 Main Features

The PL-1000RO combines the following key functionalities:

- Flexible wavelengths add/drop
- Variable optical attenuator (VOA) for optical power equalization
- 44 DWDM C-Band channels with 100 GHz spacing or 88 DWDM C-Band channels with 50 GHz spacing
- Manual or automatic channel equalization
- Supports 40 Gbps and 100 Gbps signal rates
- Supports linear add/drop and ring topologies
- Two 100M management ports based on SFP optics for local or remote management using an Optical Supervisory Channel (OSC)
- Automatic Laser Shutdown (ALS) on management ports

- Optional one or two Booster and/or Pre-Amp EDFA modules for optical power amplification
- Optional MUX/DEMUX module
- The following management protocols are available for configuration, monitoring, and provisioning:
  - CLI over a serial or Telnet/SSH connection
  - Web-based HTTP/HTTPS management
  - SNMP management interface
  - Remote Authentication Dial In User Service (Radius) protocol for centralized remote user authentication
  - Syslog protocol
  - Simple Network Time Protocol (SNTP) for network timing
  - TFTP and FTP for file transfer
  - Rapid Spanning Tree Protocol (RSTP)
- Supports Operations, Administration, and Maintenance (OAM) functions:
  - Alarm and Event fault management
  - Optical channel monitoring (OCM) for all channels
  - Performance monitoring (PM)
  - External alarms
- Pluggable FAN unit
- AC and DC, single or dual pluggable power supply units (PSUs)

### 1.1.2 Typical Application

The PL-1000RO can be managed using Command Line Interface (CLI) over a serial or Telnet/Secure Shell (SSH) connection, Web management over HTTP/HTTPS, or SNMP.

As with other PacketLight devices, the PL-1000RO can be managed with PacketLight's LightWatch™ NMS/EMS (network management system). For information about LightWatch, see the *LightWatch Getting Started Guide*.

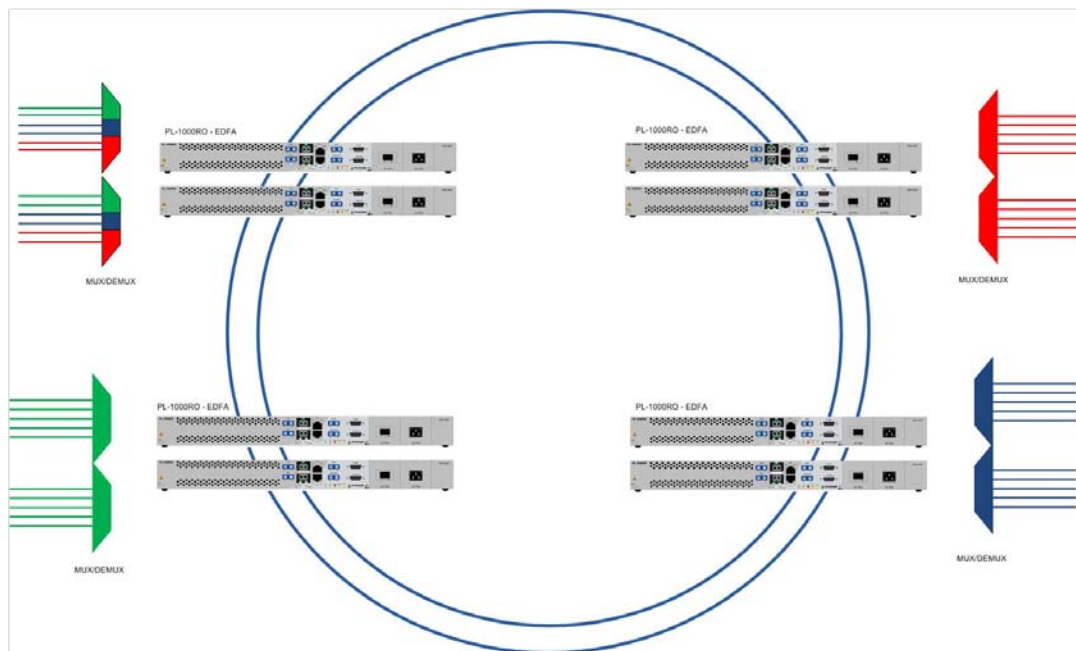
The PL-1000RO can be used to:

- Expand existing fiber capacity regardless of service type
- Build scalable, high-capacity, pay-as-you-grow optical networks
- Converge existing networks and new services over existing infrastructure
- Provide a fully optical layer solution, transparent to service rate and type
- Build cost-effective add and drop networks



- Integrate with third-party DWDM optical solutions and colored optics
- Typically the PL-1000RO may be used in a ring or linear add/drop topology.

The following figure illustrates a ring with four sites connected with PL-1000RO devices.



**Figure 1: Typical Application for PL-1000RO Devices**

### 1.1.2.1 Example Application

The following figure illustrates a typical application that shows four sites connected in a DWDM ring of six wavelengths. Each site has two PL-1000RO units, one PL-300 device, and two PL-1000 devices. Using the PL-1000RO node, the user is able to dynamically change the route of the 10G services between the PL-1000 devices by defining the provisioning of add/drop and express channels in each site.

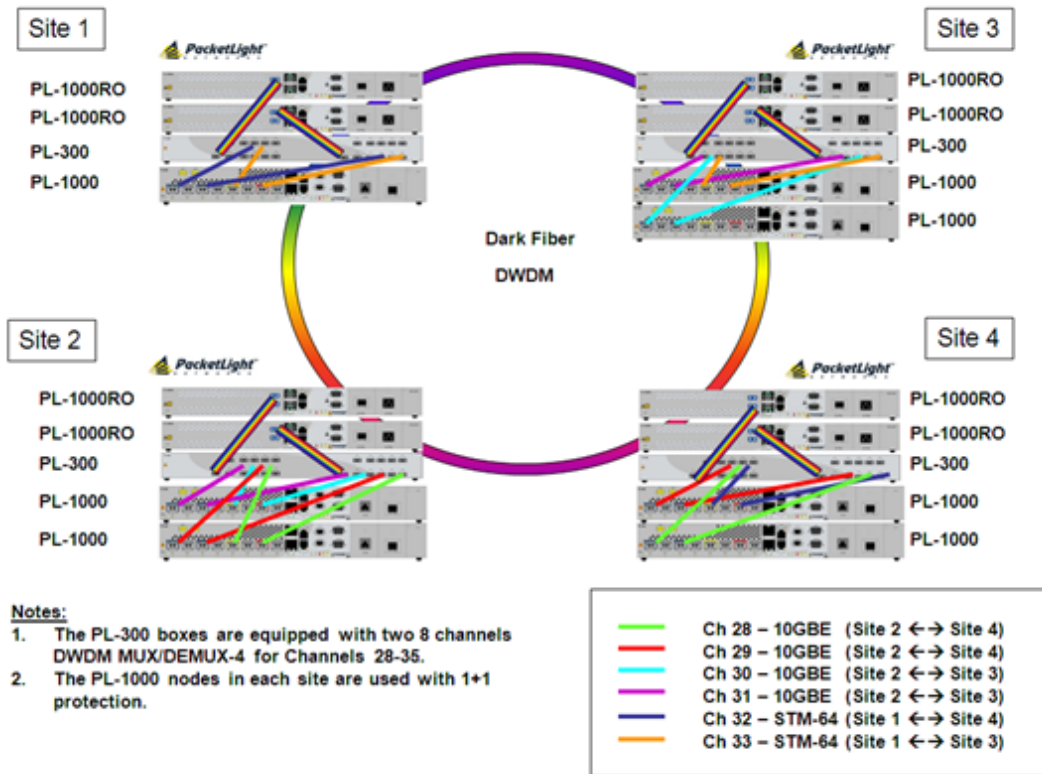


Figure 2: Example Application

### 1.1.3 Physical Description

The PL-1000RO is a compact unit intended for installation in a 19-inch or 23-inch rack or placed on a desktop or shelf.

The PL-1000RO unit is a 19-inch/1U ETSI compliant unit with single or dual field-replaceable AC and/or DC power supplies and a pluggable FAN unit.



Figure 3: PL-1000RO Unit without MUX/DEMUX

All connections are made to the front panel. The PL-1000RO front panel also includes indicator LEDs that show its operating status.

The following figure shows the function of the connectors on the front panel.

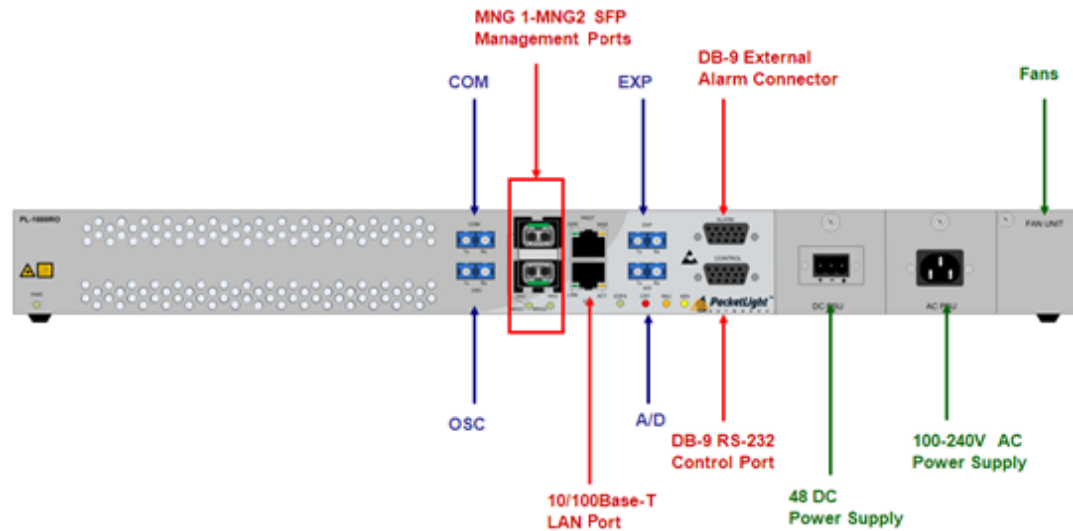


Figure 4: PL-1000RO Front Panel without MUX/DEMUX

## 1.2 PL-1000RO Configurations

This section describes some of the available configurations of the PL-1000RO.

### 1.2.1 MUX/DEMUX Module Configurations

The PL-1000RO has two basic configurations:

- Without a MUX/DEMUX module
- With a MUX/DEMUX module

### 1.2.1.1 PL-1000RO without MUX/DEMUX

The following figure shows the front panel of the PL-1000RO without a MUX/DEMUX module.

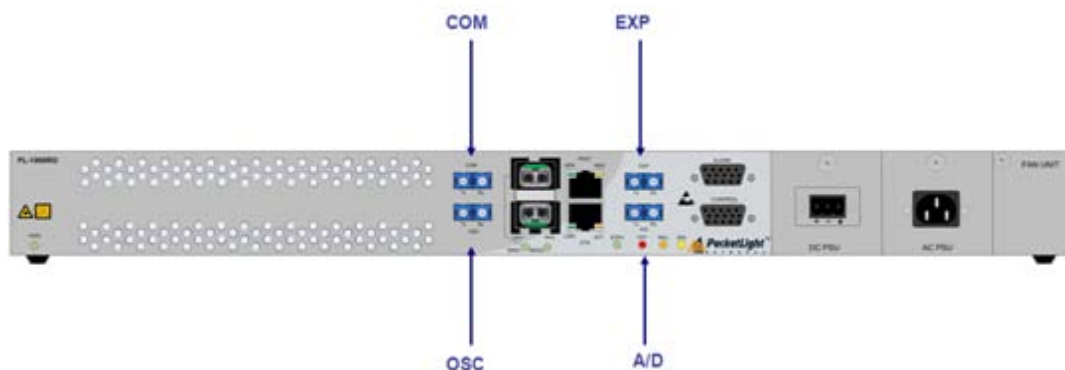


Figure 5: PL-1000RO Data Ports without MUX/DEMUX

#### 1.2.1.1.1 Data Ports without MUX/DEMUX

The following are the data ports of a PL-1000RO without a MUX/DEMUX module:

- **COM:** The common network port connected to the line.
- **EXP:** The express channels.
- **A/D:** The add/drop channels.
- **OSC:** The optical supervisory channel.

### 1.2.1.1.2 Ring Connectivity without MUX/DEMUX

The following figure shows an example of two PL-1000RO nodes without MUX/DEMUX modules in a ring.

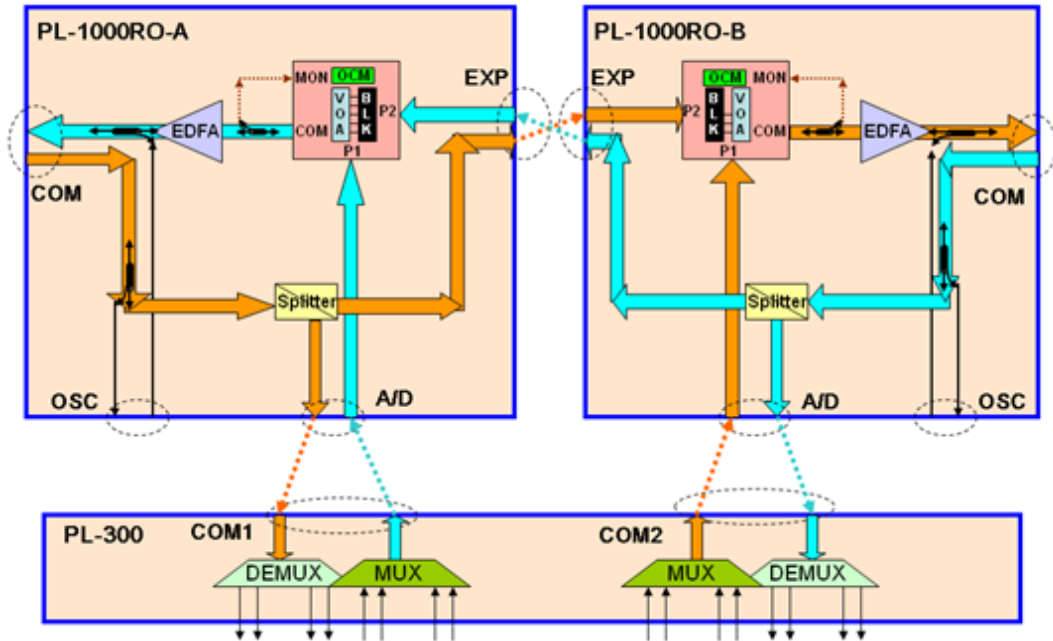


Figure 6: PL-1000RO without MUX/DEMUX inside a Ring (Example)

### 1.2.1.2 PL-1000RO with MUX/DEMUX

The following figure shows the front panel of the PL-1000RO with a MUX/DEMUX module.

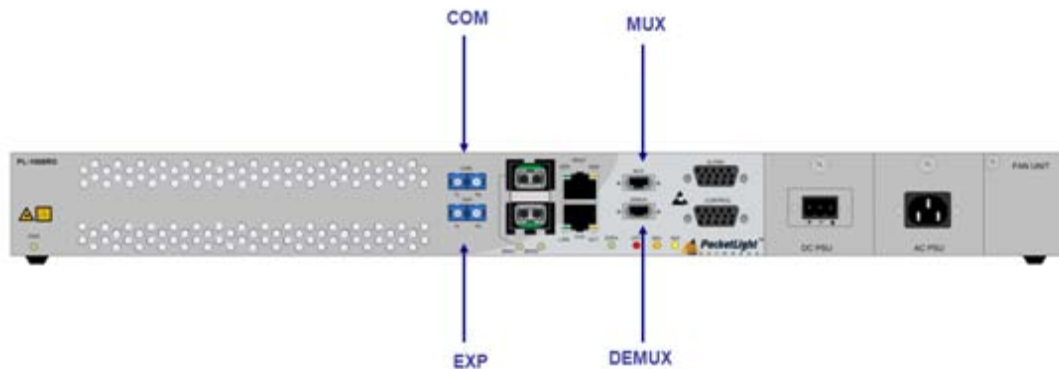


Figure 7: PL-1000RO Data Ports with MUX/DEMUX

#### 1.2.1.2.1 Data Ports with MUX/DEMUX

The following are the data ports of a PL-1000RO with a MUX/DEMUX module:

- **COM:** The common network port connected to the line.
- **EXP:** The express channels.
- **MUX:** The input to the MUX/DEMUX module.
- **DEMUX:** The output of the MUX/DEMUX module.

### 1.2.1.2.2 Ring Connectivity with MUX/DEMUX

The following figure shows an example of two PL-1000RO nodes with MUX/DEMUX modules in a ring.

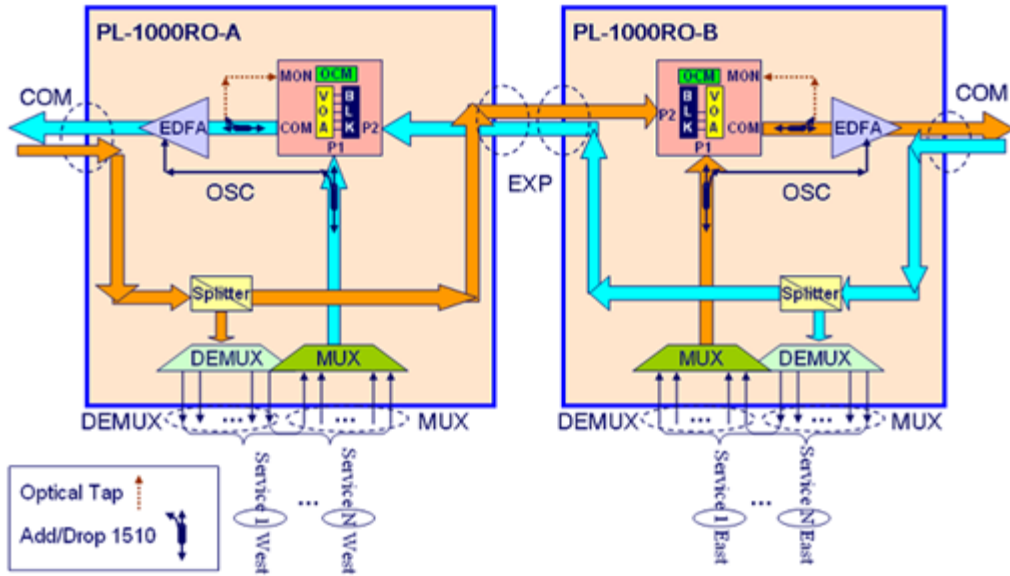


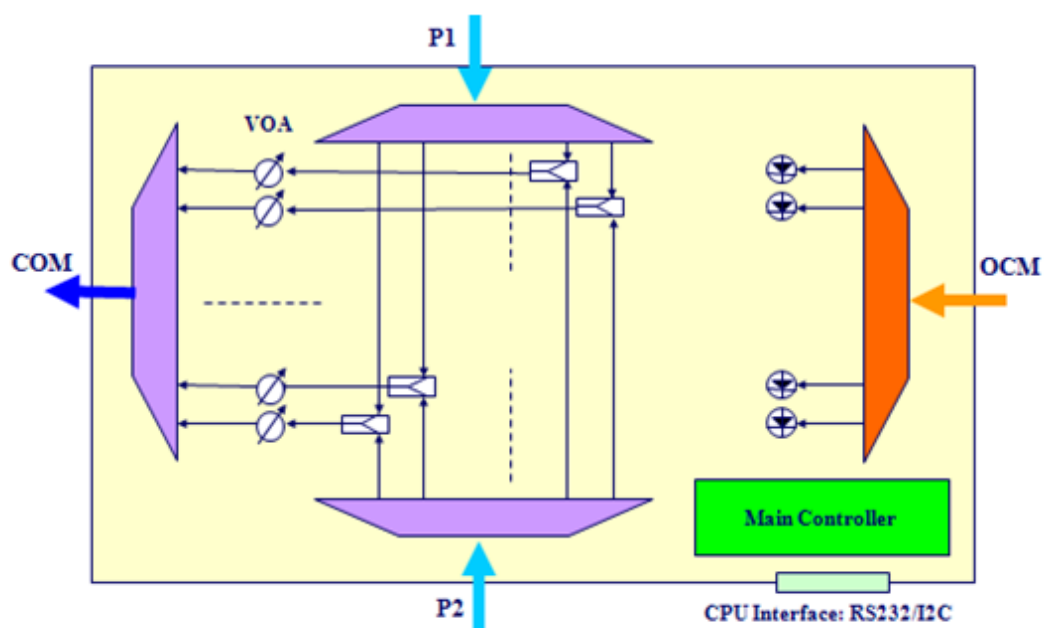
Figure 8: PL-1000RO with MUX/DEMUX inside a Ring (Example)

## 1.2.2 WSS Module Configurations

The WSS can be ordered with 100 GHz or with 50 GHz spacing. When ordered with 100 GHz, there are 44 available channels. When ordered with 50 GHz, there are 88 available channels.

### 1.2.2.1 WSS Module

The PL-1000RO uses a WSS module based on WSS 1x2 architecture.



**Figure 9: WSS Architecture**

The following are the WSS components as shown in the figure above:

- **P1 and P2 ports:** These ports are connected to the input DWDM signals, each containing multiple optical channels.
- **WSS optical switch:** Selects the source of each channel from one of the following:
  - P1 port
  - P2 port
  - None
- **VOA:** Used for equalizing the power of the outgoing optical channels.
- **COM port:** Outputs the DWDM signal composed of the selected equalized channels.
- **OCM:** Used for monitoring the power of the equalized optical channels.

### 1.2.3 EDFA Module Configurations

The PL-1000RO can be ordered with two, one, or no EDFA modules. Each EDFA can be a Booster or Pre-Amp.

#### 1.2.3.1 EDFA Modules

The PL-1000RO can be ordered with one or two optional EDFA modules that are used to amplify the optical power of the DWDM signal. The EDFA modules can be used as a Booster and/or Pre-Amp.

- **Booster EDFA:** It is used on the Tx optical path. It can be connected externally to the front panel LC adapter if the MUX is not installed in the PL-1000RO or internally between the output fiber of the MUX and the COM port on the front panel.
- **Pre-Amp EDFA:** It is used on the Rx optical path. It can be connected externally to the front panel LC adapter if the DEMUX is not installed in the PL-1000RO or internally between the COM port on the front panel and the input fiber of the DEMUX.

## 1.2.4 Power Supply Unit Configurations

PL-1000RO is available with AC and DC power supplies:

- **AC:** 100 to 240 VAC, 50/60 Hz, 1.5A maximum
- **DC:** -48 VDC, 3A maximum

The maximum power consumption of the PL-1000RO is 60W.

The PL-1000RO may be ordered with one or two AC and/or DC power supply units. The power supplies are redundant and replaceable without causing traffic interference.

**NOTE:** Both AC and DC PSUs can be used in the same unit.

The unit does not have a power ON/OFF switch, and therefore starts operating as soon as the power is connected.

## 1.2.5 FAN Unit Configuration

The PL-1000RO is available with a pluggable and replaceable FAN unit. The air intake vents are located on the right side. The FAN unit has an automatic speed control mechanism that supports lower noise, improved MTBF and power saving.

Air intake vents should be clear of obstruction.

## 1.3 PL-1000RO Management

This section describes the PL-1000RO management.



### 1.3.1 Management Ports

This section describes the PL-1000RO management ports.

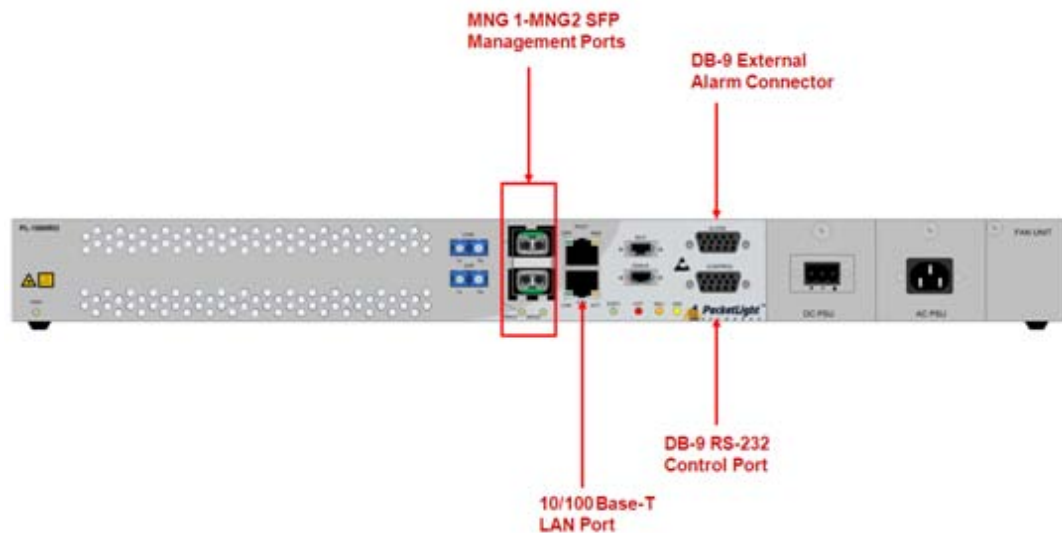


Figure 10: PL-1000RO Management Ports

#### 1.3.1.1 CONTROL Port

The RS-232 asynchronous supervisory port has a DCE interface that supports a data rate of 9600 bps.

Initial configuration of the PL-1000RO is performed using the CLI management interface from any ASCII terminal (dumb terminal or personal computer (PC) running a terminal emulation program) directly connected to the PL-1000RO serial CONTROL connector.

After the initial configuration, the PL-1000RO may be managed, supervised, and configured by a Web browser or an SNMP network management system.

For more information, see [Connection Data](#) (p. 179).

#### 1.3.1.2 ETH Port

The PL-1000RO can be accessed through the Ethernet 10/100 Base-T LAN port for local management.

For more information, see [Connection Data](#) (p. 179).

#### 1.3.1.3 MNG Ports

The PL-1000RO is equipped with two SFP based MNG ports labeled "MNG 1" and "MNG 2". These ports enable remote management of a PL-1000RO unit or local cascading in a multi-chassis application.

This management channel may be multiplexed as an extra OSC wavelength by the optical add/drop multiplexer. The PL-1000RO supports two OSCs for multi-chassis application and for remote management with facility protection.

The facility protection is for the management network when the two management ports are active and there is more than one management route between the nodes. In point-to-point topology without protection, only one OSC port is needed on each side (it can be either of the two). For a protected point-to-point or ring topology, both OSC ports should be used.

The PL-1000RO uses the standard Rapid Spanning Tree Protocol (RSTP) protocol to uniquely determine the route for the management traffic between the nodes, and to dynamically change the management route should a facility failure occur.

For more information, see [Connection Data](#) (p. 179).

#### 1.3.1.4 ALARM Port

The PL-1000RO has an ALARM (or External Alarm) port for the environmental alarm. This port supports one input and one output.

For more information, see [Connection Data](#) (p. 179).

### 1.3.2 Management Functionality

The PL-1000RO management functionality includes:

- Viewing fault alarms and events
- Configuring and viewing device parameters
- User access control with user and password authentication
- Monitoring status
- Viewing performance monitoring statistics
- Maintenance operations such as software upgrade and system restart
- Viewing the network topology

### 1.3.3 Management Protocols

This section describes the main management protocols supported by PL-1000RO.

#### 1.3.3.1 CLI Management

For initial IP configuration and several other management tasks, the PL-1000RO supports CLI ASCII management. CLI management is accessible via the CONTROL serial port or Telnet/SSH connection.

For more information, see [CLI](#) (p. 165).

### 1.3.3.2 Web-based Management

The PL-1000RO supervision and configuration functions can be performed using a standard Web browser. The Web management can be used with HTTP or HTTPS (Secured HTTP).

For detailed information on Web-based management, see [Configuration Management](#) (p. 91).

### 1.3.3.3 SNMP Management

PL-1000RO devices can also be managed by PacketLight’s LightWatch™ NMS/EMS, by RADview™, or by other third-party SNMP-based management systems.

For more information about available PL-1000RO MIBs and LightWatch™, contact PacketLight Technical Support.

## 1.4 Technical Specifications

This section lists the general and WSS technical specifications.

### 1.4.1 General Specifications

**Table 1: General Specifications**

<b>MUX/DEMUX</b>	Number of Modules	0 or 1
	Channels	4 or 8
	Wavelength	DWDM ITU G.694.1 Channels 15 to 60 C-Band
	Express Channel	1511 +/-6.5 nm
	Link Loss (MUX+DEMUX)	< 6 dB
	Spacing	100 GHz
	Express Channel Link Loss	< 1.5 dB
<b>Optical Amplifier (EDFA)</b>	Number of Modules	0, 1, or 2
	Output Power	<ul style="list-style-type: none"> <li>● <b>Booster:</b> 14 dBm, 17 dBm, 20 dBm, 23 dBm</li> <li>● <b>Pre-Amp:</b> +5 dBm</li> </ul>
	Optical Gain	<ul style="list-style-type: none"> <li>● <b>Booster:</b> +10 to +22 dB</li> <li>● <b>Pre-Amp:</b> +18 db</li> </ul>
	Input Power	<ul style="list-style-type: none"> <li>● <b>Booster:</b> -24 to +16 dBm</li> <li>● <b>Pre-Amp:</b> -36 to -15 dBm</li> </ul>
	AGC	Keeps the amplifier gain fixed without dependency when adding or removing services.

	APC	Keeps the amplifier output power fixed without dependency when adding or removing services.
	Eye Safety	Automatic laser power reduction upon fiber cut or disconnection.
<b>Supervisory and Management Ports</b>	CONTROL Port	Used for initial configuration of the node IP or for local access to CLI. <ul style="list-style-type: none"> <li>• <b>Interface:</b> RS-232</li> <li>• <b>Connector:</b> 9-pin D-type, female</li> <li>• <b>Format:</b> asynchronous</li> <li>• <b>Baud rate:</b> 9600 bps</li> <li>• <b>Word format:</b> 8 bits, no parity, 1 stop bit, and 1 start bit</li> <li>• <b>Flow control:</b> None</li> </ul>
	ETH Port	Management LAN port for local out-of-band access. <ul style="list-style-type: none"> <li>• <b>Interface:</b> 10/100 Base-T</li> <li>• <b>Connector:</b> RJ-45</li> </ul> <b>NOTE:</b> Initial IP configuration can be done via RS-232.
	MNG1 and MNG2 Ports	2 Optical management ports <ul style="list-style-type: none"> <li>• <b>Interface:</b> 100 Base-FX</li> <li>• <b>Connector:</b> SFP transceiver</li> <li>• <b>Single mode:</b> <ul style="list-style-type: none"> <li>▪ <b>CWDM:</b> 1290 nm or 1310 nm</li> <li>▪ <b>DWDM:</b> 1490 nm or 1510 nm</li> </ul> </li> <li>• <b>Multi-mode:</b> 850 nm</li> </ul> <b>NOTE:</b> IP of the MNG port can be configured using the Web application.
<b>Data Ports</b>	COM, EXP, Add/Drop (A/D), and OSC Ports	4 Duplex LC connectors <ul style="list-style-type: none"> <li>• <b>Fiber type:</b> Single mode</li> <li>• <b>Fiber size:</b> 2 mm optical</li> <li>• <b>Connector type:</b> LC with or without protective shutters</li> <li>• <b>Port type:</b> Optical data port</li> </ul>
<b>Environment</b>	ALARM Port	Used for external office alarms. <ul style="list-style-type: none"> <li>• <b>Connector:</b> DB-9, female</li> <li>• <b>Environmental:</b> 1 input and 1 output</li> </ul>
<b>System LEDs</b>	PWR	<ul style="list-style-type: none"> <li>• <b>Green blinking:</b> Power-up stage</li> <li>• <b>Green:</b> Normal operation</li> </ul>
	CRT	<ul style="list-style-type: none"> <li>• <b>OFF:</b> No Critical alarm detected</li> <li>• <b>Red:</b> Critical alarm detected</li> </ul>
	MAJ	<ul style="list-style-type: none"> <li>• <b>OFF:</b> No Major alarm detected</li> <li>• <b>Red:</b> Major alarm detected</li> </ul>

	MIN	<ul style="list-style-type: none"> <li>• <b>OFF</b>: No Minor alarm detected</li> <li>• <b>Red</b>: Minor alarm detected</li> </ul>
<b>WSS LEDs</b>	WSS	<ul style="list-style-type: none"> <li>• <b>Green</b>: Normal operation</li> <li>• <b>Red</b>: Alarm detected</li> </ul>
<b>MNG Port LEDs</b>	MNG1 and MNG2	<ul style="list-style-type: none"> <li>• <b>OFF</b>: Admin Down</li> <li>• <b>Green</b>: Normal operation</li> <li>• <b>Red</b>: Alarm detected</li> </ul>
<b>Amplifier LEDs</b>	E1 and E2	<ul style="list-style-type: none"> <li>• <b>OFF</b>: Admin Down or EDFA module is not installed</li> <li>• <b>Green</b>: The corresponding amplifier is operational</li> <li>• <b>Red</b>: EDFA failure detected</li> </ul>
<b>PROT Port LEDs</b>	OPR	Unused
	MASTER	Unused
<b>ETH Port LEDs</b>	LINK	<ul style="list-style-type: none"> <li>• <b>Green</b>: Normal operation</li> <li>• <b>OFF</b>: Port is disconnected</li> </ul>
	ACT	<ul style="list-style-type: none"> <li>• <b>Yellow blinking</b>: Transmit and/or receive activity detected on the port</li> </ul>
<b>PSU LEDs</b>	PWR	<ul style="list-style-type: none"> <li>• <b>Green</b>: Normal operation</li> <li>• <b>Red</b>: PSU failure detected</li> <li>• <b>OFF</b>: PSU is not installed</li> </ul>
<b>Network Management</b>	Protocols	<ul style="list-style-type: none"> <li>• CLI over RS-232 or Telnet/SSH</li> <li>• Web-based HTTP/HTTPS management</li> <li>• SNMPv2c</li> <li>• Radius</li> <li>• Syslog</li> <li>• SNTP</li> <li>• TFTP and FTP for file transfer</li> <li>• RSTP</li> </ul>
	Alarms	Current alarms are available. Each alarm is time stamped.
	Event Messages	Last 512 events and audit messages are available. Each message is time stamped.
	Log File	The events and audit messages are stored in the PL-1000RO system log files, which can be exported to a text file for offline viewing.
<b>ALS</b>	Optical Ports	ALS is available for the MNG ports.
<b>Power Supply</b>	Number of Units	1 or 2
	Redundancy	Single or dual feeding, pluggable
	AC Source	100 to 240 VAC, 50/60 Hz, 1.5A maximum
	DC Source	-48 VDC 3A maximum
	Power Consumption	60W maximum

	Protective Earthing Conductor	18 AWG minimum
<b>Fans</b>	Maintenance	Replaceable and hot pluggable
	Flow	1.14 cubic meter/minute (4 fans 0.286 m <sup>3</sup> /min each)
<b>Physical Dimensions</b>	Height	44 mm/1.733" (1U)
	Width	440 mm/17.32"
	Depth	230 mm/9.05"
	Weight	8 kg/17.6 lbs maximum
	Mounting Options	19", 23", ETSI rack mountable
<b>Environment</b>	Normal Operating Temperature	0°C to +45°C/+32°F to +113°F
	Storage Temperature	-25°C to +55°C/-13°F to +131°F
	Normal Operating Humidity	5% to 85% RH non-condensing
	Storage Humidity	Up to 95% RH
<b>EMC</b>	Standards	<ul style="list-style-type: none"> <li>• ETSI EN 300 386</li> <li>• ETSI EN 55024</li> <li>• ETSI EN 55022</li> <li>• IEC/EN 61000-3-2</li> <li>• IEC/EN 61000-3-3</li> <li>• IEC/EN 61000-4-2</li> <li>• IEC/EN 61000-4-3</li> <li>• IEC/EN 61000-4-4</li> <li>• IEC/EN 61000-4-5</li> <li>• IEC/EN 61000-4-6</li> <li>• IEC/EN 61000-4-11</li> <li>• AS/NZS CISPR 22</li> <li>• FCC Class A CFR 47 Part 15 Subpart B</li> <li>• Industry Canada ICES-003:04; C108.8-M1983</li> <li>• VCCI Technical Requirements, V-3/2001.04</li> <li>• ETSI EN 300 132-2</li> <li>• GR-1089-CORE, Issue 4</li> </ul>
<b>Safety</b>	Standards	<ul style="list-style-type: none"> <li>• IEC/EN 60825-1</li> <li>• IEC/EN 60825-2</li> <li>• IEC/EN/UL 60950-1</li> <li>• Telcordia SR-332, Issue 2</li> <li>• RoHS 5/6</li> </ul>

## 1.4.2 WSS Specifications

**Table 2: WSS Specifications**

Insertion Loss	All Ports	6.5 dB (maximum)
Loss Uniformity	All Ports	1.5 dB (maximum)
WDL	All Ports	1.2 dB (maximum)
PDL	All Ports	0.5 dB to 1.0 dB
Channel Range		191.3 THz to 196.0 THz, Full C-Band, 1529.55 nm to 1567.13 nm
Channel Count	44 Channels	100 GHz spacing, ITU grid, Channels 17 to 60 (increments of 1.0)
	88 Channels	50 GHz spacing, ITU grid, Channels 17 to 60.5 (increments of 0.5)
-0.5 dB Passband		±20 GHz, Centered on ITU grid
-3.0 dB Passband		±25 GHz, centered on ITU grid
-30 dB Stopband		±15 GHz, centered on ITU grid
Chromatic Dispersion		-10 ps/nm to +10 ps/nm, In passband, both express and drop
PMD		-0.2 ps/nm to +0.2 ps/nm, In passband
Switch Speed		0.001 ms to 100 ms
VOA Range		0 dB to 15 dB
VOA Error		0.5 dB to 1 dB
Optical Power Limit	1 Channel	20 dB (maximum), In passband
Optical Power Limit	All Channels	27 dB Entire input spectrum





## 2 Installation

This chapter provides installation information and instructions for the PL-1000RO.

### In this Chapter

Safety Precautions .....	19
Site Requirements .....	21
Installing the PL-1000RO Unit .....	22

## 2.1 Safety Precautions


This section describes the safety precautions.

### 2.1.1 General Safety Precautions


The following are the general safety precautions:

- The equipment should be used in a restricted access location only.
- No internal settings, adjustments, maintenance, and repairs may be performed by the operator or the user; such activities may be performed only by skilled service personnel who are aware of the hazards involved.
- Always observe standard safety precautions during installation, operation, and maintenance of this product.

### 2.1.2 Electrical Safety Precautions

 **WARNING:** Dangerous voltages may be present on the cables connected to the PL-1000RO:

- Never connect cables to a PL-1000RO unit if it is not properly installed and grounded.
- Disconnect the power cable before removing a pluggable power supply unit.

 **GROUNDING:** For your protection and to prevent possible damage to equipment when a fault condition occurs on the cables connected to the equipment (for example, a lightning stroke or contact with high voltage power lines), the case of the PL-1000RO unit must be properly grounded at all times. Any interruption of the protective (grounding) connection inside or outside the equipment, or the disconnection of the protective ground terminal, can make this equipment dangerous. Intentional interruption is prohibited.

Before connecting any cables, the protective ground terminal of the PL-1000RO must be connected to a protective ground (see [Connection Data](#) (p. 179)).

The grounding connection is also made through the power cable, which must be inserted in a power socket (outlet) with protective ground contact. Therefore, the power cable plug must always be inserted in a socket outlet provided with a protective ground contact, and the protective action must not be negated by use of an extension cord (power cable) without a protective conductor (grounding).

Whenever PL-1000RO units are installed in a rack, make sure that the rack is properly grounded and connected to a reliable, low resistance grounding system.

### 2.1.2.1 Laser Safety Classification

PL-1000RO units equipped with laser devices comply with laser product performance standards set by government agencies for Class 3B laser products.

According to IEC EN60825-2 standard, the following warning applies to Class 3B laser products.

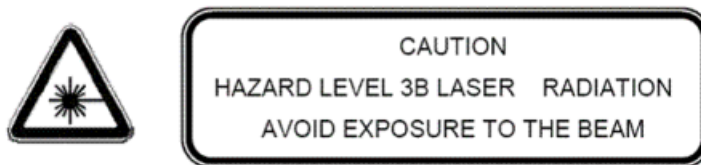


Figure 11: Class 3B Laser Warning

PL-1000RO units are shipped with protective covers installed on all the optical connectors. Do not remove these covers until you are ready to connect optical cables to the connectors. Keep the covers for reuse, to reinstall the cover over the optical connector as soon as the optical cable is disconnected.

### 2.1.2.2 Laser Safety Statutory Warning and Operating Precautions

All personnel involved in equipment installation, operation, and maintenance must be aware that the laser radiation is invisible. Therefore, the personnel must strictly observe the applicable safety precautions and, in particular, must avoid looking straight into optical connectors, either directly or using optical instruments.

In addition to the general precautions described in this section, be sure to observe the following warnings when operating a product equipped with a laser device. Failure to observe these warnings could result in fire, bodily injury, and damage to the equipment.




**WARNING:** To reduce the risk of exposure to hazardous radiation:

- Do not try to open the enclosure. There are no user serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only authorized service technicians to repair the unit.

### 2.1.3 Protection against Electrostatic Discharge

An electrostatic discharge (ESD) occurs between two objects when an object carrying static electrical charges touches or is brought near the other object. Static electrical charges appear as a result of friction between surfaces of insulating materials or separation of two such surfaces. They may also be induced by electrical fields.

Routine activities, such as walking across an insulating floor, friction between garment parts, and friction between objects, can easily build charges up to levels that may cause damage, especially when humidity is low.

 **CAUTION:** PL-1000RO internal boards contain components sensitive to ESD. To prevent ESD damage, do not touch internal components or connectors. If you are not using a wrist strap, before touching a PL-1000RO unit or performing any internal settings on the PL-1000RO, it is recommended to discharge the electrostatic charge of your body by touching the frame of a grounded equipment unit.

Whenever feasible during installation, use standard ESD protection wrist straps to discharge electrostatic charges. It is also recommended to use garments and packaging made of anti-static materials, or materials that have high resistance, yet are not insulators.

## 2.2 Site Requirements

This section describes the PL-1000RO site requirements.

### 2.2.1 Physical Requirements

The PL-1000RO units are intended for installation in 19-inch or 23-inch racks or placed on desktops or shelves.

All the connections are made to the front panel.

### 2.2.2 Power Requirements


AC-powered PL-1000RO units should be installed within 1.5m (5 feet) of an easily accessible, grounded AC outlet capable of furnishing the required AC supply voltage, of 100 to 240 VAC, 50/60 Hz, and 1.5A maximum.

DC-powered PL-1000RO units require a -48 VDC, 3A maximum DC power source with the positive terminal grounded. In addition, the DC power connector contains the chassis (frame) ground terminal (see [Power Connectors](#) (p. 184)).

### 2.2.3 Ambient Requirements

The recommended ambient operating temperature of the PL-1000RO is 0° to +45°C/+32° to +113°F, at a relative humidity of 5% to 85%, non-condensing.

The PL-1000RO is cooled by free air convection and a pluggable cooling FAN unit. The air intake vents are located on the right side.

 **CAUTION:** Do not obstruct these vents.

The PL-1000RO contains a fan speed control for lower noise, improved MTBF and power save.

## 2.2.4 Electromagnetic Compatibility Considerations


The PL-1000RO is designed to comply with the electromagnetic compatibility (EMC) requirements of Sub Part J of FCC Rules, Part 15, for Class A electronic equipment and additional applicable standards.

To meet these standards, the following conditions are necessary:

- The PL-1000RO must be connected to a low resistance grounding system.
- Whenever feasible, shielded cables must be used.

## 2.3 Installing the PL-1000RO Unit

PL-1000RO units are intended for installation in 19-inch or 23-inch racks or placed on desktops or shelves.

 **CAUTION:** Before installing a PL-1000RO unit, review the [Safety Precautions](#) (p. 19).

After installing the system, it is necessary to configure it in accordance with the specific user's requirements. The preliminary system configuration is performed through a supervision terminal directly connected to the PL-1000RO (for procedures for using the terminal, see [Operation and Preliminary Configuration](#) (p. 29)). The software necessary for using the terminal is stored in the PL-1000RO.

### 2.3.1 Package Contents

The PL-1000RO package includes the following items:

- PL-1000RO unit
- Ethernet cable
- 3m RS-232 terminal cable
- Power cords (according to the ordered power supplies)
  - **AC power:** 3m power cord equipped with the appropriate plug
  - **DC power:** DC power cord
- Fiber tray (if ordered)
- Kit for rack installation: 19", 23" (if ordered), or 600 mm ETSI (if ordered)

## 2.3.2 Required Equipment

The cables needed to connect to the PL-1000RO depend on the PL-1000RO application. You can use standard cables or prepare the appropriate cables yourself (see [Connection Data](#) (p. 179)).

## 2.3.3 Cable Connections


Before starting, refer to the site installation plan and identify the cables intended for connection to this PL-1000RO unit (see [Site Requirements](#) (p. 21) and [Connection Data](#) (p. 179)).

### 2.3.3.1 Optical Cable Handling Precautions

The following are the optical cable handling precautions:


- Make sure that all the optical connectors are closed at all times, either by the appropriate protective caps or by the mating cable connector. Do not remove the protective cap until an optical fiber is connected to the corresponding connector, and immediately install a protective cap after a cable is disconnected.
- (Recommended) Before installing optical cables, thoroughly clean their connectors using an approved cleaning kit.
- When connecting optical cables, make sure to prevent cable twisting and avoid sharp bends. Unless otherwise specified by the optical cable manufacturer, the minimum fiber bending radius is 35 mm. Always leave some slack, to prevent stress.
- (Recommended) Install plastic supports on each cable connector. These supports determine the fiber bending radius at the connector entry point and also prevent stress at this point.

### 2.3.3.2 Connecting the PL-1000RO to Ground and Power


 **WARNING:** Any interruption of the protective (grounding) conductor (inside or outside the device) or disconnecting the protective earth terminal can make the device dangerous. Intentional interruption is prohibited.

 **GROUNDING:**

- The PL-1000RO protective ground terminals must be connected to protective ground before power is applied and before connecting any other cable. This connection is made through the AC or DC power cable.
- The power cord plug should only be inserted in an outlet provided with a protective ground (earth) contact. The protective action must not be negated by using an extension cord (power cable) without a protective conductor (grounding).

 **WARNING:** Dangerous voltages may be present on the cables connected to the PL-1000RO:

- Never connect cables to a PL-1000RO unit if it is not properly installed and grounded. This means that its power cable must be inserted in an outlet provided with a protective ground (earth) contact before connecting any user or network cable to the PL-1000RO.
- Disconnect all the cables connected to the connectors of the PL-1000RO before disconnecting the PL-1000RO power cable.

 **CAUTION:** The PL-1000RO does not have a power ON/OFF switch, and therefore it starts operating as soon as power is applied. To control the connection of power to the PL-1000RO, it is recommended to use an external power ON/OFF switch that disconnects all poles simultaneously. For example, the circuit breaker used to protect the supply line to the PL-1000RO may also serve as the ON/OFF switch. This type of circuit breaker should be rated 10A.

Power should be supplied to the PL-1000RO through a power cable terminated in an appropriate plug, in accordance with the required power source.

**To connect the PL-1000RO to ground and power:**

1. Connect one end of the power cable to each PL-1000RO power connector.
2. When ready to apply power, insert the plug at the other end of the power cable into a socket (outlet) with a protective ground contact.

The **PWR** LED of the PL-1000RO lights up and starts blinking.

### 2.3.3.3 Cabling the Management Ports

You can cable the following management ports:

- MNG port
- CONTROL port
- ETH port

#### 2.3.3.3.1 Cabling the CONTROL Port

**To cable the CONTROL port:**

- Connect the local console to the 9-pin CONTROL port using a straight cable (a cable wired point-to-point).

For specific information regarding pin allocations in the PL-1000RO connectors, see [Connection Data](#) (p. 179).

#### 2.3.3.3.2 Cabling the ETH Port

**To cable the ETH port:**

- Connect the 10/100 Base-T ETH port to the local LAN using a cable with an RJ-45 connector.

For specific information regarding pin allocations in the PL-1000RO connectors, see [Connection Data](#) (p. 179).

### 2.3.3.3.3 Cabling the MNG Port

#### To cable the MNG port for a PL-1000RO without a MUX/DEMUX module:

1. Connect one of the MNG ports to the PL-1000RO OSC connector.  
This connection allows management of the local PL-1000RO by a remote PL-1000RO connected to the ring.
2. Connect the other MNG port to the MNG port of one of the neighbor PacketLight nodes located in the same site.  
This connection allows management connectivity to the other local PacketLight nodes.

#### To cable the MNG port for a PL-1000RO with a MUX/DEMUX module:

1. Connect one of the MNG ports to the MUX/DEMUX fiber labeled "OSC".  
This connection allows management of the local PL-1000RO by a remote PL-1000RO connected to the ring.
2. Connect the other MNG port to the MNG port of one of the neighbor PacketLight nodes located in the same site.  
This connection allows management connectivity to the other local PacketLight nodes.

### 2.3.3.4 Cabling the Data Ports

The cabling of the optical ports is dependent upon the actual network topology.

The following sections provide instructions for cabling the data ports of a PL-1000RO node.

#### 2.3.3.4.1 Cabling the COM Port

##### To cable the COM port:

- Connect the COM LC connector to the fiber that goes to the east/west side of the network.

#### 2.3.3.4.2 Cabling the EXP Port

##### To cable the EXP port:

- Connect the EXP LC connector to the fiber that carries the express channels coming from the next PL-1000RO connected to the other side of the network.

#### 2.3.3.4.3 Cabling the Add/Drop Port

The following is applicable only to a PL-1000RO without a MUX/DEMUX module.

##### To cable the Add/Drop port:

- Connect the Add/Drop LC connector to the fiber that carries the add/drop channels coming from the MUX/DEMUX connected to the local devices.

#### 2.3.3.4.4 Cabling the OSC Port

The following is applicable only to a PL-1000RO without a MUX/DEMUX module.

**To cable the OSC port:**

- Connect the OSC LC connector to the fiber that comes from one of the local MNG ports.

#### 2.3.3.4.5 Cabling the MUX/DEMUX Port

The following is applicable only to a PL-1000RO with a MUX/DEMUX module installed.

**To connect cables to the PL-1000RO MUX/DEMUX port:**

1. Remove the protective plug from the MUX/DEMUX port.
2. Connect the supplied ribbon cable to the MUX/DEMUX port.
3. Connect the LC connector to the fiber to the add/drop channels coming from the local devices.
4. Connect the MNG LC connector of the ribbon to one of the MNG ports of the PL-1000RO.

### 2.3.4 Cabling Examples

This section provides cabling examples of a ring PL-1000RO with MUX/DEMUX and without MUX/DEMUX.



### 2.3.4.1 Cabling Example of a Ring PL-1000RO without MUX/DEMUX

The following figure illustrates an example of cabling two PL-1000RO nodes (west and east) without MUX/DEMUX modules, with PL-300 and PL-1000 nodes, inside a ring.

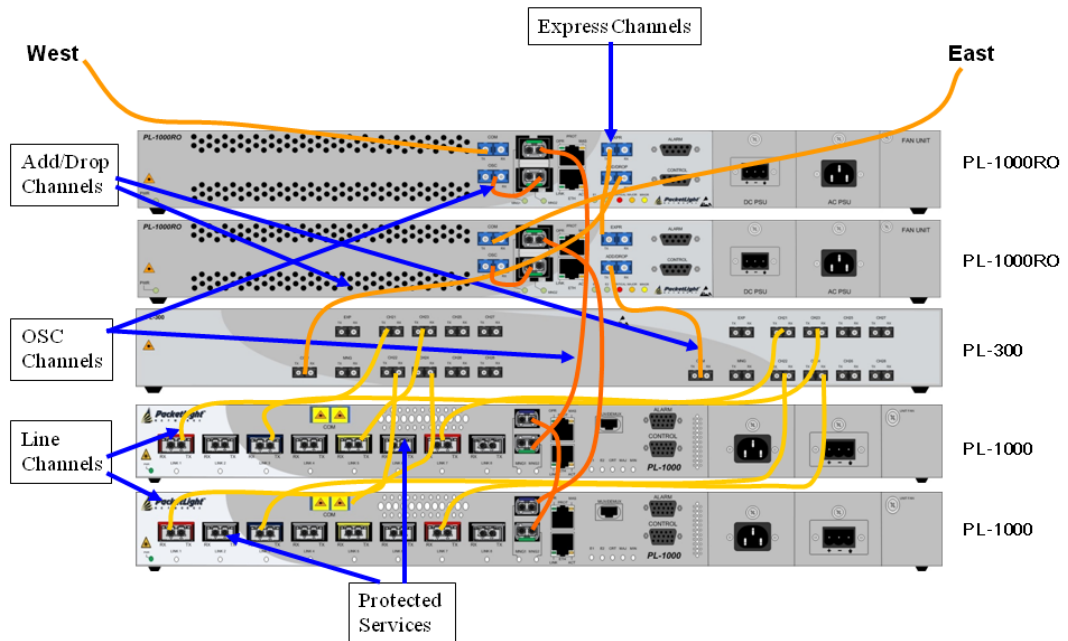


Figure 12: Cabling of a Ring PL-1000RO without MUX/DEMUX (Example)

### 2.3.4.2 Cabling Example of a Ring PL-1000RO with MUX/DEMUX

The following figure illustrates an example of cabling two PL-1000RO nodes (west and east) with MUX/DEMUX modules, with PL-1000 nodes, inside a ring.

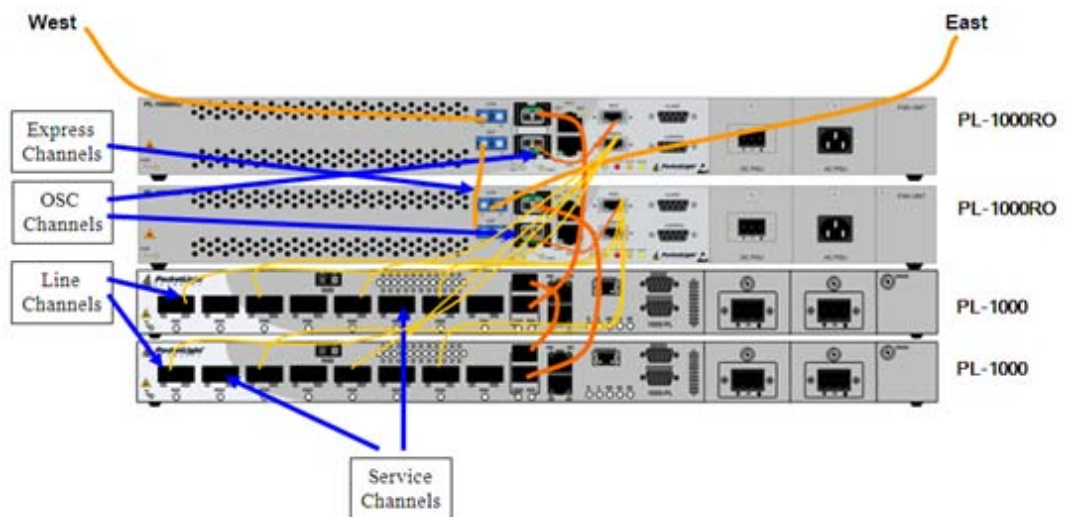


Figure 13: Cabling of a Ring PL-1000RO with MUX/DEMUX (Example)



## 3 Operation and Preliminary Configuration

This chapter provides general operating instructions and preliminary configuration instructions for the PL-1000RO unit. It also explains how to access the Web application and CLI.

### In this Chapter

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Accessing the Web Application .....	31
Navigating the Web Application .....	33
Logging Out of the Web Application .....	36

### 3.1 Operating Instructions


This section provides instructions for connecting and configuring the terminal, and for turning on the PL-1000RO.

#### 3.1.1 Connecting and Configuring the Terminal

##### To connect and configure the terminal:

1. Connect a terminal to the CONTROL connector of the PL-1000RO using a straight (point-to-point) cable.  
  
Any standard VT-100 ASCII terminal (dumb terminal or PC emulating an ASCII terminal) equipped with an RS-232 communication interface can be used for PL-1000RO preliminary configuration (the exact pinout of the connector is described in [Connection Data](#) (p. 179)).
2. Check that the installation and the required cable connections have been correctly performed (see [Installing the PL-1000RO Unit](#) (p. 22)).
3. Configure the terminal as follows:
  - **9600 kbps**
  - **1 start bit**
  - **8 data bits**
  - **No parity**
  - **1 stop bit**
  - **Full-duplex**
  - **Echo off**
  - **Disable any type of flow control**

### 3.1.2 Turning on the PL-1000RO

 **WARNING:** Do not connect the power before the unit is in the designated position. The PL-1000RO does not have a power ON/OFF switch and therefore starts operating as soon as the power is connected.

#### To turn on the PL-1000RO:

1. Connect the PL-1000RO to the power source (see [Connecting the PL-1000RO to Ground and Power](#) (p. 23)).

The **PWR** LED lights up and blinks during power up; all other LEDs (except **ETH**) are off during this time.

2. Wait for the completion of the power-up initialization and LED testing before starting to work on the system. This takes approximately one minute.

The **PWR** LED lights steadily, and all other LEDs display the PL-1000RO status.

## 3.2 Performing Preliminary Configuration

You may perform the preliminary IP configuration using CLI via the CONTROL port. This port can be directly connected to a terminal using a cable wired point to point (see [Connection Data](#) (p. 179)).

For more information about the CLI commands, see [CLI](#) (p. 165).

As an alternative to using a local terminal, the first time preliminary configuration can also be performed via the Web browser, or via CLI over a Telnet/SSH connection, using the default IP address **192.192.192.1** and subnet mask **255.255.255.0**.

#### To perform preliminary configuration:

1. Log in to the terminal.

**NOTE:** The CLI of the PL-1000RO is user/password protected to ensure secure access.

1. At the prompt, type the following CLI command: **login**

The prompt to enter the user name appears.

2. Type the default user name: **admin**

The prompt to enter the password appears.

3. Type the default password: **admin**

2. Configure the Ethernet port IP address via the terminal in order to support the Web-based application.

1. Acquire the Ethernet IP address using CLI if needed (see [Configure Interface Ethernet IP Command](#) (p. 174)).

2. At the prompt, type the following CLI command:

```
configure interface ethernet ip <addr> [-n <netmask>] [-g <gateway>]
```

**Example:** Configure the IP address to **192.168.0.100** with subnet mask **255.255.255.0**.

```
PL-1000RO>> configure interface ethernet ip 192.168.0.100 -n 255.255.255.0
```

**Table 3: Configure Interface Ethernet IP Command Options**

Attribute	Description	Format/Values
<addr>	IP address	Dot notation For example: 192.168.0.100 Default: 192.192.192.1
<netmask>	Subnet mask	<ul style="list-style-type: none"> <li>• Dot notation For example: 255.255.255.0</li> <li>• Hexadecimal notation For example: ffffffff00</li> <li>• Subnet mask of the IP class corresponding to the specified address</li> </ul> Default: Subnet mask of the IP class corresponding to the specified address
<gateway>	Gateway IP address	Dot notation For example: 192.168.0.1

### 3.3 Accessing the Web Application

This section provides instructions for accessing the Web application.

#### 3.3.1 Web Browser Requirements

The following are the Web browser requirements:

- Microsoft® Internet Explorer® version 8 or above
- Mozilla® Firefox® version 7 or above
- Google Chrome™ version 15 or above

The Web user interface enables user configuration via HTTP/HTTPS client (using default IP address **192.192.192.1** and subnet mask **255.255.255.0**).

The default address can be changed by the user. If a different IP address is desired, it is necessary to configure the Ethernet port interface IP address of the PL-1000RO before accessing the Web (see [Performing Preliminary Configuration](#) (p. 30)).

### 3.3.2 Prerequisites for Accessing the Web Application

The following are the prerequisites for accessing the Web application:

- The PL-1000RO is properly installed.
- The PL-1000RO is connected to a Web browser.
- Any pop-up blocking software is disabled.
- JavaScript should be enabled in the browser.

### 3.3.3 Logging In to the Web Application

**To log in to the Web application:**

1. Acquire the Ethernet IP address using CLI if needed (see [Configure Interface Ethernet IP Command](#) (p. 174)).
2. Open the Web browser.
3. In the address field of the browser, type the **IP address** of the PL-1000RO in the following format:

**http://IP\_address** (for HTTP access)

*or*

**https://IP\_address** (for HTTP secure access)

(<IP\_address> stands for the actual IP address of the PL-1000RO)

4. Press **Enter**.

The Login window opens.



**Figure 14: Login Window**

5. In the **User Name** field, type the name of the user.

**NOTE:** The user name and password are case sensitive.

6. In the **Password** field, type the password.

Only alphanumeric characters without spaces are allowed.

7. Click **Login**.

The System Configuration window opens displaying the **General** tab.

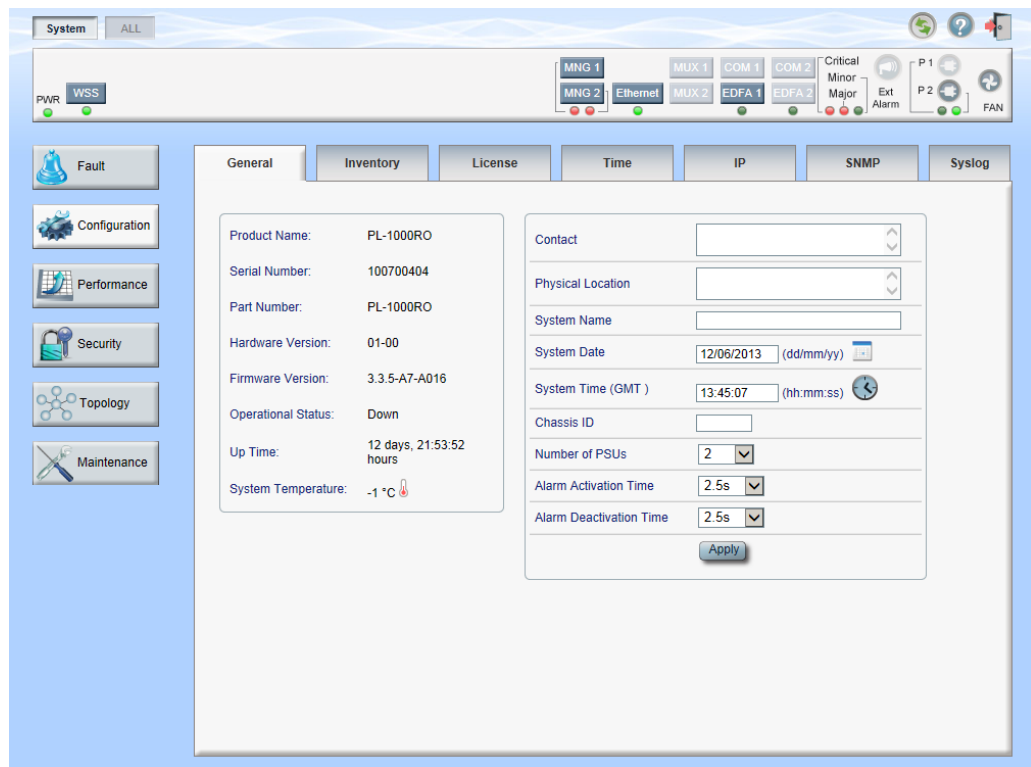


Figure 15: System Configuration Window

### 3.4 Navigating the Web Application

This section describes the PL-1000RO item buttons, sidebar buttons, and tabs.

#### 3.4.1 Item Buttons

The following figure shows an example of the buttons used for performing operations in the Web application.

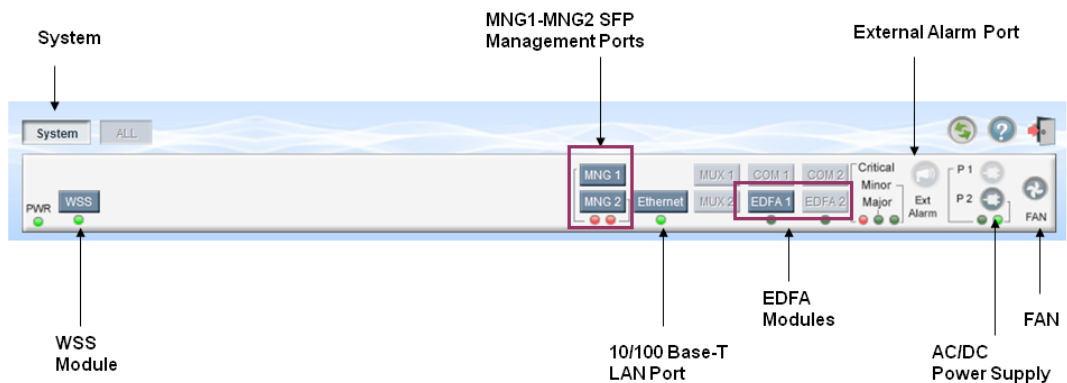



Figure 16: PL-1000RO Item Buttons (Example)

The buttons displayed vary according to the configuration. For example, if the PL-1000RO does not have an EDFA module installed, the **EDFA** button is disabled.

The Item buttons displayed also vary according to the context of the window. For example, the **FAN**  button is disabled in the Fault window because no faults are defined for this unit.

### 3.4.2 Sidebar Buttons

The following figure shows the sidebar buttons.



**Figure 17: PL-1000RO Sidebar Buttons**

Use the sidebar buttons to do the following:

- **Fault:** View PL-1000RO faults
- **Configuration:** Configure the PL-1000RO parameters
- **Performance:** View system optical information and port performance monitoring
- **Security:** Manage users' accounts
- **Topology:** View network topology
- **Maintenance:** Perform maintenance tasks for the PL-1000RO



### 3.4.3 Tabs

The following figure shows an example of the tabs used for performing system security operations.

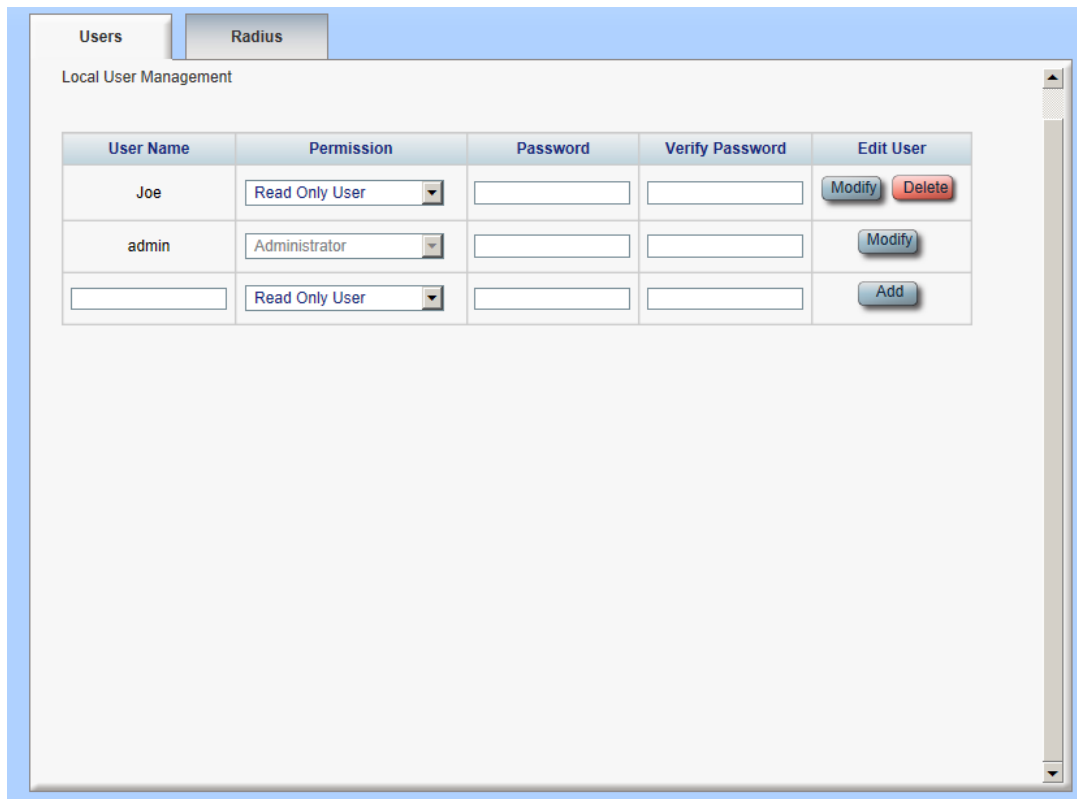


Figure 18: PL-1000RO Tabs (Example)

The tabs displayed vary according to the user permissions. For example, the **Radius** tab is displayed only for a user with Administrator permissions; therefore, in the following figure, the **Radius** tab is not displayed because the user has **Read Only User** permissions.

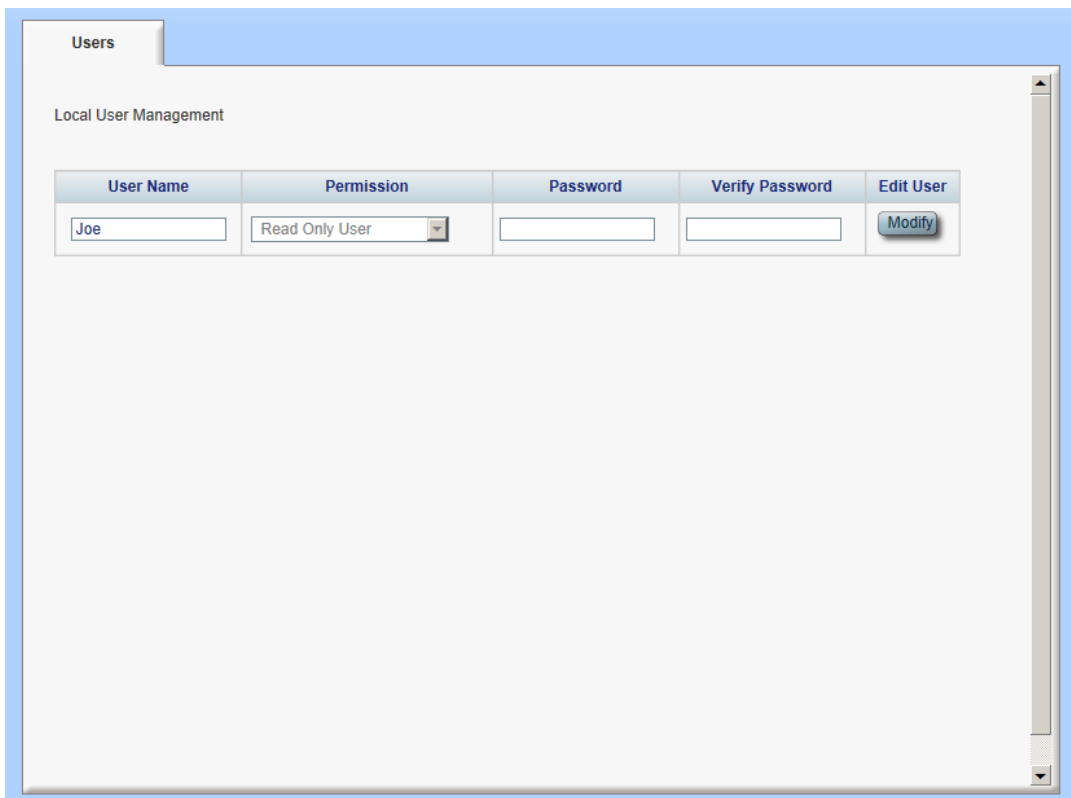


Figure 19: PL-1000RO Users Tab

### 3.5 Logging Out of the Web Application

To log out of the Web application:

- Click **Logout** .

You are logged out.

## 4 Security Management

This chapter describes how to manage users' accounts.

### In this Chapter

User Access Levels.....	37
User Authentication Methods.....	37
Security Settings.....	40

### 4.1 User Access Levels

The PL-1000RO supports the following types of users.

**Table 4: User Access Levels**

User Type	Permissions	Notes
<b>Administrator</b>		
Administrator	Access and edit permissions for all functions; can add and delete users, change access levels, and change passwords.	<ul style="list-style-type: none"> <li>• <b>User name:</b> admin</li> <li>• <b>Password:</b> admin (default)</li> </ul> <p><b>NOTE:</b> You can change the password. However, the user name cannot be changed and is set to "admin" by default.</p>
<b>Non-Administrator</b>		
Read/Write User	View and manage the node; cannot manage other users but can change their own password (see <a href="#">Changing Your Password</a> (p. 44)).	
Read Only User	View only; no edit permissions except to change their own password (see <a href="#">Changing Your Password</a> (p. 44)).	

### 4.2 User Authentication Methods

The access to the PL-1000RO Web application and CLI is protected. Therefore, before performing any operation on the device, the user needs to log in to the node by entering a user name and password, which is then authenticated by the node.

There are two methods for user authentication:

- Local authentication
- Remote authentication

## 4.2.1 Local Authentication

The local authentication method is always enabled. The authentication is performed against a local database stored in the node.

Local authentication requires that an updated list of user names and passwords be provided to each node in the network.

## 4.2.2 Remote Authentication

The PL-1000RO supports centralized authentication, implemented with the Radius protocol as defined by RFC-2865.

The remote authentication method is optional, and can be enabled or disabled by the network administrator. The authentication is performed against a centralized database stored on a Radius server.

The remote authentication allows the network administrator to keep the updated list of user names and passwords on a Radius server.

When a user tries to log in and the user name and password are not on the local user list, if the Radius authentication is enabled, the node communicates with the Radius server and performs remote user authentication. If the user name and password are on the remote user list, the log in succeeds.

### 4.2.2.1 Attribute Value Pairs

The Radius Attribute Value Pairs (AVP) carry data in both the request and the response for the authentication.

The following table lists the attributes used by the remote Radius authentication.

**Table 5: Attributes Used**

Attribute	AVP Type	Access-Request	Access-Accept	Format/Values
User-Name	1	√	√	The name of the user as carried by the Radius <b>Access-Request</b> . Format: String
User-Password	2	√	√	The password of the user as carried by the Radius <b>Access-Request</b> . Format: String
Class	25	-	√	The access level granted to the user as carried by the Radius <b>Access-Accept</b> . Format: String Allowed values: <ul style="list-style-type: none"> <li>• 1: read-only access</li> <li>• 2: read-write access</li> <li>• 4: admin access</li> </ul>

#### 4.2.2.2 Shared Secret

The Radius protocol does not transmit passwords in clear text between the Radius client and server. Rather, a shared secret is used along with the MD5 hashing algorithm to encrypt passwords. The shared secret string is not sent over the network; therefore that same key should be independently configured to the Radius clients and server.

#### 4.2.2.3 Server Redundancy

For improved redundancy, the PL-1000RO can use one or two Radius servers: Server #1 and Server #2.

**NOTE:** There is no precedence between the Radius servers; therefore, the authentication response is taken from the first server to answer.

#### 4.2.2.4 Setting Up Radius

Before using Radius, the network administration should set up the Radius servers and enable Radius authentication.

**To set up Radius:**

1. Launch one or two Radius servers on Windows/Unix systems that are accessible to the nodes via the IP network.
2. Configure the Radius servers with **Shared Secret** string that will be used by the Radius servers and clients.
3. Enter the user name, password, and permission of all users to the Radius servers.
4. Configure the access information to the Radius servers for the Radius clients of the nodes.
5. Enable Radius authentication for all nodes.

#### 4.2.2.5 Configuring the Radius Server

**NOTE:** The server configuration process may look different on different Radius server packages.

An Administrator can configure the Radius server.

**To configure the Radius server:**

1. Configure the **Authentication Port** (default port is 1812).

**NOTE:** If a firewall exists between the nodes to the Radius servers, make sure that it does not block the chosen port.

2. Configure the **Shared Secret**.
3. For each user, configure the following attributes:

- **User-Name**

Only alphanumeric characters without spaces are allowed.

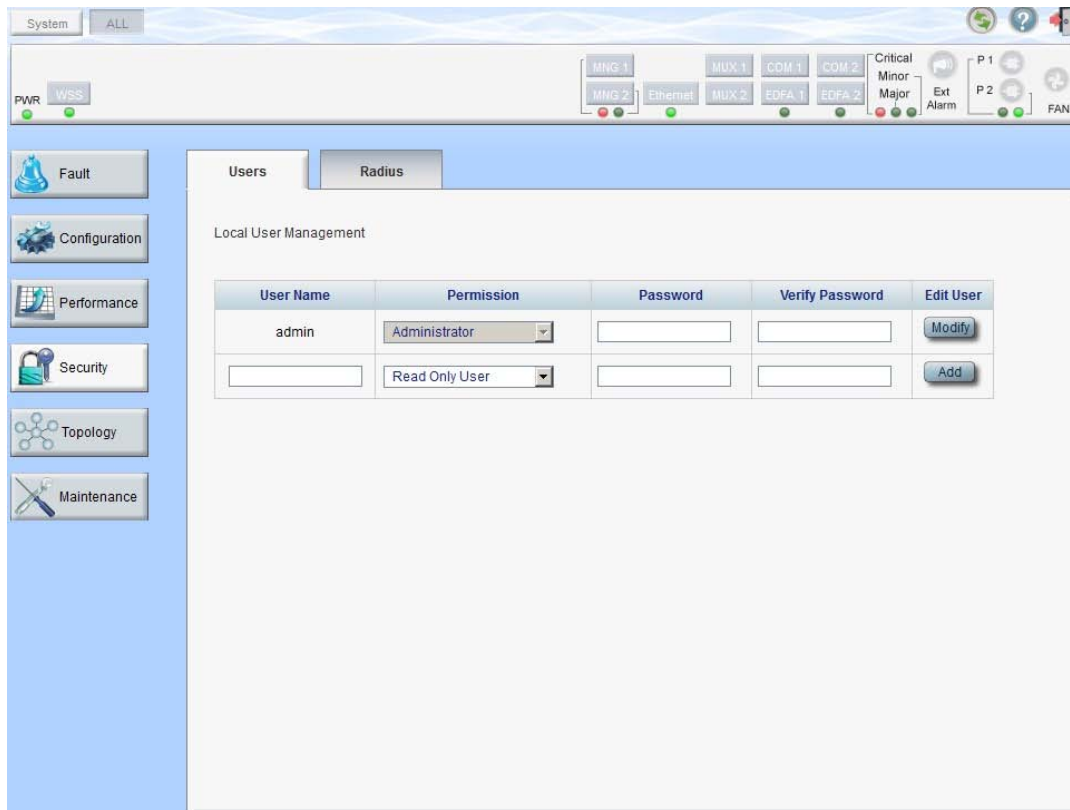
- **User-Password**

Only alphanumeric characters without spaces are allowed.

- **Class**

For a description of the attributes, see [Attribute Value Pairs](#) (p. 38).

## 4.3 Security Settings



**Figure 20: Security Settings Window**

Use the Security Settings window to do the following:

- **Users tab (Administrator):** Add a new user, change a user password, change a user permission level, and delete a user
- **Users tab (Non-Administrator):** Change your password
- **Radius tab (Administrator):** Configure the Radius client

**To open the Security Settings window:**

- Click **Security**.

The Security Settings window opens.

### 4.3.1 Users Tab (Administrator)

Local User Management

User Name	Permission	Password	Verify Password	Edit User
Smith	Read Only User	<input type="password"/>	<input type="password"/>	Modify Delete
admin	Administrator	<input type="password"/>	<input type="password"/>	Modify
<input type="text"/>	Read Only User	<input type="password"/>	<input type="password"/>	Add

**Figure 21: Users Tab (Administrator)**

An Administrator can use the Users tab to manage the user list for local authentication:

- Add a new user
- Change a user password
- Change a user permission level
- Delete a user

#### 4.3.1.1 Adding a New User

An Administrator can use the Users tab to add a new user.

**To add a new user:**

1. Click the **Users** tab.  
The Users tab opens displaying all users and their permission levels.
2. Fill in the fields as explained in the following table.
3. Click **Add**.

The new user is added.

**Table 6: Users Tab Parameters (Administrator)**

Parameter	Description	Format/Values
User Name	The name of the user.	Only alphanumeric characters without spaces are allowed.
Permission	The permission level for the user.	Administrator, Read/Write User, Read Only User (see <a href="#">User Access Levels</a> (p. 37))
Password	The password for the user.	Only alphanumeric characters without spaces are allowed. <b>NOTE:</b> The password is hidden for security reasons.
Verify Password	The password for the user again.	Only alphanumeric characters without spaces are allowed. <b>NOTE:</b> The password is hidden for security reasons.

### 4.3.1.2 Changing a User Permission Level

An Administrator can use the Users tab to change a user permission level.

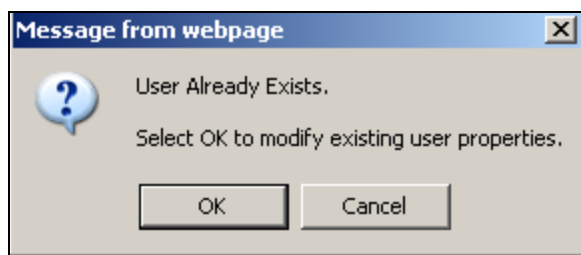
#### To change a user permission level:

1. Click the **Users** tab.

The Users tab opens displaying all users and their permission levels.

2. Find the user whose password you want to change.
3. From the **Permission** drop-down list, select the new permission level for this user (see [User Access Levels](#) (p. 37)).
4. Click **Modify**.

The following confirmation message appears.



**Figure 22: Confirm Changes**

5. Click **OK**.

The new permission level is assigned to the specified user.

### 4.3.1.3 Changing a User Password

An Administrator can use the Users tab to change all user passwords.

**NOTE:** For security reasons, it is recommended to change the default **admin** password. If the Administrator password has been changed and is unknown, contact PacketLight Technical Support.

#### To change a user password:

1. Click the **Users** tab.

The Users tab opens displaying all users and their permission levels.

2. Find the user whose password you want to change.
3. In the **Password** field, type the new password.

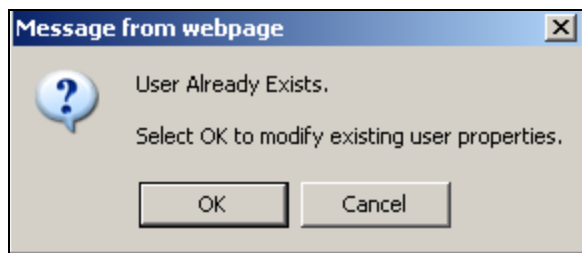
Only alphanumeric characters without spaces are allowed.

**NOTE:** The password is hidden for security reasons.

4. In the **Verify Password** field, type the new password again.
5. Click **Modify**.



The following confirmation message appears.



**Figure 23: Confirm Changes**

6. Click **OK**.

The new password is assigned to the specified user.

#### 4.3.1.4 Deleting a User

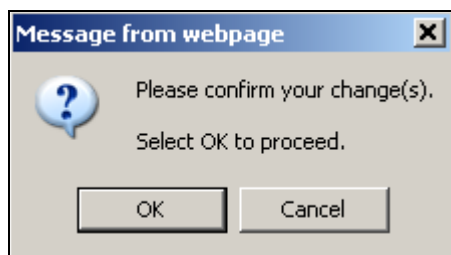
An Administrator can use the Users tab to delete a user.

**NOTE:** The **admin** user cannot be deleted.

**To delete a user:**

1. Click the **Users** tab.  
The Users tab opens displaying all users and their permission levels.
2. Find the user you want to delete.
3. Click **Delete**.

The following confirmation message appears.

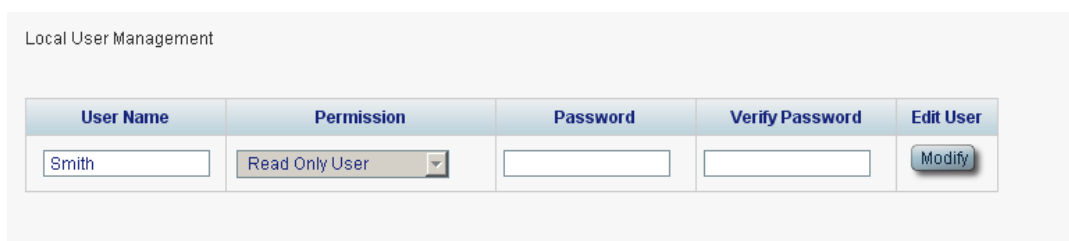


**Figure 24: Confirm Delete**

4. Click **OK**.

The specified user is deleted.

#### 4.3.2 Users Tab (Non-Administrator)



**Figure 25: Users Tab (Non-Administrator)**

Non-administrator users cannot manage other users; however, they can use the Users tab to change their own password if they are on the local user list.

### 4.3.2.1 Changing Your Password

A non-administrator can use the Users tab to change their own password.

**To change your password:**

1. Click the **Users** tab.

The Users tab opens displaying your user name and permissions.

2. In the **Password** field, type the new password.

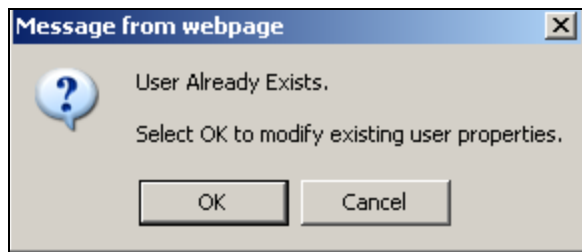
Only alphanumeric characters without spaces are allowed.

**NOTE:** The password is hidden for security reasons.

3. In the **Verify Password** field, type the new password again to be certain that it was typed correctly.

4. Click **Modify**.

The following confirmation message appears.



**Figure 26: Confirm Changes**

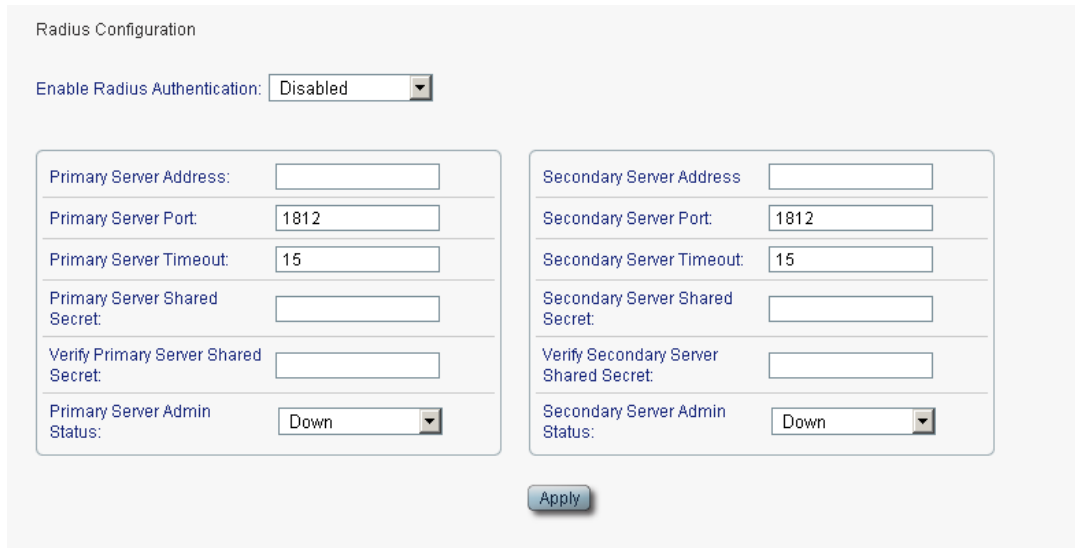
5. Click **OK**.

Your password is changed.

**Table 7: Users Tab Parameters (Non-Administrator)**

Parameter	Description	Format/Values
User Name	Your user name.	Only alphanumeric characters without spaces are allowed. <b>NOTE:</b> This field is read only.
Permission	Your permission level for the user.	Read-Write User, Read Only User <b>NOTE:</b> This field is read only.
Password	Your password.	Only alphanumeric characters without spaces are allowed. <b>NOTE:</b> The password is hidden for security reasons.
Verify Password	Your password again.	Only alphanumeric characters without spaces are allowed. <b>NOTE:</b> The password is hidden for security reasons.

### 4.3.3 Radius Tab (Administrator)



**Figure 27: Radius Tab (Administrator)**

An Administrator can use the Radius tab to configure the Radius client on the node.

#### 4.3.3.1 Configuring the Radius Client

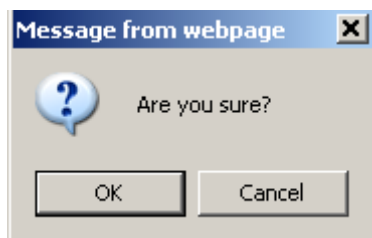
An Administrator can use the Radius tab to configure the Radius client on the node.

**NOTE:** For the remote Radius authentication to be activated, the **Enable Radius Authentication** must be set to **Enabled** and the **Admin Status** of at least one server must be set to **Up**.

**To configure the Radius client:**

1. Click the **Radius** tab.  
The Radius tab opens displaying the Radius configuration.
2. Fill in the fields as explained in the following table.
3. Click **Apply**.

The following confirmation message appears.



**Figure 28: Confirm Configuration**

4. Click **OK**.  
The Radius client is configured.

**Table 8: Radius Tab Parameters (Administrator)**

Parameter	Description	Format/Values
Enable Radius Authentication	Whether or not to enable the Radius authentication.	Enabled, Disabled
Primary Server Address	The IP address of the primary server.	Dot notation For example: 192.168.0.100
Primary Server Port	The port number of the primary server.	1812 (default)
Primary Server Timeout	The amount of time before the primary server times out (in seconds).	Integer
Primary Server Shared Secret	The shared secret for the primary server.	Free text
Verify Primary Server Shared Secret	The shared secret for the primary server again.	Free text
Primary Server Admin Status	The administrative status of the primary server.	Up, Down
Secondary Server Address	The IP address of the secondary server.	Dot notation For example: 192.168.0.100
Secondary Server Port	The port number of the secondary server.	1812 (default)
Secondary Server Timeout	The amount of time before the secondary server times out (in seconds).	Integer
Secondary Server Shared Secret	The shared secret for the secondary server.	Free text
Verify Secondary Server Shared Secret	The shared secret for the secondary server again.	Free text
Secondary Server Admin Status	The administrative status of the secondary server.	Up, Down

## 5 Fault Management

This chapter describes the PL-1000RO fault management, which is used to localize and identify problems in the network incorporating PL-1000RO units.

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### 5.1 Fault Views

This section describes the following Fault views:

- Alarms
- Events
- Configuration Changes

#### 5.1.1 Alarms

The PL-1000RO keeps a list of the alarms currently detected on the system. When an alarm is detected, the **Alarm Rise** event is generated and the alarm is added to the list. When the **Alarm Clear** is detected, the alarm is removed from the list.

The following information is stored for each alarm:

- **Date and Time:** The date and time when the alarm was detected.
- **Source:** The entity that caused the alarm.
- **Severity:** The severity of the alarm.
- **Type:** The type of the alarm.
- **Service Affecting:** **Yes** or **No** according to the alarm impact.

#### 5.1.2 Events

The PL-1000RO continuously monitors the traffic signals and other exceptional conditions. Whenever such a condition occurs, the PL-1000RO generates a time stamped event message and sends it as an SNMP notification to the registered management systems. The PL-1000RO logs the history of the last 512 events in

a cyclic buffer that can be browsed by the Web application or by SNMP management systems.

In addition, the events and audit messages are printed in the PL-1000RO system log files, which can be exported to a text file for offline viewing.

The PL-1000RO provides the following events:

- **Alarm Rise:** Alarms are standing faults. They are raised after a configurable stabilization period of several seconds. These events are generated when a new alarm occurs.
- **Alarm Clear:** Alarms are standing faults. They are cleared after a configurable stabilization period of several seconds. These events are generated when an alarm is cleared.
- **Link Up:** These are standard SNMP events that are generated when the operational status of a port is changed from **Down** to **Up**.
- **Link Down:** These are standard SNMP events that are generated when the operational status of a port is changed from **Up** to **Down**.
- **Cold Restart:** These are standard SNMP events that are generated after a Cold Restart to the node.
- **Warm Restart:** These are standard SNMP events that are generated after a Warm Restart to the node.
- **Test Status Changed:** These events are generated when the loopback or PRBS test status of a port is changed.
- **Inventory Change:** These events are generated when the node inventory is changed.
- **Unsolicited Event:** These events are generated when an exceptional event occurs.
- **Configuration Change:** These events are generated when the node configuration is changed.

### 5.1.3 Configuration Changes

The PL-1000RO generates an event when the configuration of a node is explicitly changed by the user and stores the event in the Configuration Changes log for auditing.

## 5.2 General Fault Viewing Procedure

The following is the general procedure for viewing the PL-1000RO faults. The specific procedures for each item are provided in the following sections.

**To view the PL-1000RO faults:**

1. Click **Fault**.

2. Click the desired button in the upper portion of the window to select the item to view:

- **System** (see [System Faults](#) (p. 49))
- **All** (see [All Faults](#) (p. 55))
- **WSS** (see [WSS Faults](#) (p. 61))
- **MNG** (see [Management Port Faults](#) (p. 67))
- **Ethernet** (see [Ethernet Port Faults](#) (p. 73))
- **EDFA** (if present) (see [EDFA Faults](#) (p. 79))
- **PSU** (see [PSU Faults](#) (p. 85))

The appropriate Fault window opens.

3. Click one of the following tabs:

- **Alarms**
- **Events**
- **Configuration Changes**

The appropriate tab opens. Note that some or all of the fields may be read only.

## 5.3 System Faults

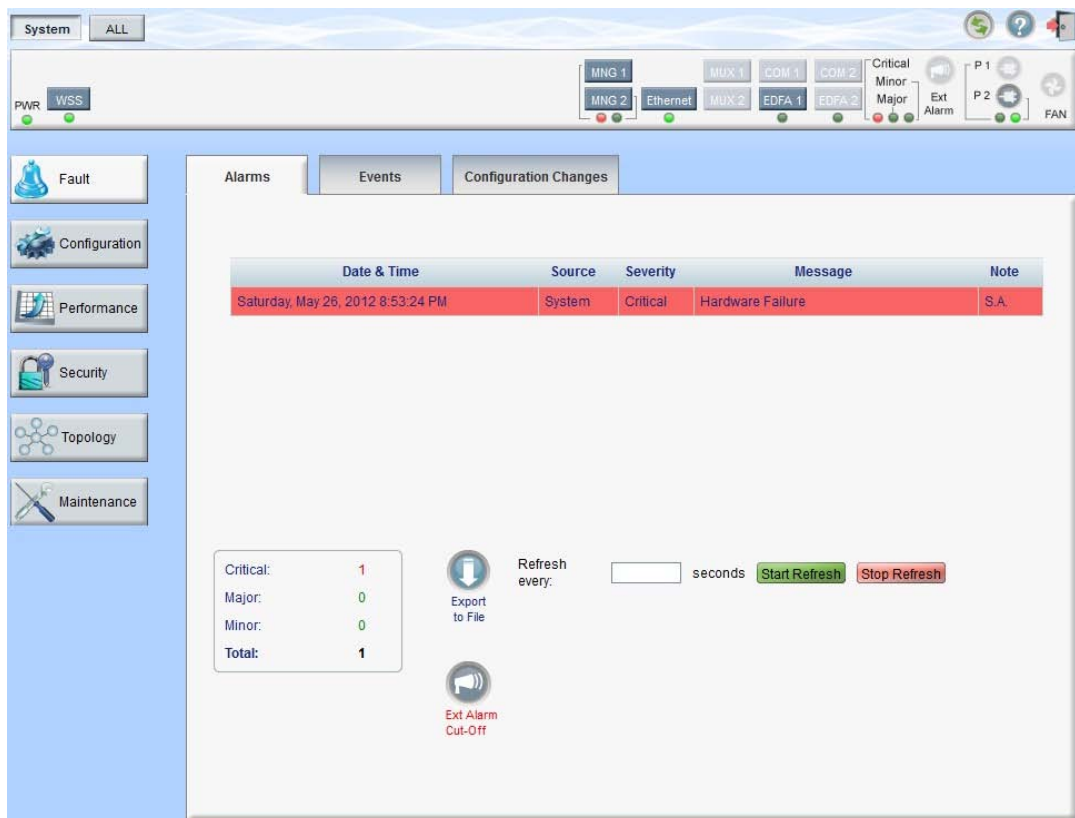


Figure 29: System Fault Window

Use the System Fault window to do the following:

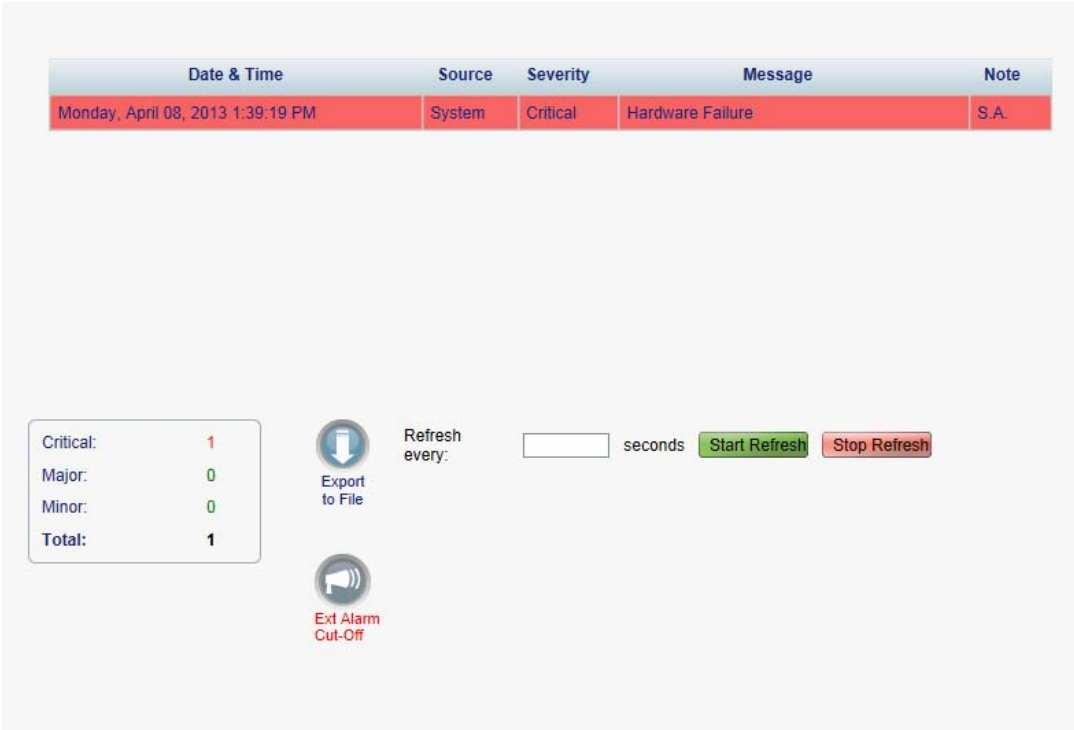
- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Event Log tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the System Fault window:**

1. Click **Fault**.
2. Click **System**.



The System Fault window opens.

### 5.3.1 Alarms Tab



Date & Time	Source	Severity	Message	Note
Monday, April 08, 2013 1:39:19 PM	System	Critical	Hardware Failure	S.A.

Critical: 1 Major: 0 Minor: 0 Total: 1	 Export to File	Refresh every: <input type="text"/> seconds	<input type="button" value="Start Refresh"/> <input type="button" value="Stop Refresh"/>
	 Ext Alarm Cut-Off		

**Figure 30: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view current alarms:**

1. Click the **Alarms** tab.



The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:

- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm

**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications](#) (p. 13).

2. To export the list of alarms to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.


The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

6. To turn off the external alarm, click **Ext Alarm Cut-Off** .

The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

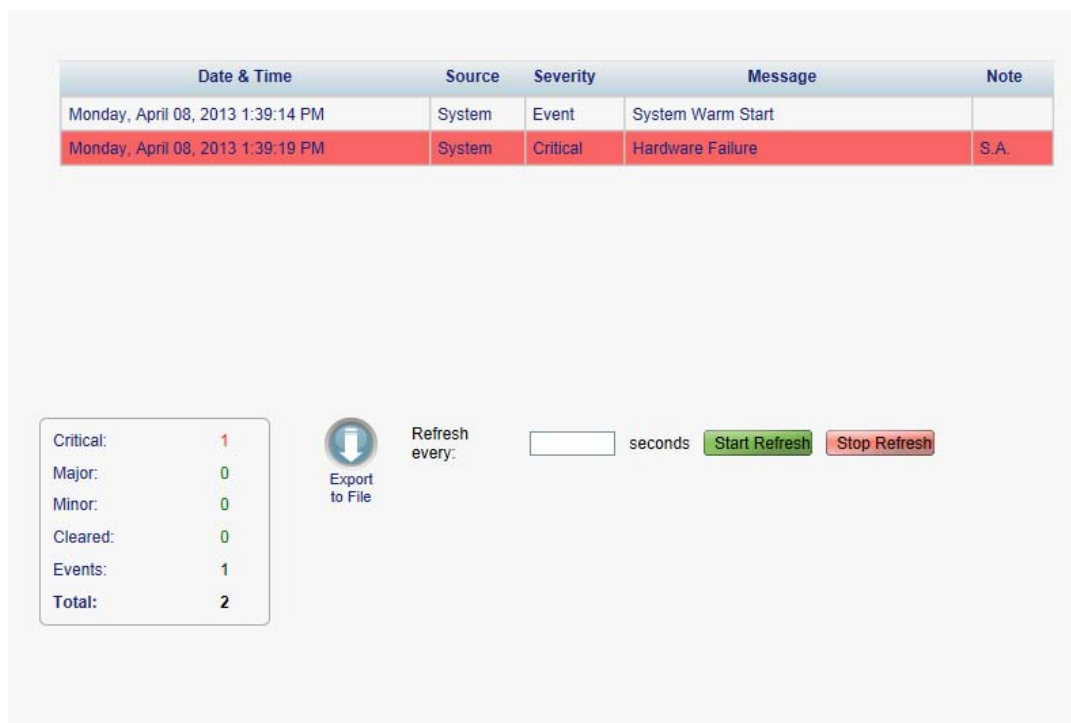
**NOTE:** This action does not clear any alarms.

**Table 9: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	

Parameter	Description	Format/Values
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>

### 5.3.2 Events Tab



Date & Time	Source	Severity	Message	Note
Monday, April 08, 2013 1:39:14 PM	System	Event	System Warm Start	
Monday, April 08, 2013 1:39:19 PM	System	Critical	Hardware Failure	S.A.

Critical: 1  
 Major: 0  
 Minor: 0  
 Cleared: 0  
 Events: 1  
 Total: 2

Export to File  seconds

**Figure 31: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view the Event Log:**

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.

The color of the event background indicates the severity of the event:

- **Red:** Indicates the occurrence of a Critical or Major alarm
- **Yellow:** Indicates the occurrence of a Minor alarm
- **Green:** Indicates that the corresponding alarm is cleared
- **White:** Indicates informational messages

2. To export the Event Log to a file:

1. Click **Export File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.
3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.




The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 10: Events Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>

### 5.3.3 Configuration Changes Tab

Date & Time	Source	Severity	Message	Note
Monday, October 24, 2011 11:51:20 AM	System	Event	System Configuration Event :Add user USER=John, LEVEL=1	User: admin
Monday, October 24, 2011 11:52:29 AM	System	Event	System Configuration Event :Delete user John	User: admin
Monday, October 24, 2011 11:52:41 AM	System	Event	System Configuration Event :Add user USER=John, LEVEL=1	User: admin
Monday, October 24, 2011 11:52:56 AM	System	Event	System Configuration Event :Delete user John	User: admin
Monday, October 24, 2011 12:27:44 PM	System	Event	System Configuration Event :Configuration change SNMP ADD: c0a8012a	User: SNMP

**Total:** 5
 
 Refresh every:  seconds
 



**Figure 32: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

#### To view the Configuration Changes Log:

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File**  .  
The Opening table.csv dialog box appears.
2. Click **Save File**.
3. Click **OK**.

3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh**  .

The information is updated immediately.

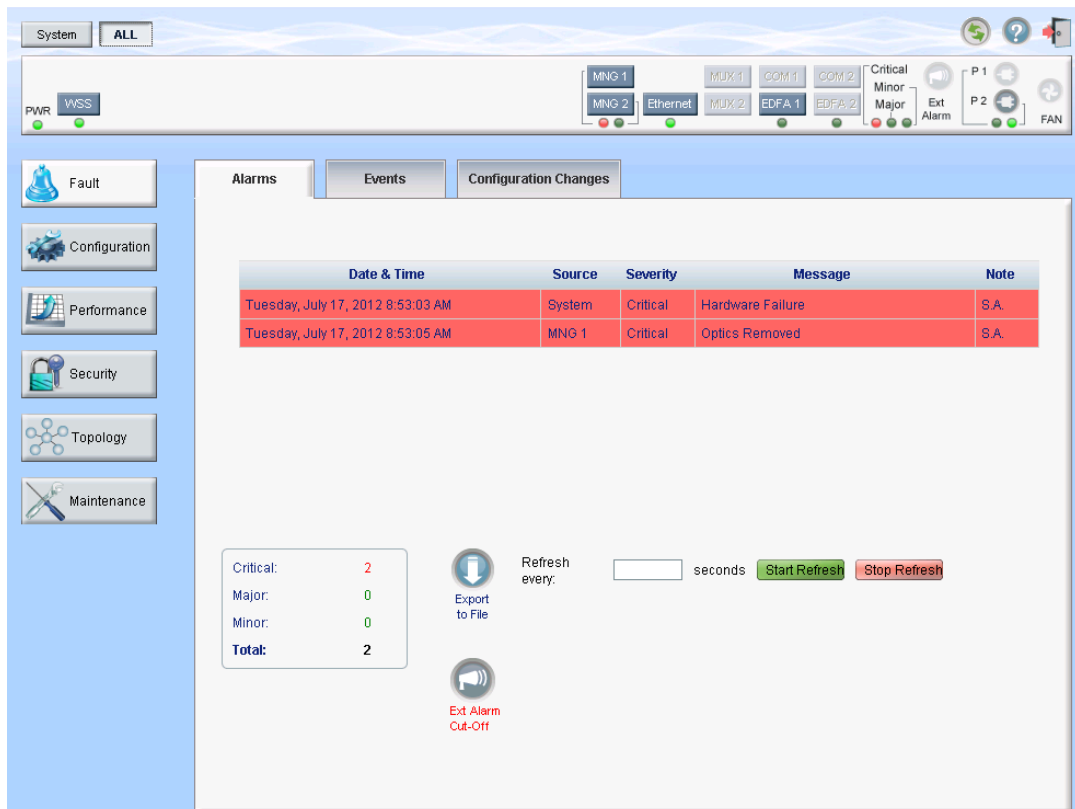
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 11: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

## 5.4 All Faults



**Figure 33: All Fault Window**

Use the All Fault window to do the following:

- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Events tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

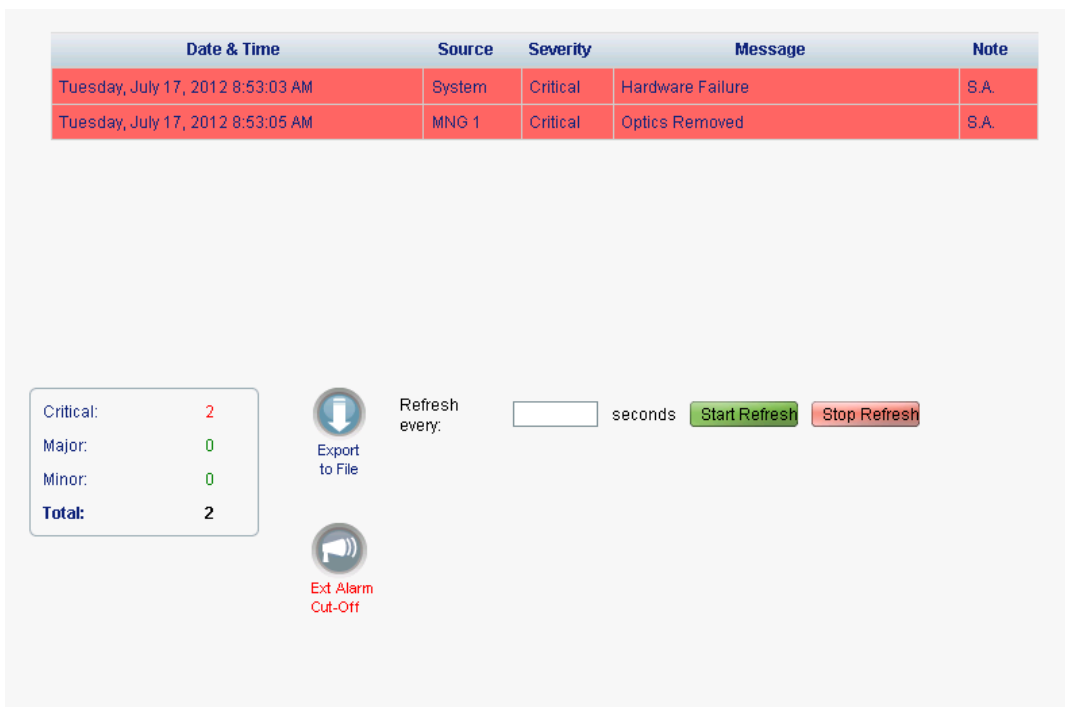
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the All Fault window:**

1. Click **Fault**.
2. Click **All**.

The All Fault window opens.


### 5.4.1 Alarms Tab




Date & Time	Source	Severity	Message	Note
Tuesday, July 17, 2012 8:53:03 AM	System	Critical	Hardware Failure	S.A.
Tuesday, July 17, 2012 8:53:05 AM	MNG 1	Critical	Optics Removed	S.A.

Critical:	2
Major:	0
Minor:	0
<b>Total:</b>	<b>2</b>

 Export to File
  Refresh every:  seconds

 Ext Alarm Cut-Off

**Figure 34: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view current alarms:**


1. Click the **Alarms** tab.

The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:


- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm

**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications](#) (p. 13).


2. To export the list of alarms to a file:
  1. Click **Export to File** .
 

The Opening table.csv dialog box appears.
  2. Click **Save File**.
  3. Click **OK**.
3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.
 

The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.
 

The information is automatically updated after the specified number of seconds.
4. To refresh the Fault display manually, click **Refresh** .
 

The information is updated immediately.
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.
 

The automatic refresh is stopped and the **Refresh every** field is cleared.
6. To turn off the external alarm, click **Ext Alarm Cut-Off** .
 

The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

**NOTE:** This action does not clear any alarms.

**Table 12: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>


## 5.4.2 Events Tab

Date & Time	Source	Severity	Message	Note
Tuesday, July 17, 2012 8:53:01 AM	System	Event	System Cold Start	
Tuesday, July 17, 2012 8:53:02 AM	MNG 1	Event	Link Up	
Tuesday, July 17, 2012 8:53:03 AM	System	Critical	Hardware Failure	S.A.
Tuesday, July 17, 2012 8:53:04 AM	Ethernet Port	Event	Link Up	
Tuesday, July 17, 2012 8:53:05 AM	MNG 1	Event	Link Down	
Tuesday, July 17, 2012 8:53:05 AM	MNG 1	Critical	Optics Removed	S.A.

Critical:	2
Major:	0
Minor:	0
Cleared:	0
Events:	4
<b>Total:</b>	<b>6</b>


Export to File

Refresh every:

seconds
Start Refresh Stop Refresh

**Figure 35: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view the Event Log:

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.

The color of the event background indicates the severity of the event:

- **Red:** Indicates the occurrence of a Critical or Major alarm
- **Yellow:** Indicates the occurrence of a Minor alarm
- **Green:** Indicates that the corresponding alarm is cleared
- **White:** Indicates informational messages


2. To export the Event Log to a file:

1. Click **Export File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.



3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
4. To refresh the Fault display manually, click **Refresh** .  
The information is updated immediately.
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 13: Events Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>

### 5.4.3 Configuration Changes Tab

Date & Time	Source	Severity	Message	Note
Tuesday, July 17, 2012 8:53:05 AM	System	Event	System Configuration Event :Change date TUE 17 JUL 2012 08:53:05	User: SNTP
Tuesday, July 17, 2012 9:33:11 PM	System	Event	System Configuration Event :Change date TUE 17 JUL 2012 21:33:11	User: SNTP
Wednesday, July 18, 2012 3:43:17 PM	System	Event	System Configuration Event :Change date WED 18 JUL 2012 15:43:17	User: SNTP

**Total:** 3

 Export to File

Refresh every:  seconds
  

**Figure 36: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view the Configuration Changes Log:**

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

- To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

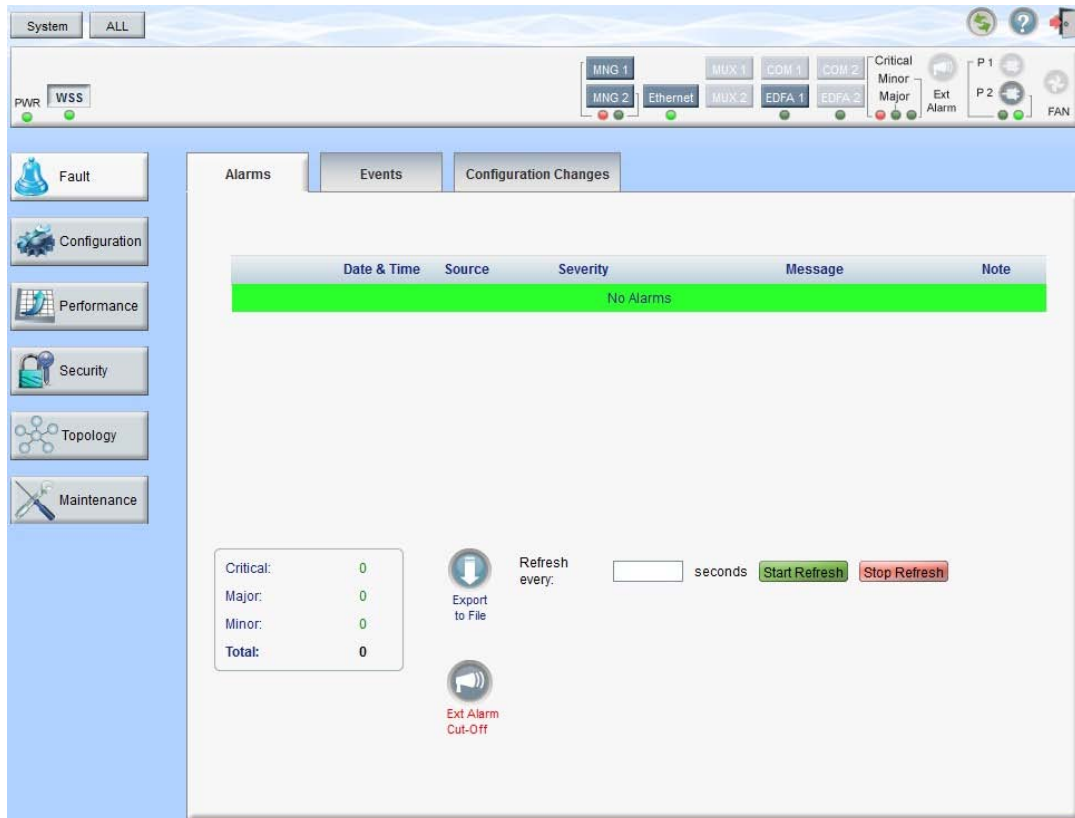
- To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 14: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

## 5.5 WSS Faults



**Figure 37: WSS Fault Window**

Use the WSS Fault window to do the following:

- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Event Log tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the WSS Fault window:**

1. Click **Fault**.
2. Click the **WSS** button to select the WSS module.

The WSS Fault window opens.

### 5.5.1 Alarms Tab



**Figure 38: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view current alarms:**

1. Click the **Alarms** tab.

The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:

- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm

**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications](#) (p. 13).

2. To export the list of alarms to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.


The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

6. To turn off the external alarm, click **Ext Alarm Cut-Off** .

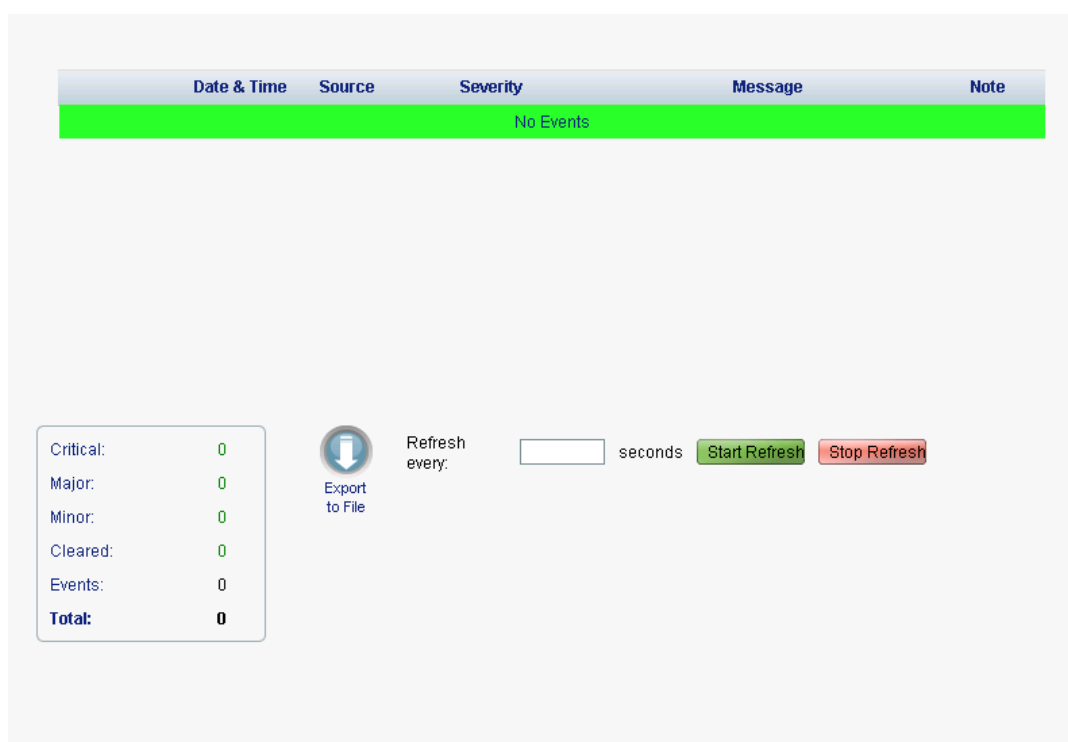
The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

**NOTE:** This action does not clear any alarms.

**Table 15: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>

## 5.5.2 Events Tab


**Figure 39: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.


### To view the Event Log:

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.


The color of the event background indicates the severity of the event:

- **Red:** Indicates the occurrence of a Critical or Major alarm

- **Yellow:** Indicates the occurrence of a Minor alarm
  - **Green:** Indicates that the corresponding alarm is cleared
  - **White:** Indicates informational messages
2. To export the Event Log to a file:
    1. Click **Export File** .
 

The Opening table.csv dialog box appears.
    2. Click **Save File**.
    3. Click **OK**.
  3. To set the refresh rate of the Fault display:
    1. In the **Refresh every** field, type the number of seconds that the window should refresh.
 

The minimum refresh rate is 2 seconds.
    2. Click **Start Refresh**.
 

The information is automatically updated after the specified number of seconds.
  4. To refresh the Fault display manually, click **Refresh** .
 

The information is updated immediately.
  5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.
 

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 16: Events Tab Parameters**


Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>

### 5.5.3 Configuration Changes Tab

Date & Time	Source	Severity	Message	Note
Tuesday, July 24, 2012 08:27:42	WSS Channel 13	Event	System Configuration Event :Provisioning change ROADM PROV 2	User: admin
Tuesday, July 24, 2012 08:28:40	WSS Channel 23	Event	System Configuration Event :Provisioning change ROADM PROV 3	User: admin

Total: 2

  
 Export to File

Refresh every:  seconds

Start Refresh

Stop Refresh

**Figure 40: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

#### To view the Configuration Changes Log:

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.

3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.



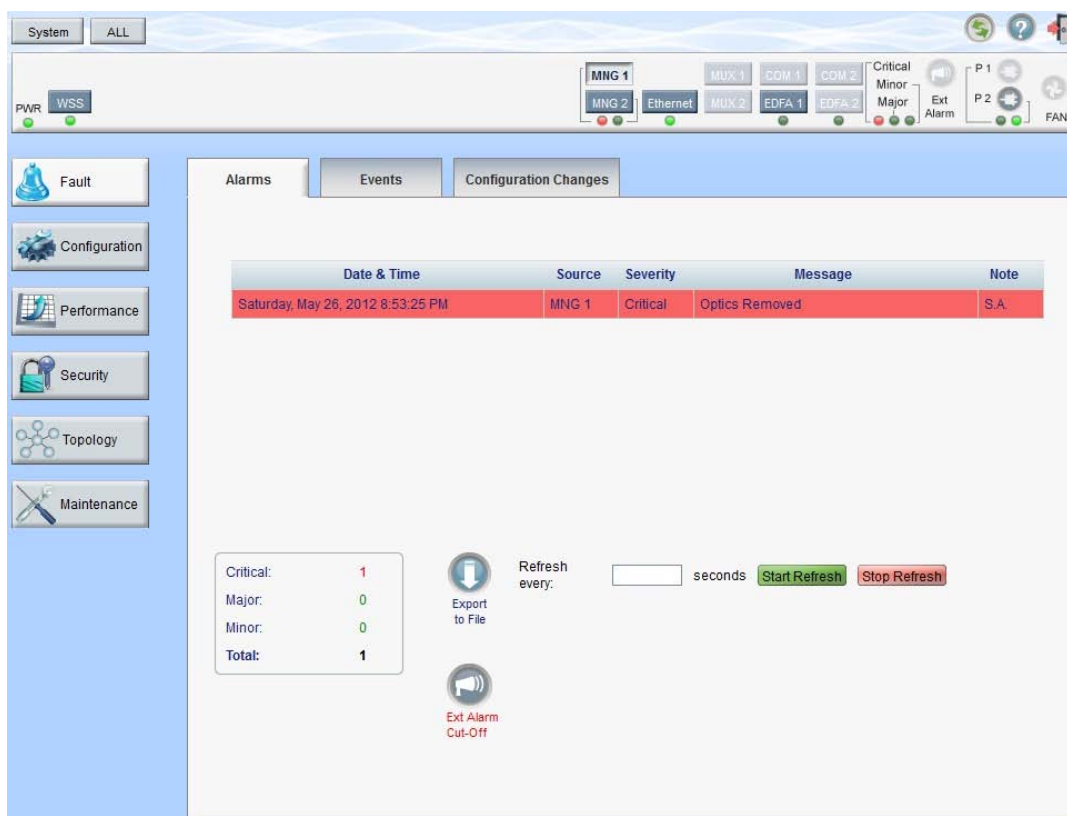
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 17: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

## 5.6 Management Port Faults



**Figure 41: Management Port Fault Window**

Use the Management Port Fault window to do the following:

- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Event Log tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

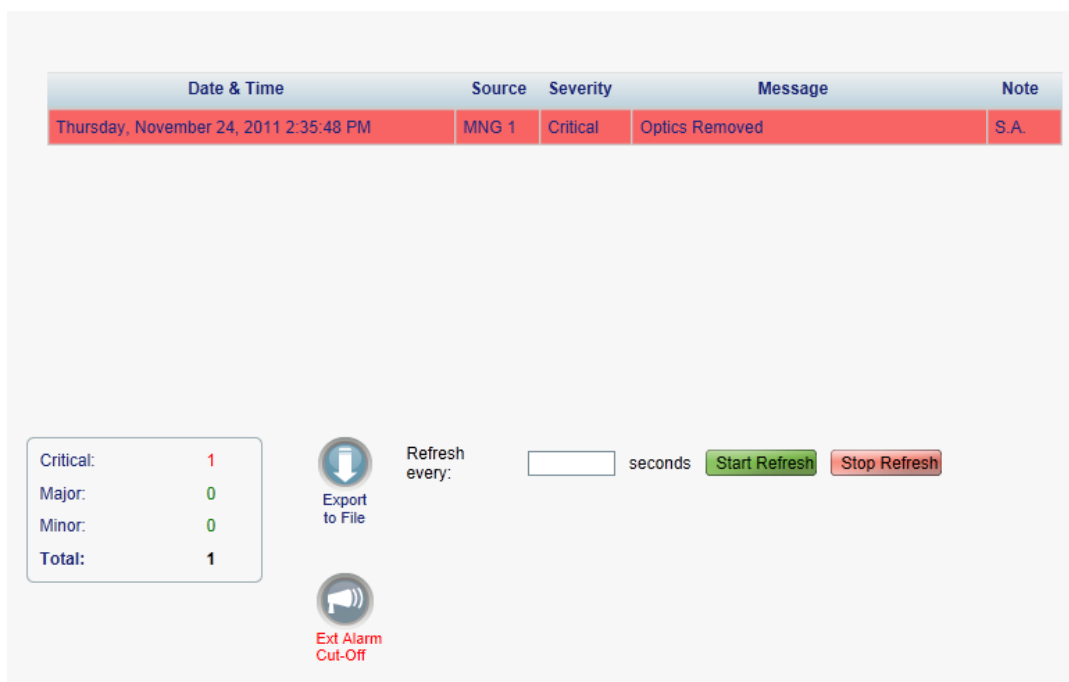
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the Management Port Fault window:**

1. Click **Fault**.
2. Click an **MNG** button to select the management port.

The appropriate Management Port Fault window opens.

## 5.6.1 Alarms Tab



Date & Time	Source	Severity	Message	Note
Thursday, November 24, 2011 2:35:48 PM	MNG 1	Critical	Optics Removed	S.A.

Critical:	1
Major:	0
Minor:	0
<b>Total:</b>	<b>1</b>

Refresh every:  seconds Start Refresh Stop Refresh

Export to File

Ext Alarm Cut-Off

**Figure 42: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view current alarms:**

1. Click the **Alarms** tab.

The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:

- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm

**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications](#) (p. 13).

2. To export the list of alarms to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.


The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

6. To turn off the external alarm, click **Ext Alarm Cut-Off** .

The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

**NOTE:** This action does not clear any alarms.

**Table 18: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>


## 5.6.2 Events Tab

Date & Time	Source	Severity	Message	Note
Monday, October 24, 2011 12:31:32 PM	MNG 2	Critical	Optics Loss of Light	S.A.
Monday, October 24, 2011 2:00:26 PM	MNG 2	Event	Link Up	
Monday, October 24, 2011 2:00:26 PM	MNG 2	Cleared	Optics Loss of Light	

Critical:	1
Major:	0
Minor:	0
Cleared:	1
Events:	1
<b>Total:</b>	<b>3</b>


Export to File

Refresh every:

seconds
Start Refresh
Stop Refresh

**Figure 43: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view the Event Log:

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.

The color of the event background indicates the severity of the event:

- **Red:** Indicates the occurrence of a Critical or Major alarm
- **Yellow:** Indicates the occurrence of a Minor alarm
- **Green:** Indicates that the corresponding alarm is cleared
- **White:** Indicates informational messages

2. To export the Event Log to a file:

1. Click **Export File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

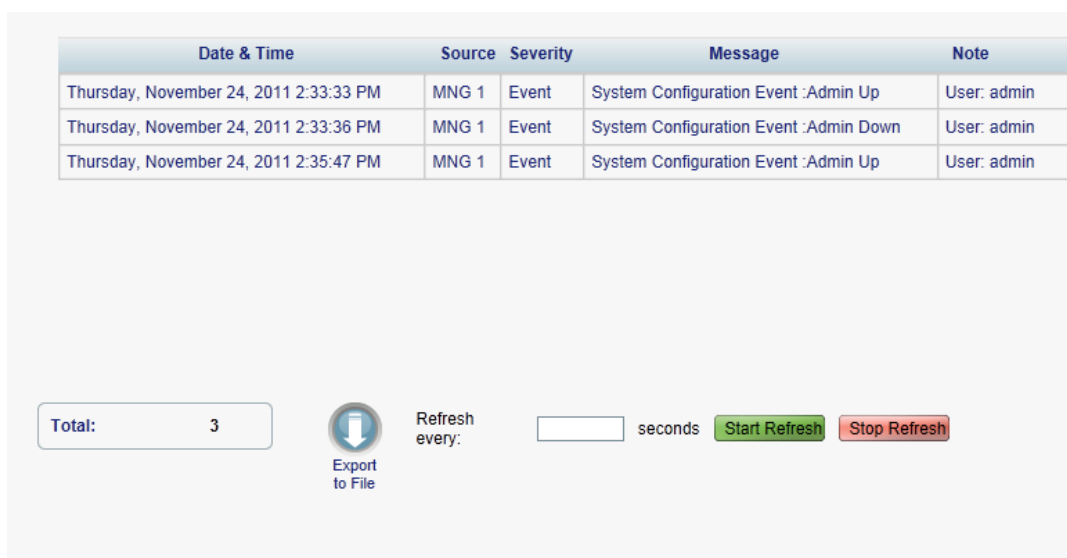
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.


**Table 19: Events Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>

### 5.6.3 Configuration Changes Tab



Date & Time	Source	Severity	Message	Note
Thursday, November 24, 2011 2:33:33 PM	MNG 1	Event	System Configuration Event :Admin Up	User: admin
Thursday, November 24, 2011 2:33:36 PM	MNG 1	Event	System Configuration Event :Admin Down	User: admin
Thursday, November 24, 2011 2:35:47 PM	MNG 1	Event	System Configuration Event :Admin Up	User: admin

Total: 

 Refresh every:  seconds

**Figure 44: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view the Configuration Changes Log:**

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

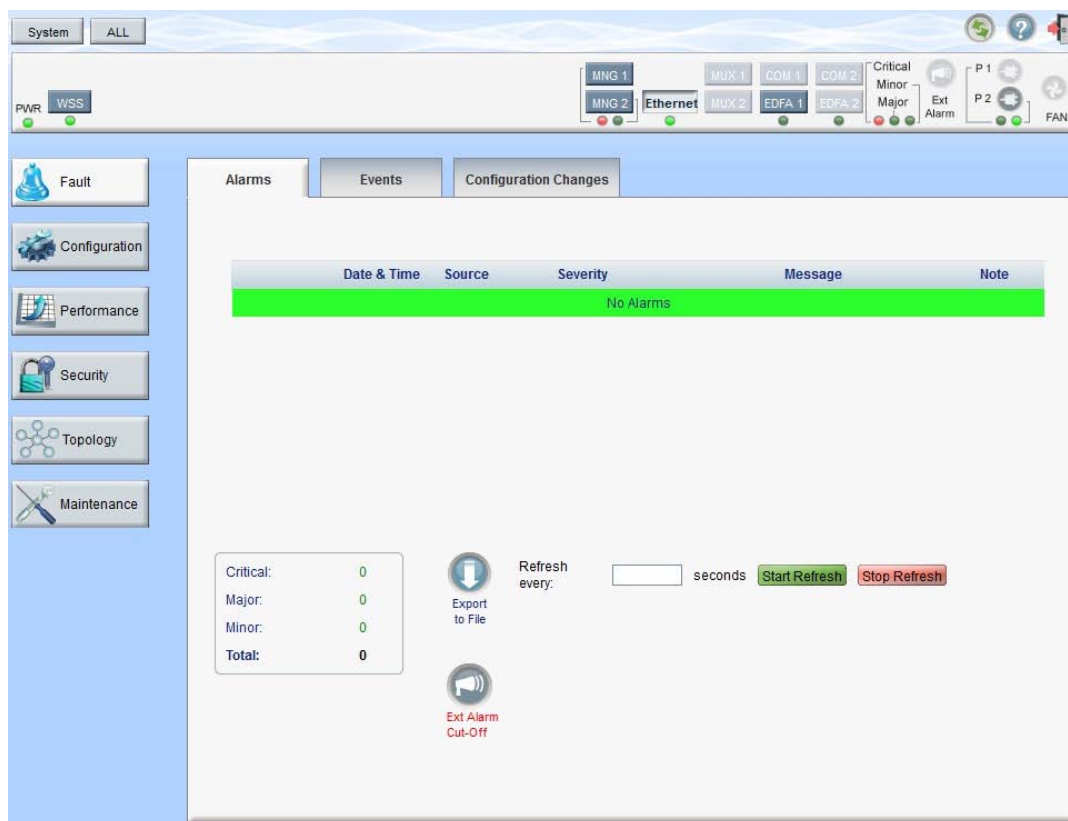
The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 20: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

A

## 5.7 Ethernet Port Faults



**Figure 45: Ethernet Port Fault Window**

Use the Ethernet Port Fault window to do the following:

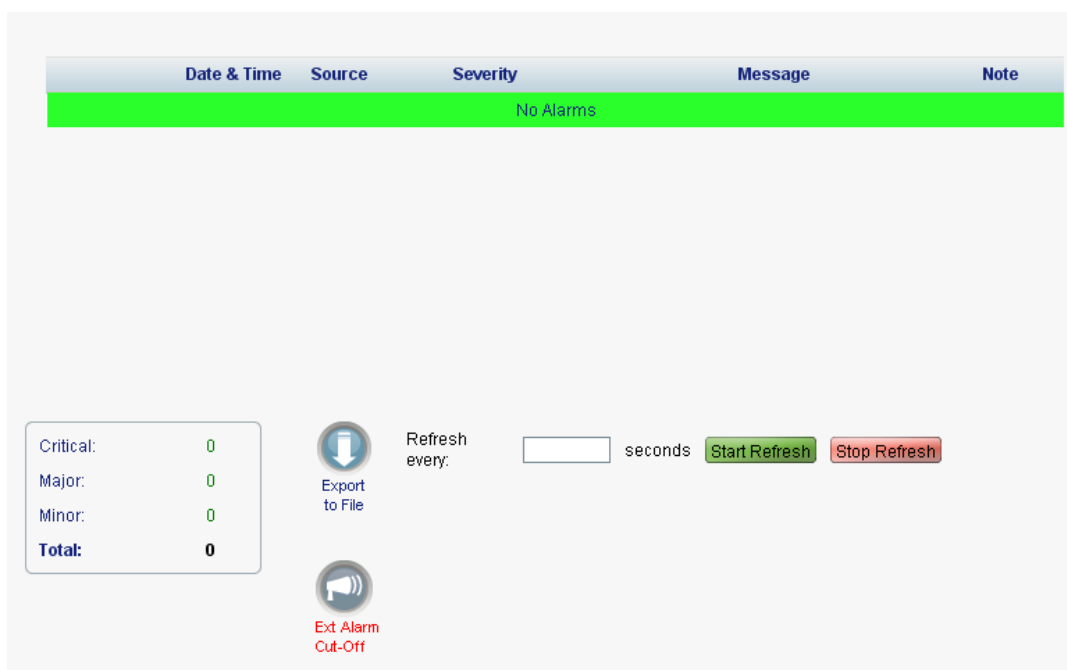
- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Event Log tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the Ethernet Port Fault window:**

1. Click **Fault**.
2. Click **Ethernet** to select the Ethernet port.

The Ethernet Port Fault window opens.

## 5.7.1 Alarms Tab



**Figure 46: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view current alarms:

1. Click the **Alarms** tab.

The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:

- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm

**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications](#) (p. 13).



2. To export the list of alarms to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.



3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
4. To refresh the Fault display manually, click **Refresh** .  
The information is updated immediately.
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.
6. To turn off the external alarm, click **Ext Alarm Cut-Off** .  
The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

**NOTE:** This action does not clear any alarms.

**Table 21: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>


## 5.7.2 Events Tab

Date & Time	Source	Severity	Message	Note
Monday, October 24, 2011 10:58:33 AM	Ethernet Port	Event	Link Up	

Critical:	0
Major:	0
Minor:	0
Cleared:	0
Events:	1
<b>Total:</b>	<b>1</b>


Export to File

Refresh every:  seconds
Start Refresh Stop Refresh

**Figure 47: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view the Event Log:

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.

The color of the event background indicates the severity of the event:

- **Red:** Indicates the occurrence of a Critical or Major alarm
- **Yellow:** Indicates the occurrence of a Minor alarm
- **Green:** Indicates that the corresponding alarm is cleared
- **White:** Indicates informational messages

2. To export the Event Log to a file:

1. Click **Export File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

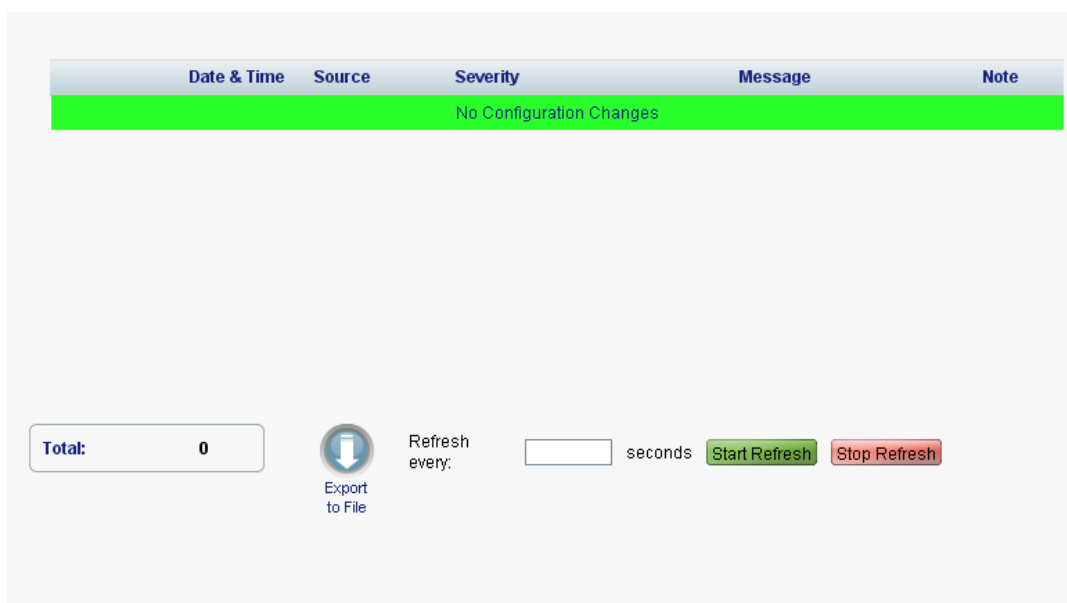
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 22: Events Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>

### 5.7.3 Configuration Changes Tab



**Figure 48: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view the Configuration Changes Log:**

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

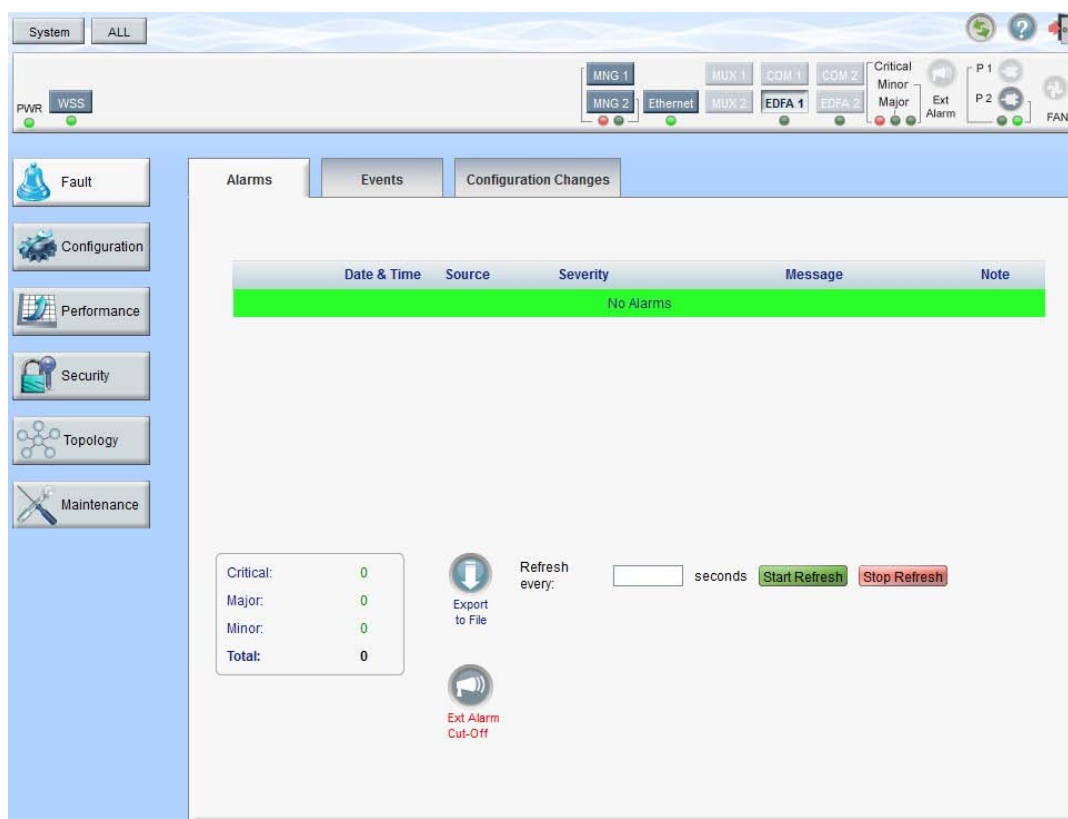
The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 23: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

A

## 5.8 EDFA Faults



**Figure 49: EDFA Fault Window**

**NOTE:** The **EDFA** button is enabled only if an EDFA module is installed.

Use the EDFA Fault window to do the following:

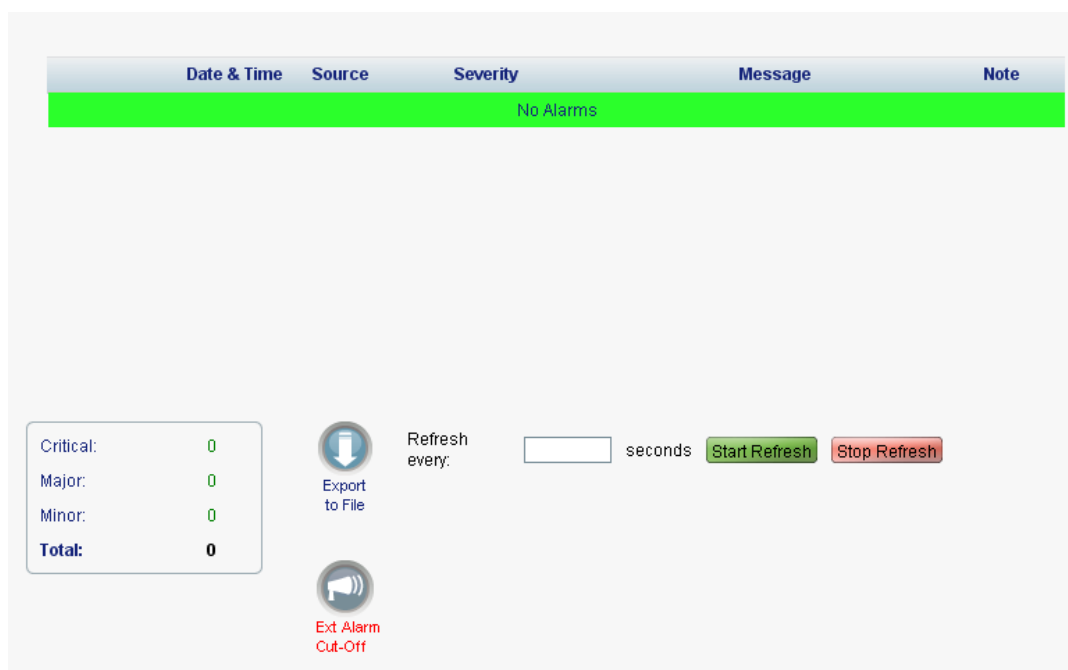
- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Event Log tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the EDFA Fault window:**

1. Click **Fault**.
2. Click an **EDFA** button to select the EDFA module.

The appropriate EDFA Fault window opens.

## 5.8.1 Alarms Tab



**Figure 50: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view current alarms:

1. Click the **Alarms** tab.

The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:

- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm



**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications](#) (p. 13).

2. To export the list of alarms to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.

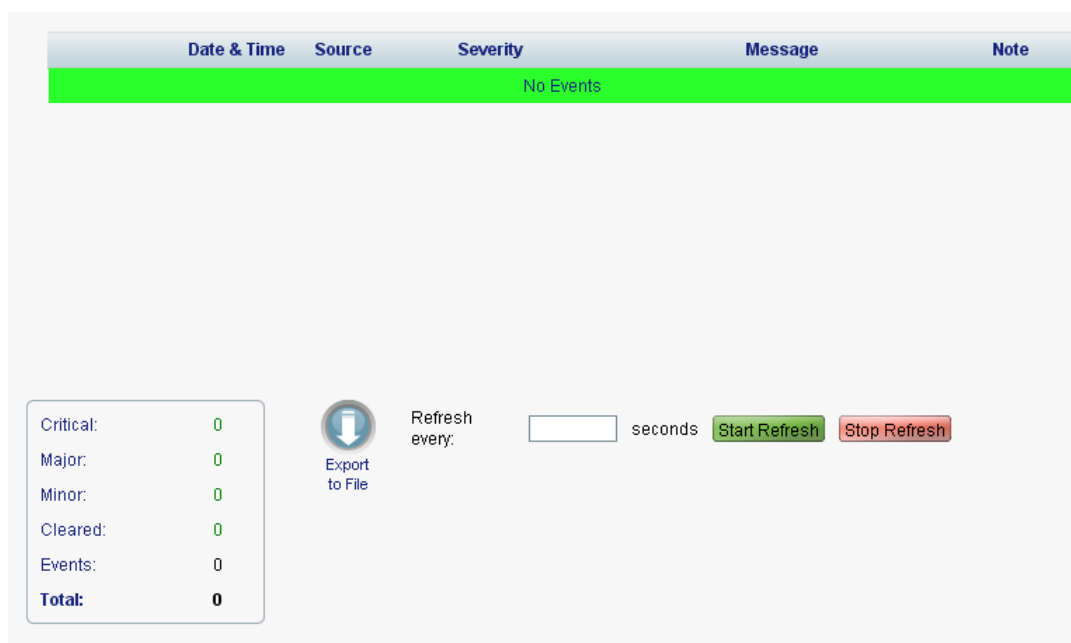
3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
4. To refresh the Fault display manually, click **Refresh** .  
The information is updated immediately.
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.
6. To turn off the external alarm, click **Ext Alarm Cut-Off** .  
The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

**NOTE:** This action does not clear any alarms.

**Table 24: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>

## 5.8.2 Events Tab



**Figure 51: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view the Event Log:

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.

The color of the event background indicates the severity of the event:

- **Red:** Indicates the occurrence of a Critical or Major alarm
- **Yellow:** Indicates the occurrence of a Minor alarm
- **Green:** Indicates that the corresponding alarm is cleared
- **White:** Indicates informational messages

2. To export the Event Log to a file:

1. Click **Export File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.

3. To set the refresh rate of the Fault display:


1. In the **Refresh every** field, type the number of seconds that the window should refresh.



The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

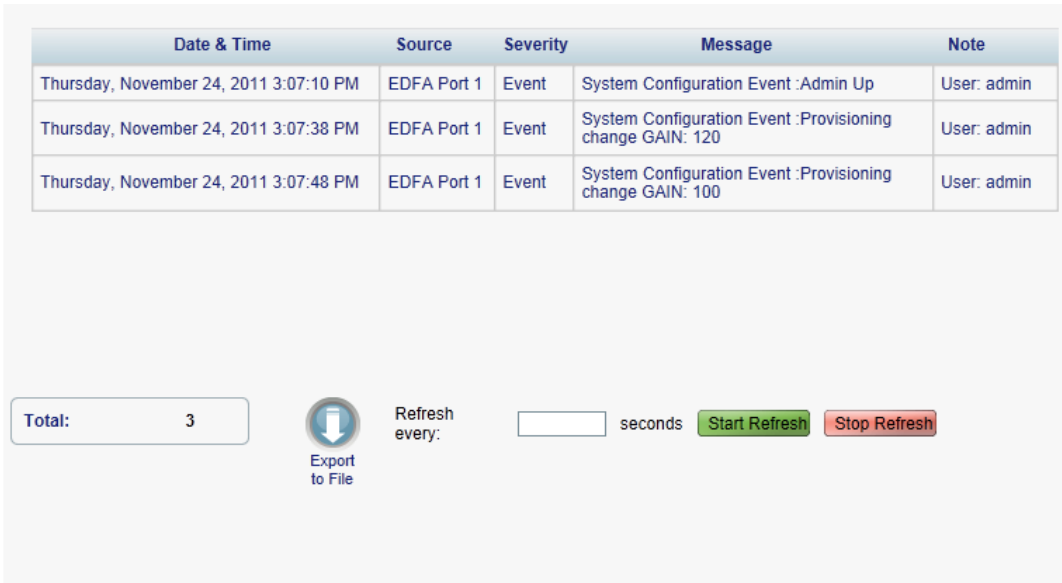
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 25: Events Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>


### 5.8.3 Configuration Changes Tab



Date & Time	Source	Severity	Message	Note
Thursday, November 24, 2011 3:07:10 PM	EDFA Port 1	Event	System Configuration Event :Admin Up	User: admin
Thursday, November 24, 2011 3:07:38 PM	EDFA Port 1	Event	System Configuration Event :Provisioning change GAIN: 120	User: admin
Thursday, November 24, 2011 3:07:48 PM	EDFA Port 1	Event	System Configuration Event :Provisioning change GAIN: 100	User: admin

Total: 3

Refresh every:  seconds Start Refresh Stop Refresh

 Export to File

**Figure 52: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view the Configuration Changes Log:**

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh** .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

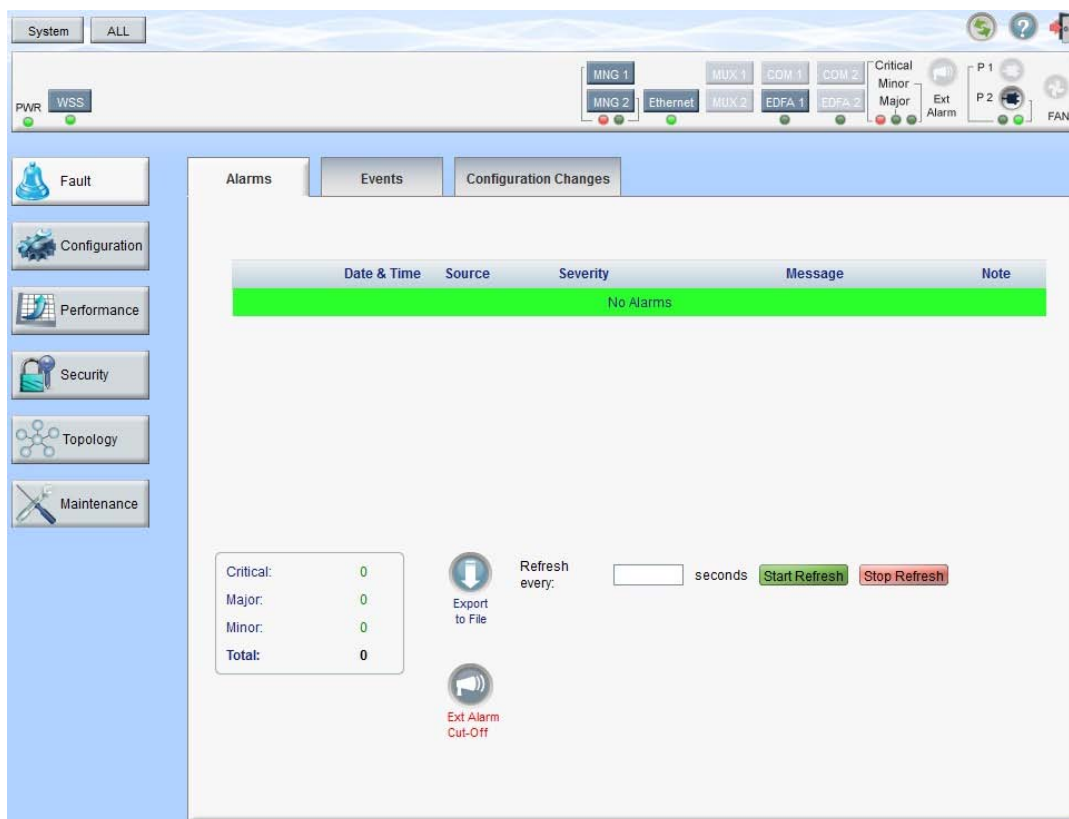
The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 26: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

A

## 5.9 PSU Faults



**Figure 53: PSU Fault Window**

Use the PSU Fault window to do the following:

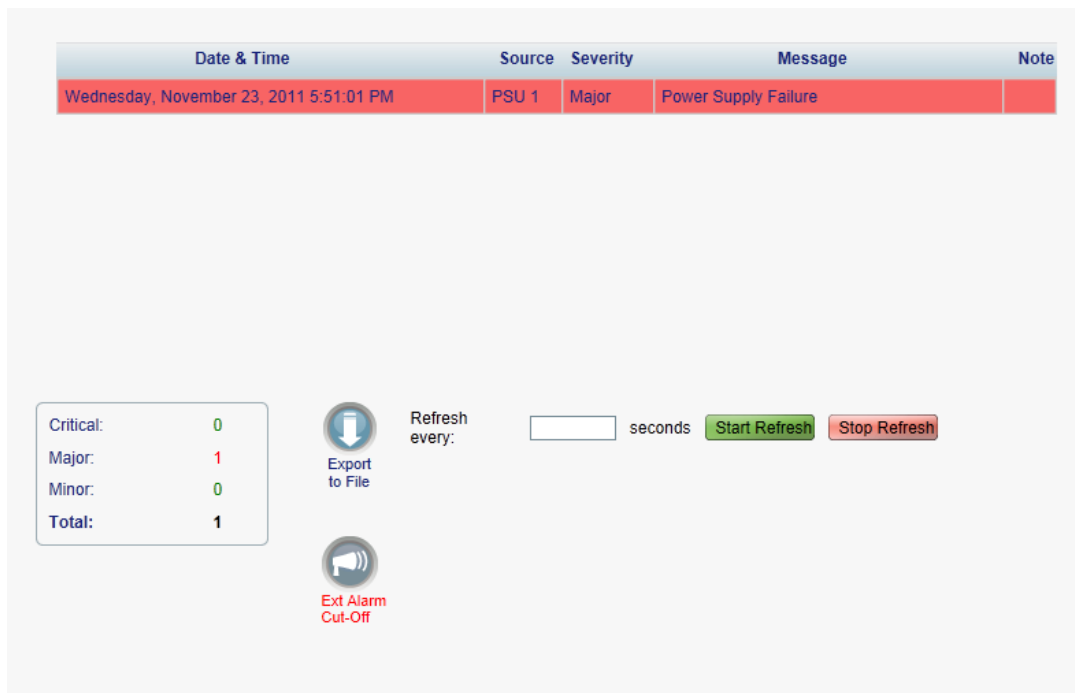
- **Alarms tab:** View the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Event Log tab:** View the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display
- **Configuration Changes tab:** View the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display

**To open the PSU Fault window:**

1. Click **Fault**.
2. Click a **PSU** button  to select the PSU.

The appropriate PSU Fault window opens.

### 5.9.1 Alarms Tab



**Figure 54: Alarms Tab**

Use the Alarms tab to view the current alarms, turn off the external alarm, export the list of alarms to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view current alarms:**

1. Click the **Alarms** tab.

The Alarms tab opens displaying the list of current alarms along with the problems in the node. The fields are read only and explained in the following table.

The color of the alarm background indicates the severity of the alarm:

- **Red:** Critical or Major alarm
- **Yellow:** Minor alarm



**NOTE:** The LED display reflects the actual LED indications on the unit. For the list of LEDs and their functions, see [Technical Specifications \(p. 13\)](#).

2. To export the list of alarms to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.

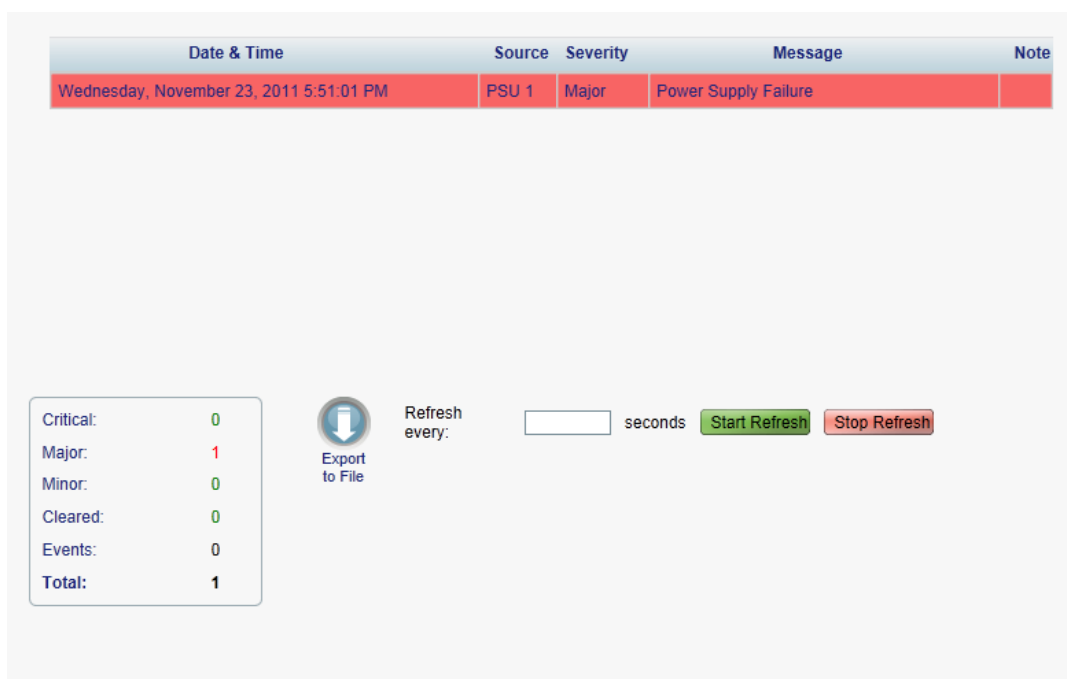
3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
4. To refresh the Fault display manually, click **Refresh** .  
The information is updated immediately.
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.
6. To turn off the external alarm, click **Ext Alarm Cut-Off** .  
The external alarm caused by the current faults turns off; new faults will activate the external alarm again.

**NOTE:** This action does not clear any alarms.

**Table 27: Alarms Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the alarm was detected.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the alarm.	
Severity	The severity of the alarm.	Critical, Major, Minor
Message	The type of alarm.	
Note	Whether or not the alarm is service affecting.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The alarm is service affecting.</li> <li>• <b>Blank:</b> The alarm is not service affecting.</li> </ul>


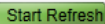

## 5.9.2 Events Tab



Date & Time	Source	Severity	Message	Note
Wednesday, November 23, 2011 5:51:01 PM	PSU 1	Major	Power Supply Failure	

Critical:	0
Major:	1
Minor:	0
Cleared:	0
Events:	0
<b>Total:</b>	<b>1</b>

 Export to File
 Refresh every:  seconds
  

**Figure 55: Events Tab**

Use the Events tab to view the Event Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

### To view the Event Log:

1. Click the **Events** tab.

The Events tab opens displaying the list of events and history of the node's fault notifications. The fields are read only and explained in the following table.

The color of the event background indicates the severity of the event:


- **Red:** Indicates the occurrence of a Critical or Major alarm
- **Yellow:** Indicates the occurrence of a Minor alarm
- **Green:** Indicates that the corresponding alarm is cleared
- **White:** Indicates informational messages

2. To export the Event Log to a file:

1. Click **Export File** .

The Opening table.csv dialog box appears.

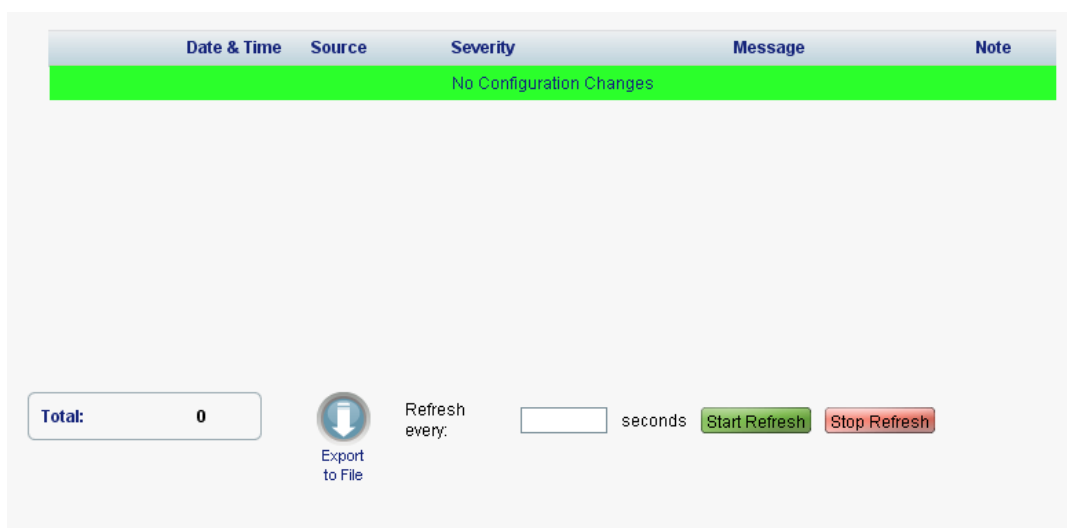
2. Click **Save File**.
3. Click **OK**.

3. To set the refresh rate of the Fault display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
4. To refresh the Fault display manually, click **Refresh** .  
The information is updated immediately.
5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 28: Events Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the event occurred.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the event.	
Severity	The severity of the event.	Critical, Major, Minor, Cleared, Event
Message	The type of event.	
Note	Information related to the event.	<ul style="list-style-type: none"> <li>• <b>S.A.:</b> The event is service affecting.</li> <li>• <b>Blank:</b> The event is not service affecting.</li> <li>• <b>Other:</b> Information related to the event.</li> </ul>

### 5.9.3 Configuration Changes Tab



**Figure 56: Configuration Changes Tab**

Use the Configuration Changes tab to view the Configuration Changes Log, export the log to a file, set the refresh rate, and stop the automatic refresh of the Fault display.

**To view the Configuration Changes Log:**

1. Click the **Configuration Changes** tab.

The Configuration Changes tab opens displaying the list of Configuration events and history of the node's fault notifications. The fields are read only and explained in the following table.

2. To export the Configuration Changes Log to a file:

1. Click **Export to File**  .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.


3. To set the refresh rate of the Fault display:

1. In the **Refresh every** field, type the number of seconds that the window should refresh.

The minimum refresh rate is 2 seconds.

2. Click **Start Refresh**.

The information is automatically updated after the specified number of seconds.

4. To refresh the Fault display manually, click **Refresh**  .

The information is updated immediately.

5. To stop the automatic refresh of the Fault display, click **Stop Refresh**.

The automatic refresh is stopped and the **Refresh every** field is cleared.

**Table 29: Configuration Changes Tab Parameters**

Parameter	Description	Format/Values
Date & Time	The date and time when the change was made.	Day of the week, Month, Day, Year, HH:MM:SS, AM/PM
Source	The entity that caused the change.	
Severity	The severity of the change.	Critical, Major, Minor, Cleared, Event
Message	The type of change.	
Note	Information related to the change.	

A



## 6 Configuration Management

This chapter provides instructions for configuring the PL-1000RO.

For initial configuration of the PL-1000RO via a local terminal, and instructions for logging in and out of the Web application, see [Operation and Preliminary Configuration](#) (p. 29).

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### 6.1 Configuration Options

Use the following configuration operations to manage the PL-1000RO.

- **System**
  - View general system information, such as hardware version and system uptime
  - View system inventory
  - Configure Simple Network Time Protocol (SNTP) parameters
  - Configure IP addresses, default gateway, and static routing
  - Configure SNMP parameters and traps
  - Define to which Syslog server you want the node to send the events
- **WSS Module**
  - Configure general WSS parameters
  - Configure how the DWDM channels are handled by the WSS module
- **MNG Port**
  - View port status
  - Configure port parameters
  - Enable or disable the port
  - View SFP information

- Configure ALS parameters
- **Ethernet Port**
  - View port properties
  - Configure auto negotiation parameters
- **MUX/DEMUX Module**
  - View channel wavelength configuration
- **EDFA Module**
  - View module status
  - Configure the EDFA mode and related parameters
  - Enable or disable the module
- **PSU**
  - View PSU information
- **FAN Unit**
  - View FAN information

## 6.2 General Configuration Procedure

The following is the general procedure for viewing and configuring the PL-1000RO configuration. The specific procedures for each item are provided in the following sections.

### To view and configure the PL-1000RO configuration:

1. Click **Configuration**.
2. Click the desired button in the upper portion of the window to select the item to view and/or configure:
  - **System** (see [System Configuration](#) (p. 93))
  - **WSS** (see [WSS Configuration](#) (p. 105))
  - **MNG** (see [Management Port Configuration](#) (p. 109))
  - **Ethernet** (see [Ethernet Port Configuration](#) (p. 115))
  - **MUX** (if present) (see [MUX/DEMUX Configuration](#) (p. 117))
  - **EDFA** (if present) (see [EDFA Configuration](#) (p. 118))
  - **PSU** (see [PSU Configuration](#) (p. 121))
  - **FAN** (see [FAN Unit Information](#) (p. 123))

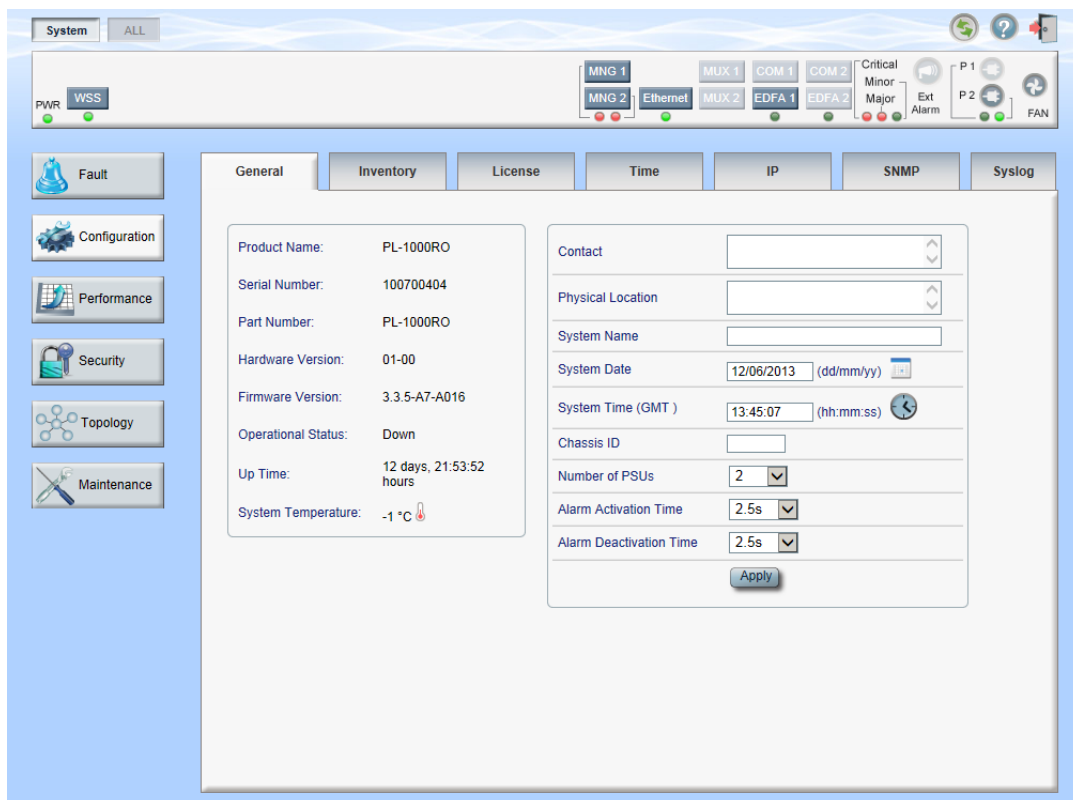
The appropriate Configuration window opens.

3. Click a tab.

The appropriate tab opens.

4. Fill in the fields as explained in the appropriate table. Note that some or all of the fields may be read only.
5. When all of the information is provided, click **Apply**.

## 6.3 System Configuration



**Figure 57: System Configuration Window**

Use the System Configuration window to do the following:

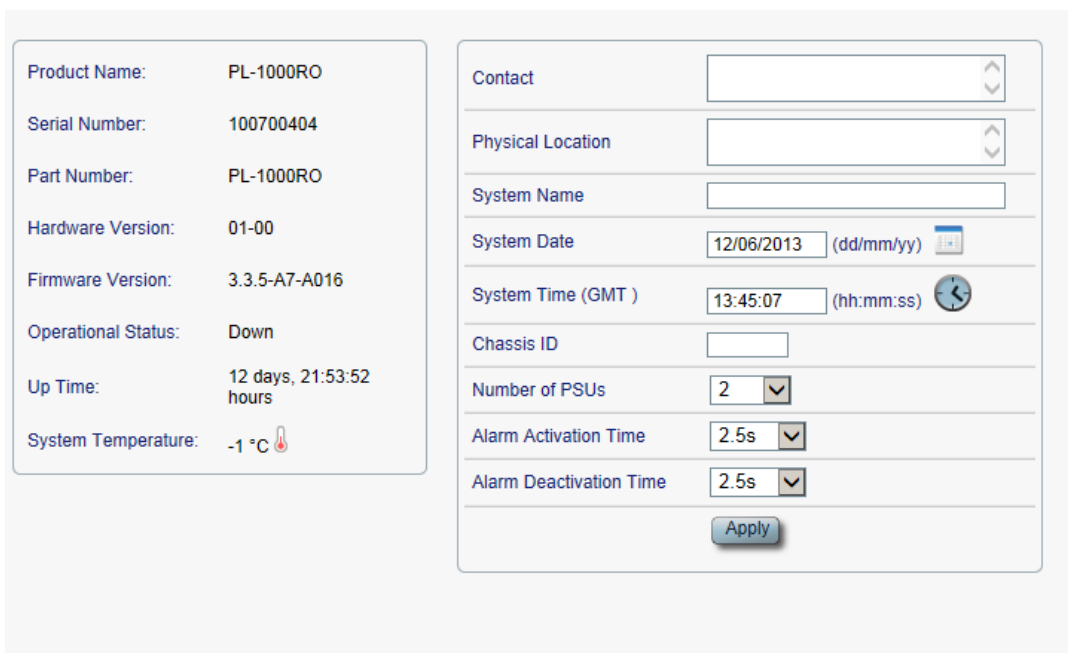
- **General tab:** Configure general system parameters
- **Inventory tab:** View system inventory
- **License tab:** Not relevant for PL-1000RO
- **Time tab:** Configure SNTP parameters
- **IP tab:** Configure IP addresses and static routing
- **SNMP tab:** Configure SNMP parameters and traps
- **Syslog tab:** Configure Syslog servers

**To open the System Configuration window:**

1. Click **Configuration**.
2. Click **System**.

The System Configuration window opens.

### 6.3.1 General Tab



**Figure 58: General Tab**



Use the General tab to configure general system parameters.

**To configure general system parameters:**

1. Click the **General** tab.  
 The General tab opens displaying the general system configuration.
2. Fill in the fields as explained in the following table.
3. Click **Apply**.

**Table 30: General Tab Parameters**

Parameter	Description	Format/Values
Product Name	The name of the product.	PL-1000RO
Serial Number	The serial number of the entity.	Serial number
Part Number	The part number of the node.	Part number
Hardware Version	The hardware version of the system.	dd-dd (Major-Minor)
Firmware Version	The firmware version of the system.	Firmware version
Operational Status	The operational status of the system. This indicates if there is a failure in the system.	<ul style="list-style-type: none"> <li>• <b>Up</b>: Normal operation</li> <li>• <b>Down</b>: Alarm is detected</li> </ul>
Up Time	The system uptime. This shows how much time passed since last reset.	Elapsed time
System Temperature	The measured temperature of the system.	Celsius

Parameter	Description	Format/Values
Contact	The contact information for PacketLight Technical Support.	Free text
Physical Location	The address of the site.	Free text
System Name	The logical name given to the PL-1000RO.	Free text
System Date	Sets the current system date. This is the date used for time stamps.	<ul style="list-style-type: none"> <li>Set dd/mm/yy <i>or</i></li> <li>Select the date using the calendar </li> <li><i>or</i></li> <li>Will be set automatically by SNTP (if enabled)</li> </ul>
System Time (GMT)	Sets the current system time of day. This is the time used for time stamps.	<ul style="list-style-type: none"> <li>Select hh:mm:ss <i>or</i></li> <li>Set the time using the clock </li> <li><i>or</i></li> <li>Will be set automatically by SNTP (if enabled)</li> </ul>
Chassis ID	The chassis number. This is used for the optimization of the topology display.	1,2, and so on <b>NOTE:</b> If several nodes are in the same location, they should have the same number (see <a href="#">Defining Multiple Nodes as Multi-Chassis</a> (p. 153)).
Number of PSUs	The number of power supply units installed in the PL-1000RO.	1, 2
Alarm Activation Time	The time from defect detection till report, if defect is still constantly detected.	2.5-10 seconds Default: 2.5 seconds <b>NOTE:</b> Recommended to use the default time.
Alarm Deactivation Time	The time from no defect detection till report, if defect is still constantly not detected.	2.5-10 seconds Default: 10 seconds <b>NOTE:</b> Recommended to use the default time.

## 6.3.2 Inventory Tab

Name	Description	Serial Number	Hardware Rev	Part Number	Manufacturer
PL-1000RO	Main Board	0	01-00	PL-1000RO	PacketLight Networks
PSU 2	AC Power Interface Card	100700560	0101	AS3371A00	
FAN Unit	Cooling Fan Unit		0100	FAN UNIT	
MUX Module 1	MUX DWDM-8				
EDFA Module 1	Amplifier Module		-		
WSS Module	WSS Module				


  
 Export to File

**Figure 59: Inventory Tab**

Use the Inventory tab to display information about the components currently installed in the system.

**NOTE:** Not all parameters are applicable for all types of components.

### To view system inventory:

1. Click the **Inventory** tab.

The Inventory tab opens displaying the system inventory. The fields are read only and explained in the following table.

2. To export the inventory list to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.
3. Click **OK**.

**Table 31: Inventory Tab Parameters**

Parameter	Description
Name	The logical component name.
Description	The type of component.
Serial Number	The serial number of the component.
Hardware Rev	The hardware revision of the component.
Part Number	The part number of the component.
Manufacturer	The manufacturer of the component.

### 6.3.3 License Tab



Figure 60: License Tab

**NOTE:** The License tab is only applicable for products requiring a license and is not relevant for PL-1000RO.

### 6.3.4 Time Tab

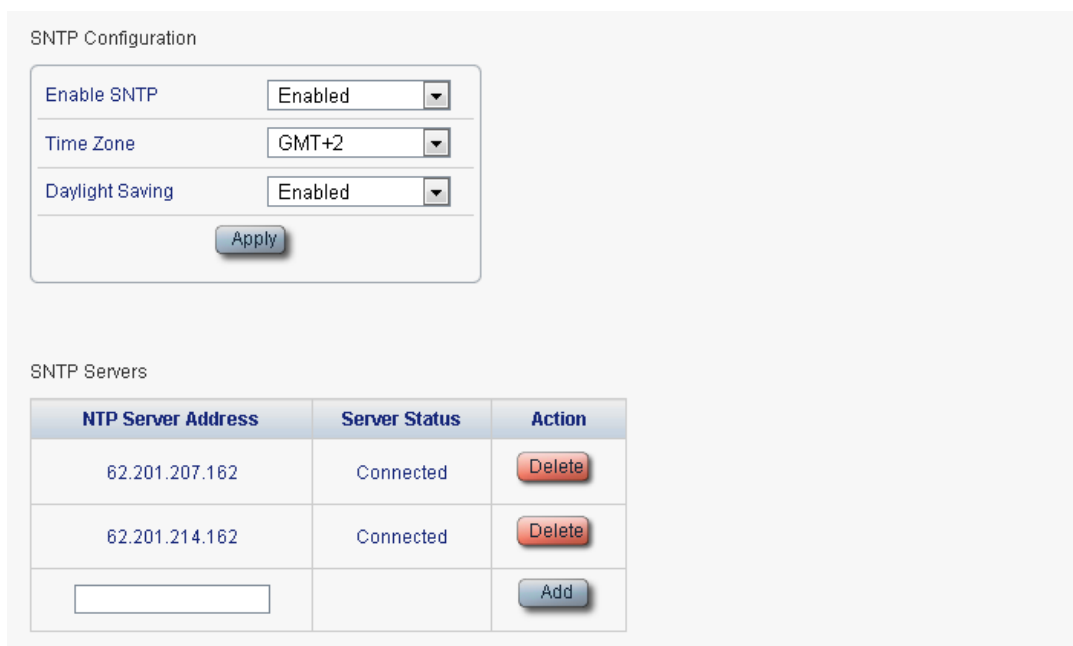


Figure 61: Time Tab

Use the Time tab to configure the PL-1000RO to use the standard protocol SNTP to synchronize its calendar time with an external accurate time server.

The PL-1000RO polls the list of defined servers every 10 minutes and takes the time from the first connected server.

**NOTE:**

- Update the **Daylight Saving** parameter twice a year.
- In order to communicate with the Time Server, the PL-1000RO must have an IP route to the defined server. Therefore, you may want to add the Time Server address to the **Static Routing** table (see [IP Tab](#) (p. 99)).

**To configure SNTP:**

1. Click the **Time** tab.

The Time tab opens displaying the Time and Time Server parameters. The fields are explained in the following table.

2. To configure the **Time** parameters:
  1. Fill in the following fields:
    - **Enable SNTP**
    - **Time Zone**
    - **Daylight Saving**
  2. Click **Apply**.
3. To add a server:
  1. In the **NTP Server Address**, type the IP address.
  2. Click **Add**.
4. To remove a server, click **Delete** in the corresponding line.

**Table 32: Time Tab Parameters**

Parameter	Description	Format/Values
<b>Time Parameters</b>		
Enable SNTP	Enables or disables the time synchronization process.	<ul style="list-style-type: none"> <li>• <b>Enabled:</b> Operate the protocol</li> <li>• <b>Disabled:</b> Stop the protocol</li> </ul>
Time Zone	Sets the time zone of the node that defines the conversion from Coordinated Universal Time (UTC) to local time.	GMT±n Select a time zone according to your geographical location. <b>NOTE:</b> The local time is shown.
Daylight Saving	Sets whether or not the clock will advance one hour due to summer time saving.	<ul style="list-style-type: none"> <li>• <b>Enabled:</b> Advance the clock</li> <li>• <b>Disabled:</b> Do not advance the clock</li> </ul>
<b>Time Server Parameters</b>		
NTP Server Address	The IP address of an SNTP time server.	IP address
Server Status	The status of the connection with the server.	<ul style="list-style-type: none"> <li>• <b>Unknown:</b> No attempt has yet been made to connect to the server.</li> <li>• <b>Connected:</b> The link to the server has been established.</li> <li>• <b>Disconnected:</b> No link to the server.</li> </ul> <b>NOTE:</b> This field is read only.



### 6.3.5 IP Tab

IP Addresses

LAN IP Address	<input type="text" value="192.10.10.10"/>
LAN Subnet Mask	<input type="text" value="255.255.0.0"/>
Default Gateway	<input type="text"/>
OSC/In-band IP Address	<input type="text" value="10.0.23.2"/>
OSC/In-band Subnet Mask	<input type="text" value="255.0.0.0"/>
Network Mode	<input type="text" value="Dual Networks"/> ▼

Static Routing

Destination Address	Subnet Mask	Gateway	Action
12.0.0.0	255.255.0.0	10.0.0.1	<input type="button" value="Delete"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>

Figure 62: IP Tab - Dual Networks

**IP Addresses**

LAN IP Address	<input type="text" value="192.168.3.2"/>
LAN Subnet Mask	<input type="text" value="255.0.0.0"/>
Default Gateway	<input type="text" value="192.168.0.150"/>
OSC/In-band IP Address	<input type="text" value="192.168.3.2"/>
OSC/In-band Subnet Mask	<input type="text" value="255.0.0.0"/>
Network Mode	<input type="text" value="Single Network"/> ▼

**Static Routing**

Destination Address	Subnet Mask	Gateway	Action
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>

**Figure 63: IP Tab - Single Network**

Use the IP tab to configure the IP addresses, default gateway of the node, and static routing.

The PL-1000RO node supports two network modes: **Dual Networks** and **Single Network**.

- **Dual Networks:** In this mode, the node has two IP addresses; one is the **LAN IP Address** that is used for the LAN port and the other is the **OSC/In-band Address** that is used for the MNG ports.
- **Single Network:** In this mode, the node has a single IP address (**LAN IP Address**) that is used for both the LAN port and the MNG ports.

**NOTE:**

- Changing the network mode automatically restarts the PL-1000RO; the process may take a few minutes.
- Changing the IP address configuration may immediately stop management communication to the node.
- When configuring IP addresses, make sure that the IP address of the OSC/In-band is not in the same subnet as the LAN port, otherwise the routing of the management traffic will fail.

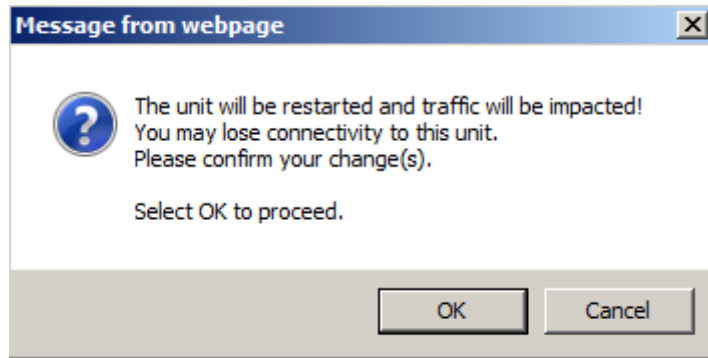
**To configure IP addresses, default gateway, and static routing:**

1. Click the **IP** tab.

The IP tab opens displaying the IP Address and Static Routing configuration.

2. In the **LAN IP Address** section, fill in the fields as explained in the following table.
3. Click **Apply**.

If you changed the network mode, the following confirmation message appears.



**Figure 64: Confirm Changes**

Click **OK**.

4. To add a new static route:
  1. In the **Static Routing** section, fill in the following fields as explained in the following table.
  2. Click **Add**.
5. To remove a configured static route, click **Delete** in the corresponding line.

**Table 33: IP Tab Parameters**

Parameter	Description	Format/Values
<b>IP Addresses</b>		
LAN IP Address	The IP address of the Ethernet port.	IP address For example: 192.168.3.231
LAN Subnet Mask	The subnet mask of the Ethernet port.	Dot notation For example: 255.255.248.0
Default Gateway	The default gateway of the node.	Dot notation For example: 192.168.0.254
OSC/In-band IP Address	The IP address of the OSC management channels.	Dot notation For example: 10.0.11.34
		<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>▪ This field is read only when <b>Network Mode</b> is set to <b>Single Network</b>.</li> <li>▪ The same IP address applies to both MNG ports.</li> </ul>

Parameter	Description	Format/Values
OSC/In-band Subnet Mask	The subnet mask of the OSC.	Dot notation For example: 255.0.0.0 <b>NOTE:</b> This field is read only when <b>Network Mode</b> is set to <b>Single Network</b> .
Network Mode	The mode of the network.	Dual Networks, Single Network <b>NOTE:</b> This field appears only for certain hardware versions.
<b>Static Routing</b>		
Destination Address	The address of the destination.	IP address For example: 11.0.3.24
Subnet Mask	The subnet mask of the destination route.	Dot notation For example: 255.255.255.0
Gateway	The address of the gateway for this destination.	IP address For example: 192.168.0.150

### 6.3.6 SNMP Tab

SNMP Configuration

Read-Only Community String	<input type="text" value="read-only"/>
Read-Write Community String	<input type="text" value="read-write"/>
SNMP Trap Compatibility Format	<input type="text" value="Full IfIndex Mode"/>

SNMP Traps

Manager Address	SNMP Traps	Community	Trap Port	Action
192.168.1.42	SNMP V2c	public	162	<input type="button" value="Delete"/>
<input type="text"/>	<input type="text" value="SNMP V2c"/>	<input type="text" value="public"/>	<input type="text" value="162"/>	<input type="button" value="Add"/>

**Figure 65: SNMP Tab**

Use the SNMP tab to configure the SNMP configuration and traps.



**WARNING:**

- Changing the community strings may immediately affect the access of the current SNMP session.

- In order to send traps to the management system, the PL-1000RO must have a specific IP route. Therefore, if needed, add the management system address to the **Static Routing** table (see [IP Tab](#) (p. 99)).

#### To configure the SNMP configuration and traps:

1. Click the **SNMP** tab.

The SNMP tab opens displaying the SNMP configuration and traps.

2. In the **SNMP Configuration** section, fill in the following fields as explained in the following table.
3. Click **Apply**.
4. To send SNMP traps to a given management system:
  1. In the **SNMP Traps** section, fill in the following fields as explained in the following table.
  2. Click **Add**.
5. To stop SNMP traps from being sent to a given management system, click **Delete** in the corresponding line.

**Table 34: SNMP Tab Parameters**

Parameter	Description	Format/Values
<b>SNMP Configuration</b>		
Read-Only Community String	The community string of the SNMP to be used for read operations.	A string of alphanumeric characters without spaces. Default: read-only
Write-Only Community String	The community string of the SNMP to be used for write operations.	A string of alphanumeric characters without spaces. Default: read-write
SNMP Trap Compatibility Format	Determines the format of the IfIndex that is sent with the SNMP traps.	<ul style="list-style-type: none"> <li>• <b>Port IfIndex Mode:</b> Used with the legacy Network Management System (NMS)</li> <li>• <b>Full IfIndex Mode:</b> Used with any other NMS.</li> </ul>
<b>SNMP Traps</b>		
Manager Address	The address of the management system.	IP address For example: 192.168.1.50
SNMP Traps	The SNMP trap format.	SNMPV2c, SNMPV1 Default: SNMPV2c
Community	The community string of the traps.	public (default)
Trap Port	The UDP port number.	162 (default)

### 6.3.7 Syslog Tab

Syslog Server Address	Syslog Port	Message Level	Action
192.168.1.37	514	Traps	Delete
<input type="text"/>	<input type="text" value="514"/>	Traps <input type="button" value="v"/>	Add

**Figure 66: Syslog Tab**

Use the Syslog tab to define the Syslog servers you want the node to send the log of events to.

A system log of the last 512 events is kept by the node and may be retrieved using the Event Log (see [Events](#) (p. 47)).

For keeping a longer history of the events, you may choose to use a Syslog server running the Syslog protocol as defined by RFC 5424, to receive the node events and save them on an external Syslog system.

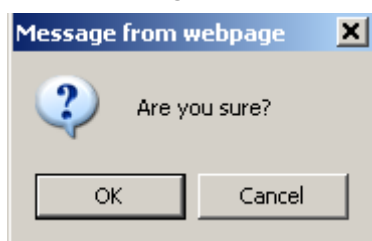
**To configure Syslog servers:**

1. Click the **Syslog** tab.

The Syslog tab opens displaying the Syslog configuration.

2. To send events to a given Syslog server:
  1. In the **Syslog Servers** section, fill in the following fields as explained in the following table.
  2. Click **Add**.

The following confirmation message appears.



**Figure 67: Confirm Configuration**

3. Click **OK**.
3. To remove a configured Syslog server:
  1. Click **Delete** in the corresponding line.

The following confirmation message appears.

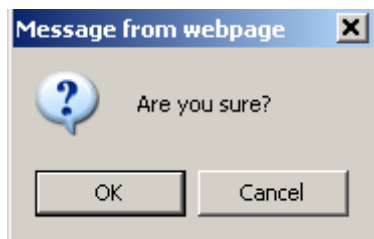


Figure 68: Confirm Configuration

2. Click **OK**.

Table 35: Syslog Tab Parameters

Parameter	Description	Format/Values
Syslog Server Address	The address of the Syslog system.	IP address For example: 192.168.1.37
Syslog port	The UDP port number.	Port number Default: 514
Message Level	The supported message filter level.	<ul style="list-style-type: none"> <li>• <b>Traps:</b> Traps only</li> <li>• <b>Log:</b> Log messages</li> <li>• <b>Debug:</b> Log and debug messages</li> </ul> Default: Traps

## 6.4 WSS Configuration

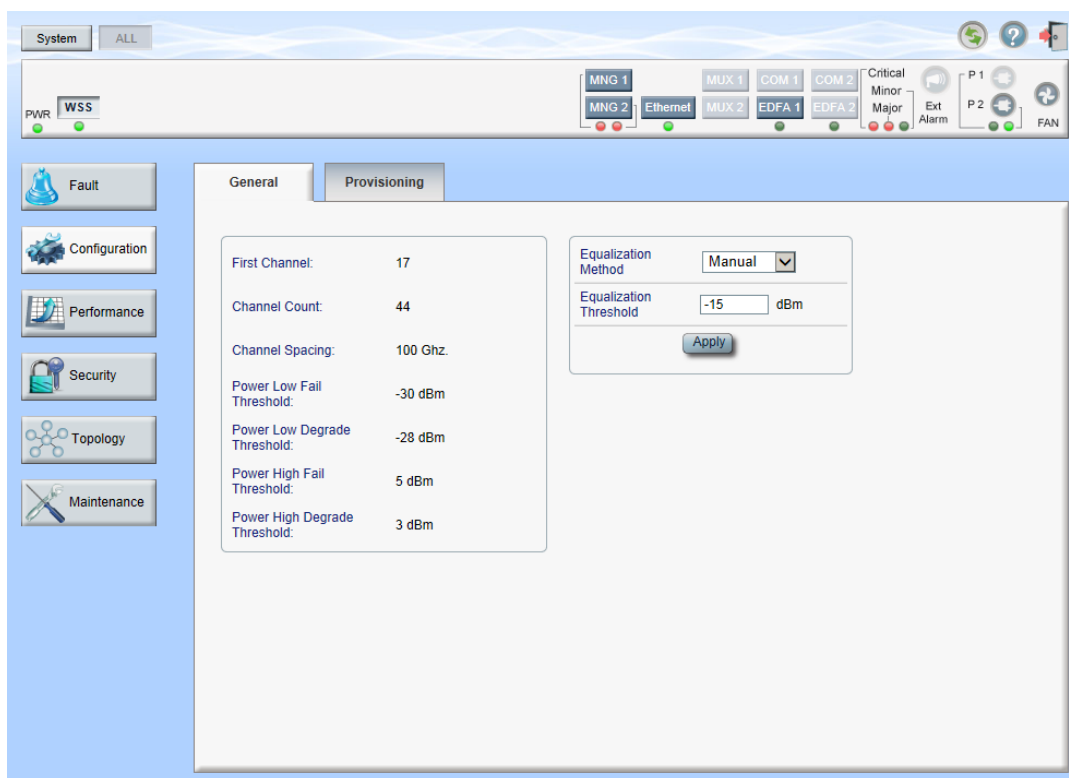


Figure 69: WSS Configuration Window

Use the WSS Configuration window to do the following:

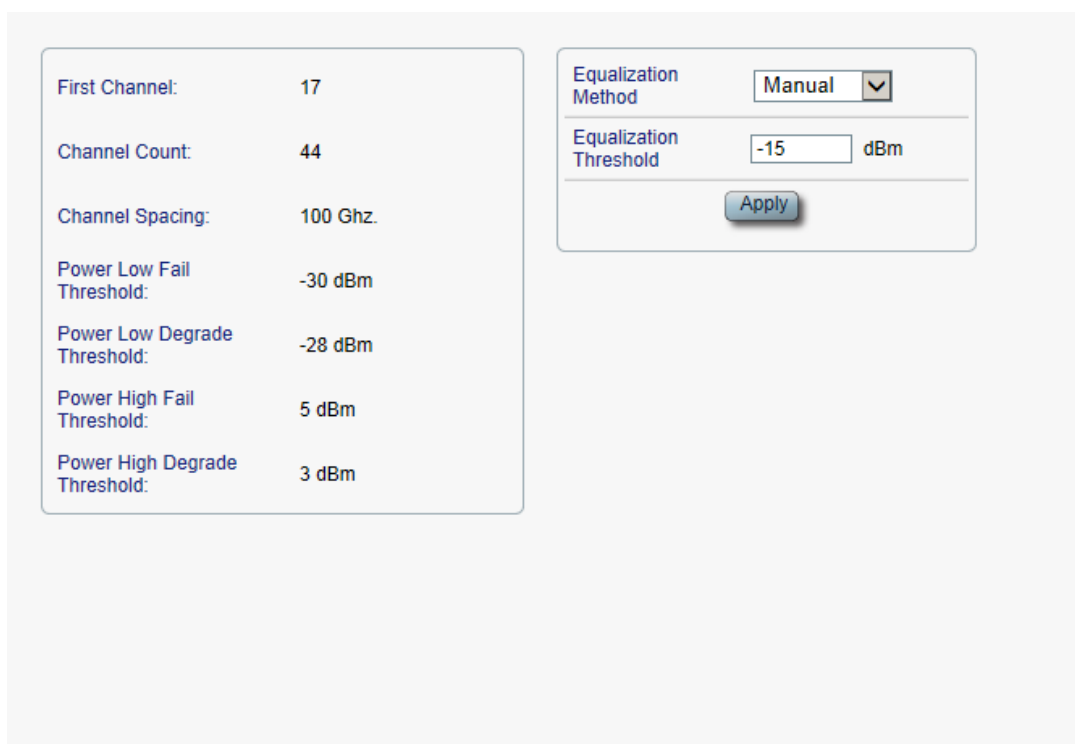
- **General tab:** Configure general WSS parameters
- **Provisioning tab:** Configure how the DWDM channels are handled by the WSS module

**To open the WSS Configuration window:**

1. Click **Configuration**.
2. Click **WSS** to select the WSS module.

The WSS Configuration window opens.

### 6.4.1 General Tab



First Channel:	17
Channel Count:	44
Channel Spacing:	100 Ghz.
Power Low Fail Threshold:	-30 dBm
Power Low Degrade Threshold:	-28 dBm
Power High Fail Threshold:	5 dBm
Power High Degrade Threshold:	3 dBm

Equalization Method: Manual ▼

---

Equalization Threshold: -15 dBm

---

Apply

**Figure 70: General Tab**

Use the General tab to configure general WSS parameters.

**To configure general WSS parameters:**

1. Click the **General** tab.

The General tab opens displaying the general WSS configuration.

2. Fill in the fields as explained in the following table.
3. Click **Apply**.



**Table 36: General Tab Parameters**

Parameter	Description	Format/Values
First Channel	The number of the first channel.	<ul style="list-style-type: none"> <li>• <b>44 Channels:</b> 17</li> <li>• <b>88 Channels:</b> 17</li> </ul>
Channel	The number of channels.	44, 88
Channel Spacing	The channel spacing of the WSS.	<ul style="list-style-type: none"> <li>• <b>44 Channels:</b> 100 GHz</li> <li>• <b>88 Channels:</b> 50 GHz</li> </ul>
Power Low Fail Threshold	The default threshold for the Power Low Fail Threshold alarm.	dBm
Power Low Degrade Threshold	The default threshold for the Power Low Degrade Threshold alarm.	dBm
Power High Fail Threshold	The default threshold for the Power High Fail Threshold alarm.	dBm
Power High Degrade Threshold	The default threshold for the Power High Degrade Threshold alarm.	dBm
Equalization Method	The method for channel equalization.	Manual, Automatic
Equalization Threshold	Channels with power below this threshold are not included in power equalization.	dBm <b>NOTE:</b> This field is displayed and applied only if <b>Equalization Method</b> is set to <b>Manual</b> .

## 6.4.2 Provisioning Tab

Channel	Alias	Wavelength	Add/Drop	Express	Not Used
17	<input type="text" value="Boston"/>	1563.86	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
18	<input type="text"/>	1563.05	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
19	<input type="text"/>	1562.23	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
20	<input type="text"/>	1561.42	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
21	<input type="text"/>	1560.61	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
22	<input type="text"/>	1559.79	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
23	<input type="text"/>	1558.98	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
24	<input type="text"/>	1558.17	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
25	<input type="text"/>	1557.36	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
26	<input type="text"/>	1556.55	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
27	<input type="text"/>	1555.75	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
28	<input type="text"/>	1554.94	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
29	<input type="text"/>	1554.13	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
30	<input type="text"/>	1553.32	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Figure 71: Provisioning Tab**

Use the Provisioning tab to configure how the DWDM channels are handled by the WSS module.

**To configure the DWDM channels:**

1. Click the **Provisioning** tab.

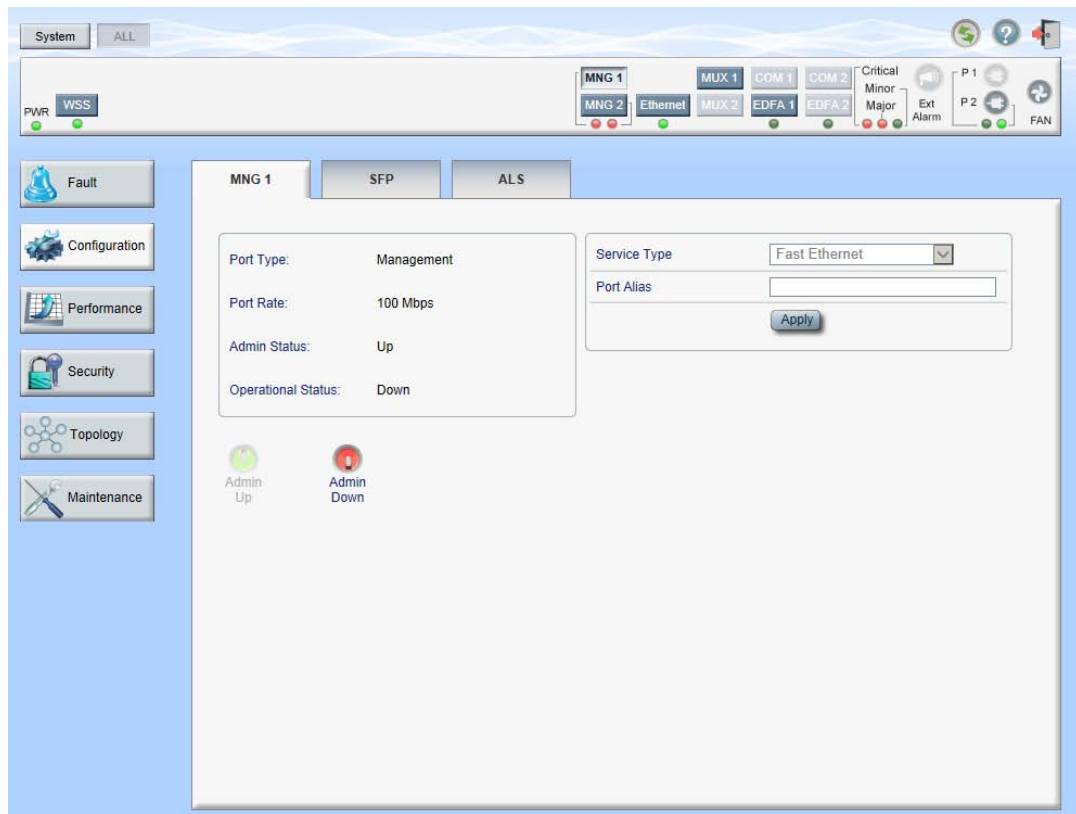
The Provisioning tab opens displaying the DWDM channels configuration. The fields are explained the following table.

2. For each channel, click one of the following options: **Add/Drop**, **Express**, or **Not Used**.
3. Click **Apply**.

**Table 37: Provisioning Tab Parameters**

Parameter	Description	Format/Values
Channel	The channel number in the DWDM 50/100 GHz spacing grid as defined by ITU-T G.694.1.	<ul style="list-style-type: none"> <li>• <b>50 GHz:</b> 17 to 60.5 (increments of 0.5)</li> <li>• <b>100 GHz:</b> 17 to 60 (increments of 1.0)</li> </ul>
Alias	The logical name given to the channel for identification purposes.	Free text
Wavelength	The wavelength of the channel.	Units: nanometers (nm)
Add/Drop	Channel is locally used.	
Express	Channel is locally bypassed.	
Not Used	Channel is unused.	Default

## 6.5 Management Port Configuration



**Figure 72: Management Port Window**

Use the Management Port Configuration window to do the following:

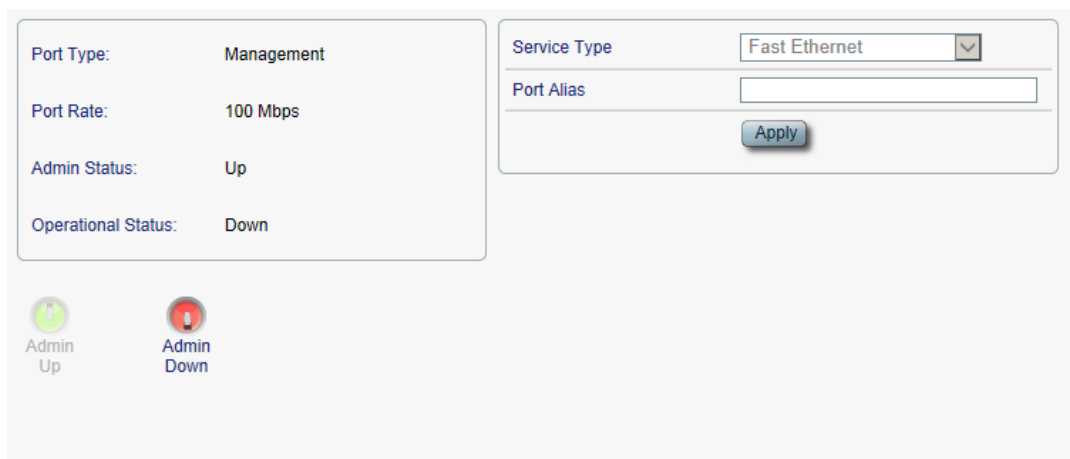
- **MNG tab:** Configure an MNG port and enable/disable the port
- **SFP tab:** Configure the SFP module
- **ALS tab:** Configure ALS for an MNG port

**To open the Management Port Configuration window:**

1. Click **Configuration**.
2. Click an **MNG** button to select the management port.

The appropriate Management Port Configuration window opens.

## 6.5.1 MNG Tab



**Figure 73: MNG Tab**

Use the MNG tab to configure a management port and enable/disable the port.

### To configure a management port:

1. Click the **MNG** tab.

The MNG tab opens displaying the management port configuration.

2. Fill in the fields as explained in the following table.
3. Click **Apply**.
4. To enable the port:

1. Click **Admin Up** .

The following confirmation message appears.



**Figure 74: Confirm Changes**

2. Click **OK**.

The selected port is enabled, the **Admin Up** button is disabled, and the **Admin Down** button is enabled.

5. To disable the port:

1. Click **Admin Down** .

The following confirmation message appears.



**Figure 75: Confirm Changes**

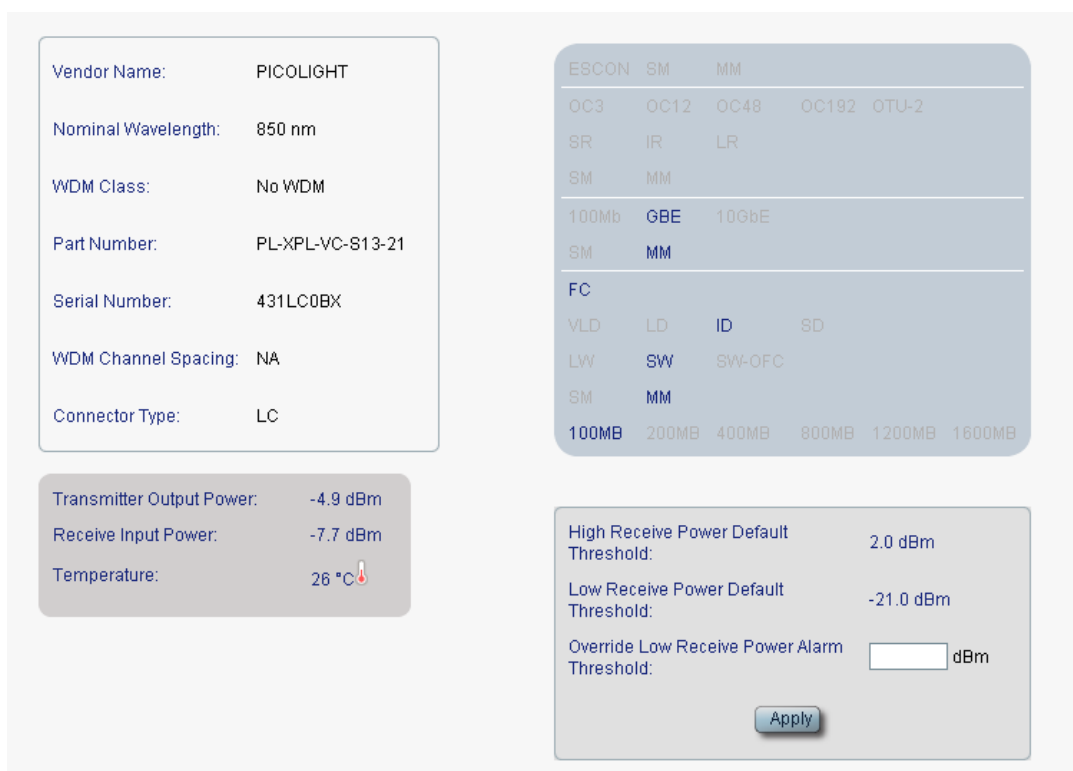
2. Click **OK**.

The selected port is disabled, the **Admin Up** button is enabled, and the **Admin Down** button is disabled.

**Table 38: MNG Tab Parameters**

Parameter	Description	Format/Values
Port Type	The type of port.	Management
Port Rate	The maximum bit rate of the OSC management port.	125 Mbps
Admin Status	The administrative status of the port.	Up, Down To change the value, click <b>Admin Up</b> or <b>Admin Down</b> .
Operational Status	The operational status of the port. This indicates if there is a failure in the port.	<ul style="list-style-type: none"> <li>• <b>Up</b>: Normal operation</li> <li>• <b>Down</b>: Alarm is detected or <b>Admin Down</b></li> </ul>
Service Type	The management type.	Fast Ethernet (default)
Port Alias	The logical name given to the port for identification purposes.	Free text

## 6.5.2 SFP Tab



**Figure 76: SFP Tab**

Use the SFP tab to display information about the type and status of the optical transceiver inserted in the selected port and configure the override low receiver power alarm threshold.

**To configure the SFP module:**

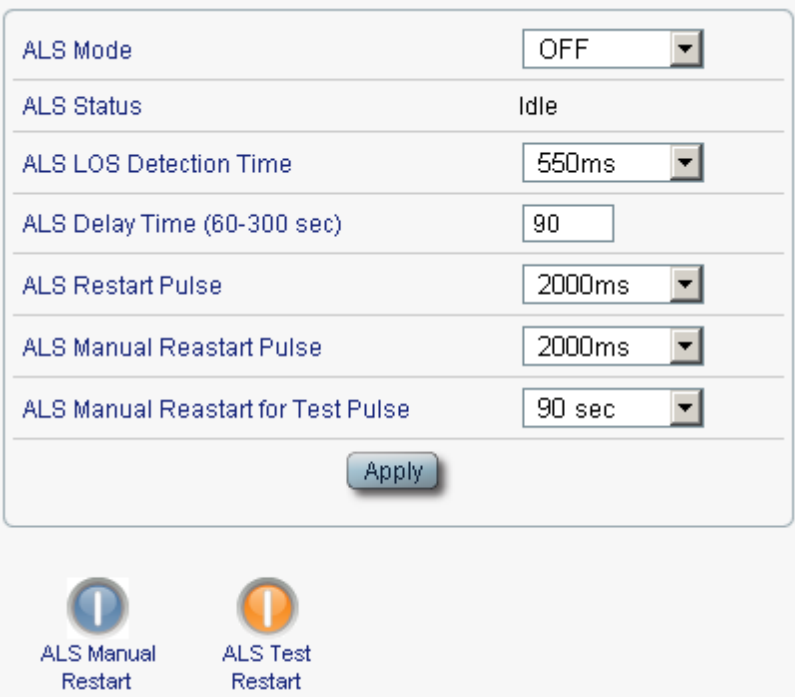
1. Click the **SFP** tab.  
The SFP tab opens displaying the SFP configuration.
2. Fill in the fields as explained in the following table.
3. Click **Apply**.

**Table 39: SFP Tab Parameters**

Parameter	Description	Format/Values
Vendor Name	The name of the SFP vendor.	String
Nominal Wavelength	The defined wavelength of the SFP.	nm
WDM Class	The type of SFP.	No WDM, CWDM, DWDM
Part Number	The part number of the SFP.	String
Serial Number	The serial number of the SFP.	String
WDM Channel Spacing	The channel spacing of the SFP.	<ul style="list-style-type: none"> <li>• <b>CWDM:</b> nm</li> <li>• <b>DWDM:</b> GHz</li> </ul>

Parameter	Description	Format/Values
Connector Type	The type of SFP connector.	<ul style="list-style-type: none"> <li>• <b>Optical:</b> LC</li> <li>• <b>Electrical:</b> RJ45</li> </ul>
Transmitter Output Power	The measured output power of the SFP.	dBm
Receiver Input Power	The measured input power of the SFP.	dBm
Temperature	The measured temperature of the SFP.	Celsius
ESCON Capabilities	The SP capabilities of the ESCON services are marked.	
SONET/SDH Capabilities	The SFP capabilities of the OC-3, OC-12, OC-48, OC-192, and OTU-2 services are marked.	
Ethernet Capabilities	The SFP capabilities of the 100Mb, GbE, and 10GbE Ethernet services are marked.	
FC Capabilities	The SFP capabilities of the FC services are marked.	
High Receiver Power Default Threshold	The default threshold for the High Receiver Power alarm.	dBm
Low Receiver Power Default Threshold	The default threshold for Low Receiver Power alarm.	dBm
Override Low Receiver Power Alarm Threshold	The configured threshold for the Low Receiver Power alarm.	dBm

### 6.5.3 ALS Tab



ALS Mode: OFF  
 ALS Status: Idle  
 ALS LOS Detection Time: 550ms  
 ALS Delay Time (60-300 sec): 90  
 ALS Restart Pulse: 2000ms  
 ALS Manual Restart Pulse: 2000ms  
 ALS Manual Restart for Test Pulse: 90 sec

[Apply]

[ALS Manual Restart] [ALS Test Restart]

Figure 77: ALS Tab

Use the ALS tab to configure ALS for a management port.

The ALS is designed for eye safety considerations. It provides the capability of automatically reducing the optical power when there is loss of optical power. The loss of optical power can be caused by cable break, equipment failure, connector unplugging, and so on.

The PL-1000RO implements the ALS optical safety procedure as defined by the ITU-T Recommendation G.664.

A laser restart operation (automatic and manual) is also provided to facilitate an easy restoration of the system after reconnection of the link.

**To configure ALS for a management port:**

1. Click **Configuration**.

2. Click an **MNG** button to select the management port.

The appropriate Management Port Configuration window opens.

3. Click the **ALS** tab.

The ALS tab opens displaying the ALS configuration for the management port.

4. Fill in the fields as explained in the following table.

5. Click **Apply**.

6. To initiate a manual restart pulse, click **ALS Manual Restart** .

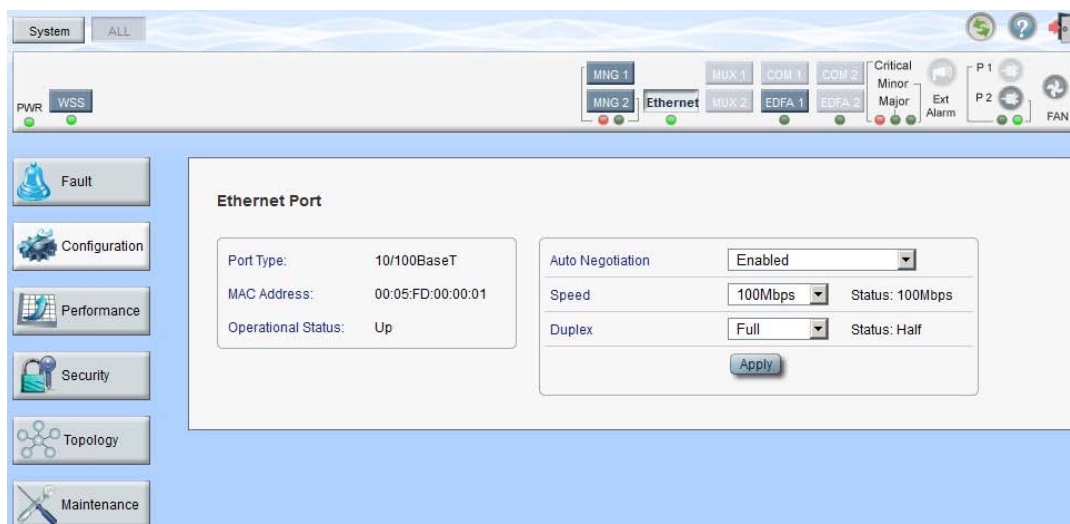
7. To initiate a manual restart for test pulse, click **ALS Test Restart** .

**Table 40: ALS Tab Parameters**

Parameter	Description	Format/Values
ALS Mode	Enable or disable ALS for this port.	OFF, ON Default: OFF
ALS Status	The current status of the ALS.	Idle, Active
ALS LOS Detection Time	The time to declare optical LOS present or clear (in milliseconds).	550 ± 50 ms Default: 550 ms
ALS Delay Time (60-300 sec)	The duration between two laser reactivations (in seconds).	60 to 300 sec Default: 90 sec
ALS Restart Pulse	The automatic restart pulse width (in milliseconds).	2000 ± 250 ms Default: 2000 ms <b>NOTE:</b> Automatic mode only.
ALS Manual Restart Pulse	Manual restart pulse width (in milliseconds).	2000 ± 250 ms Default: 2000 ms <b>NOTE:</b> Manual mode only.
ALS Manual Restart for Test Pulse	Manual restart for test pulse width (in seconds).	90 ± 10 sec Default: 90 sec <b>NOTE:</b> Manual restart only.



## 6.6 Ethernet Port Configuration



**Figure 78: Ethernet Port Window**

Use the Ethernet Port Configuration window to configure the Ethernet port status and parameters.



**WARNING:** Changing the link parameters of the Ethernet port may cause a loss of connection to the node.

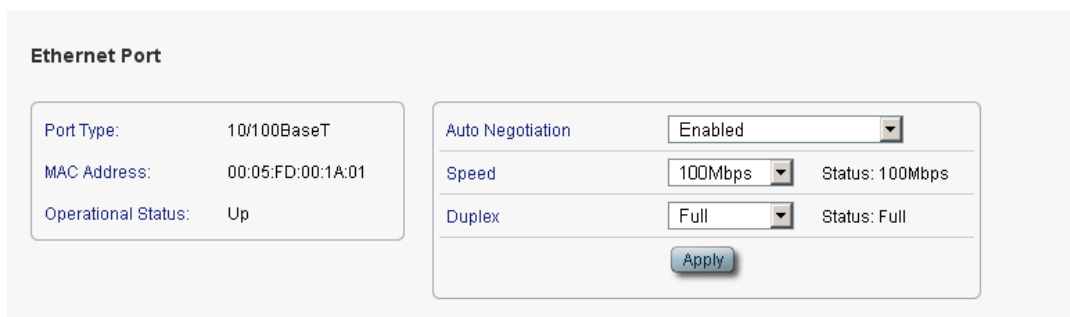
**NOTE:** The Auto Negotiation protocol is defined by IEEE 802.3 as the standard method by which two connected Ethernet devices choose common transmission parameters, such as speed and duplex mode.

**To open the Ethernet Port Configuration window:**

1. Click **Configuration**.
2. Click **Ethernet** to select the Ethernet port.

The Ethernet Port Configuration window opens.

### 6.6.1 Ethernet Tab



**Figure 79: Ethernet Tab**

Use the Ethernet tab to configure the Ethernet port.

**To configure the Ethernet port:**

1. Click **Ethernet** to select the Ethernet port.

The Ethernet tab opens displaying the Ethernet port configuration.

2. Fill in the fields as explained in the following table.
3. Click **Apply**.

**Table 41: Ethernet Tab Parameters**

Parameter	Description	Format/Values
Port Type	The type of port.	10/100 Base-T
MAC Address	The MAC address of the Ethernet port.	XX:XX:XX:XX:XX:XX
Operational Status	The operational status of the port. This indicates if there is a failure in the port.	<ul style="list-style-type: none"> <li>• <b>Up</b>: Normal operation</li> <li>• <b>Down</b>: Alarm is detected or <b>Admin Down</b></li> </ul>
Auto Negotiation	Whether or not the auto negotiation of the Ethernet link parameters should be performed.	<ul style="list-style-type: none"> <li>• <b>Enabled</b>: Auto negotiation is performed during Ethernet link establishment.</li> <li>• <b>Disabled</b>: The Ethernet link parameters are manually determined by the settings of the <b>Speed</b> and <b>Duplex</b> fields.</li> </ul> Default: Enabled <b>NOTE</b> : The advertised capabilities of the Ethernet port are: <ul style="list-style-type: none"> <li>▪ <b>Speed</b>: 10 Mbps, 100 Mbps</li> <li>▪ <b>Duplex</b>: Full, Half</li> <li>▪ <b>Flow Control</b>: Disabled</li> </ul>
Speed	The actual speed of the port.	10 Mbps, 100 Mbps <b>NOTE</b> : This field is applicable only if <b>Auto Negotiation</b> is enabled.
Speed (Manual)	The manual value of the speed of the Ethernet port.	10 Mbps, 100 Mbps <b>NOTE</b> : This field is applicable only when <b>Auto Negotiation</b> is disabled.
Status (Speed)	The actual speed of the Ethernet port.	10 Mbps, 100 Mbps
Duplex (Manual)	The manual value of the duplex mode of the Ethernet port.	Full, Half Default: Full <b>NOTE</b> : This field is applicable only if <b>Auto Negotiation</b> is disabled.
Status (Duplex)	The actual duplex of the Ethernet port.	Full, Half

## 6.7 MUX/DEMUX Configuration

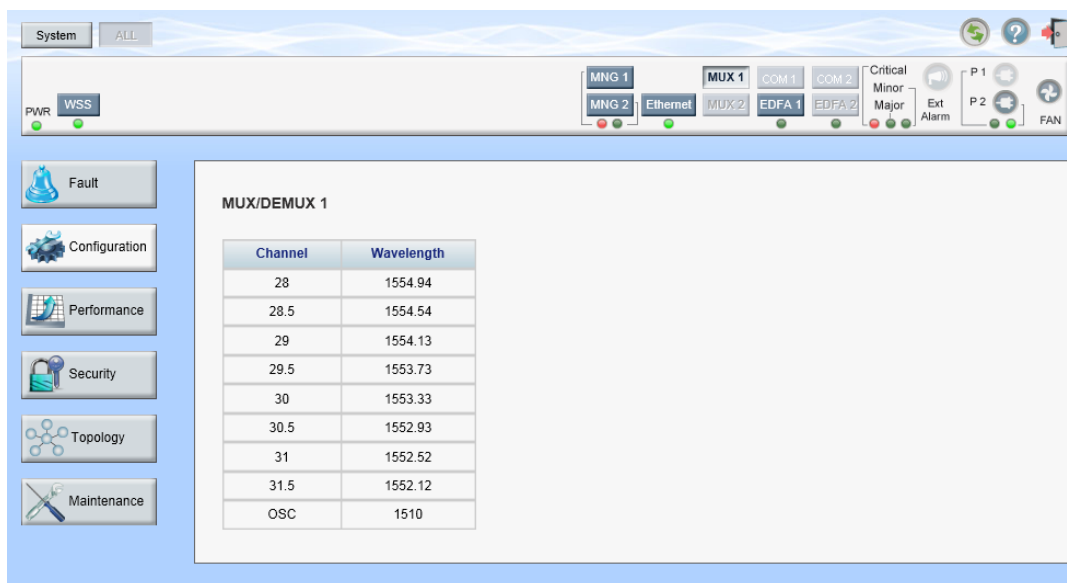


Figure 80: MUX/DEMUX Configuration Window

**NOTE:** The **MUX** button is enabled only if a MUX/DEMUX module is installed.

Use the MUX/DEMUX Configuration window to display the wavelengths of the WDM uplink channels.

**To open the MUX/DEMUX Configuration window:**

1. Click **Configuration**.
2. Click **MUX** to select the MUX/DEMUX module.  
The MUX/DEMUX Configuration window opens.

### 6.7.1 MUX/DEMUX Tab

MUX/DEMUX 1	
Channel	Wavelength
28	1554.94
28.5	1554.54
29	1554.13
29.5	1553.73
30	1553.33
30.5	1552.93
31	1552.52
31.5	1552.12
OSC	1510

Figure 81: MUX/DEMUX Tab

Use the MUX/DEMUX tab to display the wavelengths of the WDM channels; there are no configurable parameters.

**To view the MUX/DEMUX module:**

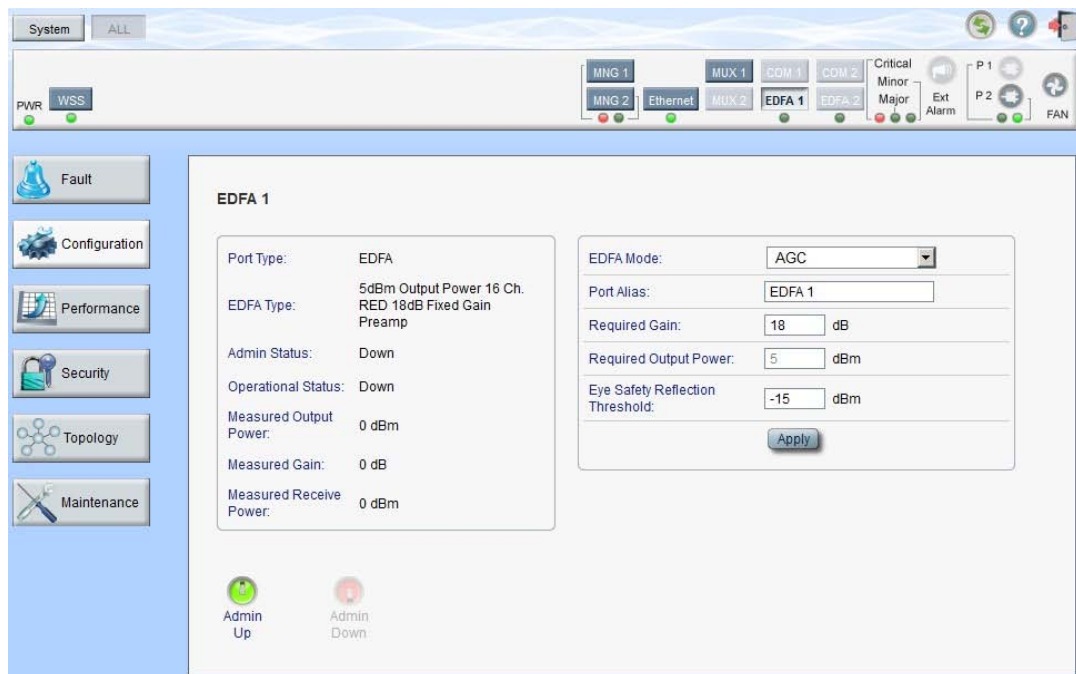
- Click **MUX** to select the MUX/DEMUX module.

The MUX/DEMUX tab opens displaying the MUX/DEMUX module configuration. The fields are read only and explained in the following table.

**Table 42: MUX/DEMUX Tab Parameters**

Parameter	Description	Format/Values
Channel	The ITU channel number supported by the MUX/DEMUX.	<ul style="list-style-type: none"> <li>• <b>CWDM:</b> CWDM, OSC</li> <li>• <b>DWDM:</b> Channel number, OSC</li> </ul>
Wavelength	The corresponding channel wavelength.	

## 6.8 EDFA Configuration



**Figure 82: EDFA Configuration Window**

**NOTE:** The **EDFA** button is enabled only if an EDFA module is installed.

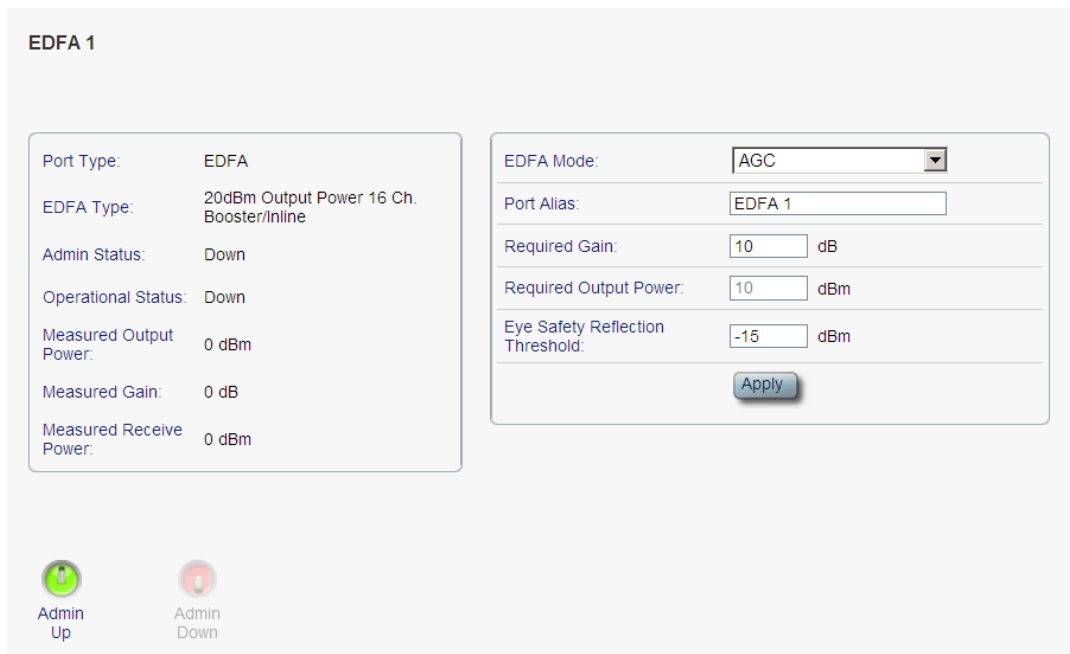
Use the EDFA Configuration window to configure the EDFA module and enable/disable the module.

**To open the EDFA Configuration window:**

1. Click **Configuration**.
2. Click an **EDFA** button to select the EDFA module.

The appropriate EDFA Configuration window opens.

## 6.8.1 EDFA Tab



**Figure 83: EDFA Tab**

Use the EDFA tab to configure the EDFA module and enable/disable the module.

**To configure the EDFA module:**

1. Click an **EDFA** button to select the EDFA module.

The EDFA tab opens displaying the EDFA module configuration.

2. Fill in the fields as explained in the following table.
3. Click **Apply**.
4. To enable the module:

1. Click **Admin Up** .

The following confirmation message appears.



**Figure 84: Confirm Changes**

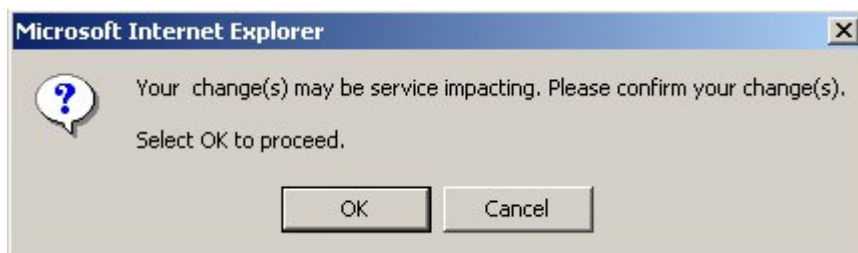
2. Click **OK**.

The selected module is enabled, the **Admin Up** button is disabled, and the **Admin Down** button is enabled.

5. To disable the module:

1. Click **Admin Down** .

The following confirmation message appears.



**Figure 85: Confirm Changes**

2. Click **OK**.

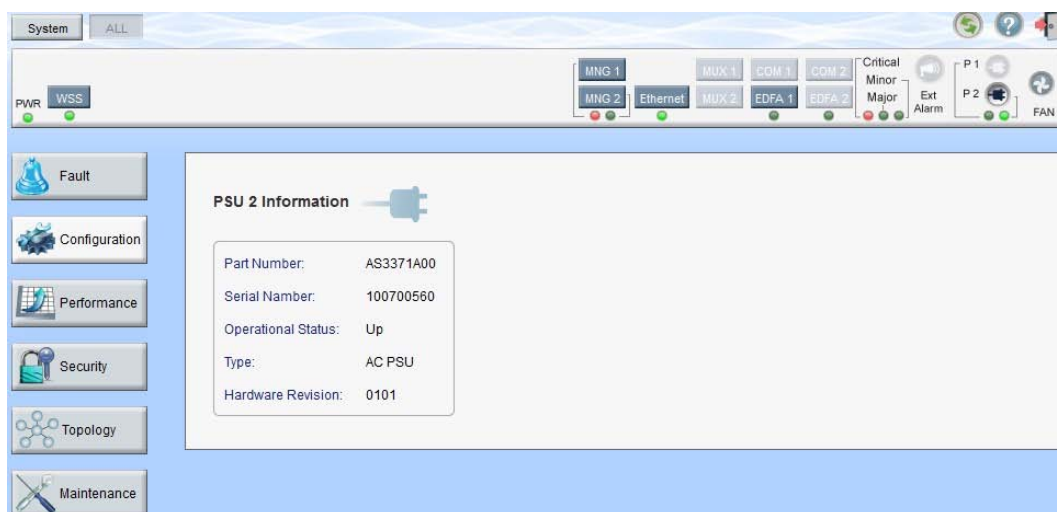
The selected module is disabled, the **Admin Up** button is enabled, and the **Admin Down** button is disabled.

**Table 43: EDFA Tab Parameters**

Parameter	Description	Format/Values
Port Type	The type of port.	EDFA
EDFA Type	The type of installed EDFA module as determined by maximum output power, maximum number of optical channels, and Booster/Inline or Pre-Amp.	EDFA types and input power ranges: <ul style="list-style-type: none"> <li>• <b>14 dBm</b>: -24 dBm to +10 dBm</li> <li>• <b>17 dBm</b>: -24 dBm to +10 dBm</li> <li>• <b>20 dBm</b>: -24 dBm to +10 dBm</li> <li>• <b>23 dBm</b>: -5 dBm to +16 dBm</li> </ul>
Admin Status	The administrative status of the EDFA module.	Up, Down To change the value, click <b>Admin Up</b> or <b>Admin Down</b> .
Operational Status	The operational status of the EDFA module. This indicates if there is a failure in the EDFA module.	<ul style="list-style-type: none"> <li>• <b>Up</b>: Normal operation</li> <li>• <b>Down</b>: Alarm is detected or <b>Admin Down</b></li> </ul>
Measured Output Power	The current measured optical power of the EDFA.	dBm
Measured Gain	The current measured gain of the EDFA.	dB
Measured Receive Power	The current measured receive power of the EDFA.	dBm

Parameter	Description	Format/Values
EDFA Mode	Selected amplification mode.	<ul style="list-style-type: none"> <li>• <b>AGC</b>: Gain remains constant.</li> <li>• <b>APC</b>: Output power remains constant.</li> </ul> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>▪ AGC is recommended.</li> <li>▪ The other available fields vary depending on which EDFA mode is selected.</li> </ul>
Port Alias	The logical name given to the module for identification purposes.	Free text
Required Gain	Specifies the required constant gain.	<ul style="list-style-type: none"> <li>• <b>Booster</b>: +10 to +22 dB</li> <li>• <b>Pre-Amp</b>: +18 dB</li> </ul> <p><b>NOTE:</b> Available only if <b>EDFA mode</b> is <b>AGC</b>.</p>
Required Output Power	Specifies the required constant power.	<ul style="list-style-type: none"> <li>• <b>Booster</b>: 14 dBm, 17 dBm, 20 dBm, 23 dBm</li> <li>• <b>Pre-Amp</b>: +5 dBm</li> </ul> <p><b>NOTE:</b> Available only if <b>EDFA mode</b> is <b>APC</b>.</p>
Eye Safety Reflection Threshold	The reflection threshold for eye safety.	dBm

## 6.9 PSU Configuration



**Figure 86: PSU Configuration Window**

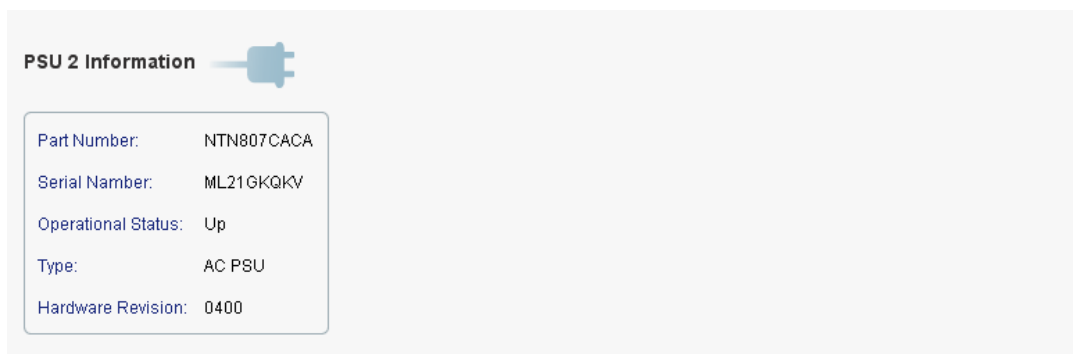
Use the PSU Configuration window to view information about the power supply units currently installed in the system.

**To open the PSU Configuration window:**

1. Click **Configuration**.
2. Click a **PSU** button  to select the power supply unit.

The appropriate PSU Configuration window opens.


## 6.9.1 PSU Tab



**Figure 87: PSU Tab**

Use the PSU tab to view information about the power supply units currently installed in the system.

**To view PSU information:**

- Click a **PSU** button  to select the power supply unit.

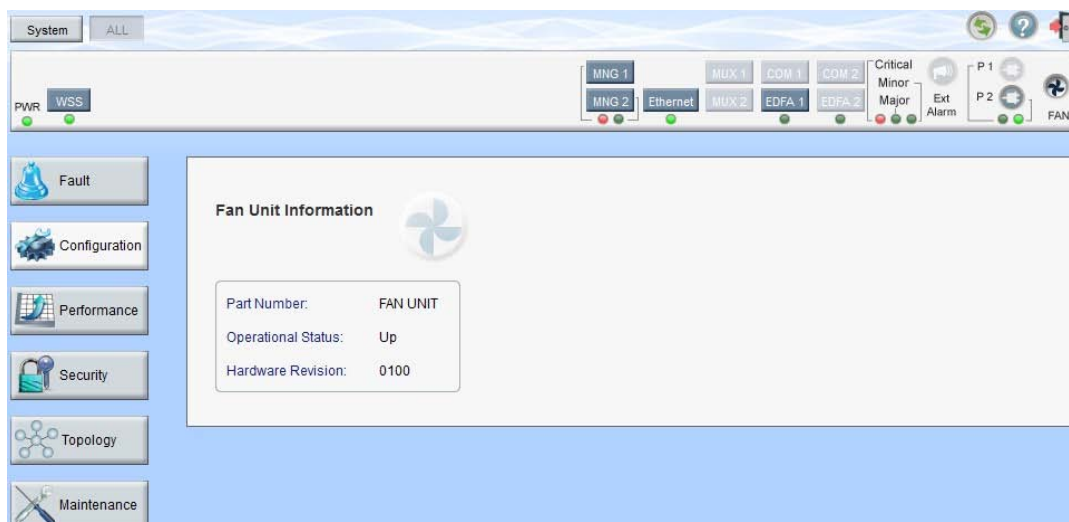
The PSU tab opens displaying the PSU information. The fields are read only and explained in the following table.

**Table 44: PSU Tab Parameters**

Parameter	Description	Format/Values
Part Number	The part number of the power supply unit.	Part number
Serial Number	The serial number of the power supply unit.	Serial number
Operational Status	The operational status of the power supply unit. This indicates if there is a failure in the power supply unit.	<ul style="list-style-type: none"> <li>• <b>Up</b>: Normal operation</li> <li>• <b>Down</b>: Alarm is detected</li> </ul>
Type	The type of power supply unit.	AC PSU, DC PSU
Hardware Revision	The hardware version of the power supply unit.	dddd




## 6.10 FAN Unit Configuration



**Figure 88: FAN Unit Configuration Window**

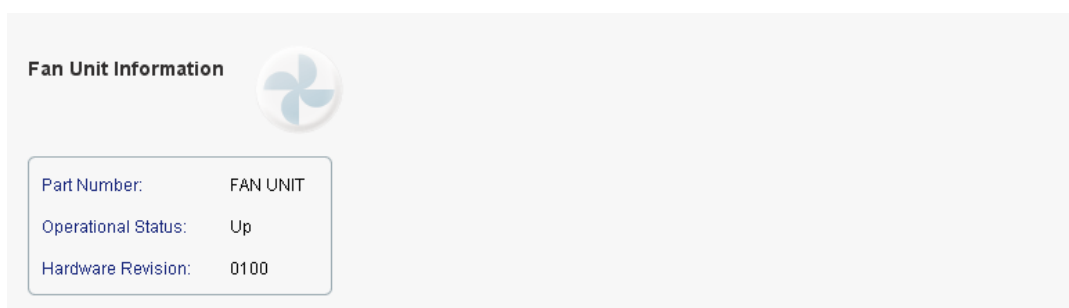
Use the FAN Unit Configuration window to view information about the FAN unit currently installed in the system.

**To open the FAN Unit Configuration window:**

1. Click **Configuration**.
2. Click **FAN**  to select the FAN unit.

The FAN Unit Configuration window opens.

### 6.10.1 FAN Unit Tab



**Figure 89: FAN Unit Tab**

Use the FAN Unit tab to display information about the FAN unit currently installed in the system.

**To view the FAN unit information:**

- Click **FAN**  to select the FAN unit.

The FAN Unit tab opens displaying the FAN unit information. The fields are read only and explained in the following table.

**Table 45: FAN Unit Tab Parameters**

Parameters	Description	Format/Values
Part Number	The part number of the FAN unit	FAN UNIT
Operational Status	The operational status of the FAN unit. This indicates if there is a failure in the FAN unit.	<ul style="list-style-type: none"><li>• <b>Up</b>: Normal operation</li><li>• <b>Down</b>: Alarm is detected</li></ul>
Hardware Revision	The hardware version of the FAN unit.	dddd



# 7 Performance Monitoring

This chapter describes the available PL-1000RO optical information and port performance monitoring.

## In this Chapter

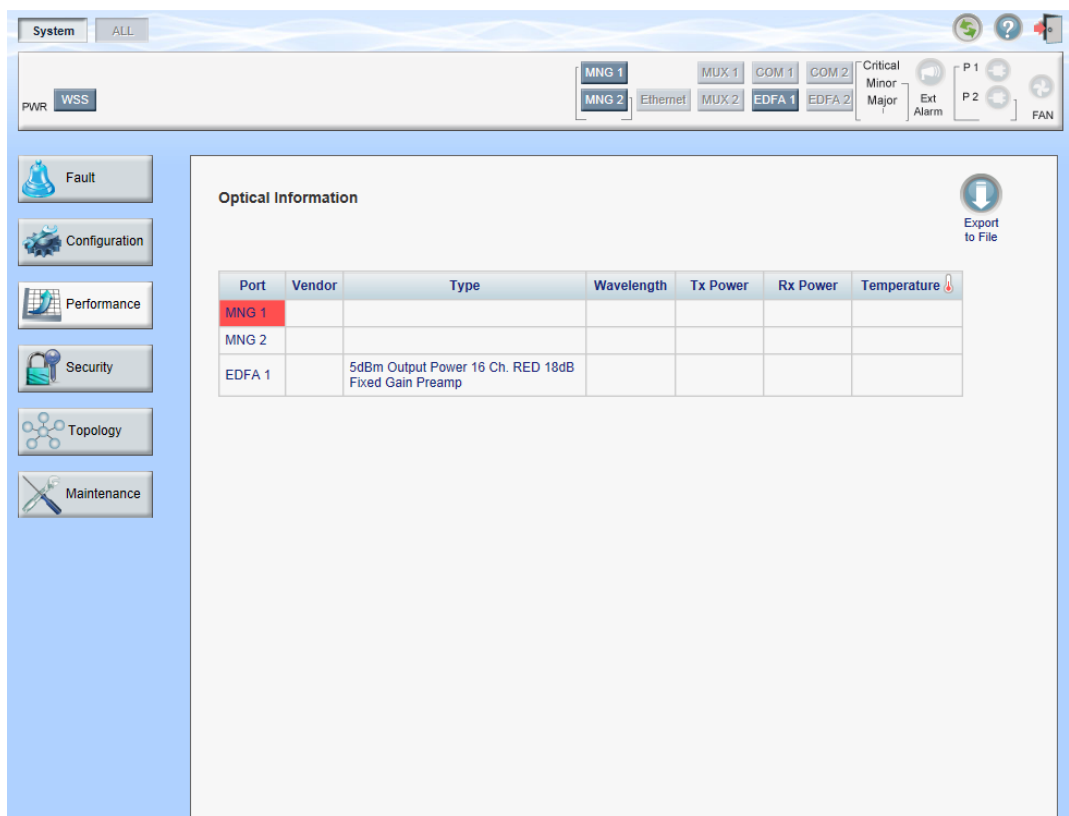
Optical Information ..... 126

WSS Monitoring ..... 128

Management Port Performance Monitoring ..... 130

EDFA Performance Monitoring ..... 133

## 7.1 Optical Information



**Figure 90: Optical Information Window**

Use the System Optical Information window to view optical performance of all optical modules installed in the system.

**To open the System Optical Information window:**

1. Click **Performance**.
2. Click **System**.

The Optical Information window opens.

## 7.1.1 Optical Information Tab



Port	Vendor	Type	Wavelength	Tx Power	Rx Power	Temperature
MNG 1						
MNG 2						
EDFA 1		5dBm Output Power 16 Ch. RED 18dB Fixed Gain Preamp				

**Figure 91: Optical Information Tab**

Use the Optical Information tab to view system optical information.

**To view the optical information tab:**

1. Click **System**.

The Optical Information tab opens displaying the optical information. The fields are read only and explained in the following table.

2. To export the optical information to a file:

1. Click **Export to File** .
  - The Opening table.csv dialog box appears.
2. Click **Save File**.
3. Click **OK**.

3. To refresh the optical information, click **Refresh** .

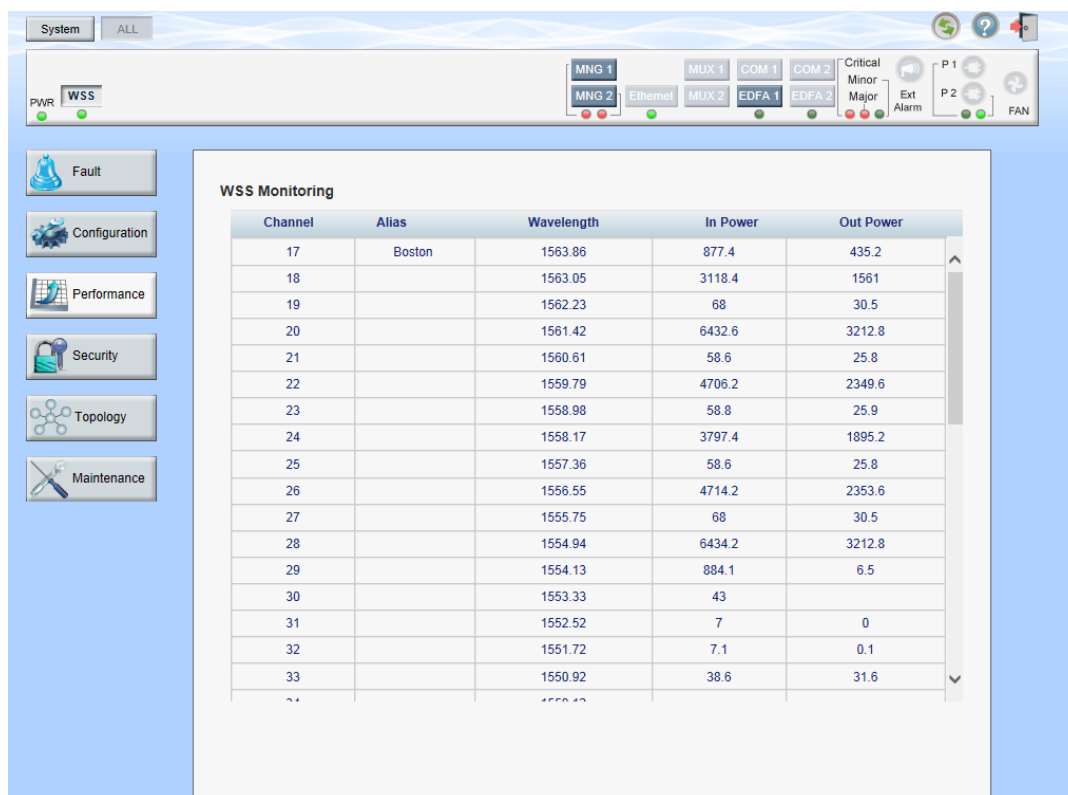
The information is updated immediately.

**Table 46: Optical Information Tab Parameters**

Parameter	Description
Port	The name of the port or module in which the optical module is installed. <b>NOTE:</b> This parameter may or may not be marked: <ul style="list-style-type: none"> <li>▪ <b>Red:</b> This indicates that there is a standing alarm against this optical module.</li> <li>▪ <b>Green:</b> This indicates that the <b>Admin Status</b> and <b>Operational Status</b> of the port are <b>Up</b>.</li> <li>▪ <b>Not marked:</b> This indicates that the optical module does not exist.</li> </ul>
Vendor	The manufacturer of the optical module.
Type	The type of optical module.
Wavelength	The Tx wavelength (nm).
Tx Power	The current measured Tx power.

Parameter	Description
Rx Power	The current measured Rx power.
Temperature	The current measured temperature of the optical module.

## 7.2 WSS Monitoring



**Figure 92: WSS Monitoring Window**

Use the WSS Monitoring window to view optical performance of the optical channels handled by the WSS module.

**To open the WSS Monitoring window:**

1. Click **Performance**.
2. Click **WSS**.

The WSS Monitoring window opens.

## 7.2.1 WSS Monitoring Tab

Channel	Alias	Wavelength	In Power	Out Power
17	Boston	1563.86	877.4	435.2
18		1563.05	3118.4	1561
19		1562.23	68	30.5
20		1561.42	6432.6	3212.8
21		1560.61	58.6	25.8
22		1559.79	4706.2	2349.6
23		1558.98	58.8	25.9
24		1558.17	3797.4	1895.2
25		1557.36	58.6	25.8
26		1556.55	4714.2	2353.6
27		1555.75	68	30.5
28		1554.94	6434.2	3212.8
29		1554.13	884.1	6.5
30		1553.33	43	
31		1552.52	7	0
32		1551.72	7.1	0.1
33		1550.92	38.6	31.6

**Figure 93: WSS Monitoring Tab**

Use the WSS Monitoring tab to monitor the performance of the WSS channels.

**To view WSS performance:**

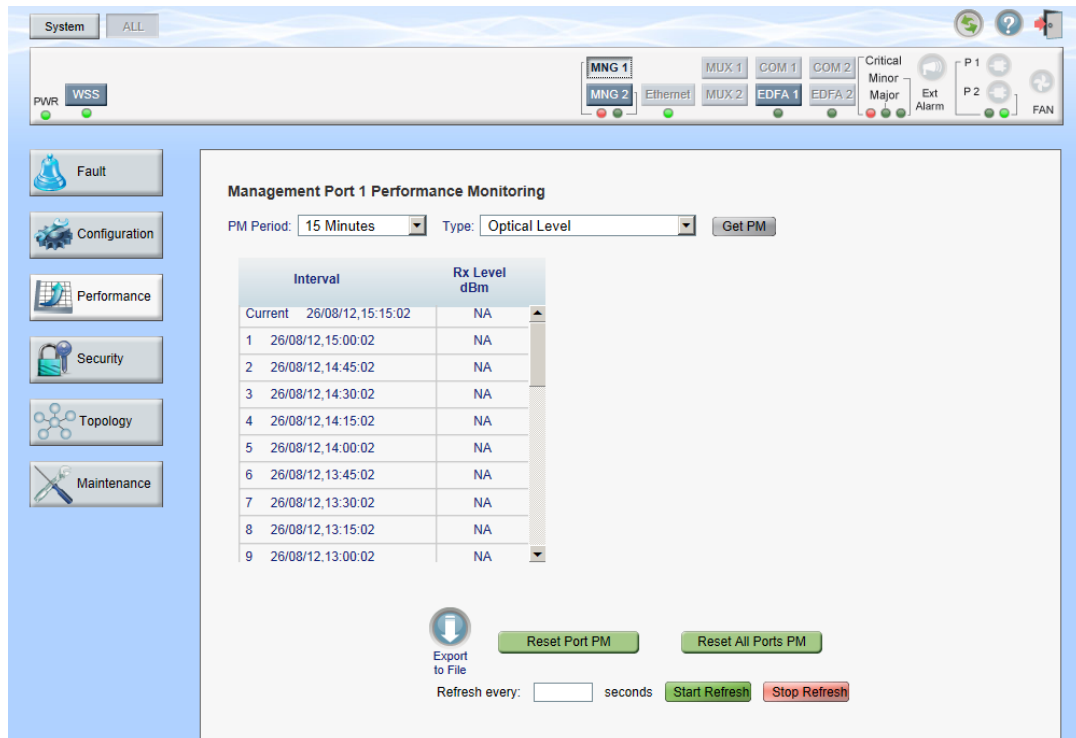
- Click **WSS**.

The WSS Monitoring tab is displayed. The fields are read only and explained in the following table.

**Table 47: WSS Monitoring Tab Parameters**

Parameter	Description
Channel	The DWDM channel.
Alias	The logical name given to the channel for identification purposes.
Wavelength	The wavelength of the channel (nm).
In Power Level	The optical power level of the channel before the VOA (dBm), LOS, or blank. <ul style="list-style-type: none"> <li>• <b>Optical power level:</b> Displayed only for channels configured as add/drop or express.</li> <li>• <b>LOS:</b> Displayed only if the optical power of the channel is below the threshold (lower than -30 dBm).</li> </ul>
Out Power Level	The optical power level of the channel after the VOA (dBm), LOS, or blank. <ul style="list-style-type: none"> <li>• <b>Optical power level:</b> Displayed only for channels configured as add/drop or express.</li> <li>• <b>LOS:</b> Displayed only if the optical power of the channel is below the threshold (lower than -30 dBm).</li> </ul>

## 7.3 Management Port Performance Monitoring



**Figure 94: Management Port Performance Monitoring Window**

Use the Management Port Performance Monitoring window to view management port optical performance monitoring.

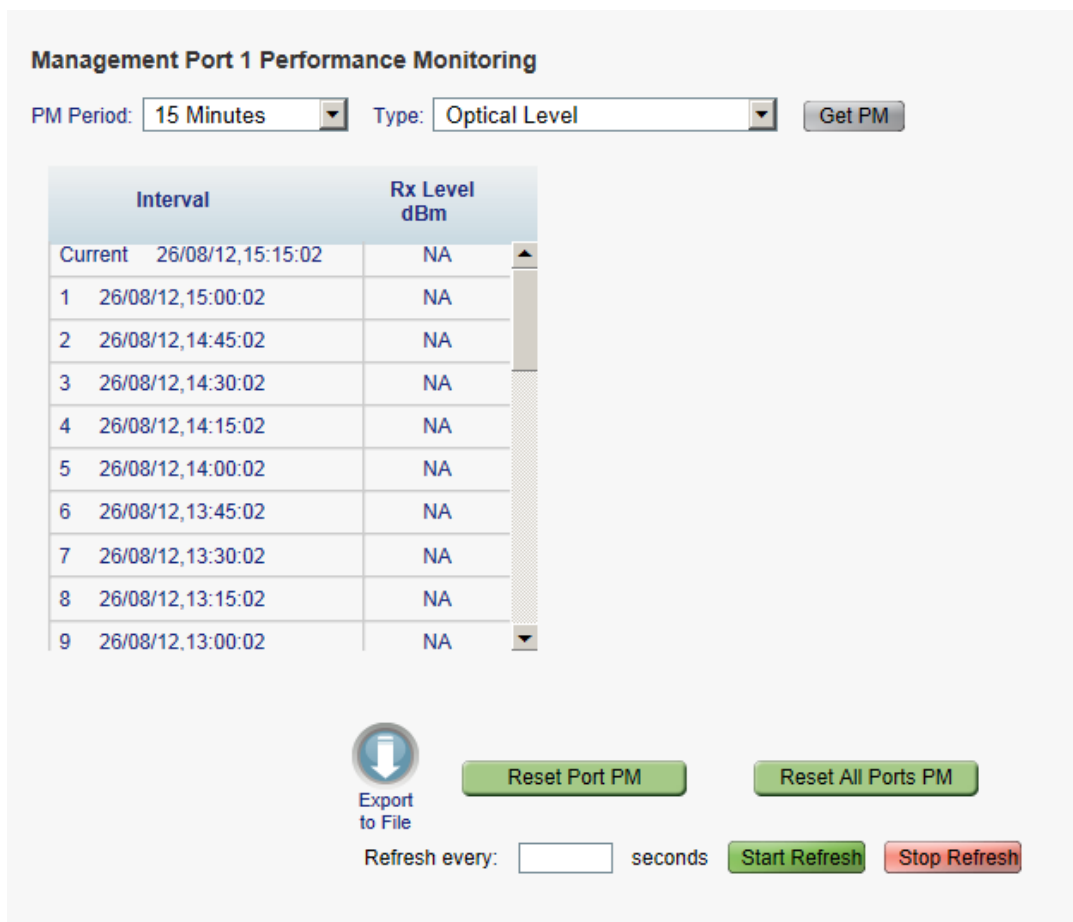
**To open the Management Port Performance Monitoring window:**

1. Click **Performance**.
2. Click an **MNG** button to select the management port.

The appropriate Management Port Performance Monitoring window opens.



### 7.3.1 Viewing Optical Performance Monitoring



**Management Port 1 Performance Monitoring**

PM Period:  Type:

	Interval	Rx Level dBm
Current	26/08/12,15:15:02	NA
1	26/08/12,15:00:02	NA
2	26/08/12,14:45:02	NA
3	26/08/12,14:30:02	NA
4	26/08/12,14:15:02	NA
5	26/08/12,14:00:02	NA
6	26/08/12,13:45:02	NA
7	26/08/12,13:30:02	NA
8	26/08/12,13:15:02	NA
9	26/08/12,13:00:02	NA

Refresh every:  seconds

**Figure 95: Optical Level Performance Monitoring**

Use the Management Port Performance Monitoring tab to view management port optical level performance monitoring.

**To view optical level performance monitoring:**

1. Click an **MNG** button to select the management port.

The appropriate Management Port Performance Monitoring tab opens displaying the displaying the management port performance monitoring. The fields are explained in the following table. The counters are read only.

2. From the **PM Period** drop-down list, select the interval.
3. From the **Type** drop-down list, select **Optical Level**.
4. Click **Get PM**.


The optical level counters are updated.

5. To export the optical level information to a file:

1. Click **Export to File** .

The Opening table.csv dialog box appears.

2. Click **Save File**.

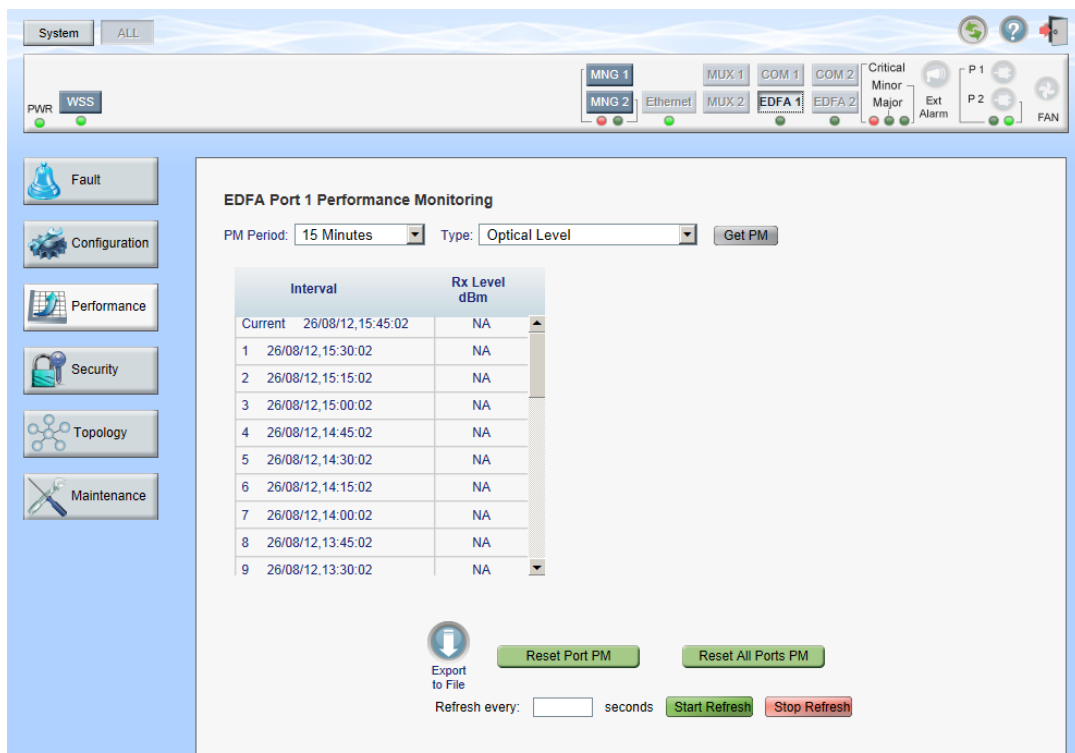
3. Click **OK**.
6. To set the refresh rate of the PM display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
7. To refresh the PM display manually, click **Refresh** .  
The information is updated immediately.
8. To stop the automatic refresh of the PM display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.
9. To clear the optical level counters for a specific port, click **Reset Port PM**.
10. To clear the optical level counters for all ports, click **Reset All Ports PM**.

**Table 48: Management Port Optical Level PM Parameters**

Parameter	Description	Format/Values
PM Period	The interval for averaging the measured Rx power.	15 Minutes, Days
Type	The type of performance monitoring.	Optical Level
Interval	The date and time of the interval.	<p><b>PM Period</b> is set to <b>15 Minutes</b>:</p> <ul style="list-style-type: none"> <li>• <b>Current</b>: The date and time of the current interval of 15 minutes is displayed in the first row.</li> <li>• <b>1 to 32</b>: The date and time of the last 32 intervals of 15 minutes is displayed in the second row to the last row of the table.</li> </ul> <p><b>PM Period</b> is set to <b>Days</b>:</p> <ul style="list-style-type: none"> <li>• <b>Untimed</b>: The date and time of the last reset of the system or last reset of the optical level counters is displayed in the first row of the table.</li> <li>• <b>Current Day</b>: The date and 00:00 AM of the current day is displayed in the second row of the table.</li> <li>• <b>Previous Day</b>: The date and 00:00 AM of the previous day is displayed in the last row of the table.</li> </ul>

Parameter	Description	Format/Values
Rx Level dBm	The measured Rx power level during the interval (in dBm).	<p><b>PM Period</b> is set to <b>15 Minutes</b>:</p> <ul style="list-style-type: none"> <li><b>Current</b>: The measured Rx power for the current interval of 15 minutes is displayed in the first row.</li> <li><b>1 to 32</b>: The measured Rx power for the last 32 intervals of 15 minutes is displayed in the second row to the last row of the table.</li> </ul> <p><b>PM Period</b> is set to <b>Days</b>:</p> <ul style="list-style-type: none"> <li><b>Untimed</b>: The average of the measured Rx power since last reset of the system or since the last reset of the optical level counters is displayed in the first row of the table.</li> <li><b>Current Day</b>: The average of the measured Rx power since 00:00 AM of the current day is displayed in the second row of the table.</li> <li><b>Previous Day</b>: The average of the measured Rx power during the 24 hours since 00:00 AM of the previous day is displayed in the last row of the table.</li> </ul>

## 7.4 EDFA Performance Monitoring



**EDFA Port 1 Performance Monitoring**

PM Period: 15 Minutes Type: Optical Level Get PM

Interval	Rx Level dBm
Current 26/08/12,15:45:02	NA
1 26/08/12,15:30:02	NA
2 26/08/12,15:15:02	NA
3 26/08/12,15:00:02	NA
4 26/08/12,14:45:02	NA
5 26/08/12,14:30:02	NA
6 26/08/12,14:15:02	NA
7 26/08/12,14:00:02	NA
8 26/08/12,13:45:02	NA
9 26/08/12,13:30:02	NA

Export to File Reset Port PM Reset All Ports PM  
 Refresh every:  seconds Start Refresh Stop Refresh

Figure 96: EDFA Performance Monitoring Window

**NOTE:** The **EDFA** button is enabled only if an EDFA module is installed.

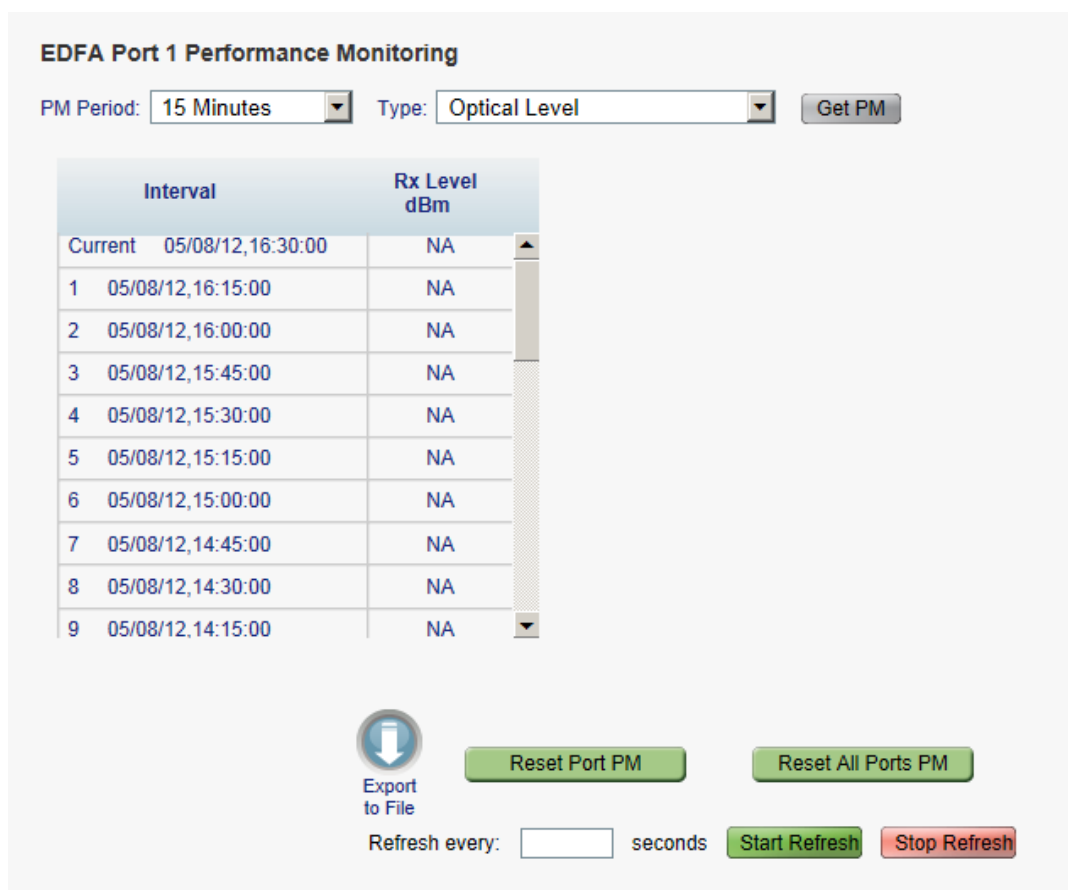
Use the EDFA Performance Monitoring window to view EDFA module optical performance monitoring.

**To open the EDFA Performance Monitoring window:**

1. Click **Performance**.
2. Click an **EDFA** button to select the EDFA module.

The appropriate EDFA Performance Monitoring window opens.

### 7.4.1 Viewing Optical Performance Monitoring



Interval	Rx Level dBm
Current 05/08/12,16:30:00	NA
1 05/08/12,16:15:00	NA
2 05/08/12,16:00:00	NA
3 05/08/12,15:45:00	NA
4 05/08/12,15:30:00	NA
5 05/08/12,15:15:00	NA
6 05/08/12,15:00:00	NA
7 05/08/12,14:45:00	NA
8 05/08/12,14:30:00	NA
9 05/08/12,14:15:00	NA

**Figure 97: Optical Level Performance Monitoring**



Use the EDFA Performance Monitoring tab to view EDFA optical level performance monitoring.

**To view optical level performance monitoring:**

1. Click an **EDFA** button to select the EDFA module.

The appropriate EDFA Performance Monitoring tab opens displaying the displaying the EDFA performance monitoring. The fields are explained in the following table. The counters are read only.

2. From the **PM Period** drop-down list, select the interval.
3. From the **Type** drop-down list, select **Optical Level**.

4. Click **Get PM**.  
The optical level counters are updated.
5. To export the optical level information to a file:
  1. Click **Export to File** .  
The Opening table.csv dialog box appears.
  2. Click **Save File**.
  3. Click **OK**.
6. To set the refresh rate of the PM display:
  1. In the **Refresh every** field, type the number of seconds that the window should refresh.  
The minimum refresh rate is 2 seconds.
  2. Click **Start Refresh**.  
The information is automatically updated after the specified number of seconds.
7. To refresh the PM display manually, click **Refresh** .  
The information is updated immediately.
8. To stop the automatic refresh of the PM display, click **Stop Refresh**.  
The automatic refresh is stopped and the **Refresh every** field is cleared.
9. To clear the optical level counters for a specific port, click **Reset Port PM**.
10. To clear the optical level counters for all ports, click **Reset All Ports PM**.

**Table 49: EDFA Optical Level PM Parameters**

Parameter	Description	Format/Values
PM Period	The interval for averaging the measured Rx power.	15 Minutes, Days
Type	The type of performance monitoring.	Optical Level

Parameter	Description	Format/Values
Interval	The date and time of the interval.	<p><b>PM Period</b> is set to <b>15 Minutes</b>:</p> <ul style="list-style-type: none"> <li>• <b>Current</b>: The date and time of the current interval of 15 minutes is displayed in the first row.</li> <li>• <b>1 to 32</b>: The date and time of the last 32 intervals of 15 minutes is displayed in the second row to the last row of the table.</li> </ul> <p><b>PM Period</b> is set to <b>Days</b>:</p> <ul style="list-style-type: none"> <li>• <b>Untimed</b>: The date and time of the last reset of the system or last reset of the optical level counters is displayed in the first row of the table.</li> <li>• <b>Current Day</b>: The date and 00:00 AM of the current day is displayed in the second row of the table.</li> <li>• <b>Previous Day</b>: The date and 00:00 AM of the previous day is displayed in the last row of the table.</li> </ul>
Rx Level dBm	The measured Rx power level during the interval (in dBm).	<p><b>PM Period</b> is set to <b>15 Minutes</b>:</p> <ul style="list-style-type: none"> <li>• <b>Current</b>: The measured Rx power for the current interval of 15 minutes is displayed in the first row.</li> <li>• <b>1 to 32</b>: The measured Rx power for the last 32 intervals of 15 minutes is displayed in the second row to the last row of the table.</li> </ul> <p><b>PM Period</b> is set to <b>Days</b>:</p> <ul style="list-style-type: none"> <li>• <b>Untimed</b>: The average of the measured Rx power since last reset of the system or since the last reset of the optical level counters is displayed in the first row of the table.</li> <li>• <b>Current Day</b>: The average of the measured Rx power since 00:00 AM of the current day is displayed in the second row of the table.</li> <li>• <b>Previous Day</b>: The average of the measured Rx power during the 24 hours since 00:00 AM of the previous day is displayed in the last row of the table.</li> </ul>

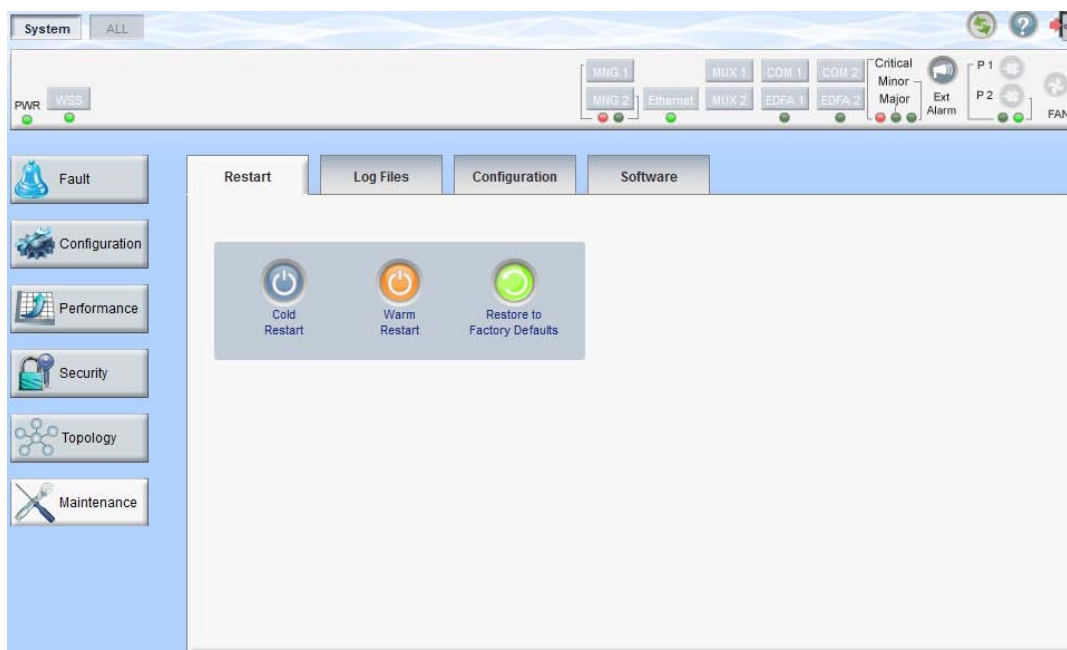
# 8 Maintenance

This chapter describes how to perform maintenance tasks for the PL-1000RO.

## In this Chapter

System Maintenance ..... 137  
 External Alarm Maintenance..... 146

## 8.1 System Maintenance



**Figure 98: System Maintenance Window**

Use the System Maintenance window to do the following:

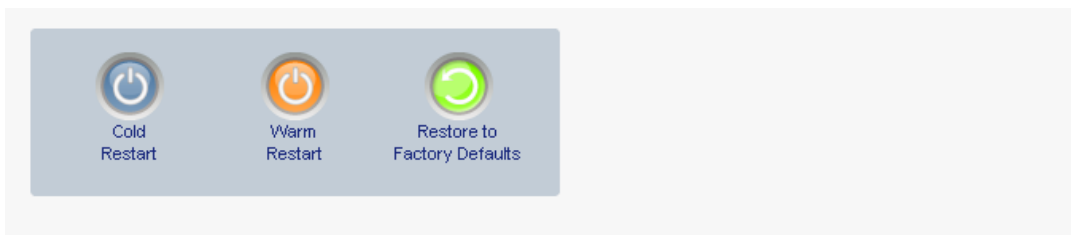
- **Restart tab:** Restart the PL-1000RO unit
- **Log Files tab:** View and save the System Log files
- **Configuration tab:**
  - **Download Configuration File:** Update system configuration by downloading a previously saved system configuration file to the node
  - **Upload Configuration File:** Upload system configuration and save it to the local file system
- **Software tab:** Download and activate a new software version

**To open the System Maintenance window:**

1. Click **Maintenance**.
2. Click **System**.

The System Maintenance window opens.

### 8.1.1 Restart Tab



**Figure 99: Restart Tab**

Use the Restart tab to do the following:

- **Cold Restart:** Service-affecting operation that is required for major upgrade to the device software
- **Warm Restart:** Non-service-affecting operation that is required for minor upgrade of the device software
- **Restore to Factory Defaults:** Service-affecting operation that restores the device to factory defaults

**NOTE:** If you restore to the factory default configuration, all previous configurations applied to the node will be lost, except for the IP information. Therefore, you should reapply the desired configuration.

**To restart the PL-1000RO unit:**

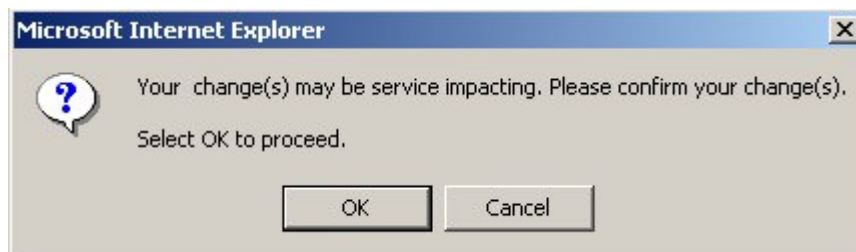
1. Click the **Restart** tab.

The Restart tab opens.

2. To perform a cold restart:

1. Click **Cold Restart** .

The following confirmation message appears.



**Figure 100: Confirm Changes**

2. Click **OK**.

The software and hardware are reloaded and the system restarts.

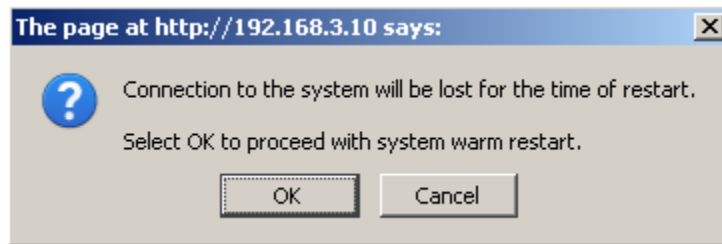
Traffic goes down for a short period of time.



3. To perform a warm restart:

1. Click **Warm Restart** .

The following confirmation message appears.



**Figure 101: Confirm Changes**

2. Click **OK**.

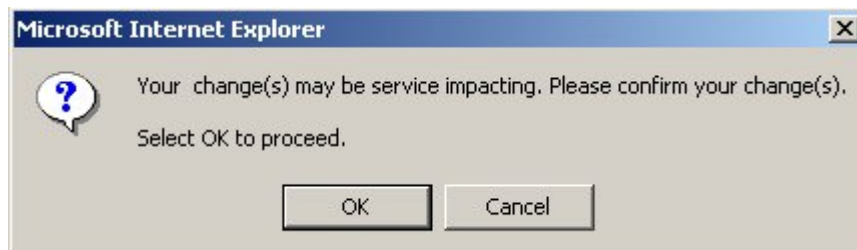
The software is reloaded and the system restarts.

Traffic is not affected.

4. To restore to the factory default configuration:

1. Click **Restore to Factory Defaults** .

The following confirmation message appears.



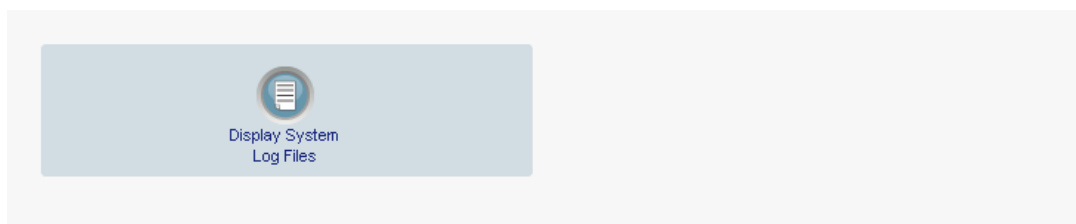
**Figure 102: Confirm Changes**

2. Click **OK**.

All system default configuration parameter values, except for IP information, are restored and the system restarts.

Traffic is affected.

## 8.1.2 Log Files Tab



**Figure 103: Log Files Tab**

Use the Log Files tab to view and save System Log files.

**To view and save System Log files:**

1. Click **Log Files**.

The Log Files tab opens.



2. Click **Display System Log Files**.

The System Log files are displayed.

3. To save the log data, copy the displayed text from the browser window, paste it into a file, and then save the file.

```

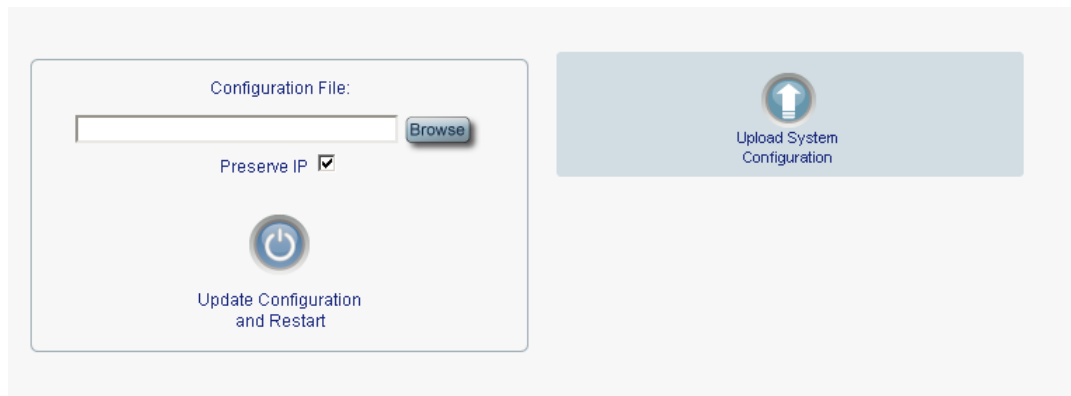
Prev Log:
0x16bb210 (PB_INIT): <3163> THU DEC 27 00:00:31 1990 EVENT System is starting up, Please wait...
0x16bb210 (PB_INIT): <3489> THU DEC 27 00:00:34 1990 EVENT Signature = HOT START
0x16bb210 (PB_INIT): <3489> THU DEC 27 00:00:34 1990 DEBUG Hotstart data pointer = 0x3f00014
0x16bb210 (PB_INIT): <3489> THU DEC 27 00:00:34 1990 DEBUG Software Ver:1.1.5 (Created on Sep 21 2011, 13:00:13)
0x16bb210 (PB_INIT): <3489> THU DEC 27 00:00:34 1990 DEBUG ----- Start Hardware Initialization and Testing : -----
0x16bb210 (PB_INIT): <3494> THU DEC 27 00:00:34 1990 EVENT FPGA not loaded: switch to normal start mode
0x16bb210 (PB_INIT): <3512> THU DEC 27 00:00:34 1990 EVENT Loading FPGA 0 created on: Tue Sep 06 10:57:34 2011...
0x16bb210 (PB_INIT): <3563> THU DEC 27 00:00:35 1990 EVENT OPTO FPGA Version is a01b
0x16bb210 (PB_INIT): <3598> THU DEC 27 00:00:35 1990 DEBUG L2 Switch QuarterDeck has been started.
0x16bb210 (PB_INIT): <3796> THU DEC 27 00:00:37 1990 DEBUG HW VER IS 300
0x16bb210 (PB_INIT): <3796> THU DEC 27 00:00:37 1990 EVENT Adding LAN_IF address 192.168.3.33, subnet #0000000
0x16bb210 (PB_INIT): <3798> THU DEC 27 00:00:37 1990 EVENT Adding MNG_IF address 10.0.26.18, subnet #0000000
0x16bb210 (PB_INIT): <3799> TUE FEB 08 23:16:21 2000 EVENT RTC Initialization: TUE FEB 08 23:16:21 2000

0x16bb210 (PB_INIT): <3809> TUE FEB 08 23:16:21 2000 DEBUG Driver Version 70503
0x16bb210 (PB_INIT): <3834> TUE FEB 08 23:16:21 2000 DEBUG Framer Part 5420 rev 2
0x16bb210 (PB_INIT): <4332> TUE FEB 08 23:16:26 2000 DEBUG Loaded Firmware 6020401 20110418
interrupt: OAPS[0]: Port invalid for OAPS failure event 256!
interrupt: OAPS[1]: Port invalid for OAPS failure event 256!

Current Log:
0x16bb210 (PB_INIT): <3166> THU DEC 27 00:00:31 1990 EVENT System is starting up, Please wait...
0x16bb210 (PB_INIT): <3528> THU DEC 27 00:00:34 1990 EVENT Signature = NORMAL START
0x16bb210 (PB_INIT): <3528> THU DEC 27 00:00:34 1990 DEBUG Software Ver:1.1.5 (Created on Sep 21 2011, 13:00:13)
0x16bb210 (PB_INIT): <3528> THU DEC 27 00:00:34 1990 DEBUG ----- Start Hardware Initialization and Testing : -----
0x16bb210 (PB_INIT): <3552> THU DEC 27 00:00:34 1990 EVENT Loading FPGA 0 created on: Tue Sep 06 10:57:34 2011...
0x16bb210 (PB_INIT): <3605> THU DEC 27 00:00:35 1990 EVENT OPTO FPGA Version is a01b
0x16bb210 (PB_INIT): <3640> THU DEC 27 00:00:35 1990 DEBUG L2 Switch QuarterDeck has been started.
0x16bb210 (PB_INIT): <3838> THU DEC 27 00:00:37 1990 DEBUG HW VER IS 300
0x16bb210 (PB_INIT): <3838> THU DEC 27 00:00:37 1990 EVENT Adding LAN_IF address 192.168.3.33, subnet #0000000
0x16bb210 (PB_INIT): <3840> THU DEC 27 00:00:37 1990 EVENT Adding MNG_IF address 10.0.26.18, subnet #0000000
0x16bb210 (PB_INIT): <3841> MON OCT 10 17:59:49 2011 EVENT RTC Initialization: MON OCT 10 17:59:49 2011
    
```

**Figure 104: System Log Files (Example)**

### 8.1.3 Configuration Tab



**Figure 105: Configuration Tab**

Use the Configuration tab to do the following:

- Update the system configuration with a previously saved file of system configuration, while preserving or replacing the IP addresses, and cold restart the PL-1000RO unit
- Upload the current system configuration of the PL-1000RO unit and save it to the local file system

#### 8.1.3.1 Uploading System Configuration

**NOTE:**

- You can upload the node configuration to the local computer and save it to file. You can then use the saved file to reapply node configuration.
- You can replace a box with a new box by uploading and storing the configuration of the old box and then updating the new box with the stored configuration. In this case, you may want to clear the **Preserve IP** check box so that the new node will get the same IP address as the old node.
- The format of the saved configuration is a text file. However, changing the content of this file manually is not allowed.

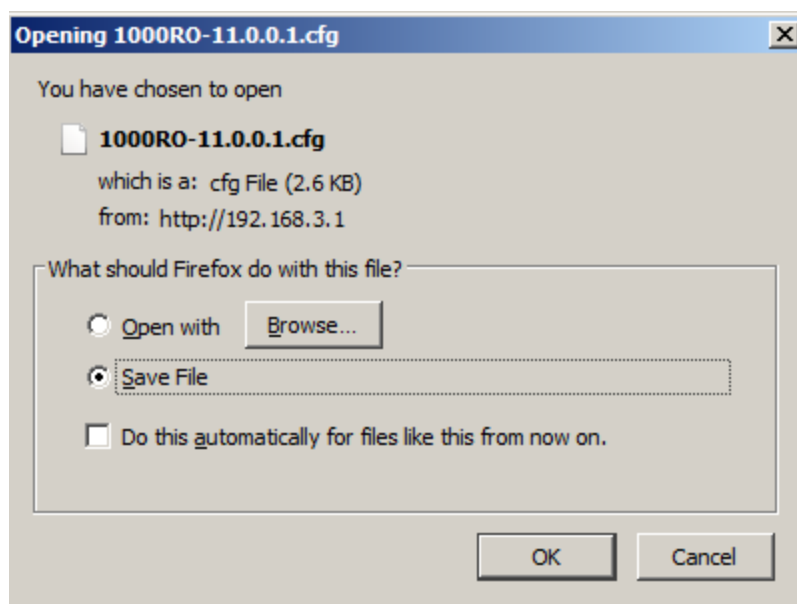
**To upload system configuration:**

1. Click the **Configuration** tab.  
The Configuration tab opens.

2. Click **Upload System Configuration**



The Opening .cfg dialog box appears.




**Figure 106: Opening .cfg Dialog Box**

3. Click **Save File**.
4. Click **OK**.

### 8.1.3.2 Updating System Configuration and Restarting the PL-1000RO Unit

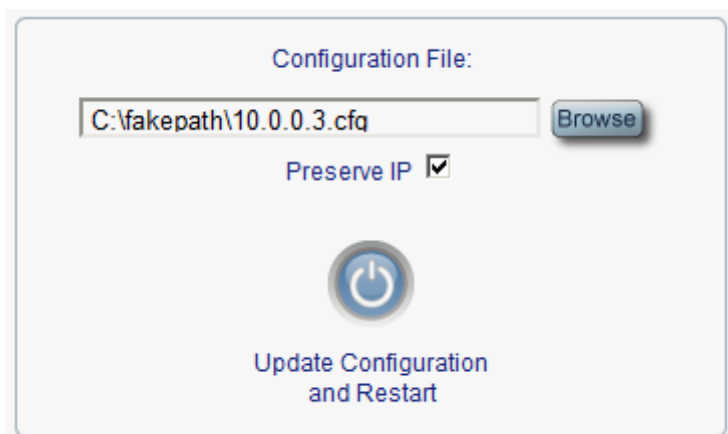
Use the Configuration tab to update the system configuration, while preserving or replacing the IP addresses, and restart the PL-1000RO unit.

 **WARNING:** When uploading a system configuration file which was retrieved from another node, make sure to select the **Preserve IP** check box; otherwise, the new node will receive the same IP as the old node, and both nodes will have the same IP address.

**To update system configuration and restart the PL-1000RO unit:**

1. Click the **Configuration** tab.  
The Configuration tab opens
2. In the **Configuration File** field, type the full path of the file or click **Browse** and browse to the file location.

For example: `C:\fakepath\10.0.0.3.cfg`.

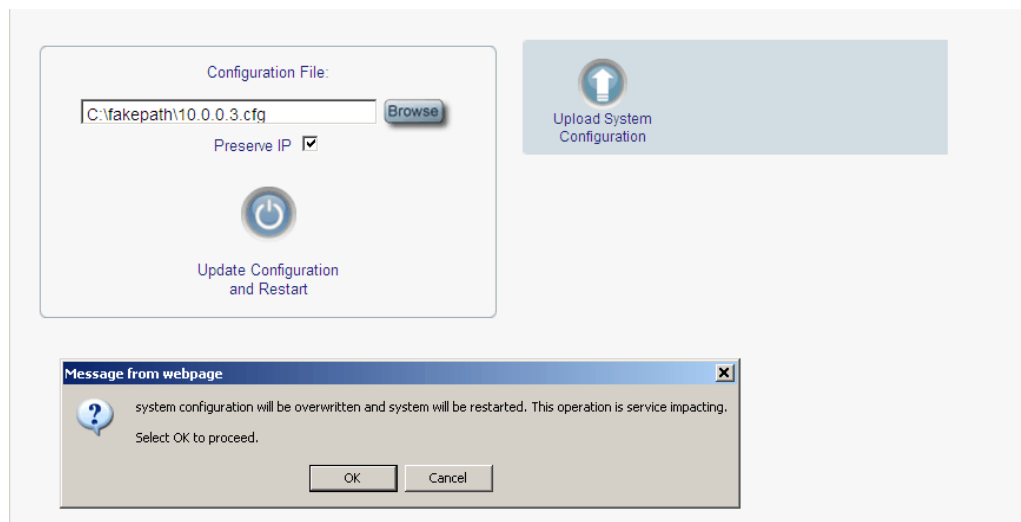


**Figure 107: Update System Configuration: Configuration File**

3. To preserve the IP addresses, select the Preserve IP check box.

4. Click **Update Configuration and Restart** .

The following confirmation message appears.



**Figure 108: Confirm System Overwrite**

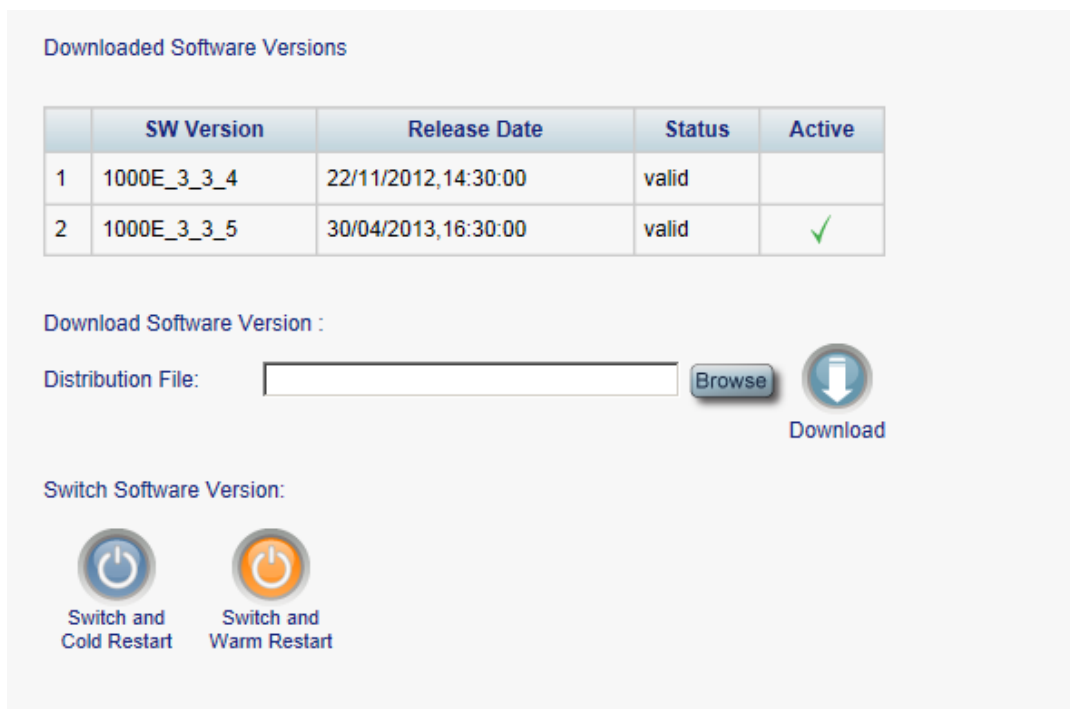
5. Click **OK**.

The following update message appears and the node is rebooted.

**System is updating its configuration and restarting.**  
**Please wait for the system to come up to resume operation.**

**Figure 109: System Updating and Restarting Message**


## 8.1.4 Software Tab





Downloaded Software Versions

	SW Version	Release Date	Status	Active
1	1000E_3_3_4	22/11/2012,14:30:00	valid	
2	1000E_3_3_5	30/04/2013,16:30:00	valid	✓

Download Software Version :

Distribution File:    Download

Switch Software Version:


 Switch and Cold Restart  Switch and Warm Restart

**Figure 110: Software Tab**

Use the Software tab to do the following:

- Download software
- Switch and activate a new software version

### 8.1.4.1 Downloading Software

 **WARNING:** Do not perform operations from another open browser during download.

**To download software:**

1. Click the **Software** tab.

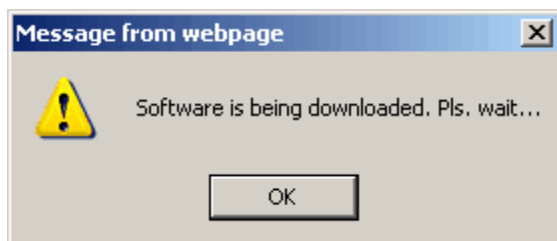
The Software tab opens displaying the downloaded software versions. If a new version has been uploaded, two versions appear in the listing; the active version is indicated by a check mark ✓.

2. In the **Distribution Directory** field, type the full path of the file or click **Browse** and browse to the file location.

For example: **p1.vx**

3. Click **Download** .

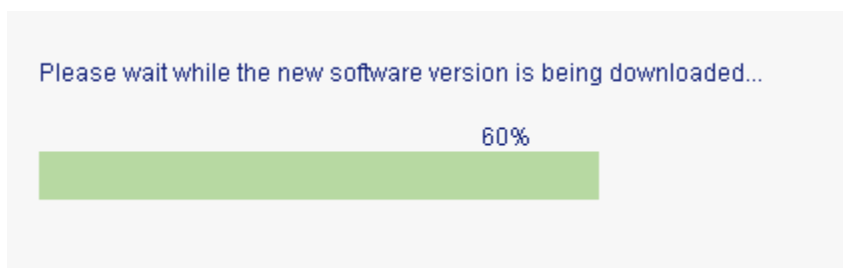
The following message appears.



**Figure 111: Software Download Message**

4. Click **OK**.

The Software Download Status window opens.



**Figure 112: Software Download Status Window**

The files are downloaded and the version displayed in the **Downloaded Software Versions** table. The new version is always idle (not active).

### 8.1.4.2 Switching Software Versions

After the new software version is downloaded, you can activate the new software version.

**To switch software versions:**

1. Click the **Software** tab.

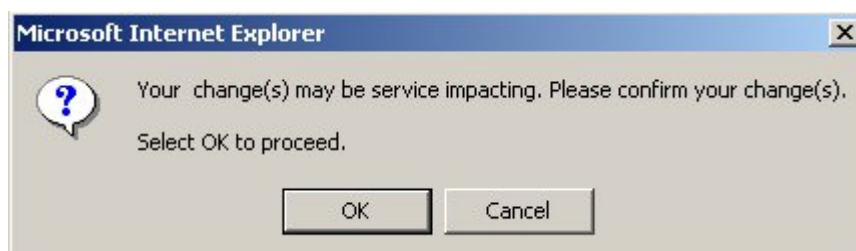
The Software tab opens displaying the downloaded software versions. If a new version has been uploaded, two versions appear in the listing; the active version is indicated by a check mark ✓.

2. To perform a switch and cold restart:



1. Click **Switch & Cold Restart**.

The following confirmation message appears.



**Figure 113: Confirm Changes**

2. Click **OK**.

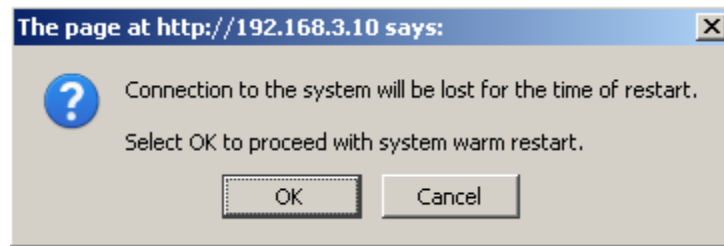
The software version is switched, the software and firmware are reloaded, and the new version is activated.

Traffic goes down for a short period of time.

3. To perform a warm restart:

1. Click **Switch & Warm Restart** .

The following confirmation message appears.



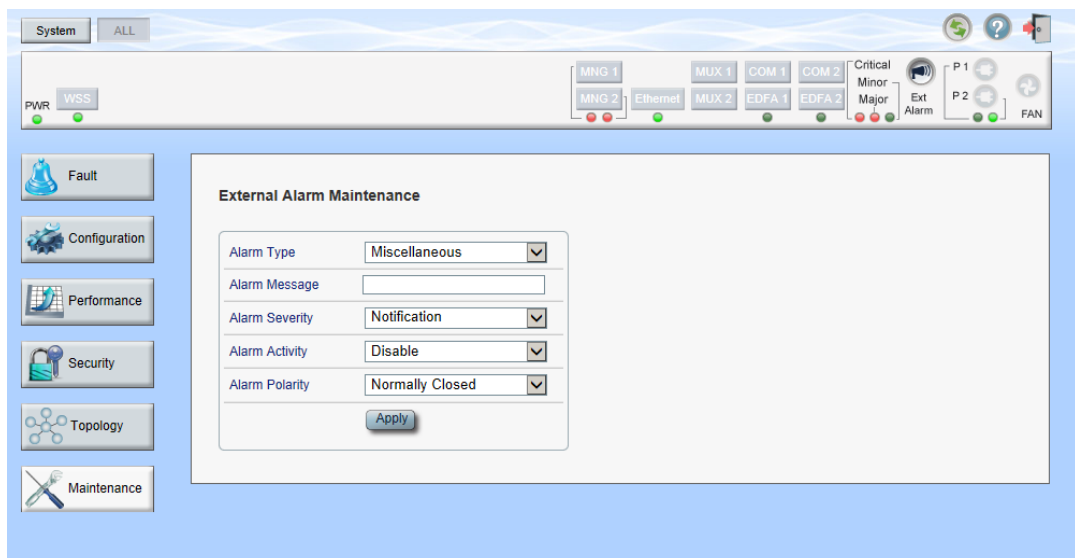
**Figure 114: Confirm Changes**

2. Click **OK**.

The software version is switched, the software is reloaded and restarted, and the new version is activated.

Traffic is not affected.

## 8.2 External Alarm Maintenance




**Figure 115: External Alarm Maintenance Window**

Use the External Alarm Maintenance window to configure the external alarm.



**To open the External Alarm Maintenance window:**

1. Click **Maintenance**.
2. Click the **Ext Alarm**  button to select the external alarm.  
The External Alarm Maintenance window opens.


### 8.2.1 External Alarm Maintenance Tab



**Figure 116: External Alarm Tab**

Use the External Alarm tab to configure the external alarm.

**To configure the external alarm:**

1. Click **Ext Alarm**  .  
The External Alarm Maintenance tab opens.
2. Fill in the fields as explained in the following table.
3. Click **Apply**.

**Table 50: External Alarm Maintenance Tab Parameters**

Parameter	Description	Format/Values
Alarm Type	A predefined list of standard external alarm types.	The type of configuration determines the values.
Alarm Message	The alarm text that is used when <b>Alarm Type</b> is set to <b>Miscellaneous</b> .	Free text
Alarm Severity	The severity of the External Input Alarm.	Critical, Major, Minor, Notification
Alarm Activity	Used to disable the Input External Alarm.	Disable, Enable
Alarm Polarity	Determines the polarity of the Input Dry Contact.	Normally Close, Normally Open



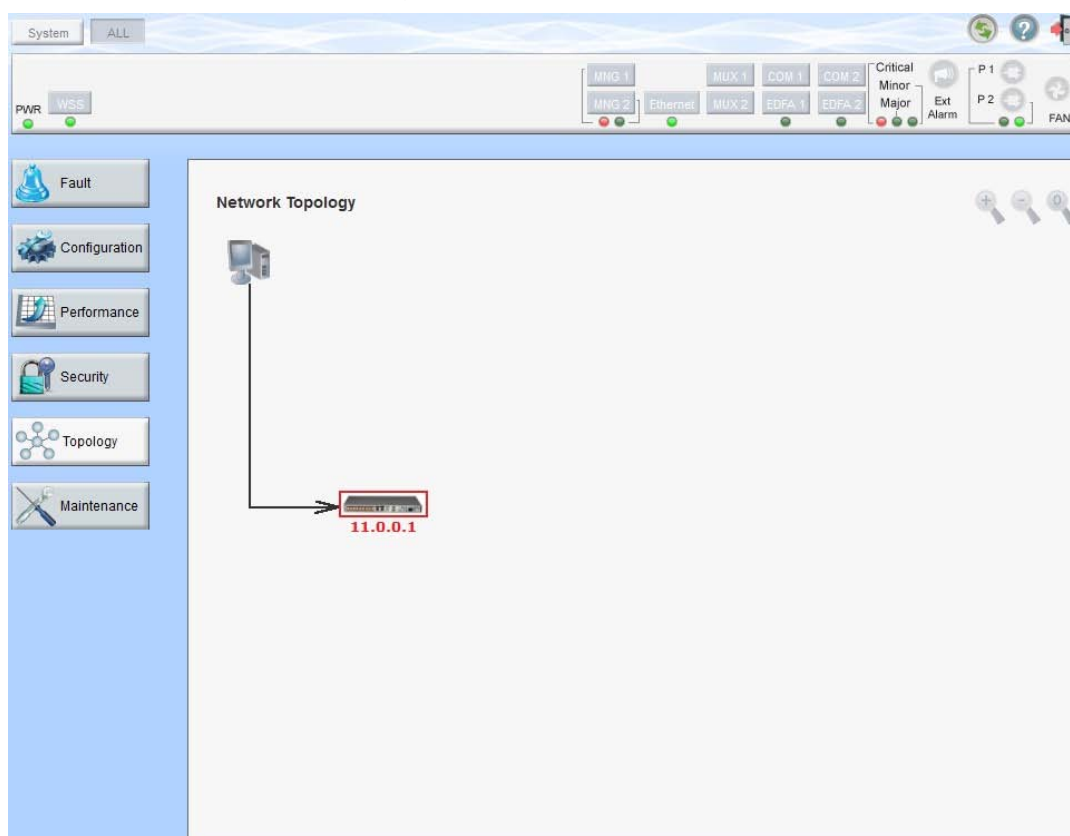
# 9 Topology Management

This chapter describes how manage the topology of PL-1000RO nodes.

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Network Topology..... 149

## 9.1 Network Topology



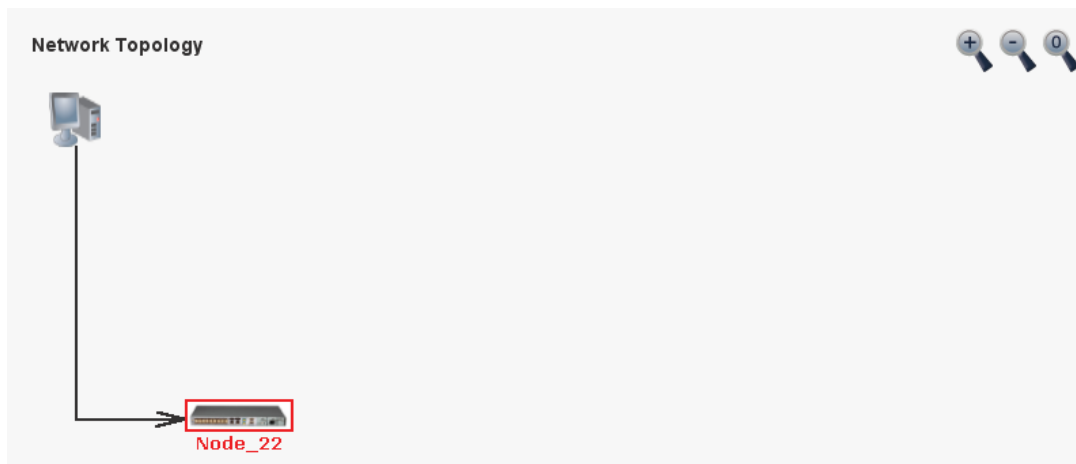
**Figure 117: Network Topology Window**

Use the Network Topology window to view the network topology and define multiple nodes as multi-chassis.

**To open the Network Topology window:**

- Click **Topology**.  
The Network Topology window opens.

### 9.1.1 Network Topology Tab



**Figure 118: Network Topology Tab**

Use the Network Topology tab to view the topology.

**To view the network topology:**

- Click the **Network Topology** tab.

The Network Topology tab opens displaying the PL-1000RO nodes connected together with the OSC channel.

### 9.1.1.1 Network Linear Topology

The following figure is an example of a linear topology.

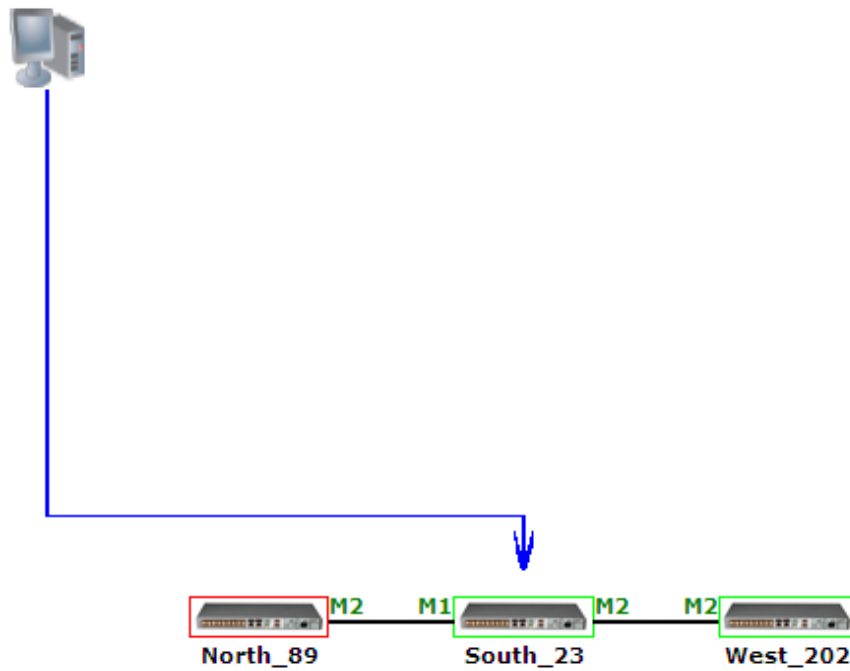


Figure 119: Linear Topology (Example)

### 9.1.1.2 Ring Topology

The following figure is an example of a network ring topology.

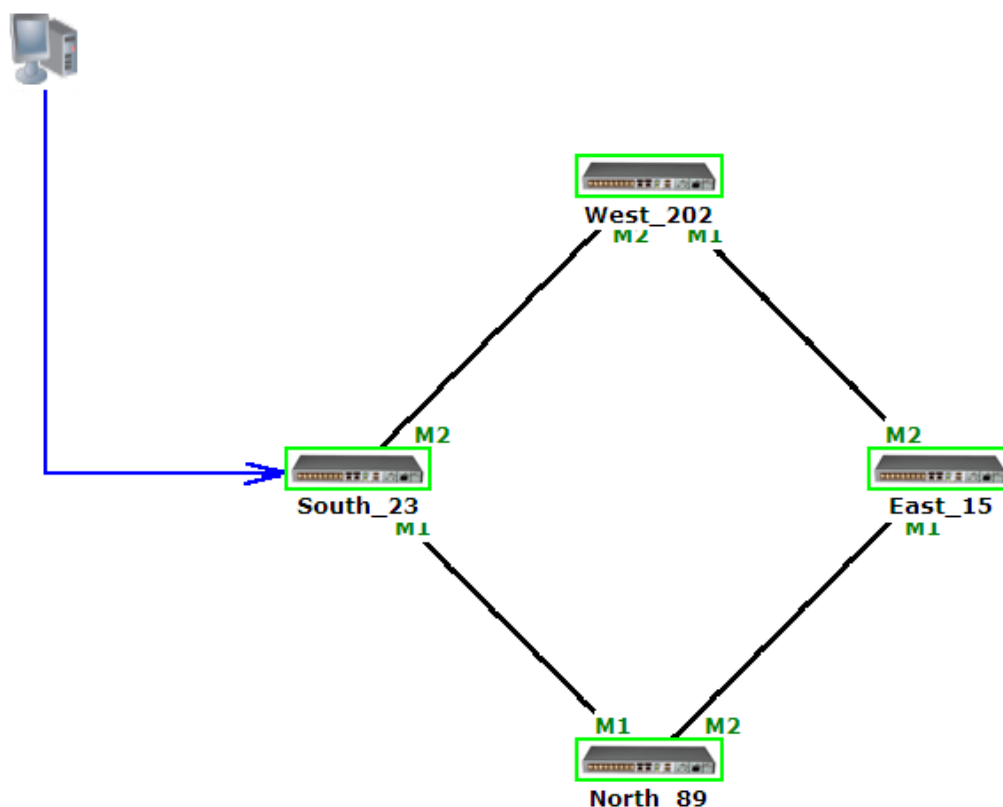


Figure 120: Ring Topology (Example)

### 9.1.1.3 Management Arc

The blue arrow starting at the management system and ending at a node points to the node that is currently being browsed via the HTTP/HTTPS session.

### 9.1.1.4 Node Title

The system name of the node is displayed below the node. If there is no configured name, the OSC/In-band IP address of the node is displayed.

### 9.1.1.5 Alarm Status of the Node

The alarm status of each node is marked by the color of the box around the node:

- **Green:** No Major alarms on the node
- **Red:** Major alarms on the node

### 9.1.1.6 MNG Port Labels

The labels attached to the arc ends represent the identity of the management port connected to that arc.

- **M1**: Stands for MNG 1 port.
- **M2**: Stands for MNG 2 port.


## 9.1.2 Zooming In and Out of the Topology Display


In complex networks, some details of the displayed topology may be hidden or unclear and a zoom may be required. Therefore, for non-linear topologies, you can zoom in and out of the topology display.


**To zoom in and out of the topology display:**

1. Click the **Network Topology** tab.

The Network Topology tab opens displaying the PL-1000RO nodes connected together with the OSC channel.

2. To increase magnification of the topology display, click **Zoom In** .

3. To decrease magnification of the topology display, click **Zoom Out** .

4. To return to the original view of the topology display, click **Restore To Default** .

## 9.1.3 Browsing Other Nodes

You can use the topology view to browse other nodes displayed in the network topology.

**To browse other nodes:**

1. Click the **Network Topology** tab.

The Network Topology tab opens displaying the PL-1000RO nodes connected together with the OSC channel.

2. Click a node icon .

A new Web browser opens enabling you to view the selected node.

**NOTE:** You should have the IP access of the node you want to browse. Therefore, you may have to define one of the nodes as the gateway to the other node, and if needed, add the IP address of the management system to the **Static Routing** table of the node (see [IP Tab](#) (p. 99).)

## 9.1.4 Defining Multiple Nodes as Multi-Chassis

When multiple PL-1000RO nodes are located at the same site, you can define them as *multi-chassis*.

**NOTE:** The Chassis ID number must be the same for each node.

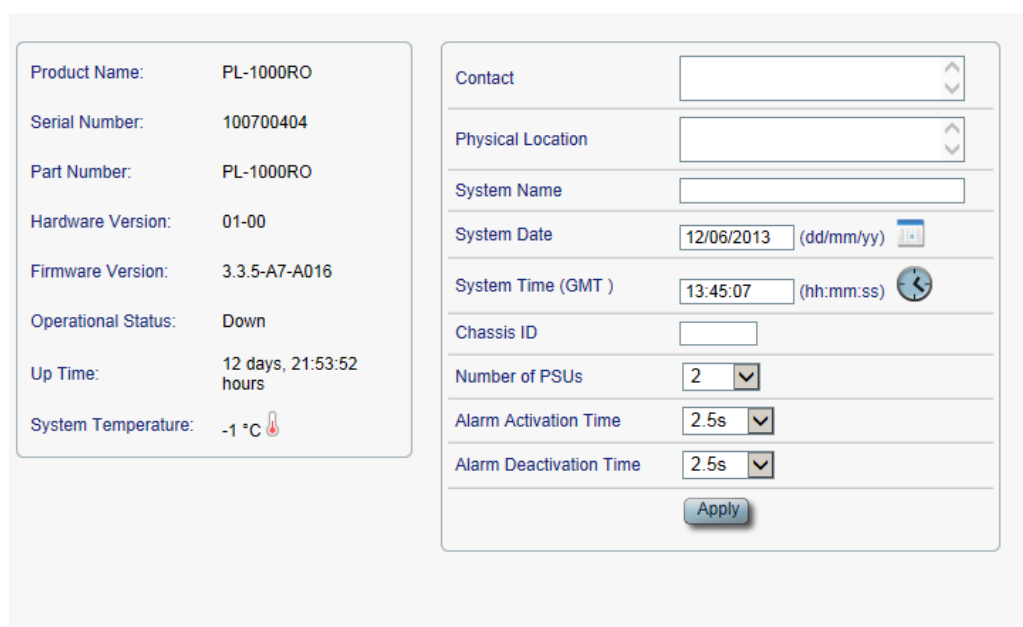
**To define multiple nodes as multi-chassis:**

1. Log in to the PL-1000RO node (see [Logging In to the Web Application](#) (p. 32)).
2. Click **Configuration**.
3. Click **System**.

The System Configuration window opens.

4. Click the **General** tab.

The General tab opens.



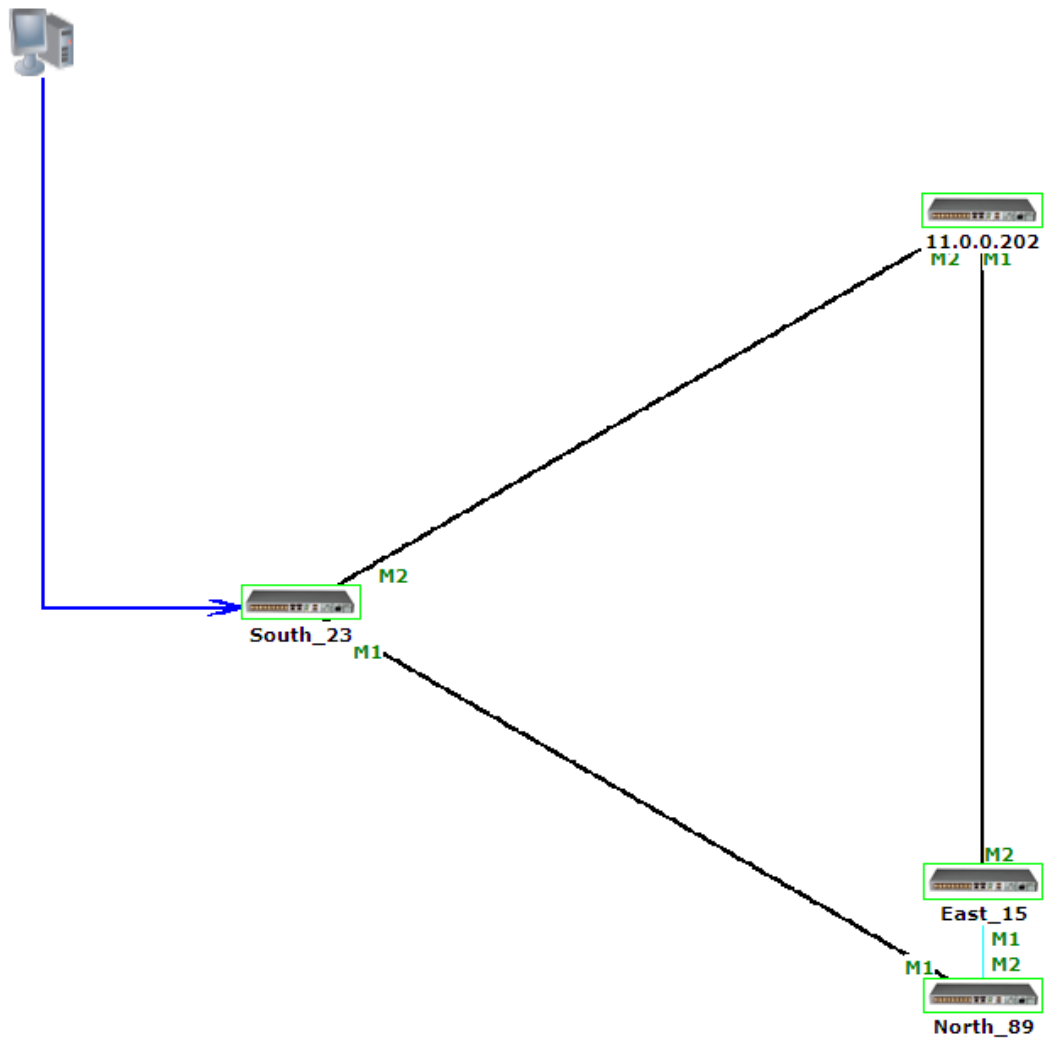
Product Name:	PL-1000RO	Contact	<input type="text"/>
Serial Number:	100700404	Physical Location	<input type="text"/>
Part Number:	PL-1000RO	System Name	<input type="text"/>
Hardware Version:	01-00	System Date	12/06/2013 (dd/mm/yy)
Firmware Version:	3.3.5-A7-A016	System Time (GMT)	13:45:07 (hh:mm:ss)
Operational Status:	Down	Chassis ID	<input type="text"/>
Up Time:	12 days, 21:53:52 hours	Number of PSUs	2
System Temperature:	-1 °C	Alarm Activation Time	2.5s
		Alarm Deactivation Time	2.5s
		<input type="button" value="Apply"/>	

**Figure 121: General Tab**

5. In the **Chassis ID** field, type the number.
6. Click **Apply**.
7. Repeat these steps for each node.



The following figure shows two nodes, in a ring of four, defined as multi-chassis.



**Figure 122: Multi-Chassis Nodes**



## 10 Remote Management Configuration

This chapter provides instructions and for setting up and configuring remote management.

A remote PL-1000RO can be managed through the OSC management channel.

### In this Chapter

Remote Management Configuration Example..... 157

### 10.1 Remote Management Configuration Example

The following figure illustrates an example of how to configure the remote management for the point-to-point setup. In this setup, there are two management systems: **A** and **B**. These systems can manage PL-1000RO nodes A and B via the OSC channel.

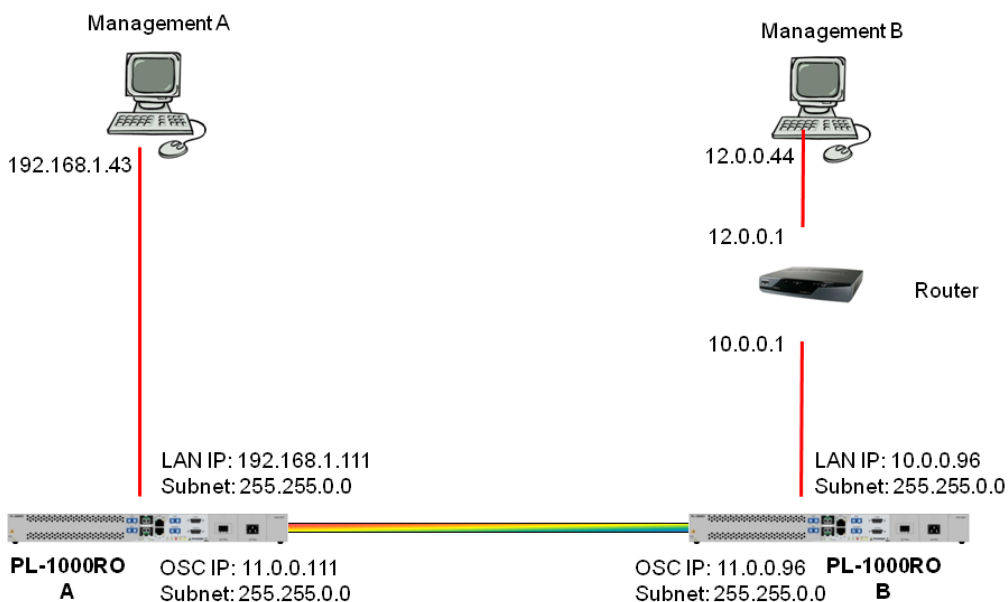


Figure 123: Point-to-Point Remote Management (Example)

#### 10.1.1 Setting Up Point-to-Point Management

To set up point-to-point management:

1. Make sure that you have local Web access to both PL-1000RO nodes (see [Accessing the Web Application](#) (p. 31)).
2. Configure management for PL-1000RO A.
3. Configure management for PL-1000RO B.
4. Access the Web application from Management A to PL-1000RO A.
5. Access the Web application from Management A to PL-1000RO B.

6. Access the Web application from Management B to PL-1000RO B.
7. Access the Web application from Management B to PL-1000RO A.

## 10.1.2 Configuring Management for PL-1000RO A

### To configure management for PL-1000RO A:

1. Click **Configuration**.
2. Click **System**.

The System Configuration window opens.

3. Click the **IP** tab.

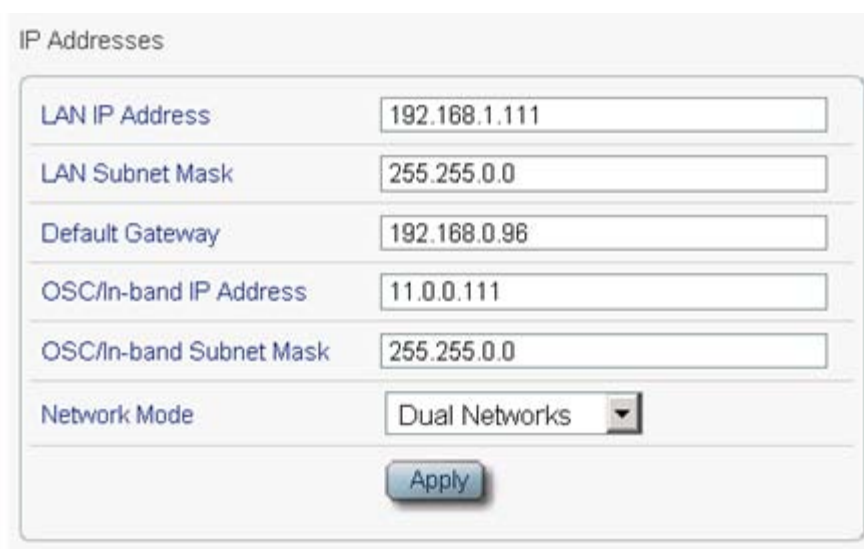
The IP tab opens displaying the IP Address and Static Routing configuration (see [IP Tab](#) (p. 99)).

4. Set the IP address of the OSC interfaces manually. In the **IP Addresses** section, fill in the fields as follows:
  - **LAN IP Address:** 192.168.1.111
  - **LAN Subnet Mask:** 255.255.0.0
  - **Default Gateway:** 192.168.0.96
  - **OSC/In-band IP Address:** 11.0.0.111
  - **OSC/In-band Subnet Mask:** 255.255.0.0

**NOTE:** This example assumes that you are working in **Dual Network** mode.

5. Click **Apply**.

The **IP Addresses** section should appear as follows.



IP Addresses	
LAN IP Address	192.168.1.111
LAN Subnet Mask	255.255.0.0
Default Gateway	192.168.0.96
OSC/In-band IP Address	11.0.0.111
OSC/In-band Subnet Mask	255.255.0.0
Network Mode	Dual Networks
<input type="button" value="Apply"/>	

**Figure 124: IP Addresses: PL-1000RO A (Example)**

6. (Required only if using an SNMP management system) Configure the **SNMP Traps** table to send SNMP traps to the two management systems: **A** and **B** (see [SNMP Tab](#) (p. 102)).

The SNMP Traps table should appear as follows.

SNMP Traps				
Manager Address	SNMP Traps	Community	Trap Port	Action
192.168.1.34	SNMP V2c	public	162	Delete
192.168.1.42	SNMP V2c	public	162	Delete
192.168.1.43	SNMP V2c	public	162	Delete
192.168.1.58	SNMP V2c	public	162	Delete
<input type="text"/>	SNMP V2c <input type="button" value="v"/>	<input type="text" value="public"/>	<input type="text" value="162"/>	<input type="button" value="Add"/>

Figure 125: SNMP Traps Table (Example)

### 10.1.3 Configuring Management for PL-1000RO B

When configuring the management for PL-1000RO B, make sure that:

- Different IP addresses are assigned to each MNG port in the remote and local nodes.
- The MNG ports of the remote and local PL-1000RO nodes should be in the same subnet.

**To configure the management for PL-1000RO B:**

1. Click **Configuration**.
2. Click **System**.

The System Configuration window opens.

3. Click the **IP** tab.

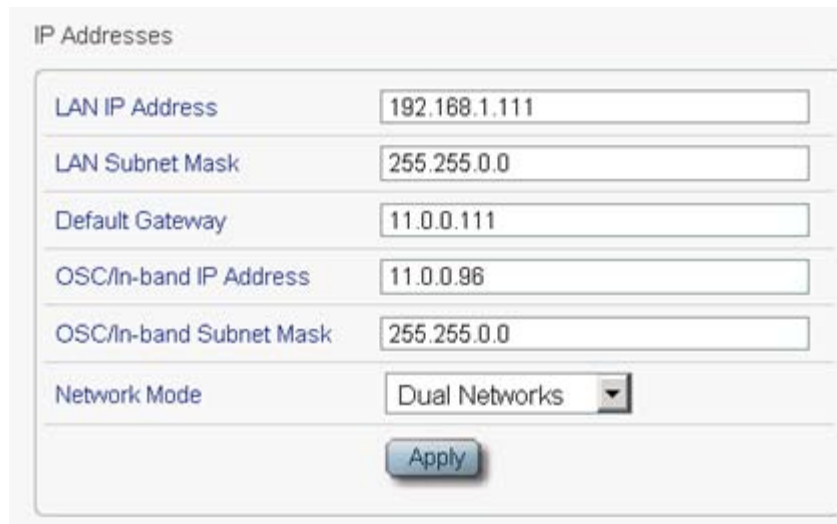
The IP tab opens displaying the IP Address and Static Routing configuration (see [IP Tab \(p. 99\)](#)).

4. Set the IP address of the OSC interfaces manually. In the **IP Addresses** section, fill in the fields as follows:
  - **LAN IP Address:** 192.168.1.111
  - **LAN Subnet Mask:** 255.255.0.0
  - **Default Gateway:** 11.0.0.111
  - **OSC/In-band IP Address:** 11.0.0.96
  - **OSC/In-band Subnet Mask:** 255.255.0.0

**NOTE:** This example assumes that you are working in **Dual Network** mode.

5. Click **Apply**.

The **IP Addresses** section should appear as follows.



IP Addresses	
LAN IP Address	192.168.1.111
LAN Subnet Mask	255.255.0.0
Default Gateway	11.0.0.111
OSC/In-band IP Address	11.0.0.96
OSC/In-band Subnet Mask	255.255.0.0
Network Mode	Dual Networks
<input type="button" value="Apply"/>	

**Figure 126: IP Addresses: PL-1000RO B (Example)**

6. Configure the **Static Routing** table to enable the route to Management B as follows:
  - **Destination Address:** 12.0.0.44
  - **Gateway:** 10.0.0.1
7. Click **Add**.

The Static Routing table should appear as follows.



Destination Address	Gateway	Action
12.0.0.44	10.0.0.1	<input type="button" value="Add"/>

**Figure 127: Static Routing Table (Example)**

8. (Required only if using an SNMP management system) Configure the **SNMP Traps** table to send SNMP traps to the two management systems: **A** and **B** (see [SNMP Tab](#) (p. 102)).

The SNMP Traps table should appear as follows.

SNMP Traps				
Manager Address	SNMP Traps	Community	Trap Port	Action
192.168.1.34	SNMP V2c	public	162	Delete
192.168.1.42	SNMP V2c	public	162	Delete
192.168.1.43	SNMP V2c	public	162	Delete
192.168.1.58	SNMP V2c	public	162	Delete
<input type="text"/>	SNMP V2c <input type="button" value="v"/>	<input type="text" value="public"/>	<input type="text" value="162"/>	<input type="button" value="Add"/>

Figure 128: SNMP Traps Table (Example)

### 10.1.4 Accessing the Web Application from Management A to PL-1000RO A

To access the Web application from Management A to PL-1000RO A:

1. Open the Web browser.
2. In the address field of the browser, type the **IP address** of the LAN port of PL-1000RO A as follows:

**http://192.168.1.111** (for HTTP access)

or

**https://192.168.1.111** (for HTTPS secure access) (as illustrated in [Remote Management Configuration Example](#) (p. 157))

3. Press **Enter**.  
The Login window opens.
4. Log in to the Web application (see [Logging In to the Web Application](#) (p. 32)).

### 10.1.5 Accessing the Web Application from Management A to PL-1000RO B

To access the Web application from Management A to PL-1000RO B:

1. Add a new route to Management A as follows:  

```
> ROUTE ADD 11.0.0.0 MASK 255.255.0.0 192.168.1.111
```
2. Open the Web browser.
3. In the address field of the browser, type the **IP address** of the management port of the remote PL-1000RO as follows:

**http://11.0.0.96** (for HTTP access)

or

[https://11.0.0.96](#) (for HTTP secure access) (as illustrated in [Remote Management Configuration Example](#) (p. 157))

4. Press **Enter**.

The Login window opens.

5. Log in to the Web Application (see [Logging In to the Web Application](#) (p. 32)).

### 10.1.6 Accessing the Web Application from Management B to PL-1000RO B

**To access the Web application from Management B to PL-1000RO B:**

1. Add a new route to Management B as follows:

```
> ROUTE ADD 10.0.0.0 MASK 255.255.0.0 12.0.0.1
```

2. Open the Web browser.
3. In the address field of the browser, type the **IP address** of the LAN port of PL-1000RO B as follows:

[http://10.0.0.96](#) (for HTTP access)

*or*

[https://10.0.0.96](#) (for HTTP secure access) (as illustrated in [Remote Management Configuration Example](#) (p. 157))

4. Press **Enter**.

The Login window opens.

5. Log in to the Web Application (see [Logging In to the Web Application](#) (p. 32)).

### 10.1.7 Accessing the Web Application from Management B to PL-1000RO A

**To access the Web application from Management B to PL-1000RO A:**

1. Add a new route to Management B as follows:

```
> ROUTE ADD 11.0.0.0 MASK 255.255.0.0 12.0.0.1
```

2. Configure the router between Management B and PL-1000RO A so that the IP address of the PL-1000RO B LAN port ([10.0.0.96](#) as illustrated in [Remote Management Configuration Example](#) (p. 157)) is the gateway for subnet [11.0.0.0](#).

3. In the address field of the browser, type the **IP address** of the MNG port of PL-1000RO A as follows:

[http://11.0.0.111](#) (for HTTP access)

*or*

[https://11.0.0.111](#) (for HTTP secure access) (as illustrated in [Remote Management Configuration Example](#) (p. 157)).



4. Press **Enter**.

The Login window opens.

5. Log in to the Web application (see [Logging In to the Web Application](#) (p. 32)).



## 11 CLI

This chapter describes the CLI for PL-1000RO.

The CLI provides commands for status monitoring and basic configuration of the PL-1000RO.

### In this Chapter

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### 11.1 General Features

The following are the general features of the CLI:

- The CLI uses the user and password authentication inherited from the Web application. The same user and password that is used for the Web application is accepted by the CLI.
- The CLI checks the user permission properties (Administrator, Read/Write, Read-Only) during command execution. These properties are inherited from the Web application.
- The CLI commands are ordered in a hierarchical tree structure. To move between tree nodes, you specify the name of the next node. The current hierarchy is specified by the prompt.
- Help is available for each command.
- The commands are case sensitive.
- The CLI allows command abbreviation. This means that a unique command prefix can be used instead of writing the full command name.

**NOTE:** No abbreviation is allowed for the parameters of the command.

### 11.2 Accessing the CLI

There are two ways to access the CLI interface:

- **Using a Serial Port:** This method uses the CONTROL port of the PL-1000RO to connect locally to a PC with a terminal emulation application.
- **Using Telnet or SSH:** These methods can be used with an IP connection via the local LAN port or remotely via the OSC channel.

## 11.2.1 Using a Serial Port

To use a serial port to access the CLI:

1. Connect the COM port of the PC to the CONTROL port of the node using a DB-9 RS-232 connector.
2. On the PC, open a terminal emulation application that uses the COM port.
3. Configure the COM port as follows:
  - **Baud rate:** 9600 bps
  - **Data:** 8 bits
  - **Parity:** None
  - **Start:** 1 bit
  - **Stop:** 1 bit
  - **Flow control:** None
4. Press **ENTER**.

The CLI prompt appears as follows:

```
PL-1000RO>>
```

5. Log in to the node using the predefined user and password.

**NOTE:** For security reasons, the password is not echoed to the terminal.

For example:

```
PL-1000RO>>login
User: admin
Password:
PL-1000RO>>
```

6. Run the desired CLI commands as described in [Running CLI Commands](#) (p. 169).

## 11.2.2 Using Telnet

To use a Telnet session to access the CLI:

1. Make sure that there is an IP connection to the node by opening the CMD window and typing the following command:

```
$ ping <node-ip-address>
```

If the IP connection exists, the ping command should respond with output similar to the following:

```
Pinging 192.168.3.201 with 32 bytes of data:
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.3.201:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2. After the successful ping, invoke the following command:

```
$ telnet <node-ip-address>
```

As a result, the Telnet session starts and the CLI prompt of the node is displayed:

```
PL-1000RO>>
```

3. Log in to the node using the predefined user and password.

For example:

```
PL-1000RO>>login
User: admin
Password:
PL-1000RO>>
```

4. Run the desired CLI commands as described in [Running CLI Commands](#) (p. 169).
5. Terminate the Telnet session by pressing **<CTRL+]>**.

The following prompt is displayed:

```
Welcome to Microsoft Telnet Client
Escape Character is 'CTRL+]'
Microsoft Telnet>
```

6. To exit the Telnet session, type the following command: **quit**

**NOTE:** Up to three Telnet/SSH sessions to the same device can be open at the same time.

### 11.2.3 Using SSH

To use SSH, you should have an installed SSH client on your machine.

**To use an SSH session to access the CLI:**

1. Make sure that there is an IP connection to the node by opening the CMD window and typing the following command:

```
$ ping <node-ip-address>
```

If the IP connection exists, the ping command should respond with output similar to the following:

```
Pinging 192.168.3.201 with 32 bytes of data:
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Reply from 192.168.3.201: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.3.201:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2. After the successful ping, invoke the SSH client. You should specify to the client the IP of the node to which you want to connect.

If this is the first time you connect to the node, you will probably see a message similar to the following:

```
The server's host key is not cached in the registry.  
You have no guarantee that the server is the computer you think it is.  
The server's rsa2 key fingerprint is:  
ssh-rsa 1024 7b:e5:6f:a7:f4:f9:81:62:5c:e3:1f:bf:8b:57:6c:5a  
If you trust this host, hit Yes to add the key to PuTTY's cache and carry  
on connecting.  
If you want to carry on connecting just once, without adding the key to  
the cache, hit No.  
If you do not trust this host, hit Cancel to abandon the connection.
```

3. If such a message appears, hit **Yes** to approve the connection.
4. Complete the log in to the node by using the predefined user and password.

For example:

```
login as: admin  
Sent username "admin"  
admin@192.168.3.3's password:  
PL-1000RO>>
```

5. Run the desired CLI commands as described in [Running CLI Commands](#) (p. 169).
6. Terminate the SSH session by pressing '**CTRL+D**'.

**NOTE:** Up to three Telnet/SSH sessions to the same device can be open at the same time.

## 11.3 CLI Command Types

The following types of CLI commands are supported:

- General commands: These commands can be invoked from anywhere in the command tree.
- Ping command
- Interface commands
- IP Setting commands
- Log commands
- Show commands
- System Restart command

The following figure shows the hierarchy of the commands.

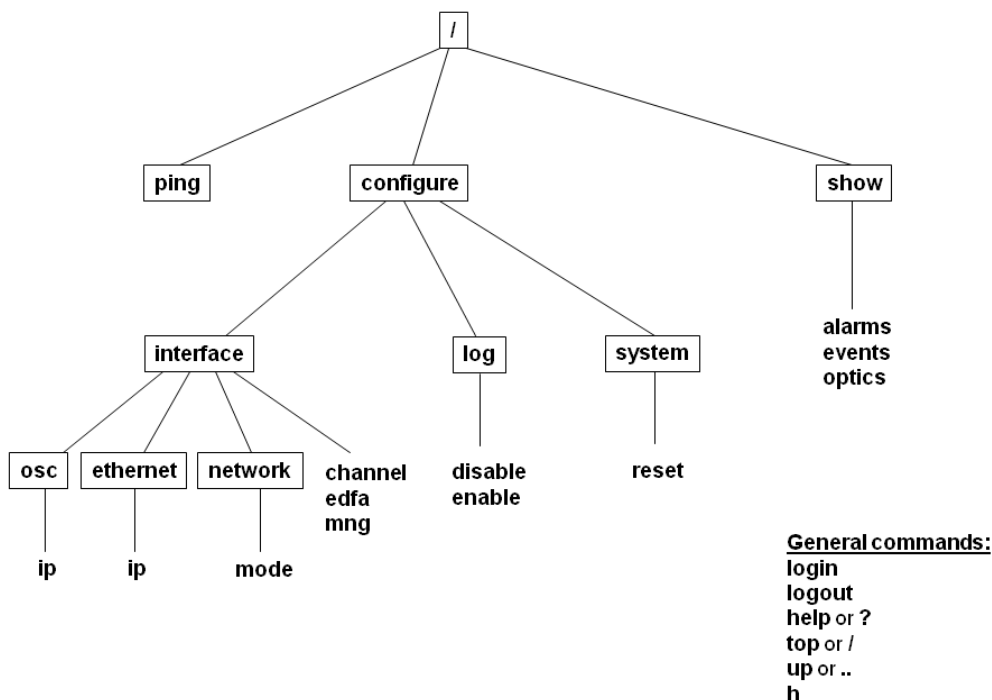


Figure 129: CLI Command Tree

## 11.4 Running CLI Commands

You can run the following CLI commands:

- General commands
  - [Login](#) (p. 170)
  - [Logout](#) (p. 171)
  - [Help](#) (p. 171)
  - [History](#) (p. 171)
  - [Top](#) (p. 172)
  - [Up](#) (p. 172)
- [Ping Command](#) (p. 172)
- Interface commands
  - [Configure Interface Channel](#) (p. 173)
  - [Configure Interface EDFA](#) (p. 173)
  - [Configure Interface MNG](#) (p. 174)
- IP Setting commands
  - [Configure Interface Ethernet IP](#) (p. 174)

- [Configure Interface OSC IP](#) (p. 175)
- [Configure Interface Network Mode](#) (p. 175)
- Log commands
  - [Configure Log Enable](#) (p. 176)
  - [Configure Log Disable](#) (p. 176)
- Show commands
  - [Show Alarms](#) (p. 177)
  - [Show Events](#) (p. 177)
  - [Show Optics](#) (p. 177)
- System Restart command
  - [Configure System Reset](#) (p. 178)

## 11.4.1 General Commands

The following are general commands that can be invoked from anywhere in the command tree:

- [Login](#) (p. 170)
- [Logout](#) (p. 171)
- [Help](#) (p. 171)
- [History](#) (p. 171)
- [Top](#) (p. 172)
- [Up](#) (p. 172)

### 11.4.1.1 Login Command

Command:

**login**

Description:

This command is required before any other command can be issued.

The CLI uses the user and password authentication inherited from the Web application. The same user and password that is used for the Web application is accepted by the CLI.

In addition, the CLI checks the user permission properties (Administrator, Read Only, Read-Write) during command execution. These properties are inherited from the Web application.



Example:

```
PL-1000RO>>login
User: admin
Password:
PL-1000RO>>
```

**NOTE:** For security reasons, the password is not echoed to the terminal.

### 11.4.1.2 Logout Command

Command:

```
logout
```

Description:

This command terminates the user session.

To run further CLI commands, you must log in again.

Example:

```
PL-1000RO>>logout
PL-1000RO>>
```

### 11.4.1.3 Help Command

Command:

```
help [<command>]
```

*or*

```
? [<command>]
```

Description:

This command displays the syntax of the specified command.

Example:

```
PL-1000RO>>help con int eth ip
config interface ethernet ip [<addr> [-n <netmask>] [-g <gateway>]]
PL-1000RO>>
```

### 11.4.1.4 History Command

Command:

```
h
```

Description:

This command displays the last 20 commands.

Example:

```
PL-1000RO>show>>h
15 ?
16 ..
17 xp
18 ?
19 ..
```

```
20 ?
21 log
22 ?
23 ..
24 ?
25 sys
26 ?
27 ..
28 ?
29 ..
30 ?
31 sh
32 ?
33 !
34 h
PL-1000RO>show>>
```

#### 11.4.1.5 Top Command

Command:

**top**

*or*

/

Description:

This command takes you to the root of the command tree.

Example:

```
PL-1000RO>configure>interface>>top
PL-1000RO>>
```

#### 11.4.1.6 Up Command

Command:

**up**

*or*

..

Description:

This command takes you up one level in the command tree.

Example:

```
PL-1000RO>configure>interface>ethernet>>up
PL-1000RO>configure>interface>>
```

#### 11.4.2 Ping Command

Command:

**ping <ip-address>**

Description:

This command sends a ping request to the specified IP address.

Example:

```
PL-1000RO>>ping 11.0.0.36
Pinging 11.0.0.36 (11.0.0.36) with 64 bytes of data:
Reply from 11.0.0.36 bytes=64 ttl=64 seq=0 time=0ms
--- 11.0.0.36 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0 ms
rtt min/avg/max = 0/0/0 ms
PL-1000RO>>
```

### 11.4.3 Interface Commands

The following are the Interface commands:

- [Configure Interface Channel](#) (p. 173)
- [Configure Interface EDFA](#) (p. 173)
- [Configure Interface MNG](#) (p. 174)

#### 11.4.3.1 Configure Interface Channel Command

Command:

```
configure interface channel <n> [add | exp | na]
```

Description:

This command configures how the DWDM channel will be handled by the local WSS.

- **<add>**: Channel is locally used.
- **<exp>**: Channel is locally bypassed.
- **<na>**: Channel is unused.

If no parameter is specified, the current value of the channel is displayed.

Example:

```
PL-1000RO>configure>interface>>channel 17 add
PL-1000RO>configure>interface>>
```

#### 11.4.3.2 Configure Interface EDFA Command

Command:

```
configure interface edfa <n> [up | down]
```

Description:

This command sets the **Admin Status** of the EDFA to the required value.

If the **Admin Status** is not specified, the administrative status of the EDFA is displayed.

Example:

```
PL-1000RO>configure>interface>>edfa 1 up
PL-1000RO>configure>interface>>
```

### 11.4.3.3 Configure Interface MNG Command

Command:

```
configure interface mng <n> [up | down]
```

Description:

This command sets the **Admin Status** of the MNG port to the required value.

If the **Admin Status** is not specified, the administrative status of the MNG port is displayed.

Example:

```
PL-1000RO>configure>interface>>mng 1 down
PL-1000RO>configure>interface>>mng 1
Port MNG 1 is DOWN
PL-1000RO>configure>interface>>
```

## 11.4.4 IP Setting Commands

The following are the IP Setting commands:

- [Configure Interface Ethernet IP](#) (p. 174)
- [Configure Interface OSC IP](#) (p. 175)
- [Configure Interface Network Mode](#) (p. 175)

### 11.4.4.1 Configure Interface Ethernet IP Command

Command:

```
configure interface ethernet ip [<addr> [-n <netmask>] [-g  
<gateway>]]
```

Description:

This command sets the IP parameters of the LAN port.

- **<addr>**: IP address of the LAN port.
- **<netmask>**: Subnet mask of the port.
- **<gateway>**: IP address of the default gateway.

If no parameters are specified, the current IP parameter values are displayed.

Example:

```
PL-1000RO>configure>interface>ethernet>>ip 10.0.3.200 -n 255.255.0.0 -g
10.0.44.44
PL-1000RO>configure>interface>ethernet>>ip
Addr is 10.0.3.200, Subnet mask is 255.255.0.0
Gateway is 10.0.44.44
PL-1000RO>configure>interface>ethernet>>
```

#### 11.4.4.2 Configure Interface OSC IP Command

Command:

```
configure interface osc ip [<addr> [-n <netmask>] [-g <gateway>]]
```

Description:

This command sets the IP parameters of the MNG ports.

- **<addr>**: IP address of the MNG ports.
- **<netmask>**: Subnet mask of the MNG ports.
- **<gateway>**: IP address of the default gateway.

If no parameter is specified, the current IP parameter values of the MNG ports are displayed.

**NOTE:**

- This command is not available when working in **Single Network** mode.
- When working via Telnet, changing the IP parameters of the OSC may prevent further access to the node.
- Both MNG ports have the same IP parameters, therefore, changing the OSC IP parameters also changes the parameters of both MNG ports.

Example:

```
PL-1000RO>configure>interface>osc>>ip 11.0.3.200 -n 255.255.0.0 -g  
11.0.3.201  
PL-1000RO>configure>interface>osc>>ip  
Addr is 11.0.3.200, Subnet mask is 255.255.0.0  
Gateway is 11.0.3.201  
PL-1000RO>configure>interface>osc>>
```

#### 11.4.4.3 Configure Network Mode

Command:

```
configure interface network mode [dual |single ]
```

Description:

This command sets the network mode to **Dual Networks** mode or **Single Network** mode.

- **Dual**: In this mode, the node has two IP addresses; one for the LAN port and the other for the MNG ports.
- **Single**: In this mode, the node has a single IP address that is used for the all management ports (LAN port and MNG ports).

**NOTE:** After changing network mode, you must cold restart the node (see [Configure System Reset Command](#) (p. 178)).

Example:

```
PL-1000RO>configure>interface>network>>? mode  
config interface network mode [dual|single]  
PL-1000RO>configure>interface>network>>mode
```

```
Current network mode is single
PL-1000RO>configure>interface>>..
PL-1000RO>configure>>interface network mode dual
PL-1000RO>configure>>system reset c
```

## 11.4.5 Log Commands

The following are the Log commands:

- [Configure Log Enable](#) (p. 176)
- [Configure Log Disable](#) (p. 176)

### 11.4.5.1 Configure Log Enable Command

Command:

```
configure log enable
```

Description:

This command enables the echoing of system events to the terminal.

By default, the log of the CLI session accessed via the serial port is enabled.

Example:

```
PL-1000RO>configure>log>>enable
PL-1000RO>configure>log>>
```

### 11.4.5.2 Configure Log Disable Command

Command:

```
configure log disable
```

Description:

This command disables the echoing of system events to the terminal.

By default, the log of the CLI session accessed via Telnet is disabled.

Example:

```
PL-1000RO>configure>log>>disable
PL-1000RO>configure>log>>
```

## 11.4.6 Show Commands

The following are the Show commands:

- [Show Alarms](#) (p. 177)
- [Show Events](#) (p. 177)
- [Show Optics](#) (p. 177)

### 11.4.6.1 Show Alarms Command

Command:

```
show alarms [mng <n>] | [edfa <n> | system]
```

Description:

This command displays the alarms of the specified entity. If no parameters are specified, all alarms are displayed.

**NOTE:** The commands **Show Alarms Port** and **Show Alarms Uplink** are not applicable to the PL-1000RO.

Example:

```
PL-1000RO>show alarms mng 1
SUN JUN 23 12:22:46 2013      MNG 1  Optics Removed      Critical      S.A.
PL-1000RO>>
```

### 11.4.6.2 Show Events Command

Command:

```
show events [mng <n>] | [edfa <n> | system]
```

Description:

This command displays the events of the specified entity. If no parameters are specified, all events are displayed.

**NOTE:** The commands **Show Events Port** and **Show Events Uplink** are not applicable to the PL-1000RO.

Example:

```
PL-1000RO>show events mng 1
THU JUN 18 12:22:44 2009      MNG 1  Link Up
Event
THU JUN 18 12:22:46 2009      MNG 1  Optics Loss of Light      Critical
S.A.
THU JUN 18 12:22:46 2009      MNG 1  Loss Propagation          Minor
THU JUN 18 12:22:47 2009      MNG 1  Link Down
Event
PL-1000RO>>
```

### 11.4.6.3 Show Optics Command

Command:

```
show optics [mng <n>] | [edfa <n>] | [channel <n>]
```

Description:

This command displays the optical information of the specified entity.

**NOTE:** The command **Show Optics Port** is not applicable to the PL-1000RO.

Example:

```
PL-1000RO>show optics mng 2
Vendor: Infineon FO GmbH
Part Number: V23848-M305-C56W
Serial Number: 26572841
```

```
Wavelength: 850.00 nm
Type: Non WDM

Tx Power: -6.2 dBm
Rx Power: -8.3 dBm
Temperature: 31 C
PL-1000RO>>
```

## 11.4.7 System Restart Command

The following is the System Restart command:

- [Configure System Reset](#) (p. 178)

### 11.4.7.1 Configure System Reset Command

Command:

```
configure system reset <f | c | w>
```

Description:

This command restarts the node.

The restart type is determined by the parameter of the command:

- **<f>**: Restore to factory defaults; traffic affecting; deletes the node configuration except for the IP information; removes all licensing information from the node (if applicable)
- **<c>**: Cold restart; traffic affecting; keeps the node configuration
- **<w>**: Warm restart; not traffic affecting; keeps the node configuration

#### NOTE:

- Performing this command while using Telnet/SSH will terminate the session.
- It is recommended to save the old configuration file before restoring to factory defaults.

Example (of a Telnet session):

```
PL-1000RO>>configure system reset w
PL-1000RO>>

Connection to host lost.
```



# Appendix A: Connection Data

This appendix describes the connectors for the PL-1000RO.

## In this Appendix

CONTROL Connector ..... 179  
 ALARM Connector ..... 179  
 ETH Connector ..... 182  
 Optical PL-1000RO Connectors ..... 182  
 Power Supply Combinations ..... 183  
 Power Connectors ..... 184  
 Protective Ground Terminal ..... 185  
 Fiber Shelf ..... 186

## A.1 CONTROL Connector

The CONTROL connector is a 9-pin D-type female connector with RS-232 asynchronous DCE interface, intended for direct connection to a supervision terminal. The connection to the supervision terminal is by means of a straight cable (a cable wired point-to-point). The connector is wired in accordance with the following table.

**Table 51: CONTROL Connector Wiring**

Pin	Function	Direction
2	Transmit Data (TX)	From PL-1000RO
3	Receive Data (RX)	To PL-1000RO
5	Signal Ground (SIG)	Common reference

## A.2 ALARM Connector

The ALARM connector of the PL-1000RO is a 9-pin D-type female connector that is used to connect to the external alarm system (for example, a buzzer) of the customer.

The ALARM connector provides two connectivity methods:

- Normally Open
- Normally Closed

The connector is wired in accordance with the following table.

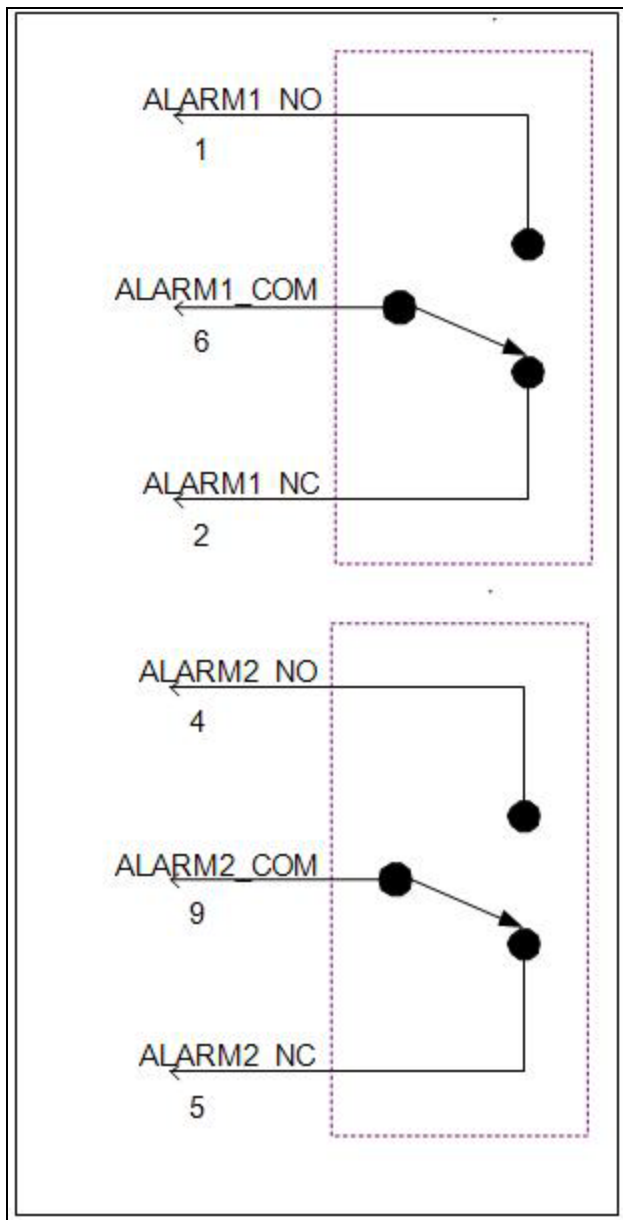


Figure 130: External ALARM Diagram

**Table 52: ALARM Interface, Pin Function**

Pin	Designation	Function
1	ALARM Normally Open (ALARM1_NO)	In normal operation, pin 6 (ALARM Common) is internally connected to pin 2 (ALARM Normally Closed).  Upon a Major alarm event, the internal connection of pin 6 (ALARM Common) is switched to this pin (pin 1).
2	ALARM Normally Closed (ALARM1_NC)	In normal operation, pin 6 (ALARM Common) is internally connected to this pin (pin 2).  Upon a Major or Critical alarm event, the internal connection of pin 6 (ALARM Common) is switched to pin 1 (Alarm Normally Open)
6	ALARM Common (ALARM1_COM)	Common signal
3		Internally connected to GND.
7	ALARM IN 1	Input External Alarm
8	ALARM IN 2	Not connected
4*	ALARM Normally Open (ALARM2_NO)	In normal operation, pin 9 (ALARM Common) is internally connected to pin 5 (Alarm Normally Closed).  Upon a Major alarm event, the internal connection of pin 9 (ALARM Common) is switched to this pin (pin 4).
5*	ALARM Normally Closed (ALARM2_NC)	In normal operation, pin 9 (ALARM Common) is internally connected to this pin (pin 5).  Upon a Major alarm event, the internal connection of the pin 9 (ALARM Common) is switched to pin 4 (ALARM Normally Open).
9*	ALARM Common (ALARM2_COM)	Common signal

\* The pin will be implemented in a future software release.

## A.3 ETH Connector

The PL-1000RO ETH port is a 10/100 Base-T Ethernet interface terminated in an RJ-45 connector. The port can be connected by a standard station cable to any type of 10/100 Base-T Ethernet port.

Connector pin functions are listed in the following table.

**Table 53: ETH Port Connector, Pin Functions**

Pin	Designation	Function
1	RXD+	Receive Data output, + wire
2	RXD-	Receive Data output, - wire
3	TXD+	Transmit Data input, + wire
4, 5	-	Not connected
6	TXD-	Transmit Data input, - wire
7, 8	-	Not connected

## A.4 Optical PL-1000RO Connectors

The optical PL-1000RO connectors can be one of the following ports:

- Data
- MNG
- MUX/DEMUX

### A.4.1 Data Ports

The data ports are up to four fixed duplex LC connectors.

**Table 54: Data Ports Specifications**

Specification	Requirement
Fiber Type	Single mode
Fiber Size	2 mm optical fiber
Connector Type	LC with protective shutters
Port Type	Optical ports

## A.4.2 MNG Ports

The MNG ports accept optical or copper (electrical) SFP modules.

**Table 55: MNG Ports Specifications**

Specification	Requirement
Fiber/Cable Type	<ul style="list-style-type: none"> <li>• <b>Optical SFP:</b> Single mode or multi-mode</li> <li>• <b>Copper SFP:</b> Twisted pair</li> </ul>
Wavelength	<ul style="list-style-type: none"> <li>• <b>Single mode:</b> <ul style="list-style-type: none"> <li>▪ CWDM: 1290 nm or 1310 nm</li> <li>▪ DWDM: 1490 nm or 1510 nm</li> </ul> </li> <li>• <b>Multi-mode:</b> 850 nm</li> </ul>
Fiber Size	2 mm optical fiber
Connector Type	<ul style="list-style-type: none"> <li>• <b>Optical SFP:</b> LC</li> <li>• <b>Copper SFP:</b> RJ-45</li> </ul>
Port Type	Management

## A.4.3 MUX/DEMUX Port

The MUX/DEMUX port consists of one or two Multifiber Pull Off (MPO) connectors suitable for a dedicated ribbon cable (supplied by PacketLight).

**Table 56: MUX/DEMUX Port Specifications**

Specification	Requirement
Fiber Type	Single mode
Fiber Size	2 mm optical fiber
Connector Type	MUX/DEMUX: MPO/APC female
Port Type	MUX/DEMUX connections

## A.5 Power Supply Combinations

The following power supply combinations are feasible in the PL-1000RO:

- One or two AC power supplies
- One or two DC power supplies

**NOTE:** Both AC and DC PSUs can be used in the same unit.

## A.6 Power Connectors

The PL-1000RO may have the following power supply connectors:

- **AC-powered PL-1000RO units:** Standard three-pin IEC320 C5 connector 3A for connection to AC power.
- **DC-powered PL-1000RO units:** DC power is supplied with a dedicated connector for wiring.

The following figure shows how to wire the DC connector (DC power supply only).

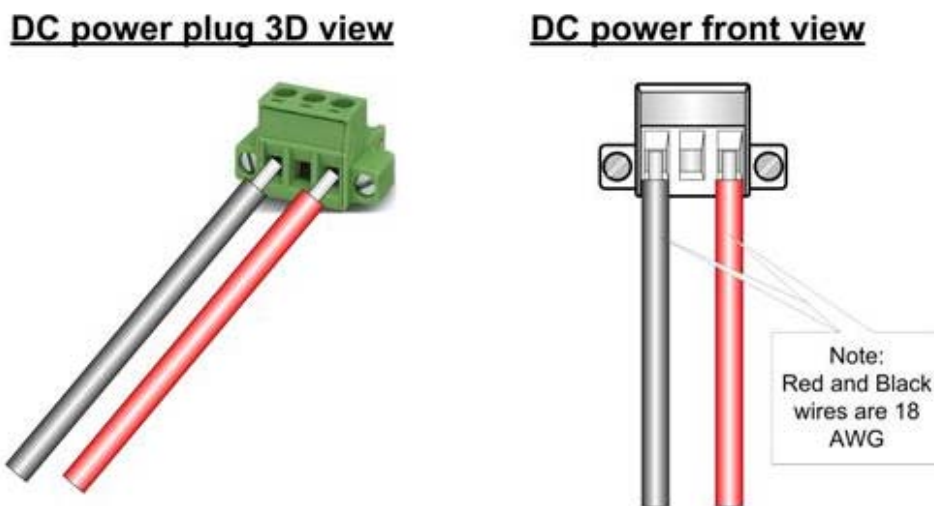


Figure 131: DC Connector Wiring Diagram

## A.7 Protective Ground Terminal

The protective ground terminal of the PL-1000RO, located on the rack mount, must be connected to a protective ground.

The following figure shows how to wire the ground terminal.

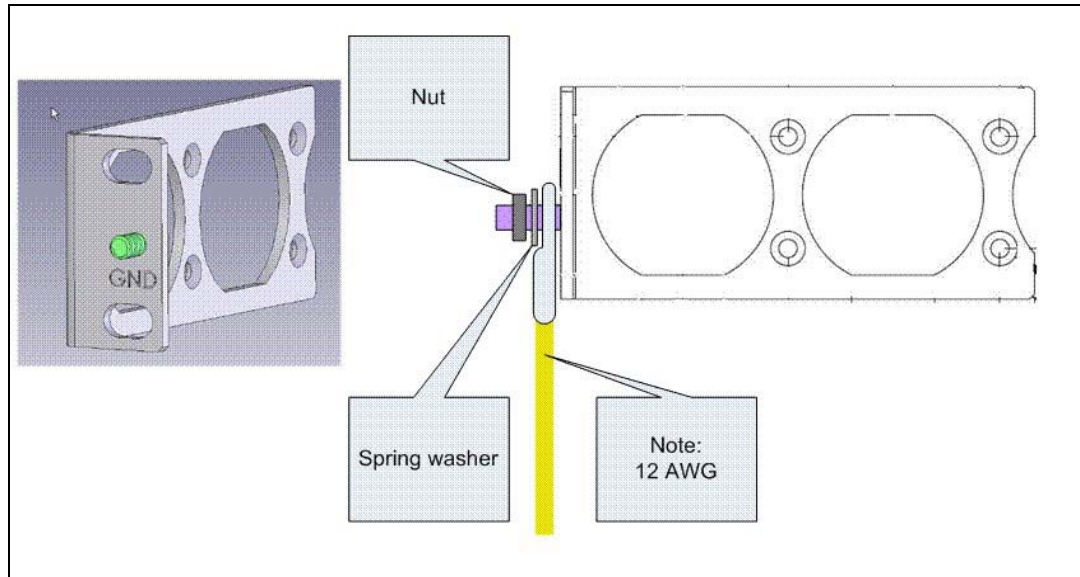


Figure 132: Protective Ground Terminal Wiring Diagram

## A.8 Fiber Shelf

The fiber shelf is an optional tray that can be attached to the PL-1000RO to help you organize the optical fibers.

The following figure shows the mechanical details of the fiber shelf.

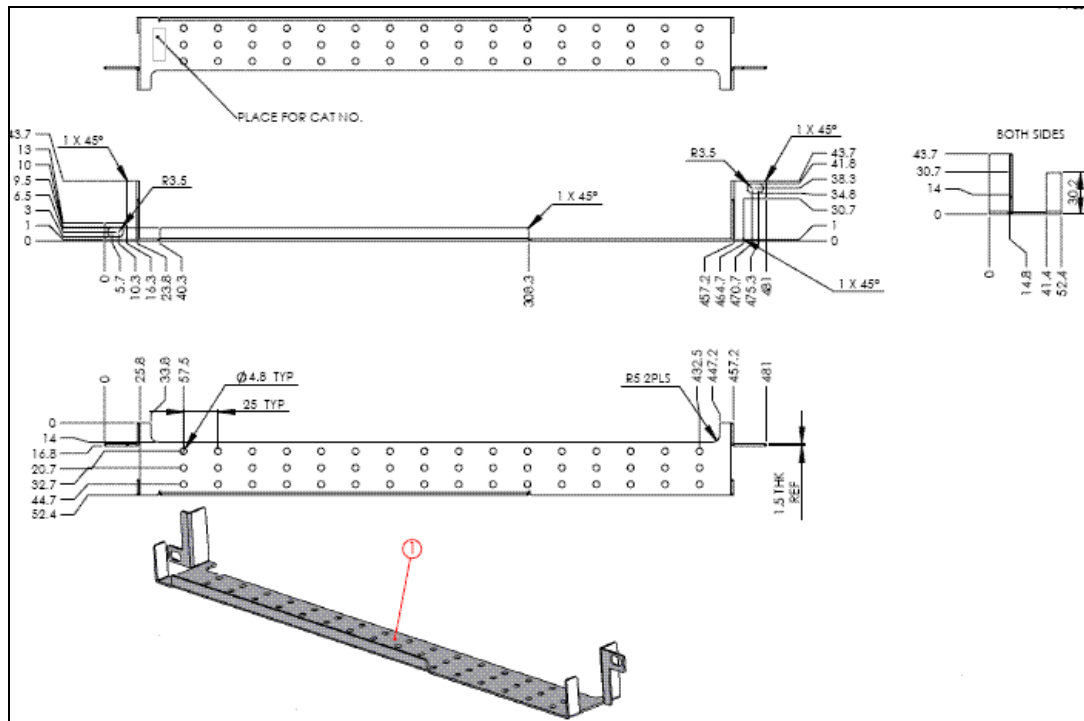


Figure 133: Fiber Shelf Diagram



## Appendix B: Alarm and Event Messages

This appendix describes the possible alarm and event messages.

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Configuration Event Messages .....	189
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### B.1 Alarm Messages

The following table lists the possible PL-1000RO alarm messages and their interpretation and/or corrective measures.

**Table 57: Alarm Messages**

Source	Message	Interpretation/Corrective Measures
PSU1/PSU2	Power Supply Failure	Replace the faulty PSU.
PSU1/PSU2	Power Failure– Low Voltage	Replace the faulty PSU.
FAN	Fan Failure	The internal cooling fan of the device does not operate. Replace the FAN unit as soon as possible.
System	Hardware failure	A technical failure has been detected. Replace the device.
System	Database Restore Failed	Failed to update the system configuration.
System	Database Restore in Progress	Failed to update the system configuration.
System	Cold Restart Required: FPGA Changed	After a warm restart, the FPGA version is not consistent with the software version. A cold restart is required.
System	Software Upgrade Failed	The downloaded software is corrupted. Reload the software.
System	Network Time Protocol Failure	SNTP timing protocol failure. Check the IP connection to the NTP servers.
External Input Alarm	(As configured)	The External Input Alarm is active.
Optics	Optics Removed	The optical module has been removed. Insert an optical module or shut the port down.
Optics	Optics Loss of Light	A Loss of Light indication has been received in regards to the specific optical module. The optical power of the received signal is below the minimum power level. Check the fiber connection and/or clean the fiber connector.
Optics	Optics Transmission Fault	The transceiver is not transmitting. Replace the optical module.
Optics	Optics Hardware Failure	A hardware fault was detected in the optical module. Replace the optical module.

Source	Message	Interpretation/Corrective Measures
Optics	Optics High Transmission Power	The transmission power of the optical module is above its specification.
Optics	Optics Low Transmission Power	The transmission power of the optical module is below its specification.
Optics	Optics High Temperature	The temperature inside the optical module is above its specification.
Optics	Optics Low Temperature	The temperature inside the optical module is below its specification.
Optics	Optics High Reception Power	The incoming signal into the optical module is too high. An attenuation of the input signal is required.
Optics	Optics Low Reception Power	The incoming signal into the optical module is too low.
Optics	Optics High Laser Temperature	The temperature of the laser is above its specification.
Optics	Optics Low Laser Temperature	The temperature of the laser is below its specification.
Optics	Optics High Laser Wavelength	The laser wavelength exceeds the high alarm level.
Optics	Optics Low Laser Wavelength	The laser wavelength exceeds the low alarm level.
Optics	Optics Bit Rate Mismatch	The inserted optical module has a mismatch problem due to the wrong rate or type. Replace the optical module or update the configured service type.
Optics	Unauthorized Optics Inserted and is Shutdown	The inserted optical module is unauthorized for use. Replace the optical module with an authorized optical module.
EDFA	EDFA Gain	The EDFA gain is out of acceptable range.
EDFA	EDFA Hardware Failure	The interface does not respond.
EDFA	EDFA Temperature	The EDFA temperature is out of acceptable range.
EDFA	EDFA Loss of Light	No signal is detected.
EDFA	EDFA Receive Power Out of Bound	The receive signal is out of acceptable range. Check the optical power of the EDFA client signals. Use attenuation if required.
EDFA	EDFA Transmit Power Out of Bound	The transmit signal is out of acceptable range. Check the optical power of the EDFA client signals.
EDFA	EDFA Down	Closed the EDFA output upon loss of input. Check the EDFA client signals.
EDFA	EDFA End of Line	An EDFA problem. Replace the device.
EDFA	EDFA Eye Safety	Hazard. No fiber is connected to the port.

Source	Message	Interpretation/Corrective Measures
WSS	Channel Power Low Degrade	The input power of the channel is below the signal degrade low threshold.
WSS	Channel Power High Degrade	The input power of the channel is above the signal degrade high threshold.
WSS	Channel Power Low Fail	The input power of the channel is below the signal fail low threshold.
WSS	Channel Power High Fail	The input power of the channel is above the signal fail high threshold.
WSS	Unequalized Output Power	The output optical power of the channels is not equalized.

## B.2 Configuration Event Messages

The following table lists the configuration event messages generated by the PL-1000RO and explains their interpretation.

**Table 58: Configuration Event Messages**

Source	Message	Interpretation
System	Change date	The system date or time has changed.
System	Restore provisioning	A new configuration file has been loaded.
System	Change IP	The IP of the node has changed.
System	Alarm cut-off	The Alarm Cut-off has been operated.
System	Add user	A new user was added.
System	Delete user	A user was deleted.
Port	Admin Down	Admin Down has been performed for the port.
Port	Admin Up	Admin Up has been performed for the port.

## B.3 Other Event Messages

The following table lists the other event messages generated by the PL-1000RO and explains their interpretation.

**Table 59: Other Event Messages**

Event Type	Source	Message	Interpretation
Inventory Changed	PSU, FAN, Optics	Inventory Changed	The node inventory has changed. A component was inserted or removed.
Dying Gasp	System	Remote Unit Failure	A remote unit had a power failure.
Software Upgrade	System	Software Upgrade Completed	The Software Upgrade operation has been completed.



# Appendix C: Troubleshooting Chart

This appendix describes some trouble symptoms and their corrective measures.

## In this Appendix

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## C.1 Troubleshooting Chart

Identify the trouble symptoms in the following table and perform the actions listed under "Corrective Measures" in the order given until the problem is corrected.

**Table 60: Troubleshooting Chart**

No.	Trouble Symptoms	Probable Cause	Corrective Measures
1	PL-1000RO does not turn on.	No power	<ol style="list-style-type: none"> <li>1. Check that the power cable is properly connected to the PL-1000RO power connector.</li> <li>2. Check that both ends of the power cable are properly connected.</li> <li>3. Check that power is available at the power outlet serving the PL-1000RO.</li> </ol>
		Defective power supply	Replace the power supply unit.
		Defective PL-1000RO	Replace the PL-1000RO.
2	The LOS LED of a device connected to PL-1000RO is lit.	Cable connection problems	<ol style="list-style-type: none"> <li>1. Check all cables at the PL-1000RO Tx and Rx port connectors.</li> <li>2. Repeat check at the remote equipment.</li> <li>3. Make sure that the optical module used matches the fiber type (single mode / multi-mode).</li> </ol>
		Fiber problem	<ol style="list-style-type: none"> <li>1. Use a short fiber to connect the remote equipment Rx connector to its Tx connector.</li> <li>2. If the problem is solved, connect the Rx connector of the fiber to the Tx connector at the PL-1000RO location.</li> <li>3. If the problem persists, replace the fiber.</li> </ol>
		Defective remote equipment	<p>Use a short fiber to connect the remote equipment Rx connector to its Tx.</p> <p>If the LOS LED is still lit, the remote equipment is defective.</p>
		A problem with the PL-1000RO port state	Set the <b>Admin Status</b> of the PL-1000RO uplink port to <b>Up</b> .
		Defective optical module	<ol style="list-style-type: none"> <li>1. Check for optical module alarms.</li> <li>2. Replace the optical module.</li> </ol>

No.	Trouble Symptoms	Probable Cause	Corrective Measures
		Defective PL-1000RO	<ol style="list-style-type: none"> <li>1. Use a short fiber to connect the PL-1000RO Rx connector to its Tx connector. (A signal generator may be required as the PL-1000RO does not generate signals by itself.)</li> <li>2. If the LOS LED is still lit, replace the PL-1000RO.</li> </ol>
3	The LED of the local PL-1000RO port is red.	Cable connection problems	<ol style="list-style-type: none"> <li>1. Check for proper connections of the cables to the PL-1000RO Tx and Rx connector.</li> <li>2. Repeat check at the remote equipment.</li> </ol>
		High Signal Level	<ol style="list-style-type: none"> <li>1. Check the <b>Receiver Input Power</b> of the optical module (see <a href="#">SFP Tab</a> (p. 112)).</li> <li>2. If the power is too high, add an attenuator.</li> </ol>
		Defective optical module	<ol style="list-style-type: none"> <li>1. Check for optical module alarms.</li> <li>2. Replace the optical module.</li> </ol>
		Fiber problem	<ol style="list-style-type: none"> <li>1. Check the <b>Receiver Input Power</b> of the optical module (see <a href="#">SFP Tab</a> (p. 112)).</li> <li>2. If the power is too low, replace the fiber.</li> </ol>
		Defective PL-1000RO	<ol style="list-style-type: none"> <li>1. Check the PL-1000RO alarms.</li> <li>2. If there are alarms, replace the PL-1000RO.</li> </ol>
		Defective remote equipment	<ol style="list-style-type: none"> <li>1. Use a different remote unit.</li> <li>2. If the problem is solved, replace the remote unit.</li> </ol>
4	The equipment attached to the LAN port of the local PL-1000RO cannot communicate with the remote PL-1000RO over the WAN.	Problem with the connection to the LAN	<ol style="list-style-type: none"> <li>1. Check that the LINK LED of the corresponding LAN port lights. If not, check for proper connection of the cable to the LAN port.</li> <li>2. Check that the <b>Admin Status</b> of the MNG port is <b>Up</b> and that it is operating properly.</li> <li>3. Check that the IP information of the remote PL-1000RO is configured correctly (for example, the default gateway).</li> </ol>
		External problem	Check the IP configuration of the external equipment (for example, the gateway address) that is connected to the local PL-1000RO LAN port.
		Defective PL-1000RO	Replace the PL-1000RO.

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