EtherWAN

EX17008 and EX17016 Web-Smart Switches

User's Guide

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Products Supported by this Manual:

EX17008 and EX17016

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	08/052014	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.
Italic	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 EX17008 and EX17016 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 (either EX17008 or EX17016).

Contents

1 Introduction

Topics:

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

Congratulations on your purchase of the EX17008 or EX17016 Web-Smart 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-complaint powered devices automatically. To simplify installation, the switch is shipped ready for use.

Figure 1-1. EX17008 Series Switch

Figure 1-2. EX17016 Series Switch

EX17008 and EX17016 Web-Smart Switches User Guide

Key Features

This section summarizes the key features of the EX17008 and EX17016 switches.

Model EX17008 Features

- 8 10/100BASE-TX ports supporting IEEE 802.3af Power over Ethernet (PoE) Power Sourcing Equipment (PSE), with a total PoE power budget of 123.2 W Max.

Model EX17016 Features

- 16 10/100BASE-TX ports supporting IEEE 802.3af PoE PSE, with a total PoE power budget of 246.4 W Max.

Common Features

- All 10/100TX 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, and QoS priority

- 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 18)
2.	**Connect to the 10/100 Mbps Switch Ports** • 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: – Model EX17008: use ports **1** through **8**. – Model EX17016: use ports **1** through **16**. • Repeat this step for each additional device you want to connect to the 10/100 Mbps ports.	"10/100 Mbps RJ-45 Ports" (page 15) and "Connecting to the 10/100 Mbps RJ-45 Ports" (page 20)
3.	**Power On** • 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.	"Applying AC Power" (page 20)
4.	**Configure the Switch** • Configure a PC for subnet 192.168.2.*n*, where *n* 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.	Chapters 3 and 4

2 Unpacking and Installation

This chapter describes how to unpack and install the EX17008 and EX17016 switches.

Unpacking the Hardware

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

• One EX17008 or EX17016 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:

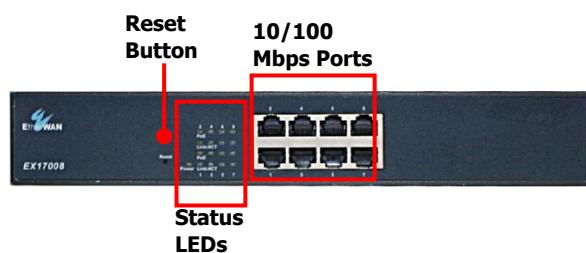– Internet Explorer

– Mozilla Firefox

– Google Chrome

Internet Explorer is the preferred browser for EtherWAN switch configuration.
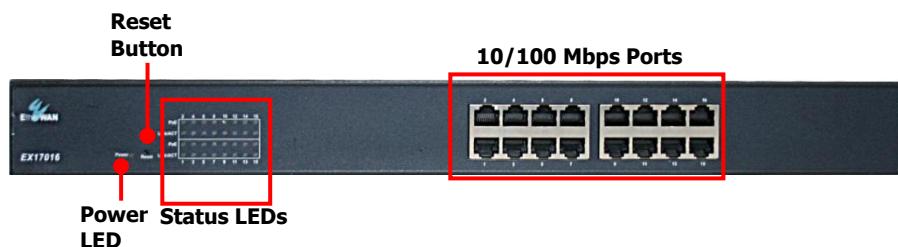
Hardware Features

The following sections describe the hardware features of the EX17008 and EX17016 switches.

Front Panel

Figure 2-1 and Figure 2-2 show the front panels of the EX17008 and EX17016 switches.

Figure 2-1. Front Panel of the EX17008 Switch

Figure 2-2. Front Panel of the EX17016 Switch

10/100 Mbps RJ-45 Ports

The EX17008 switch has 8 10/100 Mbps RJ-45 ports designated **1** through **8** (see Figure 2-1). The EX17016 switch has 16 10/100 Mbps RJ-45 ports designated **1** through **16** (see Figure 2-2).

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.

Reset Button

The EX17008 and EX17016 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 40).

LEDs

The EX17008 and EX17016 front panel LEDs show power, PoE, and link/activity status. Table 2-1 summarizes the LEDs on the switch.

Table 2-1. 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.

Rear Panel

The EX17008 and EX17016 rear panel has a receptacle for connecting the supplied external power adapter. Use only the external power adapter supplied with the switch.

The rear panel also has one fan that allows air to pass through the switch enclosure and exit through the rear of the chassis. Be sure the fan is not blocked.

Figure 2-3. Rear Panel of the EX17008 Switch

Figure 2-4. Rear Panel of the EX17016 Switch

Side and Bottom Panels

The EX17008 and EX17016 side panels have vents for cooling. Be sure these vents are not blocked.

The bottom panel has 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 18
2. Installing the switch. See page 18.
3. Connecting to the 10/100 Mbps RJ-45 ports. See page 20.
4. Checking the installation. See page 20.
5. Applying AC power. See page 20.

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Preparing the Site

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

Table 2-2. Site Requirements

| Characteristics	Requirements

Mounting
    Desktop installations:
 	
    Rack-mount installations:
	
	Provide a flat table or shelf surface.
	
	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.

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
    Temperature:
 	
    Operating humidity:
 	
    Ventilation:
 	
    Operating conditions:
	
	Install the switch in a dry area, with ambient temperature between 0 and 40ºC (32 and 104ºF). Keep the switch away from heat sources such as direct sunlight, warm air exhausts, hot-air vents, and heaters.
	
	The installation location should have a maximum relative humidity of 90%, non-condensing.
	
	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.
	Be sure there is adequate airflow in the room or wiring closet where you intend to install the switch.
	
	Keep the switch at least 6 ft (1.83 m) away from nearest source of electromagnetic noise, such as a photocopy machine.

Stacking	If you intend to stack two or more switches, be sure: • 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.
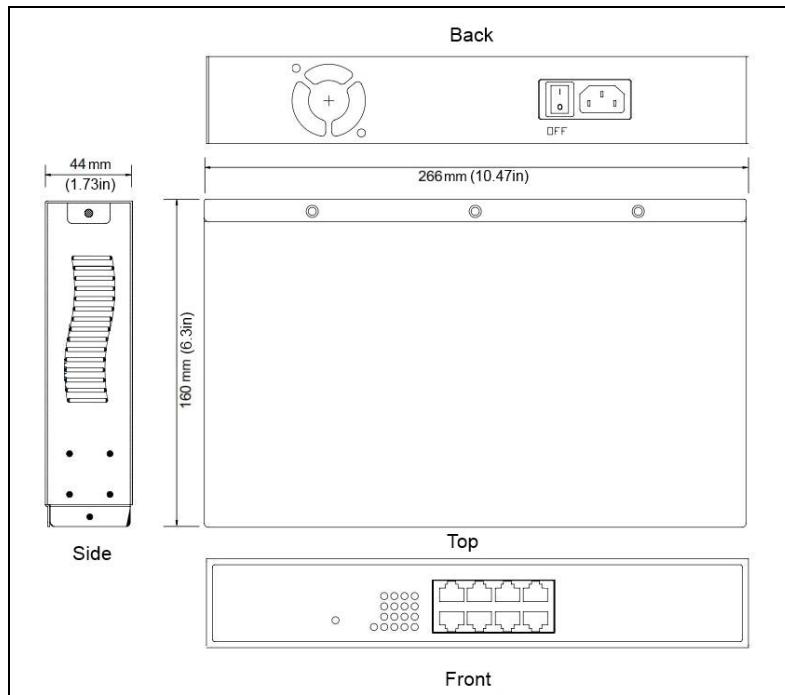
Figure 2-5. EX17008 Switch Dimensions
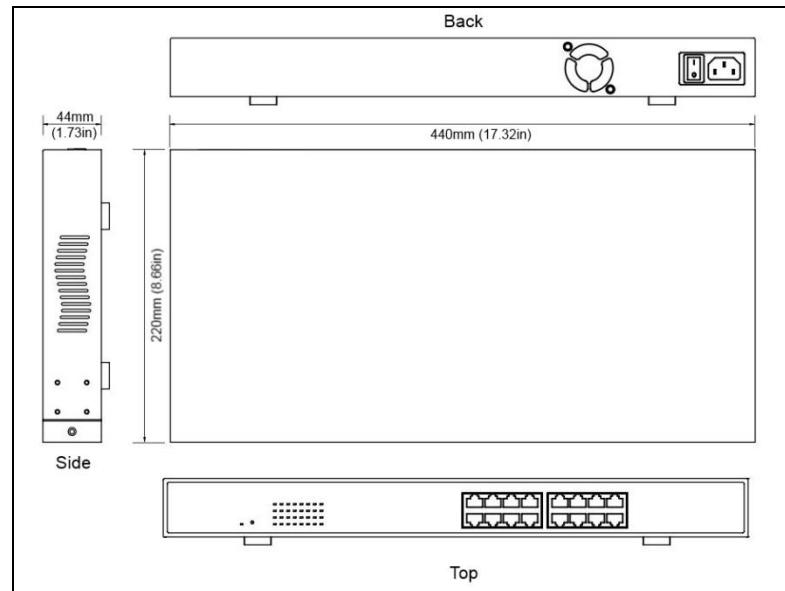
Figure 2-6. EX17016 Switch Dimensions

Connecting to the 10/100 Mbps RJ-45 Ports

The front panel of the switch provides 8 or 16 10/100 Mbps RJ-45 ports, depending on the model (see "10/100 Mbps RJ-45 Ports" on page 15). 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.

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

EX17008 and EX17016 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** and **Link/ACT** LEDs blink momentarily.

- The fan starts.

- The yellow **Power LED** goes ON.

- The **Link/ACT** 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** 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 fan, 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:

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.
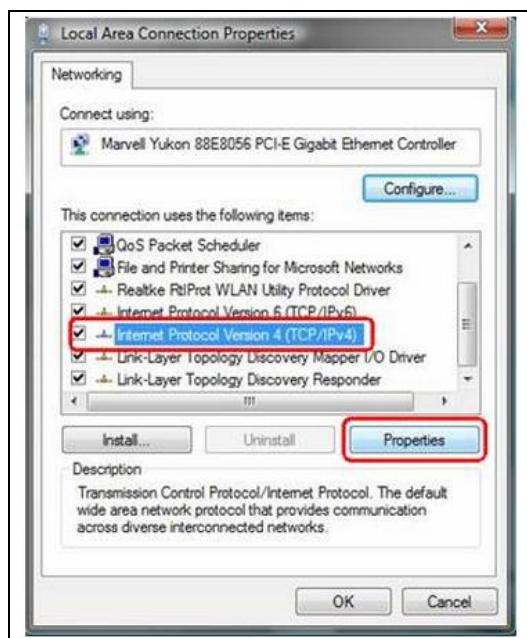
1. Click **Start >Control Panel > Network and Internet >View network status and tasks**.

2. In the left pane, click **Change adapter settings**.
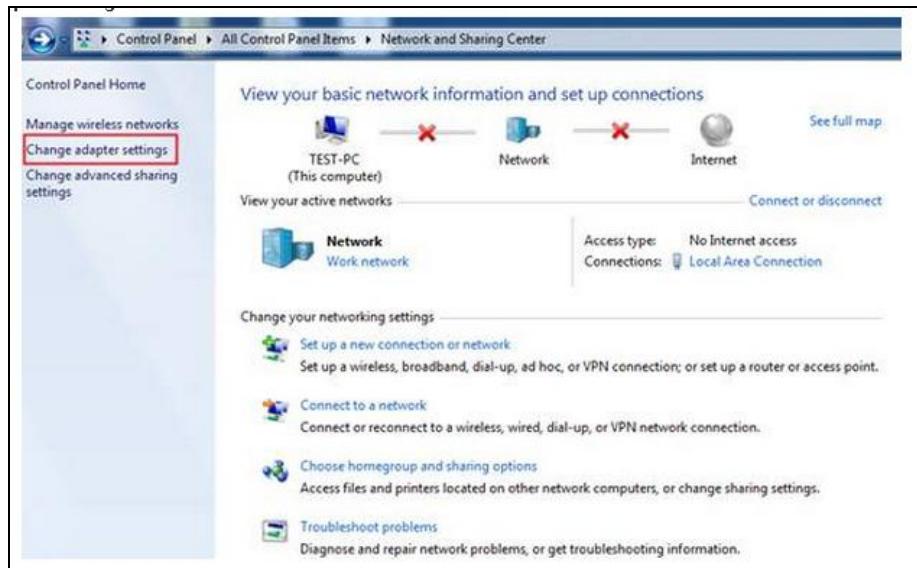
3. On the right side of the page, select the connection, right click it, and then select **Properties**.
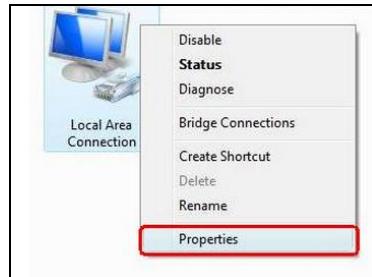
4. Click Internet Protocol Version 4 (TCP/IPv4), and then click Properties.

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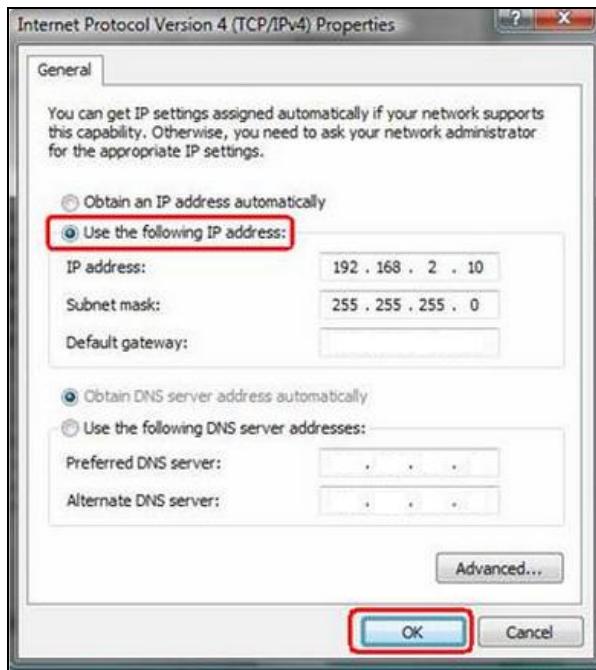
8. Click **OK** to exit the current dialog box, and then click **OK** again to exit the initial dialog box.

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 29)*

- *Idle Time Security (page 30)*

- *Understanding the Web Management Interface (page 30)*

- *Web Management Interface Menus (page 32)*

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**:

Address 🔵 http://192.168.2.1

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

USER LOG IN

Site: 192.168.2.1

ID:

Password:

OK

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 36) and default username and password (see page 35).

Idle Time Security

For security, the switch has an idle time security feature that closes the current Web management session automatically if the interface is not used for 15 minutes. This feature prevents a session from remaining open to unauthorized users if the operator should walk away from the management PC.

Approximately five minutes before the switch ends the session, a message alerts you that the session will end if there is no activity. This message has a **Back** button that you can click to return to your Web management session. If you fail to click the button within the allotted time, the current Web management session ends automatically and you will have to relog in to a new session.

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 EX17016 switch are shown, with port 16 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 EX17008 and EX17016 switches are the same.
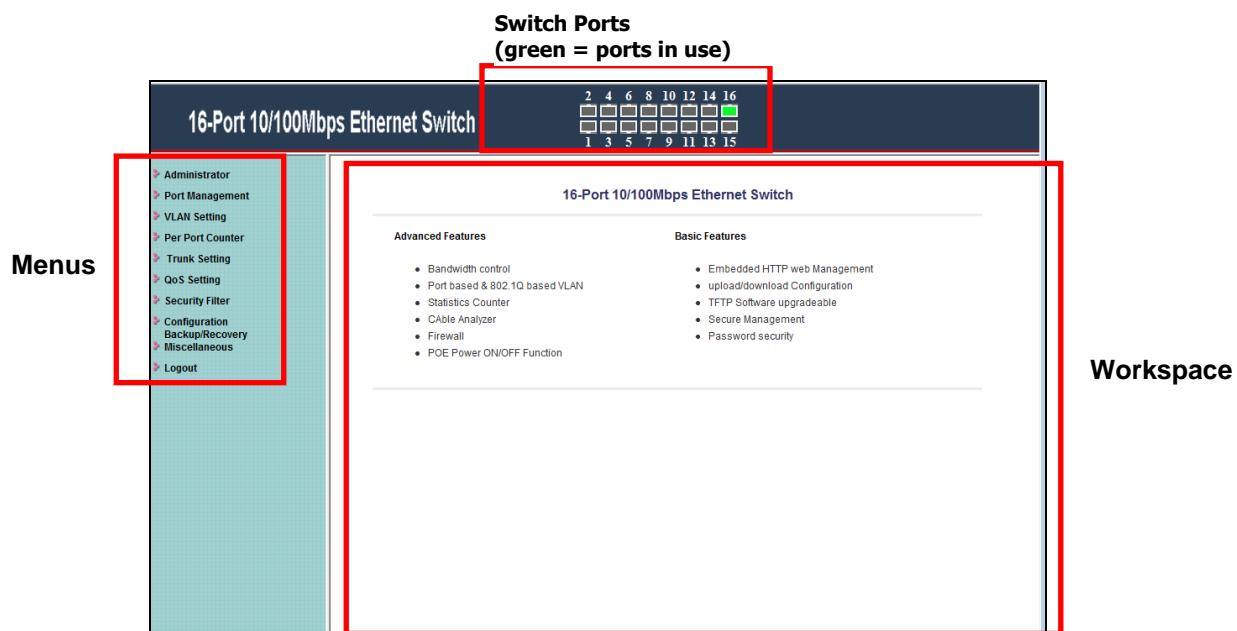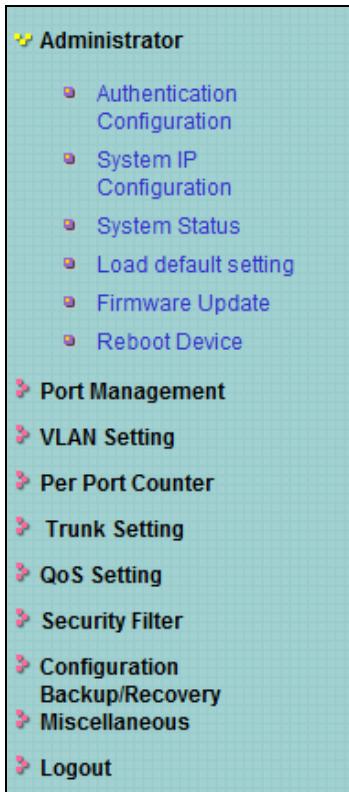

Figure 4-2. Main Areas on the Web Management Interface (EX17016 Switch)

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

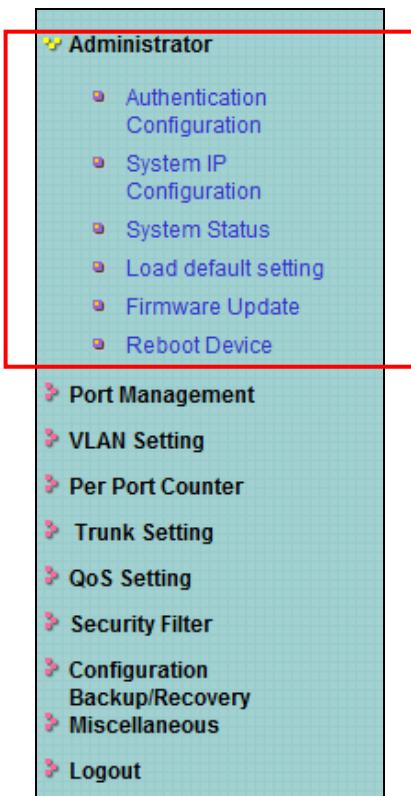| Menus and Submenus	Description	See Page
Administrator > Authentication Configuration	Changes the Web management interface username and password.	35
Administrator > System IP Configuration	Configures the switch to use a DHCP-assigned or static IP address.	36
Administrator > System Status	Shows the MAC address, number of ports, and system version; and lets you specify an optional comment.	37
Administrator > Load default setting	Returns the switch to its default configuration.	38
Administrator > Firmware Update	Updates the switch firmware.	39
Administrator > Reboot Device	Reboots the switch.	40
Port Management > Port Configuration	Configures switch ports.	42
Port Management > Port Mirroring	Sends network traffic on a port copied to another port for analysis.	45
Port Management > Bandwidth Control	Limits the rates at which the switch accepts incoming data and retransmits outgoing data.	47
Port Management > Broadcast Storm Control	Prevents network traffic from being disrupted.	50
Port Management > POE	Enables or disables PoE for each switch port.	51
VLAN Setting > VLAN Mode	Toggles between tagged- and port-based VLAN modes.	54
VLAN Setting > VLAN Member	Allows ports to join a VLAN.	58
VLAN Setting > Multi to 2 Setting	Configures two physical switch ports to a single destination port.	61
Per Port Counter > Port Counter	Displays the number of packets transmitted and received for each port.	64
Trunk Setting	Configures up to two trunk ports on the switch.	65
QoS Setting > Priority Mode	Selects the priority mode used to queue high- and low-priority traffic.	69
QoS Setting > Class of Service Configuration	Uses Class of Service (CoS) to set up consistent traffic prioritization policies.	70
QoS Setting > TCP/UDP Port Number QoS	Configure CoS settings based on the protocol associated with packets.	71

Table 4-1. Web Management Interface Menus and Submenus

Menus and Submenus	Description	See Page
EX17008: Security Filter > MAC Address Binding	Binds Media Access Channel (MAC) addresses to switch ports.	75
EX17016: Security Filter > MAC Address Filter	Configures the switch to drop packets with specific source or destination Media Access Channel (MAC) addresses.	77
Security Filter > TCP/UDP Filter	Processes or drops incoming packets based on protocols.	79
Configuration Backup/Recovery	Saves and restores the switch configuration.	81
Miscellaneous	Configures output queuing aging time, VLAN striding, and IGMP snooping versions 1 and 2.	84
Logout	Logs you out of the current Web management interface session.	86

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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 35.

- **System IP Configuration** — configures the switch to use a DHCP-assigned or static IP address. See page 36.

- **System Status** — shows the MAC address, number of ports, and system version. Also, lets you specify an optional comment. See page 37.

- **Local default settings** — returns the switch to its default configuration. See page 38.

- **Firmware Update** — updates the switch firmware. See page 39.

- **Reboot Device** — reboots the switch. See page 40.

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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.

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, and 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.

> **Note:** The **IP Address**, **Subnet Mask**, and **Gateway** fields are not available when **IP Configure** is set to **DHCP**.

3. Click **Update**.

System IP Configuration

Setting	Value
IP Address	192 . 168 . 2 . 1
Subnet Mask	255 . 255 . 255 . 0
Gateway	192 . 168 . 2 . 254
IP Configure	⦿ Static ○ DHCP
	Update

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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:a6:2c
Number of Ports	16
Comment	Switch16/PoE16 [Update]
System Version	IP210SDK2_L2.21_IP1717 v1.2.2

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.
Update Button	After configuring the settings on this page, click this button to commit your settings.

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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 16).

<div style="border:1px solid #000; padding:20px;">

Load Default Setting

recover switch default setting excluding the IP address,Comment(in System Status),User name and Password

[Load]

</div>
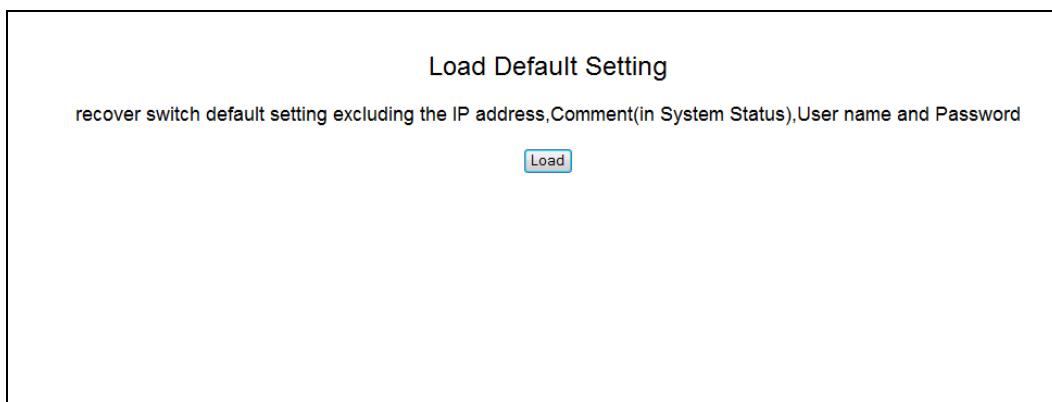
Firmware Update Page

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).
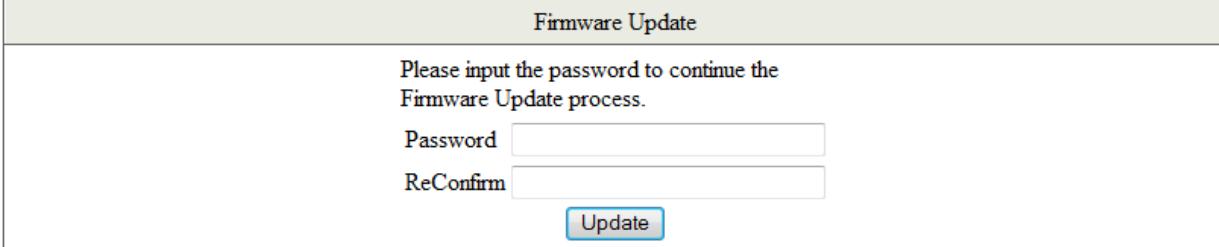
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Reboot Device Page

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 16).

Reboot Device:
Click "Confirm" to Reboot the Device Confirm

Port Management Menu

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

- **Port Configuration** — configures switch ports. See page 42.

- **Port Mirroring** — copies network traffic from one port to another port. See page 45.

- **Bandwidth Control** — limits the rates at which the switch accepts incoming data and retransmits outgoing data. See page 47.

- **Broadcast Storm Control** — prevents LAN traffic from being disrupted by a broadcast, multicast, or unicast storm on a port. See page 50.

- **POE** — enables or disables PoE on switch ports. See page 51.

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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 43.

- 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 44.

Configure Switch Ports Here →

Current Status and Settings →

Port Configuration

Function	Auto	Speed	Duplex	Pause	Backpressure	Tx Capability	Addr. Learning
	---- ▼	---- ▼	---- ▼	---- ▼	---- ▼	---- ▼	---- ▼

Select Port No. 01 ☐ 02 ☐ 03 ☐ 04 ☐ 05 ☐ 06 ☐ 07 ☐ 08 ☐ 09 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐

[Update]

Port	Current Status				Setting Status						
	Link	Speed	Duplex	FlowCtrl	Auto-Nego	Speed	Duplex	Pause	Backpressure	Tx Cap	Addr. Learning
1	---	---	---	---	Auto	100M	full	on	on	on	on
2	---	---	---	---	Auto	100M	full	on	on	on	on
3	---	---	---	---	Auto	100M	full	on	on	on	on
4	---	---	---	---	Auto	100M	full	on	on	on	on
5	---	---	---	---	Auto	100M	full	on	on	on	on
6	---	---	---	---	Auto	100M	full	on	on	on	on
7	---	---	---	---	Auto	100M	full	on	on	on	on
8					Auto	100M	full	on	on	on	on

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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
Auto	Enables or disables a port's ability to negotiate the communication speed and duplex mode automatically. Choices are: • 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: • 100M = maximum port speed is 100 Mbps. • 10M = maximum port speed is 10 Mbps.
Duplex	Specifies the port's duplex mode. Choices are: • 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: • 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: • Enable = enable backpressure. • Disable = disable backpressure.
Tx capability	Enables or disables a port's ability to send data on the network. Choices are: • Enable = port can send data. • Disable = port cannot send data.
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: • 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	
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.
Tx Cap	Shows whether the port is configured to send data.
Addr. Learning	Shows whether address learning is enabled (ON) or disabled (OFF) for the ports.

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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.

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 49.

- 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 49.

Configure Bandwidth Control Here

Switch Port Status and Settings

Bandwidth Control

Port No	Tx Rate Value	Rx Rate Value
01 ▾	Bandwidth = ____ X resolution. (0~255) 0: Full speed. 1~255: Specified bandwidth.	Bandwidth = ____ X resolution. (0~255) 0: Full speed. 1~255: Specified bandwidth.

Resolution	Low ▾
	Low:32Kbps
	  (1).Rate value: 1~255.
	High:512Kbps
	  (1).When link speed is 10M and the resolution is 512Kbps, the Rate value should be 1~19.
	  (2).When link speed is 100M and the resolution is 512Kbps, the Rate value should be 1~195.
	all ports use the same bandwidth resolution.	

[Update] [LoadDefault]

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

Port No	Tx Rate(Kbps)	Rx Rate(Kbps)	Link Speed	Port No	Tx Rate(Kbps)	Rx Rate(Kbps)	Link Speed
1	Full Speed	Full Speed	---	5	Full Speed	Full Speed	---
2	Full Speed	Full Speed	---	6	Full Speed	Full Speed	---
3	Full Speed	Full Speed	---	7	Full Speed	Full Speed	---
4	Full Speed	Full Speed	---	8	Full Speed	Full Speed	100M

Model EX17008 Switch

Configure Bandwidth Control Here ●——→

Bandwidth Control

Port No	Tx Rate	Rx Rate
01 ▼	0~255 (0:full speed)	0~255 (0:full speed)
Speed Base	Low ▼ Low:32Kbps High:512Kbps 　(1).When link speed is 10M. The Rate value is 1~19. 　(2).When link speed is 100M. The Rate value is 1~195. all ports use the same speed base	
	Update　　LoadDefault	
If the link speed of selected port is lower than the rate that you setting, this system will use the value of link speed as your setting rate.		

Switch Port Status and Settings ●——→

Port No	Tx Rate(Kbps)	Rx Rate(Kbps)	Link Speed	Port No	Tx Rate(Kbps)	Rx Rate(Kbps)	Link Speed
1	Full Speed	Full Speed	---	9	Full Speed	Full Speed	---
2	Full Speed	Full Speed	---	10	Full Speed	Full Speed	---
3	Full Speed	Full Speed	---	11	Full Speed	Full Speed	---
4	Full Speed	Full Speed	---	12	Full Speed	Full Speed	---

Model EX17016 Switch

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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 Value** field (EX17008 switch) or **Tx Rate** field (EX17016 switch), enter a transmission rate from 0 to 255 (0 = full speed).

3. In the **Rx Rate Value** field (EX17008 switch) or **Rx Rate** field (EX17016 switch), enter a receive rate from 0 to 255 (0 = full speed).

4. 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 (Kbps)	Port transmission speed.
Rx Rate (Kbps)	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 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐
	9 ☐	10 ☐	11 ☐	12 ☐	13 ☐	14 ☐	15 ☐	16 ☐
[Update]								
This value indicates the number of broadcast packet which is allowed to enter each port in one time unit. One time unit is 500 us for 100Mbps speed and 5000us for 10Mbps speed								

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	☑	☑	☑	☑	☑	☑	☑	☑
PSE Current	No Load	No Load	No Load	No Load	No Load	No Load	No Load	No Load
Minimun Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---
Port	9	10	11	12	13	14	15	16
Enable	☑	☑	☑	☑	☑	☑	☑	☑
PSE Current	No Load	No Load	No Load	No Load	No Load	No Load	No Load	No Load
Minimun Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---

Update

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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 Membership page.

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- 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 is 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 mode properties.

The switch's VLAN features can be accessed from the **VLAN Setting** menu. This menu lets you perform the following tasks:
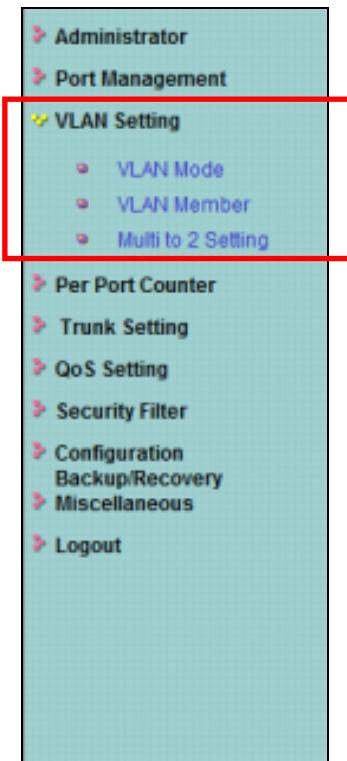
- **VLAN mode** — toggles between tagged- and port-based VLAN modes. See page 54.

- **VLAN Member** — allows ports to join a VLAN. See page 58.

- **Multi to 2 Setting** — configures two physical switch ports to a single destination port. This page applies to port-based VLANs only. See page 61.

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

VLAN Mode

VLAN Mode	Port Based VLAN Change VLAN mode
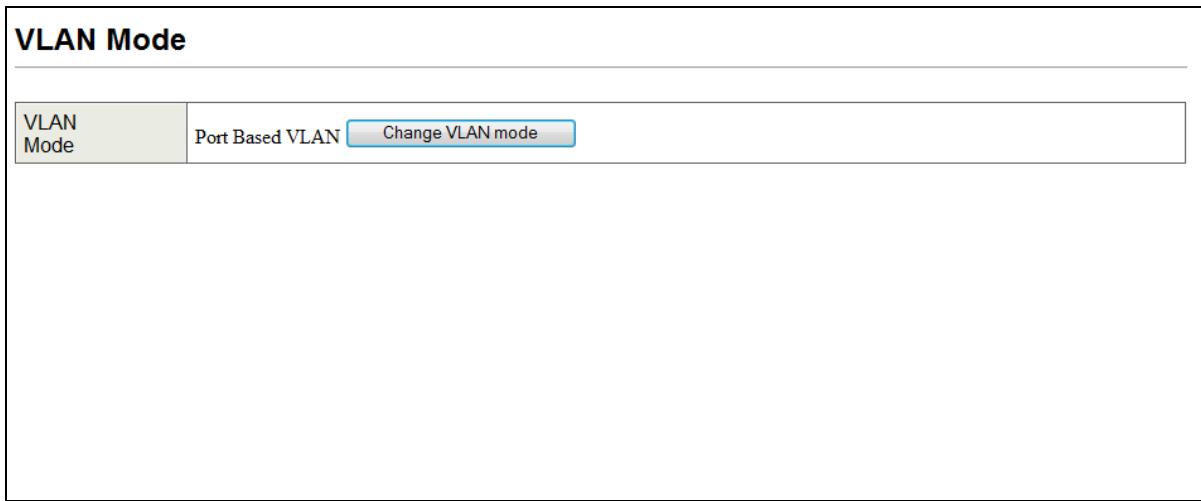
Port-based VLANs

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.

To switch to a port-based VLAN:

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

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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.

Changing to a Tagged-Based VLAN

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

To switch to a tagged-based VLAN:

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

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 ○ AddTag ◉ don't care ○ RemoveTag	Port 02 ○ AddTag ◉ don't care ○ RemoveTag	Port 03 ○ AddTag ◉ don't care ○ RemoveTag	Port 04 ○ AddTag ◉ don't care ○ RemoveTag	Port 05 ○ AddTag ◉ don't care ○ RemoveTag	Port 06 ○ AddTag ◉ don't care ○ RemoveTag	Port 07 ○ AddTag ◉ don't care ○ RemoveTag	Port 08 ○ AddTag ◉ don't care ○ RemoveTag
	Port 09 ○ AddTag ◉ don't care ○ RemoveTag	Port 10 ○ AddTag ◉ don't care ○ RemoveTag	Port 11 ○ AddTag ◉ don't care ○ RemoveTag	Port 12 ○ AddTag ◉ don't care ○ RemoveTag	Port 13 ○ AddTag ◉ don't care ○ RemoveTag	Port 14 ○ AddTag ◉ don't care ○ RemoveTag	Port 15 ○ AddTag ◉ don't care ○ RemoveTag	Port 16 ○ AddTag ◉ don't care ○ RemoveTag

[Update]

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**.

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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 54).

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 ▾ Read			
Dest PORT	01	02	03	04	05	06	07	08
select	☑	☑	☑	☑	☑	☑	☑	☑
Dest PORT	09	10	11	12	13	14	15	16
select	☑	☑	☑	☑	☑	☑	☑	☑

Update   LoadDefault

VLAN MEMBER

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	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
3	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
5	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
7	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

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.

To add members to a tag-based VLAN:

1. Using the **VLAN No**. drop-down list, click a VLAN number.

2. In the **VID** field, enter a unique port VLAN identifier from 1 to 4094, and then click **Add**.

3. On the **select** rows, check the destination 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, this VID is treated as a VID embedded in an 802.1Q tag.

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4. On the **Port/PVID Index** rows, change the default VLAN ID that is assigned to an access port to designate the virtual LAN segment to which this port is connected.

5. Click **Update**.

A list of the VLAN members appears at the bottom of the page.

Multi to 2 Page

Path: **VLAN Setting > Multi to 2**

The Multi to 2 Setting page is a per-port VLAN feature that applies to port-based VLANs only. This page lets you configure two 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.

> **Note:** If your switch is configured for tagged-based VLANs, changing the settings on this page return the switch to port-based VLAN operation automatically.

1. Using the **Destination Port No.** drop-down lists, click the destination port numbers.

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**.

Model EX17008 Switch

Multi to 2 Setting

Destination PortNo	Port 1: 01 ▾
	Port 2: 01 ▾
Current Setting	Port:- & -

Disable Port	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
								[Update]								

1.A example for Multi-to-2 structure

VLAN Configuration

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.

Model EX17016 Switch

Per Port Counter Menu

The **Per Port Counter** menu lets you perform the following task:
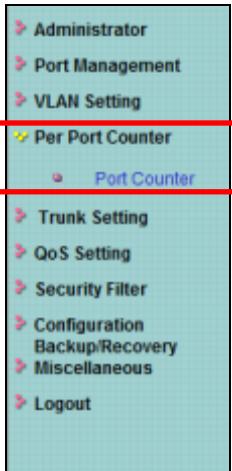
- **Port Counter** — displays the number of packets transmitted and received for each port. See page 64.

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:

    – Receive packet and transmit packet

    – Transmit packet and collision count

    – Receive packet and drop packet

    – Receive packet and CRC error packet

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: Receive Packet & Transmit Packet

Port	Receive Packet	Transmit Packet
01	0	0
02	0	0
03	0	0
04	0	0
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	8046	2686

Trunk Setting Menu

The **Trunk Setting** menu lets you perform the following task:

Administrator
Port Management
VLAN Setting
Per Port Counter
Trunk Setting
QoS Setting
Security Filter
Configuration
Backup/Recovery
Miscellaneous
Logout
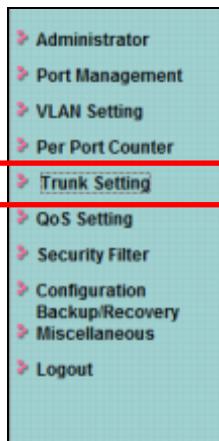
- **Trunk Setting** — configures up to two port trunks. See page 66.

Trunk Configuration Page

Path: **Trunk Configuration Page Port Counter > Port Counter**

The Trunk Configuration page lets you configure up to two port trunks on the switch. A port trunk is an economical way to increase the bandwidth between the switch and another networking device, such as a network server, router, workstation, or another Ethernet switch. A port trunk is a group of ports that are grouped together to function as one logical path. A port trunk increases the bandwidth between the switch and another network device and is useful in situations where a single physical link between the devices is insufficient to handle the traffic load.

A trunk can consist of up to four ports. The ports of a trunk can be either consecutive (for example, ports 2 through 4) or nonconsecutive (for example, ports 5 and 7).

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 VLANs.

To configure trunks:

1. Next to **Trunk Hash Algorithm Selection**, click the trunk host algorithm you want to use. Choices are:

– **Port ID** = the switch distributes outbound traffic to the links within the trunk group on the basis of port IDs.

– **SA** = the switch distributes outbound traffic to the links within the trunk group on the basis of source address pairs.

– **DA** = the switch distributes outbound traffic to the links within the trunk group on the basis of destination address pairs.

– **SA & DA** = the switch distributes outbound traffic to the links within the trunk group on the basis of source/destination address pairs.

2. Next to **Trunk 0**, check the physical switch ports that will make up the first trunk (trunk 0).

3. If you want a second trunk, next to **Trunk 1**, check the physical switch ports that will make up the second trunk (trunk 1).

4. Click **Update**.

QoS Setting Menu

The **QoS Setting** menu lets you perform the following tasks:
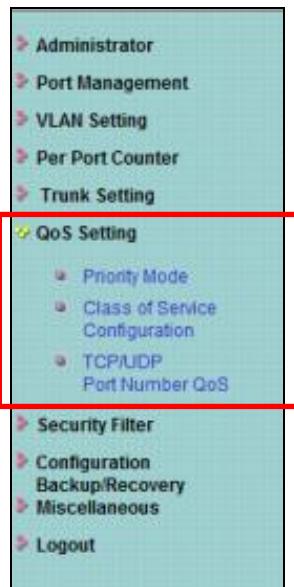
- **Priority Mode** — selects the priority mode used to queue high- and low-priority traffic. See page 69.

- **Class of Service Configuration** — uses Class of Service (CoS) to set up consistent traffic prioritization policies. See page 70.

- **TCP/UDP Port Number QoS** — configure CoS settings based on the protocol associated with packets. See page 71.

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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-Service** = 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.

   – **4 Queue WRR** = the switch uses four configurable queues at each interface.

2. If **Mode** is set to **4 Queue WRR**, use the **Q1**, **Q2**, **A3**, and **Q4** drop-down lists to specify the amount of attention the queue is given in case of congestion. These selections define the number of packets taken from the queue each time the weighted round robin (WRR) scheduler runs through the queues in sequence. Choices are 1 through 8 for each queue.

3. Click **Update**.

Class of Service Configuration Page

Path: **QoS Setting > Class of Service Configuration**

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

☑=Enable High Priority

Port No\Mode	Port Base	VLAN Tag	IP / DS	Port No\Mode	Port Base	VLAN Tag	IP / DS
1	Low Priority ▾	☐	☐	9	Low Priority ▾	☐	☐
2	Low Priority ▾	☐	☐	10	Low Priority ▾	☐	☐
3	Low Priority ▾	☐	☐	11	Low Priority ▾	☐	☐
4	Low Priority ▾	☐	☐	12	Low Priority ▾	☐	☐
5	Low Priority ▾	☐	☐	13	Low Priority ▾	☐	☐
6	Low Priority ▾	☐	☐	14	Low Priority ▾	☐	☐
7	Low Priority ▾	☐	☐	15	Low Priority ▾	☐	☐
8	Low Priority ▾	☐	☐	16	Low Priority ▾	☐	☐

Update

TCP/UDP Port Based Page

Path: **QoS Setting > TCP/UDP Port Number QoS**

When you click **QoS Setting > TCP/UDP Port Number QoS**, the screen that appears depends on the switch model you have. Although the name of the page differs between models, both pages let you configure CoS settings based on protocols and other criteria.

Class of Service Configuration

Protocol	Option
FTP	Low
SSH	Low
TELNET	Low
SMTP	Low
DNS	Low
TFTP	Low
HTTP(80/8080)	Low
POP3	Low
NEWS	Low
SNTP	Low
NetBIOS	Low
IMAP(143/220)	Low
SNMP(161/162)	Low
HTTPS	Low
MSN	Low

Model EX17008 Switch

TCP/UDP Port Based QoS

Protocol	Option
FTP	Low ▾
SSH	Low ▾
TELNET	Low ▾
SMTP	Low ▾
DNS	Low ▾
TFTP	Low ▾
HTTP (80/8080)	Low ▾
POP3	Low ▾
NEWS	Low ▾
SNTP	Low ▾
NetBIOS	Low ▾
IMAP (143/220)	Low ▾
SNMP (161/162)	Low ▾
HTTPS	Low ▾
MSN	Low ▾
XRD_RDP	Low ▾
QQ (4000/8000)	Low ▾
ICQ	Low ▾
Yahoo	Low ▾
BOOTP/	Low ▾

Model EX17016 Switch

To configure these settings:

1. The **Protocol** section lets you define QoS settings for frames based on protocol. Each protocol has an **Option** drop-down list from which you can choose one of the following choices to specify how the switch handles frames associated with those protocols:

   – **Low** = incoming packets are forwarded with low priority.

   – **Middle Low** = incoming packets are forwarded with low-to-middle low priority.

   – **Middle High** = incoming packets are forwarded with low-to-middle high priority.

   – **High** = incoming packets are forwarded with high priority.

   – **Drop** = incoming packets are discarded at the source port.

2. The **User Define Port range** row lets you specify up to three user-defined ports, designated **Define A**, **Define B**, and **Define C**

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– In the top **Port** field, enter the first port, in the port range, on which permitted or denied session traffic is running.

– In the bottom **Port** field, enter the ending port, in the port range, on which permitted or denied session traffic is running.

User Define Port range (65535~1)	Define_A Port: 0 ~ Port: 0	Define_B Port: 0 ~ Port: 0	Define_C Port: 0 ~ Port: 0
TOS Priority Setting	6'b001010: Low ▾ 6'b010010: Low ▾ 6'b011010: Low ▾ 6'b100010: Low ▾ 6'b101110: Low ▾ 6'b110000: Low ▾ 6'b111000: Low ▾		

Enable Port							
01 ☐	02 ☐	03 ☐	04 ☐	05 ☐	06 ☐	07 ☐	08 ☐
09 ☐	10 ☐	11 ☐	12 ☐	13 ☐	14 ☐	15 ☐	16 ☐

TCP/UDP port number QoS function [Disable ▾]

[Update]

The Class of Service for TCP/UDP port number allows the network administrator to assign the specific application to a priotity queue.

3. The **TOS Priority Setting** row lets you set the priority of a service, which in turn, determines the quality of that service for the traffic passing through the switch. Choices are:

– **Low** = incoming packets are forwarded with low priority.

– **Middle Low** = incoming packets are forwarded with low-to-middle low priority.

– **Middle High** = incoming packets are forwarded with low-to-middle high priority.

– **High** = incoming packets are forwarded with high priority.

4. The **Enable Port** row lets you select (check) or deselect (uncheck) the ports to which the settings on this page are applied.

5. Using the **TCP/UDP port number QoS function** drop-down list, select whether you want to enable or disable the settings on this page.

6. Click **Update**.

Security Menu

The **Security** menu for the Model EX17008 switch lets you perform the following tasks:
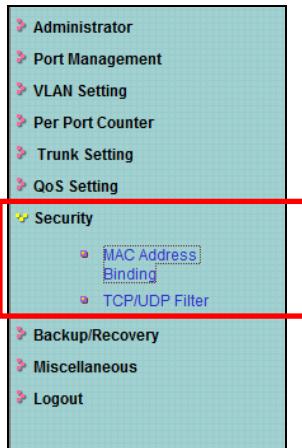
- **Mac Address Binding** — binds Media Access Channel (MAC) addresses to switch ports. See page 75.

- **TCP/UDP Filter** — processes or drops incoming packets based on protocols. See page 79.

The **Security** menu for the Model EX17016 switch lets you perform the following tasks:
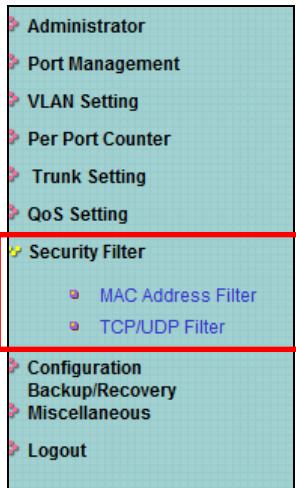
- **Mac Address Filter** — configure the switch to drop packets with specific source or destination MAC addresses. See page 77.

- **TCP/UDP Filter** — processes or drops incoming packets based on protocols. See page 79.

MAC Address Binding Page (Model EX17008 Switch)

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 Configuration

Port No.	MAC Address
1	Read

Select Port 01 ▾ Binding Disable ▾ Update

Port No.	Filter Status	Port No.	Filter Status
1	Disable	5	Disable
2	Disable	6	Disable
3	Disable	7	Disable
4	Disable	8	Disable

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.
Filter Status	MAC address filter status of the port.

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MAC Address Configuration Page (Model EX17016 Switch)

Path: **Security > MAC Address Filter**

The MAC Address Configuration page for the Model EX17016 switch lets you configure the switch to drop packets with specific source or destination MAC addresses. This feature is disabled by default and supports only unicast static addresses.

This page is organized into two sections:

- The top section has fields and drop-down lists for enabling or disabling MAC address filtering.

- The bottom section shows the MAC address filter status for the switch ports.

Filtering MAC Addresses

To filter MAC addresses:

1. Under **MAC Address**, enter up to three MAC addresses that will be filtered.

2. Using the **Select Port** drop-down list, click the switch port to which you want to apply filtering to the MAC address(es) you specified in step 1.

3. Using the **Filter** drop-down list, click **Enable** or **Disable**:

   – **Enable** = cause the port to filter the MAC addresses.

–   **Disable** = cause this port not to filter the MAC addresses.

4. Click **Update**.

MAC Address Configuration Status Fields

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

Field	Description
Port No.	Port numbers for each switch port.
Filter Status	MAC address filter status of the port.

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:

   – **Deny** = the switch drops the protocols selected in the next step and forwards other protocols.

   – **Allow** = the switch forwards the protocols selected in the next step and drops the other protocols.

3. For **Secure Port**, check the port where the packet is to be forwarded or dropped.

4. For **Protocol**, check the protocols you want forwarded (if **Port Filtering Rule** = **allow**) or dropped (if **Port Filtering Rule** = **deny**).

5. Click **Update**.

TCP_UDP Filter Configuration

Function Enable	Disable ▾						
Port Filtering Rule	Deny ▾ "Deny" means the outgoing packets to the selected port with selected protocol will be dropped and other protocols will be forwarded. "Allow" means the selected protocol will be forwarded and other protocol will be dropped. Note: 1. The secure WAN port should be set at the physical port which is connected to the server. 2. Once this function is enabled, the switch will check the destination TCP/UDP port number at the outgoing direction of the secure WAN port. If the condition matches, this packet will be dropped or forwarded.						
Secure Port	☐ Port01	☐ Port02	☐ Port03	☐ Port04	☐ Port05	☐ Port06	☐ Port07	☐ Port08
	☐ Port09	☐ Port10	☐ Port11	☐ Port12	☐ Port13	☐ Port14	☐ Port15	☐ Port16
Protocol	☐ FTP	☐ SSH	☐ TELNET	☐ SMTP	☐ DNS	☐ TFTP	☐ HTTP (80/8080)	☐ POP3
	☐ NEWS	☐ SNTP	☐ NetBIOS	☐ IMAP (143/220)	☐ SNMP (161/162)	☐ HTTPS	☐ XRD_RDP	☐ BOOTP/ DHCP
	☐ UserDEF_a	☐ UserDEF_b	☐ UserDEF_c					
				Update				

Configuration Backup/Recovery Menu

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

- **Configuration Backup/Recovery** — saves and restores the switch configuration. See page 81.

Administrator
Port Management
VLAN Setting
Per Port Counter
Trunk Setting
QoS Setting
Security Filter
Configuration
Backup/Recovery
Miscellaneous
Logout

Configuration Backup/Recovery Page

Path: **Configuration 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. [Download]

Recovery(PC→Switch)

Select the image file : [   ] [Browse...]

Password: [   ] [Update]

To save the switch configuration:

1. Under **Backup (Switch -> PC)**, click **Download**.
2. When the File Download dialog box appears, click **Save**.
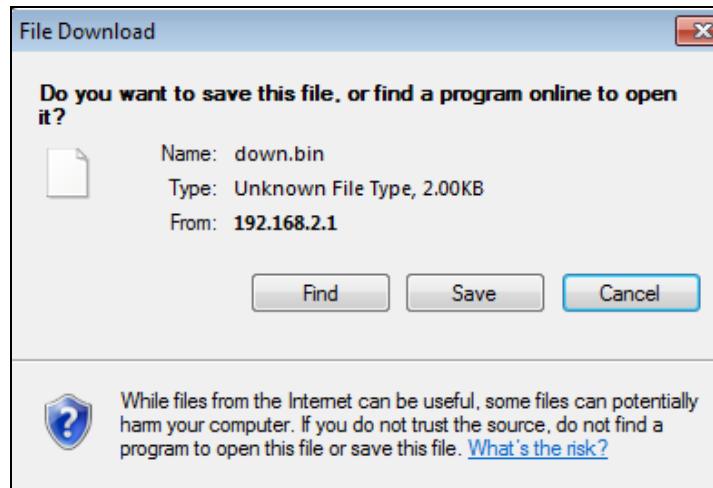
3. In the Save As dialog box, go to the location where you want to save the file, and then click **Save**.

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**.

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Miscellaneous Menu

Path: **Miscellaneous**

The **Miscellaneous** menu lets you perform the following task:
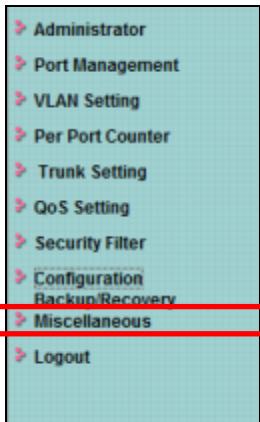
- **Miscellaneous** — configures output queuing aging time, VLAN striding, and IGMP snooping versions 1 and 2. See page 84.

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

Output Queuing Aging Time

VLAN Striding

IGMP Snooping V1 & V2

| 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
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.

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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

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.

EtherWAN
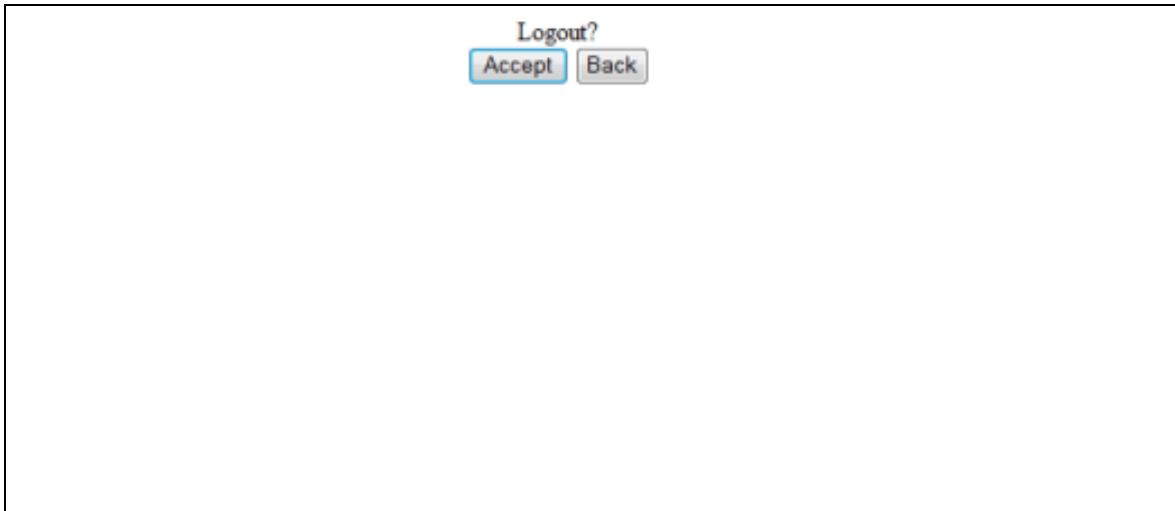
5 Troubleshooting

Topics:

- *Troubleshooting Chart (page 88)*
- *Additional Troubleshooting Suggestions (page 89)*

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 50).
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.

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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 16) or use the **Administrator > Reboot Device** page on the switch's Web management interface (see "Reboot Device Page" on page 40). 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.

Appendix A - Specifications

Technology

Specification	Description
Standards:	• IEEE 802.3af • IEEE802.3 10BASE-T • IEEE802.3u 100BASE-TX • IEEE802.3x
Forward and Filtering Rate:	• 10 Mbps: 14,880 pps • 100 Mbps: 148,810 pps
Packet Buffer Memory: Model EX17008: Model EX17016:	 512 K bits 1.5 M bits
Processing Type:	Store-and-Forward Half-duplex backpressure and IEEE802.3x full-duplex flow control
Address Table Size: Model EX17008: Model EX17016:	 1024 MAC addresses 4096 MAC addresses

Power

Specification	Description
Power Input:	100 – 240 VAC, 50 / 60 Hz
Power Consumption: Model EX17008: Model EX17016:	 Device: Max. 8.8 W (without PoE) PoE power budget: 123.2 W Max. Device: Max. 13.5 W (without PoE) PoE power budget: 246.4 W Max.
PoE Power Output:	IEEE802.3af: up to 15.4 W/port, 47 – 55 VDC, 350 mA Max.

Mechanical

Specification	Description
Casing:	Metal case
Dimensions:	
Model EX17008:	266 mm (W) x 160 mm (D) x 44 mm (H) (10.47" (W) x 6.30" (D) x 1.73" (H))
Model EX17016:	440 mm (W) x 220 mm (D) x 44 mm (H) (17.32" (W) x 8.66" (D) x 1.73" (H)) Standard 19" rack-mount size, one-unit-height
Weight:	
Model EX17008:	1.4 Kg (3.08 lbs.)
Model EX17016:	3.8 Kg (8.37 lbs.)
Installation:	
Model EX17008:	Desktop, rack mounting
Model EX17016:	Rack mounting

Interface

Specification	Description
Ethernet Ports:	
Model EX17008:	10/100BASE-TX: 8 PoE ports
Model EX17016:	10/100BASE-TX: 16 PoE ports
LED Indicators:	• Per unit: Power Status • Per port: Link/Activity, PoE Act/status

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)

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Regulatory Approvals

Specification	Description
ISO:	Manufactured in an ISO9001 facility
Emission Compliance:	FCC Part 15, Class B, CE mark Class B
Safety:	UL60950-1, EN60950-1, IEC60950-1

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August 13, 2014

Document version: Version 1