



EX17082, EX17162, and EX17242

Web-Smart Switches

User's Guide

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Products Supported by this Manual:

EX17082, EX17162, and EX17242



Preface

Audience

This guide is designed for the person who installs, configures, deploys, and maintains the Ethernet network. This document assumes the reader has moderate hardware, computer, and Internet skills.

Document Revision Level

This section provides a history of the revision changes to this document.

Revision	Document Version	Date	Description
A	Version 1	08/05/2014	Initial release

Changes in this Revision

N/A - this is first version of this document.

Document Conventions

This guide uses the following conventions to draw your attention to certain information.

Safety and Warnings

This guide uses the following symbols to draw your attention to certain information.

Symbol	Meaning	Description
	Note	Notes emphasize or supplement important points of the main text.
	Tip	Tips provide helpful information, guidelines, or suggestions for performing tasks more effectively.
	Warning	Warnings indicate that failure to take a specified action could result in damage to the device, or could result in serious bodily injury.
	Electric Shock Hazard	This symbol warns users of electric shock hazard. Failure to take appropriate precautions such as not opening or touching hazardous areas of the equipment could result in injury or death.

Typographic Conventions

This guide also uses the following typographic conventions.

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels.
<i>Italic</i>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Angled brackets (< >) are also used to indicate variables.
screen/code	Indicates text that is displayed on screen or entered by the user.
< > angled brackets	Indicates a variable, which is a placeholder for actual text provided by the user or system. Italic font is also used to indicate variables.
[] square brackets	Indicates optional values.
{ } braces	Indicates required or expected values.
vertical bar	Indicates that you have a choice between two or more options or arguments.

References to Switch Models

This guide covers the EX17082, EX17162, and EX17242 Web-Smart Switches from EtherWAN Systems, Inc. When information in this guide applies to both models, the models are referred to collectively as “the switch.” If information applies to specific models only, those models are identified by model name (EX17082, EX17162, or EX17242).

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1 Introduction

Topics:

- ▲ *Key Features* (page 11)
- ▲ *Quick Start Guide* (page 12)

Congratulations on your purchase of the Web-Smart EX17082, EX17162, or EX17242 Switch from EtherWAN Systems, Inc. Your switch is a state-of-the-art IEEE-compliant network solution designed for users who require high-performance along with the power of management to eliminate bottlenecks and increase productivity.

Your switch is also a Power Sourcing Equipment (PSE) device. All 10/100 Mbps ports support Power over Ethernet (PoE), which detects and supplies power with IEEE 802.3af-compliant powered devices automatically. The switch also provides Gigabit-speed connections to servers and other Gigabit Ethernet switches. To simplify installation, the switch is shipped ready for use.



Figure 1-1. EX17082 Series Switch



Figure 1-2. EX17162 Series Switch



Figure 1-3. EX17242 Series Switch

Key Features

This section summarizes the key features of the EX17162 and EX17242 switches.

Model EX17082 Features

- 8 10/100TX ports supporting 15.4 W (IEEE 802.3af) Power over Ethernet (PoE) Power Sourcing Equipment (PSE), with a total PoE power budget of 246.4 W Max.

Model EX17162 Features

- 16 10/100TX ports supporting 15.4 W (IEEE 802.3af) Power over Ethernet (PoE) Power Sourcing Equipment (PSE), with a total PoE power budget of 246.4 W Max.

Model EX17242 Features

- 24 10/100TX ports supporting 15.4W (IEEE 802.3af) PoE PSE, with a total PoE power budget of 369.6 W Max.

Model EX17242L Features

- 24 10/100TX ports supporting 15.4W (IEEE 802.3af) PoE PSE, with a total PoE power budget of 180 W Max.

Common Features

- Two pair of Gigabit Ethernet ports:
 - Two RJ-45 1000TX ports
 - Two fibre optic Small Form Factor Pluggable (SFP) 1000TX ports
- All 10/100TX and 1000TX ports support full/half-duplex, auto-negotiation, and auto-MDI/MDIX
- Web management interface for configuring PoE power status and link status, system, IP configuration, port-based VLAN, QoS mode, QoS priority, and MAC/port-based trunking
- 100 – 240 VAC, 50 – 60 Hz internal universal power supply
- 0°C to 45°C (32°F to 113°F) operating temperature range
- Supports rack mounting

Quick Start Guide

The following procedure enables advanced users to get their switch up and running in the shortest possible time. For detailed installation instructions, refer to the sections in the right column below.

Step	Description	For Reference, See...
1.	Find a Location for the Switch Set the switch on a flat surface or mount it in a standard rack (1 rack unit high) using the supplied rack-mounting hardware brackets.	"Preparing the Site" (page 21)
2.	Connect to the 10/100 Mbps Switch Ports <ul style="list-style-type: none">• Connect one end of a Category 5 or better Ethernet cable to the Ethernet port of a computer, printer, network storage, or other network device.• Connect the other end to a 10/100 Mbps RJ-45 port on the switch:<ul style="list-style-type: none">– Model EX17082: use ports 1 through 8.– Model EX17162: use ports 1 through 16.– Model EX17242: use ports 1 through 24.• Repeat this step for each additional device you want to connect to the 10/100 Mbps ports.	"10/100 Mbps RJ-45 Ports" (page 17) and "Connecting to the 10/100 Mbps RJ-45 Ports" (page 24)
3.	Connect to the Gigabit Ethernet Switch Ports Connect to the same ports, either the two 1000 Mbps RJ-45 ports or the two fibre optic SFP ports. You cannot use both pairs of ports at the same time. RJ-45 Ports: <ul style="list-style-type: none">• Connect one end of a Category 5 or better Ethernet cable to the Ethernet port of a device or other switch.• Connect the other end to one of the 1000 Mbps RJ-45 ports on the front of the switch:<ul style="list-style-type: none">– Model EX17082: use ports 9 TX and 10 TX.– Model EX17162: use ports 17 TX and 18 TX.– Model EX17242: use ports 25 TX and 26 TX.• Repeat this step to use the second 1000 Mbps RJ-45 port if necessary.	"Gigabit Ethernet Ports" (page 17) "Connecting to the Gigabit Ethernet Ports" (page 24)

Step	Description	For Reference, See...
	<p>SFP Ports:</p> <ul style="list-style-type: none"> Remove any protector plugs from the SFP transceivers on the front of the switch. Position and insert a SFP transceiver into one of the SFP ports until it is firmly seated, and then close the latching bale. <ul style="list-style-type: none"> Model EX17082: use ports 9FX through 10FX. Model EX17162: use ports 17 FX and 18 FX. Model EX17242: use ports 25 FX and 26 FX. Repeat this step to use the second SFP port if necessary. 	<p>"Connecting to the Gigabit Ethernet Ports" (page 24)</p>
4.	<p>Power On</p> <ul style="list-style-type: none"> Connect the female end of the supplied AC power adapter cable to the power receptacle on the back of the switch. Connect the 3-pronged end of the AC power adapter cable to a grounded 3-pronged AC outlet. Move the ON/OFF switch on the rear panel of the switch to the ON position. Wait for the switch to complete its Power On Self Test. Confirm that the LEDs for ports connected to a device are green. If not, replace the Ethernet cable, and then check the port LED again. 	<p>"Applying AC Power" (page 26)</p>
5.	<p>Configure the Switch</p> <ul style="list-style-type: none"> Configure a PC for subnet 192.168.2.<i>n</i>, where <i>n</i> is a number other than 1 in the range 0 to 255. Connect the PC to a 10/100 Mbps RJ-45 port on the switch, launch a browser, and specify the switch's default IP address 192.168.2.1. At the User Log In page, type admin in the ID and Password fields, and then click OK. Click Administrator > Authentication Configuration, enter a new case-sensitive username and password, and then click Update. Click Administrator > System IP Configuration. Next to IP Configure, click DHCP, or click Static and enter the IP address, subnet mask, and gateway settings for the network on which you will use the switch. Click Update. Change any other settings, as necessary. 	<p>Chapters 3 and 4</p>

2 Unpacking and Installation

Topics:

- ▲ *Unpacking the Hardware*
(page 15)
- ▲ *System Requirements*
(page 15)
- ▲ *Hardware Features* *(page 16)*
- ▲ *Installing the Switch* *(page 20)*
- ▲ *Where to Go from Here*
(page 27)

This chapter describes how to unpack and install the EX17082, EX17162, and EX17242 switches.

Unpacking the Hardware

Unpack the items and confirm that no items are missing or damaged. Your package should include:

- One EX17082, EX17162, or EX17242 switch
- One external power adapter
- Rack-mounting hardware brackets
- One CD containing this user's guide

If any item is damaged or missing, notify your authorized EtherWAN representative. Keep the carton, including the original packing material, in case you need to store the product or return it.

System Requirements

To complete your installation, you need the following items:

- **Computer with an Ethernet (RJ-45) Interface**

Managing the switch requires a personal or notebook computer (PC) with a 10/100base-TX Ethernet interface and a physical RJ-45 connection. The preferred operating system for the computer is Microsoft Windows XP/Vista/7. You can use Apple OSX or Linux systems as well, but for brevity, all web configurations in this manual use Windows 7 as the underlying operating system.

- **Category 5+ Ethernet Cables**

An Ethernet cable of at least Category 5 rating is required to connect your PC to the switch. The cable can be configured as "straight-through" or crossover.

- **Web Browser Software**

Use any of the following web browsers when configuring the switch:

- Internet Explorer
- Mozilla Firefox
- Google Chrome

Internet Explorer is the preferred browser for EtherWAN switch configuration.

Hardware Features

The following sections describe the hardware features of the EX17082, EX17162, and EX17242 switches.

Front Panel

Figure 2-2 and Figure 2-3 show the front panels of the switches.

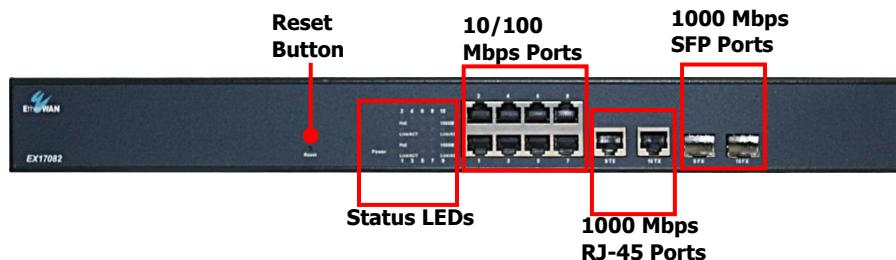


Figure 2-1. Front Panel of the EX17082 Switch

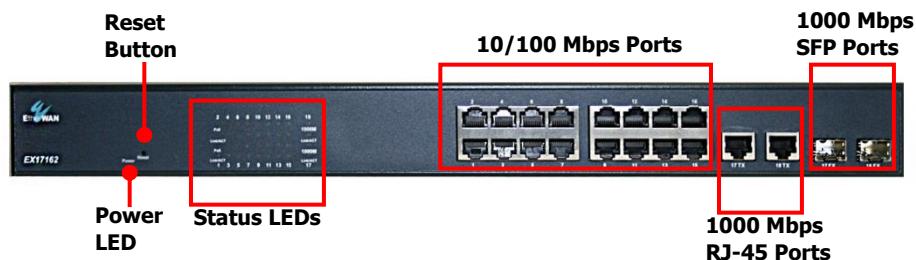


Figure 2-2. Front Panel of the EX17162 Switch

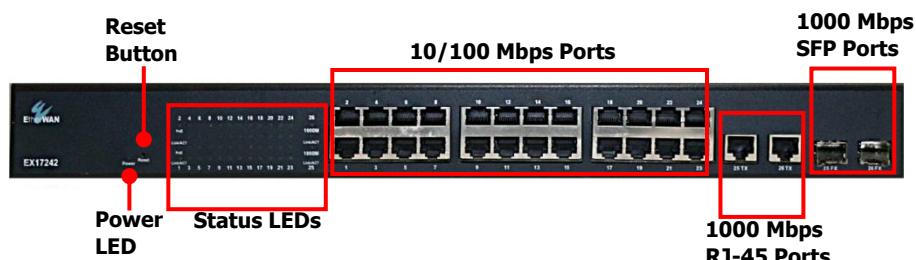


Figure 2-3. Front Panel of the EX17242 Switch

10/100 Mbps RJ-45 Ports

The switches have the following 10/100 Mbps RJ-45 ports:

Switch Model	Number of 10/100 Mbps RJ-45 Ports	Port Designations
Model EX17082	8	1 through 8 (see Figure 2-1)
Model EX17162	16	1 through 16 (see Figure 2-2)
Model EX17242	24	1 through 24 (see Figure 2-3)

These ports are auto-sensing, auto-MDIX 10/100 Mbps ports. When you insert a cable into an RJ-45 port, the switch:

- Determines whether the cable is a straight-through or crossover cable.
- Automatically ascertains the maximum speed (10 or 100 Mbps) and duplex mode (half- or full-duplex) of the attached device.

After determining this information, the switch configures the RJ-45 port automatically to enable communications with the attached device, without requiring user intervention.

Gigabit Ethernet Ports

EX17082, EX17162, and EX17242 switches have four Gigabit Ethernet interfaces in the form of two RJ-45 ports and two fibre optic Small Form Factor Pluggable (SFP) ports. These ports provide a full-duplex 1000 Mbps (1 Gbps) connection, and can be used to connect upstream to other switches or to other devices. For example, you can connect a Network Video Recorder (NVR) to one port, and use the other port to upstream to another switch or the network backbone.

Table 2-1 shows the port designations for the Gigabit Ethernet interfaces. Only one pair of Gigabit Ethernet ports can be used at a time. If you use one or two RJ-45 Gigabit Ethernet ports, for example, you cannot use the SFP ports.

Table 2-1. Gigabit Ethernet Port Designations

Switch Model	Port Designations on 1000 Mbps RJ-45 Ports	Port Designations on SFP Ports
Model EX17082 (see Figure 2-1)	9 TX and 10 TX	9 FX and 10 FX
Model EX17162 (see Figure 2-2)	17 TX and 18 TX	17 FX and 18 FX
Model EX17242 (see Figure 2-3)	25 TX and 26 TX	25 FX and 26 FX



Note: These ports have also been referred to as mini-GigaBit or (GBIC) ports, but this term has been made obsolete by SFP.

Reset Button

The EX17082, EX17162, and EX17242 front panels have a reset button to reset the switch to its factory default settings. This button is recessed to prevent accidental resets of the switch.

To reset the switch to its factory default settings and remove all customized overrides you made to the default settings:

1. Leave power cord connected to the switch.
2. Using a pin or paper clip, press and hold the reset button for about 10 seconds, then release the reset button.
3. Wait for the switch to reboot.



Note: You can also reboot the switch using the Reboot Device page in the switch's Web management interface (see "Reboot Device Page" on page 46).

LEDs

The EX17082, EX17162, and EX17242 front panel LEDs show power, PoE, link/activity, and 1000 Mbps activity status. Table 2-2 summarizes the LEDs on the switches.

Table 2-2. Front Panel LEDs

LED	Color	Status	Description
Power	Yellow	ON	Power is supplied to the switch.
PoE (the port number)	Yellow	ON	Power Device (PD) is connected.
		OFF	PD is disconnected.
Link/ACT (the port number)	Green	ON	A valid network connection has been established.
		OFF	Data transmission is not occurring on the port.
		Flashing	Data is being sent or received on the port.
1000M (the port number)	Green	ON	A valid network connection has been established on the 1000 Mbps port.
		OFF	Data transmission is not occurring on the 1000 Mbps port.
		Flashing	Data is being sent or received on the 1000 Mbps port.

Rear Panel

The EX17082, EX17162, and EX17242 rear panels have a receptacle for connecting the supplied external power adapter. Use only the external power adapter supplied with the switch.

The rear panels also have one or more fans that allow air to pass through the switch enclosure and exit through the rear of the chassis. Be sure these fans are not blocked.



Figure 2-4. Rear Panel of the EX17082 Switch



Figure 2-5. Rear Panel of the EX17162 Switch



Figure 2-6. Rear Panel of the EX17242 Switch

Side and Bottom Panels

The EX17082, EX17162, and EX17242 side panels have vents for cooling. Be sure these vents are not blocked.

The bottom panels have a product label that shows regulatory compliance, product serial number, and other information.

Installing the Switch

Switch installation involves the following steps:

1. [Preparing the site](#). See page 21
2. [Installing the switch](#). See page 21.
3. [Connecting to the 10/100 Mbps RJ-45 ports](#). See page 24.
4. [Connecting to the Gigabit Ethernet ports](#). See page 25.
5. [Checking the installation](#). See page 26.
6. [Applying AC power](#). See page 26.

Preparing the Site

Before you install your switch, be sure your operating environment meets the operating environment requirements in Table 2-3.

Table 2-3. Site Requirements

Characteristics	Requirements
Mounting	<p>Desktop installations: Provide a flat table or shelf surface.</p> <p>Rack-mount installations: Use a 19-inch (48.3-centimeter) EIA standard equipment rack that is grounded and physically secure. You also need the rack-mount guide supplied with your switch.</p>
Access	Locate the switch in a position that lets you access the front panel RJ-45 ports, view the front panel LEDs, and access the rear-panel power connector.
Power source	Provide a power source within 6 feet (1.8 meters) of the installation location. Power specifications for the switch are shown in Appendix A. Be sure the AC outlet is not controlled by a wall switch, which can accidentally turn off power to the outlet and the switch.
Environmental	<p>Temperature: Install the switch in a dry area, with ambient temperature between 0 and 40°C (32 and 104°F). Keep the switch away from heat sources such as direct sunlight, warm air exhausts, hot-air vents, and heaters.</p> <p>Operating humidity: The installation location should have a maximum relative humidity of 90%, non-condensing.</p> <p>Ventilation: Do not restrict airflow by covering or obstructing the vents on the rear and side panels of the switch. Keep at least 2 inches (5.08 centimeters) free on all sides for cooling.</p> <p>Operating conditions: Be sure there is adequate airflow in the room or wiring closet where you intend to install the switch.</p> <p>Keep the switch at least 6 ft (1.83 m) away from nearest source of electromagnetic noise, such as a photocopy machine.</p>
Stacking	If you intend to stack two or more switches, be sure: <ul style="list-style-type: none">The mounting surface can safely support the stack.There is adequate space around the stack for ventilation and cooling.

Installing the Switch

You can install your switch on a flat surface or in a standard EIA 19-inch rack that can be placed in a wiring closet with other equipment.

- If installing the switch on a desktop or shelf, allow sufficient ventilation space between the device and the objects around it.
- If installing the switch in a rack, attach the supplied rack-mounting brackets to the switch's front panel (one on each side), and secure them with the screws provided with the equipment rack. For more information, refer to the documentation that came with the equipment rack.

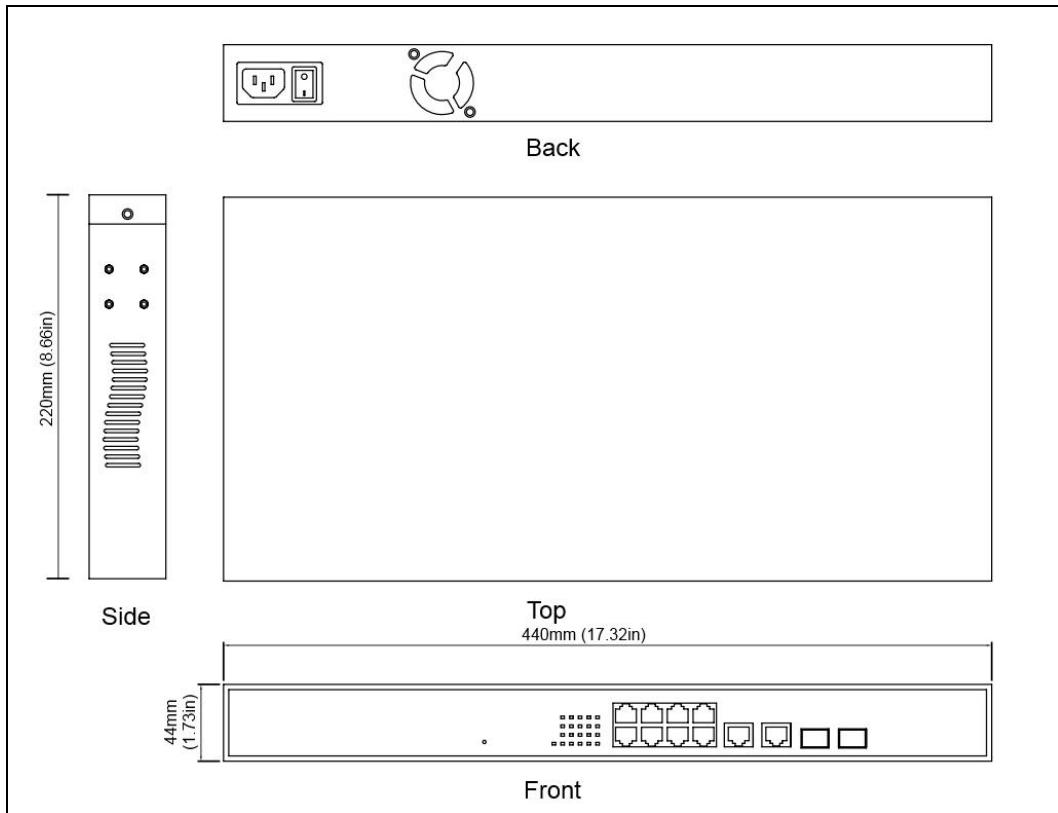


Figure 2-7. EX17082 Switch Dimensions

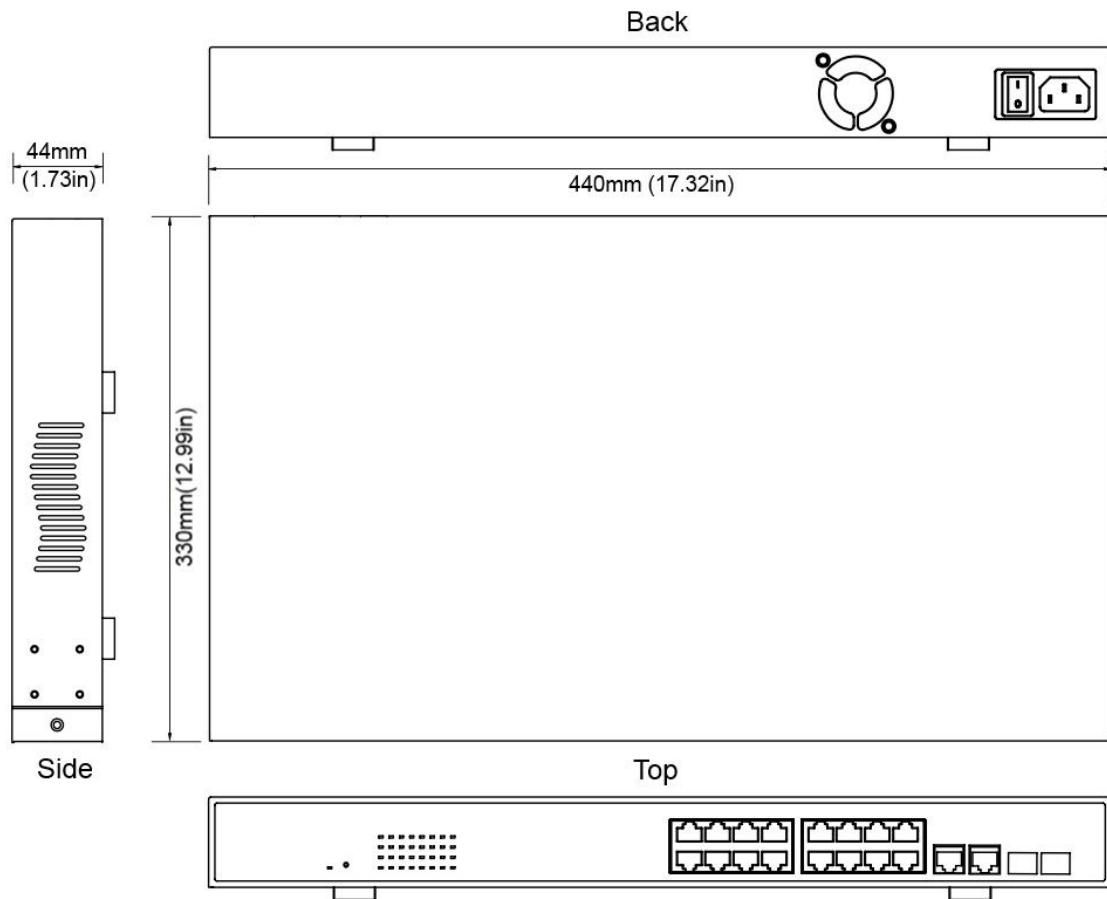


Figure 2-8. EX17162 Switch Dimensions

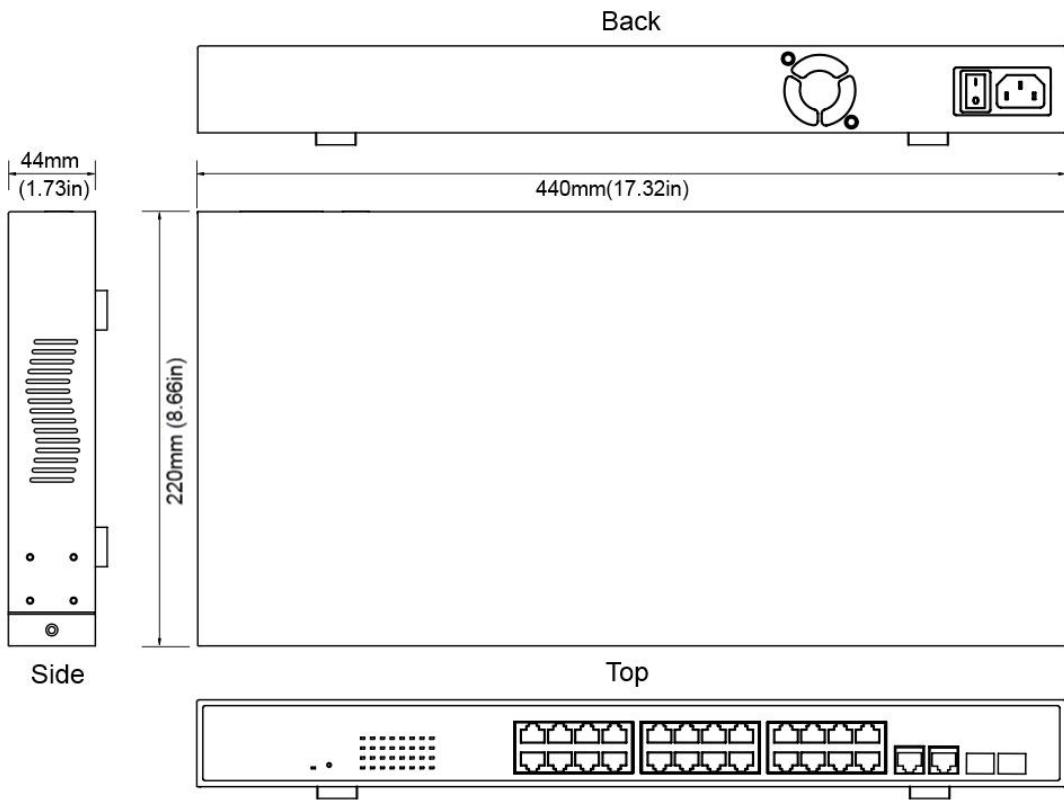


Figure 2-9. EX17242 Switch Dimensions

Connecting to the 10/100 Mbps RJ-45 Ports

The front panel of the switch provides 8, 16, or 24 10/100 Mbps RJ-45 ports, depending on the model (see “10/100 Mbps RJ-45 Ports” on page 17). To prevent ESD damage, follow normal board and component handling procedures.



Note: PoE faults are caused when noncompliant cabling or powered devices are connected to a PoE port. Use only standard-compliant cabling to connect IEEE 802.3af-compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.

To connect devices to the switch’s 10/100 Mbps RJ-45 ports:

1. Insert one end of a Category 5 or better Ethernet cable into a switch port.
2. Insert the other cable end into the Ethernet port of a computer, printer, network storage, or other network device.

-
3. Repeat steps 1 and 2 for each additional device you want to connect to the switch.

Connecting to the Gigabit Ethernet Ports

The front panel of the switch provides two 1000 Mbps RJ-45 ports and two 1000 Mbps fibre optic SFP ports (see “Gigabit Ethernet Ports” on page 17). Use these ports to connect upstream to other switches or to devices such as a storage unit or network video recorder (NVR).

The Gigabit ports are combination ports, where only one pair of ports can be used at a time. If you use the RJ-45 interfaces on one port, for example, you cannot use the SFP on that same port.

Connecting to 1000 Mbps RJ-45 Ports

To connect devices to the 1000 Mbps RJ-45 ports:

1. Insert one end of a Category 5 or better Ethernet cable into either of the two 1000 Mbps RJ-45 ports on the front panel of the switch.
2. Connect the other end of the cable to the other switch or device.
3. Repeat steps 1 and 2 to connect the second 1000 Mbps RJ-45 port to another switch or device.

Connecting to 1000 Mbps Fibre Optic SFP Ports

To connect devices to the 1000 Mbps fibre optic SFP ports:

1. Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface on the chassis.
2. Remove the dust plugs from the fiber-optic SFP module ports on the switch and store them in a safe place.
3. Find the send (TX) and receive (RX) markings that identify the top side of the SFP module.



Note: On some SFP modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection, either send or receive (TX or RX).

4. Align the SFP module in front of the slot opening.
5. Insert the SFP module into the slot on the switch until you feel the connector on the module snap into place in the rear of the slot.

Checking the Installation

Before you apply power:

- Inspect the equipment thoroughly.
- Verify that all cables are installed correctly.
- Check cable routing to make sure cables are not damaged or create a safety hazard.
- Be sure all equipment is mounted properly and securely.

Applying AC Power

EX17082, EX17162, and EX17242 switches have an ON/OFF switch that controls power to the switch.

Before you connect the power cord, select an AC outlet that is not controlled by a wall switch, which can turn off power to the switch. After you select an appropriate outlet, use the following procedure to apply AC power.

1. Connect the female end of the supplied AC power adapter cable to the power receptacle on the back of the switch.
2. Connect the 3-pronged end of the AC power adapter cable to a grounded 3-pronged AC outlet.
3. On the rear panel, move the ON/OFF switch to the ON position ().

When you apply power:

- All green **PoE**, **Link/ACT**, and **100M** LEDs blink momentarily.
- The fans start.
- The yellow **Power LED** goes ON.
- The **Link/ACT** and **100M** LEDs for every port connected to a device flash, as the switch conducts a brief Power On Self-Test (POST).

After the switch passes the POST, the **Link/ACT** and **100M** LEDs for every port connected to a device go ON. The **PoE** LEDs also go ON if Power Devices are connected. The switch is now functional and ready to pass data.

If you do not hear the fans, or if the **Power** LED is not ON, check that the power cable is plugged in correctly, the ON/OFF switch is set to the ON position, and that the power source is good and not controlled by a wall switch. If this does not resolve the problem, see Chapter 5, Troubleshooting.

Where to Go from Here

After you power-up the switch for the first time, you configure it using the switch's built-in management software. For more information, see Chapters 3 and 4.

3 Preparing to Configure the Switch

Topics:

- ▲ *Connecting the PC* (page 29)
- ▲ *Configuring TCP/IP Settings for Microsoft Windows 7* (page 29)
- ▲ *Disabling Proxy Settings* (page 31)
- ▲ *Disabling Firewall and Security Software* (page 33)

After you install the switch, configure it using the switch's built-in Web management interface and a Web browser on a PC.

For the Web browser to access the switch's Web management interface, the PC and switch must be on the same subnet. This means the first time you configure the switch, you must change your PC's TCP/IP settings to match the switch's default subnet of 192.168.2.1.

The procedure for changing your PC's TCP/IP settings depends on the PC's operating system. This chapter describes how to configure TCP/IP settings for PCs that have a Microsoft Windows 7 operating system.

If your PC is running an operating system other than Windows 7, refer to the documentation for your operating system to find out how to change the PC's TCP/IP settings.

Connecting the PC

To connect a PC to the switch:

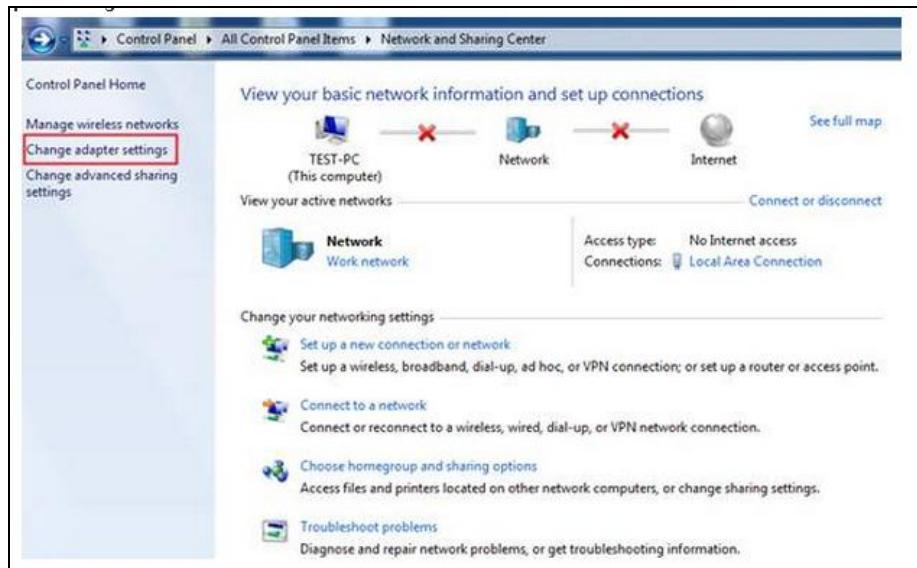
1. Insert one end of a Category 5 or better Ethernet cable into an available 10/100 Mbps RJ-45 port on the front panel of the switch.
2. Connect the other end of the cable to the Ethernet port on the PC you will use to configure the switch.
3. Confirm that the **Link/ACT** LED for the port to which the PC is connected is ON. If the LED is OFF, replace the Ethernet cable connecting your computer and switch.

Configuring TCP/IP Settings for Microsoft Windows 7

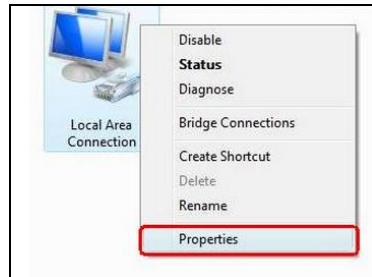
After connecting the PC to the switch, change the PC's TCP/IP settings to the switch's default subnet.

The following procedure describes how to change the TCP/IP settings for a PC running Windows 7.

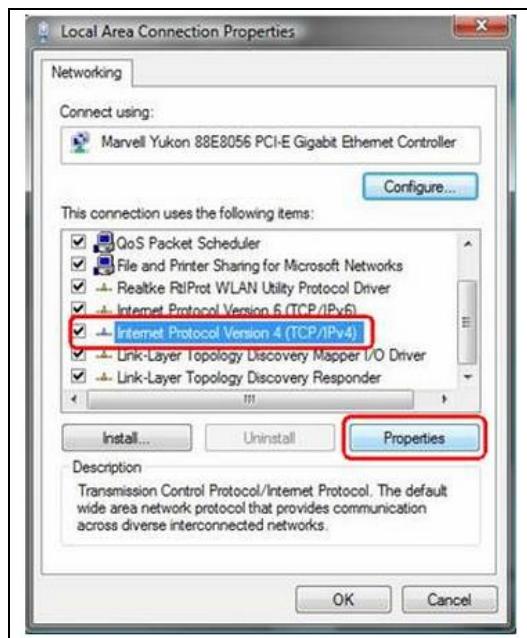
1. Click **Start >Control Panel > Network and Internet >View network status and tasks**.
2. In the left pane, click **Change adapter settings**.



3. On the right side of the page, select the connection, right click it, and then select **Properties**.



4. Click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.

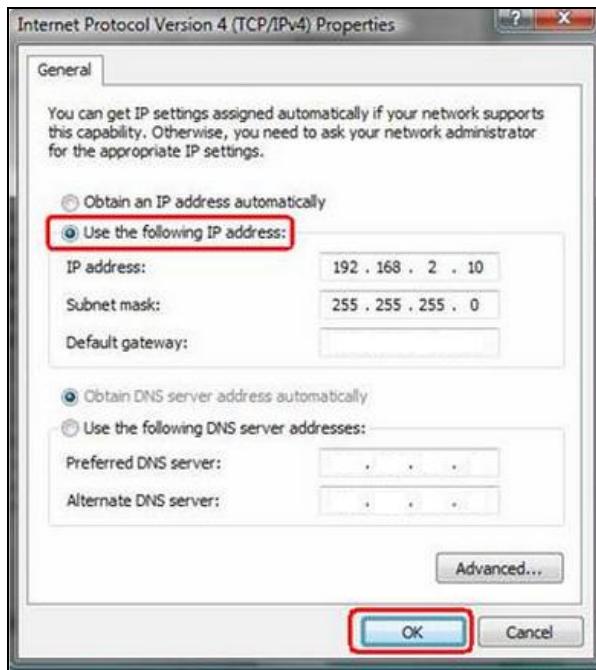


5. In the **General** tab, click **Use the following IP address**.
6. In the **IP address** field, type 192.168.2.10.



Tip: Although the last digit in the previous step is 10, in reality, this digit can be any number between 0 and 255, except the number 1 because the address 192.168.2.1 is already being used by the switch.

7. Press the Tab key to populate the **Subnet mask** field automatically. You can leave the **Default gateway** field blank.



8. Click **OK** to exit the current dialog box, and then click **OK** again to exit the initial dialog box.

Disabling Proxy Settings

Before using the switch's Web management interface, disable proxy settings in your Web browser. Otherwise, you might not be able to view the switch's Web-based configuration pages.

Disabling Proxy Settings in Internet Explorer

The following procedure describes how to disable proxy settings in Internet Explorer 5 and later.

1. Start Internet Explorer.
2. On your browser's **Tool** menu, click **Options**. The Internet Options dialog box appears.
3. In the Internet Options dialog box, click the **Connections** tab.
4. In the **Connections** tab, click the **LAN settings** button. The Local Area Network (LAN) Settings dialog box appears.
5. In the Local Area Network (LAN) Settings dialog box, uncheck all check boxes.
6. Click **OK** until the Internet Options window appears.
7. In the Internet Options window, under **Temporary Internet Files**, click **Settings**.
8. For the option **Check for newer versions of stored pages**, select **Every time I visit the webpage**.

-
9. Click **OK** until you close all open browser dialog boxes.

Disabling Proxy Settings in Firefox

The following procedure describes how to disable proxy settings in Firefox.

1. Start Firefox.
2. On your browser's **Tools** menu, click **Options**. The Options dialog box appears.
3. Click the **Advanced** tab.
4. In the Advanced tab, click the **Network** tab.
5. Click the **Settings** button.
6. Click **Direct connection to the Internet**.
7. Click the **OK** button to confirm this change.

Disabling Proxy Settings in Safari

The following procedure describes how to disable proxy settings in Safari.

1. Start Safari.
2. Click the Safari menu and select **Preferences**.
3. Click the **Advanced** tab.
4. In the **Advanced** tab, click the **Change Settings** button.
5. Choose your location from the **Location** list (this is generally **Automatic**).
6. Select your connection method. If using a wired connection, select **Built-in Ethernet**. For wireless, select **Airport**.
7. Click the **Proxies** tab.
8. Be sure each proxy in the list is unchecked.
9. Click **Apply Now** to finish.

Disabling Firewall and Security Software

If you encounter problems connecting to the switch, disable any firewall or security software that may be running on your PC before configuring the switch. For more information, refer to the documentation for your firewall.

4 Configuring the Switch

Topics:

- ▲ *Logging in to the Web Management Interface (page 35)*
- ▲ *Idle Time Security (page 36)*
- ▲ *Understanding the Web Management Interface (page 36)*
- ▲ *Web Management Interface Menus (page 38)*

After you attach a PC to the switch and configure the PC to the same subnet as the switch, use the information in this chapter to configure the switch.

Logging in to the Web Management Interface

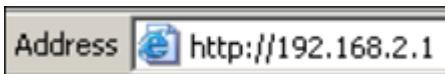
To access the switch's configuration settings, launch a Web browser on the PC you configured in Chapter 3 and log in to the switch's Web management interface.

1. Launch a Web browser.

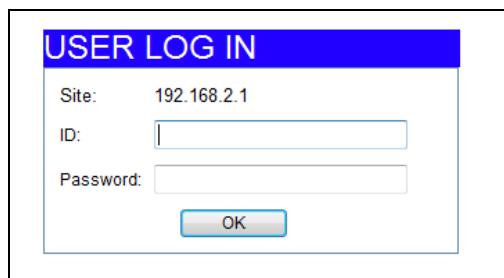


Note: Your computer does not have to be online to configure your switch.

2. In the browser address bar, type the switch's default TCP/IP address of **http://192.168.2.1**:



3. Press the **Enter** key. The User Log In screen appears (see Figure 4-1).



A screenshot of a "USER LOG IN" dialog box. The title bar is blue with white text. The main area has a light gray background. It contains three text input fields: "Site:" with the value "192.168.2.1", "ID:" with an empty input field, and "Password:" with an empty input field. Below these fields is a blue "OK" button.

Figure 4-1. User Log In Screen

4. In the User Log In screen, type **admin** as the default username and default password. Both the username and password are case sensitive.
5. Click **OK**. The Web management interface starts and the page in Figure 4-2 appears.



Note: First-time logins must change the switch's system IP configuration settings (see page 42) and default username and password (see page 41).

Idle Time Security

For security, the switch has an idle time security feature that either closes the current Web management session automatically or displays the last management page accessed if the interface is not used for a certain period of time.

By default, this feature is disabled. However, you can use the System Status page to enable this feature and configure the period of inactivity that can occur during a Web management session before the switch ends the session automatically. For more information, see “System Status Page” on page 43.

Understanding the Web Management Interface

The top of the Web management interface shows the switch ports, with ports in use highlighted in green. In Figure 4-2, for example, the ports for the EX17162 switch are shown, with port 4 in use.

The left side of the Web management interface contains the menus you use to configure the switch. When you click a menu, the configuration settings associated with the menu appear in the workspace (see Figure 4-2). The menus and configuration settings for the EX17162 and EX17242 switches are the same.

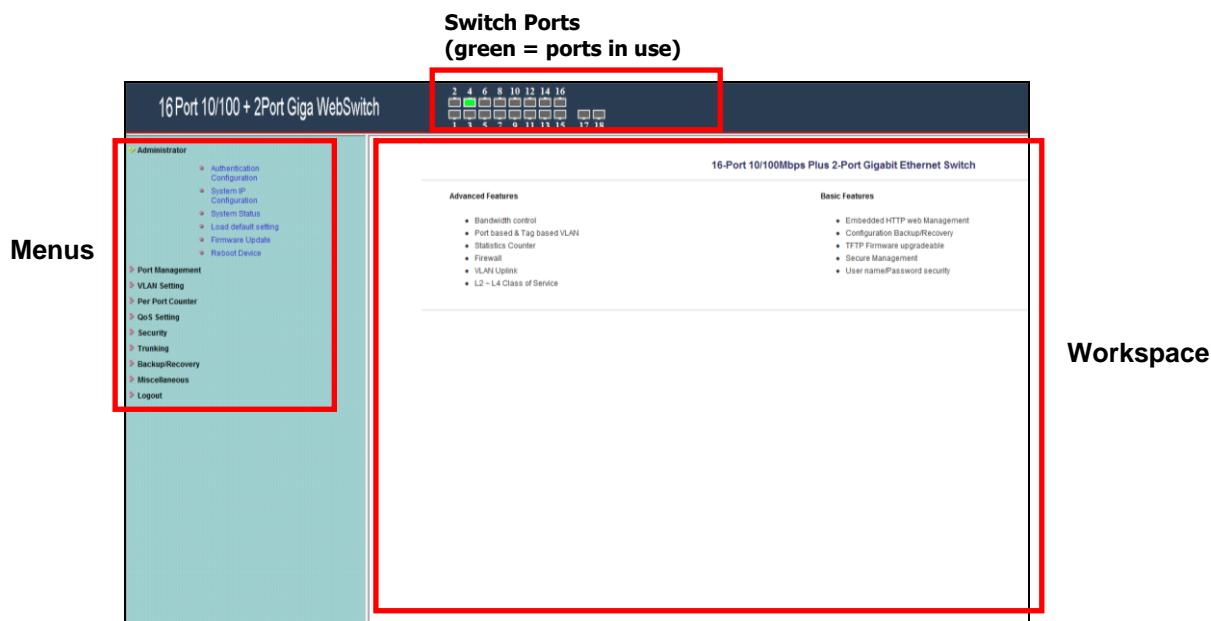


Figure 4-2. Main Areas on the Web Management Interface (EX17162 Switch)

Some menus have submenus. If you click a menu that has submenus, the submenus appear below it. For example, if you click the **Administrator** menu, the submenus in Figure 4-3 appear.



Figure 4-3. Example of Administrator Submenus



Note: Depending on the switch model you have, the number of ports shown in the screens in this chapter might differ from the number of ports shown in your Web management screens.

Web Management Interface Menus

Table 4-1 describes the pages in the Web management interface.

The first time you configure the switch, you must configure the following settings:

- **Administrator > System IP Configuration** page to configure the switch's IP address.
- **Administrator > Authentication Configuration** page to change the default username and password used to log in to the Web management interface.

Table 4-1. Web Management Interface Menus and Submenus

Menus and Submenus	Description	See Page
Administrator > Authentication Configuration	Changes the Web management interface username and password.	41
Administrator > System IP Configuration	Configures the switch to use a DHCP-assigned or static IP address.	42
Administrator > System Status	Shows the MAC address, number of ports, and system version; and lets you specify idle time security settings and an optional comment.	43
Administrator > Load default setting	Returns the switch to its default configuration.	43
Administrator > Firmware Update	Updates the switch firmware.	45
Administrator > Reboot Device	Reboots the switch.	46
Port Management > Port Configuration	Configures switch ports.	48
Port Management > Port Mirroring	Sends network traffic on a port copied to another port for analysis.	51
Port Management > Bandwidth Control	Limits the rates at which the switch accepts incoming data and retransmits outgoing data.	52
Port Management > Broadcast Storm Control	Prevents network traffic from being disrupted.	55
Port Management > POE	Enables or disables PoE for each switch port.	56
VLAN Setting > VLAN Mode	Toggles between tagged- and port-based VLAN modes.	59
VLAN Setting > VLAN Member	Allows ports to join a VLAN.	63
VLAN Setting > Multi to 1 Setting	Configures one or more physical switch ports to a single destination port.	66
Per Port Counter > Port Counter	Displays the number of packets transmitted and received for each port.	68
QoS Setting > Priority Mode	Selects the priority mode used to queue high- and low-priority traffic.	70
QoS Setting > Port 802.1p, IP/DS Based	Uses Class of Service (CoS) to set up consistent traffic prioritization policies.	71
QoS Setting > TCP/UDP Port Based	Configure CoS settings based on the protocol associated with packets.	72
Security > MAC Address Binding	Binds Media Access Channel (MAC) addresses to switch ports.	75
Security > TCP/UDP Filter	Processes or drops incoming packets based on protocols.	77

Table 4-1. Web Management Interface Menus and Submenus

Menus and Submenus	Description	See Page
Trunking > Link Aggregation Settings	Configures switch ports for use in trunks.	80
Backup/Recovery	Saves and restores the switch configuration.	83
Miscellaneous	Configures output queuing aging time, VLAN striding, IGMP snooping versions 1 and 2, and VLAN uplink setting.	86
Logout	Logs you out of the current Web management interface session.	88

Administrator Menu

The **Administrator** menu lets you perform the following tasks:



- **Authentication Configuration** — changes the username and password used to log in to the Web management interface. See page 41.
- **System IP Configuration** — configures the switch to use a DHCP-assigned or static IP address. See page 42.
- **System Status** — shows the MAC address, number of ports, and system version. Also, lets you specify idle time security settings and an optional comment. See page 43.
- **Local default settings** — returns the switch to its default configuration. See page 43.
- **Firmware Update** — updates the switch firmware. See page 45.
- **Reboot Device** — reboots the switch. See page 46.

Authentication Configuration Page

Path: **Administrator > Authentication Configuration**

The Authentication Configuration page lets you change the username and password used to log in to the switch's Web management interface.

Authentication Configuration

Setting	Value
Username	admin <small>max:15 Characters</small>
Password	••••• <small>max:15 Characters</small>
Confirm Password	•••••
<input type="button" value="Update"/>	

Note:
Username & Password only can use "a-z","A-Z","0-9"

The first time you log in, we recommend you change the default username and password used to log in to the switch's Web management interface to prevent unauthorized individuals from gaining access to the switch.

1. In the **Username** field, enter a case-sensitive username, up to 15 characters. Permitted characters are lower-case characters a-z, upper-case characters A-Z, digits 0-9, underscore (_), plus sign (+), minus sign (-), and equals sign (=).
2. In the **Password** field, enter a case-sensitive password, up to 15 characters. Permitted characters are the same as the ones for the username 1. For security, each typed password character is masked as a dot (•).
3. In the **Confirm** field, enter the same case-sensitive password you typed in the **Password** field. For security purposes, every typed character is masked as a dot (•).
4. Click **Update**.
5. When a message tells you that the update was successful and prompts you to reboot the switch, click **Reboot**.

System IP Configuration Page

Path: **Administrator > System IP Configuration**

The System IP Configuration page lets you configure the switch to use a static or dynamic (DHCP) IP address. The first time you log in, configure these settings to match the settings of the network on which the switch will be used.

1. If your network uses a Dynamic Host Configuration Protocol (DHCP) server to allocate IP addresses dynamically, next to **IP Configure**, click **DHCP**, and then skip to step 3.
2. If your network uses static IP addresses, next to **IP Configure**, click **Static**. Then complete the **IP Address**, **Subnet Mask**, and **Gateway** fields with the static IP address information for the switch. The IP address must be unique and must not be used by any other device on the network.
3. Click **Update**.

System IP Configuration	
Setting	Value
IP Address	<input type="text"/> 192 . <input type="text"/> 168 . <input type="text"/> 2 . <input type="text"/> 1
Subnet Mask	<input type="text"/> 255 . <input type="text"/> 255 . <input type="text"/> 255 . <input type="text"/> 0
Gateway	<input type="text"/> 192 . <input type="text"/> 168 . <input type="text"/> 2 . <input type="text"/> 254
IP Configure	<input checked="" type="radio"/> Static <input type="radio"/> DHCP
Update	

System Status Page

Path: **Administrator > System Status**

The System Status page displays the switch's system status information, and lets you enter an optional comment and configure the idle time security.

System Status	
MAC Address	00:e0:b3:34:a3:6a
Number of Ports	16+2
Comment	switch MAX:15
System Version	V110510EW
Idle Time Security	
Idle Time: <input type="text" value="0"/> (1~30 Minutes)	
<input type="radio"/> Auto Logout(Default) <input type="radio"/> Back to the last display.	
<input type="button" value="Update"/>	
Note: Comment name only can use "a-z" "A-Z" "_" "+" "-" "0-9"	

Field	Description
MAC Address	Read-only field that shows the switch's Media Access Channel (MAC) address.
Number of Ports	Read-only field that shows the number of ports on the switch.
Comment	Lets you enter an optional comment, up to 15 characters. Permitted characters are lower-case characters a-z, upper-case characters A-Z, digits 0-9, underscore (_), plus sign (+), minus sign (-), and equals sign (=).
System Version	Read-only field that shows the system software version.
Idle Time Security	Number of minutes a Web management session can be idle before the switch ends the session or displays the last management page shown. By default, idle time security is disabled. To change this setting: 1. Check the Idle Time Security check box to enable idle time security. 2. In the Idle Time field, enter the number of minutes the switch can remain idle before taking the action in step 3 automatically. Range is 1-to-30 minutes. 0 disables idle timeout security. 3. Click the action the switch is to take when the idle time is reached: <ul style="list-style-type: none">• Auto logout = log out of current management session. The user is required to re-login before using the Web management interface again.• Back to the last display = redisplay the last management page shown.
Update Button	After configuring the settings on this page, click this button to commit your settings.

Load Default Setting Page

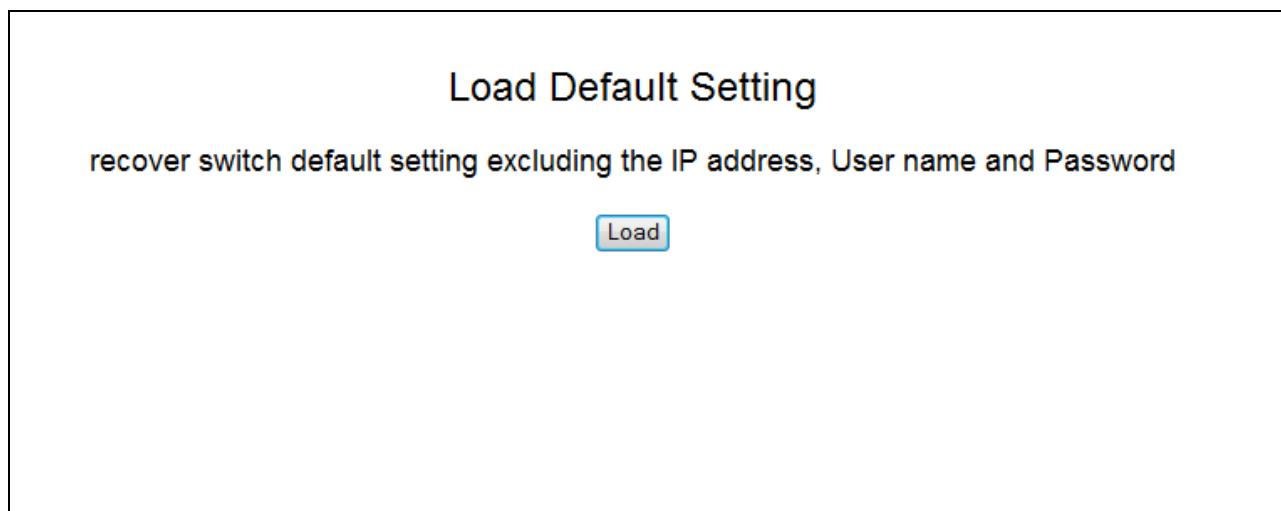
Path: **Administrator > Load Default Setting**

The Load Default Setting page provides a **Load** button that returns the switch to its default configuration settings. Clicking this button removes all overrides made to the default configuration settings.

The only settings that do not return to their default settings are:

- The switch's IP address
- The comment entered in the **Administrator > System Status** page
- The username and password configured in the **Administrator > Authentication Configuration** page.

To reset the switch's IP address, comment, and username and password, reset the switch using the reset button (see "Reset Button" on page 18).



Firmware Update Page

Path: **Administrator > Firmware Update**

The Firmware Update page lets you upgrade the switch firmware. After you obtain the upgraded firmware file from EtherWAN, use the fields in this page to upgrade the switch firmware.

1. In the **Password** field, enter the case-sensitive password used to access the Web management interface. For security, each typed password character is masked as a dot (•).
2. In the **ReConfirm**, field, enter the same case-sensitive password you typed in the Password field. For security purposes, every typed character is masked as a dot (•).
3. Click **Update**. A warning message appears.
4. Click **OK** to proceed with the firmware update (or click **Cancel** to abort the procedure).

Firmware Update	
Please input the password to continue the Firmware Update process.	
Password	<input type="text"/>
ReConfirm	<input type="text"/>
Update	

Reboot Device Page

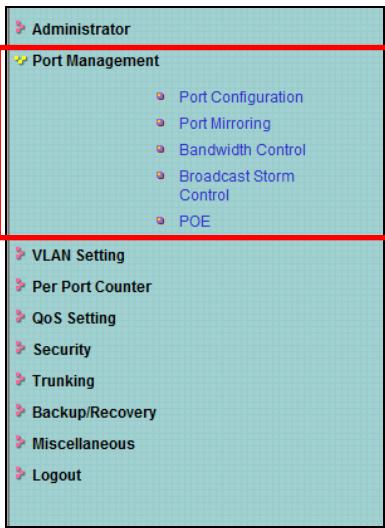
Path: **Administrator > Reboot Device**

The Reboot Device page has a **Confirm** button that reboots the switch. This button is functionally equivalent to pressing the reset button on the switch (see “Reset Button” on page 18).



Port Management Menu

The **Port Management** menu lets you perform the following tasks:



- **Port Configuration** — configures switch ports. See page 48.
- **Port Mirroring** — copies network traffic from one port to another port. See page 51.
- **Bandwidth Control** — limits the rates at which the switch accepts incoming data and retransmits outgoing data. See page 52.
- **Broadcast Storm Control** — prevents LAN traffic from being disrupted by a broadcast, multicast, or unicast storm on a port. See page 55.
- **POE** — enables or disables PoE on switch ports. See page 56.

Port Configuration Page

Path: Port Management > Port Configuration

The Port Management page is organized into two sections:

- The top section provides drop-down lists and check boxes for configuring switch ports. See “Configuring Switch Ports” on page 49.
- The bottom section is a read-only area that shows the current status and settings of the switch ports. See “Port Configuration Fields” on page 50.

The screenshot shows the 'Port Configuration' page. On the left, there is a legend with two entries: 'Configure Switch Ports Here' with a red arrow pointing to the top section, and 'Current Status and Settings' with a red arrow pointing to the bottom section. The top section contains a table with columns for Function, Tx/Rx Ability, Auto-Negotiation, Speed, Duplex, Pause, Backpressure, and Addr. Learning. It includes dropdown menus and checkboxes. Below this is a 'Select Port No.' dropdown with options from 01 to 18 and an 'Update' button. The bottom section contains two tables. The first table, 'Current Status', has columns for Port, Link, Speed, Duplex, FlowCtrl, Tx/Rx Ability, Auto-Nego, Speed, Duplex, Pause, Backpressure, and Addr. Learning. The second table, 'Setting Status', has the same columns. Both tables show data for ports 1 through 18, with port 4 highlighted in green.

Port	Link	Speed	Duplex	FlowCtrl	Tx/Rx Ability	Auto-Nego	Speed	Duplex	Pause	Backpressure	Addr. Learning
1	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
2	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
3	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
4	●	100M	FULL	ON	ON	AUTO	100M	FULL	ON	ON	ON
5	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
6	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
7	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
8	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
9	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
10	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
11	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
12	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
13	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
14	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
15	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
16	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
17	---	---	---	---	ON	AUTO	1G	FULL	ON	ON	ON
18	---	---	---	---	ON	AUTO	1G	FULL	ON	ON	ON

Port	Link	Speed	Duplex	FlowCtrl	Tx/Rx Ability	Auto-Nego	Speed	Duplex	Pause	Backpressure	Addr. Learning
1	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
2	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
3	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
4	●	100M	FULL	ON	ON	AUTO	100M	FULL	ON	ON	ON
5	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
6	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
7	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
8	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
9	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
10	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
11	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
12	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
13	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
14	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
15	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
16	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON
17	---	---	---	---	ON	AUTO	1G	FULL	ON	ON	ON
18	---	---	---	---	ON	AUTO	1G	FULL	ON	ON	ON

Configuring Switch Ports

To configure switch ports.

1. At the top of the page, next to **Select Port No.**, check each switch port that will have the same configuration settings.
2. Using the **Function** drop-down lists, set the configuration settings for the checked ports (see Table 4-2).
3. Click **Update**.

Table 4-2. Port Configuration Settings

Setting	Description
Tx/Rx Ability	Enables or disables a port's ability to send and receive data on the network. Choices are: <ul style="list-style-type: none">• Enable = port can send and receive data.• Disable = port cannot send and receive data.
Auto-Negotiation	Enables or disables a port's ability to negotiate the communication speed and duplex mode automatically. Choices are: <ul style="list-style-type: none">• Enable = port can auto-negotiate speed and duplex mode.• Disable = port cannot auto-negotiate speed and duplex mode.
Speed	Specifies the maximum speed for a port. Choices are: <ul style="list-style-type: none">• 1G = maximum port speed is 1 Gbps.• 100M = maximum port speed is 100 Mbps.• 10M = maximum port speed is 10 Mbps.
Duplex	Specifies the port's duplex mode. Choices are: <ul style="list-style-type: none">• Full = full-duplex.• Half = half-duplex.
Pause	Determines whether the port sends pause frames. When a port gets overloaded, enabling this setting allows a port to send pause requests to the devices sending it data to allow the overloaded condition to clear. Choices are: <ul style="list-style-type: none">• Enable = send pause frames.• Disable = do not send pause frames.
Backpressure	Enables or disables backpressure on ports operating at 10 or 100 Mbps in half-duplex. During periods of packet congestion, ports use backpressure to stop their network counterparts from transmitting more packets temporarily. This prevents a buffer overrun, and the subsequent loss and retransmission of network packets. You cannot set backpressure on ports where auto-negotiation is enabled. You can enable backpressure only on ports where the speed and duplex mode are configured manually. Choices are: <ul style="list-style-type: none">• Enable = enable backpressure.• Disable = disable backpressure.

Setting	Description
Addr. Learning	Allows the switch to learn the MAC addresses of the stations in the network to identify on which port to send traffic. Choices are: <ul style="list-style-type: none"> Enable = enable address learning. Disable = disable address learning.

Port Configuration Fields

The fields at the bottom area of the Port Configuration page show the current status and setting status of the switch ports.

Field	Description
Port	Port numbers for each switch port.
Current Status	
Link	Speed at which the port tries to connect to a port on another switch or device. A green LED indicates ports in use.
Speed	Speed of the port (for example, “10” for 10 Mbps and “100” for 100 Mbps).
Duplex	Duplex mode of the port (for example, “FULL” for full-duplex).
FlowCtrl	Shows whether flow control is enabled (ON) or disabled (OFF) for the ports.
Setting Status	
Tx/Rx Ability	Shows whether the port is configured to send and receive data.
Auto-Nego	Shows whether auto-negotiation is enabled or disabled for the ports.
Speed	Specifies the port speed.
Duplex	Shows the port duplex mode, either HALF (half-duplex) or FULL (full-duplex).
Pause	Shows whether the use of pause frames is enabled (ON) or disabled (OFF) for the ports.
Backpressure	Shows whether backpressure is enabled (ON) or disabled (OFF) for the ports.
Addr. Learning	Shows whether address learning is enabled (ON) or disabled (OFF) for the ports.

Port Mirroring Page

Path: **Port Management > Port Mirroring**

The Port Mirroring page lets the switch send network traffic on a port copied to another port for analysis by a network analyzer. A mirroring session consists of a destination port and at least one source port. A mirror copy of the traffic on the source port(s) being probed is transmitted from the source port to the destination probe port. A network analyzer can be connected to a destination probe port to analyze network traffic.

A port configured as a destination probe port acts as a mirroring port as long as the session is operationally active. When the session is not active, the port transmits and receives traffic based on the other configuration parameters.

Port Mirroring									
Dest Port	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
	10 <input type="checkbox"/>	11 <input type="checkbox"/>	12 <input type="checkbox"/>	13 <input type="checkbox"/>	14 <input type="checkbox"/>	15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	18 <input type="checkbox"/>
Monitored Packets	Disable ▾								
Source Port	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
	10 <input type="checkbox"/>	11 <input type="checkbox"/>	12 <input type="checkbox"/>	13 <input type="checkbox"/>	14 <input type="checkbox"/>	15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	18 <input type="checkbox"/>
<input type="button" value="Update"/>									
Multi to Multi Sniffer function									

To configure port mirroring:

1. Next to **Dest Port**, check the ports you want to designate as destination ports.
2. Using the **Monitored Packets** drop-down list, click the packets that are to be mirrored. Choices are:
 - **Disable** = disables mirroring.
 - **Rx** = receive packets.
 - **Tx** = transmit packets.
 - **Tx & Rx** = transmit and receive packets.
3. Next to **Source Port**, check the ports you want to designate as source ports.
4. Click **Update**.

Bandwidth Control Page

Path: **Port Management > Bandwidth Control**

The Bandwidth Control page is organized into two sections:

- The top section provides drop-down lists and fields for limiting the rate at which the switch accepts incoming data and the rate at which it retransmits outgoing data. See “Configuring Bandwidth Control” on page 53.
- The bottom section is a read-only area that shows the current status and setting status of the switch ports. See “Bandwidth Control Fields” on page 54.

The screenshot shows the 'Bandwidth Control' page with two main sections. On the left, a red arrow points to the 'Configure Bandwidth Control Here' section, which includes a dropdown menu for 'Speed Base' (set to 'Low') and a note about link speed resolution. On the right, another red arrow points to the 'Switch Port Status and Settings' section, which displays a table of port configurations for ports 1 through 18.

Configure Bandwidth Control Here

Port No	Tx Rate (0~255) (0 Full Speed)	Rx Rate (0~255) (0 Full Speed)
1	Low	Low
2	(1)32Kbps Tx/Rx bandwidth resolution for port 1~ port 18. Actual Tx/Rx bandwidth =Rate value x 32 kbps. The rate value is 1~255.	(1)32Kbps Tx/Rx bandwidth resolution for port 1~ port 18. Actual Tx/Rx bandwidth =Rate value x 32 kbps. The rate value is 1~255.
3	High	High
4	(1)256Kbps Tx/Rx bandwidth resolution for port 1~ port 16. Actual Tx/Rx bandwidth =Rate value x 256Kbps. The rate value is 1~255. When link speed is 10MB. The rate value is 1~39. Actual Tx/Rx bandwidth =Rate value x 256Kbps. The rate value is 1~255. When link speed is 10MB. The rate value is 1~48. Actual Tx/Rx bandwidth =Rate value x 2048Kbps. The rate value is 1~255. When link speed is 100MB. The rate value is 1~48.	(1)256Kbps Tx/Rx bandwidth resolution for port 1~ port 16. Actual Tx/Rx bandwidth =Rate value x 256Kbps. The rate value is 1~255. When link speed is 10MB. The rate value is 1~39. Actual Tx/Rx bandwidth =Rate value x 256Kbps. The rate value is 1~255. When link speed is 10MB. The rate value is 1~48. Actual Tx/Rx bandwidth =Rate value x 2048Kbps. The rate value is 1~255. When link speed is 100MB. The rate value is 1~48.

If the link speed of selected port is lower than the rate that you seting, this system will use the value of link speed as your setting rate.

Switch Port Status and Settings

Port No	Tx Rate	Rx Rate	Link Speed	Port No	Tx Rate	Rx Rate	Link Speed
1	Full Speed	Full Speed	---	10	Full Speed	Full Speed	---
2	Full Speed	Full Speed	---	11	Full Speed	Full Speed	---
3	Full Speed	Full Speed	---	12	Full Speed	Full Speed	---
4	Full Speed	Full Speed	100M	13	Full Speed	Full Speed	---
5	Full Speed	Full Speed	---	14	Full Speed	Full Speed	---
6	Full Speed	Full Speed	---	15	Full Speed	Full Speed	---
7	Full Speed	Full Speed	---	16	Full Speed	Full Speed	---
8	Full Speed	Full Speed	---	17	Full Speed	Full Speed	---
9	Full Speed	Full Speed	---	18	Full Speed	Full Speed	---

Configuring Bandwidth Control

To configure bandwidth control.

1. Using the **Port No.** drop-down list, click the switch port you want to configure.
2. In the **Tx Rate** field, enter a transmission rate from 0 to 255 (0 = full speed).
3. In the **Rx Rate** field, enter a receive rate from 0 to 255 (0 = full speed).
4. Using the **Speed Base** drop-down list, select **Low** or **High**, as follows:
 - Low:
 - 32 Kbps Tx/Rx bandwidth resolution for ports 1 through 18.
 - Actual Tx/Rx bandwidth = rate value x 32 kbps. The rate value is 1~255.
 - High:
 - (1) 256 Kbps Tx/Rx bandwidth resolution for ports 1 through 16.
 - Actual Tx/Rx bandwidth = rate value x 256 Kbps. If link speed is 10 Mbps, the rate value is 1~255. The rate value is 1~39.
 - (2) Bandwidth is 2048 Kbps for ports 17 and 18.
 - Actual Tx/Rx bandwidth = rate value x 2048Kbps. The rate value is 1~255.
 - If link speed is 10 Mbps, the rate value is 1~4.
 - If link speed is 100 Mbps, the rate value is 1~48.
5. Click **Update** (or click **Load Default** to load default values instead).



Note: If the link speed of the selected port is lower than the rate you set, the switch uses the link speed value as your setting rate.

Bandwidth Control Fields

The fields at the bottom area of the Bandwidth Control page are two columns that show the current status of the switch ports.

Field	Description
Port No.	Port numbers for each switch port.
Current Status	
Tx Rate	Port transmission speed.
Rx Rate	Port receive speed.
Link Speed	Port link speed.

Broadcast Storm Control Page

Path: **Port Management > Broadcast Storm Control**

The Broadcast Storm Control page prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port. A LAN storm occurs when packets flood the LAN, creating excessive traffic and degrading network performance. Errors in the protocol-stack implementation, mistakes in network configuration, or users issuing a denial-of-service attack can cause a storm.

Storm control uses rising and falling thresholds to block and restore the forwarding of broadcast, unicast, or multicast packets. Storm control is configured for the switch as a whole, but operates on a per-port basis.

Broadcast Storm Control									
Threshold	63 1-63								
Enable Port	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
	10 <input type="checkbox"/>	11 <input type="checkbox"/>	12 <input type="checkbox"/>	13 <input type="checkbox"/>	14 <input type="checkbox"/>	15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	18 <input type="checkbox"/>

Update

This value indicates the number of broadcast packet which is allowed to enter each port in one time unit. One time unit is 50us for Gigabit speed, 500 us for 100Mbps speed and 5000us for 10Mbps speed

Note: This effect may be not significant for long broadcast packet, since the broadcast packet count passing through the switch in a time unit is probably less than the specified number.

To configure broadcast storm control:

1. In the **Threshold** field, enter a number from 1 to 63 that corresponds to the number of broadcast packets allowed to enter each port. A higher threshold allows more packets to pass through.
2. Next to **Enable Port**, check each port to which you want to apply broadcast storm control.
3. Click **Update**.

POE Page

Path: **Port Management > POE**

Power over Ethernet (PoE) means that power sourcing equipment (PSE) supplies power to powered devices (PD) such as IP telephone, wireless LAN access point, and web camera from Ethernet interfaces through twisted pair cables. The POE Configuration page lets you enable or disable PoE independently for each switch port.

Field	Description
Port	Port number for each port on the switch.
Enable	Check this check box to enable PoE for a port or uncheck to disable PoE for a port. If checked, the PoE of the port is able to supply power to the attached PD.
PSE Current	Status of the port current.
Minimum Output Power	Status of the minimum output power.
POE Class	Each POE port detects the class of the attached PD.
Update Button	After configuring the settings on this page, click this button to commit your settings.

POE Configuration								
Port	01	02	03	04	05	06	07	08
Enable	<input checked="" type="checkbox"/>							
PSE Current	No Load							
Minimum Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---
Port	09	10	11	12	13	14	15	16
Enable	<input checked="" type="checkbox"/>							
PSE Current	No Load							
Minimum Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---
<input type="button" value="Update"/>								
<small>Update: Update the power control function. Enable<input checked="" type="checkbox"/>:Power On Enable<input type="checkbox"/>:Power Off</small>								

VLAN Setting Menu

A Local Area Network (LAN) can be defined as a broadcast domain. Hubs, bridges or switches in the same physical segment or segments connect all end node devices. End nodes can communicate with each other without the need for a router. Routers connect LANs together, routing the traffic to appropriate port.

A virtual LAN (VLAN) is a local-area network with a definition that maps workstations on some other basis than geographic location (for example, by department, type of user, or primary application). To communicate between VLANs, traffic must go through a router, just as if they were on two separate LANs.

A VLAN is a group of PCs, servers and other network resources that behave as if they were connected to a single, network segment — even though they may not be. For example, all marketing personnel may be spread throughout a building. Yet if they are all assigned to a single VLAN, they can share resources and bandwidth as if they were connected to the same segment. The resources of other departments can be invisible to the marketing VLAN members, accessible to all, or accessible only to specified individuals, depending on how the IT manager has set up the VLANs.

The Advantages of VLANs

- **Provides network segmentation.** Users who communicate most frequently with each other can be grouped into common VLANs, regardless of physical location. Each group's traffic is largely contained within the VLAN, reducing extraneous traffic and improving the efficiency of the whole network.
- **Improves management.** The addition of nodes, as well as moves and other changes, can be dealt with quickly and conveniently from a management interface rather than the wiring closet.
- **Increases bandwidth and performance.** VLANs free up bandwidth by limiting node-to-node and broadcast traffic throughout the network.
- **Enhances network security.** VLANs create virtual boundaries that can be crossed only through a router. So standard, router-based security measures can be used to restrict access to each VLAN.

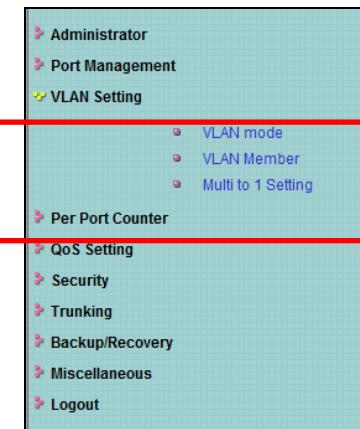
VLAN Behavior in the Switch

Packets received by the switch will be treated in the following way:

- If an untagged packet enters a port configured for tag-based VLAN, the port settings defined on the **VLAN Setting > VLAN Mode** page determine whether the packet is tagged automatically. Each port has a default VLAN ID setting that is user-configurable. The VLAN ID for each port can be changed on the VLAN Mode page.

- If a tagged packet enters a port configured for tag-based VLAN, the port settings defined on the **VLAN Setting > VLAN Mode** page determine whether the tag is ignored or removed automatically.
- If the port in which the packet entered the switch does not have membership with the VLAN specified by the VLAN ID tag, the packet is dropped. Port VLAN membership settings are changed on the **VLAN Setting > VLAN Member** page.
- If the port has membership to the VLAN specified by the packet's VLAN ID, the packet will be able to be sent to other ports with the same VLAN ID membership.
- Packets leaving the switch will be either tagged or untagged, depending on the setting for that port's VLAN membership properties.

The switch's VLAN features can be accessed from the **VLAN Setting** menu. This menu lets you perform the following tasks:



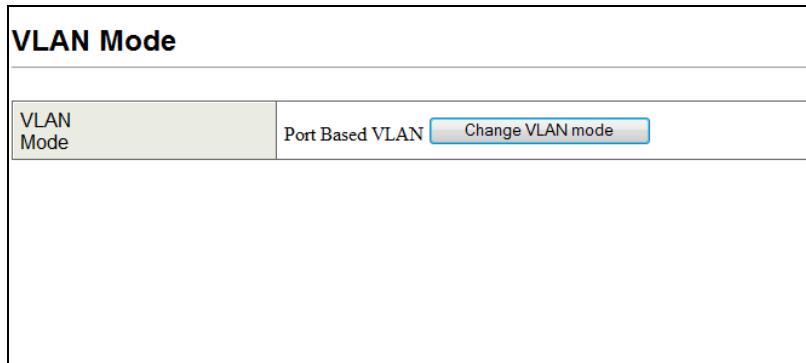
- **VLAN mode** — toggles between tagged- and port-based VLAN modes. See page 59.
- **VLAN Member** — allows ports to join a VLAN. See page 63.
- **Multi to 1 Setting** — configures one or more physical switch ports to a single destination port. See page 66.

VLAN Mode Page

Path: **VLAN Setting > VLAN Mode**

The VLAN Mode page lets you toggle between two virtual VLAN modes:

- Port-based VLAN
- Tagged-based VLAN



Port-based VLANs

A port-based VLAN is a group of ports that form a logical Ethernet segment. Each port of a port-based VLAN can belong to only one VLAN at a time. A port-based VLAN can have as many or as few ports as needed. The VLAN can consist of all the ports on an Ethernet switch, or just a few ports. In addition, a port-based VLAN can span switches and consist of ports from multiple Ethernet switches.

Ports in a port-based VLAN are referred to as untagged ports and the frames received on the ports as untagged frames. The names derive from the fact that the frames received on a port do not contain any information that indicates VLAN membership, and that VLAN membership is determined solely by a port's PVID.

Tagged-based VLANs

VLAN membership in a tagged-based VLAN is determined by information within the frames that are received on a port. This differs from a port-based VLAN, where the PVIDs assigned to the ports determine VLAN membership.

The VLAN information within an Ethernet frame is referred to as a tag or tagged header. A tag, which follows the source and destination addresses in a frame, contains the VID of the VLAN to which the frame belongs (IEEE 802.3ac standard). This number uniquely identifies each VLAN in a network.

When the switch receives a frame with a VLAN tag, referred to as a tagged frame, the switch forwards the frame only to those ports that share the same VID.

A port that receives or transmits tagged frames is referred to as a tagged port. Any network device connected to a tagged port must be IEEE 802.1Q-compliant. This is the standard that outlines the requirements and standards for tagging. The device must be able to process the tagged information on received frames and add tagged information to transmitted frames.

Changing to a Port-Based VLAN

If a VLAN Mode page similar to the following appears, the switch is configured for tagged-based VLAN.

VLAN Mode									
VLAN Mode	Tag Based VLAN Change VLAN mode								
Tag Mode	Port 01 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 02 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 03 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 04 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 05 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 06 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 07 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 08 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 09 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag
	Port 10 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 11 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 12 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 13 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 14 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 15 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 16 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 17 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 18 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag

Note:
If the link partner is a network interface card, it probably cannot recognize the VLAN tag.
In this case, it is strongly recommended the network administrator to remove the VLAN tag of the corresponding port.

To switch to a port-based VLAN:

1. Click **Change VLAN Mode**. The following warning appears.

WARNING!	
Current Tag-base VLAN Setting will be reset to default setting, if you click on "Continue" button to change to Port-base VLAN mode. Otherwise, click on "Back" button to cancel.	
<input type="button" value="Continue"/>	<input type="button" value="Back"/>

2. Click **Continue** to proceed (or click **Back** to return to the previous page, without changing the VLAN mode). If you clicked **Continue**, a page similar to the following appears, indicating that the switch is now configured for a port-based VLAN.

VLAN Mode		
VLAN Mode	Port Based VLAN	Change VLAN mode

Changing to a Tagged-Based VLAN

If the VLAN Mode page appears as shown below, the switch is configured for port-based VLAN.

VLAN Mode		
VLAN Mode	Port Based VLAN	Change VLAN mode

To switch to a tagged-based VLAN:

1. Click **Change VLAN Mode**. The following warning appears.

WARNING!	
Current Port-base VLAN Setting will be reset to default setting. if you click on "Continue" button to change to Tag-base VLAN mode. Otherwise, click on "Back" button to cancel.	
Continue	Back

2. Click **Continue** to proceed (or click **Back** to return to the previous page, without changing the VLAN mode). If you clicked **Continue**, a page similar to the following appears.

VLAN Mode									
VLAN Mode	Tag Based VLAN								
	Change VLAN mode								
Tag Mode	Port 01 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 02 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 03 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 04 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 05 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 06 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 07 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 08 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	
	Port 10 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 11 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 12 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 13 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 14 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 15 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 16 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	Port 17 <input type="radio"/> AddTag <input checked="" type="radio"/> don't care <input type="radio"/> RemoveTag	
<input type="button" value="Update"/>									
<p>Note: If the link partner is a network interface card, it probably cannot recognize the VLAN tag. In this case, it is strongly recommended the network administrator to remove the VLAN tag of the corresponding port. </p>									

3. Next to **Tag Mode**, click whether the ports should add, ignore, or remove tags in the frames they forward to other nodes on the network.
4. Click **Update**.

VLAN Member Page

Path: **VLAN Setting > VLAN Member**

You configure a port to belong to a VLAN by assigning a membership mode that determines the kind of traffic the port carries and the number of VLANs to which it can belong. The procedure you use depends on whether you configured the switch for port-based VLAN or tagged-based VLAN (see “VLAN Mode Page” on page 59).

Port-Based VLANs

If you configured the switch for a port-based VLAN, clicking **VLAN Setting > VLAN Member** displays a page similar to the following.

VLAN Member Setting (Port Based)																				
Port	01 <input type="button" value="Read"/>																			
	Dest PORT		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
	select		<input type="checkbox"/>																	
	<input type="button" value="Update"/>	<input type="button" value="LoadDefault"/>																		
VLAN MEMBER																				
Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
1	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
3	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
5	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
6	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
7	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
8	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
9	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
10	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
11	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
12	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
13	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
14	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
15	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
16	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
17	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
18	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
Port	1	2	3	4	5	6	7	8	9	0	1	1	1	1	1	1	1	1		

To add members to a port-based VLAN:

1. Using the **Port** drop-down list, select a port number, and then click **Read**.
2. On the **select** rows, check each destination port that you want to make a member of this VLAN. Uncheck each port that you do not want to make a member.
3. Click **Update** (or click **Load Default** to load default values instead).

The **VLAN Member** table at the bottom of the page shows read-only settings for the VLAN members associated with each switch port.

Tag-Based VLANs

If you configured the switch for a tag-based VLAN, clicking **VLAN Setting > VLAN Member** displays a page similar to the following.

VLAN Member Setting (Tag Based)										
VID:	(1~4094)	Add	Delete	Update						
Add: Enter a VID, select the VLAN member for this entry and then press this button to add a VLAN entry to the table. Del: Select a VID in the table and then press this button to remove a VID entry from the table. Update: Modify the existing VID entry, select VID and then press the button.										
VLAN Member Port		01	02	03	04	05	06	07	08	09
select		<input checked="" type="checkbox"/>								
VLAN Member Port		10	11	12	13	14	15	16	17	18
select		<input checked="" type="checkbox"/>								
Note: If you do not select any port, this VID will be treated as a VID embedded in a 802.1Q tag.										
VID Source port		01	02	03	04	05	06	07	08	09
select		<input type="checkbox"/>								
VID Source port		10	11	12	13	14	15	16	17	18
select		<input type="checkbox"/>								
Port VID Map.										
Port	01	02	03	04	05	06	07	08	09	

To add members to a tag-based VLAN:

1. In the **VID** field, enter a unique port VLAN identifier from 1 to 4094, and then click **Add**.
2. On the **select** rows, check the VLAN member ports and VID source ports that you want to add as members, and uncheck the ones you do not want as members.



Note: If you do not check any VLAN member ports and VID source ports, this VID is treated as a VID embedded in an 802.1Q tag.

3. Click **Update**.

Delete and **Update** buttons on the top-right side of the page let you remove or modify VIDs.

- To delete a VID, click a VID from the drop-down list, and then click **Delete**.

-
- To modify a VID, click a VID from the drop-down list, check or uncheck the VLAN member ports and VID source ports as desired, and then click **Update**.

A map of the port VIDs appears at the bottom of the page.

Multi to 1 Page

Path: **VLAN Setting > Multi to 1**

The Multi to 1 Setting page is a per-port VLAN feature that lets you configure one or more physical switch ports to a single destination port. If you configure this setting, it deletes the VLAN group settings. Similarly, configuring the VLAN group settings thereafter deletes the Multi-to-1 settings.

1. Using the **Destination Port No.** drop-down list, click a destination port number.
2. On the **Disable Port** row, check each physical port on the switch that you want to exchange packets with the destination port.
3. Click **Update**.

Multi to 1 Setting									
Destination PortNo.	01 ▾								
Current Setting	Port-								
Disable Port	01 <input type="checkbox"/>	02 <input type="checkbox"/>	03 <input type="checkbox"/>	04 <input type="checkbox"/>	05 <input type="checkbox"/>	06 <input type="checkbox"/>	07 <input type="checkbox"/>	08 <input type="checkbox"/>	09 <input type="checkbox"/>
	10 <input type="checkbox"/>	11 <input type="checkbox"/>	12 <input type="checkbox"/>	13 <input type="checkbox"/>	14 <input type="checkbox"/>	15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	18 <input type="checkbox"/>

Note: "Disabled port" defines the switch physical port which is disabled.

1. A example for Multi-to-1 structure

Ports	VLAN Group
01	1
02	2
12	:
16	16

2. The original setting of the VLAN Group will be cleared and replaced by this special structure if you enable this function.
On the other hand, If you set the VLAN Group again, this special structure will be cleared and replaced by your newest setting.

Per Port Counter Menu

The **Per Port Counter** menu lets you perform the following task:



- **Port Counter**—displays the number of packets transmitted and received for each port. See page 68.

Port Counter Page

Path: **Per Port Counter > Port Counter**

The Counter Category page displays the number of packets transmitted and received for each port.

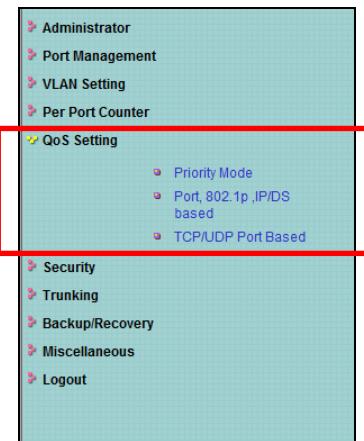
1. Using the **Counter Mode Selection** drop-down list, click the type of packet you want to view. Choices are:
 - Transmit and receive packets
 - Collision count and transmission packets
 - Dropped packets and receive packets
 - CRC error packets and receive packets
2. Click **Update**. The page is refreshed and the information you requested is displayed.

Buttons at the bottom of the page let you refresh and clear the values shown on the page.

Counter Category		
Counter Mode Selection: <input type="button" value="Transmit Packet & Receive Packet"/> <input type="button" value="Update"/>		
Port	Transmit Packet Receive Packet	
01	0	0
02	0	0
03	0	0
04	968	2336
05	0	0
06	0	0
07	0	0
08	0	0
09	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0

QoS Setting Menu

The **QoS Setting** menu lets you perform the following tasks:



- **Priority Mode** — selects the priority mode used to queue high- and low-priority traffic. See page 70.
- **Port 802.1p, IP/DS based** — uses Class of Service (CoS) to set up consistent traffic prioritization policies. See page 71.
- **TCP/UDP Port Based** — configure CoS settings based on the protocol associated with packets. See page 72.

Priority Mode Page

Path: **QoS Setting > Priority Mode**

Quality of Service (QoS) provides the switch with a mechanism to queue and service high-priority traffic before low- priority traffic. Using the Priority Mode page, you can select the priority mode the switch uses to queue high- and low-priority traffic.

1. Next to **Mode**, click one of the following priority modes:

- **First-In-First-Out** = the switch processes and forwards packets in the order they arrive.
- **All-High-before-Low** = the switch services high-priority traffic in its transmit queue before low-priority traffic.
- **Weight-Round-Robin** = the switch processes packets in order, but uses a ratio of high- vs. low-priority packets based on the **Low weight** and **High weight** values you select. These values are converted into percentages for handling low-priority and high-priority traffic. For example, if **Low weight** = 3 and **High weight** = 5, the ratio of low-priority transmit packets to high- priority transmit packets handled by the switch is 3 to 5.



Note: A weight value of 0 is treated as a value of 8.

2. Click **Update**.

Priority Mode	
Priority Mode	
Mode	<input checked="" type="radio"/> First-In-First-Out <input type="radio"/> All-High-before-Low <input type="radio"/> Weight-Round-Robin. Low weight: <input type="text" value="0"/> High weight: <input type="text" value="0"/>
<input type="button" value="Update"/>	
<p>Note: When the queue weight is set to "0", it will be treated as "8". The "low weight" and "high weight" means the ratio of the packet in the transmit queue. For example, If "low weight" and "high weight" are set to "3" and "5", the ratio of the transmit packet for the low priority to high priority is 3/5.</p>	

Port 802.1p , IP DS Based Page

Path: **QoS Setting > Port 802.1p , IP DS Based**

The Class of Service Configuration page lets you use the switch's Class of Service (CoS) feature to set up consistent traffic prioritization policies.

CoS prioritizes traffic to prevent less important traffic from consuming network bandwidth, and slowing down or stopping the delivery of more important traffic. For example, without CoS, most traffic received by the switch is forwarded with the same priority it had when it entered the switch. In many cases, such traffic is "normal" priority and competes for bandwidth with all other normal-priority traffic, regardless of its relative importance to your organization's mission. CoS keeps the most important network traffic moving at an acceptable speed, regardless of current bandwidth usage. This means you can manage available bandwidth so that the switch transmits the most important traffic first.

1. For each port, check one or more characteristics that indicate to the switch to give packets with those characteristics higher priority than packets that do not have those characteristics. For example, to give packets that have VLAN tags and arrive on port 2 a higher priority than packets on other ports that do not have VLAN tags, check **VLAN Tag** for **Port No. 2**.
2. Click **Update**.

Class of Service Configuration							
<input checked="" type="checkbox"/> =Enable High Priority							
Port No.\Mode	Port Base	VLAN Tag	IP / DS	Port No.\Mode	Port Base	VLAN Tag	IP / DS
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

As long as any of three COS schemes(802.1p,IP TOS/DS or Port Base) is mapped to "high", the data packet will be treated as the high priority.
VLAN Tag priority: high priority -> 4~7; low priority -> 0~3
IPv4 DS and IPv6 TC: high priority -> 10,18,26,34,46,48,56 ; low priority -> others

TCP/UDP Port Based Page

Path: QoS Setting > TCP/UDP Based

Clicking **QoS Setting > TCP/UDP Based** displays another Class of Service Configuration page, where you configure CoS settings based on the protocol associated with packets. Each protocol has an **Option** drop-down list from which you can specify how the switch handles frames associated with the protocols.

The **Option** drop-down list provides the following selections:

- **F-I-F-O** = incoming packets are forwarded using a first-in-first-out scheme.
- **Discard** = incoming packets are discarded at the source port.
- **Low** = incoming packets are forwarded with low priority.
- **High** = incoming packets are forwarded with high priority.

Class of Service Configuration				
Protocol		Option		
FTP(20,21)		FIFO		
SSH(22)		FIFO		
TELNET(23)		FIFO		
SMTP(25)		FIFO		
DNS(53)		FIFO		
TFTP(69)		FIFO		
HTTP(80,8000)		FIFO		
POP3(110)		FIFO		
NEWS(119)		FIFO		
SNTP(123)		FIFO		
NBNS(137-139)		FIFO		
IMAP(143,220)		FIFO		
BINM(161,162)		FIFO		
HTTPD(443)		FIFO		
MSN(883)		FIFO		
XRD_RDP(3389)		FIFO		
QQU(4000,8000)		FIFO		
ICQ(5190)		FIFO		
Yahoo(5050)		FIFO		
BOOTP_DHCP(67,68)		Low		
User_Define_a		FIFO		
User_Define_b		FIFO		
User_Define_c		FIFO		
User_Define_d		FIFO		
User_Define_a Port: Mask:0 (1-65535) MaskC:255	User_Define_a Port: Mask:0	User_Define_b Port: Mask:0	User_Define_c Port: Mask:0	User_Define_d Port: Mask:0

Note: The mask defines which bit is ignored when the mask is applied. For example, UDP/TCP port = 65535 and mask = 3 means 65520, 65531, 65534 and 65535 are all taken into account. UDP/TCP port = 65535 and mask=0, this means only 65535 is taken into account.

TCP/UDP port QoS function: Not Available

Note: When the "override" item is selected, the Port_based, Tag_based, IP_TOS_based, Cos listed above will be ignored.

The last row on the page lets you specify CoS settings for a user-defined port.

1. In the **Port** field, enter a port number.
2. In the **Mask** field, enter a bit number of the 7-bit IP address that you want the switch to ignore.

Examples:

- If UDP/TCP port = 65535 and **Mask** = 5, the switch takes into account 65530, 65531, 65534, and 65535.
- If UDP/TCP port = 65535 and **Mask** = 0, the switch takes into account 65535 only.

User_Define Port number (1~65535) Mask(0~255)	User_Define_a Port: <input type="text"/> Mask:0
--	---

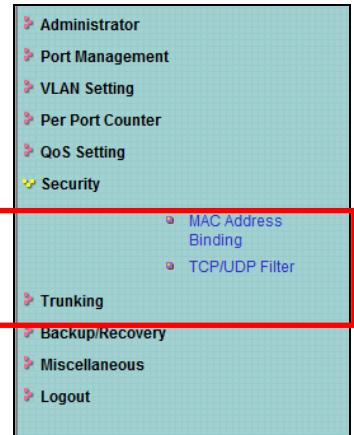
Below this row is a **TCP/UDP port QoS function** drop-down list that provides two settings:

- **Override** = switch ignores the port-based, IP type of service (ToS)-based, and CoS settings defined in the Web management interface.
- **Not Override** = switch obeys the port-based, IP ToS-based, and CoS settings defined in the Web management interface.

TCP/UDP port QoS function	Not Override
Note: When the "override" item is selected, the Port_based, Tag_based, IP TOS_based, CoS listed above will be ignored.	

Security Menu

The **Security** menu lets you perform the following tasks:



- **Mac Address Binding** — binds Media Access Channel (MAC) addresses to switch ports. See page 75.
- **TCP/UDP Filter** — processes or drops incoming packets based on protocols. See page 77.

MAC Address Binding Page

Path: **Security > MAC Address Binding**

The MAC Address Binding page lets you bind up to three Media Access Channel (MAC) addresses to every port on the switch. This page is organized into two sections:

- The top section has fields and drop-down lists for enabling or disabling MAC address binding.
- The bottom section shows the MAC address binding status for the switch ports.

Configure MAC Address Binding Here 

MAC Address Binding Status 

MAC Address Binding			
Port No.	MAC Address		
1	<input type="text"/> <input type="button" value="Read"/>	Select Port 01 ▾ Binding Disable ▾ <input type="button" value="Update"/>	
Note: If you enable the MAC address binding function, the address learning function will be disabled automatically.			
Port No.	Binding Status	Port No.	Binding Status
1	Disable	10	Disable
2	Disable	11	Disable
3	Disable	12	Disable
4	Disable	13	Disable
5	Disable	14	Disable
6	Disable	15	Disable
7	Disable	16	Disable
8	Disable	17	Disable
9	Disable	18	Disable

Note: The MAC address of current management connection is f0:de:f1:bef5:0b at port 4.

Configuring MAC Address Binding

To enable MAC address binding:

1. Under **MAC Address**, enter up to three MAC addresses that will bind to a switch port.
2. Using the **Select Port** drop-down list, click the switch port to which you want to bind the MAC address(es) you specified in step 1.
3. Using the **Binding** drop-down list, click **Enable** or **Disable**:
 - **Enable** = port binds MAC addresses until the specified number is reached.
 - **Disable** = port learns MAC addresses freely.
4. Click **Update**.
5. If address learning is enabled, a message warns you that enabling MAC address binding disables address learning automatically. Click **OK** to remove the message and enable MAC address binding (or click **Cancel** to abort the operation).

MAC Address Binding Status Fields

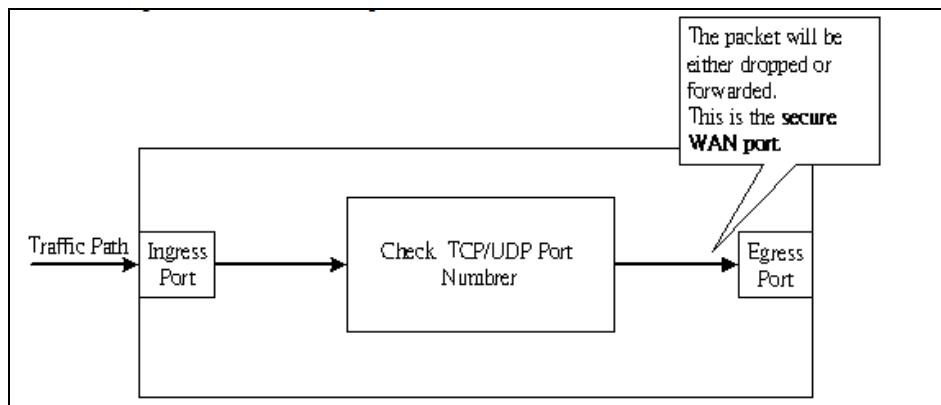
The fields at the bottom area of the MAC Address Binding page show the current MAC address binding status of the switch ports.

Field	Description
Port No.	Port numbers for each switch port.
Binding Status	MAC address binding status of the port.
Speed	Speed of the port (for example, "10" for 10 Mbps and "100" for 100 Mbps).

TCP/UDP Filter Configuration Page

Path: **Security > TCP/UDP Filter**

The TCP/UDP Filter Configuration page lets you specify which incoming packets are processed and which are dropped based on the protocol associated with the packets.



To configure TCP/UDP filter configuration:

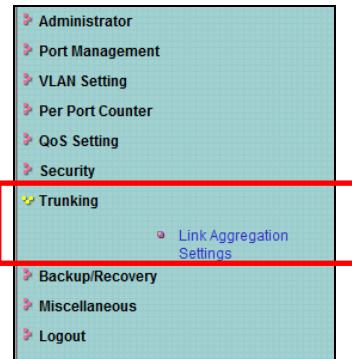
1. Using the **Function Enable** drop-down list, click **Enable**.
2. Using the **Port Filtering Rule** drop-down list, click one of the following selections:
 - **positive** = the switch forwards the protocols selected in the next step and drops the other protocols.
 - **negative** = the switch drops the protocols selected in the next step and forwards other protocols
3. For **Protocol**, check the protocols you want forwarded (if **Port Filtering Rule = positive**) or dropped (if **Port Filtering Rule = negative**).
4. For **Secure WAN port**, check the port where the packet is to be forwarded or dropped.
5. Click **Update**.

TCP_UDP Filter Configuration

Function Enable	Disable <input type="button" value=""/>
Port Filtering Rule	<input checked="" type="radio"/> negative <input type="radio"/> Note: (1)The outgoing packet with selected protocol will be either forwarded or dropped at secure WAN port as the figure shwon below. (2)'negative' means the selected protocol will be dropped and other protocols will be forwarded. "positive" means the selected protocol will be forwarded and other protocol will be dropped.
Protocol	<input type="checkbox"/> FTP(20,21) <input type="checkbox"/> SSH(22) <input type="checkbox"/> TELNET(23) <input type="checkbox"/> SMTP(25) <input type="checkbox"/> DNS(53) <input type="checkbox"/> TFTP(69) <input type="checkbox"/> HTTP(80,8080) <input type="checkbox"/> POP3(110) <input type="checkbox"/> NEWS(119) <input type="checkbox"/> SNTP(123) <input type="checkbox"/> NetBIOS(137~139) <input type="checkbox"/> IMAP(143,220) <input type="checkbox"/> SNMP(161,162) <input type="checkbox"/> HTTPS(443) <input type="checkbox"/> XRD_RDP(3389) <input type="checkbox"/> BOOTP_DHCP(67,68) <input type="checkbox"/> User_Define_a <input type="checkbox"/> User_Define_b <input type="checkbox"/> User_Define_c <input type="checkbox"/> User_Define_d
Secure WAN port	<input type="checkbox"/> Port01 <input type="checkbox"/> Port02 <input type="checkbox"/> Port03 <input type="checkbox"/> Port04 <input type="checkbox"/> Port05 <input type="checkbox"/> Port06 <input type="checkbox"/> Port07 <input type="checkbox"/> Port08 <input type="checkbox"/> Port09 <input type="checkbox"/> Port10 <input type="checkbox"/> Port11 <input type="checkbox"/> Port12 <input type="checkbox"/> Port13 <input type="checkbox"/> Port14 <input type="checkbox"/> Port15 <input type="checkbox"/> Port16 <input type="checkbox"/> Port17 <input type="checkbox"/> Port18
<input type="button" value="Update"/>	
Note:The description of Secure WAN port is shown below.	
<pre> graph LR IP[Ingress Port] --> C[Check TCP/UDP Port Number] C --> EP[Egress Port] subgraph Note [Note] direction TB N1[The packet will be either dropped or forwarded.] N2[This is the secure WAN port.] end Note -.-> EP </pre>	

Trunking Menu

The **Trunking** menu lets you perform the following task:



- **Link Aggregation Settings** — configures switch ports for use in trunks. See page 80.

Trunking Page

Path: Trunking > Link Aggregation Settings

Trunking is a feature that increases the bandwidth between network devices by allowing multiple physical links between switches to work as one virtual (or “aggregate”) link. The Trunking page lets you configure the switch ports for use in trunks. You can trunk ports that have different settings; however, the speed used will be the lowest speed between the ports. The ports must be on the same VLAN.

Trunking																														
System Priority		1 (1~65535)																												
Link Aggregation Algorithm		MAC Src&Dst ▾																												
<input type="button" value="Submit"/>																														
<input type="button" value="Refresh"/>																														
<table border="1"><thead><tr><th colspan="2"></th><th>Link Group</th></tr><tr><th rowspan="3">Member</th><th>P17</th><th>P18</th></tr><tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>--</td><td>--</td></tr></thead><tbody><tr><td colspan="2">State</td><td>Disable ▾</td></tr><tr><td colspan="2">Type</td><td>Static ▾</td></tr><tr><td colspan="2">Operation Key</td><td>(1~65535)</td></tr><tr><td colspan="2">Time Out</td><td>Long Time Out ▾</td></tr><tr><td colspan="2">Activity</td><td>Passive ▾</td></tr><tr><td colspan="3" style="text-align: center;"><input type="button" value="Submit"/></td></tr></tbody></table>					Link Group	Member	P17	P18	<input type="checkbox"/>	<input type="checkbox"/>	--	--	State		Disable ▾	Type		Static ▾	Operation Key		(1~65535)	Time Out		Long Time Out ▾	Activity		Passive ▾	<input type="button" value="Submit"/>		
		Link Group																												
Member	P17	P18																												
	<input type="checkbox"/>	<input type="checkbox"/>																												
	--	--																												
State		Disable ▾																												
Type		Static ▾																												
Operation Key		(1~65535)																												
Time Out		Long Time Out ▾																												
Activity		Passive ▾																												
<input type="button" value="Submit"/>																														

Field	Description
System Priority	The system priority specifies the switch’s link aggregation priority relative to the devices at the other ends of the links on which link aggregation is enabled. A higher value indicates a lower priority. You can specify a priority from 0 – 65535. Default is 1.
Link Aggregation Algorithm	Algorithm used for link aggregation. Choices are: <ul style="list-style-type: none">• MAC Source = specifies source MAC address as the load distribution method. This is a Layer 2 load balance method.• MAC Src & Dst = specifies source address/destination MAC address as the load distribution method. This is a Layer 2 load balance method.
Submit Button	Click this button to submit your System Priority and Link Aggregation Algorithm selections.

Field	Description
Member	Check the check boxes of the ports you want to aggregate. Unchecked ports will not be aggregated.
State	Click whether aggregation is enabled or disabled for the ports.
Type	Select the type of port trunk. Choices are: <ul style="list-style-type: none"> • Static = multiple ports on the switch that function as a single virtual link between the switch and another device. • LACP = increases the bandwidth between two network devices by distributing the traffic load over multiple physical links. See the note following this table.
Operation Key	Identifies the group of ports that are eligible to be aggregated into a trunk group. The software assigns a key to each group of ports automatically. The Web management interface assigns the keys in ascending numerical order, beginning with 0. You can change a port group's key to a value from 0 – 65535.
Time Out	Indicates the timeout value of the port. Choices are: <ul style="list-style-type: none"> • Long = the trunk group has already been formed and the port is therefore using a longer message timeout for the LACPDU messages exchanged with the remote port. Typically, these messages are used as confirmation of the health of the aggregate link. • Short = the port has just started the LACPDU message exchange process with the port at the other end of the link. The S timeout value also can mean that the link aggregation information received from the remote port has expired and the ports are starting a new information exchange.
Activity	Switch interfaces exchange LACP packets only with partner interfaces that have an active or passive mode configuration. <ul style="list-style-type: none"> • Passive = interface responds to LACP packets that it receives, but does not start LACP packet negotiation. This setting minimizes the transmission of LACP packets. • Active = places an interface into an active negotiation state, in which the interface starts negotiations with other interfaces by sending LACP packets.
Submit Button	After configuring the settings on this page, click this button to commit your settings.



Note: If you enable LACP on some specified ports and their link partners are normal ports without LACP, these specified ports cannot transmit packets to receive packets from the link partner.

Backup/Recovery Menu

The **Backup/Recovery** menu lets you perform the following task:



- **Backup/Recovery** — saves and restores the switch configuration. See page 83.

Configuration Backup/Recovery Page

Path: **Backup/Recovery**

The Configuration Backup/Recovery page lets you save the switch configuration on your computer or restore the switch configuration by uploading a binary (or ".bin") file that you saved previously on your computer.

Configuration Backup/Recovery

Backup(Switch→PC)

Please check "Download" to download EEPROM contents.

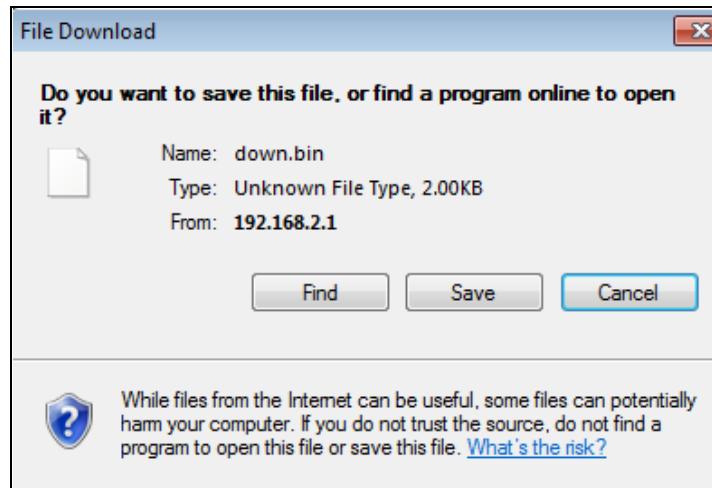
Recovery(PC→Switch)

Select the image file :

Password:

To save the switch configuration:

1. Under **Backup (Switch -> PC)**, click **Download**.
2. When the File Download dialog box appears, click **Save**.



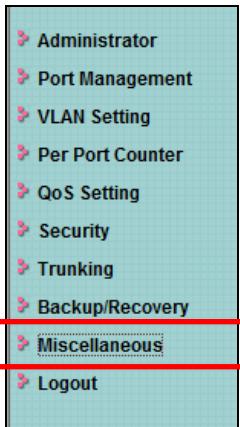
3. In the Save As dialog box, go to the location where you want to save the file, and then click **Save**.

To recover switch settings using a bin file you saved using the procedure above:

1. Under **Recover (PC -> Switch)**, click **Browse**.
2. When the Choose File to Upload dialog box appears, use the dialog box to go to the location where the bin file resides, and then click the file and click **Open**.
3. In the **Password** field, enter the same password you use to log into the Web management interface.
4. Click **Update**.

Miscellaneous Menu

The **Miscellaneous** menu lets you perform the following task:



- **Miscellaneous** — configures output queuing aging time, VLAN striding, IGMP snooping versions 1 and 2, and VLAN uplink setting. See page 86.

Miscellaneous Setting Page

Path: **Miscellaneous**

The Miscellaneous Setting page lets you configure the following settings:

- Output queuing aging time
- VLAN striding
- IGMP snooping versions 1 and 2
- VLAN uplink setting

Miscellaneous Setting								
Output Queue Aging Time								
Aging time Disable ▾ ms	The output queue aging function allows the administrator to select the aging time of a packet stored in the output queue. A packet stored in the output queue for a long time will lower the free packet buffer, resulting in the poor utilization of the buffer and the poor switch performance.							
VLAN Striding								
VLAN Striding Disable ▾	When this function is enabled, the switch will forward a uni-cast packet to the destination port. No matter whether the destination port is in the same VLAN group.							
IGMP Snooping V1 & V2								
IGMP Snooping Disable ▾	IGMP Snooping V1 & V2 function enable							
IGMP Leave Packet [Disable ▾]	Leave packet will be forwarded to IGMP router ports.							
VLAN Uplink Setting								
Port 01 Uplink1 Uplink2	Port 02 Uplink1 Uplink2	Port 03 Uplink1 Uplink2	Port 04 Uplink1 Uplink2	Port 05 Uplink1 Uplink2	Port 06 Uplink1 Uplink2	Port 07 Uplink1 Uplink2	Port 08 Uplink1 Uplink2	Port 09 Uplink1 Uplink2
Port 10 Uplink1 Uplink2	Port 11 Uplink1 Uplink2	Port 12 Uplink1 Uplink2	Port 13 Uplink1 Uplink2	Port 14 Uplink1 Uplink2	Port 15 Uplink1 Uplink2	Port 16 Uplink1 Uplink2	Port 17 Uplink1 Uplink2	Port 18 Uplink1 Uplink2
<input type="button" value="Clear Uplink1"/> <input type="button" value="Clear Uplink2"/>								
<input type="button" value="Update"/>								

Configuring Output Queuing Aging Time

The **Output Queuing Aging Time** section is used to avoid poor utilization of the switch. When a packet is stored in the switch for a long time, the time slot defined by the protocol will expire and this packet becomes useless. To prevent these useless packets from wasting the bandwidth, the switch provides an option to enable the queue aging function. Once enabled, the switch monitors the aging timer for each packet before it is sent out. A packet that stays in a queue for a long time will be discarded.

Output Queue Aging Time	
Aging time Disable ▾ ms	The output queue aging function allows the administrator to select the aging time of a packet stored in the output queue. A packet stored in the output queue for a long time will lower the free packet buffer, resulting in the poor utilization of the buffer and the poor switch performance.

VLAN Striding

By selecting this function, the switch forwards unicast packets to the destination port, regardless of whether the destination port is in the same VLAN.

VLAN Striding	
VLAN Striding Disable ▾	When this function is enabled, the switch will forward a uni-cast packet to the destination port. No matter whether the destination port is in the same VLAN group.

IGMP Snooping

When this function is enabled, the switch executes IGMP snooping version 1 and version 2 without the intervention of the CPU. The switch handles Internet Group Management Protocol (IGMP) report packets automatically. If you enable **Leave packet will be forwarded to IGMP router ports** and members want to leave this multicast group, the IGMP leave packet will be forwarded to the router ports.

IGMP Snooping V1 & V2	
IGMP Snooping Disable ▾	IGMP Snooping V1 & V2 function enable
IGMP Leave Packet Disable ▾	Leave packet will be forwarded to IGMP router ports.

VLAN Uplink Setting

This section lets you define the “Uplink port.” This port normally is the port attached to the uplink router. If you set this function, any frame transferred to other VLAN members is forwarded out the uplink port only.

VLAN Uplink Setting									
Port 01 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 02 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 03 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 04 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 05 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 06 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 07 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 08 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 09 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	
Port 10 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 11 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 12 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 13 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 14 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 15 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 16 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 17 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	Port 18 <input type="radio"/> Uplink1 <input checked="" type="radio"/> Uplink2	
									<input type="radio"/> Clear Uplink1 <input type="radio"/> Clear Uplink2

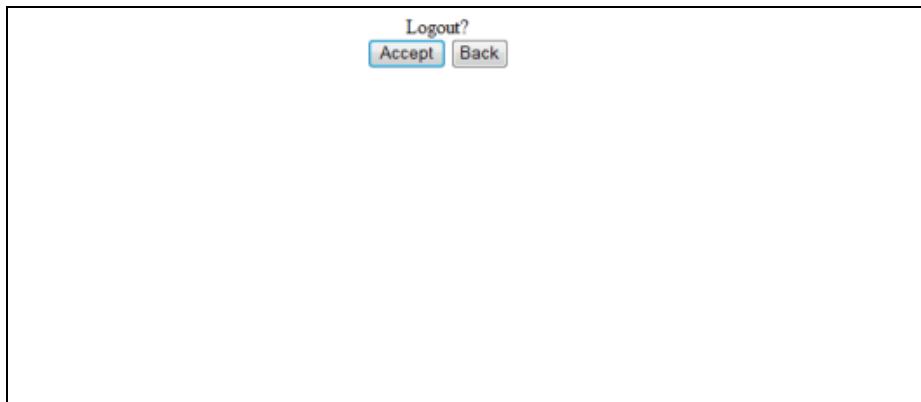
For example:

1. Set ports 1, 2, and 3 to the same VLAN and set ports 4, 5 and 6 to the same VLAN.
2. Set port 01 to **Uplink1**, set port 4 to **Uplink2**, and then click **Update**.
3. If port 2 wants to send a unicast packet to port 5, the packet will be transferred to port 1.

Logout Menu



The **Logout** menu logs you out of the current Web management interface session. When you click this menu, the prompt below asks whether you want to log out. Click **Accept** to logout and end your session or click **Back** to remain in the current session.



5 Troubleshooting

Topics:

- ▲ *Troubleshooting Chart
(page 90)*
- ▲ *Additional
Troubleshooting
Suggestions (page 91)*

This chapter provides information about troubleshooting the switch.

Troubleshooting Chart

Table 5-1 symptoms, causes, and solutions of possible problems.

Table 5-1. Troubleshooting Chart

Symptom	Cause	Solution
Power LED is OFF.	The switch is not receiving power.	Check the power cord connections for the switch at the switch and the connected device. Be sure all cables used are correct and comply with Ethernet specifications.
Link/ACT LED is OFF or intermittent.	Port connection is not working.	Check the crimp on the connectors and be sure the plug is inserted properly and locked into the port at both the switch and the connecting device. Be sure all cables used are correct and comply with Ethernet specifications. Check for a defective adapter card, cable, or port by testing them in an alternate environment where all products are functioning.
File transfer is slow or performance degradation is a problem.	Half- or full-duplex setting on the switch and the connected device are not the same.	Configure the switch and the attached device to auto-negotiate.
A segment or device is not recognized as part of the network.	One or more devices are not connected properly or cabling does not meet Ethernet guidelines.	Verify that the cabling is correct. Be sure all connectors are securely positioned in the required ports. Equipment may have been disconnected accidentally.
Collisions are occurring on the connected segment.	Some collisions are normal when the connection is operating in half-duplex mode.	Recheck the settings of the device attached to the switch port. Be sure the switch and the attached device are using the same duplex setting. Be sure the switch and the attached device are set to auto-negotiate. Check and, if necessary, change the settings on the Port Management > Broadcast Storm Control page (see page 55).
Link/ACT LED is flashing continuously on all connected ports and the network is disabled.	A network loop (redundant path) has been created.	Break the loop by ensuring that there is only one path from any networked device to any other networked device.

Additional Troubleshooting Suggestions

If the suggestions in Table 5-1 do not resolve your problem, refer to the troubleshooting suggestions in this section.

Network Adapter Cards

Be sure the network adapter cards installed in the PC used to configure the switch are in working condition and the latest software driver has been installed.

Configuration

If problems occur after altering the switch's network configuration, restore the original connections and determine the problem by implementing the new changes one step at a time. Be sure cable distances, repeater limits, and other physical aspects of the installation do not exceed the Ethernet limitations.

Switch Integrity

If required, verify the integrity of the switch by resetting it. To reset the switch, use the reset button on the front panel (see “Reset Button” on page 18) or use the **Administrator > Reboot Device** page on the switch’s Web management interface (see “Reboot Device Page” on page 46). If the problem continues, contact EtherWAN Systems technical support.

Auto-Negotiation

The 10/100 Mbps ports negotiate the correct duplex mode and speed if the switch is configured for auto-negotiation (this is the switch’s default setting) and the device at the other end of the link supports auto-negotiation. If the device does not support auto-negotiation, the switch determines only the speed correctly and the duplex mode defaults to half-duplex.

The Gigabit ports on the switch negotiate speed, duplex mode, and flow control, provided the attached device supports auto-negotiation.

Appendix A - Specifications

Technology

Specification	Description
Standards:	<p>Model EX17082 and Model EX17162:</p> <ul style="list-style-type: none"> • IEEE802.3 10BASE-T • IEEE802.3u 100BASE-TX • IEEE802.3x • IEEE802.3ab 1000BASE-T • IEEE802.3z 1000BASE-SX/LX • IEEE802.1p QoS • IEEE802.3at PoE <p>Model EX17242:</p> <ul style="list-style-type: none"> • IEEE802.3af • IEEE802.3 10BASE-T • IEEE802.3u 100BASE-TX • IEEE802.3x • IEEE802.3ab 1000BASE-T • IEEE802.3z 1000BASE-SX/LX • IEEE802.1p
Forward and Filtering Rate:	<ul style="list-style-type: none"> • 10 Mbps: 14,880 pps • 100 Mbps: 148,810 pps • 1000 Mbps: 1,488,100 pps
Packet Buffer Memory:	2.75 M bits
Processing Type:	<ul style="list-style-type: none"> • Store-and-Forward • Half-duplex backpressure and IEEE802.3x full-duplex flow control
Address Table Size:	4096 MAC addresses

Power

Specification	Description
Power Input:	100 – 240 VAC, 50 / 60 Hz
Power Consumption:	<p>Model EX17082: Device: Max. 9 W (without PoE) PoE power budget: 246.4 W Max.</p> <p>Model EX17162: Device: Max. 12 W (without PoE) PoE power budget: 246.4 W Max</p> <p>Model EX17242: Device: 390W Max. PoE power budget: 369.6 W</p> <p>Model EX17242L: Device: 195 W Max PoE power budget: 180 W</p>
PoE Power Output:	
Model EX17082:	IEEE 802.3at: up to 30W/port, 50 - 57VDC, 600 mA Max.
Model EX17162 and Model EX17242:	IEEE802.3af: up to 15.4 W/port, 47 – 55 VDC, 350 mA Max.

Mechanical

Specification	Description
Casing:	Metal case
Dimensions:	<p>Model EX17162: 440 mm (W) x 330 mm (D) x 44 mm (H) (17.32" (W) x 12.99" (D) x 1.73" (H)) Standard 19" rack-mount size, one-unit-height</p> <p>Model EX17242: 440 mm (W) x 220 mm (D) x 44 mm (H) (17.32" (W) x 8.67" (D) x 1.73" (H)) Standard 19" rack-mount size, one-unit-height</p>
Weight:	<p>Model EX17162: 4.3 kg (9.46 lbs.)</p> <p>Model EX17242: 4 Kg (8.81 lbs.)</p>
Installation:	Rack mounting

Interface

Specification	Description
Ethernet Ports:	
Model EX17082:	10/100BASE-TX: 8 PoE ports Gigabit: 2 ports
Model EX17162:	10/100BASE-TX: 16 PoE ports Gigabit: 2 ports
Model EX17242:	10/100BASE-TX: 24 PoE ports Gigabit: 2 ports
LED Indicators:	<ul style="list-style-type: none">• Per unit: Power Status• Per port: 10/100TX: Link/Activity, PoE Act/status• Gigabit: Link/Activity

Environment

Specification	Description
Operating Temperature:	0°C to 45°C (32°F to 113°F)
Storage Temperature:	-10°C to 70°C (14°F to 158°F)
Ambient Relative Humidity:	10% to 95% (non-condensing)

Regulatory Approvals

Specification	Description
ISO:	Manufactured in an ISO9001 facility
Emission Compliance:	FCC Part 15, Class A, CE mark Class A

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EX17082, EX17162, and EX17242 Web-Smart Switches User Guide

August 13, 2014

Document version: Version 1