MGS3750-28F

MetroGigabit Switch

Version 1.02
Edition 2, 11/2016

User's Guide

Default Login Details	
IP Address	http://192.168.1.1
User Name	admin
Password	1234

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.

Related Documentation

- CLI Reference Guide

  The CLI Reference Guide explains how to use the Command-Line Interface (CLI) and CLI commands to configure the Switch.

- More Information

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

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1

Hardware Installation and Connection

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

1.1 Installation Scenarios

The Switch can be placed on a desktop or rack-mounted on a standard EIA rack. Use the rubber feet in a desktop installation and the brackets in a rack-mounted installation.

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.

1.2 Desktop Installation Procedure

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.

1.3 Mounting the Switch on a Rack

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.

1.3.1 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.

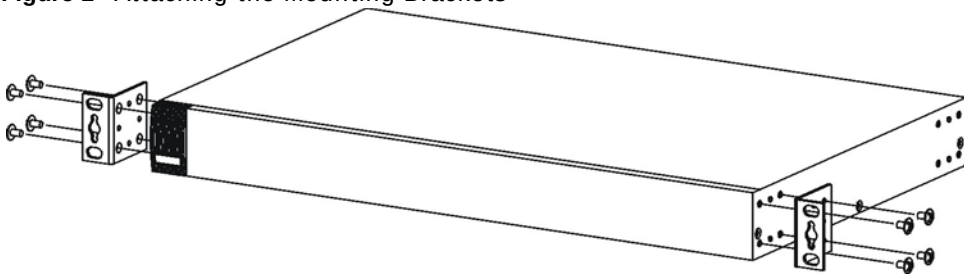
1.3.1.1 Precautions

- 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.

1.3.2 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 1 Attaching the Mounting Brackets



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

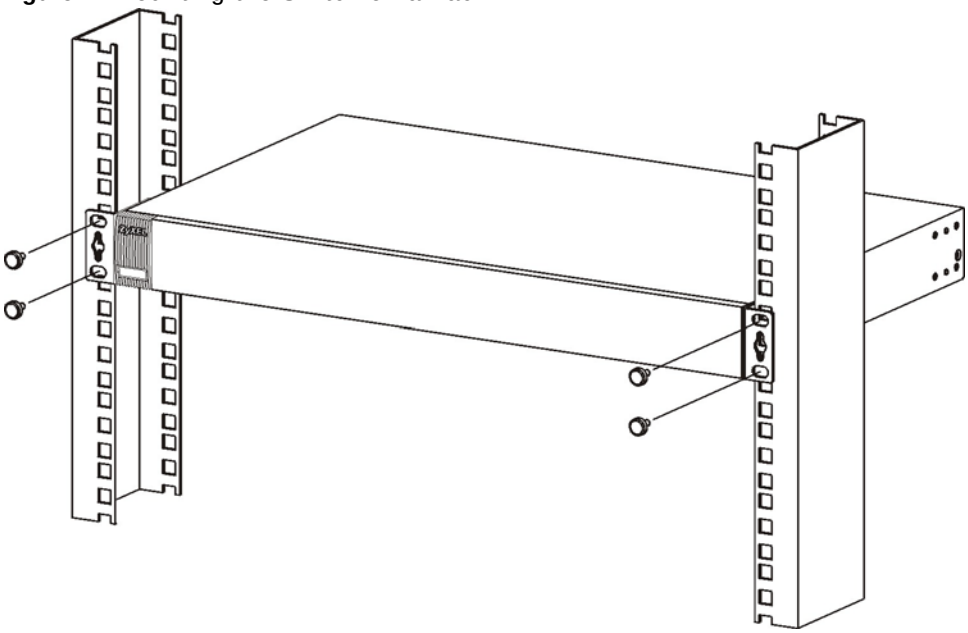
3 Repeat steps 1 and 2 to install the second mounting bracket on the other side of the Switch.

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

1.3.3 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 2 Mounting the Switch on a Rack



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.

2

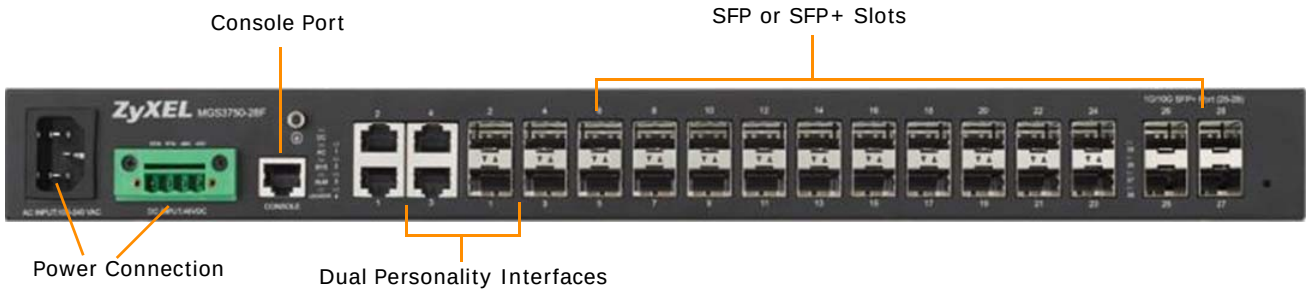
Hardware Overview

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

2.1 Front Panel

The following figure shows the front panel of the Switch.

Figure 3 MGS3750-28F Front Panel: AC/DC Model



The following table describes the port labels on the front panel.

Table 1 Front Panel Connections

LABEL	DESCRIPTION
Power Connection	Connect an appropriate power supply to this port.
SFP or SFP+ Slots	Use SFP or SFP+ transceivers in these slots for fiber-optic or copper connections to a computer, a hub, a switch or a router. You can also insert a SFP+ Direct Attach Copper (DAC) in the SFP+ Slot.
Four Dual Personality Interfaces	Each interface has one 10/100/1000 BASE-T RJ-45 port and one transceiver slot. You can activate one port or one transceiver slot at a time.
	• Four 10/100/1000 BASE-T RJ-45 Ports: Connect these ports to high-bandwidth backbone network Ethernet switches using 10/100/1000G BASE-T compatible copper cables.
	• Four Transceiver Slots: Use mini-GBIC or SFP transceivers in these slots for connections to backbone Ethernet switches.
Console Port	The console port is for local configuration of the Switch.

2.1.1 Console Port

For local management, you can use a computer with terminal emulation software configured to the following parameters:

- VT100
- Terminal emulation
- 115200 bps
- No parity, 8 data bits, 1 stop bit
- No flow control

Connect the male 9-pin end of the console cable to the console port of the Switch. Connect the female end to a serial port (COM1, COM2 or other COM port) of your computer.

2.1.1.1 Default Ethernet Negotiation Settings

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

- Speed: Auto
- Duplex: Auto
- Flow control: Off
- Link Aggregation: Disabled

2.1.1.2 Auto-crossover

All ports are auto-crossover, that is auto-MDIX ports (Media Dependent Interface Crossover), so you may use either a straight-through Ethernet cable or crossover Ethernet cable for all Gigabit port connections. Auto-crossover ports automatically sense whether they need to function as crossover or straight ports, so crossover cables can connect both computers and switches/hubs.

2.1.2 Transceiver Slots

These are slots for mini-GBIC (Gigabit Interface Converter) transceivers or 100 Mbps Small Form-factor Pluggable (SFP) transceivers. A transceiver is a single unit that houses a transmitter and a receiver. The Switch does not come with transceivers. You must use transceivers that comply with the 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 or even copper cable connectors.

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

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

2.1.2.1 Transceiver Installation

Use the following steps to install a mini-GBIC transceiver (SFP module).

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

4 Close the transceiver's latch (latch styles vary).

5 Connect the fiber optic cables to the transceiver.

Figure 4 Transceiver Installation Example

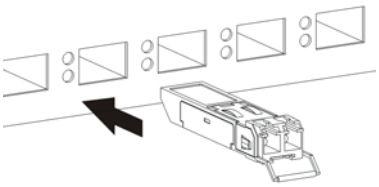
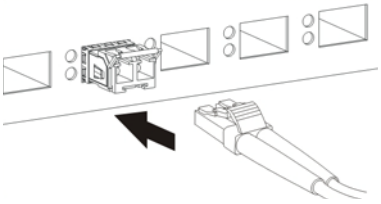


Figure 5 Connecting the Fiber Optic Cables



2.1.2.2 Transceiver Removal

Use the following steps to remove a mini-GBIC transceiver (SFP module).

1 Remove the fiber optic cables from the transceiver.

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

3 Pull the transceiver out of the slot.

Figure 6 Removing the Fiber Optic Cables

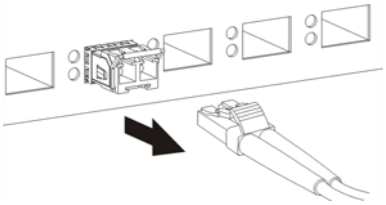


Figure 7 Opening the Transceiver's Latch Example

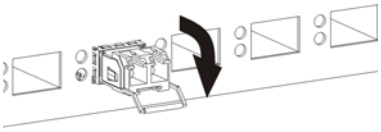
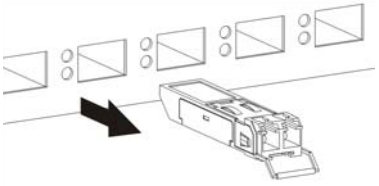


Figure 8 Transceiver Removal Example



2.1.3 Power Connector

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

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

Note: Check the power supply requirements on the panel, and make sure you are using an appropriate power source.

Keep the power supply switch and the Switch's power switch in the OFF position until you come to the procedure for turning on the power.

Use only power wires of the required diameter for connecting the Switch to a power supply.

2.1.3.1 AC Power Connection

Connect the female end of the power cord to the power socket of your Switch. Connect the other end of the cord to a power outlet.

2.1.3.2 DC Power Connection

The Switch uses a single ETB series terminal block plug with four pins which allows you to connect up to two separate power supplies. If one power supply fails the system can operate on the remaining power supply. Use two wires to connect to a single terminal pair, one wire for the positive terminal and one wire for the negative terminal.

Note: The current rating of the power wires must be greater than 20 Amps. The power supply to which the Switch connects must have a built-in circuit breaker or switch to toggle the power.

Note: When installing the power wire, push it firmly into the terminal as deep as possible and make sure that no exposed (bare) wire can be seen or touched.

Exposed power wire is dangerous. Use extreme care when connecting a DC power source to the device.

To connect a power supply:

1. Use a screwdriver to loosen the terminal block captive screws.
2. Connect one end of a power wire to the Switch's **RTN** (return) pin and tighten the captive screw.
3. Connect the other end of the power wire to the positive terminal on the power supply.
4. Connect one end of a power wire to the Switch's **-48V** (input) pin and tighten the captive screw.
5. Connect the other end of the power wire to the negative terminal on the power supply.
6. Insert the terminal block plug in the Switch's terminal block header.

2.2 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 2 LED Descriptions

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	On	The system is turned on.
		Off	The system is off.
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.
ALM	Red	On	A hardware failure is detected, or an external alarm is active.
		Off	The system is functioning normally.
100/1000 Mbps SFP Slots (1 LED Per Port)			
1 ~ 24	Green	On	The link to the network is up.
		Blinking	Mini SFP port is receiving or transmitting data.
		Off	This link is disconnected or failed
1/10G SFP+ Slots (1 LED Per Port)			
25 ~ 28	Green	On	The link to the network is up.
		Blinking	Mini SFP port is receiving or transmitting data.
		Off	This link is disconnected or failed
10/100/1000 BASE-T Ethernet Ports (in Dual Personality Interface)			
LNK/ACT	Green	On	The link to the network is up.
		Blinking	The port is receiving or transmitting data.
		Off	This link is disconnected or failed.

3

Logging into the Web Interface

3.1 Launch Browser

Enter http://device IP (default administration IP: 192.168.1.1). Press Enter.

The login page appears. The default user name is "admin", and the default password is "1234".

Select English or Chinese interface.

Figure 9 Login

Click on the Login button to enter the web setup interface.

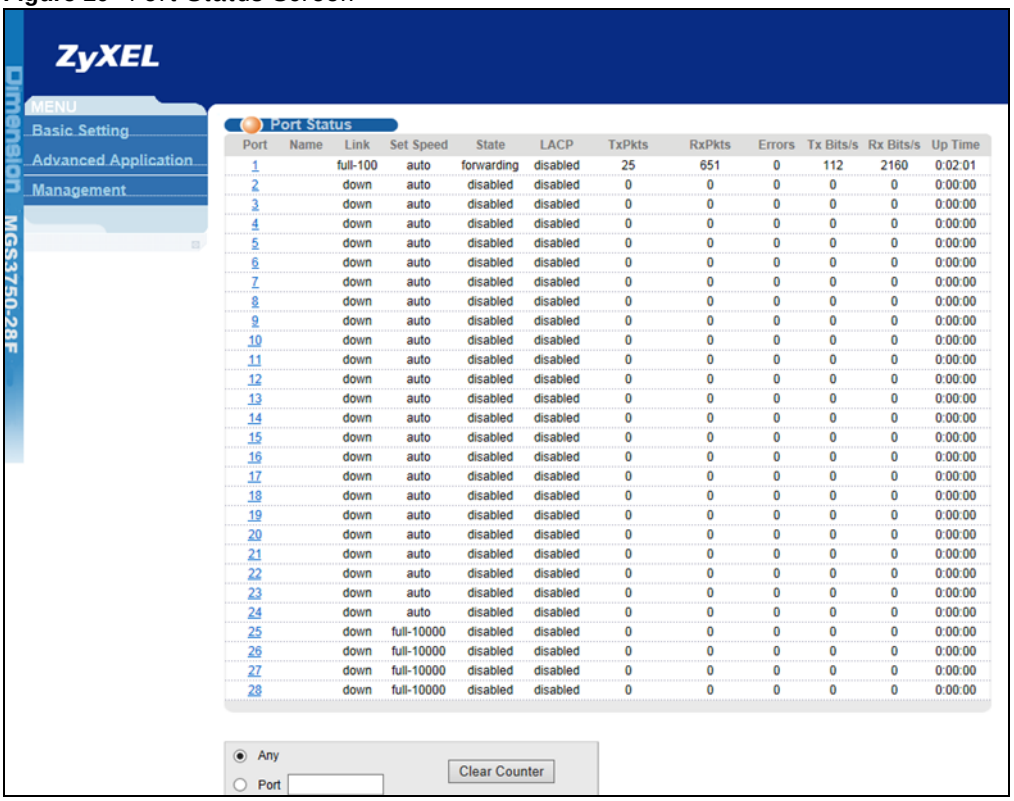
4

Overall Web Page Layout

4.1 Port Status

Shown below is an illustration of the web setup interface after logging in.

Figure 10 Port Status Screen



The following table describes the labels in this screen.

Table 3 Port Status Screen

LABEL	DESCRIPTION
Port	This identifies the Ethernet port. Click a port number to display the **Port Details** screen.
Name	This is the name you assigned to this port in the **Port Setup** screen.
Link	This field displays the speed (either **10** for 10Mbps, **100** for 100Mbps, **1000** for 1000bps, or **10000** for 1Gbps) and the duplex (**F** for full duplex or **H** for half). It also shows the cable type (**Copper** or **Fiber**) for the combo ports.
Set Speed	This field helps you set port speed. The speed is set to **auto** by default.

Table 3 Port Status Screen (continued)

LABEL	DESCRIPTION
State	If STP (Spanning Tree Protocol) is enabled, this field displays the STP state of the port. If STP is disabled, this field displays **FORWARDING** if the link is up, otherwise, it displays **STOP**. When LACP (Link Aggregation Control Protocol), STP, and dot1x are in blocking state, it displays Blocking.
LACP	This fields displays whether LACP (Link Aggregation Control Protocol) has been enabled on the port.
TxPkts	This field shows the number of transmitted frames on this port.
RxPkts	This field shows the number of received frames on this port.
Errors	This field shows the number of received errors on this port.
Tx KB/s	This field shows the number of kilobytes per second transmitted on this port.
Rx KB/s	This field shows the number of kilobytes per second received on this port.
Up Time	This field shows the total amount of time in hours, minutes and seconds the port has been up.
Clear Counter	Select **Port**, enter a port number and then click **Clear Counter** to erase the recorded statistical information for that port, or select **Any** to clear statistics for all ports.

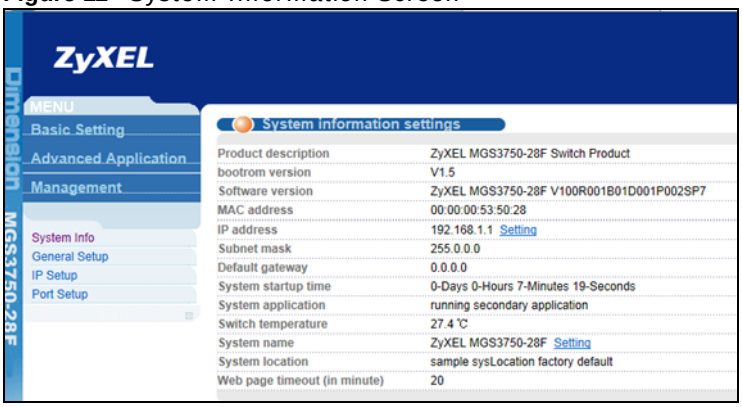
5

Basic Settings

5.1 System Info

View basic system information. The IP address and system name can also be set here.

Figure 11 System Information Screen



The following table describes the labels in this screen.

Table 4 System Information Screen

LABEL	DESCRIPTION
Product description	This field displays the descriptive name of the Switch for identification purposes.
bootrom version	This field displays the version number of the Switch's bootrom.
Software Version	This field displays the version number of the Switch's current software.
MAC Address	This field displays the MAC addresses of the Switch.
IP address	This field displays the current IP address of the Switch.
Subnet mask	This field displays the current subnet mask.
Default Gateway	This is the IP address of the default gateway, if applicable.
System startup time	This field displays how long the Switch has been running since it last started up.
System Application	This field displays whether the Switch runs on default or secondary software application.
Switch temperature	The Switch has temperature sensors that are capable of detecting and reporting if the temperature rises above the threshold.
System Name	This field displays the name used to identify the Switch on any network.

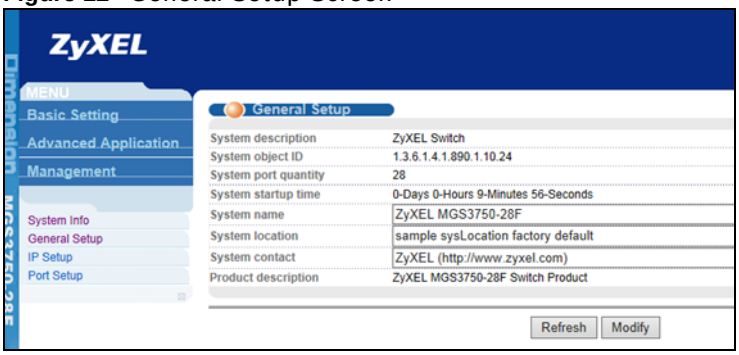
Table 4 System Information Screen (continued)

LABEL	DESCRIPTION
System Location	This field displays the geographic location of your Switch.
Web page tiimeout (in munute)	This field displays how many minutes a management session can be left idle before the session times out. After it times out you have to log in with your password again. Very long idle timeouts may have security risks. A value of "0" means a management session never times out, no matter how long it has been left idle (not recommended).

5.2 General Application

View data such as device description, device OID, and number of ports.

Figure 12 General Setup Screen



The following table describes the labels in this screen.

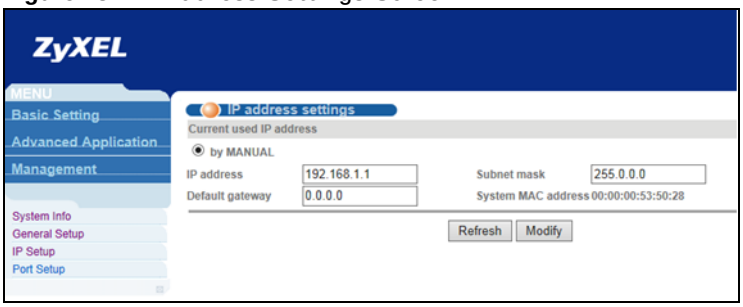
Table 5 General Setup Screen

LABEL	DESCRIPTION
System description	This field tells what this device is.
System object ID	An OID (Object ID) that begins with “1.3.6.1.4.1.890.1.5.8.81” is defined in private MIBs. Otherwise, it is a standard MIB OID.
System port quantity	This field displays how many ports the Switch has.
System startup time	This field displays how long the Switch has been running since it last started up.
System Name	Choose a descriptive name for identification purposes. This name consists of up to 64 printable characters; spaces are allowed.
System Location	Enter the geographic location of your Switch. You can use up to 32 printable ASCII characters; spaces are allowed.
System Contact	Enter the name of the person in charge of this Switch. You can use up to 32 printable ASCII characters; spaces are allowed.
Product description	This field displays the descriptive name of the Switch for identification purposes.
Refresh	Click **Refresh** to update the screen.
Modify	Click **Modify** to save your changes to the Switch’s run-time memory. The Switch loses these changes if it is turned off or loses power.

5.3 IP Setup

Set system IP, gateway, and subnet mask here.

Figure 13 IP Address Settings Screen



The following table describes the labels in this screen.

Table 6 IP Address Settings Screen

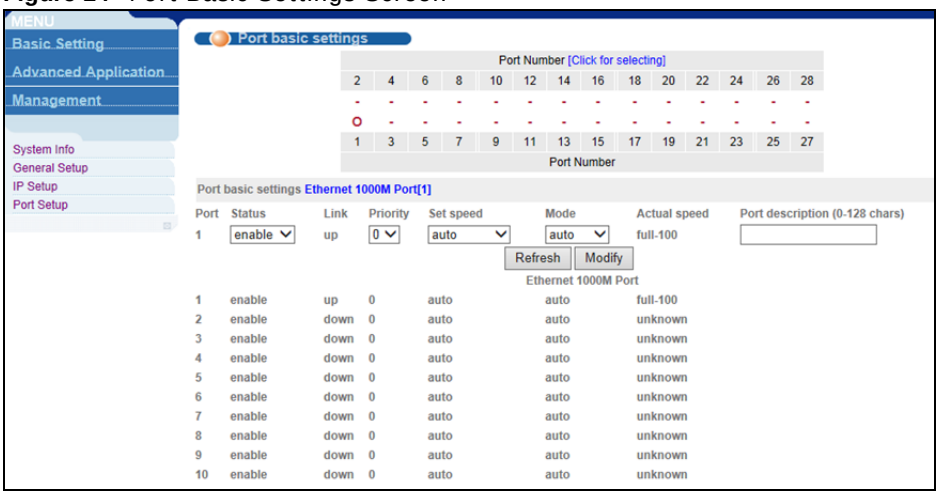
LABEL	DESCRIPTION
by MANUAL	Select by **MANUAL** to configure IP address, subnet mask, and default gateway manually.
IP Address	This field displays IP address of the Switch in the IP domain.
Default Gateway	This is the IP address of the default gateway, if applicable.
Subnet mask	This field displays the current subnet mask.
System MAC address	This field displays the MAC addresses of the Switch.
Refresh	Click **Refresh** to update the screen.
Modify	Click **Modify** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.

5.4 Port Setup

Set port speed, priority, and enable/disable ports. View the status of all ports.

Note: "O" means connected, and "-" means not connected.

Figure 14 Port Basic Settings Screen



The following table describes the fields in this screen.

Table 7 Port Basic Settings Screen

LABEL	DESCRIPTION
Port Number	"O" means connected, and "-" means not connected.
Port	This is the port index number.
Status	Set port status to "disable" to turn off the port; ports are enabled by default.
Link	This field displays the link is **up** or **down**.
Priority	Set port priority; priority is a value between 0-7.
Set Speed	This field helps you set port speed. The speed is set to **auto** by default.
Mode	Select the speed and the duplex mode of the Ethernet connection on this port. Selecting **auto** (auto-negotiation) allows one port to negotiate with a peer port automatically to obtain the connection speed and duplex mode that both ends support. You can also select other options, such as **Master** and **Slaver**.
Actual Speed	This field displays the current speed of the port.
Port Description (0-128 Chars)	You can add descriptions to a port in this field.
Refresh	Click **Refresh** to update the screen.
Modify	Click **Modify** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.

6

Advanced Application Configurations

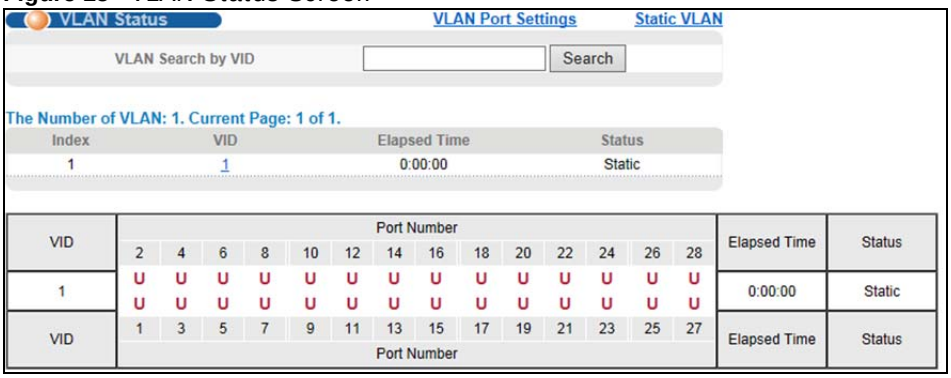
6.1 VLAN

This chapter shows you how to configure port-based VLANs.

6.1.1 VLAN Status

Use this screen to view and search all VLAN groups.

Figure 15 VLAN Status Screen



The following table describes the labels in this screen.

Table 8 VLAN Status Screen

LABEL	DESCRIPTION
VLAN Search by VID	Enter an existing VLAN ID number(s) (separated by a comma) and click **Search** to display only the specified VLAN(s) in the list below. Leave this field blank and click **Search** to display all VLANs configured on the Switch.
The Number of VLAN	This is the number of VLANs configured on the Switch.
The Number of Search Results	This is the number of VLANs that match the searching criteria and display in the list below. This field displays only when you use the **Search** button to look for certain VLANs.
Index	This is the VLAN index number. Click on an index number to view more VLAN details.
VID	This is the VLAN identification number that was configured in the **Static VLAN** screen.
Elapsed Time	This field shows how long it has been since a normal VLAN was registered or a static VLAN was set up.

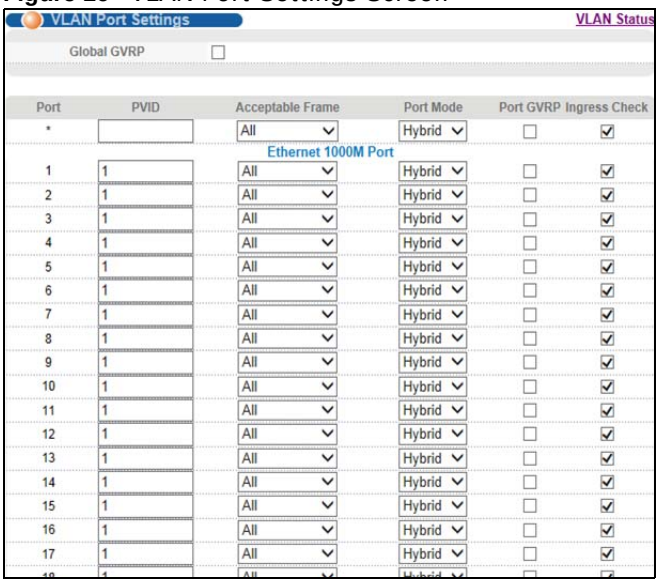
Table 8 VLAN Status Screen (continued)

LABEL	DESCRIPTION
Status	This field shows how this VLAN was added to the Switch. **Dynamic**: using GVRP **Static**: added as a permanent entry **Voice**: manually added as a Voice VLAN **MVR**: added via multicast VLAN registration **Private** - manually added as a private VLAN (primary, isolated or community)
Port Number	This column displays the ports that are participating in a VLAN. A tagged port is marked as **T**, an untagged port is marked as **U** and ports not participating in a VLAN are marked as "**–**".

6.1.2 VLAN Port Settings

Use the VLAN Port Setup screen to configure the static VLAN settings on a port.

Figure 16 VLAN Port Settings Screen



The following table describes the fields in this screen.

Table 9 VLAN Port Settings Screen

LABEL	DESCRIPTION
VLAN Status	Return to the VLAN status page.
Global GVRP	Enable global GVRP function.
Port	This field displays the port 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. Enter a number between 1and 4094 as the port VLAN ID.

Table 9 VLAN Port Settings Screen

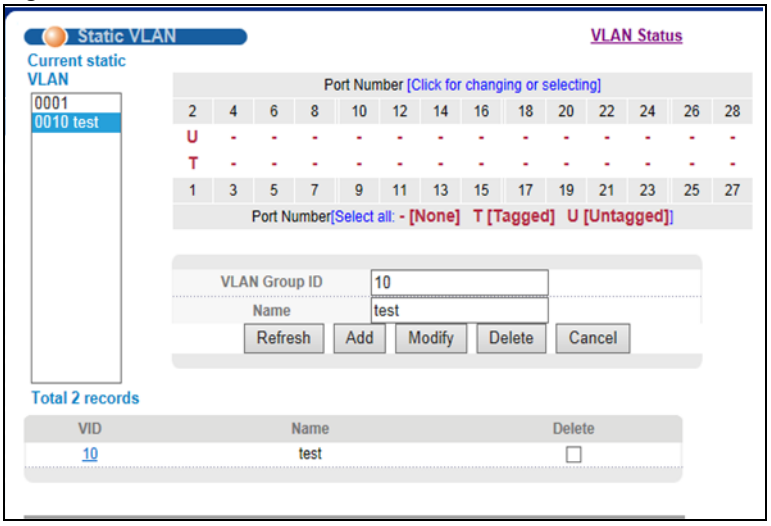
LABEL	DESCRIPTION
Acceptable Frame	Specify the type of frames allowed on a port. Choices are **All**, **Tag Only** and **Untag Only**. Select **All** from the drop-down list box to accept all untagged or tagged frames on this port. This is the default setting. Select **Tag Only** to accept only tagged frames on this port. All untagged frames will be dropped. Select **Untag Only** to accept only untagged frames on this port. All tagged frames will be dropped.
Port Mode	Edit the port mode; there are three port modes: Select **Hybrid mode** and port can be tagged or untagged within a VLAN; it can also be a member of multiple VLANs. Select **Trunk mode** and port must be tagged within a VLAN; it can also be a member of multiple VLANs. Select **Access mode** and port must be untagged within a VLAN; this port can only be inside one VLAN.
Port GVRP	Enable the port's GVRP (Dynamic VLAN learning function; port must be set to Trunk mode).
Ingress Check	If this check box is selected, the Switch discards incoming frames on a port for VLANs that do not include this port in its member set. Clear this check box to disable ingress filtering.

6.1.3 Static VLAN

Add, edit, or remove VLAN ports.

If a new VLAN is added with VID=10 that contains 1 Tagged port and 2 Untagged ports, the user can click on the white area underneath the port number to edit its member ports. The **Modify** function is identical to **Add**.

Figure 17 Static VLAN Screen



The following table describes the labels in this screen.

Table 10 Static VLAN Screen

LABEL	DESCRIPTION
Current static VLAN	Select the static VLAN group, and make configurations to the group.
Port Number	This column displays the ports that are participating in a VLAN. A tagged port is marked as **T**, an untagged port is marked as **U** and ports not participating in a VLAN are marked as "**–**".
VLAN Group ID	Enter the VLAN ID for this static entry; the valid range is between 1 and 4094.
Name	Enter a descriptive name for the VLAN group for identification purposes. This name consists of up to 64 printable characters. Spaces are allowed.
Refresh	Click **Refresh** to update the screen.
Add	Click **Add** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Modify	Select a static VLAN group from **Current static VLAN** field, and make configurations to the group.
Delete	Click Delete to remove the VLAN group ID.
Cancel	Click **Cancel** to change the fields back to their last saved values.
VID	This field displays the ID number of the VLAN group. Click the number to edit the VLAN settings.
Name	This field diesplays the name of the VID.
Delete	Select the check box to delete the VID.

6.2 Static Mac Forwarding

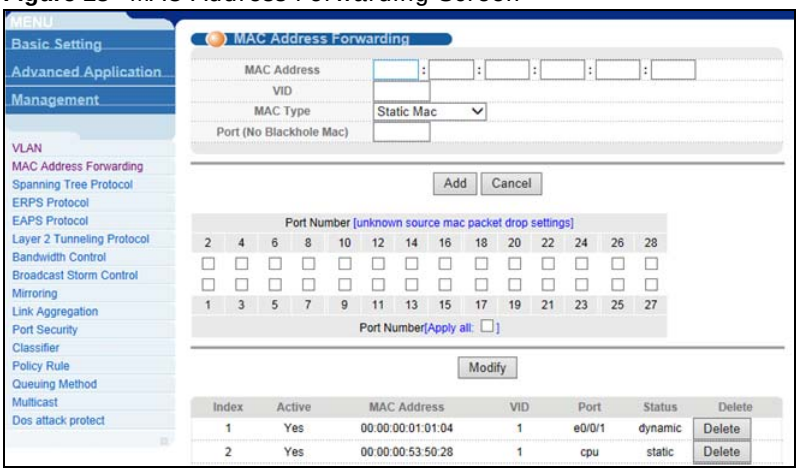
Manually add dynamic, static, blackhole, and permanent MAC addresses.

A static MAC address is an address that has been manually entered in the MAC address table. Static MAC addresses do not age out. When you set up static MAC address rules, you are setting static MAC addresses for a port. This may reduce the need for broadcasting.

Static MAC address forwarding together with port security allow only computers in the MAC address table on a port to access the Switch.

A blackhole port drops traffic without notifying the sources.

Figure 18 MAC Address Forwarding Screen



The following table describes the fields in this screen.

Table 11 MAC Address Forwarding Screen

LABEL	DESCRIPTION
MAC Address	Enter the MAC address in valid MAC address format, that is, six hexadecimal character pairs. Note: Static MAC addresses do not age out.
VID	Enter the VLAN identification number.
MAC Type	**Static Mac** - A static MAC address is an address that has been manually entered in the MAC address table. Static MAC addresses do not age out. When you set up static MAC address rules, you are setting static MAC addresses for a port. This may reduce the need for broadcasting. Static MAC address forwarding together with port security allow only computers in the MAC address table on a port to access the Switch. **Dynamic Mac** - A dynamic MAC address is an address that is learned on a port. Apart from **Static Mac** and **Dynamic Mac**, you can also select other options, such as **Blackhole Mac** and **Permanent Mac**. They are addresses that was manually entered in the MAB address table and not age out. When setting up the MAC Address rules to a port may reduce the need for broadcasting.
Port (No Blackhole Mac)	Enter a port that the MAC address was entered in the previous field, and it will be forwarded automatically.
Add	Click **Add** to save your rule to the Switch's run-time memory. The Switch loses this rule if it is turned off or loses power.
Cancel	Click **Cancel** to reset the fields to their last saved values.
Port Number	In the Port Number area, select the check box to disable MAC learning for the port. MAC learning is enabled by default.
Apply all	Select **Apply all** to apply unknown source MAC packet drop support to all ports.
Modify	Click **Modify** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Index	Click an index number to modify a static MAC address rule for a port.
Active	This field displays whether this static MAC address forwarding rule is active (**Yes**) or not (**No**). You may temporarily deactivate a rule without deleting it.
MAC Address	This field displays the MAC address that will be forwarded and the VLAN identification number to which the MAC address belongs.
VID	This field displays the ID number of the VLAN group.

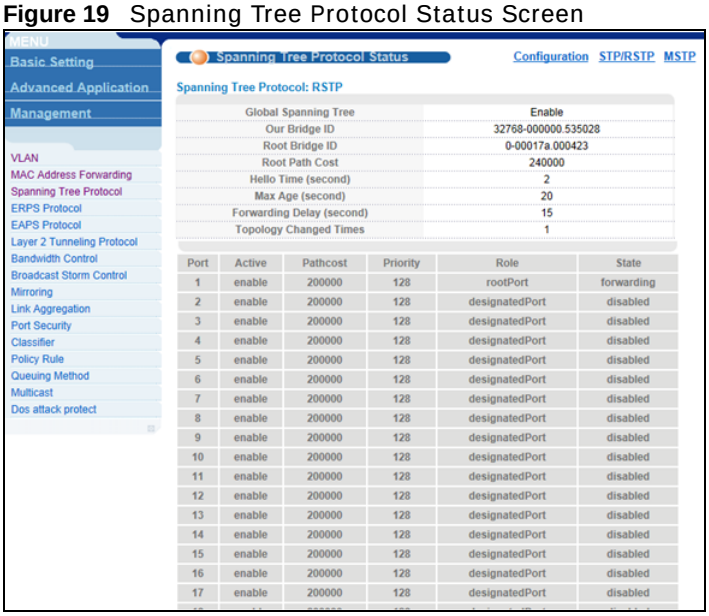
Table 11 MAC Address Forwarding Screen

LABEL	DESCRIPTION
Port	This field displays the port where the MAC address shown in the next field will be forwarded.
Status	This field displays the type of the MAC address.
Delete	Click **Delete** to remove the entry from the summary table.

6.3 Spanning Tree Protocol

To view the STP status in the different STP modes (RSTP, or MSTP) you can configure on the Switch.

Figure 19 Spanning Tree Protocol Status Screen



The following table describes the fields in this screen.

Table 12 Spanning Tree Protocol Status Screen

LABEL	DESCRIPTION
Configuration	Open global spanning tree configurations.
Global Spanning Tree	This field displays the status of Global Spanning Tree.
Our Bridge ID	**Our Bridge** is this switch. This Switch may also be the root bridge. This is the unique identifier for this bridge, consisting of bridge priority plus MAC address. This ID is the same for Root and Our Bridge if the Switch is the root switch.
Root Bridge ID	**Root** refers to the base of the spanning tree (the root bridge). This is the unique identifier for this bridge, consisting of bridge priority plus MAC address. This ID is the same for Root and Our Bridge if the Switch is the root switch.
Root Path Cost	It is the cost of transmitting a frame to a LAN through that port.

Table 12 Spanning Tree Protocol Status Screen

LABEL	DESCRIPTION
Hello Time (second)	This is the time interval (in seconds) at which the root switch transmits a configuration message. The root bridge determines Hello Time, Max Age and Forwarding Delay.
Max Age (second)	This is the maximum time (in seconds) the Switch can wait without receiving a configuration message before attempting to reconfigure.
Forwarding Delay (second)	This is the time (in seconds) the root switch will wait before changing states (that is, listening to learning to forwarding). Note: The listening state does not exist in RSTP.
Topology Changed Times	This is the number of times the spanning tree has been reconfigured.
Port	This field displays the number of the port on the Switch.
Active	This field displays whether Global Spanning Tree is activated or not.
Pathcost	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.
Priority	Configure the priority for each port here. 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.
Role	This field displays the role of the port in STP. • **Root** - A forwarding port on a non-root bridge, which has the lowest path cost and is the best port from the non-root bridge to the root bridge. A root bridge does not have a root port. • **Designated** - A forwarding port on the designated bridge for each connected LAN segment. A designated bridge has the lowest path cost to the root bridge among the bridges connected to the LAN segment. All the ports on a root bridge (root switch) are designated ports. • **Alternate** - A blocked port, which has a best alternate path to the root bridge. This path is different from using the root port. The port moves to the forwarding state when the designated port for the LAN segment fails. • **Backup** - A blocked port, which has a backup/redundant path to a LAN segment where a designated port is already connected when a switch has two links to the same LAN segment. • **Disabled** - Not strictly part of STP. The port can be disabled manually.
State	If STP (Spanning Tree Protocol) is enabled, this field displays the STP state of the port. If STP is disabled, this field displays FORWARDING if the link is up, otherwise, it displays STOP. When LACP (Link Aggregation Control Protocol), STP, and dot1x are in blocking state, it displays Blocking.

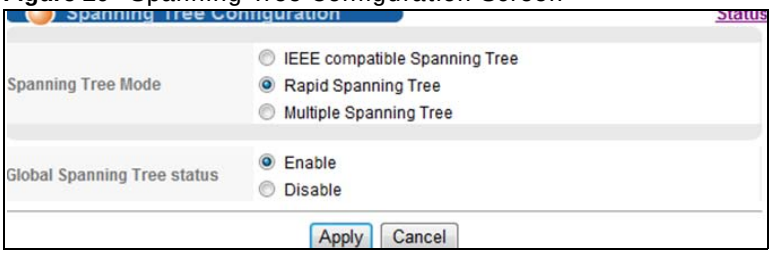
6.3.1 Spanning Tree Configuration

Use the **Spanning Tree Configuration** screen to activate one of the STP modes on the Switch. Click **Configuration** in the upper right corner of **Spanning Tree Protocol Status** screen.

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

Figure 20 Spanning Tree Configuration Screen



The following table describes the fields in this screen.

Table 13 Spanning Tree Configuration Screen

LABEL	DESCRIPTION
Status	Click Status to go back to the **Spanning Tree Protocol Status** screen.
Spanning Tree Mode	You can activate one of the STP modes on the Switch: **STP** (Spanning Tree Protocol), **RSTP** (Rapid Spanning Tree Protocol), **MSTP** (Multiple Spanning Tree Protocol). The default is RSTP.
Global Spanning Tree Status	Default is disable.

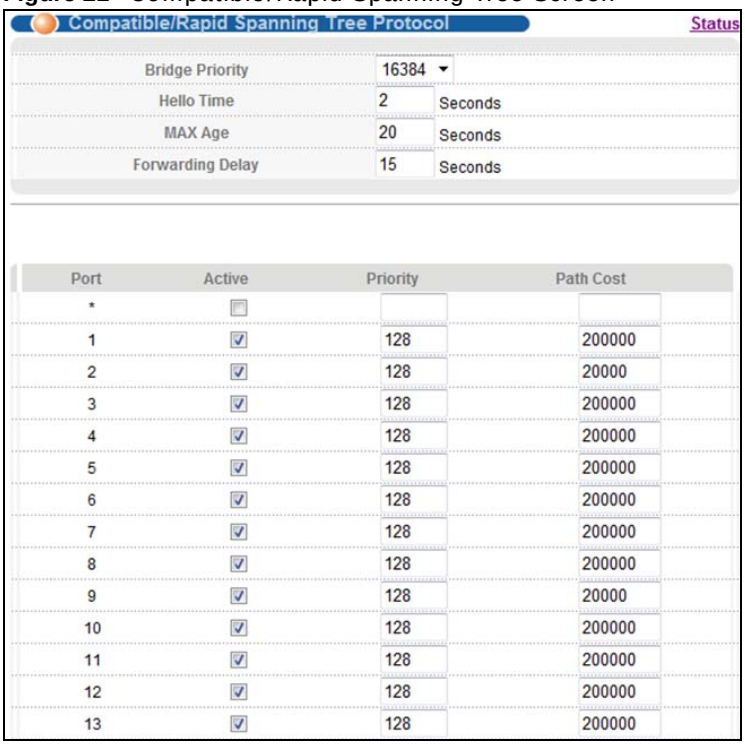
6.3.2 Compatible/Rapid Spanning Tree Protocol

Click **STP / RSTP** in the upper right corner of **Spanning Tree Protocol Status** screen.

The opened page can be used to configure the STP and RSTP mode of the spanning tree including global, port priority, port spanning tree status, and path cost.

Bridge priority can be modified (by default, bridge priority is set to 32768), STP protocol packet interval, Maximum packet lifetime, and forwarding delay.

Figure 21 Compatible/Rapid Spanning Tree Screen



The following table describes the fields in this screen.

Table 14 Compatible/Rapid Spanning Tree Screen

LABEL	DESCRIPTION
Status	Click Status to go back to the **Spanning Tree Protocol Status** screen.
Bridge Priority	Bridge priority is used in determining the root switch, root port and designated port. The switch with the highest priority (lowest numeric value) becomes the STP root switch. If all switches have the same priority, the switch with the lowest MAC address will then become the root switch. Select a value from the drop-down list box. The lower the numeric value you assign, the higher the priority for this bridge. Bridge Priority determines the root bridge, which in turn determines Hello Time, Max Age and Forwarding Delay.
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.
Max Age	This is the maximum time (in seconds) the 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.
Forwarding Delay	This is the maximum time (in seconds) the 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. As a general rule: Note: 2 * (Forward Delay - 1) >= Max Age >= 2 * (Hello Time + 1)

Table 14 Compatible/Rapid Spanning Tree Screen

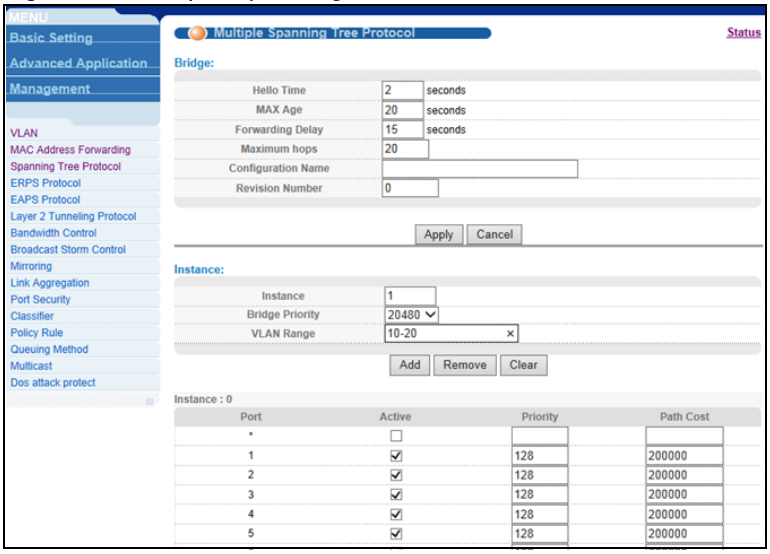
LABEL	DESCRIPTION
Port	This field displays the port number.
Active	Select the check box to enable the port's STP function (default is Active), set port priority (default is 128) and path cost (default is 200000) .
Priority	Configure the priority for each port here. Priority decides which port should 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.
Path Cost	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.

6.3.3 Multiple Spanning Tree Protocol

Click **MSTP** in the upper right corner of **Spanning Tree Protocol Status** screen.

Use this screen to configure spanning tree for MSTP mode.

Figure 22 Multiple Spanning Tree Protocol Screen



The following table describes the fields in this screen.

Table 15 Multiple Spanning Tree Protocol Screen

LABEL	DESCRIPTION
Status	Click Status to go back to the **Spanning Tree Protocol Status** screen.
Bridge	You can configure **Hello Time**, **MAX Age**, **Forwarding Delay**, **Configuration Name**, and **Revision Number** under **Bridge**.
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.

Table 15 Multiple Spanning Tree Protocol Screen

LABEL	DESCRIPTION
Max Age	This is the maximum time (in seconds) the 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.
Forwarding Delay	This is the maximum time (in seconds) the 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. As a general rule: Note: 2 * (Forward Delay - 1) >= Max Age >= 2 * (Hello Time + 1)
Maximum hops	Enter the number of hops (between 1 and 255) in an MSTP region before the BPDU is discarded and the port information is aged.
Configuration Name	Enter a descriptive name (up to 32 characters) of an MST region.
Revision Number	Enter a number to identify a region's configuration. Devices must have the same revision number to belong to the same region.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh.
Instance	Instances can be added or removed from the table. For example, if instance 1 is added with instance priority 20480 (default is 32768) , then it mirrors VLAN 10 - 20. The port status for MSTP spanning tree can be configured; configuration is identical to the RSTP port.
Instance	Enter the number you want to use to identify this MST instance on the Switch. The Switch supports instance numbers 0-15.
Bridge Priority	Set the priority of the Switch for the specific spanning tree instance. The lower the number, the more likely the Switch will be chosen as the root bridge within the spanning tree instance. Enter priority values between 0 and 61440 in increments of 4096 (thus valid values are 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344 and 61440).
VLAN Range	Enter the start of the VLAN ID range that you want to add or remove from the VLAN range edit area in the **Start** field. Enter the end of the VLAN ID range that you want to add or remove from the VLAN range edit area in the **End** field. Next click: • **Add** - to add this range of VLAN(s) to be mapped to the MST instance. • **Remove** - to remove this range of VLAN(s) from being mapped to the MST instance. • **Clear** - to remove all VLAN(s) from being mapped to this MST instance.
Port	This field displays the port number.
*	Settings in this row apply to all ports. Use this row only if you want to make some settings the same for all ports. Use this row first to set the common settings and then make adjustments on a port-by-port basis. Note: Changes in this row are copied to all the ports as soon as you make them.
Active	Select this check box to add this port to the MST instance.

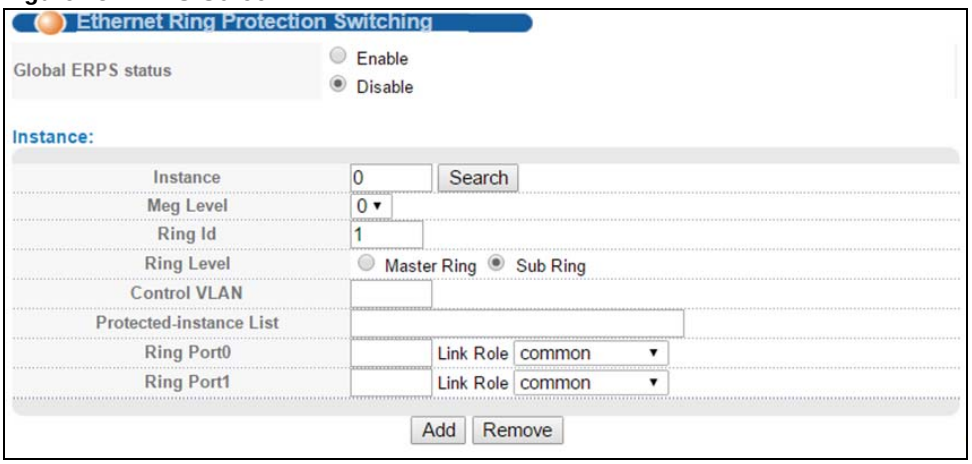
Table 15 Multiple Spanning Tree Protocol Screen

LABEL	DESCRIPTION
Priority	Configure the priority for each port here. 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.
Path Cost	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.

6.4 ERPS Protocol

ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) provides protection and prevents loops for Ethernet traffic in a ring topology.

Figure 23 ERPS Screen



The following table describes the fields in this screen.

Table 16 ERPS Screen

LABEL	DESCRIPTION
Global ERPS Status	Enable/disable ERPS function for the entire zone.
Instance	Instance range is from 0-15; it works in a way similar to domains in ERRP.
Search	Click **Search** to find instances.
Meg Level	Used with CFM and is consistent with CFM level. CFM is mainly used for faults other than linkdown such as one-way connections; ERPS will work normally if CFM is disabled, but will not be able to detect one-way connection faults.
Ring ID	Ring ID range is 1-239. Ring IDs can be duplicated, but the Control VLAN must be different, and vice versa.
Ring Level	In an ERPS network, there must be at least one major ring, but there can be multiple sub-rings. ERPS protocol packets for sub-rings will be passed to the major ring, but not between major rings.
Control VLAN	The Control VLAN range is from 2-4094. The destination VLAN in the ERPS protocol packet must be a VLAN that does not exist on the system.
Protected-instance List	Enter the protection instance information in this field. The same port can not be configured with the same protection instance in different ERPS.

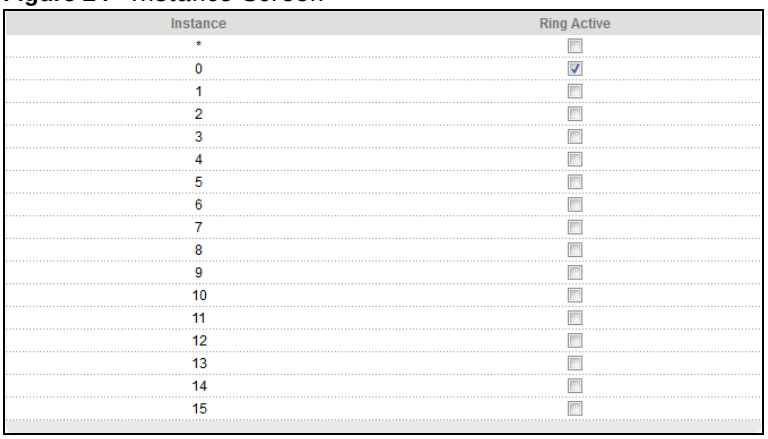
Table 16 ERPS Screen

LABEL	DESCRIPTION
Ring Port	The four possible port roles are **owner**, **neighbor**, **next-neighbor**, and **common**. When the link is normal, then owner and neighbor ports will be in the discarding mode while other ports will be in the forwarding mode.
Add	Click **Add** to insert the entry in the summary table below and save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Remove	Click **Remove** to clear the configurations.

6.4.1 Instance Screen

Click **Add** at the bottom of the **ERPS** screen.

Figure 24 Instance Screen



The following table describes the fields in this screen.

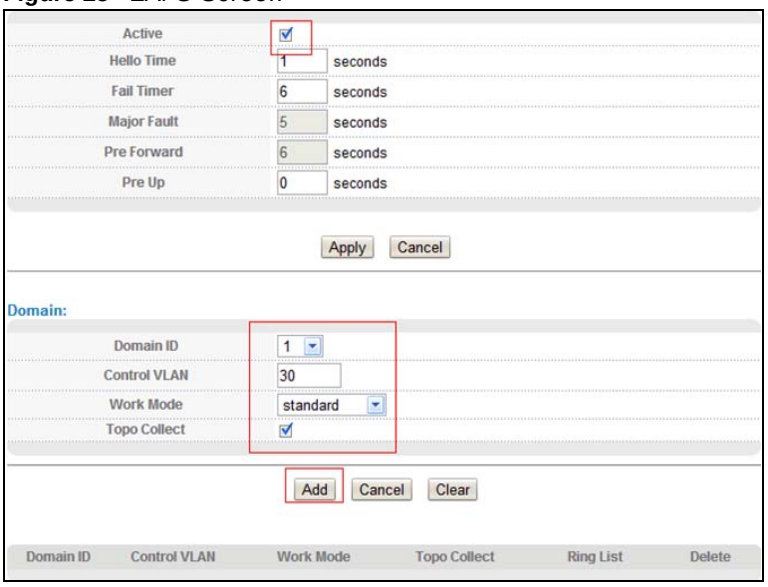
Table 17 Instance Screen

LABEL	DESCRIPTION
Instance	Instance range is from 0-15; it works in a way similar to domains in ERRP.
Ring Active	Select the check box to enable the ring protection function for the corresponding instance. Otherwise, the instance cannot be used.

6.5 EAPS Protocol

Use this screen to add domain, control VLAN, and select a Work Mode to enable topology collection.

Figure 25 EAPS Screen



The following table describes the fields in this screen.

Table 18 EAPS Screen

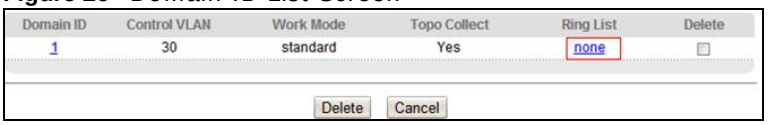
LABEL	DESCRIPTION
Active	Select this option to enable EAPS.
Hello Time	This is the time interval in seconds between BPDU (Bridge Protocol Data Units) configuration message generations by the root switch. The allowed range is 1 to 10 seconds.
Fail Timer	Type a figure to define a time during which the hello packet should be received. If the master node secondary port fails to receive the hello packet, and the Switch will consider that a link fault has occurred on the ring network.
Major Fault	Type a figure to define a time during which a report needs to be made by the assistant-edge node. Otherwise, the primary ring in the domain will be considered faulty.
Pre Forward	Type a figure to define a time that the transit node will stay in the Pre-forwarding state with the port recovered blocked if the temporary loop occurs.
Pre Up	Type a figure to configure recovery timer value.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh.
Domain ID	Select a domain configuration mode.
Control VLAN	The Control VLAN range is from 2-4094. The destination VLAN in the ERPS protocol packet must be a VLAN that does not exist on the system.
Work Mode	Select **standard**, **EIPS**, or **RRPP** Mode.
Topo Collect	Click the check box to enable topology discovery.
Add	Click **Add** to insert the entry in the summary table below and save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to reset the fields back to your previous configuration.
Clear	Click **Clear** to delete the configurations of the above fields.

Table 18 EAPS Screen

LABEL	DESCRIPTION
Ring List	This field display the ring ID. "0" means master ring; "1"means sub ring.
Delete	Click **Delete** to remove the selected entry from the summary table.

Once a row is added to the table but the ring is not, click on "none" to add the ring.

Figure 26 Domain ID List Screen



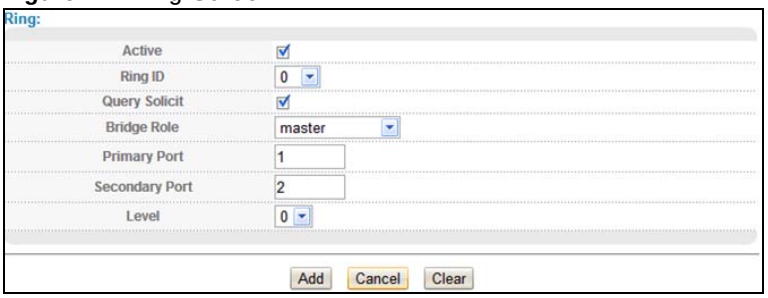
The following table describes the fields in this screen.

Table 19 EAPS Screen

LABEL	DESCRIPTION
Domain ID	This field displays the domain configuration mode.
Control VLAN	This field displays the Control VLAN configured.
Work Mode	This field displays the work mode you selected.
Topo Collect	This field displays whether Topo Collect is enabled or not.
Ring List	This field display the ring ID. "0" means master ring; "1"means rub ring.
Delete	Click **Delete** to remove the selected entry from the summary table.

Adding a ring.

Figure 27 Ring Screen



The following table describes the fields in this screen.

Table 20 EAPS Screen

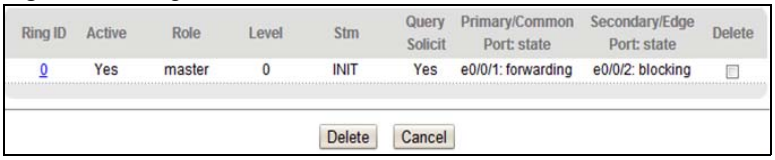
LABEL	DESCRIPTION
Active	Select this option to enable the ring.
Ring ID	Select the ring ID. "0" means master ring; "1" means sub ring.
Query Solicit	Click the check box to enable solicit query. When EAPS topology change, the device will send a solicit query or ICMP query to all the ports to reinitiate IGMP report to update the multicast entry.
Bridge Role	Select **master** or **tansit**.
Primary Port	Enter a primary port number for **master** or **transit** selected in **Bridge Role** field.
Secondary Port	Enter a secondary port number for **master** or **transit** selected in **Bridge Role** field.
Level	Select the ring level number.

Table 20 EAPS Screen

LABEL	DESCRIPTION
Add	Click **Add** to insert the entry in the summary table below and save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to reset the fields back to your previous configuration.
Clear	Click **Clear** to delete the configurations of the above fields.

Once a ring is added, it will show in the list.

Figure 28 Ring ID List Screen



The following table describes the fields in this screen.

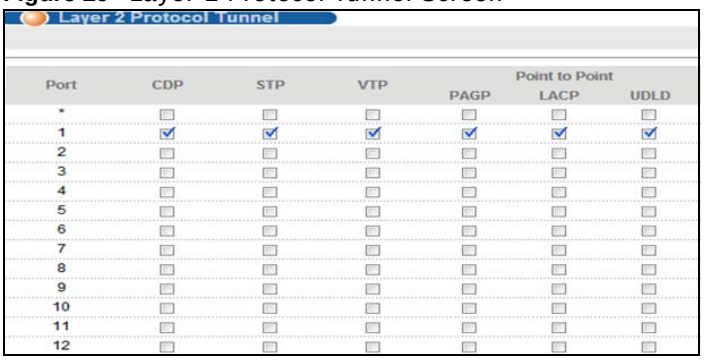
Table 21 EAPS Screen

LABEL	DESCRIPTION
Ring ID	This field displays the ring ID. "0" means master ring; "1" means sub ring.
Active	This field displays whether the **Ring ID** is active or not.
Role	This field displays whetehr the **Bridge Role** is **master** or **transit**.
Level	This field displays the ring level.
Stm	This field displays the statement.
Query Solicit	This field displays whether **Query Solicit** is enabled or not.
Primary/Common Port:State	This field displays the EAPS Primary Port Number and state.
Secondary/Edge Port:State	This field displays the EAPS secondary Port Number and state.
Delete	Click **Delete** to remove the selected entry from the summary table.

6.6 Layer 2 Protocol Tunnel

Use the screen to set the packet to be sent by the port.

Figure 29 Layer 2 Protocol Tunnel Screen



The following table describes the fields in this screen.

Table 22 Layer 2 Protocol Tunnel Screen

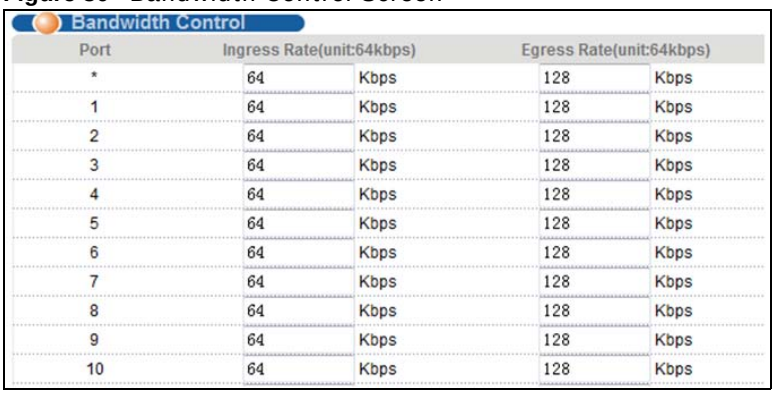
LABEL	DESCRIPTION
Port	This field displays the port number.
*	Use this row to make the setting the same for all ports. Use this row first and then make adjustments on a port-by-port basis. Note: Changes in this row are copied to all the ports as soon as you make them.
CDP	Select this option to have the Switch tunnel CDP (Cisco Discovery Protocol) packets so that other Cisco devices can be discovered through the service provider's network.
STP	Select this option to have the Switch tunnel STP (Spanning Tree Protocol) packets so that STP can run properly across the service provider's network and spanning trees can be set up based on bridge information from all (local and remote) networks.
VTP	Select this option to have the Switch tunnel VTP (VLAN Trunking Protocol) packets so that all customer switches can use consistent VLAN configuration through the service provider's network.
Point to Point	The Switch supports PAgP (Port Aggregation Protocol), LACP (Link Aggregation Control Protocol) and UDLD (UniDirectional Link Detection) tunneling for a point-to-point topology. Both PAgP and UDLD are Cisco's proprietary data link layer protocols. PAgP is similar to LACP and used to set up a logical aggregation of Ethernet ports automatically. UDLD is to determine the link's physical status and detect a unidirectional link.
PAGP	Select this option to have the Switch send PAgP packets to a peer to automatically negotiate and build a logical port aggregation.
LACP	Select this option to have the Switch send LACP packets to a peer to dynamically creates and manages trunk groups.
UDLD	Select this option to have the Switch send UDLD packets to a peer's port it connected to monitor the physical status of a link.

6.7 Bandwidth Control

This section shows you how you can cap the maximum bandwidth using the **Bandwidth Control** screen.

Bandwidth control means defining a maximum allowable bandwidth for incoming and/or out-going traffic flows on a port.

Figure 30 Bandwidth Control Screen



The following table describes the fields in this screen.

Table 23 Bandwidth Control Screen

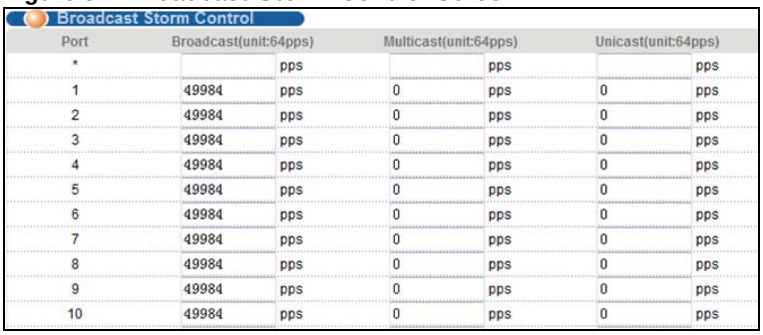
LABEL	DESCRIPTION
Port	This field displays the port number.
Ingress Rate	Specify the maximum bandwidth allowed in kilobits per second (Kbps) for the incoming traffic flow on a port. Note: Ingress rate bandwidth control applies to layer 2 traffic only.
Egress Rate	Specify the maximum bandwidth allowed in kilobits per second (Kbps) for the out-going traffic flow on a port.

6.8 Broadcast Storm Control

This section introduces and shows you how to configure the broadcast storm control feature.

Broadcast 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. Enable this feature to reduce broadcast, multicast and/or Unicast packets in your network. You can specify limits for each packet type on each port.

Figure 31 Broadcast Storm Control Screen



The following table describes the fields in this screen.

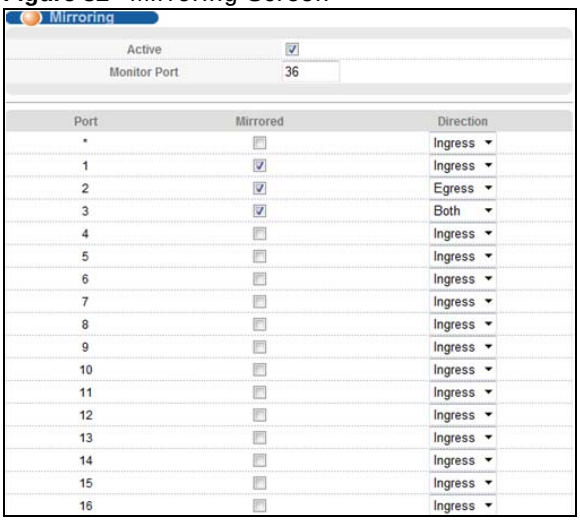
Table 24 Broadcast Storm Control Screen

LABEL	DESCRIPTION
Port	This field displays the port number.
Broadcast(unit:64pps)	Specify how many broadcast packets the port receives per second.
Multicast(unit:64pps)	Specify how many multicast packets the port receives per second.
Unicast(unit:64pps)	Limit the number of unknown unicast packets that the port can receive each second. The unit is packets per second and its actual value must be a multiple of 64.

6.9 Mirroring

Use this screen to select a monitor port and specify the traffic flow to be copied to the monitor port.

Figure 32 Mirroring Screen



The following table describes the fields in this screen.

Table 25 Mirroring Screen

LABEL	DESCRIPTION
Active	Select this check box to activate port mirroring on the Switch. Clear this check box 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). Enter the port number of the monitor port.
Port	This field displays the port number.
*	Settings in this row apply to all ports. Use this row only if you want to make some settings the same for all ports. Use this row first to set the common settings and then make adjustments on a port-by-port basis. Note: Changes in this row are copied to all the ports as soon as you make them.

Table 25 Mirroring Screen

LABEL	DESCRIPTION
Mirrored	Select this option to mirror the traffic on a port.
Direction	Specify the direction of the traffic to mirror by selecting from the drop-down list box. Choices are **Egress** (outgoing), **Ingress** (incoming) and **Both**.

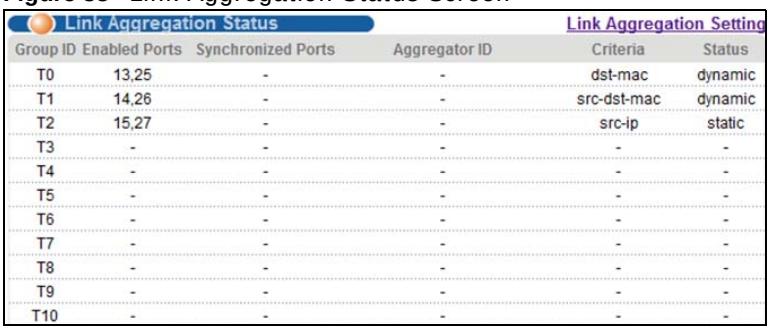
6.10 Link Aggregation

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

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 beginning port of each trunk group must be physically connected to form a trunk group.

Figure 33 Link Aggregation Status Screen



The following table describes the fields in this screen.

Table 26 Link Aggregation Status Screen

LABEL	DESCRIPTION
Link Aggregation Setting	Configure link aggregation ports.
Group ID	This field displays the group ID to identify a trunk group, that is, one logical link containing multiple ports.
Enabled Ports	These are the ports you have configured in the **Link Aggregation** screen to be in the trunk group. The port number(s) displays only when this trunk group is activated and there is a port belonging to this group.
Synchronized Ports	These are the ports that are currently transmitting data as one logical link in this trunk group.
Aggregator ID	Link Aggregator ID consists of the following: system priority, MAC address, key, port priority and port number. The ID displays only when there is a port belonging to this trunk group and LACP is also enabled for this group.

Table 26 Link Aggregation Status Screen

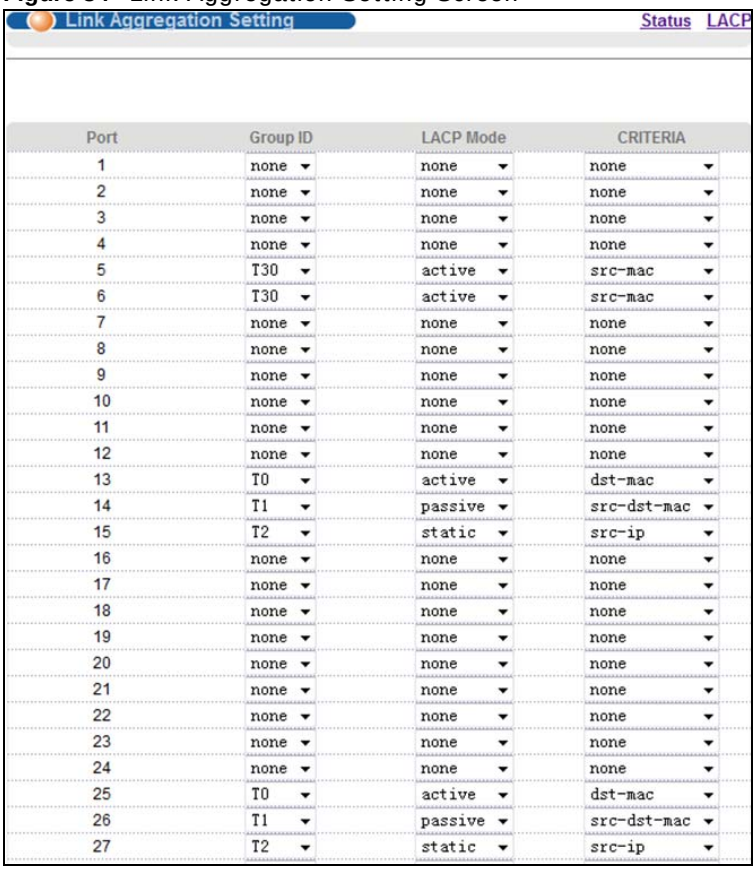
LABEL	DESCRIPTION
Criteria	This shows the outgoing traffic distribution algorithm used in this trunk group. Packets from the same source and/or to the same destination are sent over the same link within the trunk. **src-mac** means the Switch distributes traffic based on the packet's source MAC address. **dst-mac** means the Switch distributes traffic based on the packet's destination MAC address. **src-dst-mac** means the Switch distributes traffic based on a combination of the packet's source and destination MAC addresses. **src-ip** means the Switch distributes traffic based on the packet's source IP address. **dst-ip** means the Switch distributes traffic based on the packet's destination IP address. **src-dst-ip** means the Switch distributes traffic based on a combination of the packet's source and destination IP addresses.
Status	This field displays how these ports were added to the trunk group. It displays: • **Static** - if the ports are configured as static members of a trunk group. • **LACP** - if the ports are configured to join a trunk group via LACP.

6.10.1 Link Aggregation Setting

Click **Link Aggregation Setting** in the upper right corner of **Link Aggregation Status** screen.

Configure link aggregation ports.

Figure 34 Link Aggregation Setting Screen



The following table describes the fields in this screen.

Table 27 Link Aggregation Setting Screen

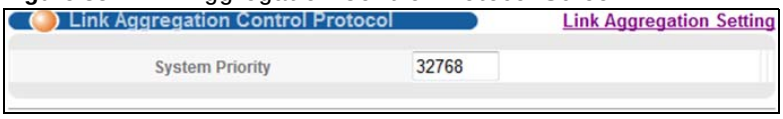
LABEL	DESCRIPTION
LACP	Enable/Disable aggregation group.
Port	This field displays the port number.
Group ID	The field identifies the link aggregation group, that is, one logical link containing multiple ports.
LACP Mode	Sets the aggregation mode (static aggregation/dynamic aggregation).
Criteria	Select 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 **src-dst-mac** 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. Select **src-mac** to distribute traffic based on the packet's source MAC address. Select **dst-mac** to distribute traffic based on the packet's destination MAC address. Select **src-dst-mac** to distribute traffic based on a combination of the packet's source and destination MAC addresses. Select **src-ip** to distribute traffic based on the packet's source IP address. Select **dst-ip** to distribute traffic based on the packet's destination IP address. Select **src-dst-ip** to distribute traffic based on a combination of the packet's source and destination IP addresses.

6.10.2 Link Aggregation Control Protocol

Use this screen to enable Link Aggregation Control Protocol.

Click **LACP** in the upper right corner of **Link Aggregation Setting** screen.

Figure 35 Link Aggregation Control Protocol Screen



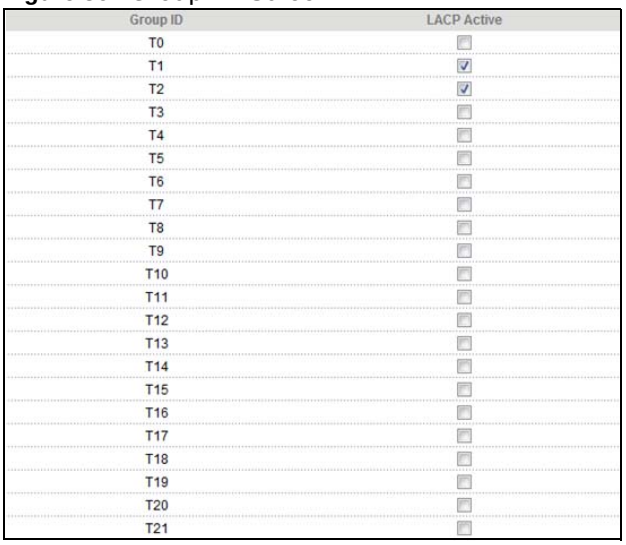
The following table describes the fields in this screen.

Table 28 Link Aggregation Control Protocol Screen

LABEL	DESCRIPTION
System Priority	Enable the aggregation group then set the priority of the ports within the group. Default is 32768.

6.10.3 Group ID

Figure 36 Group ID Screen



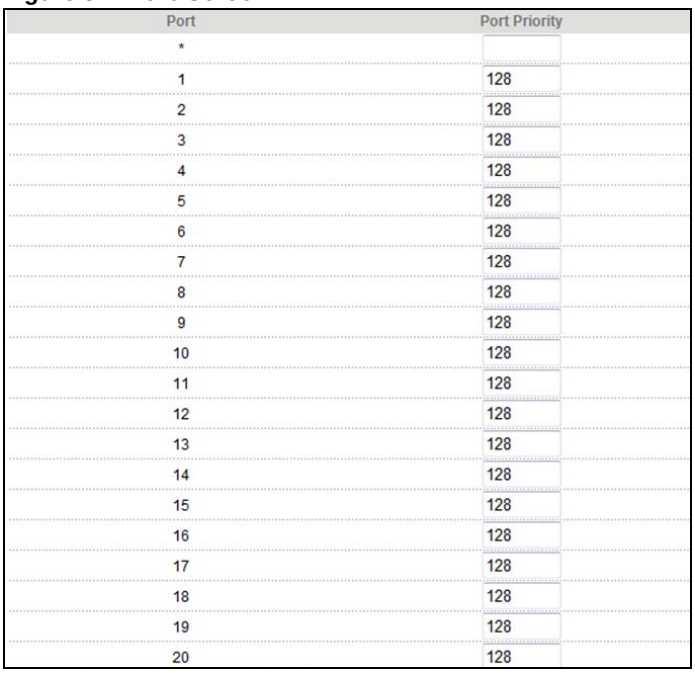
The following table describes the fields in this screen.

Table 29 Group ID Screen

LABEL	DESCRIPTION
Group ID	This field displays the group ID to identify a trunk group, that is, one logical link containing multiple ports.
LACP Active	Enable/Disable aggregation group.

6.10.4 Port

Figure 37 Port Screen



Port	Port Priority
*	
1	128
2	128
3	128
4	128
5	128
6	128
7	128
8	128
9	128
10	128
11	128
12	128
13	128
14	128
15	128
16	128
17	128
18	128
19	128
20	128

The following table describes the fields in this screen.

Table 30 Port Screen

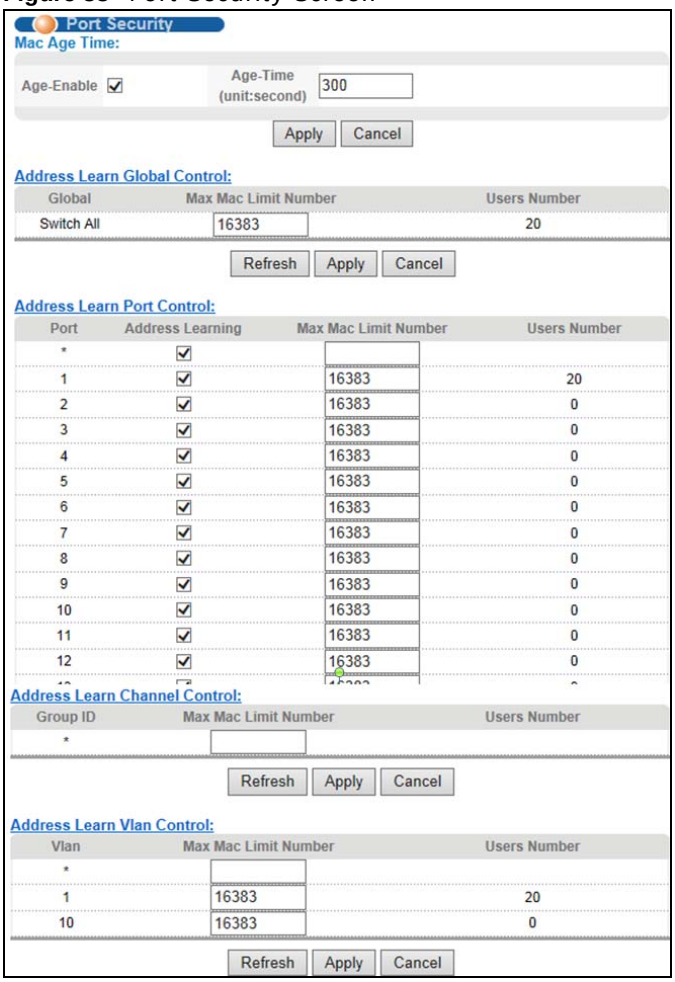
LABEL	DESCRIPTION
Port	This field displays the port number.
Port Priority	Set the priority of ports in the aggregation group (priority ranges from 1-65535), and default is 128. Priority decides which port should be disabled when more than one port forms a loop in a switch. Ports with a higher priority numeric value are disabled first.

6.11 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 16K MAC addresses in total with no limit on individual ports other than the sum cannot exceed 16K.

For maximum port security, enable this feature, disable MAC address learning and configure static MAC address(es) for a port. It is not recommended you disable port security together with MAC address learning as this will result in many broadcasts. By default, MAC address learning is still enabled even though the port security is not activated.

Figure 38 Port Security Screen



The following table describes the fields in this screen.

Table 31 Port Security Screen

LABEL	DESCRIPTION
Mac Age Time	Enter a time from 10 to 1000000 seconds. This is how long all dynamically learned MAC addresses remain in the MAC address table before they age out (and must be relearned).
Age-Enable	Select this to enable age time. When the aging time for a MAC address in the table expires, the address will be removed
Age Time(unit:second)	Set MAC Aging Time, and enable/disable MAC Aging Function. When MAC Aging is enabled, the default aging time is 300 seconds. This is how long all dynamically learned MAC addresses remain in the MAC address table before they age out (and must be relearned).
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh..
Address Learn Global Control	Set the maximum MAC learning limit for the switch (default is 16K).
Global	This field is to limit the maximum MAC numbers based on global.

Table 31 Port Security Screen

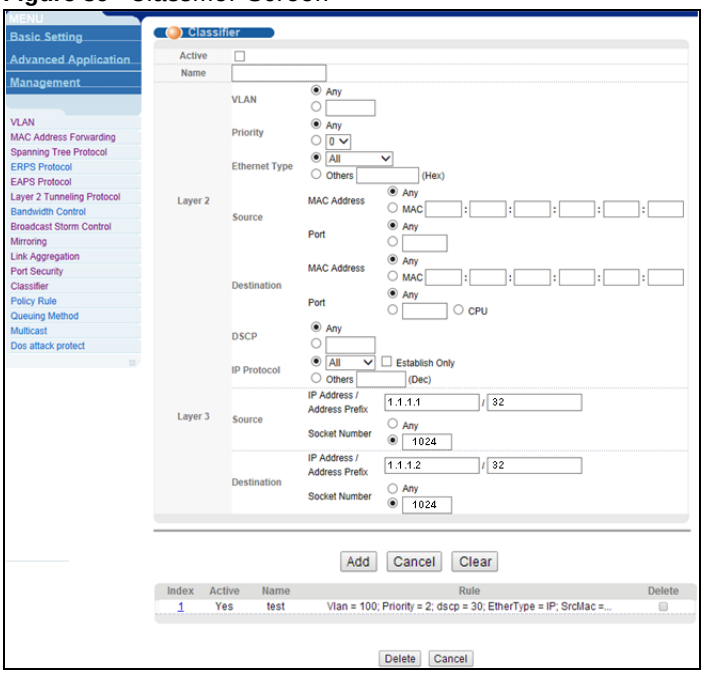
LABEL	DESCRIPTION
Max MAC Limit Number	Set MAC control learning limit (0-16384). MAC learning limit can only be set when MAC control learning is enabled for the port.
Users Number	This field displays the MAC numbers that Switch has learned.
Refresh	Click **Refresh** to update this screen.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh..
Address Learn Port Control	Enable the port's MAC address learning function (MAC learning is enabled by default).
Port	This field displays the port number.
Address Learning	MAC address learning reduces outgoing broadcast traffic. For MAC address learning to occur on a port, the port itself must be active with address learning enabled.
Max Mac Limit Numebr	Set MAC control learning limit (0-16384). MAC learning limit can only be set when MAC control learning is enabled for the port.
Users Number	This field displays the MAC numbers that Switch has learned.
Address Learn Channel Control	Set the maximum MAC learning limit for the switch channel.
Group ID	This field displays the group ID to identify a trunk group, that is, one logical link containing multiple ports.
Max Mac Limit Numebr	Set MAC control learning limit (0-16384). MAC learning limit can only be set when MAC control learning is enabled for the port.
Users Number	This field displays the MAC numbers that Switch has learned.
Refresh	Click **Refresh** to update this screen.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh..
Address Learn VLAN Control	Set the maximum MAC learning limit for the VLAN.
Vlan	This field displays the VLAN group number.
Max Mac Limit Numebr	Set MAC control learning limit (0-16384). MAC learning limit can only be set when MAC control learning is enabled for the port.
Users Number	This field displays the MAC numbers that Switch has learned.
Refresh	Click **Refresh** to update this screen.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh..

6.12 Classifier

A classifier distinguishes traffic into flows based on the configured criteria.

Use the **Classifier Configuration** screen to define the classifiers. After you define the classifier, you can specify actions (or policy) to act upon the traffic that matches the rules.

Figure 39 Classifier Screen



The following table describes the fields in this screen.

Table 32 Classifier Screen

LABEL	DESCRIPTION
Active	Select this option to enable this rule.
Name	Enter a descriptive name for this rule for identifying purposes.
VLAN	Select **Any** to classify traffic from any VLAN or select the second option and specify the source VLAN ID in the field provided.
Priority	Select **Any** to classify traffic from any priority level or select the second option and specify a priority level in the field provided.
Ethernet Type	Select an Ethernet type or select **Other** and enter the Ethernet type number in hexadecimal value.
Layer 2	Specify the fields below to configure a layer 2 classifier.
Source	
MAC Address	Select **Any** to apply the rule to all MAC addresses. To specify a source, select **MAC / Mask** to enter the source MAC address of the packet in valid MAC address format (six hexadecimal character pairs) and type the mask for the specified MAC address to determine which bits a packet's MAC address should match. Enter "f" for each bit of the specified MAC address that the traffic's MAC address should match. Enter "0" for the bit(s) of the matched traffic's MAC address, which can be of any hexadecimal character(s). For example, if you set the MAC address to 00:13:49:00:00:00 and the mask to ff:ff:ff:00:00:00, a packet with a MAC address of 00:13:49:12:34:56 matches this criteria. If you leave the **Mask** field blank, the Switch automatically sets the mask to ff:ff:ff:ff:ff:ff.
Port	Select **Any** to apply the rule to all ports. To specify a port group, select the second choice and type a port group numbers.
Destination	

Table 32 Classifier Screen

LABEL	DESCRIPTION
MAC Address	Select **Any** to apply the rule to all MAC addresses. To specify a destination, select **MAC / Mask** to enter the destination MAC address of the packet in valid MAC address format (six hexadecimal character pairs) and type the mask for the specified MAC address to determine which bits a packet's MAC address should match. Enter "f" for each bit of the specified MAC address that the traffic's MAC address should match. Enter "0" for the bit(s) of the matched traffic's MAC address, which can be of any hexadecimal character(s). For example, if you set the MAC address to 00:13:49:00:00:00 and the mask to ff:ff:ff:00:00:00, a packet with a MAC address of 00:13:49:12:34:56 matches this criteria. If you leave the **Mask** field blank, the Switch automatically sets the mask to ff:ff:ff:ff:ff:ff.
Port	Select **Any** to apply the rule to any ports. To specify a port group, select the second choice and type a port group numbers. Select **CPU** to apply the rule to the CPU port.
DSCP	Select **Any** to classify traffic from any DSCP or select the second option and specify a DSCP (DiffServ Code Point) number between 0 and 63 in the field provided.
IP Protocol	Select an IPv4 protocol type or select **Other** and enter the protocol number in decimal value. You may select **Establish Only** for **TCP** protocol type. This means that the Switch will pick out the packets that are sent to establish TCP connections.
Layer 3	Set Layer 3 parameters, such as: Source IP, destination IP, protocol, and port number.
Source	
IP Address/Address Prefix	Enter a source IP address in dotted decimal notation. Specify the address prefix by entering the number of ones in the subnet mask. A subnet mask can be represented in a 32-bit notation. For example, the subnet mask "255.255.255.0" can be represented as "11111111.11111111.11111111.00000000", and counting up the number of ones in this case results in 24.
Socket Number	Note: You must select either **UDP** or **TCP** in the **IP Protocol** field before you configure the socket numbers. Select **Any** to apply the rule to all TCP/UDP protocol port numbers or select the second option and enter a TCP/UDP protocol port number.
Destination	
IP Address/Address Prefix	Enter a destination IP address in dotted decimal notation. Specify the address prefix by entering the number of ones in the subnet mask.
Socket Number	Note: You must select either **UDP** or **TCP** in the **IP Protocol** field before you configure the socket numbers. Select **Any** to apply the rule to all TCP/UDP protocol port numbers or select the second option and enter a TCP/UDP protocol port number.
Add	Click **Add** to insert the entry in the summary table below and save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to reset the fields back to your previous configuration.
Clear	Click **Clear** to delete the configurations of the above fields.
Index	This field displays the index number of the rule. Click an index number to edit the rule.

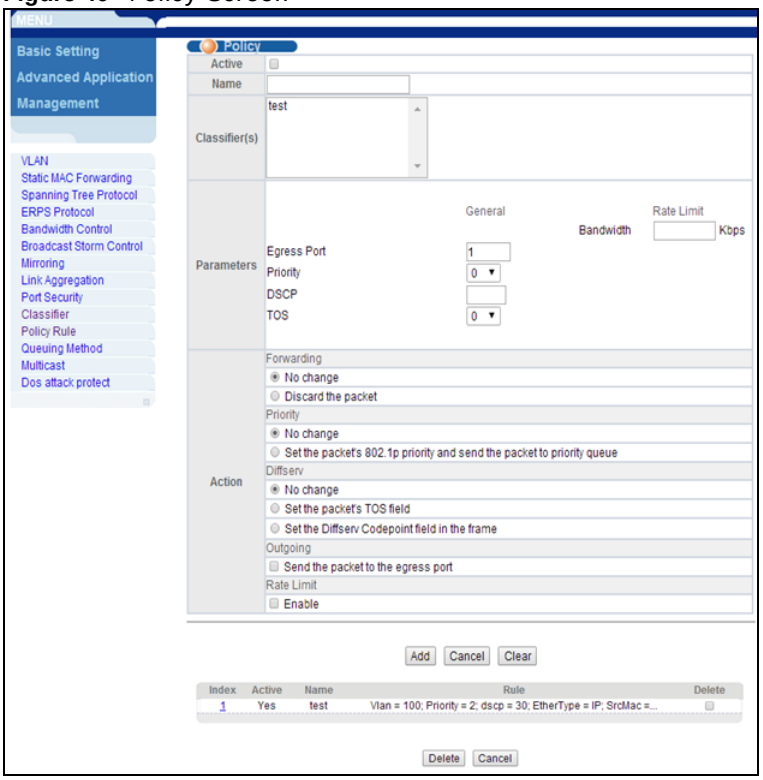
Table 32 Classifier Screen

LABEL	DESCRIPTION
Active	This field displays **Yes** when the rule is activated and **No** when it is deactivated.
Name	This field displays the descriptive name for this rule. This is for identification purpose only.
Rule	This field displays a summary of the classifier rule's settings.
Delete	Click **Delete** to remove the selected entry from the summary table.
Delete	Click **Delete** to remove.
Cancel	Click **Cancel** to reset the fields back to your previous configuration.

6.13 Policy Rule

A policy rule ensures that a traffic flow gets the requested treatment in the network.

Figure 40 Policy Screen



The following table describes the fields in this screen.

Table 33 Policy Screen

LABEL	DESCRIPTION
Active	Select this option to enable the policy.
Name	Enter a descriptive name for identification purposes.

Table 33 Policy Screen

LABEL	DESCRIPTION
Classifier(s)	This field displays the active classifier(s) you configure in the **Classifier** screen. Select the classifier(s) to which this policy rule applies. To select more than one classifier, press [SHIFT] and select the choices at the same time.
Parameters Set the fields below for this policy. You only have to set the field(s) that is related to the action(s) you configure in the **Action** field.	
Egress Port	Type the number of an outgoing port.
Priority	Specify a priority level.
DSCP	Specify a DSCP (DiffServ Code Point) number between 0 and 63.
TOS	Specify the type of service (TOS) priority level.
Bandwidth	Specify the bandwidth in kilobit per second (Kbps). Enter a number between 1 and 1000000.
Action	Action Specify the action(s) the Switch takes on the associated classified traffic flow. Note: You can specify only one action (pair) in a policy rule. To have the Switch take multiple actions on the same traffic flow, you need to define multiple classifiers with the same criteria and apply different policy rules. Say you have several classifiers that identify the same traffic flow and you specify a different policy rule for each. If their policy actions conflict (**Discard the packet**, **Send the packet to the egress port** and **Rate Limit**), the Switch only applies the policy rules with the **Discard the packet** and **Send the packet to the egress port** actions depending on the classifier names. The longer the classifier name, the higher the classifier priority. If two classifier names are the same length, the bigger the character, the higher the classifier priority. The lowercase letters (such as a and b) have higher priority than the capitals (such as A and B) in the classifier name. For example, the classifier with the name of class 2, class a or class B takes priority over the classifier with the name of class 1 or class A. Let's say you set two classifiers (Class 1 and Class 2) and both identify all traffic from MAC address 11:22:33:44:55:66 on port 3. If Policy 1 applies to Class 1 and the action is to drop the packets, Policy 2 applies to Class 2 and the action is to forward the packets to the egress port, the Switch will forward the packets. If Policy 1 applies to Class 1 and the action is to drop the packets, Policy 2 applies to Class 2 and the action is to enable bandwidth limitation, the Switch will discard the packets immediately. If Policy 1 applies to Class 1 and the action is to forward the packets to the egress port, Policy 2 applies to Class 2 and the action is to enable bandwidth limitation, the Switch will forward the packets.
Forwarding	Select **No change** to forward the packets. Select **Discard the packet** to drop the packets.
Priority	Select **No change** to keep the priority setting of the frames. Select **Set the packet's 802.1p priority and send the packet to priority queue** to replace the packet's 802.1p priority field with the value you set in the **Priority** field and put the packets in the designated queue.

Table 33 Policy Screen

LABEL	DESCRIPTION
Diffserv	Select **No change** to keep the TOS and/or DSCP fields in the packets. Select **Set the packet's TOS field** to set the TOS field with the value you configure in the **TOS** field. Select **Set the Diffserv Codepoint field in the frame** to set the DSCP field with the value you configure in the **DSCP** field.
Outgoing	Select **Send the packet to the egress port** to send the packet to the egress port.
Rate Limit	Set the rate limit. Default is not selected.
Add	Click **Add** to inset the entry to the summary table below and save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to reset the fields back to your previous configuration.
Clear	Click **Clear** to delete the configurations of the above fields.
Index	This field displays the policy index number. Click an index number to edit the policy.
Active	This field displays **Yes** when policy is activated and **No** when is it deactivated.
Name	This field displays the name you have assigned to this policy.
Rule	This field displays the policy you configured.
Delete	Click **Delete** to remove the selected entry from the summary table.
Delete	Click **Delete** to remove.
Cancel	Click **Cancel** to clear the check boxes.

6.14 Queuing Method

Set queue priority. There are four queuing modes: SPQ, WRR, WFQ, and SP+WFQ. The default queuing method is SPQ.

Strictly Priority Queuing

Strictly Priority Queuing (SPQ) services queues based on priority only. As traffic comes into the Switch, traffic on the highest priority queue, Q7 is transmitted first. When that queue empties, traffic on the next highest-priority queue, Q6 is transmitted until Q6 empties, and then traffic is transmitted on Q5 and so on. If higher priority queues never empty, then traffic on lower priority queues never gets sent. SPQ does not automatically adapt to changing network requirements.

Weighted Fair Queuing

Weighted Fair Queuing is used to guarantee each queue's minimum bandwidth based on its bandwidth weight (portion) (the number you configure in the Weight field) when there is traffic congestion. WFQ is activated only when a port has more traffic than it can handle. Queues with larger weights get more guaranteed bandwidth than queues with smaller weights. This queuing mechanism is highly efficient in that it divides any available bandwidth across the different traffic queues. By default, the weight for Q0 is 1, for Q1 is 2, for Q2 is 3, and so on.

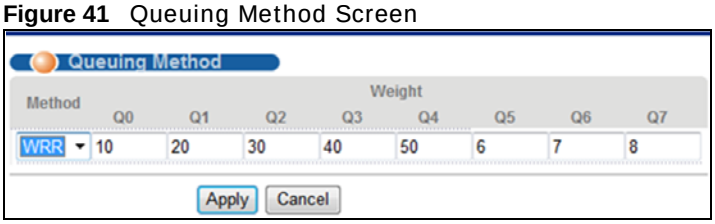
Weighted Round Robin Scheduling (WRR)

Round Robin Scheduling services queues on a rotating basis and is activated only when a port has more traffic than it can handle. A queue is a given an amount of bandwidth irrespective of the incoming traffic on that port. This queue then moves to the back of the list. The next queue is given an equal amount of bandwidth, and then moves to the end of the list; and so on, depending on the number of queues being used. This works in a looping fashion until a queue is empty.

Weighted Round Robin Scheduling (WRR) uses the same algorithm as round robin scheduling, but services queues based on their priority and queue weight (the number you configure in the queue **Weight** field) rather than a fixed amount of bandwidth. WRR is activated only when a port has more traffic than it can handle. Queues with larger weights get more service than queues with smaller weights. This queuing mechanism is highly efficient in that it divides any available bandwidth across the different traffic queues and returns to queues that have not yet emptied.

Please set the **Method** of Q0-Q7 to WRR.

Figure 41 Queuing Method Screen



The following table describes the labels in this screen.

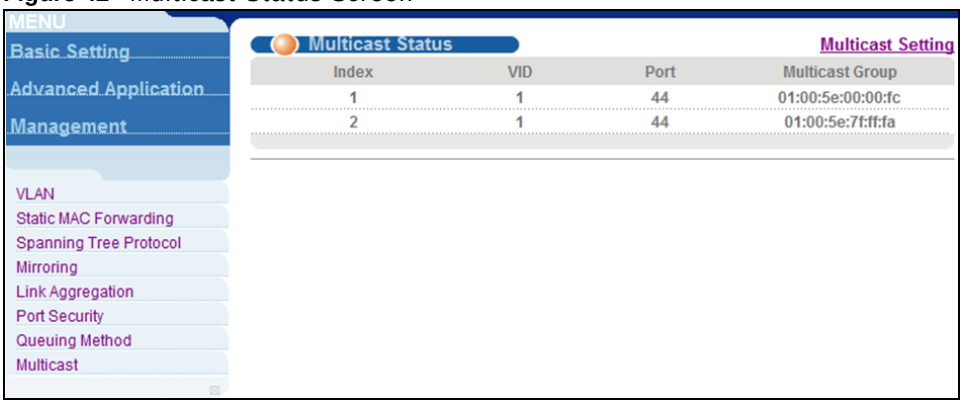
Table 34 Queuing Method Screen

LABEL	DESCRIPTION
Method	Select **SPQ** (Strictly Priority Queuing), **WFQ** (Weighted Fair Queuing) or **WRR** (Weighted Round Robin). Strictly Priority Queuing services queues based on priority only. When the highest priority queue empties, traffic on the next highest-priority queue begins. Q7 has the highest priority and Q0 the lowest. Weighted Fair Queuing is used to guarantee each queue's minimum bandwidth based on their bandwidth portion (weight) (the number you configure in the **Weight** field). Queues with larger weights get more guaranteed bandwidth than queues with smaller weights. Weighted Round Robin Scheduling services queues on a rotating basis based on their queue weight (the number you configure in the queue **Weight** field). Queues with larger weights get more service than queues with smaller weights.
Weight	When you select **WFQ** or **WRR** enter the queue weight here. Bandwidth is divided across the different traffic queues according to their weights.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh.

6.15 Multicast

View all multicast groups, specific groups of hosts that will receive particular data, on the Switch; this includes both static multicasts as well as multicasts learned through the IGMP-snooping protocol.

Figure 42 Multicast Status Screen



The following table describes the fields in this screen.

Table 35 Multicast Status Screen

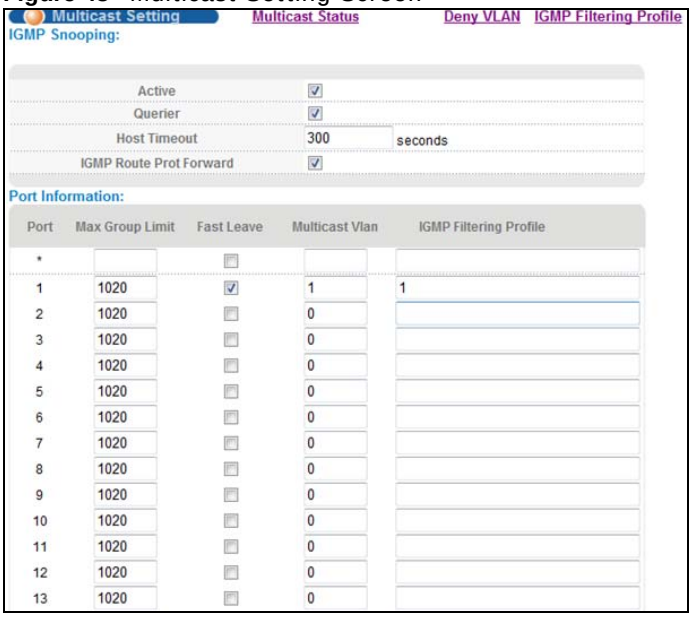
LABEL	DESCRIPTION
Multicast Setting	Configure IGMP-snooping function.
Index	This is the index number of the entry.
VID	This field displays the multicast VLAN ID.
Port	This field displays the port number that belongs to the multicast group.
Multicast Group	This field displays IP multicast group addresses.

6.15.1 Multicast Setting

Use this screen to enable IGMP snooping to forward group multicast traffic only to ports that are members of that group.

Click **Multicast Setting** in the upper right corner of **Multicast Status** screen.

Figure 43 Multicast Setting Screen



The following table describes the fields in this screen.

Table 36 Multicast Setting Screen

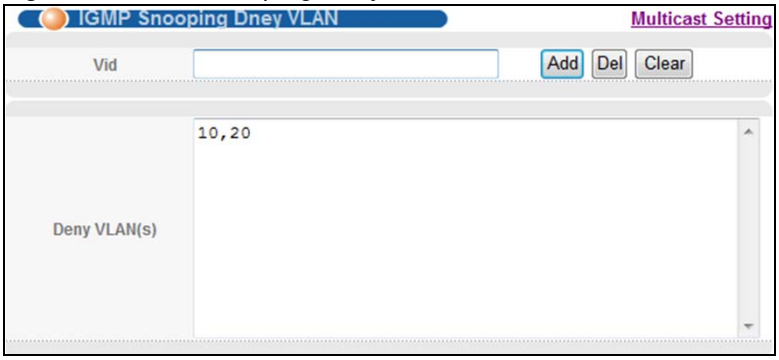
LABEL	DESCRIPTION
IGMP Snooping	
Active	Select Active to enable IGMP Snooping to forward group multicast traffic only to ports that are members of that group.
Querier	Select this option to allow the Switch to send IGMP General Query messages to the VLANs with the multicast hosts attached.
Host Timeout	pecify the time (from 1 to 16 711 450) in seconds that elapses before the Switch removes an IGMP group membership entry if it does not receive report messages from the port. (default is 300 seconds).
IGMP Route Port Forward	Enable the router forwarding function.
Port Information	
Port	This field displays the port number.
Max Group Limit	Set the learning limit of multicast packets for the port (default is 1020).
Fast Leave	Enable the port's fast leave function (when the port receives IGMP departure packets, it deletes the port from the multicast group). Enter an IGMP fast leave timeout value (from 200 to 6,348,800) in miliseconds. Select this option to have the Switch use this timeout to update the forwarding table for the port. In fast leave mode, right after receiving an IGMP leave message from a host on a port, the Switch itself sends out an IGMP Group-Specific Query (GSQ) message to determine whether other hosts connected to the port should remain in the specific multicast group. This helps speed up the leave process. This defines how many seconds the Switch waits for an IGMP report before removing an IGMP snooping membership entry when an IGMP leave message is received on this port from a host.
Multicast VLAN	Set the default VLAN for multicast.
IGMP Filtering Profile	Add or delete IGMP filtering profiles. Set the IGMP filtering for the port. When IGMP filter is used, then only allowed multicasts can be used for learning. Multicasts banned by the IGMP filter cannot be used for learning.

6.15.2 IGMP Snooping Deny VLAN

Use the screen to set the traffic in the specified VLAN groups to ignore IGMP snooping.

Click **Deny VLAN** in the upper right corner of **Multicast Setting** screen.

Figure 44 IGMP Snooping Deny VLAN Screen



The following table describes the fields in this screen.

Table 37 IGMP Snooping Deny VLAN Screen

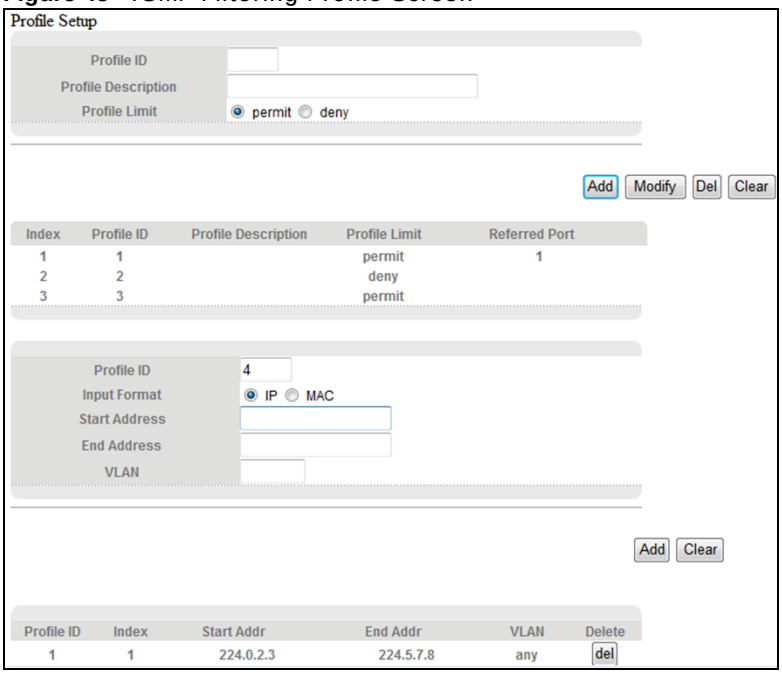
LABEL	DESCRIPTION
IGMP Snooping	IGMP snooping enables a layer-2 switch to dynamically learn the members of IP multicast groups. The switch can then forward multicast traffic to ports that are members of those multicast groups. When a switch receives multicast traffic destined for multicast groups that it does not know, it either forwards the traffic to all ports or discards it (depending on the switch and/or the switch's configuration). IGMP snooping generates no additional network traffic and allows a switch to handle multicast traffic more efficiently and effectively.
VID	This field displays the multicast VLAN ID.
Add	Click **Add** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Del	Click **Del** to delete the VLAN ID you input in **VID**.
Clear	Click **Clear** to delete the configurations in **Deny VLAN(s)**.
Deny VLAN(s)	You can list the IGMP snooping Deny VLAN entry in the table.

6.15.3 IGMP Filtering Profile

Click **IGMP Filtering Profile** in the upper right corner of **Multicast Setting** screen.

An IGMP filtering profile specifies a range of multicast groups that clients connected to the Switch are able to join. A profile contains a range of multicast IP addresses which you want clients to be able to join. Clients connected to those ports are then able to join the multicast groups specified in the profile. Each port can be assigned a single profile. A profile can be assigned to multiple ports.

Figure 45 IGMP Filtering Profile Screen



The following table describes the fields in this screen.

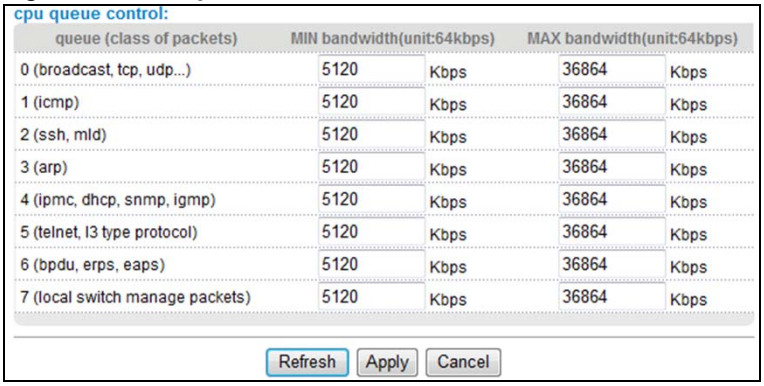
Table 38 IGMP Filtering Profile Screen

LABEL	DESCRIPTION
Profile Setup	Add IGMP filtering profile.
Profile ID	The profile ID can be between 1-128.
Profile Description	You can add descriptions to a profile in this field.
Profile Limit	Profile rule can be either permit or deny.
Add	Click **Add** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Modify	Click **Modify** to make changes to a profile ID.
Del	Click **Del** to delete a profile ID and the rules applied to it.
Clear	Click **Clear** to delete the configurations of the fields.
Index	This is the index number of a IGMP filtering profile entry. Click this number to edit the entry.
Profile ID	The profile ID can be between 1-128.
Profile Description	This field displays the profile description you've given to the profile ID.
Profile Limit	You can choose to **permit** or **deny** the profile.
Referred Port	This field displays the port with the referred rules.
Profile ID	The profile ID can be between 1-128.
Input Format	Filter address can be set as IP or MAC address.
Start Address	Type the starting multicast IP address for a range of multicast IP addresses that you want to belong to the IGMP filter profile.
End Address	Type the ending multicast IP address for a range of IP addresses that you want to belong to the IGMP filter profile. If you want to add a single multicast IP address, enter it in both the **Start Address** and **End Address** fields.
VLAN	Input a VLAN group number.
Add	Click this to create a new entry. This saves your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Clear	Click **Clear** to delete the configurations of the fields.
Profile ID	Thie field displays the profile ID.
Index	Thie field displays the index number.
Start Addr	This field displays the starting multicast IP address that you want to belong to the IGMP filter profile.
End Addr	This field displays the ending multicast IP address that you want to belong to the IGMP filter profile.
VLAN	This field displays the VLAN ID with the IGMP filtering profile.
Delete	Click **Del** to delete a profile ID.

6.16 CPU Queue Control

Use this screen to control the rate at which packets are passed to the CPU.

Figure 46 CPU Queue Control Screen



The following table describes the fields in this screen.

Table 39 CPU Queue Control Screen

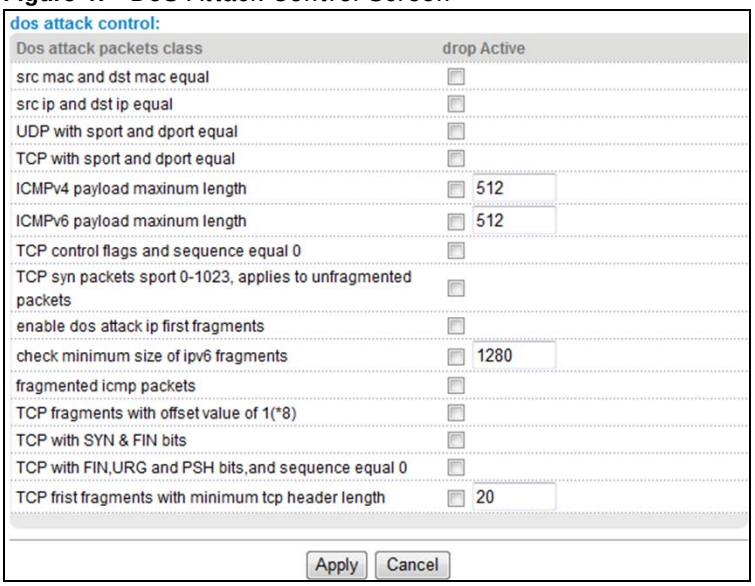
LABEL	DESCRIPTION
cpu queue control	
queue (class of packets)	This field displays the type of control packet you want to configure.
MIN bandwidth (unit:64kbps)	Input the minimum bandwidth of the control packet size that can receive or transmit per second in this field.
MAX bandwidth(unit:64kbps)	Input Maximum bandwidth of the control packet size that can receive or transmit per second in this field.
Refresh	Click **Refresh** to update this screen.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh.

6.17 DoS Attack Control

A Denial of Service (DoS) attack aims to bring down a network or a device by sending tremendously high counts of requests.

Use the screen to control DoS packets.

Figure 47 DoS Attack Control Screen



The following table describes the fields in this screen.

Table 40 DoS Attack Control Screen

LABEL	DESCRIPTION
src mac and dst mac equal	Control packets with the same source MAC address as the current MAC address.
src ip and dst ip equal	Control packets with the same source IP address as the current IP address.
UDP with sport and dport equal	Control packets with the same source UDP port as the current port.
TCP with sport and dport equal	Control packets with the same source TCP port as the current port.
ICMPv4 payload maximum length	Control packets with the maximum payload length for ICMPv4.
ICMPv6 payload maximum length	Control packets with the maximum payload length for ICMPv6.
TCP control flags and sequence equal 0	Control packets whose TCP control flags and sequence are equal to 0.
TCP syn packets sport 0-1023, applies to unfragmented packets	TCP sync packets with source port between 0 - 1023; used for controlling unfragmented packets.
Enable dos attack ip first fragments	Check for first fragment of IP packet for a DoS attack.
Check minimum size of ipv6 fragments	Check the size of the smallest IPv6 fragment.
Fragmented ICMP packets	Control ICMP packets marked as fragmented.
TCP fragments with offset value of 1(*8)	Control TCP packets with a fragment value of 1(*8).
TCP with SYN & FIN bits	Control TCP packets with SYN and FIN bits.

Table 40 DoS Attack Control Screen

LABEL	DESCRIPTION
TCP with FIN,URG and PSH bits,and sequence equal 0	Control TCP packets with FIN, URG, and PSH bits whose sequence = 0.
TCP first fragments with minimum tcp header length	Control TCP packets where the first fragment has the minimum TCP header length.

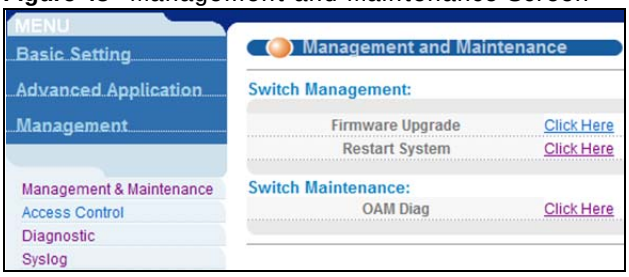
7

Management

7.1 Maintenance

Use this screen for Switch upgrade, restart, and maintenance.

Figure 48 Management and Maintenance Screen



The following table describes the labels in this screen.

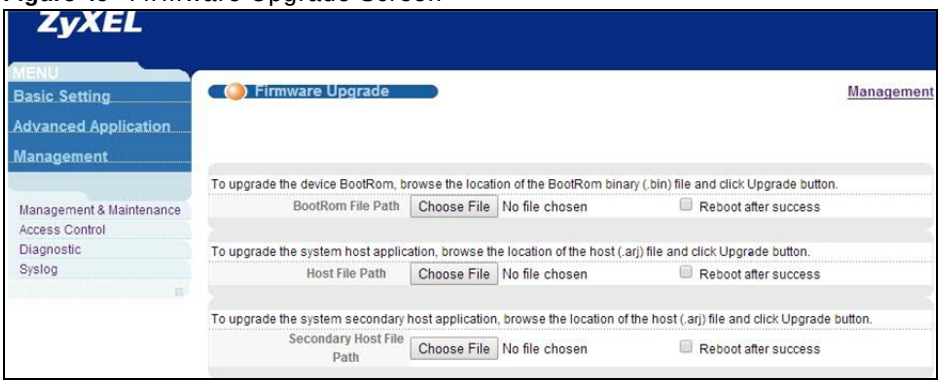
Table 41 Management and Maintenance Screen

LABEL	DESCRIPTION
Switch Management	
Firmware Upgrade	Click **Click Here** to go to the **Firmware Upgrade** screen, and upgrade firmware.
Restart System	Click **Click Here** to go to the **Restart System** screen. Use **Restart System** screen to restart the system directly or restore the system to its default factory settings.
Switch Maintenance	
OAM Diag	Click **Click Here** to go to the **OAM Diag** screen. Use this screen to run Virtual Cable Test (VCT) diagnostics.

7.1.1 Firmware Upgrade

Upgrade the Switch's BootRom and Host programs.

Figure 49 Firmware Upgrade Screen



The following table describes the labels in this screen.

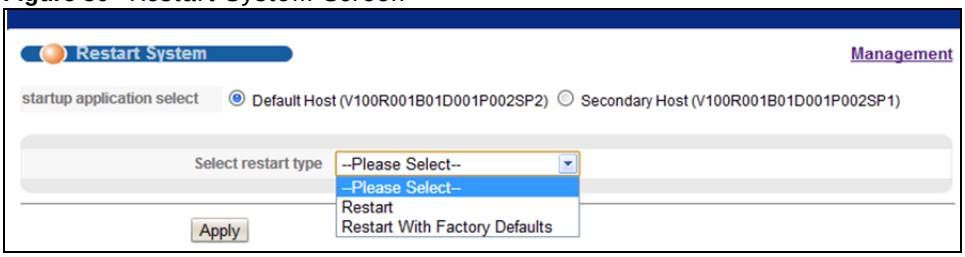
Table 42 Firmware Upgrade Screen

LABEL	DESCRIPTION
Choose File	Click **Choose File** to upload the BootRom file to the Switch.
Reboot After Success	The Switch will reboot after the file is uploaded successfully.
Choose File	Click **Choose File** to upload the Host file to the Switch.
Reboot After Success	The Switch will reboot after the file is uploaded successfully.
Choose File	Click **Choose File** to upload the Secondary file to the Switch.
Reboot After Success	The Switch will reboot after the file is uploaded successfully.

7.1.2 Restart System

Use this screen to choose to restart the system directly or restore the system to its default factory settings. If the Switch has two systems, then it can be set to load the default system or the backup system upon restarting.

Figure 50 Restart System Screen



The following table describes the labels in this screen.

Table 43 Restart System Screen

LABEL	DESCRIPTION
Startup Application Select	
Default Host	When the Switch start up, it will run the default host software. This number is the software version on the Switch and it will change once you upgrade/downgrade it.

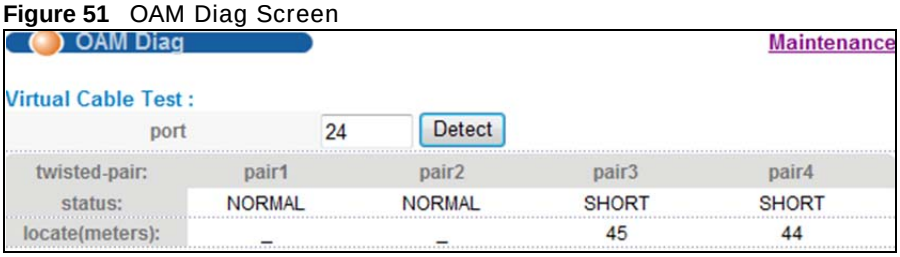
Table 43 Restart System Screen (continued)

LABEL	DESCRIPTION
Secondary Host	When the Switch start up, it will run the secondary host software. This number is the software version on the Switch and it will change once you upgrade/downgrade it.
Select Restart Type	Select **Restart** to restart the system directly. Select **Restart With Factory Defaults** to restore the system to its default factory settings.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.

7.1.3 OAM Diag

Use this screen to run Virtual Cable Test (VCT) diagnostics. Check the cable status. The results can be normal, short circuit, or open circuit.

Figure 51 OAM Diag Screen



The following table describes the fields in this screen.

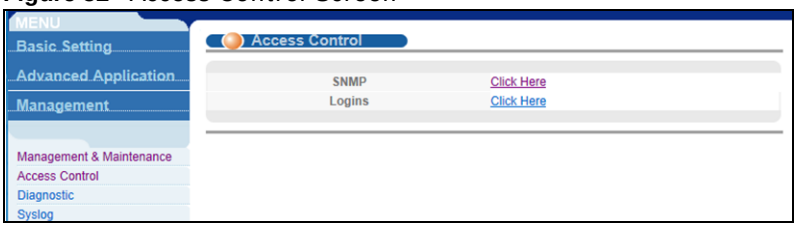
Table 44 OAM Diag Screen

LABEL	DESCRIPTION
Virtual Cable Test: Enter a port number and click Detect to perform a physical wire-pair test of the Ethernet connections on the specified port(s).	
Port	Enter a port number that you want to run the virtual cable test.
Detect	Click **Detect** to run the virtual cable test.
Twisted-pair	This field displays the network cable sequence.
Status	When this field displays **NORMAL**, It means the status is normal. When this field displays **SHORT**, It means the status is short circuit. When this field displays **OPEN**, It means the status is open circuit.
locate(meters)	This field detects the distance of the error lacations. The maximum detecting distance of 100M port is 181 meters, and GE port is 175 meters.

7.2 Access Control

Enter the Logins page then click on SNMP to configure the SNMP protocol. Click on Logins to add administrators for the Switch.

Figure 52 Access Control Screen



The following table describes the fields in this screen.

Table 45 Access Control Screen

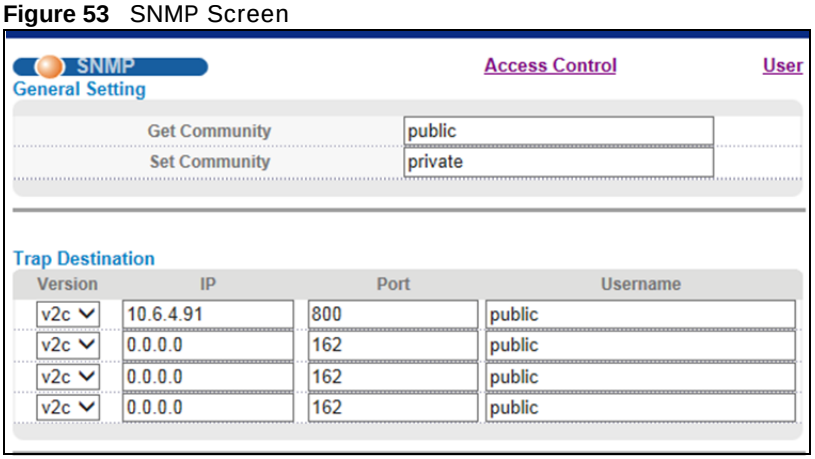
LABEL	DESCRIPTION
SNMP	Click **Click Here** to make configurations on SNMP.
Logins	Click **Click Here** to make configurations on logins.

7.2.1 SNMP

Simple Network Management Protocol is a popular management protocol defined by the Internet community for TCP/IP networks. It is a communication protocol for collecting information from devices on the network.

Use this screen to configure your SNMP settings.

Figure 53 SNMP Screen



The following table describes the fields in this screen.

Table 46 SNMP Screen

LABEL	DESCRIPTION
Access Control	Enter the Logins page then click on SNMP to configure the SNMP protocol. Click on Logins to add administrators for the Switch.
User	Set SNMP user information.
General Settings	Use this section to specify the SNMP version and community (password) values.
Get Community	Enter the **Get Community** string, which is the password for the incoming Get- and GetNext- requests from the management station. The **Get Community** string is only used by SNMP managers using SNMP version 2c or lower.

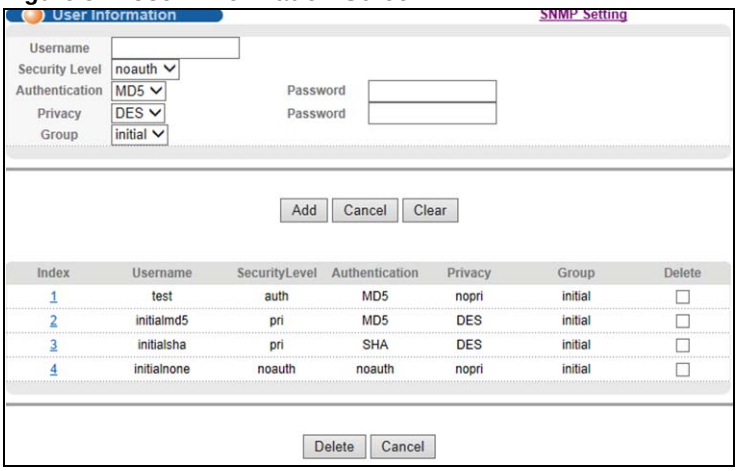
Table 46 SNMP Screen

LABEL	DESCRIPTION
Set Community	Enter the **Set Community**, which is the password for incoming Set- requests from the management station. The **Set Community** string is only used by SNMP managers using SNMP version 2c or lower.
Trap Destination	Use this section to configure where to send SNMP traps from the Switch.
Version	Specify the version of the SNMP trap messages.
IP	Enter the IP addresses of up to four managers to send your SNMP traps to.
Port	Enter the port number upon which the manager listens for SNMP traps.
Username	Enter the username to be sent to the SNMP manager along with the SNMP v3 trap. This username must match an existing account on the Switch (configured in **Management** > **Access Control** > **Logins** screen).

7.2.2 User Information

Use the **User** screen to create SNMP users for authentication with managers using SNMP v3 and associate them to SNMP groups. An SNMP user is an SNMP manager.

Figure 54 User Information Screen



The following table describes the labels in this screen.

Table 47 User Information Screen

LABEL	DESCRIPTION
User Information	Use the username and password of the login accounts you specify in this screen to create accounts on the SNMP v3 manager.
Username	Specify the username of a login account on the Switch.

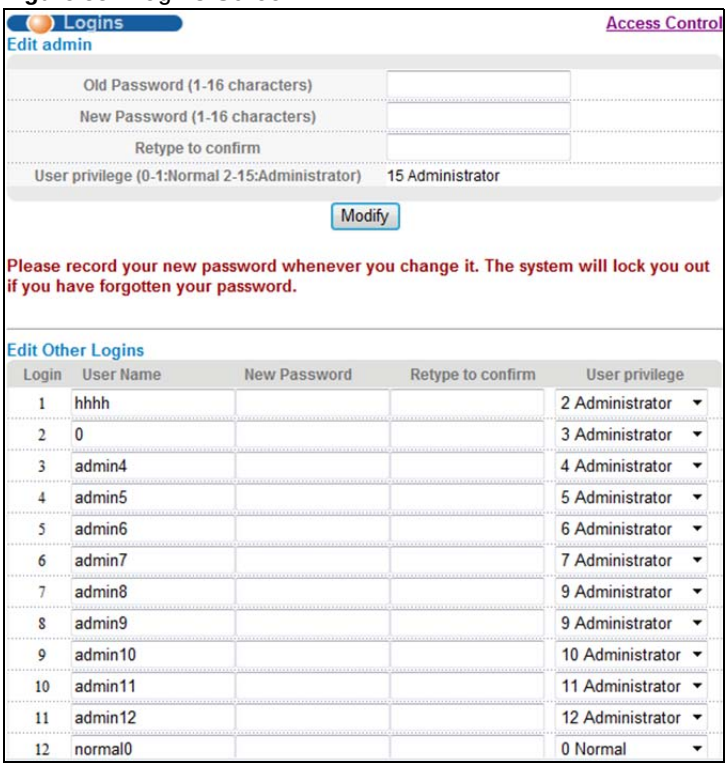
Table 47 User Information Screen (continued)

LABEL	DESCRIPTION
Security Level	Select whether you want to implement authentication and/or encryption for SNMP communication from this user. Choose: • **noauth** -to use the username as the password string to send to the SNMP manager. This is equivalent to the Get, Set and Trap Community in SNMP v2c. This is the lowest security level. • **auth** - to implement an authentication algorithm for SNMP messages sent by this user. • **priv** - to implement authentication and encryption for SNMP messages sent by this user. This is the highest security level. Note: The settings on the SNMP manager must be set at the same security level or higher than the security level settings on the Switch.
Authentication	Select an authentication algorithm. **MD5** (Message Digest 5) and **SHA** (Secure Hash Algorithm) are hash algorithms used to authenticate SNMP data. SHA authentication is generally considered stronger than MD5, but is slower.
Password	Enter the password of up to 32 ASCII characters for SNMP user authentication.
Privacy	Specify the encryption method for SNMP communication from this user. You can choose one of the following: • **DES** - Data Encryption Standard is a widely used (but breakable) method of data encryption. It applies a 56-bit key to each 64-bit block of data. • **AES** - Advanced Encryption Standard is another method for data encryption that also uses a secret key. AES applies a 128-bit key to 128-bit blocks of data.
Password	Enter the password of up to 32 ASCII characters for encrypting SNMP packets.
Group	SNMP v3 adopts the concept of View-based Access Control Model (VACM) group. SNMP managers in one group are assigned common access rights to MIBs. Specify in which SNMP group this user is. **admin** - Members of this group can perform all types of system configuration, including the management of administrator accounts. **readwrite** - Members of this group have read and write rights, meaning that the user can create and edit the MIBs on the Switch, except the user account and AAA configuration. **readonly** - Members of this group have read rights only, meaning the user can collect information from the Switch.
Add	Click this to create a new entry or to update an existing one. This saves your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to reset the fields to your previous configuration.
Clear	Click **Clear** to reset the fields to the factory defaults.
Index	This is a read-only number identifying a login account on the Switch. Click on an index number to view more details and edit an existing account.
Username	This field displays the username of a login account on the Switch.
Security Level	This field displays whether you want to implement authentication and/or encryption for SNMP communication with this user.
Authentication	This field displays the authentication algorithm used for SNMP communication with this user.
Privacy	This field displays the encryption method used for SNMP communication with this user.
Group	This field displays the SNMP group to which this user belongs.
Delete	Click **Delete** to remove the selected entry from the summary table.
Delete	Click **Delete** to remove.
Cancel	Click **Cancel** to begin configuring this screen afresh.

7.2.3 Logins

Use this screen to create users that is able to login the web configurator with their own user names and passwords. Also, if user privilege is 0-1, it's **Normal** user; 2-15 is **Administrator** user.

Figure 55 Logins Screen



The following table describes the fields in this screen.

Table 48 Logins Screen

LABEL	DESCRIPTION
Edit admin	Edit admin user/password.
Old Password (1-16 characters)	Type the existing system password (**1234** is the default password when shipped).
New Password (1-16 characters)	Enter your new system password.
Retype to confirm	Retype your new system password for confirmation
User privilege (0-1:Normal 2-15:Administrator)	This field displays the privilege level for this user. if user privilege is 0-1, it's **Normal** user; 2-15 is **Administrator** user.
Modify	Click **Modify** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Login	This field displays the login index number.
Edit Other Logins	Admin user can add/delete users and change user passwords; up to 15 users can be added.
User Name	Set a user name (up to 32 ASCII characters long).
New Password	Enter your new system password.

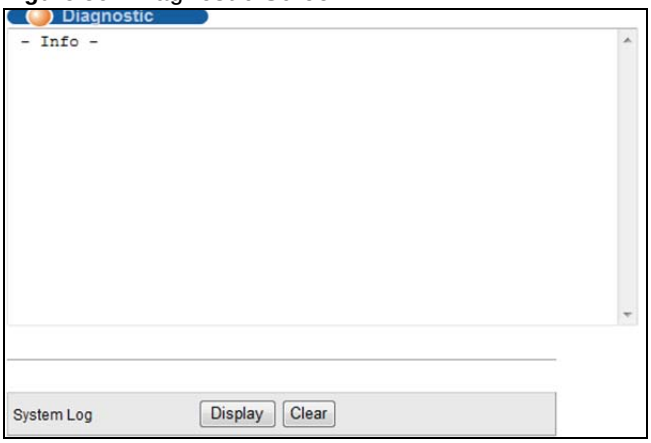
Table 48 Logins Screen

LABEL	DESCRIPTION
Retype to confirm	Retype your new system password for confirmation
User privilege	Type the privilege level for this user. if user privilege is 0-1, it's **Normal** user; 2-15 is **Administrator** user. Users can run command lines if the session's privilege level is greater than or equal to the command's privilege level. The session privilege initially comes from the privilege of the login account. For example, if the user has a privilege of 5, he/she can run commands that requires privilege level of 5 or less but not more.

7.3 Diagnostic

Use this screen to display system logs.

Figure 56 Diagnostic Screen



The following table describes the fields in this screen.

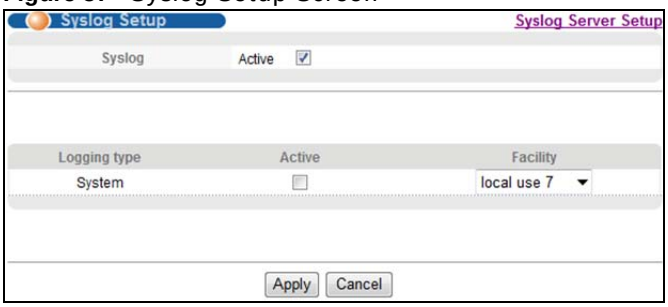
Table 49 Diagnostic Screen

LABEL	DESCRIPTION
Display	Click to display system logs.
Clear	Clears the system log.

7.4 Syslog Setup

The syslog feature sends logs to an external syslog server. Use this screen to configure the Switch's system logging settings and configure a list of external syslog servers.

Figure 57 Syslog Setup Screen



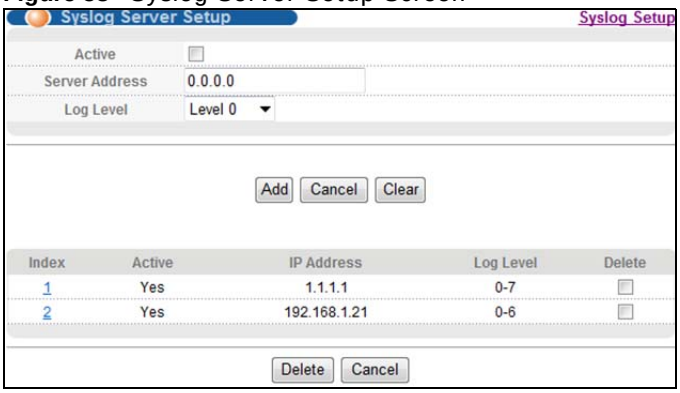
The following table describes the fields in this screen.

Table 50 Syslog Setup Screen

LABEL	DESCRIPTION
Active	Select the check box at the top to enable syslog, and deselect to disable this function.
Logging type	Select the "active" check box to enable the server's logging function.
Active	Select this option to set the device to generate logs for the corresponding category.
Facility	The default Facility is local use 7. Click to select other syslog server functions from the pull-down menu.
Apply	Click **Apply** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.
Cancel	Click **Cancel** to begin configuring this screen afresh.

7.4.1 Syslog Server Setup

Figure 58 Syslog Server Setup Screen



The following table describes the fields in this screen.

Table 51 Syslog Server Setup Screen

LABEL	DESCRIPTION
Active	Select this check box to have the Switch send logs to this syslog server. Clear the check box if you want to create a syslog server entry but not have the Switch send logs to it (you can edit the entry later).
Server Address	Enter the IP address of the syslog server.
Log Level	Select the severity level(s) of the logs that you want the Switch to send to this syslog server. The lower the number, the more critical the logs are.
Add	Click **Add** to save your changes to the Switch's run-time memory. The Switch loses these changes if it is turned off or loses power.

Table 51 Syslog Server Setup Screen

LABEL	DESCRIPTION
Cancel	Click **Cancel** to begin configuring this screen afresh.
Clear	Click **Clear** to return the fields to the factory defaults.
Index	This is the index number of a syslog server entry. Click this number to edit the entry.
Active	This field displays **Yes** if the Switch is to send logs to the syslog server. **No** displays if the Switch is not to send logs to the syslog server.
IP Address	This field displays the IP address of the syslog server.
Log Level	This field displays the severity level of the logs that the Switch is to send to this syslog server.
Delete	Click **Delete** to remove the selected entry(ies).
Delete	Click **Delete** to remove.
Cancel	Click **Cancel** to begin configuring this screen afresh.

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

B

Legal Information

Copyright

Disclaimer

ZyXEL does not assume any liability arising out of the application or use of any products, or software described herein. Neither does it convey any license under its patent rights nor the patent rights of others. ZyXEL further reserves the right to make changes in any products described herein without notice. This publication is subject to change without notice.

Regulatory Notice and Statement

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

WARNING: This equipment is compliant with Class A of EN55032. In a residential environment this equipment may cause radio interference.

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 obstruct the device ventilation slots as insufficient airflow may harm your device. For example, do not place the device in an enclosed space such as a box or on a very soft surface such as a bed or sofa.
- 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.
- 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.
- To avoid possible eye injury, do NOT look into an operating fiber-optic module's connector.

- CLASS 1 LASER PRODUCT (for products with mini-GBIC slots or laser products, such as fiber-optic transceiver and GPON products).
- PRODUCT COMPLIES WITH 21 CFR 1040.10 AND 1040.11. (for products with mini-GBIC slots or laser products, such as fiber-optic transceiver and GPON products)

- APPAREIL À LASER DE CLASS 1 (for products with mini-GBIC slots or laser products, such as fiber-optic transceiver and GPON products).
- PRODUIT CONFORME SELON 21 CFR 1040.10 ET 1040.11. (for products with mini-GBIC slots or laser products, such as fiber-optic transceiver and GPON products)

Environment Statement

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/ЕО	PPW Směrnice 94/62/ES	PPW Direktiv 94/62/EF	PPW Richtlinie 94/62/EG
REACH РЕГЛАМЕНТ (ЕО) № 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	Jméno/ titul : Richard Hsu / Quality Management Division Senior Manager	Navn/ titel : Richard Hsu / Quality Management Division Senior Manager	Name/ titel : Richard Hsu / Quality Management Division Senior Manager
Подпис : Дата (дд/мм/гггг): 01/10/2014	Podpis : Datum (dd/mm/rrrr): 01/10/2014	Underskrift : Dato (dd/mm/åååå): 01/10/2014	Unterschrift : 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 RÈGLEMENT (CE) N° 1907/2006
Nimi/ ametikoht : Richard Hsu / Quality Management Division Senior Manager	Name/ title : Richard Hsu / Quality Management Division Senior Manager	Nombre/ título : Richard Hsu / Quality Management Division Senior Manager	Nom/ titre : Richard Hsu / Quality Management Division Senior Manager
Allkiri : Kuupäev (pp/kk/aaaa): 01/10/2014	Signature : Date (dd/mm/yyyy): 01/10/2014	Firma : Fecha (aaaa/mm/dd): 2014/10/01	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	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	Nome/ titolo : Richard Hsu / Quality Management Division Senior Manager	Nosaukum s/ tituls : Richard Hsu / Quality Management Division Senior Manager	Vardas/ titulas : Richard Hsu / Quality Management Division Senior Manager
Potpis : Datum (dd/mm/yyyy): 01/10/2014	Firma : Data (aaaa/mm/gg): 2014/10/01	Paraksts : Datums(dd/mm/gggg): 01/10/2014	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	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	Isem/ titolu : Richard Hsu / Quality Management Division Senior Manager	Naam/ titel : Richard Hsu / Quality Management Division Senior Manager	Nazwisko /tytuł : Richard Hsu / Quality Management Division Senior Manager
Aláírás : Dátum (éééé/hh/nn): 2014/10/01	Firma : Data (ssss/xx/jj): 2014/10/01	Handtekening : Datum (dd/mm/jaar): 01/10/2014	Podpis : 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	Numele/ titlu : Richard Hsu / Quality Management Division Senior Manager	Meno/ titul : Richard Hsu / Quality Management Division Senior Manager	Ime/ naziv : Richard Hsu / Quality Management Division Senior Manager
Assinatura : Data (dd/mm/aaaa): 01/10/2014	Semnătura : Data (zz/ll/aaaa): 01/10/2014	Podpis : Dátum (dd/mm/rrrr): 01/10/2014	Podpis : 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	Namn/ titel : Richard Hsu / Quality Management Division Senior Manager	Δνομα/ ίτλος : Richard Hsu / Quality Management Division Senior Manager	Navn/ tittel : Richard Hsu / Quality Management Division Senior Manager
Allekirjoitus : Päivämäärä (pp/kk/vvvv): 01/10/2014	Namnteckning : Datum (dd/mm/åååå): 01/10/2014	Υπογραφή : Ημερομηνία (ηη/μμ/εεεε): 01/10/2014	Signatur : Dato (dd/mm/åååå): 01/10/2014

台灣

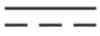
警告使用者：
• 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。」

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。

About the Symbols

Various symbols are used in this product to ensure correct usage, to prevent danger to the user and others, and to prevent property damage. The meaning of these symbols are described below. It is important that you read these descriptions thoroughly and fully understand the contents.

Explanation of the Symbols

SYMBOL	EXPLANATION
	Alternating current (AC): AC is an electric current in which the flow of electric charge periodically reverses direction.
	Direct current (DC): DC if the unidirectional flow or movement of electric charge carriers.
	Earth; ground: A wiring terminal intended for connection of a Protective Earthing Conductor.
	Class II equipment: The method of protection against electric shock in the case of class II equipment is either double insulation or reinforced insulation.

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.

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