



# iMux Modular Multiplexer System

## Software Manual



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# 1. Introduction

## Product Description

The iMux is a powerful fiber optic modular multiplexer capable of providing up to 16 channels of T1, RS232, 4 wire data/600 Ohm audio and analog phone FXO/FXS services, plus four built-in Gigabit Ethernet ports, over a single fiber. Each of these services are supplied by our communication modules, each module will transport up to 4 channels of the specified service and may be installed in any combination. Spares or add-on modules may be ordered separately and are field installable.

Gigabit SFPs are used for the back-haul fiber transport of the communication services. Each iMux will take up to 2 SFPs for redundancy. The SFPs are hot swappable and automatically fail over in case of a failure in the primary fiber path.

The iMux may be managed through SNMP, web Interface, craft port or menu keys on the front panel. It also has an external alarm port for alarm monitoring, as well as 4 programmable alarm contacts. The system provides local/remote loopback functions that are ideal for network testing and maintenance.

## Standard Features

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Multiplexes up to 16 voice and data channels plus Gigabit Ethernet over a single fiber

Up to 4 modules (each with 4 channels) may be used in any combination to mix and match services

Convenient front LED status indicators

T1, RS232, POTS, & 4 Wire Data service modules

4 built-in Gigabit Ethernet ports

Aggregated Ethernet throughput are up to 800 Mbps

Supports VLAN/QOS and port rate control

SFP's are hot swappable & provide 1+1 redundancy

Ethernet Ports can be configured to be Isolated Channels or Shared.

Supports SNMP , HTTP / FTP / TFTP remote software upgradeable

Supports TELNET function to configure and monitor local and remote devices through TCP/IP network

The POTS modules support phone extensions as well as ring down.

Redundant 48VDC or AC/DC powering options

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## 2. Configuration with a Web Browser

### Establishing Connection to Device

RLH iMux may be configured and managed via an intuitive, web-based graphical user interface or GUI. The Web GUI can be accessed natively using Microsoft Internet Explorer. Microsoft Edge may also be used when enabling Internet Explorer (IE) mode and reloading the Web GUI, or by saving the Web GUI URL as an IE mode page.

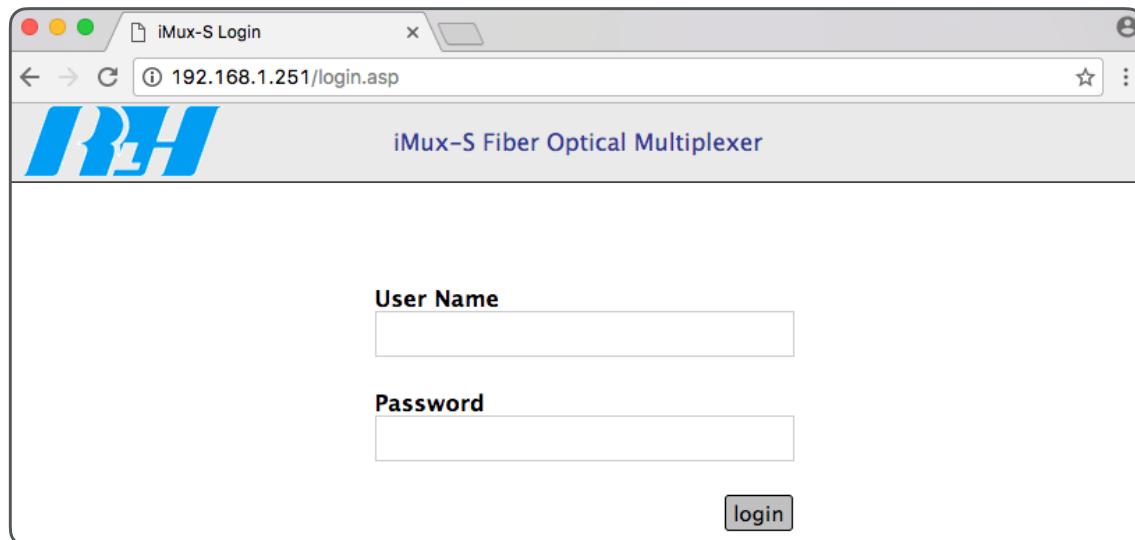
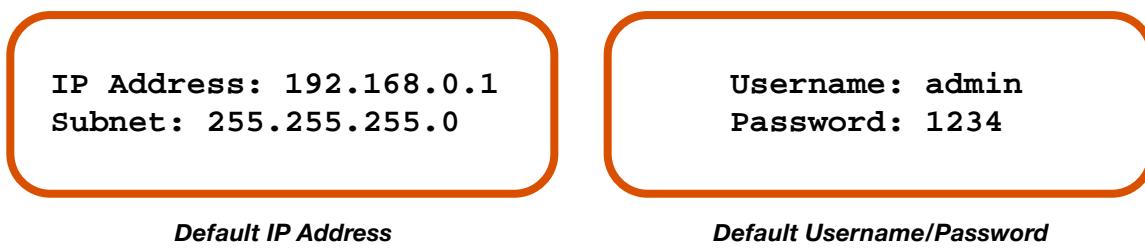
#### Default Settings

In most cases you will need to assign a temporary static IP to your workstation to initially access the switch web access page. The assigned temporary address should be within the same subnet as the default IP address.

Example Workstation Address:

- IP: 192.168.0.50
- Subnet: 255.255.255.0

Now access the device via: <http://192.168.0.1>

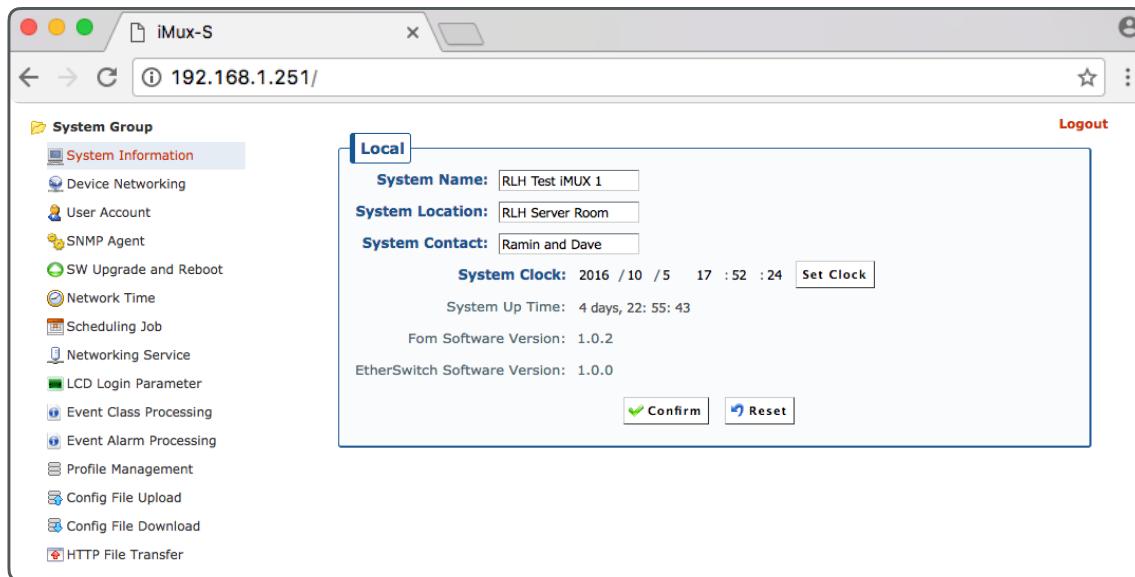


**Login Web Interface Screen**

# System Group

The System Group section is where a majority of device management and configuration procedures take place.

## System Information



**System Information Web Interface**

Settings	Description
<b>System Name</b>	Enter the desired hostname of the device.
<b>System Location</b>	Enter the geographic location information of the device.
<b>System Contact</b>	Enter the name and/or contact information of the designated manager.
<b>System Clock</b>	Displays the current Date + Time configuration of the device. Displayed in as: Year /Month /Day HH : MM :SS
<b>System Up Time</b>	The amount of time that has passed since the last device boot.
<b>Fom Software Version</b>	Currently loaded multiplexer system software version.
<b>EtherSwitch Software Version</b>	Currently loaded Ethernet Switch software version.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

## Device Networking



### Device Networking Web Interface

Settings	Description
<b>Device IP Address</b>	Desired IP Address of the device.
<b>Device IP NetMask</b>	Desired Ethernet Subnet Mask of the device.
<b>Default Gateway IP Address</b>	IP Address of the network's Default Gateway.
<b>IP Setup Mode</b>	<p><b>Set Only</b> Sets the IP values entered without saving or applying the new configuration.</p> <p><b>NOTE:</b> After confirming, the device configuration must be saved in the Profile Management section to save changes.</p> <p><b>NOTE:</b> Reboot device to apply the new IP configuration.</p>
<b>Set and Apply</b>	<p>Sets and applies the IP values entered without saving the new configuration to the running profile.</p> <p><b>NOTE:</b> After confirming, the configuration must be saved on the Profile Management page to the applicable running profile.</p>
<b>IP Running Status</b>	<p>Displays the different device addresses.</p> <p><b>MAC Address</b> Displays the Media Access Control (MAC) Address of the device.</p> <p><b>IP Address</b> Displays the current working IP address of the device.</p> <p><b>IP NetMask</b> Displays the current configured IP Network Subnet Mask.</p> <p><b>Gateway IP Address</b> Displays the current configured IP address of the network's default gateway.</p>

## User Account

Local	User Name	Password	Confirm Pass	Group	Auto-Logout	Status
<input type="checkbox"/>	admin	*****	*****	Admin	0 Secs	Enable
<input type="checkbox"/>	operator	*****	*****	Control	0 Secs	Disable
<input type="checkbox"/>	monitor	*****	*****	Monitor	0 Secs	Disable

### User Account Web Interface

Settings		Description
<b>Edit</b>		Account selection box to left of the user account being modified.
		<b>Note:</b> usernames may not be altered after the accounts are created.
<b>Add</b>		Complete the new user account information and click the button to create.
<b>Edit</b>		Button to modify the user account(s) that are selected in the edit column.
<b>Delete</b>		Button to remove the user account(s) that are selected in the edit column.
<b>User Name</b>		Create a Username using 1-8 characters. (letters, numbers, and symbols)
<b>Password</b>		Create a Password using 1-8 characters. (letters, numbers, and symbols)
<b>Confirm Password</b>		Verify password by typing in the same password as in the Password field.
<b>Group</b>		Required to determine the level of access the user is granted to the system.
	<b>Admin</b>	Access to all levels and areas of the system are granted.
	<b>Control</b>	Administer all areas of the system outside of the System Group sub menu.
	<b>Monitor</b>	Users will only be able to monitor the status of the system.
<b>Auto-Logout</b>		Specifies the amount of time, in seconds, that will pass before the user is automatically logged out of the system and will be forced to log in again.
<b>Status</b>	<b>Enable</b>	Enable the user account and allow the user to log in.
	<b>Disable</b>	Disable the user account and prevent the user from logging in to the system.
		<b>Note:</b> Message sent to user to check username and password information.

## SNMP Agent

System Group

- System Information
- Device Networking
- User Account
- SNMP Agent**
- SW Upgrade and Reboot
- Network Time
- Scheduling Job
- Networking Service
- LCD Login Parameter
- Event Class Processing
- Event Alarm Processing
- Profile Management
- Config File Upload
- Config File Download
- HTTP File Transfer

**Logout**

**Local**

Trap IP Address 1: 0.0.0.0 Port: 162

Trap IP Address 2: 0.0.0.0 Port: 162

Trap IP Address 3: 0.0.0.0 Port: 162

Trap IP Address 4: 0.0.0.0 Port: 162

Read Community Name: public

Write Community Name: private

Trap Community Name: public

Send Snmp Authentication Failure Trap:  No  Yes

**Confirm** **Reset**

### SNMP Agent Web Interface

Settings	Description
<b>Trap IP Address</b>	1~4 Enter the IPv4 Address of the SNMP trap into the designated field.
<b>Port</b>	Enter the Port number of the SNMP trap in the designated field.
<b>Read Community Name</b>	Enter the desired SNMP Read Community Name of the device.
<b>Write Community Name</b>	Enter the desired SNMP Write Community Name of the device.
<b>Trap Community Name</b>	Enter the desired SNMP Trap Community Name of the device.
<b>Send SNMP Authentication Failure Trap</b>	Determines whether the device will transmit SNMP authentication traps.
<b>Yes</b>	SNMP trap will be transmitted on SNMP authentication failure.
<b>No</b>	SNMP trap will not be transmitted on SNMP authentication failure.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

## SW Upgrade and Reboot

The screenshot shows a web browser window titled 'iMux-S' with the URL '192.168.1.251/'. The left sidebar contains a 'System Group' menu with various options like System Information, Device Networking, User Account, SNMP Agent, SW Upgrade and Reboot (which is selected), Network Time, Scheduling Job, Networking Service, LCD Login Parameter, Event Class Processing, Event Alarm Processing, Profile Management, Config File Upload, Config File Download, and HTTP File Transfer. The main content area is titled 'Local' and shows a configuration form for 'SW Upgrade and Reboot'. The form includes fields for 'Software Source' (radio buttons for FTP/TFTP, Local File, HTTP), 'Access Protocol' (dropdown menu set to 'FTP'), 'Server IP Address' (text input '0.0.0.0'), 'Image File Name (.cmp)' (text input), 'EtherSwitch File Name (.wrp)' (text input), 'Chip File Name (.vme)' (text input), 'Login User Name' (text input), and 'Login Password' (text input). At the bottom are three buttons: 'Confirm' (green checkmark), 'UpGrade' (green circular arrow), and 'Reboot' (red circular arrow).

### SW Upgrade and Reboot Web Interface

#### Software Source - FTP/TFTP

Settings	Description
<b>FTP/TFTP</b>	Access upgrade files from a configured FTP or TFTP server on the network.
<b>Access Protocol</b>	Select the desired file transfer protocol from the drop down menu.
<b>Server IP Address</b>	Enter the IP Address of the file server to access the upgrade files.
<b>Image File Name (.cmp)</b>	Name must be exactly as it is saved on the file server, case sensitive.
<b>EtherSwitch File Name (.wrp)</b>	Name must be exactly as it is saved on the file server, case sensitive.
<b>Chip File Name (.vme)</b>	Name must be exactly as it is saved on the file server, case sensitive.
<b>Login User Name</b>	Enter the username of the account that will be used to access the file server.
<b>Login Password</b>	Enter the password of the account that will be used to access the file server.
<b>Confirm</b>	Checks validity of the entered information prior to initiation of upgrade.
<b>Upgrade</b>	Initiates the upgrade operation on the respective device once its been confirmed.
<b>Reboot</b>	Initiates the reboot with the upgraded files to the respective device.
<b>Confirm Local + Remote</b>	Checks validity of the entered information for both devices simultaneously prior to initiation of upgrade.

### Software Source - Local File

Settings	Description
<b>Local File</b>	Access local files to upload stored in local device storage.
<b>Confirm</b>	Checks validity of the entered information prior to initiation of upgrade.
<b>Upgrade</b>	Initiates the upgrade operation on the respective device once its been confirmed.
<b>Reboot</b>	Initiates the reboot with the upgraded files to the respective device.
<b>Confirm Local + Remote</b>	Checks validity of the entered information for both devices simultaneously prior to initiation of upgrade.

### Software Source - HTTP

Settings	Description
<b>HTTP</b>	Upload a configuration file from your workstation via HTTP.
<b>Image File</b>	Click Choose File to select the desired upgrade file from the workstation storage.
<b>Confirm</b>	Checks validity of the entered information prior to initiation of upgrade.
<b>Upgrade</b>	Initiates the upgrade operation on the respective device once its been confirmed.
<b>Reboot</b>	Initiates the reboot with the upgraded files to the respective device.
<b>Confirm</b>	Checks validity of the entered information before starting the upgrade.

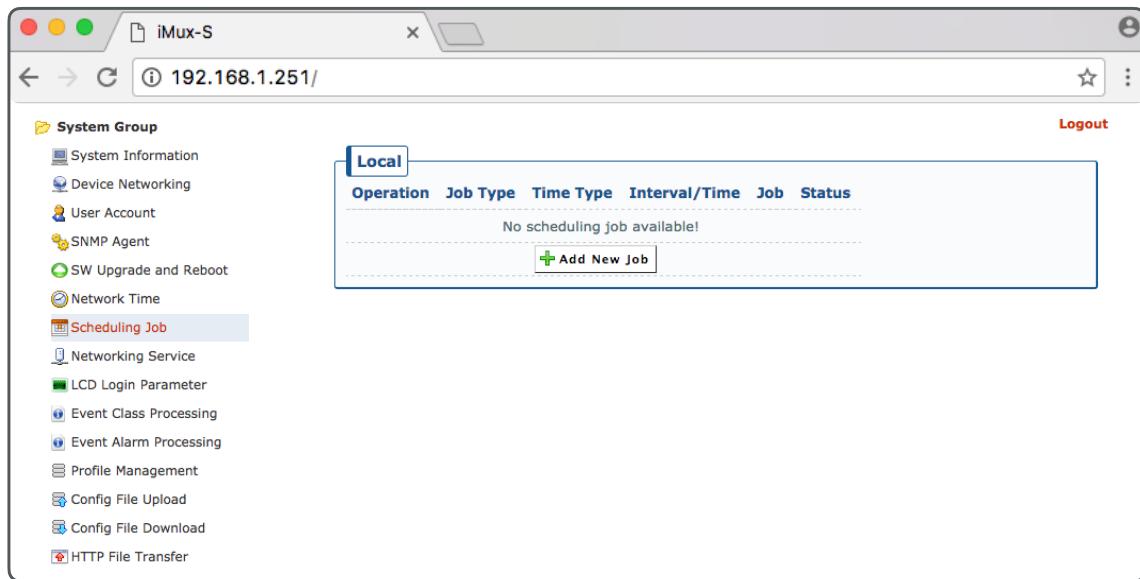
## Network Time



### Network Time Web Interface

Settings	Description
<b>System Clock</b>	Displays the current Date + Time configuration of the device. Year / Month / Day, HH : MM : SS
<b>Clock Server IP Address</b>	Enter the IPv4 address of the NTP server on the network (local or internet) that will provide the current time and date.
<b>Time Zone</b>	Select the desired time zone from the drop down menu.
<b>Confirm</b>	Checks validity of the new settings prior to synchronizing the devices.
<b>Synchronize</b>	Click to open the synchronization dialogue box. Operation target menu options include local, remote, or local + remote.
<b>Reset</b>	Reverts any unconfirmed changes to the settings back to their unaltered state.
<b>Confirm Local + Remote</b>	Checks validity of the entered information for both devices simultaneously prior to synchronization.

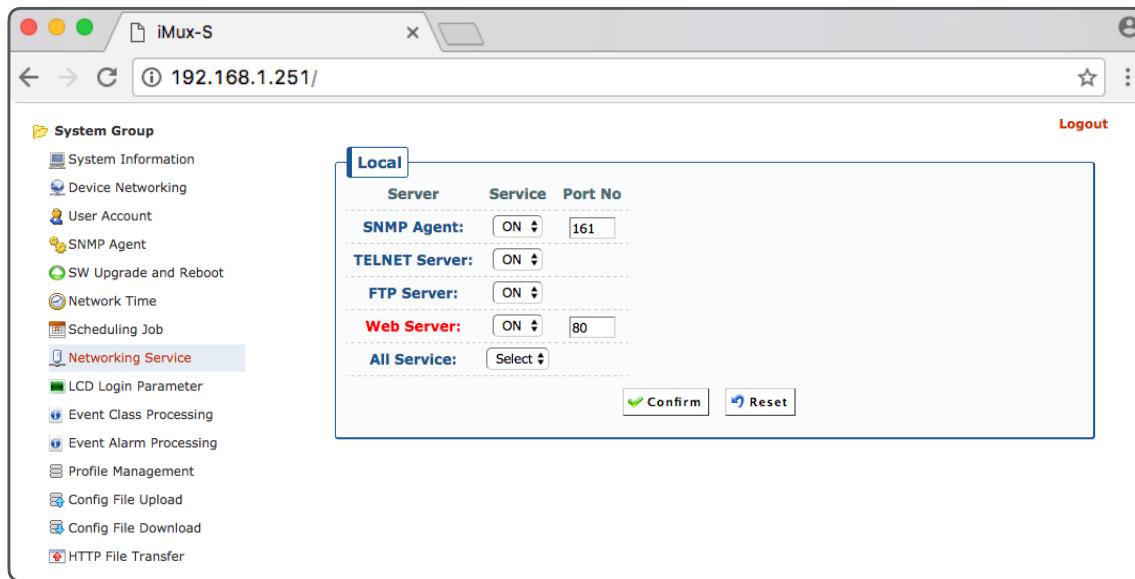
## Scheduling Job



**Scheduling Job Web Interface**

Settings	Description
<b>Operation</b>	Lists the existing scheduling job operations. Edit or delete them by clicking on the corresponding button to the left.
<b>Job Type</b>	There are 3 types of jobs available
<b>Periodic</b>	The job is performed repeatedly over the time interval that is designated.
<b>One Shot</b>	A single instance of the job is performed after the designated time interval.
<b>Booting</b>	The job is carried out on system boot.
<b>Time Type</b>	There are 2 Time Types available.
<b>Interval</b>	The time interval may be a whole number of minutes from 1 to 3000.
<b>Day</b>	A daily designated time that is executed on a 24 hour time interval.
<b>Interval/Time</b>	Displays the configured time interval or daily run time of the scheduled job.
<b>Job</b>	Schedule any of the following job types: Send Schedule Trap, Time Sync Trap, Software Upgrade, Network Time Sync, System Reboot, Config Upload, Config Download, or Do Nothing.
<b>Status</b>	Displays the running status of the scheduled job.
<b>Completed</b>	Denotes a job that has occurred and is not scheduled to occur again in the future.
<b>Waiting</b>	Denotes a job that is scheduled to run in the future.
<b>Add New Job</b>	Click the button to open the Add New Scheduling sub window.

## Network Service



### Network Service Web Interface

Settings		Description
<b>SNMP Agent</b>	<b>ON</b>	Enable Device SNMP Agent.
	<b>OFF</b>	Disable Device SNMP Agent.
<b>Port No</b>		Enter the desired IP port through which the SNMP Agent will be available. <i>Entered value must be between 1 and 65535.</i>
<b>Telnet Server</b>	<b>ON</b>	Enable Device Telnet.
	<b>OFF</b>	Disable Device Telnet.
<b>FTP Server</b>	<b>ON</b>	Enable Device FTP.
	<b>OFF</b>	Disable Device FTP.
<b>Web Server</b>	<b>ON</b>	Enable Device Web Server.
	<b>OFF</b>	Disable Device Web Server.
<b>Port No</b>		Enter the desired IP port that the iMux Web Server will be available. <i>Entered port value must be between 1 and 65535.</i>
<b>All Service</b>	<b>Select</b>	Default setting. Enable or disable all services by selecting ON or OFF.
	<b>ON</b>	Enable ALL network services listed above.
	<b>OFF</b>	Enable ALL network services listed above.
<b>Confirm</b>		Apply Settings.
<b>Reset</b>		Remove unconfirmed settings.
<b>Confirm Local + Remote</b>		Apply settings to both the local and remote iMux units.

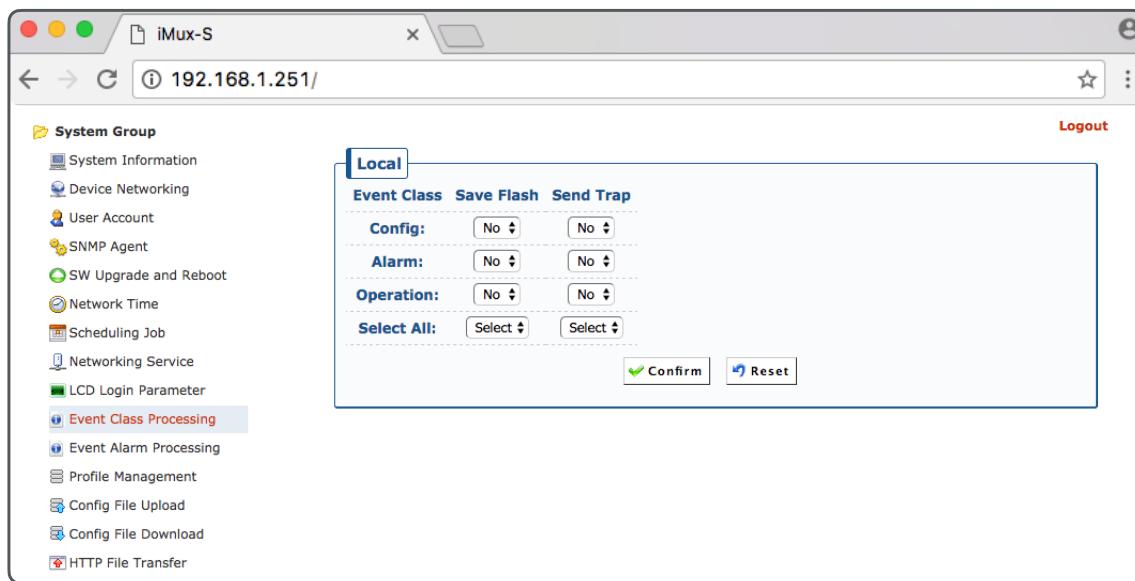
## LCD Login Parameters

The screenshot shows a web-based configuration interface for an iMux unit. The URL in the address bar is 192.168.1.251. The left sidebar lists various system groups: System Information, Device Networking, User Account, SNMP Agent, SW Upgrade and Reboot, Network Time, Scheduling Job, Networking Service, LCD Login Parameter (which is selected and highlighted in blue), Event Class Processing, Event Alarm Processing, Profile Management, Config File Upload, Config File Download, and HTTP File Transfer. The main content area is titled 'Local' and contains the 'LCD Login Parameters' configuration. It includes fields for 'LCD Login' (set to 'Enable'), 'Auto LCD Logout Seconds' (set to '0'), 'Auto Backlight Off Seconds' (set to '600'), and eight dropdown menus for 'LCD Pass Key 1' through 'LCD Pass Key 8' (each set to a specific direction: Home, Up, Down, Right). At the bottom are 'Confirm' and 'Reset' buttons. A 'Logout' link is in the top right corner of the main content area.

### LCD Login Parameters Web Interface

Settings	Description
<b>LCD Login</b>	LCD Panel can be used to login the device.
<b>Disable</b>	Disables login via the LCD Panel.
<b>Enable</b>	Enables login via the LCD Panel.
<b>Auto LCD Log Out Seconds</b>	Enter the number of minutes of inactivity that will elapse before the logged in user is automatically logged out.
<b>Auto Backlight Off Seconds</b>	Enter the number of minutes of inactivity that will elapse before the LCD backlight turns off.
<b>LCD Pass Keys 1~8</b>	The LCD panel password consists of 8 button presses using the Home, Up, Down, and Right keys.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

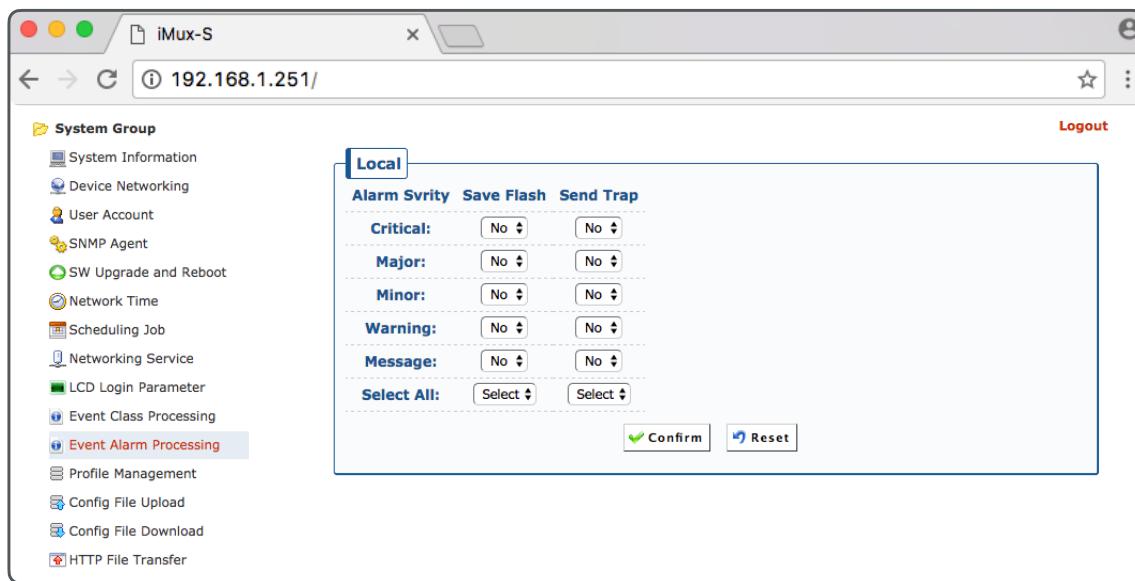
## Event Class Processing



### Event Class Processing Web Interface

Settings	Description
<b>Event Class</b>	Indicates the class of event that is being considered for logging.
	Use the respective dropdown menu to determine the instances for each.
<b>Save Flash</b>	Determines the instances to be saved to device flash storage.
<b>Send Trap</b>	Determines the instances that will trigger SNMP Traps to be sent.
<b>Config</b>	Includes any configuration changes events that are made to the system.
<b>Alarm</b>	System alarm events.
<b>Operation</b>	System operational events that are not listed as alarm events.
<b>Select All</b>	Set all above mentioned Event Classes simultaneously.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

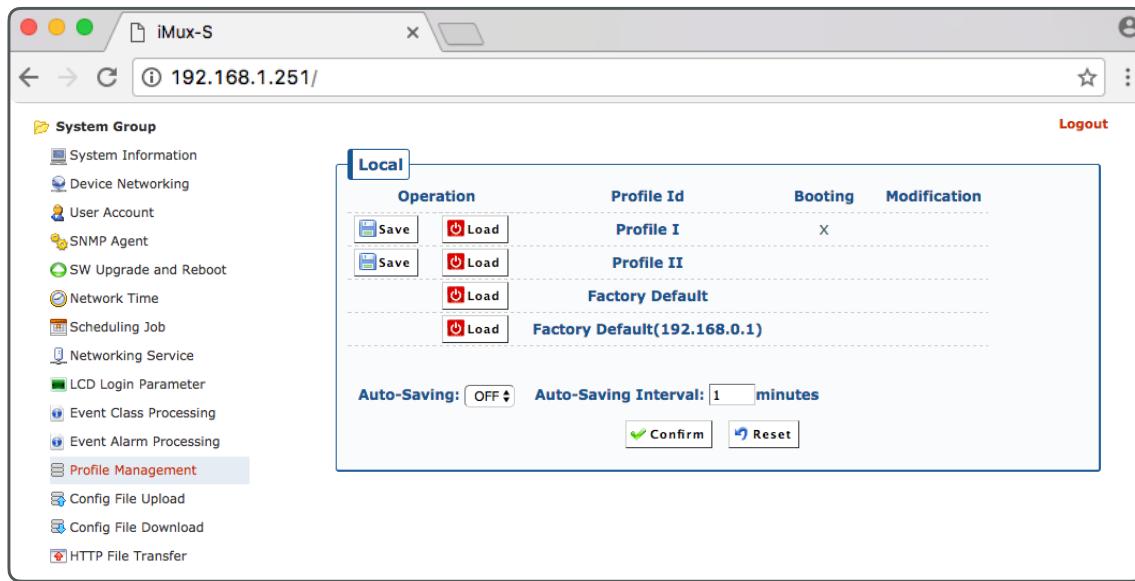
## Event Alarm Processing



### Event Alarm Processing Web Interface

Settings	Description
<b>Alarm Srvity</b>	Alarm Severity describes the degree or severity of the system notice. Use the respective dropdown menu to determine the instances for each.
<b>Save Flash</b>	Determines if the event will be saved to flash memory on the device.
<b>Send Trap</b>	Determines if the event will result in the transmission of an SNMP trap.
<b>Critical</b>	Critical Alarm Class is the most serious system message classification available.
<b>Major</b>	Major Alarm Class is the next level down from Critical.
<b>Minor</b>	Minor Alarm Class is the next level down from Major.
<b>Warning</b>	Warning Alarm Class is the next level down from Minor.
<b>Message</b>	Message Alarm Class is the next level down from Warning and is also the lowest system alert level classification.
<b>Select All</b>	Each respective drop down menu is used to configure the Yes/No setting for all alarm classes in the Save Flash or Send Trap Columns.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

## Profile Management



### Profile Management Web Interface

Settings	Description
<b>Operation</b>	Save or Load system configurations to/from the Profile ID locations.
<b>Save</b>	Saves the current system configuration to the respective Profile ID.
<b>Load</b>	Loads the stored system configuration from the respective Profile ID.
<b>Profile ID</b>	The locations in the system memory that the configuration can be saved.
<b>Profile I</b> Save/Load	The first system configuration storage location.
<b>Profile II</b> Save/Load	The second system configuration storage location.
<b>Factory Default</b> Load Only	The first of two factory default configuration storage location.
<b>Factory Default (192.168.0.1)</b> Load Only	The second of two factory default configuration storage location has an IP address.
<b>Booting</b>	Identifies the profile or configuration image file that was booted and applied on the last system startup.
<b>Modifications</b>	Identifies that changes have been made to the respective configuration profile that have not been saved yet.
<b>Auto Saving</b>	Enable to auto-save the system configuration over the defined time interval.
<b>Auto Saving Interval</b>	The time interval in minutes between Auto-Save operations being carried out.
<b>Minutes</b>	A value of 1 - 999 is accepted.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

## Configuration File Upload

### Configuration File Upload Web Interface

Settings	Description
<b>Access Protocol</b>	Select the protocol to upload the configuration file.
<b>TFTP</b>	Trivial File Transfer Protocol.
<b>FTP</b>	File Transfer Protocol.
<b>Server IP Address</b>	Enter the IPv4 address of the FTP/TFTP Server the file will be uploaded.
<b>File Name</b>	Enter the desired filename of the uploaded configuration file.
<b>Login User Name</b>	Enter the username of the account used to log in to the FTP/TFTP Server.
<b>Login Password Name</b>	Enter the password of the account used to log in to the FTP/TFTP Server.
<b>File Name Extension</b>	Select the system attribute (if any) to be used as a file extension for the uploaded config file. The list is in the following table below.
<b>Confirm</b>	Apply Settings.
<b>Upload</b>	File configuration procedure using the information entered.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

### File Name Extension Options

Settings	Description
<b>None</b>	No file extension is added to the configuration file name.
<b>System Name</b>	Hostname of the device will be used.
<b>Device IP</b>	IPv4 address of the device will be used.
<b>Site</b>	Site attribute of the device will be used.
<b>System Name + Device IP</b>	Hostname and IPv4 address of the device will be used.
<b>System Name + Site</b>	Hostname and site attribute of the device will be used.
<b>Device IP + Site</b>	IPv4 address and site attribute of the device will be used.
<b>System Name + Device IP + Site</b>	Hostname, IPv4 address, and site attribute of the device will be used.

## Configuration File Download

The screenshot shows the 'iMux-S' web interface with the URL '192.168.1.251/'. The left sidebar has a 'System Group' menu with various options like System Information, Device Networking, User Account, etc. The main content area has a 'Local' tab selected. It contains fields for 'Software Source' (set to 'Remote Server'), 'Access Protocol' (set to 'FTP'), 'Server IP Address' (0.0.0.0), 'File Name', 'Login User Name', 'Login Password Name', and 'File Name Extension' (None). At the bottom are 'Confirm', 'Download', and 'Reset' buttons.

### Configuration File Download Web Interface

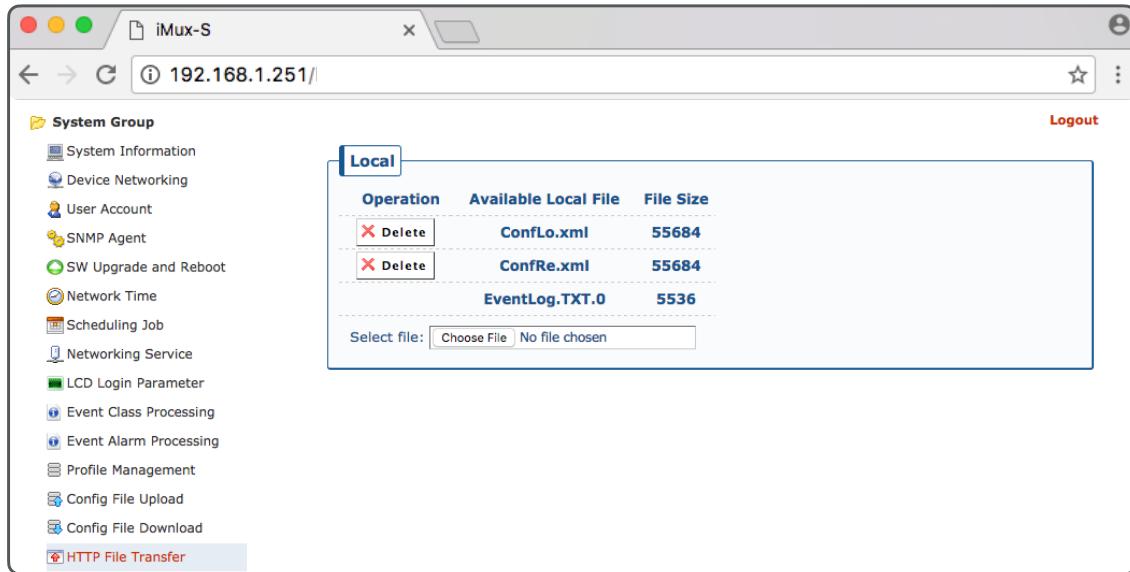
Settings	Description
<b>Software Source</b>	Use the drop down menu to download file via FTP/TFTP or from a local file.
<b>Remote Server</b>	Displays the FTP/TFTP download parameter dialogue boxes.
<b>Local File</b>	Displays a list of available local files for selection.
<b>Access Protocol</b>	Select either protocol to be used when uploading the configuration file.
<b>TFTP</b>	Sets the Trivial File Transfer Protocol when uploading the configuration file.
<b>FTP</b>	Sets the File Transfer Protocol when uploading the configuration file.
<b>Server IP Address</b>	Enter the IPv4 address of the FTP/TFTP Server to upload the file to.
<b>File Name</b>	Enter the desired filename of the uploaded configuration file.
<b>Login User Name</b>	Enter the username of the account used to log in to the FTP/TFTP Server.
<b>Login Password</b>	Enter the password of the account used to log in to the FTP/TFTP Server.
<b>File Name Extension</b>	Select what system attribute (if any) will be used as a file extension for the uploaded configuration file. The list is in the table on the following page.
<b>Confirm</b>	Apply Settings.
<b>Download</b>	File configuration procedure using the information entered.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

**NOTE:** The File Name Extension Option list can be found on the following page.

### File Name Extension Options

Settings	Description
<b>None</b>	No file extension is added to the configuration file name.
<b>System Name</b>	Hostname of the device will be used.
<b>Device IP</b>	IPv4 address of the device will be used.
<b>Site</b>	Site attribute of the device will be used.
<b>System Name + Device IP</b>	Hostname and IPv4 address of the device will be used.
<b>System Name + Site</b>	Hostname and site attribute of the device will be used.
<b>Device IP + Site</b>	IPv4 address and site attribute of the device will be used.
<b>System Name + Device IP + Site</b>	Hostname, IPv4 address, and site attribute of the device will be used.

### HTTP File Transfer



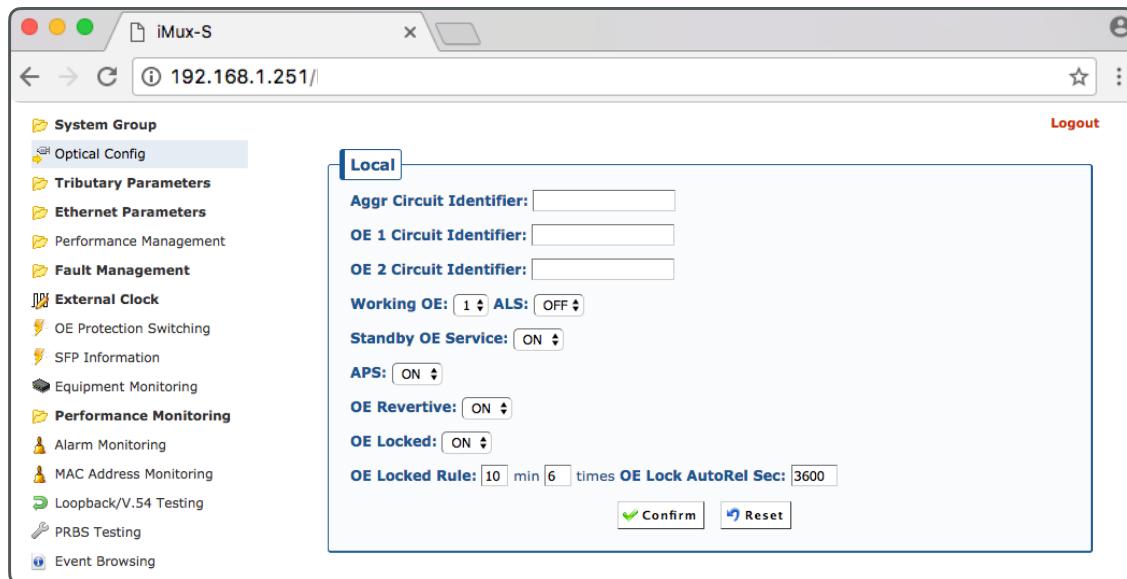
### HTTP File Transfer Web Interface

Settings	Description
<b>Operation</b>	Add or delete files to the device memory.
<b>Delete</b>	Delete the respective file from the device memory.
<b>Available Local File</b>	The file names of the available files are listed in this column.
<b>File Size</b>	Displays the file size. (In Bytes)
<b>Select File</b>	Dialog box used to select a file to upload.
<b>Choose File</b>	Select a file from the local PC workstation in use.

# Optical Configuration

The iMux system optical network device parameters and redundancy configuration may be managed from the Optical Configuration section.

## Optical Configuration Settings



The screenshot shows the 'Optical Configuration Settings' page of the iMux-S web interface. The left sidebar lists various system groups and parameters. The main 'Local' configuration page includes fields for Aggr Circuit Identifier, OE 1 Circuit Identifier, OE 2 Circuit Identifier, Working OE (with ALS dropdown), Standby OE Service, APS, OE Revertive, OE Locked, and OE Locked Rule (with a 10 min 6 times OE Lock AutoRel Sec input). At the bottom are 'Confirm' and 'Reset' buttons.

**Optical Configuration Settings Web Interface**

Settings	Description
<b>Aggr Circuit Identifier</b>	Name and identify the optical circuits of the connected iMux devices.
<b>OE 1 Circuit Identifier</b>	Enter the desired name of the Primary Optical Circuit.
<b>OE 2 Circuit Identifier</b>	Enter the desired name of the Secondary / Redundant Optical Circuit.
<b>Working OE</b>	Allows the administrator to designate the primary working optical circuit.
<b>ALS</b>	Automatic Laser Shutdown, system will automatically terminate all light transmission when a fiber break is detected by either system.
<b>NOTE:</b> Both sides of the fiber interface must have ALS enabled, ON.	
<b>NOTE:</b> Prevents dangerous light levels from being emitted from broken fibers when they are unintentionally severed.	
<b>Standby OE Service</b>	Enables the system to automatically switch over to the alternate optical circuit in the event communications become impossible on the primary circuit.
<b>APS</b>	Enables Automatic Protection Switching.

**NOTE:** Optical Configuration settings are continued on the following page.

### Optical Configuration Settings Continued...

Settings	Description
<b>OE Revertive</b>	Dictates the system behavior after restoring the primary optical circuit function.
<b>ON</b>	System will revert to the primary optical circuit when connection is restored.
<b>OFF</b>	Administrator must login to manually switch to the primary optical circuit.
<b>OE Locked</b>	Enable lock rule threshold by selecting ON and set the rule below.
<b>OE Locked Rule</b>	Sets frequency threshold of communication failure events detected on the primary fiber circuit before the secondary optical path locks until the primary path reliability improves.
<b>Min</b>	Optical circuit error threshold count time interval. Specified in minutes.
<b>Times</b>	Defines the threshold for the frequency of communication errors on the given optical circuit for the above defined time interval.
<b>OE Locked AutoRel Sec</b>	Defines the time interval, in seconds, that the OE lock remains engaged.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

# Tributary Parameters

Tributary refers to the 4 slots in the rear of the iMux-S where the different types of communications modules may be installed and utilized. The Tributary Parameters section allows administrators to enable and configure the communications modules installed in the tributary slots.

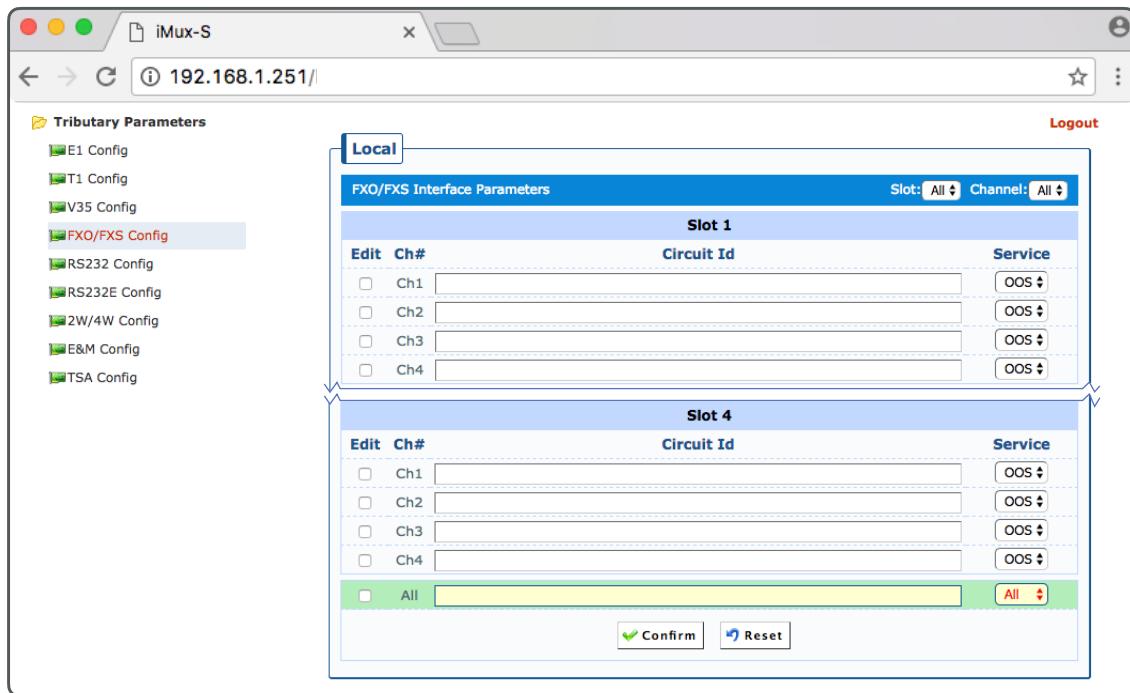
## T1 Configuration

The screenshot shows the 'T1 Interface Parameters' configuration page. The left sidebar lists various configuration options: E1 Config, T1 Config (which is selected and highlighted in blue), V35 Config, FXO/FXS Config, RS232 Config, RS232E Config, 2W/4W Config, E&M Config, and TSA Config. The main content area is divided into two sections: 'Slot 1' and 'Slot 4'. Each section has a table with columns for Edit, Ch#, Circuit Id, Service, Coding, Framing, and T1 LBO. The 'Service' column includes dropdown menus for 'IS' (In Service) and 'OOS' (Out of Service). The 'Coding' column includes dropdown menus for 'B8ZS' and 'AMI'. The 'Framing' column includes dropdown menus for 'ESF', 'SF', and 'Unframe'. The 'T1 LBO' column includes dropdown menus for '0-133 ft', '133-266 ft', '266-399ft', '399-533ft', and '533-655ft'. At the bottom of each section, there is a 'All' button, and at the very bottom, there are 'Confirm', 'Reset', and 'All' buttons.

**T1 Configuration Web Interface**

Settings		Description
<b>T1 Interface Parameters</b>		Configure T1 service module circuits to the respective tributary slot.
<b>slot</b>		Identifies slot module is located in (1-4).
<b>channel</b>		Identifies the interfaces position in the Module.
<b>Slot 1~4</b>	<b>Edit</b>	Must be selected when editing parameters on the interface.
	<b>All</b>	When selected all channels in the slot will be updated.
	<b>Ch#</b>	Identifies the channel being updated.
	<b>Circuit ID</b>	Naming space to include circuit details or description.
	<b>Service</b>	IS - In Service - Indicates the channel is active. OOS - Out of service - Indicates the channel is disabled.
	<b>Coding</b>	AMI or B8ZS.
	<b>Framing</b>	ESF, SF, Unframed.
	<b>T1 LBO</b>	Adjusts the gain based on the length of copper present. 0-133 ft, 133-266 ft, 266-399ft, 399-533ft, 533-655ft
<b>Confirm</b>		Apply Settings.
<b>Reset</b>		Remove unconfirmed settings.
<b>Confirm Local + Remote</b>		Apply settings to both the local and remote iMux units.

## FXO/FXS Configuration



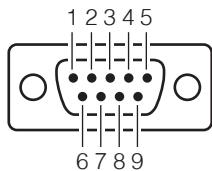
### POTS (FXO/FXS) Configuration Web Interface

Settings	Description
<b>FXO/FXS Interface Parameters</b>	Configure POTS service module circuits to the respective tributary slot.
<b>Slot</b>	Identifies slot module is located in (1-4).
<b>Channel</b>	Identifies the interfaces position in the Module.
<b>Slot 1~4</b>	<b>Edit</b> Must be selected when editing parameters on the interface. <b>All</b> When selected all channels in the slot will be updated. <b>Ch#</b> Identifies the channel being updated. <b>Circuit ID</b> Naming space to include circuit details or description. <b>Service</b> IS - In Service - Indicates the channel is active. OOS - Out of service - Indicates the channel is disabled.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

## RS-232 Configuration

The screenshot shows the iMux-S web interface for RS-232 configuration. The sidebar on the left lists tributary parameters: E1 Config, T1 Config, V35 Config, FXO/FXS Config, RS232 Config (selected), RS232E Config, 2W/4W Config, E&M Config, and TSA Config. The main panel is titled 'Local' and shows 'RS232 Interface Parameters' for 'Slot 1' and 'Slot 4'. Each slot has a table with columns for 'Edit', 'Ch#', 'Circuit Id', 'Service' (with dropdowns for 'OOS' and 'Enable'), and 'DataReadyDetect' (with dropdowns for 'Enable' and 'Disable'). The 'Slot 4' table includes a row for 'All' with dropdowns for 'Service' and 'DataReadyDetect'. At the bottom of the main panel are 'Confirm' and 'Reset' buttons.

### RS-232 Configuration Web Interface

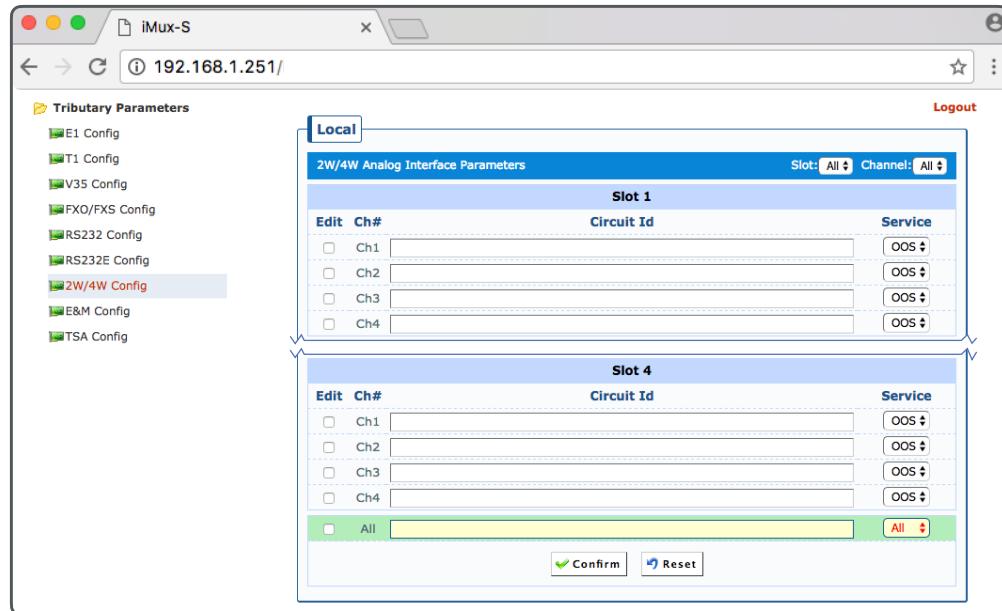


PIN #	1	2	3	4	5	6	7	8	9
Signal	DCD	RXD	TXD	DTR	GND	DSR	RTS	CTS	NA

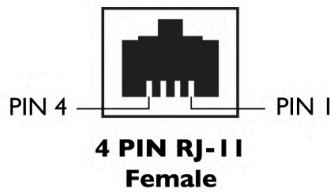
#### Sync/DCE (DB-9 Male) Pin Detail

Settings		Description
<b>RS-232 Interface Parameters</b>		Enable or disable RS-232 service module circuits in the respective tributary slot.
<b>Slot</b>		Identifies the slot module is located in (1-4).
<b>Channel</b>		Identifies the position of the interface in the module.
<b>Slot 1~4</b>	<b>Edit</b>	Must be selected when editing parameters on the selected interface.
	<b>All</b>	Configuration updates will apply to all channels/circuits.
	<b>Ch#</b>	Identifies the channel being updated.
	<b>Circuit ID</b>	Naming space to include circuit details or description.
	<b>Service</b>	IS - In Service - Indicates the channel is enabled. OOS - Out of service - Indicates the channel is disabled.
	<b>DataReadyDetect</b>	Enable or disable the following pins: DCD, DTR, DSR, RTS, CTS.
<b>Confirm</b>		Apply Settings.
<b>Reset</b>		Remove unconfirmed settings.
<b>Confirm Local + Remote</b>		Apply settings to both the local and remote iMux units.

## 2W/4W Configuration



### 2W / 4W Analog Data Configuration Web Interface



Analogy Channel	Pin	Description
Input	1	Tip
	4	Ring
Output	2	Tip
	3	Ring

### 2W/4W Interface Pin Detail

**Note:** This 2W/4W module interface only supports unidirectional 2W analog data transmission.

2W data signals transmit over Pins 1/4, with the signals received on Pins 2/3 of the opposing module.

Settings	Description										
<b>2W/4W Analog Interface Parameters</b>	Configure 2W/4W Analog module circuits to the respective tributary slot.										
<b>Slot</b>	Identifies the modules located in slots (1-4).										
<b>Channel</b>	Identifies the interfaces position in the Module.										
<b>Slot 1~4</b>	<table> <tr> <td><b>Edit</b></td><td>Must be selected when editing parameters on the interface.</td></tr> <tr> <td><b>All</b></td><td>Select to update all channels in the slot.</td></tr> <tr> <td><b>Ch#</b></td><td>Identifies the channel being updated.</td></tr> <tr> <td><b>Circuit ID</b></td><td>Naming space to include circuit details or description.</td></tr> <tr> <td><b>Service</b></td><td>IS - In Service - Indicates the channel is active. OOS - Out of service - Indicates the channel is disabled.</td></tr> </table>	<b>Edit</b>	Must be selected when editing parameters on the interface.	<b>All</b>	Select to update all channels in the slot.	<b>Ch#</b>	Identifies the channel being updated.	<b>Circuit ID</b>	Naming space to include circuit details or description.	<b>Service</b>	IS - In Service - Indicates the channel is active. OOS - Out of service - Indicates the channel is disabled.
<b>Edit</b>	Must be selected when editing parameters on the interface.										
<b>All</b>	Select to update all channels in the slot.										
<b>Ch#</b>	Identifies the channel being updated.										
<b>Circuit ID</b>	Naming space to include circuit details or description.										
<b>Service</b>	IS - In Service - Indicates the channel is active. OOS - Out of service - Indicates the channel is disabled.										
<b>Confirm</b>	Apply Settings.										
<b>Reset</b>	Remove unconfirmed settings.										
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.										

# Ethernet Parameters

The configuration of the iMux Ethernet network ports are controlled and managed in this section.

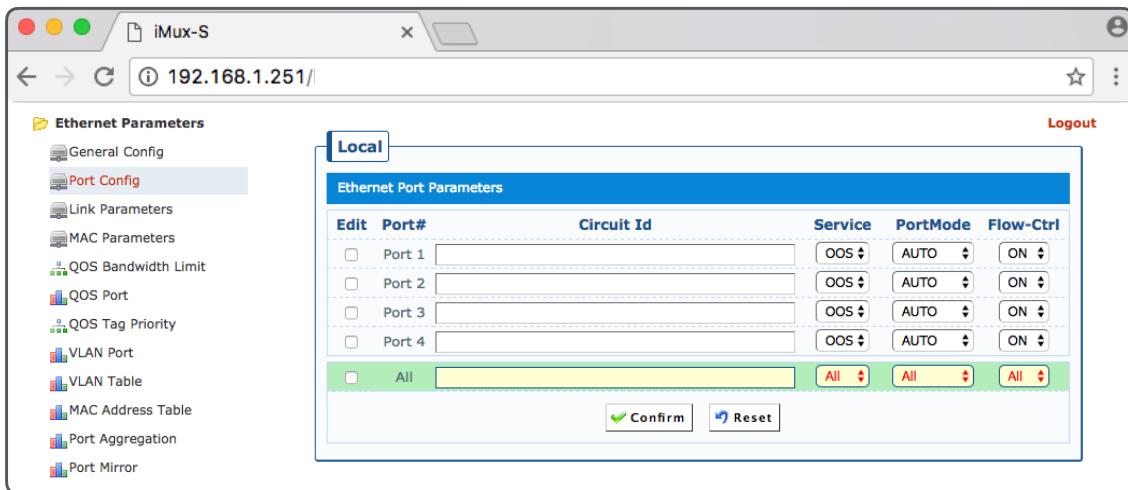
## General Configuration



**General Ethernet Configuration Web Interface**

Settings	Description
<b>Run Mode</b>	Configure the Ethernet ports as either P2P or Switch.
<b>P2P</b>	The Ethernet port is connected ONLY to the corresponding Ethernet Port on the Remote system. The VLAN configuration is disregarded.
<b>Switch</b>	The Ethernet port is connected and acting as a managed switch, VLAN, Rate Limiting, and QoS Configuration will apply.
<b>Age Time</b>	Specifies the aging time of the auto-learned MAC Addresses (Default value is 300 seconds, 0 seconds disables auto-learning).
<b>Rate Unit</b>	Specifies the rate unit to be used for bandwidth shaping and policing.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

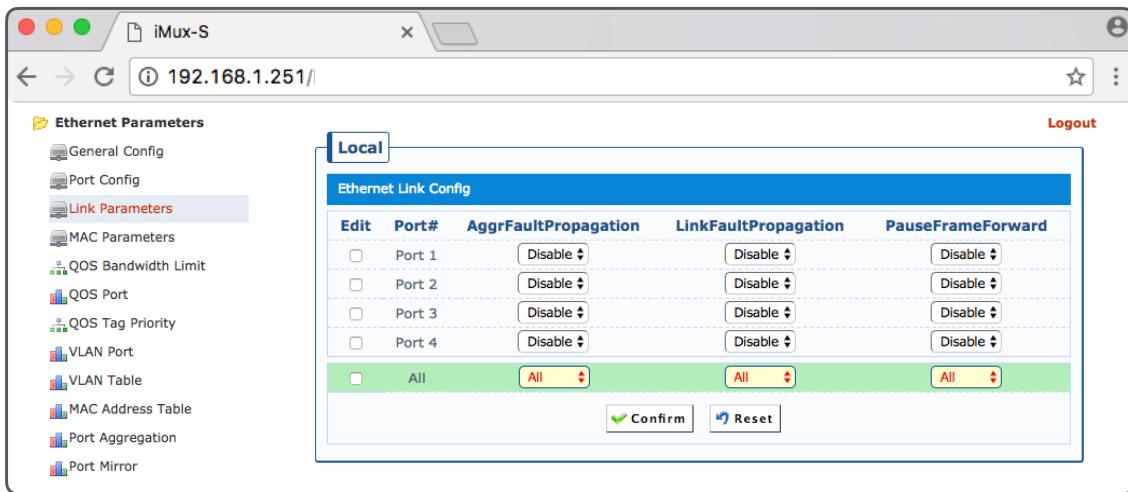
## Port Configuration



### Ethernet Port Configuration Web Interface

Settings	Description
<b>Ethernet Port Parameters</b>	Allows management of the Ethernet ports.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	Select to update all channels in the slot.
<b>Port# 1~4</b>	Ethernet port identification.
<b>Circuit Id</b>	Name or describe the connected device.
<b>Service</b>	IS - In Service - Indicates the channel is active. OOS - Out of service - Indicates the channel is disabled.
<b>PortMode</b>	Select the speed and duplex mode desired for each port.
<b>Auto</b>	Automatically detect speed and duplex.
<b>10HDX</b>	10 Mbps and half duplex.
<b>10FDX</b>	10 Mbps and Full Duplex.
<b>100HDX</b>	100 Mbps and Half Duplex.
<b>100FDX</b>	100 Mbps and Full Duplex.
<b>1000FDX</b>	1000 Mbps and Full Duplex.
<b>Flow-Ctrl</b>	Disable or Enable Flow Control.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

## Link Parameters



### Ethernet Link Parameters Web Interface

Settings	Description
<b>Ethernet Link Config</b>	These options only apply when Ethernet ports are configured in P2P mode.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	Select to update all channels in the slot.
<b>Port# 1~4</b>	Ethernet port identification.
<b>AggrFaultPropagation</b>	When Enabled Ethernet port will turn off when the Aggregate interface is in alarm (LOF or AIS).
<b>LinkFaultPropagation</b>	When Enabled if the remote correlating Ethernet port link goes down, the local port will go down (LFP).
<b>PauseFrameForward</b>	When Enabled any ingress pause frames will be forwarded to the remote unit and transmitted to the connected Ethernet device.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

## MAC Parameters

The screenshot shows a web browser window titled 'iMux-S' with the URL '192.168.1.251/'. The left sidebar has a 'Ethernet Parameters' menu with 'MAC Parameters' selected. The main content area is titled 'Ethernet MAC Parameters Config' and shows a table for 'Edit' mode. The table has columns for 'Port#' (Port 1, Port 2, Port 3, Port 4, Port T, All) and 'MacLearning' (Enable dropdown, 1518). The 'MaxFrameLen(1518-9600)' column shows '1518' for all ports. At the bottom are 'Confirm' and 'Reset' buttons.

**Ethernet MAC Parameters Web Interface**

Settings	Description
<b>Ethernet MAC Parameters Config</b>	Allows the configuration of MAC address learning by Ethernet port.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	Select to update all channels in the slot.
<b>Port# 1-4 and T</b>	Ethernet port identification.
<b>MacLearning</b>	Enable or Disable MAC address learning for each Ethernet port.
<b>MaxFrameLen(1518-9600)</b>	<p>Set the maximum MTU size for Ethernet frames received.</p> <p>Jumbo Frames are supported when configured to 9600.</p> <p>Frames exceeding the configured size will be dropped.</p>
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

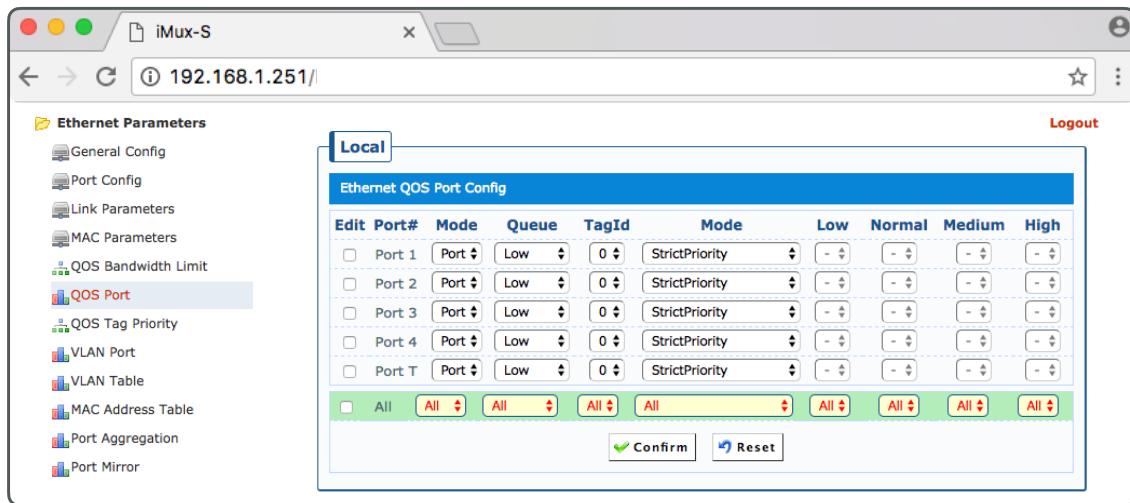
## QoS Bandwidth Limit

Port#	Policer	Rate(1-31)	Shaper	Rate(1-31)
Port 1	Disable	10	Disable	10
Port 2	Disable	10	Disable	10
Port 3	Disable	10	Disable	10
Port 4	Disable	10	Disable	10
All	All		All	

### QoS Bandwidth Limit Web Interface

Settings	Description
<b>Ethernet QoS Bandwidth Limit Parameters Config</b>	Allows the configuration of QoS Bandwidth Limit by Ethernet port.
<b>Edit</b>	Must be selected when editing parameters on the interface
<b>All</b>	Select to update all channels in the slot.
<b>Port# 1~4</b>	Ethernet port identification.
<b>Policer</b>	Enable or Disable Traffic Policer for each port.
<b>Rate (1-30)</b>	The rate set here will be the multiplier for the Rate Unit set in the Ethernet Parameters > General Config section.
<b>Shaper</b>	Enable or Disable Traffic Shaper for each port.
<b>Rate (1-31)</b>	The rate set here will be the multiplier for the Rate Unit set in the Ethernet Parameters > General Config section.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

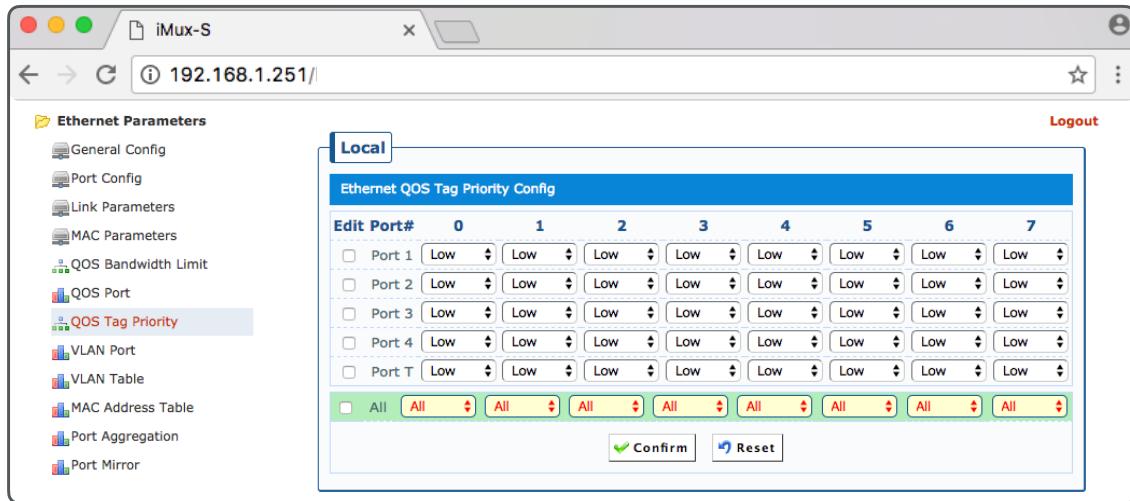
## QoS Port



**QoS Port Web Interface**

Settings	Description
<b>Ethernet QoS Port Config</b>	Allows the configuration of packet prioritization based on port and/or VLAN.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	When selected all channels in the slot will be updated.
<b>Port# 1~4 and T</b>	Ethernet port identification.
<b>Mode</b>	Use the drop down menu to set the port mode.
<b>Tag</b>	QoS will be determined on the VLAN Tag.
<b>Port</b>	All ingress traffic per Ethernet port will be assigned to Queue.
<b>Queue</b>	Four QoS Queues are present in this device in order of priority lowest to Highest (Low, Normal, Medium, High).
<b>TagID (1-7)</b>	Assigning a TagID to the port will further prioritize Ethernet traffic within a Queue, 1 the lowest and 7 the highest.
<b>Mode</b>	Use the drop down menu to set the method of QoS packeting.
<b>StrictPriority</b>	Traffic will be queued and sent strictly by the priority assigned.
<b>WeightedRoundRobin</b>	Traffic will be queued and sent with higher priority traffic getting a weighted preference. (1/2/4/8) weight can be assigned.
<b>Low</b>	Assign the weighted preference to this Queue.
<b>Normal</b>	Assign the weighted preference to this Queue.
<b>Medium</b>	Assign the weighted preference to this Queue.
<b>High</b>	Assign the weighted preference to this Queue.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

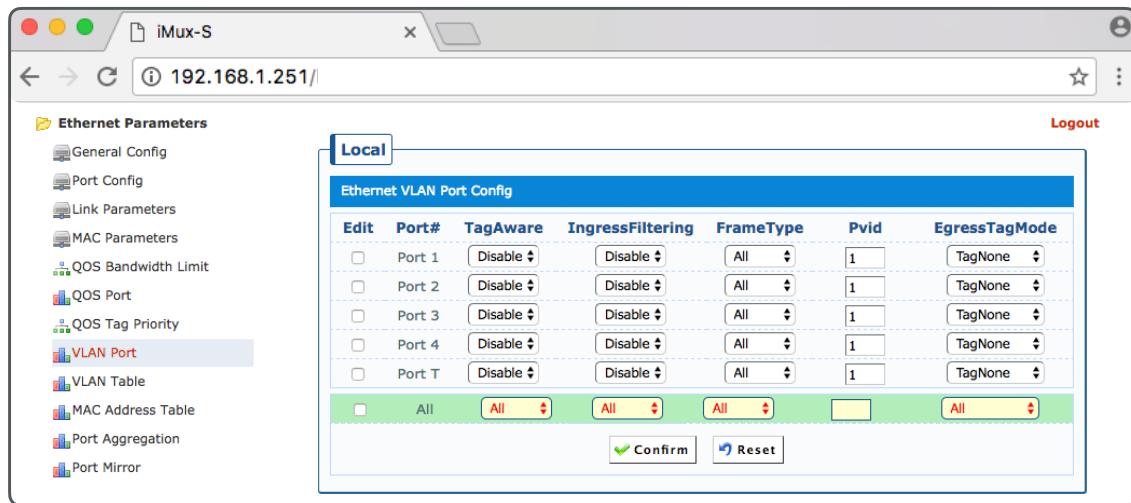
## QoS Tag Priority



### QoS Tag Priority Interface

Settings	Description
<b>Ethernet QoS Tag Priority Config</b>	Assign priority by port when tag mode is utilized with QoS tag id.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	Select to update all channels in the slot.
<b>Port# 1~4 and T</b>	Ethernet port identification.
<b>0~7</b>	In tag mode, assign a priority to each QoS TagID. Dropdown options include: Low, Normal, Medium, and High.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

## VLAN Port



### VLAN Port Web Interface

Settings	Description
<b>Ethernet VLAN Port Config</b>	Each VLAN port can be individual configured.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	Select to update all channels in the slot.
<b>Port# 1~4 and T</b>	Ethernet port identification.
<b>TagAware</b>	VLAN tags may be forwarded with the Ethernet Frame.
<b>Enable</b>	Removes VLAN tags.
<b>Disable</b>	Forwards the VLAN tags.
<b>IngressFiltering</b>	Filters out all Ethernet frames not matching the configured VLAN tags.
<b>FrameType</b>	Use the drop down menu to accept all or only tagged Ethernet frames.
<b>All</b>	Accepts all Ethernet frames. (tagged or untagged)
<b>Tagged</b>	Accepts only tagged Ethernet frames.
<b>Pvid</b>	Untagged Frames will be assigned to this VLAN ID.
<b>EgressTagMode</b>	Selections for Egress Ethernet tagging.
<b>Tagnone</b>	No VLAN tag will be applied to outbound Ethernet Frames.
<b>TagNonPVID</b>	Frames that don't match configured PVID will be re-tagged with the PVID.
<b>TagAll</b>	Every Frame will have a VLAN tag applied.
<b>Note:</b> Ensure TagAware is enabled on the Ingress port before selecting the TagAll mode.	
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

## VLAN Table

The screenshot shows a web-based configuration interface for a VLAN table. The left sidebar lists various Ethernet parameters, with 'VLAN Table' selected. The main area is titled 'Local' and contains a table with columns: Edit, VLAN ID, Port 1, Port 2, Port 3, Port 4, and Port T. A row is being added, indicated by a green '+' icon. The 'VLAN ID' column has a dropdown set to '1'. The 'Port 1' through 'Port T' columns have dropdowns set to 'ON'. At the bottom are 'Add' and 'Delete' buttons, and 'Confirm' and 'Delete' buttons for the current row.

**VLAN Table Web Interface**

Settings	Description
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>Add</b>	Create new VLAN ID's as needed.
<b>VLAN ID</b>	Enter your desired VLAN ID.
<b>Port 1~T</b>	OFF: The port will not be a member of the VLAN ID being created. ON: The port will be a member of the VLAN ID Being created.
<b>Confirm</b>	Apply Settings.
<b>Delete</b>	Remove unconfirmed settings.

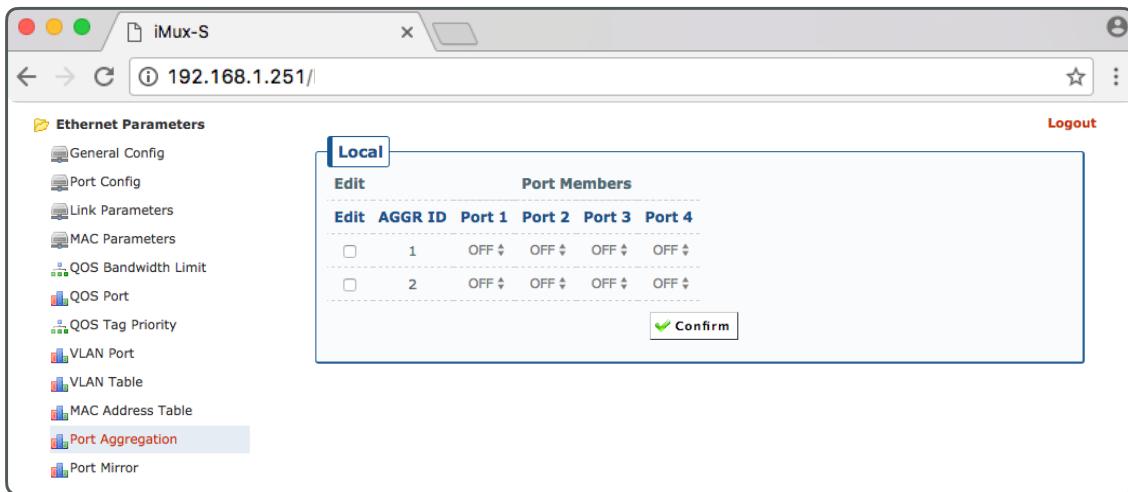
## MAC Address Table

The screenshot shows a web-based configuration interface for a MAC address table. The left sidebar lists various Ethernet parameters, with 'MAC Address Table' selected. The main area is titled 'Local' and contains a table with columns: Edit, VLAN ID, MAC Address, Port 1, Port 2, Port 3, and Port 4. A row is being added, indicated by a green '+' icon. The 'VLAN ID' column has a dropdown. The 'Port 1' through 'Port 4' columns have dropdowns set to 'OFF'. At the bottom is a 'Delete' button.

**MAC Address Table Web Interface**

Settings	Description
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>Add</b>	Create new MAC-Based VLAN addresses as needed.
<b>VLAN ID</b>	Enter your desired VLAN ID.
<b>MAC Address</b>	Enter the static MAC address to be associated with this VLAN ID.
<b>Port 1~4</b>	Turn ON the member ports to listen for this MAC-Address.
<b>Delete</b>	Remove unconfirmed settings.

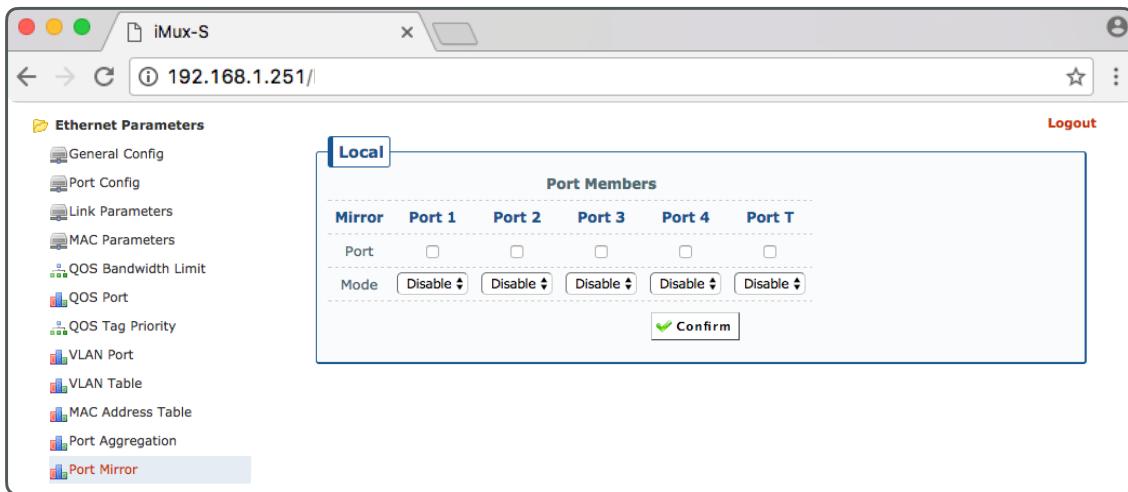
## Port Aggregation



**Port Aggregation Web Interface**

Settings	Description
<b>Edit</b>	Change the parameters of this AGGR ID.
<b>AGGR ID</b>	Lists the ID of the aggregated port, only two aggregated links are allowed.
<b>Port 1~4</b>	Select ports to add to a single aggregated logical link.
<b>Confirm</b>	Apply Settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

## Port Mirror



**Port Mirror Web Interface**

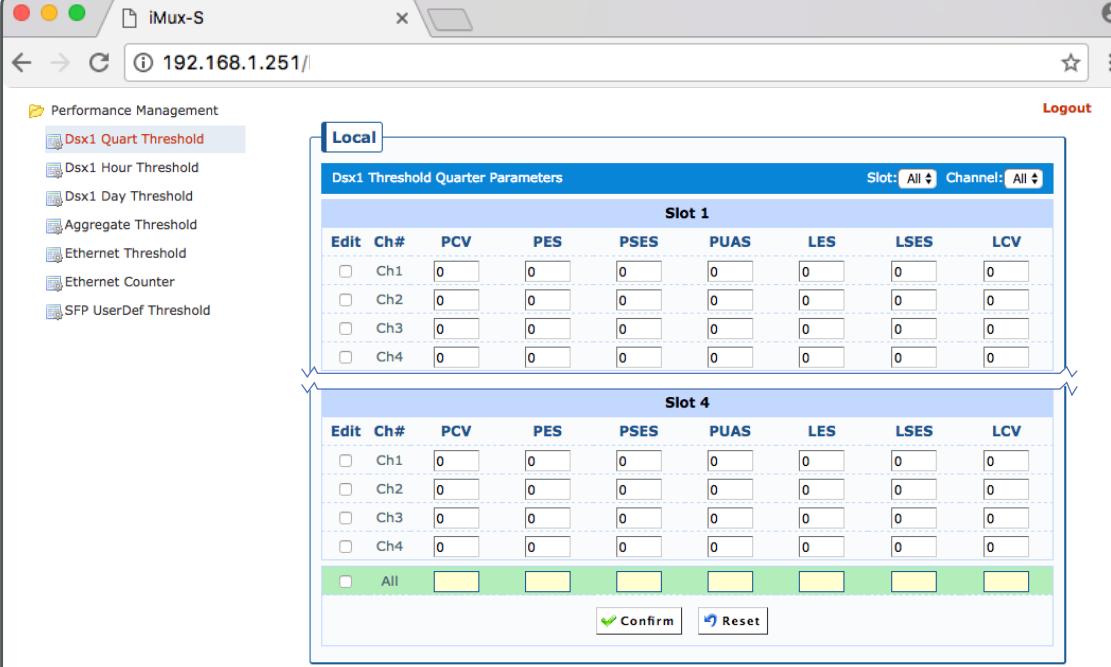
Settings	Description
<b>Mirror</b>	Passive analysis of network traffic for diagnosis purposes.
<b>Port 1~4 and T</b>	The selected port will become the destination (output) of mirrored traffic.
<b>Mode</b>	When enabled this port will mirror its traffic to the selected port.
<b>Confirm</b>	Apply Settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

# Performance Management

The alarm threshold values for the various communications hardware attributes as well error counter or failure detection thresholds for the various communications links that are available in the system, can be set manually by system administrators in the Performance Management section.

**Note:** The Performance Management area can only be used to set these error threshold values for when a system attribute enters into the alarm state. The Equipment Monitoring, Performance Monitoring, and Alarm Monitoring sections should be used to monitor the status of alarm conditions and alerts from the system.

## Dsx1 Threshold - Quarter (15 Minute), Hour and Day



The screenshot shows the 'Dsx1 Threshold Quarter Parameters' interface. The left sidebar lists performance management categories: Dsx1 Quart Threshold (selected), Dsx1 Hour Threshold, Dsx1 Day Threshold, Aggregate Threshold, Ethernet Threshold, Ethernet Counter, and SFP UserDef Threshold. The main area is divided into two sections: 'Slot 1' and 'Slot 4'. Each section has a header with 'Edit', 'Ch#', and numerical columns for PCV, PES, PSES, PUAS, LES, LSES, and LCV. Below these are four rows for Ch1, Ch2, Ch3, and Ch4, each with a checkbox and a numeric input field. A summary row at the bottom of each section shows values for 'All' channels. At the bottom of the interface are 'Confirm' and 'Reset' buttons.

**Dsx1 Threshold Quarter Parameters Web Interface**

Settings	Description
<b>Dsx1 Threshold Parameters</b>	Alarm threshold values can be set for 15 minute, hour, and 24 hour increments.
<b>slot</b>	Slot Module is inserted into.
<b>Channel</b>	Channel on the module.

**NOTE:** Dsx1 Threshold settings are continued on the following page.

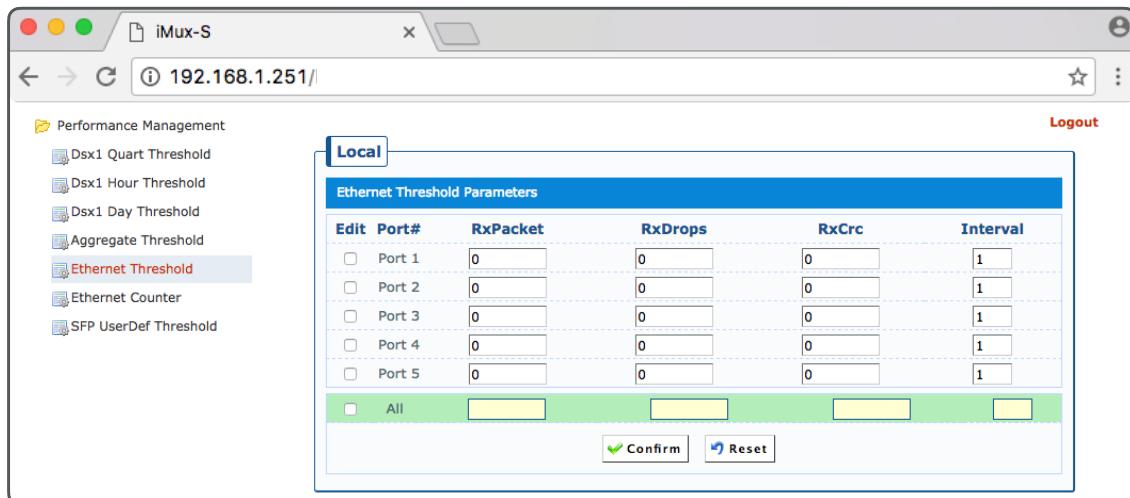
Settings	Description
<b>Slot 1~4</b>	Set a counter threshold, to meet or exceed, for the TCA alarm. Placing a zero (0) in the field disables the TCA alarm for each value.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	When selected all channels in the slot will be updated.
<b>Ch#</b>	Each slot has 4 channels.
<b>PCV</b>	Path Code Violation.
<b>PES</b>	Path Error Second.
<b>PSES</b>	Path Several Error Second.
<b>PUAS</b>	Path Unavailable Second.
<b>LES</b>	Line Error Second.
<b>LSES</b>	Line Severity Error Second.
<b>LCV</b>	Line Code Violation.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

## Aggregate Threshold

### Aggregate Threshold Web Interface

Settings	Description
<b>Aggregate Threshold Parameters</b>	Enter a value for the aggregate alarm threshold of all DSX1 circuits.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	When selected all channels in the slot will be updated.
<b>PMType#</b>	Select the performance management time interval.
<b>PCV</b>	Path Code Violation.
<b>PES</b>	Path Error Second.
<b>PSES</b>	Path Several Error Second.
<b>PUAS</b>	Path Unavailable Second.
<b>LES</b>	Line Error Second.
<b>LSES</b>	Line Severity Error Second.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

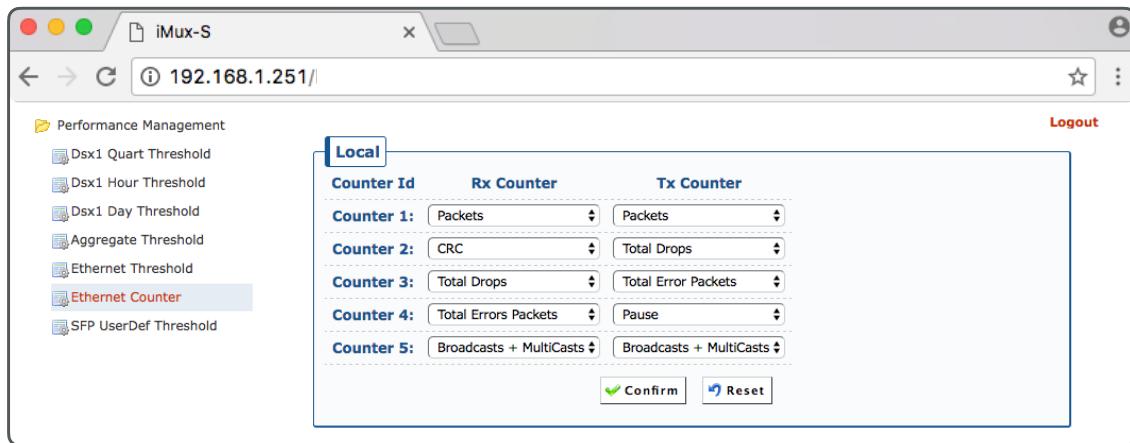
## Ethernet Threshold



**Ethernet Threshold Web Interface**

Settings	Description
<b>Ethernet Threshold Parameters</b>	TCA Alarm based on the Ethernet Counters exceeding configured values.
	Placing a zero (0) in the field disables the threshold.
<b>Edit</b>	Must be selected when editing parameters on the interface.
<b>All</b>	When selected all channels in the slot will be updated.
<b>Port# 1~5</b>	Ethernet port identification.
<b>RxPacket</b>	Received Packets.
<b>RxDrops</b>	Packet Drops. (Packet Loss)
<b>RxCrc</b>	CRC Errors on received packets.
<b>Interval</b>	Interval in minutes considered for the threshold values.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.

## Ethernet Counter



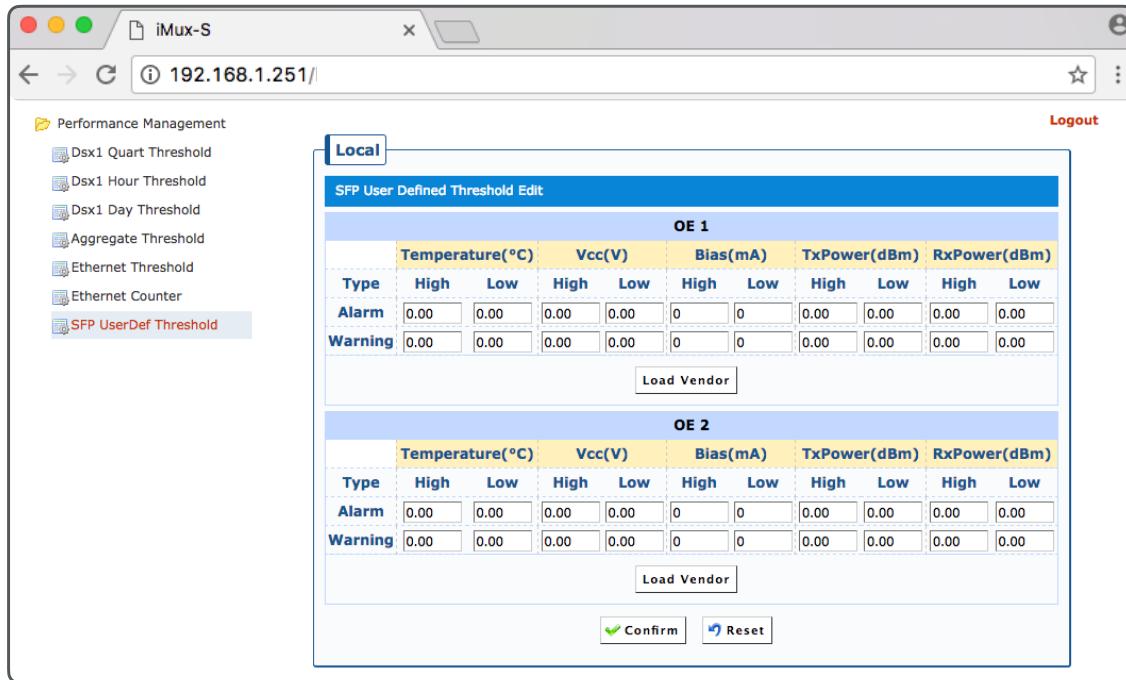
**Ethernet Counter Web Interface**

Settings	Description
<b>Counter ID</b>	Select to monitor up to 5 configured Transmit or Receive Counters.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm + Reset</b>	Apply settings to both the local and remote iMux units.

### Counter Packet Options

- Packets	- 64	- FIFO Drops
- Broadcasts & Multicasts	- 65-127	- Backward Drops
- Total Error	- 128-255	- Classifier Drops
- Packets	- 256-511	- CRC
- Broadcasts	- 512-1023	- underrsize
- Multicasts	- 1024	- Oversize
- Rx Packet	- Jumbo	- Fragments
- Tx Packet	- Pause	

## SFP User Defined Threshold Edit



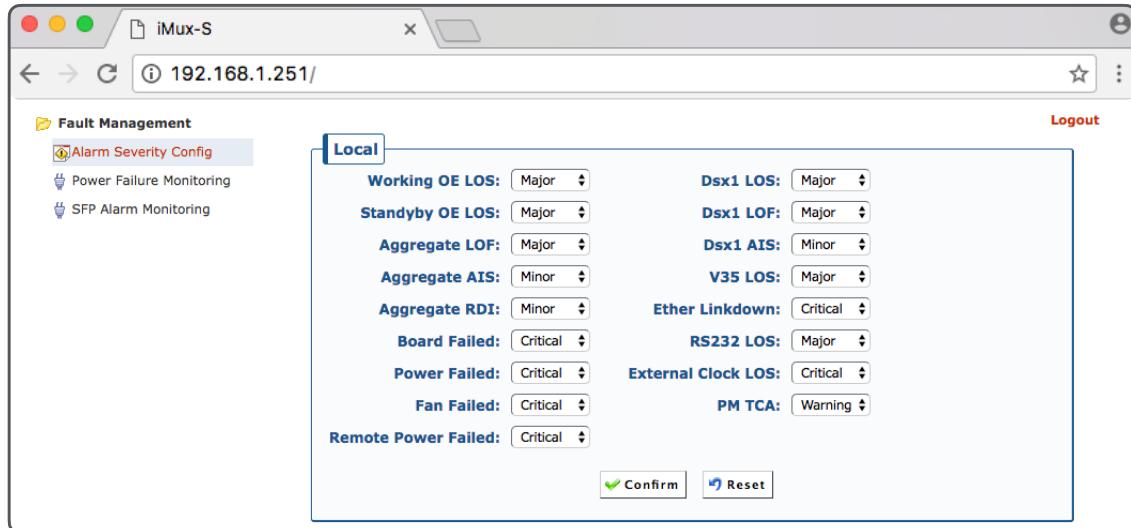
### SFP User Defined Threshold Configuration Web Interface

Settings		Description
<b>SFP User Defined Threshold Edit</b>		These options are only available when SFP's supporting DDI are used, standard bundled iMux SFPs do not provide this information.  Please contact us for our SFP DDI modules to enable this functionality.
<b>OE 1~2</b>		Threshold options can be defined per OE port.
<b>Temperature (C)</b>		Temperature provided by the SFP.
<b>Vcc (V)</b>		Voltage being provided to the SFP.
<b>Bias (mA)</b>		Current consumed by the SFP.
<b>TxPower (dBm)</b>		Transmitting optical power of the SFP.
<b>RxPower (dBm)</b>		Received signal.
<b>Type</b>	<b>High</b>	Set the over alarm Threshold.
	<b>Low</b>	Set the under alarm threshold.
<b>Alarm</b>		When thresholds are exceeded the SFP TCA will alarm.
<b>Warning</b>		Will send a warning alarm to the even log.
<b>Load Vendor</b>		Load threshold points from the SFP.
<b>Confirm</b>		Apply Settings.
<b>Reset</b>		Remove unconfirmed settings.

# Fault Management

The Fault Management section is used to classify the various system alarm types by severity categories. Classifying the alarm types into categories will then allow admins to assign severity levels to different types of failures detected by the system. This section also provides a means to manage power and SFP alarm types.

## Alarm Severity Configuration



The screenshot shows a web-based configuration interface for alarm severity. The left sidebar has links for 'Fault Management', 'Alarm Severity Config' (which is selected and highlighted in red), 'Power Failure Monitoring', and 'SFP Alarm Monitoring'. The main content area is titled 'Local' and contains a table of alarms with dropdown menus for their severity levels. The alarms and their current severity levels are:

Alarm Type	Current Severity
Working OE LOS	Major
Standby OE LOS	Major
Aggregate LOF	Major
Aggregate AIS	Minor
Aggregate RDI	Minor
Board Failed	Critical
Power Failed	Critical
Fan Failed	Critical
Remote Power Failed	Critical
Dsx1 LOS	Major
Dsx1 LOF	Major
Dsx1 AIS	Minor
V35 LOS	Major
Ether Linkdown	Critical
RS232 LOS	Major
External Clock LOS	Critical
PM TCA	Warning

At the bottom are 'Confirm' and 'Reset' buttons.

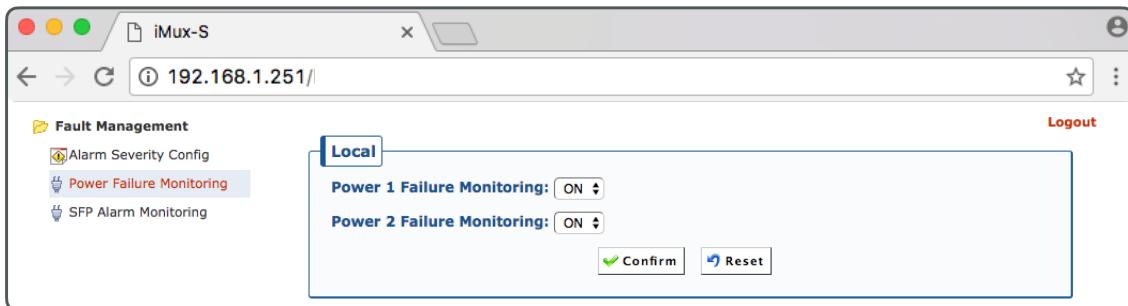
**Alarm Severity Configuration Web Interface**

Settings	Description
<b>Drop Down Menu Options</b>	Use the drop down menu to designate the desired alarm class for the respective system events listed below.
<b>Critical</b>	The most serious form of system message classification available.
<b>Major</b>	The next level down from Critical.
<b>Minor</b>	The next level down from Major.
<b>Warning</b>	The next level down from Minor.
<b>Message</b>	The lowest system alert level classification.
<b>Working OE LOS</b>	The Primary optical circuit experiences loss of signal.
<b>Standby OE LOS</b>	The Secondary optical circuit experiences loss of signal.
<b>Aggregate LOF</b>	The aggregate loss of fiber is a condition where both optical circuits are down.
<b>Aggregate AIS</b>	Aggregate alarm indication signal is present.
<b>Aggregate RDI</b>	Aggregate remote defect indication is present.
<b>Board Failed</b>	Main circuit board failure detected.
<b>Power Failed</b>	AC or DC power input failure detected.
<b>Fan Failed</b>	Internal cooling fan failure detected.
<b>Remote Power Failed</b>	AC or DC power input failure detected on the remote iMix system.
<b>Dsx1 LOS</b>	Dsx1 loss of signal condition exists.
<b>Dsx1 LOF</b>	Dsx1 loss of fiber condition exists.
<b>Dsx1 AIS</b>	Dsx1 alarm indication signal is present.

**NOTE:** Alarm severity configuration settings are continued on the following page.

Settings	Description
<b>V35 LOS</b>	V35 loss of signal condition exists.
<b>Ether Linkdown</b>	A link loss event has occurred on an Ethernet port.
<b>RS232 LOS</b>	RS232 loss of signal condition exists.
<b>External Clock LOS</b>	An external clock loss of signal condition exists.
<b>PM TCA</b>	A performance monitoring alert and/or threshold crossing alert indication is present.
<b>Confirm</b>	Apply Settings
<b>Reset</b>	Remove unconfirmed settings
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units

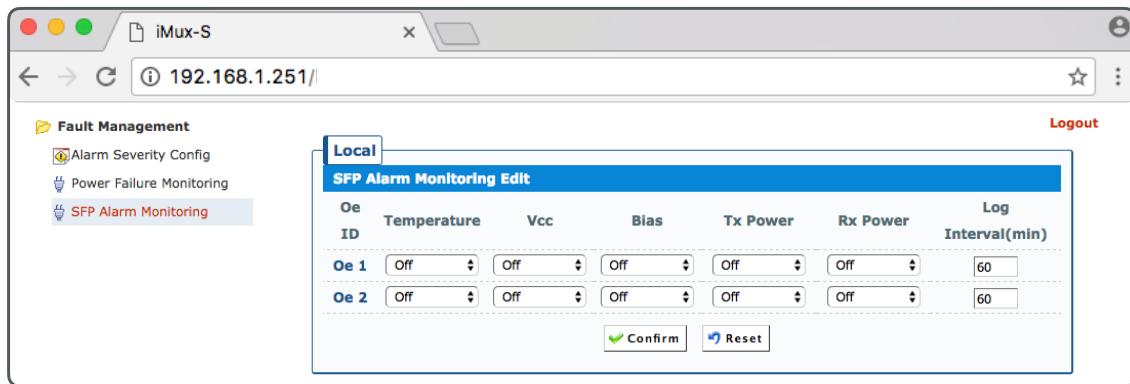
## Power Failure Monitoring



**Power Failure Monitoring Web Interface**

Settings	Description
<b>Failure Monitoring</b>	Enable or disable power failure monitoring for the two power inputs.
<b>ON</b>	Enable.
<b>OFF</b>	Disable.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm + Reset</b>	Apply settings to both the local and remote iMux units.

## SFP Alarm Monitoring



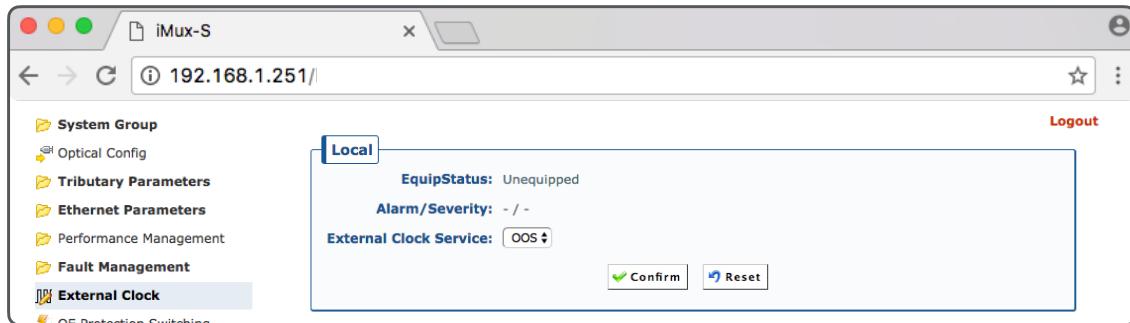
### SFP Alarm Monitoring Web Interface

Settings	Description
<b>SFP Alarm Monitoring Edit</b>	Use the drop down menu to select one of the four following reference options for the respective SFP attribute.
<b>OFF</b>	No set alarm monitoring.
<b>Vendor</b>	Set to manufacturing provided values from DDI compatible SFP's.
<b>User</b>	Set to the manually defined alarm threshold values.
<b>VendorUser</b>	Assigns priority to vendor provided threshold values. User threshold is applied in the case of no vendor supplied values.
<b>OE ID</b>	Refers to the SFP installed in one of the two SFP slots.
<b>OE 1</b>	Primary SFP slot.
<b>OE 2</b>	Secondary SFP slot.
<b>Temperature</b>	SFP Temperature Attribute measured in Celsius (C).
<b>Vcc</b>	SFP Voltage Supply Attribute measured in Volts (V).
<b>Bias</b>	SFP Power Bias measured in milliamps (mA).
<b>Tx Power</b>	SFP detected Optical Transmission Power Ratio in Decibels (dBm).
<b>Rx Power</b>	SFP detected Optical Power Ratio Received in Decibels (dBm).
<b>Log Interval (min)</b>	The time interval between logging events of the attributes that have been selected for logging.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

# External Clock

This section manages the External Clock input to the device in cases where the use an external clock is indicated.

## External Clock Settings



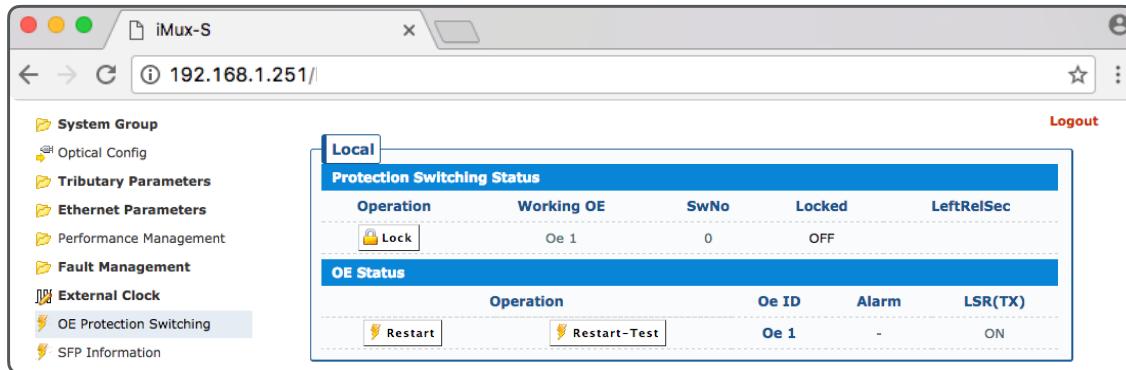
**External Clock Web Interface**

Settings	Description
<b>EquipStatus</b>	The detection status of the external clock is displayed.
<b>Unequipped</b>	External Clock not Detected.
<b>Equipped</b>	External Clock Detected.
<b>Alarm/Severity</b>	The alarm status of the external clock is displayed along with the severity of the alarm.
<b>External Clock Service</b>	Use the dropdown menu to select from the following options that will enable or disable the external clock.
<b>oos</b>	Out Of Service disables the external clock.
<b>IS</b>	In Service enables the external clock.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

# OE Protection Switching

This section provides basic information regarding the status of the optical networking modules or SFP's installed in the iMux-S system, as well as providing a means to test optical modules themselves as well as testing the redundancy or failover behavior of the optical modules.

## Status



The screenshot shows a web browser window for the iMux-S system at 192.168.1.251. The left sidebar contains navigation links: System Group, Optical Config, Tributary Parameters, Ethernet Parameters, Performance Management, Fault Management, External Clock, OE Protection Switching, and SFP Information. The main content area is titled 'Local Protection Switching Status'. It contains two tables: 'Protection Switching Status' and 'OE Status'. The 'Protection Switching Status' table has columns: Operation (Lock), Working OE (Oe 1), SwNo (0), Locked (OFF), and LeftRelSec. The 'OE Status' table has columns: Operation (Restart, Restart-Test), Oe ID (Oe 1), Alarm (-), and LSR(TX) (ON). A 'Logout' link is in the top right corner.

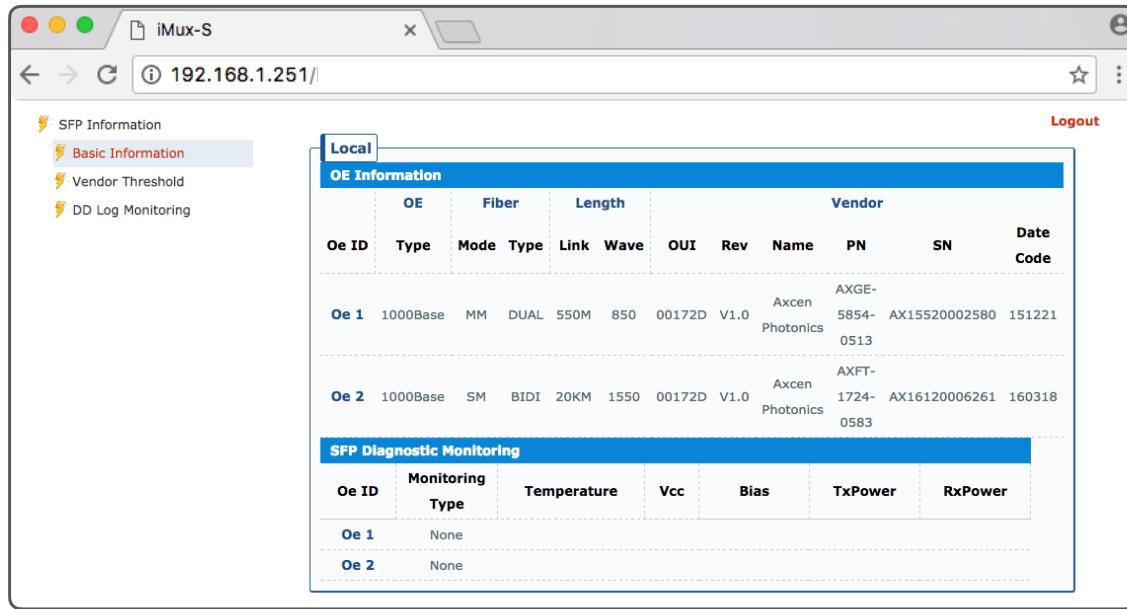
**OE Protection Switching Status Web Interface**

Settings	Description
<b>Protection Switching Status</b>	This section displays the OE link status and provides the capability to test and restart optical hardware as needed.
<b>Operation</b>	Lock/Unlock, Restart, and Restart-Test operation types are offered here.
<b>Working OE</b>	Displays the OE port currently the operating link port to the remote iMux system.
<b>SwNo</b>	Displays the SwNo number.
<b>Locked</b>	Displays the lock status of the respective OE. When an OE is locked, the system will be forced to only utilize the locked optical port only. (ON = Locked , OFF = Unlocked)
<b>LeftRelSec</b>	Displays the remaining amount of time in seconds, before the locked OE automatically returns to unlocked status.
<b>OE Status</b>	This section displays the status of the SFP modules an provides the capability to test and restart the SFPs as needed.
<b>Operation</b>	Two operation types are offered in this section. Restart and Restart-Test. Restart = Restart the respective SFP. Restart-Test = Restart the SFP and perform diagnostics.
<b>Oe ID</b>	Displays the ID tag of the respective OE port.
<b>Alarm</b>	Displays the alarm status of the respective OE when an alarm condition exists.
<b>LSR(TX)</b>	Displays whether the SFP in the respective EO port is actively transmitting or not. ON = The SFP is currently transmitting light. OFF = The SFP is not transmitting light.
<b>Confirm</b>	Apply Settings.
<b>Reset</b>	Remove unconfirmed settings.
<b>Confirm Local + Remote</b>	Apply settings to both the local and remote iMux units.

# SFP Information

This section provides device administrators with detailed information regarding the SFP modules installed in the system. If the SFP modules are DDI compatible, the data retrieved from the diagnostic circuits of the SFP will be displayed in this section.

## Basic Information



The screenshot shows a web browser window titled 'iMux-S' with the URL '192.168.1.251/'. The left sidebar has links for 'SFP Information', 'Basic Information' (which is selected and highlighted in grey), 'Vendor Threshold', and 'DD Log Monitoring'. The main content area is titled 'Local' and contains a table for 'OE Information' and another for 'SFP Diagnostic Monitoring'.

OE Information											
OE ID	OE	Fiber		Length		Vendor					
		Type	Mode	Type	Link	Wave	OUI	Rev	Name	PN	SN
Oe 1	1000Base	MM	DUAL	550M	850	00172D	V1.0	Axcent Photonics	AXGE-5854-0513	AX15520002580	151221
Oe 2	1000Base	SM	BIDI	20KM	1550	00172D	V1.0	Axcent Photonics	AXFT-1724-0583	AX16120006261	160318

SFP Diagnostic Monitoring						
Oe ID	Monitoring Type	Temperature	Vcc	Bias	TxPower	RxPower
Oe 1	None					
Oe 2	None					

**SFP Basic Information Web Interface**

Settings	Description
<b>OE Information</b>	This section displays detailed SFP module information when available.
<b>OE ID</b>	Displays the ID tag of the respective OE.
<b>OE Type</b>	Displays the speed classification of the installed SFP module.
<b>Fiber</b>	Displays the type of optical fiber the SFP is designed to transmit signal across.
<b>Mode</b>	SM = Singlemode
	MM = Multimode
<b>Type</b>	Displays the installed SFP is a Dual Fiber or Single Fiber/Bi-Directional module.
<b>Length</b>	This section displays the length and wavelength specification of the fiber link.
<b>Link</b>	Provides an estimate of the length of the link in meters. (M or kM)
<b>Wave</b>	Displays the wavelength of light that is employed by the SFP module.
<b>Vendor</b>	Displays vendor specific information gathered from SFP modules.
<b>OUI</b>	Displays the Organizationally Unique Identifier of the installed SFP module.
<b>Rev</b>	Displays the manufacturer revision code.
<b>Name</b>	Displays the name of the manufacturer of the installed SFP module.
<b>PN</b>	Displays the part number of the installed SFP module.
<b>SN</b>	Displays the serial number of the installed SFP module.
<b>Date Code</b>	Displays the date code of the installed SFP module.

**Note:** SFP diagnostic monitoring settings are continued on the next page.

Settings	Description
<b>SFP Diagnostic Monitoring</b>	For DDMI or DDI enabled SFP modules, the retrieved diagnostic information will be displayed in this section.
<b>OE ID</b>	Displays the ID tag of the respective OE.
<b>Type</b>	Displays the detected monitoring type of the installed SFP module.
<b>Temperature</b>	Displays the current operating temperature of the SFP module.
<b>Vcc</b>	Displays the current voltage of the SFP module.
<b>Bias</b>	Displays the current being actively drawn by the installed SFP module.
<b>TxPower</b>	Displays the current transmission power of the installed SFP module.
<b>RxPower</b>	Displays the received signal power of the installed SFP module.

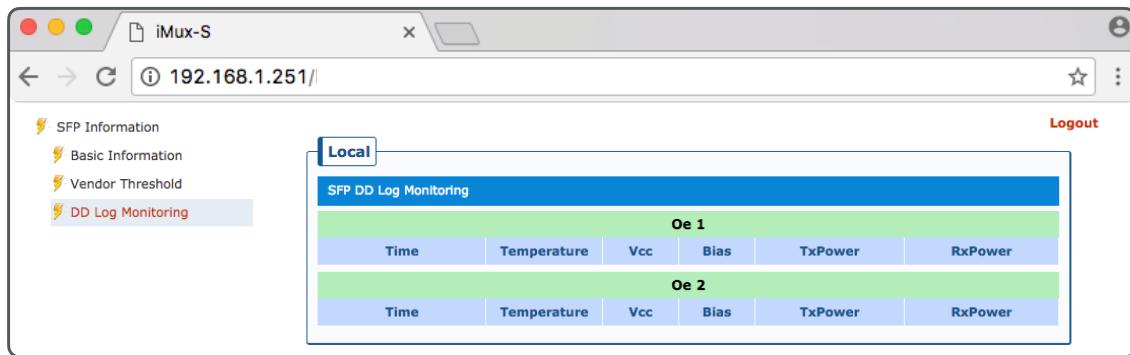
## Vendor Threshold

SFP Vendor Alarm/Warning Threshold											
OE ID	Type	Temperature(°C)		Vcc(V)		Bias(ma)		TxPower(dBm)		RxPower(dBm)	
		High	Low	High	Low	High	Low	High	Low	High	Low
OE 1	Alarm	None	None	None	None	None	None	None	None	None	None
	Warning	None	None	None	None	None	None	None	None	None	None
OE 2	Alarm	None	None	None	None	None	None	None	None	None	None
	Warning	None	None	None	None	None	None	None	None	None	None

**Vendor Threshold Web Interface**

Settings	Description
<b>SFP Vendor Alarm/Warning Threshold</b>	This section displays the vendor supplied attribute values that are retrieved from compatible SFP modules. Compatible SFP modules will display values. If "None" is displayed, the information could not be retrieved from the SFP module.
<b>OE ID</b>	Displays the ID tag of the optical link or SFP port.
<b>Type</b>	Displays the type of the attribute being listed.
<b>Alarm</b>	Threshold values that need immediate attention.
<b>Warning</b>	Threshold values that bring attention to potential issues.
<b>Temperature (C)</b>	Set the system high and low temperature threshold for notifications.
<b>Vcc (V)</b>	Set the system high and low voltage threshold for notifications.
<b>Bias (ma)</b>	Set the over high and low current threshold for notifications.
<b>TxPower (dBm)</b>	Set the transmission optical power high and low threshold for notifications.
<b>RxPower (dBm)</b>	Set the system reception optical power high and low threshold for notifications.

## DD Log Monitoring



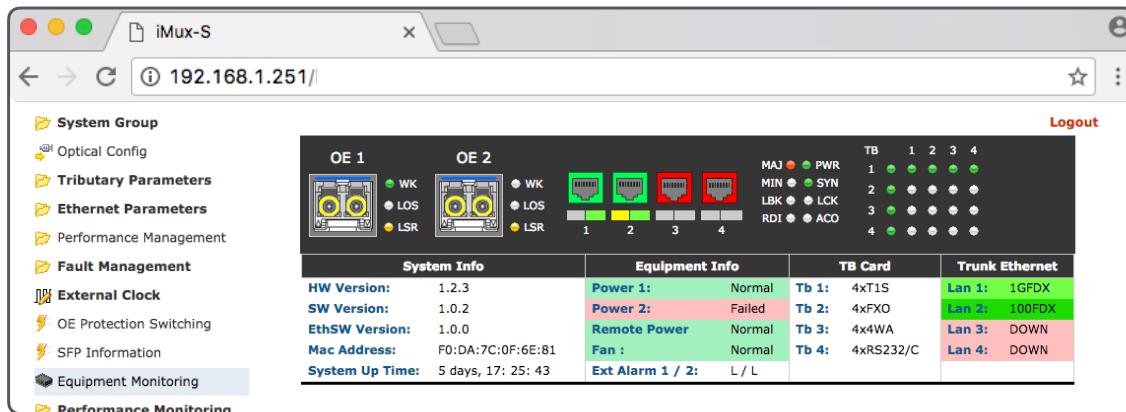
**DD Log Monitoring Web Interface**

Settings	Description
<b>Oe 1~2</b>	Identifies each optical link or SFP port.
<b>Time</b>	Displays the date and time of the log entry.
<b>Temperature</b>	Displays the logged temperature of the respective SFP at the time of logging.
<b>Vcc</b>	Displays the logged voltage of the respective SFP at the time of logging.
<b>Bias</b>	Displays the logged current of the respective SFP at the time of logging.
<b>TxPower</b>	Displays the transmitted optical power of the respective SFP at the time of logging.
<b>RxPower</b>	Displays the received optical power of the respective SFP at the time of logging.

# Equipment Monitoring

The Equipment Monitoring section is an ideal graphical dashboard for the local and remotely connected iMux-S systems in operation. Any major alarms and alerts will be graphically displayed on this page along with the LED status of the systems connected.

## Equipment Monitoring



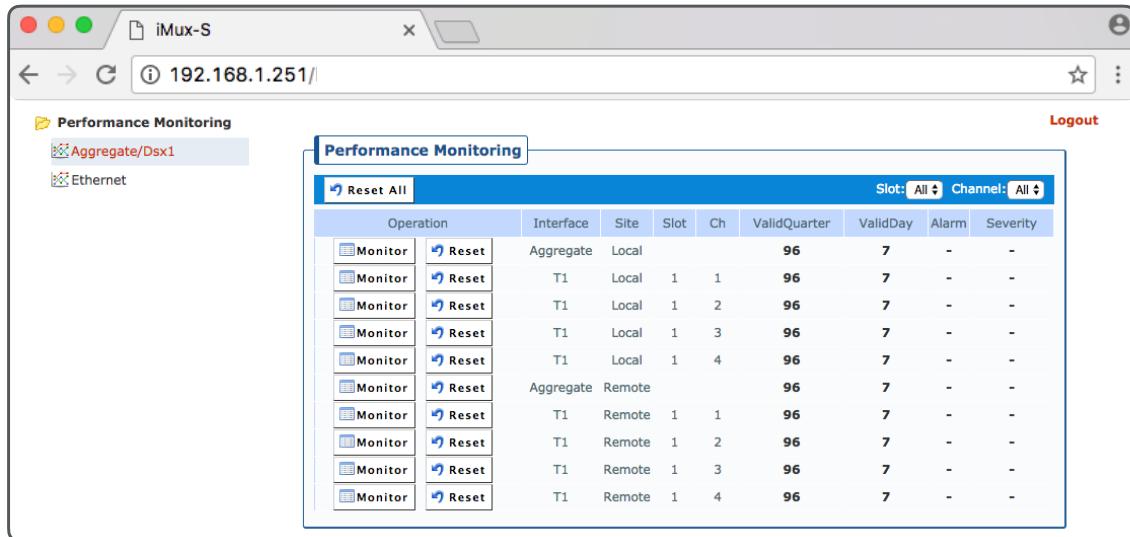
**Equipment Monitoring Web Interface**

Settings	Description
<b>System Info</b>	This section serves as an effective dashboard for the simplification of device monitoring and management by offering an all encompassing, one glance view of the system modules and their status.
<b>HW Version</b>	Displays the hardware version of the system.
<b>SW Version</b>	Displays the software version of the system.
<b>EthSW Version</b>	Displays the Ethernet management software version of the system.
<b>MAC Address</b>	Displays the physical address (MAC Address) of the system.
<b>System Up Time</b>	Displays the system uptime since the last boot up.
<b>Equipment Info</b>	Consists of power inputs, remote power, internal fans, and external alarms.
<b>Power 1</b>	Displays the status of the primary power input of the system.
<b>Power 2</b>	Displays the status of the secondary power input of the system.
<b>Remote Power</b>	Displays the power input status of the connected remote system. <b>Note:</b> Both power inputs on the remote iMux must fail in order for remote power failure status to be displayed.
<b>Fan</b>	Displays the status of the internal cooling fan.
<b>Ext Alarm 1 / 2</b>	Displays the status of the external alarm contacts.
<b>Tb Card</b>	Displays the type of tributary card installed in each of the four (4) slots.
<b>Tb 1~4</b>	Type of tributary card installed in the designated slot location.
<b>Trunk Ethernet</b>	Displays the status of each of the four (4) Ethernet ports.
<b>Lan 1~4</b>	Status of the designated Ethernet port.

# Performance Monitoring

The Performance Monitoring section displays system performance, warning and alarm statuses for the communications systems being monitored, such as T1 and Ethernet channels.

## Aggregate/Dsx1



Reset All		Slot: All Channel: All							
Operation	Interface	Site	Slot	Ch	ValidQuarter	ValidDay	Alarm	Severity	
Monitor	Aggregate	Local			96	7	-	-	
Reset	T1	Local	1	1	96	7	-	-	
Monitor	T1	Local	1	2	96	7	-	-	
Reset	T1	Local	1	3	96	7	-	-	
Monitor	T1	Local	1	4	96	7	-	-	
Reset	Aggregate	Remote			96	7	-	-	
Monitor	T1	Remote	1	1	96	7	-	-	
Reset	T1	Remote	1	2	96	7	-	-	
Monitor	T1	Remote	1	3	96	7	-	-	
Reset	T1	Remote	1	4	96	7	-	-	

**Aggregate / Dsx1 Web Interface**

Settings	Description
<b>Performance Monitoring</b>	Monitor and reset T1 circuits.
<b>Reset All</b>	Issues a reset procedure to all of the connection types listed in this section.
<b>Slot</b>	Filters the tributary slots displayed below.
<b>Channel</b>	Filters the signal channel numbers of the slots and displays them below.
<b>Operation</b>	Click to monitor or reset the circuit.
<b>Monitor</b>	Obtain detailed statistics for the respective signal channel being observed.
<b>Reset</b>	Restarts the respective signal channel being selected.
<b>Interface</b>	The signal interface type is displayed here.
<b>Aggregate</b>	Refers to all the channels on the tributary card listed below that line item.
<b>Site</b>	Displays the location of the tributary card.
<b>Slot</b>	Displays the tributary slot in which the respective signal channel is located.
<b>Channel</b>	Displays the signal channel number of the respective tributary card installed.
<b>Valid Quarter</b>	Displays the valid quarter of the signal channel or aggregate of signal channels being considered.
<b>Valid Day</b>	Displays the valid day of the signal channel or aggregate of signal channels being considered.
<b>Alarm</b>	Displays the alarm type for the signal channel.
<b>AIS</b>	Alarm Indication Signal.
<b>LOS</b>	Loss of Signal.
<b>Severity</b>	Displays the severity of the alarm type detected.

## Ethernet Performance

Port	Rx Packets	Rx CRC	Tx Packets	Alarm
1	2138	0	0	-
2	1269	0	0	-
3	0	0	0	LinkDown
4	0	0	0	LinkDown

Lan/Lo/1	
Receive Counter	
Bytes:	0
packets:	0
CRC:	0
Total Drops:	0
Total Errors Packets:	0
Broadcasts +	0
MultiCasts:	0

Monitoring Local Port 1 Example

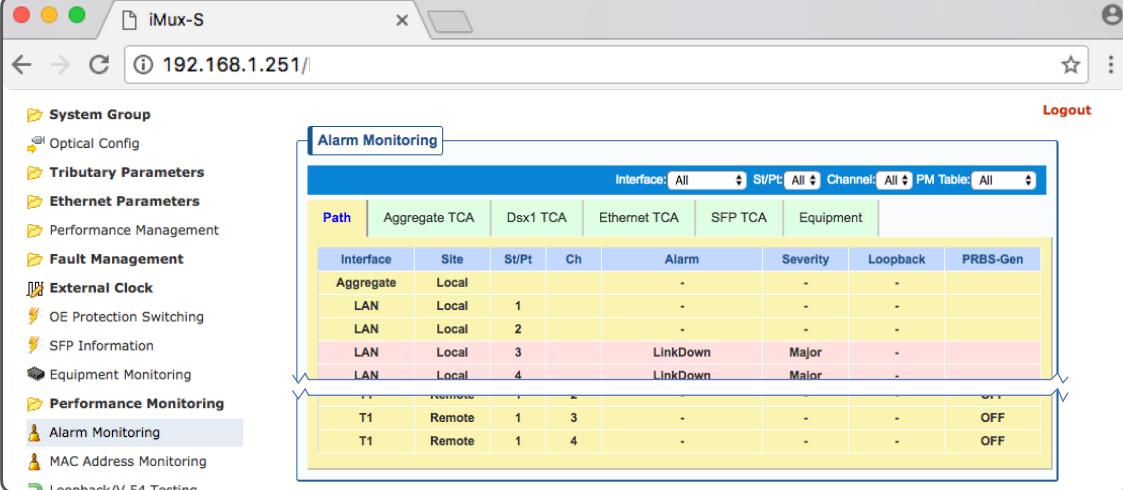
### Ethernet Performance Web Interface

Settings	Description
<b>Select All</b>	Select Local and Remote iMux systems.
<b>Reset Counter</b>	Select the Local, Remote, or All check boxes and then select the Reset Counter button to zero out all counters.
<b>Port 1~4 and T</b>	Filters the Ethernet ports and optical port displayed below.
<b>Operation</b>	Select this field to view current counts of all counter options configured in Performance Management > Ethernet Counter section.
<b>Monitor</b>	Click the button to see an individual port's performance.
<b>Interface</b>	All ports are LAN in the Ethernet performance web interface.
<b>Site</b>	Identifies the port as either on the local or remote system.
<b>Port</b>	Identifies Ethernet ports and adjusts the list in ascending or descending order.
<b>Rx Packets</b>	Indicates the number of packets received by port and sorts the list in ascending or descending order.
<b>Rx CRC</b>	Indicates the Ethernet port's CRC failure information and sorts the list in ascending or descending order.
<b>Tx Packets</b>	Indicates the number of packets transmitted by port and sorts the list in ascending or descending order.
<b>Alarm</b>	Indicates the Ethernet ports alarm state. May be sorted by port alarm state.

# Alarm Monitoring

The Alarm Monitoring section allows detailed alarm status conditions to be displayed and viewed by administrators.

## Alarm Monitoring Settings



The screenshot shows a web browser window titled 'iMux-S' with the URL '192.168.1.251/'. The left sidebar contains a navigation menu with the following items: System Group, Optical Config, Tributary Parameters, Ethernet Parameters, Performance Management, Fault Management, External Clock, OE Protection Switching, SFP Information, Equipment Monitoring, Performance Monitoring, Alarm Monitoring (which is selected and highlighted in grey), and MAC Address Monitoring. The main content area is titled 'Alarm Monitoring'. At the top of this area are four dropdown menus: 'Interface: All', 'S/Pt: All', 'Channel: All', and 'PM Table: All'. Below these is a table with the following columns: Path, Aggregate TCA, Dsx1 TCA, Ethernet TCA, SFP TCA, and Equipment. The table contains several rows of data, with the first few rows shown below:

Path	Aggregate TCA	Dsx1 TCA	Ethernet TCA	SFP TCA	Equipment		
Interface	Site	St/Pt	Ch	Alarm	Severity	Loopback	PRBS-Gen
Aggregate	Local			-	-	-	
LAN	Local	1		-	-	-	
LAN	Local	2		-	-	-	
LAN	Local	3		LinkDown	Major	-	
LAN	Local	4		LinkDown	Major	-	
T1	Remote	1	2	-	-	-	OFF
T1	Remote	1	3	-	-	-	OFF
T1	Remote	1	4	-	-	-	OFF

**Alarm Monitoring Web Interface**

Settings	Description
<b>Interface</b>	Select the type of interface you would like to filter.
<b>All</b>	Displays every communication port and circuit.
<b>Aggregate</b>	Displays any communication line on the device that has log events.
<b>OE</b>	Displays Optic ports that has log events.
<b>TB</b>	Displays any tributary ports that has log events.
<b>LAN</b>	Displays any Ethernet ports that has log events.
<b>St/Pt</b>	Filters the slot or Ethernet ports (1-4) and lists them below.
<b>Channel</b>	Filters the tributary channels and lists those that have log events.
<b>PM Table</b>	Filter through time intervals of the performance monitoring tables.
<b>Path</b>	Interface type.
<b>Aggregate TCA</b>	Displays any Aggregate DSX1 threshold alarms.
<b>Dsx1 TCA</b>	Displays any DSX1 threshold alarms.
<b>Ethernet TCA</b>	Displays any Ethernet threshold alarms.
<b>SFP TCA</b>	Displays any SFP threshold alarms.
<b>Equipment</b>	Displays equipment alarms and severity.

# MAC Address Monitoring

The MAC Address Monitoring section allows administrators to view the MAC addresses of devices that have communicated with the iMux-S system.

## Mac Address Monitoring

The screenshot shows a web browser window for 'iMux-S' at '192.168.1.251/'. The left sidebar contains a navigation menu with items like System Group, Optical Config, Tributary Parameters, Ethernet Parameters, Performance Management, Fault Management, External Clock, OE Protection Switching, SFP Information, Equipment Monitoring, Performance Monitoring, Alarm Monitoring, MAC Address Monitoring, and Loopback/AV 54 Testing. The main content area is titled 'Ethernet MAC Address Table Monitoring' and shows a table with the following data:

No	Type	VlanId	MAC Address	TkE Sl/Ch
1	Dynamic	1	F0-DA-7C-06-00-1F	1
2	Dynamic	2	C4-D6-55-3B-E9-6A	2

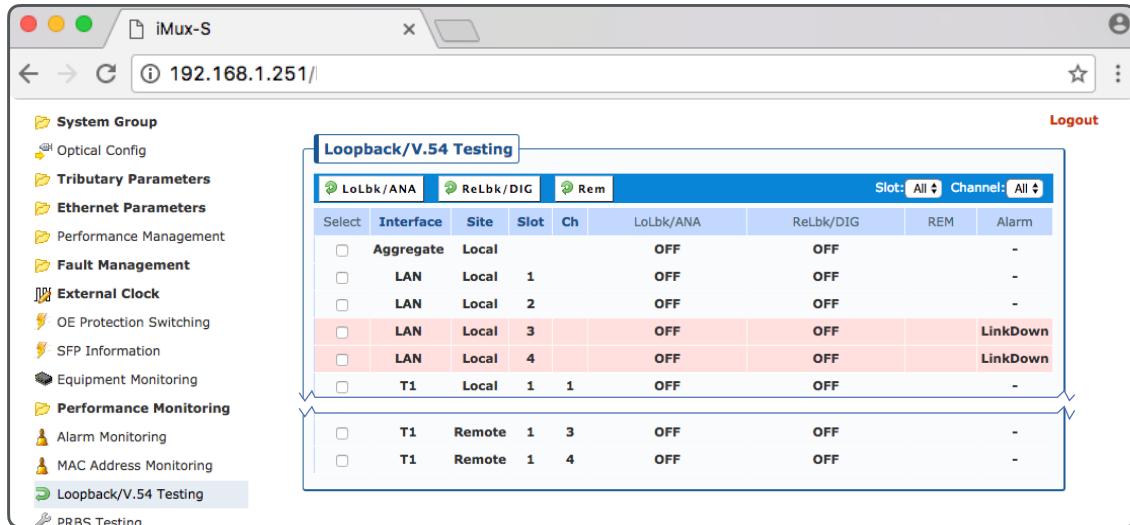
### Mac Address Monitoring Web Interface

Settings	Description
<b>Refresh</b>	Update table information.
<b>Flush</b>	Flush address table and relearn dynamic addresses.
<b>MAC Table Site</b>	Select the local or remote MAC Address table.
<b>Auto Refresh</b>	Auto refresh the page.
<b>Ethernet MAC Address Table Monitoring</b>	Supports up to 8192 MAC Addresses.
<b>No</b>	Line number of the table.
<b>Type</b>	Dynamic or Static MAC Address.
<b>VlanId</b>	VLAN MAC Address resides in.
<b>MAC Address</b>	MAC Address Field.
<b>TkE s1/Ch</b>	Ethernet Port 1-4 or T.

# Loopback / V.54 Testing

The Loopback / V.54 Testing section allows administrators to create loopback conditions in order to perform diagnostic testing during installation and repair operations.

## Loopback / V.54 Testing



The screenshot shows a web browser window titled 'iMux-S' with the URL '192.168.1.251/'. The left sidebar contains a navigation menu with various system and monitoring options. The main content area is titled 'Loopback/V.54 Testing' and displays a table of loopback configurations. The table has columns for 'Select', 'Interface', 'Site', 'Slot', 'Ch', 'LoLbk/ANA', 'ReLbk/DIG', 'REM', and 'Alarm'. The table shows several entries, with rows 3 and 4 highlighted in pink, indicating 'LinkDown' status.

Select	Interface	Site	Slot	Ch	LoLbk/ANA	ReLbk/DIG	REM	Alarm
<input type="checkbox"/>	Aggregate	Local			OFF	OFF	-	
<input type="checkbox"/>	LAN	Local	1		OFF	OFF	-	
<input type="checkbox"/>	LAN	Local	2		OFF	OFF	-	
<input type="checkbox"/>	LAN	Local	3		OFF	OFF		LinkDown
<input type="checkbox"/>	LAN	Local	4		OFF	OFF		LinkDown
<input type="checkbox"/>	T1	Local	1	1	OFF	OFF	-	
<input type="checkbox"/>	T1	Remote	1	3	OFF	OFF	-	
<input type="checkbox"/>	T1	Remote	1	4	OFF	OFF	-	

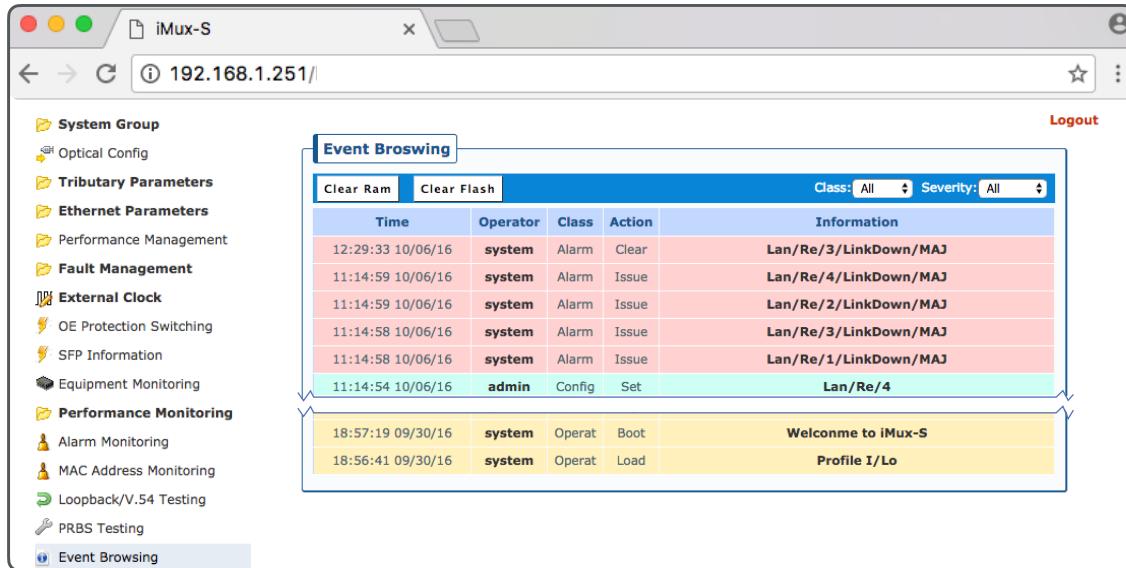
### Loopback / V.54 Testing Web Interface

Settings	Description
<b>LoLbk/ANA</b>	Local Loopback / Analog.
<b>ReLbk/DIG</b>	Remote Loopback / digital.
<b>Rem</b>	Remove the loopback.
<b>Slot</b>	Tributary slot being constrained and/or individual VLAN ports.
<b>Channel</b>	Numbered port of the tributary slot.
<b>Select</b>	Check one or more box to test the circuits.
<b>Interface</b>	T1 or Aggregate. (All)
<b>Site</b>	Local or Remote iMux Unit.
<b>Slot</b>	Slot the T1 module is located in.
<b>Ch</b>	The slot T1 channel number (1-4).
<b>LoLbk/ANA</b>	Loop Back the Local T1 Interface.
<b>ReLbk/DIG</b>	Loop Back the Remote T1 interface.
<b>REM</b>	REM is only for V.54 Testing.
<b>Alarm</b>	Will display Alarm if present.

# Event Browsing

The Event Browsing section allows administrators to observe the log entries in the system event log as well as clearing the log entries from both RAM and flash memory types when deemed appropriate.

## Event Browsing Log



Time	Operator	Class	Action	Information
12:29:33 10/06/16	system	Alarm	Clear	Lan/Re/3/LinkDown/MAJ
11:14:59 10/06/16	system	Alarm	Issue	Lan/Re/4/LinkDown/MAJ
11:14:59 10/06/16	system	Alarm	Issue	Lan/Re/2/LinkDown/MAJ
11:14:58 10/06/16	system	Alarm	Issue	Lan/Re/3/LinkDown/MAJ
11:14:58 10/06/16	system	Alarm	Issue	Lan/Re/1/LinkDown/MAJ
11:14:54 10/06/16	admin	Config	Set	Lan/Re/4
18:57:19 09/30/16	system	Operat	Boot	Welcome to iMux-S
18:56:41 09/30/16	system	Operat	Load	Profile I/Lo

**Event Browsing Web Interface**

Settings		Description
<b>Clear Ram</b>		Clear events in running RAM memory.
<b>Clear Flash</b>		Clear events stored on local flash.
<b>Class</b>		Filter event categories. (Config, Operat, or Alarm)
<b>All</b>		Shows all categories.
<b>Severity</b>		Filter Events. (Critical, Major, Minor, & Warning)
<b>All</b>		Shows all events.
<b>Event Browsing</b>	<b>Time</b>	Device time when the event occurred.
	<b>Operator</b>	Displays the originator of the event. (administrator or System)
	<b>Class</b>	Displays the classification of event that occurred. (Config, Operat, or Alarm)
	<b>Action</b>	Displays what took place.
<b>Information</b>		Displays the path to where the event took place.

## Logout

The logout link can be found in the same spot on any of the management pages. By clicking the Logout link the user is logged out of the web interface. The user is returned to the login screen.

### Logout



#### ***Web Interface Header - Logout***

Settings	Description
<a href="#">Logout</a>	Logs out of system and returns to the login page.

### 3. Support

#### Technical Support

<b>Corporate Headquarters:</b>	RLH Industries, Inc. 936 N. Main Street Orange, CA 92867 USA
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Please contact your RLH sales representative  
for pricing and delivery information.

Specifications subject to change without notice.