WATERS NETWORK SYSTEMS™

# OPERATING MANUAL

# PSX1008 and MS1008 Switch

## Managed Switch with Eight 10/100Base-TX Ports

## Plus One Fiber Port

PSX1008-MSC

PSX1008-MST

PSX1008-MTRJ

PSX1008-SSC-30

MS1008-MSC

MS1008-MST

MS1008-MTRJ

MS1008-SSC-30


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## Table of Contents

# 1.0 Specifications

## OPERATIONAL CHARACTERISTICS:

| | |
|---|---|
| MAC Address Table: | 8k |
| Switching Mode: | Store-and-forward |
| Memory Buffer Size: | 4Mb |
| Performance: | Non-blocking wire speed (up to 3.8Gbps) |

## MANAGEMENT FEATURES:

Web-based, Telnet and console
SNMP
Port setting for duplex and speed
Port trunking (4 groups)
Port based and tagged VLANs (up to 256)
QoS
IGMP
GVRP
Port mirroring
Broadcast storm
Spanning Tree

## NETWORK STANDARDS:

IEEE 802.3
IEEE 802.3u
IEEE 802.3x
IEEE 802.1q
IEEE 802.1p
IEEE 802.1d
IEEE 802.3ad

## EMI/SAFETY COMPLIANCE:

FCC Class A, CE, UL cUL

## NETWORK CABLE CONNECTORS

RJ45 shielded female ports

| | |
|---|---|
| 10/100Mbps: | CAT5 UTP or better |
| Multimode: | SC |
| Singlemode: | SC connectors (up to 10km) |

## POWER SUPPLY:

Input Voltage
110 to 240 VAC,  50 to 60Hz

**Power Consumption**

17 watts maximum

**OPERATING ENVIRONMENT:**

Ambient Temperature:
32° to 113°F (0° to 45°C)
Storage:
-40° to 158°F (-40°to 70°C)
Ambient relative humidity:
10% to 90% (non-condensing)

**MECHANICAL:**

Enclosure:
Rugged high-strength sheet metal suitable for stand-alone, wall or tabletop mounting
Cooling Method: Fan cooled

**PHYSICAL CHARACTERISTICS:**

*PSX Models*:
Dimensions:
10 x 5.25 x 1.75 in (250 x 132 x 37.5mm)
Weight:
2.4lbs

*MS Models*:
Dimensions:
16 x 11 x 1.75 in (406x 279 x 37.5mm)
Weight:
3.7lbs (1.68kg)

## 2.0 Package Contents

Examine the shipping container for obvious damage prior to installing this product. Notify the carrier of any damage that you believe occurred during shipment. Ensure that the items listed below are included. If an item is missing, please contact your supplier. The 1008 switch package contains the following:

- 1008 Switch
- Power Cord
- Four Rubber Feet
- RS-232 cable
- User's Guide

## 3.0 Introduction

In our modern society, communication and sharing information is essential to our lives. Computer networks have proven to be one of the fastest methods of communication.

The 1008 series of switches are compact desktop size switches that are the ideal solution for any network user. The 1008 switches provide high-performance managed switching functions with low-cost connectivity. The 1008 switches feature store-and-forward switching and will auto-learn and store source addresses with an 8K-entry MAC address table.

Figure 3-1. PSX-1008-MSC

The switch provides eight switched auto-sensing 10/100Base-TX RJ45 ports plus one 100Base-FX fiber port. The switch will automatically detect the speed of connected devices to accommodate both 10 and 100Mbps. The 10Mbps bandwidth will accommodate 10Mbps workgroup switches while simultaneously providing the 100Mbps bandwidth required for multimedia applications. All RJ45 ports support the **Auto MDI/MDIX** function.

With the built-in Web-based management functionality, managing and configuring the switch is easy. From cabinet management to port-level control and monitoring, you can visually configure and manage your network via your Web Browser. Just click your mouse instead of typing command strings. The 1008 switch can be managed via Telnet, Console, or SNMP Management.

Ethernet switching technology dramatically boosted the total bandwidth of a network, eliminating congestion problems inherent with the carrier sense multiple access with the collision detection (CSMA/CD) protocol and greatly reduced unnecessary transmissions.

This revolutionized networking. First, by allowing two-way, simultaneous transmissions over the same port (full-duplex), bandwidth was essentially doubled. Second, by reducing the collision domain to a single switch-port, the need for carrier sensing was eliminated. Third, by using the store-and-forward technology's approach of inspecting each packet to intercept corrupt or redundant data, switching eliminated unnecessary transmissions that slow down network traffic.

Auto-negotiation regulates the speed and duplex of each port, based on the capability of both devices. Flow-control allows transmission from a 100Mbps node to a 10Mbps node without loss of data. Auto-negotiation and flow-control may have to be disabled for some networking operations that involve legacy equipment. Disabling the auto-negotiation is accomplished by hard setting the speed or duplex mode of a port.

## 3.1 Hardware Features

- Conforms to IEEE 802.3, 802.3u, and 802.3x Ethernet Standards
- Auto-sensing 10/100Base-TX RJ45 port ports
- Automatic MDI/MDIX crossover for each 10/100Base-TX port
- 1 Fixed 100Base-FX port (SC, ST or MTRJ connector)
- Console port on rear side for system configuration
- Half-duplex mode for backpressure
- Full-duplex for flow control
- Store-and-forward switching architecture
- Automatic address learning, address migration

- 8K-entry MAC address table
- 2Mbit memory buffer sharing
- Performs non-blocking full wire speed

### 3.2 Software Features

| | |
|---|---|
| **RFC Standard** | RFC 1157 SNMP, RFC 1213 MIB II, RFC 1643 Ethernet Like, RFC 1493 Bridge MIB, RFC 1757 RMON1, LANTECH Enterprise MIB, RFC 1215 Trap |
| **Management** | Web management (IE)<br>Local console (RS-232 on rear side)<br>Telnet |
| **Trunk** | IEEE 802.3ad Trunk with LACP for load distribution control and fail over recover<br>Up to 4 ports per group, maximum 4 groups |
| **Class of Service** | IEEE802.1p, Each port supports 2 priority queues (high/low) |
| **QoS** | System support 8 levels of priority and mapping to high/low priority queue |
| **VLAN** | Port-based VLAN, 802.1Q Tag VLAN, Protocol type VLAN<br>VLAN ID up to 4094, VLANs up to 256 groups. GVRP support. |
| **IP Multicast** | Support IGMP snooping, supports 256 groups.<br>Support 2 types of query mode (enable/disable or auto query) |
| **Filter Database** | Support per port static MAC address lock, MAC filter, port security |
| **Port Mirror** | Use this feature to analyze port traffic. Supports maximum 8 ports. |
| **Broadcast Control** | None, 5%, 10%, 15%, 20%, 25% |
| **Spanning Tree** | IEEE802.1d support |

## 3.3 Management Methods

The 1008 switch series supports following management methods:

- Console and Telnet Management
- Web-based Management
- SNMP Network Management

### 3.31 Console and Telnet Management

Console Management is done through the RS-232 Console Port. Use the RS-232 cable supplied in your package to connect directly to a workstation from your 1008 switch. Once an IP address has been set on the 1008 switch, you can use Telnet or Web Management to login to the switch and modify the configuration.

### 3.32 Web-based Management

The 1008 provides an embedded HTML web site residing in flash memory. It offers advanced management features and allow users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer.

### 3.33 SNMP Network Management

SNMP (Simple Network Management Protocol) provides a means to monitor and control network devices, manage configurations, collect statistics, performance and security information.

## 3.4 Hardware Description

### Front Panel

The front panel of the 1008 switch consists of 8 auto-sensing 10/100Mbps RJ45 ports and one 100Base-FX port. The LED indicators are also located on the front panel of the switch.

Figure 3-2. The Front Panel of the 1008-MSC Switch

The front panel is displayed as below.

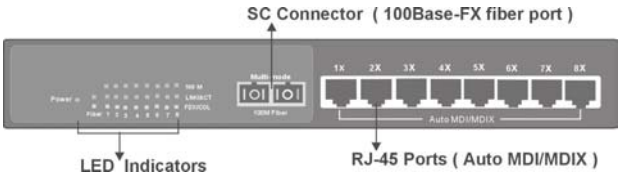



Figure 3-3. Front Panel of the 1008-MSC Switch

### Rear Panel

The console port and a three-pronged AC power plug are located on the rear panel of the switch. The 1008 switches work in the range 100-240V AC, 50-60Hz.


Figure 3-4. The Rear Panel of the 1008 Switch

The console port can be used to perform management functions. Console connection requires a direct connection between the switch and an workstation with a RS-232 cable.

Hardware Ports

- One port either 1000Base-SX, LX or TX
- Eight 10/100 auto MDI/MDIX 10/100Base-TX connections. MDI allows you to connect to another hub or switch and MDIX allows you to connect to a workstation or PC. Therefore, **Auto MDI/MDIX** means that you can connect to another switch or workstation without a crossover cable.

## 3.5 LED Indicators

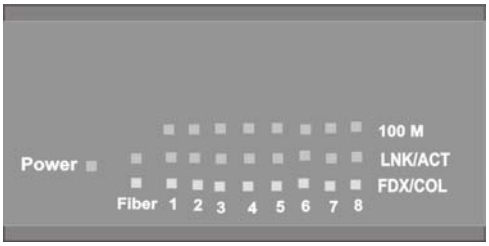



Figure 3-5. LED Indicators for 1008 Switch

There are three LED-Indicators (100M, LK/ACT, FDX/COL) for each of the eight 10/100Base-TX copper ports. The following table provides the status and description of the LEDs. The LEDs provide a real-time indication of systematic operation status.

| Ethernet Port | | | |
|---|---|---|---|
| **LED** | **Status** | **Color** | **Description** |
| **Power** | On | Green | Power On |
| **100M** | On | Green | The port is operating at 100Mbps. |
| | Off | | Port is operating at 10Mbps or no device attached |
| **LNK/ ACT** | On | Green | The port is connecting with the device. |
| | Blinks | Green | The port is receiving or transmitting data. |
| | Off | | No device attached. |
| **FDX/ COL** | On | Orange | The port is operating in full-duplex mode. |
| | Blinks | Orange | Collision of packets occurs in the port. |
| | Off | | No device attached or in half-duplex mode. |

Table 3-1. LED Description

## 3.6 Desktop Installation

Choose a surface for your switch that is clean, smooth, level, sturdy and with a power outlet nearby. Make sure there is enough clearance around the switch to allow attachment of cables, power cord and air circulation.

### 3.61 Attaching Rubber Feet

1. Make sure mounting surface on the bottom of the switch is free of grease and dust.
2. Remove adhesive backing from the rubber feet.
3. Apply the rubber feet to each corner on the bottom of the switch.

Figure 3-6. Attaching Rubber Feet to each corner on the bottom of the switch

### 3.62 Power On

Connect the power cord to the AC power socket on the rear panel of the switch. Check the power indicator on the front panel to see if power is properly supplied.

## 4.0 Network Applications

This section provides samples of network topology in which the 1008 switch can be used. The 1008 series of switches are generally used as a desktop, workgroup or edge segment switch.

**Desktop Application**

The 1008 series of switches provide the ideal solution for small workgroups. The switch can be used as a standalone switch to which personal computers, servers, and print servers are directly connected to form a small workgroup.

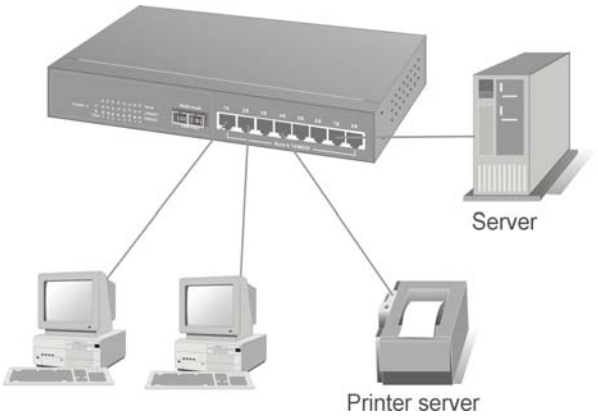



Figure 4-1. Desktop Application

Segment Application

For enterprise networks where large data packets are constantly processed, this switch is suitable for department users to connect to the corporate backbone.

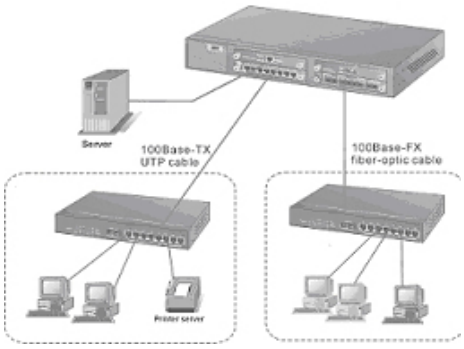



Figure 4-2 Segment Application

The 1008 switch can be directly connected to PCs, workstations, and servers. The switch automatically learns node addresses, which are subsequently used to filter and forward all traffic based on the destination address. You can use any of the copper ports to connect with another switch to interconnect each of your small-switched workgroups to form a larger switched network.

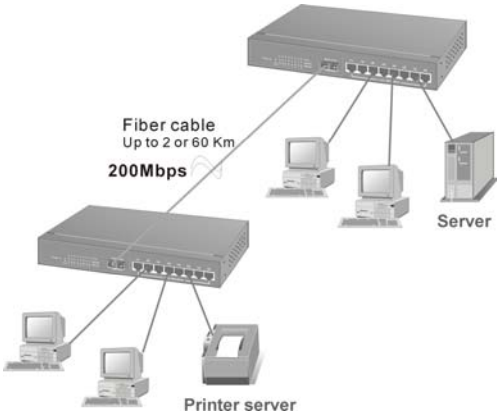



Figure 4-3 Use fiber port to extend the distance between workgroups

In the above illustration, two 1008 switches are used to interconnect two small workgroups.

## 4.1 Network Configuration

This section explains how to configure console management via a direct connection to the console port of the switch. Console management involves the administration of the switch via a direct connection to the RS-232 console port. This port is a female DB-9 connector. From the **Main Console Management Menu,** you have access to all of the management functions of the switch.

Connecting a Terminal or PC to the Console Port

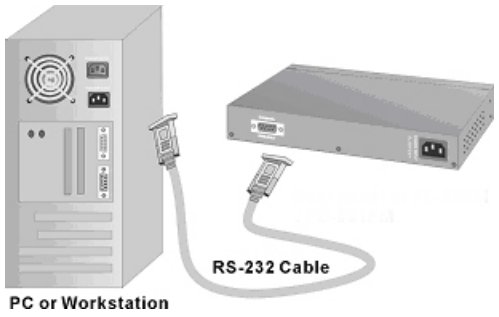



Figure 4-4. Connecting the 1008 switch to a terminal via RS-232 cable

Use the supplied RS-232 cable to connect a terminal or PC to the console port. The terminal or PC to be connected must support the terminal emulation program.

After the connection between switch and PC is made, run a **terminal emulation program** or **Hyper Terminal** to match the following default characteristics of the console port:

| | |
|---|---|
| **Baud Rate:** | **9600 bps** |
| **Data Bits:** | **8** |
| **Parity:** | **None** |
| **Stop Bit:** | **1** |
| **Flow Control:** | **None** |

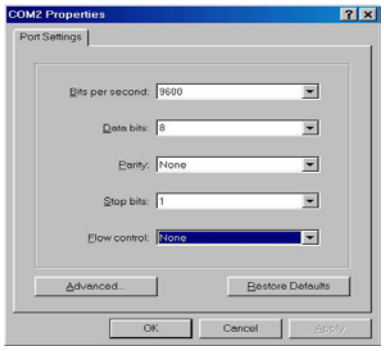
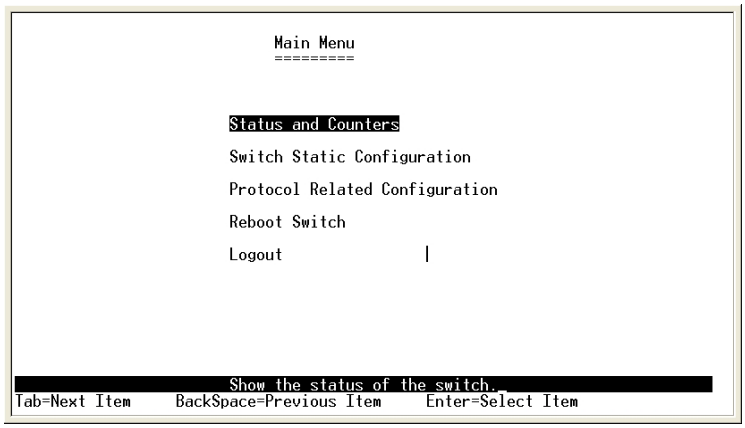



Figure 4-5. Communication Parameters

1. Press **Enter** once you have entered the parameters listed above.
2. Turn on the switch. The switch will display a series of messages as it performs a self test. Once the self test is completed, the login screen will be displayed.
3. Enter the username and password. The default user name is **root**, and the default password is **root**. You may change the login identification to make it more secure for your network (Section 4.29).




## 4.2 Main Menu

The following five choices are listed on the **Main Menu**:

- **Status and Counters** – Displays the status of the switch.
- **Switch Static Configuration** - Use to configure the switch from another set of menus.
- **Protocol Related Configuration** - Configure the following protocol functions.
    - **STP**
    - **SNMP**
    - **GVRP**
    - **LACP**
- **Reboot Switch** - Restart the system or reset switch to default configuration.
- **Logout** - Exit the management functions.

**Control Keys**

The following keys are used to move between menu options in all menus:

**Tab:** Use the tab key to move to the next menu option.

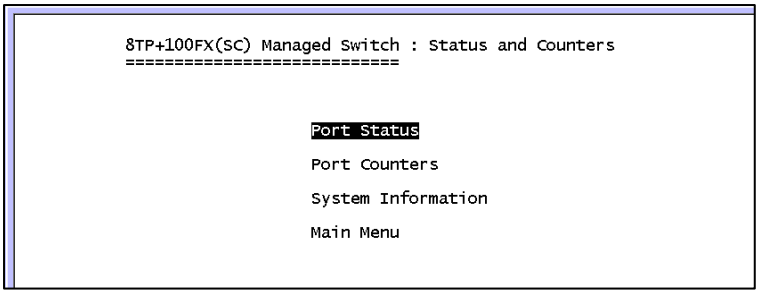
**Backspace:** Use the backspace key to move to the previous option.

**Enter:** Use enter to make selection

**Space:** Toggles selected item to move between configuration choices.

The bottom of the screen displays the keys that are used to for the management functions.

## 4.21 Status and Counters

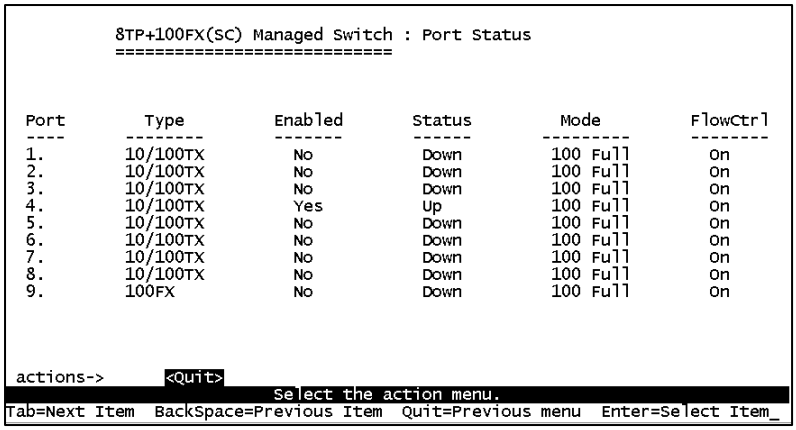



Press the **Tab** or **Backspace** key to make your selection, and press **Enter**.

## 4.22 Status and Counters - Port Status

The **Port Status'** screen displays the status of all of the ports.

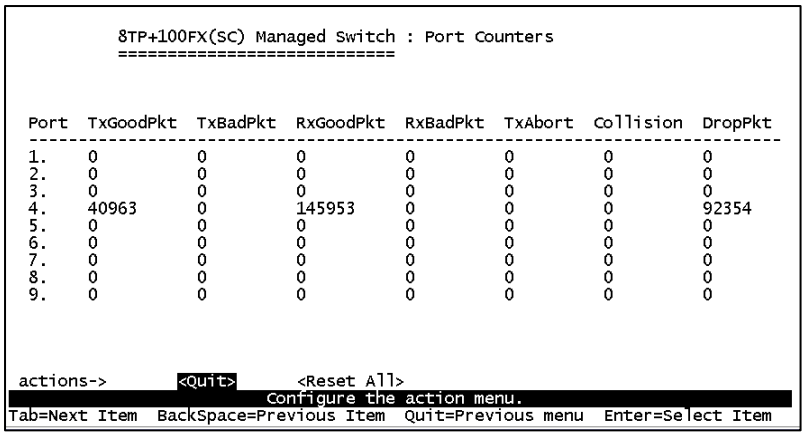
- **Type** - Displays the port speed for each port.
- **Enabled** – You have the choice of enabling or disabling the port. Enabled will be displayed as **Yes** and Disabled will be displayed as **No**. The **Default** setting is **Yes**.
- **Status** - Display the status of the port. **Down** means there is no link, and **Up** means there is a link.
- **Mode** - Displays the actual port speed and duplex setting.
- **Flow Ctrl** - Displays the flow control status. Flow control is **ON** by default.



You can press the **Tab** or **Backspace** key to select a menu choice. Press the **Enter** key to select item.

### 4.23 Status and Counters - Port Counters

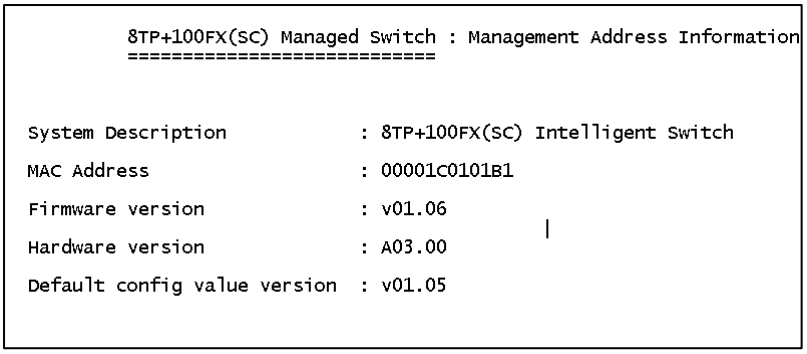
The **Port Counters'** screen provides the current status of the switch




### 4.24 Status and Counters - System Information

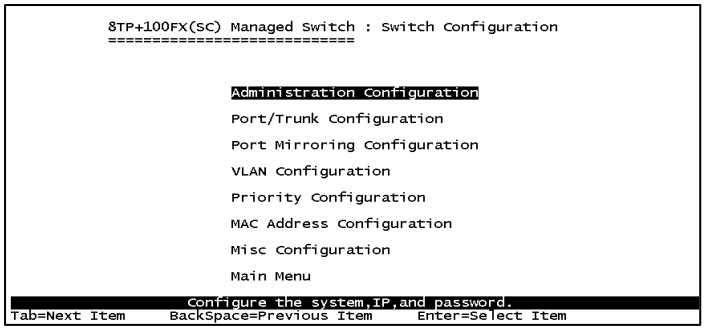
The **System Information** screen displays the following information:

- **System Description** - The name of device type.
- **MAC Address** - The unique hardware address assigned by manufacturer.
- **Firmware Version** - Displays the switch's firmware version.
- **Hardware Version** - Displays the switch's hardware version.
- **Kernel Version** – Displays the switch's kernel version.



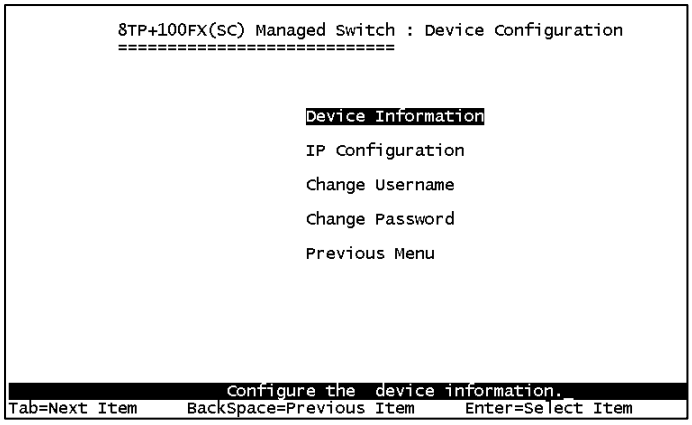
## 4.25 Switch Static Configuration

The **Switch Static Configuration** (on the Main Menu) menu provides the following options:




## 4.26 Administration Configuration

The **Administration Configuration** (from the Switch Configuration menu) menu provides the following options:



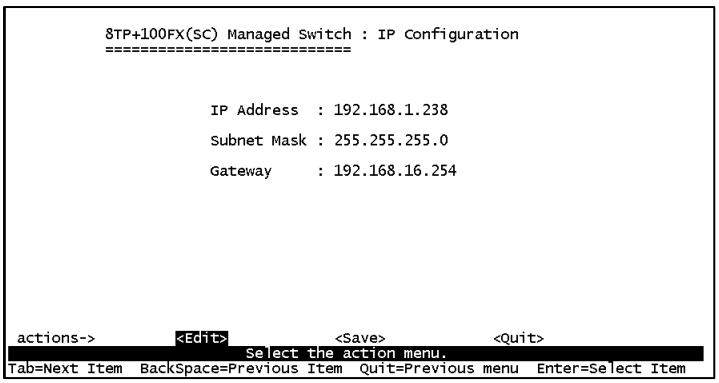

## 4.27 Device Information

The **Device Information** menu provides the following information:

## 4.28 IP Configuration

The **IP Configuration** menu allows you to assign an appropriate IP address.

1. Select **Edit** to configure all items.
2. When you have completed the configuration, press the **Esc** key to return to the menu line.
3. Select **Save** to save the new settings.




**Note:** Always restart the switch once you have modified the configuration.

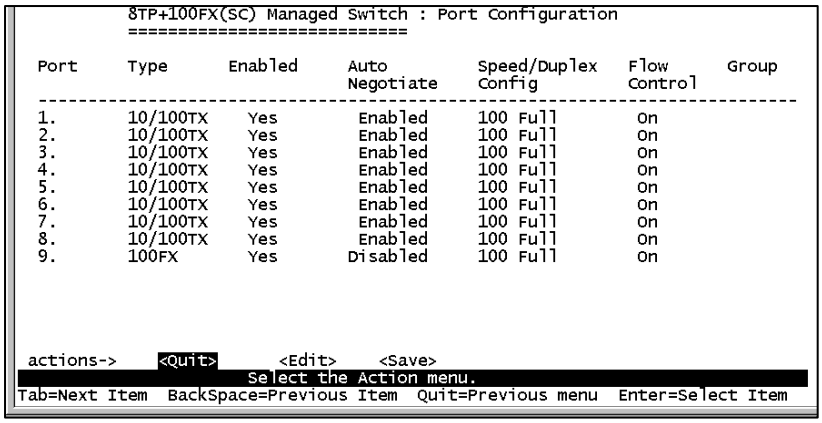
## 4.29 Change User Name and Password

You can change the **User Name** and **Password** from the **Device Configuration** menu. The old password is required in order to make the change to the new password.

## 4.30 Port / Trunk Configuration

You can use this menu to change the port status and configure trunk groups. Use the **TAB** key to change configure of these settings:

- **Enabled** – You can disable or enable the port control.
- **Auto Negotiate** – You can enable or disable auto negotiation per port.
- **Speed/Duplex Config** – Ports 1-8 can be set to 100Mbps or 10Mbps speed. Port 9 can only be set to 1000Mbps and set full-duplex or half-duplex mode.
- **Flow Control** – You can set flow control function to be enabled or disabled. Flow control is **enabled** by default.
- **Group** – You can set trunk group for port 1~port 8. You can set up to four trunk groups.

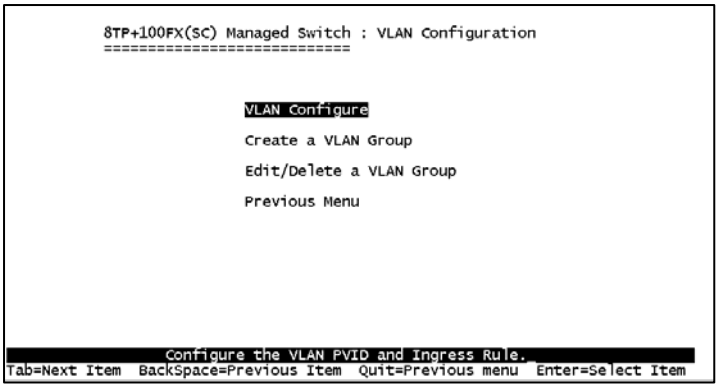



## 4.31 Port Mirroring Configuration

Port mirroring is a method used for monitoring traffic in switched networks. Traffic can be monitored through ports by one specific port. The traffic that goes in or out monitored ports will be duplicated into the monitoring port. Port mirroring is **disabled** by default. **Port Mirroring** can be accessed from the **Switch Static Configuration Menu**.

- **Port Mirroring State -** Use the space bar to toggle from **Disable** to **Enable** for port-mirroring function.
- **Mirroring Port -** The mirror port can be used to see all monitored port traffic.
- **Source Port -** The source port is the port you want to monitor. All monitored port traffic will be copied to sniffed port. You can select a maximum of nine ports to monitor in the switch. User can choose to monitor RX frames only or TX frames only or both RX and TX frames from the port.

## 4.32 VLAN Configuration




The **VLAN Configuration Menu** can be accessed from the **Switch Static Configuration Menu**. VLANs are **disabled** by default. Once you have **enabled** VLANs, you may choose between the following:

- 802.1q
- 802.1q with GVRP
- Port-based

**PVID (Port VID):** Set the port VLAN ID that will be assigned to untagged traffic on a given port. This feature is useful for accommodating devices that you want to participate in the VLAN but that don't support tagging. Only one untagged VLAN is allowed per port.

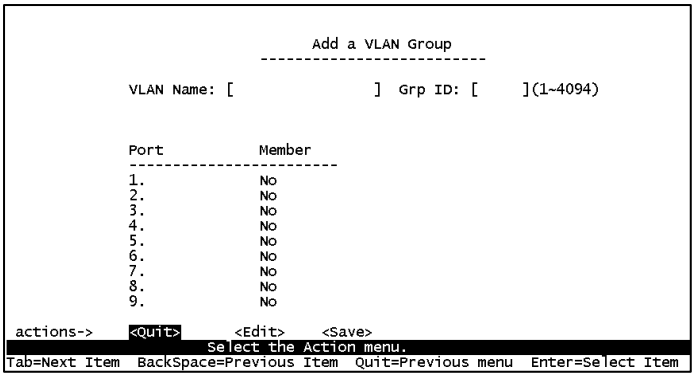
**Ingress Filter 1:** Forward only packets with VIDs matching this port's configured VID. Use the **Space** bar to choose to forward or drop the frame that the VID does not match this port's configured VID.

**Ingress Filter 2:** Drop untagged frame. Use the **Space** bar to choose drop or forward the untagged frame. Once you have set VLANs to **enabled**, you are ready to create a VLAN group.

## 4.33 Creating a VLAN Group

1. Select **Create a VLAN Group** from the **VLAN Configuration Menu**.
2. Provide the following information for the VLAN:
    - **VLAN Name:** Type a name for the new VLAN.
    - **VLAN ID:** Type a VID (between 2~4094). The default is 1.
    - **Protocol VLAN:** Press the **Space** bar to choose the type of protocol.

- **Un-Tagged:** Assign untagged to the port.
- **Tagged:** Assign tagged to the port.
- **No:** The port is not a member of this VLAN group.




### 4.34 Edit / Delete a VLAN Group

To edit or delete a VLAN group, use the following instructions.

1. Select **Edit/Delete a VLAN Group** from the **VLAN Configuration Menu**.
2. Choose the VLAN group that you want to edit or delete and then press **Enter**.
3. You can modify the configuration for the VLAN.
4. Remember to choose **Save** once you have completed your modifications or VLAN deletions so all configuration values are saved.

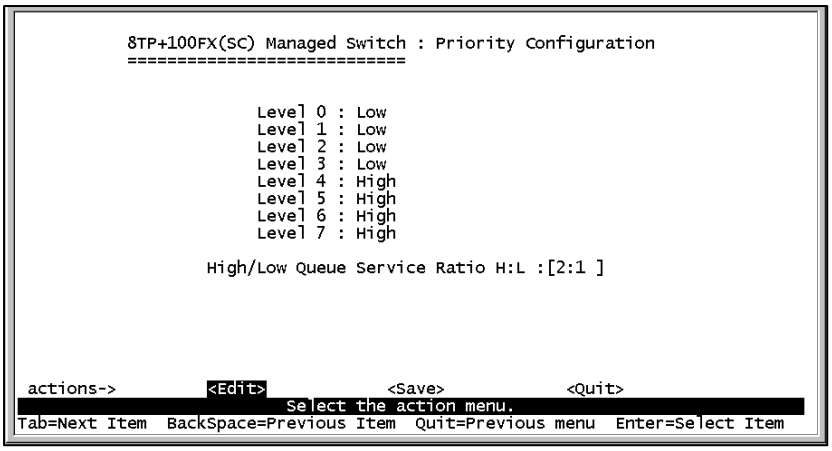
**Note:** You cannot modify the default VLAN Name and VLAN ID, and you cannot delete the default VLAN.

### 4.35 Priority Configuration

- **Levels 0~7** can be set to high or low queue service
- **High/Low Queue Service Ratio H: L:** User can select the ratio of high priority packets and low priority packets.
    - **First In First Out:** The sequence of packets sent depends on the order of arrival.
    - **High to Low:** The high priority packets are sent before low priority packets.
    - **Ratio H: L:** Select the preference given to packets in the switch's high-priority queue.

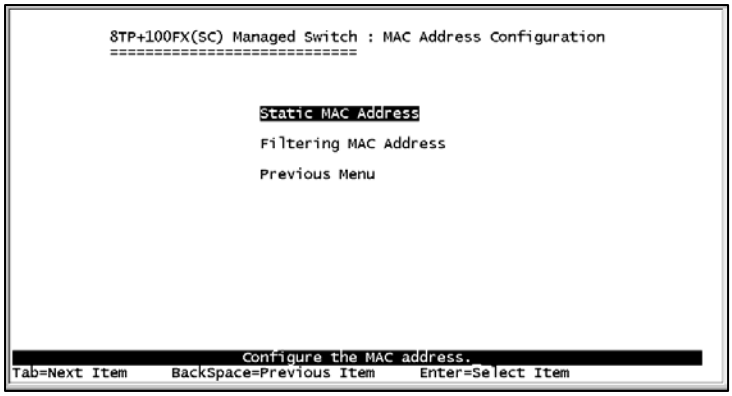
These options represent the number of high priority packets sent before one low priority

packet is sent. For example, **2 High: 1 Low** means that the switch sends two high priority packets before sending one low priority packet.




**Note:** Remember to **save** settings..

## 4.36 MAC Address Configuration




When you add a static MAC address, it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address when the device is active again on the network. User can add / modify / delete a static MAC address.

**Add static MAC address**

1. Select **Add** to add a static MAC address.
2. Enter the MAC address of the desired port. This port will be set to permanently forward traffic, regardless of the device's network activity.
3. Enter the **port number** under **Port num**.

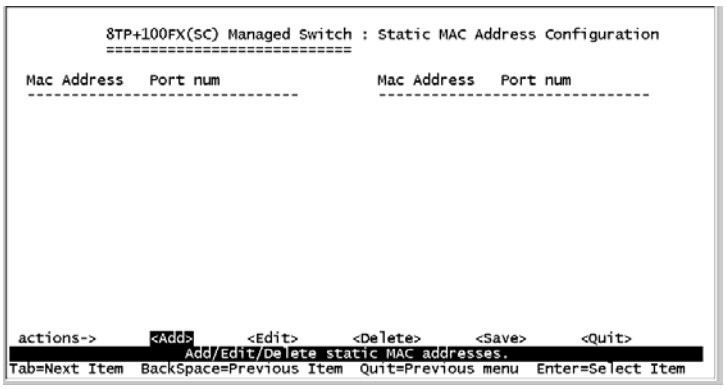
4. If tag-based VLANs are set up on the switch, static addresses are associated with individual VLANs. Type the **VID** to associate with the MAC address.
5. Press **ESC** to return to the action menu line.
6. Select **Save** to save all configure values.

**Edit Static MAC address**

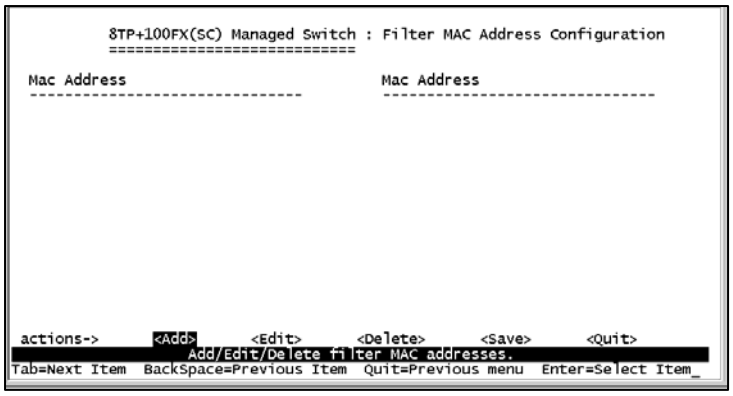
1. Select **Edit** to modify a static MAC address.
2. Choose the MAC address that you want to modify and then press **Enter**.
3. Select **Edit** to modify all the items.
4. Press **ESC** to return to the action menu line.
5. Select **Save** to save all configure values.

**Delete static MAC address**

1. Select **Delete** to delete a static MAC address.
2. Select the MAC address that you want to delete and then press **Enter**.
3. After deleting a static MAC address, select **Save** to complete the deleting operation.



## 4.37 Filtering MAC Addresses



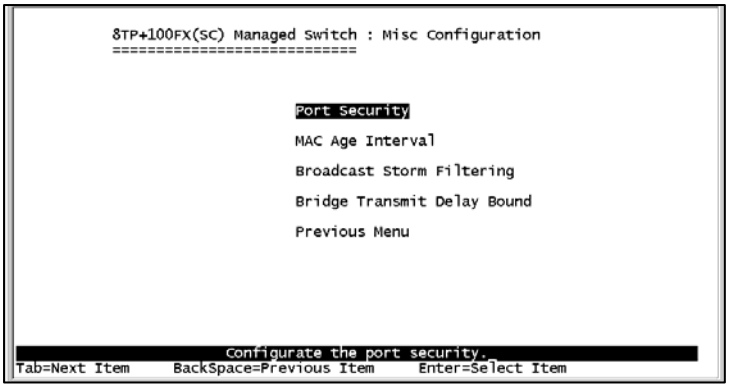

### Edit Filtering MAC Addresses

1. Select **Edit** to modify a static filtering address.
2. Choose the MAC address that you want to modify and then press **Enter**.
3. Press **Edit** to modify all the items.
4. Press **ESC** to return to the action menu line.
5. Select **Save** to save all configure values.

### Delete Filtering MAC Addresses

1. Press **Delete** to delete a Filtering MAC address.
2. Choose the MAC address that you want to delete and then press **Enter**.
3. After deleting the filtering MAC address, select **Save** to complete the deleting operation.

## 4.38 Misc. Configuration



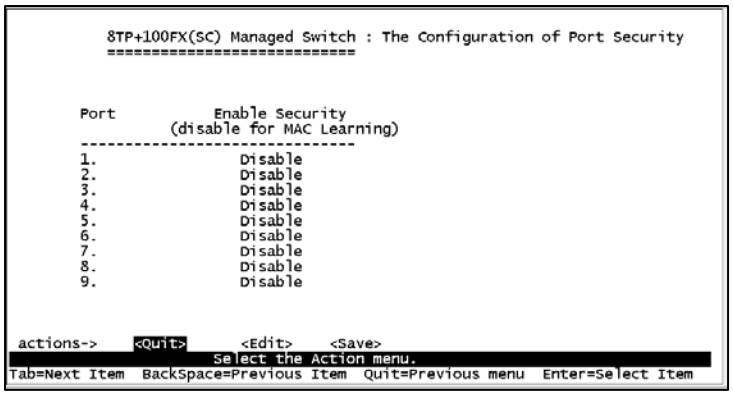

The following settings can be made through the **Misc Configuration Menu**:

- Port Security

- MAC Age Interval
- Broadcast Storm Filtering
- Bridge Transmit Delay Bound

### 4.38.1 Port Security

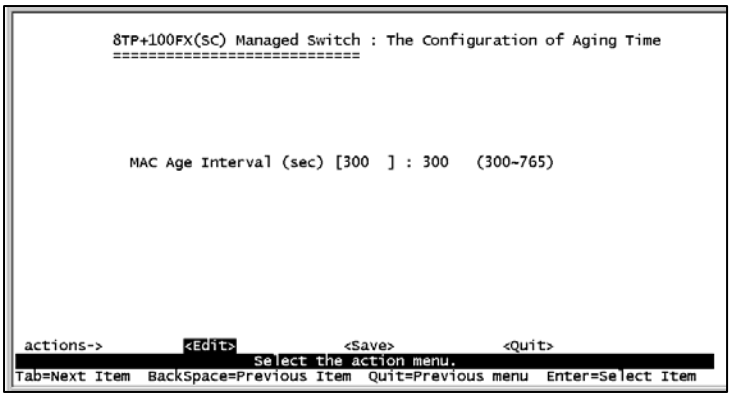
A port in security mode will be “locked” which means no new addresses can be learned. Only the incoming packets with SMAC already existing in the address table can be forwarded normally. User can disable the port from learning any new MAC addresses, and then use the static MAC addresses screen to define a list of MAC addresses that can communicate with the secure port.




1. Select **Edit** to enable or disable the port security.
2. Press the **Space** bar to choose enable / disable item.
3. Press **ESC** to return to the action menu line.
4. Select **Save** to save the configure values.

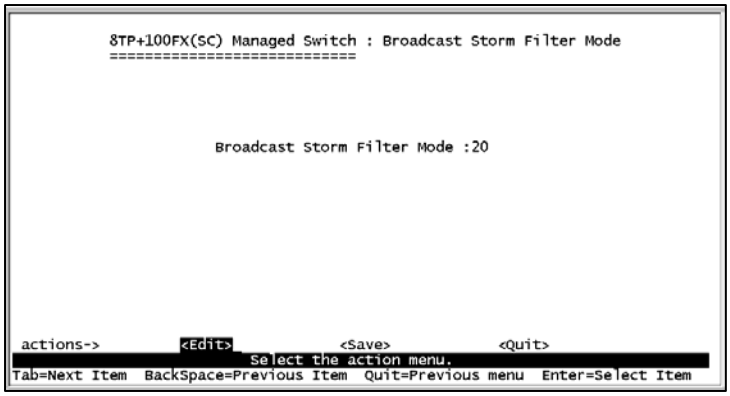
### 4.38.2 MAC Age Interval

Use this option to enter the number of seconds that an inactive MAC address remains in the switch’s address table. The valid range is 300~765 seconds. Default is 300 seconds.




### 4.38.3 Broadcast Storm Filtering

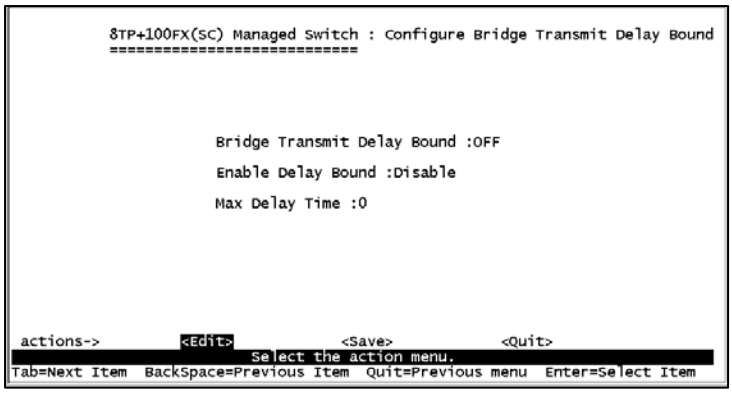
This option is used to configure the broadcast storm control. The valid threshold value is 5%, 10%, 15%, 20%, 25% and NO.




### 4.38.4 Max Bridge Transmit Delay

**Bridge transit delay bound** must be enabled before you can configure this function.

- **Max bridge transmit delay bound -** Limit the packets' queuing time in the switch. If enabled, packets that exceed the queue will be dropped. Valid values are 1 sec, 2 sec, 4 sec and Off. The default is 1 second.
- **Enable Delay Bound -** Limit the low priority packets queuing time in switch. If enabled, the low priority packet will be sent once it exceeds the **Max Delay Time**.
- **Max Delay Time -** Used to set the time that low priority packets are queued in switch. The valid range is 1~255 ms.




## 4.4 Protocol Related Configuration

The following functions can be set in the **Protocol Related Configuration** menu:

- **STP** – Disabled by default. Once STP has been enabled, you will be able to set the system configuration and perport configuration.
- **SNMP**
- **GVRP** – Disabled by default.
- **LACP**

### 4.41 Perport Configuration

- **PortState** – Use this option to view the spanning tree status per port.
- **PathCost** – Use PathCost to specify the path cost of the port that the switch is using to determine the forwarding ports. If you change the value, the switch must be rebooted for the new value to take effect.
- **Priority** – Use this option to set port priority; you can make it more or less likely to become the root port. If you change the value, the switch must be rebooted to use the new value.

### 4.42 SNMP

The **SNMP Menu** is used to define management stations as trap managers and to enter SNMP community strings. Use this menu to define a name, location, and contact person for the switch.

### 4.43 System Options

The following settings can be made from the **System Options Menu**.

- **System Name** – Enter a name to be used for the switch.
- **System Contact** – Enter the name of contact person or organization.

- **System Location** – Enter the location of the switch.

### 4.44 Community Strings

Use the **Community Strings Menu** to enter the following information:

- **Community Name** - Enter the name of current strings.
- **Write Access** – Determine the rights. Choose between:
  - **Read only** - Read only enables requests accompanied by this string to display MIB-object information.
  - **Read/Write** – Read/write enables requests accompanied by this string to display MIB-object information and to set MIB objects.

### 4.45 Trap Managers

A trap manager is a management station that receives traps or system alerts generated by the switch. If no trap manager is defined, no traps are received. To create a trap manager, enter the IP address of the station and a community string.

### 4.45 GVRP

The **GVRP Menu** allows you to enable and disable the GVRP (VLAN Registration Protocol). GVRP is **disabled** by default.

### 4.46 LACP

The **LACP Configuration Menu** provides the following options:

- Aggregator Setting
- State Activity
- LACP Status

#### 4.46.1 Aggregator Setting

- **Group:** Display the trunk group ID.
- **LACP:** Use the **Space** bar to enable or disable LACP (Link Aggregation Control Protocol) support. If it is enabled, the group is LACP static trunking group. If it is disabled, the group is local static trunking group.
- **LACP Work Port Num:** This setting is the maximum number of ports that can be aggregated at the same time. If LACP is set to static trunking group, the additional ports are on standby and able to aggregate if a work port fails. If it is set to local static trunking group, the number must be the same as group ports.

**NOTE:** Before setting LACP support, you have to set the trunk group.

### 4.46.2 State Activity

- **Active:** The port automatically sends LACP protocol packets.
- **Passive:** The port does not automatically send LACP protocol packets, and responds only when it receives LACP protocol packets from the opposite device.

### 4.46.3 LACP Status

This screen provides the status of the LACP configuration.

### 4.5 Reboot Switch

Rebooting the switch provides two choices.

- **Default:** Reset switch to recover default configuration.
- **Restart:** Reboot the switch with new configuration settings.

### 4.6 Xmodem Upgrade

To perform the Xmodem upgrade, press the **X** key to start upgrading for Xmodem. Disconnect the terminal and modify baud rate to 57600bps. Then, reconnect. Once attached, follow these instructions:

1. Select **send file** under the **transfer** menu on the menu bar.
2. Select the **browse** button to select the path.
3. Select **1K Xmodem** from **protocol**.
4. Select **Send**.
5. After successfully upgrading the new firmware, please modify baud rate to 9600bps.

## 5.0 Web-Based Management

This section introduces the configuration and functions of the Web-based management of 1008 switch. The 1008 series of switches provides an embedded HTML website residing in flash memory. Management functions can be performed from anywhere on the network through a standard Web Browser.

**NOTE:** If you are using Win2000 with the Service Pack 2 function, the web management function will be not be displayed correctly if the IE is below Version 5.5.

## 5.1 Accessing Management Functions through the Web

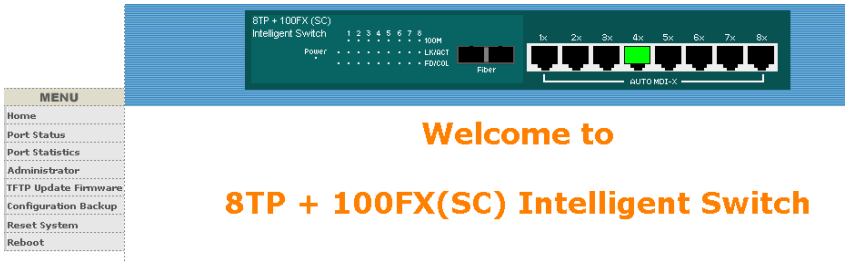
In order to use the management functions via your Web Browser, the following defaults must be set. Use the **Console** connection to modify the IP for use with your web browser.

- **IP Address:** 192.168.16.1
- **Subnet Mask:** 255.255.255.0
- **Default Gateway:** 192.168.16.254
- **User Name:** root
- **Password:** root

Once these settings have been made, access your Web Browser and type in: **http://192.168.16.1**. Enter the user name and password.

## 5.2 Web Management Home Overview

The opening screen will provide a picture of the switch at the top of the screen and menu options to the left of your screen.




## 5.3 Port Status

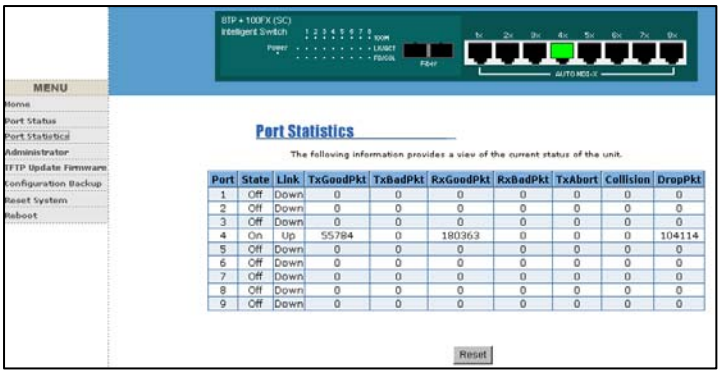
The **Port Status** menu provides the following information:

- **State:** Displays the port status (ON or OFF depending on the user's setting). **Unlink** will be treated as **off**.
- **Link Status:** Down is **No Link**. UP is **Link**.
- **Auto Negotiation:** Displays the auto negotiation mode. Is it set to **auto negotiate** or is it hard set to a speed.
- **Speed Status:** Current status of port
- **Duplex Status:** Display full-duplex or half-duplex mode.
- **Flow Control:** Displays the Flow Control current setting.

- **Config:** Displays the state of user setting.
- **Actual:** Displays the negotiation result.

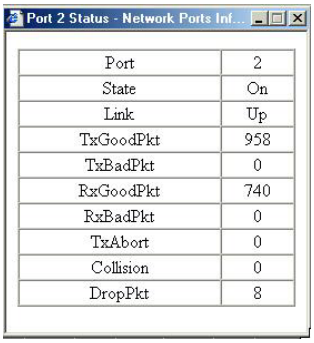
## 5.4 Port Statistics

The following information provides a view of the current status of the unit.




| Port | State | Link | TxGoodPkt | TxBadPkt | RxGoodPkt | RxBadPkt | TxAbort | Collision | DropPkt |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | On | Up | 55784 | 0 | 180363 | 0 | 0 | 0 | 104114 |
| 5 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | Off | Down | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

The following displays a single port counter:




| | |
|---|---|
| Port | 2 |
| State | On |
| Link | Up |
| TxGoodPkt | 958 |
| TxBadPkt | 0 |
| RxGoodPkt | 740 |
| RxBadPkt | 0 |
| TxAbort | 0 |
| Collision | 0 |
| DropPkt | 8 |

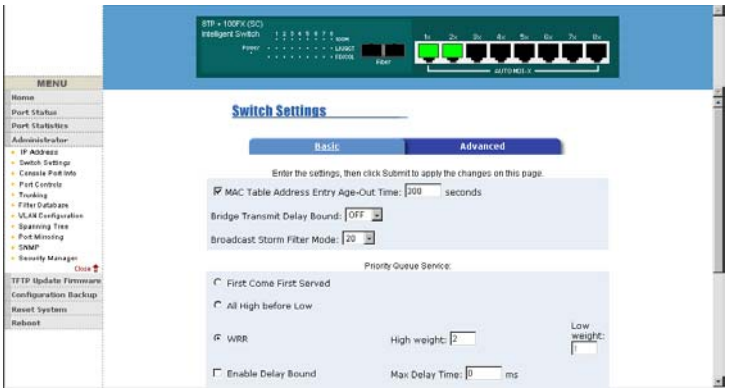
## 5.5 Administrator

The **Administrator** functions:

- **IP address** – You can modify the IP address from this option. You must reset the switch and use the new IP address to connect via your browser.
- **Basic Switch settings** – The following switch settings are displayed through this option:
    - **Description** – Displays the name of the device.
    - **MAC Address** – Displays the unique hardware address assigned by the manufacturer. This cannot be changed.
    - **Firmware Version** – Displays the switches firmware version.

- **Hardware Version** – Displays the switches firmware version.
- **Kernel Version** – Displays the default EEPROM value.

- **Advanced Switch Settings** – The following switch settings are displayed through this option:




  - **Miscellaneous Settings**
    - **MAC Address Age-Out Time** – Enter the number of seconds that an inactive MAC address remains in the switch's address table. The valid range is 300 ~ 765 seconds. The default is **300 seconds**.
    - **Max Bridge Transit Delay Bound Control** – Limit the packets queuing time in the switch. If enabled, the packets exceeding the queue will be dropped. Valid values are 1, 2 or 4 seconds and Off. The default is **1 second**.
    - **Broadcast Storm Filter** - This option is used to configure the broadcast storm control. It must be enabled and then the upper threshold must be set for the individual ports. The threshold is the percentage of the port's total bandwidth used by broadcast traffic. When the broadcast traffic for a port rises above the threshold that has been set, broadcast storm control becomes active. The valid threshold value is 5%, 10%, 15%, 20%, 25% and Off.
  - **Priority Queue Service Settings**
    - **First Come First Service** - The sequence of packets sent depends on the arrival order.

- **All High before Low** - The high priority packets are sent before the low priority packets.
- **Weighted Round Ratio** - Select the preference given to packets in the switch's high-priority queue. These options represent the number of high priority packets sent before one low priority packet is sent. For example, **2 High: 1 Low** means that the switch sends 2 high priority packets before sending 1 low priority packet.
- **Enable Delay Bound** – This setting limits the low priority packets queuing time in switch. The **Default Max Delay Time** is 255ms. If the low priority packet that stays in switch exceeds the Max Delay Time, it will be sent. The valid range is 1~255 ms.
- **QoS Policy: High Priority Levels** – There are 0~7 priority levels that can be mapped to high or low queue. When sending packets, different priority Levels in VLAN Tag can be selected.

  **NOTE:** Make sure Max **bridge transit delay bound control** is enabled before enabling **Delay Bound**.

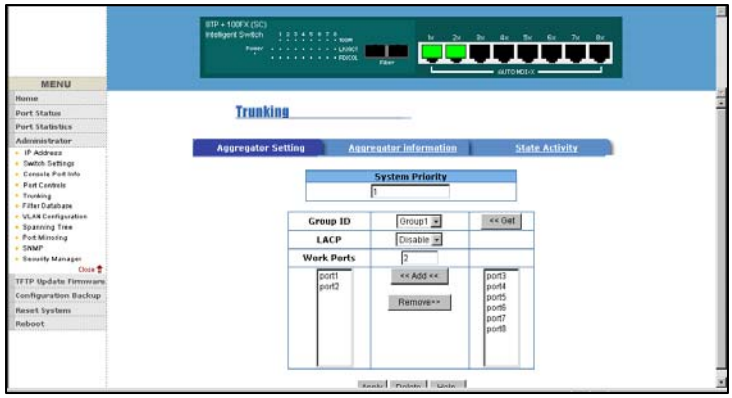
- **Protocol Enable Setting**
  - **Enable Spanning Tree Protocol** – The default is **Disabled**. The recommendation is to enable STP.
  - **Enable Internet Group Multicast Protocol** – This option allows you to enable IGMP protocol
  - **VLAN Operation Mode** – You can make the selection between 802.1Q (Port Based) without GVRP VLAN mode, 802.1Q (Port Based) with GVRP VLAN mode or Port Based.
  - **IGMP Query Mode** - Recognize different Query from client or server to decide which Queryer will be the first priority. There are three modes to choose from:
    - **Auto Mode**: Choose the indicated Switch, which has the smallest IP address to be the Queryer.
    - **Enable Mode**: Enable one of Switches to be the Queryer.
    - **Disable Mode**: Disable the other Switches from being the

Queryer.

- **Console port information** – The console connection is a standard interface used to communicate with the switch via the serial port on the workstation. Section 4.1 describes the console connection.
- **Port controls** - The following settings can be changed:
    - **State** - You can disable or enable this port control.
    - **Auto Negotiation** - Auto negotiation can be enabled or disabled per port
    - **Speed Setting** - You can set 100Mbps or 10Mbps speed (Port 1 ~ Port 8).
    - **Duplex setting** - Set full-duplex or half-duplex mode.
    - **Flow control setting** – Flow control function is set to enable or disable.
- **Link aggregation** – Trunking provides a standardized means for exchanging information between partner systems on a link. This allows their Link Aggregation Control instances to reach agreement on the identity of the Link Aggregation Group to which the link belongs, move the link to that Link Aggregation Group, and ensure that its transmission and reception functions in an orderly manner. Link aggregation allows you to group up to eight consecutive ports into a single dedicated connection. This feature can expand bandwidth to a device on the network. LACP operation requires full-duplex mode**.** For detailed information, refer to the IEEE 802.3ad standard.
- Filter database
- VLAN configuration
- Spanning Tree
- Port Mirror
- SNMP
- Security Manager
- TFTP Update Firmware
- Configuration Backup
- Reset System and Reboot.

## 5.6 LACP Setting

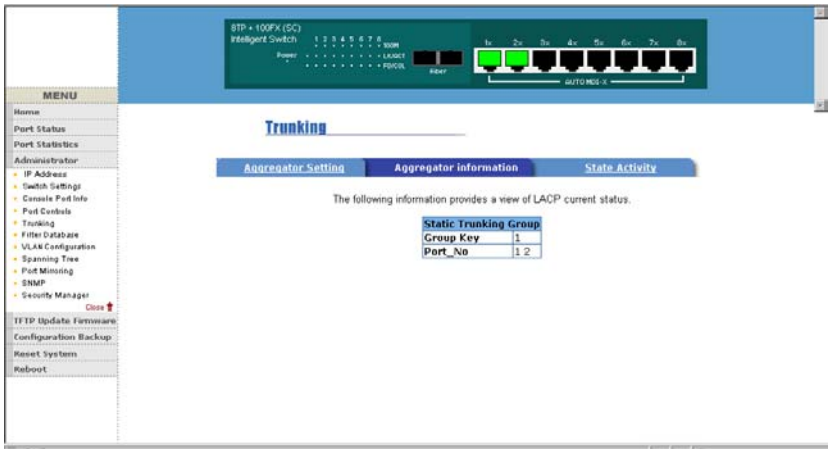
The **system priority value** is used to identify the active LACP. The switch with the lowest value has the highest priority and is selected as the active LACP.




1. **Group ID** - A link aggregation can be created across two or more ports. Select the **Group ID** and then click on **Get**.
2. **LACP** – If enabled, the group is the LACP static trunking group. If it is disabled, the group is the local static trunking group.
3. All ports support LACP dynamic trunking group. If connecting to a device that also supports LACP, the LACP dynamic trunking group will be created automatically.
4. **Work ports** - The maximum number of ports can be aggregated at the same time. If LACP static trunking group, the ports exceeding the maximum are on standby and able to aggregate if a work port fails. If it set to local static trunking group, the number must be the same as group ports.
5. Select the ports to join the trunking group
6. If LACP enabled, you can configure LACP to either **Active/Passive** status in each ports.
7. Select **Apply** to apply the settings.

## 5.7 Aggregator Information

The **Aggregator Information** screen displays the LACP information.

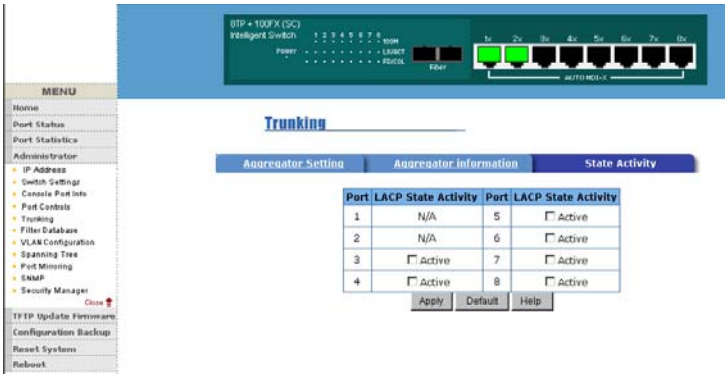



## 5.8 State Activity

The **State Activity** screen provides the following information:

- **Active** (select) - The port automatically sends LACP protocol packets.
- **Passive** (no select) - The port does not automatically send the LACP protocol packets, and responds only if it receives LACP protocol packets from the opposite device.

A link with either two active LACP ports or one active port can perform dynamic LACP trunking. A link with two passive LACP ports will not perform dynamic LACP trunking because both ports are waiting for the LACP protocol packet from the opposite device. When you select a trunking port, active status will be created automatically for an **active LACP.**

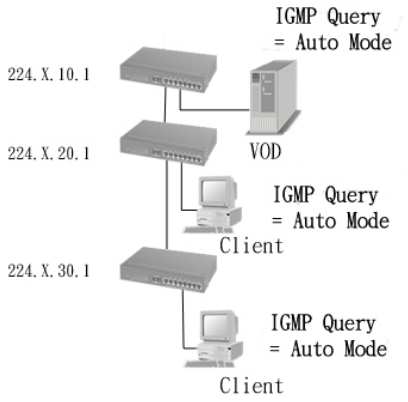


## 5.9 Filter Database

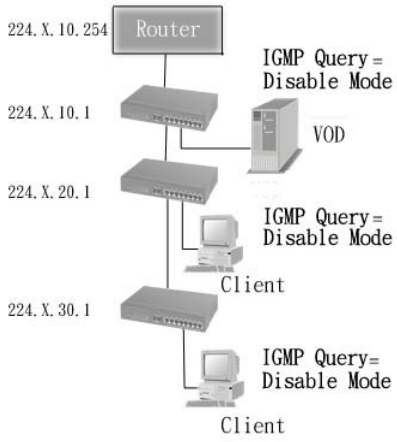
### 5.91 IGMP Snooping

The following topologies shown below indicate how the IGMP Query works within a network:

1. This topology has to be set when the router's IP address is smaller than the other switches in the subnet.

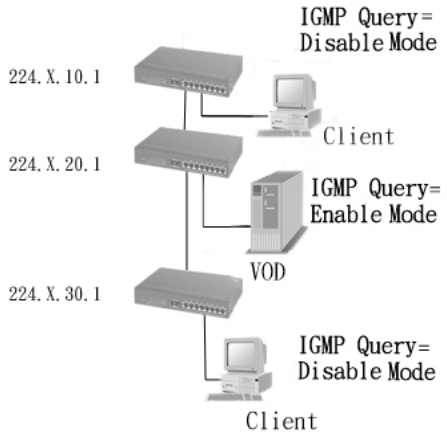



2. This topology has to be set when the router's IP address is not smaller than other switches in the subnet.




**Note:** The router supports IGMP protocol, IGMP (Internet Group Management Protocol) must be set to enable and the router has to be the Queryer.

3. This topology must b set when the switch's IP address is not the smallest in the subnet. In auto mode, the network will cause multicast storm from the client IGMP report unless the topology is set as shown below:




**Note:** The recommendation is that the VOD server set with the switch has the smallest IP address.

The 1008 switch supports IP multicast. By enabling IGMP, you will be able to display IGMP snooping information from this screen. You will be able to see the different multicast groups, VID and member ports. IP multicast addresses range from 224.0.0.0 through 239.255.255.255.

IGMP is an internal protocol of the Internet Protocol (IP) suite. IP manages multicast traffic by using switches, routers, and hosts that support IGMP. Enabling IGMP allows the ports to detect IGMP queries and report packets and manage IP multicast traffic through the switch.

IGMP uses the following three fundamental types of messages:

| Message | Description |
|---|---|
| Query | A message sent from the query (IGMP router or switch) asking for a response from each host belonging to the multicast group. |
| Report | A message sent by a host to the query to indicate that the host wants to be or is a member of a given group indicated in the report message. |
| Leave Group | A message sent by a host to the query to indicate that the host is no longer a member of a specific multicast group. |

## 5.92 Static MAC Address

When you add a static MAC address, it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address when the disconnected or powered-off device is active on the network again.

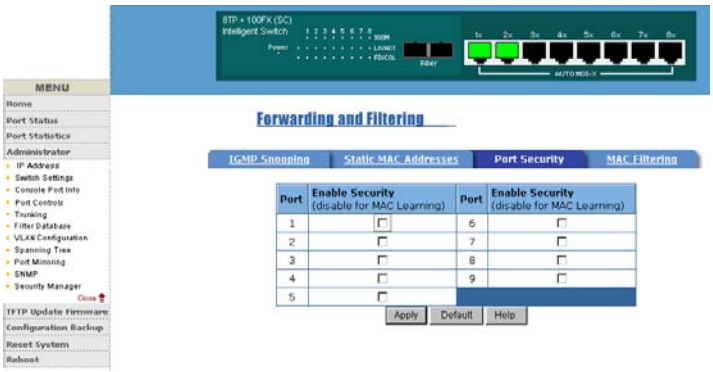
**To add a static MAC address:**

1. From the **Main Menu**, select **Administrator**.
2. Select **Filter Database**.
3. Click **Static MAC Addresses**. In the MAC address box, enter the MAC address to and from which the port should permanently forward traffic, regardless of the device's network activity.
4. In the **Port Number** box, select a port number.
5. If tag-based (IEEE 802.1Q) VLANs are set up on the switch, static addresses are associated with individual VLANs. Type the **VID** (tag-based VLANs) to associate with the MAC address.
6. Click the **Add** button.

## 5.93 Port Security

A port in security mode will be “locked” without permission of address learning. Only the incoming packets with static MAC already existing in the address table can be forwarded

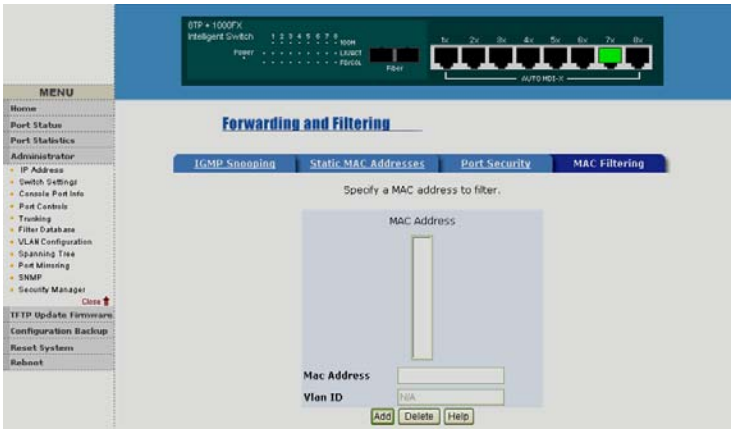
normally. You can disable the port from learning any new MAC addresses, and then use the static MAC addresses screen to define a list of MAC addresses that can use the secure port. Once you have entered the settings, click the **Apply** button to apply the changes for port security.




## 5.94 MAC Address Filtering

MAC address filtering allows the switch to drop unwanted traffic. Traffic is filtered based on the destination addresses.

1. In the **MAC Address** field, enter the MAC address that you want to filter.
2. **VLAN ID** - If tag-based (802.1Q) VLAN are set up on the switch, in the VLAN ID field type the **VID** to associate with the MAC address.
3. Click the **Add** button.
4. Use the **Delete** button to delete unwanted MAC address.




## 5.95 VLAN Configuration

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. It

allows you to isolate network traffic so only members of the VLAN receive traffic from the same VLAN members. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

The 1008 switch supports both port-based and protocol-based VLANs from the web. By default, VLAN support is enabled and all ports on the switch belong to the default VLAN. The **default VID is 1**.

**NOTE:** The default VLAN can't be deleted or modified.

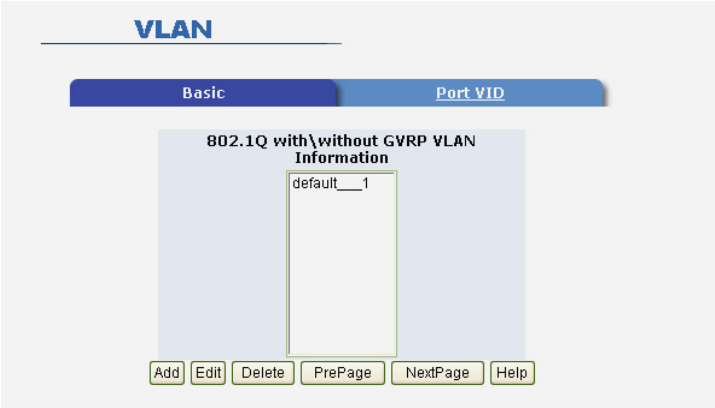
**Port-based VLANs (IEEE 802.1Q VLAN)**

The port-based tagging rule is an IEEE 802.1Q specification standard. Therefore, it is possible to create a VLAN across devices from different switch vendors. IEEE 802.1Q VLAN uses a technique to insert a **tag** into the Ethernet frames. The **tag** contains a VLAN Identifier (VID) that indicates the VLAN numbers.

**Protocol-based VLAN**

In order for an end station to send packets to different VLANs, it has to be either capable of tagging packets with VLAN tags or attached to a VLAN-aware device that is capable of classifying and tagging the packet with different VLAN IDs.

## 5.96 Basic VLAN Setting




**To create a VLAN and add tagged member ports:**

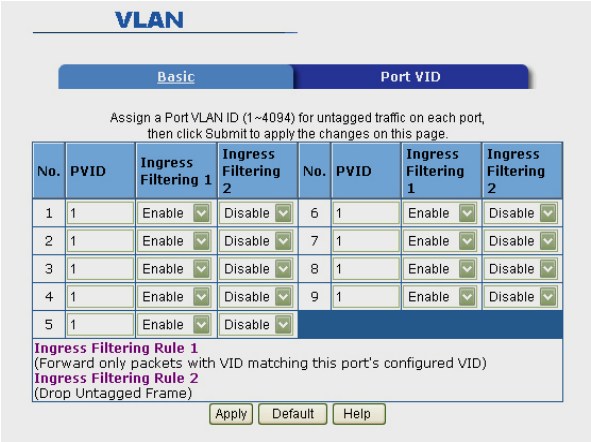
1. From the **Main Menu**, select **Administrator**.
2. Select **VLAN Configuration**.
3. Click the **Add** button.
4. Type a name for the new VLAN.

5. Type a VID (between 2-4094). (The default is 1.)
6. From the **Available Ports** field, select the ports to include in the VLAN.
7. Select **Add**.
8. Click **Apply**.

**To configure port VID settings:**

1. From the **Main Menu,** select **Tag-based** (IEEE 802.1Q) VLAN page.
2. Select **Port VID Settings**.

**Port VID (PVID)** - Sets the Port VLAN ID that will be assigned to untagged traffic on a given port. For example, if port 9's Default PVID is 100, all untagged packets on port 9 will belong to VLAN 100. The default setting for all ports is VID 1. This feature is useful for accommodating devices that you want to participate in the VLAN but that don't support tagging. Only one untagged VLAN is allowed per port.




**Ingress Filtering**

Ingress filtering allows frames belonging to a specific VLAN to be forwarded if the port belongs to that VLAN. The 1008 switch has two ingress filtering rules:

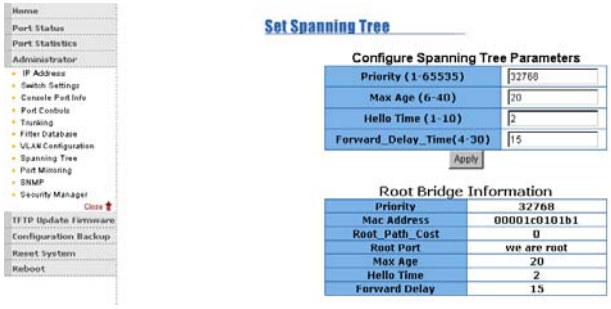
- **Ingress Filtering Rule 1**: Forward only packets with VID matching this port's configured VID Ingress Filtering.
- **Rule 2**: Drop Untagged Frame.

## 5.10 Spanning Tree

The Spanning-Tree Protocol (STP) is a standardized method (IEEE 802.1D) for avoiding loops in switched networks. When STP is enabled, only one path at a time is active between any two nodes on the network. STP is **disabled** by default. You can enable

the Spanning-Tree Protocol from the management functions through the Web.

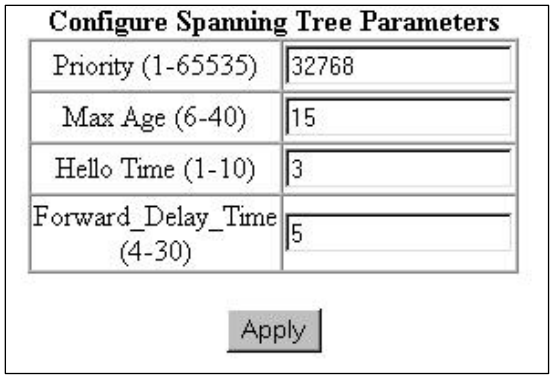
1. Select **Spanning Tree** from the **Advanced Menu**.
2. Select **enable Spanning-Tree protocol**. It is recommended that you enable STP on all switches to ensure a single active path on the network.




3. Review spanning tree information about the Root Bridge from the following screen.

STP Port Status

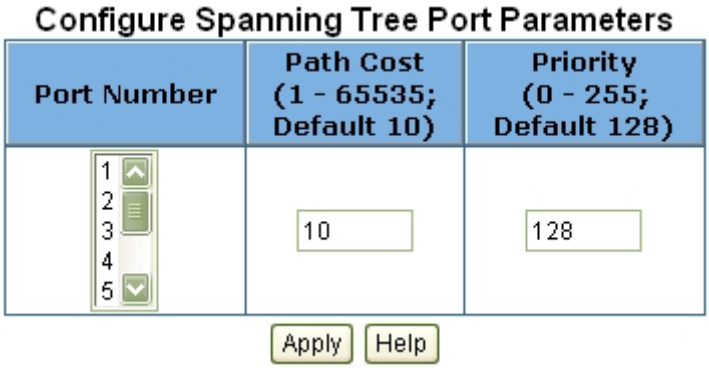
| PortNum | PathCost | Priority | PortState |
|---|---|---|---|
| 1 | 10 | 128 | DISABLED |
| 2 | 10 | 128 | DISABLED |
| 3 | 10 | 128 | DISABLED |
| 4 | 10 | 128 | FORWARDING |
| 5 | 10 | 128 | DISABLED |
| 6 | 10 | 128 | DISABLED |
| 7 | 10 | 128 | DISABLED |
| 8 | 10 | 128 | DISABLED |
| 9 | 10 | 128 | DISABLED |



The following table describes the Spanning Tree parameters.

| Parameter | Description |
|---|---|
| Priority | You can change the priority value which is a value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. Enter a number 1 through 65535. |
| Max Age | You can change Max Age value, which is the number of seconds a bridge waits without receiving Spanning-Tree Protocol configuration messages before attempting a reconfiguration. Enter a number 6 through 40. |
| Hello Time | You can change Hello time value which is the number of seconds between the transmissions of Spanning-Tree Protocol configuration messages. Enter a number 1 through 10. |
| Forward Delay time | You can change forward delay time, which is the number of seconds a port waits before changing from its Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a number 4 through 30. |

The following parameters can be configured on each port. Click the **Apply** button to modify.

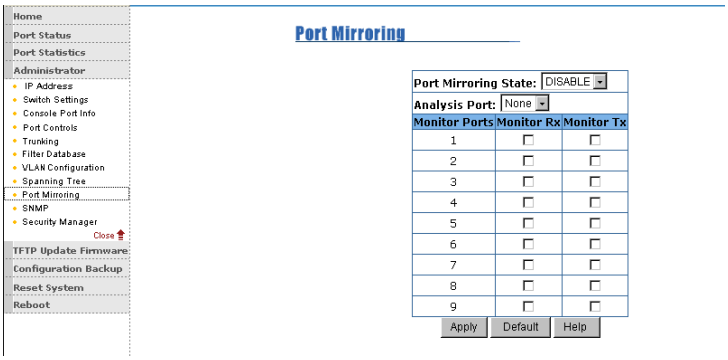


The following table describes the path cost and port priority.

| Parameter | Description |
|---|---|
| Port Priority | You can make a port more or less likely to become the root port. The range is 0-255, and the **default setting is 128**. |
| Path Cost | Specifies the path cost of the port that switch uses to determine which ports are the forwarding ports. The lowest number of forwarding ports is 1, and the range is 1-65535. The default value is base don IEEE802.1D.<br>10Mbps = 50-600 100Mbps = 10-60<br>If you change the value, you must reboot the switch. |

## 5.11 Port Mirroring

Port Mirroring is a method used to monitor traffic in switched networks. Traffic through ports can be monitored by one specific port. That is, traffic goes in or out monitored ports will be duplicated into mirror port.




The following explains the port mirroring settings.

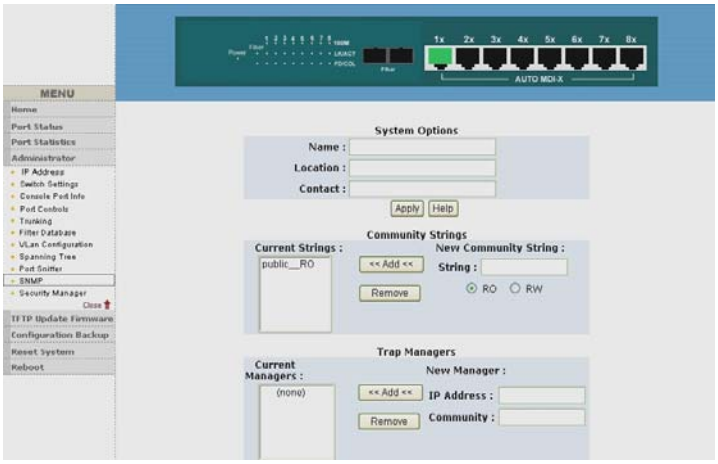
- **Roving Analysis State** - Enable or disable the port mirror function.
- **Mirror Ports** – Lists the ports you want to mirror. All mirror port traffic will be copied to mirror port. You can select a maximum of 9 monitor ports in the switch. If you want to disable the function, you must set monitor port to none.
- **Monitor Rx** - Monitored receives frames from the port.
- **Monitor Tx** - Monitored sends frames from the port.

## 5.12 SNMP

SNMP is a protocol that governs the transfer of information between management and agent. The 1008 switch supports SNMP V1.

Any network running Simple Network Management Protocol (SNMP) can manage the switch, provided the Management Information Base (MIB) is installed correctly on the management station.

You can define management stations as trap managers and then enter SNMP community strings. You can also define a name, location, and contact person for the switch. Once you have entered the **system options data**, click **Apply** to update the settings.




**System Option**

1. **Name** - Enter a name to be used for the switch.
2. **Location** - Enter the location of the switch.
3. **Contact** - Enter the name of a person or organization.
4. Click the **Apply** button.

**Community strings**: serve as passwords and can be entered as one of the following.

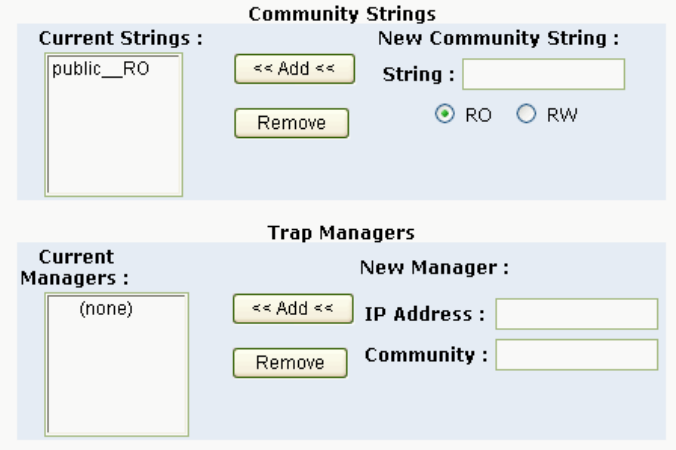
- **Read only:** Enables requests accompanied by this string to display MIB-object information.
- **Read write:** Enables requests accompanied by this string to display MIB-object information and to set MIB objects.

**Trap Manager**

- A trap manager is a management station that receives traps and alerts generated by

the switch. If no trap manager is defined, no traps are issued. Create a trap manager by entering the IP address of the station and a community string.

- **IP Address:** Fill in the trap device IP.
- **Community Strings:** The trap device community strings.
- Click “Add” button.




## 5.13 Security Manager

The **Security Manager** allows you to modify your user name and password. The **default login** is:

- Default User Name: **root**
- Default Password: **root**

## 5.14 TFTP Update Firmware

The following menu options provide system control functions to update firmware and remote boot the switch.

1. Copy **firmware update** to TFTP software directory.
2. Select **TFTP Update Firmware** from the **Menu**.
3. Select **Update Firmware**.

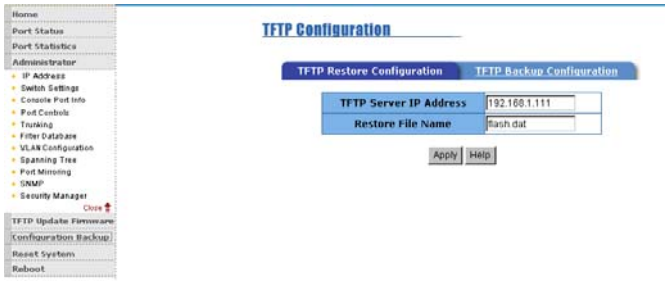
## 5.15 Configuration Backup

The **Configuration Backup** menu provides an option to restore the EEPROM value. Before restoring, you must return the image in the TFTP service. The switch will download the back flash image.

Use this screen to set the TFTP server's IP address. You can save the current EEPROM value, and then proceed to the TFTP restore configuration screen to restore the EEPROM value. Select **Apply** to complete the upload.

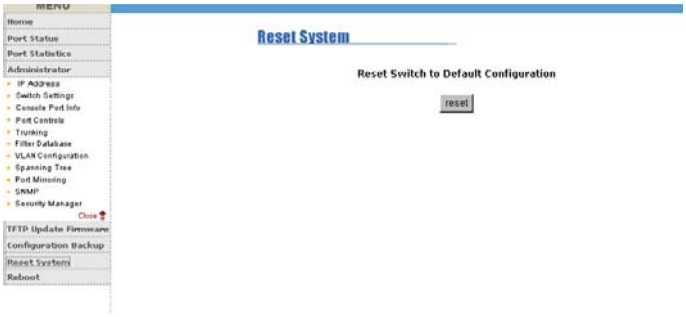

## 5.16 TFTP Backup Configuration

Use this page to set TFTP server IP address. You can save current EEPROM value from here, then go to the TFTP restore configuration page to restore the EEPROM value.



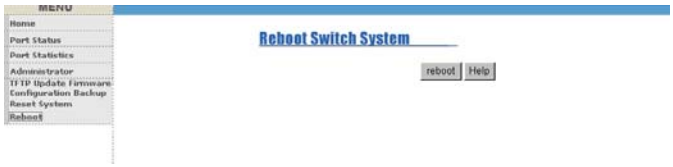
## 5.17 Reset System

To return the switch to the default configuration, use the **Reset System** menu.




## 5.18 Reboot

The switch must be rebooted so the defaults are restored.



## 6.0 Troubleshooting

All Waters' switching products are designed to provide reliability and consistently high performance in all network environments. The installation of Waters' ProSwitch 1008 switch is a straightforward procedure (See Sections 3-5). Should problems develop during installation or operation, this section is intended to help locate, identify and correct these types of problems. Please follow the suggestions listed below prior to contacting your supplier. However, if you are unsure of the procedures described in this section or if the Waters' ProSwitch 1008 switch is not performing as expected, do not attempt to repair the unit; instead contact your supplier for assistance or contact Waters Network Systems' Customer Support Center at **800.328.2275** or email carolynl@watersnet.com.

### 6.1 Before Calling for Assistance

1. If difficulty is encountered when installing or operating the unit, refer back to the Installation Section of this manual. Also check to make sure that the various components of the network are operational and compatible.
2. Check the cables and connectors to ensure that they have been properly connected and the cables/wires have not been crimped or in some way impaired during installation. (About 90% of network downtime can be attributed to wiring and connector problems.)
3. Make sure that an AC power cord is properly attached to the 1008.
4. Be certain that each AC power cord is plugged into a functioning electrical outlet. Use the PWR LEDs to verify each unit is receiving power.
5. If the problem is isolated to a network device other than the Waters' 1008 switch, it is recommended that the problem device be replaced with a known good device. Verify whether or not the problem is corrected. If not, go to next step. If the problem is corrected, the Waters' 1008 switch and its associated cables are functioning properly.
6. If the problem continues, contact Waters Network Systems Customer Service at 800.328.2275 or email carolynl@watersnet.com for assistance.

**When Calling for Assistance**

Please be prepared to provide the following information.

1. A complete description of the problem, including the following:
    a. The nature and duration of the problem
    b. Situations when the problem occurs
    c. The components involved in the problem
    d. Any particular application that, when used, appears to create the problem
2. An accurate list of Waters Network Systems product model(s) involved. Include the date(s) that you purchased the products from your supplier.
3. It is useful to include other network equipment models and related hardware, including personal computers, workstations, terminals and printers; plus, the various network media types being used.
4. A record of changes that have been made to your network configuration prior to the occurrence of the problem. Any changes to system administration procedures should all be noted in this record.

### 6.2 Return Material Authorization (RMA) Procedure

All returns for repair must be accompanied by a Return Material Authorization (RMA) number. To obtain an RMA number, call Waters Network Systems Customer Service at 800.328.2275 during business hours of 8:00 am to 5:00 pm (CT) or email carolynl@watersnet.com. When calling, please have the following information readily available:

- Name and phone number of your contact person
- Name of your company/institution
- Your shipping address
- Product name
- Failure symptoms, including a full description of the problem
- Waters Network Systems will carefully test and evaluate all returned products, will repair products that are under warranty at no charge, and will return the warranty-repaired units to the sender with shipping charges prepaid (see Warranty Information at the end of this manual for complete details). However, if Waters cannot duplicate the problem or condition causing the return, the unit will be returned as: **No Problem Found**.

Waters Network Systems reserves the right to charge for the testing of non-defective units under warranty. Testing and repair of product that is not under warranty will result in a customer (user) charge.

### 6.3 Shipping and Packaging Information

Should you need to ship the unit back to Waters Network Systems, please follow these instructions: Package the unit carefully. It is recommended that you use the original container if available. Units should be wrapped in a "bubble-wrap" plastic sheet or bag for shipping protection. (You may retain all connectors and this Installation Guide.)
CAUTION: Do not pack the unit in Styrofoam "popcorn" type packing material. This material may cause electro-static shock damage to the unit.
Clearly mark the Return Material Authorization (RMA) number on the outside of the shipping container. Waters Network Systems is not responsible for your return shipping charges.
Ship the package to:

Waters Network Systems
Attention: Customer Service
945 37th Avenue, NW
Rochester, MN 55901

# 7.0 Warranty

**Waters Network Systems'**

**Warranty Statement**

Waters Network Systems' products are warranted against defects in materials and workmanship. The warranty period for each product will be provided upon request at the time of purchase. Unless otherwise stated, the warranty period is for the useable life of the product.

In the event of a malfunction or other indication of product failure attributable directly to faulty materials and/or workmanship, Waters Network Systems will, at its option, repair or replace the defective products or components at no additional charge as set for herein. This limited warranty does not include service to repair damage resulting from accident, disaster, misuse, neglect, lightning, acts of God, tampering or product modification. Service under the warranty may be obtained by contacting Waters Network Systems and receiving a Return Material Authorization (RMA) number from Waters Network Systems. Returned product accompanied with the issued RMA number and prepaid shipping will be repaired or replaced by Waters Network Systems. Repaired or replaced products will be returned at no cost to the original Buyer and shipped via the carrier and method of delivery chosen by Waters Network Systems.

Specific warranty by product family is as follows:

| | |
|---|---|
| ProSwitch-Secure: | Limited Lifetime (see note) |
| ProSwitch-SecureAir+: | Limited Lifetime |
| ProSwitch-Lite: | 3 Years from date of manufacture (see note) |
| ProSwitch-Xpress: | Limited Lifetime |
| ProSwitch-PSX | Limited Lifetime |
| ProSwitch-Xtreme: | Limited Lifetime (see note) |
| ProSwitch-FlexPort: | Limited Lifetime |
| ProSwitch-FixPort: | Limited Lifetime |
| ProSwitch-CS and CSX: | 3 Years from date of manufacture (see note) |
| ProMedia Converters | 3 Years from date of manufacture (see note) |

**Note: Warranty period for any and all external power supplies is one (1) year from date of purchase.**

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*WATERS NETWORK SYSTEMS'* LIABILITY UNDER THE WARRANTY SHALL BE LIMITED TO PRODUCT REPAIR, OR REPLACEMENT OF THE BUYER'S PURCHASE PRICE. IN NO EVENT SHALL *WATERS NETWORK SYSTEMS* BE LIABLE FOR THE COST OF PROCUREMENT OF SUBSTITUTE GOODS BY THE CUSTOMER OR FOR ANY CONSEQENTIAL OR INCIDENTAL DAMAGES FOR BREACH OR WARRANTY.