# GS1900 Series

GbE Smart Managed Switch

Version 2.10
Edition 2, 04/2016

# User's Guide

| Default Login Details | |
|---|---|
| IP Address | http://192.168.1.1 (In-band ports) |
| User Name | admin |
| Password | 1234 |

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**IMPORTANT!**

**READ CAREFULLY BEFORE USE.**

**KEEP THIS GUIDE FOR FUTURE REFERENCE.**

Note: This guide is a reference for a series of products. Therefore some features or options in this guide may not be available in your product.

Screenshots and graphics in this book may differ slightly from your product due to differences in your product firmware or your computer operating system. Every effort has been made to ensure that the information in this manual is accurate.

Note: It is recommended you use the Web Configurator to configure the Switch.

- Web Configurator Online Help

  Click the help icon in any screen for help in configuring that screen and supplementary information.

- More Inforamtion

  Go to support.zyxel.com to find other information on the Switch.

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# PART I
# User's Guide

# 1

# Getting to Know Your Switch

This chapter introduces the main features and applications of the Switch.

## 1.1 Introduction

The GS1900 series is a new generation Gigabit Ethernet (GbE) Web-Managed Switch.

This User's Guide covers the following models:

**Table 1** GS1900 Series Comparison Table

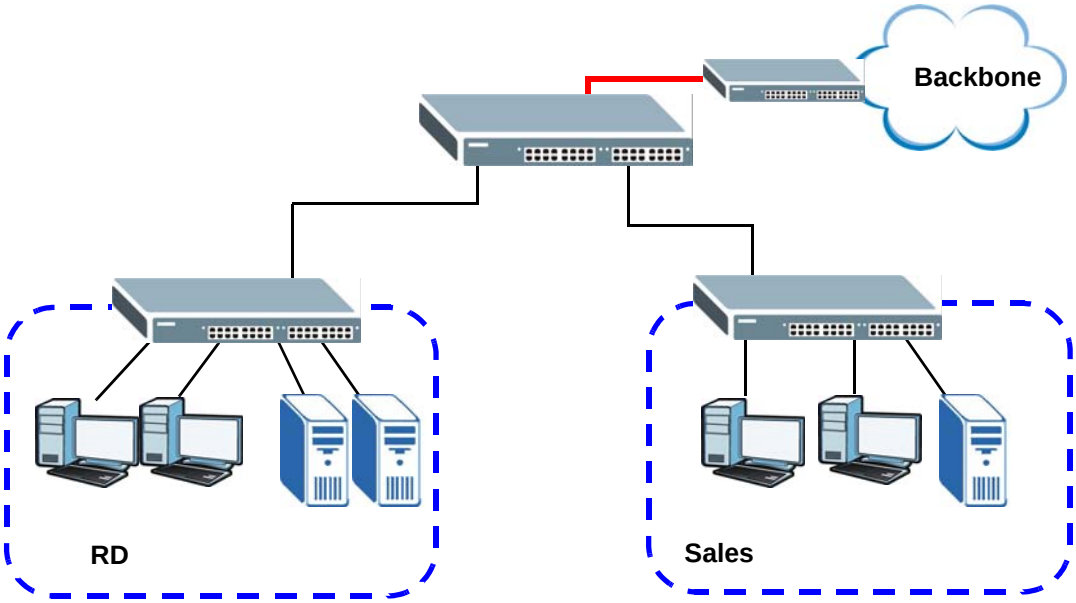
| MODEL | GS1900-8 | GS1900-8HP | GS1900-10HP | GS1900-16 | GS1900-24E | GS1900-24 | GS1900-24HP | GS1900-48 | GS1900-48HP |
|---|---|---|---|---|---|---|---|---|---|
| 100/1000 Mbps Port | 8 | - | - | 16 | 24 | 24 | - | 48 | 24 |
| 100/1000 Mbps PoE Port | - | 8 | 8 | - | - | - | 24 | - | 24 |
| 1G SFP Slots Fiber | - | - | 2 | - | - | 2 | 2 | 2 | 2 |
| Desktop | v | v | v | v | v | | | | |
| Wall-mount | v | v | v | v | v | | | | |
| Rack-mount | | | | v | v | v | v | v | v |
| Power ON/OFF Switch | v | v | v | v | v | | | | |

See the datasheet for a full list of firmware features available on the Switch.

### 1.1.1 Bridging Example

In this example the Switch connects different company departments (**RD** and **Sales**) to the corporate backbone. It can alleviate bandwidth contention and eliminate server and network bottlenecks. All users that need high bandwidth can connect to high-speed department servers via the Switch.

**Figure 1** Bridging Application

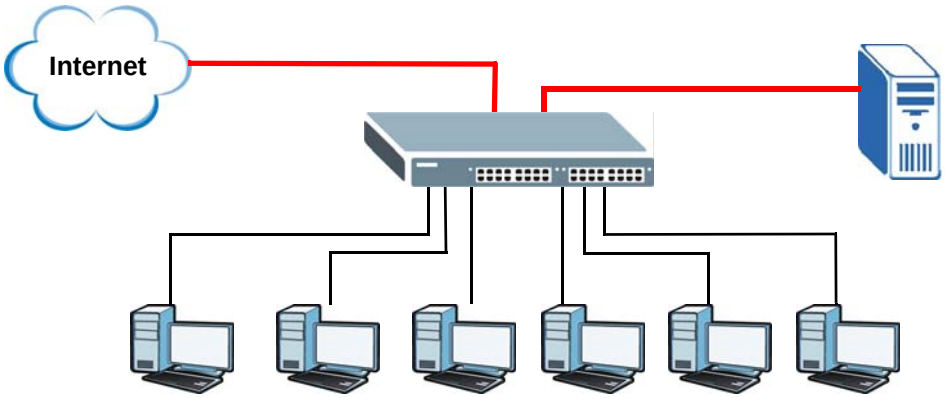



## 1.1.2 Gigabit Ethernet to the Desktop

The Switch is an ideal solution for small networks which demand high bandwidth for a group of heavy traffic users. You can connect computers and servers directly to the Switch's port or connect other switches to the Switch.

In this example, all computers can share high-speed applications on the server and access the Internet. To expand the network, simply add more networking devices such as switches, routers, computers, print servers and so on.

**Figure 2** Gigabit to the Desktop




## 1.1.3 IEEE 802.1Q VLAN Application Example

A VLAN (Virtual Local Area Network) allows a physical network to be partitioned into multiple logical networks. Stations on a logical network belong to one or more groups. With VLAN, a station cannot

directly talk to or hear from stations that are not in the same group(s) unless such traffic first goes through a router.

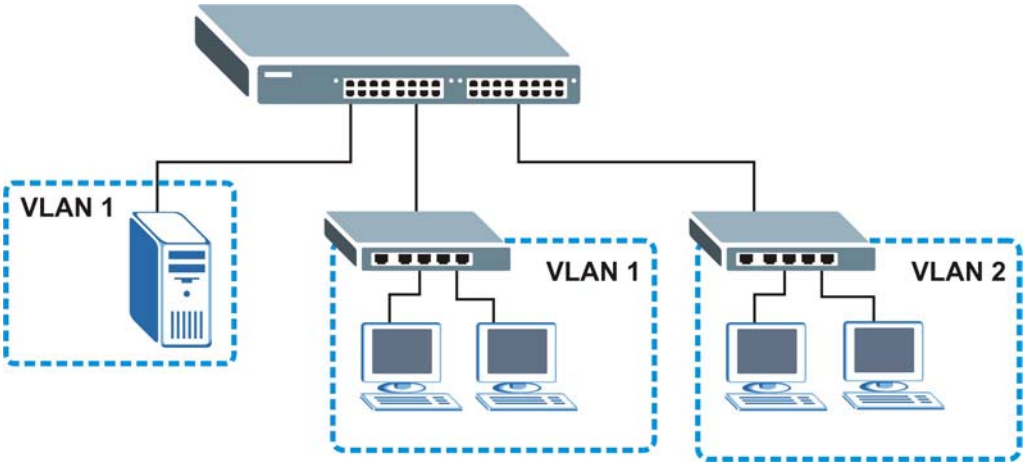
For more information on VLANs, refer to Chapter 9 on page 62.

#### 1.1.3.1 Tag-based VLAN Example

Ports in the same VLAN group share the same frame broadcast domain, thus increasing network performance by reducing broadcast traffic. VLAN groups can be modified at any time by adding, moving or changing ports without any re-cabling.

Shared resources such as a server can be used by all ports in the same VLAN as the server. In the following figure only ports that need access to the server need to be part of VLAN 1. Ports can belong to other VLAN groups too.

**Figure 3** Shared Server Using VLAN Example




### 1.1.4 IPv6 Support

IPv6 (Internet Protocol version 6), is designed to enhance IP address size and features. The increase in IPv6 address size to 128 bits (from the 32-bit IPv4 address) allows up to 3.4 x $10^{38}$ IP addresses. At the time of writing, the Switch supports the following features.

- Static address assignment and stateless auto-configuration
- Neighbor Discovery Protocol (a protocol used to discover other IPv6 devices in a network)
- Remote Management using PING, SNMP, HTTP and TFTP services
- ICMPv6 to report errors encountered in packet processing and perform diagnostic functions, such as "PING"
- IPv4/IPv6 dual stack; the Switch can run IPv4 and IPv6 at the same time
- DHCPv6 client

## 1.2 Ways to Manage the Switch

Use any of the following methods to manage the Switch.

- Web Configurator. This is recommended for everyday management of the Switch using a (supported) web browser. See Chapter 5 on page 33.
- TFTP. Use Trivial File Transfer Protocol for firmware upgrades and configuration backup/restore. See Section 32.1 on page 214, Section 32.3 on page 216, and Section 32.4 on page 218
- SNMP. The device can be configured by a SNMP manager. See Section 31.3 on page 199.

## 1.3 Good Habits for Managing the Switch

Do the following things regularly to make the Switch more secure and to manage the Switch more effectively.

- Change the password. Use a password that's not easy to guess and that consists of different types of characters, such as numbers and letters.
- Write down the password and put it in a safe place.
- Back up the configuration (and make sure you know how to restore it). Restoring an earlier working configuration may be useful if the device becomes unstable or even crashes. If you forget your password, you will have to reset the Switch to its factory default settings. If you backed up an earlier configuration file, you would not have to totally re-configure the Switch. You could simply restore your last configuration.

2

# Hardware Installation and Connection

This chapter shows you how to install and connect the Switch.

## 2.1 Freestanding Installation

1 Make sure the Switch is clean and dry.

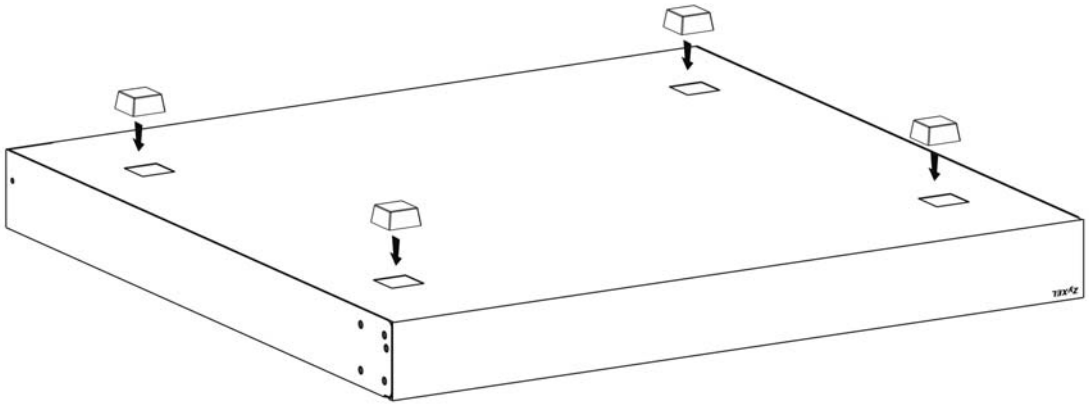
2 Set the Switch on a smooth, level surface strong enough to support the weight of the Switch and the connected cables. Make sure there is a power outlet nearby.

3 Make sure there is enough clearance around the Switch to allow air circulation and the attachment of cables and the power cord.

4 Remove the adhesive backing from the rubber feet.

5 Attach the rubber feet to each corner on the bottom of the Switch. These rubber feet help protect the Switch from shock or vibration and ensure space between devices when stacking.

**Figure 4** Attaching Rubber Feet



Note: Do NOT block the ventilation holes. Leave space between devices when stacking.

Note: For proper ventilation, allow at least 4 inches (10 cm) of clearance at the front and 3.4 inches (8 cm) at the back of the Switch. This is especially important for enclosed rack installations.

# 2.2 Hardware Installation

See Table 1 on page 15 for a comparison of the hardware installation methods of each model:

Note: Ask an authorized technician to attach the Switch to the rack/wall.

Refer to Section 2.2.2 on page 21 for rack-mounting instructions. Take note of the following:

- The Switch should have a minimum 25 mm space around it for ventilation.
- The Switch should be placed on a desk that has a level surface and that is able to support the weight of the Switch.

To start using it, simply connect the power cables and turn on the Switch.

## 2.2.1 Wall Mounting

Do the following to attach your Switch to a wall.

See the following table for how far apart to place the screws.

**Table 2** Distance between the centers of the holes for wall mounting

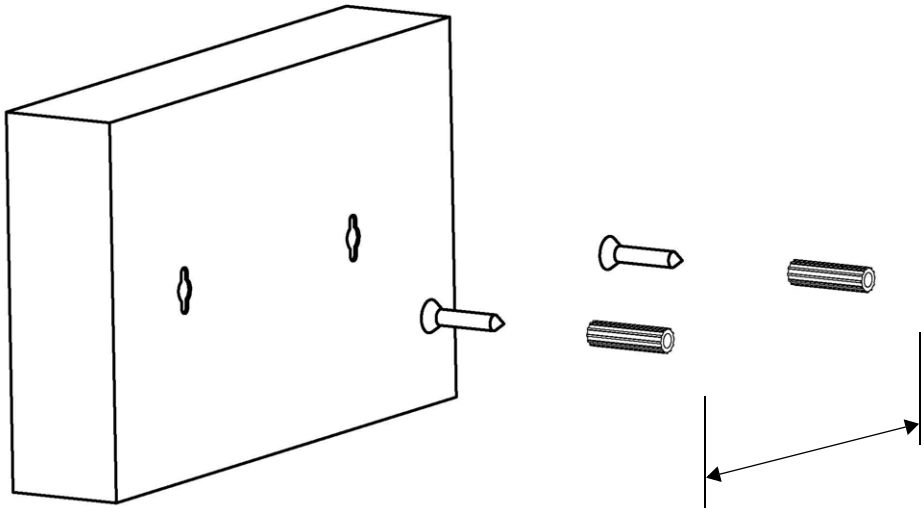
| GS1900-8 | GS1900-8HP | GS1900-10HP | GS1900-16 | GS1900-24E |
|---|---|---|---|---|
| 176 mm | 176 mm | 176 mm | 148 mm | 207 mm |

Screw the two screws provided with your Switch into the wall (see the figure in step 2). Use screws with 6 mm ~ 8 mm (0.24" ~ 0.31") wide heads. Do not screw the screws all the way in to the wall; leave a small gap between the head of the screw and the wall.

The gap must be big enough for the screw heads to slide into the screw slots and the connection cables to run down the back of the Switch.

Note: Make sure the screws are securely fixed to the wall and strong enough to hold the weight of the Switch with the connection cables.

Align the holes on the back of the Switch with the screws on the wall. Hang the Switch on the screws.



**The Switch should be wall-mounted horizontally. The Switch's side panels with ventilation slots should not be facing up or down as this position is less safe.**

## 2.2.2 Rack Mounting

The Switch can be mounted on an EIA standard size, 19-inch rack or in a wiring closet with other equipment. Follow the steps below to mount your Switch on a standard EIA rack using a rack-mounting kit.

### Rack-mounted Installation Requirements

- Two mounting brackets.
- Eight M3 flat head screws and a #2 Philips screwdriver.
- Four M5 flat head screws and a #2 Philips screwdriver.

**Failure to use the proper screws may damage the unit.**

### Precautions

- Make sure the rack will safely support the combined weight of all the equipment it contains.
- Make sure the position of the Switch does not make the rack unstable or top-heavy. Take all necessary precautions to anchor the rack securely before installing the unit.

### Attaching the Mounting Brackets to the Switch

1 Position a mounting bracket on one side of the Switch, lining up the four screw holes on the bracket with the screw holes on the side of the Switch.

**Figure 5** Attaching the Mounting Brackets (GS1900-16 and GS1900-24E)

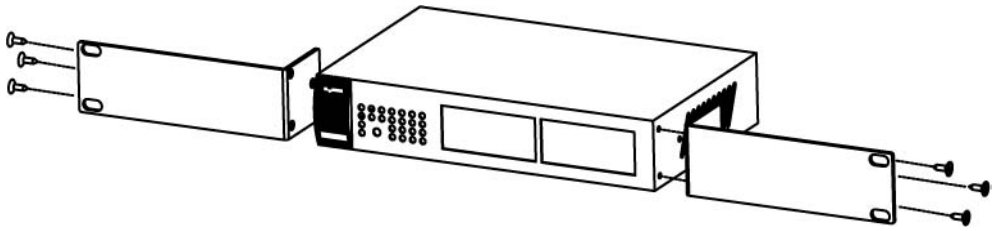
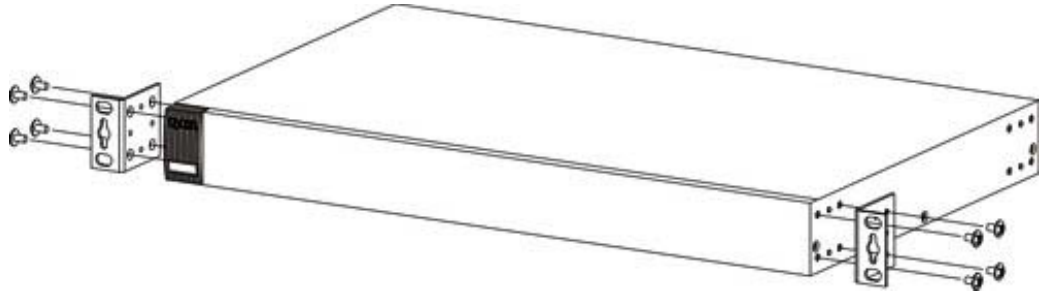


**Figure 6** Attaching the Mounting Brackets (GS1900-24, GS1900-24HP, GS1900-48, GS1900-48HP)



2 Using a #2 Philips screwdriver, install the M3 flat head screws through the mounting bracket holes into the Switch.

3 Repeat steps 1 and 2 to install the second mounting bracket on the other side of the Switch.

4 You may now mount the Switch on a rack. Proceed to the next section.

### 2.2.2.1 Mounting the Switch on a Rack

1 Position a mounting bracket (that is already attached to the Switch) on one side of the rack, lining up the two screw holes on the bracket with the screw holes on the side of the rack.

**Figure 7** Mounting the Switch on a Rack (GS1900-16 and GS1900-24E)

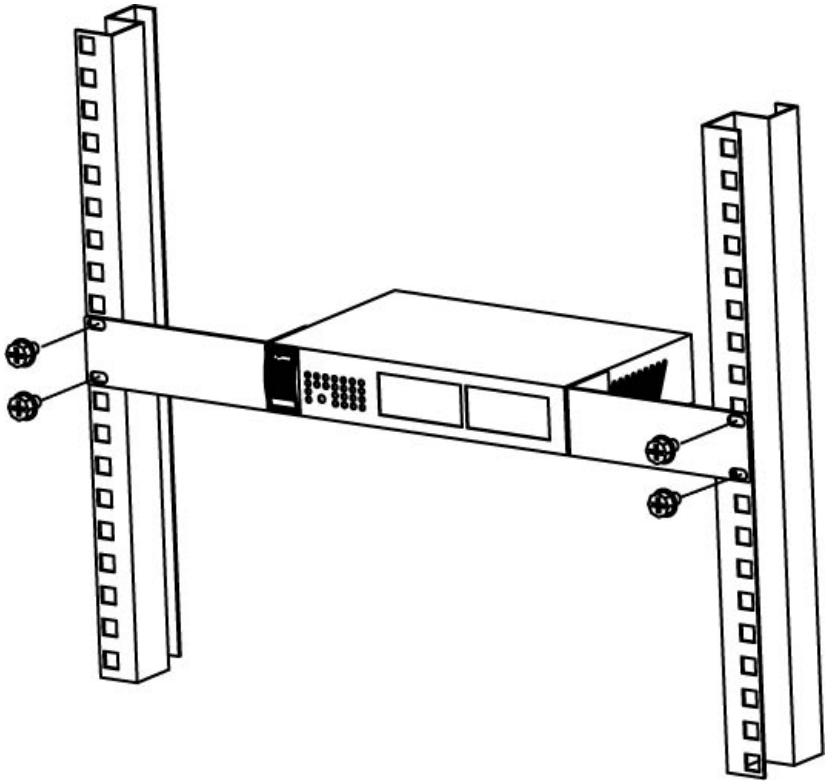
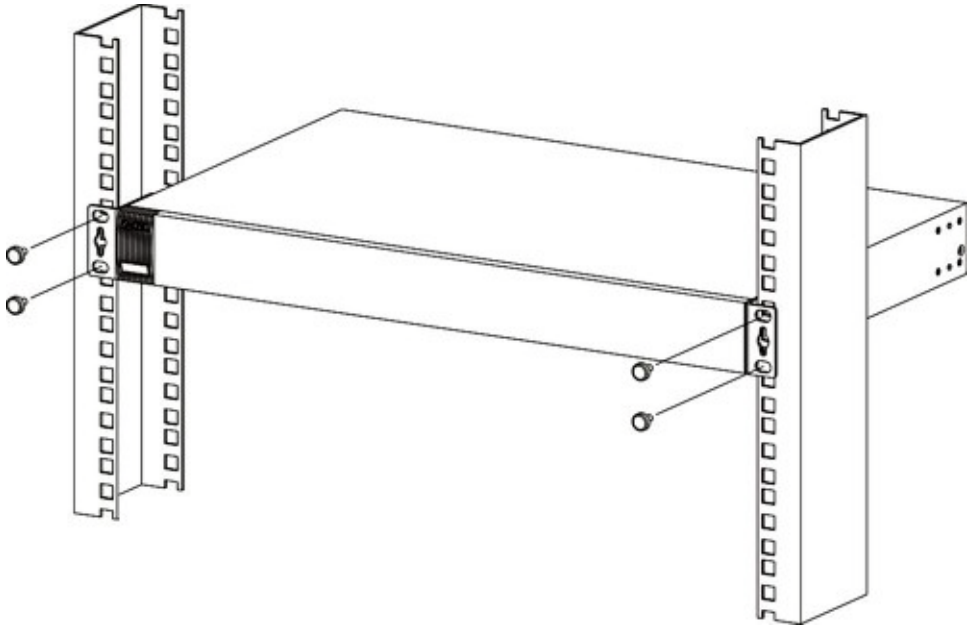


**Figure 8** Mounting the Switch on a Rack (GS1900-24, GS1900-24HP, GS1900-48, GS1900-48HP)



**2** Using a #2 Philips screwdriver, install the M5 flat head screws through the mounting bracket holes into the rack.

**3** Repeat steps 1 and 2 to attach the second mounting bracket on the other side of the rack.

# 3

# Hardware Overview

This chapter describes the front panel and rear panel of the Switch and shows you how to make the hardware connections.

## 3.1 Front Panel Connections

The following figures show the front panels of the Switch.

**Figure 9** Front Panel: GS1900-8

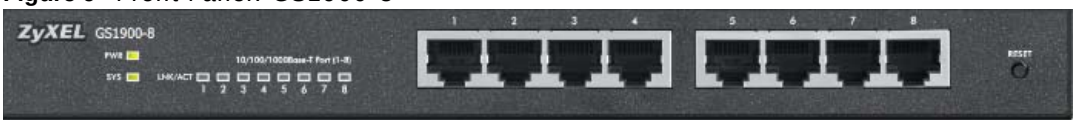



**Figure 10** Front Panel: GS1900-8HP

Revision A1

Revision B1

**Figure 11** Front Panel: GS1900-10HP

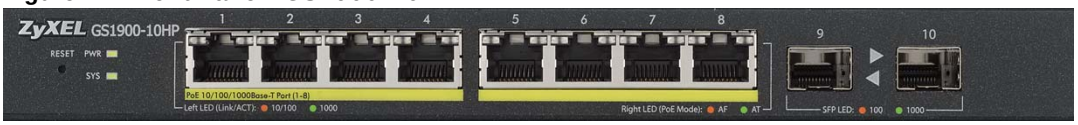


**Figure 12** Front Panel: GS1900-16

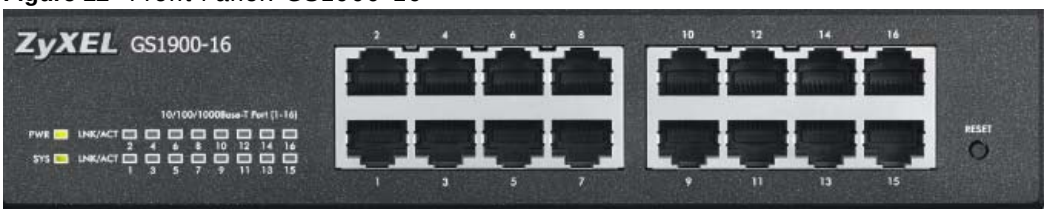



**Figure 13** Front Panel: GS1900-24E

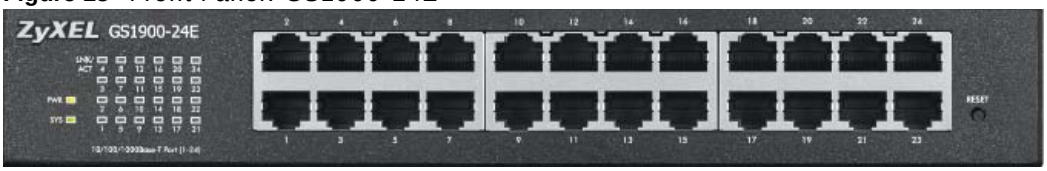
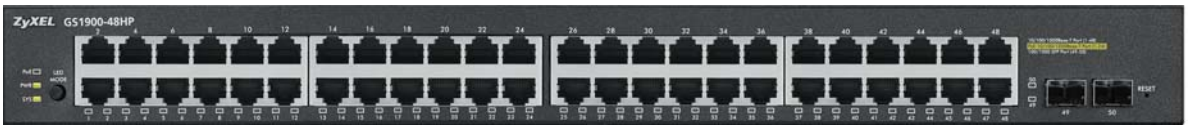



**Figure 14** Front Panel: GS1900-24

**Figure 15** Front Panel: GS1900-24HP

**Figure 16** Front Panel: GS1900-48

**Figure 17** Front Panel: GS1900-48HP




## 3.1.1 Ethernet Ports

The Switch has 1000Base-T auto-negotiating, auto-crossover Ethernet ports. In 10/100/1000 Mbps Gigabit Ethernet, the speed can be 10Mbps, 100 Mbps or 1000 Mbps. The duplex mode can be both half or full duplex at 100 Mbps and full duplex only at 1000 Mbps.

An auto-negotiating port can detect and adjust to the optimum Ethernet speed (10/100/1000 Mbps) and duplex mode (full duplex or half duplex) of the connected device.

An auto-crossover (auto-MDI/MDI-X) port automatically works with a straight-through or crossover Ethernet cable.

#### 3.1.1.1 Default Ethernet Settings

The factory default negotiation settings for the Ethernet ports on the Switch are:

- Speed: Auto
- Duplex: Auto
- Flow control: Off

### 3.1.2 SFP Slots

These are slots for Small Form-Factor Pluggable (SFP) transceivers. A transceiver is a single unit that houses a transmitter and a receiver. Use a transceiver to connect a fiber-optic cable to the Switch. The Switch does not come with transceivers. You must use transceivers that comply with the Small Form-Factor Pluggable (SFP) Transceiver MultiSource Agreement (MSA). See the SFF committee's INF-8074i specification Rev 1.0 for details.

You can change transceivers while the Switch is operating. You can use different transceivers to connect to Ethernet switches with different types of fiber-optic connectors.

- Type: SFP connection interface
- Connection speed: 1 Gigabit per second (Gbps)

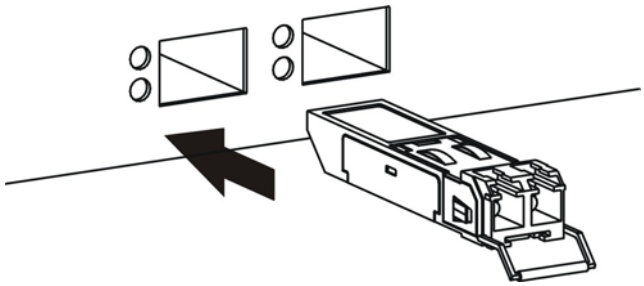
**To avoid possible eye injury, do not look into an operating fiber-optic module's connectors.**

#### 3.1.2.1 Transceiver Installation

Use the following steps to install a transceiver.

1 Insert the transceiver into the slot with the exposed section of PCB board facing down.

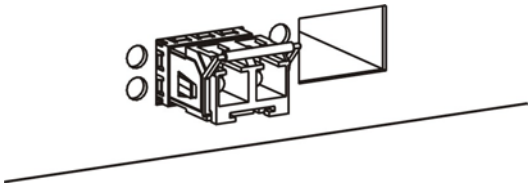
**Figure 18** Transceiver Installation Example



2 Press the transceiver firmly until it clicks into place.

3 The Switch automatically detects the installed transceiver. Check the LEDs to verify that it is functioning properly.

**Figure 19** Installed Transceiver

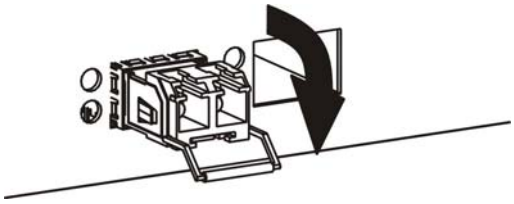


### 3.1.2.2 Transceiver Removal

Use the following steps to remove a transceiver.

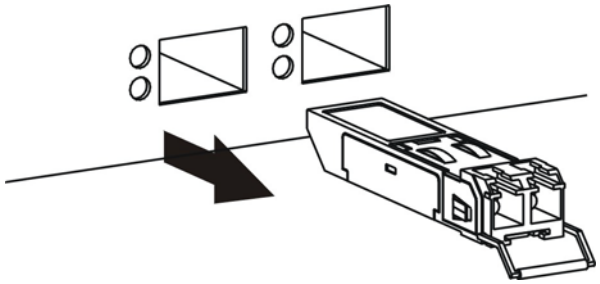
1 Open the transceiver's latch (latch styles vary).

**Figure 20** Opening the Transceiver's Latch Example



2 Pull the transceiver out of the slot.

**Figure 21** Transceiver Removal Example



## 3.2 Rear Panel

The following figures show the rear panels of the Switch.

**Figure 22** Rear Panel: GS1900-8

**Figure 23** Rear Panel: GS1900-8HP

Revision A1

Revision B1

**Figure 24** Rear Panel: GS1900-10HP

**Figure 25** Rear Panel: GS1900-16

**Figure 26** Rear Panel: GS1900-24E

**Figure 27** Rear Panel: GS1900-24

**Figure 28** Rear Panel: GS1900-24HP

**Figure 29** Rear Panel: GS1900-48

**Figure 30** Rear Panel: GS1900-48HP

## 3.2.1 Power Connection

Make sure you are using the correct power source and that no objects obstruct the airflow of the fans.

The Switch uses two power supply modules, one of which is redundant, so if one power module fails the system can operate on the remaining module.

### Rear Panel Power Connection

Connect one end of the supplied power cord or power adaptor to the power receptacle on the back of the Switch and the other end to the appropriate power source.

For Switches with a power switch (see Table 1 on page 15), use the **POWER ON / OFF** switch to have the Switch power on or off.

### Connecting the Power

Use the following procedures to connect the Switch to a power source after you have installed it in a rack.

Note: Use the included power cord for the AC power connection.

1. Connect the female end of the power cord to the AC power socket.
2. Connect the other end of the cord to a power outlet.

### Disconnecting the Power

The power input connectors can be disconnected from the power source individually.

1. Disconnect the power cord from the power outlet.
2. Disconnect the power cord from the AC power socket.

# 3.3 LEDs

After you connect the power to the Switch, view the LEDs to ensure proper functioning of the Switch and as an aid in troubleshooting.

**Table 3** LED Descriptions

| LED | COLOR | STATUS | DESCRIPTION |
|---|---|---|---|
| PWR | Green | On | The system is turned on. |
| | | Off | The system is off or has failed. |
| SYS | Green | On | The system is on and functioning properly. |
| | | Blinking | The system is rebooting and performing self-diagnostic tests. |
| | | Off | The power is off or the system is not ready/malfunctioning. |
| Ethernet Ports | | | |
| LNK/ACT | Green | Blinking | The system is transmitting/receiving to/from a 100/1000 Mbps Ethernet network. |
| | | On | The link to a 100/1000 Mbps Ethernet network is up. |
| | | Off | The link to an Ethernet network is down. |
| PoE<br>(see Section 1.1 on page 15) | Green | On | Power is supplied to all PoE Ethernet ports. |
| | | Off | There is no power supply. |
| 1G SFP Slots (Fiber Ports - see Section 1.1 on page 15) | | | |
| LNK/ACT | Green | Blinking | The system is transmitting/receiving to/from a 100/1000 Mbps Fiber network. |
| | | On | The link to a 100/1000 Mbps Fiber network is up. |
| | | Off | The link to a Fiber network is down. |

**Table 4** LED Descriptions (GS1900-8HP (Revison B1) and GS1900-10HP Only)

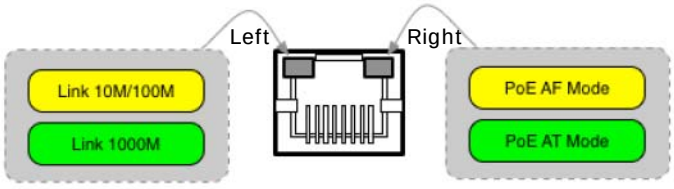
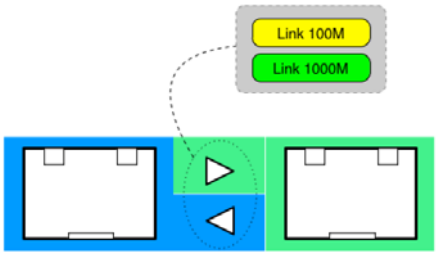
| LED | COLOR | STATUS | DESCRIPTION |
|---|---|---|---|
| PWR | Green | On | The system is turned on. |
| | | Off | The system is off or has failed. |
| SYS | Green | On | The system is on and functioning properly. |
| | | Blinking | The system is rebooting. |
| | Red | On | There is a system error. |
| PoE 10/100/1000Base-T Ports (1-8), 2 LEDs per port<br>  <br> | | | |
| Right | Amber | On | The port is in PoE AF mode. That is, the Switch is following the IEEE 802.3af standard to supply power to this port. |
| | Green | On | The port is in PoE AT mode. That is, the Switch is following the IEEE 802.3at standard to supply power to this port. |
| | | Off | Power is not supplied to this port. |

**Table 4** LED Descriptions (continued)(GS1900-8HP (Revison B1) and GS1900-10HP Only)

| LED | COLOR | STATUS | DESCRIPTION |
|---|---|---|---|
| Left | Amber | On | The link to a 10/100 Mbps Ethernet network is up. |
| | | Blinking | The system is transmitting/receiving to/from a 100/1000 Mbps Fiber network. |
| | Green | On | The link to a 1 Gbps Ethernet network is up. |
| | | Blinking | The system is transmitting/receiving to/from 1 Gbps Mbps Ethernet network. |

**Table 5** LED Descriptions for SFP Port (GS1100-10HP and GS1900-10HP Only)

| LED | COLOR | STATUS | DESCRIPTION |
|---|---|---|---|
| Two arrow LEDs for 1G SFP Slots (Fiber Ports)   | | | |
| right/left arrows | Amber | On | The link to a 100 Mbps Fiber network is up. |
| | | Blinking | The system is transmitting/receiving to/from a 100 Mbps Fiber network. |
| | Green | On | The link to a 1 Gbps Fiber network is up. |
| | | Blinking | The system is transmitting/receiving to/from 1 Gbps Mbps Fiber network. |

# 4

# ZON Utility

This chapter describes the screens for ZON Utility.

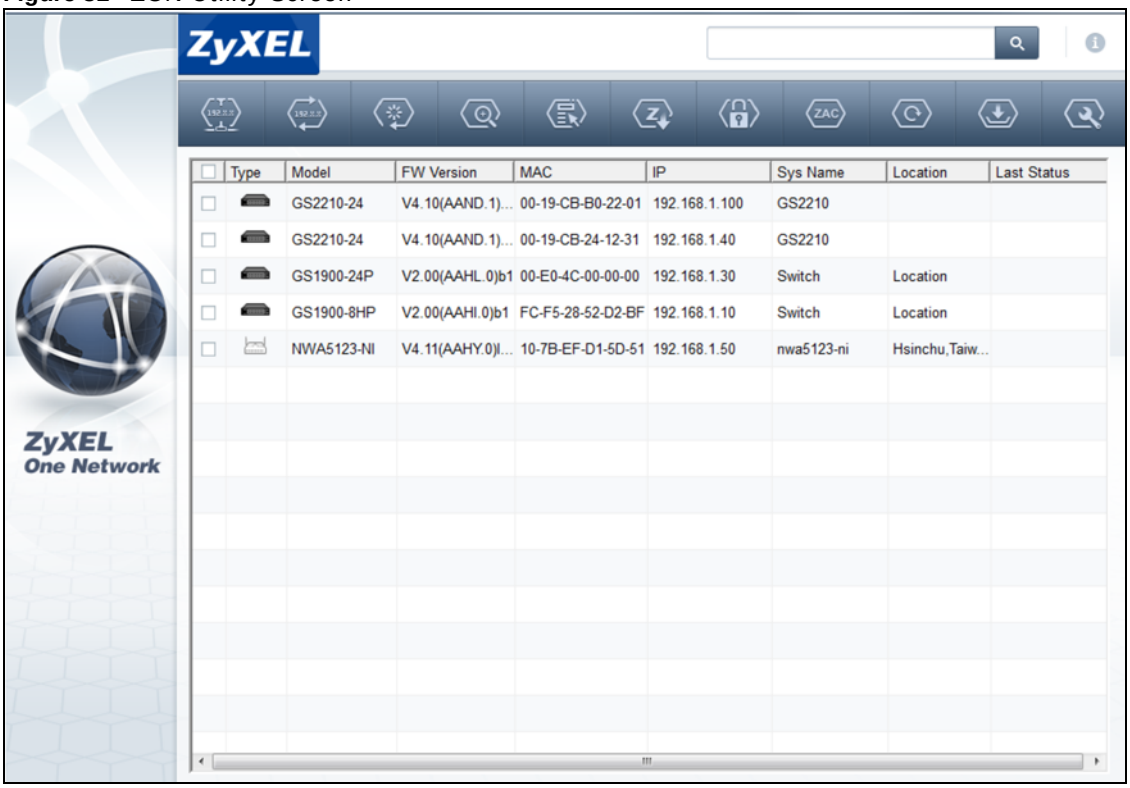
## 4.1 ZyXEL One Network (ZON) Utility Screen

ZON Utility is a program designed to help you deploy and manage a network more efficiently. It detects devices automatically and allows you to do basic settings on devices in the network without having to be near it.

The ZON Utility issues requests via ZyXEL Discovery Protocol (ZDP) and in response to the query, the device responds back with basic information including IP address, firmware version, location, system and model name in the same broadcast domain. The information is then displayed in the ZON Utility screen and you can perform tasks like basic configuration of the devices and batch firmware upgrade in it. You can download the ZON Utility at www.zyxel.com and install it on a PC.

The following figure shows the ZON Utility screen.

**Figure 31** ZON Utility Screen



# 5

# The Web Configurator

## 5.1 Overview

The Switch **Web Configurator** allows easy management using an Internet browser.

In order to use the Web Configurator, you must:

- Use Internet Explorer 7.0 and later or Firefox 1.5 and later
- Allow pop-up windows
- Enable JavaScript (enabled by default)
- Enable Java permissions (enabled by default)
- Enable cookies

The recommended screen resolution is 1024 x 768 pixels and higher.

## 5.2 Access

1 Make sure your Switch hardware is properly connected. See the Quick Start Guide.

2 Browse to https://192.168.1.1. The **Login** screen appears.

**Figure 32** The Login Screen

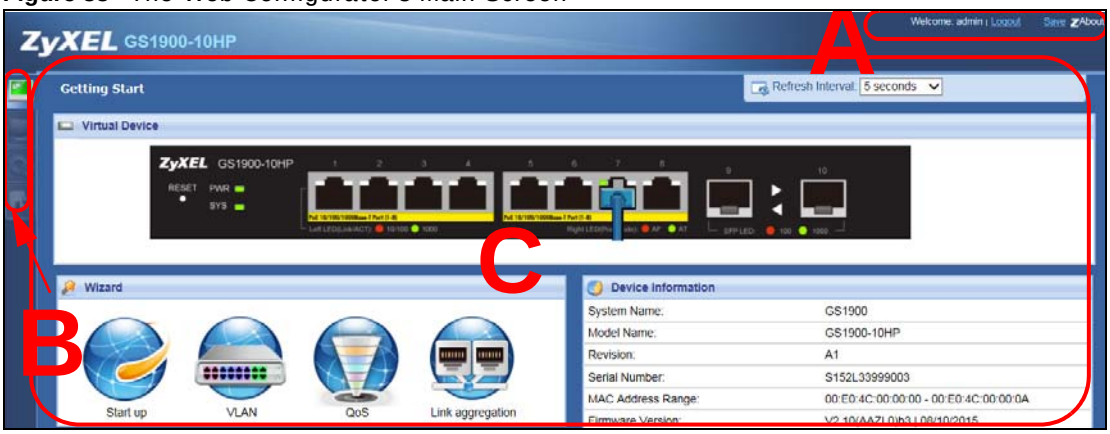
3 Enter the user name (default: “admin”) and password (default: “1234”).

4 Click **Login**. If you logged in using the default user name and password, getting start appears. The **Getting Start** screen appears every time you log in using the default user name and default password.

# 5.3 Navigating the Web Configurator

The following summarizes how to navigate the web configurator from the **Getting Start** screen. This guide uses the GS1900-10HP screens as an example. The screens may vary slightly for different models.

**Figure 33** The Web Configurator's Main Screen




The Web Configurator's main screen is divided into these parts:

- **A** - Title Bar
- **B** - Navigation Panel
- **C** - Main Window

## 5.3.1 Title Bar

The title bar provides some useful links that always appear over the screens below, regardless of how deep into the Web Configurator you navigate.

**Figure 34** Title Bar

The icons provide the following functions.

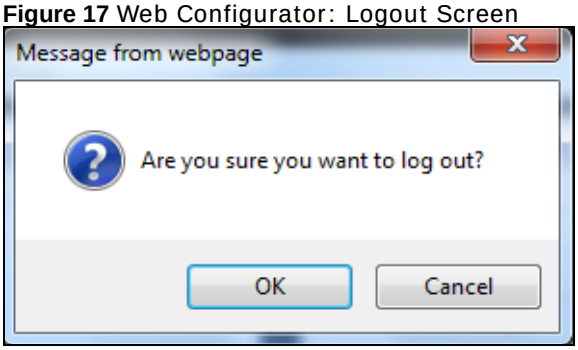
**Table 6** Title Bar: Web Configurator Icons

| LABEL | DESCRIPTION |
|---|---|
| Logout | Click this to log out of the Web Configurator. |
| OK | Click **OK** to apply the changes. |
| Cancel | Click **Cancel** to discard the changes. |
| Save | Click this to apply your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power, so use the **Save** link on the top navigation panel to save your changes to the non-volatile memory when you are done configuring. |
| About | Click this to display basic information about the Switch. |
| Help | Click this to open the help page for the current screen. |

Click **Logout** in a screen to exit the web configurator. You have to log in with your password again after you log out. This is recommended after you finish a management session for security reasons.

Click **OK** and confirm at the pop-up screen to complete the task. Click **Cancel** and confirm at the pop-up screen to discard the changes.

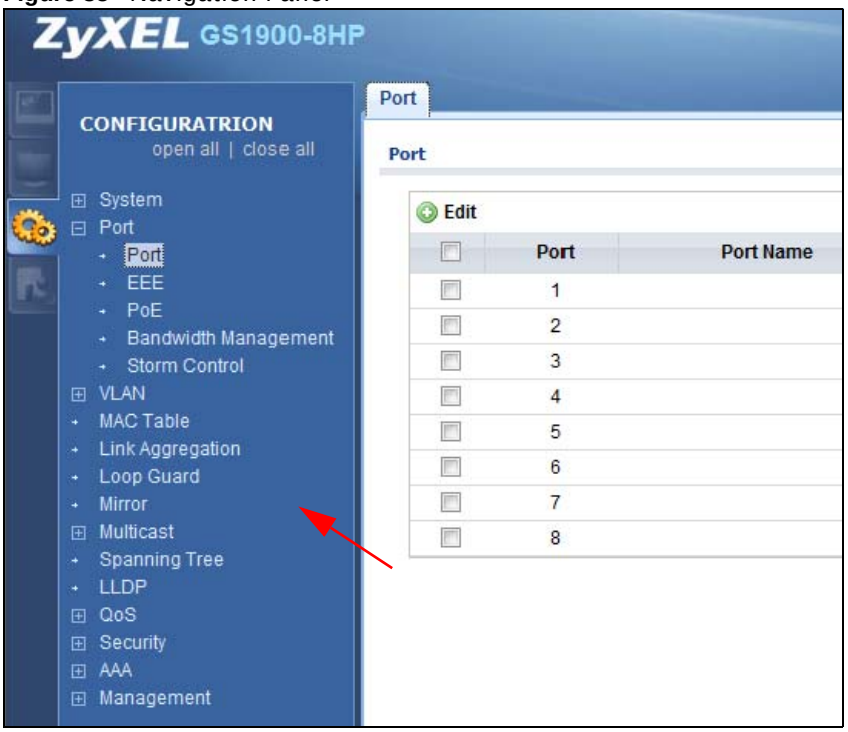
**Figure 17** Web Configurator: Logout Screen




## 5.3.2 Navigation Panel

Use the menu items on the navigation panel to open screens to configure Switch features. The following sections introduce the Switch's navigation panel menus and their screens.

**Figure 35** Navigation Panel




### Getting Start

Getting Start displays general device information, system status, system resource usage, and interface status.

For details on Getting Start features, see Chapter 6 on page 41.

## Monitor Menu

The monitor menu screens display status and statistics information.

**Table 7** Monitor Menu Screens Summary

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| System | | This link takes you to a screen where you can see general identification information for the Switch. |
| IP | IPv4 | This link takes you to a screen where you can see an IPv4 interface and the IPv4 settings on the Switch. |
| | IPv6 | This link takes you to a screen where you can see an IPv6 interface and the IPv6 settings on the Switch. |
| Information | | This link takes you to a screen that displays general system information: system name, system location, and system contact. |
| Port | | This link takes you to screens where you can see speed, flow control and priority settings for individual Switch ports. |
| Port | Status | Displays status settings for individual Switch ports. |
| | Port Counters | Displays interface, port 1 interface mib counters, port 1 etherlike mib counters, port 1 RMON mib counters settings for individual Switch ports. |
| | Bandwidth Utilization | Displays port bandwidth utilization settings for individual Switch ports. |
| PoE | | Displays PoE status. |
| Bandwidth Management | Bandwidth Control | Displays egress global burst and port rate for individual Switch ports. |
| Storm Control | | This link takes you to a screen that displays broadcast filters. |
| VLAN | | This link takes you to screens where you can see port-based or 802.1Q VLAN (depending on what you configured in the Switch Setup menu). You can also see a protocol based VLAN or a subnet based VLAN in these screens. |
| VLAN | VLAN | Displays VLAN settings. |
| | Port | Displays port settings. |
| | VLAN Port | Displays VLAN port settings. |
| Guest VLAN | | Displays global and port settings. |
| Voice VLAN | | Displays global and port settings. |
| MAC Table | | This link takes you to a screen where you can view the MAC address and VLAN ID of a device attach to a port. You can also view what kind of MAC address it is. |
| Link Aggregation | LAG | This link takes you to screen where you can view aggregate physical links to form one logical, higher-bandwidth link. |
| Loop Guard | | This link takes you to a screen where you can view protection against network loops that occur on the edge of your network. |
| Multicast | | This link takes you to screen where you can view various multicast features, IGMP snooping and create multicast VLANs. |
| IGMP | VLAN | Displays VLAN settings. |
| | Statistics | Displays statistics settings. |
| | Group | Displays group settings. |
| | Router | Displays router settings. |
| Spanning Tree | | This link takes you to screens where you can view CIST, MST, STP preventing network loops. |

**Table 7** Monitor Menu Screens Summary (continued)

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| | CIST | Displays CIST instance status. |
| | CIST Port | Displays CIST port status. |
| | MST | Displays MST instance status. |
| | MST Port | Displays MST port status. |
| | STP Statistics | Displays STP statistics. |
| LLDP | | Displays statistics, remote information, and overloading. |
| | Statistics | Displays LLDP global and port statistics. |
| | Remote Information | Displays remote device information. |
| | Overloading | Displays port overloading information. |
| Security | | Displays port security and 802.1X settings. |
| Port Security | | Displays global and port settings. |
| 802.1X | Port | Displays 802.1X port settings. |
| | Authenticated Hosts | Displays authenticated hosts table. |
| Management | | Displays syslog and error disable. |
| Syslog | | Displays logging filter select and show system log. |
| Error Disable | | Displays global and port settings. |

## Configuration Menu

Use the configuration menu screens to configure the Switch's features.

**Table 8** Configuration Menu Screens Summary

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| System | | This link takes you to a screen where you can configure general identification information and time settings for the Switch. |
| IP | IPv4 | This link takes you to a screen where you can enable an IPv4 interface and configure the IPv4 settings on the Switch. |
| | IPv6 | This link takes you to a screen where you can enable an IPv6 interface and configure the IPv6 settings on the Switch. |
| Time | System Time | Configure time of system. |
| | SNTP Server | Configure SNTP server settings. |
| Information | System Information | This link takes you to a screen that configures general system information: system name, system location, and system contact. |
| Port | | This link takes you to screens where you can configure speed, flow control and priority settings for individual Switch ports. |
| Port | | Configure port settings for individual Switch ports. |
| EEE | | Configure EEE settings for individual Switch ports. |
| PoE | Global | This link takes you to a screen where you can configure the global settings for the Switch to supply power over Ethernet (PoE). |
| | Port | This link takes you to a screen where you can configure port PoE settings. |
| Bandwidth Management | Bandwidth Control | Configure egress global burst and port rate. |
| Storm Control | Port | Configure port settings. |

**Table 8** Configuration Menu Screens Summary (continued)

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| VLAN | | This link takes you to screens where you can configure VLAN, guest VLAN, and voice VLAN settings. |
| VLAN | VLAN | Configure VLAN settings. |
| | Port | Configure port settings. |
| | VLAN Port | Configure VLAN port settings. |
| Guest VLAN | Global | Configure global settings. |
| | Port | Configure port settings. |
| Voice VLAN | Global | Configure global settings. |
| | OUI | Configure OUI settings. |
| | Port | Configure port settings. |
| MAC Table | | This link takes you to a screen where you can configure the MAC address and VLAN ID of a device attach to a port. You can also configure what kind of MAC address it is. |
| | Static MAC | This link takes you to screens where you can configure static MAC addresses for a port. These static MAC addresses do not age out. |
| | Filtering MAC | This link takes you to a screen to set up filtering rules. |
| | Dynamic Age | Configure dynamic learned and MAC address information. |
| Link Aggregation | | This link takes you to screen where you can logically aggregate physical links to form one logical, higher-bandwidth link. |
| | Global | Configure global settings. |
| | LAG Management | Configure LAG management settings. |
| | LAG Port | Configure LAG port settings. |
| | LACP Port | Configure LACP port settings. |
| Loop Guard | | This link takes you to a screen where you can configure protection against network loops that occur on the edge of your network. |
| | Global | Configure global settings. |
| | Port | Configure port settings. |
| Mirror | | This link takes you to screens where you can copy traffic from one port or ports to another port. Thus, allowing you to examine the traffic from the first port without interference. |
| Multicast | | This link takes you to screen where you can configure various multicast features, IGMP snooping and create multicast VLANs. |
| IGMP | Global | Configure global settings. |
| | VLAN | Configure Vlan settings. |
| | Router Port | Configure router port settings. |
| | Profile | Configure profile settings. |
| | Throttling | Configure throttling settings. |
| Spanning Tree | | This link takes you to screens where you can configure the RSTP/MRSTP/MSTP to prevent network loops. |
| | Global | Configure global settings. |
| | STP Port | Configure STP port settings. |
| | CIST | Configure CIST settings. |
| | CIST Port | Configure CIST port settings. |
| | MST | Configure MST settings. |

**Table 8** Configuration Menu Screens Summary (continued)

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| | MST Port | Configure MST port settings. |
| LLDP | | Configure global, port, local information, MED network policy, and MED port settings. |
| | Global | Configure global settings. |
| | Port | Configure port settings. |
| | Local Information | Configure local information settings. |
| | MED Network Policy | Configure MED network policy settings. |
| | MED Port | Configure MED port settings. |
| QoS | | Configure general and trust mode settings. |
| General | Port | Configure port settings. |
| | Queue | This link takes you to a screen where you can configure queuing with associated queue weights for each port. |
| | CoS Mapping | Configure CoS mapping settings. |
| | DSCP Mapping | Configure DSCP mapping settings. |
| | IP Precedence Mapping | Configure IP precedence mapping settings. |
| Trust Mode | Global | Configure global settings. |
| | Port | Configure port settings. |
| Security | | Configure port security, protected port, 802.1X and DoS settings. |
| Port Security | Global | Configure global settings. |
| | Port | Configure port settings. |
| Protected Port | | Configure protected port settings. |
| 802.1X | Global | Configure global settings. |
| | Port | Configure port settings. |
| DoS | Global | Configure global settings. |
| | Port | Configure port settings. |
| AAA | | This link takes you to a screen where you can view authentication, authorization and accounting services via external servers. The external servers can be either RADIUS (Remote Authentication Dial-In User Service) or TACACS+ (Terminal Access Controller Access-Control System Plus). |
| Auth Method | | Configure auth method settings. |
| RADIUS | | Configure RADIUS settings. |
| TACACS+ | | Configure TACACS+ settings. |
| Management | | Configure syslog, SNMP, error disable, HTTP/HTTPS, users and remote access control. |
| Syslog | Global | Configure global settings. |
| | Local | Configure local settings. |
| | Remote | Configure remote settings. |
| SNMP | Global | Configure global settings. |
| | Community | Configure community settings. |
| | Group | Configure group settings. |
| | User | Configure users settings. |

**Table 8** Configuration Menu Screens Summary (continued)

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| | Trap | Configure trap settings. |
| | Trap Destination | Configure trap destination settings. |
| Error Disable | | This link takes you to a screen where you can configure CPU protection and error disable recovery. |
| HTTP/HTTPS | HTTP | Configure HTTP settings. |
| | HTTPS | Configure HTTPS settings. |
| Users | | Configure users settings. |
| Remote Access Control | | This link takes you to a screen where you can configure global and profile settings. |

## Maintenance Menu

Use the maintenance menu screens to manage configuration and firmware files, run diagnostics, and reboot or shut down the Switch.

**Table 9** Maintenance Menu Screens Summary

| FOLDER OR LINK | TAB | FUNCTION |
|---|---|---|
| Firmware | Upload | Manage upload settings. |
| | Management | Manage dual image and images information. |
| Configuration | Backup | Manage backup configuration. |
| | Restore | Manage restore configuration. |
| | Management | Manage configuration settings. |
| | Factory Default | Restore factory defaults. |
| Diagnostics | | This link takes you to screens where you can view system logs and can test port(s). |
| Port Test | Cable Diag | Manage cable diag and test results. |
| PING | IPv4 | Manage ping test settings. |
| | IPv6 | Manage IPv6 ping test settings. |
| Trace | Trace Route | Manage trace route settings. |
| Reboot | | Reset the system. |

# 6

# Getting Start

## 6.1 Overview

Use the **Getting Start** screens to check status information about the Switch.

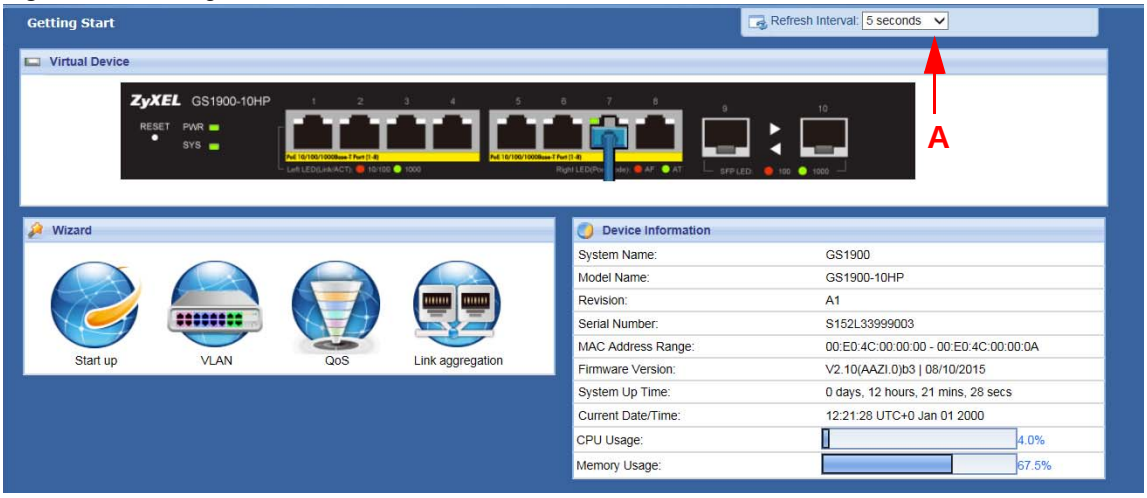
### 6.1.1 What You Can Do in this Chapter

- The main **Getting Start** screen (Section 6.2 on page 41) displays the Switch's general device information, system status, system resource usage, and interface status. You can also display other status screens for more information.

## 6.2 Getting Start

This screen is the first thing you see when you log into the Switch. It also appears every time you click the **Getting Start** icon in the navigation panel. The Getting Start displays general device information, system status, system resource usage, and interface status in widgets.

**Figure 36** Getting Start




The following table describes the labels in this screen.

**Table 10** Getting Start

| LABEL | DESCRIPTION |
|---|---|
| Refresh Interval (A) | Use the drop-box to select: None, 5 seconds, 10 seconds, 15 seconds, 20 seconds, 25 seconds, or 30 seconds. |
| Virtual Device | Displays an image of the Switch. |
| Wizard | Displays the following links: Start up, VLAN, QoS, and link aggregation. |

**Table 10** Getting Start (continued)

| LABEL | DESCRIPTION |
|---|---|
| Device Information | |
| System Name | This field displays the name used to identify the Switch on any network. |
| Model Name | This field displays the model name of this Switch. |
| Revision | This field displays the hardware revision number of this Switch. |
| Serial Number | This field displays the serial number of this Switch. |
| MAC Address Range | This field displays the MAC addresses used by the Switch. Each physical port or wireless radio has one MAC address. The first MAC address is assigned to the Ethernet LAN port, the second MAC address is assigned to the first radio, and so on. |
| Firmware Version | This field displays the version number and date of the firmware the Switch is currently running. |
| System Up Time | This field displays how long the Switch has been running since it last restarted or was turned on. |
| Current Date/ Time | This field displays the current date and time in the Switch. The format is hh:mm:ss yyyy-mm-dd . |
| CPU Usage | This field displays the Switch's recent CPU usage. |
| Memory Usage | This field displays the Switch's recent memory usage. |

## 6.2.1 Wizard

Wizard displays start up, VLAN, QoS, and link aggregation.

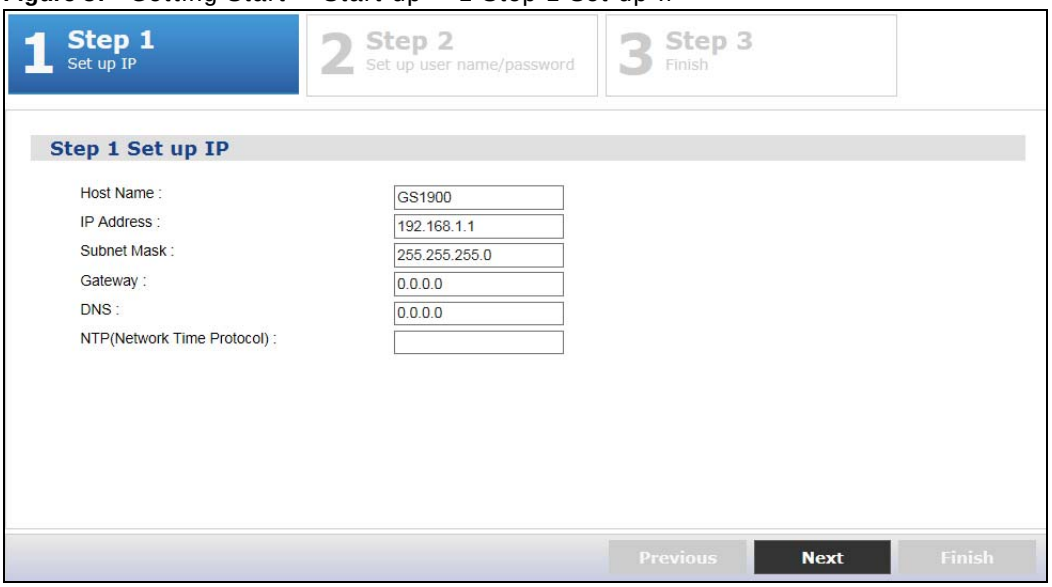
For details on Wizard features, see system Chapter 7 on page 52, VLAN Chapter 9 on page 62, QoS Chapter 28 on page 172, and link aggregation Chapter 11 on page 70.

### Start up

In start up, you can set up IP/DNS, set up your username/password, and view finished results.

In order to set up your IP/DNS, please do the following. Click **Getting Start > Start up > 1 Step 1 Set up IP** to access this screen.

**Figure 37** Getting Start > Start up > 1 Step 1 Set up IP



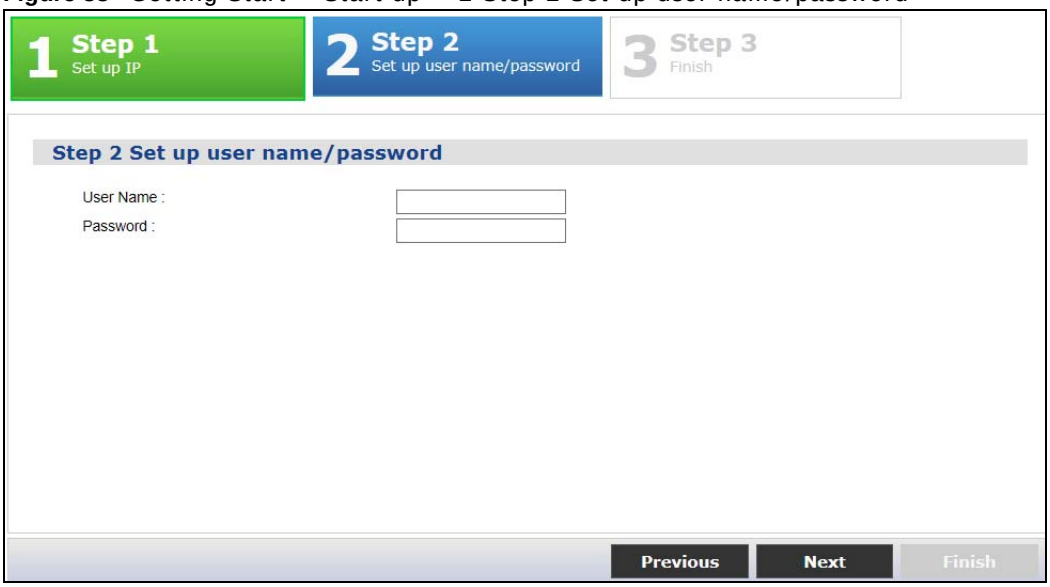

Each field is described in the following table.

**Table 11** Getting Start > Start up > 1 Step 1 Set up IP

| LABEL | DESCRIPTION |
|---|---|
| Host Name | This field displays a host name. |
| IP Address | The Switch needs an IP address for it to be managed over the network. The factory default IP address is 192.168.1.1. |
| Subnet Mask | The subnet mask specifies the network number portion of an IP address.<br><br>The factory default subnet mask is 255.255.255.0. |
| Gateway | Type the IP address of the default outgoing gateway in dotted decimal notation, for example 192.168.1.254. |
| DNS | DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. Enter a domain name server IP address in order to be able to use a domain name instead of an IP address. |
| NTP(Network Time Protocol) | This field displays the NTP time servers from which the Switch gets the time and date. |
| Next | Click **Next** to show the next screen. |

After clicking **Next,** the set up your user name screen appears.

**Figure 38** Getting Start > Start up > 2 Step 2 Set up user name/password



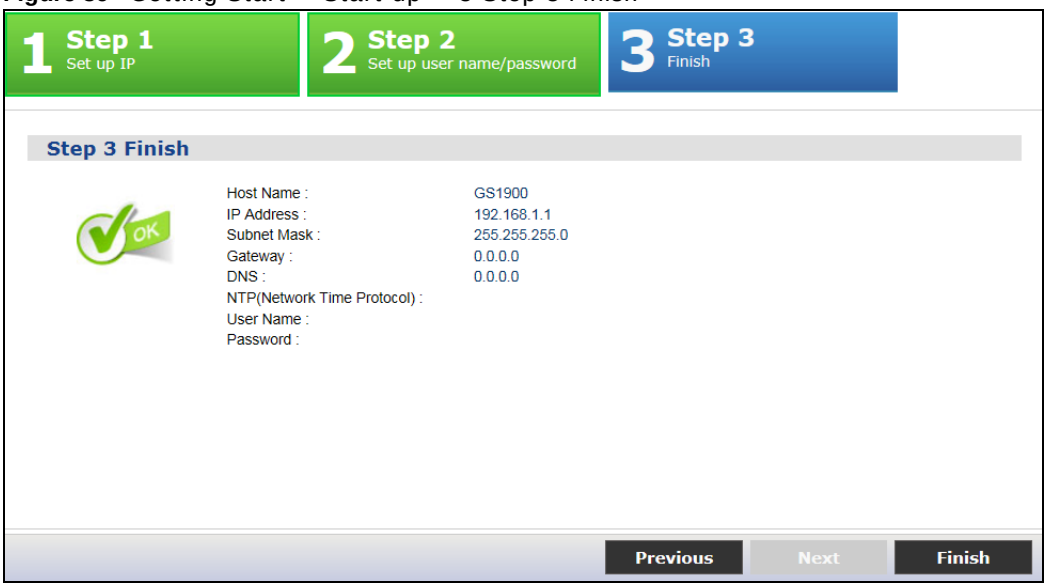

Each field is described in the following table.

**Table 12** Getting Start > Start up > 2 Step 2 Set up user name/password

| LABEL | DESCRIPTION |
|---|---|
| Username | The default username is **admin** and associated default password is **1234**. |
| Password | The default username is **admin** and associated default password is **1234**. |
| Previous | Click **Previous** to show the previous screen. |
| Next | Click **Next** to show the next screen. |

After clicking **Next,** the finish screen appears.

**Figure 39** Getting Start > Start up > 3 Step 3 Finish



Each field is described in the following table.

**Table 13** Getting Start > Start up > 3 Step 3 Finish

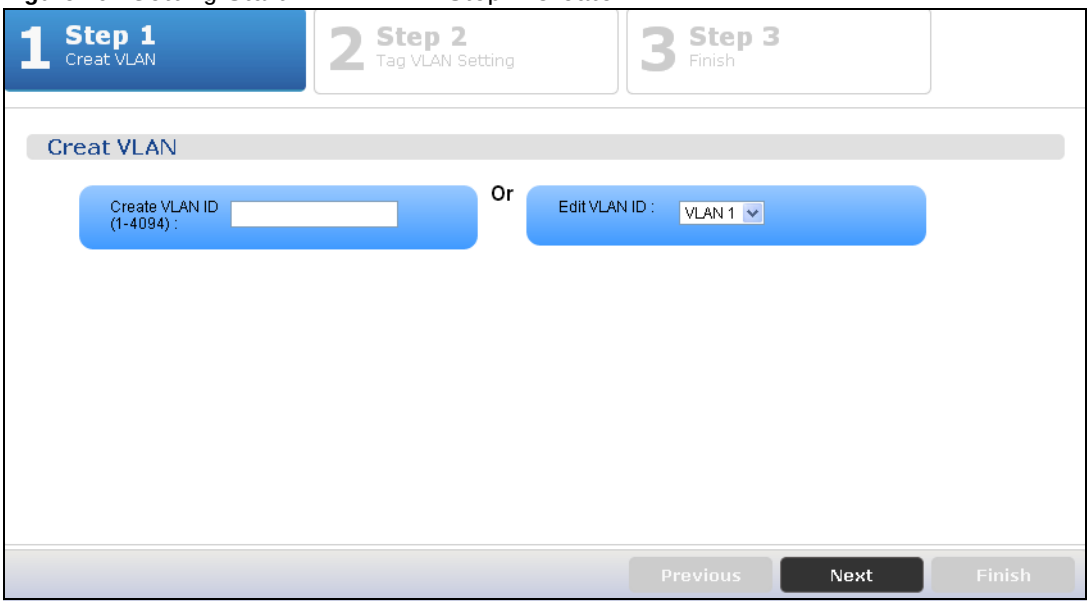
| LABEL | DESCRIPTION |
|---|---|
| Host Name | This field displays a host name. |
| IP Address | The Switch needs an IP address for it to be managed over the network. The factory default IP address is 192.168.1.1. |
| Subnet Mask | The subnet mask specifies the network number portion of an IP address.<br><br>The factory default subnet mask is 255.255.255.0. |
| Gateway | Type the IP address of the default outgoing gateway in dotted decimal notation, for example 192.168.1.254. |
| DNS | DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. Enter a domain name server IP address in order to be able to use a domain name instead of an IP address. |
| NTP(Network Time Protocol) | This field displays the NTP time servers from which the Switch gets the time and date. |
| Username | The default username is **admin** and associated default password is **1234**. |
| Password | The default username is **admin** and associated default password is **1234**. |
| Previous | Click **Previous** to show the previous screen. |
| Finish | Review the information and click **Finish** to create the task. |

## VLAN

In VLAN, you can create VLAN, tag VLAN setting, and view finished results.

In order to create VLAN, please do the following. Click **Getting Start > VLAN > 1 Step 1 Create VLAN** to access this screen.

**Figure 40** Getting Start > VLAN > 1 Step 1 Create VLAN



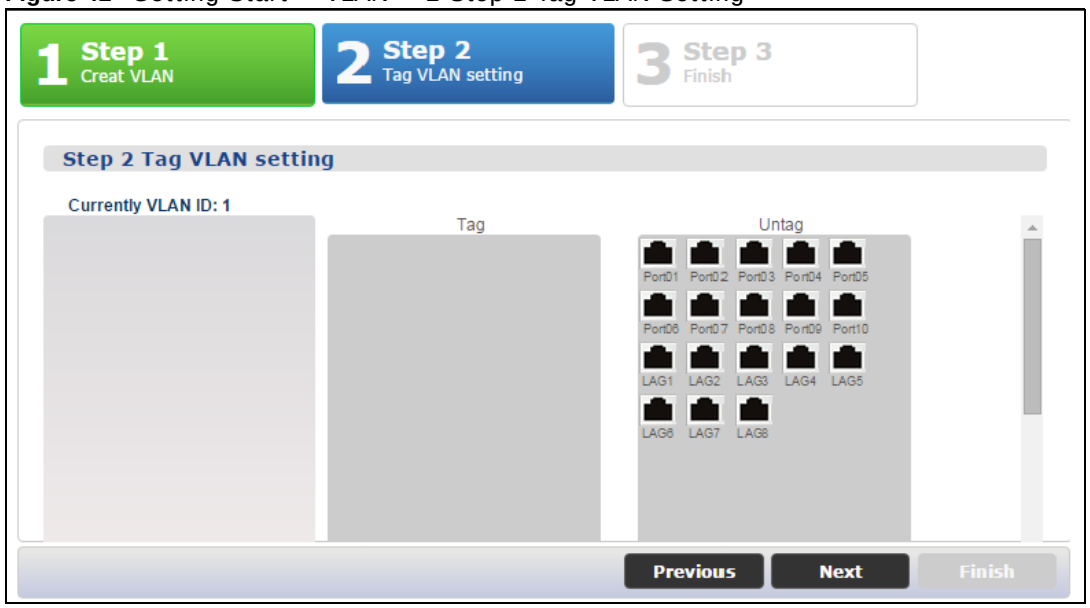
Each field is described in the following table.

**Table 14** Getting Start > VLAN > 1 Step 1 Create VLAN

| LABEL | DESCRIPTION |
|---|---|
| Create VLAN ID (1-4094) | Type a number between 1 and 4094 to create a VLAN ID. |
| Edit VLAN ID | Select from the drop-box a VLAN ID. |
| Next | Click **Next** to show the next screen. |

After clicking Next, the tag VLAN setting screen appears.

**Figure 41** Getting Start > VLAN > 2 Step 2 Tag VLAN Setting



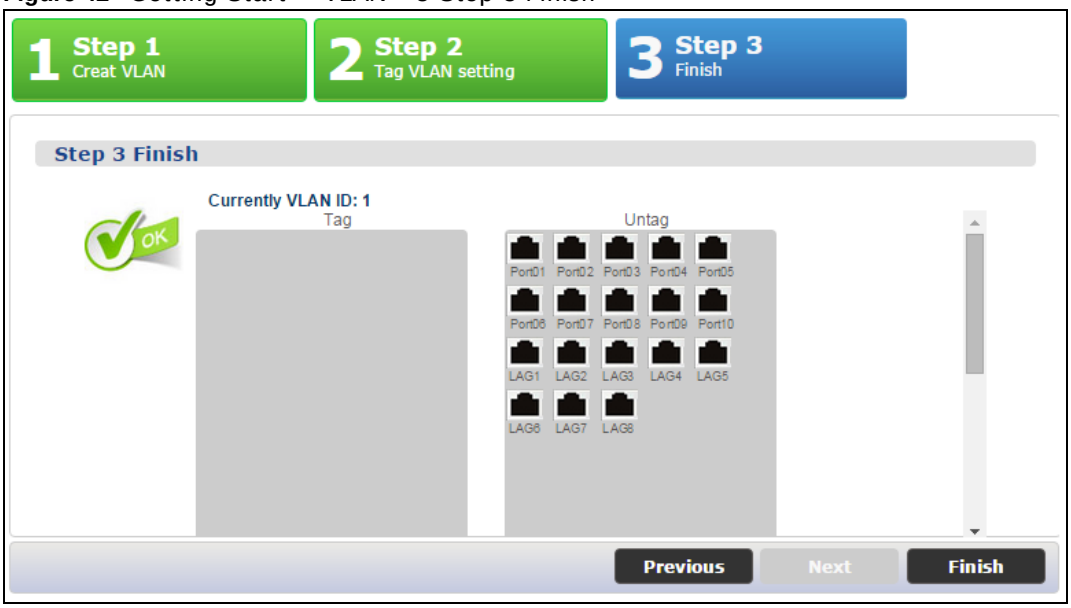

Each field is described in the following table.

**Table 15** Getting Start > VLAN > 2 Step 2 Tag VLAN Setting

| LABEL | DESCRIPTION |
|---|---|
| Currently VLAN ID | This field displays the VLAN identification number. |
| Tag | Ports belonging to the specified VLAN tag all outgoing frames transmitted. |
| Untag | Ports belonging to the specified VLAN don't tag all outgoing frames transmitted. |
| Previous | Click **Previous** to show the previous screen. |
| Next | Click **Next** to show the next screen. |

After clicking **Next,** the finish screen appears.

**Figure 42** Getting Start > VLAN> 3 Step 3 Finish




Each field is described in the following table.

**Table 16** Getting Start > VLAN > 3 Step 3 Finish

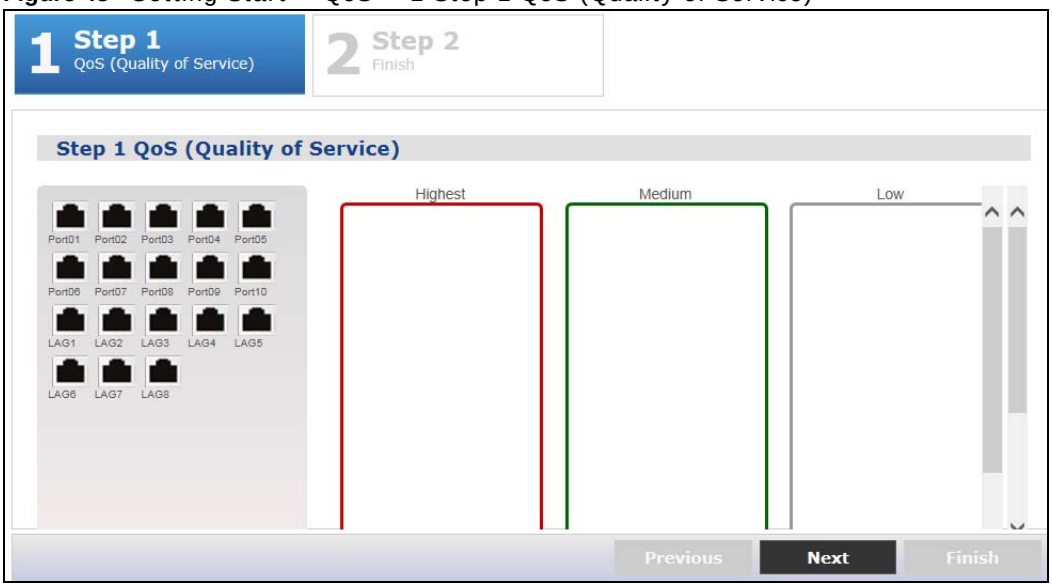
| LABEL | DESCRIPTION |
|---|---|
| Currently VLAN ID | This field displays the VLAN identification number. |
| Tag | Ports belonging to the specified VLAN tag all outgoing frames transmitted. |
| Untag | Ports belonging to the specified VLAN don't tag all outgoing frames transmitted. |
| Previous | Click **Previous** to show the previous screen. |
| Finish | Review the information and click **Finish** to create the task. |

## QoS

In QoS, you can create QoS settings, and view finished results.

In order to create QoS settings, please do the following. Click **Getting Start > QoS > 1 Step 1 QoS (Quality ofOf Service)** to access this screen.

**Figure 43** Getting Start > QoS > 1 Step 1 QoS (Quality of Service)



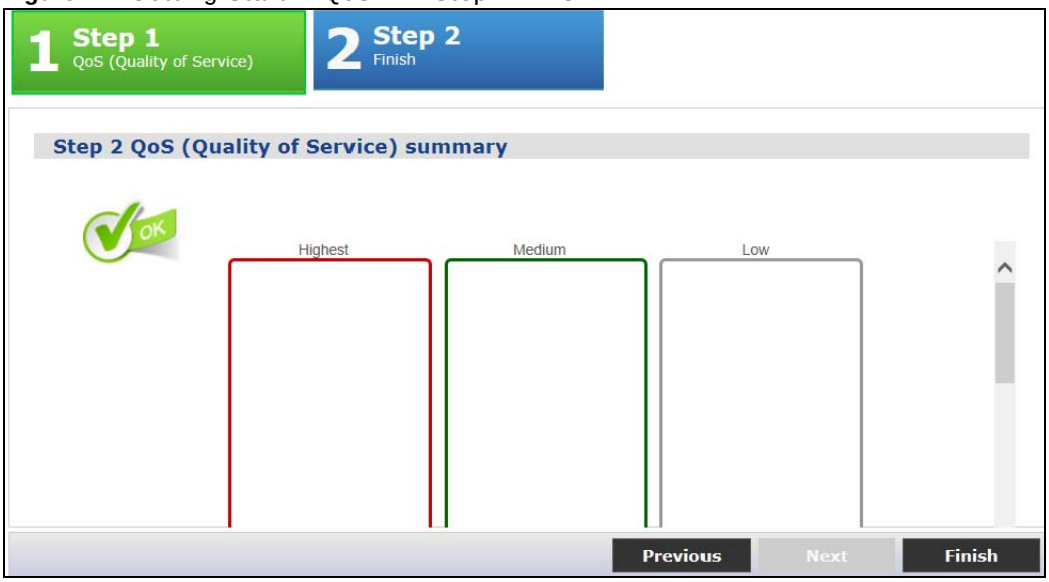

Each field is described in the following table.

**Table 17** Getting Start > QoS > 1 Step 1 QoS (Quality ofOf Service)

| LABEL | DESCRIPTION |
|---|---|
| Highest | Click and drag icons located on the left to desired preference. |
| Medium | Click and drag icons located on the left to desired preference. |
| Low | Click and drag icons located on the left to desired preference. |
| Next | Click **Next** to show the next screen. |

After clicking **Next,** the finish screen appears.

**Figure 44** Getting Start > QoS > 2 Step 2 Finish



Each field is described in the following table.

**Table 18** Getting Start > QoS > 2 Step 2 Finish

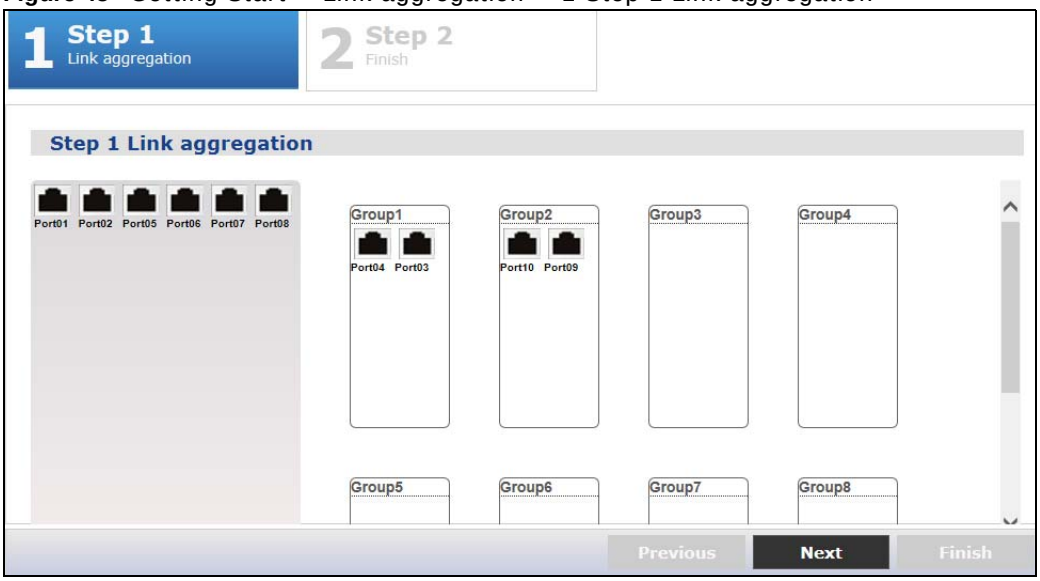
| LABEL | DESCRIPTION |
|---|---|
| Highest | Displays summary results. |
| Medium | Displays summary results. |
| Low | Displays summary results. |
| Previous | Click **Previous** to show the previous screen. |
| Finish | Review the information and click **Finish** to create the task. |

## Link aggregation

In link aggregation, you can link aggregation and view finished results.

In order to create link aggregation settings, please do the following. Click **Getting Start > Link aggregation > 1 Step 1 Link aggregation** to access this screen.

**Figure 45** Getting Start > Link aggregation > 1 Step 1 Link aggregation




Each field is described in the following table.

**Table 19** Getting Start > Link aggregation > 1 Step 1 Link aggregation

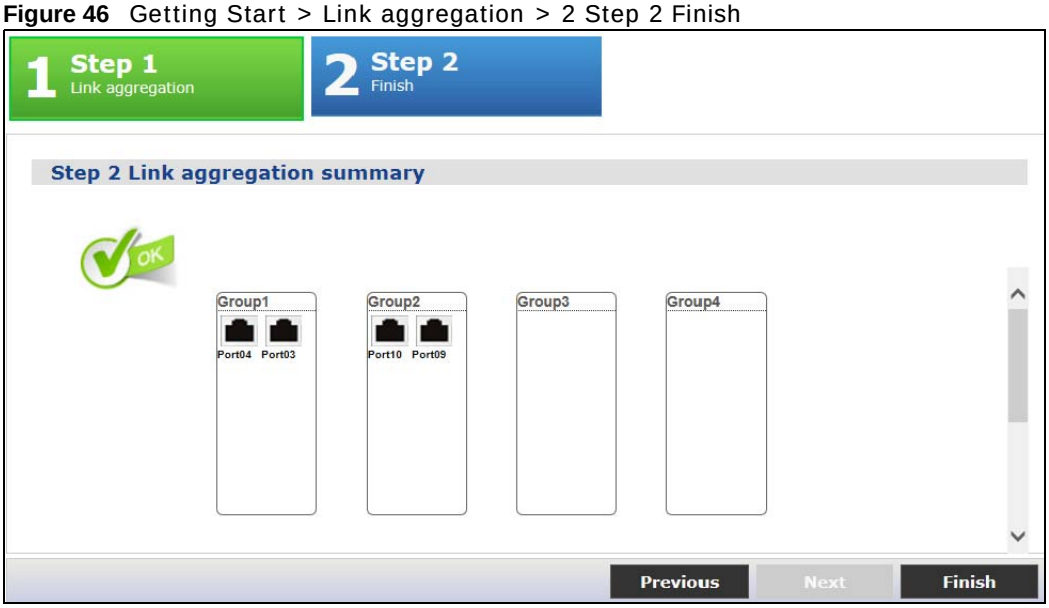
| LABEL | DESCRIPTION |
|---|---|
| Group 1 | Click and drag icons located on the left to desired preference. |
| Group 2 | Click and drag icons located on the left to desired preference. |
| Group 3 | Click and drag icons located on the left to desired preference. |
| Group 4 | Click and drag icons located on the left to desired preference. |
| Group 5 | Click and drag icons located on the left to desired preference. |
| Group 6 | Click and drag icons located on the left to desired preference. |
| Group 7 | Click and drag icons located on the left to desired preference. |

**Table 19** Getting Start > Link aggregation > 1 Step 1 Link aggregation

| LABEL | DESCRIPTION |
|---|---|
| Group 8 | Click and drag icons located on the left to desired preference. |
| Next | Click **Next** to show the next screen. |

After clicking **Next,** the finish screen appears.

**Figure 46** Getting Start > Link aggregation > 2 Step 2 Finish




Each field is described in the following table.

**Table 20** Getting Start > Link aggregation > 2 Step 2 Finish

| LABEL | DESCRIPTION |
|---|---|
| Group 1 | Displays summary results. |
| Group 2 | Displays summary results. |
| Group 3 | Displays summary results. |
| Group 4 | Displays summary results. |
| Group 5 | Displays summary results. |
| Group 6 | Displays summary results. |
| Group 7 | Displays summary results. |
| Group 8 | Displays summary results. |
| Previous | Click **Previous** to show the previous screen. |
| Finish | Review the information and click **Finish** to create the task. |

# PART II
# Technical Reference

# 7

# Monitor: System

## 7.1 Overview

This section provides information for **System** in **Monitor**. Use the **System** screens to view general Switch settings.

### 7.1.1 What You Can Do in this Chapter

- The **IP** screen (Section 7.2 on page 52) displays IPv4 and IPv6.
- The **Information** screen (Section 7.3 on page 54) displays the system information.

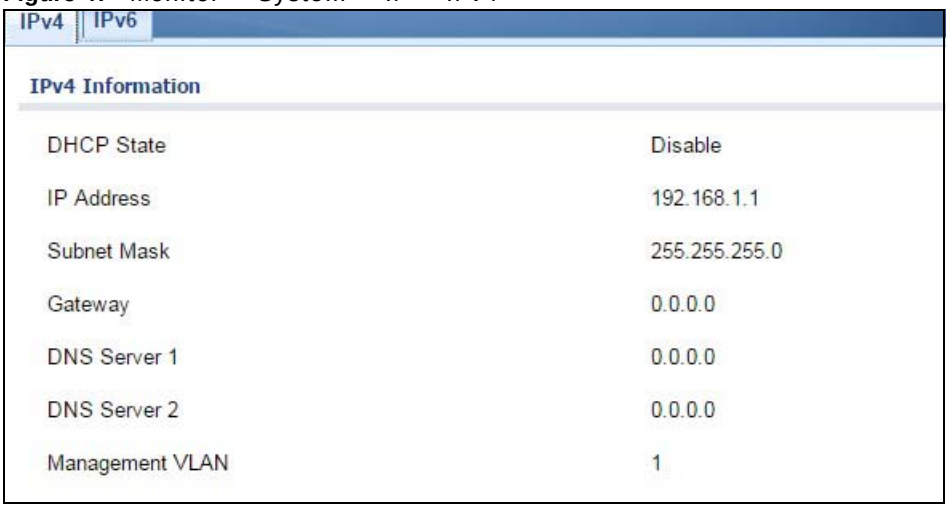
## 7.2 IP

The Switch needs an IP address for it to be managed over the network. The factory default IP address is 192.168.1.1. The subnet mask specifies the network number portion of an IP address. The factory default subnet mask is 255.255.255.0.

### 7.2.1 IPv4

Use this screen to view the Switch's IPv4 information. Click **Monitor > System > IP > IPv4** to open this screen.

**Figure 47** Monitor > System > IP > IPv4



The following table describes the labels in this screen.

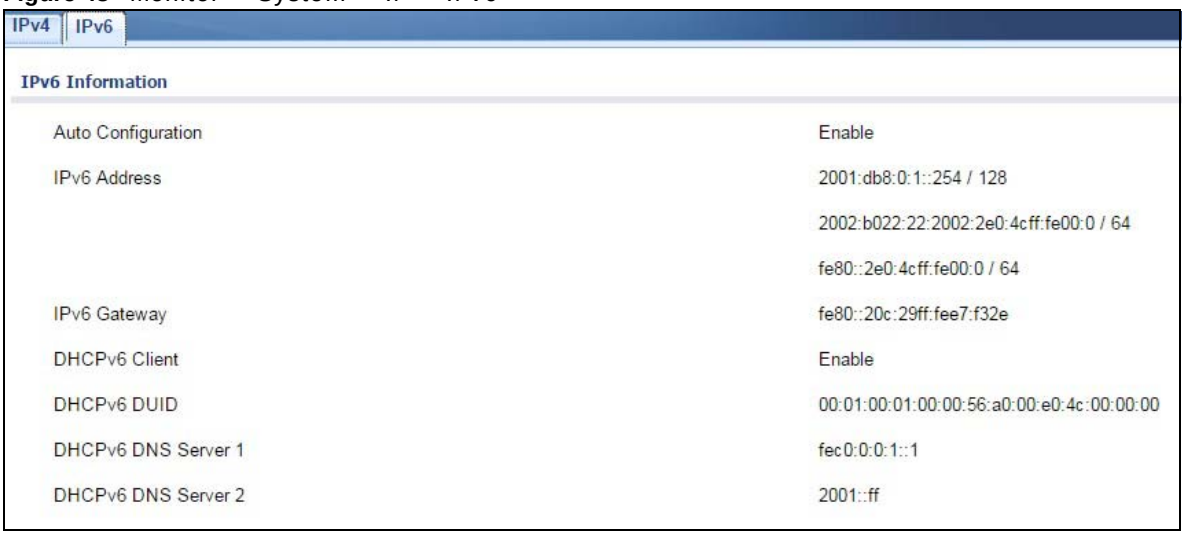
**Table 21** Monitor > System > IP > IPv4

| LABEL | DESCRIPTION |
|---|---|
| DHCP State | This field displays the state of Dynamic Host Configuration Protocol RFC 2131 and RFC 2132 (DHCP). |
| IP Address | This field displays IP address of the Switch in the IP domain. |
| Subnet Mask | This field displays the subnet mask of the Switch in the IP domain. |
| Gateway | This field displays the IP address of the default outgoing gateway in dotted decimal notation, for example 192.168.1.254. |
| DNS Server 1 | DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. This field displays a domain name server IP address, enabling the use of a domain. |
| DNS Server 2 | DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. This field displays a domain name server IP address, enabling the use of a domain. |
| Management VLAN | This field displays the management VLAN. |

## 7.2.2 IPv6

Use this screen to view the Switch's IPv6 information. Click **Monitor > System > IP > IPv6** to open this screen.

**Figure 48** Monitor > System > IP > IPv6




The following table describes the labels in this screen.

**Table 22** Monitor > System > IP > IPv6

| LABEL | DESCRIPTION |
|---|---|
| Auto Configuration | This field displays auto configuration. |
| IPv6 Address | This field displays IP address of the Switch in the IP domain. |
| IPv6 Gateway | This field displays the IP address of the default outgoing gateway. |
| DHCPv6 Client | This field displays the Switch's DHCP settings when it is acting as a DHCPv6 client. |

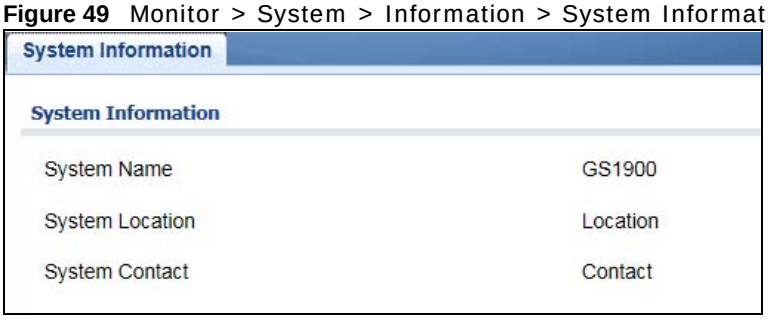
**Table 22** Monitor > System > IP > IPv6 (continued)

| LABEL | DESCRIPTION |
|---|---|
| DHCPv6 DUID | DUID(DHCP Unique Identifier).<br>The DHCP server will provide the IP address based on the DUID information from client. |
| DHCPv6 DNS server 1 | Primary DNS server IPv6 address form DHCP. |
| DHCPv6 DNS server 2 | Secondary DNS server IPv6 address from DHCP. |

# 7.3 Information

In the navigation panel, click **Monitor > System > Information > System Information** to display the screen as shown. You can view system information.

**Figure 49** Monitor > System > Information > System Information




The following table describes the labels in this screen.

**Table 23** Monitor > System > Information > System Information

| LABEL | DESCRIPTION |
|---|---|
| System Name | This field displays the descriptive name of the Switch for identification purposes. |
| System Location | This field displays the geographic location of the Switch for identification purposes. |
| System Contact | This field displays the person in charge of the Switch for identification purposes. |

# 8

# Monitor: Port

## 8.1 Overview

This section provides information for **Port** in **Monitor**. Use the **Port** screens to view general Switch port settings.

### 8.1.1 What You Can Do in this Chapter

- The **Port** screen (Section 8.2 on page 55) displays status, port counters, and bandwidth utilization.
- The **PoE** screen (Section 8.3 on page 59) displays PoE.
- The **Bandwidth Management** screen (Section 8.4 on page 60) displays bandwidth control.
- The **Storm Control** screen (Section 8.5 on page 61) displays port settings of the Switch.

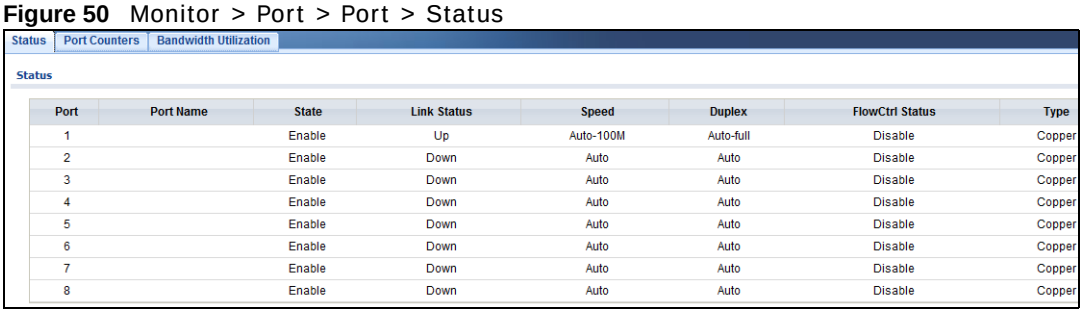
## 8.2 Port

Use this screen to view Switch port settings.

### 8.2.1 Status

Use this screen to view the Switch's port statistics. Click **Monitor > Port > Port > Status** to access this screen.

**Figure 50** Monitor > Port > Port > Status




| Port | Port Name | State | Link Status | Speed | Duplex | FlowCtrl Status | Type |
|---|---|---|---|---|---|---|---|
| 1 | | Enable | Up | Auto-100M | Auto-full | Disable | Copper |
| 2 | | Enable | Down | Auto | Auto | Disable | Copper |
| 3 | | Enable | Down | Auto | Auto | Disable | Copper |
| 4 | | Enable | Down | Auto | Auto | Disable | Copper |
| 5 | | Enable | Down | Auto | Auto | Disable | Copper |
| 6 | | Enable | Down | Auto | Auto | Disable | Copper |
| 7 | | Enable | Down | Auto | Auto | Disable | Copper |
| 8 | | Enable | Down | Auto | Auto | Disable | Copper |

Each field is described in the following table.

**Table 24** Monitor > Port > Port > Status

| LABEL | DESCRIPTION |
|---|---|
| Port | This is the port index number. |
| Port Name | A descriptive name that identifies this port. |

**Table 24** Monitor > Port > Port > Status (continued)

| LABEL | DESCRIPTION |
|---|---|
| State | This is port admin setting state. |
| Link Status | This field displays **Up**, **Down** or **NotPresent**. It displays **Up** when the port is linked up or **Down** when it is not. When no any physical port is binding with this group, it displays **NotPresent**. |
| Speed | View the speed of the Ethernet connection on this port. |
| Duplex | View the duplex mode of the Ethernet connection on this port. |
| FlowCtrl Status | A concentration of traffic on a port decreases port bandwidth and overflows buffer memory causing packet discards and frame losses. Flow Control is used to regulate transmission of signals to match the bandwidth of the receiving port. |
| Type | View the type on this port. |

## 8.2.2 Port Counters

Use this screen to view the Switch's port counters settings. Click **Monitor > Port > Port > Port Counters** to access this screen.

**Figure 51** Monitor > Port > Port > Port Counters

Each field is described in the following table.

**Table 25** Monitor > Port > Port > Port Counters

| LABEL | DESCRIPTION |
|---|---|
| Interface | |
| Port | This field displays the port. |

**Table 25** Monitor > Port > Port > Port Counters (continued)

| LABEL | DESCRIPTION |
|---|---|
| Mode | This field displays the mode. |
| Port 1 Interface mib Counters | |
| ifInOctets | This field displays the ifInOctets. |
| ifInUcastPkts | This field displays the ifInUcastPkts. |
| ifInNUcastPkts | This field displays the ifInNUcastPkts.. |
| ifInDiscards | This field displays the ifInDiscards. |
| ifOutOctets | This field displays the ifOutOctets. |
| ifOutUcastPkts | This field displays the ifOutUcastPkts. |
| ifOutNUcastPkts | This field displays the ifOutNUcastPkts. |
| ifOutDiscards | This field displays the ifOutDiscards. |
| ifInMulticastPkts | This field displays the ifInMulticastPkts. |
| ifInBroadcastPkts | This field displays the ifInBroadcastPkts. |
| ifOutMulticastPkts | This field displays the ifOutMulticastPkts. |
| ifOutBroadcastPkts | This field displays the ifOutBroadcastPkts. |
| Port 1 Etherlike mib Counters | |
| dot3StatsAlignmentErrors | This field displays the dot3StatsAlignmentErrors. |
| dot3StatsFCSErrors | This field displays the dot3StatsFCSErrors. |
| dot3StatsSingleCollisionFrames | This field displays the dot3StatsSingleCollisionFrames. |
| dot3StatsMultipleCollisionFrames | This field displays the dot3StatsMultipleCollisionFrames. |
| dot3StatsDeferredTransmissions | This field displays the dot3StatsDeferredTransmissions. |
| dot3StatsLateCollisions | This field displays the dot3StatsLateCollisions. |
| dot3StatsExcessiveCollisions | This field displays the dot3StatsExcessiveCollisions. |
| dot3StatsFrameTooLongs | This field displays the dot3StatsFrameTooLongs. |
| dot3StatsSymbolErrors | This field displays the dot3StatsSymbolErrors. |
| dot3ControlInUnkownOpcodes | This field displays the dot3ControlInUnkownOpcodes. |
| dot3IInPauseFrames | This field displays the dot3IInPauseFrames. |
| dot3lOutPauseFrames | This field displays the dot3lOutPauseFrames. |
| Port 1 RMON mib Counters | |
| etherStatsDropEvents | This field displays the etherStatsDropEvents. |
| etherStatsOctets | This field displays the etherStatsOctets. |
| etherStatsPkts | This field displays the etherStatsPkts. |
| etherStatsBroadcastPkts | This field displays the etherStatsBroadcastPkts. |
| etherStatsMulticastPkts | This field displays the etherStatsMulticastPkts. |
| etherStatsCRCAlignErrors | This field displays the etherStatsCRCAlignErrors. |
| etherStatsUnderSizePkts | This field displays the etherStatsUnderSizePkts. |
| etherStatsOverSizePkts | This field displays the etherStatsOverSizePkts. |
| etherStatsFragments | This field displays the etherStatsFragments. |
| etherStatsJabbers | This field displays the etherStatsJabbers. |
| etherStatsCollisions | This field displays the etherStatsCollisions. |
| etherStatsPkts64Octets | This field displays the etherStatsPkts64Octets. |
| etherStatsPkts65to127Octets | This field displays the etherStatsPkts65to127Octets. |

**Table 25** Monitor > Port > Port > Port Counters (continued)

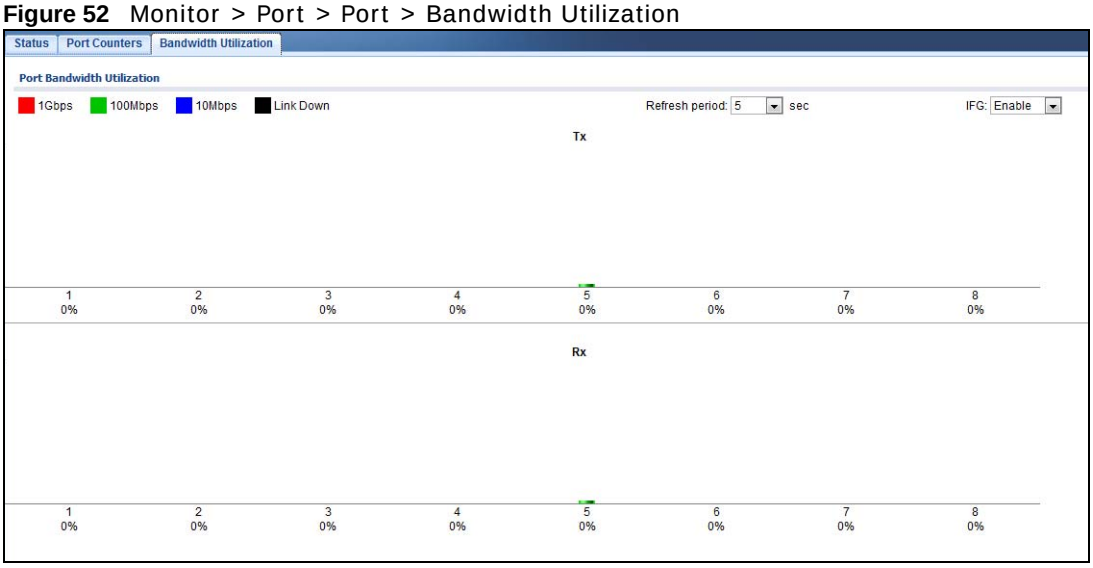
| LABEL | DESCRIPTION |
|---|---|
| etherStatsPkts128to255Octets | This field displays the etherStatsPkts128to255Octets. |
| etherStatsPkts256to511Octets | This field displays the etherStatsPkts256to511Octets. |
| etherStatsPkts512to1023Octets | This field displays the etherStatsPkts512to1023Octets. |

## 8.2.3 Bandwidth Utilization

Utilization is the percentage of a network's bandwidth that is currently being consumed by network traffic. Each vertical bar represents the highest utilization on a port, and can be either transmitted (Tx) traffic or received (Rx) traffic during the last time interval in seconds.

Use this screen to view the Switch's bandwidth utilization settings. Click **Monitor > Port > Port > Bandwidth Utilization** to access this screen.

**Figure 52** Monitor > Port > Port > Bandwidth Utilization




Each field is described in the following table.

**Table 26** Monitor > Port > Port > Bandwidth Utilization

| LABEL | DESCRIPTION |
|---|---|
| Port Bandwidth Utilization | |
| 1Gbps | This field displays the 1Gbps. |
| 100Mbps | This field displays the 100Mbps. |
| 10Mbps | This field displays the 10Mbps. |
| Link down | This field displays the link down. |
| Refresh period | This field displays the refresh period. |
| IFG | This field displays the IFG. |
| Tx | Transmitted (Tx) traffic during the last time interval in seconds. |
| Rx | Received (Rx) traffic during thetime interval in seconds. |

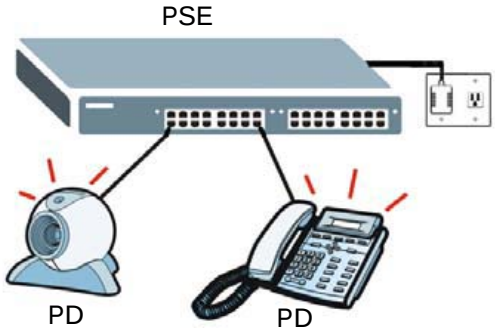
# 8.3 PoE

Note: The PoE function and the following screens are available for models ending in “HP” only.

The Switch supports both the IEEE 802.3af Power over Ethernet (PoE) and IEEE 802.3at High Power over Ethernet (PoE) standards. The Switch is Power Sourcing Equipment (PSE) because it provides a source of power via its Ethernet ports, and each device that receives power through an Ethernet port is a Powered Device (PD).

In the figure below, the IP camera and IP phone get their power directly from the Switch. Aside from minimizing the need for cables and wires, PoE removes the hassle of trying to find a nearby electric outlet to power up devices.

**Figure 53** Powered Device Examples

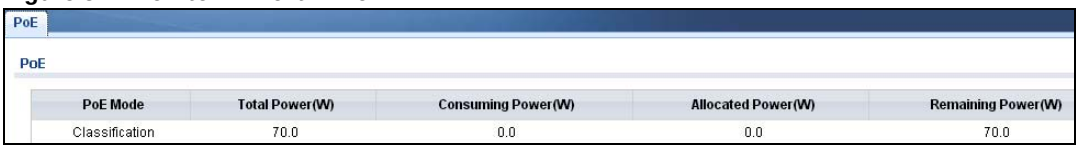



You can also set priorities so that the Switch is able to reserve and allocate power to certain PDs.

Note: The PoE devices that supply or receive power and their connected Ethernet cables must all be completely indoors.

To view the current amount of power that PDs are receiving from the Switch, click **Monitor > Port > PoE**.

**Figure 54** Monitor > Port > PoE




Each field is described in the following table.

**Table 27** Monitor > Port > PoE

| LABEL | DESCRIPTION |
|---|---|
| PoE Mode | This field displays the power management mode used by the Switch, whether it is in **Classification** or **Consumption** mode. |
| Total Power(W) | This field displays the total power the Switch can provide to the connected PoE-enabled devices on the PoE ports. The total power of GS1900-10HP is 77W and GS1900-8HP is 70W. |
| Consuming Power(W) | This field displays the total amount of power the Switch is currently supplying to the connected PoE-enabled devices. |

**Table 27** Monitor > Port > PoE

| LABEL | DESCRIPTION |
|---|---|
| Allocated Power(W) | This field displays the total amount of power the Switch has reserved for PoE after negotiating with the connected PoE device(s).<br><br>**Consuming Power (W)** can be less than or equal but not more than the **Allocated Power (W)**. |
| Remaining Power(W) | This field displays the amount of power the Switch can still provide for PoE.<br><br>Note: The Switch must have at least 16 W of remaining power in order to supply power to a PoE device, even if the PoE device needs less than 16 W. |

# 8.4 Bandwidth Management

This section shows you the maximum bandwidth using the **Bandwidth Management** screen. Bandwidth management shows themaximum allowable bandwidth for incoming and/or out-going traffic flows on a port.

## 8.4.1 Bandwidth Control

Use this screen to view the Switch's bandwidth control in egress global burst and port rate.

An egress port is an outgoing port, that is, a port through which a data packet leaves for both ports. An ingress port is an incoming port, that is, a port through which a data packet enters.

Click **Monitor > Port > Bandwidth Management > Bandwidth Control** to access this screen.

**Figure 55** Monitor > Port > Bandwidth Management > Bandwidth Control

| Port | Ingress RateLimit (Kbps) | Egress RateLimit (Kbps) |
|---|---|---|
| 1 | Disable | Disable |
| 2 | Disable | Disable |
| 3 | Disable | Disable |
| 4 | Disable | Disable |
| 5 | Disable | Disable |
| 6 | Disable | Disable |
| 7 | Disable | Disable |
| 8 | Disable | Disable |

Each field is described in the following table.

**Table 28** Monitor > Port > Bandwidth Management > Bandwidth Control

| LABEL | DESCRIPTION |
|---|---|
| Egress Global Burst | |
| Egress Global Burst | This field specifies the current egress burst size in bytes all ports. |
| Port Rate | View the maximum bandwidth allowed in kilobits per second (Kbps) for the traffic flow on a port. |
| Port | This field displays the port number. |

**Table 28** Monitor > Port > Bandwidth Management > Bandwidth Control (continued)

| LABEL | DESCRIPTION |
|---|---|
| Ingress RateLimit (Kbps) | View the maximum bandwidth allowed in kilobits per second (Kbps) for the incoming traffic flow on a port. |
| Egress RateLimit (Kbps) | View the maximum bandwidth allowed in kilobits per second (Kbps) for the out-going traffic flow on a port. |

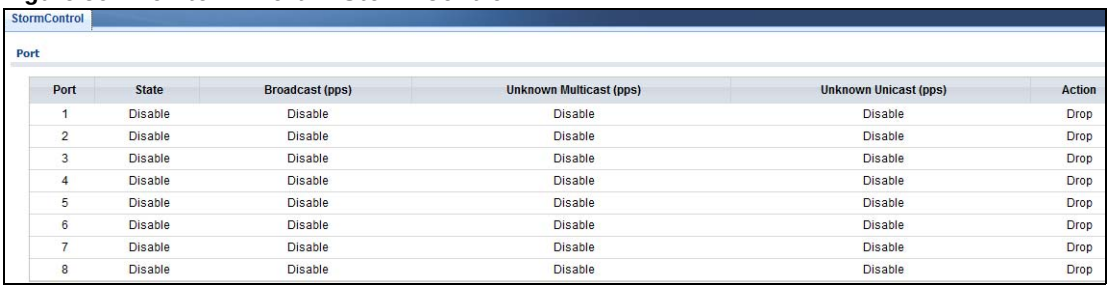
# 8.5 Storm Control

This section shows you the storm control feature.

Storm control limits the number of broadcast, multicast and unicast packets the Switch receives per second on the ports. When the maximum number of allowable broadcast, multicast and/or unicast packets is reached per second, the subsequent packets are discarded. Enabling this feature reduces broadcast, multicast and/or unicast packets in your network. You can specify limits for each packet type on each port.

Click **Monitor > Port > Storm Control** to access this screen.

**Figure 56** Monitor > Port > Storm Control




| Port | State | Broadcast (pps) | Unknown Multicast (pps) | Unknown Unicast (pps) | Action |
|---|---|---|---|---|---|
| 1 | Disable | Disable | Disable | Disable | Drop |
| 2 | Disable | Disable | Disable | Disable | Drop |
| 3 | Disable | Disable | Disable | Disable | Drop |
| 4 | Disable | Disable | Disable | Disable | Drop |
| 5 | Disable | Disable | Disable | Disable | Drop |
| 6 | Disable | Disable | Disable | Disable | Drop |
| 7 | Disable | Disable | Disable | Disable | Drop |
| 8 | Disable | Disable | Disable | Disable | Drop |

Each field is described in the following table.

**Table 29** Monitor > Port > Storm Control

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port | This field displays the port number. |
| State | This field displays the state. |
| Broadcast (pps) | Displays how many broadcast packets the port receives (in pps). |
| Unknown Multicast (pps) | Displays how many unknown multicast packets the port receives (in pps). |
| Unknown Unicast (pps) | Displays how many unknown unicast packets the port receives (in pps). |
| Action | Displays the action the device takes when a limit is reached. The following options are available:<br>• **Drop** - drop the packet.<br>• **Shutdown** - shutdown the connection. |

# 9

# Monitor: VLAN

## 9.1 Overview

This section provides information for **VLAN** in **Monitor**.

A VLAN (Virtual Local Area Network) allows a physical network to be partitioned into multiple logical networks. Devices on a logical network belong to one group. A device can belong to more than one group. With VLAN, a device cannot directly talk to or hear from devices that are not in the same group(s); the traffic must first go through a router.

In MTU (Multi-Tenant Unit) applications, VLAN is vital in providing isolation and security among the subscribers. When properly configured, VLAN prevents one subscriber from accessing the network resources of another on the same LAN, thus a user will not see the printers and hard disks of another user on the same network.

VLAN also increases network performance by limiting broadcasts to a smaller and more manageable logical broadcast domain. In traditional switched environments, all broadcast packets go to each and every individual port. With VLAN, all broadcasts are confined to a specific broadcast domain.

### 9.1.1 What You Can Do in this Chapter

- The **VLAN** screen (Section 9.2 on page 62) displays VLAN, port, and VLAN port settings.
- The **Guest VLAN** screen (Section 9.3 on page 65) displays the global and port settings of the Switch.
- The **Voice VLAN** screen (Section 9.4 on page 66) displays the global and port settings of the Switch.

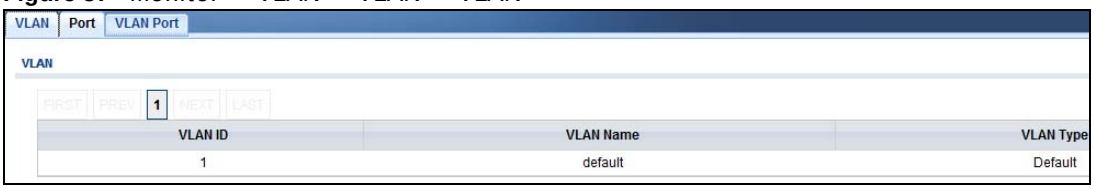
## 9.2 VLAN

Use this screen to view Switch VLAN settings.

### 9.2.1 VLAN

Use this screen to view the Switch's VLAN settings. Click **Monitor > VLAN > VLAN > VLAN** to access this screen.

**Figure 57** Monitor > VLAN > VLAN > VLAN




Each field is described in the following table.

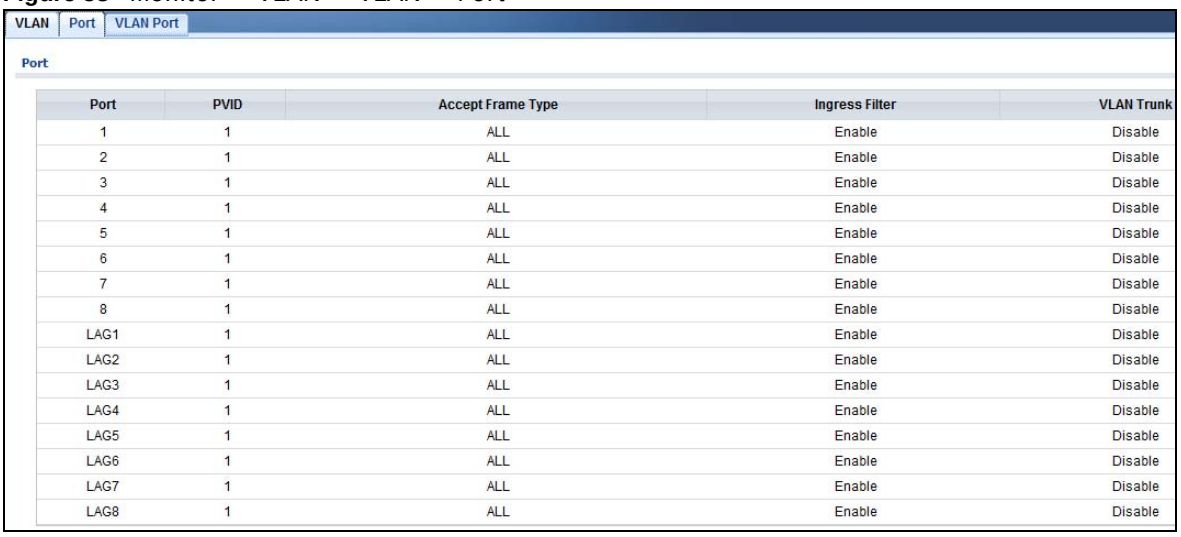
**Table 30** Monitor > VLAN > VLAN > VLAN

| LABEL | DESCRIPTION |
|---|---|
| VLAN | |
| VLAN ID | This is the VLAN identification number. |
| VLAN Name | Displays a descriptive name for the VLAN for identification purposes. |
| VLAN Type | Displays a type for the VLAN for identification purposes. |

## 9.2.2 Port

Use this screen to view the Switch's port setting in VLAN. Click **Monitor > VLAN > VLAN > Port** to access this screen.

**Figure 58** Monitor > VLAN > VLAN > Port




| Port | PVID | Accept Frame Type | Ingress Filter | VLAN Trunk |
|---|---|---|---|---|
| 1 | 1 | ALL | Enable | Disable |
| 2 | 1 | ALL | Enable | Disable |
| 3 | 1 | ALL | Enable | Disable |
| 4 | 1 | ALL | Enable | Disable |
| 5 | 1 | ALL | Enable | Disable |
| 6 | 1 | ALL | Enable | Disable |
| 7 | 1 | ALL | Enable | Disable |
| 8 | 1 | ALL | Enable | Disable |
| LAG1 | 1 | ALL | Enable | Disable |
| LAG2 | 1 | ALL | Enable | Disable |
| LAG3 | 1 | ALL | Enable | Disable |
| LAG4 | 1 | ALL | Enable | Disable |
| LAG5 | 1 | ALL | Enable | Disable |
| LAG6 | 1 | ALL | Enable | Disable |
| LAG7 | 1 | ALL | Enable | Disable |
| LAG8 | 1 | ALL | Enable | Disable |

Each field is described in the following table.

**Table 31** Monitor > VLAN > VLAN > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port | This field displays the port number. |
| PVID | This is the port VLAN identification number.<br><br>A PVID (Port VLAN ID) is a tag that adds to incoming untagged frames received on a port so that the frames are forwarded to the VLAN group that the tag defines. |

**Table 31** Monitor > VLAN > VLAN > Port (continued)

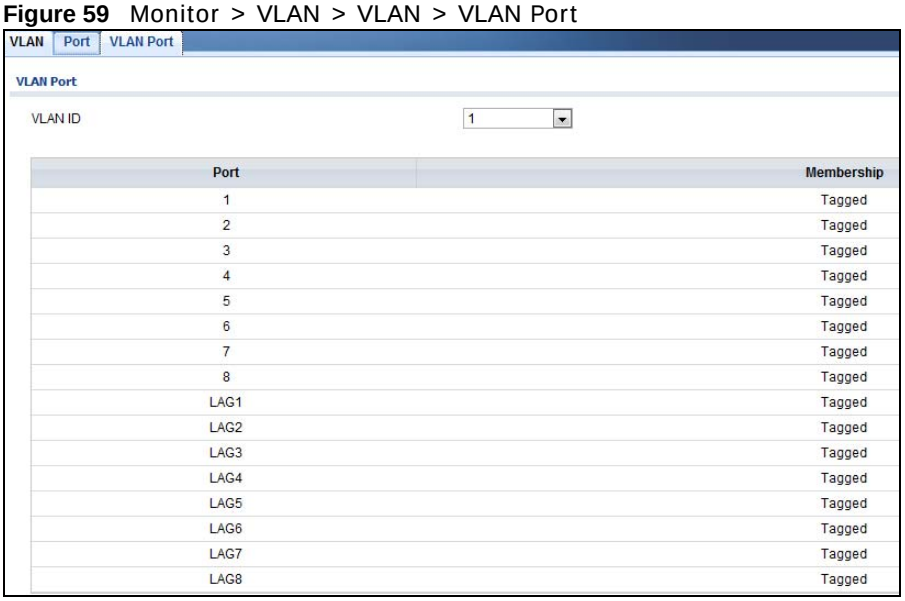
| LABEL | DESCRIPTION |
|---|---|
| Accept Frame Type | This field displays the type that is accepted by the frame.<br><br>Specifes the type of frames allowed on a port. Choices are **All**, **Tag Only** and **Untag Only**. **All** accepts all untagged or tagged frames on this port. This is the default setting. **Tag Only** accepts only tagged frames on this port. All untagged frames will be dropped. **Untag Only** accepts only untagged frames on this port. All tagged frames will be dropped. |
| Ingress Filter | If set, the Switch discards incoming frames for VLANs that do not have this port as a member. |
| VLAN Trunks | Enable **VLAN Trunking** on ports connected to other switches or routers (but not ports directly connected to end users) to allow frames belonging to unknown VLAN groups to pass through the Switch. |

## 9.2.3 VLAN Port

Port-based VLANs are VLANs where the packet forwarding decision is based on the destination MAC address and its associated port. Port-based VLANs require allowed outgoing ports to be defined for each port. Therefore, if you wish to allow two subscriber ports to talk to each other, for example, between conference rooms in a hotel, you must define the egress (an egress port is an outgoing port, that is, a port through which a data packet leaves) for both ports. Port-based VLANs are specific only to the Switch on which they were created.

Use this screen to view the Switch's VLAN port settings. Click **Monitor > VLAN > VLAN > VLAN Port** to access this screen.

**Figure 59** Monitor > VLAN > VLAN > VLAN Port




Each field is described in the following table.

**Table 32** Monitor > VLAN > VLAN > VLAN Port

| LABEL | DESCRIPTION |
|---|---|
| VLAN Port | |
| VLAN ID | This is the VLAN identification number. |

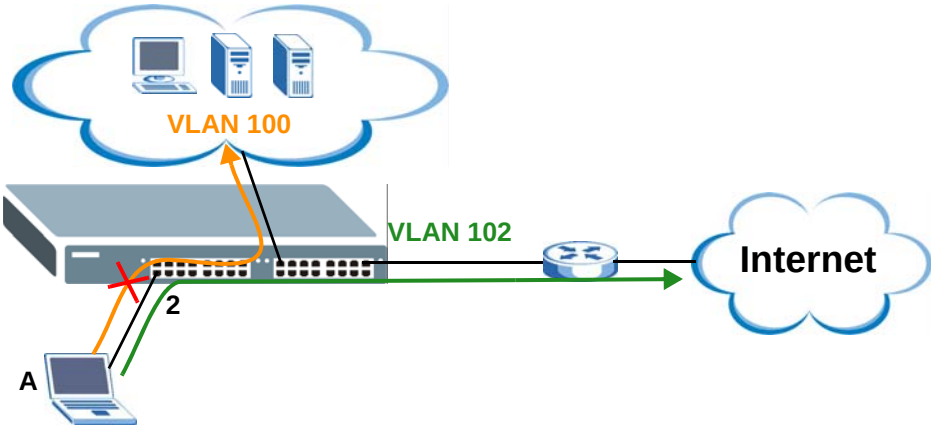
**Table 32** Monitor > VLAN > VLAN > VLAN Port (continued)

| LABEL | DESCRIPTION |
|---|---|
| Port | Displays the port index value. |
| Membership | Displays the status of the VLAN group: **Forbidden, Excluded, Tagged** or **Untagged.** |

# 9.3 Guest VLAN

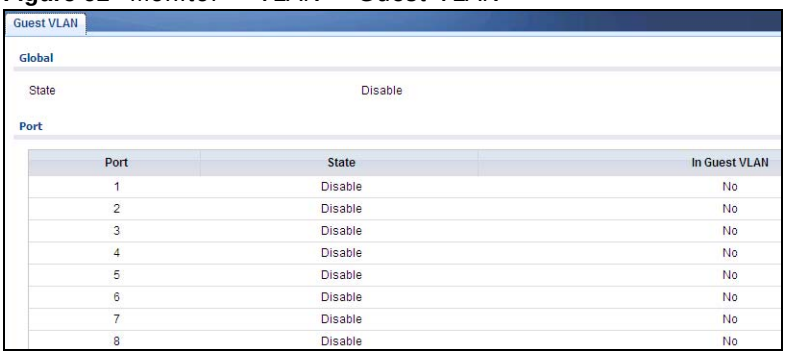
When 802.1x port authentication is enabled on the Switch and its ports, clients that do not have the correct credentials are blocked from using the port(s). You can configure your Switch to have one VLAN that acts as a guest VLAN. If you enable the guest VLAN (**102** in the example) on a port (**2** in the example), the user (**A** in the example) that is not IEEE 802.1x capable or fails to enter the correct username and password can still access the port, but traffic from the user is forwarded to the guest VLAN. That is, unauthenticated users can have access to limited network resources in the same guest VLAN, such as the Internet. The rights granted to the Guest VLAN depends on how the network administrator configures switches or routers with the guest network feature.

**Figure 60** Guest VLAN Example




Use this screen to view the Switch's guest VLAN. Click **Monitor > VLAN > Guest VLAN** to access this screen.

**Figure 61** Monitor > VLAN > Guest VLAN




| Port | State | In Guest VLAN |
|---|---|---|
| 1 | Disable | No |
| 2 | Disable | No |
| 3 | Disable | No |
| 4 | Disable | No |
| 5 | Disable | No |
| 6 | Disable | No |
| 7 | Disable | No |
| 8 | Disable | No |

Each field is described in the following table.

**Table 33** Monitor > VLAN > Guest VLAN

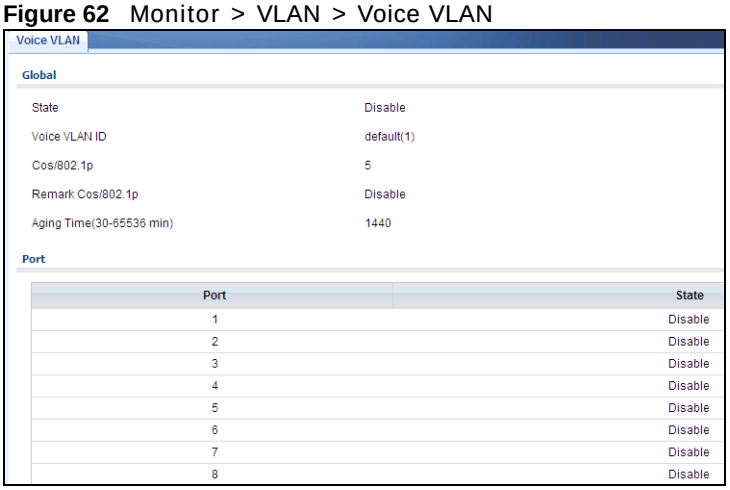
| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | This field displays the state of global guest VLAN. |
| Port | |
| Port | This field displays a port number. |
| State | This field displays the state of a port. |
| In Guest VLAN | This field displays the status of the port, is the port is in guest VLAN or not. |

# 9.4 Voice VLAN

Voice VLANs are VLANs configured specially for voice traffic. By adding the ports connected with voice devices to voice VLANs, you can have voice traffic transmitted within voice VLANs and perform QoS-related configuration for voice traffic as required, thus ensuring the transmission priority of voice traffic and voice quality.

Use this screen to view Switch global and port voice VLAN settings for voice traffic. Click **Monitor > VLAN > Voice VLAN** to access this screen.

**Figure 62** Monitor > VLAN > Voice VLAN




Each field is described in the following table.

**Table 34** Monitor > VLAN > Voice VLAN

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | This field displays the state of a port. |
| Voice VLAN ID | This is the voice VLAN identification number. |
| Cos/802.1p | This displays the packet's 802.1p priority field. |
| Remark Cos/802.1p | This field displays the state of the cos/802.1p. |
| Aging Time (30-65536 min) | Displays the time interval (from 30 to 65536) in minutes. |
| Port | |

**Table 34** Monitor > VLAN > Voice VLAN (continued)

| LABEL | DESCRIPTION |
|---|---|
| Port | This field displays a port number. |
| State | This field displays the state of a port. |

10

# Monitor: MAC Table

## 10.1 Overview

This section provides information for **MAC Table** in **Monitor**.

The **MAC Table** screen (a MAC table is also known as a filtering database) shows how frames are forwarded or filtered across the Switch's ports. When a device (which may belong to a VLAN group) sends a packet which is forwarded to a port on the Switch, the MAC address of the device is shown on the Switch's **MAC Table**. It also shows whether the MAC address is dynamic (learned by the Switch) or static (manually entered in the **Static MAC Forwarding** screen).

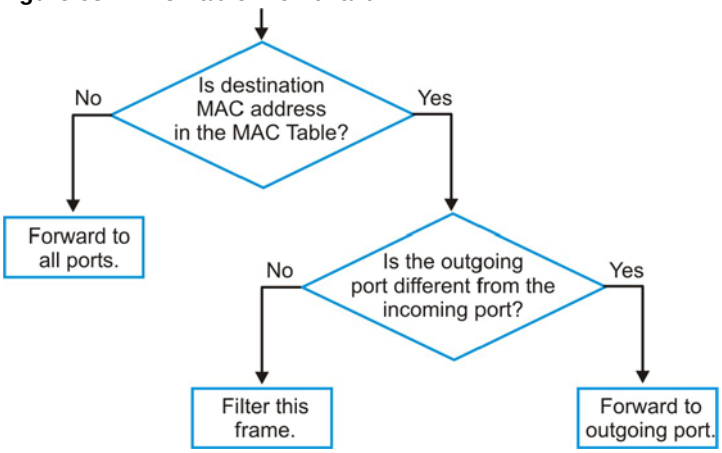
The Switch uses the **MAC Table** to determine how to forward frames. See the following figure.

1 The Switch examines a received frame and learns the port from which this source MAC address came.

2 The Switch checks to see if the frame's destination MAC address matches a source MAC address already learned in the **MAC Table**.

- If the Switch has already learned the port for this MAC address, then it forwards the frame to that port.
- If the Switch has not already learned the port for this MAC address, then the frame is flooded to all ports. Too much port flooding leads to network congestion.
- If the Switch has already learned the port for this MAC address, but the destination port is the same as the port it came in on, then it filters the frame.

**Figure 63** MAC Table Flowchart




This link takes you to a screen where you can view the MAC address and VLAN ID of a device attach to a port. You can also view what kind of MAC address it is.

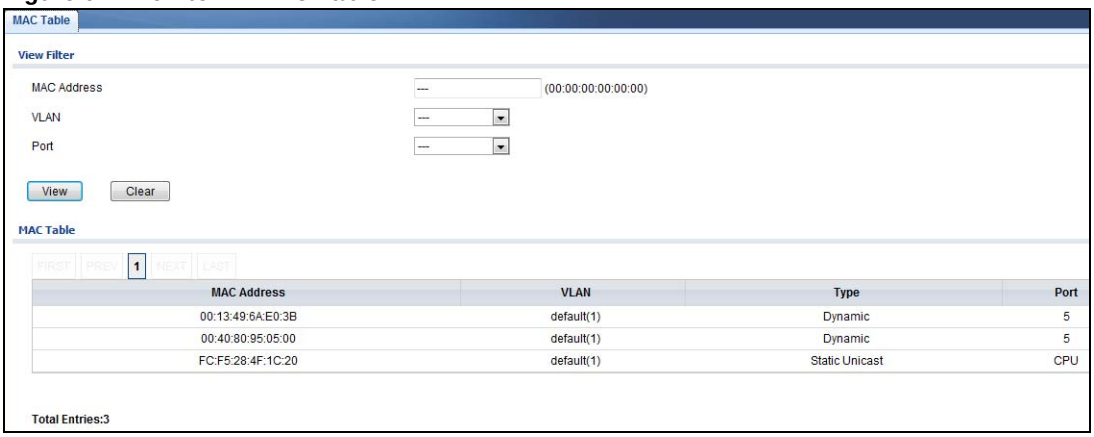
### 10.1.1 What You Can Do in this Chapter

- The **MAC Table** screen (Section 10.2 on page 69) displays view filter and MAC table of the Switch.

## 10.2 MAC Table

Use this screen to view filter static and MAC table settings. Click **Monitor > MAC Table** to access this screen.

**Figure 64** Monitor > MAC Table




Each field is described in the following table.

**Table 35** Monitor > MAC Table

| LABEL | DESCRIPTION |
|---|---|
| View filter | |
| MAC Address | This is the MAC address of the device from which this incoming frame came. |
| VLAN | Displays a type for the VLAN for identification purposes. |
| Port | This is the port from which the above MAC address was learned. |
| View | This link takes you to a screen where you can view the MAC address and VLAN ID of a device attach to a port. You can also view what kind of MAC address it is. |
| Clear | Click **Clear** to return the fields to the factory defaults. |
| MAC Table | |
| MAC Address | This is the MAC address of the device from which this incoming frame came. |
| VLAN | Displays a type for the VLAN for identification purposes. |
| Type | This shows whether the MAC address is **dynamic** (learned by the Switch) or **static** (manually entered in the **Static MAC Forwarding** screen). |
| Port | This is the port from which the above MAC address was learned. |
| Total Entries | Displays the number of total entries. |

# 11

# Monitor: Link Aggregation

## 11.1 Overview

This section provides information for **Link Aggregation** in **Monitor**.

Link aggregation (trunking) is the grouping of physical ports into one logical higher-capacity link. You may want to trunk ports if for example, it is cheaper to use multiple lower-speed links than to under-utilize a high-speed, but more costly, single-port link. However, the more ports you aggregate then the fewer available ports you have. A trunk group is one logical link containing multiple ports.

The Switch supports both static and dynamic link aggregation.

Note: In a properly planned network, it is recommended to implement static link aggregation only. This ensures increased network stability and control over the trunk groups on your Switch.

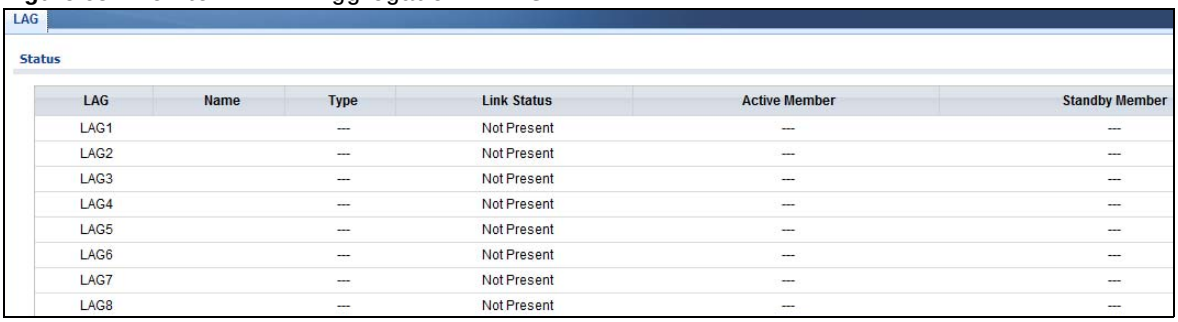
### 11.1.1 What You Can Do in this Chapter

- The **Link Aggregation** screen (Section 11.2 on page 70) displays link aggregation status.

## 11.2 Link Aggregation

Use the **Link Aggregation** screens to view Switch link aggregation status. Click **Monitor > Link Aggregation > LAG** to access this screen.

**Figure 65** Monitor > Link Aggregation > LAG




| LAG | Name | Type | Link Status | Active Member | Standby Member |
|---|---|---|---|---|---|
| LAG1 | | --- | Not Present | --- | --- |
| LAG2 | | --- | Not Present | --- | --- |
| LAG3 | | --- | Not Present | --- | --- |
| LAG4 | | --- | Not Present | --- | --- |
| LAG5 | | --- | Not Present | --- | --- |
| LAG6 | | --- | Not Present | --- | --- |
| LAG7 | | --- | Not Present | --- | --- |
| LAG8 | | --- | Not Present | --- | --- |

Each field is described in the following table.

**Table 36** Monitor > Link Aggregation > LAG

| LABEL | DESCRIPTION |
|---|---|
| LAG | Displays the link aggregation status index value. |
| Name | This field displays the name. |
| Type | This field displays the type. |
| Link Status | This field displays the status of the link. It displays **Up** when the port is linked up or **Down** when it is not. When no any physical port is binding with this group, it displays **NotPresent**. |
| Active Member | Displays if this member is an active member of a trunk. |
| Standby Member | Displays if this member is an standby member of a trunk. |

12

# Monitor: Loop Guard

## 12.1 Overview

This section provides information for **Loop Guard** in **Monitor**.

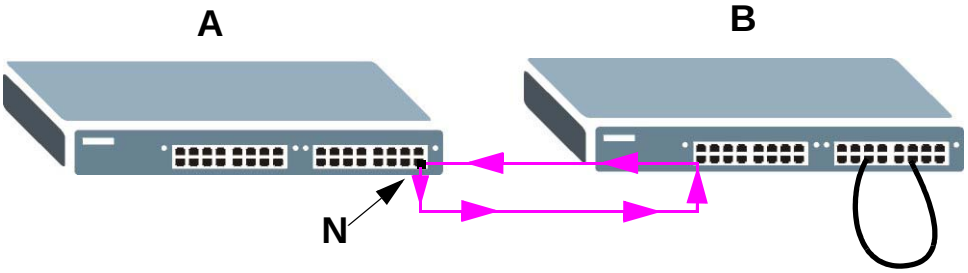
Loop guard is designed to handle loop problems on the edge of your network. This can occur when a port is connected to a Switch that is in a loop state. Loop state occurs as a result of human error. It happens when two ports on a switch are connected with the same cable. When a switch in loop state sends out broadcast messages the messages loop back to the switch and are re-broadcast again and again causing a broadcast storm.

If a switch (not in loop state) connects to a switch in loop state, then it will be affected by the switch in loop state in the following way:

- It will receive broadcast messages sent out from the switch in loop state.
- It will receive its own broadcast messages that it sends out as they loop back. It will then re-broadcast those messages again.

The following figure shows port **N** on switch **A** connected to switch **B**. Switch **B** is in loop state. When broadcast or multicast packets leave port **N** and reach switch **B**, they are sent back to port **N** on **A** as they are rebroadcast from **B**.

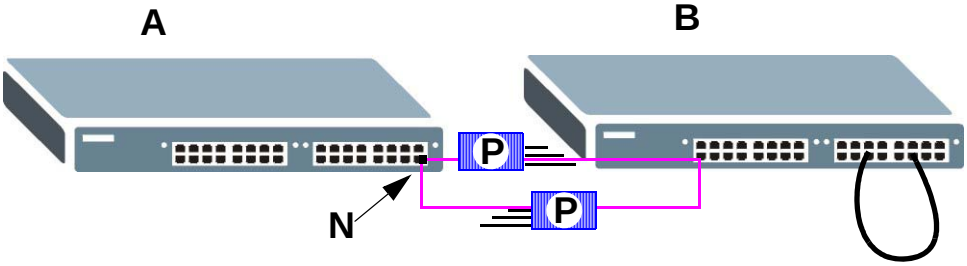
**Figure 66** Switch in Loop State




The loop guard feature checks to see if a loop guard enabled port is connected to a switch in loop state. This is accomplished by periodically sending a probe packet and seeing if the packet returns on the same port. If this is the case, the Switch will shut down the port connected to the switch in loop state.

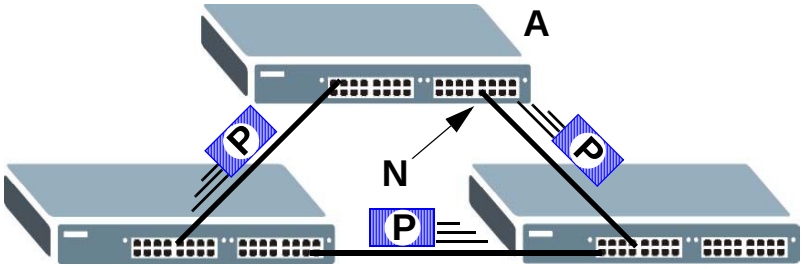
The following figure shows a loop guard enabled port **N** on switch **A** sending a probe packet **P** to switch **B**. Since switch **B** is in loop state, the probe packet **P** returns to port **N** on **A**. The Switch then shuts down port **N** to ensure that the rest of the network is not affected by the switch in loop state.

**Figure 67** Loop Guard - Probe Packet




The Switch also shuts down port **N** if the probe packet returns to switch **A** on any other port. In other words loop guard also protects against standard network loops. The following figure illustrates three switches forming a loop. A sample path of the loop guard probe packet is also shown. In this example, the probe packet is sent from port **N** and returns on another port. As long as loop guard is enabled on port **N**. The Switch will shut down port **N** if it detects that the probe packet has returned to the Switch.

**Figure 68** Loop Guard - Network Loop




### 12.1.1 What You Can Do in this Chapter

- The **Loop Guard** screen (Section 12.2 on page 73) displays loop guard status.

## 12.2 Loop Guard

Use the **Loop Guard** screen to view Switch loop guard status. Click **Monitor > Loop Guard** to access this screen.

**Figure 69** Monitor > Loop Guard

Each field is described in the following table.

**Table 37** Monitor > Loop Guard

| LABEL | DESCRIPTION |
|---|---|
| Loop Guard Status | |
| Port | This field displays a port number. |
| Status | This field displays the status. |
| Time Left (sec) | This field displays the amount of time left in seconds. |
| Action | This field displays the action. |

# 13

# Monitor: Multicast

## 13.1 Overview

This section provides information for **Multicast** in **Monitor**.

Traditionally, IP packets are transmitted in one of either two ways - Unicast (1 sender to 1 recipient) or Broadcast (1 sender to everybody on the network). Multicast delivers IP packets to just a group of hosts on the network.

IGMP (Internet Group Management Protocol) is a network-layer protocol used to establish membership in an IPv4 multicast group - it is not used to carry user data. Refer to RFC 1112, RFC 2236 and RFC 3376 for information on IGMP versions 1, 2 and 3 respectively.

### 13.1.1 What You Can Do in this Chapter

- The **IGMP** screen (Section 13.2 on page 75) displays Vlan, statistics, group, and router.

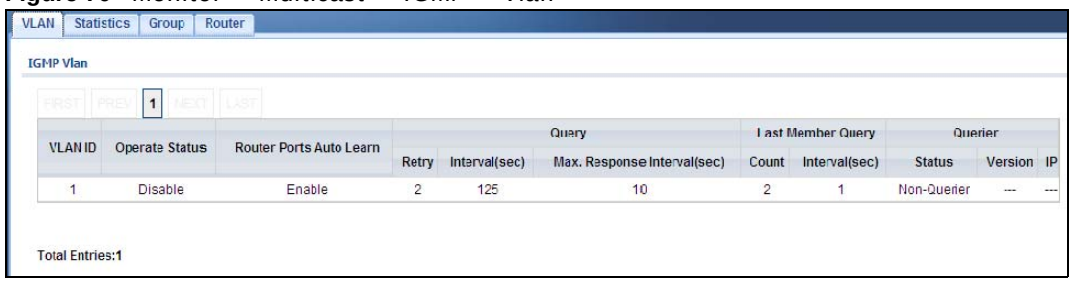
## 13.2 IGMP

Use this screen to view Switch various multicast features.

### 13.2.1 Vlan

Use this screen to view the Switch's IGMP vlan. Click **Monitor > Multicast > IGMP > Vlan** to access this screen.

**Figure 70** Monitor > Multicast > IGMP > Vlan



Each field is described in the following table.

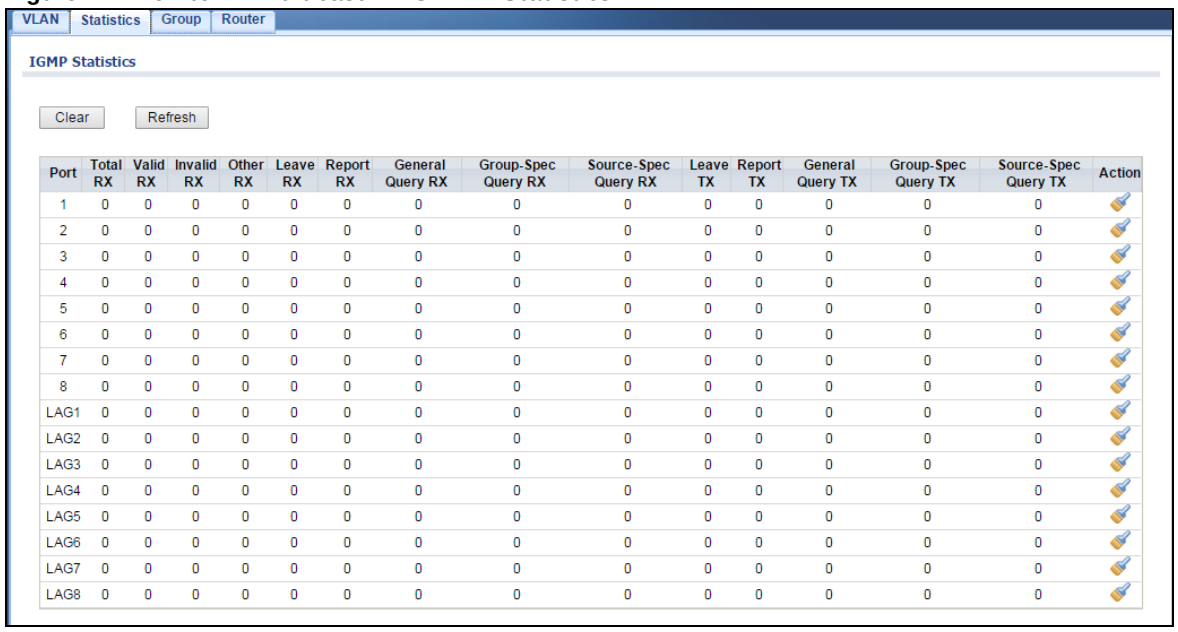
**Table 38** Monitor > Multicast > IGMP > Vlan

| LABEL | DESCRIPTION |
|---|---|
| VLAN ID | Displays the identification for the VLAN. |
| Operate Status | Displays the status of the operation. |
| Router Ports Auto Learn | Displays whether the router ports are auto learn or not. |
| Query | |
| Retry | Displays the number of retry. |
| Interval | Displays the number (in seconds) for the time interval. |
| Max. Reponse Interval(sec) | Displays the maximum reponse (in seconds) for the time interval. |
| Last Member Query | |
| Count | Displays the number of count. |
| Interval(sec) | Displays the in seconds for the time interval. |
| Querier | Allow sthe Switch to send IGMP General Query messages to the VLANs with the multicast hosts attached. |
| Status | This field displays the entry as querier or non-querier. |
| Version | This field displays the entry querier version. |
| IP | This field displays the the entry querier IP address. |
| Total Entries | This field displays the number of total entries. |

## 13.2.2 Statistics

Use this screen to view the Switch's IGMP statistics. Click **Monitor > Multicast > IGMP > Statistics** to access this screen.

**Figure 71** Monitor > Multicast > IGMP > Statistics




| Port | Total RX | Valid RX | Invalid RX | Other RX | Leave RX | Report RX | General Query RX | Group-Spec Query RX | Source-Spec Query RX | Leave TX | Report TX | General Query TX | Group-Spec Query TX | Source-Spec Query TX | Action |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LAG8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

Each field is described in the following table.

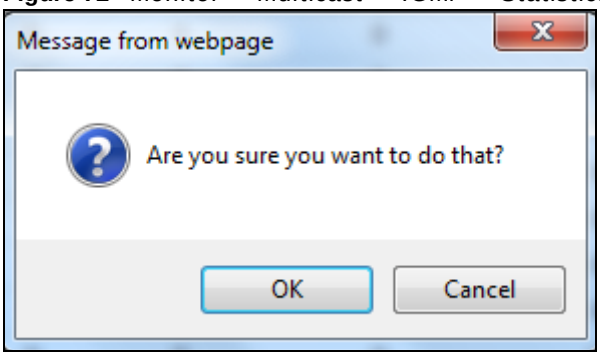
**Table 39** Monitor > Multicast > IGMP > Statistics

| LABEL | DESCRIPTION |
|---|---|
| Clear | Click **Clear** to reset the fields to the factory defaults. |
| Refresh | Click **Refresh** to reload the page. |
| Port | This field displays a port number. |
| Total RX | This field displays the total amount of RX. |
| Valid RX | This field displays the total amount of valid RX. |
| Invalid RX | This field displays the total amount of invalid RX. |
| Other RX | This field displays the total amount of other RX. |
| Leave RX | This field displays the total amount of leave RX. |
| Report RX | This field displays the total amount of report RX. |
| General Query RX | This field displays the total amount of general query RX. |
| Group-Spec Query RX | This field displays the total amount of group-spec query RX. |
| Source-Spec Query RX | This field displays the total amount of source-spec query RX. |
| Leave TX | This field displays the total amount of leave TX. |
| Report TX | This field displays the total amount of report TX. |
| General Query TX | This field displays the total amount of general query TX. |
| Group-Spec Query TX | This field displays the total amount of group-spec query TX. |
| Source-Spec Query TX | This field displays the total amount of source-spec query TX. |
| Action | Click **Action** to reset the statistics of the specific field back to zero . |
| OK | Click **OK** to apply the changes. |
| Cancel | Click **Cancel** to discard the changes. |

In the Action column, the **Action** option allows you to clear the statistics.

Click **OK** and confirm at the pop-up screen to complete the task. Click **Cancel** and confirm at the pop-up screen to discard the changes.

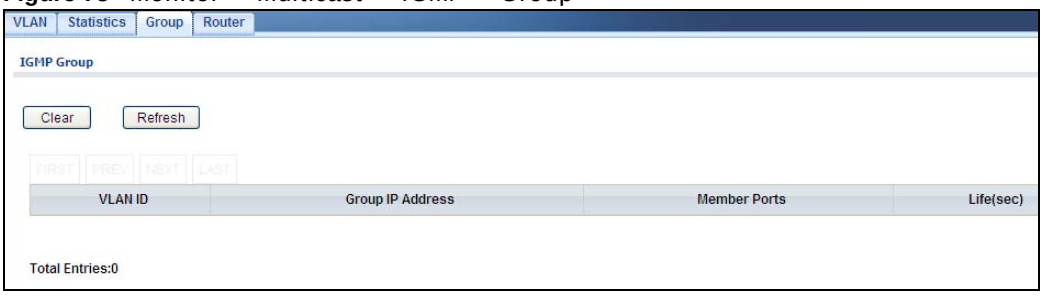
**Figure 72** Monitor > Multicast > IGMP > Statistics > Action




## 13.2.3 Group

Use this screen to view the Switch's IGMP group. Click **Monitor > Multicast > IGMP > Group** to access this screen.

**Figure 73** Monitor > Multicast > IGMP > Group




Each field is described in the following table.

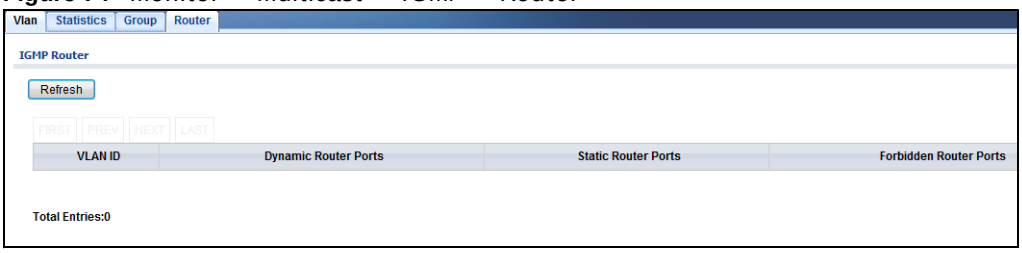
**Table 40** Monitor > Multicast > IGMP > Group

| LABEL | DESCRIPTION |
|---|---|
| Clear | Click **Clear** to delete the dynamic groups. |
| Refresh | Click **Refresh** to reload the page. |
| VLAN ID | Displays the identification for the VLAN. |
| Group IP Address | This field displays the group IP address. |
| Member Ports | This field displays the member ports. |
| Life(sec) | Displays life in seconds for the time interval. |
| Total Entries | This field displays the number of total entries. |

## 13.2.4 Router

Use this screen to view the Switch's IGMP router. Click **Monitor > Multicast > IGMP > Router** to access this screen.

**Figure 74** Monitor > Multicast > IGMP > Router




Each field is described in the following table.

**Table 41** Monitor > Multicast > IGMP > Router

| LABEL | DESCRIPTION |
|---|---|
| Refresh | Click **Refresh** to reload the page. |
| VLAN ID | Displays the identification for the VLAN. |
| Dynamic Router Ports | This field displays the dynamic router ports. |
| Static Router Ports | This field displays the static router ports. |
| Forbidden Router Ports | This field displays the forbidden router ports. |
| Total Entries | This field displays the number of total entries. |

# 14

# Monitor: Spanning Tree

## 14.1 Overview

This section provides information for **Spanning Tree** in **Monitor**.

The Switch supports Spanning Tree Protocol (STP), Common and Internal Spanning Tree (CIST), and Multiple Spanning Tree (MST).

### 14.1.1 What You Can Do in this Chapter

- The **Spanning Tree** screen (Section 14.2 on page 79) displays CIST, CIST port, MST, MST port, STP statistics.

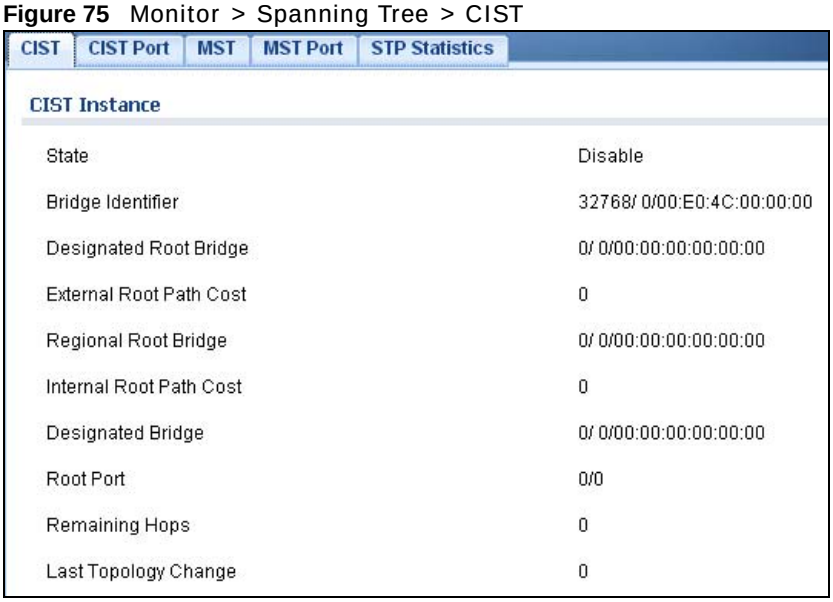
## 14.2 Spanning Tree

Use this screen to view Switch spanning tree settings.

### 14.2.1 CIST

Use this screen to view the Switch's spanning tree CIST instance. Click **Monitor > Spanning Tree > CIST** to access this screen.

**Figure 75** Monitor > Spanning Tree > CIST



Each field is described in the following table.

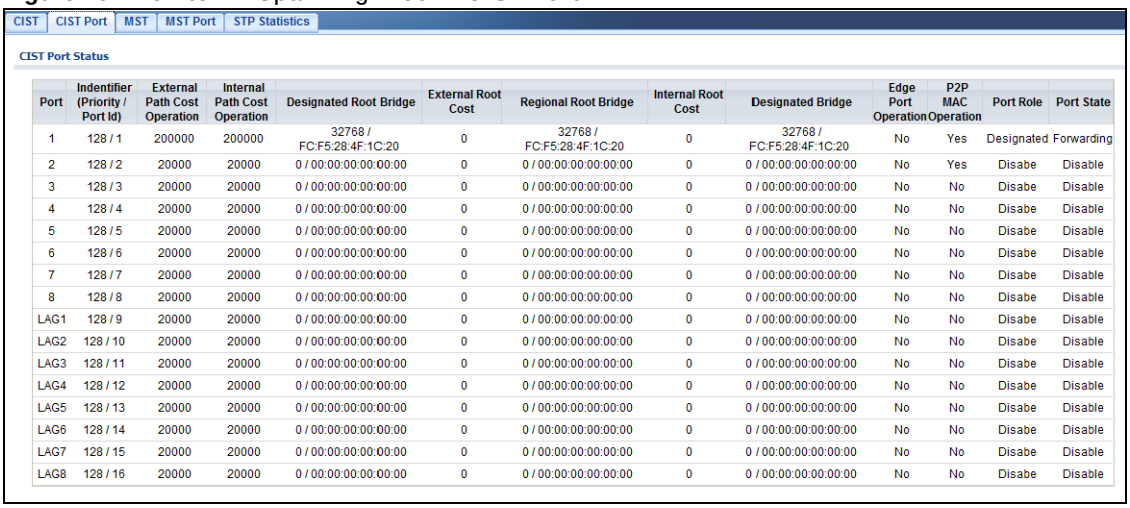
**Table 42** Monitor > Spanning Tree > CIST

| LABEL | DESCRIPTION |
|---|---|
| State | This field displays the state. |
| Bridge Indentifier | This is the unique identifier for this bridge, consisting of the bridge priority plus the MAC address. |
| Designate Root Bridge | Root bridge refers to the base of the spanning tree. |
| External Root Path Cost | The cost of the path from this bridge to the cist Root Bridge. |
| Regional Root Bridge | Root bridge refers to the base of the spanning tree. |
| Internal Root Path Cost | The cost of the path from this bridge to the internal Regional Root Bridge. |
| Designated Bridge | For each LAN segment, a designated bridge is selected. This bridge has the lowest cost to the root among the bridges connected to the LAN. |
| Root Port | On each bridge, the bridge communicates with the root through the root port. The root port is the port on this Switch with the lowest path cost to the root (the root path cost). If there is no root port, then this Switch has been accepted as the root bridge of the spanning tree network. |
| Remanining Hops | This field displays the number of remanining hops. |
| Last Topology Change | Topology change information is directly propagated throughout the network from the device that generates the topology change. |

## 14.2.2 CIST Port

Use this screen to view the Switch's spanning tree CIST port status. Click **Monitor > Spanning Tree > CIST Port** to access this screen.

**Figure 76** Monitor > Spanning Tree > CIST Port




| Port | Indentifier (Priority / Port Id) | External Path Cost Operation | Internal Path Cost Operation | Designated Root Bridge | External Root Cost | Regional Root Bridge | Internal Root Cost | Designated Bridge | Edge Port Operation | P2P MAC Operation | Port Role | Port State |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 128 / 1 | 200000 | 200000 | 32768 / FC:F5:28:4F:1C:20 | 0 | 32768 / FC:F5:28:4F:1C:20 | 0 | 32768 / FC:F5:28:4F:1C:20 | No | Yes | Designated | Forwarding |
| 2 | 128 / 2 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | Yes | Disabe | Disable |
| 3 | 128 / 3 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| 4 | 128 / 4 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| 5 | 128 / 5 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| 6 | 128 / 6 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| 7 | 128 / 7 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| 8 | 128 / 8 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG1 | 128 / 9 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG2 | 128 / 10 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG3 | 128 / 11 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG4 | 128 / 12 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG5 | 128 / 13 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG6 | 128 / 14 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG7 | 128 / 15 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |
| LAG8 | 128 / 16 | 20000 | 20000 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | 0 | 0 / 00:00:00:00:00:00 | No | No | Disabe | Disable |

Each field is described in the following table.

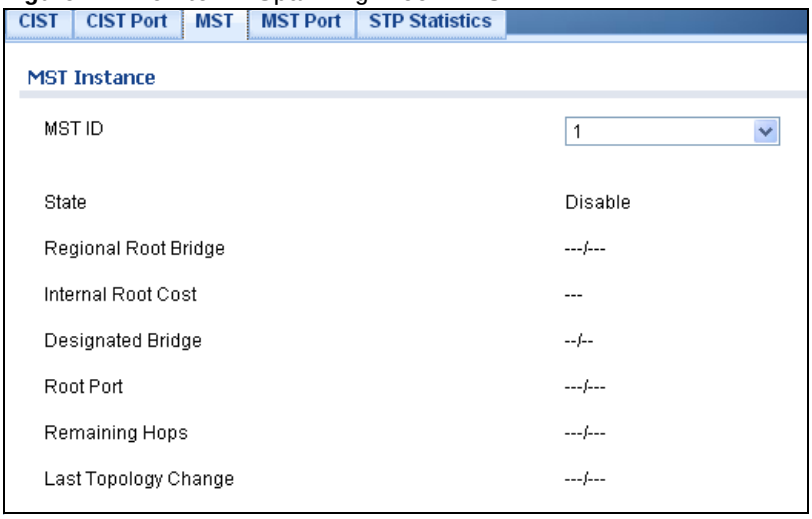
**Table 43** Monitor > Spanning Tree > CIST Port

| LABEL | DESCRIPTION |
|---|---|
| Port | This field displays the port number. |
| Indentifier (Priority / Port Id) | This field displays the identifier (in priority / port number). |
| External Path Cost Operation | Path cost is the cost of transmitting a frame on to a LAN through that port. It is recommended to assign this value according to the speed of the bridge. The slower the media, the higher the cost. |
| Internal Path Cost Operation | Path cost is the cost of transmitting a frame on to a LAN through that port. It is recommended to assign this value according to the speed of the bridge. The slower the media, the higher the cost. |
| Designated Root Bridge | Root bridge refers to the base of the spanning tree. |
| External Root Cost | This field displays the external root cost. |
| Regional Root Bridge | Root bridge refers to the base of the spanning tree. |
| Internal Root Cost | This field displays the internal root cost. |
| Designated Bridge | For each LAN segment, a designated bridge is selected. This bridge has the lowest cost to the root among the bridges connected to the LAN. |
| Edge Port Operation | An edge port changes its initial STP port state from blocking state to forwarding state immediately without going through listening and learning states right after the port is configured as an edge port or when its link status changes. |
| P2P MAC Operation | This field displays the state of the P2P MAC operation. |
| Port Role | This field displays the state of the port role. |
| Port State | This field displays the state of the port. |

## 14.2.3 MST

Use this screen to view the Switch's spanning tree MST instance. Click **Monitor > Spanning Tree > MST** to access this screen.

**Figure 77** Monitor > Spanning Tree > MST



Each field is described in the following table.

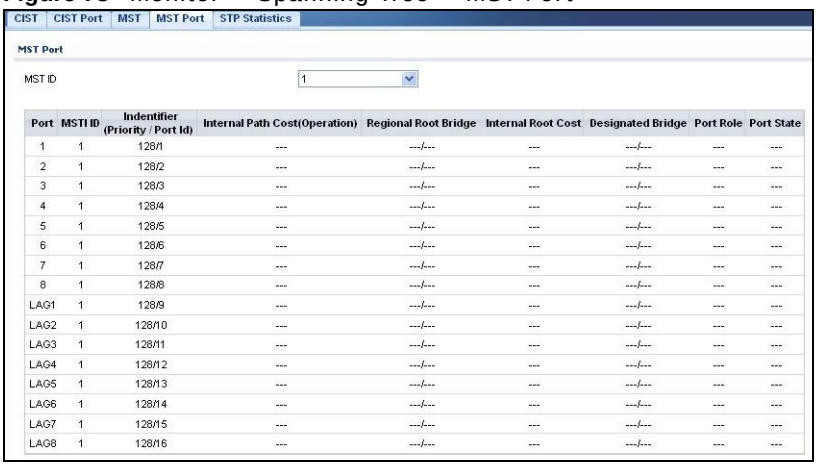
**Table 44** Monitor > Spanning Tree > MST

| LABEL | DESCRIPTION |
|---|---|
| MST ID | This is the unique identifier for this MST.<br><br>Select a number from the drop-down menu to display results. |
| State | This field displays the state. |
| Regional Root Bridge | Root bridge refers to the base of the spanning tree. |
| Internal Root Cost | This field displays the internal root cost. |
| Designated Bridge | For each LAN segment, a designated bridge is selected. This bridge has the lowest cost to the root among the bridges connected to the LAN. |
| Root Port | On each bridge, the bridge communicates with the root through the root port. The root port is the port on this Switch with the lowest path cost to the root (the root path cost). If there is no root port, then this Switch has been accepted as the root bridge of the spanning tree network. |
| Remanining Hops | This field displays the number of remanining hops. |
| Last Topology Change | Topology change information is directly propagated throughout the network from the device that generates the topology change. |

## 14.2.4 MST Port

Use this screen to view the Switch's spanning tree MST port status. Click **Monitor > Spanning Tree > MST Port** to access this screen.

**Figure 78** Monitor > Spanning Tree > MST Port




| Port | MSTI ID | Indentifier (Priority / Port Id) | Internal Path Cost(Operation) | Regional Root Bridge | Internal Root Cost | Designated Bridge | Port Role | Port State |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 128/1 | --- | ---/--- | --- | ---/--- | --- | --- |
| 2 | 1 | 128/2 | --- | ---/--- | --- | ---/--- | --- | --- |
| 3 | 1 | 128/3 | --- | ---/--- | --- | ---/--- | --- | --- |
| 4 | 1 | 128/4 | --- | ---/--- | --- | ---/--- | --- | --- |
| 5 | 1 | 128/5 | --- | ---/--- | --- | ---/--- | --- | --- |
| 6 | 1 | 128/6 | --- | ---/--- | --- | ---/--- | --- | --- |
| 7 | 1 | 128/7 | --- | ---/--- | --- | ---/--- | --- | --- |
| 8 | 1 | 128/8 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG1 | 1 | 128/9 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG2 | 1 | 128/10 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG3 | 1 | 128/11 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG4 | 1 | 128/12 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG5 | 1 | 128/13 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG6 | 1 | 128/14 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG7 | 1 | 128/15 | --- | ---/--- | --- | ---/--- | --- | --- |
| LAG8 | 1 | 128/16 | --- | ---/--- | --- | ---/--- | --- | --- |

Each field is described in the following table.

**Table 45** Monitor > Spanning Tree > MST Port

| LABEL | DESCRIPTION |
|---|---|
| MST ID | This is the unique identifier for this MST.<br><br>Select a number from the drop-down menu to display results. |
| Port | This field displays the port number. |
| MSTI ID | A VLAN can be mapped to a specific Multiple Spanning Tree Instance (MSTI). MSTI allows multiple VLANs to use the same spanning tree. |

**Table 45** Monitor > Spanning Tree > MST Port (continued)

| LABEL | DESCRIPTION |
|---|---|
| Indentifier (Priority / Port Id) | This field displays the identifier (in priority / port number). |
| Internal Path Cost(Operation) | Path cost is the cost of transmitting a frame on to a LAN through that port. It is recommended to assign this value according to the speed of the bridge. The slower the media, the higher the cost. |
| Regional Root Bridge | Root bridge refers to the base of the spanning tree. |
| Internal Root Cost | This field displays the internal root cost. |
| Designated Bridge | For each LAN segment, a designated bridge is selected. This bridge has the lowest cost to the root among the bridges connected to the LAN. |
| Port Role | This field displays the state of the port role. |
| Port State | This field displays the state of the port. |

## 14.2.5 STP Statistics

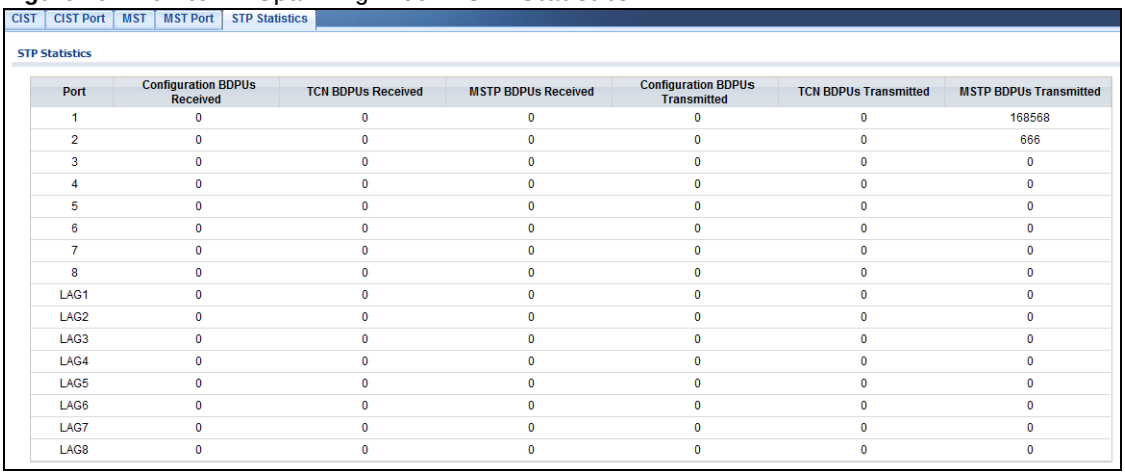
(R)STP detects and breaks network loops and provides backup links between switches, bridges or routers. It allows a Switch to interact with other (R)STP-compliant switches in your network to ensure that only one path exists between any two stations on the network.

The Switch uses IEEE 802.1w RSTP (Rapid Spanning Tree Protocol) that allows faster convergence of the spanning tree than STP (while also being backwards compatible with STP-only aware bridges). In RSTP, topology change information is directly propagated throughout the network from the device that generates the topology change. In STP, a longer delay is required as the device that causes a topology change first notifies the root bridge and then the root bridge notifies the network. Both RSTP and STP flush unwanted learned addresses from the filtering database. In RSTP, the port states are Discarding, Learning, and Forwarding.

Note: In this user's guide, "STP" refers to both STP and RSTP.

Use this screen to view the Switch's spanning tree STP statistics. Click **Monitor > Spanning Tree > STP Statistics** to access this screen.

**Figure 79** Monitor > Spanning Tree > STP Statistics




| Port | Configuration BDPUs Received | TCN BDPUs Received | MSTP BDPUs Received | Configuration BDPUs Transmitted | TCN BDPUs Transmitted | MSTP BDPUs Transmitted |
|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 168568 |
| 2 | 0 | 0 | 0 | 0 | 0 | 666 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG1 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG2 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG3 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG4 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG5 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG6 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG7 | 0 | 0 | 0 | 0 | 0 | 0 |
| LAG8 | 0 | 0 | 0 | 0 | 0 | 0 |

Each field is described in the following table.

**Table 46** Monitor > Spanning Tree > STP Statistics

| LABEL | DESCRIPTION |
|---|---|
| Port | This field displays the port number. |
| Configuration BDPUs Received | This field displays the configuration BDPUs received. |
| TCN BDPUs Received | This field displays the TCN BDPUs received. |
| MSTP BDPUs Received | This field displays the Multiple Spanning Tree Protocol (MSTP) BDPUs received. |
| Configuration BDPUs Transmitted | This field displays the configuration BDPUs transmitted. |
| TCN BDPUs Transmitted | This field displays the TCN BDPUs transmitted. |
| MSTP BDPUs Transmitted | This field displays the Multiple Spanning Tree Protocol (MSTP) BDPUs transmitted. |

# 15

# Monitor: LLDP

## 15.1 Overview

This section provides information for **LLDP** in **Monitor**.

Link Layer Discovery Protocol (LLDP), defined as IEEE 802.1ab, enables LAN devices that support LLDP to exchange their configured settings. This helps eliminate configuration mismatch issues.

### 15.1.1 What You Can Do in this Chapter

- The **LLDP** screen (Section 15.2 on page 85) displays statistics, remote information, and overloading.

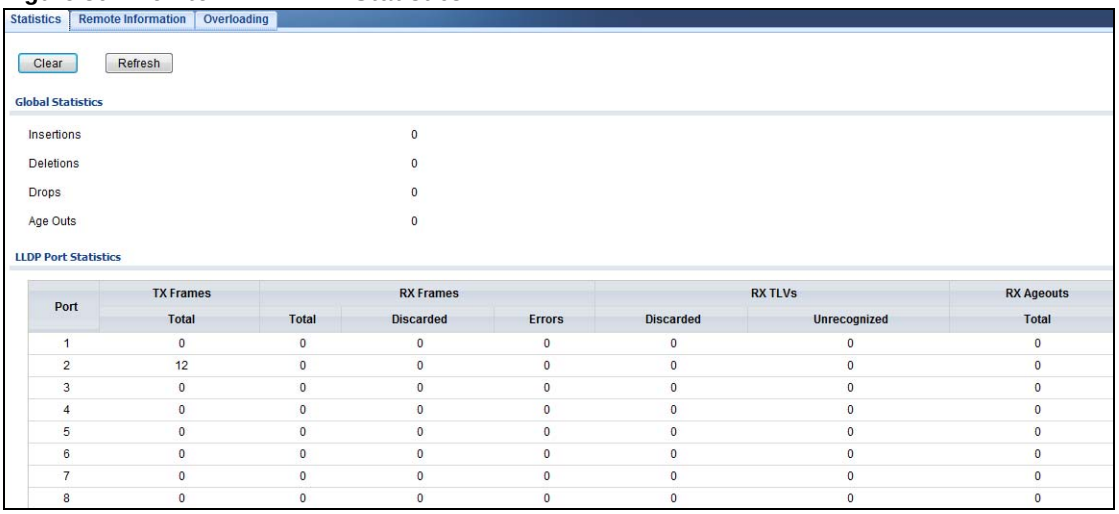
## 15.2 LLDP

This link takes you to a screen where you can view LLDP on the Switch. LLDP allows a network device to advertise its identity and capabilities on the local network. It also allows the device to maintain and store information from adjacent devices which are directly connected to the network device.

### 15.2.1 Statistics

Use this screen to view the Switch's LLDP global and port statistics. Click **Monitor > LLDP > Statistics** to access this screen.

**Figure 80** Monitor > LLDP > Statistics




| Port | TX Frames | RX Frames | | | RX TLVs | | RX Ageouts |
|---|---|---|---|---|---|---|---|
| | Total | Total | Discarded | Errors | Discarded | Unrecognized | Total |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Each field is described in the following table.

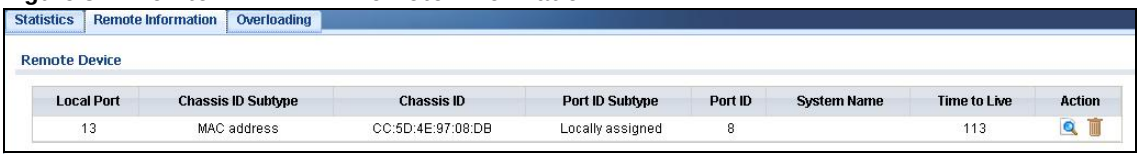
**Table 47** Monitor > LLDP > Statistics

| LABEL | DESCRIPTION |
|---|---|
| Clear | Click **Clear** to clear statistics. |
| Refresh | Click **Refresh** to reload the page. |
| Global Statistics | |
| Insertions | This field displays the number of insertions. |
| Deletions | This field displays the number of deletions. |
| Drops | This field displays the number of drops. |
| Age Outs | This field displays the number of age outs. |
| LLDP Port Statistics | |
| Port | This field displays the port number. |
| TX Frames Total | This field displays the total number of TX LLDP frames. |
| RX Frames Total | This field displays the total number of RX LLDP frames. |
| RX Frames Discarded | This field displays the number of discarded RX LLDP frames. |
| RX Frames Errors | This field displays the number of RX LLDP frames errors. |
| RX TLVs Discarded | This field displays the number of discarded RX LLDP TLVs. |
| RX TLVs Unrecognized | This field displays the number of unrecognized RX LLDP TLVs. |
| RX Ageouts Total | This field displays the total number of RX LLDP ageouts. |

## 15.2.2 Remote Information

Use this screen to view the Switch's LLDP remote device information. Click **Monitor > LLDP > Remote Information** to access this screen.

**Figure 81** Monitor > LLDP > Remote Information




Each field is described in the following table.

**Table 48** Monitor > LLDP > Remote Information

| LABEL | DESCRIPTION |
|---|---|
| Local Port | This field displays the local port. |
| Chassis ID Subtype | This field displays the chassis ID subtype. |
| Chassis ID | This field displays the chassis ID. |
| Port ID Subtype | This field displays the port ID subtype. |
| Port ID | This field displays the port ID. |
| System Name | This field displays the descriptive name of the Switch for identification purposes. |
| Time to Live | This field displays the live time of this entry. |

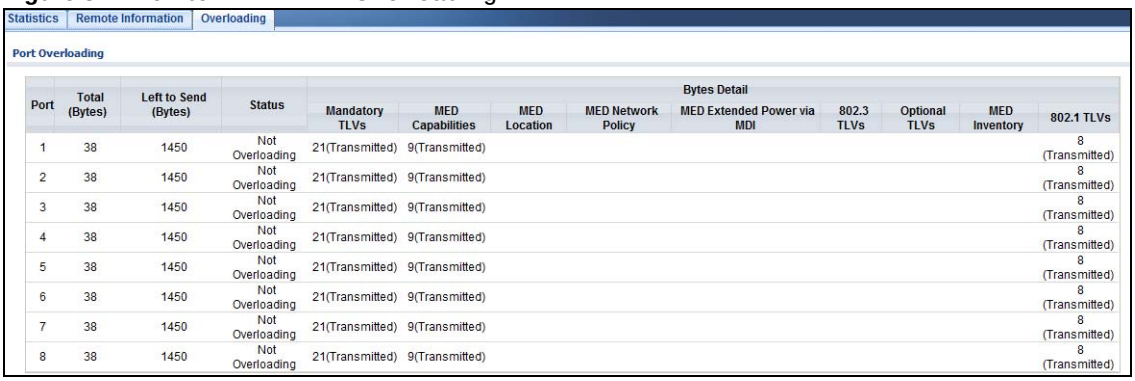
**Table 48** Monitor > LLDP > Remote Information (continued)

| LABEL | DESCRIPTION |
|---|---|
| Action | |
| Detail | Click **Detail** to show more information about this entry. |
| Delete | Click **Delete** to remove the entry. |

## 15.2.3 Overloading

Use this screen to view the Switch's LLDP port overloading. Click **Monitor > LLDP > Overloading** to access this screen.

**Figure 82** Monitor > LLDP > Overloading




| Port | Total (Bytes) | Left to Send (Bytes) | Status | Bytes Detail | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mandatory TLVs | MED Capabilities | MED Location | MED Network Policy | MED Extended Power via MDI | 802.3 TLVs | Optional TLVs | MED Inventory | 802.1 TLVs |
| 1 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 2 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 3 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 4 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 5 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 6 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 7 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |
| 8 | 38 | 1450 | Not Overloading | 21(Transmitted) | 9(Transmitted) | | | | | | | 8 (Transmitted) |

Each field is described in the following table.

**Table 49** Monitor > LLDP > Overloading

| LABEL | DESCRIPTION |
|---|---|
| Port | This label shows the port you are viewing. |
| Total (Bytes) | This field displays the total in bytes. |
| Left to Send (Bytes) | This field displays what is left to send in bytes. |
| Status | This field displays whether the Switch is overloading or not. |
| Bytes Details | This field displays how many bytes used by TLVs |
| Mandatory TLVs | This field displays how many bytes used by mandatory TLVs. |
| MED Capabilities | This field displays how many bytes used by MED capabilities. |
| MED Location | This field displays how many bytes used by MED location. |
| MED Network Policy | This field displays how many bytes used by MED network policy. |
| MED Extended Power via MDI | This field displays how many bytes used by MED extended power via MDI. |
| 802.3 TLVs | This field displays how many bytes used by 802.3 TLVs. |
| Optional TLVs | This field displays how many bytes used by optional TLVs. |
| MED Inventory | This field displays how many bytes used by MED inventory. |
| 802.1 TLVs | This field displays how many bytes used by 802.1 TLVs. |

# 16

# Monitor: Security

## 16.1 Overview

This section provides information for **Security** in **Monitor**.

This link takes you to a screen where you can view the settings or traffic statistics which contain detailed information about specific activities.

### 16.1.1 What You Can Do in this Chapter

- The **Port Security** screen (Section 16.2 on page 88) displays global and port.
- The **802.1X** screen (Section 16.3 on page 89) displays port and authenticated hosts.

## 16.2 Port Security

Port security allows only packets with dynamically learned MAC addresses and/or configured static MAC addresses to pass through a port on the Switch. The Switch can learn up to 8K MAC addresses in total with no limit on individual ports; system total MAC address entry is 8K. Static MAC address still can be configured when port security is enabled; the function of port security is concerned with dynamic mac address learn action. When total MAC address entry is 8k, static MAC can't be configured.

Use this screen to view Switch port security settings. Click **Monitor > Security > Port Security** to access this screen.

**Figure 83** Monitor > Security > Port Security

Port Security

Global

Status Disable

Port

| Port | Status | Max MAC Entry Number | Current Addr Number | Action |
|---|---|---|---|---|
| 1 | Disable | Unlimited | 0 | --- |
| 2 | Disable | Unlimited | 1 | --- |
| 3 | Disable | Unlimited | 0 | --- |
| 4 | Disable | Unlimited | 0 | --- |
| 5 | Disable | Unlimited | 0 | --- |
| 6 | Disable | Unlimited | 0 | --- |
| 7 | Disable | Unlimited | 0 | --- |
| 8 | Disable | Unlimited | 0 | --- |
| LAG1 | Disable | Unlimited | 0 | --- |
| LAG2 | Disable | Unlimited | 0 | --- |
| LAG3 | Disable | Unlimited | 0 | --- |
| LAG4 | Disable | Unlimited | 0 | --- |
| LAG5 | Disable | Unlimited | 0 | --- |
| LAG6 | Disable | Unlimited | 0 | --- |
| LAG7 | Disable | Unlimited | 0 | --- |
| LAG8 | Disable | Unlimited | 0 | --- |

Each field is described in the following table.

**Table 50** Monitor > Security > Port Security

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| Status | This field displays the status of global control information. |
| Port | |
| Port | This field displays a port number. |
| Status | This field displays the status of port based control information. |
| Max MAC Entry Number | Displays the designated maximum number of allowed MAC entries. The maximum MAC entry number can be learned for individual ports. |
| Current Addr Number | This field displays the number of the current addr. |
| Action | This field displays the action(s) the Switch takes on the associated classified traffic flow. |

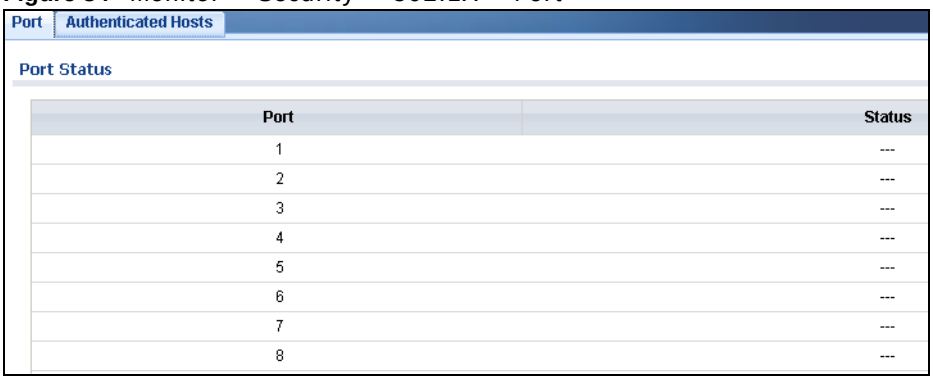
# 16.3 802.1X

Use this screen to view Switch 802.1x security settings.

## 16.3.1 Port

Use this screen to view the Switch's 802.1x port status. Click **Monitor > Security > 802.1X > Port** to access this screen.

**Figure 84** Monitor > Security > 802.1X > Port




Each field is described in the following table.

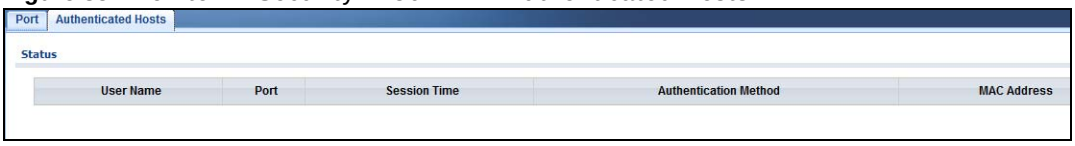
**Table 51** Monitor > Security > 802.1X > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | This label shows the port you are viewing. |
| Status | This field displays status of the port. |

## 16.3.2 Authenticated Hosts

Use this screen to view the Switch's 802.1x security authenticated host status. Click **Monitor > Security > 802.1X > Authenticated Hosts** to access this screen.

**Figure 85** Monitor > Security > 802.1X> Authenticated Hosts




Each field is described in the following table.

**Table 52** Monitor > Security > 802.1X > Authenticated Hosts

| LABEL | DESCRIPTION |
|---|---|
| User Name | This field displays the name of a user. |
| Port | This label shows the port you are viewing. |
| Session Time | This label shows the session time. |
| Authentication Method | This label shows the authentication method. |
| MAC Address | This field displays the source MAC address in the binding. |

# 17

# Monitor: Management

## 17.1 Overview

This section provides information for **Management** in **Monitor**.

This chapter describes how to view management settings on the Switch.

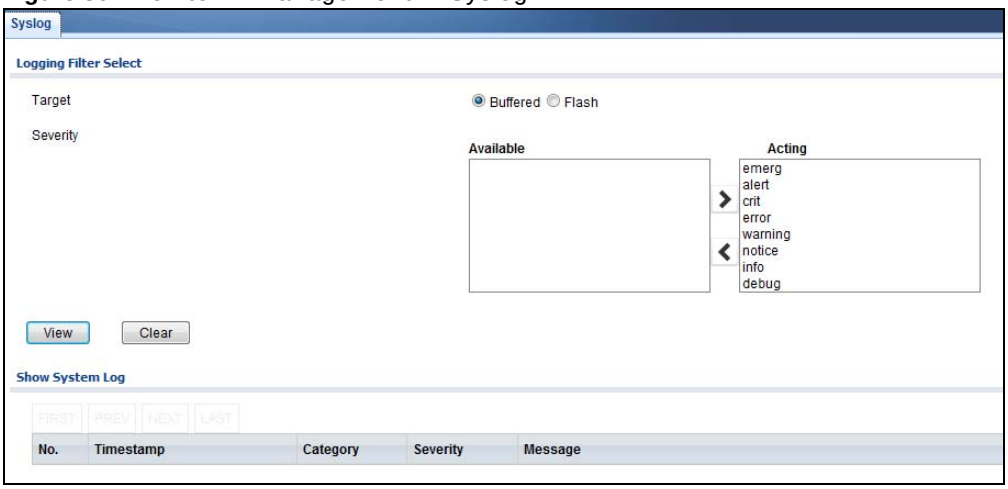
### 17.1.1 What You Can Do in this Chapter

- The **Syslog** screen (Section 17.2 on page 91) displays logging filter select and shows system log.
- The **Error Disable** screen (Section 17.3 on page 92) displays global and port.

## 17.2 Syslog

Use this screen to view Switch syslog management. Click **Monitor > Management > Syslog** to access this screen.

**Figure 86** Monitor > Management > Syslog



Each field is described in the following table.

**Table 53** Monitor > Management > Syslog

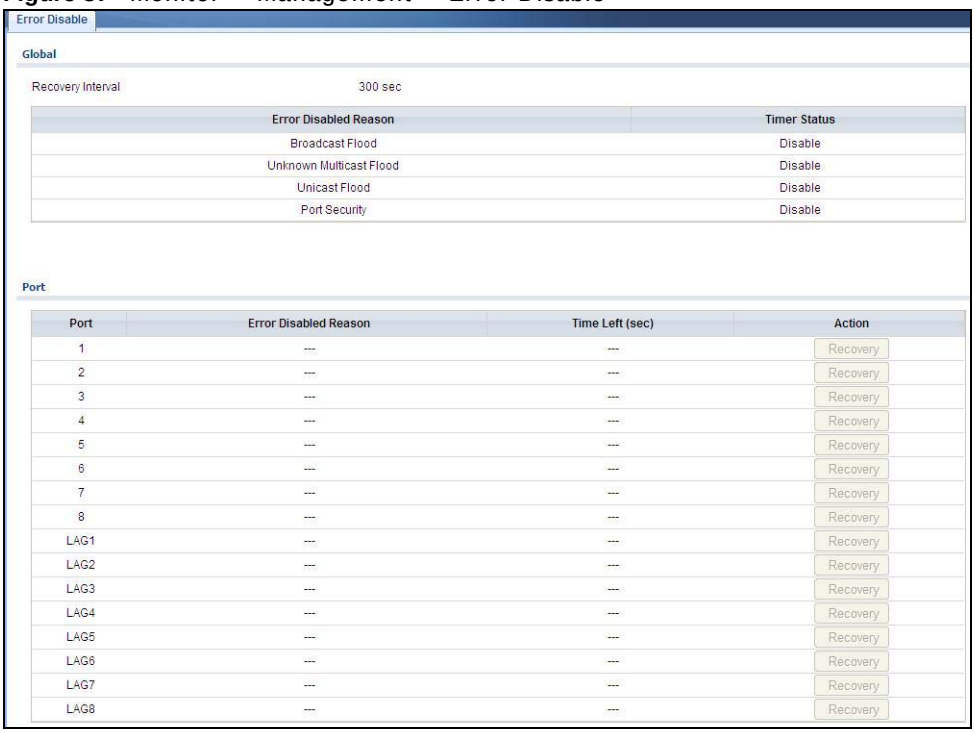
| LABEL | DESCRIPTION |
|---|---|
| Logging Filter Select | |
| Target | Select **Buffered** or **Flash.**<br>Buffered: Login saved to temporary memory.<br>Flash: Login saved to permanent memory. |
| Severity | This field displays two options: Available and Acting.<br>Severity type: crit, emerg, alert, error, warning, notice, info, and debug. |
| Available | Click **<** to move a severity type from the acting box to the available box.<br>Click **>** to move a severity type to the acting box from the available box. |
| Acting | Click **<** to move a severity type from the acting box to the available box.<br>Click **>** to move a severity type to the acting box from the available box. |
| > | Click **>** to move a severity type to the acting box from the available box. |
| < | Click **<** to move a severity type from the acting box to the available box. |
| View | Click **View** to display results**.** |
| Clear | Click **Clear** to clear results**.** |
| Show System Log | The syslog protocol allows devices to send event notification messages across an IP network to syslog servers that collect the event messages. A syslog-enabled device can generate a syslog message and send it to a syslog server |
| No. | This field displays the number you are viewing. |
| Timestamp | This field displays the timestamp. |
| Category | This field displays the category. |
| Severity | This field displays the severity. |
| Message | The syslog protocol allows devices to send event notification messages across an IP network to syslog servers that collect the event messages. A syslog-enabled device can generate a syslog message and send it to a syslog server. |

# 17.3 Error Disable

This link takes you to a screen where you can view CPU protection and error disable recovery.

Use this screen to view Switch global and port error disable management. Click **Monitor > Management > Error Disable** to access this screen.

**Figure 87** Monitor > Management > Error Disable




Each field is described in the following table.

**Table 54** Monitor > Management > Error Disable

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| Recovery Interval | View the number of seconds (from 30 to 2592000) for the time interval of the recovery. |
| Error Disabled Reason | This field displays the supported features that allow the Switch to shut down a port or discard packets on a port according to the feature requirements and what action you configure. |
| Timer Status | Select this option to allow the Switch to wait for the specified time interval to activate a port or allow specific packets on a port, after the error was gone. Deselect this option to turn off this rule. |
| Port | |
| Port | This field displays the port number. |
| Error Disabled Reason | This field displays the supported features that allow the Switch to shut down a port or discard packets on a port according to the feature requirements and what action you configure. |
| Time Left (sec) | This field displays the time left in seconds. |
| Action | This field displays the action. |

# 18

# Configuration: System

## 18.1 Overview

This section provides information for **System** in **Configuration**.

### 18.1.1 What You Can Do in this Chapter

- The IP screen (Section 18.2 on page 94) displays IPv4 and IPv6 settings.
- The Time screen (Section 18.3 on page 96) displays the system time and SNTP settings.
- The Information screen (Section 18.4 on page 97) displays the system information.

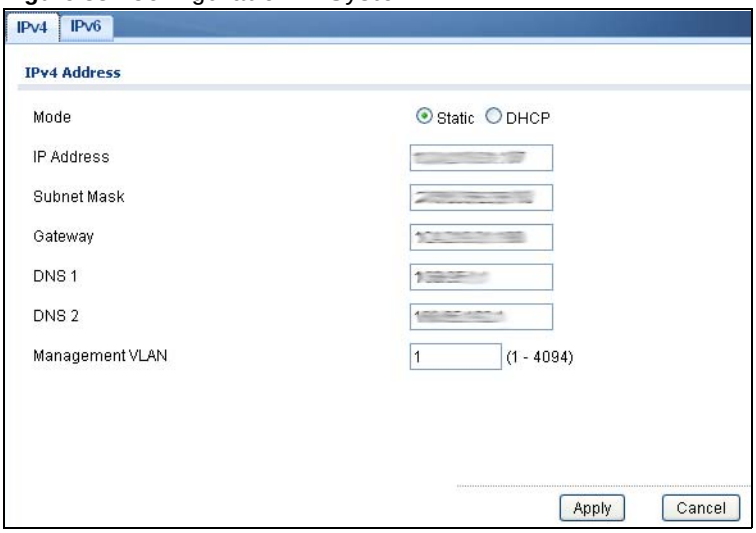
## 18.2 IP

The Switch needs an IP address for it to be managed over the network. The factory default IP address is 192.168.1.1. The subnet mask specifies the network number portion of an IP address. The factory default subnet mask is 255.255.255.0.

### 18.2.1 The IPv4 Screen

Use this screen to view the IPv4 interface status and Switch's management IPv4 addresses. Click **Configuration > System > IP > IPv4** to open this screen.

**Figure 88** Configuration > System > IP > IPv4



The following table describes the labels in this screen.

**Table 55** Configuration > System > IP > IPv4

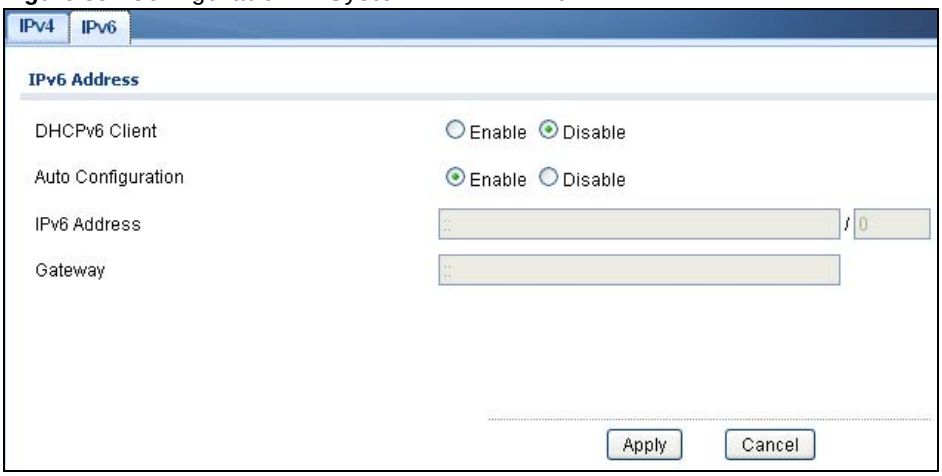
| LABEL | DESCRIPTION |
|---|---|
| IPv4 Address | |
| Mode | Select Static to define the IPv4 network properties or DHCP to allow the device to define the properties. |
| IP Address | Enter the IP address of the Switch in the IP domain. |
| Subnet Mask | Enter the subnet mask of the Switch in the IP domain. |
| Gateway | Enter the IP address of the default outgoing gateway in dotted decimal notation, for example 192.168.1.254. |
| DNS Server 1 | Enter the IP address for the primary domain name server. DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. |
| DNS Server 2 | Enter the IP address for the secondary domain name server. DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. |
| Management VLAN | Enter the port number of the management VLAN. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 18.2.2 The IPv6 Screen

Use this screen to view the IPv6 interface status and Switch's management IPv6 addresses.

Click **Configuration** > **System** > **IP** > **IPv6** to open this screen.

**Figure 89** Configuration > System > IP > IPv6




The following table describes the labels in this screen.

**Table 56** Configuration > System > IP > IPv6

| LABEL | DESCRIPTION |
|---|---|
| IPv6 Address | |
| DHCPv6 Client | Select **Enable** to allow the device to act as a DHCPv6 client or **Disable** to disallow it. This field displays the Switch's DHCP settings when it is acting as a DHCPv6 client. |
| Auto Configuration | Select **Enable** to allow the device to auto-configure the IPv6 properties or **Disable** to manually enter the properties. |

**Table 56** Configuration > System > IP > IPv6 (continued)

| LABEL | DESCRIPTION |
|---|---|
| IPv6 Address | Enter the IPv6 address of the Switch in the IP domain. |
| Gateway | Enter the IPv6 address of the default outgoing gateway. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

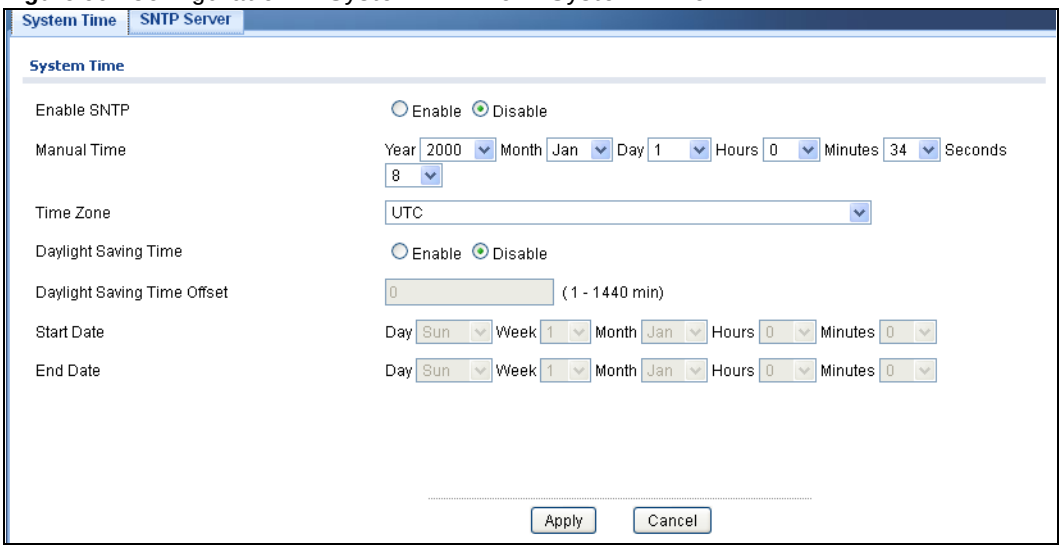
# 18.3 Time

The Time option is used to setup the system time and SNTP (Simple Network Time Protocol) server settings.

## 18.3.1 The System Time Screen

In the navigation panel, click **Configuration > System > Time** > **System Time** to display the screen as shown.

**Figure 90** Configuration > System > Time > System Time




The following table describes the labels in this screen.

**Table 57** Configuration > System > Time

| LABEL | DESCRIPTION |
|---|---|
| System Time | |
| Enable SNTP | Select **Enable** to enable using a simple network time protocol (SNTP) server to manage the system time or **Disable** to manually manage system time. |
| Manual Time | Select the system date and time values from the dropdown lists. |
| Time Zone | Select the time zone from the dropdown list. |
| Daylight Saving Time | Select **Enable** to use Daylight Saving Time to offset the system time or **Disable** not adjust system time. |

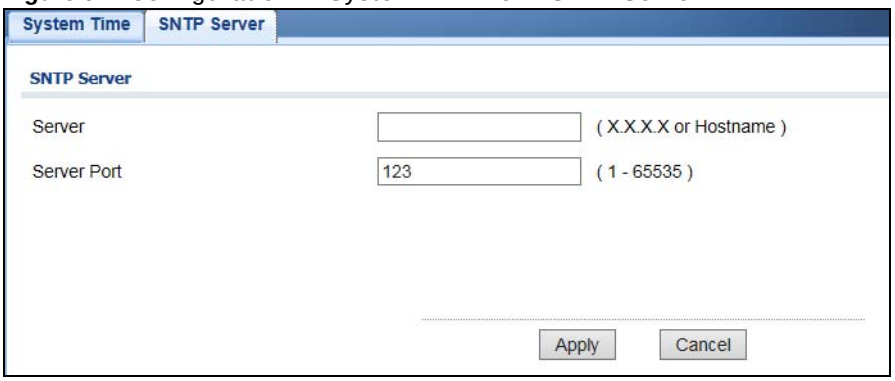
**Table 57** Configuration > System > Time (continued)

| LABEL | DESCRIPTION |
|---|---|
| Daylight Saving Time Offset | Enter the daylight saving time offset value in minutes. |
| Start Date | Select the start date of the daylight saving time period from the dropdown lists. |
| End Date | Select the end date of the daylight saving time period from the dropdown lists. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

### 18.3.2 The SNTP Server Screen

In the navigation panel, click **Configuration > System > Time > SNTP Server** to display the screen as shown.

**Figure 91** Configuration > System > Time > SNTP Server




The following table describes the labels in this screen.

**Table 58** Configuration > System > Time > SNTP Server

| LABEL | DESCRIPTION |
|---|---|
| SNTP Server | |
| Server | Enter the address of the simple network time protocol (SNTP) server as an IP address (192.168.0.1) or as a URL (www.zyxel.com). |
| Server Port | Enter the port number of the SNTP server. The numeric value can be between 1 and 65535. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

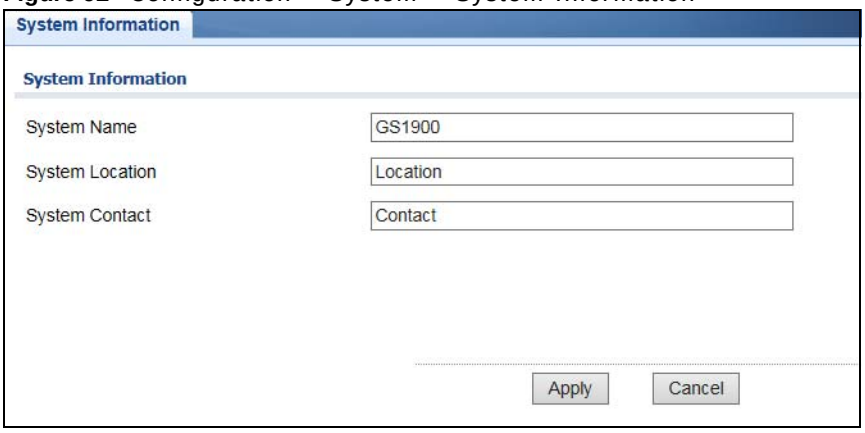
## 18.4 Information

The information option is used to set the following system information properties: system name, system location, and system contact information.

### 18.4.1 The System Information Screen

In the navigation panel, click **Configuration** > **System** > **System Information** to display the screen as shown. You can set the system name, system location, and system contact.

**Figure 92** Configuration > System > System Information




The following table describes the labels in this screen.

**Table 59** Configuration > System > System Information

| LABEL | DESCRIPTION |
|---|---|
| System Information | |
| System Name | Enter the descriptive name of the Switch for identification purposes. |
| System Location | Enter the geographic location of the Switch for identification purposes. |
| System Contact | Enter the person in charge of the Switch for identification purposes. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 19

# Configuration: Port

## 19.1 Overview

This section provides information for **Port** in **Configuration.**

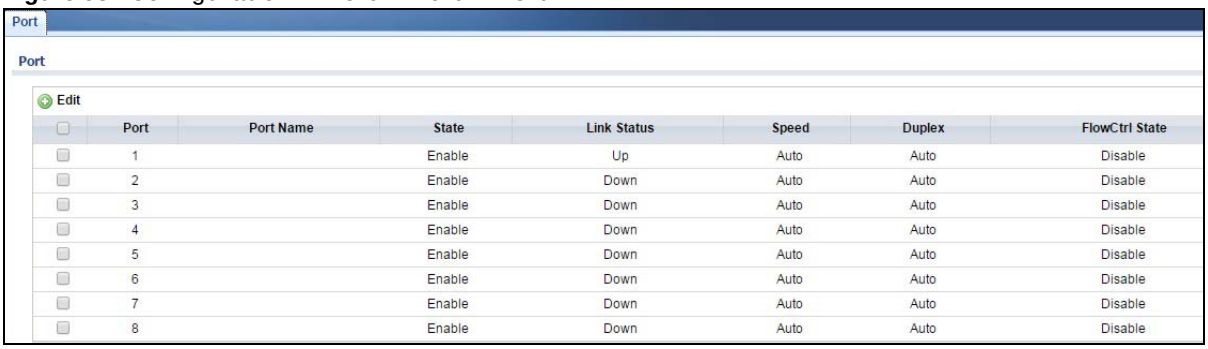
### 19.1.1 What You Can Do in this Chapter

- The Port screen (Section 19.2 on page 99) displays general port settings.
- The EEE screen (Section 19.3 on page 101) displays the port EEE settings.
- The PoE screen (Section 19.4 on page 102) displays the port PoE settings.
- The Bandwidth Management screen (Section 19.5 on page 108) displays the port ingress and egress settings.
- The Storm Control screen (Section 19.6 on page 110) displays the port storm control settings.

## 19.2 Port

Use this screen to view Switch port settings and select ports for configuration. Click **Configuration** > **Port** > **Port** > **Port** to open this screen.

**Figure 93** Configuration > Port > Port > Port




| Port | Port Name | State | Link Status | Speed | Duplex | FlowCtrl State |
|---|---|---|---|---|---|---|
| 1 | | Enable | Up | Auto | Auto | Disable |
| 2 | | Enable | Down | Auto | Auto | Disable |
| 3 | | Enable | Down | Auto | Auto | Disable |
| 4 | | Enable | Down | Auto | Auto | Disable |
| 5 | | Enable | Down | Auto | Auto | Disable |
| 6 | | Enable | Down | Auto | Auto | Disable |
| 7 | | Enable | Down | Auto | Auto | Disable |
| 8 | | Enable | Down | Auto | Auto | Disable |

The following table describes the labels in this screen.

**Table 60** Configuration > Port > Port > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |

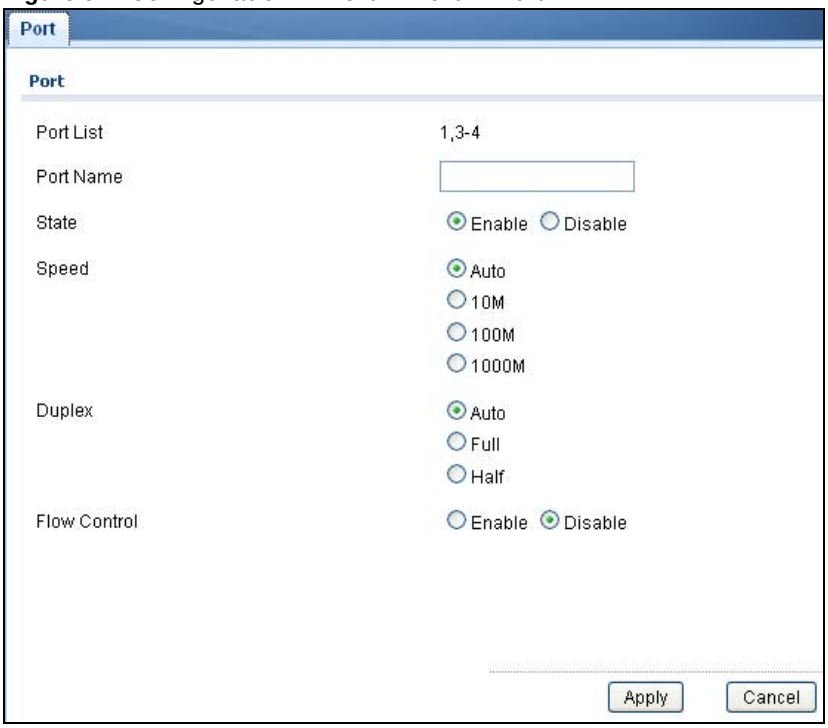
**Table 60** Configuration > Port > Port > Port (continued)

| LABEL | DESCRIPTION |
|---|---|
| Port Name | Displays a descriptive name that identifies this port. The length of the name can be up to 32 alpha-numerical characters.<br><br>Note: Due to space limitations, the port name may be truncated in some web configurator screens. |
| State | Displays the port status as enabled or disabled. |
| Link Status | Displays the link status as up or down. |
| Speed | Displays the speed of the Ethernet connection on this port. The choices are **Auto**, **10M**, **100M**, and **1000M**. |
| Duplex | Displays the duplex mode of the Ethernet connection on this port. The choices are **auto**, **full**, or **half**. |
| FlowCtrl State | Displays the flow control state as enabled or disabled. A concentration of traffic on a port decreases port bandwidth and overflows buffer memory causing packet discards and frame losses. Flow Control is used to regulate transmission of signals to match the bandwidth of the receiving port. |

## 19.2.1 The Port Edit Screen

Use this screen to configure Switch port settings. Click **Configuration** > **Port** > **Port** > **Edit** to open this screen.

**Figure 94** Configuration > Port > Port > Edit



The following table describes the labels in this screen.

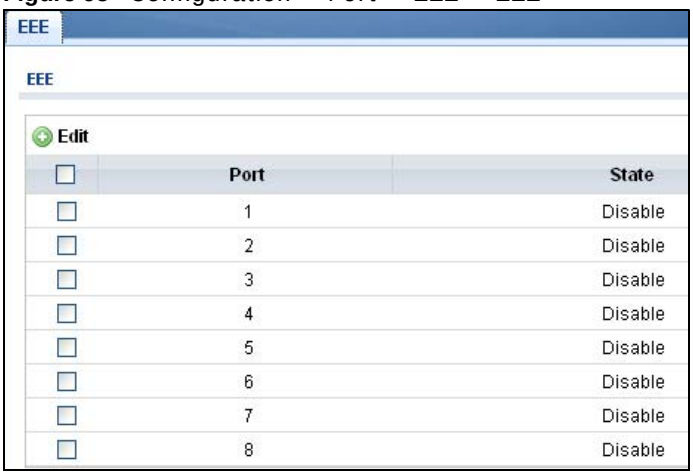
**Table 61** Configuration > Port > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port Edit | |
| Port List | Displays the list of port index numbers that are being configured. |
| Port Name | Enter a descriptive name that identifies this port. The length of the name can be up to 32 alpha-numerical characters.<br>Note: Due to space limitations, the port name may be truncated in some web configurator screens. |
| State | Select **Enable** to enable the ports or **Disable** to disable them. |
| Speed | Select the speed of the Ethernet connection on this port. The choices are **Auto**, **10M**, **100M**, and **1000M**. |
| Duplex | Select the duplex mode of the Ethernet connection on this port. The choices are **Auto**, **Full**, or **Half**. |
| FlowCtrl State | Select **Enable** to allow the device to manage data flow or **Disable** to have no data flow management. A concentration of traffic on a port decreases port bandwidth and overflows buffer memory causing packet discards and frame losses. Flow Control is used to regulate transmission of signals to match the bandwidth of the receiving port. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 19.3 EEE

Use this screen to view Switch port Energy-Efficient Ethernet (EEE) settings and select ports for configuration. Click **Configuration** > **Port** > **EEE** > **EEE** to open this screen.

**Figure 95** Configuration > Port > EEE > EEE



The following table describes the labels in this screen.

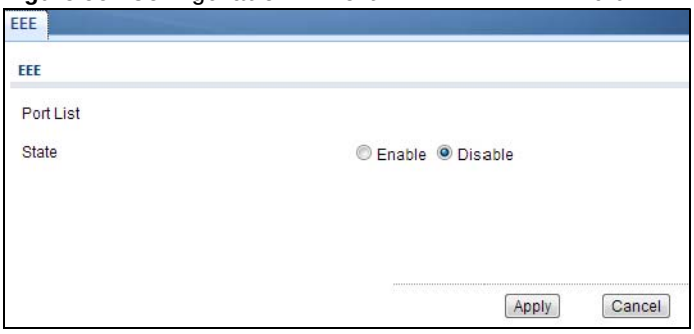
**Table 62** Configuration > Port > EEE > EEE

| LABEL | DESCRIPTION |
|---|---|
| EEE | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |
| State | Displays the port status as enabled or disabled. |

### 19.3.1 The EEE Edit Screen

Use this screen to configure Switch port EEE settings. Click **Configuration** > **Port** > **EEE** > **EEE** > **Edit** to open this screen.

**Figure 96** Configuration > Port > EEE > EEE > Edit




The following table describes the labels in this screen.

**Table 63** Configuration > Port > EEE > EEE > Edit

| LABEL | DESCRIPTION |
|---|---|
| EEE | |
| Port List | Displays the list of port index numbers that are being configured. |
| State | Select **Enable** to designate the ports as EEE or **Disable** to not designate them as EEE. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

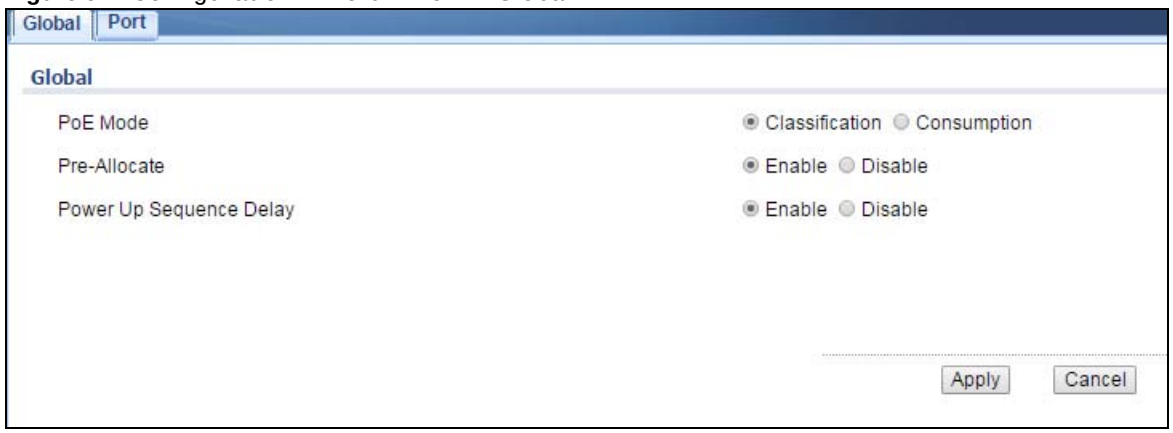
## 19.4 PoE

The Switch supports both the IEEE 802.3af Power over Ethernet (PoE) and IEEE 802.3at High Power over Ethernet (PoE) standards. The Switch is Power Sourcing Equipment (PSE) because it provides a source of power via its Ethernet ports, and each device that receives power through an Ethernet port is a Powered Device (PD).

## 19.4.1 The Global Screen

In the navigation panel, click **Configuration > Port > PoE > Global** to display the screen as shown. Use this screen to configure Power over Ethernet (PoE) global settings.

**Figure 97** Configuration > Port > PoE > Global




The following table describes the labels in this screen.

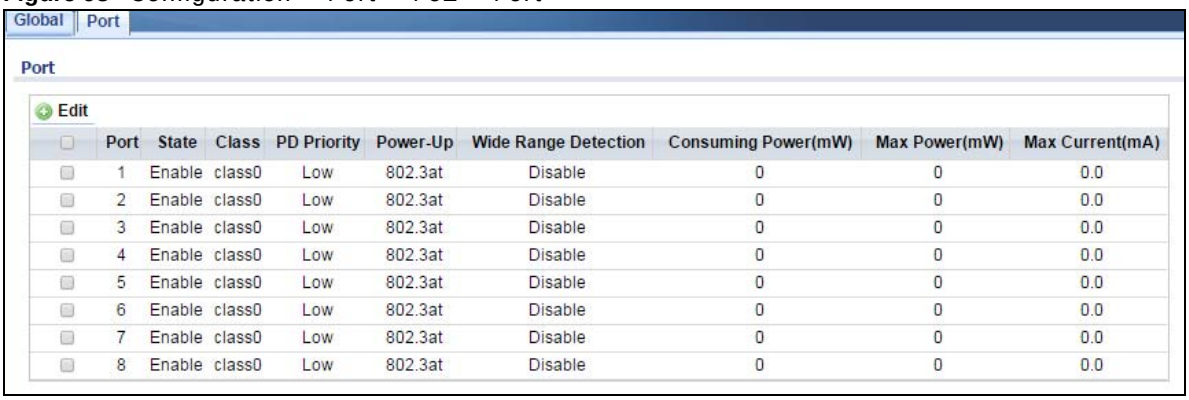
**Table 64** Configuration > Port > PoE > Global

| LABEL | DESCRIPTION |
|---|---|
| PoE Mode | Select the power management mode you want the Switch to use.<br>• **Classification** - Select this if you want the Switch to reserve the Max Power (mW) to each PD according to the priority level. If the total power supply runs out, PDs with lower priority do not get power to function.<br>• **Consumption** - Select this if you want the Switch to manage the total power supply so that each connected PD gets a resource. However, the power allocated by the Switch may be less than the Max Power (mW) of the PD. PDs with higher priority also get more power than those with lower priority levels. |
| Pre-Allocate | This field is only available on GS1900-8HP (Revision B1) and GS1900-10HP only.<br>Select **Enable** to have the Switch pre-allocate power to each port based on the classification of the PD device. Otherwise, select **Disable**. |
| Power Up Sequence Delay | This field is only available on GS1900-8HP (Revision B1) and GS1900-10HP only.<br>Select **Enable** to allow PoE ports to be powered up one-by-one randomly or **Disable** to allow them all to be powered up at the same time. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 19.4.2 The Port Screen

Use this screen to view Switch port PoE settings and select ports for configuration. Click **Configuration** > **Port** > **PoE** > **Port** to open this screen.

**Figure 98** Configuration > Port > PoE > Port




| Port | State | Class | PD Priority | Power-Up | Wide Range Detection | Consuming Power(mW) | Max Power(mW) | Max Current(mA) |
|---|---|---|---|---|---|---|---|---|
| 1 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 2 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 3 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 4 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 5 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 6 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 7 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |
| 8 | Enable | class0 | Low | 802.3at | Disable | 0 | 0 | 0.0 |

The following table describes the labels in this screen.

**Table 65** Configuration > Port > PoE > Port

| LABEL | DESCRIPTION |
|---|---|
| Edit | Select one or more ports in the first column of the table and click this to configure PoE settings for the ports. |
| Port | Displays the port index number. |
| State | Displays which ports can receive power from the Switch. You can set this in the **Configuration** > **Port** > **PoE Edit** screen.<br>• **Disable** - The powered device (PD) connected to this port cannot get power.<br>• **Enable** - The PD connected to this port can receive power. |
| Class | This shows the power classification of the PD.<br>This is a number from 0 to 4, where each value represents a range of power (W) and current (mA) that the PD requires to function. The ranges are as follows.<br>• **Class 0** - Default, 0.44 to 12.94<br>• **Class 1** - Optional, 0.44 to 3.84<br>• **Class 2** - Optional, 3.84 to 6.49<br>• **Class 3** - Optional, 6.49 to 12.95<br>• **Class 4** - Reserved (PSEs classify as Class 0) in a switch that supports IEEE 802.3af only. Optional, 12.95 to 25.50 in a switch that supports IEEE 802.3at. |
| PD Priority | When the total power requested by the PDs exceeds the total PoE power budget on the Switch, you can set the PD priority to allow the Switch to provide power to ports with higher priority first.<br>• **Critical** has the highest priority.<br>• **High** has the Switch assign power to the port after all critical priority ports are served.<br>• **Medium** has the Switch assign power to the port after all critical and high priority ports are served.<br>• **Low** has the Switch assign power to the port after all critical, high and medium priority ports are served. |

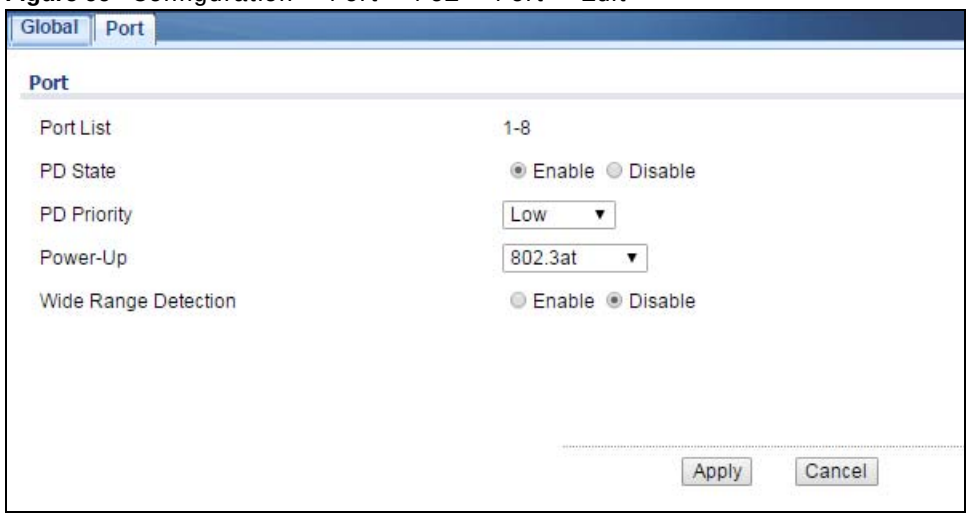
**Table 65** Configuration > Port > PoE > Port (continued)

| LABEL | DESCRIPTION |
|---|---|
| Power-Up | This shows how the Switch provides power to the connected PD at power-up.<br><br>**802.3af** - the Switch follows the IEEE 802.3af Power over Ethernet standard to supply power to the connected PDs during power-up.<br><br>**Legacy** - the Switch can provide power to the connected PDs that require high inrush currents at power-up.<br><br>**Pre-802.3at** - the Switch initially offers power on the port according to the IEEE 802.3af standard, and then switches to support the IEEE 802.3at standard within 75 milliseconds after a PD is connected to the port. Select this option if the Switch is performing 2-event Layer-1 classification (PoE+ hardware classification) or the connected PD is NOT performing Layer 2 power classification using Link Layer Discovery Protocol (LLDP).<br><br>**802.3at** - the Switch supports the IEEE 802.3at High Power over Ethernet standard and can supply power of up to 30W per Ethernet port. IEEE 802.3at is also known as PoE+ or PoE Plus. An IEEE 802.3at compatible device is referred to as Type 2. Power Class 4 (High Power) can only be used by Type 2 devices. If the connected PD requires a Class 4 current when it is turned on, it will be powered up in this mode. |
| Wide Range Detection | This field is available on GS1900-8HP (Revision B1) and GS1900-10HP only.<br><br>This shows whether the Switch enables a wider detection range for the PD or not.<br><br>The Switch detects whether a connected device is a powered device or not before supplying power to the port. For the PD detection, the Switch applies a fixed voltage to the device and then receives returned current. If the returned current is within the IEEE 802.3AF/AT standard range, the device will be considered as a valid PD by the Switch.<br><br>However, in real cases, environmental interferences might easily cause the returned current out of the standard range. This field displays **Enable** if the Switch applies a wider range for PD detection. Otherwise, it displays **Disable**. |
| Consuming Power (mW) | Displays the current amount of power consumed by the PD from the Switch on this port. |
| Max Power (mW) | Displays the maximum amount of power the PD could use from the Switch on this port. The maximum power the Switch can supply to a port is 30W. |
| Max Current (mA) | Displays the maximum amount of current drawn by the PD from the Switch on this port. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 19.4.3 The PoE Edit Screen

Use this screen to configure Switch port PoE settings. Click **Configuration** > **Port** > **PoE** > **Port** > **Edit** to open this screen.

**Figure 99** Configuration > Port > PoE > Port > Edit




The following table describes the labels in this screen.

**Table 66** Configuration > Port > PoE > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port List | Displays the list of port index numbers that are being configured. |
| PD State | Select **Enable** to provide power to a PD connected to the port or **Disable** so the port cannot receive power from the Switch. |
| PD Priority | This field is not available for the SFP or SFP+ ports.<br><br>When the total power requested by the PDs exceeds the total PoE power budget on the Switch, you can set the PD priority to allow the Switch to provide power to ports with higher priority.<br><br>Select **Critical** to give the PD connected to this port the highest priority.<br><br>Select **High** to set the Switch to assign the remaining power to the port after all critical priority ports are served.<br><br>Select **Medium** to set the Switch to assign the remaining power to the port after all critical and high priority ports are served.<br><br>Select **Low** to set the Switch to assign the remaining power to the port after all critical, high and medium priority ports are served. |
| Power-Up | Set how the Switch provides power to a connected PD at power-up.<br><br>**802.3af** - the Switch follows the IEEE 802.3af Power over Ethernet standard to supply power to the connected PDs during power-up.<br><br>**Legacy** - the Switch can provide power to the connected PDs that require high inrush currents at power-up.<br><br>**Pre-802.3at** - the Switch initially offers power on the port according to the IEEE 802.3af standard, and then switches to support the IEEE 802.3at standard within 75 milliseconds after a PD is connected to the port. Select this option if the Switch is performing 2-event Layer-1 classification (PoE+ hardware classification) or the connected PD is NOT performing Layer 2 power classification using Link Layer Discovery Protocol (LLDP).<br><br>**802.3at** - the Switch supports the IEEE 802.3at High Power over Ethernet standard and can supply power of up to 30W per Ethernet port. IEEE 802.3at is also known as PoE+ or PoE Plus. An IEEE 802.3at compatible device is referred to as Type 2. Power Class 4 (High Power) can only be used by Type 2 devices. If the connected PD requires a Class 4 current when it is turned on, it will be powered up in this mode. |

**Table 66** Configuration > Port > PoE > Port > Edit (continued)

| LABEL | DESCRIPTION |
|---|---|
| Wide Range Detection | This field is available on GS1900-8HP (Revision B1) and GS1900-10HP only.<br><br>Select whether to enable a wider detection range for the PD or not.<br><br>The Switch detects whether a connected device is a powered device or not before supplying power to the port. For the PD detection, the Switch applies a fixed voltage to the device and then receives returned current. If the returned current is within the IEEE 802.3AF/AT standard range, the device will be considered as a valid PD by the Switch.<br><br>However, in real cases, environmental interferences might easily cause the returned current out of the standard range. This field displays **Enable** if the Switch applies a wider range for PD detection. Otherwise, it displays **Disable**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

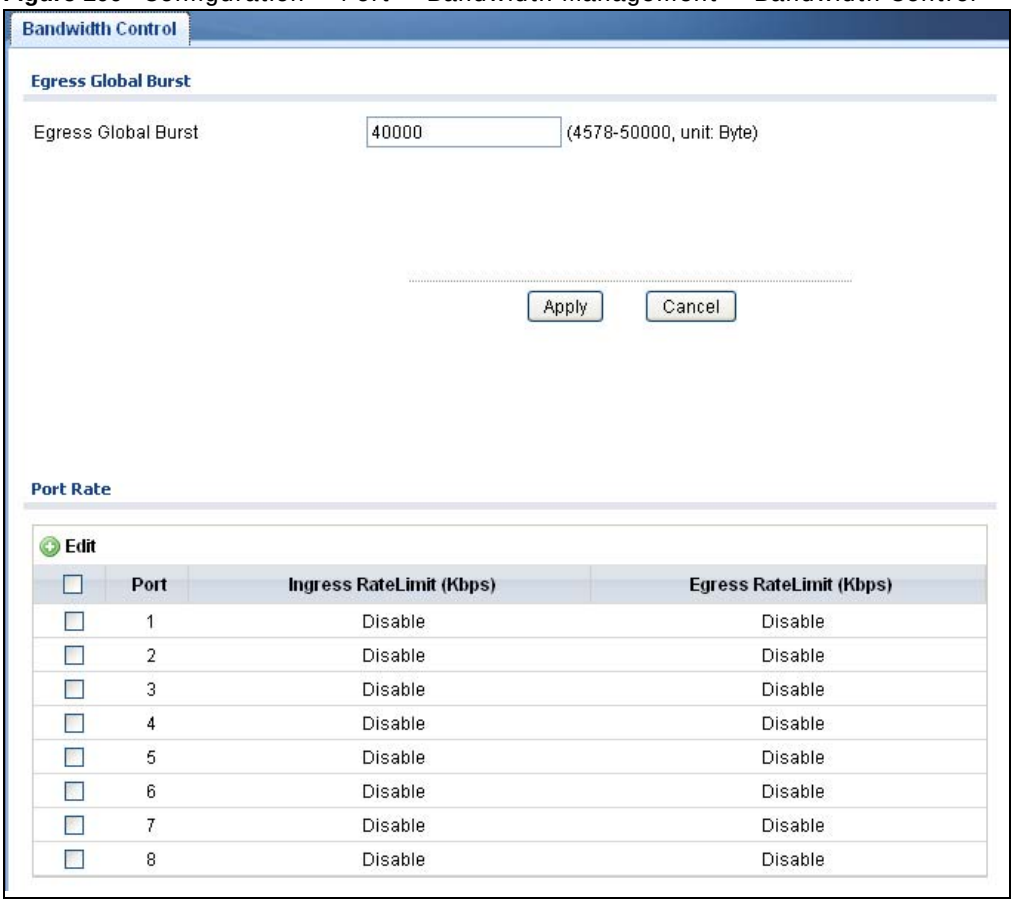
# 19.5 Bandwidth Management

Bandwidth management means defining a maximum allowable bandwidth for incoming and/or outgoing traffic flows on a port.

## 19.5.1 The Bandwidth Control Screen

Use this screen to view Egress Bandwidth Management settings and select ports for configuration. Click **Configuration** > **Port** > **Bandwidth Management** > **Bandwidth Control** to open this screen.

**Figure 100** Configuration > Port > Bandwidth Management > Bandwidth Control




The following table describes the labels in this screen.

**Table 67** Configuration > Port > Bandwidth Management > Bandwidth Control

| LABEL | DESCRIPTION |
|---|---|
| Egress Global Burst | |
| Egress Global Burst | Specify the current egress burst size in bytes for all ports. |
| Port Rate | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |

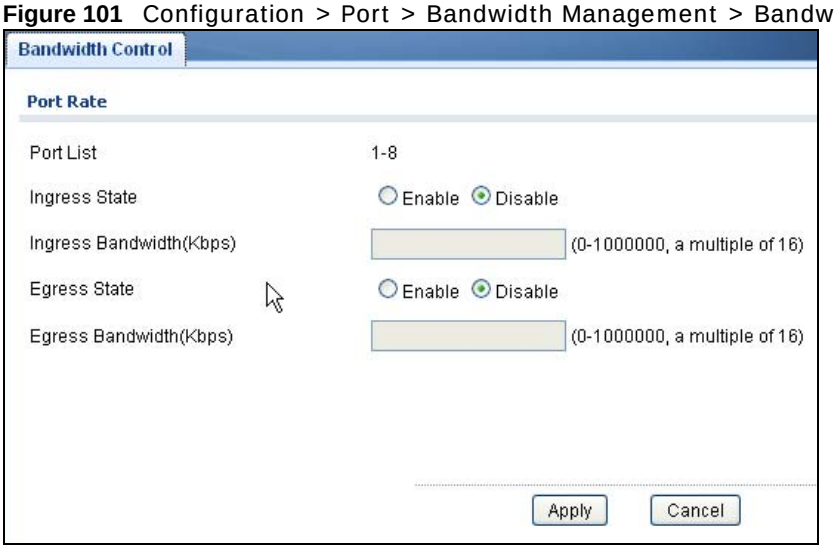
**Table 67** Configuration > Port > Bandwidth Management > Bandwidth Control (continued)

| LABEL | DESCRIPTION |
|---|---|
| Ingress Rate Limit (Kbps) | Displays the maximum bandwidth allowed in kilobits per second (Kbps) for the incoming traffic flow on a port. |
| Egress Rate Limit (Kbps) | Displays the maximum bandwidth allowed in kilobits per second (Kbps) for the outgoing traffic flow on a port. |

## 19.5.2 The Port Rate Edit Screen

Use this screen to configure port rate Bandwidth Management settings. Click **Configuration** > **Port** > **Bandwidth Management** > **Bandwidth Control** > **Edit** to open this screen.

**Figure 101** Configuration > Port > Bandwidth Management > Bandwidth Control > Edit




The following table describes the labels in this screen.

**Table 68** Configuration > Port > Bandwidth Management > Bandwidth Control > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port Rate | |
| Port List | Displays the list of port index numbers that are being configured. |
| Ingress State | Select **Enable** to activate ingress peak rate limits on the port(s). |
| Ingress Bandwidth (Kbps) | Enter the maximum bandwidth allowed in kilobits per second (Kbps) for the outgoing traffic flow on a port. |
| Egress State | Select **Enable** to activate egress peak rate limits on the port(s). |
| Egress Bandwidth (Kbps) | Enter the maximum bandwidth allowed in kilobits per second (Kbps) for the outgoing traffic flow on a port. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

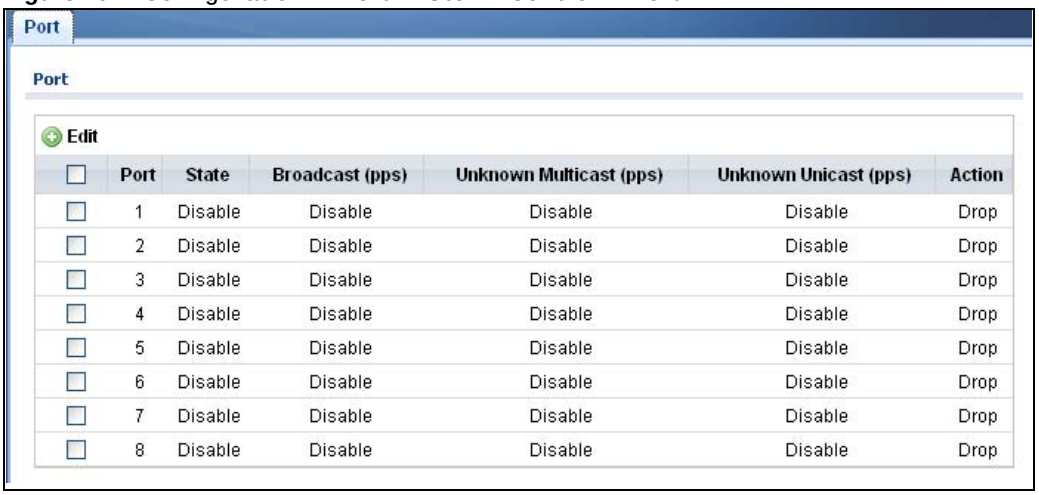
# 19.6 Storm Control

Broadcast storm control limits the number of broadcast, multicast and destination lookup failure (DLF) packets the Switch receives per second on the ports. When the maximum number of allowable broadcast, multicast and/or DLF packets is reached per second, the subsequent packets are discarded. Enable this feature to reduce broadcast, multicast and/or DLF packets in your network. You can specify limits for each packet type on each port.

## 19.6.1 The Port Screen

Use this screen to view Storm Control settings for individual ports. Click **Configuration** > **Port** > **Storm Control** > **Port** to open this screen.

**Figure 102** Configuration > Port > Storm Control > Port




| Port | State | Broadcast (pps) | Unknown Multicast (pps) | Unknown Unicast (pps) | Action |
|---|---|---|---|---|---|
| 1 | Disable | Disable | Disable | Disable | Drop |
| 2 | Disable | Disable | Disable | Disable | Drop |
| 3 | Disable | Disable | Disable | Disable | Drop |
| 4 | Disable | Disable | Disable | Disable | Drop |
| 5 | Disable | Disable | Disable | Disable | Drop |
| 6 | Disable | Disable | Disable | Disable | Drop |
| 7 | Disable | Disable | Disable | Disable | Drop |
| 8 | Disable | Disable | Disable | Disable | Drop |

The following table describes the labels in this screen.

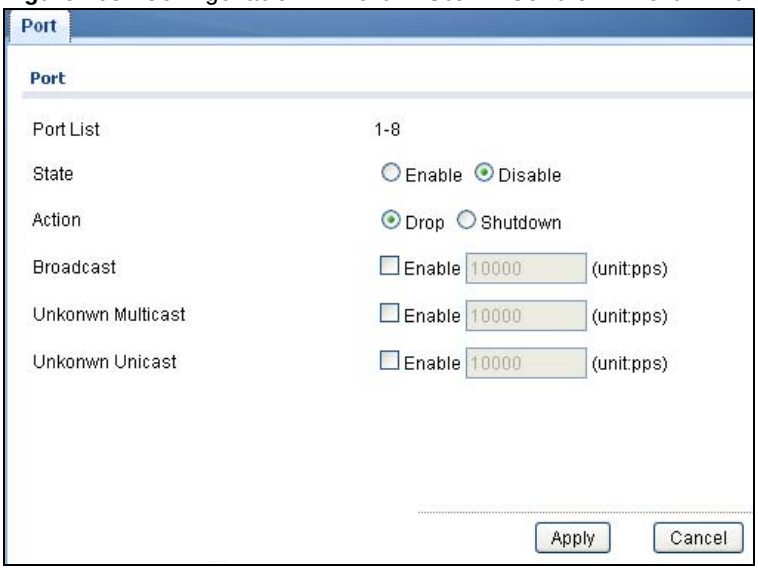
**Table 69** Configuration > Port > Storm Control > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |
| State | Displays whether the traffic storm control on the Switch is enabled or disabled. |
| Broadcast (pps) | Displays how many broadcast packets the port receives per second. |
| Unknown Multicast (pps) | Displays how many multicast packets the port receives per second. |
| Unknown Unicast (pps) | Displays how many unicast packets the port receives per second. |
| Action | Displays the action the device takes when a limit is reached. The following options are available:<br>• **Drop** - drop the packet.<br>• **Shutdown** - shutdown the connection. |

## 19.6.2 The Port Edit Screen

Use this screen to configure Storm Control settings for individual ports. Click **Configuration** > **Port** > **Storm Control** > **Port** > **Edit** to open this screen.

**Figure 103** Configuration > Port > Storm Control > Port > Edit




The following table describes the labels in this screen.

**Table 70** Configuration > Port > Storm Control > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port List | Displays the port list index number(s). |
| State | Select **Enable** to activate traffic storm control on the port(s). |
| Action | Determines the action the device takes when a limit is reached. The following options are available:<br>• **Drop** - drop the packet when limit is reached.<br>• **Shutdown** - shutdown the connection when a limit is reached. |
| Broadcast (pps) | Click the **Enable** checkbox to active the feature.<br>Enter the maximum number of broadcast packets the port can receive per second. |
| Unknown Multicast (pps) | Click the **Enable** checkbox to active the feature.<br>Enter the maximum number of multicast packets the port can receive per second. |
| Unknown Unicast (pps) | Click the **Enable** checkbox to active the feature.<br>Enter the maximum number of unicast packets the port can receive per second. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

20

# Configuration: VLAN

## 20.1 Overview

This section provides information for **VLAN** in **Configuration.**

A VLAN (Virtual Local Area Network) allows a physical network to be partitioned into multiple logical networks. Devices on a logical network belong to one group. A device can belong to more than one group. With VLAN, a device cannot directly talk to or hear from devices that are not in the same group(s); the traffic must first go through a router.

In MTU (Multi-Tenant Unit) applications, VLAN is vital in providing isolation and security among the subscribers. When properly configured, VLAN prevents one subscriber from accessing the network resources of another on the same LAN, thus a user will not see the printers and hard disks of another user on the same network.

VLAN also increases network performance by limiting broadcasts to a smaller and more manageable logical broadcast domain. In traditional switched environments, all broadcast packets go to each and every individual port. With VLAN, all broadcasts are confined to a specific broadcast domain.

### 20.1.1 What You Can Do in this Chapter

- The VLAN screen (Section 20.2 on page 113) displays VLAN, port, and VLAN port settings.
- The Guest VLAN screen (Section 20.3 on page 118) displays the global and port settings of the Switch.
- The Voice VLAN screen (Section 20.4 on page 120) displays the global, OUI, and port settings of the Switch.

# 20.2 VLAN

Use this screen to view and configure VLAN settings.

## 20.2.1 The VLAN Screen

Use this screen to view VLAN settings. Click **Configuration** > **VLAN** > **VLAN** > **VLAN** to open this screen.

**Figure 104** Configuration > VLAN > VLAN > VLAN

The following table describes the labels in this screen.

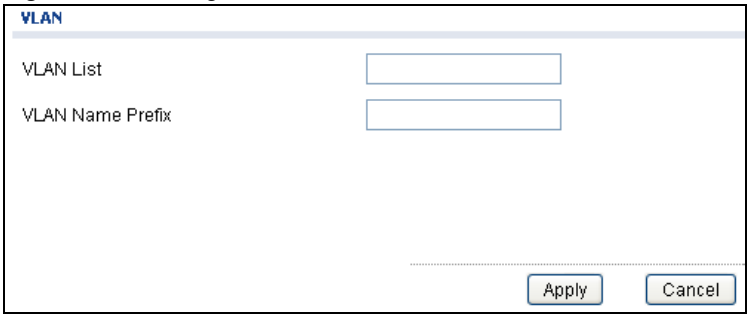
**Table 71** Configuration > VLAN > VLAN > VLAN

| LABEL | DESCRIPTION |
|---|---|
| Create VLAN | |
| Add | Click **Add** to create a new VLAN entry. |
| VLAN ID | Displays the VLAN ID number. |
| VLAN Name | Displays a descriptive name for the VLAN group for identification purposes. This name consists of up to 64 printable characters; spaces are allowed. |
| VLAN Type | Displays **Default** or **Static**. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |

## 20.2.2 The VLAN Add Screen

Use this screen to add a VLAN. Click **Configuration** > **VLAN** > **VLAN** > **VLAN** > **Add** to open this screen.

**Figure 105** Configuration > VLAN > VLAN > VLAN > Add



The following table describes the labels in this screen.

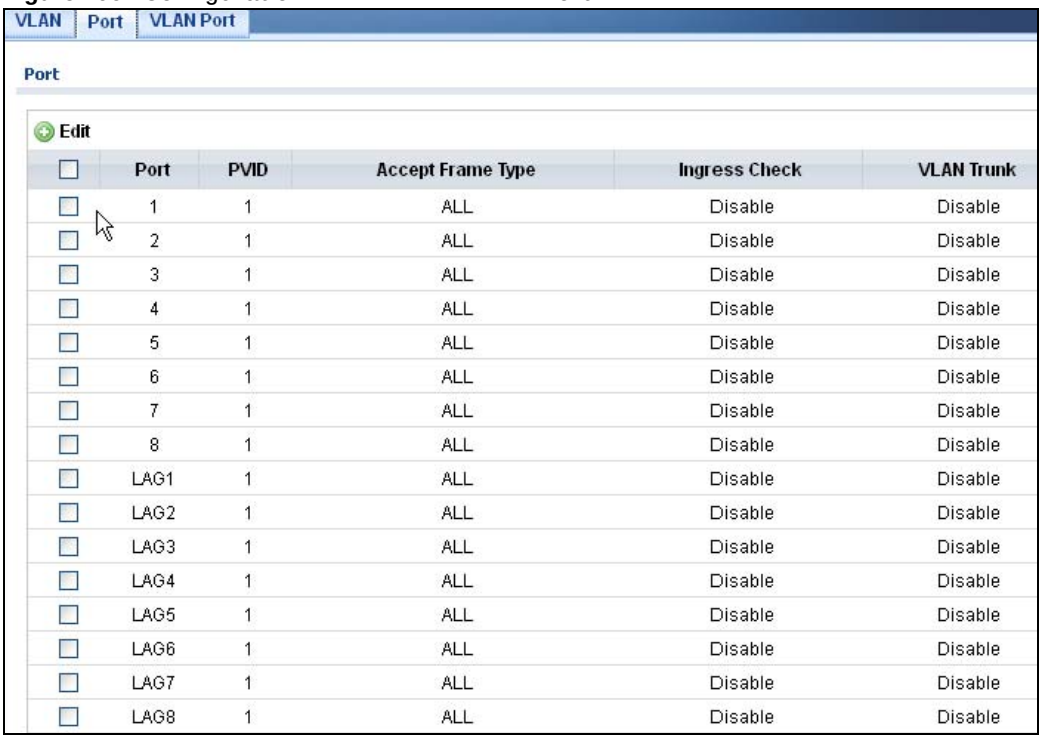
**Table 72** Configuration > VLAN > VLAN > VLAN > Add

| LABEL | DESCRIPTION |
|---|---|
| VLAN | |
| VLAN List | **Primary** private VLANs can associate with several (secondary) **Community** private VLANs and up to one (secondary) **Isolated** private VLAN.<br>You only configure **VLAN Association List** for **Primary** private VLANs. Use a dash to associate consecutive VLANs and a comma (no spaces) to associate non-consecutive VLANs. For example, 51-53 includes 51, 52 and 53, but 51,53 does not include 52.<br>Secondary private VLANs can only be associated with one primary private VLAN. |
| VLAN Name Prefix | Enter a prefix for the VLAN name. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 20.2.3 The Port Screen

Use this screen to view port settings and select VLANs for configuration. Click **Configuration** > **VLAN** > **VLAN** > **Port** to open this screen.

**Figure 106** Configuration > VLAN > VLAN > Port




| Port | PVID | Accept Frame Type | Ingress Check | VLAN Trunk |
|---|---|---|---|---|
| 1 | 1 | ALL | Disable | Disable |
| 2 | 1 | ALL | Disable | Disable |
| 3 | 1 | ALL | Disable | Disable |
| 4 | 1 | ALL | Disable | Disable |
| 5 | 1 | ALL | Disable | Disable |
| 6 | 1 | ALL | Disable | Disable |
| 7 | 1 | ALL | Disable | Disable |
| 8 | 1 | ALL | Disable | Disable |
| LAG1 | 1 | ALL | Disable | Disable |
| LAG2 | 1 | ALL | Disable | Disable |
| LAG3 | 1 | ALL | Disable | Disable |
| LAG4 | 1 | ALL | Disable | Disable |
| LAG5 | 1 | ALL | Disable | Disable |
| LAG6 | 1 | ALL | Disable | Disable |
| LAG7 | 1 | ALL | Disable | Disable |
| LAG8 | 1 | ALL | Disable | Disable |

The following table describes the labels in this screen.

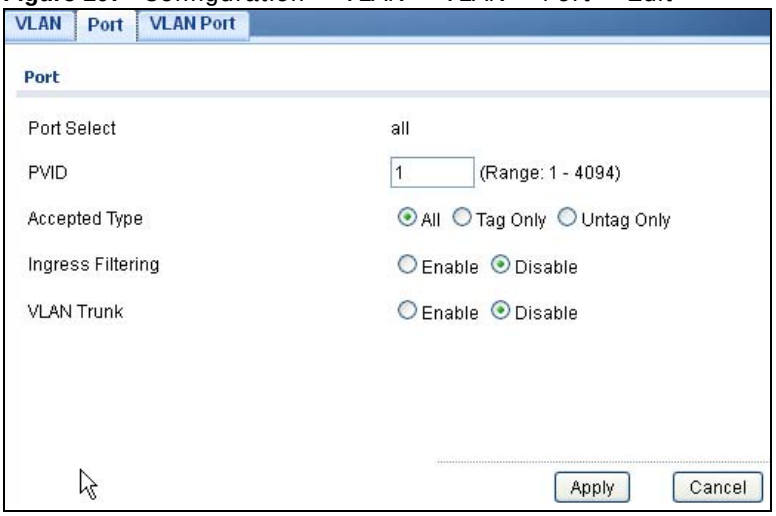
**Table 73** Configuration > VLAN > VLAN > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |
| PVID | A PVID (Port VLAN ID) is a tag that adds to incoming untagged frames received on a port so that the frames are forwarded to the VLAN group that the tag defines. |
| Accept Frame Type | Specify the type of frames allowed on a port. Choices are **All**, **Tag Only** and **Untag Only**. |
| Ingress Check | If this check box is selected for a port, the Switch discards incoming frames for VLANs that do not include this port in its member set. |
| VLAN Trunk | Enable VLAN Trunking on ports connected to other switches or routers (but not ports directly connected to end users) to allow frames belonging to unknown VLAN groups to pass through the Switch. |

## 20.2.4 The Port Edit Screen

Use this screen to configure port settings. Click **Configuration** > **VLAN** > **VLAN** > **Port** > **Edit** to open this screen.

**Figure 107** Configuration > VLAN > VLAN > Port > Edit




The following table describes the labels in this screen.

**Table 74** Configuration > VLAN > VLAN > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port Select | Displays the list of port index numbers that are being configured. |
| PVID | Enter a number between 1 and 4094 as the port VLAN ID. |

**Table 74** Configuration > VLAN > VLAN > Port > Edit (continued)

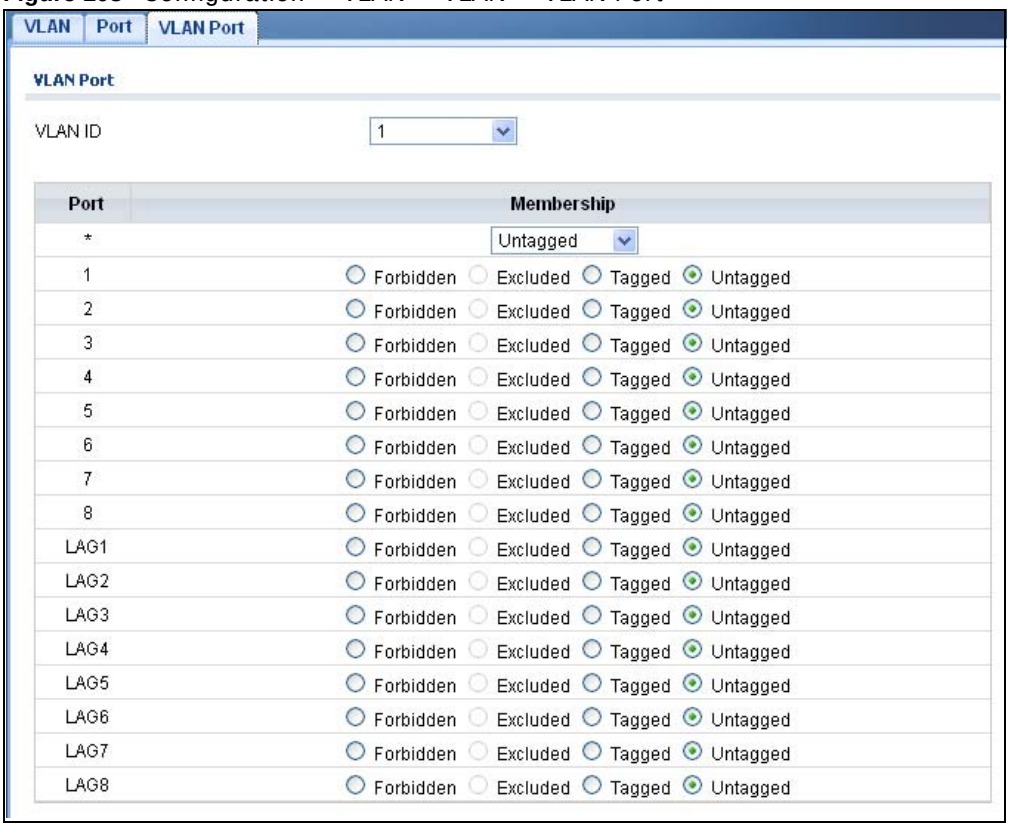
| LABEL | DESCRIPTION |
|---|---|
| Accepted Type | Select **All** from the drop-down list box to accept all untagged or tagged frames on this port. This is the default setting.<br><br>Select **Tag Only** to accept only tagged frames on this port. All untagged frames will be dropped.<br><br>Select **Untag Only** to accept only untagged frames on this port. All tagged frames will be dropped. |
| Ingress Filtering | If this check box is selected for a port, the Switch discards incoming frames for VLANs that do not include this port in its member set.<br><br>Clear this check box to disable ingress filtering. |
| VLAN Trunk | Enable VLAN Trunking on ports connected to other switches or routers (but not ports directly connected to end users) to allow frames belonging to unknown VLAN groups to pass through the Switch. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 20.2.5 The VLAN Port Screen

Port-based VLANs are VLANs where the packet forwarding decision is based on the destination MAC address and its associated port. Port-based VLANs require allowed outgoing ports to be defined for each port. Therefore, if you wish to allow two subscriber ports to talk to each other, for example, between conference rooms in a hotel, you must define the egress (an egress port is an outgoing port, that is, a port through which a data packet leaves) for both ports. Port-based VLANs are specific only to the Switch on which they were created.

Use this screen to view VLAN port settings. Click **Configuration** > **VLAN** > **VLAN** > **VLAN Port** to open this screen.

**Figure 108** Configuration > VLAN > VLAN > VLAN Port




The following table describes the labels in this screen.

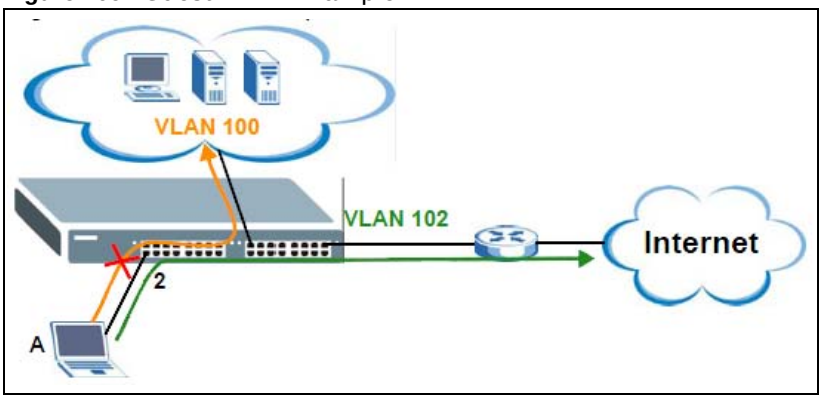
**Table 75** Configuration > VLAN > VLAN > VLAN Port

| LABEL | DESCRIPTION |
|---|---|
| VLAN Port | |
| VLAN ID | Select the ID of the VLAN you want to configure. |
| Port | Displays the port index value. |
| Membership | Select **Forbidden** if you want to prohibit the port from joining this VLAN group.<br>Select **Excluded** to remove the port from the VLAN.<br>Select **Tagged** to set the port TX tag status to tagged in the VLAN.<br>Select **Untagged** to set the port TX tag status to untagged in the VLAN. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 20.3 Guest VLAN

When 802.1x port authentication is enabled on the Switch and its ports, clients that do not have the correct credentials are blocked from using the port(s). You can configure your Switch to have one VLAN that acts as a guest VLAN. If you enable the guest VLAN (102 in the example) on a port (2 in the example), the user (A in the example) that is not IEEE 802.1x capable or fails to enter the correct username and password can still access the port, but traffic from the user is forwarded to the guest VLAN. That is, unauthenticated users can have access to limited network resources in the same guest VLAN, such as the Internet. The rights granted to the Guest VLAN depends on how the network administrator configures switches or routers with the guest network feature.

**Figure 109** Guest VLAN Example

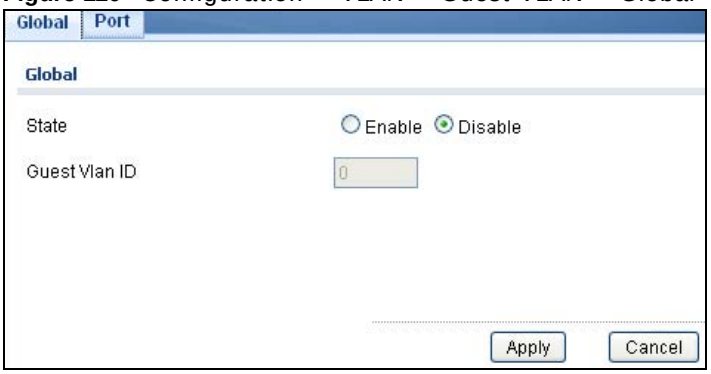



Use this screen to view and configure guest VLAN settings.

## 20.3.1 The Global Screen

Use this screen to configure the global Guest VLAN settings. Click **Configuration** > **VLAN** > **Guest VLAN** to open this screen.

**Figure 110** Configuration > VLAN > Guest VLAN > Global




The following table describes the labels in this screen.

**Table 76** Configuration > VLAN > Guest VLAN > Global

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select to enable the global Guest VLAN feature. |

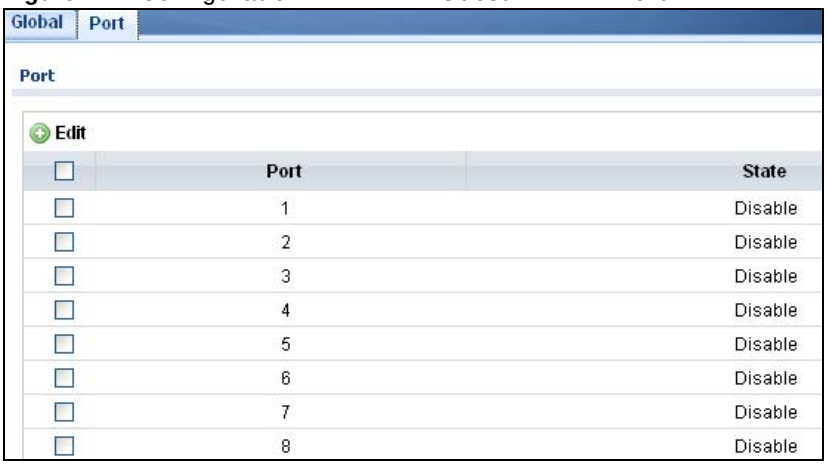
**Table 76** Configuration > VLAN > Guest VLAN > Global (continued)

| LABEL | DESCRIPTION |
|---|---|
| Guest VLAN ID | Enter the global guest VLAN ID. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 20.3.2 The Port Screen

Use this screen to view the Guest VLAN port settings and select VLAN port(s) for configuration. Click **Configuration** > **VLAN** > **Guest VLAN** > **Port** to open this screen.

**Figure 111** Configuration > VLAN > Guest VLAN > Port




The following table describes the labels in this screen.

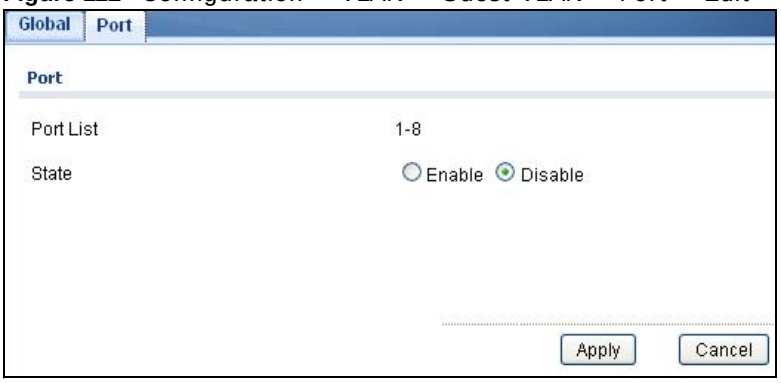
**Table 77** Configuration > VLAN > Guest VLAN > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |
| State | Display the state of the selected port. |

## 20.3.3 The Port Edit Screen

Use this screen to configure the guest VLAN port EEE settings. Click **Configuration** > **VLAN** > **Guest VLAN** > **Port** > **Edit** to open this screen.

**Figure 112** Configuration > VLAN > Guest VLAN > Port > Edit




The following table describes the labels in this screen.

**Table 78** Configuration > VLAN > Guest VLAN > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port List | Displays the list of port index numbers that are being configured. |
| State | Enable/Disable the guest VLAN feature. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 20.4 Voice VLAN

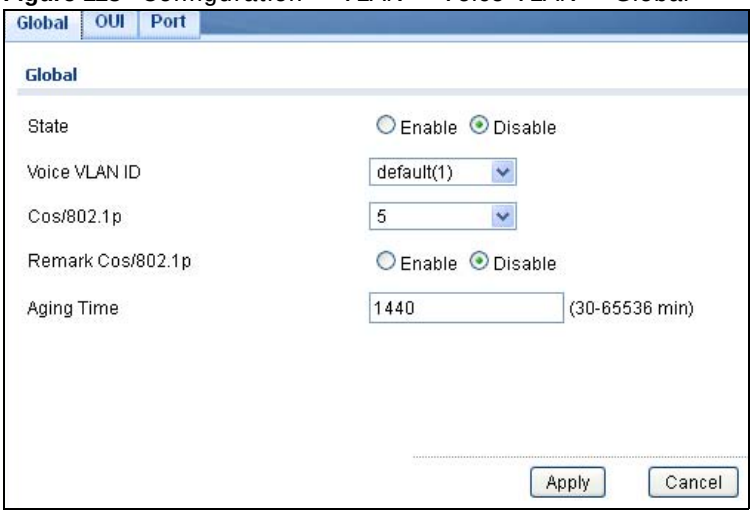
The Voice VLAN feature enables voice traffic forwarding on the Voice VLAN, then the switch can classify and schedule network traffic. It is recommended that there be two VLANs on a port - one for voice, one for data. Before connecting the IP device to the switch, the IP phone should configure the voice VLAN ID correctly. It should be configured through its own GUI.

Use this screen to view and configure voice VLAN settings.

## 20.4.1 The Global Screen

Use this screen to configure the global Voice VLAN settings. Click **Configuration** > **VLAN** > **Voice VLAN** > **Global** to open this screen.

**Figure 113** Configuration > VLAN > Voice VLAN > Global




The following table describes the labels in this screen.

**Table 79** Configuration > VLAN > Voice VLAN > Global

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select **Enable** to activate the global voice VLAN feature. |
| Voice VLAN ID | Enter the global voice VLAN ID. It should be a unique VLAN ID in the system and cannot equal each port PVID. It is a conflict in configuration if the value equals management VID, MVR VID, PVID etc. The allowed range is 1 to 4095. |
| Cos/802.1p | Displays the 802.1p packet priority field. |
| Remark Cos/ 802.1p | Select to **Enable** the priority remark function for cos/802.1p. |
| Aging Time | Enter the voice VLAN secure learning aging time. The allowed range is 10 to 10000000 seconds. It is used when security mode or auto detect mode is enabled. In other cases, it will be based on hardware aging time. The actual aging time will be situated between the [age_time; 2 * age_time] interval. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 20.4.2 The OUI Screen

Use this screen to view the OUI settings. The maximum number of entries is 16. Modifying the OUI table will restart auto detection of OUI process. Click **Configuration** > **VLAN** > **Voice VLAN** > **OUI** to open this screen.

**Figure 114** Configuration > VLAN > Voice VLAN > OUI

The following table describes the labels in this screen.

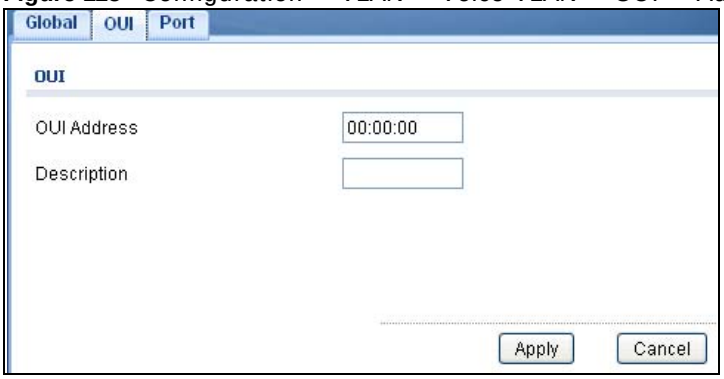
**Table 80** Configuration > VLAN > Voice VLAN > OUI

| LABEL | DESCRIPTION |
|---|---|
| OUI | |
| Add | Click **Add** to create a new OUI entry. |
| OUI Address | Displays an OUI address. A telephony OUI address is a globally unique identifier assigned to a vendor by IEEE. It must be 6 characters long and the input format is "xx-xx-xx" (x is a hexadecimal digit). |
| Description | Displays a description of the OUI address. Normally, it describes which vendor telephony device it belongs to. The allowed string length is 0 to 32. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 20.4.3 The OUI Add/Edit Screen

Use this screen to add/edit an OUI address. Click **Configuration** > **VLAN** > **Voice VLAN** > **OUI** > **Add/Edit** to open this screen.

**Figure 115** Configuration > VLAN > Voice VLAN > OUI > Add/Edit



The following table describes the labels in this screen.

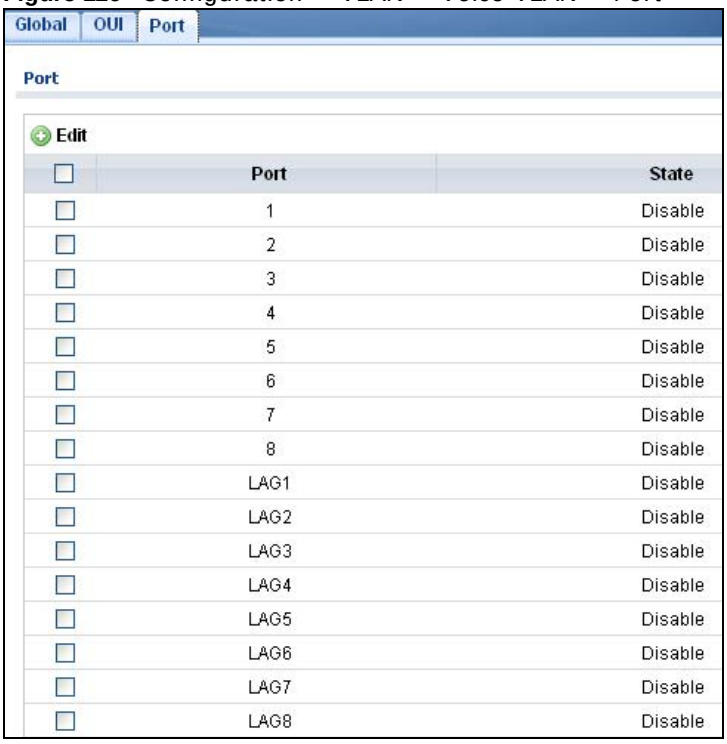
**Table 81** Configuration > VLAN > Voice VLAN > OUI > Add/Edit

| LABEL | DESCRIPTION |
|---|---|
| OUI | |
| OUI Address | Enter an OUI address. A telephony OUI address is a globally unique identifier assigned to a vendor by IEEE. It must be 6 characters long and the input format is "xx-xx-xx" (x is a hexadecimal digit). |
| Description | Enter a description of the OUI address. Normally, it describes which vendor telephony device it belongs to. The allowed string length is 0 to 32. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 20.4.4 The Port Screen

Use this screen to view the Voice VLAN port settings and select a port for configuration. Click **Configuration** > **VLAN** > **Voice VLAN** > **Port** to open this screen.

**Figure 116** Configuration > VLAN > Voice VLAN > Port




The following table describes the labels in this screen.

**Table 82** Configuration > VLAN > Voice VLAN > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |

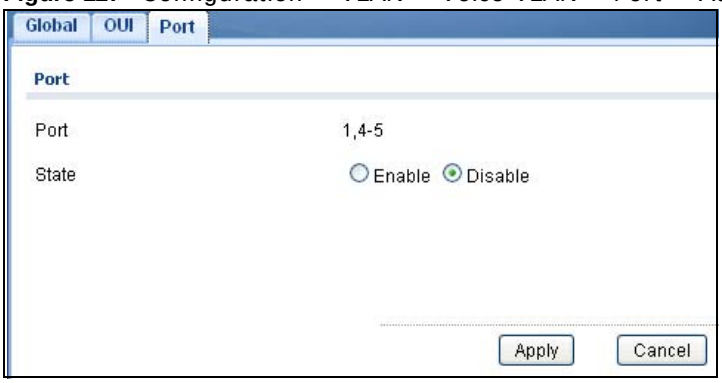
**Table 82** Configuration > VLAN > Voice VLAN > Port (continued)

| LABEL | DESCRIPTION |
|---|---|
| Port | Displays the port index value. |
| State | Displays the Voice VLAN port security mode state. When the function is enabled, all non-telephonic MAC addresses in the Voice VLAN will be blocked for 10 seconds. Possible port modes are:<br>• **Enabled**: Enable Voice VLAN security mode operation.<br>• **Disabled**: Disable Voice VLAN security mode operation. |

## 20.4.5 The Port Edit Screen

Use this screen to edit the port(s) security state. Click **Configuration** > **VLAN** > **Voice VLAN** > **Port** > **Add / Edit** to open this screen.

**Figure 117** Configuration > VLAN > Voice VLAN > Port > Add/Edit




The following table describes the labels in this screen.

**Table 83** Configuration > VLAN > Voice VLAN > Port > Add/Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port | Displays the port(s) index value. |
| State | Select the Voice VLAN port security mode state. When the function is enabled, all non-telephonic MAC addresses in the Voice VLAN will be blocked for 10 seconds. Possible port modes are:<br>• **Enabled**: Enable Voice VLAN security mode operation.<br>• **Disabled**: Disable Voice VLAN security mode operation. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 21

# Configuration: MAC Table

## 21.1 Overview

This section provides information for **MAC Table** in **Configuration**.

The **MAC Table** screen (a MAC table is also known as a filtering database) shows how frames are forwarded or filtered across the Switch's ports. When a device (which may belong to a VLAN group) sends a packet which is forwarded to a port on the Switch, the MAC address of the device is shown on the Switch's **MAC Table**. It also shows whether the MAC address is dynamic (learned by the Switch) or static (manually entered in the **Static MAC Forwarding** screen).

### 21.1.1 What You Can Do in this Chapter

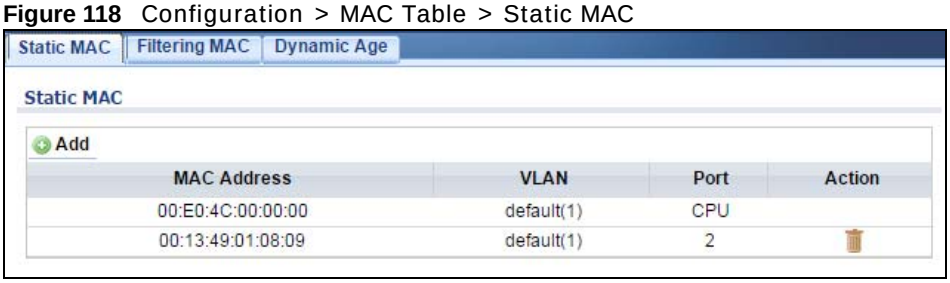
The MAC Table screen (Section 21.2 on page 125) displays Static MAC, Filtering MAC, and Dynamic MAC settings.

## 21.2 MAC Table

### 21.2.1 The Static MAC Screen

Use this screen to view Static MAC addresses settings. Click **Configuration > MAC Table** > **Static MAC** to open this screen.

**Figure 118** Configuration > MAC Table > Static MAC




The following table describes the labels in this screen.

**Table 84** Configuration > MAC Table > Static MAC

| LABEL | DESCRIPTION |
|---|---|
| Static MAC | |
| Add | Click **Add** to create a new **Static MAC** entry. |
| MAC Address | Displays the object MAC address from which this incoming frame came. |

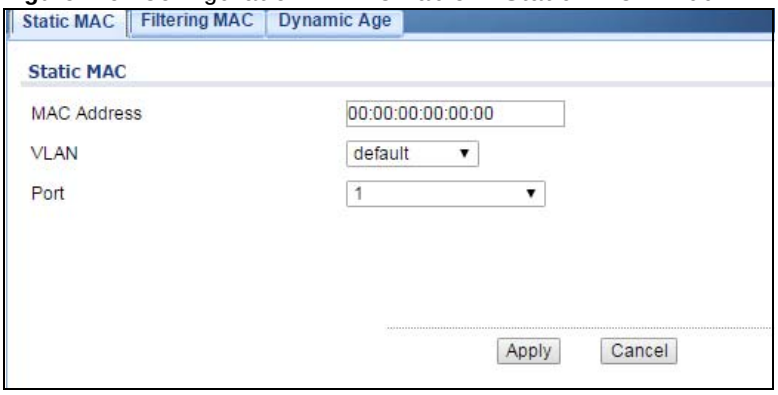
**Table 84** Configuration > MAC Table > Static MAC (continued)

| LABEL | DESCRIPTION |
|---|---|
| VLAN | Displays the VLAN group to which this frame belongs. |
| Port | Displays the port from which the above MAC address was learned. |
| Action | Click **Delete** to remove the MAC address. |

## 21.2.2 The Static MAC Add Screen

Use this screen to add new Static MAC addresses. Click **Configuration > MAC Table** > **Static MAC > Add** to open this screen.

**Figure 119** Configuration > MAC Table > Static MAC > Add




The following table describes the labels in this screen.

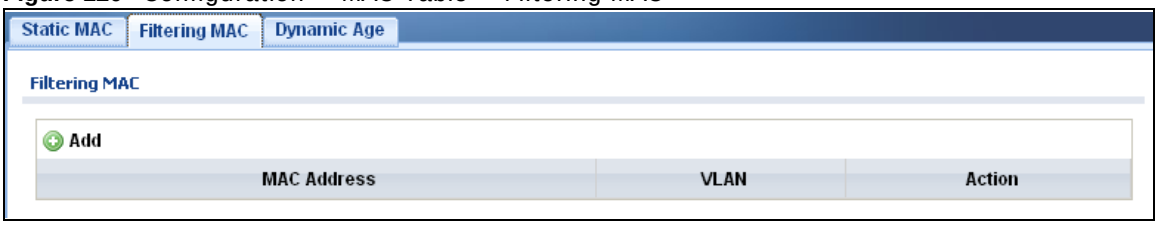
**Table 85** Configuration > MAC Table > Static MAC > Add

| LABEL | DESCRIPTION |
|---|---|
| Static MAC | |
| MAC Address | Enter the object MAC address. |
| VLAN | Select the VLAN group which to associate the MAC address. |
| Port | Select the port which to associate the above MAC address. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 21.2.3 The Filtering MAC Screen

Use this screen to view Filtering MAC addresses. Click **Configuration > MAC Table** > **Filtering MAC** to open this screen.

**Figure 120** Configuration > MAC Table > Filtering MAC



The following table describes the labels in this screen.

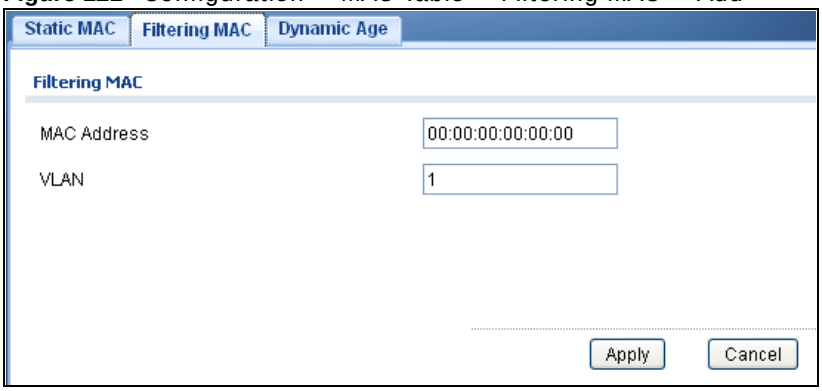
**Table 86** Configuration > MAC Table > Filtering MAC

| LABEL | DESCRIPTION |
|---|---|
| MAC Filtering | |
| Add | Click **Add** to create a new **Filtering MAC** entry. |
| MAC Address | Displays the filtering object MAC address from which this incoming frame came. |
| VLAN | Displays the VLAN group to which this frame belongs. |
| Action | |
| Delete | Click **Delete** to remove the entry. |

## 21.2.4 The Filtering MAC Add Screen

Use this screen to add new Filtering MAC addresses. Click **Configuration > MAC Table > Filtering MAC** > **Add** to open this screen.

**Figure 121** Configuration > MAC Table > Filtering MAC > Add




The following table describes the labels in this screen.

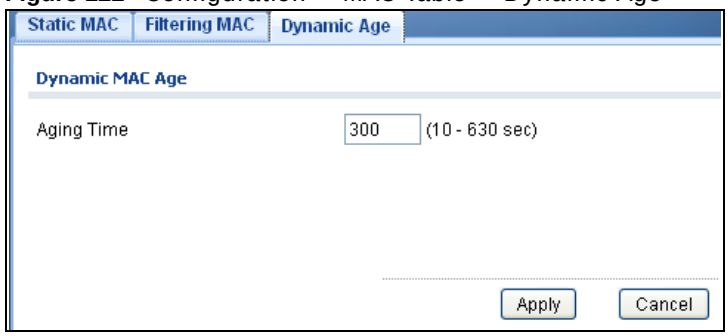
**Table 87** Configuration > MAC Table > Filtering MAC > Add

| LABEL | DESCRIPTION |
|---|---|
| Filtering MAC | |
| MAC Address | Enter the MAC address of the device. |
| VLAN | Select the VLAN group to associate the filtering object MAC address. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 21.2.5 The Dynamic Age Screen

Use this screen to enter the Dynamic MAC Age. The dynamic MAC age is how long all dynamically learned MAC addresses remain in the MAC address table before they age out (and must be relearned). Click **Configuration > MAC Table > Dynamic Age** to open this screen.

**Figure 122** Configuration > MAC Table > Dynamic Age




The following table describes the labels in this screen.

**Table 88** Configuration > Dynamic Age

| LABEL | DESCRIPTION |
|---|---|
| Dynamic MAC Age | |
| Aging Time | Enter the aging time of the MAC address. The value can be between 10 and 630 seconds. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

22

# Configuration: Link Aggregation

## 22.1 Overview

This section provides information for **Link Aggregation** in **Configuration.**

This chapter shows you how to logically aggregate physical links to form one logical, higher bandwidth link.

### 22.1.1 What You Can Do in this Chapter

The Link Aggregation screen (Section 22.2 on page 129) displays global, LAG management, LAG port, and LACP port settings.

## 22.2 Link Aggregation

Link aggregation (trunking) is the grouping of physical ports into one logical higher-capacity link. You may want to trunk ports if for example, it is cheaper to use multiple lower-speed links than to under-utilize a high-speed, but more costly, single-port link.

However, the more ports you aggregate then the fewer available ports you have. A trunk group is one logical link containing multiple ports.

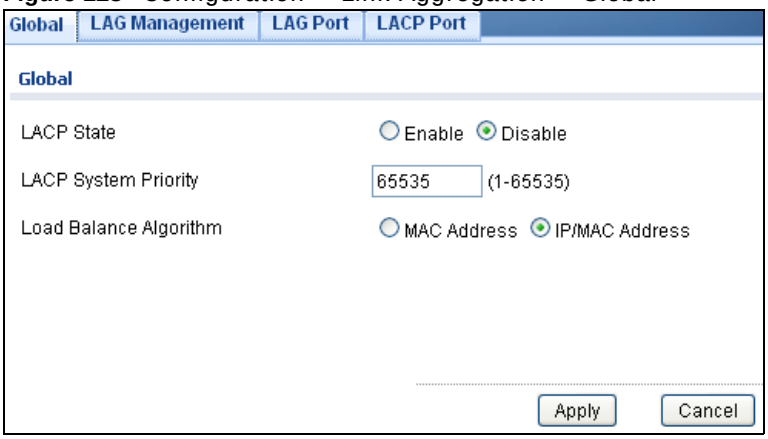
The Switch supports both static and dynamic link aggregation.

Note: In a properly planned network, it is recommended to implement static link aggregation only. This ensures increased network stability and control over the trunk groups on your Switch.

### 22.2.1 The Global Screen

Use this screen to configure global Link Aggregation settings. Click **Configuration** > **Link Aggregation** > **Global** to open this screen.

**Figure 123** Configuration > Link Aggregation > Global




The following table describes the labels in this screen.

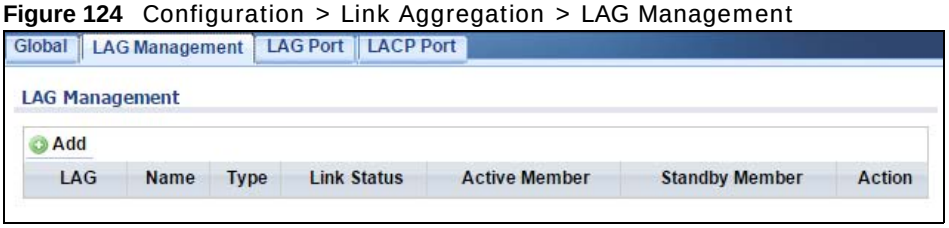
**Table 89** Configuration > Link Aggregation > Global

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| LACP State | Select **Enable** to activate the link aggregation control protocol. |
| LACP System Priority | LACP system priority is a number between 1 and 65,535. The switch with the lowest system priority (and lowest port number if system priority is the same) becomes the LACP "server". The LACP "server" controls the operation of LACP setup. Enter a number to set the priority of an active port using Link Aggregation Control Protocol (LACP). The smaller the number, the higher the priority level. |
| Load Balance Algorithm | Select the outgoing traffic distribution type. Packets from the same source and/or to the same destination are sent over the same link within the trunk. By default, the Switch uses the **IP/MAC Address** distribution type. If the Switch is behind a router, the packet's destination or source MAC address will be changed. In this case, set the Switch to distribute traffic based on its IP address to make sure port trunking can work properly.<br><br>Select **MAC Address** to distribute traffic based on a combination of the packet's source and destination MAC addresses.<br><br>Select **IP/MAC Address** to distribute traffic based on a combination of the packet's source and destination IP addresses. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 22.2.2 The LAG Management Screen

Use this screen to view LAG management settings. Click **Configuration** > **Link Aggregation** > **LAG Management** to open this screen.

**Figure 124** Configuration > Link Aggregation > LAG Management



The following table describes the labels in this screen.

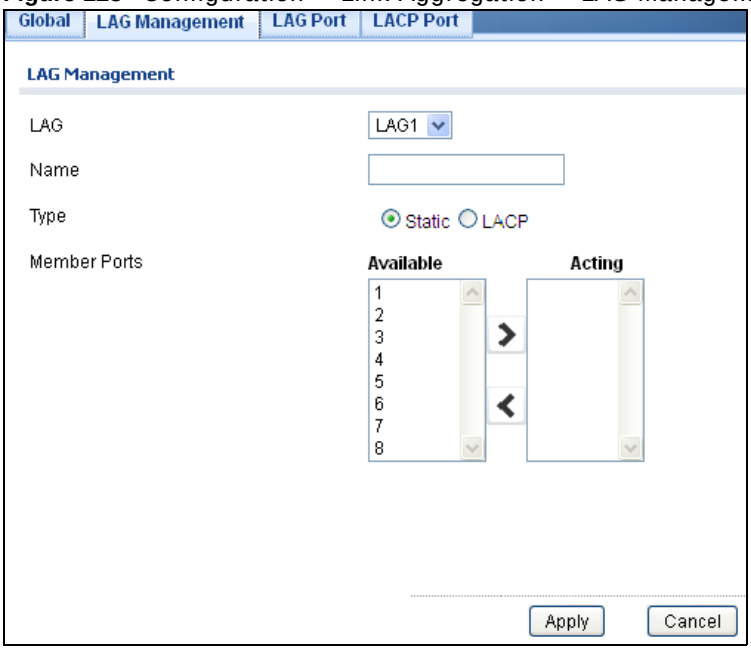
**Table 90** Configuration > Link Aggregation > LAG Management

| LABEL | DESCRIPTION |
|---|---|
| LAG Management | |
| Add | Click **Add** to create a new **LAG Management** entry. |
| LAG | Displays the link aggregation group (LAG), that is, one logical link containing multiple ports. |
| Name | Displays the name of the link aggregation group. |
| Type | This field displays how these ports were added to the trunk group. It displays:<br>**Static** - if the ports are configured as static members of a trunk group.<br>**LACP** - if the ports are configured to join a trunk group via LACP. |
| Link Status | Displays link status as either **Link up** or **Link down**. |
| Active Member | Displays if this member is an active member of a trunk. |
| Standby Member | Displays if this member is an standby member of a trunk. |
| Modify | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 22.2.3 The LAG Add Screen

Use this screen to add a LAG. Click **Configuration** > **Link Aggregation** > **LAG Management** > **Add** to open this screen.

**Figure 125** Configuration > Link Aggregation > LAG Management > Add



The following table describes the labels in this screen.

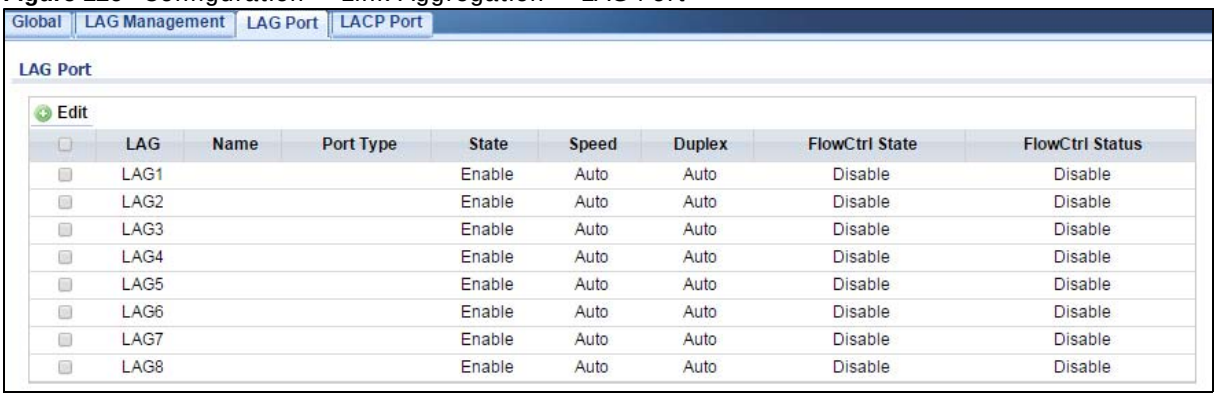
**Table 91** Configuration > Link Aggregation > LAG Management > Add

| LABEL | DESCRIPTION |
|---|---|
| LAG Management | |
| LAG | Select the link aggregation group (LAG). |
| Name | Enter the name of this entry. |
| Type | Select **Static** or **LACP**. |
| Member Ports | Select the member ports to be part of the LAG. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 22.2.4 The LAG Port Screen

Use this screen to view LAG port settings. Click **Configuration** > **Link Aggregation** > **LAG Port** to open this screen.

**Figure 126** Configuration > Link Aggregation > LAG Port




| LAG | Name | Port Type | State | Speed | Duplex | FlowCtrl State | FlowCtrl Status |
|---|---|---|---|---|---|---|---|
| LAG1 | | | Enable | Auto | Auto | Disable | Disable |
| LAG2 | | | Enable | Auto | Auto | Disable | Disable |
| LAG3 | | | Enable | Auto | Auto | Disable | Disable |
| LAG4 | | | Enable | Auto | Auto | Disable | Disable |
| LAG5 | | | Enable | Auto | Auto | Disable | Disable |
| LAG6 | | | Enable | Auto | Auto | Disable | Disable |
| LAG7 | | | Enable | Auto | Auto | Disable | Disable |
| LAG8 | | | Enable | Auto | Auto | Disable | Disable |

The following table describes the labels in this screen.

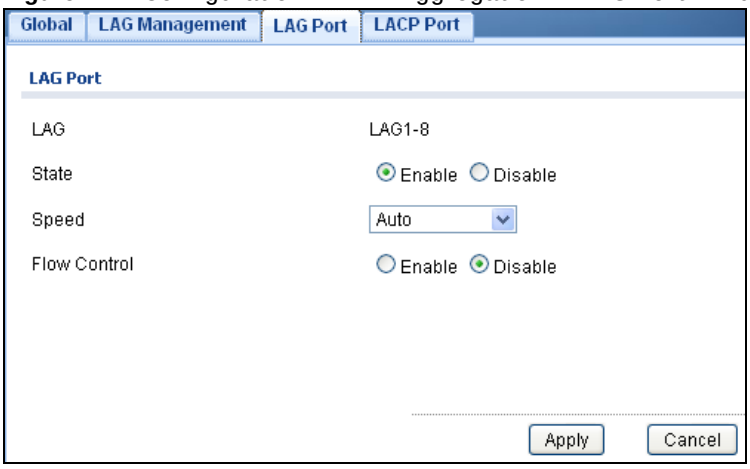
**Table 92** Configuration > Link Aggregation > LAG Port

| LABEL | DESCRIPTION |
|---|---|
| LAG Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| LAG | Displays the LAG index value. |
| Name | Displays the LAG name. |
| Port Type | Displays the port type. |
| State | Displays the state as **Enable**/**Disable**. |
| Speed | Displays the speed value as **Auto**, **Auto-10M**, **Auto-100M**, **Auto-1000M**, **Auto-10/100M**, **10M**, **100M**, or **1000M**. |
| Duplex | Displays the duplex value as **Full**, **Half**, or **Auto**. |
| FlowCtrl State | Displays whether flow control is **Enable**/**Disable**. |
| FlowCtrl Status | Displays whether flow control is in use (**Enable**) or not (**Disable**). |

## 22.2.5 The LAG Port Edit Screen

Use this screen to edit a LAG port. Click **Configuration** > **Link Aggregation** > **LAG Port** > **Edit** to open this screen.

**Figure 127** Configuration > Link Aggregation > LAG Port > Edit




The following table describes the labels in this screen.

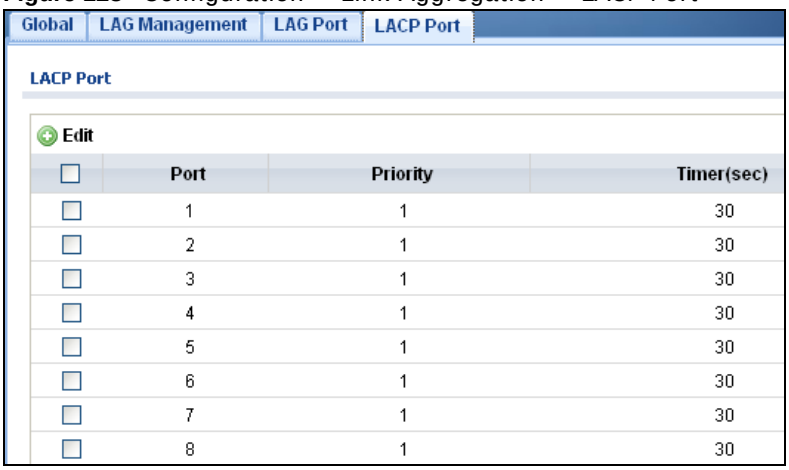
**Table 93** Configuration > Link Aggregation > LAG Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| LAG Port Edit | |
| LAG | Displays the LAG index values. |
| State | Select the state to be **Enable** or **Disable**. |
| Speed | Displays the speed value as **Auto**, **10M**, **100M**, or **1000M**. |
| Flow Control | Select **Enable** to use the flow control feature. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 22.2.6 The LACP Port Screen

Use this screen to view LACP Port settings. Click **Configuration** > **Link Aggregation** > **LACP Port** to open this screen.

**Figure 128** Configuration > Link Aggregation > LACP Port




The following table describes the labels in this screen.

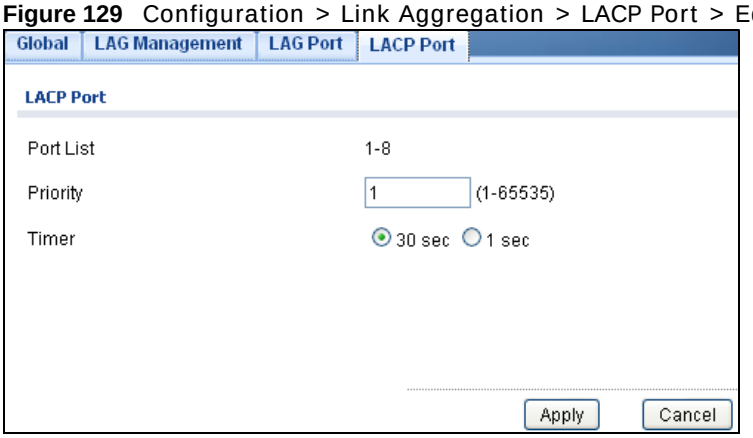
**Table 94** Configuration > Link Aggregation > LACP Port

| LABEL | DESCRIPTION |
|---|---|
| LACP Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index number. |
| Priority | Displays the priority value. |
| Timer (sec) | Displays the Timer value in seconds.<br><br>Timeout is the time interval between the individual port exchanges of LACP packets in order to check that the peer port in the trunk group is still up. If a port does not respond after three tries, then it is deemed to be “down” and is removed from the trunk. Set a short timeout (one second) for busy trunked links to ensure that disabled ports are removed from the trunk group as soon as possible. |

## 22.2.7 The LACP Port Edit Screen

Use this screen to edit a LACP Port. Click **Configuration** > **Link Aggregation** > **LACP Port** > **Edit** to open this screen.

**Figure 129** Configuration > Link Aggregation > LACP Port > Edit



The following table describes the labels in this screen.

**Table 95** Configuration > Link Aggregation > LACP Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| LACP Port | |
| Port List | Displays the list of port index numbers to be configured. |
| Priority | Enter a value for the port priority. The number can be between 1 and 65,535. |
| Timer | Select a timer value of either 1 second or 30 seconds. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 23

# Configuration: Loop Guard

## 23.1 Overview

This section provides information for **Loop Guard** in **Configuration.**

This chapter shows you how to configure the Switch to guard against loops on the edge of your network.

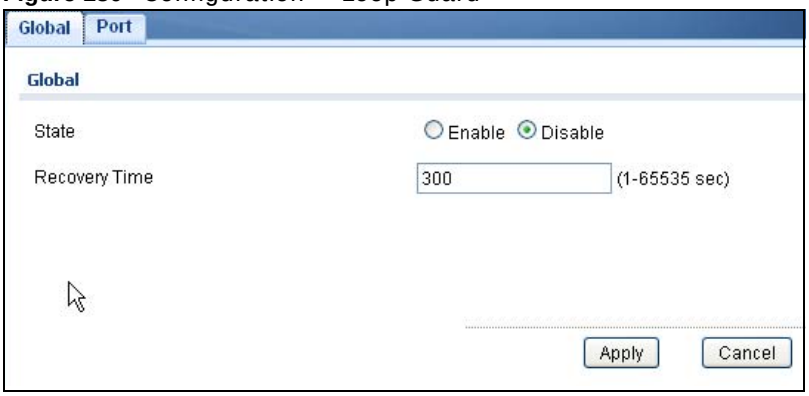
## 23.2 Loop Guard

Loop guard allows you to configure the Switch to shut down a port if it detects that packets sent out on that port loop back to the Switch. While you can use Spanning Tree Protocol (STP) to prevent loops in the core of your network. STP cannot prevent loops that occur on the edge of your network.

### 23.2.1 The Global Screen

Use this screen to configure the global Loop Guard. Click **Configuration > Loop Guard** to open this screen.

**Figure 130** Configuration > Loop Guard




The following table describes the labels in this screen.

**Table 96** Configuration > Loop Guard

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select **Enable** to activate loop protection on this switch. |

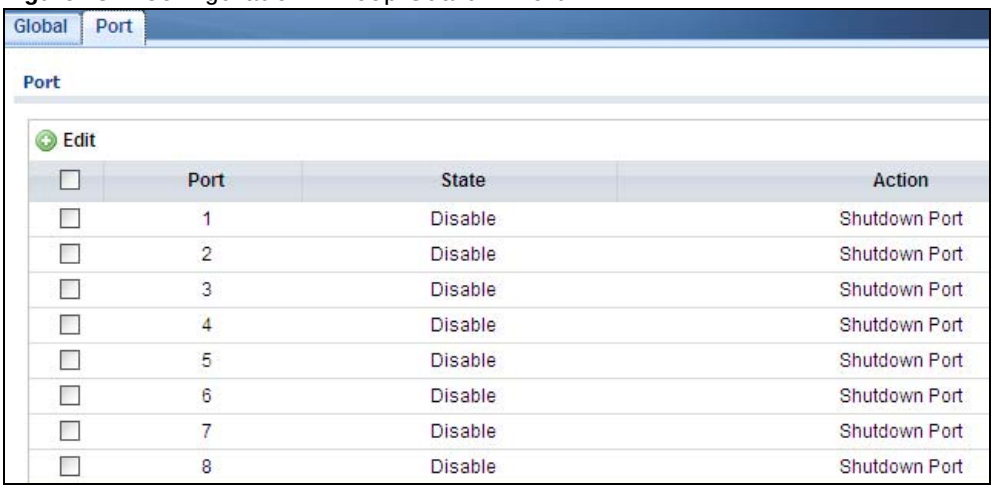
**Table 96** Configuration > Loop Guard (continued)

| LABEL | DESCRIPTION |
|---|---|
| Recovery Time | Enter the period (in seconds) for which a port will be kept disabled in the event of a loop is detected (and the port action shuts down the port). |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 23.2.2 The Loop Guard Port

Use this screen to view the Loop Guard Port. Click **Configuration** > **Loop Guard** > **Port** to open this screen.

**Figure 131** Configuration > Loop Guard > Port




The following table describes the labels in this screen.

**Table 97** Configuration > Loop Guard > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Click **Edit** to change the properties of the port. |
| Port | Displays the port index number. |
| State | Displays whether the port state is **Enable** or **Disable**. |
| Action | Displays the action to take by the Switch. The options are **Log**, **Shutdown Port**, and **Shutdown** and **Log**. |

## 23.2.3 The Port Edit Screen

Use this screen to configure a Loop Guard port. Click **Configuration** > **Loop Guard** > **Port** > **Edit** to open this screen.

**Figure 132** Configuration > Loop Guard > Port > Edit

The following table describes the labels in this screen.

**Table 98** Configuration > Loop Guard > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port List | Displays the list of port index numbers to be configured. |
| State | Select **Enable** to use the Admin Enabled feature. |
| Action | Select the action to take by the Switch. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

24

# Configuration: Mirror

## 24.1 Overview

This section provides information for **Mirror** in **Configuration.**

## 24.2 Mirror

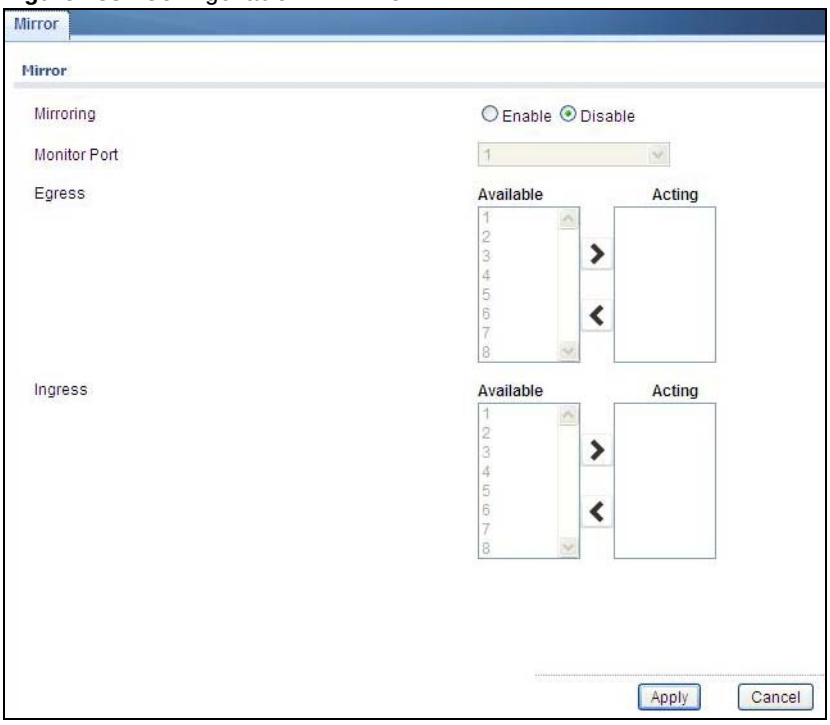
Port mirroring allows you to copy a traffic flow to a monitor port (the port you copy the traffic to) in order that you can examine the traffic from the monitor port without interference.

The Switch supports local port mirroring.

### 24.2.1 The Mirror Screen

Use this screen to configure Mirroring. Click **Configuration > Mirror** to open this screen.

**Figure 133** Configuration > Mirror



The following table describes the labels in this screen.

**Table 99** Configuration > Mirror

| LABEL | DESCRIPTION |
|---|---|
| Mirror | |
| Mirroring | Select **Enable** to activate port mirroring on the Switch or **Disable** to disable the feature. |
| Monitor Port | The monitor port is the port you copy the traffic to in order to examine it in more detail without interfering with the traffic flow on the original port(s). Type the port number of the monitor port. |
| Egress | Specify the ports to mirror outgoing traffic. |
| Available | Click **<** to move a severity type from the acting box to the available box.<br>Click **>** to move a severity type to the acting box from the available box. |
| Acting | Click **<** to move a severity type from the acting box to the available box.<br>Click **>** to move a severity type to the acting box from the available box. |
| > | Click **>** to move a severity type to the acting box from the available box. |
| < | Click **<** to move a severity type from the acting box to the available box. |
| Ingress | Specify the ports to mirror incoming traffic. |
| Available | Click **<** to move a severity type from the acting box to the available box.<br>Click **>** to move a severity type to the acting box from the available box. |
| Acting | Click **<** to move a severity type from the acting box to the available box.<br>Click **>** to move a severity type to the acting box from the available box. |
| > | Click **>** to move a severity type to the acting box from the available box. |
| < | Click **<** to move a severity type from the acting box to the available box. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 25

# Configuration: Multicast

## 25.1 Overview

This section provides information for **Multicast** in **Configuration**.

Traditionally, IP packets are transmitted in one of either two ways - Unicast (1 sender to 1 recipient) or Broadcast (1 sender to everybody on the network). Multicast delivers IP packets to just a group of hosts on the network.

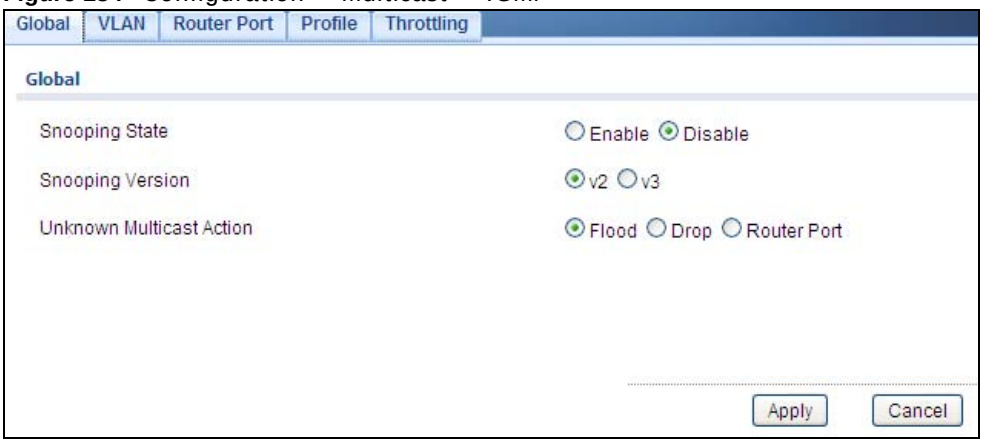
## 25.2 IGMP

IGMP (Internet Group Management Protocol) is a network-layer protocol used to establish membership in an IPv4 multicast group - it is not used to carry user data. Refer to RFC 1112, RFC 2236 and RFC 3376 for information on IGMP versions 1, 2 and 3 respectively.

### 25.2.1 The Global Screen

Use this screen to view the **IGMP Global** settings. Click **Configuration > Multicast > IGMP** to open this screen.

**Figure 134** Configuration > Multicast > IGMP




The following table describes the labels in this screen.

**Table 100** Configuration > Multicast > IGMP

| LABEL | DESCRIPTION |
|---|---|
| IGMP Global | |
| Snooping Status | Select **Enable** to turn on IGMP packet snooping or **Disable** to turn snooping off. |

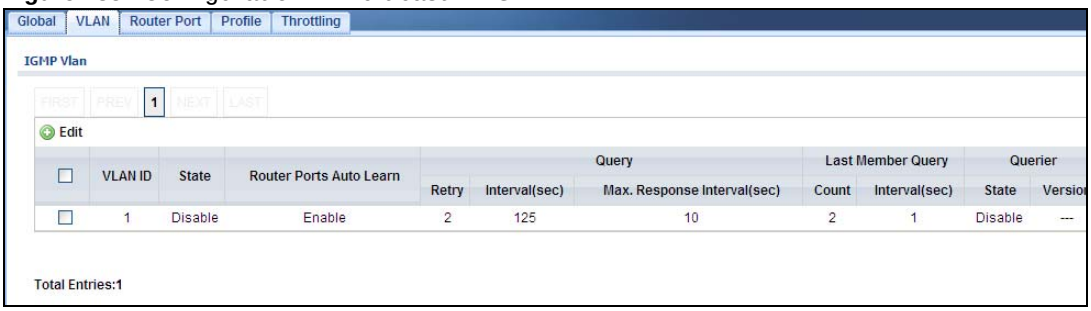
**Table 100** Configuration > Multicast > IGMP (continued)

| LABEL | DESCRIPTION |
|---|---|
| Snooping Version | Select **v2** or **v3** depending on the snooping version you require. |
| Unknown Multicast Action | Select to send the IPv4 unknown multicast frame to the router port. The following options are available:<br>• **Flood** - select to send the frame(s) to all ports.<br>• **Drop** - select to discard the frame(s).<br>• **Router Port** - select to send the frame to router port. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 25.2.2 The VLAN Screen

Use this screen to view the **IGMP VLAN** settings. Click **Configuration > Multicast > IGMP > VLAN** to open this screen.

**Figure 135** Configuration > Multicast > IGMP > VLAN




The following table describes the labels in this screen.

**Table 101** Configuration > Multicast > IGMP > VLAN

| LABEL | DESCRIPTION |
|---|---|
| IGMP VLAN | |
| Edit | Click **Edit** to change the properties of the IGMP VLAN entry. |
| VLAN ID | Displays the ID of a static VLAN; the valid range is between 1 and 4094. |
| Status | Display the status of the VLAN as enabled or disabled. |
| Router Ports Auto Learn | Displays the Switch learn multicast router port member status of any VLANs as enabled or disabled. |
| Query | |
| Retry | Displays the number of query retry times. |
| Interval (sec) | Displays the amount of time (in seconds) between general query messages sent by the router connected to the upstream port. |
| Max. Response Interval (sec) | Displays the amount of time (in seconds) the router connected to the upstream port waits for a response to an IGMP general query message. |
| Last Member Query | |
| Count | Displays the number of queries. |
| Interval (sec) | Displays the amount of time (in milliseconds) between the IGMP group-specific queries sent by an upstream port when an IGMP Done message is received. |
| Querier | |

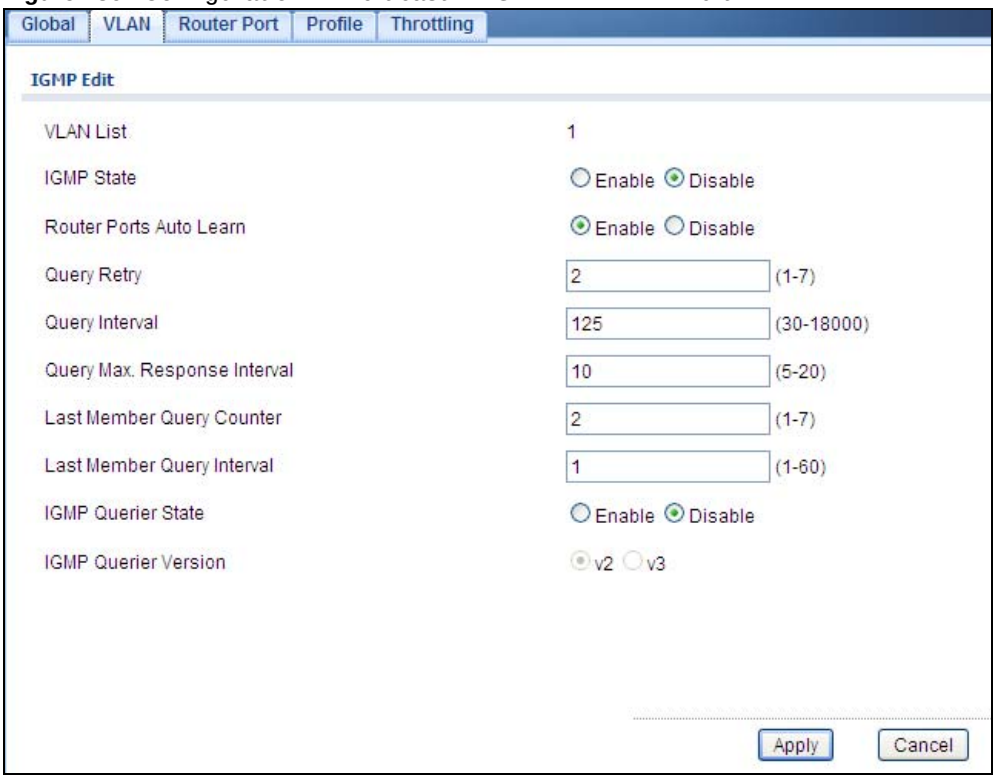
**Table 101** Configuration > Multicast > IGMP > VLAN (continued)

| LABEL | DESCRIPTION |
|---|---|
| State | Displays the switch current VLAN querier entry as **Enable** or **Disable**. |
| Version | Displays the switch current VLAN querier entry version. |

## 25.2.3 The Edit IGMP Screen

Use this screen to configure the **IGMP VLAN** settings. Click **Configuration > Multicast > IGMP > VLAN** > **Edit** to open this screen.

**Figure 136** Configuration > Multicast > IGMP > VLAN > Edit




The following table describes the labels in this screen.

**Table 102** Configuration > Multicast > IGMP > VLAN > Modify

| LABEL | DESCRIPTION |
|---|---|
| IGMP Edit | |
| VLAN List | Enter the ID of a static VLAN; the valid range is between 1 and 4094. |
| IGMP State | Select the status of the VLAN to **Enable** or **Disable** the function. |
| Router Ports Auto Learn | Select **Enabled** to have the Switch learn multicast router membership information of any VLANs automatically. |
| Query | |
| Retry | Enter the number of query retry times. The value can be between 1 and 7. |
| Interval (sec) | Enter the amount of time (in seconds) between general query messages sent by the router connected to the upstream port. The value can be between 30 and 18000. |
| Max. Response Interval (sec) | Enter the amount of time (in seconds) the router connected to the upstream port waits for a response to an IGMP general query message. |

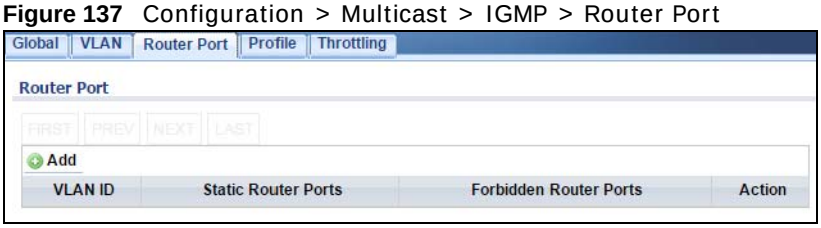
**Table 102** Configuration > Multicast > IGMP > VLAN > Modify (continued)

| LABEL | DESCRIPTION |
|---|---|
| Last Member Query | |
| Count | Enter the number of queries. |
| Interval (sec) | Enter the amount of time (in seconds) between the IGMP group-specific queries sent by an upstream port when an IGMP Done message is received. |
| Querier | |
| IGMP Querier State | Select the IGMP querier status to **Enable** or **Disable** the function. |
| IGMP Querier Version | Select the IGMP Querier version to **v2** or **v3**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 25.2.4 The Router Port Screen

Use this screen to view the **Router Port** settings. Click **Configuration > Multicast > IGMP > Router Port** to open this screen.

**Figure 137** Configuration > Multicast > IGMP > Router Port




The following table describes the labels in this screen.

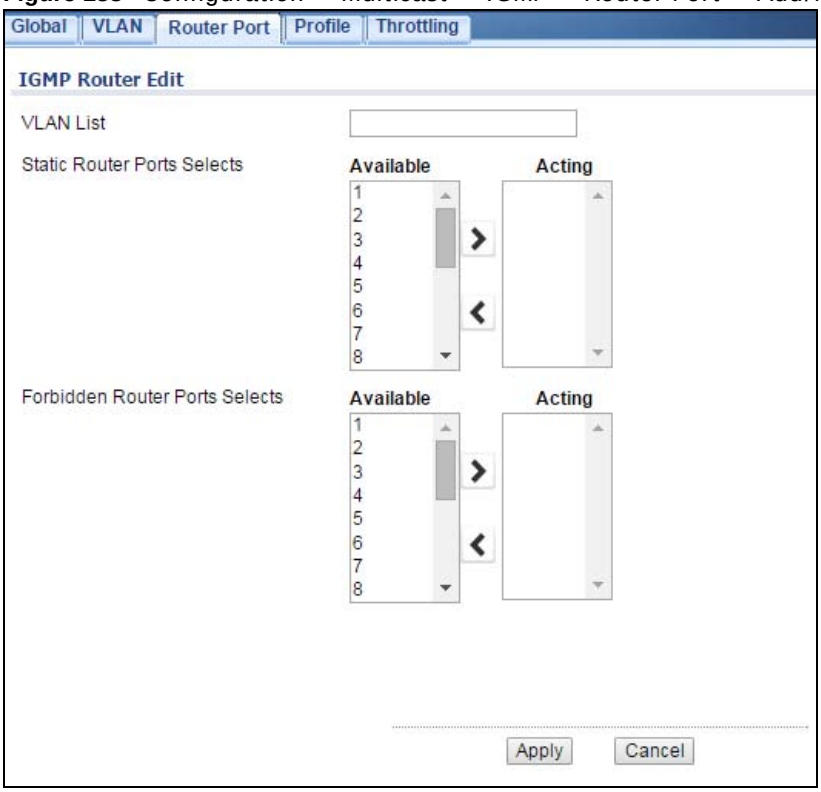
**Table 103** Configuration > Multicast > IGMP > Router Port

| LABEL | DESCRIPTION |
|---|---|
| Router Port | |
| Add | Click **Add** to create a new **Router Port** entry. |
| VLAN ID | Displays the ID of a static VLAN; the valid range is between 1 and 4094. |
| Static Router Ports | Displays the ports that are defined as static router ports. |
| Forbidden Router Ports | Displays the ports that are defined as forbidden router ports. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 25.2.5 The Add/Edit Router Port Screen

Use this screen to configure the **Router Port** settings. Click **Configuration > Multicast > IGMP > Router Port** > **Add / Modify** to open this screen.

**Figure 138** Configuration > Multicast > IGMP > Router Port > Add/Modify




The following table describes the labels in this screen.

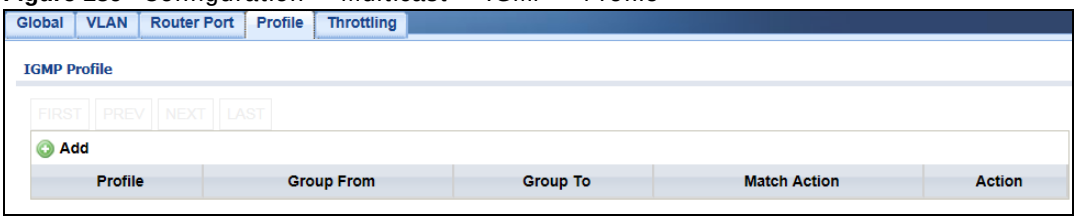
**Table 104** Configuration > Multicast > IGMP > Router Port > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| IGMP Router Edit | |
| VLAN List | Enter the static VLAN IDs (valid range for each ID value is between 1 and 4094). |
| Static Router Ports Selects | Select the port(s) to be static router ports. |
| Forbidden Router Ports Selects | Select the port(s) to be forbidden router ports. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 25.2.6 The Profile Screen

Use this screen to view the **IGMP Profile** settings. Click **Configuration > Multicast > IGMP > Profile** to open this screen.

**Figure 139** Configuration > Multicast > IGMP > Profile




The following table describes the labels in this screen.

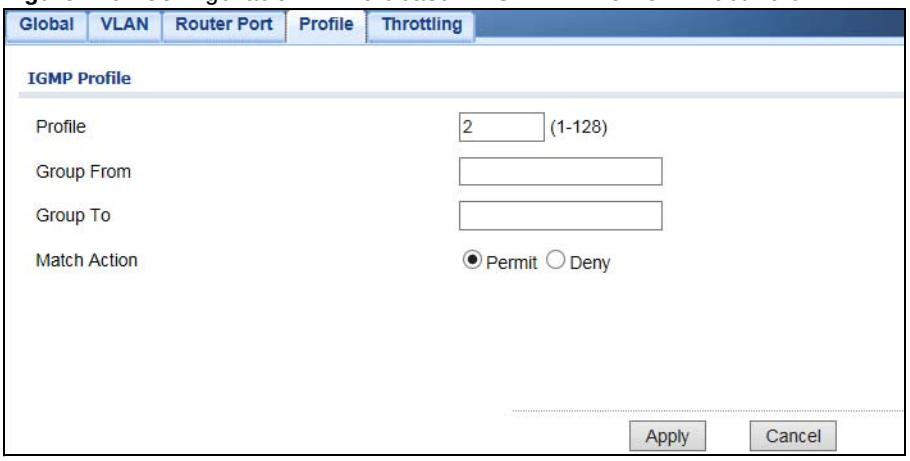
**Table 105** Configuration > Multicast > IGMP > Profile

| LABEL | DESCRIPTION |
|---|---|
| IGMP Profile | |
| Add | Click **Add** to create a new **IGMP Profile** entry. |
| Profile | Displays the **Profile** index number. |
| Group From | Displays the profile start group IP address. |
| Group To | Displays the profile end group IP address. |
| Match Action | Displays the action of the profile as **Permit** or **Deny**. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 25.2.7 The Add/Edit Profile Screen

Use this screen to configure the **IGMP Profile** settings. Click **Configuration > Multicast > IGMP > Profile** > **Add/Edit** to open this screen.

**Figure 140** Configuration > Multicast > IGMP > Profile > Add/Edit




The following table describes the labels in this screen.

**Table 106** Configuration > Multicast > IGMP > Profile > Add/Edit

| LABEL | DESCRIPTION |
|---|---|
| IGMP Profile | |
| Profile | Enter the **Profile** index number. |
| Group From | Enter the profile start group IP address. |

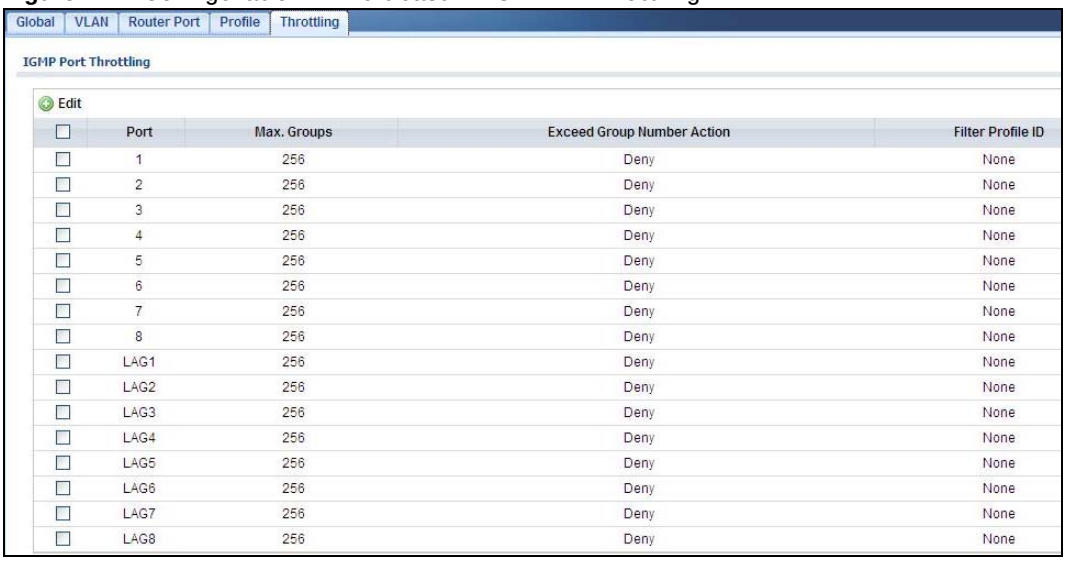
**Table 106** Configuration > Multicast > IGMP > Profile > Add/Edit (continued)

| LABEL | DESCRIPTION |
|---|---|
| Group To | Enter the profile end group IP address. |
| Match Action | Select the action of the profile as to be **Permit** or **Deny**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 25.2.8 The Throttling Screen

Use this screen to view the **Throttling** settings. Click **Configuration > Multicast > IGMP > Throttling** to open this screen.

**Figure 141** Configuration > Multicast > IGMP > Throttling




| Port | Max. Groups | Exceed Group Number Action | Filter Profile ID |
|---|---|---|---|
| 1 | 256 | Deny | None |
| 2 | 256 | Deny | None |
| 3 | 256 | Deny | None |
| 4 | 256 | Deny | None |
| 5 | 256 | Deny | None |
| 6 | 256 | Deny | None |
| 7 | 256 | Deny | None |
| 8 | 256 | Deny | None |
| LAG1 | 256 | Deny | None |
| LAG2 | 256 | Deny | None |
| LAG3 | 256 | Deny | None |
| LAG4 | 256 | Deny | None |
| LAG5 | 256 | Deny | None |
| LAG6 | 256 | Deny | None |
| LAG7 | 256 | Deny | None |
| LAG8 | 256 | Deny | None |

The following table describes the labels in this screen.

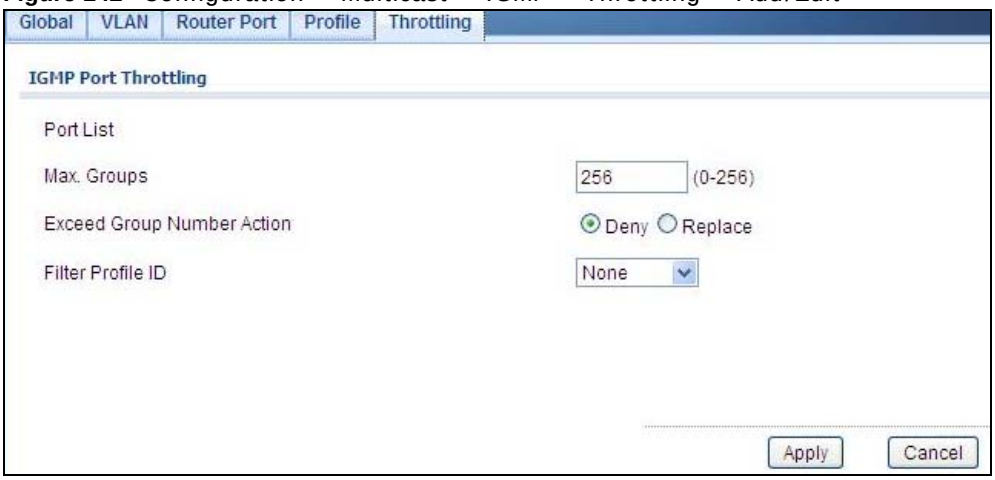
**Table 107** Configuration > Multicast > IGMP > Throttling

| LABEL | DESCRIPTION |
|---|---|
| IGMP Port Throttling | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index value. |
| Max. Groups | Displays the maximum number of groups. |
| Exceed Group Number Action | Displays the action taken by the groups as **Permit** or **Deny**. |
| Filter Profile ID | Displays the throttling filter profile ID. |

## 25.2.9 The Add/Edit Throttling Screen

Use this screen to configure the **Throttling** settings. Click **Configuration > Multicast > IGMP > Throttling** > **Add/Edit** to open this screen.

**Figure 142** Configuration > Multicast > IGMP > Throttling > Add/Edit




The following table describes the labels in this screen.

**Table 108** Configuration > Multicast > IGMP > Throttling > Add/Edit

| LABEL | DESCRIPTION |
|---|---|
| IGMP Port Throttling | |
| Port List | Enter the port index value(s). |
| Max. Groups | Enter the maximum number of groups. Enter a value between 0 and 256. |
| Exceed Group Number Action | Select the action taken by the groups to be **Deny** or **Replace**. |
| Filter Profile ID | Select the throttling filter profile ID from the dropdown list. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

26

# Configuration: Spanning Tree

## 26.1 Overview

This section provides information for **Spanning Tree** in **Configuration.**

The Switch supports Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP) as defined in the following standards.

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree Protocol

The Switch also allows you to set up multiple STP configurations (or trees). Ports can then be assigned to the trees.

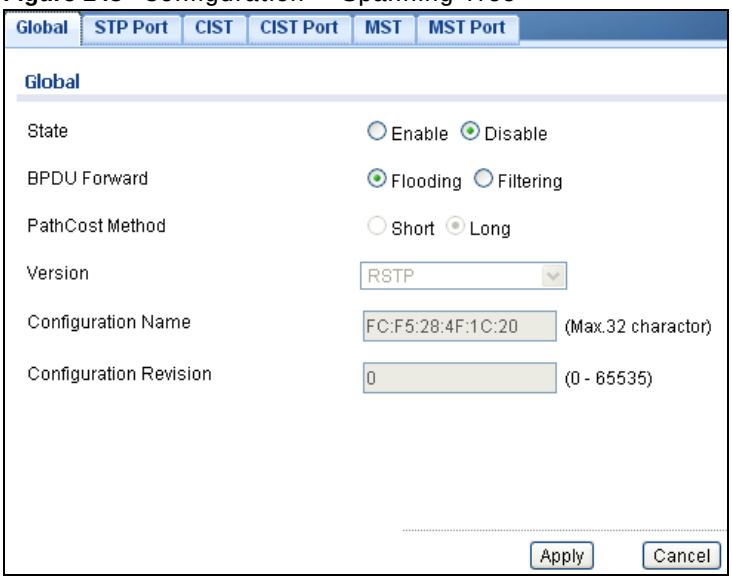
## 26.2 Spanning Tree

(R)STP detects and breaks network loops and provides backup links between switches, bridges or routers. It allows a Switch to interact with other (R)STP-compliant switches in your network to ensure that only one path exists between any two stations on the network.

### 26.2.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration > Spanning Tree** to open this screen.

**Figure 143** Configuration > Spanning Tree




The following table describes the labels in this screen.

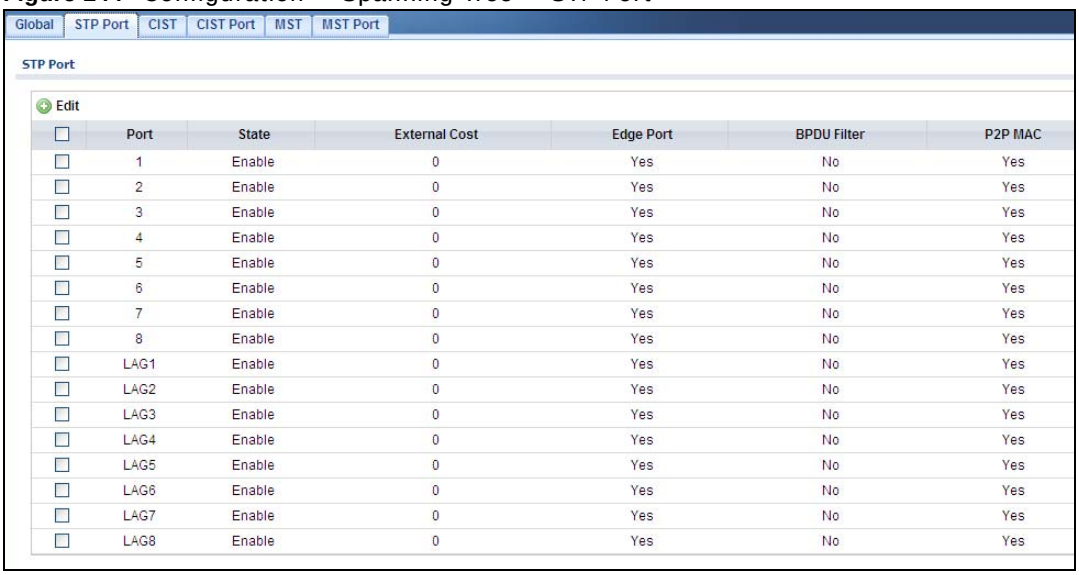
**Table 109** Configuration > Spanning Tree

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select to **Enable** or **Disable** the Spanning-Tree function. |
| BPDU Forward | Select the bridge protocol data units forward (BPDU) option to be **Flooding** or **Filtering**. |
| Path Cost Method | Select **Short** or **Long** as a **Path Cost** method.<br><br>Path cost is the cost of transmitting a frame on to a LAN through that port. It is recommended that you assign this value according to the speed of the bridge. The slower the media, the higher the cost - see Table 40 on page 112 for more information. |
| Version | Select the type of spanning tree protocol to use. The following options are available:<br><br>• **STP**<br>• **RSTP**<br>• **MSTP** |
| Configuration Name | Enter the name of the configuration in hexadecimal. The maximum number characters is 32. |
| Configuration Revision | Enter the revision number of configuration. The number can be between 0 and 65535. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 26.2.2 The STP Port Screen

Use this screen to view the **STP Port** settings. Click **Configuration > Spanning Tree > STP Port** to open this screen.

**Figure 144** Configuration > Spanning Tree > STP Port




| Port | State | External Cost | Edge Port | BPDU Filter | P2P MAC |
|---|---|---|---|---|---|
| 1 | Enable | 0 | Yes | No | Yes |
| 2 | Enable | 0 | Yes | No | Yes |
| 3 | Enable | 0 | Yes | No | Yes |
| 4 | Enable | 0 | Yes | No | Yes |
| 5 | Enable | 0 | Yes | No | Yes |
| 6 | Enable | 0 | Yes | No | Yes |
| 7 | Enable | 0 | Yes | No | Yes |
| 8 | Enable | 0 | Yes | No | Yes |
| LAG1 | Enable | 0 | Yes | No | Yes |
| LAG2 | Enable | 0 | Yes | No | Yes |
| LAG3 | Enable | 0 | Yes | No | Yes |
| LAG4 | Enable | 0 | Yes | No | Yes |
| LAG5 | Enable | 0 | Yes | No | Yes |
| LAG6 | Enable | 0 | Yes | No | Yes |
| LAG7 | Enable | 0 | Yes | No | Yes |
| LAG8 | Enable | 0 | Yes | No | Yes |

The following table describes the labels in this screen.

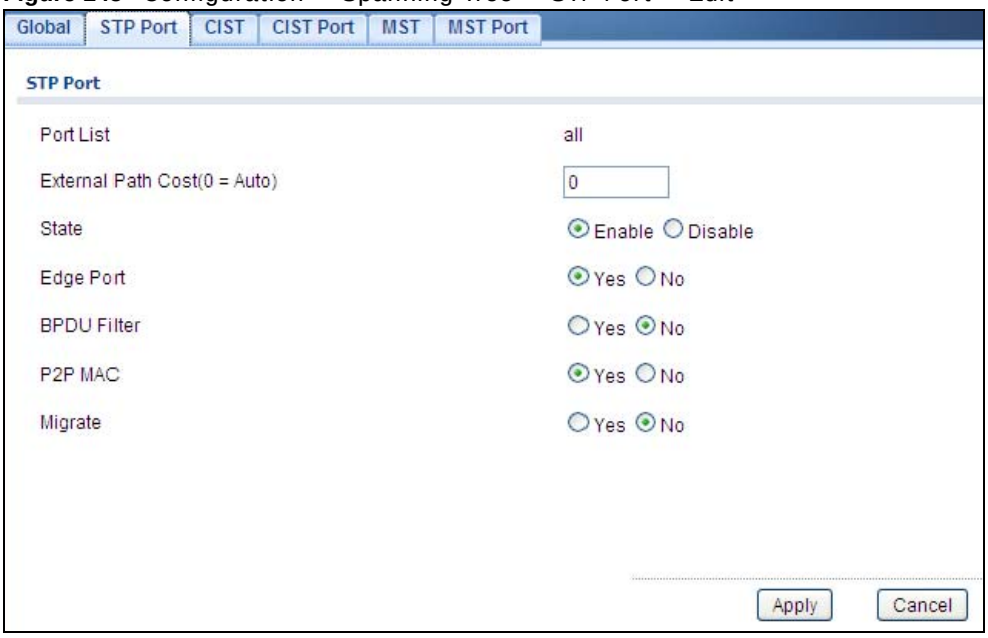
**Table 110** Configuration > Spanning Tree > STP Port

| LABEL | DESCRIPTION |
|---|---|
| STP Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the index number of the STP port. |
| State | Display the status of the STP port as enabled or disabled. |
| External Cost | Displays the external path cost. |
| Edge Port | Displays the edge port status as **Yes** or **No**. |
| BPDU Filter | Displays the BPDU filter status as **Yes** or **No**. |
| P2P MAC | Displays the P2P MAC status as **Yes** or **No**. |

## 26.2.3 The STP Port Edit Screen

Use this screen to configure the **STP Port Edit** settings. Click **Configuration > Spanning Tree > STP Port > Edit** to open this screen.

**Figure 145** Configuration > Spanning Tree > STP Port > Edit




The following table describes the labels in this screen.

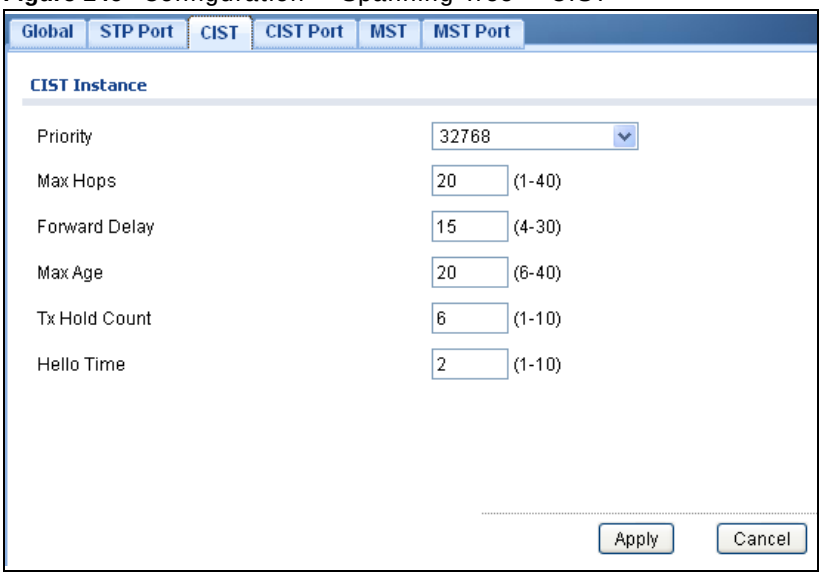
**Table 111** Configuration > Spanning Tree > STP Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| STP Port | |
| Port List | Enter the index number of the STP port(s). |
| External Path Cost (0=Auto) | Enter the external path cost. Enter 0 for Auto. |
| State | Select the state of the STP port as enabled or disabled. |
| Edge Port | Select this check box to configure a port as an edge port when it is directly attached to a computer. An edge port changes its initial STP port state from blocking state to forwarding state immediately without going through listening and learning states right after the port is configured as an edge port or when its link status changes.<br><br>Note: An edge port becomes a non-edge port as soon as it receives a Bridge Protocol Data Unit (BPDU). |
| BPDU Filter | Select **Yes** to activate BPDU filter or **No** to deactivate it. |
| P2P MAC | Select **Yes** to activate P2P MAC or **No** to deactivate it. |
| Migrate | Select **Yes** to activate Migrate or **No** to deactivate it. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 26.2.4 The CIST Screen

Use this screen to view the **CIST** settings. Click **Configuration > Spanning Tree > CIST** to open this screen.

**Figure 146** Configuration > Spanning Tree > CIST




The following table describes the labels in this screen.

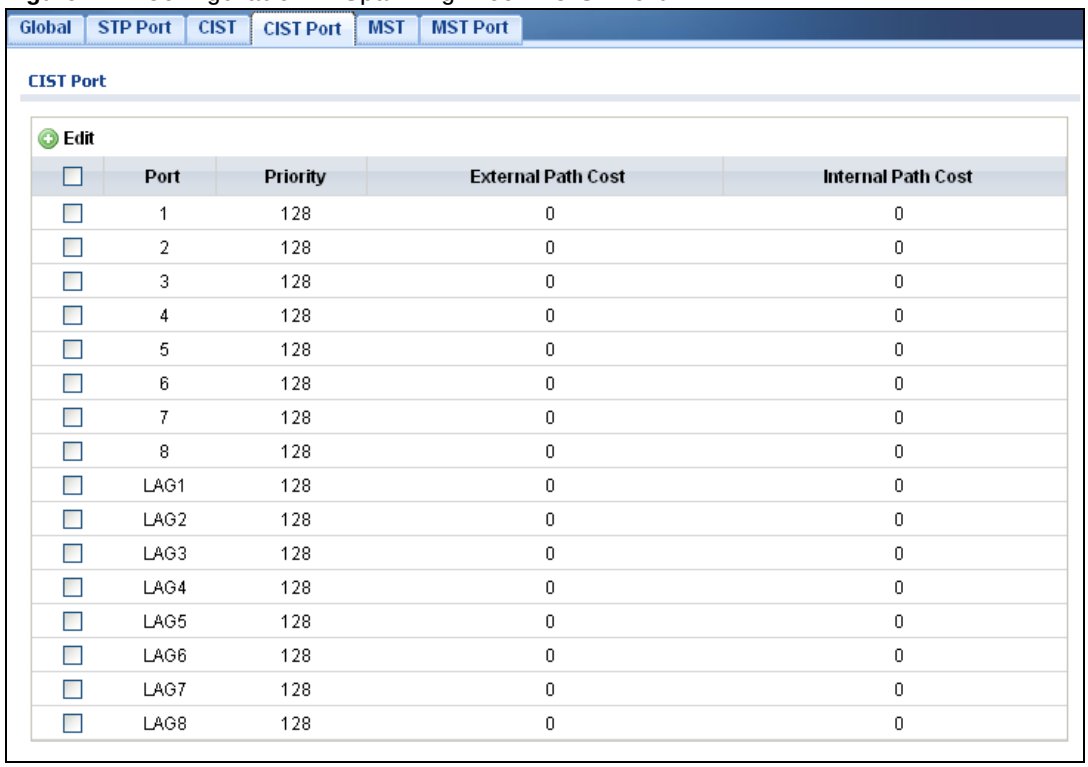
**Table 112** Configuration > Spanning Tree > CIST

| LABEL | DESCRIPTION |
|---|---|
| CIST Instance | |
| Priority | Configure priority of CIST bridge ID.<br><br>Priority is part of bridge ID, used for CIST root bridge selection. |
| Max Hops | Enter a maximum number of hops value. The value can be between 1 and 40. |
| Forward Delay | This is the maximum time (in seconds) a switch will wait before changing states. This delay is required because every switch must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a blocking state; otherwise, temporary data loops might result. The allowed range is 4 to 30 seconds.<br><br>As a general rule:<br><br>Note: 2 * (Forward Delay - 1) >= Max Age >= 2 * (Hello Time + 1) |
| Max Age | This is the maximum time (in seconds) a switch can wait without receiving a BPDU before attempting to reconfigure. All switch ports (except for designated ports) should receive BPDUs at regular intervals. Any port that ages out STP information (provided in the last BPDU) becomes the designated port for the attached LAN. If it is a root port, a new root port is selected from among the switch ports attached to the network. The allowed range is 6 to 40 seconds. |
| Tx Hold Count | Enter a transmission hold count value. The value can be between 1 and 10. |
| Hello Time | This is the time interval in seconds between BPDU (Bridge Protocol Data Units) configuration message generations by the root switch. The allowed range is 1 to 10 seconds. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 26.2.5 The CIST Port Screen

Use this screen to view the **CIST Port** settings. Click **Configuration > Spanning Tree > CIST Port** to open this screen.

**Figure 147** Configuration > Spanning Tree > CIST Port




| Port | Priority | External Path Cost | Internal Path Cost |
|---|---|---|---|
| 1 | 128 | 0 | 0 |
| 2 | 128 | 0 | 0 |
| 3 | 128 | 0 | 0 |
| 4 | 128 | 0 | 0 |
| 5 | 128 | 0 | 0 |
| 6 | 128 | 0 | 0 |
| 7 | 128 | 0 | 0 |
| 8 | 128 | 0 | 0 |
| LAG1 | 128 | 0 | 0 |
| LAG2 | 128 | 0 | 0 |
| LAG3 | 128 | 0 | 0 |
| LAG4 | 128 | 0 | 0 |
| LAG5 | 128 | 0 | 0 |
| LAG6 | 128 | 0 | 0 |
| LAG7 | 128 | 0 | 0 |
| LAG8 | 128 | 0 | 0 |

The following table describes the labels in this screen.

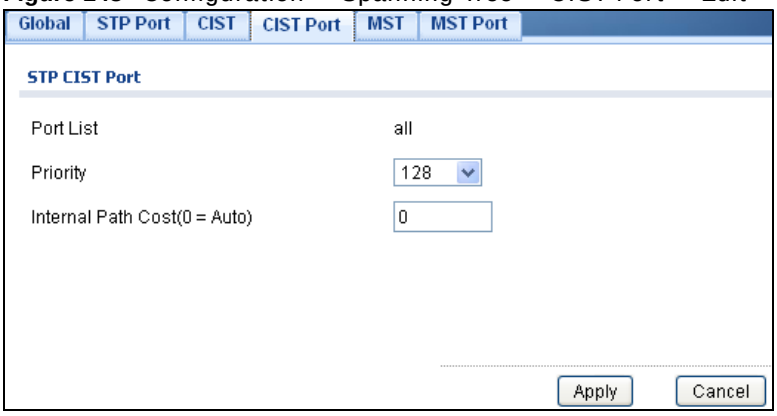
**Table 113** Configuration > Spanning Tree > CIST Port

| LABEL | DESCRIPTION |
|---|---|
| CIST Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the index number of the STP port. |
| Priority | Displays the priority for each port here. |
| External Path Cost | Displays the external path cost. |
| Internal Path Cost | Displays the internal path cost. |

## 26.2.6 The CIST Port Edit Screen

Use this screen to configure the **CIST Port Edit** settings. Click **Configuration > Spanning Tree > CIST Port > Edit** to open this screen.

**Figure 148** Configuration > Spanning Tree > CIST Port > Edit




The following table describes the labels in this screen.

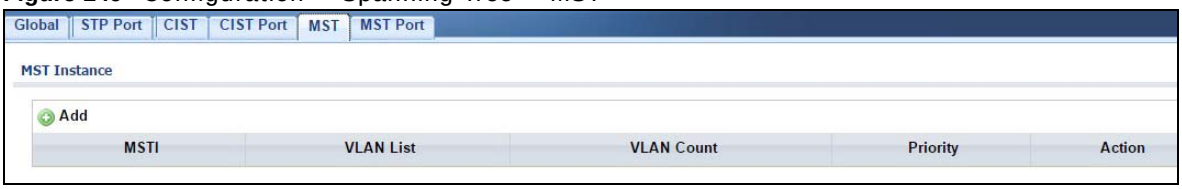
**Table 114** Configuration > Spanning Tree > CIST Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| STP CIST Port | |
| Port List | Enter the index number of the STP port(s). |
| Priority | Configure the priority for each port here.<br><br>Priority decides which port should be disabled when more than one port forms a loop in a switch. Ports with a higher priority numeric value are disabled first. The allowed range is between 0 and 255 and the default value is 128. |
| Internal Path Cost (0=Auto) | Enter the internal path cost. Enter 0 or Auto. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 26.2.7 The MST Screen

Use this screen to view the **MST** settings. Click **Configuration > Spanning Tree > MST** to open this screen.

**Figure 149** Configuration > Spanning Tree > MST




The following table describes the labels in this screen.

**Table 115** Configuration > Spanning Tree > MST

| LABEL | DESCRIPTION |
|---|---|
| MST Instance | |
| Add | Click **Add** to create a new **MST Instance** entry. |
| MSTI | Displays the Multiple Spanning Tree Instance(s) (MSTI). |
| VLAN List | Display a list of MSTI VLANs. |

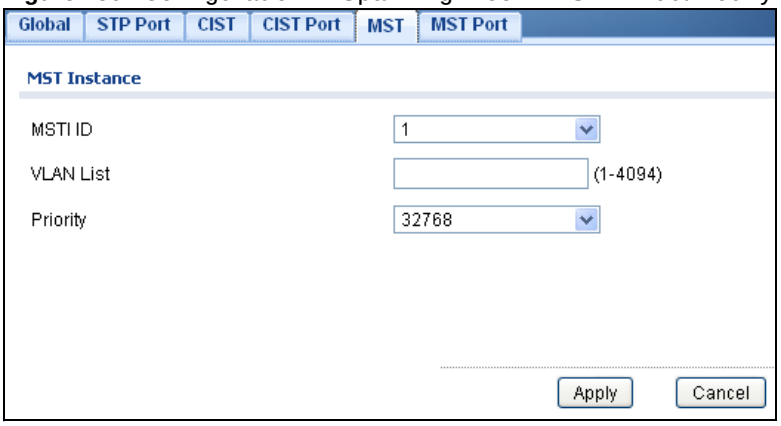
**Table 115** Configuration > Spanning Tree > MST (continued)

| LABEL | DESCRIPTION |
|---|---|
| VLAN Count | Displays the VLAN count. |
| Priority | Displays the priority for each port here. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 26.2.8 The Add/Modify MST Screen

Use this screen to configure the **MST** settings. Click **Configuration** > **Spanning Tree** > **MST** > **Add / Modify** to open this screen.

**Figure 150** Configuration > Spanning Tree > MST > Add/Modify




The following table describes the labels in this screen.

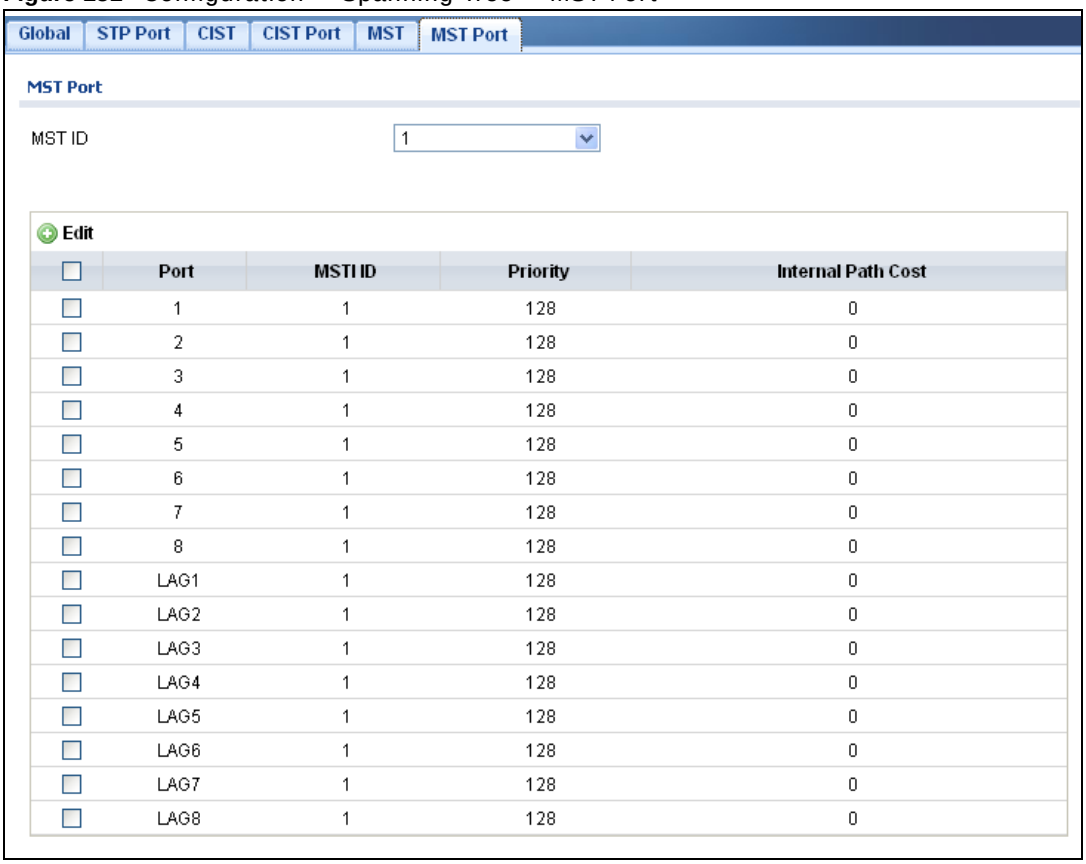
**Table 116** Configuration > Spanning Tree > MST > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| MST Instance | |
| MST ID | Displays the Multiple Spanning Tree Instance (MSTI) ID(s). |
| VLAN List | Display a list of MSTI VLANs. |
| Priority | Displays MSTI bridge ID priority value. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 26.2.9 The MST Port Screen

Use this screen to view the **MST Port** settings. Click **Configuration > Spanning Tree > MST Port** to open this screen.

**Figure 151** Configuration > Spanning Tree > MST Port




The following table describes the labels in this screen.

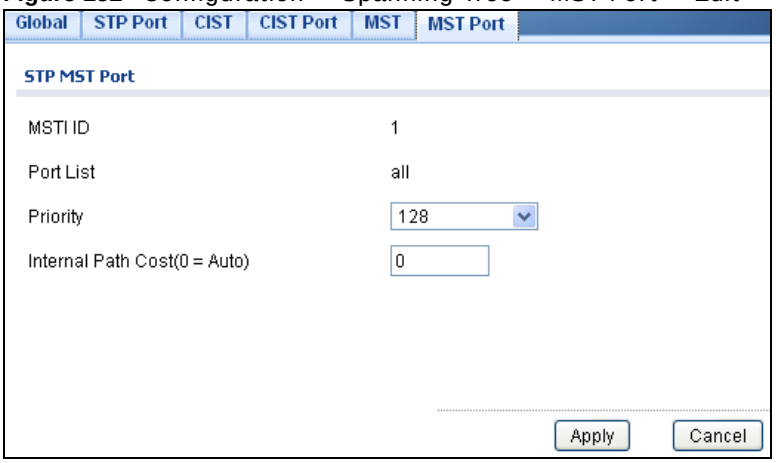
**Table 117** Configuration > Spanning Tree > MST Port

| LABEL | DESCRIPTION |
|---|---|
| MST Port | |
| MST ID | Select the MST port ID number from the dropdown list. |
| Edit | Select this check box to configure the properties of MST ID. Click the **Edit** button change the properties of the MST ID. |
| Port | Displays the index number of the MST port. |
| MSTI ID | Displays the index value of the MSTI. |
| Priority | Displays the priority for each port. |
| Internal Path Cost | Displays the internal path cost. |

## 26.2.10 The MST Port Edit Screen

Use this screen to configure the **MST Port Edit** settings. Click **Configuration > Spanning Tree > MST Port > Edit** to open this screen.

**Figure 152** Configuration > Spanning Tree > MST Port > Edit




The following table describes the labels in this screen.

**Table 118** Configuration > Spanning Tree > MST Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| STP MST Port | |
| MST ID | Displays the MST ID number. |
| Port List | Enter the index number of the MTP port(s). |
| Priority | Configure the priority for each port here.<br><br>Priority decides which port should be disabled when more than one port forms a loop in a switch. Ports with a higher priority numeric value are disabled first. The allowed range is between 0 and 255 and the default value is 128. |
| Internal Path Cost (0=Auto) | Enter the internal path cost. Enter 0 for Auto. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 27

# Configuration: LLDP

## 27.1 Overview

This section provides information for **LLDP** in **Configuration.**

Use the **Link Layer Discovery Protocol (LLDP)** screens to configure LLDP Switch settings.

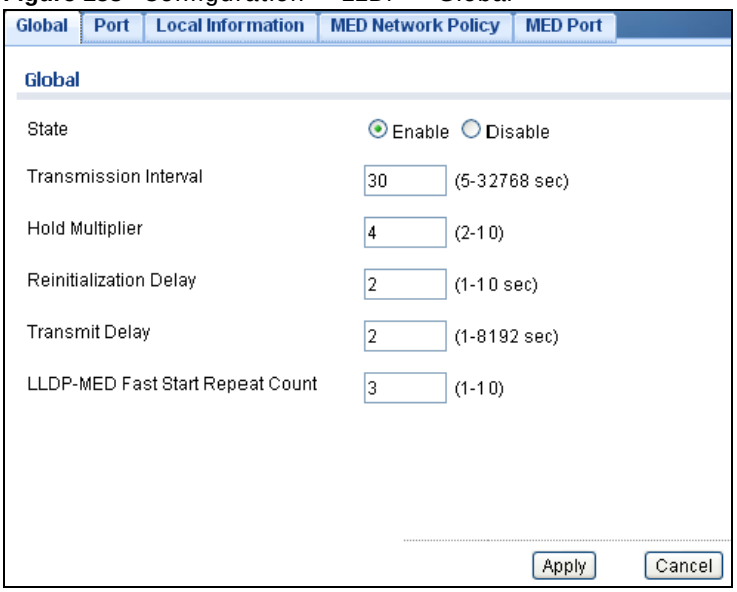
## 27.2 LLDP

This page allows the user to inspect and configure the current LLDP port settings.

### 27.2.1 The Global Screen

Use this screen to configure the **Global** settings. Click **Configuration > LLDP > Global** to open this screen.

**Figure 153** Configuration > LLDP > Global




The following table describes the labels in this screen.

**Table 119** Configuration > LLDP > Global

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select **Enable** to activate the global LLDP. |

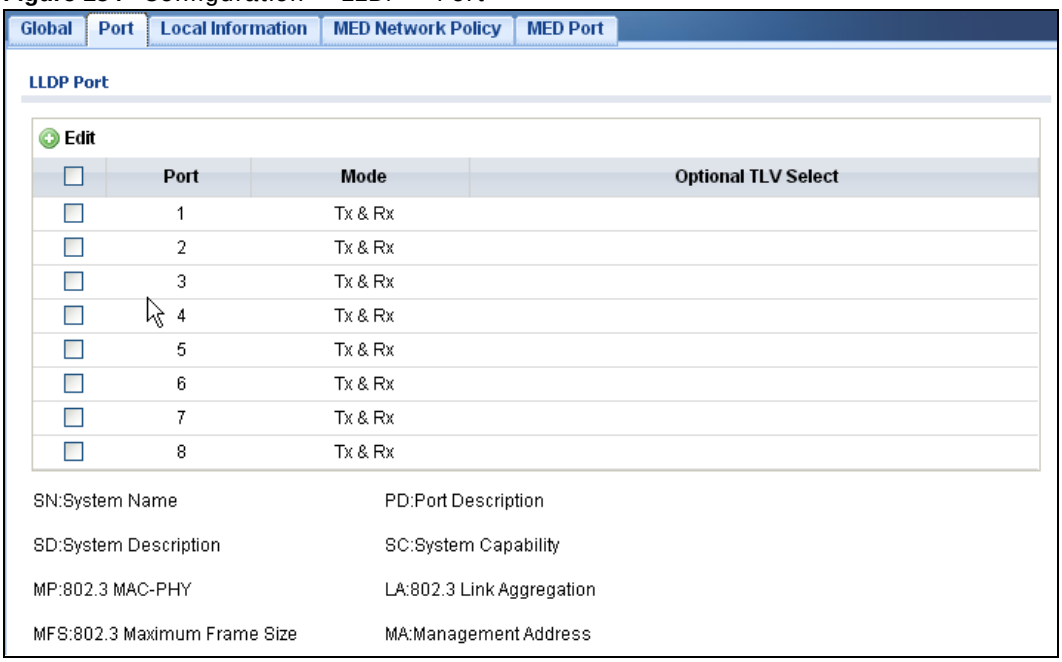
**Table 119** Configuration > LLDP > Global (continued)

| LABEL | DESCRIPTION |
|---|---|
| Transmission Interval | Enter the transmission interval value.<br><br>The switch periodically transmits LLDP frames to its neighbors for having the network discovery information up-to-date. The interval between each LLDP frame is determined by the Tx Interval value. Valid values are restricted to 5 - 32768 seconds. |
| Hold Multiplier | Enter the hold multiplier value.<br><br>Each LLDP frame contains information about how long the information in the LLDP frame shall be considered valid. The LLDP information valid period is set to Tx Hold multiplied by Tx Interval seconds. Valid values are restricted to 2 - 10 times. |
| Reinitialization Delay | Enter the reinitialization delay value.<br><br>When a port is disabled, LLDP is disabled or the switch is rebooted, an LLDP shutdown frame is transmitted to the neighboring units, signalling that the LLDP information isn't valid anymore. Tx Reinit controls the amount of seconds between the shutdown frame and a new LLDP initialization. Valid values are restricted to 1 - 10 seconds. |
| Transmit Delay | Enter the transmission delay value.<br><br>If some configuration is changed (e.g. the IP address) a new LLDP frame is transmitted, but the time between the LLDP frames will always be at least the value of Tx Delay seconds. Tx Delay cannot be larger than 1/4 of the Tx Interval value. Valid values are restricted to 1 - 8192 seconds. |
| LLDP-MED Fast Start Repeat Count | Enter the LLDP-MED fast start repeat count value.<br><br>Because there is a risk of an LLDP frame being lost during transmission between neighbors, it is recommended to repeat the fast start transmission multiple times to increase the possibility of the neighbors receiving the LLDP frame. With Fast start repeat count it is possible to specify the number of times the fast start transmission would be repeated. The recommended value is 4 times, given that 4 LLDP frames with a 1 second interval will be transmitted, when an LLDP frame with new information is received. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 27.2.2 The Port Screen

Use this screen to view the **Port** settings. Click **Configuration > LLDP > Port** to open this screen.

**Figure 154** Configuration > LLDP > Port




The following table describes the labels in this screen.

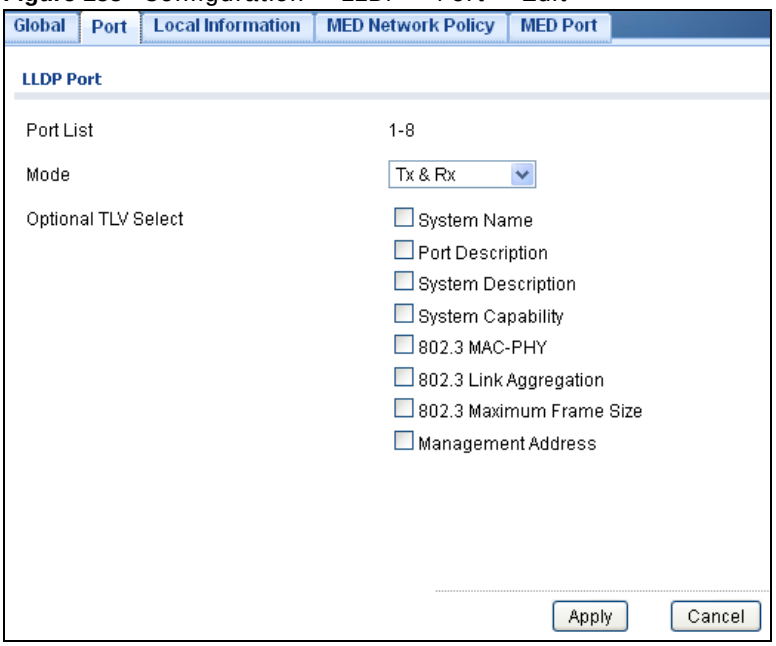
**Table 120** Configuration > LLDP > Port

| LABEL | DESCRIPTION |
|---|---|
| LLDP VLAN | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the index number of the LLDP port. |
| Mode | Displays the mode of the LLDP port as **Disable**, **Tx Only**, **Rx Only**, or **Tx & Rx**. |
| Optional TLV Select | Displays the TLV as one or more of the following options:<br>• SN - System Name<br>• PD - Port Description<br>• SD - System Description<br>• SC - System Capability<br>• MP - 802.3 MAC-PHY<br>• LA - 802.3 Link Aggregation<br>• MFS - 802.3 Maximum Frame Size<br>• MA - Management Address |

## 27.2.3 The Port Edit Screen

Use this screen to configure the **Port Edit** settings. Click **Configuration > LLDP > Port > Edit** to open this screen.

**Figure 155** Configuration > LLDP > Port > Edit




The following table describes the labels in this screen.

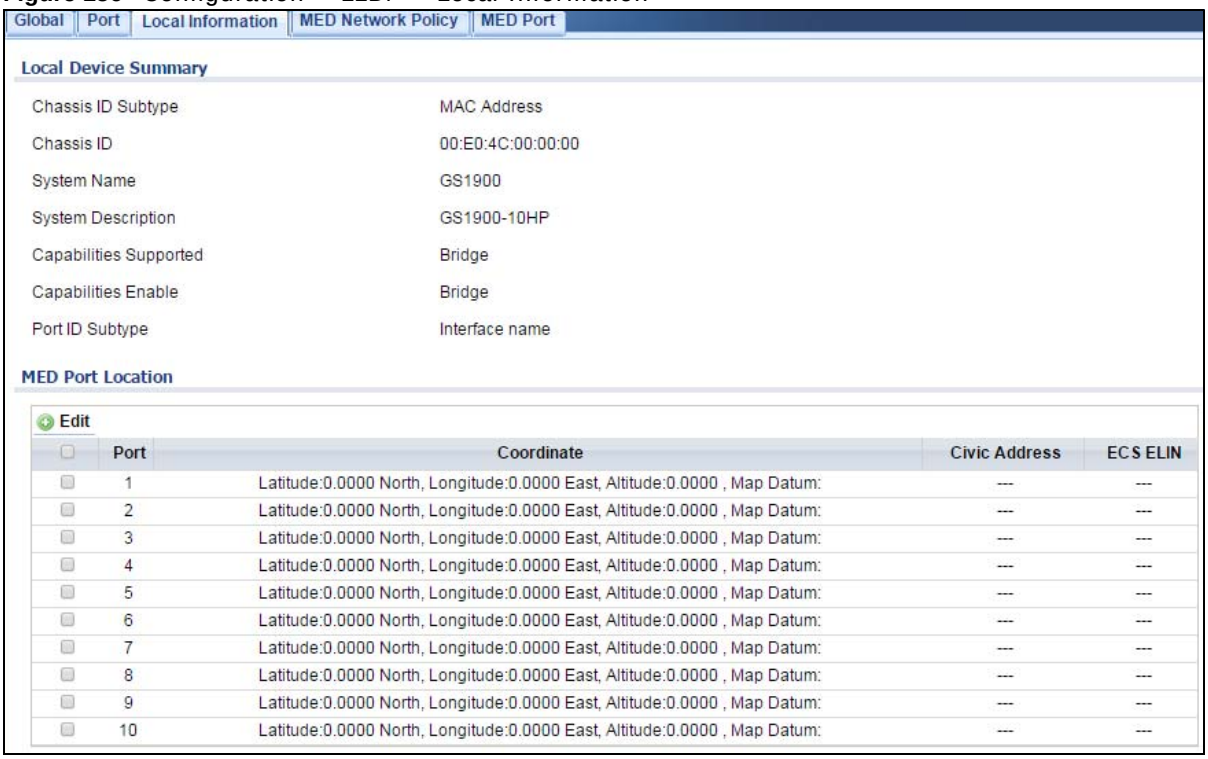
**Table 121** Configuration > LLDP > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| LLDP Port | |
| Port List | Displays the index number of the LLDP port(s). |
| Mode | Select the mode of the LLDP port as **Disable**, **Tx Only**, **Rx Only**, or **Tx & Rx**. |
| Optional TLV Select | Select the TLV as one or more of the following options:<br>• **SN** - System Name<br>• **PD** - Port Description<br>• **SD** - System Description<br>• **SC** - System Capability<br>• **MP** - 802.3 MAC-PHY<br>• **LA** - 802.3 Link Aggregation<br>• **MFS** - 802.3 Maximum Frame Size<br>• **MA** - Management Address |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 27.2.4 The Local Information Screen

Use this screen to view the **Local Information** settings. Click **Configuration > LLDP** > **Local Information** to open this screen.

**Figure 156** Configuration > LLDP > Local Information




The following table describes the labels in this screen.

**Table 122** Configuration > LLDP > Local Information

| LABEL | DESCRIPTION |
|---|---|
| Local Device Summary | |
| Chassis ID Subtype | Displays the chassis ID subtype. |
| Chassis ID | The **Chassis ID** is the identification of the neighbor's LLDP frames. |
| System Name | **System Name** is the name advertised by the neighbor unit. |
| System Description | Displays the **System Description**. |

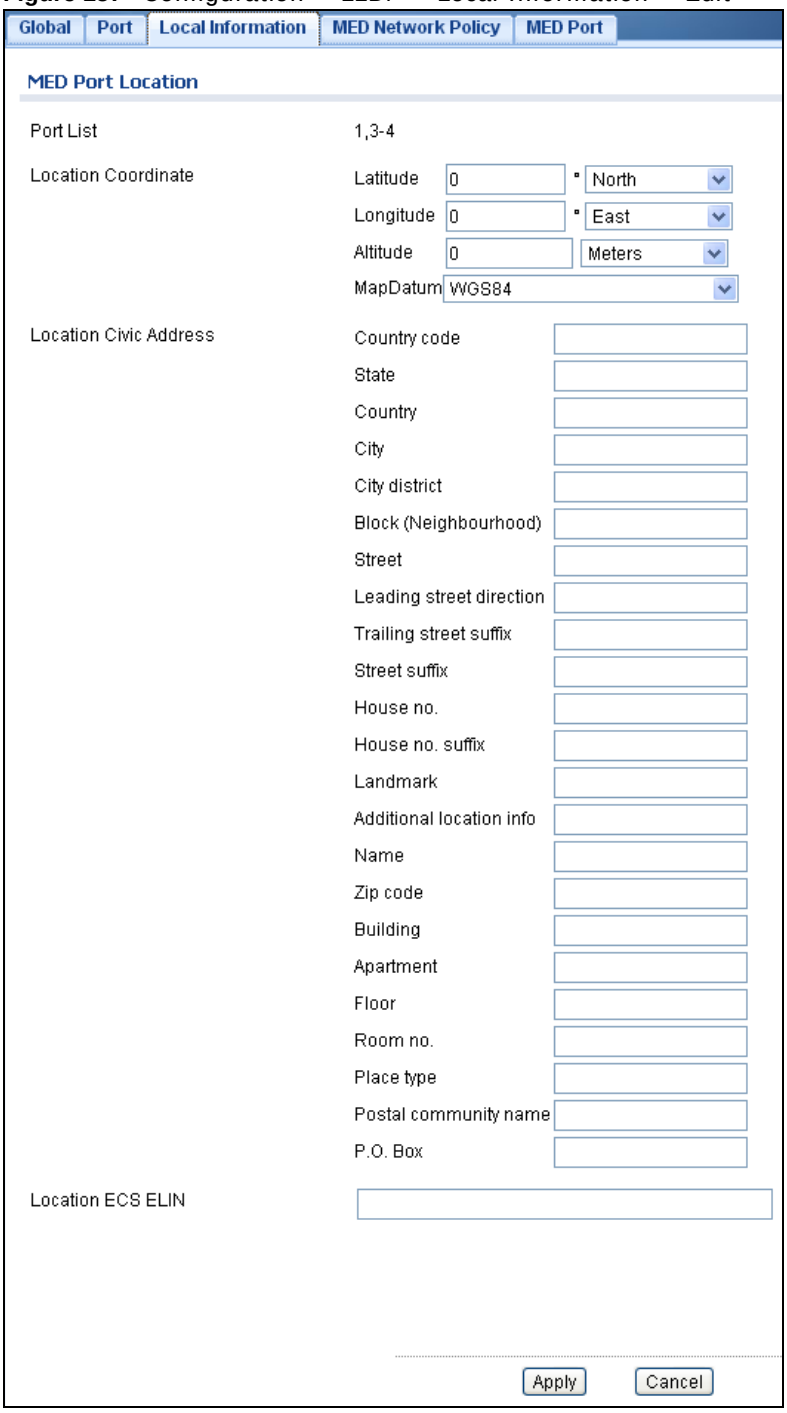
**Table 122** Configuration > LLDP > Local Information (continued)

| LABEL | DESCRIPTION |
|---|---|
| Capabilities Supported | **Capabilities Supported** describes the neighbor unit's capabilities. The possible capabilities are:<br>1. Other<br>2. Repeater<br>3. Bridge<br>4. WLAN Access Point<br>5. Router<br>6. Telephone<br>7. DOCSIS cable device<br>8. Station only<br>9. Reserved<br>When a capability is enabled, the capability is followed by (+). If the capability is disabled, the capability is followed by (-). |
| Capabilities Enable | Displays which capability is enabled. |
| Port ID Subtype | Displays the **Port ID Subtype**. |
| MED Port Location | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the index number of the LLDP port(s). |
| Coordinate | Displays the location coordinate of the LLDP port(s). |
| Civic Address | Displays the location of the civic address(es) in hexadecimal. |
| ECS ELIN | Emergency Call Service (e.g. E911 and others), such as defined by TIA or NENA.<br>Emergency Call Service ELIN identifier data format is defined to carry the ELIN identifier as used during emergency call setup to a traditional CAMA or ISDN trunk-based PSAP. This format consists of a numerical digit string, corresponding to the ELIN to be used for emergency calling. |

## 27.2.5 The Local Information Edit Screen

Use this screen to configure the **Port Edit** settings. Click **Configuration > LLDP > Local Information > Edit** to open this screen.

**Figure 157** Configuration > LLDP > Local Information > Edit




The following table describes the labels in this screen.

**Table 123** Configuration > LLDP > Local Information > Edit

| LABEL | DESCRIPTION |
|---|---|
| MED Port Location | |
| Port List | Displays the index number of the LLDP port(s). The value is made of 16 pairs of hexadecimal characters. |

**Table 123** Configuration > LLDP > Local Information > Edit (continued)

| LABEL | DESCRIPTION |
|---|---|
| Location Coordinates | |
| Latitude | **Latitude** SHOULD be normalized to within 0-90 degrees with a maximum of 4 digits.<br><br>It is possible to specify the direction to either **North** of the equator or **South** of the equator. |
| Longitude | **Longitude** SHOULD be normalized to within 0-180 degrees with a maximum of 4 digits.<br><br>It is possible to specify the direction to either **East** of the prime meridian or **West** of the prime meridian. |
| Altitude | **Altitude** SHOULD be normalized to within -32767 to 32767 with a maximum of 4 digits.<br><br>It is possible to select between two altitude types (floors or meters).<br><br>**Meters:** Representing meters of Altitude defined by the vertical datum specified.<br><br>**Floors:** Representing altitude in a form more relevant in buildings which have different floor-to-floor dimensions. An altitude = 0.0 is meaningful even outside a building, and represents ground level at the given latitude and longitude. Inside a building, 0.0 represents the floor level associated with ground level at the main entrance. |
| Map Datum | The **Map Datum** is used for the coordinates given in these options:<br><br>**WGS84:** (Geographical 3D) - World Geodesic System 1984, CRS Code 4327, Prime Meridian Name: Greenwich.<br><br>**NAD83/NAVD88:** North American Datum 1983, CRS Code 4269, Prime Meridian Name: Greenwich; The associated vertical datum is the North American Vertical Datum of 1988 (NAVD88). This datum pair is to be used when referencing locations on land, not near tidal water (which would use Datum = NAD83/MLLW).<br><br>**NAD83/MLLW:** North American Datum 1983, CRS Code 4269, Prime Meridian Name: Greenwich; The associated vertical datum is Mean Lower Low Water (MLLW). This datum pair is to be used when referencing locations on water/sea/ocean. |
| Location Civic Address | IETF Geopriv Civic Address based Location Configuration Information (Civic Address LCI).<br><br>• **Country code:** The two-letter ISO 3166 country code in capital ASCII letters - Example: DK, DE or US.<br>• **State:** National subdivisions (state, canton, region, province, prefecture).<br>• **County:** County, parish, gun (Japan), district.<br>• **City:** City, township, shi (Japan) - Example: Copenhagen.<br>• **City district:** City division, borough, city district, ward, chou (Japan).<br>• **Block (Neighborhood):** Neighborhood, block.<br>• **Street:** Street - Example: Poppelvej.<br>• **Leading street direction:** Leading street direction - Example: N.<br>• **Trailing street suffix:** Trailing street suffix - Example: SW.<br>• **Street suffix:** Street suffix - Example: Ave, Platz.<br>• **House no.:** House number - Example: 21.<br>• **House no. suffix:** House number suffix - Example: A, 1/2.<br>• **Landmark:** Landmark or vanity address - Example: Columbia University.<br>• **Additional location info:** Additional location info - Example: South Wing.<br>• **Name:** Name (residence and office occupant) - Example: Flemming Jahn.<br>• **Zip code:** Postal/zip code - Example: 2791.<br>• **Building:** Building (structure) - Example: Low Library.<br>• **Apartment:** Unit (Apartment, suite) - Example: Apt 42.<br>• **Floor:** Floor - Example: 4.<br>• **Room no.:** Room number - Example: 450F.<br>• **Place type:** Place type - Example: Office.<br>• **Postal community name:** Postal community name - Example: Leonia.<br>• **P.O. Box:** Post office box (P.O. BOX) - Example: 12345. |

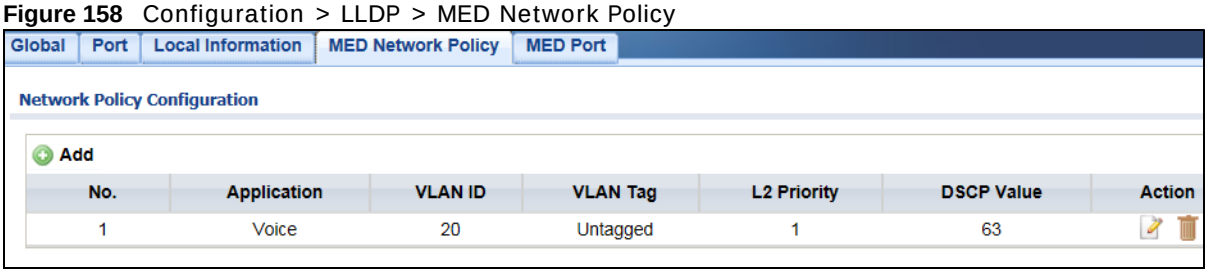
**Table 123** Configuration > LLDP > Local Information > Edit (continued)

| LABEL | DESCRIPTION |
|---|---|
| Location ECS ELIN | Emergency Call Service (e.g. E911 and others), such as defined by TIA or NENA.<br><br>Emergency Call Service ELIN identifier data format is defined to carry the ELIN identifier as used during emergency call setup to a traditional CAMA or ISDN trunk-based PSAP. This format consists of a numerical digit string, corresponding to the ELIN to be used for emergency calling. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 27.2.6 The MED Network Policy Screen

Use this screen to view the **MED Network Policy** settings. Click **Configuration > LLDP > MED Network Policy** to open this screen.

**Figure 158** Configuration > LLDP > MED Network Policy




The following table describes the labels in this screen.

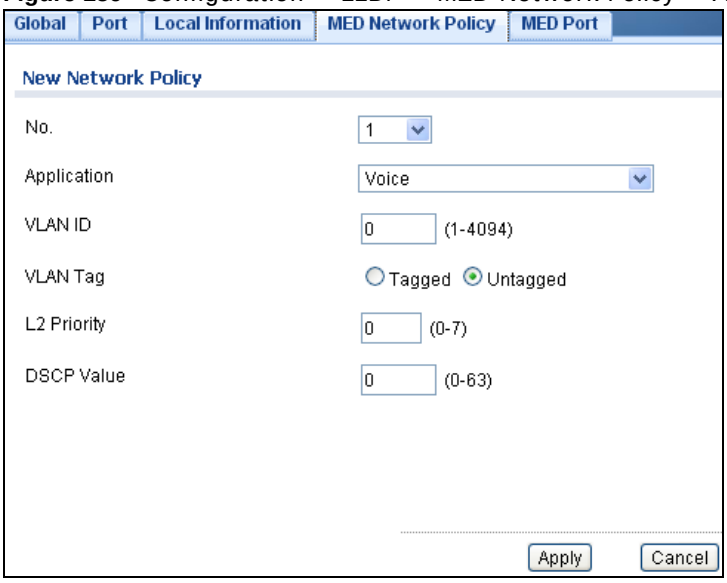
**Table 124** Configuration > LLDP > MED Network Policy

| LABEL | DESCRIPTION |
|---|---|
| Network Policy Configuration | |
| Add | Click **Add** to create a new **Network Policy Configuration** entry. |
| No. | Displays index of network policy. |
| Application | Displays the **Application type** indicating the primary function of the application(s). |
| VLAN ID | Displays the VLAN ID (VID) for the port as defined in IEEE 802.1Q-2003. |
| VLAN Tag | Displays the **VLAN Tag** value as **Tagged** or **Untagged**. |
| L2 Priority | Displays the L2 priority layer value. |
| DSCP Value | Displays the **DSCP Value**. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 27.2.7 The MED Network Policy Add/Edit Screen

Use this screen to configure the **Port Edit** settings. Click **Configuration > LLDP > MED Network Policy > Add / Edit** to open this screen.

**Figure 159** Configuration > LLDP > MED Network Policy > Add/Edit




The following table describes the labels in this screen.

**Table 125** Configuration > LLDP > MED Network Policy > Edit

| LABEL | DESCRIPTION |
|---|---|
| MED Port Location Edit | |
| No. | Select the index of network policy |
| Application | Select the **Application** type indicating the primary function of the application(s) defined for this network policy, advertised by an Endpoint or Network Connectivity Device. The possible application types are shown below.<br>1. **Voice** - for use by dedicated IP Telephony handsets and other similar appliances supporting interactive voice services. These devices are typically deployed on a separate VLAN for ease of deployment and enhanced security by isolation from data applications.<br>2. **Voice Signalling** - for use in network topologies that require a different policy for the voice signalling than for the voice media.<br>3. **Guest Voice** - to support a separate limited feature-set voice service for guest users and visitors with their own IP Telephony handsets and other similar appliances supporting interactive voice services.<br>4. **Guest Voice Signalling** - for use in network topologies that require a different policy for the guest voice signalling than for the guest voice media.<br>5. **Softphone Voice** - for use by softphone applications on typical data centric devices, such as PCs or laptops.<br>6. **Video Conferencing** - for use by dedicated Video Conferencing equipment and other similar appliances supporting real-time interactive video/audio services.<br>7. **Streaming Video** - for use by broadcast or multicast based video content distribution and other similar applications supporting streaming video services that require specific network policy treatment. Video applications relying on TCP with buffering would not be an intended use of this application type.<br>8. **Video Signalling** - for use in network topologies that require a separate policy for the video signalling than for the video media. |

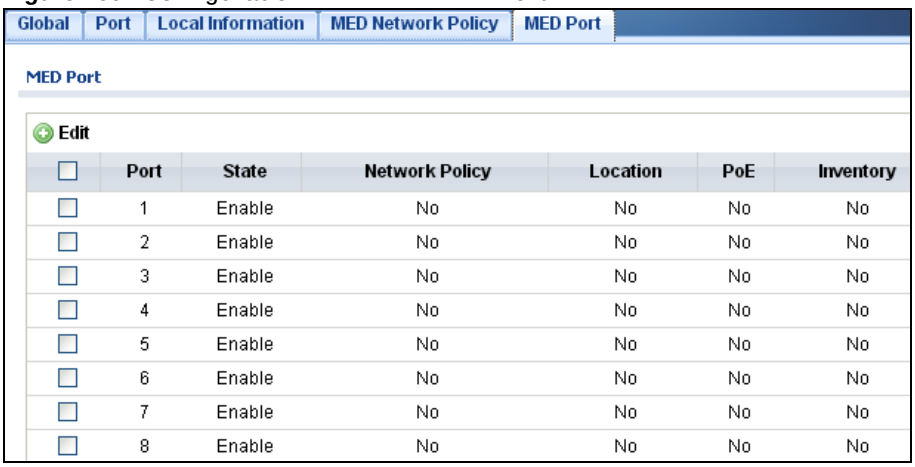
**Table 125** Configuration > LLDP > MED Network Policy > Edit (continued)

| LABEL | DESCRIPTION |
|---|---|
| VLAN ID | Enter the **VLAN ID** (VID) for the port as defined in IEEE 802.1Q-2003. A value of 1 through 4094 is used to define a valid VLAN ID. A value of 0 (Priority Tagged) is used if the device is using priority tagged frames as defined by IEEE 802.1Q-2003, meaning that only the IEEE 802.1D priority level is significant and the default PVID of the ingress port is used instead. |
| VLAN Tag | **TAG** is indicative of whether the specified application type is using a tagged or an untagged VLAN. Select **Tagged** or **Untagged**.<br><br>**Untagged:** The device is using an untagged frame format and as such does not include a tag header as defined by IEEE 802.1Q-2003.<br><br>**Tagged:** The device is using the IEEE 802.1Q tagged frame format. |
| L2 Priority | **Priority** is the Layer 2 priority to be used for the specified application type. One of the eight priority levels (0 through 7). |
| DSCP Value | **DSCP** is the DSCP value to be used to provide Diffserv node behavior for the specified application type as defined in IETF RFC 2474. Contain one of 64 code point values (0 through 63). |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 27.2.8 The MED Port Screen

Use this screen to view the **MED Port** settings. Click **Configuration > LLDP** > **MED Port** to open this screen.

**Figure 160** Configuration > LLDP > MED Port




| Port | State | Network Policy | Location | PoE | Inventory |
|---|---|---|---|---|---|
| 1 | Enable | No | No | No | No |
| 2 | Enable | No | No | No | No |
| 3 | Enable | No | No | No | No |
| 4 | Enable | No | No | No | No |
| 5 | Enable | No | No | No | No |
| 6 | Enable | No | No | No | No |
| 7 | Enable | No | No | No | No |
| 8 | Enable | No | No | No | No |

The following table describes the labels in this screen.

**Table 126** Configuration > LLDP > MED Port

| LABEL | DESCRIPTION |
|---|---|
| MED Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the **MED Port** value. |
| State | Displays the state of the MED port as **Enable** or **Disable**. |
| Network Policy | Displays the **Network Policy** value. |

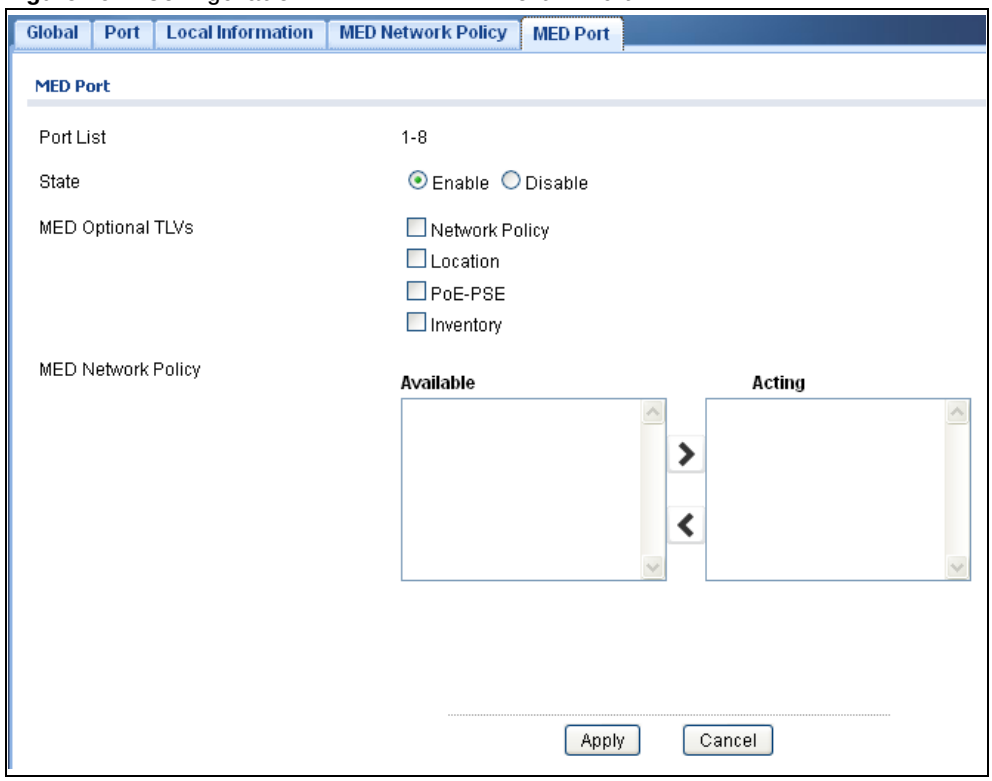
**Table 126** Configuration > LLDP > MED Port (continued)

| LABEL | DESCRIPTION |
|---|---|
| Location | Displays the **Location** value. |
| PoE | Displays the **PoE** value. |
| Inventory | Displays the **Inventory** value. |

## 27.2.9 The MED Port Add/Edit Screen

Use this screen to configure the **MED Port Edit** settings. Click **Configuration > LLDP > MED Port > Edit** to open this screen.

**Figure 161** Configuration > LLDP > MED Port > Edit




The following table describes the labels in this screen.

**Table 127** Configuration > LLDP > MED Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| MED Port | |
| Port List | Displays the **Port List**. |
| State | Select **Enable** to activate the MED Port feature. |
| MED Optional TLVs | Select one or more of the MED Optional TLVs:<br>• **Network Policy**<br>• **Location**<br>• **PoE PSE**<br>• **Inventory** |
| MED Network Policy | Select one or more of the **MED Network Policies** in **Available** and move them to **Acting** to activate. |

**Table 127** Configuration > LLDP > MED Port > Edit (continued)

| LABEL | DESCRIPTION |
|---|---|
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 28

# Configuration: QoS

## 28.1 Overview

This section provides information for **QoS** (Quality of Service) in **Configuration.**

## 28.2 General

Quality of Service (QoS) refers to both a network's ability to deliver data with minimum delay, and the networking methods used to control the use of bandwidth. Without QoS, all traffic data is equally likely to be dropped when the network is congested. This can cause a reduction in network performance and make the network inadequate for time-critical application such as video-on-demand.

### 28.2.1 The Port Screen

Use this screen to view the **Port** settings. Click **Configuration > QoS > General** to open this screen.

**Figure 162** Configuration > QoS > General

Port | Queue | CoS Mapping | DSCP Mapping | IP Precedence Mapping

QoS Port

Edit

| | Port | CoS Value | Remark CoS | Remark DSCP | Remark IP Precedence |
|---|---|---|---|---|---|
| | 1 | 0 | Disable | Disable | Disable |
| | 2 | 0 | Disable | Disable | Disable |
| | 3 | 0 | Disable | Disable | Disable |
| | 4 | 0 | Disable | Disable | Disable |
| | 5 | 0 | Disable | Disable | Disable |
| | 6 | 0 | Disable | Disable | Disable |
| | 7 | 0 | Disable | Disable | Disable |
| | 8 | 0 | Disable | Disable | Disable |
| | LAG1 | 0 | Disable | Disable | Disable |
| | LAG2 | 0 | Disable | Disable | Disable |
| | LAG3 | 0 | Disable | Disable | Disable |
| | LAG4 | 0 | Disable | Disable | Disable |
| | LAG5 | 0 | Disable | Disable | Disable |
| | LAG6 | 0 | Disable | Disable | Disable |
| | LAG7 | 0 | Disable | Disable | Disable |
| | LAG8 | 0 | Disable | Disable | Disable |

The following table describes the labels in this screen.

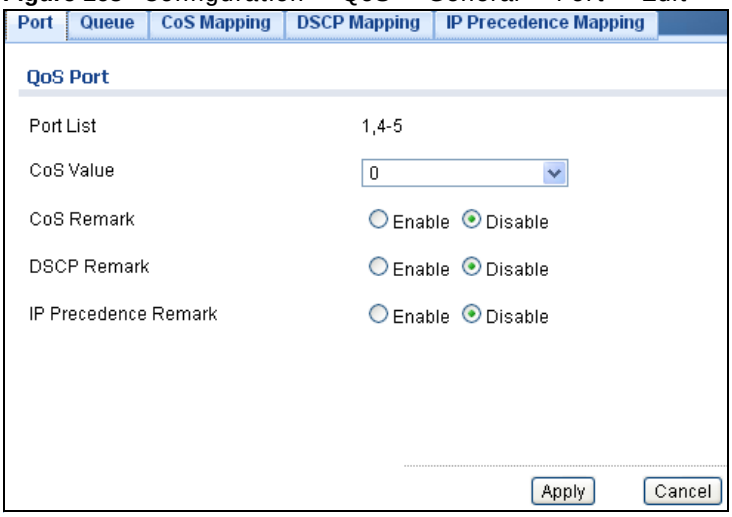
**Table 128** Configuration > QoS > General

| LABEL | DESCRIPTION |
|---|---|
| QoS Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the QoS port list. |
| CoS Value | Displays the CoS value, range: 0 - 7. |
| Remark CoS | Displays if this function is disabled or enabled. |
| Remark DSCP | Displays if this function is disabled or enabled. |
| Remark IP Precedence | Displays if this function is disabled or enabled. |

## 28.2.2 The Port Edit Screen

Use this screen to configure the **Port Edit** settings. Click **Configuration > QoS > General** > **Port > Edit** to open this screen.

**Figure 163** Configuration > QoS > General > Port > Edit




The following table describes the labels in this screen.

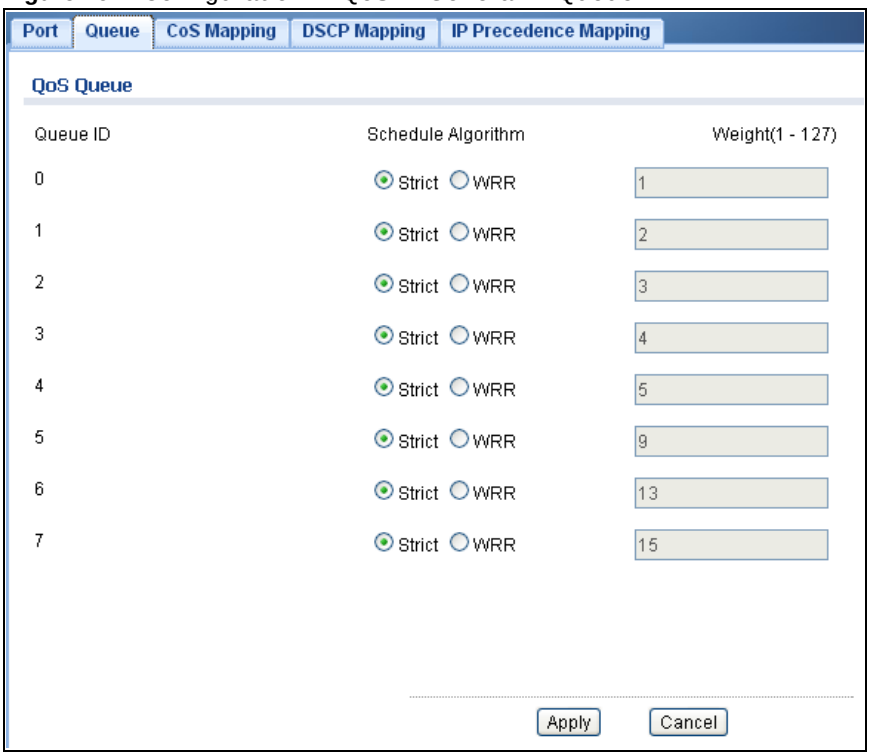
**Table 129** Configuration > QoS > General > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| QoS Port | |
| Port List | Displays the index number of the QoS port(s). |
| CoS Value | Select the **CoS Value** from the dropdown list. |
| CoS Remark | Select Enable to activate **CoS Remark**. |
| DSCP Remark | Select Enable to activate **DSCP Remark**. |
| IP Precedence Remark | Select Enable to activate **IP Precedence Remark**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 28.2.3 The Queue Screen

Use this screen to view the **Queue** settings. Click **Configuration > QoS > General** > **Queue** to open this screen.

**Figure 164** Configuration > QoS > General > Queue




The following table describes the labels in this screen.

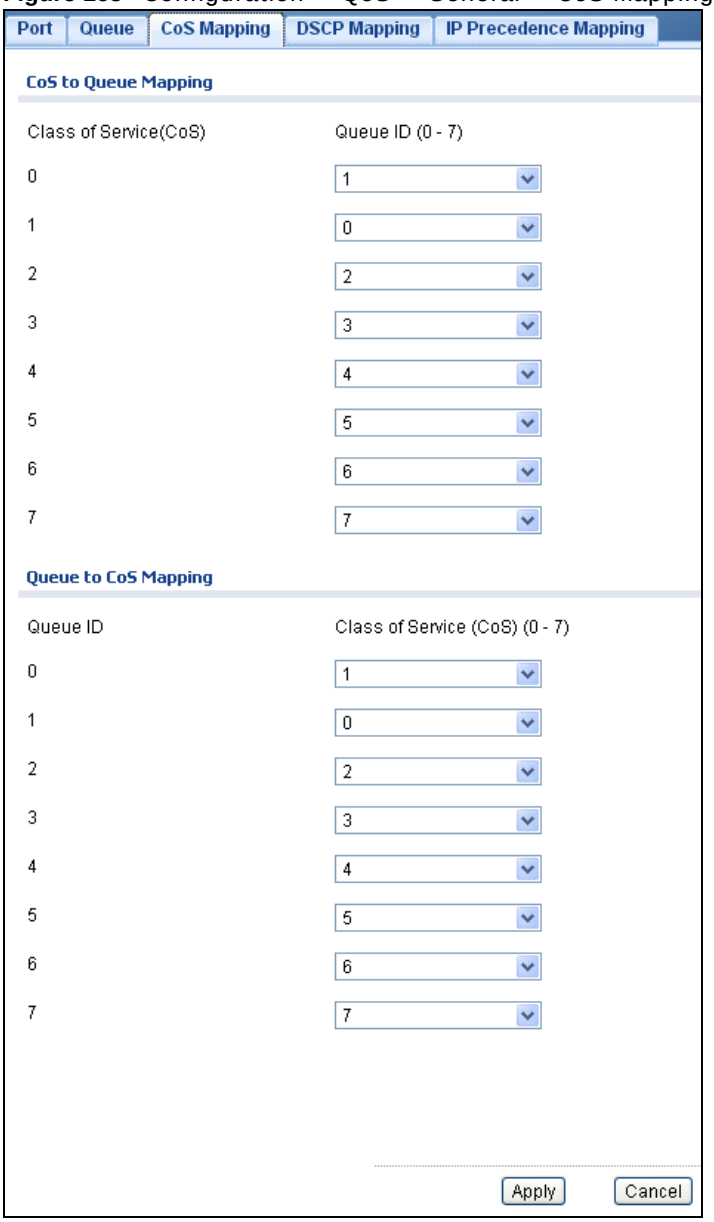
**Table 130** Configuration > QoS > General > Queue

| LABEL | DESCRIPTION |
|---|---|
| QoS Queue | |
| Queue ID | Displays the **Queue ID** value. |
| Schedule Algorithm | Select the **Schedule Algorithm** as **Strict** or **WRR**. |
| Weight (1-127) | Enter the weight of the QoS item. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 28.2.4 The CoS Mapping Screen

Use this screen to configure the **Cos Mapping** settings. Click **Configuration** > **QoS** > **General > CoS Mapping** to open this screen.

**Figure 165** Configuration > QoS > General > CoS Mapping




The following table describes the labels in this screen.

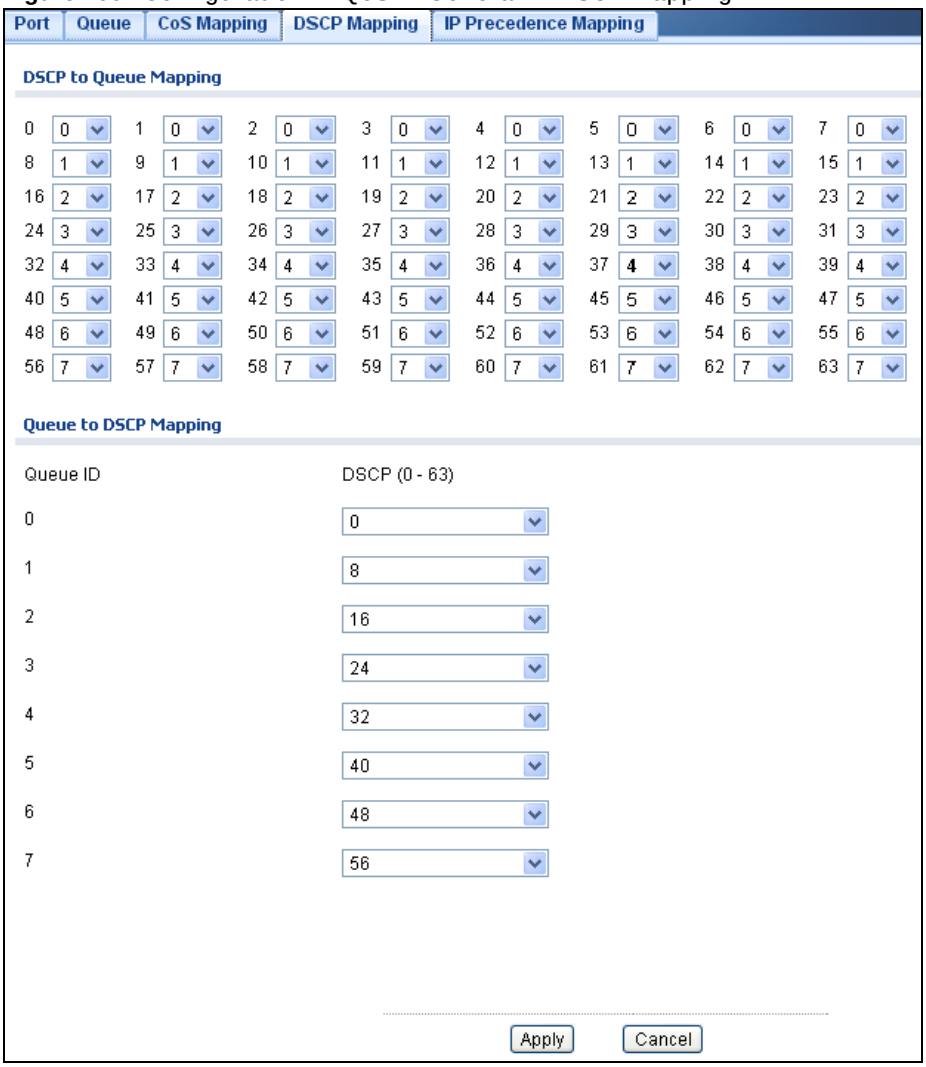
**Table 131** Configuration > QoS > General > CoS Mapping

| LABEL | DESCRIPTION |
|---|---|
| CoS to Queue Mapping | |
| Class of Service (CoS) | Displays a listing of the CoS, range: 0 - 7. |
| Queue ID (0-7) | Click the drop-down menu to map the CoS to a specific Queue ID. |
| Queue to CoS Mapping | |
| Queue ID | Displays a listing of the Queue ID, range: 0 - 7. |
| Class of Service (CoS) (0-7) | Click the drop-down menu to map the Queue ID to a specific CoS. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 28.2.5 The DSCP Mapping Screen

Use this screen to configure the **DSCP Mapping** settings. Click **Configuration** > **QoS** > **General** > **DSCP Mapping** to open this screen.

**Figure 166** Configuration > QoS > General > DSCP Mapping




The following table describes the labels in this screen.

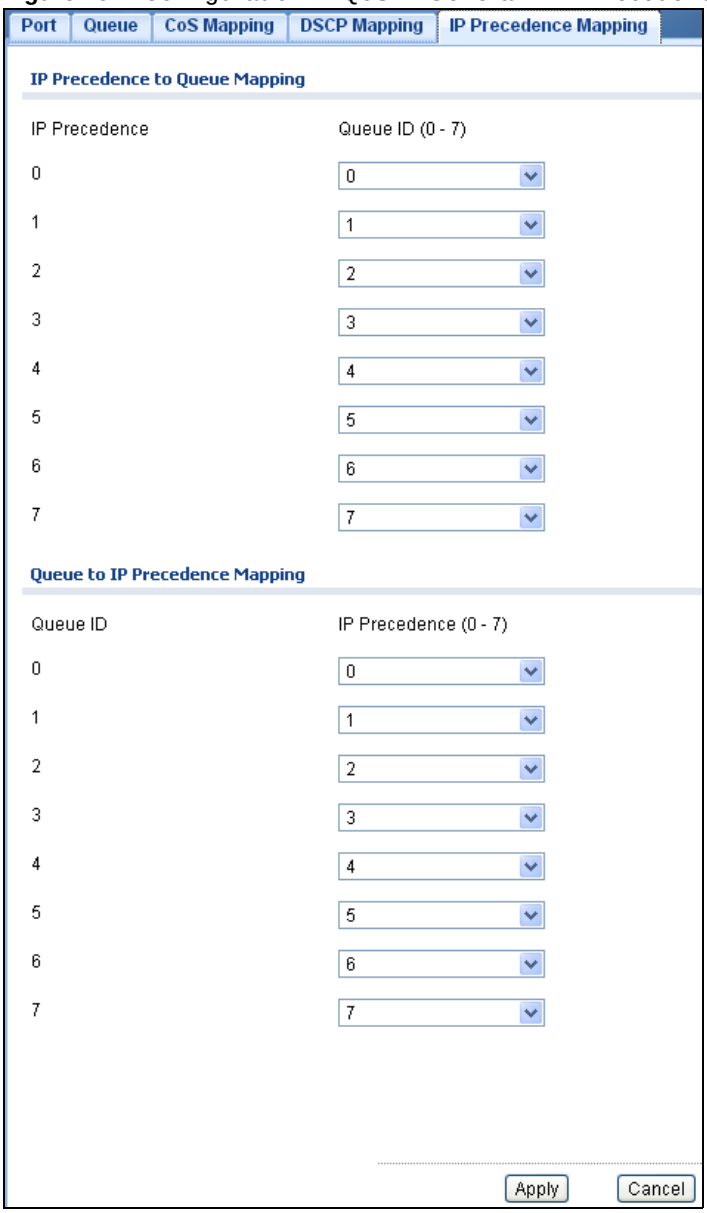
**Table 132** Configuration > QoS > General > DSCP Mapping

| LABEL | DESCRIPTION |
|---|---|
| DSCP to Queue Mapping | |
| Queue ID | Displays the DSCP **Queue ID** value. |
| Queue to DSCP Mapping | |
| DSCP (0-63) | Select the DSCP mapping value from the dropdown list. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 28.2.6 The IP Precedence Mapping Screen

Use this screen to configure the **IP Precedence Mapping** settings. Click **Configuration** > **QoS** > **General > IP Precedence Mapping** to open this screen.

**Figure 167** Configuration > QoS > General > IP Precedence Mapping




The following table describes the labels in this screen.

**Table 133** Configuration > QoS > General > IP Precedence Mapping

| LABEL | DESCRIPTION |
|---|---|
| IP Precedence to Queue Mapping | |
| IP Precedence | Displays a listing of IP Precedence, range: 0 - 7. |
| Queue ID (0-7) | Click the drop-down menu to map an IP Precedence designation to a specific Queue ID (0 - 7). |

**Table 133** Configuration > QoS > General > IP Precedence Mapping (continued)

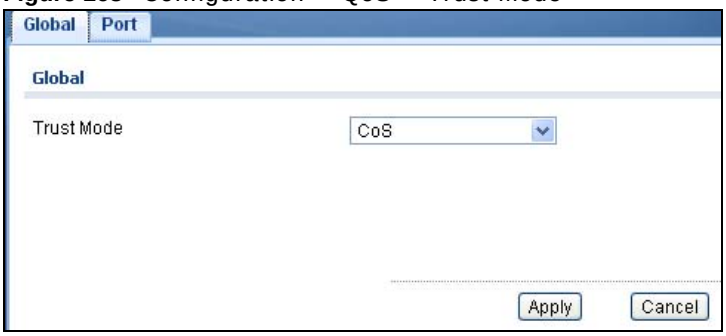
| LABEL | DESCRIPTION |
|---|---|
| Queue to IP Precedence Mapping | |
| Queue ID | Displays a listing of Queue ID, range: 0 - 7. |
| IP Precedence (0-7) | Click the drop-down menu to map a Queue ID to a specific IP precedence. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 28.3 Trust Mode

## 28.3.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration > QoS** > **Trust Mode** to open this screen.

**Figure 168** Configuration > QoS > Trust Mode




The following table describes the labels in this screen.

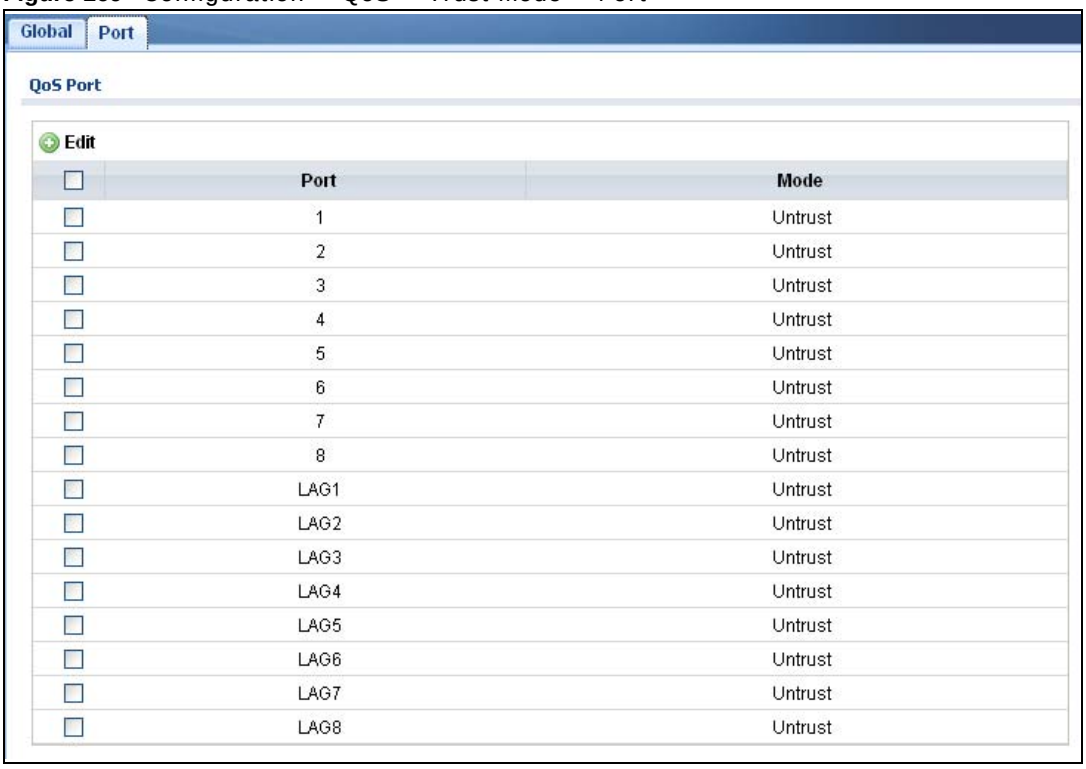
**Table 134** Configuration > QoS > Trust Mode

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| Trust Mode | Select the **Trust Mode** from the dropdown list. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 28.3.2 The Port Screen

Use this screen to view the **Port** settings. Click **Configuration > QoS** > **Trust Mode > Port** to open this screen.

**Figure 169** Configuration > QoS > Trust Mode > Port




The following table describes the labels in this screen.

**Table 135** Configuration > QoS > Trust Mode > Port

| LABEL | DESCRIPTION |
|---|---|
| QoS Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index value. |
| Mode | Displays the Trust status as **Trust** or **Untrust**. |

## 28.3.3 The Trust Mode Edit Screen

Use this screen to configure the **Trust Mode** settings. Click **Configuration > QoS > Trust Mode > Port** > **Edit** to open this screen.

**Figure 170** Configuration > QoS > Trust Mode > Port > Edit

The following table describes the labels in this screen.

**Table 136** Configuration > QoS > Trust Mode > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| QoS Port Trust Edit | |
| Port List | Displays the port index value(s). |
| Mode | Select the **Trust Mode** for the QoS port list as **Trust** or **Untrust**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 29

# Configuration: Security

## 29.1 Overview

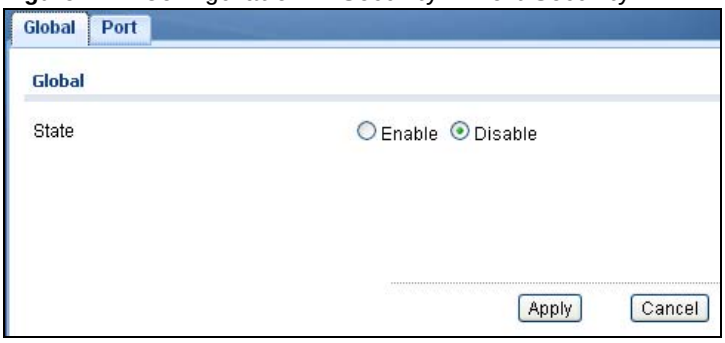
This section provides information for **Security** in **Configuration.**

## 29.2 Port Security

### 29.2.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration > Security** > **Port Security** to open this screen.

**Figure 171** Configuration > Security > Port Security




The following table describes the labels in this screen.

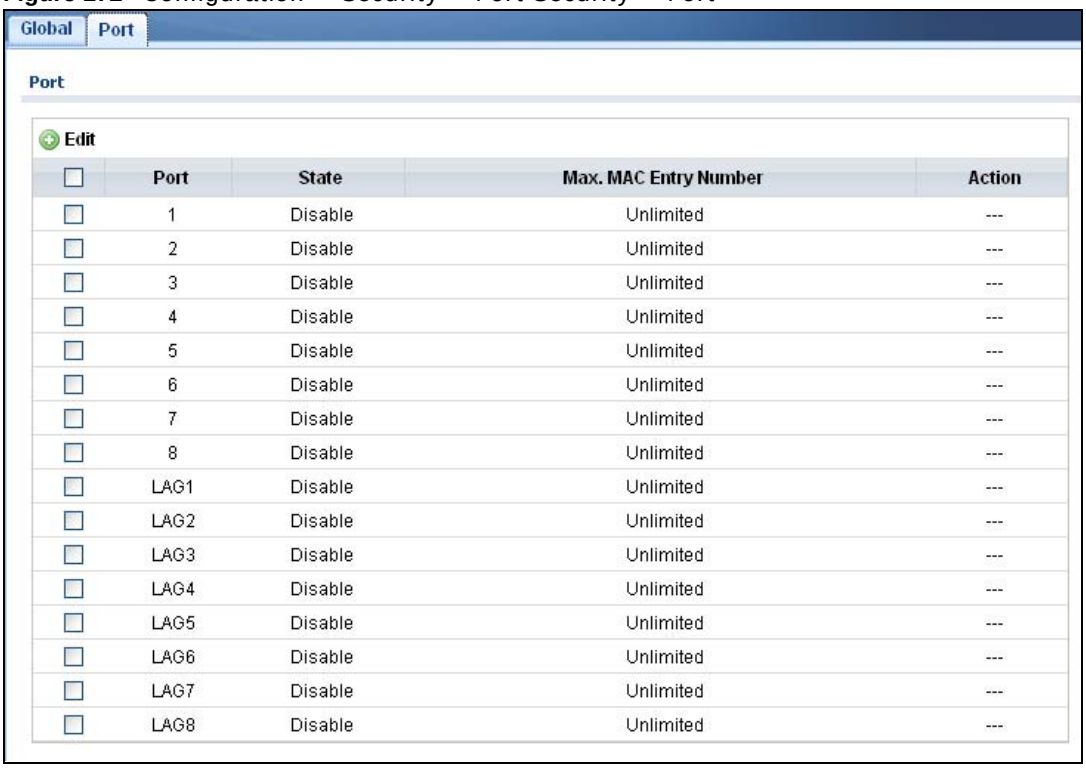
**Table 137** Configuration > Security > Port Security

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select the global security setting to be enabled or disabled. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

### 29.2.2 The Port Screen

Use this screen to view the **Port** settings. Click **Configuration > Security** > **Port Security > Port** to open this screen.

**Figure 172** Configuration > Security > Port Security > Port




| | Port | State | Max. MAC Entry Number | Action |
|---|---|---|---|---|
| ☐ | 1 | Disable | Unlimited | --- |
| ☐ | 2 | Disable | Unlimited | --- |
| ☐ | 3 | Disable | Unlimited | --- |
| ☐ | 4 | Disable | Unlimited | --- |
| ☐ | 5 | Disable | Unlimited | --- |
| ☐ | 6 | Disable | Unlimited | --- |
| ☐ | 7 | Disable | Unlimited | --- |
| ☐ | 8 | Disable | Unlimited | --- |
| ☐ | LAG1 | Disable | Unlimited | --- |
| ☐ | LAG2 | Disable | Unlimited | --- |
| ☐ | LAG3 | Disable | Unlimited | --- |
| ☐ | LAG4 | Disable | Unlimited | --- |
| ☐ | LAG5 | Disable | Unlimited | --- |
| ☐ | LAG6 | Disable | Unlimited | --- |
| ☐ | LAG7 | Disable | Unlimited | --- |
| ☐ | LAG8 | Disable | Unlimited | --- |

The following table describes the labels in this screen.

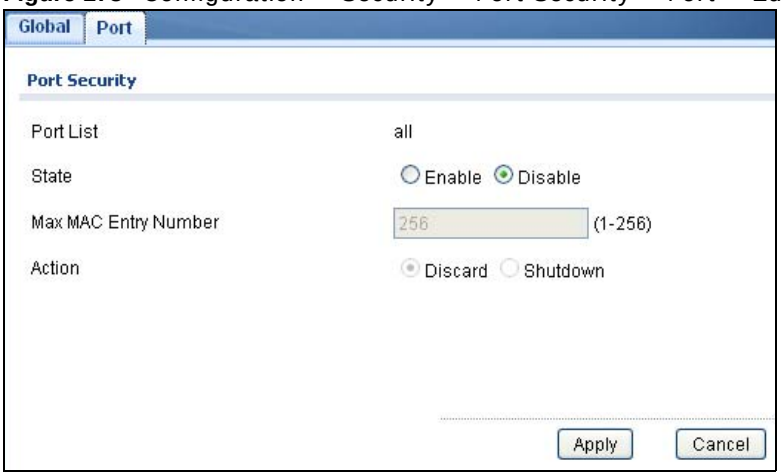
**Table 138** Configuration > Security > Port Security > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Click **Edit** to change the properties of the port. |
| Port | Displays the port index value. |
| State | Displays the Trust status as **Enable**/**Disable**. |
| Max. MAC Entry Number | Displays the designated maximum number of allowed MAC entries. The maximum MAC entry number can be learned for individual ports. |
| Action | Displays the **Action** as **Discard** or **Shutdown**. |

## 29.2.3 The Port Edit Screen

Use this screen to configure the **Port** settings. Select the port(s) you want to configure and then click **Edit** in the **Configuration > Security** > **Port Security > Port** screen to open this screen.

**Figure 173** Configuration > Security > Port Security > Port > Edit




The following table describes the labels in this screen.

**Table 139** Configuration > Security > Port Security > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port Security Edit | |
| Port List | Displays the port index value. |
| State | Select **Enable** or **Disable** for the Trust status. |
| Max MAC Entry Number | Enter the maximum MAC entry number (maximum MAC entry number can be learned for individual ports). |
| Action | Select the **Action** as **Discard** or **Shutdown**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 29.3 Protected Port

## 29.3.1 The Protected Port Screen

Use this screen to view the **Port** settings. Click **Configuration** > **Security** > **Protected Port** to open this screen.

**Figure 174** Configuration > Security > Protected Port

The following table describes the labels in this screen.

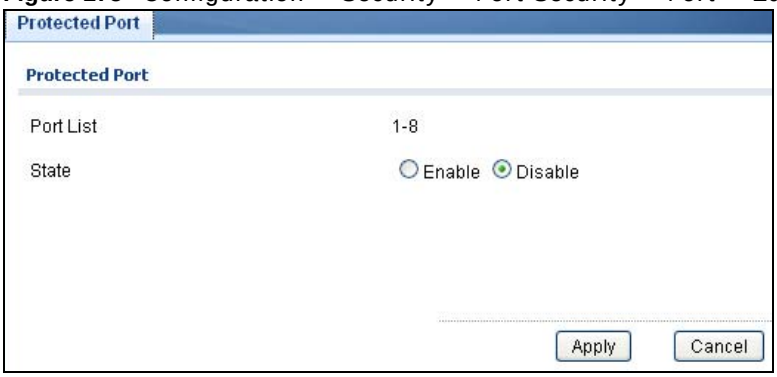
**Table 140** Configuration > Security > Protected Port

| LABEL | DESCRIPTION |
|---|---|
| Protected Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index value. |
| State | Displays the Trust status as **Enable**/**Disable**. |

## 29.3.2 The Protected Port Edit Screen

Use this screen to configure the **Port** settings. Click **Configuration > Security** > **Port Security > Port > Edit** to open this screen.

**Figure 175** Configuration > Security > Port Security > Port > Edit




The following table describes the labels in this screen.

**Table 141** Configuration > Security > Port Security > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Protected Port | |
| Port List | Displays the port list index value(s). |

**Table 141** Configuration > Security > Port Security > Port > Edit (continued)

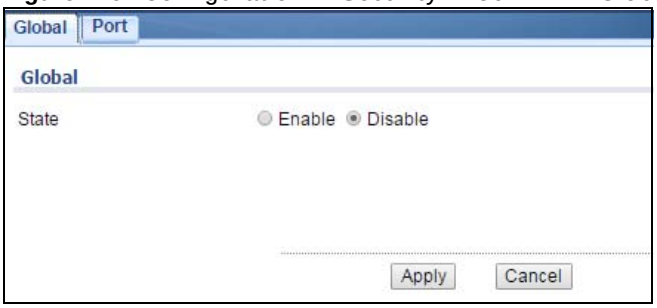
| LABEL | DESCRIPTION |
|---|---|
| State | Select **Enable** or **Disable** for the **Protected Port** status. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 29.4 802.1X

## 29.4.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration > Security** > **802.1X** > **Global** to open this screen.

**Figure 176** Configuration > Security > 802.1X > Global




The following table describes the labels in this screen.

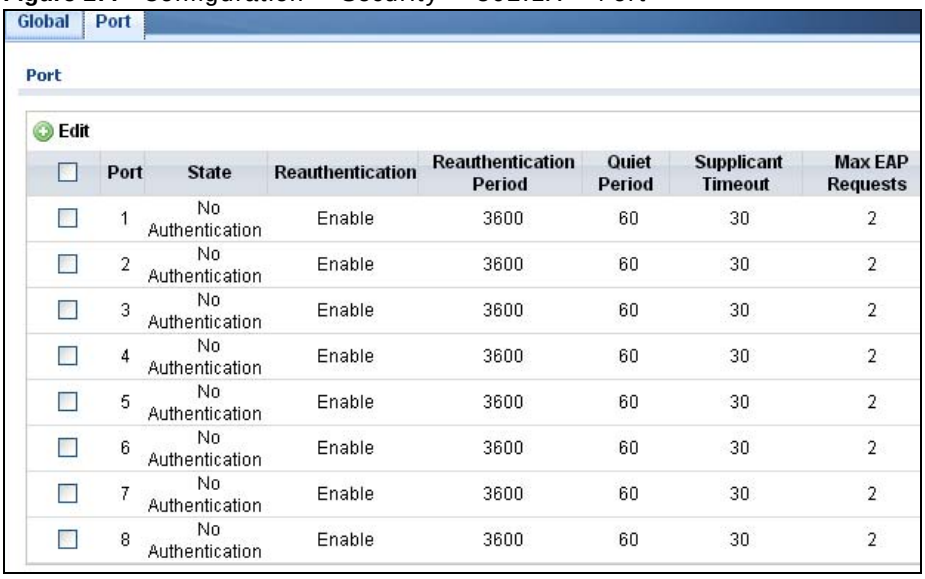
**Table 142** Configuration > Security > 802.1X > Global

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select the 802.1X security setting to be enabled or disabled. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 29.4.2 The Port Screen

Use this screen to view the **Port** settings. Click **Configuration > Security** > **802.1X > Port** to open this screen.

**Figure 177** Configuration > Security > 802.1X > Port




| | Port | State | Reauthentication | Reauthentication Period | Quiet Period | Supplicant Timeout | Max EAP Requests |
|---|---|---|---|---|---|---|---|
| ☐ | 1 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 2 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 3 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 4 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 5 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 6 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 7 | No Authentication | Enable | 3600 | 60 | 30 | 2 |
| ☐ | 8 | No Authentication | Enable | 3600 | 60 | 30 | 2 |

The following table describes the labels in this screen.

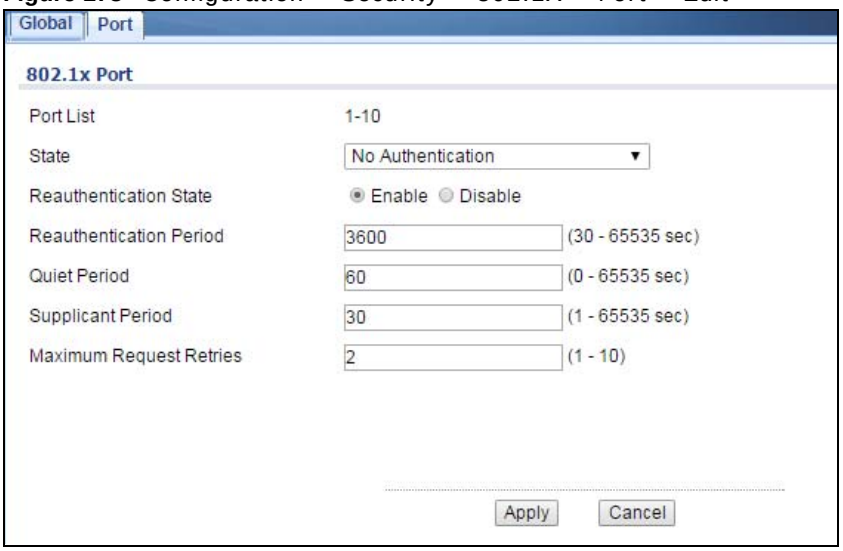
**Table 143** Configuration > Security > 802.1X > Port

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index value. |
| State | Displays the Trust status as enabled or disabled. |
| Reauthentication | Displays if Reauthentication function is enabled. If enabled, the subscriber has to periodically re-enter his or her username and password to stay connected to the port. |
| Reauthentication Period | Displays the Reauthentication period for the function: the period of time ften a client has to re-enter his or her username and password to stay connected to the port. |
| Quiet Period | Display the time out period to transmit request after receiving a rejection from the sever. |
| Supplicant Time out | Display the time out period to transmit a request when the client does not responsed. |
| Max EAP Requests | Enter the maximum number of request retries. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 29.4.3 The Port Edit Screen

Use this screen to configure the **Port** settings. Click **Configuration > Security** > **802.1X > Port > Edit** to open this screen.

**Figure 178** Configuration > Security > 802.1X > Port > Edit




The following table describes the labels in this screen.

**Table 144** Configuration > Security > 802.1X > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| 802.1X Port Edit | |
| Port List | Displays the port index value. |
| State | Displays the Trust status as enabled or disabled. |
| Reauthentication State | Specify if a subscriber has to periodically re-enter his or her username and password to stay connected to the port. Select **Enable** to activate feature. |
| Reauthentication Period | Specify how often a client has to re-enter his or her username and password to stay connected to the port. |
| Quiet Period | Display the time out period to transmit request after receiving a rejection from the sever. |
| Supplicant Period | Display the time out period to transmit a request when the client does not responsed. |
| Maximum Request Retries | Enter the maximum number of request retries. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 29.5 DoS

The Switch protects against Denial of Service (DoS) attacks, such as Scan attack and Ping of Death. The goal of DoS attacks is not to steal information, but to disable a device or network on the Internet.

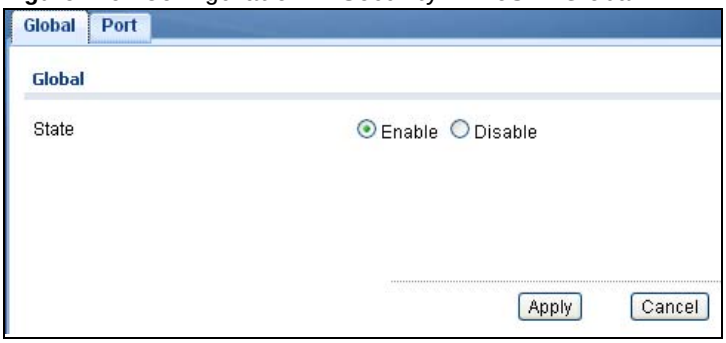
By default, the DoS feature is disabled. You need to enable it on the Switch and its port(s). See Table 148 on page 190 for the types of DoS attacks that the Switch prevents when you turn on this feature. You cannot set the Switch to block a specific type of DoS attacks.

Note: DoS protection doesn't work on LACP-enabled ports.

## 29.5.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration > Security** > **DoS** > **Global** to open this screen.

**Figure 179** Configuration > Security > DoS > Global




The following table describes the labels in this screen.

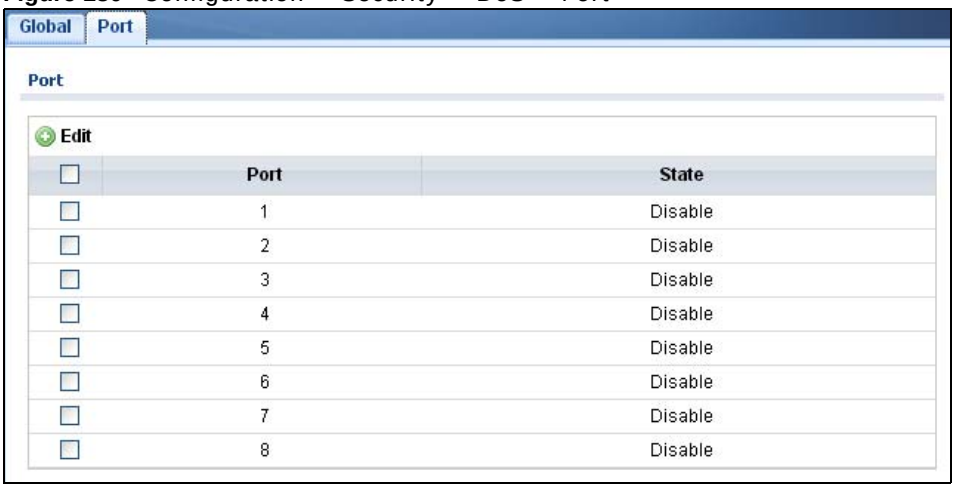
**Table 145** Configuration > Security > DoS > Global

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select the DoS security setting to be enabled or disabled. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 29.5.2 The Port Screen

Use this screen to view the **Port** settings. Click **Configuration > Security** > **DoS > Port** to open this screen.

**Figure 180** Configuration > Security > DoS > Port



The following table describes the labels in this screen.

**Table 146** Configuration > Security > DoS > Port

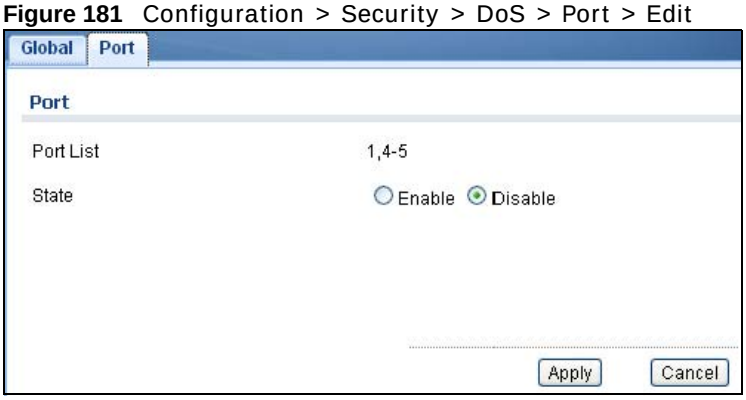
| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Edit | Select this check box to configure the properties of a port. Click the **Edit** button change the properties of the port. |
| Port | Displays the port index value. |
| State | Displays the port's DoS feature as **Enable** or **Disable**. |

## 29.5.3 The Port Edit Screen

Use this screen to configure the **Port** settings.

Click **Configuration > Security** > **DoS > Port > Edit** to open this screen.

**Figure 181** Configuration > Security > DoS > Port > Edit




The following table describes the labels in this screen.

**Table 147** Configuration > Security > DoS > Port > Edit

| LABEL | DESCRIPTION |
|---|---|
| Port | |
| Port List | Displays the port index value. |
| State | Select **Enable** to activate the port's DoS feature. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 29.5.4 DoS Attack Types

The following table describes the types of DoS attacks that the Switch can prevent when you enable the DoS feature on the Switch and the port(s).

**Table 148** DoS Attack Types

| TYPE | PACKET TYPE | DESCRIPTION |
|---|---|---|
| DA_EQUAL_SA | Layer 2 | These attacks result from sending a specially crafted packet to a machine where the source MAC address is the same as the destination MAC address. The system attempts to reply to itself, resulting in system lockup. |
| LAND | Layer 3 IPv4/IPv6 | These attacks result from sending a specially crafted packet to a machine where the source host IPv4/IPv6 address is the same as the destination host IPv4/IPv6 address. The system attempts to reply to itself, resulting in system lockup. |
| UDP_BLAT / TCP_BLAT (Blat Attack) | Layer 3 IPv4/IPv6 | These attacks result from sending a specially crafted packet to a machine where the source host UDP/TCP port is the same as the destination host UDP/TCP port. The system attempts to reply to itself, resulting in system lockup. |
| PoD (Ping of Death) | Layer 3 IPv4/IPv6 | Ping of Death uses a "ping" utility to create and send an IP packet that exceeds the maximum 65,536 bytes of data allowed by the IP specification. This may cause systems to crash, hang or reboot. |
| IPv6_FRAG_LEN_MIN | Layer 3 IPv6 | This attack uses IPv6 fragmented packets (excluding the last one) whose payload length is less than 1240 bytes. |
| ICMP_FRAG_PKT | Layer 3 IPv4/IPv6 | This attack uses many small fragmented ICMP packets. |
| ICMPv4_PING_MAX / ICMPv6_PING_MAX | Layer 3 IPv4/IPv6 | This attack uses Ping packets whose length is larger than 512 bytes. |
| SMURF | Layer 3 IPv4 | This attack uses Internet Control Message Protocol (ICMP) echo requests packets (pings) to cause network congestion or outages. |
| SYNchronization (SYN), ACKnowledgment (ACK) and FINish (FIN) packets are used to initiate, acknowledge and conclude TCP/IP communication sessions. The following scans exploit weaknesses in the TCP/IP specification and try to illicit a response from a host to identify ports for an attack: | | |
| TCP_HDR_LEN_MIN | Layer 3 IPv4 | TCP packets with header length less than 20 bytes. |
| SYN_SPORT_LESS_1024 | Layer 3 IPv4/IPv6 | TCP SYN packets with source port less than 1024. |
| NULL_SCAN (Scan Attack) | Layer 3 IPv4/IPv6 | TCP sequence number is zero and all control bits are zeroes. |
| XMAS (Scan Attack) | Layer 3 IPv4/IPv6 | TCP sequence number is zero and the FIN, URG and PSH bits are set. |
| SYN_FIN | Layer 3 IPv4/IPv6 | SYN and FIN bits are set in the TCP packet. |

# 30

# Configuration: AAA

## 30.1 Overview

This section provides information for **AAA** in **Configuration.**

Use the **AAA** screens to configure authentication, authorization and accounting settings on the Switch.

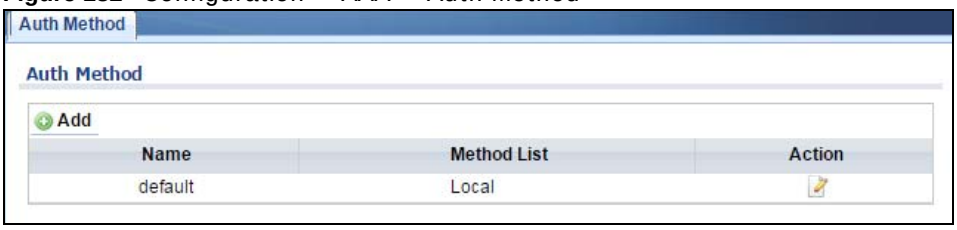
## 30.2 Auth Method

Authentication is the process of determining who a user is and validating access to the Switch. The Switch can authenticate users who try to log in based on user accounts configured on the Switch itself. The Switch can also use an external authentication server to authenticate a large number of users.

### 30.2.1 The Auth Method Screen

Use this screen to view the **Auth Method** settings. Click **Configuration** > **AAA** > **Auth Method** to open this screen.

**Figure 182** Configuration > AAA > Auth Method




The following table describes the labels in this screen.

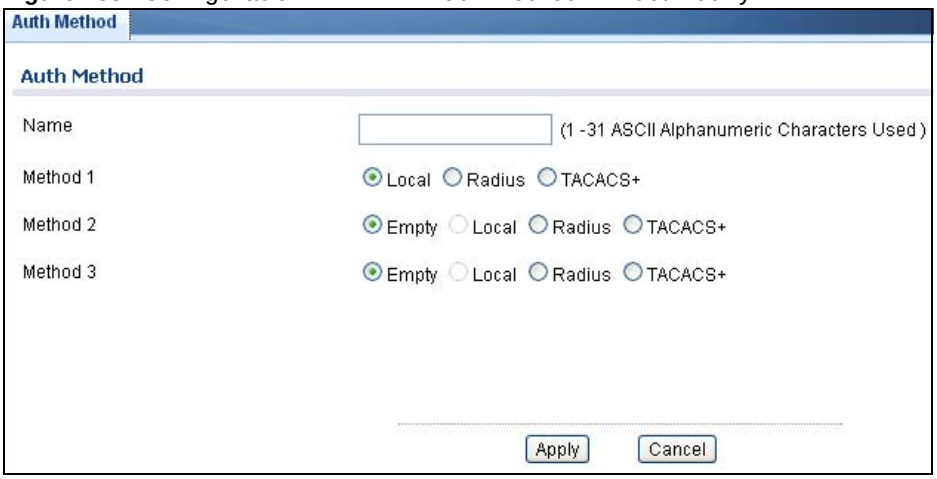
**Table 149** Configuration > AAA > Auth Method

| LABEL | DESCRIPTION |
|---|---|
| Auth Method | |
| Add | Click **Add** to create a new **Auth Method** entry. |
| Name | Displays the authentication method name. The name can be between 1 and 31 ASCII Alphanumeric Characters. |
| Method List | Displays the list of authentication methods as being **Local** or **Radius** or **TACACS+**. |
| Action | Click the **Action** button to change the configuration settings for a VLAN entry. |

### 30.2.2 The Auth Method Add/Modify Screen

Use this screen to configure the **Auth Method** settings. Click **Configuration** > **AAA** > **Auth Method** > **Add/Modify** to open this screen.

**Figure 183** Configuration > AAA > Auth Method > Add/Modify




The following table describes the labels in this screen.

**Table 150** Configuration > AAA > Auth Method > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| Auth Method | |
| Name | Enter the authentication method name. The name can be between 1 and 31 ASCII Alphanumeric Characters. |
| Method 1 | Select the first authentication method as being **Local**, **Radius**, or **TACACS+**. |
| Method 2 | Select the second authentication method as being **Empty**, **Local**, **Radius**, or **TACACS+**. |
| Method 3 | Select the third authentication method as being **Empty**, **Local**, **Radius**, or **TACACS+**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 30.3 RADIUS

### 30.3.1 The RADIUS Screen

Use this screen to configure the **RADIUS** settings. Click **Configuration** > **AAA** > **RADIUS** to open this screen.

**Figure 184** Configuration > AAA > RADIUS

The following table describes the labels in this screen.

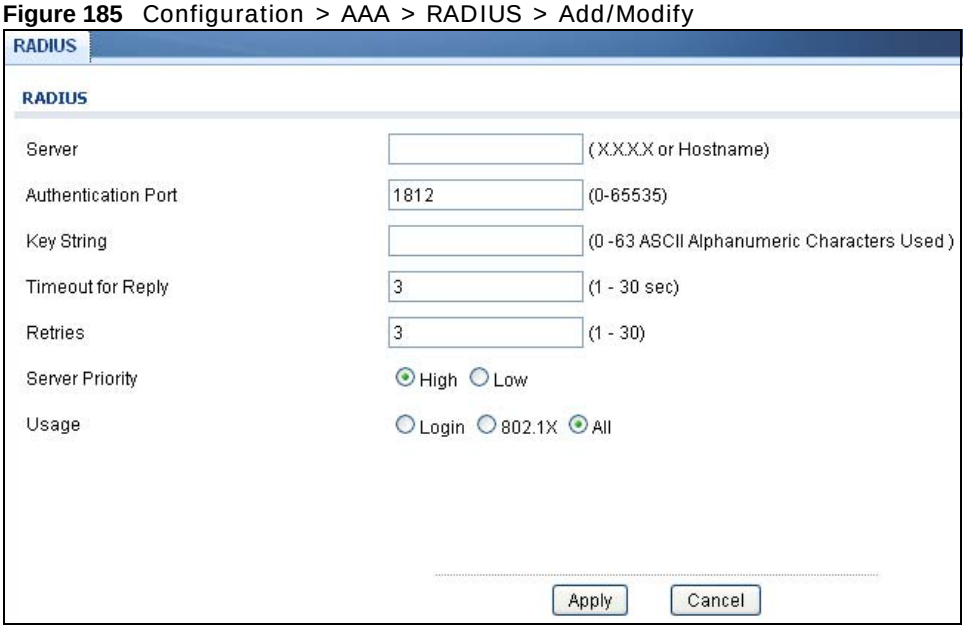
**Table 151** Configuration > AAA > RADIUS

| LABEL | DESCRIPTION |
|---|---|
| Server | |
| Add | Click **Add** to create a new **Server** entry. |
| Server | Displays the server name(s) as an IP address or a domain name. |
| Auth Port | Displays the authentication port number(s) as a value between 0 and 65535. |
| Key | Displays the authentication key. |
| Time out | Displays the number of time outs for replies. The value can be between 1 and 30 seconds. |
| Retries | Displays the number of retries. The value can be between 1 and 30. |
| Priority | Displays the server priority as **High** or **Low**. |
| Usage Type | Displays the server usage type as **Login**, **802.1X**, or **All**. |
| Action | |
| Edit | Click to **Edit** modify the entry. |
| Modify | Click **Delete** to delete the entry. |

## 30.3.2 The RADIUS Add/Modify Screen

Use this screen to configure the **RADIUS** settings. Click **Configuration** > **AAA** > **RADIUS** > **Add/Modify** to open this screen.

**Figure 185** Configuration > AAA > RADIUS > Add/Modify




The following table describes the labels in this screen.

**Table 152** Configuration > AAA > RADIUS > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| RADIUS | |
| Server | Enter the server name(s) as an IP address or a domain name. |

**Table 152** Configuration > AAA > RADIUS > Add/Modify (continued)

| LABEL | DESCRIPTION |
|---|---|
| Authentication Port | Enter the authentication port number(s) as a value between 0 and 65535. |
| Key String | Enter the authentication key string: 0 - 63 ASCII Alphanumeric Characters. |
| Timeout for Reply | Enter the number of time outs for replies. The value can be between 1 and 30 seconds. |
| Retries | Enter the number of retries. The value can be between 1 and 30. |
| Server Priority | Select the server priority as **High** or **Low**. |
| Usage | Select the server usage type as **Login**, **802.1X**, or **All**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 30.4 TACACS+

## 30.4.1 The TACACS+ Screen

Use this screen to configure the **TACACS+** settings. Click **Configuration** > **AAA** > **TACACS+** to open this screen.

**Figure 186** Configuration > AAA > TACACS+

The following table describes the labels in this screen.

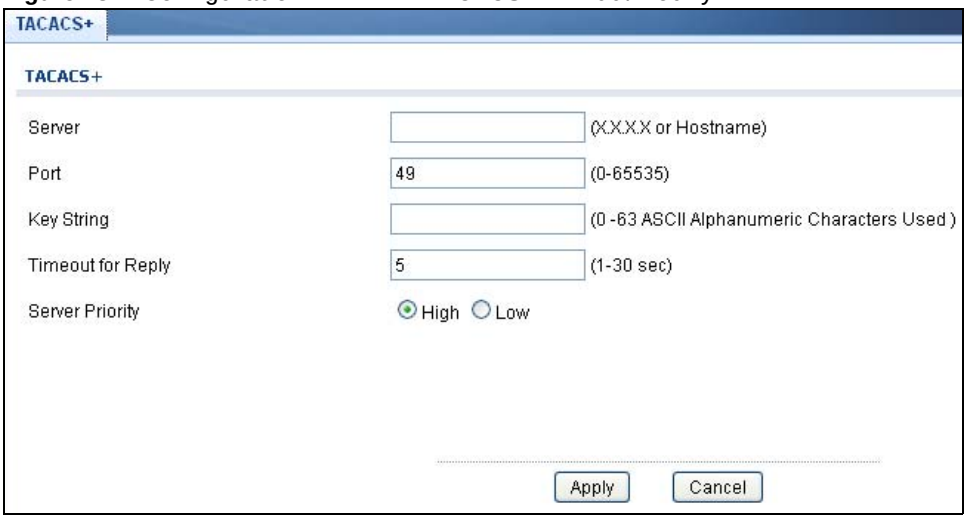
**Table 153** Configuration > AAA > TACACS+

| LABEL | DESCRIPTION |
|---|---|
| Server | |
| Add | Click **Add** to create a new **Server** entry. |
| Server | Displays the server name(s) as an IP address or a domain name. |
| Port | Displays the port number(s) as a value between 0 and 65535. |
| Key | Displays the authentication key. |
| Timeout | Displays the number of time outs for replies. The value can be between 1 and 30 seconds. |
| Priority | Displays the priority as **High** or **Low**. |
| Action | |
| Edit | Click to **Edit** modify the entry. |
| Modify | Click **Delete** to delete the entry. |

## 30.4.2 The TACACS+ Add/Modify Screen

Use this screen to configure the **TACACS+** settings. Click **Configuration** > **AAA** > **TACACS+** > **Add/Modify** to open this screen.

**Figure 187** Configuration > AAA > TACACS+ > Add/Modify




The following table describes the labels in this screen.

**Table 154** Configuration > AAA > TACACS+ > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| TACACS+ | |
| Server | Enter the server name(s) as an IP address or a domain name. |
| Port | Enter the port number(s) as a value between 0 and 65535. |
| Key String | Enter the authentication key string: 0 - 63 ASCII alphanumeric characters. |
| Timeout for Reply | Enter the number of time outs for replies. The value can be between 1 and 30 seconds. |
| Priority | Select the server priority as **High** or **Low**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 31

# Configuration: Management

## 31.1 Overview

This section provides information for **Management** in **Configuration.**

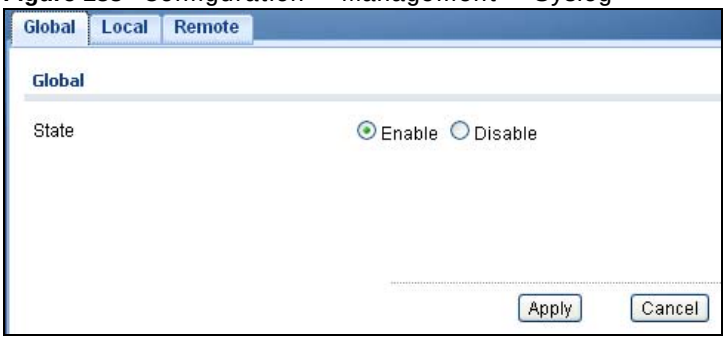
Use the **Management** screens to configure settings on the Switch. The following submenus are accessed from this section: **Syslog**, **SNMP**, **Error Disable**, **HTTP/HTTPS**, **Users**, **Remote Access Control**.

## 31.2 Syslog

### 31.2.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration** > **Management** > **Syslog** to open this screen.

**Figure 188** Configuration > Management > Syslog




The following table describes the labels in this screen.

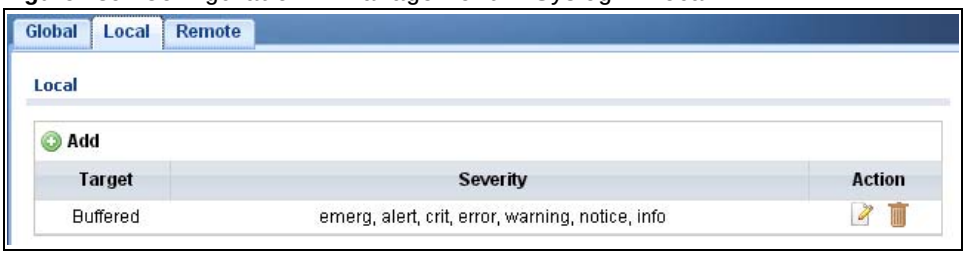
**Table 155** Configuration > Management > Syslog

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select the global logging setting to be enabled or disabled. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.2.2 The Local Screen

Use this screen to view the **Local** settings. Click **Configuration** > **Management** > **Syslog** > **Local** to open this screen.

**Figure 189** Configuration > Management > Syslog > Local




The following table describes the labels in this screen.

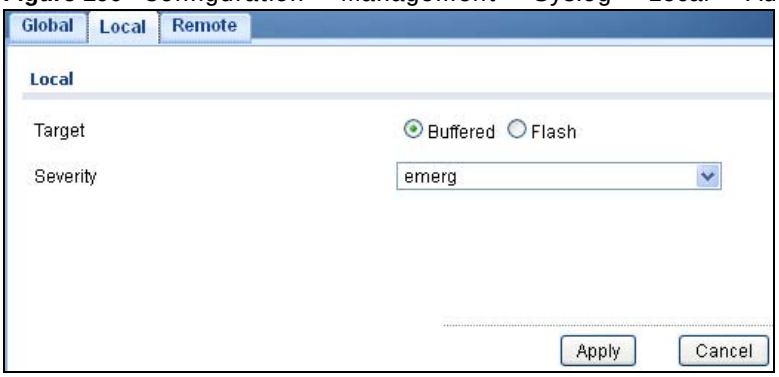
**Table 156** Configuration > Management > Syslog > Local

| LABEL | DESCRIPTION |
|---|---|
| Local | |
| Add | Click **Add** to create a new **Local** entry. |
| Target | Displays the local storage target for logging messages. The options are **Buffered** or **Flash**. |
| Severity | Displays the severity level of messages to be written to logs. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 31.2.3 The Local Add/Modify Screen

Use this screen to configure the **Local** settings. Click **Configuration** > **Management** > **Syslog** > **Local** > **Add/Modify** to open this screen.

**Figure 190** Configuration > Management > Syslog > Local > Add/Modify




The following table describes the labels in this screen.

**Table 157** Configuration > Management > Syslog > Local > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| Local Add | |
| Target | Select the local storage target for logging messages. The options are **Buffered** or **Flash**. |

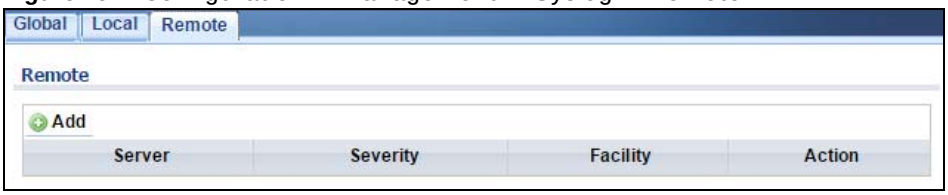
**Table 157** Configuration > Management > Syslog > Local > Add/Modify (continued)

| LABEL | DESCRIPTION |
|---|---|
| Severity | Select the severity level of messages to be written to logs. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.2.4 The Remote Screen

Use this screen to view the **Remote** settings. Click **Configuration** > **Management** > **Syslog** > **Remote** to open this screen.

**Figure 191** Configuration > Management > Syslog > Remote




The following table describes the labels in this screen.

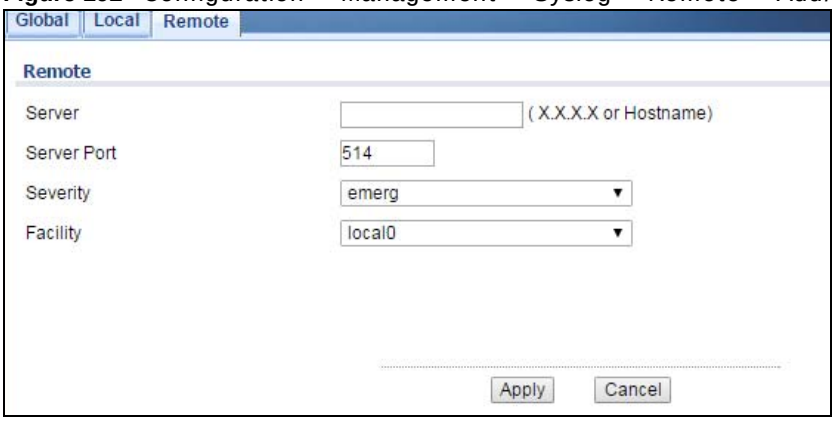
**Table 158** Configuration > Management > Syslog > Remote

| LABEL | DESCRIPTION |
|---|---|
| Local | |
| Add | Click **Add** to create a new **Remote** entry. |
| Server | Displays the server information which includes the server IP address and port number. |
| Severity | Displays the severity level of messages to be written to logs. |
| Facility | Displays the facility designation of the remote entry. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 31.2.5 The Remote Add/Modify Screen

Use this screen to configure the **Remote** settings. Click **Configuration** > **Management** > **Syslog** > **Remote** > **Add/Modify** to open this screen.

**Figure 192** Configuration > Management > Syslog > Remote > Add/Modify




The following table describes the labels in this screen.

**Table 159** Configuration > Management > Syslog > Remote > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| Remote | |
| Server | Enter a server IP address or domain name. |
| Server Port | Enter a server port number. |
| Severity | Select the severity level of messages to be written to logs. |
| Facility | Select the facility from the dropdown list. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

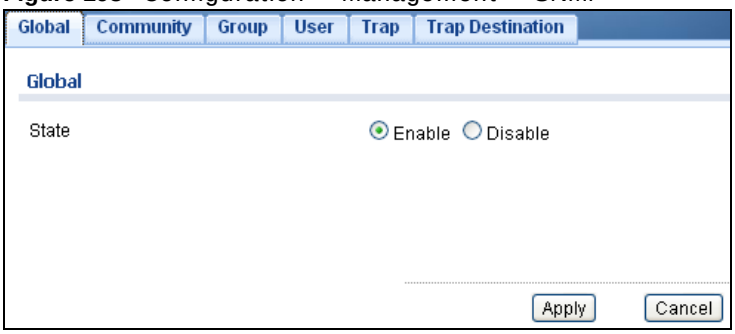
# 31.3 SNMP

Simple Network Management Protocol (SNMP) is an application layer protocol used to manage and monitor TCP/IP-based devices. SNMP is used to exchange management information between the network management system (NMS) and a network element (NE). A manager station can manage and monitor the Switch through the network via SNMP version 1 (SNMPv1), SNMP version 2c or Table 170 Access Control Overview Console Port SSH Telnet FTP Web SNMP One session Share up to nine sessions One session Up to five accounts No limit Chapter 42 Access Control 338 GS3700/ XGS3700 Series User's Guide SNMP version 3. The next figure illustrates an SNMP management operation. SNMP is only available if TCP/IP is configured.

## 31.3.1 The Global Screen

Use this screen to view the **Global** settings. Click **Configuration** > **Management** > **SNMP** to open this screen.

**Figure 193** Configuration > Management > SNMP




The following table describes the labels in this screen.

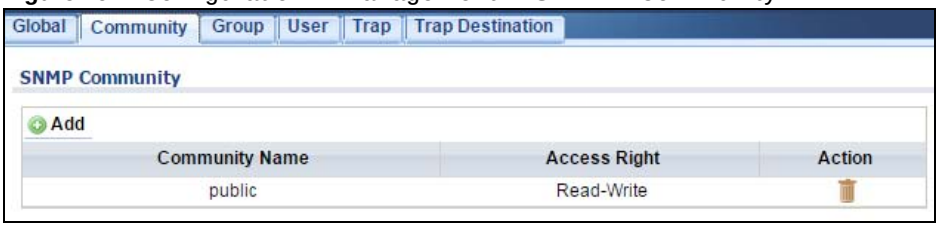
**Table 160** Configuration > Management > SNMP

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select the global SNMP setting to be enabled or disabled. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.3.2 The Community Screen

Use this screen to view the **Community** settings. Click **Configuration** > **Management** > **SNMP** > **Community** to open this screen.

**Figure 194** Configuration > Management > SNMP > Community




The following table describes the labels in this screen.

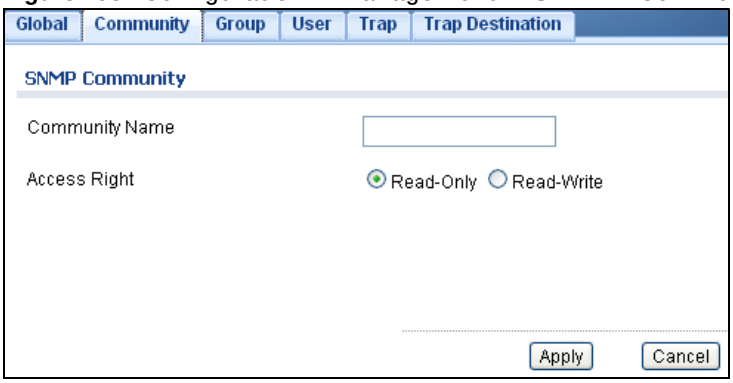
**Table 161** Configuration > Management > SNMP > Community

| LABEL | DESCRIPTION |
|---|---|
| SNMP community | |
| Add | Click **Add** to create a new **SNMP Community** entry. |
| Community Name | Displays a string identifying the community name that this entry should belong to. The allowed string length is 1 to 20, and the allowed content is ASCII characters from 33 to 126. |
| Access Right | Displays the access mode for this entry. The possible values are **Read-Only** and **Read-Write**. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 31.3.3 The Community Add/Modify Screen

Use this screen to configure the **Community** settings. Click **Configuration** > **Management** > **SNMP** > **Community** > **Add / Modify** to open this screen.

**Figure 195** Configuration > Management > SNMP > Community > Add/Modify




The following table describes the labels in this screen.

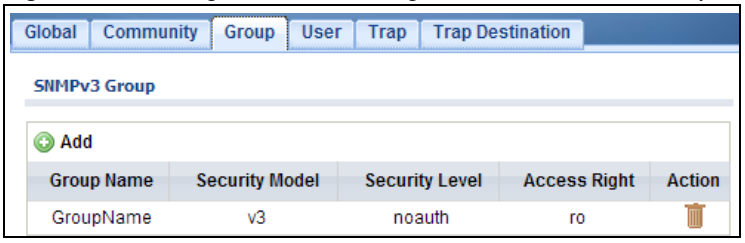
**Table 162** Configuration > Management > SNMP > Community > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| SNMP Community | |
| Community Name | Enter a string identifying the community name that this entry should belong to. The allowed string length is 1 to 20, and the allowed content is ASCII characters from 33 to 126. |
| Access Right | Select the access mode for this entry. The possible values are **Read-Only** and **Read-Write**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.3.4 The Group Screen

Use this screen to view the **Group** settings. Click **Configuration** > **Management** > **SNMP** > **Group** to open this screen.

**Figure 196** Configuration > Management > SNMP > Group




The following table describes the labels in this screen.

**Table 163** Configuration > Management > SNMP > Group

| LABEL | DESCRIPTION |
|---|---|
| SNMPv3 Group | |
| Add | Click **Add** to create a new **SNMPv3 Group** entry. |

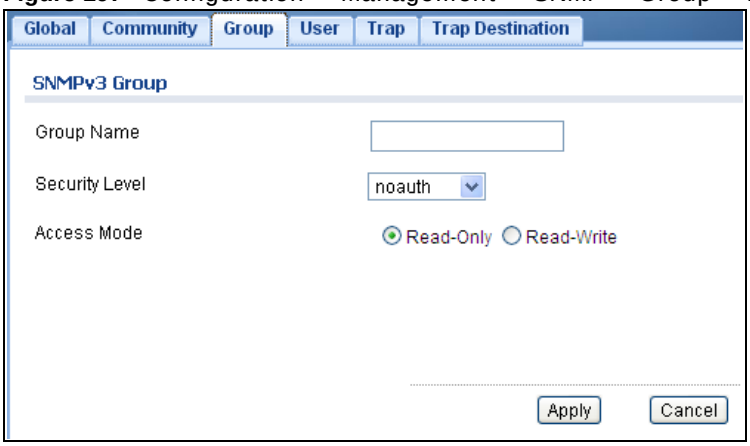
**Table 163** Configuration > Management > SNMP > Group (continued)

| LABEL | DESCRIPTION |
|---|---|
| Group Name | Displays a string identifying the group name that this entry should belong to. The allowed string length is 1 to 30, and the allowed content is ASCII characters from 33 to 126. |
| Security Model | Displays the security model that this entry belongs to. Possible security models are:<br>• **any**: Any security model accepted(v1\|v2c\|usm).<br>• **v1**: Reserved for SNMPv1.<br>• **v2c**: Reserved for SNMPv2c.<br>• **usm**: User-based Security Model (USM). |
| Security Level | Displays the security model that this entry belongs to. Possible security models are:<br>• **NoAuth**, **NoPriv**: No authentication and no privacy.<br>• **Auth**, **NoPriv**: Authentication and no privacy.<br>• **Auth**, **Priv**: Authentication and privacy. |
| Access Right | Displays the access mode for this entry. The possible values are **Read Only** and **Read-Write**. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 31.3.5 The Group Add/Modify Screen

Use this screen to configure the **Group** settings. Click **Configuration** > **Management** > **SNMP** > **Group** > **Add / Modify** to open this screen.

**Figure 197** Configuration > Management > SNMP > Group > Add/Modify




The following table describes the labels in this screen.

**Table 164** Configuration > Management > SNMP > Group > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| SNMPv3 Group Edit | |
| Group Name | Enter a string identifying the group name that this entry should belong to. The allowed string length is 1 to 30, and the allowed content is ASCII characters from 33 to 126. |
| Security Level | Select the security model that this entry belongs to. Possible security models are:<br>• **NoAuth**, **NoPriv**: No authentication and no privacy.<br>• **Auth**, **NoPriv**: Authentication and no privacy.<br>• **Auth**, **Priv**: Authentication and privacy. |
| Access Right | Select the access mode for this entry. The possible values are **Read-Only** and **Read-Write**. |

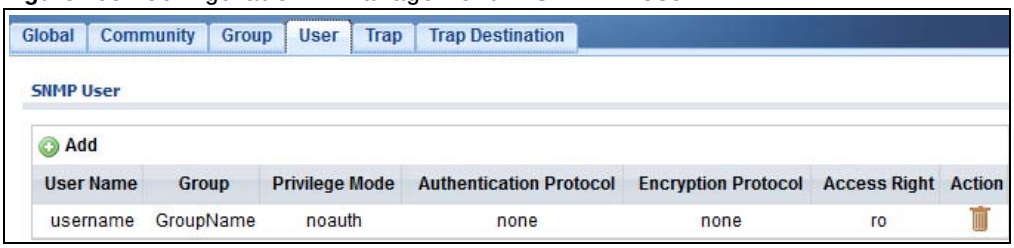
**Table 164** Configuration > Management > SNMP > Group > Add/Modify (continued)

| LABEL | DESCRIPTION |
|---|---|
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.3.6 The User Screen

Use this screen to view the **User** settings. Click **Configuration** > **Management** > **SNMP** > **User** to open this screen.

**Figure 198** Configuration > Management > SNMP > User




The following table describes the labels in this screen.

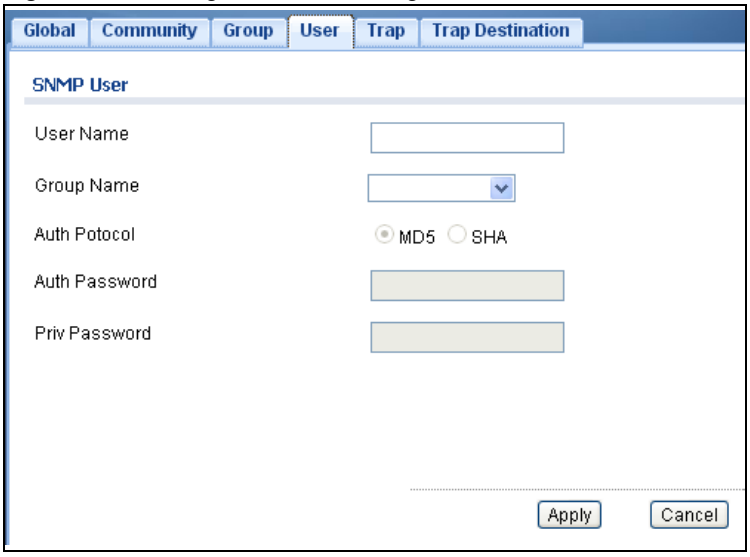
**Table 165** Configuration > Management > SNMP > User

| LABEL | DESCRIPTION |
|---|---|
| SNMP User | |
| Add | Click **Add** to create a new SNMP user. |
| User Name | Displays a string identifying the user name that this entry belongs to. The allowed string length is 1 to 30, and the allowed content is ASCII characters from 33 to 126. |
| Group | Displays a string identifying the group name that this entry belongs to. The allowed string length is 1 to 30, and the allowed content is ASCII characters from 33 to 126. |
| Privilege Mode | Displays the privilege mode that this entry belongs to. |
| Authentication Protocol | Displays the authentication protocol that this entry belongs to. Possible authentication protocols are:<br>• **None**: No authentication protocol.<br>• **MD5**: An optional flag to indicate that this user uses MD5 authentication protocol.<br>• **SHA**: An optional flag to indicate that this user uses SHA authentication protocol.<br>The value of the security level cannot be modified if the entry already exists. That means you must first ensure that the value is set correctly. |
| Encryption Protocol | Displays the encryption protocol that this entry belongs to. |
| Access Right | Displays the access mode for this entry. The possible values are **Read-Only** and **Read-Write**. |
| Action | |
| Delete | Click **Delete** to remove the entry. |

## 31.3.7 The User Add/Modify Screen

Use this screen to configure the **User** settings. Click **Configuration** > **Management** > **SNMP** > **User** > **Add / Modify** to open this screen.

**Figure 199** Configuration > Management > SNMP > User > Add/Modify




The following table describes the labels in this screen.

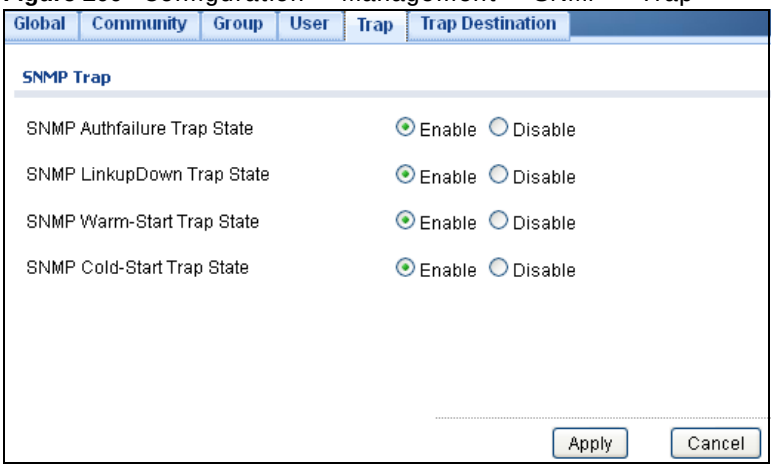
**Table 166** Configuration > Management > SNMP > User > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| SNMP User | |
| User Name | Enter a string identifying the user name that this entry belongs to. The allowed string length is 1 to 30, and the allowed content is ASCII characters from 33 to 126. |
| Group Name | Enter a string identifying the group name that this entry belongs to. The allowed string length is 1 to 30, and the allowed content is ASCII characters from 33 to 126. |
| Auth Protocol | Select the authentication protocol that this entry belongs to. Possible authentication protocols are:<br>• **MD5**: An optional flag to indicate that this user uses MD5 authentication protocol.<br>• **SHA**: An optional flag to indicate that this user uses SHA authentication protocol.<br>The value of the security level cannot be modified if the entry already exists. That means you must first ensure that the value is set correctly. |
| Auth Password | Enter a string identifying the authentication password phrase. For MD5 authentication protocol, the allowed string length is 8 to 32. For SHA authentication protocol, the allowed string length is 8 to 32. The allowed content is ASCII characters from 33 to 126. |
| Priv password | Enter a string identifying the privacy password phrase. The allowed string length is 8 to 64 and the allowed content is ASCII characters from 33 to 126. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.3.8 The Trap Screen

Use this screen to configure the **Trap** settings. Click **Configuration** > **Management** > **SNMP** > **Trap** to open this screen.

**Figure 200** Configuration > Management > SNMP > Trap




The following table describes the labels in this screen.

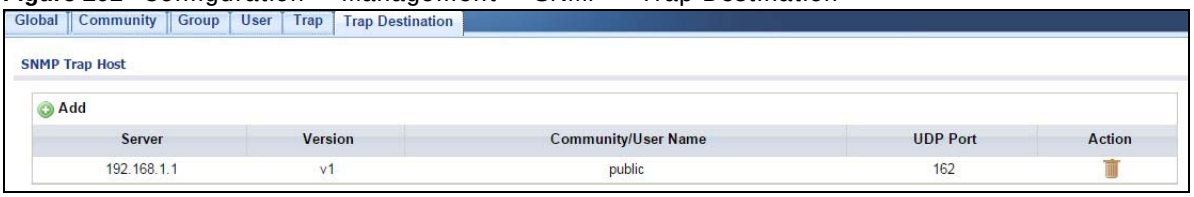
**Table 167** Configuration > Management > SNMP > Trap

| LABEL | DESCRIPTION |
|---|---|
| SNMP Trap | |
| SNMP Authfailure Trap State | Select the SNMP entity is permitted to generate authentication failure traps. Possible modes are:<br>• **Enabled**: Enable SNMP trap authentication failure.<br>• **Disabled**: Disable SNMP trap authentication failure. |
| SNMP LinkupDown Trap State | Select the SNMP trap link-up and link-down mode operation. Possible modes are:<br>• **Enabled**: Enable SNMP trap link-up and link-down mode operation.<br>• **Disabled**: Disable SNMP trap link-up and link-down mode operation. |
| SNMP Warm-Start Trap State | Reboot using software or hardware button reboot. |
| SNMP Cold-Start Trap State | Reboot though power off. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.3.9 The Trap Destination Screen

Use this screen to view the **Trap Destination** settings. Click **Configuration** > **Management** > **SNMP** > **Trap Destination** to open this screen.

**Figure 201** Configuration > Management > SNMP > Trap Destination



The following table describes the labels in this screen.

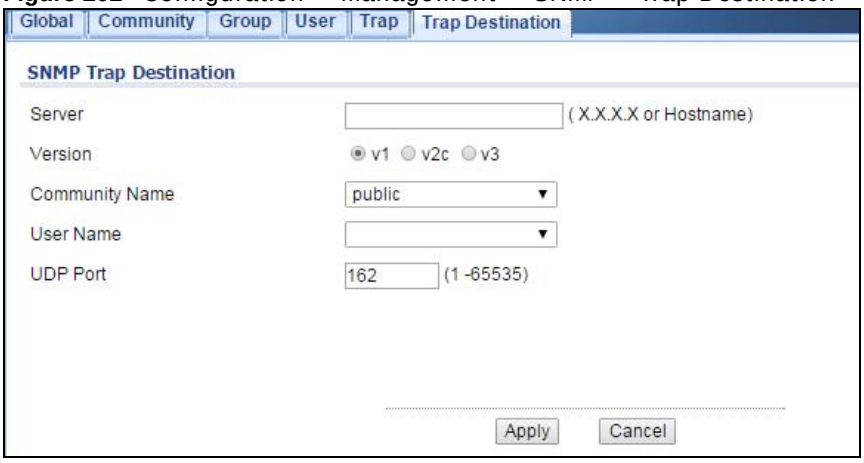
**Table 168** Configuration > Management > SNMP > Trap Destination

| LABEL | DESCRIPTION |
|---|---|
| SNMP Trap Host | |
| Add | Click **Add** to create a new **SNMP Trap Host** entry. |
| Server | Displays a string identifying the server address that this entry belongs to. |
| Version | Indicates the SNMP trap supported version. Possible versions are:<br>• **SNMP v1**: Set SNMP trap supported version 1.<br>• **SNMP v2c**: Set SNMP trap supported version 2c.<br>• **SNMP v3**: Set SNMP trap supported version 3. |
| Community/ User Name | Displays the community / user name that this entry belongs to. |
| UDP Port | Displays the trap use destination for the UDP port. |
| Action | |
| Delete | Click **Delete** to remove the entry. |

## 31.3.10 The Trap Destination Add/Modify Screen

Use this screen to configure the **Trap Destination** settings. Click **Configuration** > **Management** > **SNMP** > **Trap Destination** > **Add / Modify** to open this screen.

**Figure 202** Configuration > Management > SNMP > Trap Destination > Add/Modify




The following table describes the labels in this screen.

**Table 169** Configuration > Management > SNMP > Trap Destination > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| SNMP Trap Destination | |
| Server | Enter the IP address of the server or a string identifying the server address that this entry belongs to. |
| Version | Select the SNMP trap supported version. Possible versions are:<br>• SNMP **v1**: Set SNMP trap supported version 1.<br>• SNMP **v2c**: Set SNMP trap supported version 2c.<br>• SNMP **v3**: Set SNMP trap supported version 3. |
| Community Name | Displays the community name that this entry belongs to. |

**Table 169** Configuration > Management > SNMP > Trap Destination > Add/Modify (continued)

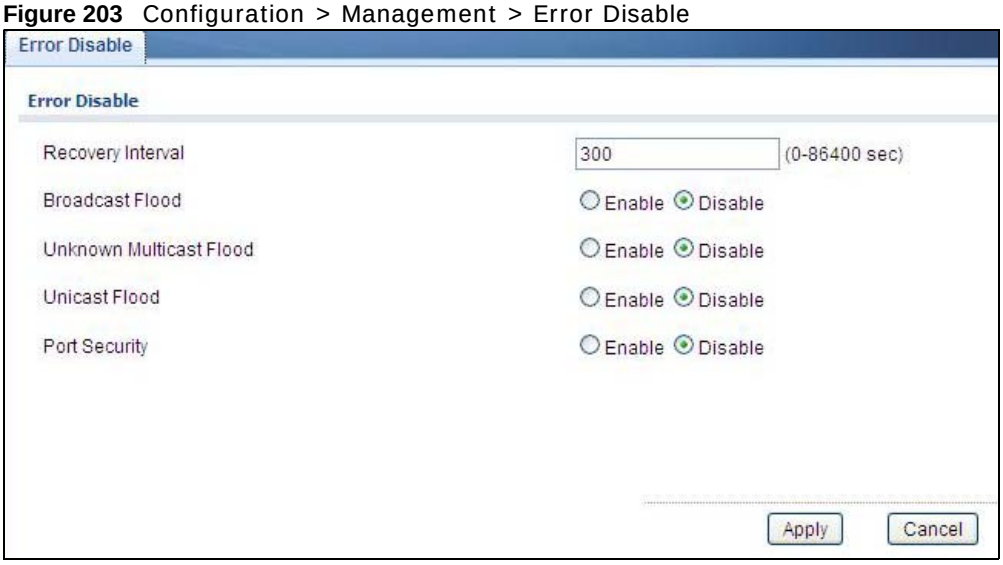
| LABEL | DESCRIPTION |
|---|---|
| User Name | Displays the user name that this entry belongs to. |
| UDP Port | Enter a UDP port for this entry. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 31.4 Error Disable

## 31.4.1 The Error Disabled Screen

Use this screen to configure the **Error Disabled** settings. Click **Configuration** > **Management** > **Error Disable** to open this screen.

**Figure 203** Configuration > Management > Error Disable




The following table describes the labels in this screen.

**Table 170** Configuration > Management > Error Disable

| LABEL | DESCRIPTION |
|---|---|
| Error Disabled Settings | |
| Recovery Interval | Enter the recovery interval value. |
| Broadcast Flood | Select an option to **Enable** or **Disable** the Broadcast Flood. |
| Unknown Multicast Flood | Select an option to **Enable** or **Disable** the Unknown Multicast Flood. |
| Unicast Flood | Select an option to **Enable** or **Disable** the Unicast Flood. |
| Port Security | Select an option to **Enable** or **Disable** the Port Security. |
| POE Inline Power | Select an option to **Enable** or **Disable** the POE Inline Power. |

**Table 170** Configuration > Management > Error Disable

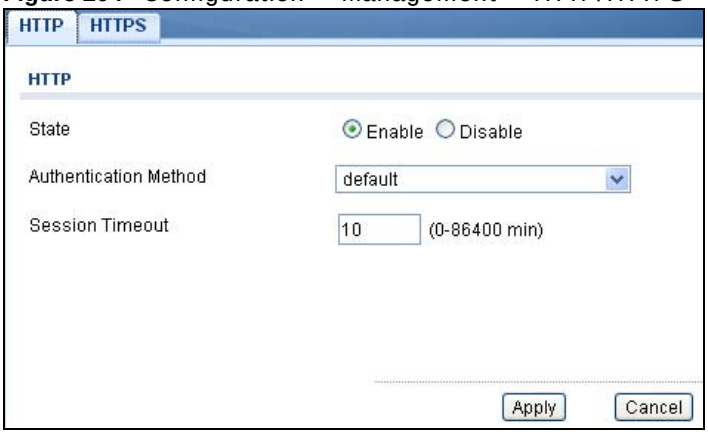
| LABEL | DESCRIPTION |
|---|---|
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 31.5 HTTP/HTTPS

## 31.5.1 The HTTP Screen

Use this screen to configure the **HTTP** settings. Click **Configuration** > **Management** > **HTTP/HTTPS** to open this screen.

**Figure 204** Configuration > Management > HTTP/HTTPS




The following table describes the labels in this screen.

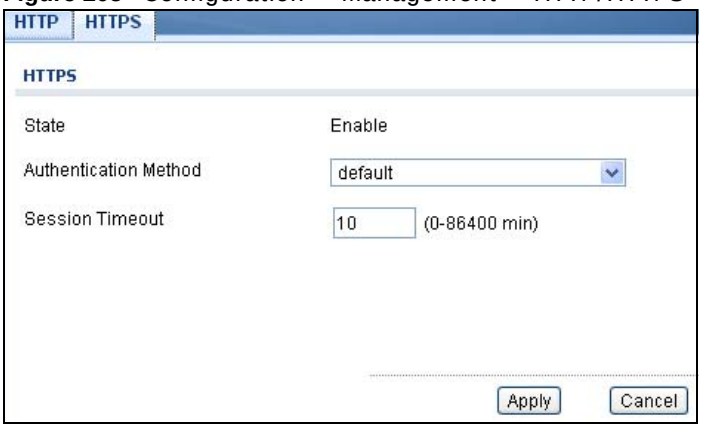
**Table 171** Configuration > Management > HTTP/HTTPS

| LABEL | DESCRIPTION |
|---|---|
| HTTP | |
| State | Select the HTTP mode operation.<br>Possible modes are:<br>• **Enabled**: Enable HTTP mode operation.<br>• **Disabled**: Disable HTTP mode operation. |
| Authentication Method | Select the authentication method from the dropdown list. |
| Session Timeout | Enter the session timeout value. The timeout can be between 0 and 86400 minutes. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

## 31.5.2 The HTTPS Screen

Use this screen to configure the **HTTPS** settings. Click **Configuration** > **Management** > **HTTP/HTTPS** > **HTTPS** to open this screen.

**Figure 205** Configuration > Management > HTTP/HTTPS > HTTPS




The following table describes the labels in this screen.

**Table 172** Configuration > Management > HTTP/HTTPS > HTTPS

| LABEL | DESCRIPTION |
|---|---|
| HTTPS | |
| State | Select the HTTPS mode operation.<br>Possible modes are:<br>• **Enabled**: Enable HTTPS mode operation. |
| Authentication Method | Select the authentication method from the dropdown list. |
| Session Timeout | Enter the session timeout value. The timeout can be between 0 and 86400 minutes. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 31.6 Users

## 31.6.1 The Users Screen

Use this screen to configure the **Users** settings. Click **Configuration** > **Management** > **Users** to open this screen.

**Figure 206** Configuration > Management > Users

The following table describes the labels in this screen.

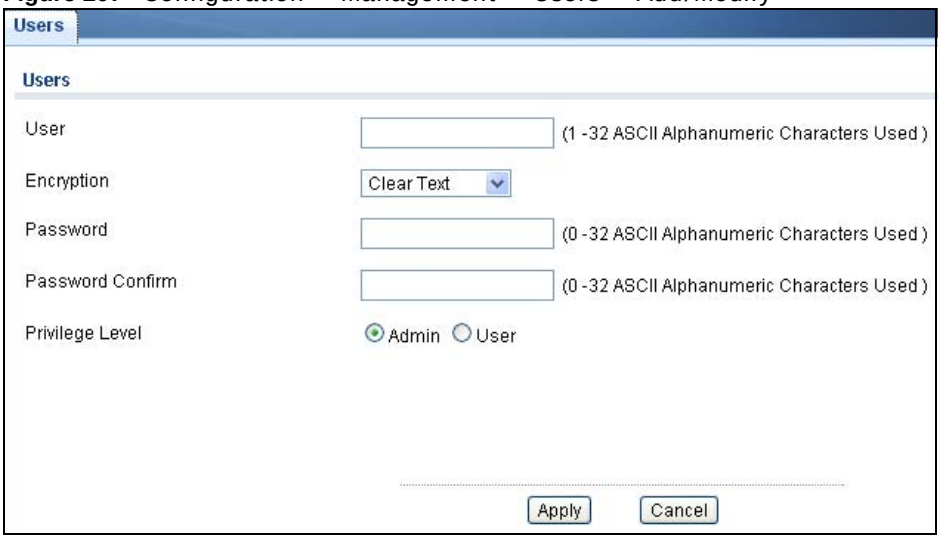
**Table 173** Configuration > Management > Users

| LABEL | DESCRIPTION |
|---|---|
| Users | |
| Add | Click **Add** to create a new **User** entry. |
| User | A string identifying the user name that this entry should belong to. The allowed string length is 1 to 32. The valid user name is a combination of letters, numbers and underscores. |
| Encryption | Displays the encryption status. The values can be **Clear Text**, **Encrypted**, and **No Password**. |
| Password | Displays the password of the user. The allowed string length is 0 to 32. |
| Privilege Level | Displays the privilege level of the user, range: admin and user. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |

## 31.6.2 The Users Add/Modify Screen

Use this screen to configure the **Users** settings. Click **Configuration** > **Management** > **Users** > **Add / Modify** to open this screen.

**Figure 207** Configuration > Management > Users > Add/Modify




The following table describes the labels in this screen.

**Table 174** Configuration > Management > Users > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| Add New Local User | |
| User | Enter a string identifying the user name that this entry should belong to. The allowed string length is 1 to 32. The valid user name is a combination of letters, numbers and underscores. |
| Encryption | Select the encryption type. The values can be **Clear Text**, **Encrypted**, and **No Password**. |
| Password | Enter a password for the user. The allowed string length is 0 to 32. |

**Table 174** Configuration > Management > Users > Add/Modify (continued)

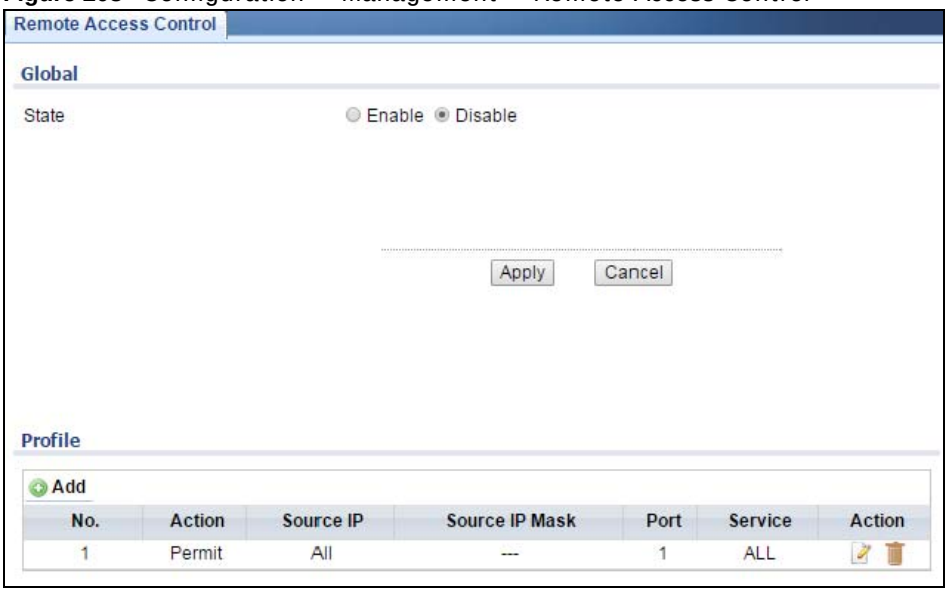
| LABEL | DESCRIPTION |
|---|---|
| Password Confirm | Enter the same password again to confirm. |
| Privilege Level | Select the privilege level of the user range: admin and user. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 31.7 Remote Access Control

## 31.7.1 The Global Screen

Use this screen to configure the **Global** settings. Click **Configuration** > **Management** > **Remote Access Control** to open this screen.

**Figure 208** Configuration > Management > Remote Access Control




The following table describes the labels in this screen.

**Table 175** Configuration > Management > Remote Access Control

| LABEL | DESCRIPTION |
|---|---|
| Global | |
| State | Select the global remote access setting to be enabled or disabled. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |
| Profile | |
| Add | Click **Add** to create a new profile entry. |
| No. | Displays the priority level of the entry. The value can be between 1 and 16. |
| Action | Displays the action value. The values are **Permit** or **Deny**. |

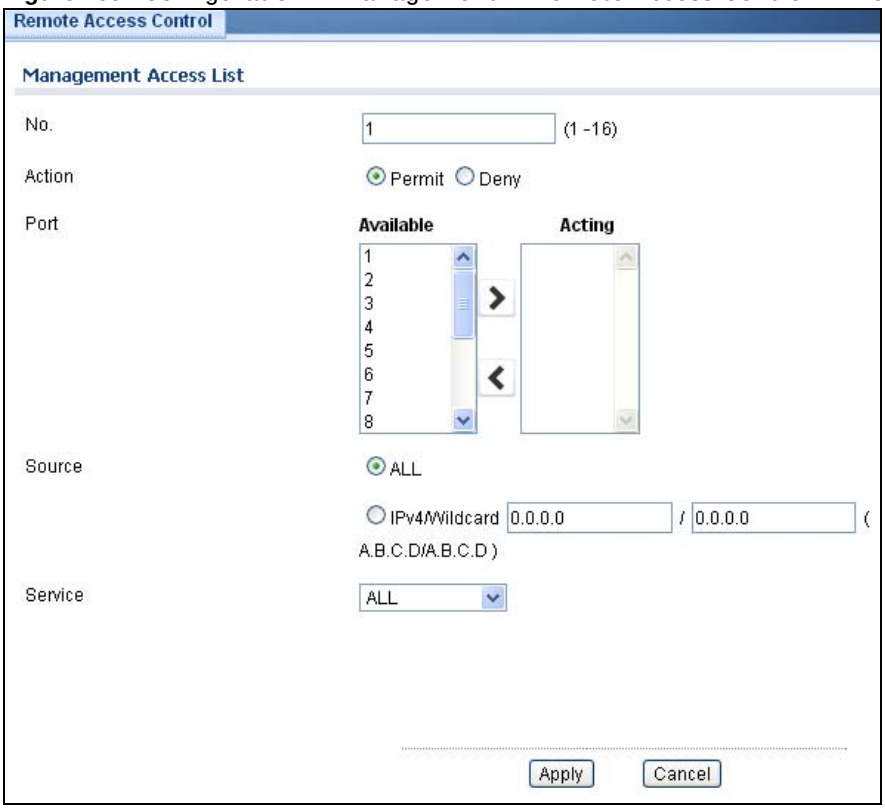
**Table 175** Configuration > Management > Remote Access Control (continued)

| LABEL | DESCRIPTION |
|---|---|
| Source IP | Display the source IP value. |
| Source IP Mask | Displays the source IP wildcard. |
| Port | Display the port value. |
| Service | Display the service used for remote access. The values are **ALL**, **HTTP**, **HTTPS**, or **SNMP**. |
| Action | |
| Edit | Click **Edit** to make changes to the entry. |
| Delete | Click **Delete** to remove the entry. |

## 31.7.2 The Profile Add/Modify Screen

Use this screen to configure the **Profile** settings. Click **Configuration** > **Management** > **Remote Access Control** > **Profile** > **Add / Modify** to open this screen.

**Figure 209** Configuration > Management > Remote Access Control > Profile > Add/Modify




The following table describes the labels in this screen.

**Table 176** Configuration > Management > Remote Access Control > Profile > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| Management Access List Add | |
| No. | Enter the priority level of the entry. The value can be between 1 and 16. |
| Action | Select the action value. The values are **Permit** or **Deny**. |

**Table 176** Configuration > Management > Remote Access Control > Profile > Add/Modify

| LABEL | DESCRIPTION |
|---|---|
| Port | Select a value in **Available** and click the **Add** (>) icon to transfer to the Acting column.<br>Select a value in **Acting** and click the **Remove** (<) icon to transfer to the Available column. |
| Source | Select the source IP value. The options are **ALL** or **IPv4/Wildcard**. |
| IPv4/Wildcard | Select and enter the IPv4/Wildcard source. |
| Service | Select the service to use for remote access. The values are **ALL**, **HTTP**, **HTTPS**, or **SNMP**. |
| Apply | Click **Apply** to save the changes. |
| Cancel | Click **Cancel** to discard the changes. |

# 32

# Maintenance

## 32.1 Firmware Upgrade

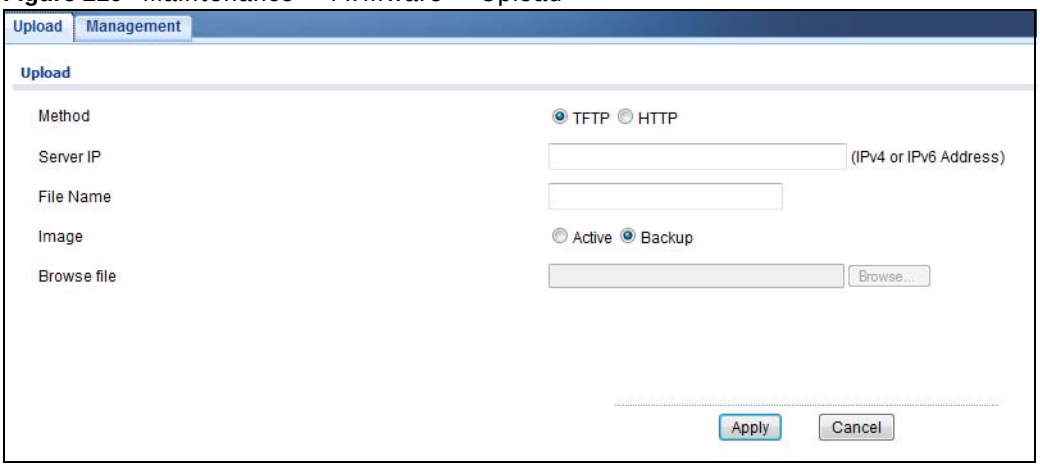
### 32.1.1 Overview

Firmware updates contain bug fixes and fixes for security vulnerabilities. It is recommended to keep the Switch's firmware up to date. You can upgrade the Switch's firmware manually using a file downloaded on your computer or through the online web configurator.

Note: Be sure to upload the correct model firmware as uploading the wrong model firmware may damage your device.

From the **Maintenance** screen, display the **Upload** screen as shown next. Use this screen to upgrade the Switch firmware.

**Figure 210** Maintenance > Firmware > Upload




The following table describes the labels under **Upload**.

**Table 177** Maintenance > Firmware > Upload

| LABEL | DESCRIPTION |
|---|---|
| Method | Choose **HTTP** to use the web configurator for the firmware upload. Alternatively, choose **TFTP** to download the firmware from a TFTP server. |
| Server IP | To download from a TFTP server, enter the TFTP server IP address. |
| File Name | Enter the name of the firmware file on the TFTP server. |
| Image | Choose **Backup** to upload the firmware file as the backup image. Alternatively, choose **Active** to upload the firmware file as the active image. |
| Browse File | Browse to the path on your computer where the firmware you want to upload to be the active image is kept. |

Upgrade the firmware from a file on a server

Follow the steps below to upgrade the firmware from a TFTP server.

1. In **Method**, choose **TFTP**.
2. In **Server IP**, enter the TFTP server IP address.
3. In **File Name**, enter the name of the firmware file on the TFTP server.
4. In **Image**, choose **Backup** to upload the firmware file as the backup image.
   OR
   Choose **Active** to upload the firmware file as the active image.
5. Click **Apply** to upgrade the chosen image.
   OR
   Click **Cancel** to discard the changes.

After the firmware upgrade process is complete, see the **System Info** screen to verify your current firmware version number.

### 32.1.2 Upgrade the firmware from a file on your computer

Note: For manual upgrade, make sure you have downloaded (and unzipped) the correct model firmware and version to your computer before uploading it to the device. The file name should have a .bin extension.

Follow the steps below to upgrade the firmware from a file on your computer.

1. In **Method**, choose **HTTP**.
2. In **Image**, choose **Active** to upload the firmware file on the active partition image.
   OR
   Choose **Backup** to upload the firmware file on the Backup partition image.
3. Click **Browse** to display the **Choose File** screen from which you can locate the firmware file in the bin format on your computer.
4. Click **Apply** to upload the chosen file.
   OR
   Click **Cancel** to discard the changes.

After the firmware upgrade process is complete, see the **System Info** screen to verify your current firmware version number.

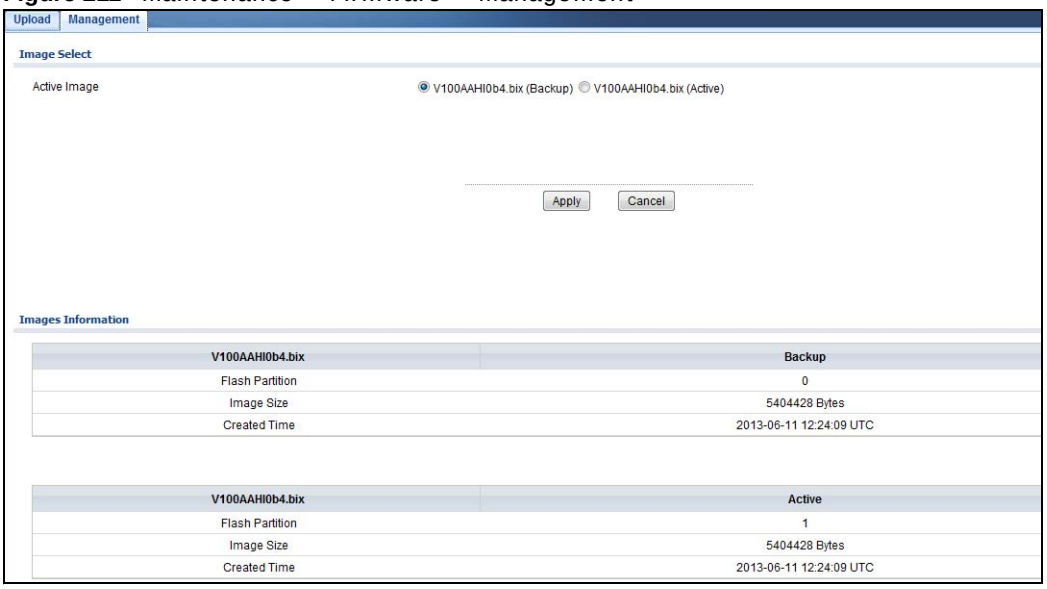
## 32.2 Firmware Management

### 32.2.1 Overview

The Firmware Management screen provides instant access to the firmware versions installed on your Switch. Active and backup firmware versions are saved as images on flash partitions. The backup image is used when the active partition has problems during boot.

From the **Maintenance** screen, display the **Firmware Management** screen as shown next. Use this screen to view image information and activate an image.

**Figure 211** Maintenance > Firmware > Management




The following table describes the labels shown under **Images Information**.

**Table 178** Maintenance > Firmware > Management

| LABEL | DESCRIPTION |
|---|---|
| Flash Partition | Displays the partition number. |
| Firmware Version | Displays the name given to the partition image, if any.<br>This field also displays the imagine type: Active or Backup. |
| Image Size | Displays the size of the partition image in bytes. |
| Created Time | Displays the date and time when the image was created in the Coordinated Universal Time (UTC) format. |

### 32.2.2 Activate the Backup Image

The current active partition is shown under **Image Select.**

Follow the steps below to choose the backup image if you are facing problems with the active partition during boot.

1. In **Active Image**, choose **Partition0 (Backup)**.
2. Click **Apply** to activate the backup image.
   OR
   Click **Cancel** to discard the changes.

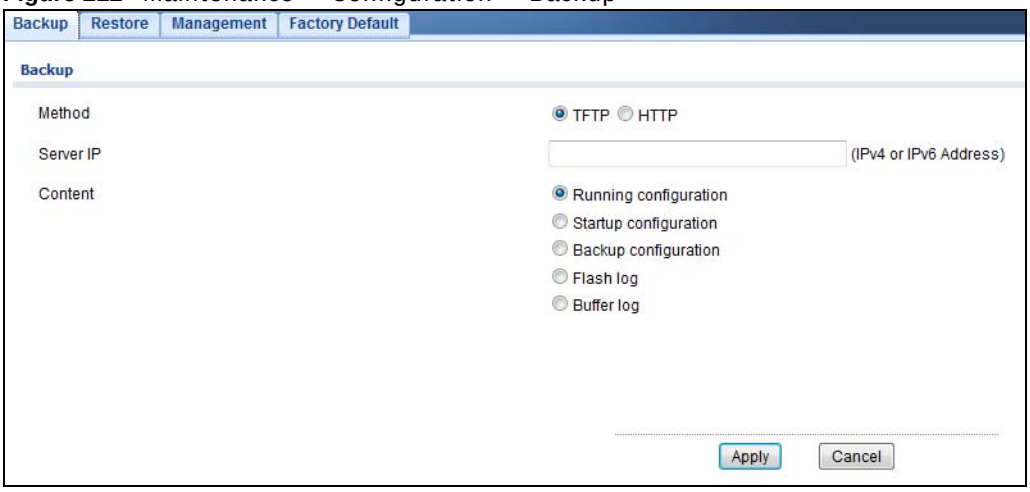
## 32.3 Backup a Configuration File

### 32.3.1 Overview

You can save various “snapshots” of your device to the server or your computer and restore them at a later date, if required.

From the **Maintenance** screen, display the **Backup** screen as shown next. Use this screen to back up your current Switch configuration and log files to a server or as local files to your computer.

**Figure 212** Maintenance > Configuration > Backup




The following table describes the labels under **Backup**.

**Table 179** Maintenance > Configuration > Backup

| LABEL | DESCRIPTION |
|---|---|
| Method | Choose **HTTP** to use the web configurator to backup the configuration. Alternatively, choose **TFTP** to upload the snapshot to a TFTP server. |
| Server IP | To upload the backup to a TFTP server, enter the TFTP server IP address. |
| Content | Choose the type of file for backup. You can back up configuration files (running, startup, or backup) or log files (flash or buffer).<br>There are three different types of configuration files:<br>Startup - this is the configuration used when the switch is booting up.<br>Running - this is the configuration when the switch is running.<br>Backup - this is saved in the Switch. If you make changes to the current configuration, and there are problems, you can revert to the Backup configuration without having to restore a new file. |

## 32.3.2 Back up configuration or log files to a server

Follow the steps below to backup configuration or log files to a TFTP server.

1. In **Method**, choose **TFTP**.
2. In **Server IP**, enter the TFTP server IP address.
3. In **Content**, choose any one file type.
4. Click **Apply** to save a snapshot of your current configuration to the TFTP server.
   OR
   Click **Cancel** to discard the changes.

## 32.3.3 Back up configuration or log files to your computer

Follow the steps below to backup configuration or log files to your computer.

1. In **Method**, choose **HTTP**.
2. In **Content**, choose any one file type.
3. Click **Apply** to display the **Save File** screen from which you can save the configuration file in the cfg format or the log file in the log format to your computer.
   OR
   Click **Cancel** to discard the changes.

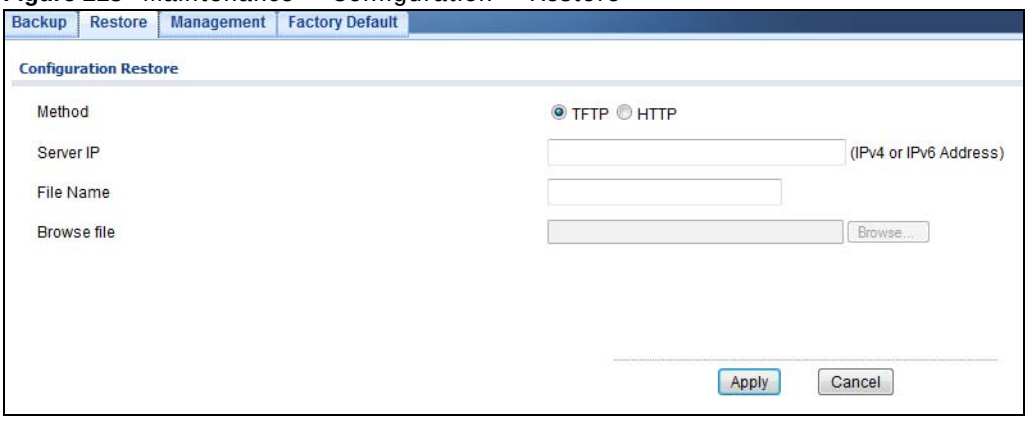
# 32.4 Restore a Configuration File

## 32.4.1 Overview

You can restore a previously saved device configuration from the server or your computer.

From the **Maintenance** screen, display the **Restore** screen as shown next. Use this screen to restore a previously saved configuration from a server or your computer.

**Figure 213** Maintenance > Configuration > Restore




The following table describes the labels under **Configuration Restore**.

**Table 180** Maintenance > Configuration > Restore

| LABEL | DESCRIPTION |
|---|---|
| Method | Choose **HTTP** to use the web configurator for restoring the configuration file. Alternatively, choose **TFTP** to download the snapshot from a TFTP server. |
| Server IP | To download from a TFTP server, enter the TFTP server IP address. |
| File Name | Enter the name of the configuration file on the TFTP server. |
| Browse File | Browse to the path on your computer where the configuration you want to upload to be the active image is kept. |

## 32.4.2 Restore the configuration from a file on a server

Follow the steps below to restore the configuration from a server.

1. In **Method**, choose **TFTP**.
2. In **Server IP**, enter the TFTP server IP address.
3. In **File Name**, enter the name of the configuration file on the TFTP server.

4. Click **Apply** to restore to the chosen file as the running configuration.
   OR
   Click **Cancel** to discard the changes.

### 32.4.3 Restore the configuration from a file on your computer

Follow the steps below to restore the configuration from a file on your computer.

1. In **Method**, choose **HTTP**.
2. Click **Browse** to display the **Choose File** screen from which you can locate the configuration file in the cfg format on your computer.
3. Click **Apply** to restore to the chosen file as the running configuration.
   OR
   Click **Cancel** to discard the changes.

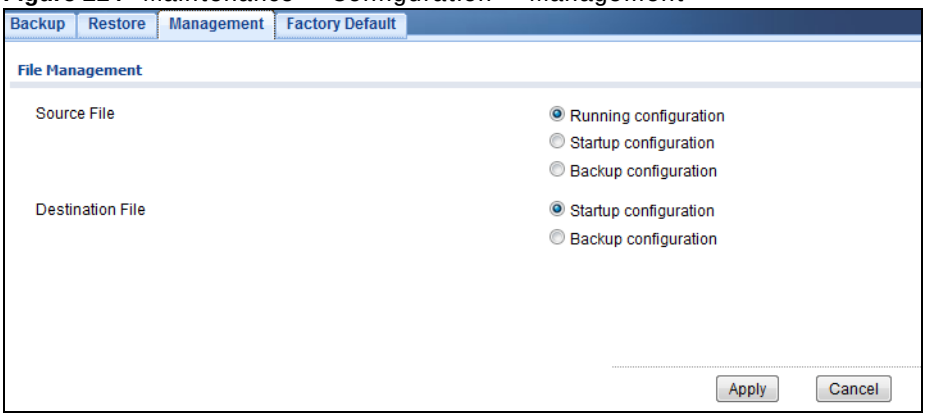
## 32.5 Manage Configuration Files

### 32.5.1 Overview

The Configuration Management screen provides instant access to the configuration files of your Switch. You can overwrite the startup and backup configurations with the current running, startup, or backup configuration file.

From the **Maintenance** screen, display the **Management** screen as shown next. Use this screen to replace startup and backup configuration files.

**Figure 214** Maintenance > Configuration > Management




Follow the steps to overwrite the startup or backup configuration file.

1. In **Source File**, select the file to be used as a reference.
2. In **Destination File**, select the file to be overwritten.
3. Click **Apply** to restore to overwrite the destination file with the source file.
   OR
   Click **Cancel** to discard the changes.

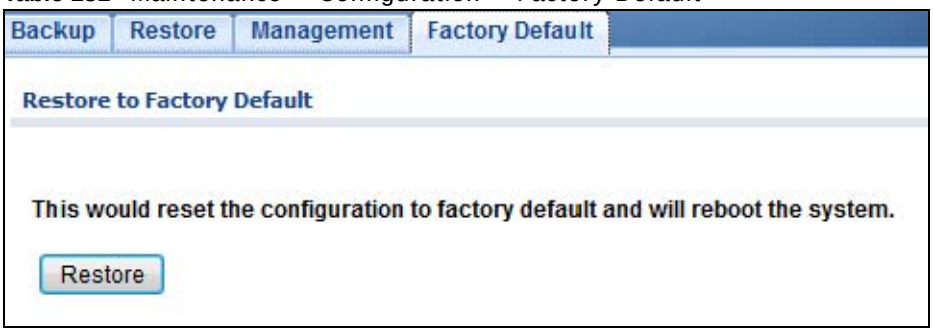
# 32.6 Reset to Factory Defaults

## 32.6.1 Overview

You can reset the Switch to it's original settings.

From the **Maintenance** screen, display the **Factory Default** screen as shown next. Use this screen to reset the Switch back to factory defaults.

**Table 181** Maintenance > Configuration > Factory Default




## 32.6.2 Reset the Switch to Factory Defaults

Follow the steps below to reset the Switch back to factory defaults.

1. Click **Restore**.
2. Click **OK** to reset all Switch configurations to the factory defaults. Wait for the Switch to restart. This takes up to two minutes.
   OR
   Click **Cancel** to discard the changes.

Note: If you want to access the Switch web configurator again, you may need to change the IP address of your computer to be in the same subnet as that of the default Switch IP address (192.168.1.1).

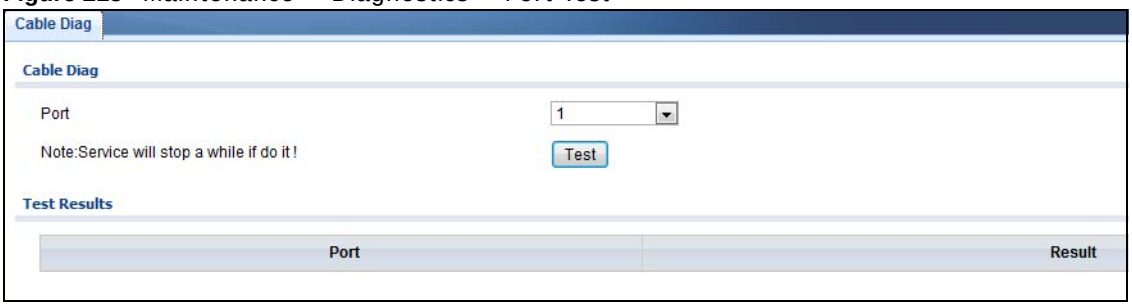
# 32.7 Network Diagnostics

Use the network utilities to perform diagnostics.

## 32.7.1 Port Test

Click **Maintenance** > **Diagnostics** > **Port Test** in the navigation panel to open this screen. Use this screen to perform an internal loopback test on an ethernet port.

**Figure 215** Maintenance > Diagnostics > Port Test




Follow the steps to perform the port test.

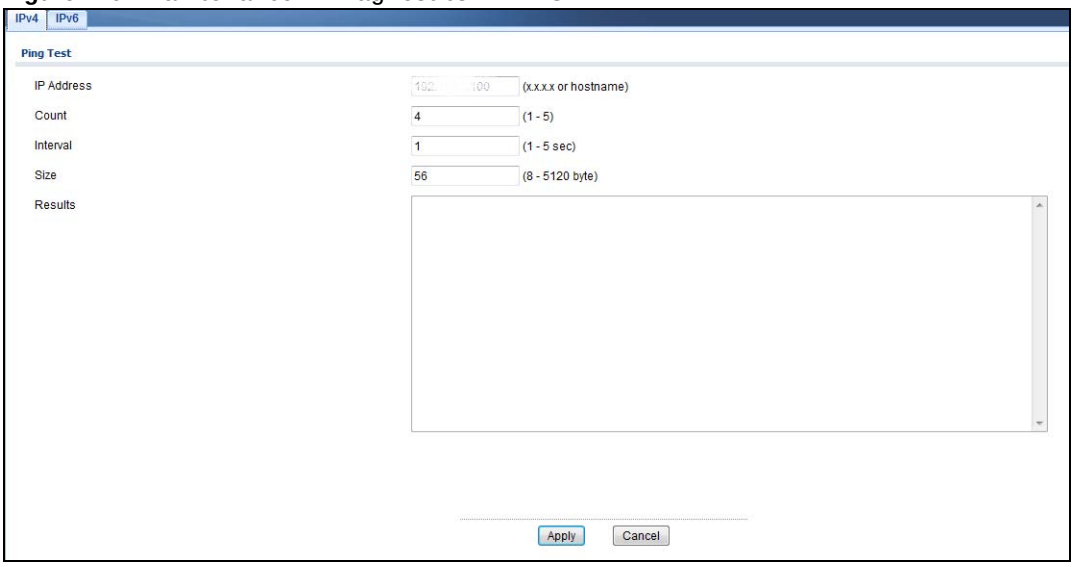
1. In **Port Test**, select the port number from the **Port** drop-down list.
2. Click **Test** to start the port test.

The test results are displayed in **Test Results**.

## 32.7.2 IPv4 Ping Test

Click **Maintenance** > **Diagnostics** > **PING > IPv4** in the navigation panel to open this screen. Use this screen to ping an IPv4 server.

**Figure 216** Maintenance > Diagnostics > PING > IPv4




The following table describes the labels under **Ping Test**.

**Table 182** Maintenance > Diagnostics > PING > IPv4

| LABEL | DESCRIPTION |
|---|---|
| IP Address | Enter the address of the target host server. |
| Count | Enter the number of ping packets to send. The range is 1 to 5 packets; the default count is 4. |
| Interval | Enter the time in seconds between sending ping packets. The range is 1 to 5 seconds; the default is 1 second. |
| Size | Enter the individual packet size in bytes. The range is 8 to 5120 bytes; the default is 56 bytes. |

Follow the steps to perform a ping test.

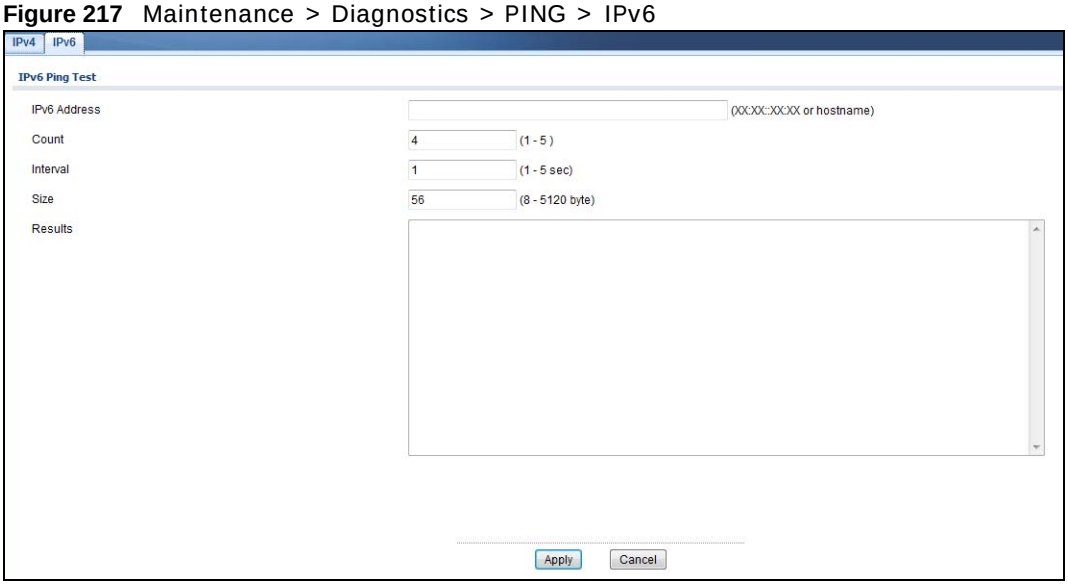
1. In **IP Address**, enter the IPv4 address.
2. In **Count**, enter the number of ping packets.
3. In **Interval**, enter the time interval in seconds.
4. In **Size**, enter the packet size in bytes
5. Click **Apply** to perform the ping test.
   OR
   Click **Cancel** to discard the changes.

The test results are displayed in **Results**.

## 32.7.3 IPv6 Ping Test

Click **Maintenance** > **Diagnostics** > **PING > IPv6** in the navigation panel to open this screen. Use this screen to ping an IPv6 server.

**Figure 217** Maintenance > Diagnostics > PING > IPv6




The following table describes the labels in **IPv6 Ping Test**.

**Table 183** Maintenance > Diagnostics > PING > IPv6

| LABEL | DESCRIPTION |
|---|---|
| IPv6 Address | Enter the address of the target host server. |
| Count | Enter the number of ping packets to send. The range is 1 to 5 packets; the default count is 4. |
| Interval | Enter the time in seconds between sending ping packets. The range is 1 to 5 seconds; the default is 1 second. |
| Size | Enter the individual packet size in bytes. The range is 8 to 5120 bytes; the default is 56 bytes. |

Follow the steps to perform a ping test.

1. In **IP Address**, enter the IPv6 address.
2. In **Count**, enter the number of ping packets.
3. In **Interval**, enter the time interval in seconds.
4. In **Size**, enter the packet size in bytes

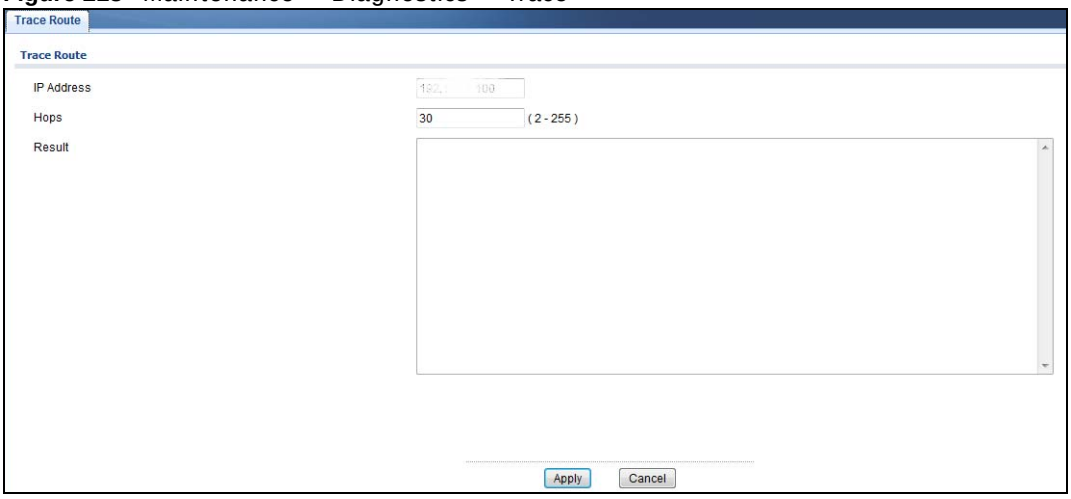
5. Click **Apply** to perform the ping test.
   OR
   Click **Cancel** to discard the changes.

The test results are displayed in **Results**.

## 32.7.4 Trace Route

Click **Maintenance** > **Diagnostics** > **Trace** in the navigation panel to open this screen. Use this screen to print the route that IP packets take to a network host.

**Figure 218** Maintenance > Diagnostics > Trace




The following table describes the labels in **Trace Route**.

**Table 184** Maintenance > Diagnostics > Trace

| LABEL | DESCRIPTION |
|---|---|
| IP Addres | Enter the address of the target host server. |
| Hops | Enter the maximum number of time-to-live or hops used in outgoing probe packets. The range is 2 to 255 packets; the default is 30 hops. |

Follow the steps to perform a trace route.

1. In **IP Address**, enter the IPv6 address.
2. In **Hops**, enter the number of hops.
3. Click **Apply** to perform the test.
   OR
   Click **Cancel** to discard the changes.

The test results are displayed in **Result**.

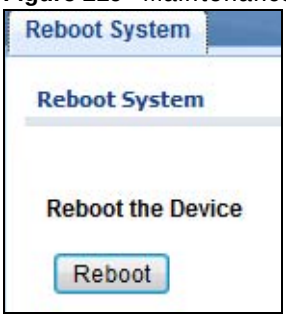
# 32.8 Reboot

## 32.8.1 Overview

You can reboot the Switch from the web configurator.

Click **Maintenance** > **Reboot** in the navigation panel to open this screen. Use this screen to restart the Switch without physically turning the power off.

**Figure 219** Maintenance > Reboot




## 32.8.2 Reboot the Switch

Follow the steps below to restart the Switch.

1. Click **Reboot**.
2. Click **OK** and then wait for the Switch to restart. This process takes up to two minutes and does not affect the Switch's configuration.
   OR
   Click **Cancel** to discard the changes.

# 33

# Troubleshooting

This chapter offers some suggestions to solve problems you might encounter. The potential problems are divided into the following categories.

- Power, Hardware Connections, and LEDs
- Switch Access and Login
- Switch Configuration

## 33.1 Power, Hardware Connections, and LEDs

### The Switch does not turn on. None of the LEDs turn on.

1. Make sure the Switch is turned on (in DC models or if the DC power supply is connected in AC/DC models).
2. Make sure you are using the power adaptor or cord included with the Switch.
3. Make sure the power adaptor or cord is connected to the Switch and plugged in to an appropriate power source. Make sure the power source is turned on.
4. Turn the Switch off and on (in DC models or if the DC power supply is connected in AC/DC models).
5. Disconnect and re-connect the power adaptor or cord to the Switch (in AC models or if the AC power supply is connected in AC/DC models).
6. If the problem continues, contact the vendor.

### The **ALM** LED is on.

1. Turn the Switch off and on (in DC models or if the DC power supply is connected in AC/DC models).
2. Disconnect and re-connect the power adaptor or cord to the Switch (in AC models or if the AC power supply is connected in AC/DC models).
3. If the problem continues, contact the vendor.

### One of the LEDs does not behave as expected.

1. Make sure you understand the normal behavior of the LED. See Section 3.3 on page 30.
2. Check the hardware connections. See Chapter 2 on page 19.
3. Inspect your cables for damage. Contact the vendor to replace any damaged cables.
4. Turn the Switch off and on (in DC models or if the DC power supply is connected in AC/DC models).
5. Disconnect and re-connect the power adaptor or cord to the Switch (in AC models or if the AC power supply is connected in AC/DC models).
6. If the problem continues, contact the vendor.

## 33.2 Switch Access and Login

### I forgot the IP address for the Switch.

1. The default in-band IP address is **192.168.1.1**.
2. Use the console port to log in to the Switch.
3. Use the **MGMT** port to log in to the Switch, the default IP address of the **MGMT** port is 192.168.0.1.
4. If this does not work, you have to reset the device to its factory defaults. See Section 32.6 on page 220.

### I forgot the username and/or password.

1. The default username is **admin** and the default password is **1234**.
2. If this does not work, you have to reset the device to its factory defaults. See Section 32.6 on page 220.

### I cannot see or access the **Login** screen in the web configurator.

1. Make sure you are using the correct IP address.
   - The default in-band IP address is **192.168.1.1**.

- If you changed the IP address, use the new IP address.
- If you changed the IP address and have forgotten it, see the troubleshooting suggestions for I forgot the IP address for the Switch.

2 Check the hardware connections, and make sure the LEDs are behaving as expected. See Section on page 19.

3 Make sure your Internet browser does not block pop-up windows and has JavaScripts and Java enabled.

4 Make sure your computer is in the same subnet as the Switch. (If you know that there are routers between your computer and the Switch, skip this step.)

5 Reset the device to its factory defaults, and try to access the Switch with the default IP address. See Section 32.6 on page 220.

6 If the problem continues, contact the vendor, or try one of the advanced suggestions.

**Advanced Suggestions**

- Try to access the Switch using another service, such as Telnet. If you can access the Switch, check the remote management settings to find out why the Switch does not respond to HTTP.

## I can see the **Login** screen, but I cannot log in to the Switch.

1 Make sure you have entered the user name and password correctly. The default user name is **admin**, and the default password is **1234**. These fields are case-sensitive, so make sure [Caps Lock] is not on.

2 You may have exceeded the maximum number of concurrent Telnet sessions. Close other Telnet session(s) or try connecting again later.

Check that you have enabled logins for HTTP or Telnet. If you have configured a secured client IP address, your computer's IP address must match it. Refer to the chapter on access control for details.

3 Disconnect and re-connect the cord to the Switch.

4 If this does not work, you have to reset the device to its factory defaults. See Section 32.6 on page 220.

## Pop-up Windows, JavaScripts and Java Permissions

In order to use the web configurator you need to allow:

- Web browser pop-up windows from your device.
- JavaScripts (enabled by default).
- Java permissions (enabled by default).

### I cannot see some of **Advanced Application** submenus at the bottom of the navigation panel.

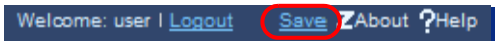
The recommended screen resolution is 1024 by 768 pixels. Adjust the value in your computer and then you should see the rest of **Advanced Application** submenus at the bottom of the navigation panel.

### There is unauthorized access to my Switch via telnet, HTTP and SSH.

Click the **Maintenance > Diagnostics** screen to check for unauthorized access to your Switch. To avoid unauthorized access, configure the secured client setting in the **Configuration > Management** > **Remote Access Control** screen for telnet, HTTP and SSH (see Section 31.7 on page 211). Computers not belonging to the secured client set cannot get permission to access the Switch.

## 33.3 Switch Configuration

### I lost my configuration settings after I restart the Switch.




Make sure you save your configuration into the Switch's nonvolatile memory each time you make changes. Click **Save** at the top right corner of the web configurator to save the configuration permanently. See also Section 5.3.1 on page 34 for more information about how to save your configuration.

A

# Customer Support

In the event of problems that cannot be solved by using this manual, you should contact your vendor. If you cannot contact your vendor, then contact a ZyXEL office for the region in which you bought the device.

See *http://www.zyxel.com/homepage.shtml* and also *http://www.zyxel.com/about_zyxel/zyxel_worldwide.shtml* for the latest information.

Please have the following information ready when you contact an office.

### Required Information

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

## Corporate Headquarters (Worldwide)

### Taiwan

- ZyXEL Communications Corporation
- http://www.zyxel.com

## Asia

### China

- ZyXEL Communications (Shanghai) Corp.
  ZyXEL Communications (Beijing) Corp.
  ZyXEL Communications (Tianjin) Corp.
- http://www.zyxel.cn

### India

- ZyXEL Technology India Pvt Ltd
- http://www.zyxel.in

### Kazakhstan

- ZyXEL Kazakhstan
- http://www.zyxel.kz

### Korea

- ZyXEL Korea Corp.
- http://www.zyxel.kr

### Malaysia

- ZyXEL Malaysia Sdn Bhd.
- http://www.zyxel.com.my

### Pakistan

- ZyXEL Pakistan (Pvt.) Ltd.
- http://www.zyxel.com.pk

### Philippines

- ZyXEL Philippines
- http://www.zyxel.com.ph

### Singapore

- ZyXEL Singapore Pte Ltd.
- http://www.zyxel.com.sg

### Taiwan

- ZyXEL Communications Corporation
- http://www.zyxel.com/tw/zh/

### Thailand

- ZyXEL Thailand Co., Ltd
- http://www.zyxel.co.th

### Vietnam

- ZyXEL Communications Corporation-Vietnam Office
- http://www.zyxel.com/vn/vi

## Europe

### Austria

- ZyXEL Deutschland GmbH
- http://www.zyxel.de

### Belarus

- ZyXEL BY
- http://www.zyxel.by

## Belgium

- ZyXEL Communications B.V.
- http://www.zyxel.com/be/nl/
- http://www.zyxel.com/be/fr/

## Bulgaria

- ZyXEL България
- http://www.zyxel.com/bg/bg/

## Czech Republic

- ZyXEL Communications Czech s.r.o
- http://www.zyxel.cz

## Denmark

- ZyXEL Communications A/S
- http://www.zyxel.dk

## Estonia

- ZyXEL Estonia
- http://www.zyxel.com/ee/et/

## Finland

- ZyXEL Communications
- http://www.zyxel.fi

## France

- ZyXEL France
- http://www.zyxel.fr

## Germany

- ZyXEL Deutschland GmbH
- http://www.zyxel.de

## Hungary

- ZyXEL Hungary & SEE
- http://www.zyxel.hu

## Italy

- ZyXEL Communications Italy
- http://www.zyxel.it/

## Latvia

- ZyXEL Latvia
- http://www.zyxel.com/lv/lv/homepage.shtml

## Lithuania

- ZyXEL Lithuania
- http://www.zyxel.com/lt/lt/homepage.shtml

## Netherlands

- ZyXEL Benelux
- http://www.zyxel.nl

## Norway

- ZyXEL Communications
- http://www.zyxel.no

## Poland

- ZyXEL Communications Poland
- http://www.zyxel.pl

## Romania

- ZyXEL Romania
- http://www.zyxel.com/ro/ro

## Russia

- ZyXEL Russia
- http://www.zyxel.ru

## Slovakia

- ZyXEL Communications Czech s.r.o. organizacna zlozka
- http://www.zyxel.sk

## Spain

- ZyXEL Communications ES Ltd
- http://www.zyxel.es

## Sweden

- ZyXEL Communications
- http://www.zyxel.se

## Switzerland

- Studerus AG

- http://www.zyxel.ch/

### Turkey

- ZyXEL Turkey A.S.
- http://www.zyxel.com.tr

### UK

- ZyXEL Communications UK Ltd.
- http://www.zyxel.co.uk

### Ukraine

- ZyXEL Ukraine
- http://www.ua.zyxel.com

## Latin America

### Argentina

- ZyXEL Communication Corporation
- http://www.zyxel.com/ec/es/

### Brazil

- ZyXEL Communications Brasil Ltda.
- https://www.zyxel.com/br/pt/

### Ecuador

- ZyXEL Communication Corporation
- http://www.zyxel.com/ec/es/

## Middle East

### Israel

- ZyXEL Communication Corporation
- http://il.zyxel.com/homepage.shtml

### Middle East

- ZyXEL Communication Corporation
- http://www.zyxel.com/me/en/

## North America

### USA

- ZyXEL Communications, Inc. - North America Headquarters
- http://www.zyxel.com/us/en/

## Oceania

### Australia

- ZyXEL Communications Corporation
- http://www.zyxel.com/au/en/

## Africa

### South Africa

- Nology (Pty) Ltd.
- http://www.zyxel.co.za

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# Legal Information

## Copyright

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## Regulatory Notice and Statement (Class A)

Model List: GS1900-8HP (Revision A1), GS1900-24, GS1900-24HP, GS1900-48, GS1900-48HP

### United States of America

The following information applies if you use the product within USA area.

#### Federal Communications Commission (FCC) EMC Statement

- This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operations.

- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### Canada

The following information applies if you use the product within Canada area

#### Industry Canada ICES statement

CAN ICES-3 (A)/NMB-3(A)

### European Union

The following information applies if you use the product within the European Union.

#### CE EMC statement

This is Class A Product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### List of National Codes

| COUNTRY | ISO 3166 2 LETTER CODE | COUNTRY | ISO 3166 2 LETTER CODE |
|---|---|---|---|
| Austria | AT | Liechtenstein | LI |
| Belgium | BE | Lithuania | LT |
| Bulgaria | BG | Luxembourg | LU |
| Croatia | HR | Malta | MT |
| Cyprus | CY | Netherlands | NL |
| Czech Republic | CR | Norway | NO |
| Denmark | DK | Poland | PL |
| Estonia | EE | Portugal | PT |
| Finland | FI | Romania | RO |
| France | FR | Serbia | RS |
| Germany | DE | Slovakia | SK |
| Greece | GR | Slovenia | SI |
| Hungary | HU | Spain | ES |
| Iceland | IS | Sweden | SE |
| Ireland | IE | Switzerland | CH |
| Italy | IT | Turkey | TR |
| Latvia | LV | United Kingdom | GB |

## Safety Warnings

- Do not use this product near water, for example, in a wet basement or near a swimming pool.
- Do not expose your device to dampness, dust or corrosive liquids.
- Do not store things on the device.
- Do not install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do not open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. Only qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Do not remove the plug and connect it to a power outlet by itself; always attach the plug to the power adaptor first before connecting it to a power outlet.
- Do not allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Please use the provided or designated connection cables/power cables/ adaptors. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe). If the power adaptor or cord is damaged, it might cause electrocution. Remove it from the device and the power source, repairing the power adapter or cord is prohibited. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- Caution: Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instruction. Dispose them at the applicable collection point for the recycling of electrical and electronic device. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- Use ONLY power wires of the appropriate wire gauge for your device. Connect it to a power supply of the correct voltage.
- Fuse Warning! Replace a fuse only with a fuse of the same type and rating.
- The POE (Power over Ethernet) devices that supply or receive power and their connected Ethernet cables must all be completely indoors.
- Do not obstruct the device ventillation slots as insufficient airflow may harm your device.
- The following warning statements apply, where the disconnect device is not incorporated in the device or where the plug on the power supply cord is intended to serve as the disconnect device,

  - For permanently connected devices, a readily accessible disconnect device shall be incorporated external to the device;

  - For pluggable devices, the socket-outlet shall be installed near the device and shall be easily accessible.
- This device must be grounded. Never defeat the ground conductor or operate the device in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.
- When connecting or disconnecting power to hot-pluggable power supplies, if offered with your system, observe the following guidelines:

  - Install the power supply before connecting the power cable to the power supply.

  - Unplug the power cable before removing the power supply.

  - If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supply.

## Environment Statment

### European Union - Disposal and Recycling Information

The symbol below means that according to local regulations your product and/or its battery shall be disposed of separately from domestic waste. If this product is end of life, take it to a recycling station designated by local authorities. At the time of disposal, the separate collection of your product and/or its battery will help save natural resources and ensure that the environment is sustainable development.

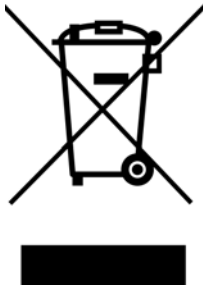
Die folgende Symbol bedeutet, dass Ihr Produkt und/oder seine Batterie gemäß den örtlichen Bestimmungen getrennt vom Hausmüll entsorgt werden muss. Wenden Sie sich an eine Recyclingstation, wenn dieses Produkt das Ende seiner Lebensdauer erreicht hat. Zum Zeitpunkt der Entsorgung wird die getrennte Sammlung von Produkt und/oder seiner Batterie dazu beitragen, natürliche Ressourcen zu sparen und die Umwelt und die menschliche Gesundheit zu schützen.

El símbolo de abajo indica que según las regulaciones locales, su producto y/o su batería deberán depositarse como basura separada de la doméstica. Cuando este producto alcance el final de su vida útil, llévelo a un punto limpio. Cuando llegue el momento de desechar el producto, la recogida por separado éste y/o su batería ayudará a salvar los recursos naturales y a proteger la salud humana y medioambiental.

Le symbole ci-dessous signifie que selon les réglementations locales votre produit et/ou sa batterie doivent être éliminés séparément des ordures ménagères. Lorsque ce produit atteint sa fin de vie, amenez-le à un centre de recyclage. Au moment de la mise au rebut, la collecte séparée de votre produit et/ou de sa batterie aidera à économiser les ressources naturelles et protéger l'environnement et la santé humaine.

Il simbolo sotto significa che secondo i regolamenti locali il vostro prodotto e/o batteria deve essere smaltito separatamente dai rifiuti domestici. Quando questo prodotto raggiunge la fine della vita di servizio portarlo a una stazione di riciclaggio. Al momento dello smaltimento, la raccolta separata del vostro prodotto e/o della sua batteria aiuta a risparmiare risorse naturali e a proteggere l'ambiente e la salute umana.

Symbolen innebär att enligt lokal lagstiftning ska produkten och/eller dess batteri kastas separat från hushållsavfallet. När den här produkten når slutet av sin livslängd ska du ta den till en återvinningsstation. Vid tiden för kasseringen bidrar du till en bättre miljö och mänsklig hälsa genom att göra dig av med den på ett återvinningsställe.



## Environmental Product Declaration

| Български (Bulgarian) | Čeština (Czech) | Dansk (Danish) | Deutsch (German) |
|---|---|---|---|
| Екологична продуктова декларация | Environmentální prohlášení o produktu | Miljøvaredeklaration | Produkt-Umweltdeklaration |
| RoHS Директива 2011/65/EC | RoHS Směrnice 2011/65/EU | RoHS Direktiv 2011/65/EU | RoHS Richtlinie 2011/65/EU |
| WEEE Директива 2012/19/EC | WEEE Směrnice 2012/19/EU | WEEE Direktiv 2012/19/EU | WEEE Richtlinie 2012/19/EU |
| PPW Директива 94/62/EO | PPW Směrnice 94/62/ES | PPW Direktiv 94/62/EF | PPW Richtlinie 94/62/EG |
| REACH РЕГЛАМЕНТ (EO) № 1907/2006 | REACH Nařízení (ES) č. 1907/2006 | REACH Forordning (EF) nr. 1907/2006 | REACH VERORDNUNG (EG) Nr.1907/2006 |
| Име/ титла : Richard Hsu / Quality Management Division Senior Manager<br>Подпис : Richard Hsu<br>Дата (дд/мм/гггг): 01/10/2014 | Jméno/ titul : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Richard Hsu<br>Datum (dd/mm/rrrr): 01/10/2014 | Navn/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Underskrift : Richard Hsu<br>Dato (dd/mm/åååå): 01/10/2014 | Name/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Unterschrift : Richard Hsu<br>Datum (jjjj/mm/tt): 2014/10/01 |

| Eesti keel (Estonian) | English | Español (Spanish) | Français (French) |
|---|---|---|---|
| Toote keskkonnadeklaratsiooni | Environmental product declaration | Declaraciones Ambientales de Producto | Profil environnemental de produit |
| RoHS Direktiiv 2011/65/EL | RoHS Directive 2011/65/EU | RoHS Directiva 2011/65/UE | RoHS Directive 2011/65/UE |
| WEEE Direktiiv 2012/19/EL | WEEE Directive 2012/19/EU | WEEE Directiva 2012/19/UE | WEEE Directive 2012/19/UE |
| PPW Direktiiv 94/62/EU | PPW Directive 94/62/EC | PPW Directiva 94/62/CE | PPW Directive 94/62/CE |
| REACH MÄÄRUS (EÜ) nr 1907/2006 | REACH Regulation (EC) No 1907/2006 | REACH REGLAMENTO (CE) nº 1907/2006 | REACH REGLEMENT (CE) N° 1907/2006 |
| Nimi/ pealkiri : Richard Hsu / Quality Management Division Senior Manager<br>Allkiri : Richard Hsu<br>Kuupäev (pp/kk/aaaa): 01/10/2014 | Name/ title : Richard Hsu / Quality Management Division Senior Manager<br>Signature : Richard Hsu<br>Date (dd/mm/yyyy): 01/10/2014 | Nombre/ título : Richard Hsu / Quality Management Division Senior Manager<br>Firma : Richard Hsu<br>Fecha (aaaa/mm/dd): 2014/10/01 | Nom/ titre : Richard Hsu / Quality Management Division Senior Manager<br>Signature : Richard Hsu<br>Date (aaaa/mm/jj): 2014/10/01 |

| Hrvatski (Croatian) | Italiano (Italian) | Latviešu valoda(Latvian) | Lietuvių kalba (Lithuanian) |
|---|---|---|---|
| Deklaraciju o zbrinjavanju proizvoda | Dichiarazione ambientale di prodotto | Produkta vides ietekmējuma deklarācija | Aplinkosauginę gaminio deklaraciją |
| RoHS Direktiva 2011/65/EU | RoHS Direttiva 2011/65/UE | RoHS Direktīva 2011/65/ES | RoHS Direktyva 2011/65/ES |
| WEEE Direktiva 2012/19/EU | WEEE Direttiva 2012/19/UE | WEEE Direktīva 2012/19/ES | WEEE Direktyva 2012/19/ES |
| PPW Direktiva 94/62/EZ | PPW Direttiva 94/62/CE | PPW Direktīva 94/62/EK | PPW Direktyva 94/62/EB |
| REACH Uredbe (EZ) br. 1907/2006 | REACH REGOLAMENTO (CE) n. 1907/2006 | REACH Regula (EK) Nr. 1907/2006 | REACH REGLAMENTAS (EB) Nr. 1907/2006 |
| Ime/ naslov : Richard Hsu / Quality Management Division Senior Manager<br>Potpis : Richard Hsu<br>Datum (dd/mm/yyyy): 01/10/2014 | Nome/ titolo : Richard Hsu / Quality Management Division Senior Manager<br>Firma : Richard Hsu<br>Data (aaaa/mm/gg): 2014/10/01 | Nosaukum s/ tituls : Richard Hsu / Quality Management Division Senior Manager<br>Paraksts : Richard Hsu<br>Datums(dd/mm/gggg): 01/10/2014 | Vardas/ titulas : Richard Hsu / Quality Management Division Senior Manager<br>Parašas : Richard Hsu<br>Data (dd/mm/mmmm): 01/10/2014 |

| Magyar (Hungarian) | Malti (Maltese) | Nederlands (Dutch) | Polski (Polish) |
|---|---|---|---|
| Környezetvédelmi terméknyilatkozatot | Dikjarazzjoni Ambjentali dwar il-Prodott | Milieuproductverklaring | Deklarację środowiskową produktu |
| RoHS 2011/65/EU Irányelve | RoHS Direttiva 2011/65/UE | RoHS Richtlijn 2011/65/EU | RoHS Dyrektywa 2011/65/UE |
| WEEE 2012/19/EU Irányelve | WEEE Direttiva 2012/19/UE | WEEE Richtlijn 2012/19/EU | WEEE Dyrektywa 2012/19/UE |
| PPW 94/62/EK Irányelve | PPW Direttiva 94/62/KE | PPW Richtlijn 94/62/EG | PPW Dyrektywa 94/62/WE |
| REACH 1907/2006/EK Rendelete | REACH REGOLAMENT (KE) NRU 1907/2006 | REACH Verordening (EG) nr. 1907/2006 | REACH Rozporządzenie (WE) nr 1907/2006 |
| Név/ cím : Richard Hsu / Quality Management Division Senior Manager<br>Aláírás : Richard Hsu<br>Dátum (éééé/hh/nn): 2014/10/01 | Isem/ titolu : Richard Hsu / Quality Management Division Senior Manager<br>Firma : Richard Hsu<br>Data (ssss/xx/jj): 2014/10/01 | Naam/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Handtekening : Richard Hsu<br>Datum (dd/mm/jaar): 01/10/2014 | Nazwisko /tytuł : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Richard Hsu<br>Data (rrrr/mm/dd): 2014/10/01 |

| Português (Portuguese) | Română (Romanian) | Slovenčina (Slovak) | Slovenščina (Slovene) |
|---|---|---|---|
| Declaração ambiental do produto | Declarație de mediu privind produsele | Vyhlásenie o environmentálnom výrobku | Okoljsko deklaracijo izdelka |
| RoHS Directiva 2011/65/UE | RoHS Directiva 2011/65/UE | RoHS Smernica 2011/65/EU | RoHS Direktiva 2011/65/EU |
| WEEE Directiva 2012/19/UE | WEEE Directiva 2012/19/UE | WEEE Smernica 2012/19/EU | WEEE Direktiva 2012/19/EU |
| PPW Directiva 94/62/CE | PPW Directiva 94/62/CE | PPW Smernica 94/62/ES | PPW Direktiva 94/62/ES |
| REACH Regulamento (CE) n.º 1907/2006 | REACH REGULAMENTUL (CE) NR.907/2006 | REACH Nariadenie (ES) č. 1907/2006 | REACH Uredba (ES) št. 1907/2006 |
| Nome/ título : Richard Hsu / Quality Management Division Senior Manager<br>Assinatura : Richard Hsu<br>Data (dd/mm/aaaa): 01/10/2014 | Numele/ titlu : Richard Hsu / Quality Management Division Senior Manager<br>Semnătura : Richard Hsu<br>Data (zz/ll/aaaa): 01/10/2014 | Meno/ titul : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Richard Hsu<br>Dátum (dd/mm/rrrr): 01/10/2014 | Ime/ naziv : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Richard Hsu<br>Datum (dd/mm/llll): 01/10/2014 |

| Suomi (Finnish) | Svenska (Swedish) | Ελληνικά (Greek) | Norsk (Norwegian) |
|---|---|---|---|
| Standardiin perustuva ympäristötuoteseloste | Miljöproduktdeklaration | Περιβαλλοντική δήλωση προϊόντος | Miljødeklarasjon |
| RoHS Direktiivi 2011/65/EU | RoHS Direktiv 2011/65/EU | RoHS Οδηγία 2011/65/ΕΕ | RoHS Direktiv 2011/65/EU |
| WEEE Direktiivi 2012/19/EU | WEEE Direktiv 2012/19/EU | WEEE Οδηγία 2012/19/ΕΕ | WEEE Direktiv 2012/19/EU |
| PPW Direktiivi 94/62/EY | PPW Direktiv 94/62/EG | PPW Οδηγία 94/62/ΕΚ | PPW Direktiv 94/62/EF |
| REACH ASETUS (EY) N:o 1907/2006 | REACH Förordning (EG) nr 1907/2006 | REACH Κανονισμοσ (ΕΚ) αριθ. 1907/2006 | REACH Forordning (EF) nr. 1907/2006 |
| Nimi/ otsikko : Richard Hsu / Quality Management Division Senior Manager<br>Allekirjoitus : Richard Hsu<br>Päivämäärä (pp/kk/vvvv): 01/10/2014 | Namn/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Namnteckning : Richard Hsu<br>Datum (dd/mm/åååå): 01/10/2014 | Δνομα/ τίτλος : Richard Hsu / Quality Management Division Senior Manager<br>Υπογραφή : Richard Hsu<br>Ημερομηνία (ηη/μμ/εεεε): 01/10/2014 | Navn/ tittel : Richard Hsu / Quality Management Division Senior Manager<br>Signatur : Richard Hsu<br>Dato (dd/mm/åååå): 01/10/2014 |

## 台灣

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。」

安全警告

為了您的安全，請先閱讀以下警告及指示 :

- 請勿將此產品接近水、火焰或放置在高溫的環境。
- 避免設備接觸
  任何液體 - 切勿讓設備接觸水、雨水、高濕度、污水腐蝕性的液體或其他水份。
  灰塵及污物 - 切勿接觸灰塵、污物、沙土、食物或其他不合適的材料。
- 雷雨天氣時，不要安裝，使用或維修此設備。有遭受電擊的風險。
- 切勿重摔或撞擊設備，並勿使用不正確的電源變壓器。
- 若接上不正確的電源變壓器會有爆炸的風險。。
- 請勿隨意更換產品內的電池。
- 如果更換不正確之電池型式，會有爆炸的風險，請依製造商說明書處理使用過之電池。
- 請將廢電池丟棄在適當的電器或電子設備回收處。
- 請勿將設備解體。
- 請勿阻礙設備的散熱孔，空氣對流不足將會造成設備損害。
- 請插在正確的電壓供給插座 ( 如 : 北美 / 台灣電壓 110V AC，歐洲是 230V AC)。
- 假若電源變壓器或電源變壓器的纜線損壞，請從插座拔除，若您還繼續插電使用，會有觸電死亡的風險。
- 請勿試圖修理電源變壓器或電源變壓器的纜線，若有毀損，請直接聯絡您購買的店家，購買一個新的電源變壓器。
- 請勿將此設備安裝於室外，此設備僅適合放置於室內。
- 請勿隨一般垃圾丟棄。
- 請參閱產品背貼上的設備額定功率。
- 請參考產品型錄或是彩盒上的作業溫度。
- 設備必須接地，接地導線不允許被破壞或沒有適當安裝接地導線，如果不確定接地方式是否符合要求可聯繫相應的電氣檢驗機構檢驗。
- 如果您提供的系統中有提供熱插拔電源，連接或斷開電源請遵循以下指導原則
  - 先連接電源線至設備連，再連接電源。
  - 先斷開電源再拔除連接至設備的電源線。
  - 如果系統有多個電源，需拔除所有連接至電源的電源線再關閉設備電源。
- 產品沒有斷電裝置或者採用電源線的插頭視為斷電裝置的一部分，以下警語將適用 :
  - 對永久連接之設備，在設備外部須安裝可觸及之斷電裝置；
  - 對插接式之設備，插座必須接近安裝之地點而且是易於觸及的。

## Regulatory Notice and Statement (Class B)

Model List: GS1900-8, GS1900-8HP (Revision B1), GS1900-10HP, GS1900-16, GS1900-24E

## UNITED STATES of AMERICA

The following information applies if you use the product within USA area.

### FCC EMC Statement

- The device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.
- This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
- If this device does cause harmful interference to radio or television reception, which is found by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna
  - Increase the separation between the devices
  - Connect the equipment to an outlet other than the receiver's
  - Consult a dealer or an experienced radio/TV technician for assistance

## CANADA

The following information applies if you use the product within Canada area

### Industry Canada ICES statement

ICAN ICES-3 (B)/NMB-3(B)

## EUROPEAN UNION

The following information applies if you use the product within the European Union.

### List of national codes

| COUNTRY | ISO 3166 2 LETTER CODE | COUNTRY | ISO 3166 2 LETTER CODE |
|---|---|---|---|
| Austria | AT | Liechtenstein | LI |
| Belgium | BE | Lithuania | LT |
| Bulgaria | BG | Luxembourg | LU |
| Croatia | HR | Malta | MT |
| Cyprus | CY | Netherlands | NL |
| Czech Republic | CZ | Norway | NO |
| Denmark | DK | Poland | PL |
| Estonia | EE | Portugal | PT |
| Finland | FI | Romania | RO |
| France | FR | Serbia | RS |
| Germany | DE | Slovakia | SK |
| Greece | GR | Slovenia | SI |
| Hungary | HU | Spain | ES |
| Iceland | IS | Switzerland | CH |
| Ireland | IE | Sweden | SE |
| Italy | IT | Turkey | TR |
| Latvia | LV | United Kingdom | GB |

## Safety Warnings

- Do not use this product near water, for example, in a wet basement or near a swimming pool.
- Do not expose your device to dampness, dust or corrosive liquids.
- Do not store things on the device.
- Do not install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do not open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Do not remove the plug and connect it to a power outlet by itself; always attach the plug to the power adaptor first before connecting it to a power outlet.
- Do not allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Please use the provided or designated connection cables/power cables/ adaptors. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe). If the power adaptor or cord is damaged, it might cause electrocution. Remove it from the device and the power source, repairing the power adapter or cord is prohibited. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- CAUTION: Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instruction. Dispose them at the applicable collection point for the recycling of electrical and electronic devices. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- Do not obstruct the device ventilation slots, as insufficient airflow may harm your device.
- The following warning statements apply, where the disconnect device is not incorporated in the device or where the plug on the power supply cord is intended to serve as the disconnect device,
  - For permanently connected devices, a readily accessible disconnect device shall be incorporated external to the device;

- For pluggable devices, the socket-outlet shall be installed near the device and shall be easily accessible.

## Environment Statement

### ErP (Energy-related Products)

ZyXEL products put on the EU market in compliance with the requirement of the European Parliament and the Council published Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (recast), so called as "ErP Directive (Energy-related Products directive) as well as ecodesign requirement laid down in applicable implementing measures, power consumption has satisfied regulation requirements which are:

Network standby power consumption < 12W, and/or

Off mode power consumption < 0.5W, and/or

Standby mode power consumption < 0.5W.

Wireless setting, please refer to "Wireless" chapter for more detail.

### European Union - Disposal and Recycling Information

The symbol below means that according to local regulations your product and/or its battery shall be disposed of separately from domestic waste. If this product is end of life, take it to a recycling station designated by local authorities. At the time of disposal, the separate collection of your product and/or its battery will help save natural resources and ensure that the environment is sustainable development.

Die folgende Symbol bedeutet, dass Ihr Produkt und/oder seine Batterie gemäß den örtlichen Bestimmungen getrennt vom Hausmüll entsorgt werden muss. Wenden Sie sich an eine Recyclingstation, wenn dieses Produkt das Ende seiner Lebensdauer erreicht hat. Zum Zeitpunkt der Entsorgung wird die getrennte Sammlung von Produkt und/oder seiner Batterie dazu beitragen, natürliche Ressourcen zu sparen und die Umwelt und die menschliche Gesundheit zu schützen.

El símbolo de abajo indica que según las regulaciones locales, su producto y/o su batería deberán depositarse como basura separada de la doméstica. Cuando este producto alcance el final de su vida útil, llévelo a un punto limpio. Cuando llegue el momento de desechar el producto, la recogida por separado éste y/o su batería ayudará a salvar los recursos naturales y a proteger la salud humana y medioambiental.

Le symbole ci-dessous signifie que selon les réglementations locales votre produit et/ou sa batterie doivent être éliminés séparément des ordures ménagères. Lorsque ce produit atteint sa fin de vie, amenez-le à un centre de recyclage. Au moment de la mise au rebut, la collecte séparée de votre produit et/ou de sa batterie aidera à économiser les ressources naturelles et protéger l'environnement et la santé humaine.

Il simbolo sotto significa che secondo i regolamenti locali il vostro prodotto e/o batteria deve essere smaltito separatamente dai rifiuti domestici. Quando questo prodotto raggiunge la fine della vita di servizio portarlo a una stazione di riciclaggio. Al momento dello smaltimento, la raccolta separata del vostro prodotto e/o della sua batteria aiuta a risparmiare risorse naturali e a proteggere l'ambiente e la salute umana.

Symbolen innebär att enligt lokal lagstiftning ska produkten och/eller dess batteri kastas separat från hushållsavfallet. När den här produkten når slutet av sin livslängd ska du ta den till en återvinningsstation. Vid tiden för kasseringen bidrar du till en bättre miljö och mänsklig hälsa genom att göra dig av med den på ett återvinningsställe.

## Environmental Product Declaration

| Български (Bulgarian) | Čeština (Czech) | Dansk (Danish) | Deutsch (German) |
|---|---|---|---|
| Екологична продуктова декларация | Environmentální prohlášení o produktu | Miljøvaredeklaration | Produkt-Umweltdeklaration |
| **RoHS** Директива 2011/65/ЕС<br>**WEEE** Директива 2012/19/ЕС<br>**PPW** Директива 94/62/ЕО<br>**REACH** РЕГЛАМЕНТ (ЕО) № 1907/2006<br>**ErP** Директива 2009/125/ЕО | **RoHS** Směrnice 2011/65/EU<br>**WEEE** Směrnice 2012/19/EU<br>**PPW** Směrnice 94/62/ES<br>**REACH** Nařízení (ES) č. 1907/2006<br>**ErP** Směrnice 2009/125/ES | **RoHS** Direktiv 2011/65/EU<br>**WEEE** Direktiv 2012/19/EU<br>**PPW** Direktiv 94/62/EF<br>**REACH** Forordning (EF) nr. 1907/2006<br>**ErP** Direktiv 2009/125/EF | **RoHS** Richtlinie 2011/65/EU<br>**WEEE** Richtlinie 2012/19/EU<br>**PPW** Richtlinie 94/62/EG<br>**REACH** VERORDNUNG (EG) Nr. 1907/2006<br>**ErP** Richtlinie 2009/125/EG |
| Име/ титла : Richard Hsu / Quality Management Division Senior Manager<br>Подпис : Дата (дд/мм/гггг): 01/10/2014 | Jméno/ titul : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Datum (dd/mm/rrrr): 01/10/2014 | Navn/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Underskrift : Dato (dd/mm/åااا): 01/10/2014 | Name/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Unterschrift : Datum (tt/mm/jj): 2014/10/01 |

| Eesti keel (Estonian) | English | Español (Spanish) | Français (French) |
|---|---|---|---|
| Toote keskkonnadeklaratsiooni | Environmental product declaration | Declaraciones Ambientales de Producto | Profil environnemental de produit |
| **RoHS** Direktiiv 2011/65/EL<br>**WEEE** Direktiiv 2012/19/EL<br>**PPW** Direktiiv 94/62/EÜ<br>**REACH** MÄÄRUS (EÜ) nr 1907/2006<br>**ErP** Direktiiv 2009/125/EÜ | **RoHS** Directive 2011/65/EU<br>**WEEE** Directive 2012/19/EU<br>**PPW** Directive 94/62/EC<br>**REACH** Regulation (EC) No 1907/2006<br>**ErP** Directive 2009/125/EC | **RoHS** Directiva 2011/65/UE<br>**WEEE** Directiva 2012/19/UE<br>**PPW** Directiva 94/62/CE<br>**REACH** REGLAMENTO (CE) nº 1907/2006<br>**ErP** Directiva 2009/125/CE | **RoHS** Directive 2011/65/UE<br>**WEEE** Directive 2012/19/UE<br>**PPW** Directive 94/62/CE<br>**REACH** RÈGLEMENT (CE) N° 1907/2006<br>**ErP** Directive 2009/125/CE |
| Nimi/ peakiri : Richard Hsu / Quality Management Division Senior Manager<br>Allkiri : Kuupäev (pp/kk/aaaa): 01/10/2014 | Name/ title : Richard Hsu / Quality Management Division Senior Manager<br>Signature : Date (dd/mm/yyyy) : 01/10/2014 | Nombre/ título : Richard Hsu / Quality Management Division Senior Manager<br>Firma : Fecha (aaaa/mm/dd): 2014/10/01 | Nom/ titre : Richard Hsu / Quality Management Division Senior Manager<br>Signature : Date (aaaa/mm/jj): 2014/10/01 |

| Hrvatski (Croatian) | Italiano (Italian) | Latviešu valoda (Latvian) | Lietuvių kalba (Lithuanian) |
|---|---|---|---|
| Deklaraciju o zbrinjavanju proizvoda | Dichiarazione ambientale di prodotto | Produkta vides ietekmējuma deklarācija | Aplinkosauginę gaminio deklaraciją |
| **RoHS** Direktiva 2011/65/EU<br>**WEEE** Direktiva 2012/19/EU<br>**PPW** Direktiva 94/62/EZ<br>**REACH** Uredbe (EZ) br. 1907/2006<br>**ErP** Direktiva 2009/125/EZ | **RoHS** Direttiva 2011/65/UE<br>**WEEE** Direttiva 2012/19/UE<br>**PPW** Direttiva 94/62/CE<br>**REACH** REGOLAMENTO (CE) n. 1907/2006<br>**ErP** Direttiva 2009/125/CE | **RoHS** Direktīva 2011/65/ES<br>**WEEE** Direktīva 2012/19/ES<br>**PPW** Direktīva 94/62/EK<br>**REACH** Regula (EK) Nr. 1907/2006<br>**ErP** Direktīva 2009/125/EK | **RoHS** Direktyva 2011/65/ES<br>**WEEE** Direktyva 2012/19/ES<br>**PPW** Direktyva 94/62/EB<br>**REACH** REGLAMENTAS (EB) Nr. 1907/2006<br>**ErP** Direktyva 2009/125/EB |
| Ime/ naslov : Richard Hsu / Quality Management Division Senior Manager<br>Potpis : Datum (dd/mm/yyyy): 01/10/2014 | Nome/ titolo : Richard Hsu / Quality Management Division Senior Manager<br>Firma : Data (aaaa/mm/gg): 2014/10/01 | Nosaukums/ tituls : Richard Hsu / Quality Management Division Senior Manager<br>Paraksts : Datums (dd/mm/gggg): 01/10/2014 | Vardas/ titulas : Richard Hsu / Quality Management Division Senior Manager<br>Parašas : Data (dd/mm/mmmm): 01/10/2014 |

| Magyar (Hungarian) | Malti (Maltese) | Nederlands (Dutch) | Polski (Polish) |
|---|---|---|---|
| Környezetvédelmi terméknyilatkozatot | Dikjarazzjoni Ambjentali dwar il-Prodott | Milieuproductverklaring | Deklarację środowiskową produktu |
| **RoHS** 2011/65/EU irányelve<br>**WEEE** 2012/19/EU irányelve<br>**PPW** 94/62/EK irányelve<br>**REACH** 1907/2006/EK Rendelete<br>**ErP** 2009/125/EK irányelve | **RoHS** Direttiva 2011/65/UE<br>**WEEE** Direttiva 2012/19/UE<br>**PPW** Direttiva 94/62/KE<br>**REACH** REGOLAMENT (KE) NRU 1907/2006<br>**ErP** Direttiva 2009/125/KE | **RoHS** Richtlijn 2011/65/EU<br>**WEEE** Richtlijn 2012/19/EU<br>**PPW** Richtlijn 94/62/EG<br>**REACH** Verordening (EG) nr. 1907/2006<br>**ErP** Richtlijn 2009/125/EG | **RoHS** Dyrektywa 2011/65/UE<br>**WEEE** Dyrektywa 2012/19/UE<br>**PPW** Dyrektywa 94/62/WE<br>**REACH** Rozporządzenie (WE) nr 1907/2006<br>**ErP** Dyrektywa 2009/125WE |
| Név/ cím : Richard Hsu / Quality Management Division Senior Manager<br>Aláírás : Dátum (éééé/hh/nn): 2014/10/01 | Isem/ titolu : Richard Hsu / Quality Management Division Senior Manager<br>Firma : Data (sss/xx/jj): 2014/10/01 | Naam/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Handtekening : Datum (dd/mm/jaar): 01/10/2014 | Nazwisko/ tytuł : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Data (mm/mm/dd): 2014/10/01 |

| Português (Portuguese) | Română (Romanian) | Slovenčina (Slovak) | Slovenščina (Slovene) |
|---|---|---|---|
| Declaração ambiental do produto | Declarație de mediu privind produsele | Vyhlásenie o environmentálnom výrobku | Okoljsko deklaracijo izdelka |
| **RoHS** Directiva 2011/65/UE<br>**WEEE** Directiva 2012/19/UE<br>**PPW** Directiva 94/62/CE<br>**REACH** Regulamento (CE) n.º 1907/2006<br>**ErP** Directiva 2009/125/CE | **RoHS** Directiva 2011/65/UE<br>**WEEE** Directiva 2012/19/UE<br>**PPW** Directiva 94/62/CE<br>**REACH** REGULAMENTUL (CE) NR. 1907/2006<br>**ErP** Directiva 2009/125/CE | **RoHS** Smernica 2011/65/EÚ<br>**WEEE** Smernica 2012/19/EÚ<br>**PPW** Smernica 94/62/ES<br>**REACH** Nariadenie (ES) č. 1907/2006<br>**ErP** Smernica 2009/125/ES | **RoHS** Direktiva 2011/65/EU<br>**WEEE** Direktiva 2012/19/EU<br>**PPW** Direktiva 94/62/ES<br>**REACH** Uredba (ES) št. 1907/2006<br>**ErP** Direktiva 2009/125/ES |
| Nome/ título : Richard Hsu / Quality Management Division Senior Manager<br>Assinatura : Data (dd/mm/aaaa): 01/10/2014 | Numele/ titlu : Richard Hsu / Quality Management Division Senior Manager<br>Semnătura : Data (zz/ll/aaaa): 01/10/2014 | Meno/ titul : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Dátum (dd/mm/rrrr): 01/10/2014 | Ime/ naziv : Richard Hsu / Quality Management Division Senior Manager<br>Podpis : Datum (dd/mm/ll): 01/10/2014 |

| Suomi (Finnish) | Svenska (Swedish) | Ελληνικά (Greek) | Norsk (Norwegian) |
|---|---|---|---|
| Standardiin perustuva ympäristötuoteseloste | Miljöproduktdeklaration | Περιβαλλοντική δήλωση προϊόντος | Miljødeklarasjon |
| **RoHS** Direktiivi 2011/65/EU<br>**WEEE** Direktiivi 2012/19/EU<br>**PPW** Direktiivi 94/62/EY<br>**REACH** ASETUS (EY) N:o 1907/2006<br>**ErP** Direktiivi 2009/125/EY | **RoHS** Direktiv 2011/65/EU<br>**WEEE** Direktiv 2012/19/EU<br>**PPW** Direktiv 94/62/EG<br>**REACH** Förordning (EG) nr 1907/2006<br>**ErP** Direktiv 2009/125/EG | **RoHS** Οδηγία 2011/65/ΕΕ<br>**WEEE** Οδηγία 2012/19/ΕΕ<br>**PPW** Οδηγία 94/62/ΕΚ<br>**REACH** Κ.αναγισμοσ (ΕΚ) αριθ. 1907/2006<br>**ErP** Οδηγία 2009/125/ΕΚ | **RoHS** Direktiv 2011/65/EU<br>**WEEE** Direktiv 2012/19/EU<br>**PPW** Direktiv 94/62/EF<br>**REACH** Forordning (EF) nr. 1907/2006<br>**ErP** Direktiv 2009/125/EF |
| Nimi/ otsikko : Richard Hsu / Quality Management Division Senior Manager<br>Allekirjoitus : Päivämäärä (pp/kk/vvvv): 01/10/2014 | Namn/ titel : Richard Hsu / Quality Management Division Senior Manager<br>Namnteckning : Datum (dd/mm/åااا): 01/10/2014 | Όνομα/ Τίτλος : Richard Hsu / Quality Management Division Senior Manager<br>Υπογραφή : Ημερομηνία (ηη/μμ/εεεε): 01/10/2014 | Navn/ tittel : Richard Hsu / Quality Management Division Senior Manager<br>Signatur : Dato (dd/mm/åااا) : 01/10/2014 |

## 台灣

安全警告

為了您的安全，請先閱讀以下警告及指示：

- 請勿將此產品接近水、火焰或放置在高溫的環境。
- 避免設備接觸任何液體 - 切勿讓設備接觸水、雨水、高濕度、污水腐蝕性的液體或其他水份。
- 灰塵及污物 - 切勿接觸灰塵、污物、沙土、食物或其他不合適的材料。
- 雷雨天氣時，不要安裝，使用或維修此設備。有遭受電擊的風險。
- 切勿重摔或撞擊設備，並勿使用不正確的電源變壓器。
- 若接上不正確的電源變壓器會有爆炸的風險。
- 請勿隨意更換產品內的電池。
- 如果更換不正確之電池型式，會有爆炸的風險，請依製造商說明書處理使用過之電池。
- 請將廢電池丟棄在適當的電器或電子設備回收處。
- 請勿將設備解體。
- 請勿阻礙設備的散熱孔，空氣對流不足將會造成設備損害。
- 請插在正確的電壓供給插座 ( 如：北美 / 台灣電壓 110V AC，歐洲是 230V AC)。
- 假若電源變壓器或電源變壓器的纜線損壞，請從插座拔除，若您還繼續插電使用，會有觸電死亡的風險。
- 請勿試圖修理電源變壓器或電源變壓器的纜線，若有毀損，請直接聯絡您購買的店家，購買一個新的電源變壓器。
- 請勿將此設備安裝於室外，此設備僅適合放置於室內。
- 請勿隨一般垃圾丟棄。
- 請參閱產品背貼上的設備額定功率。
- 請參考產品型錄或是彩盒上的作業溫度。
- 產品沒有斷電裝置或者採用電源線的插頭視為斷電裝置的一部分，以下警語將適用：
  - 對永久連接之設備， 在設備外部須安裝可觸及之斷電裝置；
  - 對插接式之設備， 插座必須接近安裝之地點而且是易於觸及的。

## Viewing Certifications

Go to http://www.zyxel.com to view this product's documentation and certifications.

## ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in material or workmanship for a specific period (the Warranty Period) from the date of purchase. The Warranty Period varies by region. Check with your vendor and/or the authorized ZyXEL local distributor for details about the Warranty Period of this product. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

### Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyXEL shall in no event be held liable for indirect or consequential damages of any kind to the purchaser.

To obtain the services of this warranty, contact your vendor. You may also refer to the warranty policy for the region in which you bought the device at http://www.zyxel.com/web/support_warranty_info.php.

## Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

## Trademarks

ZyNOS (ZyXEL Network Operating System) and ZON (ZyXEL One Network) are registered trademarks of ZyXEL Communications, Inc. Other trademarks mentioned in this publication are used for identification purposes only and may be properties of their respective owners.

## Open Source Licenses

This product contains in part some free software distributed under GPL license terms and/or GPL like licenses. Open source licenses are provided with the firmware package. You can download the latest firmware at www.zyxel.com. To obtain the source code covered under those Licenses, please contact support@zyxel.com.tw to get it.

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