



A Division of Cisco Systems, Inc.

24 or 48-Port 10/100 Fast Ethernet Switch 16, 24, or 48-Port 10/100/1000 Gigabit Ethernet Switch



with WebView

User Guide

Model No. **SRW2016/SRW2024/SRW2048/SRW224G4/SRW248G4**



Copyright and Trademarks

Specifications are subject to change without notice. Linksys is a registered trademark or trademark of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries. Copyright © 2005 Cisco Systems, Inc. All rights reserved. Other brands and product names are trademarks or registered trademarks of their respective holders.

WARNING: This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

How to Use this User Guide

The User Guide to the WebView Switches has been designed to make understanding networking with the switch easier than ever. Look for the following items when reading this User Guide:



This checkmark means there is a note of interest and is something you should pay special attention to while using the Switch.



This exclamation point means there is a caution or warning and is something that could damage your property or the Switch.



This question mark provides you with a reminder about something you might need to do while using the Switch.

In addition to these symbols, there are definitions for technical terms that are presented like this:

word: definition.

Also, each figure (diagram, screenshot, or other image) is provided with a figure number and description, like this:

Figure 0-1: Sample Figure Description

Figure numbers and descriptions can also be found in the “List of Figures” section.

Table of Contents

Chapter 1: Introduction	1
Welcome	1
What's in this User Guide?	2
Chapter 2: Getting to Know the Switch	3
Overview	3
The Front Panel	3
The Back Panel	4
Chapter 3: Connecting the Switch	5
Overview	5
Before You Install the Switch...	6
Placement Options	6
Connecting the Switch	7
Chapter 4: Using the Console Interface for Configuration	9
Overview	9
Configuring the HyperTerminal Application	9
Connecting to the Switch through a Telnet Session	10
Configuring the Switch through the Console Interface	11
Chapter 5: Using the Web-based Utility for Configuration	20
Overview	20
Accessing the Web-based Utility	20
Sys. Info. (System Information) Tab - System Description	21
Sys. Info. (System Information) Tab - System Mode	21
Sys. Info. (System Information) Tab - Forwarding Database	22
Sys. Info. (System Information) Tab - Time Synchronization	23
IP Conf. (Configuration) Tab - IP Addr. (Address)	24
Switch Conf. (Configuration) Tab - Interface Conf. (Configuration)	25
Switch Conf. (Configuration) Tab - VLAN	28
Switch Conf. (Configuration) Tab - VLAN Interface Settings	29
Switch Conf. (Configuration) Tab - GVRP Parameters	30
Switch Conf. (Configuration) Tab - LAG Conf. (Configuration)	31
Switch Conf. (Configuration) Tab - Port Mirroring	32
Switch Conf. (Configuration) Tab - LACP	33

Switch Conf. (Configuration) Tab - IGMP Snooping	34
Switch Conf. (Configuration) Tab - Bridge Multicast	35
Switch Conf. (Configuration) Tab - Bridge Multicast Forward All	36
QoS Tab - CoS Settings	37
QoS Tab - Queue Settings	38
QoS Tab - CoS to Queue	38
QoS Tab - Bandwidth	39
Security Tab - Local Users/System Password	40
Security Tab - 802.1x Users	40
Security Tab - 802.1x Port Conf. (Configuration)	41
Security Tab - RADIUS Server	43
Security Tab - Storm Control	45
Security Tab - Authenticated Users	45
Security Tab for SRW2048 Switches - ACL	46
Security Tab for SRW2048 Switches - Profile Rules	47
Security Tab for Other Switches - ACL	51
Security Tab for Other Switches - MAC Based ACL	52
Security Tab for Other Switches - ACL Mapping	53
SNTP Tab - Global Settings	54
SNTP Tab - Authentication	55
SNTP Tab - Servers	56
SNTP Tab - Interface Settings	57
Statistics Tab - Interface Statistics	58
Statistics Tab - Etherlike Statistics	59
Statistics Tab - RMON Statistics	60
Statistics Tab - RMON History Control	62
Statistics Tab - RMON History Log	63
Statistics Tab - RMON Alarms	64
Statistics Tab - RMON Events Control	66
Statistics Tab - RMON Events Log	67
Statistics Tab - EAP Statistics	68
Statistics Tab - GVRP Statistics	69
Logs Tab - Message Log	70
Logs Tab - Event Log	70
Logs Tab - Global Parameters	71
SNMP Tab	72

WebView Switches

Maintenance Tab - Telnet	82
Maintenance Tab - Reset	82
Maintenance Tab - File Download	82
Maintenance Tab - File Upload	83
Maintenance Tab - Restore Defaults	84
Maintenance Tab - Integrated Cable Test	84
Maintenance Tab - HTTP File Download	85
Spanning Tree Tab - Global Settings	86
Spanning Tree Tab - STP Interface Settings	88
Spanning Tree Tab on SRW2048 Switches - RSTP Interface Settings	90
Spanning Tree Tab on SRW2048 Switches - MSTP Properties	92
Spanning Tree Tab on SRW2048 Switches - MSTP Instance Settings	93
Spanning Tree Tab on SRW2048 Switches - MSTP Interface Settings	94
Help Tab	95
Appendix A: About Gigabit Ethernet and Fiber Optic Cabling	96
Gigabit Ethernet	96
Fiber Optic Cabling	96
Appendix B: Windows Help	97
Appendix C: Glossary	98
Appendix D: Specifications	103
Appendix E: Warranty Information	105
Appendix F: Regulatory Information	106
Appendix G: Contact Information	107

List of Figures

Figure 2-1: Front Panel of the 16-Port Switch	3
Figure 2-2: Back Panel of the 16-Port Switch	4
Figure 3-1: Typical Network Configuration for the 16-Port Switch	5
Figure 3-2: Attach the Brackets to the Switch	7
Figure 3-3: Mount the Switch in the Rack	7
Figure 4-1: Finding HyperTerminal	9
Figure 4-2: Connection Description	9
Figure 4-3: Connect To	9
Figure 4-4: COM1 Properties	10
Figure 4-5: Telnet Login screen	10
Figure 4-6: Switch Main Menu	11
Figure 4-7: Port Status	11
Figure 4-8: Port Configuration	12
Figure 4-9: System Configuration Menu	12
Figure 4-10: System Information Menu	13
Figure 4-11: Versions	13
Figure 4-12: General System Information	13
Figure 4-13: Management Settings Menu	14
Figure 4-14: Serial Port Configuration	14
Figure 4-15: Telnet Configuration	14
Figure 4-16: Username & Password Settings	15
Figure 4-17: Security Settings	15
Figure 4-18: SSL Certificate Generation	16
Figure 4-19: SSL Certificate	16
Figure 4-20: IP Configuration	16
Figure 4-21: IP Address Configuration	17
Figure 4-22: HTTP	17
Figure 4-23: HTTPS Configuration	17

Figure 4-24: Network Configuration	18
Figure 4-25: Ping Test	18
Figure 4-26: TraceRoute Test	18
Figure 4-27: File Management	19
Figure 4-28: Restore System Default Settings	19
Figure 4-29: Reboot System	19
Figure 5-1: Login Screen	20
Figure 5-2: System Information - System Description	21
Figure 5-3: System Information - System Mode	21
Figure 5-4: System Information - Forwarding Database	22
Figure 5-5: Forwarding Database - Add Entry	22
Figure 5-6: System Information - Time Synchronization	23
Figure 5-7: IP Configuration - IP Address	24
Figure 5-8: Switch Configuration - Interface Configuration	25
Figure 5-9: Interface Configuration - Change Settings	26
Figure 5-10: Switch Configuration - VLAN	28
Figure 5-11: Switch Configuration - Create VLAN	28
Figure 5-12: Switch Configuration - VLAN Interface Settings	29
Figure 5-13: Switch Configuration - edit VLAN Interface Settings	29
Figure 5-14: Switch Configuration - GVRP Parameters	30
Figure 5-15: Switch Configuration - PVE Mapping	30
Figure 5-16: Switch Configuration - LAG Configuration	31
Figure 5-17: Switch Configuration - edit LAG Configuration	31
Figure 5-18: Switch Configuration - Port Mirroring	32
Figure 5-19: Switch Configuration - LACP	33
Figure 5-20: LACP - Change Settings	33
Figure 5-21: Switch Configuration - IGMP Snooping	34
Figure 5-22: Switch Configuration - Edit IGMP Snooping	34
Figure 5-23: Switch Configuration - Bridge Multicast	35
Figure 5-24: Switch Configuration - Edit Bridge Multicast	35

Figure 5-25: Switch Configuration - Bridge Multicast Forward All	36
Figure 5-26: QoS - CoS Settings	37
Figure 5-27: QoS - Queue Settings	38
Figure 5-28: QoS - CoS to Queue	38
Figure 5-29: QoS - Bandwidth	39
Figure 5-30: QoS - Edit Bandwidth	39
Figure 5-31: Security - Local Users/System Password	40
Figure 5-32: Security - Edit Local Users/System Password	40
Figure 5-33: Security - 802.1x Users	40
Figure 5-34: Security - 802.1x Port Configuration	41
Figure 5-35: 802.1x Port Configuration - Change Settings	42
Figure 5-36: Security - RADIUS Server	43
Figure 5-37: Security - Add RADIUS Servers	43
Figure 5-38: Security - Storm Control	45
Figure 5-39: Security - Authenticated Users	45
Figure 5-40: SRW2048 Switch Security - ACL	46
Figure 5-41: SRW2048 Switch Security - create ACL profile	46
Figure 5-42: SRW2048 Switch Security - Profile Rules	47
Figure 5-43: SRW2048 Switch Security - Authentication Profiles	48
Figure 5-44: SRW2048 Switch Security - Authentication Mapping	49
Figure 5-45: SRW2048 Switch Security - TACACS+	50
Figure 5-46: Fast Ethernet Security - ACL	51
Figure 5-47: Fast Ethernet Security - create ACL Profile	51
Figure 5-48: Fast Ethernet Security - MAC Based ACL	52
Figure 5-49: Fast Ethernet Security - ACL Mapping	53
Figure 5-50: SNTP - Global Settings	54
Figure 5-51: SNTP - Authentication	55
Figure 5-52: SNTP - Servers	56
Figure 5-53: SNTP - Interface Settings	57
Figure 5-54: Statistics - Interface Statistics	58

Figure 5-55: Statistics - Etherlike Statistics	59
Figure 5-56: Statistics - RMON Statistics	60
Figure 5-57: Statistics - RMON History Control	62
Figure 5-58: Statistics - RMON History Log	63
Figure 5-59: Statistics - RMON Alarms	64
Figure 5-60: Statistics - add RMON Alarm entry	65
Figure 5-61: Statistics - RMON Events Control	66
Figure 5-62: Statistics - RMON Events Log	67
Figure 5-63: Statistics - EAP Statistics	68
Figure 5-64: Statistics - GVRP Statistics	69
Figure 5-65: Logs - Message Log	70
Figure 5-66: Logs - Event Log	70
Figure 5-67: Logs - Global Parameters	71
Figure 5-68: SNMP - Global Parameters	73
Figure 5-69: SNMP - Views	74
Figure 5-70: SNMP - Group Profile	75
Figure 5-71: SNMP - add Group Profile	76
Figure 5-72: SNMP - Group Membership	77
Figure 5-73: SNMP - add Group Membership	78
Figure 5-74: SNMP - Communities	78
Figure 5-75: SNMP - Properties	79
Figure 5-76: SNMP - Notification Filter	80
Figure 5-77: SNMP - Notification Receiver	81
Figure 5-78: Maintenance - Telnet	82
Figure 5-79: Maintenance - Reset	82
Figure 5-80: Maintenance - File Download	82
Figure 5-81: Maintenance - File Upload	83
Figure 5-82: Maintenance - Restore Defaults	84
Figure 5-83: Maintenance - Integrated Cable Test	84
Figure 5-84: Integrated Cable Test - Perform Test	85

Figure 5-85: Maintenance - HTTP File Download	85
Figure 5-86: Spanning Tree - Global Settings	86
Figure 5-87: Spanning Tree - STP Interface Settings	88
Figure 5-88: Spanning Tree - RSTP Interface Settings	90
Figure 5-89: Spanning Tree - MSTP Properties	92
Figure 5-90: Spanning Tree - MSTP Instance Settings	93
Figure 5-91: Spanning Tree - MSTP Interface Settings	94

Chapter 1: Introduction

Welcome

Thank you for choosing a WebView Switch. This Switch will allow you to network better than ever.

This new Linksys rackmount switch delivers non-blocking, wire speed switching for your 10, 100, and 1000Mbps network clients, plus multiple options for connecting to your network backbone. 16 or 24, 10/100/1000 ports wire up your workstations or connect to other switches and the backbone. And the mini-GBIC ports allow future expansion to alternate transmission media, such as fiber optic cabling.

The Switch features WebView monitoring and configuration via your web browser, making it easy to manage your VLANs and trunking groups. Or if you prefer, you can use the Switch's console interface to configure the Switch.

Use the instructions in this User Guide to help you connect the Switch, set it up, and configure it to bridge your different networks. These instructions should be all you need to get the most out of the Switch.

What's in this User Guide?

This user guide covers the steps for setting up and using the Switch.

- **Chapter 1: Introduction**
This chapter describes the Switch's applications and this User Guide.
- **Chapter 2: Getting to Know the Switch**
This chapter describes the physical features of the Switch.
- **Chapter 3: Connecting the Switch**
This chapter explains how to install and connect the Switch.
- **Chapter 4: Using the Console Interface for Configuration**
This chapter instructs you on how to use the Switch's console interface when you configure the Switch.
- **Chapter 5: Using the Web-based Utility for Configuration**
This chapter shows you how to configure the Switch using the Web-based Utility.
- **Appendix A: About Gigabit Ethernet and Fiber Optic Cabling**
This appendix gives a general description of Gigabit Ethernet and fiber optic cabling.
- **Appendix B: Windows Help**
This appendix describes how you can use Windows Help for instructions about networking, such as installing the TCP/IP protocol.
- **Appendix C: Glossary**
This appendix gives a brief glossary of terms frequently used in networking.
- **Appendix D: Specifications**
This appendix provides the Switch's technical specifications.
- **Appendix E: Warranty Information**
This appendix supplies the Switch's warranty information.
- **Appendix F: Regulatory Information**
This appendix supplies the Switch's regulatory information.
- **Appendix G: Contact Information**
This appendix provides contact information for a variety of Linksys resources, including Technical Support.

Chapter 2: Getting to Know the Switch

Overview

The Switches differ in number and types of LEDs and ports. While the 16-Port Gigabit Ethernet Switch is pictured in this chapter, the other Switches are similar in form and function.

The Front Panel

The Switch's LEDs and ports are located on the front panel.



Figure 2-1: Front Panel of the 16-Port Switch

LEDs

SYSTEM	Green. The SYSTEM LED lights up to indicate that the Switch is powered on.
Link/Act	Green. The Link/Act LED lights up to indicate a functional network link through the corresponding port (1 through 16, 24, or 48) with an attached device. It flashes to indicate that the Switch is actively sending or receiving data over that port.
Gigabit	Orange. The Gigabit LED lights up to indicate a Gigabit connection on the corresponding port (1 through 16, 24, or 48).

Ports

1-48	The Switch is equipped with 16, 24, or 48 auto-sensing, Ethernet network ports, which use RJ-45 connectors. The Fast Ethernet ports support network speeds of 10Mbps or 100Mbps, while the Gigabit Ethernet ports support network speeds of 10Mbps, 100Mbps, and 1000Mbps. They can operate in half and full-duplex modes. Auto-sensing technology enables each port to automatically detect the speed of the device connected to it (10Mbps, 100Mbps, or 1000Mbps), and adjust its speed and duplex accordingly.
-------------	---

For the 16-Port Switch, ports 8 and 16 are shared with miniGBIC1 and miniGBIC2, respectively. For the 24-Port Gigabit Ethernet Switch, ports 12 and 24 are shared with miniGBIC1 and miniGBIC2, respectively.



NOTE: If shared ports are both connected, then the miniGBIC port has priority.

miniGBIC1/2

The Switch provides two mini-GBIC ports. The mini-GBIC (gigabit interface converter) port is a connection point for a mini-GBIC expansion module, so the Switch can be uplinked via fiber to another switch. Each mini-GBIC port provides a link to a high-speed network segment or individual workstation at speeds of up to 1000Mbps.

Use the Linksys MGBT1, MGBSX1, or MGBLH1 mini-GBIC modules with the Switch. The MGBSX1 and the MGBLH1 require fiber cabling with LC connectors, while the MGBT1 requires a Category 5e Ethernet cable with an RJ-45 connector.

Console

The Console port is where you can connect a serial cable to a PC's serial port for configuration using your PC's HyperTerminal program. Refer to *Chapter 4: Using the Console Interface for Configuration* for more information.

The Back Panel

The power port is located on the back panel of the Switch.



Figure 2-2: Back Panel of the 16-Port Switch

Power

The **Power** port is where you will connect the power cord.



NOTE: If you need to reset the Switch, unplug the power cord from the back of the Switch. Wait a few seconds and then reconnect it.

Chapter 3: Connecting the Switch

Overview

This chapter will explain how to connect network devices to the Switch. For an example of a typical network configuration, see the application diagram shown below.

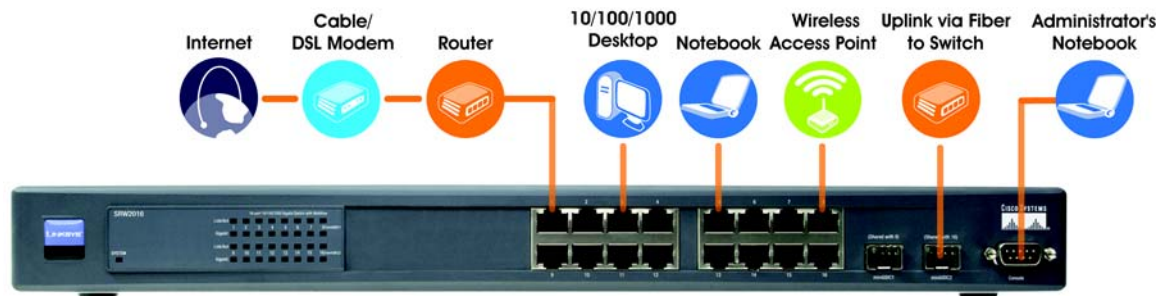


Figure 3-1: Typical Network Configuration for the 16-Port Switch

When you connect your network devices, make sure you don't exceed the maximum cabling distances, which are listed in the following table:

Table 1: Maximum Cabling Distances

From	To	Maximum Distance
Switch	Switch or Hub*	100 meters (328 feet)
Hub	Hub	5 meters (16.4 feet)
Switch or Hub	Computer	100 meters (328 feet)

*A hub refers to any type of 100Mbps hub, including regular hubs and stackable hubs. A 10Mbps hub connected to another 10Mbps hub can span up to 100 meters (328 feet).

Before You Install the Switch...

When you choose a location for the Switch, observe the following guidelines:

- Make sure that the Switch will be accessible and that the cables can be easily connected.
- Keep cabling away from sources of electrical noise, power lines, and fluorescent lighting fixtures.
- Position the Switch away from water and moisture sources.
- To ensure adequate air flow around the Switch, be sure to provide a minimum clearance of two inches (50 mm).
- Do not stack free-standing Switches more than four units high.

Placement Options

Before connecting cables to the Switch, first you will physically install the Switch. Either set the Switch on its four rubber feet for desktop placement or mount the Switch in a standard-sized, 19-inch wide, 1U high rack for rack-mount placement.

Desktop Placement

1. Attach the rubber feet to the recessed areas on the bottom of the Switch.
2. Place the Switch on a desktop near an AC power source.
3. Keep enough ventilation space for the Switch and check the environmental restrictions mentioned in the specifications.
4. Proceed to the section, “Connecting the Switch.”

Rack-Mount Placement

To mount the Switch in any standard-sized, 19-inch wide, 1U high rack, follow these instructions:

1. Place the Switch on a hard flat surface with the front panel facing you.
2. Attach a rack-mount bracket to one side of the Switch with the supplied screws. Then attach the other bracket to the other side.
3. Make sure the brackets are properly attached to the Switch.
4. Use the appropriate screws (not included) to securely attach the brackets to your rack.
5. Proceed to the section, “Connecting the Switch.”

Connecting the Switch

To connect network devices to the Switch, follow these instructions:

1. Make sure all the devices you will connect to the Switch are powered off.
2. For a 10/100Mbps devices, connect a Category 5 Ethernet network cable to one of the numbered ports on the Switch. For a 1000Mbps device, connect a Category 5e Ethernet network cable to one of the numbered ports on the Switch.
3. Connect the other end to a PC or other network device.
4. Repeat steps 2 and 3 to connect additional devices.
5. If you are using the mini-GBIC port, then connect the mini-GBIC module to the mini-GBIC port. For detailed instructions, refer to the module’s documentation.
6. If you will use the Switch’s console interface to configure the Switch, then connect the supplied serial cable to the Switch’s Console port, and tighten the captive retaining screws. Connect the other end to your PC’s serial port. (This PC must be running the VT100 terminal emulation software, such as HyperTerminal.)
7. Connect the supplied power cord to the Switch’s power port, and plug the other end into an electrical outlet.



IMPORTANT: Make sure you use the power cord that is supplied with the Switch. Use of a different power cord could damage the Switch.



IMPORTANT: Make sure you use the screws supplied with the mounting brackets. Using the wrong screws could damage the Switch and would invalidate your warranty.



Figure 3-2: Attach the Brackets to the Switch



Figure 3-3: Mount the Switch in the Rack



NOTE: If you need to reset the Switch, unplug the power cord from the back of the Switch. Wait a few seconds and then reconnect it.

WebView Switches

8. Power on the network devices connected to the Switch. Each active port's corresponding Link/Act LED will light up on the Switch. If a port has an active Gigabit connection, then its corresponding Gigabit LED will also light up.

If you will use the Switch's console interface to configure the Switch, proceed to *Chapter 4: Using the Console Interface for Configuration* for directions.

If you will use the Switch's Web-based Utility to configure the Switch, proceed to *Chapter 5: Using the Web-based Utility for Configuration*.

Chapter 4: Using the Console Interface for Configuration

Overview

The Switch features a menu-driven console interface for basic configuration of the Switch and management of your network. The Switch can be configured using CLI through the console interface or through a telnet connection. This chapter describes console interface configuration. Configuration can also be performed through the web utility, which is covered in the next chapter.

Configuring the HyperTerminal Application

Before you use the console interface, you will need to configure the HyperTerminal application on your PC.

1. Click the **Start** button. Select **Programs** and choose **Accessories**. Select **Communications**. Select **HyperTerminal** from the options listed in this menu.
2. On the *Connection Description* screen, enter a name for this connection. In the example, the name of connection is SRW2016. Select an icon for the application. Then, click the **OK** button.
3. On the *Connect To* screen, select a port to communicate with the Switch: **COM1**, **COM2**, or **TCP/IP**.

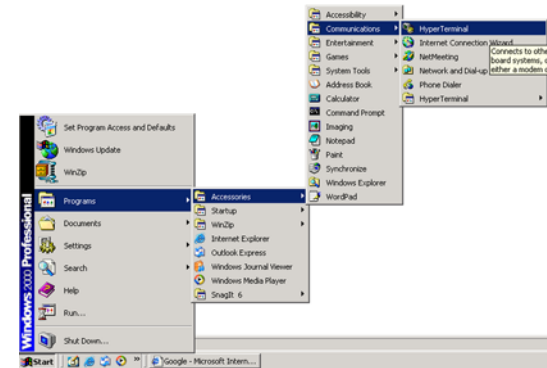


Figure 4-1: Finding HyperTerminal



Figure 4-2: Connection Description



Figure 4-3: Connect To

4. Set the serial port settings as follows:

Bits per second: **38400**

Data bits: **8**

Parity: **None**

Stop bits: **1**

Flow control: **None**

Then, click the **OK** button.



Figure 4-4: COM1 Properties

Connecting to the Switch through a Telnet Session

Open a command line editor and enter **telnet 192.168.1.254**. Then, press the **Enter** key.

The *Login* screen will now appear. The first time you open the CLI interface, select **Edit** and enter **admin** in the *User Name* field. Leave the *Password* field blank.

Press the **Esc** button and you will return to the login screen. Then, select **Enter** to enter the CLI interface.

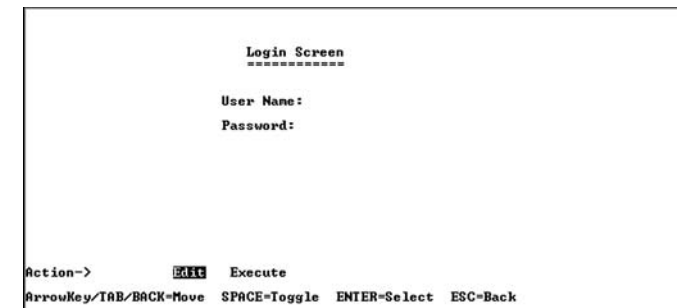


Figure 4-5: Telnet Login screen

Configuring the Switch through the Console Interface

The console screens consist of a series of menus. Each menu has several options, which are listed vertically. You select a menu option when you highlight it; pressing the **Enter** key activates the highlighted option.

To navigate through the menus and actions of the console interface, use the up or down arrow keys to move up or down, and use the left or right arrow keys to move left or right. Use the Enter key to select a menu option, and use the Esc key to return to the previous selection. Menu options and any values entered or present will be highlighted. The bottom of the screen lists the actions available.

Switch Main Menu

The *System Main Menu* screen displays these choices:

1. System Configuration Information Menu
2. Port Status
3. Port Configuration
4. Help

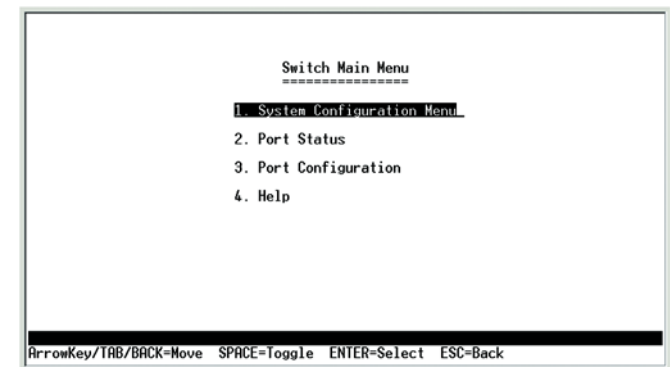


Figure 4-6: Switch Main Menu

Port Status

On the *Switch Main Menu* screen, select **Port Status** and press the **Enter** key if you want to view the status information for the Switch's ports.

The *Port Status* screen displays the port numbers, their status, Link status, speed and duplex mode, and status of flow control, which is the flow of packet transmissions.

If you want to change any settings for a port, you must use the *Port Configuration* screen.

Port	Enable	Link	Spd/Dplx	Flow Ctrl
FAST1	ENABLE	DOWN	-----	----
FAST2	ENABLE	DOWN	-----	----
FAST3	ENABLE	DOWN	-----	----
FAST4	ENABLE	DOWN	-----	----
FAST5	ENABLE	DOWN	-----	----
FAST6	ENABLE	DOWN	-----	----
FAST7	ENABLE	DOWN	-----	----
FAST8	ENABLE	DOWN	-----	----
FAST9	ENABLE	DOWN	-----	----
FAST10	ENABLE	DOWN	-----	----
FAST11	ENABLE	DOWN	-----	----
FAST12	ENABLE	DOWN	-----	----

Action-> Quit Refresh

ArrowKey/TAB/BACK=Move SPACE=Toggle ENTER=Select ESC=Back

Figure 4-7: Port Status

Port Configuration

On the *Switch Main Menu* screen, select **Port Configuration** and press the **Enter** key if you want to configure the Switch's ports.

The *Port Configuration* screen displays the port numbers, their status, auto-negotiation status, speed and duplex mode, and status of flow control, which is the flow of packet transmissions.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

Port Configuration				
Port	Enable	Auto Neg.	Spd/Dpx	Flow Ctrl
FAST1	ENABLE	On	Auto	Off
FAST2	ENABLE	On	Auto	Off
FAST3	ENABLE	On	Auto	Off
FAST4	ENABLE	On	Auto	Off
FAST5	ENABLE	On	Auto	Off
FAST6	ENABLE	On	Auto	Off
FAST7	ENABLE	On	Auto	Off
FAST8	ENABLE	On	Auto	Off
FAST9	ENABLE	On	Auto	Off
FAST10	ENABLE	On	Auto	Off
FAST11	ENABLE	On	Auto	Off
FAST12	ENABLE	On	Auto	Off

Action-> Quit Edit Save

ArrowKey/TAB/BACK=Move SPACE=Toggle ENTER=Select ESC=Back

Figure 4-8: Port Configuration

Help

Select Help and press the Enter key if you want to view the help information. This screen explains how to navigate the various screens of the console interface.

System Configuration Menu

On the *System Configuration Menu* screen, you have these choices:

1. System Information
2. Management Settings
3. User & Password Settings
4. Security Settings
5. IP Configuration
6. File Management
7. Restore System Default Settings
8. Reboot System
0. Back to main menu

System Configuration Menu	
1. System Information	
2. Management Settings	
3. User & Password Settings	
4. Security Settings	
5. IP Configuration	
6. File Management	
7. Restore System Default Settings	
8. Reboot System	
0. Back to main menu	

ArrowKey/TAB/BACK=Move SPACE=Toggle ENTER=Select ESC=Back

Figure 4-9: System Configuration Menu

System Information

Using this screen, you can check the Switch's firmware versions and general system information.

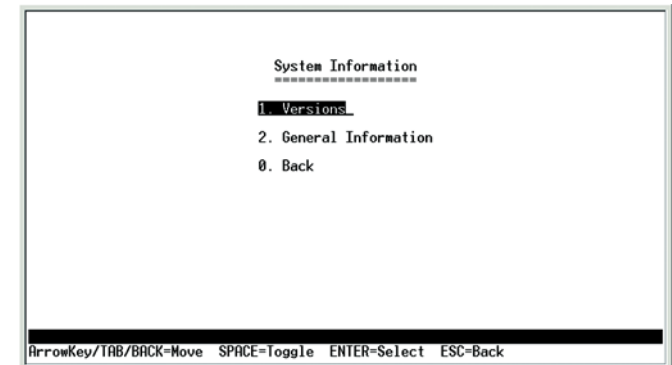


Figure 4-10: System Information Menu

Versions

The *Versions* screen displays the Switch's boot, software, and hardware firmware versions.

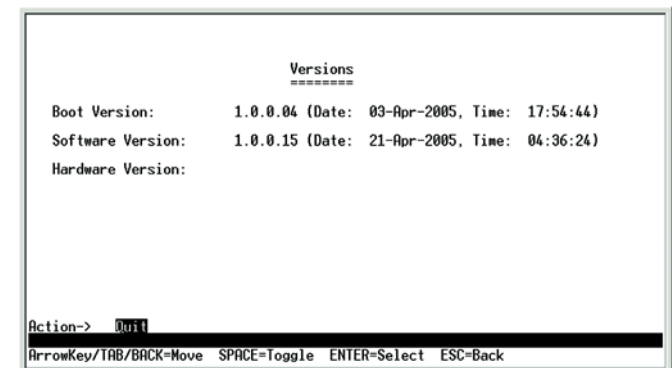


Figure 4-11: Versions

General System Information

The *General System Information* screen displays the Switch's description, System Up Time, System MAC Address, System Contact, System Name, and System Location.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

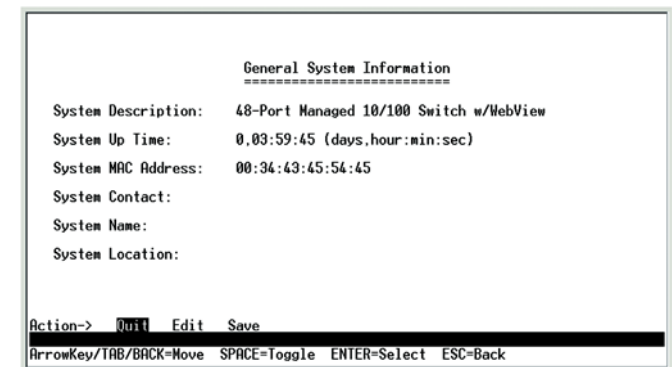


Figure 4-12: General System Information

Management Settings

From the Management Settings screen, you can set Serial Port Session Configuration, Telnet Session Configuration, or Secure Telnet (SSH) Configuration.

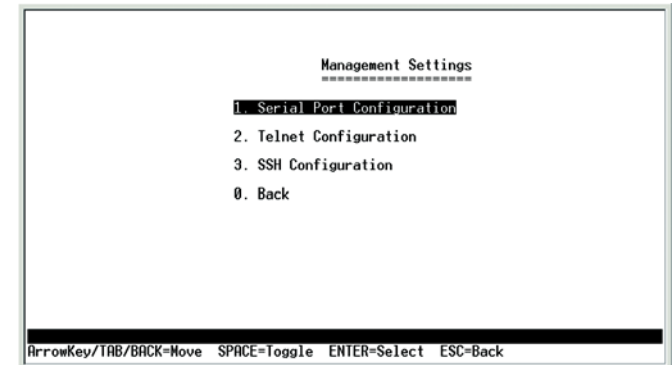


Figure 4-13: Management Settings Menu

Serial Port Configuration

On the *Serial Port Configuration* screen, the Switch's baud rate is displayed.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

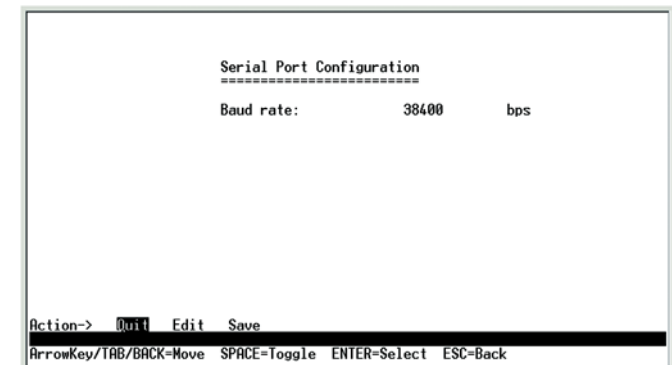


Figure 4-14: Serial Port Configuration

Telnet Configuration

On the *Telnet Configuration* screen, the time-out is displayed.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

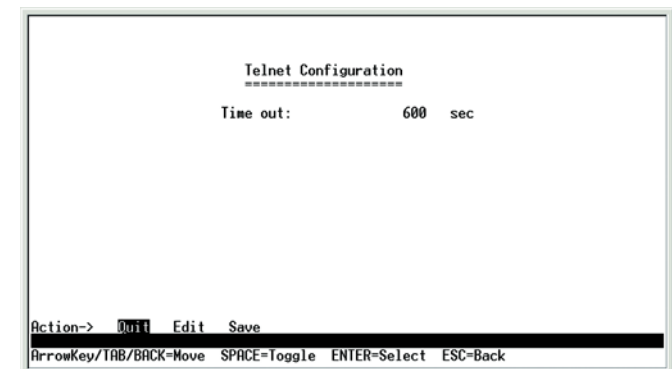


Figure 4-15: Telnet Configuration

WebView Switches

Username & Password Settings

From this screen, you can administer the user names and passwords of those accessing the Switch.

Username & Password Settings		
Username	Password	Password Again
1. admin	*****	*****
2.		
3.		
4.		
5.		

Action-> Quit Edit Save

ArrowKey/TAB/BACK=Move SPACE=Toggle ENTER=Select ESC=Back

Figure 4-16: Username & Password Settings



NOTE: The Username & Password Settings screen can also be used to set passwords for other users.

Security Settings

The Security Settings screen enables you to configure security settings on the Switch, as well as generate and display the certificate.

Security Settings

1. SSL Generate Certificate

2. SSL Show Certificate

0. Back

ArrowKey/TAB/BACK=Move SPACE=Toggle ENTER=Select ESC=Back

Figure 4-17: Security Settings

WebView Switches

SSL Certificate Generation

Use the Certificate Generation screen to specify a device-generated certificate.

The following fields are specified:

Public Key Length - Specifies the SSL RSA key length. (Range: 512 - 2048)

Organization Name - Specifies the organization name. (Range: 1 - 64)

Locality or City Name - Specifies the location or city name. (Range: 1 - 64)

State or Province Name - Specifies the state or province name. (Range: 1 - 64)

Country Name - Specifies the country name. (Range: 2 - 2)

Validity Term - Specifies number of days certification is valid. (Range: 30 - 3650)

SSL_Certificate_Generation.bmp

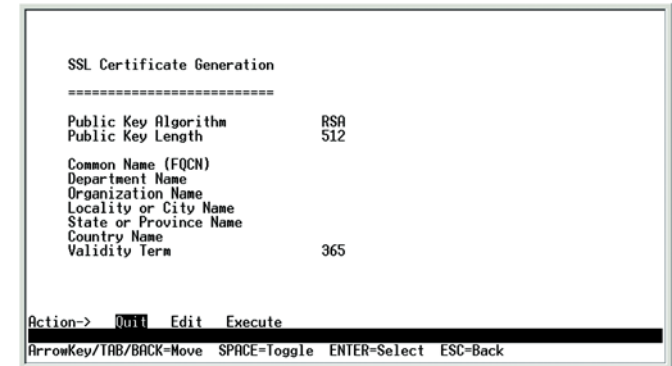


Figure 4-18: SSL Certificate Generation

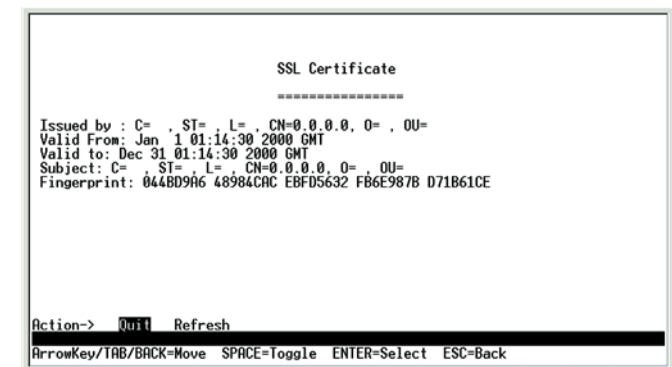


Figure 4-19: SSL Certificate

IP Configuration

The *IP Configuration* screen displays these choices: the Switch's IP Address Settings, HTTP, HTTPS Configuration and Network Configuration.

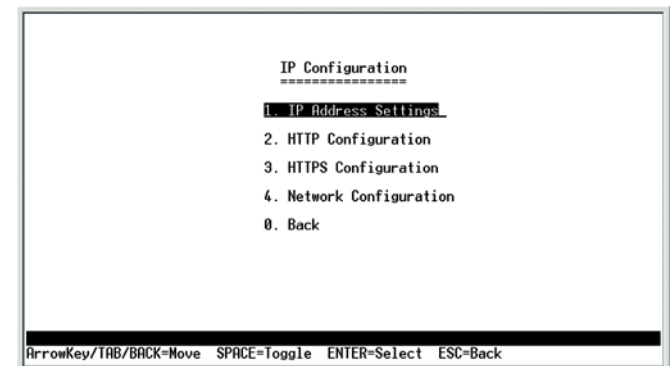


Figure 4-20: IP Configuration

IP Address Configuration

The Switch's IP information is displayed here.

IP Address. The IP Address of the Switch is displayed. (The default IP address is **192.168.1.254**.) Verify that the address you enter is correct and does not conflict with another device on the network.

Subnet Mask. The subnet mask of the Switch is displayed.

Default Gateway. The IP address of your network's default gateway is displayed.

Management VLAN. The VLAN ID number is displayed.

DHCP client. The status of the DHCP client is displayed. If you want the Switch to be a DHCP client, then select **ENABLE**. If you want to assign an static IP address to the Switch, then enter the IP settings and select **DISABLE**.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

HTTP

The *HTTP* screen displays the status and port number of the HTTP Server.

For the 24-Port Switch, there is also an HTTP Authentication setting. You can set the authentication method for up to four users of the Switch's Web-based Utility. Select **LOCAL** if you want access protected by a username and password. Select **RADIUS** if you want to use authentication via a RADIUS server. Select **TACACS** if you want access protected by the TACACS authentication protocol, which uses a username and password. Select **DENY** if you want to block access (for example, if you want to allow fewer than four users).

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

HTTPS Configuration

Use the *HTTPS Configuration* screen to configure HTTPS settings. You can enable or disable the HTTPS server and configure the port on which the session is enabled.



Figure 4-21: IP Address Configuration

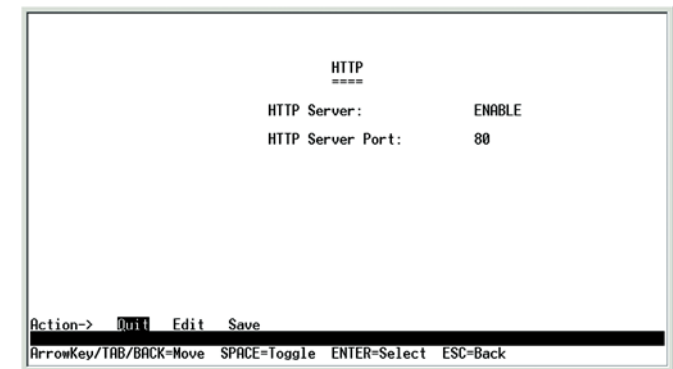


Figure 4-22: HTTP

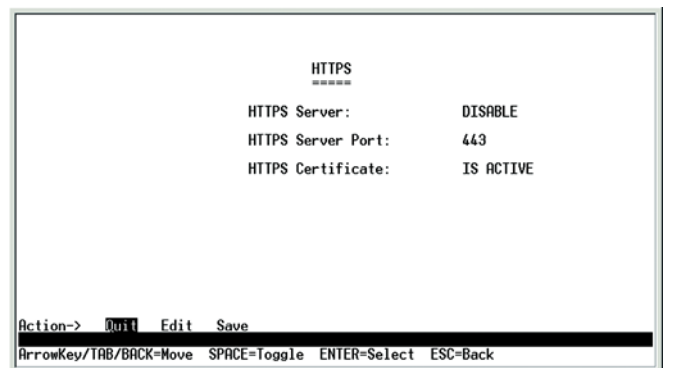


Figure 4-23: HTTPS Configuration

Network Configuration

The *Network Configuration* screen offers a choice of two tests, Ping and TraceRoute.



Figure 4-24: Network Configuration

Ping

The *Ping* screen displays the IP address of the location you want to contact.

Select **Edit** to change the IP address, and select **Execute** to begin the ping test.

After the ping test is complete, the *Ping* screen displays the IP address, status, and statistics of the ping test.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

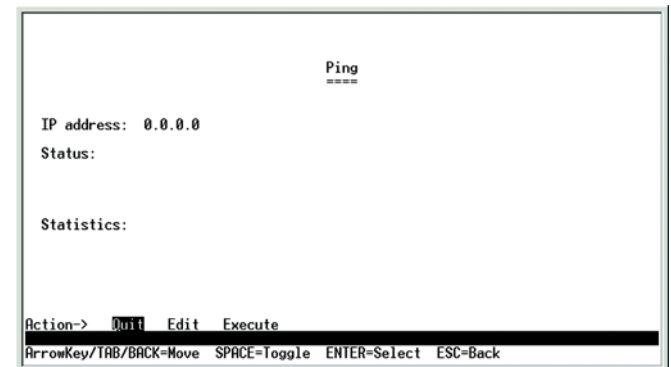


Figure 4-25: Ping Test

TraceRoute

The *TraceRoute* screen displays the IP address of the address whose route you want to trace.

Select **Edit** to change the IP address, and select **Execute** to begin the traceroute test.

After the traceroute test is complete, the *TraceRoute* screen displays the IP address, status, and statistics of the traceroute test.

Select **Edit** to make changes. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Save** to save your changes.

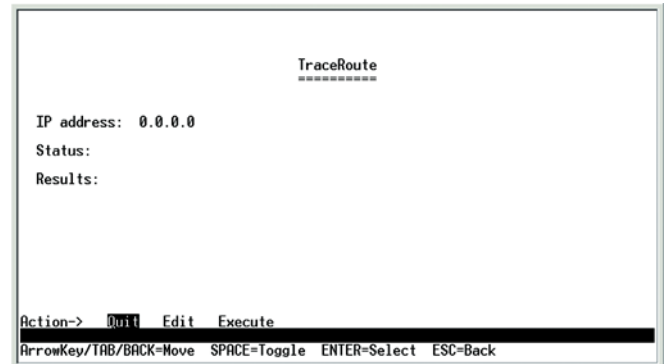


Figure 4-26: TraceRoute Test

File Management

The *File Management* screen allows you to upload or download files, such as the startup configuration, boot, or image file, using a TFTP server.

Select **Edit** to change the settings. When your changes are complete, press the **Esc** key to return to the *Action* menu, and select **Execute** to upload or download the designated file. After you download a file to the Switch, it may need to be rebooted.

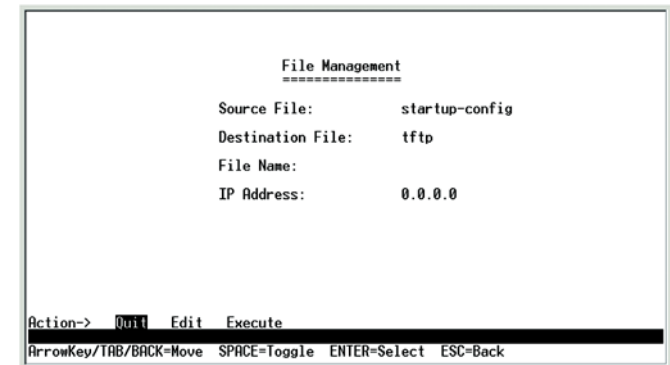


Figure 4-27: File Management

Restore System Default Settings

To restore the Switch back to the factory default settings, select **Restore System Default Settings** and press the **Enter** key. You will be asked if you want to continue. Press the **y** key to restore the Switch's default settings, or press the **n** key to cancel.

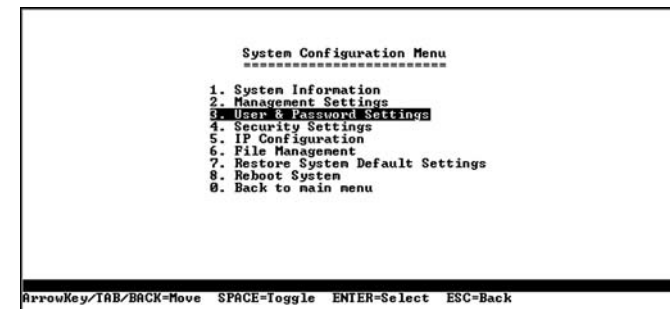


Figure 4-28: Restore System Default Settings

Reboot System

Select **Reboot System** and press the **Enter** key if you want to restart the Switch. You will be asked if you want to continue. Press the **y** key to reboot the Switch, or press the **n** key to cancel. After the Switch has rebooted, the *Switch Main Menu* screen will appear.

Back to main menu

Select **Back to main menu** and press the **Enter** key if you want to return to the *Switch Main Menu* screen.

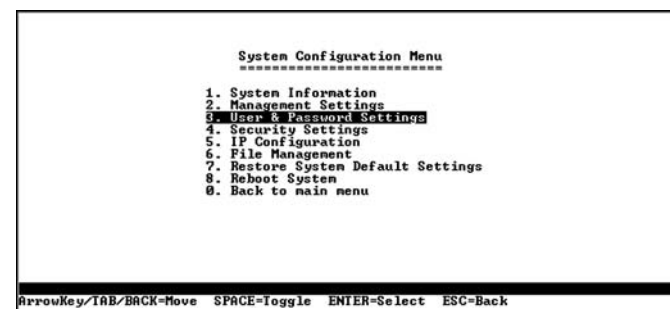


Figure 4-29: Reboot System

Chapter 5: Using the Web-based Utility for Configuration

Overview

This chapter describes the features included in the Web-based utility. All of the features shown in this chapter, unless specifically identified, are included in the Fast Ethernet switches. Additional features for the Gigabit switches are specified with images for the Gigabit Ethernet's utility included.

Accessing the Web-based Utility

Open your web browser and enter **192.168.1.254** into the *Address* field. Press the **Enter** key and the login screen will appear. The first time you open the Web-based Utility, enter **admin** in the *User Name* field, and leave the *Password* field blank. Click the **OK** button. You can set a password later from the *System Password* screen.

The first screen that appears is the *System Description* screen. This allows you to access six main tabs: Sys. Info. (System Information), IP Conf. (Configuration), Switch Conf. (Configuration), QoS (Quality of Service), Security, SNTP (Simple Network Time Protocol), Statistics, Logs, Maintenance, and Help. Click one of the main tabs to view additional tabs.

An About button appears at the top of each screen. Clicking this button will bring up the versioning information of the Switch. The LEDs on the screen display status information about their corresponding ports. A green LED indicates a connection, while a blue LED indicates no connection. When you click a port's LED, the statistics for that port are displayed.



NOTE: The LEDs displayed in the Web-based Utility are not the same as the LEDs on the front panel of the Switch. The front panel LEDs display different status information, which is described in *Chapter 2: Getting to Know the Switch*.



Figure 5-1: Login Screen

Sys. Info. (System Information) Tab - System Description

The *System Description* screen lets you enter general information about the Switch.

Model Name. This is the model number and name of the Switch.

System Name. Enter a name for the Switch.

System Location. Describe the location of the Switch.

System Contact. Enter the name of the contact person for this Switch.

System Object ID. The vendor's authoritative identification of the network management subsystem contained in the entity.

System up time. This displays the amount of time that has elapsed since the Switch was last reset.

IP Address. This is the IP address of the Switch.

Base MAC Address. This is the MAC address of the Switch.

Hardware Version. Displayed here is the version number of the Switch's hardware.

Software Version. Displayed here is the version number of the Switch's software.

Click the **Submit** button to save your changes.

Figure 5-2: System Information - System Description

Sys. Info. (System Information) Tab - System Mode

This screen appears in the Web-based utility for the Gigabit Ethernet switches ONLY. The *System Mode* screen allows you to enable or disable the Jumbo Frames feature. Jumbo Frames enable the travel of identical data in fewer frames; this promotes faster data transmissions.

Jumbo Frames. If you want to enable this feature on the Switch, select **Enabled**. You will be notified that this feature will be enabled after the Switch is reset. Otherwise, select **Disabled**.

Click the **Submit** button to save your changes.

Figure 5-3: System Information - System Mode



NOTE: The *System Mode* screen applies to the Gigabit Ethernet switches ONLY.

Sys. Info. (System Information) Tab - Forwarding Database

The *Forwarding Database* screen lets you define the aging interval of the Switch.

Aging Interval (15-630) (secs). This specifies the aging-out period on the Forwarding Database.

Click the **Submit** button to save your changes.

A table of VLAN (Virtual Local Area Network) entries is listed.

VLAN ID. Displayed here is the ID number of the VLAN for this entry.

MAC Address. This is the MAC address of the entry.

Port. This is the port number for this entry.

ifIndex. This is the interface for this entry.

Status. This indicates how the entry was created, Dynamic (dynamically learned) or Static (statically configured).

You can add or edit a forwarding interface by clicking the icon that looks like a sheet of paper. This will allow you to configure the following settings:

Interface. Select the appropriate interface, either a port number or LAG (Link Aggregation Group) number.

MAC Address. Enter the MAC address for this entry.

VLAN ID. If you want to use a VLAN ID, then select the radio button and enter the ID number of the VLAN.

VLAN Name. If you want to use a VLAN Name, select the radio button and then enter a name here.

Status. Select the status of your entry, **Permanent**, **Delete On Reset**, or **Delete On Time Out**.

Click the **Submit** button to save your changes.

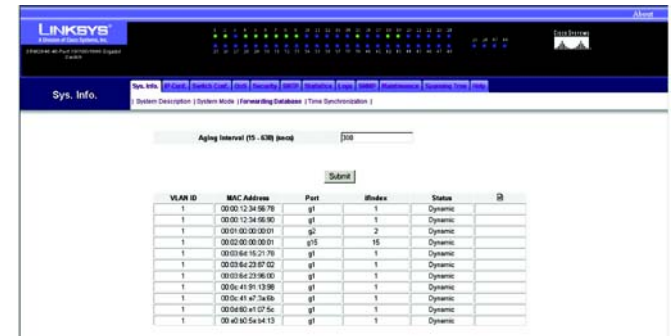


Figure 5-4: System Information - Forwarding Database

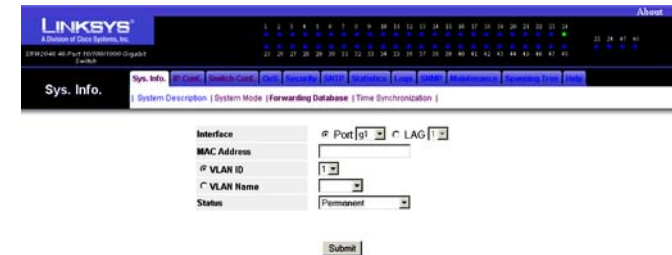


Figure 5-5: Forwarding Database - Add Entry

Sys. Info. (System Information) Tab - Time Synchronization

The *Time Synchronization* screen allows you to configure the time settings for the Switch.

Clock Source. If you want to set the system clock via an SNTP (Simple Network Time Protocol) server, then select **SNTP**. Otherwise, select **None**.

Local Settings

Date. Specify the system date here.

Local Time. Specify the system time here.

Time Zone Offset. Enter the difference between Greenwich Mean Time (GMT) and local time.

Daylight Saving. Select **Daylight Saving** to enable it on the Switch. If the Switch should use US daylight savings, then select **USA**. If the Switch should use EU daylight savings, then select **European**. If it should use another kind of daylight savings, then select **Other** and complete the *From* and *To* fields.

Time Set Offset (1-1440). For non-US and European countries, specify the amount of time for daylight savings. The default is **60** minutes.

From. If you selected **Other** for the *Daylight Saving* setting, then enter the date and time when daylight savings begins.

To. If you selected **Other** for the *Daylight Saving* setting, then enter the date and time when daylight savings ends.

Recurring. If you selected **Other** for the *Daylight Saving* setting and daylight savings has the same start and end dates and times every year, then select **Recurring**.

From. If you selected **Recurring**, then enter the date and time when daylight savings begins.

To. If you selected **Recurring**, then enter the date and time when daylight savings ends.

Click the **Submit** button to save your changes.

The screenshot shows the 'Sys. Info.' tab with the 'Time Synchronization' sub-tab selected. The 'Clock Source' is set to 'SNTP'. Under 'Local Settings', the 'Date' is '01/26/00' and 'Local Time' is '01:36:37'. 'Time Zone Offset' is 'GMT'. 'Daylight Saving' is set to 'USA'. 'Time Set Offset' is '1440' minutes. The 'Recurring' section has 'From' and 'To' fields set to '01:00' on 'Sun' of each 'Week' in 'Feb' and 'Oct' respectively. A 'Submit' button is at the bottom right.

Figure 5-6: System Information - Time Synchronization

IP Conf. (Configuration) Tab - IP Addr. (Address)

The *IP Address* screen allows you to assign DHCP or static IP settings to interfaces and assign default gateways.

DHCP Interface. If you are using the DHCP Interface, then select the radio button and specify the VLAN on which the DHCP IP address is configured.

Host Name. Enter the DHCP Host Name here.

Static Address. If you are using a static IP address, then select the radio button and enter the IP settings.

IP Address. Enter the interface IP address.

Mask. Enter the subnet mask of the currently configured IP address.

Default Gateway. Enter the IP address of the Default Gateway. To delete the Default Gateway setting, click the red **X** to the right.

Current Management Interface. Specify the interface used to manage the Default Gateway.

Click the **Submit** button to save your changes. Before any changes are incorporated into the Web-based utility, you must first return to the *System Description* screen on the *System Information* tab and click your web browser's **Refresh** button.

The screenshot shows the Linksys web interface for IP configuration. At the top, there's a navigation bar with tabs: Home, IP Config, System Information, and About. The 'IP Config.' tab is selected. Below the navigation bar, there's a section for 'IP Addr.' with two radio buttons: 'DHCP Interface' (selected) and 'Static Address'. The 'DHCP Interface' section includes fields for 'Host Name', 'IP Address' (10.0.30.55), 'Mask' (255.255.255.0), 'Default Gateway', and 'Current Management Interface' (VLAN 1). The 'Static Address' section is currently empty. At the bottom, there's a 'Submit' button and a note: 'Please note that any changes to IP address screen require refresh of web pages from main menu'.

Figure 5-7: IP Configuration - IP Address

Switch Conf. (Configuration) Tab - Interface Conf. (Configuration)

The *Interface Configuration* screen shows you the settings for each of the Switch's ports. Where many ports are present, you can scroll to the right on the screen to view the settings for further ports.

Interface#. This is the port number.

Name. This is the device port ID.

Edit. The next row shows which port is selected or modified (according to the buttons at the bottom of the screen. Click the radio button in the port's row to select that port before clicking either button at the bottom of the screen.

Port Type. This is the port type.

Port Status. Displayed here is the status of the port.

Port Speed. Displayed here is the configured rate for the port. The speed can be configured only when auto-negotiation is disabled on that port.

Duplex Mode. This is the port duplex mode, Full (transmission occurs in both directions simultaneously) or Half (transmission occurs in only one direction at a time). This mode can be configured only when auto-negotiation is disabled and port speed is set to 10Mbps or 100Mbps. It cannot be configured on Link Aggregation Groups (LAGs).

Auto Negotiation. This is the status of the port's Auto Negotiation feature.

Back Pressure. Displayed here is the status of the port's Back Pressure mode, which is used with Half Duplex Mode to disable ports from receiving messages. This mode is used for ports in Half Duplex Mode or on LAGs.

Flow Control. This is the flow control status of the port. It is active when the port uses Full Duplex Mode.

MDI/MDIX. This is the MDI/MDIX status of the port. The **Auto** setting is used when you want the port to automatically detect the cable type. The **MDI** setting is used if the port is connected to an end station. The **MDIX** setting is used if the port is connected to a hub or another switch.

LAG. This indicates if the port is part of a LAG.

Storm Control. When enabled, the Storm Control setting prevents an excessive number of broadcast and multicast messages.

Interface#	1	2	3	4	5	6	7	8	9	10	11	12	13
Name	g1	g2	g3	g4	g5	g6	g7	g8	g9	g10	g11	g12	g13
Port Type	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper	1000M copper
Port Status	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down
Port Speed	1000M	1000M	1000M	1000M	1000M	1000M	1000M	1000M	1000M	1000M	1000M	1000M	1000M
Duplex Mode													
Auto Negotiation													
Back Pressure													
Flow Control	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
MDI/MDIX	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
LAG													
Storm Control	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
PVE													

Reset the settings of Selected Port to default Modify the settings of Selected Port

Figure 5-8: Switch Configuration - Interface Configuration

PVE. For Gigabit Ethernet switches. When a port is a Private VLAN Edge (PVE) port, it bypasses the Forwarding Database and forwards all unicast, multicast, and broadcast traffic to an uplink, except for MAC-to-me packets. Uplinks can be ports or LAGs.

PVE. For Fast Ethernet switches. **PVE Groups** indicates the PVE group to which the port belongs. When an uplink is configured for a port, all ports in that group are also protected by that uplink. **PVE Uplink** indicates the uplink to which all traffic from a protected port is forwarded.

If you want to reset a port's settings to its defaults, select a port by clicking the radio button for that port. Then, click the **Reset the settings of Selected Port to default** button.

If you want to modify a port's changes, select a port by clicking the radio button for that port. Then, click the **Modify the settings of Selected Port** button. On the new screen that appears, you can change the port's settings. (Some settings shown may not be available, depending on the type of switch you have and other settings you have configured for that port.)

Interface. This is the port number.

Description. Enter a description for this port.

Port Type. This is the port type.

Admin Status. Change the status of the port here.

Current Port Status. Displayed here is the status of the port.

Reactivate Suspended Port. If you want to reactivate a port that has been suspended, click the checkbox.

Operational Status. This indicates whether or not the port is active.

Admin Speed. Change the speed of the port here.

Current Port Speed. Displayed here is the current speed of the port.

Admin Duplex. Change the duplex mode here.

Current Duplex Mode. This is the duplex mode of the port.

Auto Negotiation. You can enable or disable the port's Auto Negotiation feature.

Current Auto Negotiation. This is the current setting of the port's Auto Negotiation feature.

Back Pressure. You can enable or disable the port's Back Pressure feature.



NOTE: PVE is configured on a group of ports for FE devices. This is done using the using the PVE Mapping screen



Figure 5-9: Interface Configuration - Change Settings

Current Back Pressure. Displayed here is the status of the port's Back Pressure mode.

Flow Control. You can enable or disable the port's Flow Control feature.

Current Flow Control. This is the flow control status of the port.

MDI/MDIX. Select the **Auto** setting if you want the port to automatically detect the cable type. Select **MDI** if the port is connected to an end station. Select **MDIX** if the port is connected to a hub or another switch.

Current MDI/MDIX. This is the current MDI/MDIX status of the port.

LA. This indicates if the port is part of a LAG.

Storm Control. You can enable or disable the port's Storm Control setting.

PVE. For Gigabit Ethernet switches ONLY. When a port is a Private VLAN Edge (PVE) port, it bypasses the Forwarding Database and forwards all unicast, multicast, and broadcast traffic to an uplink, except for MAC-to-me packets. Uplinks can be ports or LAGs.

Click the **Submit** button to save your changes.

Switch Conf. (Configuration) Tab - VLAN

The VLAN screen displays subgroups of a LAN (Local Area Network).

Chose the **Select VLAN ID** or **Show All** option. If you chose to **Select VLAN ID**, chose the ID you wish to display from the drop-down menu. The following information is displayed:

VLAN

ID. This displays the VLAN ID number.

Name. This can be up to 32 alphanumeric characters long and identifies the name assigned to the VLAN.

Type. Displayed here is the VLAN type: *Dynamic* (dynamically created), *Static* (created by user), or *Default* (the Switch has one default VLAN).

Ports & LAGs. This shows the port of the column you selected or all of the ports with the following designations:

Member: Indicates the port's membership status in the VLAN, which can be:

S - Statistically included

D - Dynamically included

E - Excluded

F - Forbidden

Tagging: Indicates if the port is a tagged member with a **T** for "Tagged" or **U** for "Untagged".

To create a VLAN, click the **Create** icon on the far right of the screen. On the screen that appears, enter the VLAN ID as well as the VLAN name. Chose the port, as well as the Member and Tagging type. Then, click the **Submit** button.

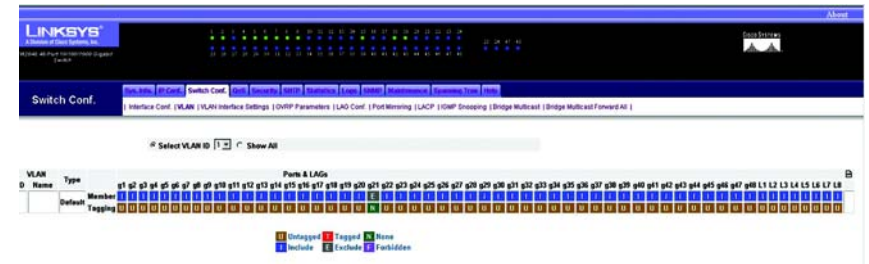


Figure 5-10: Switch Configuration - VLAN

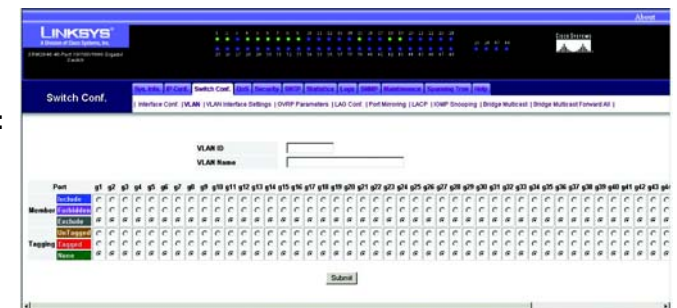


Figure 5-11: Switch Configuration - Create VLAN

Switch Conf. (Configuration) Tab - VLAN Interface Settings

The VLAN Interface Settings screen lets you define properties of the interfaces that are associated with VLANs.

Interface. This is the physical address of the interface, Port or LAG.

Interface VLAN Mode. One of the following VLAN modes will appear

- **General** - The port belongs to VLANs, and each VLAN is user-defined as tagged or untagged (full 802.1q mode).
- **Access** - The port belongs to a single, untagged VLAN. When a port is in Access mode, the packet tapes accepted on the port cannot be designated. Ingress filtering cannot be enabled/disabled on an access port.
- **Trunk** - The port belongs to VLANs in which all ports are tagged (except for one port that can be untagged).

PVID. VLAN ID of untagged packets.

Frame Type. Packet type accepted on the port, Admit All (all packets are accepted) or VLAN Only (only VLAN packets are accepted).

Ingress Filtering. Enables or disables Ingress filtering on the port. Ingress filtering discards packets that are destined to VLANs of which the specific port is not a member.

To edit the interface settings for a particular VLAN, click the **Edit** icon, which resembles a pencil, for that interface. On the screen that appears, you can settings for that interface. Click the **Submit** button when finished.

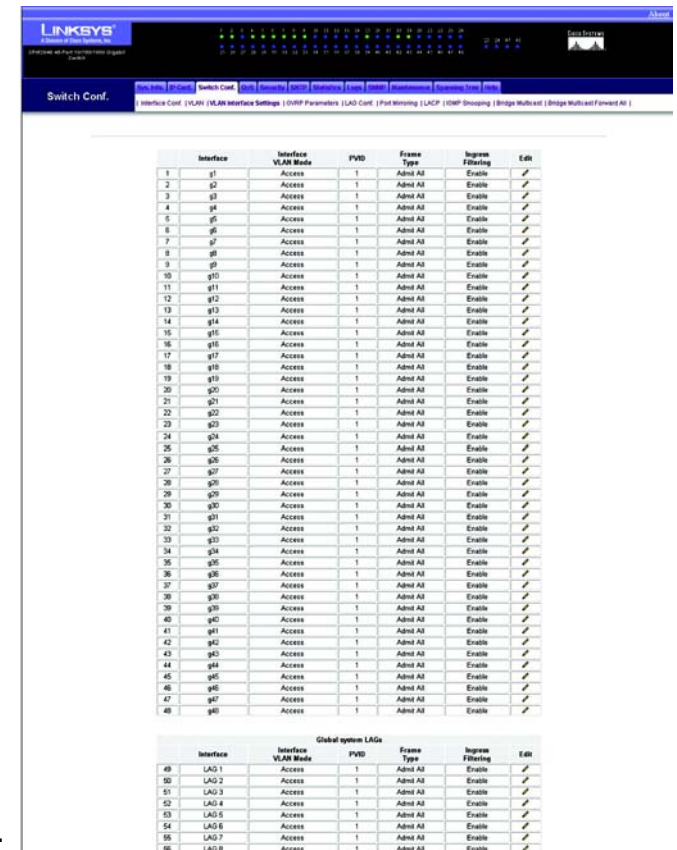


Figure 5-12: Switch Configuration - VLAN Interface Settings



Figure 5-13: Switch Configuration - edit VLAN Interface Settings

Switch Conf. (Configuration) Tab - GVRP Parameters

The name of this section is different depending on the type of Switch you are using. Gigabit Ethernet Switches show the GVRP Parameters screen. Fast Ethernet Switches show the PVE Mapping screen

GVRP Parameters - Gigabit Ethernet Switches ONLY

GARP VLAN Registration Protocol (GVRP) is specifically provided for automatic distribution of VLAN membership information among VLAN-aware bridges. GVRP allows VLAN-aware bridges to automatically learn VLANs to bridge ports mapping, without having to individually configure each bridge and register VLAN membership.

GVRP Global Status. This indicates if GVRP is enabled on the Switch.

Interface. This displays the interface/port on which GVRP is enabled.

GVRP State. This indicates if GVRP is enabled on the interface.

Dynamic VLAN Creation. This indicates if Dynamic VLAN creation is enabled on the interface.

GVRP Registration. This indicates if VLAN registration through GVRP is enabled on the interface.

To modify a GVRP, click the **Edit** icon, which looks like a pencil.

To apply changes made to a GVRP, click the **Submit** button.

Switch Conf. (Configuration) Tab - PVE Mapping

PVE Mapping performs the same functions on the Fast Ethernet Switch, as configuring a PVE uplink, using the interface screen on GE devices.

Group ID. This indicates the Group mapped on the Switch.

Group Members. This displays the ports associated with this Group.

PVE Uplink. This indicates the type of PVE uplink.

To modify a PVE, click the **Edit** icon, which looks like a pencil.



NOTE: The *GVRP Parameters* screen applies to the SRW2048 model ONLY.

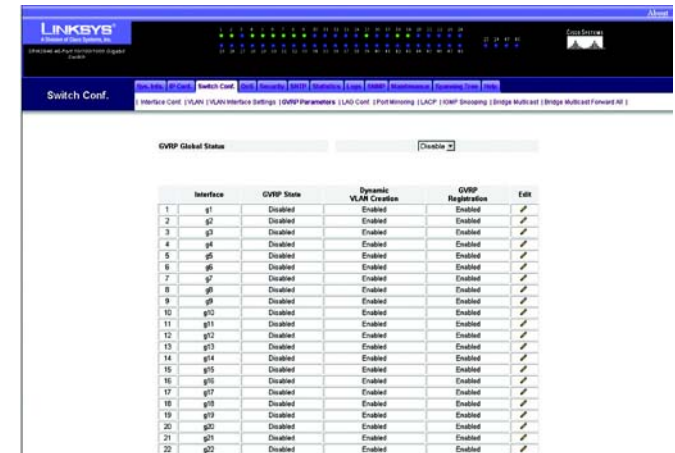


Figure 5-14: Switch Configuration - GVRP Parameters



Figure 5-15: Switch Configuration - PVE Mapping

Switch Conf. (Configuration) Tab - LAG Conf. (Configuration)

The Switch supports up to eight Link Aggregated Groups (LAGs), which maximize port usage by linking a group of ports together to form a single group. LAGs multiply the bandwidth between the network devices, increase port flexibility, and provide link redundancy. The Switch's LAGs are listed on the *LA Configuration* screen, which also allows you to modify them.

LAG Port. This displays the LAG number.

Name. This is the port name.

Link State. Displayed here is the status of the link.

Member. This shows the ports configured to the LAG.

If you want to delete a current LAG, then select the LAG's **X** icon.

To modify a LAG, click the LAG's **Edit** icon, which resembles a pencil. On the new screen that appears, you can modify the LAG for each of the Switch's ports. Where many ports are present, you can scroll to the right on the screen to view the settings for further ports.

LAG Port. This displays the LAG number.

LAG Name. Complete the *LAG Name* field.

Port. Select the ports you want to include in this LAG.

LACP. Select the ports for which you want to enable the use of Link Aggregation Control Protocol (LACP).

Activity. If checked, indicates that the port is an active member of the LAG. If not checked, indicates that it is a LAG LAP candidate, but is not an active LAG member.

Click the **Submit** button to save your changes.



Figure 5-16: Switch Configuration - LAG Configuration

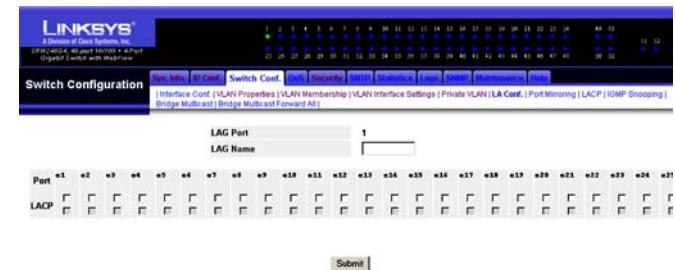


Figure 5-17: Switch Configuration - edit LAG Configuration

Switch Conf. (Configuration) Tab - Port Mirroring

The *Port Mirroring* screen lets you configure the Switch's port mirroring settings. Port mirroring can be used for diagnostics or debugging. It forwards copies of incoming and outgoing packets from one port to a monitoring port.

Port to be Mirrored. Select the port number from which port traffic is mirrored.

Probe Port. Select the port number to which port traffic is copied.

Mode. Select the appropriate port mode configuration, **RxOnly** (receiving only), **TxOnly** (transmitting only), or **Both** (receiving and transmitting).

Click the **Submit** button to save your changes.

Your port mirroring sessions are listed in a table.

Probe Port. This is the port number to which port traffic is copied.

Port To Be Mirrored. This is the port number from which port traffic is mirrored.

Copy Direction. This displays the traffic direction(s) being monitored.

Remove. If you want to delete a port mirroring session, click its **Remove** checkbox and the **Remove** button.



Figure 5-18: Switch Configuration - Port Mirroring

Switch Conf. (Configuration) Tab - LACP

The *LACP* screen allows you to enable the use of the Link Aggregation Control Protocol (LACP) on relevant links for LAGs. Listed on this screen are the LACP LAGs.

LACP System Priority (1 - 65535). Select the LACP priority value for the system. Then, click the **Submit** button.

LACP information is displayed below, per port.

Port. This is the port number using LACP.

Port Priority. This is the LACP priority value for the port.

LACP Timeout. This is the administrative LACP timeout period, Short or Long.

Click the pencil-shaped **Edit** icon to modify settings for a port. A new screen will appear, displaying the available LACP settings.

Port. Select the port you want.

LACP Port Priority. Select the LACP priority value for the port.

LACP Timeout. Select the LACP timeout period for this port, **Short** or **Long**.

Click the **Submit** button to save your changes.

LINKSYS
A Division of Cisco Systems, Inc.

FW22046 v0.1 Part 101017000 0-guest

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

About

Switch Conf.

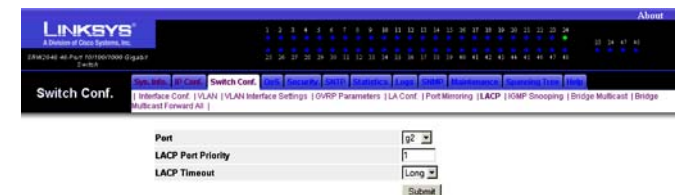
[New Tab](#)
[Edit](#)
[Switch Conf.](#)
[Interface Settings](#)
[Security](#)
[QoS](#)
[VLAN](#)
[VLAN Interface Settings](#)
[QoS Parameters](#)
[LA Conf.](#)
[Port Mirroring](#)
[LACP](#)
[IGMP Snooping](#)
[Bridge Multicast](#)
[Bridge Multicast Forward All](#)

LACP System Priority (145535)

Submit

Port	Port Priority	LACP Timeout	Edit
1	g1	1	Long
2	g2	1	Long
3	g3	1	Long
4	g4	1	Long
5	g5	1	Long
6	g6	1	Long
7	g7	1	Long
8	g8	1	Long
9	g9	1	Long
10	g10	1	Long
11	g11	1	Long
12	g12	1	Long
13	g13	1	Long
14	g14	1	Long
15	g15	1	Long
16	g16	1	Long
17	g17	1	Long
18	g18	1	Long
19	g19	1	Long
20	g20	1	Long
21	g21	1	Long
22	g22	1	Long
23	g23	1	Long
24	g24	1	Long
25	g25	1	Long
26	g26	1	Long
27	g27	1	Long
28	g28	1	Long
29	g29	1	Long
30	g30	1	Long
31	g31	1	Long
32	g32	1	Long
33	g33	1	Long
34	g34	1	Long
35	g35	1	Long
36	g36	1	Long
37	g37	1	Long
38	g38	1	Long
39	g39	1	Long
40	g40	1	Long
41	g41	1	Long
42	g42	1	Long
43	g43	1	Long
44	g44	1	Long
45	g45	1	Long
46	g46	1	Long
47	g47	1	Long
48	g48	1	Long

Figure 5-19: Switch Configuration - LACP



Port:

LACP Port Priority:

LACP Timeout:

Figure 5-20: LACP - Change Settings

Switch Conf. (Configuration) Tab - IGMP Snooping

When IGMP Snooping is enabled globally, all IGMP packets are forwarded to the CPU. The CPU analyzes the incoming packets and determines:

Which ports want to join which Multicast groups.

Which ports have Multicast routers generating IGMP queries.

What routing protocols are forwarding packets and Multicast traffic.

Ports requesting to join a specific Multicast group issue an IGMP report, specifying that Multicast group is accepting members. This results in the creation of the Multicast filtering database.

The IGMP Snooping page contains the following fields:

Enable IGMP Snooping Status. When this box is checked, IGMP Snooping is enabled on the Switch. IGMP Snooping can be enabled only if Bridge Multicast Filtering is enabled.

VLAN ID. Specifies the VLAN ID.

IGMP Snooping Status. Indicates if IGMP snooping is enabled or disabled on the VLAN.

Enable Auto Learn. Indicates if Auto Learn is enabled or disabled on the Switch. If Auto Learn is enabled, the Switch automatically learns where other Multicast groups are located.

Host Timeout. Indicates the amount of time host waits to receive a message before timing out. The default time is 260 seconds.

MRouter Timeout. Indicates the amount of the time the Multicast router waits to receive a message before it times out. The default value is 300 seconds.

Leave Timeout. Indicates the amount of time the host waits, after requesting to leave the IGMP group and not receiving a *Join* message from another station, before timing out. If a Leave Timeout occurs, the Switch notifies the Multicast device to stop sending traffic. The Leave Timeout value is either user-defined, or an immediate leave value. The default timeout is 10 seconds.

Click the **Edit** icon, which looks like a pen, to edit any of the IGMP Snooping settings. Click the **Submit** button to activate any changed you made on this screen.

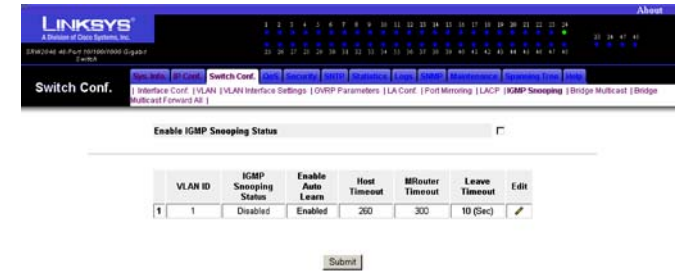


Figure 5-21: Switch Configuration - IGMP Snooping



Figure 5-22: Switch Configuration - Edit IGMP Snooping

Switch Conf. (Configuration) Tab - Bridge Multicast

The *Bridge Multicast* screen displays the ports and LAGs attached to the Multicast service group. The Port and LAG tables reflect the manner in which the port or LAG joined the Multicast group. Ports can be added either to existing groups or to new Multicast service groups.

From this screen, you can view the VLAN ID for each of the Switch's ports. Where many ports are present, you can scroll to the right on the screen to view the settings for further ports.

Enable Bridge Multicast Filtering. Indicates if bridge Multicast filtering is enabled. If Multicast filtering is disabled, Multicast frames are flooded to all ports in the relevant VLAN. This is disabled by default.

VLAN ID. Identifies a VLAN and contains information about the Multicast group address.

Bridge Multicast Address. Identifies the Multicast group IP or MAC address.

Ports. Displays Port that can be added to a Multicast service.

LAGs. Displays LAGs that can be added to a Multicast service.

The table on this screen displays the IGMP port and LAG members management settings:

- **D** - The Port/LAG has joined the multicast group dynamically,
- **S** - Attaches the port to the Multicast group as a static member.
- **F** - Forbidden ports, which are not included in the multicast group, even if IGMP snooping designated the port to join a multicast group.
- **Blank** - The port/LAG is not attached to a multicast group.

To add a multicast group, use the *Add Multicast Group* screen, by clicking the **Add** icon at the end of the row.

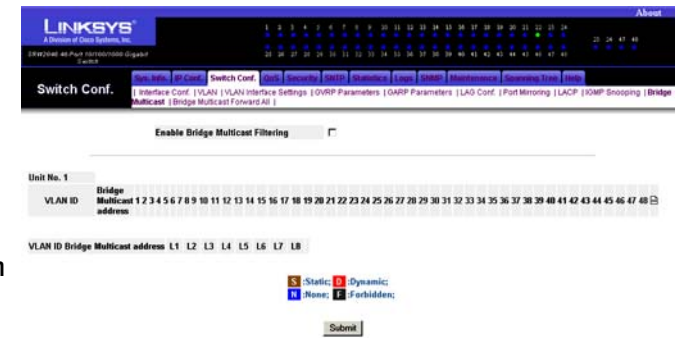


Figure 5-23: Switch Configuration - Bridge Multicast

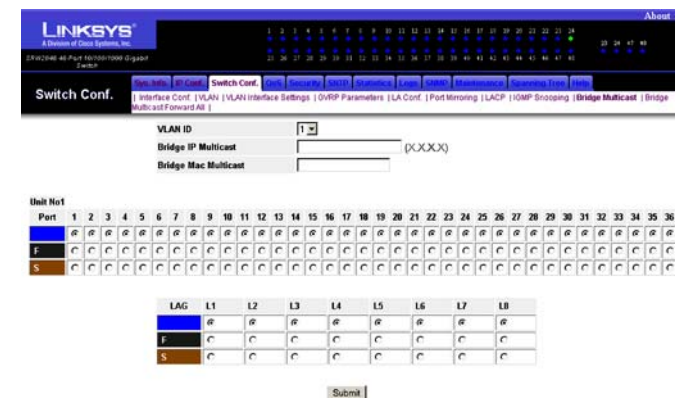


Figure 5-24: Switch Configuration - Edit Bridge Multicast

Switch Conf. (Configuration) Tab - Bridge Multicast Forward All

The *Bridge Multicast Forward All* screen contains fields for attaching ports or LAGs to a switch that is attached to a neighboring Multicast router/switch. Once IGMP Snooping is enabled, Multicast packets are forwarded to the appropriate port or VLAN.

VLAN ID. Displays the VLAN for which Multicast parameters are displayed.

Ports. Ports that can be added to a Multicast service.

The table on this screen displays the IGMP port and LAG members management settings:

- **F** - Forbidden ports, which are not included in the multicast group, even if IGMP snooping designated the port to join a multicast group.
- **S** - Attaches the port to the Multicast group as a static member.
- **D** - The Port/LAG has joined the multicast group dynamically.
- **Blank** - The port/LAG is not attached to a multicast group.

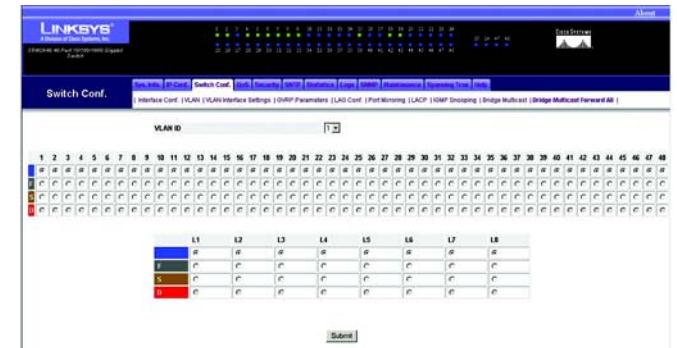


Figure 5-25: Switch Configuration - Bridge Multicast Forward All

QoS Tab - CoS Settings

Quality of Service (QoS) allows you to implement priority queuing within a network, so different types of traffic are assigned different priority queues. Class of Service (CoS) services are then assigned to the queues, using one of two methods, Strict Priority, for which time-sensitive applications are forwarded using the quickest path, or Weighted Round Robin (WRR), for which no single application dominates the forwarding capacity.

The *CoS Settings* screen lets you enable or disable CoS for various ports.

CoS Mode. This indicates whether CoS is enabled or disabled for the Switch.

Interface. This indicates the interface to be configured.

Default CoS. This defines the default CoS queue for incoming untagged packets.

Restore Defaults. To reset a port to its default value, select this checkbox.

Click the **Submit** button to save your changes.

Interface	Default CoS	Restore Defaults
g1	0	<input type="checkbox"/>
g2	0	<input type="checkbox"/>
g3	0	<input type="checkbox"/>
g4	0	<input type="checkbox"/>
g5	0	<input type="checkbox"/>
g6	0	<input type="checkbox"/>
g7	0	<input type="checkbox"/>
g8	0	<input type="checkbox"/>
g9	0	<input type="checkbox"/>
g10	0	<input type="checkbox"/>
g11	0	<input type="checkbox"/>
g12	0	<input type="checkbox"/>
g13	0	<input type="checkbox"/>
g14	0	<input type="checkbox"/>
g15	0	<input type="checkbox"/>
g16	0	<input type="checkbox"/>
g17	0	<input type="checkbox"/>
g18	0	<input type="checkbox"/>
g19	0	<input type="checkbox"/>
g20	0	<input type="checkbox"/>
g21	0	<input type="checkbox"/>
g22	0	<input type="checkbox"/>
g23	0	<input type="checkbox"/>
g24	0	<input type="checkbox"/>
g45	0	<input type="checkbox"/>
g46	0	<input type="checkbox"/>
g47	0	<input type="checkbox"/>
g48	0	<input type="checkbox"/>
LAG 1	0	<input type="checkbox"/>
LAG 2	0	<input type="checkbox"/>
LAG 3	0	<input type="checkbox"/>
LAG 4	0	<input type="checkbox"/>
LAG 5	0	<input type="checkbox"/>
LAG 6	0	<input type="checkbox"/>
LAG 7	0	<input type="checkbox"/>
LAG 8	0	<input type="checkbox"/>

Figure 5-26: QoS - CoS Settings

QoS Tab - Queue Settings

The *Queue Settings* screen lets you select the CoS method and assign bandwidth values for your queues.

Queue. This is the queue number.

Scheduling

Strict Priority. If you want traffic scheduling to be based on queue priority, then click this radio button.

WRR. If you want to assign a WRR weight to a queue, then click this radio button.

WRR Weight. If a queue uses WRR, then enter the WRR weight in this field.

% of WRR Bandwidth. This is the percentage of bandwidth used by WRR. This automatically changes if you change the WRR Weight for a queue.

Click the **Submit** button to save your changes.

Queue	Scheduling			% of WRR Bandwidth
	Strict Priority	WRR	WRR Weight	
1	<input type="radio"/>	<input type="radio"/>	1 (0-255)	
2	<input type="radio"/>	<input type="radio"/>	1 (0-255)	
3	<input type="radio"/>	<input type="radio"/>	1 (0-255)	
4	<input type="radio"/>	<input type="radio"/>	1 (0-255)	

Figure 5-27: QoS - Queue Settings

QoS Tab - CoS to Queue

The *CoS to Queue* screen lets you assign CoS settings to traffic queues.

Class of Service. This specifies the CoS priority tag values (0 is the lowest and 7 is the highest).

Queue. This indicates the traffic forwarding queue to which the CoS priority is mapped. You can designate up to four traffic priority queues.

Restore Defaults. To restore the factory defaults for mapping CoS values to a forwarding queue, click this checkbox.

Click the **Submit** button to save your changes.

Class of Service	Queue
0	1
1	1
2	1
3	1
4	1
5	1
6	1
7	1

Restore Defaults ☒

Figure 5-28: QoS - CoS to Queue

Security Tab - Local Users/System Password

This screen will appear as *Local Users* for those using a Gigabit Ethernet Switch and as *System Password* for those using a Fast Ethernet Switch.

This screen allows you to change the password for the Switch. To modify a user's Password information, click the **Edit** icon next to the user's name to open the edit screen. From this screen, you can edit the following fields:

User Name. This is the name of the administrator presently logged into the Switch's Web-based Utility.

Password. Enter a new password here. Passwords can be no longer than 20 alphanumeric characters long.

Confirm Password. Re-enter the new password. Passwords can be no longer than 20 alphanumeric characters long.

Click the **Submit** button to save your changes.

To remove a user's password information, click the **Remove** icon, which appears as a red X, next to their name.

To create a user's password, click the pen and paper icon above the Edit and Remove icons and add the information as above.



Figure 5-31: Security - Local Users/System Password

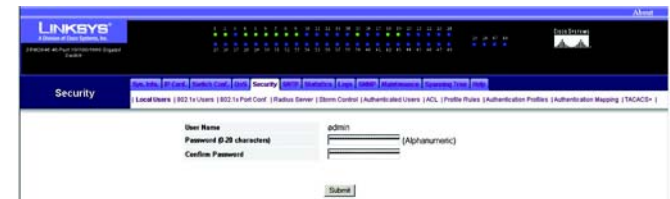


Figure 5-32: Security - Edit Local Users/System Password

Security Tab - 802.1x Users

The *802.1x Users* screen allows you to enable port-based authentication and specify the authentication method you want to use.

Port Based Network Access Control. Enable or disable port-based network access on the Switch.

Authentication Method. Select the authentication method you want to use, **RADIUS**, **None**, **RADIUS**, or **None**. For the RADIUS, None method, port authentication is performed first via RADIUS (Remote Authentication Dial In User Service). If the RADIUS server cannot be reached, then no authentication method is used. However, if a failure occurs, the port remains unauthorized and access is not granted. If you want the authentication to occur at the RADIUS server, select **RADIUS**. If you do not want to use an authentication method, then select **None**.

Click the **Submit** button to save your changes.

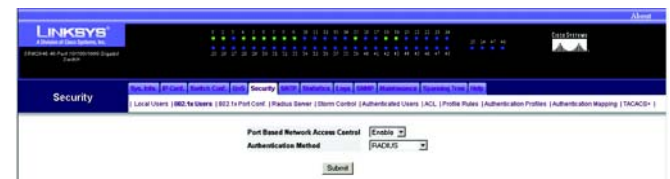


Figure 5-33: Security - 802.1x Users

Security Tab - 802.1x Port Conf. (Configuration)

The *802.1x Port Configuration* screen lists the Switch's 802.1x ports and allows you to configure the authentication settings per port. This authentication method uses a RADIUS server and the Extensible Authentication Protocol (EAP).

Port. This is the port name.

Admin Port Control. This is the state of the port authorization. Traffic is forwarded if the state is forceAuthorized. Traffic is discarded if the state is forceUnauthorized. If the state is Auto, then that means the controlled port state is set by the authentication method.

Enable Periodic Reauthentication. True indicates that reauthentication is automatic, while False indicates that reauthentication is manual.

Reauthentication Period. This is the number of seconds that the Switch waits before initiating the reauthentication process.

Quiet Period. This is the number of seconds the Switch remains in the quiet state after an authentication exchange has failed.

Resending EAP. This is the number of seconds the Switch waits for a response to an EAP request/identity frame, before resending the request.

Max EAP Requests. This is the total number of EAP requests sent. If a response is not received in time, the authentication process is restarted.

Supplicant Timeout (sec). This is the number of seconds that the Switch waits before EAP requests are resent to the client.

Server Timeout (sec). This is the number of seconds that the Switch waits before it resends a request to the RADIUS server.

Port	Admin Port Control	Enable Periodic Reauthentication	Reauthentication Period	Quiet Period	Resending EAP	Max EAP Requests	Supplicant Timeout	Server Timeout
1 g1	Force Authorized	False	3000	60	30	2	30	30
2 g2	Force Authorized	False	3000	60	30	2	30	30
3 g3	Force Authorized	False	3000	60	30	2	30	30
4 g4	Force Authorized	False	3000	60	30	2	30	30
5 g5	Force Authorized	False	3000	60	30	2	30	30
6 g6	Force Authorized	False	3000	60	30	2	30	30
7 g7	Force Authorized	False	3000	60	30	2	30	30
8 g8	Force Authorized	False	3000	60	30	2	30	30
9 g9	Force Authorized	False	3000	60	30	2	30	30
10 g10	Force Authorized	False	3000	60	30	2	30	30
11 g11	Force Authorized	False	3000	60	30	2	30	30
12 g12	Force Authorized	False	3000	60	30	2	30	30
13 g13	Force Authorized	False	3000	60	30	2	30	30
14 g14	Force Authorized	False	3000	60	30	2	30	30
15 g15	Force Authorized	False	3000	60	30	2	30	30
16 g16	Force Authorized	False	3000	60	30	2	30	30
17 g17	Force Authorized	False	3000	60	30	2	30	30
18 g18	Force Authorized	False	3000	60	30	2	30	30
19 g19	Force Authorized	False	3000	60	30	2	30	30
20 g20	Force Authorized	False	3000	60	30	2	30	30
21 g21	Force Authorized	False	3000	60	30	2	30	30
22 g22	Force Authorized	False	3000	60	30	2	30	30
23 g23	Force Authorized	False	3000	60	30	2	30	30
24 g24	Force Authorized	False	3000	60	30	2	30	30
25 g25	Force Authorized	False	3000	60	30	2	30	30
26 g26	Force Authorized	False	3000	60	30	2	30	30
27 g27	Force Authorized	False	3000	60	30	2	30	30

Figure 5-34: Security - 802.1x Port Configuration

WebView Switches

To modify the settings for an 802.1x port, click the port's **Edit** icon. On the new screen that appears, you can modify the port settings.

Port. This is the port name.

Admin Port Control. Select **forceAuthorized** if you want traffic to be forwarded. Select **forceUnauthorized** if you want traffic to be discarded. Select **Auto** if you want the controlled port state set by the authentication method.

Enable Periodic Reauthentication. Check this box if you want reauthentication to proceed automatically

Reauthentication Period. Enter the number of seconds that the Switch waits before initiating the reauthentication process.

Quiet Period. Enter the number of seconds the Switch remains in the quiet state after an authentication exchange has failed.

Resending EAP. Enter the number of seconds the Switch waits for a response to an EAP request/identity frame, before resending the request.

Max EAP Requests. Enter the total number of EAP requests sent. If a response is not received in time, the authentication process is restarted.

Supplicant Timeout. Enter the number of seconds that the Switch waits before EAP requests are resent to the client.

Server Timeout. Enter the number of seconds that the Switch waits before it resends a request to the RADIUS server.

Click the **Submit** button to save your changes.



Figure 5-35: 802.1x Port Configuration - Change Settings

Security Tab - RADIUS Server

The *RADIUS Server* screen lists the RADIUS servers used for authentication. You can use this screen to access a server's settings.

IP Address. This is the IP address of the RADIUS server.

Priority. This is the server priority, which is used to configure the server query order.

Authentication Port. This is the authentication port used to verify the RADIUS server authentication.

Number of Retries. This is the number of requests sent to the RADIUS server before a failure occurs.

Timeout for Reply. This is the number of seconds the Switch waits for an answer from the RADIUS server before retrying the query or switching to the next server.

Dead Time. This is the number of minutes that a RADIUS server is bypassed for service requests.

Source IP Address. This is the source IP address used for communication with the RADIUS server.

Usage Type. This is the RADIUS server authentication. Log in indicates that the RADIUS server is used for authentication of usernames and passwords, while 802.1x indicates that the RADIUS server is used for 802.1x authentication. All indicates that the RADIUS server is used for authentication of usernames and passwords, as well as 802.1x authentication.

To add a RADIUS server, click the paper and pencil icon. On the new screen that appears, you can configure its settings. To modify the settings of a RADIUS server, click the server's pencil icon. On the new screen that appears, you can modify its settings.

IP Address. Enter the IP address of the RADIUS server.

Priority (0-65535). Enter the server priority.

Authentication Port (0-65535). Enter the number of the authentication port.

Number of Retries (1-10). Enter the number of retries allowed before a failure occurs. To use the default, click the **Use Default** checkbox.

Timeout for Reply (1-30). Enter the number of seconds the Switch waits for an answer from the RADIUS server before retrying the query or switching to the next server. To use the default, click the **Use Default** checkbox.

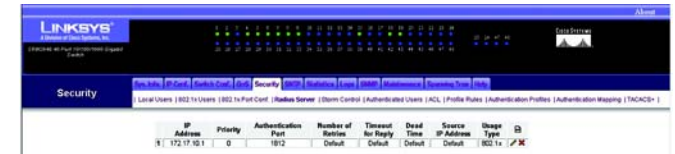


Figure 5-36: Security - RADIUS Server



Figure 5-37: Security - Add RADIUS Servers

WebView Switches

Dead Time (0-2000). Enter the number of minutes that a RADIUS server is bypassed for service requests. To use the default, click the **Use Default** checkbox.

Key String (0-128 Characters). Enter the pre-shared key in this field. To use the default, click the **Use Default** checkbox.

Source IP Address. Enter the source IP address used for communication with the RADIUS server. To use the default, click the **Use Default** checkbox.

Usage Type. This is the RADIUS server authentication. Select **Log in** if you want the RADIUS server used for authentication of usernames and passwords. Select **802.1x** if you want the RADIUS server used for 802.1x authentication. Select **All** if you want the RADIUS server used for authentication of usernames and passwords, as well as 802.1x authentication.

Default Parameters

Default Retries (1-10). Enter the number of retries allowed before a failure occurs. To use the default, click the **Use Default** checkbox.

Default Timeout for Reply (1-30). Enter the default number of seconds the Switch waits for an answer from the RADIUS server before retrying the query or switching to the next server.

Default Dead Time (0-2000). Enter the default number of minutes that a RADIUS server is bypassed for service requests.

Default Key String (0-128 Characters). Enter the default pre-shared key in this field.

Source IP Address. Enter the default source IP address used for communication with the RADIUS server.

Click the **Submit** button to save your changes.

Security Tab - Storm Control

The *Storm Control* screen allows you to enable or disable Storm Control, which limits the number of multicast and broadcast frames accepted and forwarded by the Switch.

Port. Indicates the port on which storm control is enabled.

Enable Broadcast Control. Enables broadcast control on the port.

Broadcast Mode. Specifies the broadcast mode currently enabled on the Switch. These can be:

- Unknown Unicast, Multicast & Broadcast
- Multicast & Broadcast
- Broadcast

Broadcast Rate Threshold. Indicates the maximum rate at which broadcast packets are forwarded.

To modify any of these settings, click the **Edit** icon, which resembles a pencil, to open the edit screen. T

Click the **Submit** button to save your changes.



Port	Enable Broadcast Control	Broadcast Mode	Broadcast Rate Threshold	Edit
g1	Enabled	Broadcast Only	3600	✎
g2	Enabled	Broadcast Only	3600	✎
g3	Enabled	Broadcast Only	3600	✎
g4	Enabled	Broadcast Only	3600	✎
g5	Enabled	Broadcast Only	3600	✎
g6	Enabled	Broadcast Only	3600	✎
g7	Enabled	Broadcast Only	3600	✎
g8	Enabled	Broadcast Only	3600	✎
g9	Enabled	Broadcast Only	3600	✎
g10	Enabled	Broadcast Only	3600	✎
g11	Enabled	Broadcast Only	3600	✎
g12	Enabled	Broadcast Only	3600	✎
g13	Enabled	Broadcast Only	3600	✎
g14	Enabled	Broadcast Only	3600	✎
g15	Enabled	Broadcast Only	3600	✎
g16	Enabled	Broadcast Only	3600	✎
g17	Enabled	Broadcast Only	3600	✎
g18	Enabled	Broadcast Only	3600	✎
g19	Enabled	Broadcast Only	3600	✎
g20	Enabled	Broadcast Only	3600	✎
g21	Enabled	Broadcast Only	3600	✎
g22	Enabled	Broadcast Only	3600	✎
g23	Enabled	Broadcast Only	3600	✎
g24	Enabled	Broadcast Only	3600	✎
g25	Enabled	Broadcast Only	3600	✎
g26	Enabled	Broadcast Only	3600	✎
g27	Enabled	Broadcast Only	3600	✎

Figure 5-38: Security - Storm Control



NOTE: On FE Switches, the storm control cannot be enabled if the bandwidth rate is limited.

Security Tab - Authenticated Users

The *Authenticated Users* screen shows the user port access lists.

User Name. Use this drop-down list to view the users who were authenticated and are permitted on each port.

Port. This is the port number.

Session Time. This is the number of seconds the user was logged on the port.

Authentication Method. This is the authentication method used during the most recent session. Remote indicates that the port is forceauthorized. None indicates that no authentication method was used. RADIUS indicates authentication by a RADIUS server.

MAC Address. Displayed here is the MAC address of the user.



User Name	Port	Session Time	Authentication Method	MAC Address
[Drop-down menu]				

Figure 5-39: Security - Authenticated Users

Security Tab for SRW2048 Switches - ACL

The **ACL** screen lists the access profiles and allows you to configure access profiles for the Switch.

Access Profile. This is the name of the access profile.

Activated. You can activate an access profile by selecting the radio button. You can deactivate an access profile by deselecting the radio button.

If you want to delete a current access profile, then select the access profile's X icon and click the **Submit** button.

To create an access profile, click the paper and pencil icon. To modify an access profile, click the access profile's pencil icon. On the new screen that appears, you can modify the access profile.

Access Profile Name. This is the name of the access profile.

Rule Priority (1-65535). This is the rule priority. When a packet is matched to a rule, user groups are granted permission or denied access.

Management Method. This is the method for which the access profile is defined.

Interface. This indicates the interface type to which the rule applies.

Source IP Address. This is the interface source IP address to which the rule applies.

- **Network Mask.** This is the IP subnetwork mask (or subnet mask).
- **Prefix Length.** This is the number of bits that comprise the source IP address prefix or network mask of the source IP address.

Action. This indicates whether to permit or deny management access per device.

Click the **Submit** button to save your changes.



NOTE: This section applies to the SRW2048 Switch ONLY. For all other switches, refer to the sections titled Security Tab for Other Switches.

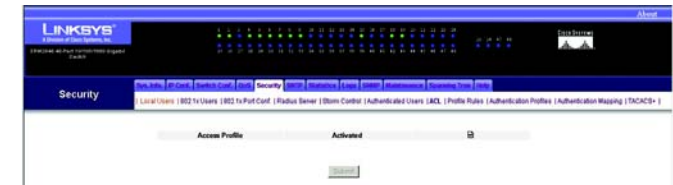


Figure 5-40: SRW2048 Switch Security - ACL

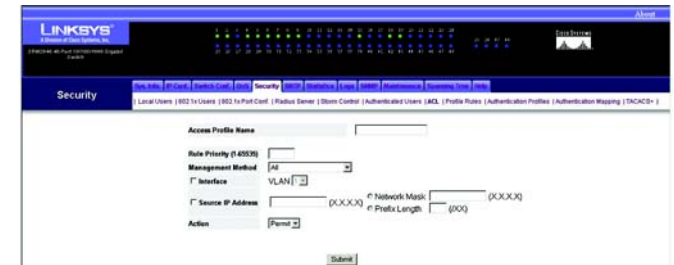


Figure 5-41: SRW2048 Switch Security - create ACL profile

Security Tab for SRW2048 Switches - Profile Rules

The *Profile Rules* screen contains fields for defining profiles and rules for accessing the Switch. Access to management functions can be limited to user groups, which are defined by ingress interfaces and source IP address or source IP subnets.

Management access can be separately defined for each type of management access method, including Web (HTTP), Secure Web (HTTPS), Telnet, and Secure Telnet. Access to different management methods may differ between user groups. For example, User Group 1 can access the device only via an HTTPS session, while User Group 2 can access the device via both HTTPS and Telnet sessions.

Management Access Lists contain up to 256 rules that determine which users can manage the device, and by which methods. Users can also be blocked from accessing the device.

Access Profile Name. This user-defined name can contain up to 32 characters.

Priority. The rule priority. When the packet is matched to a rule, user groups are either granted access or denied access to device management. The rule order is set by defining a rule priority using this field. The rule number is essential to matching packets to rules, as packets are matched on a first-fit basis. The rule priorities can be viewed in the Profile Rules Table.

Interface. The interface type to which the rule applies. This is an optional field. This rule can be applied to a selected port, LAG, or VLAN by selecting the check box, then selecting the appropriate option button and interface.

Management Method. The management method for which the access profile is defined. Users with this access profile are denied or permitted access to the device from the selected management method (line). Assigning an access profile to an interface denies access via other interfaces. If an access profile is not assigned to any interface, the device can be accessed by all interfaces.

Source IP Address. Shown in the format X.X.X.X, this is the interface source IP address for which the rule applies. This is an optional field and indicates that the rule is valid for a subnetwork.

Prefix Length. Shown in the format /XX, this displays the number of bits that comprise the source IP address prefix, or the network mask of the source IP address.

Action - Defines whether to permit or deny management access to the defined interface.

To modify the settings on this screen, click the **Edit** icon, which resembles a pencil, to open the edit screen.

To delete a rule, click the **Remove** icon, which appears as a red X.



NOTE: This section applies to the SRW2048 Switch ONLY. For all other switches, refer to the sections titled Security Tab for Other Switches.

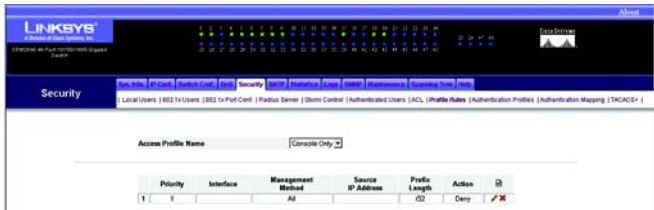


Figure 5-42: SRW2048 Switch Security - Profile Rules

Security Tab for SRW2048 Switches - Authentication Profiles

The *Authentication Profiles* screen contains fields for selecting the user authentication method on the Switch.

User authentication occurs both locally and via an external server.

User authentication occurs in the order the methods are selected. For example, if both the Local and RADIUS options are selected, the user is authenticated first locally. If the local user database is empty, the user is then authenticated via the RADIUS server. If the authentication fails using the first method, the authentication process ends.

If an error occurs during the authentication, the next selected method is used. To open the page, click Security - Authentication Profiles.

Profile Name. User-defined authentication profile lists to which user-defined authentication profiles are added. The defaults are Network Default and Console Default.

Methods. User authentication methods. The possible options are:

- **None** — No user authentication occurs.
- **Local** — User authentication occurs at the Switch level. The Switch checks the user name and password for authentication.
- **RADIUS** — User authentication occurs at the RADIUS server.
- **Line** — The line password is used for user authentication.
- **Enable** — The enable password is used for authentication.
- **TACACS+** — The user authentication occurs at the TACACS+ server.
-

To modify the settings on this screen, click the **Edit** icon, which resembles a pencil, to open the edit screen.

To delete a mapped ACL, click the **Remove** icon, which appears as a red X.



NOTE: This section applies to the SRW2048 Switch ONLY. For all other switches, refer to the sections titled Security Tab for Other Switches.



Figure 5-43: SRW2048 Switch Security - Authentication Profiles

Security Tab for SRW2048 Switches - Authentication Mapping

Console. Authentication profiles used to authenticate console users.

Telnet. Authentication profiles used to authenticate Telnet users.

Secure Telnet (SSH). Authentication profiles used to authenticate Secure Shell (SSH) users. SSH provides clients with secure and encrypted remote connections to a device.

HTTP and Secure HTTP. Authentication method used for HTTP access and Secure HTTP access, respectively. Possible field values are:

- **None** - No authentication method is used for access.
- **Local** - Authentication occurs locally.
- **RADIUS** - Authentication occurs at the RADIUS server.
- **TACACS+** - Authentication occurs at the TACACS+ server.



NOTE: This section applies to the SRW2048 Switch ONLY. For all other switches, refer to the sections titled Security Tab for Other Switches.

The screenshot shows the 'Security' tab in the Linksys WebView interface, specifically the 'Authentication Mapping' section. The page has a blue header with the Linksys logo and a navigation bar. The main content area is divided into several sections for different access methods:

- Console:** Has 'Login' (Console Default) and 'Enable' (Console Default) dropdowns.
- Telnet:** Has 'Login' (Network Default) and 'Enable' (Network Default) dropdowns.
- Secure Telnet (SSH):** Has 'Login' (Network Default) and 'Enable' (Network Default) dropdowns.
- Secure HTTP:** Has 'Optional Methods' (RADIUS, TACACS+, None) and 'Selected Methods' (Local).
- HTTP:** Has 'Optional Methods' (RADIUS, TACACS+, None) and 'Selected Methods' (Local).

At the bottom of the page is a 'Submit' button.

Figure 5-44: SRW2048 Switch Security - Authentication Mapping

Security Tab for SRW2048 Switches - TACACS+

TACACS+ provides centralized security for validation of users accessing the Switches. TACACS+ provides a centralized user-management system, while still retaining consistency with RADIUS and other authentication processes.

The TACACS+ default parameters are user-defined defaults. The default settings are applied to newly defined TACACS+ servers. If default values are not defined, the system defaults are applied to the new TACACS+ servers.

The following are the TACACS+ defaults:

Source IP Address. The default device source IP address used for the TACACS+ session between the device and the TACACS+ server. The default source IP address is 0.0.0.0.

Key String. The default key string used for authenticating and encrypting all communications between the device and the TACACS+ server. This key is encrypted and should be no longer than 128 characters.

Timeout for Reply. The default time that passes before the device and the TACACS+ server connection times out. This setting is between 1 and 30 seconds, with a default of 5 seconds.

Configuration of Server Values:

Host IP Address. Indicates the TACACS+ Server IP address.

Priority. Indicates the order in which the TACACS+ servers are used. This setting is between 0 and 65535, with a default of 0.

Source IP Address. The device source IP address used for the TACACS+ session between the device and the TACACS+ server.

Authentication Port. The port number through which the TACACS+ session occurs. This setting is between 0 and 65535, with a default port of 49.

Timeout for Reply. The amount of time that passes before the connection between the device and the TACACS+ server times out. The field range is 1-30 seconds.

Single Connection. Maintains a single open connection between the device and the TACACS+ server when selected

Status. The connection status between the device and the TACACS+ server., either Connected or Not Connected.



NOTE: This section applies to the SRW2048 Switch ONLY. For all other switches, refer to the sections titled Security Tab for Other Switches.

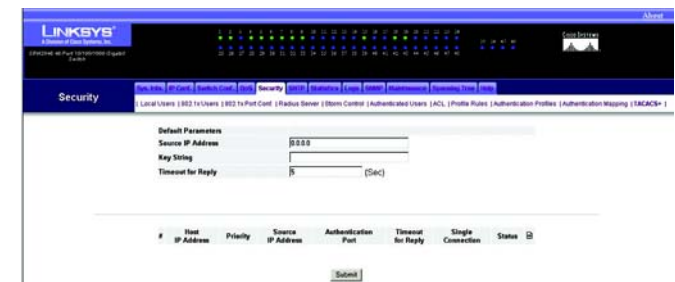


Figure 5-45: SRW2048 Switch Security - TACACS+

Security Tab for Other Switches - ACL

The **ACL** screen lists the access profiles and allows you to configure access profiles for the Switch.

Access Profile. This is the name of the access profile.

Activated. You can activate an access profile by selecting the radio button. You can deactivate an access profile by deselecting the radio button.

If you want to delete a current access profile, then select the access profile's X icon and click the **Submit** button.

To create an access profile, click the paper and pencil icon. To modify an access profile, click the access profile's pencil icon. On the new screen that appears, you can modify the access profile.

Access Profile Name. This is the name of the access profile.

Rule Priority. This is the rule priority. When a packet is matched to a rule, user groups are granted permission or denied access.

Management Method. This is the method for which the access profile is defined.

Interface. This indicates the interface type to which the rule applies.

Source IP Address. This is the interface source IP address to which the rule applies.

- **Network Mask.** This is the IP subnetwork mask (or subnet mask).
- **Prefix Length.** This is the number of bits that comprise the source IP address prefix or network mask of the source IP address.

Action. This indicates whether to permit or deny management access per device.

Click the **Submit** button to save your changes.



NOTE: This section does not apply to the SRW2048 Switch. If you have a SRW2048 Switch, refer to the sections titled Security Tab for SRW2048 Switches.



Figure 5-46: Fast Ethernet Security - ACL

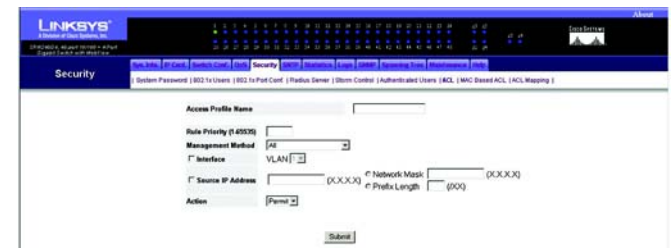


Figure 5-47: Fast Ethernet Security - create ACL Profile

Security Tab for Other Switches - MAC Based ACL

Access Control Lists (ACL) allow network managers to define classification actions and rules for specific ingress ports. ACLs contain multiple classification rules and actions. Each classification rule and action are called Access Control Element (ACE). ACEs are the filters that determine traffic classifications. MAC based ACLs are applied to any packet, including non IP. Classification fields are based on L2 fields only.

The *MAC Based ACL* screen contains the following fields:

ACL Name. This names the ACL and can be up to 32 characters long.

Remove ACL. Checking this box and then clicking the Submit button will delete the ACL.

ACLs are listed in the table below with these headings:

Priority. This displays the priority of the ACL

Destination MAC Address. This is the MAC address to which packets are addressed to the ACE.

To edit a rule in the ACL, click the **Edit** icon, which resembles a pencil.

To create an ACL:

1. Click the **Create ACL** button.
2. Enter a name for the ACL in the **ACL Name** field.
3. Enter a New ACE Priority (1-2147483647). Index of the ACE rule in the ACL field. Check the box to create a new ACE.
4. Enter a Destination MAC Address. This is the MAC address to which packets are addressed to the ACE.
5. Click the **Submit** button.



NOTE: This section does not apply to the SRW2048 Switch. If you have a SRW2048 Switch, refer to the sections titled Security Tab for SRW2048 Switches.

Figure 5-48: Fast Ethernet Security - MAC Based ACL

Security Tab for Other Switches - ACL Mapping

When an ACL is mapped to an interface, the ACL is applied to the selected interface. Use the *ACL Mapping* screen to assign ACL Lists to classification methods and interfaces.

The ACL Mapping page contains the following fields:

Interface. The VLAN to which the ACL is mapped.

ACL Name. The name of the ACL bound to the VLAN.

To modify the settings on this screen, click the **Edit** icon, which resembles a pencil, to open the edit screen.

To delete a mapped ACL, click the **Remove** icon, which appears as a red **X**.



NOTE: This section does not apply to the SRW2048 Switch. If you have a SRW2048 Switch, refer to the sections titled Security Tab for SRW2048 Switches.



Figure 5-49: Fast Ethernet Security - ACL Mapping

SNTP Tab - Global Settings

The *Global Settings* screen lets you set the Simple Network Time Protocol (SNTP) settings. SNTP makes possible accurate time synchronization by a network SNTP server for network devices. Using SNTP, the Switch is synchronized with the rest of the network and set with the correct time.

Poll Interval. Enter the interval (in seconds) at which the SNTP server is polled for unicast information.

Receive Broadcast Servers Updates. If enabled, the Switch listens to the SNTP servers for broadcast server time information on selected interfaces.

Receive Anycast Servers Updates. If enabled, the Switch polls the SNTP server for anycast server time information.

Receive Unicast Servers Updates. If enabled, the Switch polls the SNTP server for unicast server time information.

Poll Unicast Servers. If enabled, the Switch sends SNTP unicast forwarding information to the SNTP server.

Click the **Submit** button to save your changes.



Figure 5-50: SNTP - Global Settings

SNTP Tab - Authentication

The Authentication screen lists the keys used to authenticate the SNTP server.

SNTP Authentication. Enable or disable authentication of an SNTP session between the Switch and an SNTP server.

Click the **Submit** button to save your change.

Encryption Key ID. Displayed here is the encryption key used to authenticate the SNTP server and Switch.

Authentication Key. This is the key used for authentication.

Trusted Key. This indicates if there is an encryption key used (unicast/anycast) or elected (broadcast) to authenticate the SNTP server.

To add an entry, click the paper and pencil icon. On the new screen that appears, you can configure its settings. To modify the settings of an entry, click its pencil icon. On the new screen that appears, you can modify its settings.

Encryption Key ID. Enter the encryption key used to authenticate the SNTP server and Switch.

Authentication Key. Enter the key used for authentication.

Trusted Key. If there is an encryption key used (unicast/anycast) or elected (broadcast) to authenticate the SNTP server, then click the checkbox.

Click the **Submit** button to save your changes.

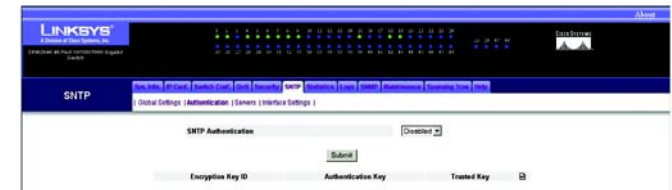


Figure 5-51: SNTP - Authentication

SNTP Tab - Servers

On the *Servers* screen, you can see a list of servers and their settings.

Unicast Server. Displayed here is the IP address of the unicast server.

Poll Interval. This is the interval (in seconds) at which the unicast server is polled for unicast information.

Encryption Key ID. This is the encryption key used to authenticate the unicast server and Switch.

Preference. This is the Switch's preference for this particular unicast server.

Status. Displayed here is the status of the unicast server.

Last Response. This describes the last response of the unicast server.

Offset. This is the difference between the Switch's time zone and the server's time zone.

Delay. This shows how long it takes for data from the server to travel to the Switch.

Add icon. To add an SNTP server, click the paper and pencil icon. Configure its settings on the screen that appears, as described below.

Anycast Server. Displayed here is the IP address of the anycast server.

Interface. This is the interface that the anycast server uses.

Preference. This is the Switch's preference for this particular anycast server.

Status. Displayed here is the status of the anycast server.

Last Response. This describes the last response of the anycast server.

Offset. This is the difference between the Switch's time zone and the server's time zone.

Delay. This shows how long it takes for data from the server to travel to the Switch.

Broadcast Server. Displayed here is the IP address of the broadcast server.

Interface. This is the interface that the broadcast server uses.

Preference. This is the Switch's preference for this particular broadcast server.

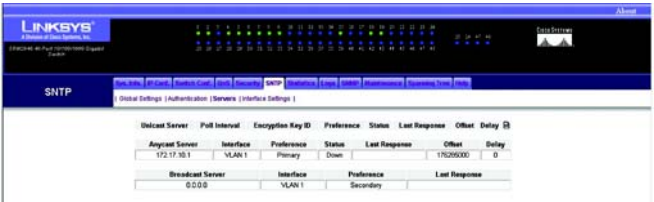


Figure 5-52: SNTP - Servers

Last Response. This describes the last response of the broadcast server.

To add an SNTP server, click the paper and pencil icon. On the new screen that appears, you can configure the following settings:

SNTP Server. Enter the IP address of an SNTP server. You can have up to eight SNTP servers.

Poll Interval. Enable this feature if you want the Switch to poll the SNTP server for system time information.

Encryption Key ID. Select the encryption key used to communicate between the SNTP server and Switch.

Click the **Submit** button to save your changes.

SNTP Tab - Interface Settings

The *Interface Settings* screen shows the SNTP settings for different interfaces.

Interface. This shows the interface on which SNTP can be enabled, either a port, LAG, or VLAN.

Receive Servers Updates. This shows whether or not updates are received.

To add an interface, click the paper and pencil icon. On the new screen that appears, you can configure the following settings:

Interface. Select the appropriate interface, **Port**, **LAG**, or **VLAN**. Then select the appropriate number from the drop-down menu.

State. If you want the interface to receive updates, select **Enable**. Otherwise, select **Disable**.

Click the **Submit** button to save your changes.



Figure 5-53: SNTP - Interface Settings

Statistics Tab - Interface Statistics

The *Interface Statistics* screen displays statistics for received and transmitted packets.

Interface. Select the appropriate interface, **Port** or **LAG**. Then, select the appropriate number from the drop-down menu.

Refresh Rate. Select how often you want the interface statistics refreshed.

Receive Statistics

Total Bytes. This is the number of octets received on the selected interface.

Unicast Packets. Displayed here is the number of unicast packets received on the selected interface.

Multicast Packets. Displayed here is the number of multicast packets received on the selected interface.

Broadcast Packets. Displayed here is the number of broadcast packets received on the selected interface.

Packets with Errors. This is the number of error packets received from the selected interface.s

Transmit Statistics

Total Bytes. This is the number of octets transmitted from the selected interface.

Unicast Packets. Displayed here is the number of unicast packets transmitted from the selected interface.

Multicast Packets. Displayed here is the number of multicast packets transmitted from the selected interface.

Broadcast Packets. Displayed here is the number of broadcast packets transmitted from the selected interface.

Click the **Clear All Counters** button to reset all statistics to zero.



Figure 5-54: Statistics - Interface Statistics

Statistics Tab - Etherlike Statistics

The *Etherlike Statistics* screen displays interface statistics.

Interface. Select the appropriate interface, **Port** or **LAG**. Then, select the appropriate number from the drop-down menu.

Refresh Rate. Select how often you want the interface statistics refreshed.

Frame Check Sequence (FCS) Errors. Displayed here is the number of FCS errors received on the selected interface.

Single Collision Frames. Displayed here is the number of single collision frames received on the selected interface.

Late Collisions. Displayed here is the number of late collision frames received on the selected interface.

Excessive Collisions. Displayed here is the number of excessive collisions received on the selected interface.

Oversize Packets. Displayed here is the number of oversized packet errors on the selected interface.

Internal MAC Receive Errors. Displayed here is the number of internal MAC received errors on the selected interface.

Received Pause Frames. Displayed here is the number of received paused frames on the selected interface.

Transmitted Pause Frames. Displayed here is the number of paused frames transmitted from the selected interface.

Click the **Clear All Counters** button to reset all statistics to zero.



Figure 5-55: Statistics - Etherlike Statistics

Statistics Tab - RMON Statistics

The *RMON Statistics* screen displays information about the Switch's use and errors. (RMON stands for Remote Monitoring.)

Interface. Select the appropriate interface, **Port** or **LAG**. Then, select the appropriate number from the drop-down menu.

Refresh Rate. Select how often you want the interface statistics refreshed.

Drop Events. This is the number of dropped events that have occurred on the interface since the Switch was last refreshed.

Received Bytes (Octets). This is the number of octets received on the interface since the Switch was last refreshed. (This number excludes framing bits.)

Received Packets. This is the number of packets received on the interface since the Switch was last refreshed.

Broadcast Packets Received. This is the number of good broadcast packets received on the interface since the Switch was last refreshed. (This number excludes multicast packets.)

Multicast Packets Received. This is the number of good multicast packets received on the interface since the Switch was last refreshed.

CRC & Align Errors. This is the number of CRC and Align errors that have occurred on the interface since the Switch was last refreshed.

Undersize Packets. This is the number of undersized packets (fewer than 64 octets) received on the interface since the Switch was last refreshed.

Oversize Packets. This is the number of oversized packets (over 1518 packets) received on the interface since the Switch was last refreshed.

Fragments. This is the number of fragments (packets with fewer than 64 octets, excluding framing bits) received on the interface since the Switch was last refreshed.

Jabbers. This is the total number of received packets that were longer than 1518 octets. (This number excludes framing bits.)

Collisions. This is the number of collisions received on the interface since the Switch was last refreshed.

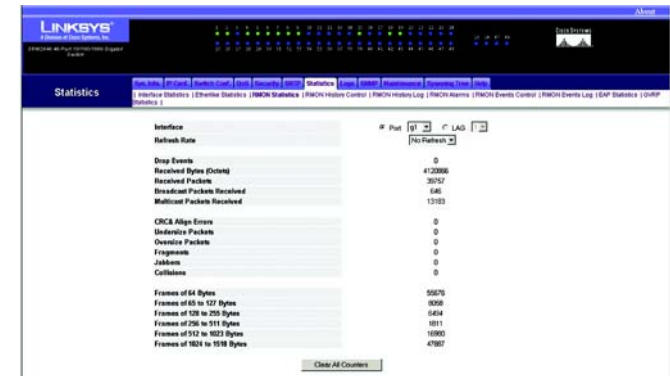


Figure 5-56: Statistics - RMON Statistics

WebView Switches

Frames of 64 Bytes. This is the number of 64-byte frames received on the interface since the Switch was last refreshed.

Frames of 65 to 127 Bytes. This is the number of 65- to 127-byte frames received on the interface since the Switch was last refreshed.

Frames of 128 to 255 Bytes. This is the number of 128- to 255-byte frames received on the interface since the Switch was last refreshed.

Frames of 256 to 511 Bytes. This is the number of 256- to 511-byte frames received on the interface since the Switch was last refreshed.

Frames of 512 to 1023 Bytes. This is the number of 512- to 1023-byte frames received on the interface since the Switch was last refreshed.

Frames of 1024 to 1518 Bytes. This is the number of 1024- to 1518-byte frames received on the interface since the Switch was last refreshed.

Click the **Clear All Counters** button to reset all statistics to zero.

Statistics Tab - RMON History Control

The *RMON History Control* screen contains information about samples of data taken from ports.

History Entry No. This is the entry number for a RMON History entry.

Source Interface. This is the interface from which the history samples were taken, either a port or LAG.

Sampling Interval. This is the time during which samples were taken from the ports.

Sampling Requested. This is the number of samples requested.

Current Number of Samples. This is the current number of samples.

Owner. This is the user who requested the RMON information.

To delete an entry, click its **X** icon.

To add an entry, click the paper and pencil icon. On the new screen that appears, you can configure the following settings:

New History Entry. The entry number is automatically displayed.

Source Interface. Select the source interface, either a **port** or **LAG**. Then, select the appropriate number from the drop-down menu.

Owner. Enter the name of the user.

Max No. of Samples to Keep. Specify the maximum number of samples to keep for this entry.

Sampling Interval. Enter the number of seconds during which samples should be taken from the ports.

Click the **Submit** button to save your changes.

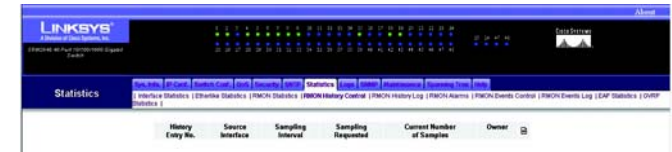


Figure 5-57: Statistics - RMON History Control

Statistics Tab - RMON History Log

The *RMON History Log* screen shows interface-specific statistics involving network sampling. Each entry has statistics from a single sample.

History Entry No. Select the history entry whose statistics you want to view.

Owner. This is the user who requested this sampling.

Sample No. This is the sample number from which the statistics were taken.

Drop Events. This is the number of dropped events that have occurred on the interface since the Switch was last refreshed.

Received Bytes (Octets). This is the number of octets received on the interface since the Switch was last refreshed. This excludes framing bits.

Received Packets. This is the number of packets received on the interface since the Switch was last refreshed.

Broadcast Packets. This is the number of good broadcast packets receive on the interface since the Switch was last refreshed.

Multicast Packets. This is the number of good multicast packets received on the interface since the Switch was last refreshed.

CRC Align Errors. This is the number of CRC and Align errors that occurred on the interface since the Switch was last refreshed.

Undersize Packets. This is the number of undersized packets (fewer than 64 octets) received on the interface since the Switch was last refreshed.

Oversize Packets. This is the number of oversized packets (over 1518 octets) received on the interface since the Switch was last refreshed.

Fragments. This is the number of fragments (packets with fewer than 64 octets, excluding framing bits) received on the interface since the Switch was last refreshed.

Jabbers. This is the total number of received packets over 1518 octets. (This number excludes frame bits.)

Collisions. This is the number of collisions received on the interface since the Switch was last refreshed.

Utilization. This is the percentage of packet utilization across the entire Switch.



Figure 5-58: Statistics - RMON History Log

Statistics Tab - RMON Alarms

The *RMON Alarms* screen displays the network alarms you have set. When the network experiences problems or events, such as rising and falling thresholds, then a network alarm will occur.

Alarm Entry. This identifies a specific alarm.

Counter Name. This is the selected MIB (Management Information Base) variable; for example, this can be the total number of octets received, the number of unicast packets transmitted, the number of pause frames received, the number of oversize packets.

Interface. This is the interface for which RMON statistics are displayed, either a port or LAG.

Counter Value. This is the value of the selected MIB variable.

Sample Type. This is the sampling method for the selected variable, Delta, which subtracts the last sampled value from the current value and then compares the difference to the threshold, or Absolute, which compares values directly with the thresholds at the end of the sampling interval.

Rising Threshold. This is the rising counter value that triggers the rising threshold alarm.

Rising Event. This is how alarms are reported, by Log, Trap, or Log and Trap.

Falling Threshold. This is the falling counter value that triggers the falling threshold alarm.

Falling Event. This is how alarms are reported, by Log, Trap, or Log and Trap.

Startup Alarm. This is the trigger that activates the alarm generation.

Interval (Sec). This is the alarm interval, measured in seconds.

Owner. This is the user who requested this alarm.

To delete an entry, click its **X** icon.

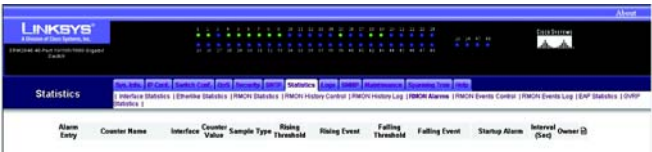


Figure 5-59: Statistics - RMON Alarms

WebView Switches

To add an entry, click the paper and pencil icon. On the new screen that appears, you can configure the following settings:

Alarm Entry. This is the number of the alarm entry.

Interface. Select the interface for which RMON statistics are displayed, either a **port** or **LAG**. Then, select the appropriate number from the drop-down menu.

Counter Name. Select the MIB (Management Information Base) variable from the drop-down menu.

Sample Type. Select the sampling method, **Delta**, which subtracts the last sampled value from the current value and then compares the difference to the threshold, or **Absolute**, which compares values directly with the thresholds at the end of the sampling interval.

Rising Threshold. Enter the rising counter value that triggers the rising threshold alarm.

Rising Event. Select how alarms are reported, **Log**, **Trap**, or **Log and Trap**.

Falling Threshold. Enter the falling counter value that triggers the falling threshold alarm.

Falling Event. Select how alarms are reported, **Log**, **Trap**, or **Log and Trap**.

Startup Alarm. Select the trigger that activates the alarm generation.

Interval. Enter the alarm interval, measured in seconds.

Owner. Enter the name of the user who requested this alarm.

Click the **Submit** button to save your changes.

The screenshot shows the LINKSYS web interface. At the top, there's a navigation bar with 'Statistics' selected. Below it, a breadcrumb trail shows the path: 'Statistics > Add RMON Alarm entry'. The main content area contains a form for adding a new RMON alarm entry. The form fields are: 'Alarm Entry' (set to 1), 'Interface' (set to 1), 'Counter Name' (set to 'Total Bytes (Octets) Received'), 'Sample Type' (set to 'Absolute'), 'Rising Threshold' (set to 100), 'Rising Event' (set to 'Log'), 'Falling Threshold' (set to 10), 'Falling Event' (set to 'Log'), 'Startup Alarm' (set to 'Rising and Falling'), 'Interval' (set to 100), and 'Owner' (empty). A 'Submit' button is at the bottom right of the form.

Figure 5-60: Statistics - add RMON Alarm entry

Statistics Tab - RMON Events Control

The *RMON Events Control* screen shows the RMON events you have configured.

Event Entry. This identifies the event.

Community. This is the community to which the event belongs.

Description. This is the description of the event.

Type. This is the event type, Log, Trap, Log and Trap, or None. Log indicates that the event is a log entry. Trap indicates that the event is a trap. An event can be both a log entry and a trap. None indicates that no event has occurred.

Time. This is the time at which the event occurred.

Owner. This is the user that defined the event.

To delete an entry, click its **X** icon.

To add an entry, click the paper and pencil icon. On the new screen that appears, you can configure the following settings:

Event Entry. This is the number of the event.

Community. Enter the name of the event's community.

Description. Describe the event in this field.

Type. Select the event type, **Log**, **Trap**, **Log and Trap**, or **None**. Log indicates that the event is a log entry. Trap indicates that the event is a trap. An event can be both a log entry and a trap. None indicates that no event has occurred.

Owner. Enter the name of the user defining this event.

Click the **Submit** button to save your changes.

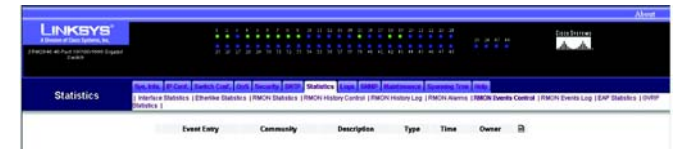


Figure 5-61: Statistics - RMON Events Control

Statistics Tab - RMON Events Log

The *RMON Events Log* screen displays a list of RMON events.

Event. This is the number of the RMON Event Log entry.

Log No. This is the log number.

Log Time. This is the time when the log entry was entered.

Description. This is the description of the log entry.

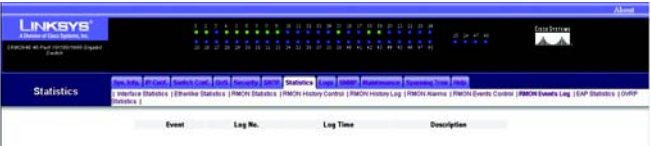


Figure 5-62: Statistics - RMON Events Log

Statistics Tab - EAP Statistics

The *EAP Statistics* screen displays information about EAP packets received on a specific port.

Port. Select the port you want to poll for statistics.

Refresh Rate. Select how often you want the EAP statistics to be refreshed.

Frames Receive. Displayed here is the number of valid EAPOL (Extensible Authentication Protocol Over Local Area Network) frames received on the port.

Frames Transmit. Displayed here is the number of EAPOL frames transmitted on the port.

Start Frames Receive. Displayed here is the number of EAPOL Start frames received on the port.

Log off Frames Receive. Displayed here is the number of EAPOL Logoff frames received on the port.

Respond ID Frames Receive. Displayed here is the number of EAP Respond/ID frames received on the port.

Respond Frames Receive. Displayed here is the number of valid EAP Response frames received on the port.

Request ID Frames Transmit. Displayed here is the number of EAP Request/ID frames transmitted on the port.

Request Frames Transmit. Displayed here is the number of EAP Request frames transmitted on the port.

Invalid Frames Receive. Displayed here is the number of unrecognized EAPOL frames received on the port.

Length Error Frames Receive. Displayed here is the number of EAPOL frames with an invalid Packet Body Length received on the port.

Last Frame Version. This is the protocol version number attached to the most recently received EAPOL frame.

Last Frame Source. This is the source MAC address attached to the most recently received EAPOL frame.



Figure 5-63: Statistics - EAP Statistics

Statistics Tab - GVRP Statistics

The *GVRP Statistics* screen displays information about GVRP packets received on a specific port.

Interface. Specifies whether statistics are displayed for a port or LAG.

Refresh Rate. Amount of time that passes before the interface statistics are refreshed.

GVRP Statistics Table

Attribute (Counter). Received/Transmitted - Statistics

Join Empty. Device GVRP Join Empty statistics.

Empty. Indicates the number of empty GVRP statistics.

Leave Empty. Device GVRP Leave Empty statistics.

Join In. Device GVRP Join In statistics.

Leave In. Device GVRP Leave in statistics.

Leave All. Device GVRP Leave all statistics.

GVRP Error Statistics

Invalid Protocol ID. Device GVRP Invalid Protocol ID statistics.

Invalid Attribute Type. Device GVRP Invalid Attribute ID statistics.

Invalid Attribute Value. Device GVRP Invalid Attribute Value statistics.

Invalid Attribute Length. Device GVRP Invalid Attribute Length statistics.

Invalid Event. Device GVRP Invalid Events statistics.



NOTE: The *GVRP Statistics* screen applies to the Gigabit Ethernet switches ONLY.

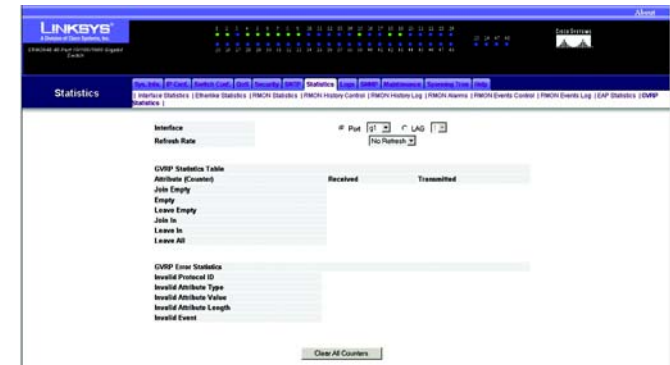


Figure 5-64: Statistics - GVRP Statistics

Logs Tab - Message Log

The *Message Log* screen shows information about log entries saved to the Log file in flash memory.

Log entries are listed in a descending column, numbered on the left.

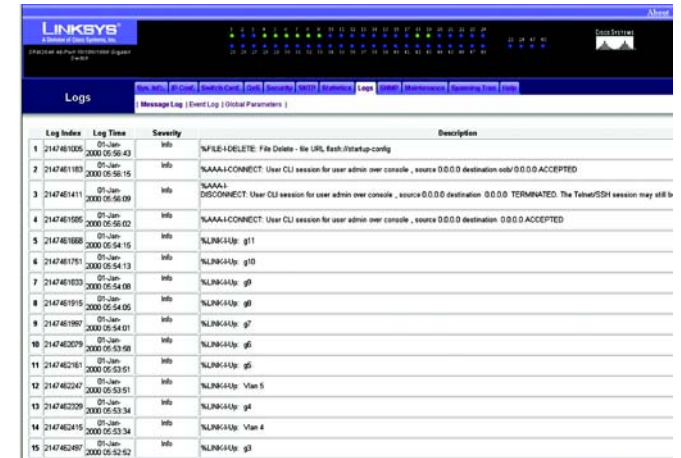
Log Index. This is the log number.

Log Time. Displayed here are the date and time at which the log was generated.

Severity. This is the severity level of the log.

Description. Displayed here is the log message text.

Click the **Clear Logs** button to clear the logs on this screen.



Log Index	Log Time	Severity	Description
1	2147481005	Info	NFLE1-DELETE: File Delete - file URL: flash:/startup-config
2	2147481183	Info	AAAA1-CONNECT: User CLI session for user admin over console, source 0.0.0.0 destination vob/0.0.0.0 ACCEPTED
3	2147481411	Info	AAAA1-DISCONNECT: User CLI session for user admin over console, source 0.0.0.0 destination 0.0.0.0 TERMINATED. The Telnet/SSH session may still be active
4	2147481595	Info	AAAA1-CONNECT: User CLI session for user admin over console, source 0.0.0.0 destination 0.0.0.0 ACCEPTED
5	2147481888	Info	NLRN1-Log: g11
6	2147481751	Info	NLRN1-Log: g10
7	2147481833	Info	NLRN1-Log: g9
8	2147481915	Info	NLRN1-Log: g8
9	2147481980	Info	NLRN1-Log: g7
10	2147482029	Info	NLRN1-Log: g6
11	2147482181	Info	NLRN1-Log: g5
12	2147482247	Info	NLRN1-Log: Vlan 5
13	2147482329	Info	NLRN1-Log: g4
14	2147482415	Info	NLRN1-Log: Vlan 4
15	2147482487	Info	NLRN1-Log: g3

Figure 5-65: Logs - Message Log

Logs Tab - Event Log

The *Event Log* screen shows information about all system logs that are saved in RAM. These logs are listed in chronological order.

Log entries are listed in a descending column, numbered on the left.

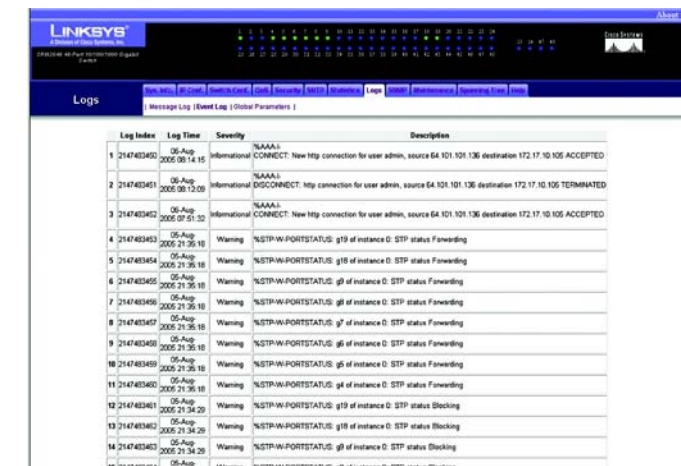
Log Index. This is the log number.

Log Time. Displayed here are the date and time at which the log was generated.

Severity. This is the severity level of the log.

Description. Displayed here is the log message text.

Click the **Clear Logs** button to clear the logs on this screen.



Log Index	Log Time	Severity	Description
1	2147483400	Informational	AAAA1-CONNECT: New http connection for user admin, source 64.101.101.136 destination 172.17.10.105 ACCEPTED
2	2147483401	Informational	AAAA1-DISCONNECT: http connection for user admin, source 64.101.101.136 destination 172.17.10.105 TERMINATED
3	2147483402	Informational	AAAA1-CONNECT: New http connection for user admin, source 64.101.101.136 destination 172.17.10.105 ACCEPTED
4	2147483403	Warning	NSTP-W-PORTSTATUS: g19 of instance 0: STP status Forwarding
5	2147483404	Warning	NSTP-W-PORTSTATUS: g18 of instance 0: STP status Forwarding
6	2147483405	Warning	NSTP-W-PORTSTATUS: g6 of instance 0: STP status Forwarding
7	2147483406	Warning	NSTP-W-PORTSTATUS: g8 of instance 0: STP status Forwarding
8	2147483407	Warning	NSTP-W-PORTSTATUS: g7 of instance 0: STP status Forwarding
9	2147483408	Warning	NSTP-W-PORTSTATUS: g6 of instance 0: STP status Forwarding
10	2147483409	Warning	NSTP-W-PORTSTATUS: g5 of instance 0: STP status Forwarding
11	2147483410	Warning	NSTP-W-PORTSTATUS: g4 of instance 0: STP status Forwarding
12	2147483411	Warning	NSTP-W-PORTSTATUS: g19 of instance 0: STP status Blocking
13	2147483412	Warning	NSTP-W-PORTSTATUS: g18 of instance 0: STP status Blocking
14	2147483413	Warning	NSTP-W-PORTSTATUS: g8 of instance 0: STP status Blocking
15	2147483414	Warning	NSTP-W-PORTSTATUS: g6 of instance 0: STP status Blocking

Figure 5-66: Logs - Event Log

Logs Tab - Global Parameters

The *Global Parameters* screen lets you define which events are recorded by which logs. You can enable logs for the Switch and define specific logs.

Logging. If you want the Switch to keep logs, select **Enable**. Otherwise, select **Disable**.

Attribute. Displayed here is Max RAM Log Entries (20-400). This stands for the maximum number of log entries held in RAM. The minimum number is 20, and the maximum number is 400.

Current. Displayed here is the current maximum number of log entries.

After Reset. Enter the maximum number of log entries you want to allow. After you save this change, you will need to reset the Switch so the change will take effect.

Severity. This is a list of severity levels, in order of severity from highest (Emergency) to lowest (Debug).

Event Log. Select the types of logs that you want to save to the Event Log.

Message Log. Select the types of logs that you want to save to the Message Log.

Click the **Submit** button to save your changes.



Figure 5-67: Logs - Global Parameters

SNMP Tab

Simple Network Management Protocol (SNMP) provides a method for managing network devices. The switches supports the following SNMP versions:

- SNMP version 1
- SNMP version 2
- SNMP version 3

SNMP v1 and v2

The SNMP agents maintains a list of variables, which are used to manage the switches. The variables are defined in the Management Information Base (MIB). The MIB presents the variables controlled by the agent. The SNMP agent defines the MIB specification format, as well as the format used to access the information over the network. Access rights to the SNMP agents are controlled by access strings.

SNMP v3

SNMP v3 also applies access control and a new traps mechanism to SNMPv1 and SNMPv2 PDUs. In addition, User Security Model (USM) are defined for SNMPv3 and includes:

- **Authentication.** Provides data integrity and data origin authentication.
- **Privacy.** Protects against disclosure message content. Cipher Block-Chaining (CBC) is used for encryption. Either authentication is enabled on a SNMP message, or both authentication and privacy are enabled on a SNMP message. Privacy cannot be enabled, however, without authentication.
- **Timeliness.** Protects against message delay or message redundancy. The SNMP agent compares incoming message to the message time information.
- **Key Management.** Defines key generation, key updates, and key use.

The switches support SNMP notification filters based on Object IDs (OID). OIDs are used by the system to manage switch features. SNMP v3 supports the following features:

- Security
- Feature Access Control



NOTE: SNMP v3 is not supported on the SRW2016 or SRW2024 Switches and will not appear in the utilities for these products.

WebView Switches

- Traps

The switches generate the following traps:

- Copy trap
- Stacking traps

This section contains the following topics:

- Configuring SNMP Security
- Configuring SNMP SecurityConfiguring SNMP Notifications

Configuring SNMP Security

Defining SNMP Security

The *SNMP Global Parameters* screen permits enabling both SNMP and Authentication notifications.

- **Local Engine ID.** Indicates the local device engine ID. The field value is a hexadecimal string. Each byte in hexadecimal character strings is two hexadecimal digits. Each byte can be separated by a period or a colon. The Engine ID must be defined before SNMPv3 is enabled. For stand-alone devices select a default Engine ID that is comprised of Enterprise number and the default MAC address. For a stackable system configure the Engine ID, and verify that the Engine ID is unique for the administrative domain. This prevents two devices in a network from having the same Engine ID.
- **Use Default.** Uses the device generated Engine ID. The default Engine ID is based on the device MAC address and is defined per standard as:
 - First 4 octets - first bit = 1, the rest is IANA Enterprise number = 3955.
 - Fifth octet - Set to 3 to indicate the MAC address that follows.
 - Last 6 octets - MAC address of the device.

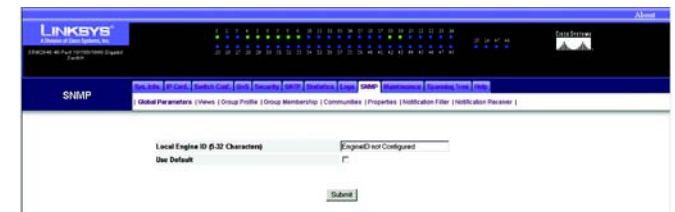


Figure 5-68: SNMP - Global Parameters

Defining SNMP Views

SNMP Views provide access or block access to device features or feature aspects. For example, a view can be defined which states that SNMP group A has Read Only (R/O) access to Multicast groups, while SNMP group B has Read-Write (R/W) access to Multicast groups. Feature access is granted via the MIB name, or MIB Object ID. To define SNMP views:

The *SNMP Views* screen contains the following fields:

- **View Name.** Displays the user-defined views. The view name can contain a maximum of 30 alphanumeric characters.
- **Object ID Subtree.** Indicates the device feature OID included or excluded in the selected SNMP view.
- **View Type.** Indicates if the defined OID branch will be included or excluded in the selected SNMP view.

To add an entry, click the paper and pencil icon. If you want to delete a view, click its **Remove** button, which appears an a red **X**.



Figure 5-69: SNMP - Views

Defining SNMP Group Profiles

The *Group Profiles* screen provides information for creating SNMP groups, and assigning SNMP access control privileges to SNMP groups. Groups allow network managers to assign access rights to specific device features, or features aspects.

The *Group Profiles* screen contains the following fields:

- **Group Name.** Displays the user-defined group to which access control rules are applied.
- **Security Model.** Defines the SNMP version attached to the group. The possible field values are:
 - SNMPv1 - SNMPv1 is defined for the group.
 - SNMPv2 - SNMPv2 is defined for the group.
 - SNMPv3 - SNMPv3 is defined for the group.
- **Security Level.** Defines the security level attached to the group. Security levels apply to SNMPv3 only. The possible field values are:
 - No Authentication - Indicates that neither the Authentication nor the Privacy security levels are assigned to the group.
 - Authentication - Authenticates SNMP messages, and ensures the SNMP messages origin is authenticated.
 - Privacy - Encrypts SNMP message.
- **Context.** This indicates is the Group is inband (within the network) or out-of-band (outside the network).
- **Operation.** Defines the group access rights. The possible field values are:
 - Read - The management access is restricted to read-only, and changes cannot be made to the assigned SNMP view.
 - Write - The management access is read-write and changes can be made to the assigned SNMP view.
 - Notify - Sends traps for the assigned SNMP view.



Figure 5-70: SNMP - Group Profile

To add an entry, click the paper and pencil icon. On the new screen that appears, you can configure the following settings:

- **Group Name.** Enter a name for the user-defined group to which access control rules are applied. The field range is up to 30 characters.
- **Security Model.** Defines the SNMP version attached to the group. The possible field values are:
 - SNMPv1 - SNMPv1 is defined for the group.
 - SNMPv2 - SNMPv2 is defined for the group.
 - SNMPv3 - SNMPv3 is defined for the group.
- **Security Level.** Defines the security level attached to the group. Security levels apply to SNMPv3 only. The possible field values are:
 - No Authentication - Indicates that neither the Authentication nor the Privacy security levels are assigned to the group.
 - Authentication - Authenticates SNMP messages, and ensures the SNMP messages origin is authenticated.
 - Privacy - Encrypts SNMP message.
- **Operation.** Defines the group access rights. The possible field values are:
 - Read - The management access is restricted to read-only, and changes cannot be made to the assigned SNMP view.
 - Write - The management access is read-write and changes can be made to the assigned SNMP view.
 - Notify - Sends traps for the assigned SNMP view.

Click the **Submit** button to save your entry.

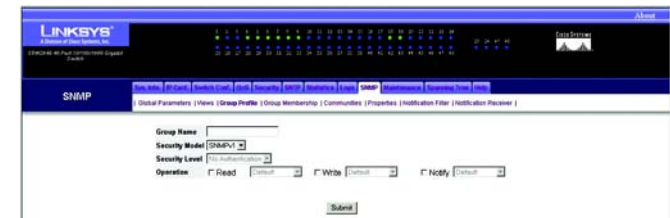


Figure 5-71: SNMP - add Group Profile

Defining SNMP Group Members

The *Group Membership* screen enables assigning system users to SNMP groups, as well as defining the user authentication method.

The *Group Membership* screen contains the following fields:

- **User Name.** Contains a list of user-defined user names. The field range is up to 30 alphanumeric characters.
- **Group Name.** Contains a list of user-defined SNMP groups. SNMP groups are defined in the Access Control Group page.
- **Engine ID.** Indicates either the local or remote SNMP entity, to which the user is connected. Changing or removing the local SNMP Engine ID deletes the SNMPv3 User Database.
 - Local - Indicates that the user is connected to a local SNMP entity.
 - Remote - Indicates that the user is connected to a remote SNMP entity. If the Engine ID is defined, remote devices receive inform messages.
- **Authentication.** Indicates the authentication method used to authenticate users. The possible field values are:
 - MD5 Key- Indicates users are authenticated using the HMAC-MD5 algorithm.
 - SHA Key - Indicates users are authenticated using the HMAC-SHA-96 authentication level.
 - MD5 Password - Indicates that HMAC-MD5-96 password is used for authentication. The user should enter a password.
 - SHA Password - Indicates that users are authenticated using the HMAC-SHA-96 authentication level. The user should enter a password.
 - None - Indicates that no user authentication is used.



Figure 5-72: SNMP - Group Membership

To add an member, click the paper and pencil icon. On the new screen that appears, you can configure all of the fields from the *Group Membership* screen, along with the following:

- **Authentication Key.** Defines the HMAC-MD5-96 or HMAC-SHA-96 authentication level. The authentication and privacy keys are entered to define the authentication key. If only authentication is required, 16 bytes are defined. If both privacy and authentication are required, 32 bytes are defined. Each byte in hexadecimal character strings is two hexadecimal digits. Each byte can be separated by a period or a colon.
- **Privacy Key.** Defines the Privacy Key (LSB). If only authentication is required, 20 bytes are defined. If both privacy and authentication are required, 36 bytes are defined. Each byte in hexadecimal character strings is two hexadecimal digits. Each byte can be separated by a period or colon.

Click the **Submit** button to add the new member.

Defining SNMP Communities

Access rights are managed by defining communities on the SNMPv1,2 SNMP Community screen. When the community names are changed, access rights are also changed. SNMP Communities are defined only for SNMP v1 and SNMP v2.

The *SNMP Communities* screen is divided into the following tables:

- SNMP Communities Basic Table
- SNMP Communities Advanced Tables

SNMP Communities Basic Table

Management Station. Displays the management station IP address for which the basic SNMP community is defined.

Community String. Defines the password used to authenticate the management station to the device.

Access Mode. Defines the access rights of the community. The possible field values are:

- Read-Only - Management access is restricted to read-only, and changes cannot be made to the community.
- Read-Write - Management access is read-write and changes can be made to the device configuration, but not to the community.



Figure 5-73: SNMP - add Group Membership



Figure 5-74: SNMP - Communities

WebView Switches

- **SNMP-Admin** - User has access to all device configuration options, as well as permissions to modify the community.

View Name. Contains a list of user-defined SNMP views

To add a community, click the paper and pencil icon. You can configure all the fields on the *SNMP Communities* screen, on the new screen that appears. Then, click the **Submit** button to add the community.

SNMP Communities Advanced Tables

Management Station. Displays the management station IP address for which the advanced SNMP community is defined.

Community String. Defines the password used to authenticate the management station to the device.

Group Name. Defines advanced SNMP communities group names.

Advanced. (Only used with SNMP v3.) Contains a list of user-defined groups. When SNMP Advanced mode is selected, the SNMP access control rules comprising the group are enabled for the selected community. The Advanced mode also enables SNMP groups for specific SNMP communities. The SNMP Advanced mode is defined only with SNMPv3.

Configuring SNMP Notifications

The *SNMP Notification Properties* screen contains parameters for defining SNMP notification parameters.

Enable SNMP Notifications. Check this box to enable the Switch to send SNMP notifications.

Enable Authentication Notifications. Check this box to enable the Switch to send SNMP Authentication failure notifications.

Click the **Submit** button to save your changes on this screen.

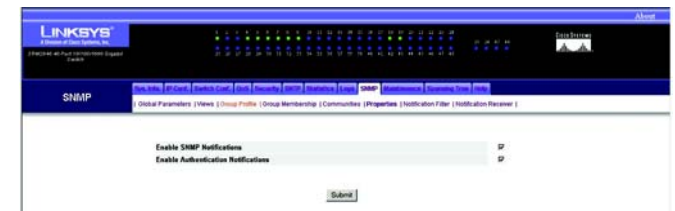


Figure 5-75: SNMP - Properties

Defining SNMP Notification Filters

The *SNMP Notification Filter* screen permits filtering traps based on OIDs. Each OID is linked to a device feature or a feature aspect. The SNMP Notification Filter Page also allows network managers to filter notifications.

The *SNMP Notification Filter* screen contains the following fields:

- **Filter Name.** Contains a list of user-defined notification filters.
- **Object ID Subtree.** Displays the OID for which notifications are sent or blocked. If a filter is attached to an OID, traps or informs are generated and sent to the trap recipients. Object IDs are selected from either the Select from List or the Object ID List.
- **Filter Type.** Indicates whether informs or traps are sent regarding the OID to the trap recipients.
 - Excluded - Restricts sending OID traps or informs.
 - Included - Sends OID traps or informs.

To add a filter, click the paper and pencil icon. You can configure all the fields on the *SNMP Notification Filter* screen. Then, click the **Submit** button to add the filter.

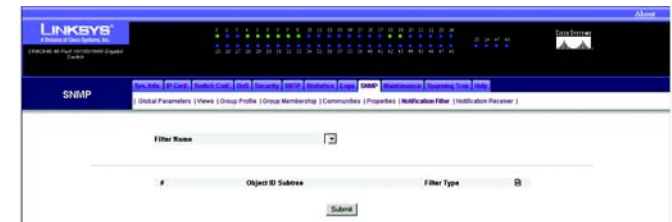


Figure 5-76: SNMP - Notification Filter

Defining SNMP Notification Recipients

The *SNMP Notification Receiver* screen contains information for defining filters that determine whether traps are sent to specific users, and the trap type sent. SNMP notification receivers provide the following services:

- Identifying Management Trap Targets
- Trap Filtering
- Selecting Trap Generation Parameters
- Providing Access Control Checks

SNMPv1,2 Notification Recipient and SNMPv3 Notification Recipient tables

Recipient IP. Indicates the IP address to whom the traps are sent.

Notification Type. Defines the notification sent. The possible field values are:

- Trap. Indicates traps are sent.
- Inform. Indicates informs are sent.

Community String. Identifies the community string of the trap manager.

Notification Version. Determines the trap type. The possible field values are:

- SNMP V1. Indicates SNMP Version 1 traps are sent.
- SNMP V2. Indicates SNMP Version 2 traps are sent.

UDP Port. Displays the UDP port used to send notifications. The default is 162.

Filter Name. Indicates if the SNMP filter for which the SNMP Notification filter is defined.

Timeout. Indicates the amount of time (seconds) the device waits before resending informs. The default is 15 seconds.

Retries (1-255). This displays the amount of times the Switch resends an inform request. The default settings is 3.

To add a recipient, click the paper and pencil icon. Configure all the fields on the screen that appears and click the **Submit** button.

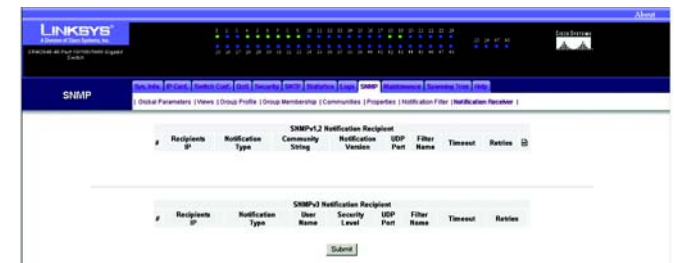


Figure 5-77: SNMP - Notification Receiver

Maintenance Tab - Telnet

The *Telnet* screen lets you connect to the Switch through telnet, a terminal emulation TCP/IP protocol.

Connect Via Telnet. If you use a telnet connection, click **Connect Via Telnet**. The HyperTerminal screen will automatically appear.

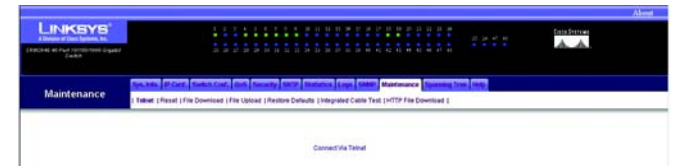


Figure 5-78: Maintenance - Telnet

Maintenance Tab - Reset

The *Reset* screen lets you reset the Switch from a remote location.

Reset the Device. If you want to reset the Switch, click **Reset the Device**. You will be asked to confirm the reset. Click the **OK** button. After the Switch is reset, you will be prompted for a user name and password before you can access the Web-based Utility.



Figure 5-79: Maintenance - Reset



NOTE: Before you reset the Switch, you should update your startup configuration file so you will not lose your current configuration settings.

Maintenance Tab - File Download

The *File Download* screen lets you download firmware or a configuration file to the Switch. You cannot download both at the same time.

Firmware Download. If you want to download firmware, click this radio button. If this is selected, then the *Configuration Download* fields will not be available.

Configuration Download. If you want to download a configuration file, click this radio button. If this is selected, then the *Firmware Download* fields will not be available.



Figure 5-80: Maintenance - File Download



NOTE: You can perform only one type of download at a time.

Firmware Download

TFTP Server IP Address. Enter the IP address of the TFTP server.

Source File Name. Enter the name of the firmware file you want to download.

Destination File Name. Specify the file type, **Software Image** or **Boot Code**.

Configuration Download

TFTP Server IP Address. Enter the IP address of the TFTP server.

Source File Name. Enter the name of the configuration file you want to download.

Destination File Name. Specify the file type, **Running Configuration** or **Startup Configuration**. The Running Configuration file holds all startup file commands and commands entered during the current session. The Startup Configuration file holds the startup file commands needed by the Switch to power on or be rebooted.

Click the **Submit** button to begin the download of the firmware or configuration file.

Maintenance Tab - File Upload

The *File Upload* screen lets you upload firmware or a configuration file to a TFTP server. You cannot upload both



NOTE: You can perform only one type of upload at a time.

at the same time.

Firmware Upload. If you want to upload firmware, click this radio button. If this is selected, then the *Configuration Upload* fields will not be available.

Configuration Upload. If you want to upload a configuration file, click this radio button. If this is selected, then the *Firmware Upload* fields will not be available.

Software Image Upload

TFTP Server IP Address. Enter the IP address of the TFTP server.

Destination File Name. Enter the software image file path to which the file will be uploaded.

Configuration Upload

TFTP Server IP Address. Enter the IP address of the TFTP server.

The screenshot shows the Linksys Maintenance - File Upload interface. At the top, there's a navigation bar with tabs: Home, Status, Configuration, Maintenance, and Tools. The 'Maintenance' tab is active. Below the navigation bar, there's a sub-header 'Maintenance' with a dropdown menu showing 'File Upload'. The main content area has two sections: 'Firmware Upload' and 'Configuration Upload'. The 'Firmware Upload' section has a radio button selected. The 'Configuration Upload' section has a radio button unselected. Both sections have input fields for 'TFTP Server IP Address', 'Destination File Name', and 'Transfer File Name'. A 'Submit' button is at the bottom right.

Figure 5-81: Maintenance - File Upload

Destination File Name. Enter the configuration file name to which the file will be uploaded.

Transfer File Name. Specify the file type, **Running Configuration** or **Startup Configuration**. The Running Configuration file holds all startup file commands and commands entered during the current session. The Startup Configuration file holds the startup file commands needed by the Switch to power on or be rebooted.

Click the **Submit** button to begin the upload of the firmware or configuration file.

Maintenance Tab - Restore Defaults

The *Restore Defaults* screen lets you restore the Switch's factory defaults.

Restore Company Defaults. Click **Restore Company Defaults** to restore the factory default settings.



NOTE: Before you restore the Switch's factory defaults, note any settings you may want to use later.



Figure 5-82: Maintenance - Restore Defaults

Maintenance Tab - Integrated Cable Test

The Integrated Cable Test screen shows you results from performance tests on copper cables. The maximum cable length that can be tested is 120 meters. Cables are tested when the ports are in the down state, except for the Approximate Cable Length test.

Port. This is the port to which the cable is connected.

Test Result. This is the test result. OK indicates that the cable passed the test. No Cable means there is no cable connected to the port. Open Cable means the cable is connected on only one side. Short Cable indicates that a short has occurred in the cable. Undefined indicates that the test could not be properly performed.

Cable Fault Distance. This is the distance from the port at which the cable error occurred.

Last Update. This is the last time the port was tested.

Test Now. Click the **Test Now** button to perform the test.

Approximate Cable Length. This is the approximate length of the cable. The Approximate Cable Length test can be performed only when the port is up and operating at 1Gbps.

Port	Test Result	Cable Fault Distance	Last Update	Cable Length
p1	undefined	undefined	undefined	Less than 50m
p2	undefined	undefined	undefined	undefined
p3	undefined	undefined	undefined	undefined
p4	undefined	undefined	undefined	undefined
p5	undefined	undefined	undefined	undefined
p6	undefined	undefined	undefined	undefined
p7	undefined	undefined	undefined	undefined
p8	undefined	undefined	undefined	undefined
p9	undefined	undefined	undefined	undefined
p10	undefined	undefined	undefined	undefined
p11	undefined	undefined	undefined	undefined
p12	undefined	undefined	undefined	undefined
p13	undefined	undefined	undefined	undefined
p14	undefined	undefined	undefined	undefined
p15	undefined	undefined	undefined	undefined
p16	undefined	undefined	undefined	undefined
p17	undefined	undefined	undefined	undefined
p18	undefined	undefined	undefined	Less than 50m
p19	undefined	undefined	undefined	Less than 50m
p20	undefined	undefined	undefined	undefined
p21	undefined	undefined	undefined	undefined
p22	undefined	undefined	undefined	undefined
p23	undefined	undefined	undefined	undefined
p24	undefined	undefined	undefined	undefined
p25	undefined	undefined	undefined	undefined
p26	undefined	undefined	undefined	undefined
p27	undefined	undefined	undefined	undefined
p28	undefined	undefined	undefined	undefined
p29	undefined	undefined	undefined	undefined
p30	undefined	undefined	undefined	undefined
p31	undefined	undefined	undefined	undefined
p32	undefined	undefined	undefined	undefined
p33	undefined	undefined	undefined	undefined
p34	undefined	undefined	undefined	undefined
p35	undefined	undefined	undefined	undefined
p36	undefined	undefined	undefined	undefined
p37	undefined	undefined	undefined	undefined
p38	undefined	undefined	undefined	undefined
p39	undefined	undefined	undefined	undefined
p40	undefined	undefined	undefined	undefined
p41	undefined	undefined	undefined	undefined
p42	undefined	undefined	undefined	undefined
p43	undefined	undefined	undefined	undefined
p44	undefined	undefined	undefined	undefined
p45	undefined	undefined	undefined	undefined
p46	undefined	undefined	undefined	undefined
p47	undefined	undefined	undefined	undefined
p48	undefined	undefined	undefined	undefined

Figure 5-83: Maintenance - Integrated Cable Test

For results on a single port, click the Edit button for that port. A new screen will appear. After clicking the **Test Now** button, the following columns will be updated:

Test Result. This is the test result. OK indicates that the cable passed the test. No Cable means there is no cable connected to the port. Open Cable means the cable is connected on only one side. Short Cable indicates that a short has occurred in the cable. Undefined indicates that the test could not be properly performed.

Cable Fault Distance. This is the distance from the port at which the cable error occurred.

Last Update. This is the last time the port was tested.

Approximate Cable Length. This is the approximate length of the tested cable. The Approximate Cable Length test can be performed only when the port is up and operating at 1Gbps.

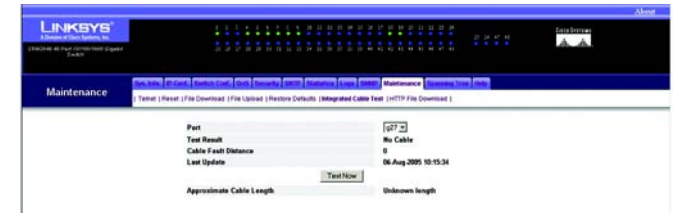


Figure 5-84: Integrated Cable Test - Perform Test

Maintenance Tab - HTTP File Download

The *HTTP File Download* screen allows you to download a file to the Switch via HTTP.

Source File Name. Enter the file path of the file you want to download, or click the **Browse** button to browse for the source file.

Click the **Submit** button to begin the download.

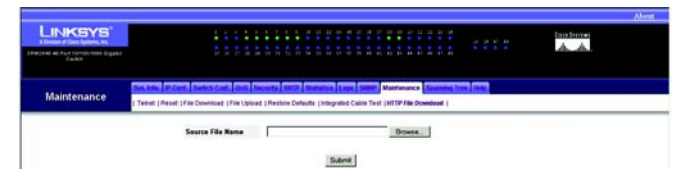


Figure 5-85: Maintenance - HTTP File Download

Spanning Tree Tab - Global Settings

Spanning Tree Protocol (STP) provides tree topography for any bridge arrangement. STP eliminates loops by providing one path between end stations on a network.

Loops occur when alternate routes exist between hosts. Loops in an extended network can cause bridges to forward traffic indefinitely, resulting in increased traffic and reducing network efficiency.

The Switch supports the following Spanning Tree versions:

Classic STP. This version provides a single path between end stations, avoiding and eliminating loops.

Rapid STP (RSTP). This version is supported on the Gigabit Ethernet Switches ONLY. This detects and uses network topologies that provide faster convergence of the spanning tree, without creating forwarding loops. If RSTP is enabled, but the neighboring device is STP enabled, the local device uses STP.

Multiple STP (MSTP). This version is supported on the Gigabit Ethernet Switches ONLY. This provides full connectivity for packets allocated to any VLAN. Multiple STP is based on the RSTP. In addition, Multiple STP transmits packets assigned to different VLANs through different MST regions. MST regions act as a single bridge if MSTP is enabled. However, if RSTP is enabled on a neighboring device, the local device uses STP, RSTP, and MSTP interoperability.

The *Global Settings* screen contains the following fields:

Spanning Tree State. Enables or disables STP, Rapid STP, or MSTP on the Switch.

STP Operation Mode. Available on the Gigabit Ethernet Switches ONLY. Indicates the STP mode by which STP is enabled on a Gigabit Ethernet Switch. The possible field values are:

Classic STP - Enables Classic STP. This is the default value.

Rapid STP - Enables Rapid STP.

Multiple STP - Enables Multiple STP.

BPDU Handling. Determines how BPDU packets are managed when STP is disabled. BPDUs are used to transmit spanning tree information. The possible field values are:

Filtering - Filters BPDU packets when spanning tree is disabled. This is the default value.

Flooding - Floods BPDU packets when spanning tree is disabled.



NOTE: Spanning Tree Protocol (STP) is not supported on the SRW2016 or SRW2024 Switches.



NOTE: Rapid STP and Multiple STP are available on the SRW2048 Switches ONLY.

The screenshot shows the 'Spanning Tree' configuration page in the Linksys Switch Web Utility. The 'Global Settings' tab is selected. The page contains the following fields and values:

Global Settings	
Spanning Tree State	Enable
STP Operation Mode	Multiple STP
BPDU Handling	Flooding
Path Cost Default Values	Short

Bridge Settings	
Priority	32768
Hi Hello Time	2 (Sec)
Hi Max Age	20 (Sec)
Hi Forward Delay	15 (Sec)

Designated Root	
Bridge ID	32768-00:13:54:29:00:00
Root Bridge ID	32768-00:13:54:29:00:00
Root Port	g1
Root Path Cost	4
Topology Changes Count	1
Last Topology Change	00:12:01:40:00:14:00

Buttons: [Save] [Cancel]

Figure 5-86: Spanning Tree - Global Settings

Path Cost Default Values. Specifies the method used to assign default path costs to STP ports. The possible field values are:

Short - Specifies 1 through 65,535 range for port path costs. This is the default value.

Long - Specifies 1 through 200,000,000 range for port path costs.

The default path costs assigned to an interface vary according to the selected method.

Ethernet - 2,000,000

Fast Ethernet - 200,000

Gigabit Ethernet - 20,000

The default values for short path costs are:

Ethernet - 100

Fast Ethernet - 19

Gigabit Ethernet - 4

Priority (0-65535). Specifies the bridge priority value. When switches or bridges are running STP, each is assigned a priority. After exchanging BPDUs, the device with the lowest priority value becomes the Root Bridge. The default value is 32768. The port priority value is provided in increments of 4096. For example, 4096, 8192, 12288, etc.

Hello Time (1-10). The Hello Time indicates the amount of time in seconds a root bridge waits between configuration messages. The default is 2 seconds.

Max Age (6-40). Specifies the Maximum Age Time. The Maximum Age Time indicates the amount of time in seconds a bridge waits before sending configuration messages. The default max age is 20 seconds.

Forward Delay (4-30). Specifies the forward delay time. The Forward Delay Time indicates the amount of time in seconds a bridge remains in a listening and learning state before forwarding packets. The default is 10 seconds.

Designated Root. The information listed indicates the ID of the bridge, which is the root of the selected instance.

Spanning Tree Tab - STP Interface Settings

The *STP Interface Settings* screen shows STP properties assigned to individual ports. This screen contains the following fields:

Port. Specifies the port number on which STP settings are to be modified.

STP. Enables or disables STP on the port.

Port Fast. If Fast Link mode is enabled for a port, the Port State is automatically placed in the Forwarding state when the port link is up. Fast Link mode optimizes the time it takes for the STP protocol to converge. STP convergence can take 30-60 seconds in large networks.

Root Guard. Indicates that this port cannot be configured as a root port.

Port State - Indicates the current STP state of a port. If enabled, the port state determines what forwarding action is taken on traffic. Possible port states are:

Disabled - STP is currently disabled on the port. The port forwards traffic while learning MAC addresses.

Blocking - The port is currently blocked and cannot be used to forward traffic or learn MAC addresses. Blocking is displayed when Classic STP is enabled.

Listening - The port is currently in the listening mode. The port cannot forward traffic nor can it learn MAC addresses.

Learning - The port is currently in the learning mode. The port cannot forward traffic however it can learn new MAC addresses.

Forwarding - The port is currently in the forwarding mode. The port can forward traffic and learn new MAC addresses.

Port Role. Indicates the port role assigned by the STP algorithm that provides STP paths. The possible field values are:

Root-Provides the lowest cost path to forward packets to root switch.

Designated-Indicates that the port via which the designated switch is attached to the LAN.

Alternate-Provides an alternate path to the root switch from the root interface.

Port	STP	Port Fast	Root Guard	Port State	Port Role	Speed	Path Cost	Priority	Designated Bridge ID	Designated Port ID	Designated Cost	Forward Transmissions	LAG	Edit
1 g1	Enable	Disabled	Disabled	N/A	Root	1000M	4	128	32768-00:00:12:34:56:78	128-24	0	1		
2 g2	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
3 g3	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
4 g4	Enable	Disabled	Disabled	N/A	Designated	100M	19	128	32768-00:03:64:29:00:00	128-4	4	3		
5 g5	Enable	Disabled	Disabled	N/A	Designated	100M	19	128	32768-00:03:64:29:00:00	128-6	4	3		
6 g6	Enable	Disabled	Disabled	N/A	Designated	100M	19	128	32768-00:03:64:29:00:00	128-8	4	3		
7 g7	Enable	Disabled	Disabled	N/A	Designated	100M	19	128	32768-00:03:64:29:00:00	128-7	4	3		
8 g8	Enable	Disabled	Disabled	N/A	Designated	100M	19	128	32768-00:03:64:29:00:00	128-9	4	3		
9 g9	Enable	Disabled	Disabled	N/A	Designated	100M	19	128	32768-00:03:64:29:00:00	128-9	4	3		
10 g10	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
11 g11	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
12 g12	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
13 g13	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
14 g14	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
15 g15	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
16 g16	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
17 g17	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
18 g18	Enable	Disabled	Disabled	N/A	Designated	1000M	4	128	32768-00:03:64:29:00:00	128-10	4	3		
19 g19	Enable	Disabled	Disabled	N/A	Designated	1000M	4	128	32768-00:03:64:29:00:00	128-10	4	3		
20 g20	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
21 g21	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
22 g22	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
23 g23	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
24 g24	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
25 g25	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
26 g26	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		
27 g27	Enable	Disabled	Disabled	N/A	Disabled	1000M	100	128	N/A	N/A	N/A	N/A		

Figure 5-87: Spanning Tree - STP Interface Settings

WebView Switches

Backup-Provides a backup path to the designated port path toward the Spanning Tree leaves. Backup ports occur only when two ports are connected in a loop by a point-to-point link. Backup ports also occur when a LAN has two or more connections connected to a shared segment.

Disabled-Indicates the port is not participating in the Spanning Tree.

Speed. This shows the speed at which the port is operating.

Path Cost. The value for this setting is 1-200000000. The port contribution to the root path cost. The path cost is adjusted to a higher or lower value, and is used to forward traffic when a path being rerouted.

Priority. This is the priority value of the port. The priority value influences the port choice when a bridge has two ports connected in a loop. The priority value is between 0 -240. The priority value is provided in increments of 16.

Designated Bridge ID. The bridge priority and the MAC Address of the designated bridge.

Designated Port ID. The designated port's priority and interface.

Designated Cost. Cost of the port participating in the STP topology. Ports with a lower cost are less likely to be blocked if STP detects loops.

Forward Transmission. This shows the number of times the port has changed from the Forwarding state to Blocking.

LAG - This is the LAG to which the port is attached.

To modify the settings on this screen, click the **Edit** icon, which resembles a pencil, to open the edit screen.



NOTE: All Spanning Tree screens that follow, for Rapid STP and Multiple STP, are available on the SRW2048 Switches ONLY.

Spanning Tree Tab on SRW2048 Switches - RSTP Interface Settings

While the classic spanning tree prevents Layer 2 forwarding loops on a general network topology, convergence can take 30-60 seconds. The delay allows time to detect possible loops, and propagate status changes.

The RSTP Interface Settings screen contains the following fields:

Interface. Port or LAG for which you can view and edit RSTP settings.

Role. Indicates the port role assigned by the STP algorithm in order to provide STP paths. The possible field values are:

Root-Provides the lowest cost path to forward packets to root switch.

Designated-Indicates that the port or LAG via which the designated switch is attached to the LAN.

Alternate-Provides an alternate path to the root switch from the root interface.

Backup-Provides a backup path to the designated port path toward the Spanning Tree leaves. Backup ports occur only when two ports are connected in a loop by a point-to-point link. Backup ports also occur when a LAN has two or more connections connected to a shared segment.

Disabled-Indicates the port is not participating in the Spanning Tree.

Mode. Indicates the current Spanning Tree mode. The Spanning Tree mode is selected in the Spanning Tree Global Settings screen. The possible field values are:

Classic STP-Indicates that Classic STP is enabled.

Rapid STP-Indicates that Rapid STP is enabled.

Multiple STP-Indicates that Multiple STP is enabled.

Fast Link Operational Status. Indicates if Fast Link is enabled or disabled for the port or LAG. If Fast Link is enabled for an interface, the interface is automatically placed in the forwarding state.

Point-to-Point Admin Status. Enables or disables the Switch to establish a point-to-point link, or specifies for the device to automatically establish a point-to-point link.

To establish communications over a point-to-point link, the originating PPP first sends Link Control Protocol (LCP) packets to configure and test the data link. After a link is established and optional facilities are negotiated as needed by the LCP, the originating PPP sends Network Control Protocols (NCP) packets to select and configure



NOTE: Rapid STP is available on the SRW2048 Switches ONLY.

#	Interface	Role	Mode	Fast Link Operational Status	Port Status	Point-to-Point Admin Status	Point-to-Point Operational Status	Activate Protocol Migration	FAIR
1	g1	Root	RSTP	Disable	N/A	Auto	Enable	1"	✓
2	g2	Disable	RSTP	Disable	N/A	Auto	Enable	1"	✓
3	g3	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
4	g4	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
5	g5	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
6	g6	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
7	g7	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
8	g8	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
9	g9	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
10	g10	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
11	g11	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
12	g12	Disable	RSTP	Disable	N/A	Auto	Enable	1"	✓
13	g13	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
14	g14	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
15	g15	Disable	RSTP	Disable	N/A	Auto	Enable	1"	✓
16	g16	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
17	g17	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
18	g18	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
19	g19	Designated	RSTP	Disable	N/A	Auto	Enable	1"	✓
20	g20	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
21	g21	Disable	STP	Disable	N/A	Auto	Enable	1"	✓
22	g22	Disable	STP	Disable	N/A	Auto	Enable	1"	✓

Figure 5-88: Spanning Tree - RSTP Interface Settings

WebView Switches

one or more network layer protocols. When each of the chosen network layer protocols has been configured, packets from each network layer protocol can be sent over the link. The link remains configured for communications until explicit LCP or NCP packets close the link, or until some external event occurs. This is the actual switch port link type. It may differ from the administrative state.

Point-to-Point Operational Status. The Point-to-Point operating state.

Activate Protocol Migration. When checked, enables PPP sending Link Control Protocol (LCP) packets to configure and test the data link.

To modify the settings on this screen, click the **Edit** icon, which resembles a pencil, to open the edit screen.

Click the **Submit** button to save any of your changes on this screen.

Spanning Tree Tab on SRW2048 Switches - MSTP Properties

MSTP operation maps VLANs into STP instances. Multiple Spanning Tree provides differing load balancing scenario. For example, while port A is blocked in one STP instance, the same port is placed in the Forwarding State in another STP instance.

In addition, packets assigned to various VLANs are transmitted along different paths within Multiple Spanning Trees Regions (MST Regions). Regions are one or more Multiple Spanning Tree bridges by which frames can be transmitted.

The MSTP Properties screen contains the following fields:

Region Name. This can be 1-32 characters in length and indicates user-defined MSTP region name.

Revision. Defines unsigned 16-bit number that identifies the current MST configuration revision. The revision number is required as part of the MST configuration. The possible field range is 0-65535.

Max Hops. Defines the total number of hops that occur in a specific region before the BPDU is discarded. Once the BPDU is discarded, the port information is aged out. The possible field range is 1-40. The field default is 20 hops.

IST Master. Indicates the Internal Spanning Tree Master ID. The IST Master is the instance 0 root.



NOTE: Rapid STP is available on the SRW2048 Switches ONLY.

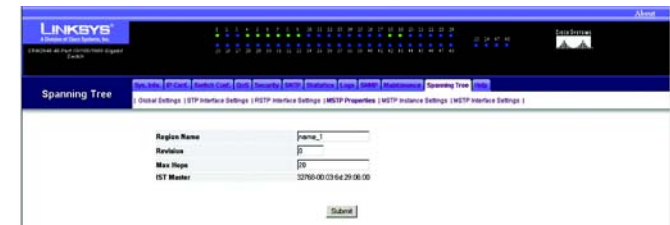


Figure 5-89: Spanning Tree - MSTP Properties

Spanning Tree Tab on SRW2048 Switches - MSTP Instance Settings

Use this screen to configure MSTP instances.

Instance ID. Defines the MSTP instance. The field range is 1-15.

Included VLANs. Displays VLANs mapped to the selected instance. Each VLAN belongs to one instance.

Bridge Priority. Specifies the selected spanning tree instance device priority. The field range is 0-61440 in steps of 4096.

Designated Root Bridge ID. Indicates the ID of the bridge which is the root of the selected instance.

Root Port. Indicates the selected instance's root port.

Root Path Cost. Indicates the selected instance's path cost.

Bridge ID. Indicates the bridge ID of the selected instance.

Remaining Hops. Indicates the number of hops remaining to the next destination.

Click the **Submit** button to save any of your changes on this screen.

Clicking the **VLAN Instance Configuration** button opens the MSTP Instance Table, which shows how your VLANs are assigned on the MSTP.



NOTE: Rapid STP is available on the SRW2048 Switches ONLY.



Figure 5-90: Spanning Tree - MSTP Instance Settings

Spanning Tree Tab on SRW2048 Switches - MSTP Interface Settings

The *MSTP Interface Settings* screen contains parameters assigning MSTP settings to specific interfaces.



NOTE: Rapid STP is available on the SRW2048 Switches ONLY.

Instance ID. Lists the MSTP instances configured on the device. Possible field range is 1-15.

Interface. Assigns either ports or LAGs to the selected MSTP instance.

MSTP. Indicates that MSTP is enabled on this interface.

Port State. Indicates whether the port is enabled or disabled in the specific instance.

Type. Indicates whether MSTP treats the port as a point-to-point port, or a port connected to a hub, and whether the port is internal to the MST region or a boundary port. A Master port provides connectivity from a MSTP region to the outlying CIST root. A Boundary port attaches MST bridges to LAN in an outlying region. If the port is a boundary port, it also indicates whether the device on the other side of the link is working in RSTP or STP mode.

Role. Indicates the port role assigned by the STP algorithm in order to provide to STP paths. The possible field values are:

Root - Provides the lowest cost path to forward packets to root device.

Designated - Indicates the port or LAG via which the designated device is attached to the LAN.

Alternate - Provides an alternate path to the root device from the root interface.

Backup - Provides a backup path to the designated port path toward the Spanning Tree leaves. Backup ports occur only when two ports are connected in a loop by a point-to-point link. Backup ports also occur when a LAN has two or more connections connected to a shared segment.

Disabled - Indicates the port is not participating in the Spanning Tree.

Mode. Mode of Spanning Tree protocol.

Interface Priority (0-240,in steps of 16). Defines the interface priority for specified instance. The default value is 128.

Path Cost. Indicates the port contribution to the Spanning Tree instance. The range should always be 1-200,000,000.

Figure 5-91: Spanning Tree - MSTP Interface Settings

WebView Switches

Designated Bridge ID. The bridge ID number that connects the link or shared LAN to the root.

Designated Port ID. The Port ID number on the designated bridge that connects the link or the shared LAN to the root.

Designated Cost. Cost of the path from the link or the shared LAN to the root.

Forward Transitions. Number of times the port changed to the forwarding state.

Remain Hops. Indicates the number of hops remaining to the next destination.

Click the **Submit** button to save any of your changes on this screen.

Clicking the **Interface Table** button opens the MSTP Interface Table, which shows the Interface settings for each port.

Help Tab

When you are viewing any screen of the Web-based Utility and you want help information about the settings on that screen, click the **Help** tab. The relevant help information will automatically be displayed. At the end of the help information, there is a link available to take you to an index of help information, if you want additional information.

Appendix A: About Gigabit Ethernet and Fiber Optic Cabling

Gigabit Ethernet

Gigabit Ethernet runs at speeds of 1Gbps (Gigabit per second), ten times faster than 100Mbps Fast Ethernet, but it still integrates seamlessly with 100Mbps Fast Ethernet hardware. Users can connect Gigabit Ethernet hardware with either fiber optic cabling or copper Category 5e cabling, with fiber optics more suited for network backbones. As the Gigabit standard gradually integrates into existing networks, current computer applications will enjoy faster access time for network data, hardware, and Internet connections.

Fiber Optic Cabling

Fiber optic cabling is made from flexible, optically efficient strands of glass and coated with a layer of rubber tubing, fiber optics use photons of light instead of electrons to send and receive data. Although fiber is physically capable of carrying terabits of data per second, the signaling hardware currently on the market can handle no more than a few gigabits of data per second.

Fiber cables come with two main connector types. The most commonly used fiber optic cable is multi-mode fiber cable (MMF), with a 62.5 micron fiber optic core. Single-mode fiber cabling is somewhat more efficient than multi-mode but far more expensive, due to its smaller optic core that helps retain the intensity of traveling light signals. A fiber connection always requires two fiber cables: one transmits data, and the other receives it.

Each fiber optic cable is tipped with a connector that fits into a fiber port on a network adapter, hub, or switch. In the USA, most cables use a square SC connector that slides and locks into place when plugged into a port or connected to another cable. In Europe, the round ST connector is more prevalent.

You must use the Linksys MGBT1, MGBSX1, or MGBLH1 mini-GBIC modules with the Linksys Gigabit Switches. The MGBSX1 and the MGBLH1 require fiber cabling with LC connectors, and the MGBT1 requires a Category 5e Ethernet cable with an RJ-45 connector.

Appendix B: Windows Help

Almost all networking products require Microsoft Windows. Windows is the most used operating system in the world and comes with many features that help make networking easier. These features can be accessed through Windows Help and are described in this appendix.

TCP/IP

Before a computer can communicate within a network, TCP/IP must be enabled. TCP/IP is a set of instructions, or protocol, all PCs follow to communicate over a network. This is true for wireless networks as well. Your PCs will not be able to utilize wireless networking without having TCP/IP enabled. Windows Help provides complete instructions on enabling TCP/IP.

Shared Resources

If you wish to share printers, folder, or files over your network, Windows Help provides complete instructions on utilizing shared resources.

Network Neighborhood/My Network Places

Other PCs on your network will appear under Network Neighborhood or My Network Places (depending upon the version of Windows you're running). Windows Help provides complete instructions on adding PCs to your network.

Appendix C: Glossary

Adapter - A device that adds network functionality to your PC.

AES (Advanced Encryption Standard) - A security method that uses symmetric 128-bit block data encryption.

Backbone - The part of a network that connects most of the systems and networks together, and handles the most data.

Bandwidth - The transmission capacity of a given device or network.

Bit - A binary digit.

Boot - To start a device and cause it to start executing instructions.

Bridge - A device that connects different networks.

Broadband - An always-on, fast Internet connection.

Browser - An application program that provides a way to look at and interact with all the information on the World Wide Web.

Buffer - A shared or assigned memory area that is used to support and coordinate different computing and networking activities so one isn't held up by the other.

Byte - A unit of data that is usually eight bits long

Cable Modem - A device that connects a computer to the cable television network, which in turn connects to the Internet.

CSMA/CA (Carrier Sense Multiple Access/Collision Avoidance) - A method of data transfer that is used to prevent data collisions.

CTS (Clear To Send) - A signal sent by a wireless device, signifying that it is ready to receive data.

Daisy Chain - A method used to connect devices in a series, one after the other.

Database - A collection of data that is organized so that its contents can easily be accessed, managed, and updated.

DDNS (Dynamic Domain Name System) - Allows the hosting of a website, FTP server, or e-mail server with a fixed domain name (e.g., www.xyz.com) and a dynamic IP address.

Default Gateway - A device that forwards Internet traffic from your local area network.

DHCP (Dynamic Host Configuration Protocol) - A networking protocol that allows administrators to assign temporary IP addresses to network computers by “leasing” an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.

DMZ (Demilitarized Zone) - Removes the Router's firewall protection from one PC, allowing it to be “seen” from the Internet.

DNS (Domain Name Server) - The IP address of your ISP's server, which translates the names of websites into IP addresses.

Domain - A specific name for a network of computers.

Download - To receive a file transmitted over a network.

DSL (Digital Subscriber Line) - An always-on broadband connection over traditional phone lines.

DTIM (Delivery Traffic Indication Message) - A message included in data packets that can increase wireless efficiency.

Dynamic IP Address - A temporary IP address assigned by a DHCP server.

Encryption - Encoding data transmitted in a network.

Ethernet - A networking protocol that specifies how data is placed on and retrieved from a common transmission medium.

Finger - A program that tells you the name associated with an e-mail address.

Firewall - A set of related programs located at a network gateway server that protects the resources of a network from users from other networks.

Firmware - The programming code that runs a networking device.

Fragmentation - Breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet.

FTP (File Transfer Protocol) - A protocol used to transfer files over a TCP/IP network.

Full Duplex - The ability of a networking device to receive and transmit data simultaneously.

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Half Duplex - Data transmission that can occur in two directions over a single line, but only one direction at a time.

Hardware - The physical aspect of computers, telecommunications, and other information technology devices.

HTTP (HyperText Transport Protocol) - The communications protocol used to connect to servers on the World Wide Web.

IP (Internet Protocol) - A protocol used to send data over a network.

IP Address - The address used to identify a computer or device on a network.

IPCONFIG - A Windows 2000 and XP utility that displays the IP address for a particular networking device.

IPSec (Internet Protocol Security) - A VPN protocol used to implement secure exchange of packets at the IP layer.

ISM band - Radio bandwidth utilized in wireless transmissions.

ISP (Internet Service Provider) - A company that provides access to the Internet.

LAN - The computers and networking products that make up your local network.

MAC (Media Access Control) Address - The unique address that a manufacturer assigns to each networking device.

Mbps (MegaBits Per Second) - One million bits per second; a unit of measurement for data transmission.

mIRC - An Internet Relay Chat program that runs under Windows.

Multicasting - Sending data to a group of destinations at once.

NAT (Network Address Translation) - NAT technology translates IP addresses of a local area network to a different IP address for the Internet.

Network - A series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.

NNTP (Network News Transfer Protocol) - The protocol used to connect to Usenet groups on the Internet.

Node - A network junction or connection point, typically a computer or work station.

Packet - A unit of data sent over a network.

Ping (Packet Internet Groper) - An Internet utility used to determine whether a particular IP address is online.

POP3 (Post Office Protocol 3) - A standard mail server commonly used on the Internet.

Port - The connection point on a computer or networking device used for plugging in cables or adapters.

PPPoE (Point to Point Protocol over Ethernet) - A type of broadband connection that provides authentication (username and password) in addition to data transport.

PPTP (Point-to-Point Tunneling Protocol) - A VPN protocol that allows the Point to Point Protocol (PPP) to be tunneled through an IP network. This protocol is also used as a type of broadband connection in Europe.

RADIUS (Remote Authentication Dial-In User Service) - A protocol that uses an authentication server to control network access.

RJ-45 (Registered Jack-45) - An Ethernet connector that holds up to eight wires.

Router - A networking device that connects multiple networks together.

RTS (Request To Send) - A networking method of coordinating large packets through the RTS Threshold setting.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

SMTP (Simple Mail Transfer Protocol) - The standard e-mail protocol on the Internet.

SNMP (Simple Network Management Protocol) - A widely used network monitoring and control protocol.

Software - Instructions for the computer. A series of instructions that performs a particular task is called a "program".

SPI (Stateful Packet Inspection) Firewall - A technology that inspects incoming packets of information before allowing them to enter the network.

Static IP Address - A fixed address assigned to a computer or device that is connected to a network.

Static Routing - Forwarding data in a network via a fixed path.

Subnet Mask - An address code that determines the size of the network.

WebView Switches

Switch - 1. A data switch that connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

TCP (Transmission Control Protocol) - A network protocol for transmitting data that requires acknowledgement from the recipient of data sent.

TCP/IP (Transmission Control Protocol/Internet Protocol) - A set of instructions PCs use to communicate over a network.

Telnet - A user command and TCP/IP protocol used for accessing remote PCs.

TFTP (Trivial File Transfer Protocol) - A version of the TCP/IP FTP protocol that has no directory or password capability.

Throughput - The amount of data moved successfully from one node to another in a given time period.

Topology - The physical layout of a network.

TX Rate - Transmission Rate.

UDP (User Datagram Protocol) - A network protocol for transmitting data that does not require acknowledgement from the recipient of the data that is sent.

Upgrade - To replace existing software or firmware with a newer version.

Upload - To transmit a file over a network.

URL (Uniform Resource Locator) - The address of a file located on the Internet.

VPN (Virtual Private Network) - A security measure to protect data as it leaves one network and goes to another over the Internet.

WAN (Wide Area Network)- The Internet.

WINIPCFG - A Windows 98 and Me utility that displays the IP address for a particular networking device.

Appendix D: Specifications

Models	SRW2016 - 16-Port 10/100/1000 Gigabit Switch with WebView
	SRW2024 - 24-Port 10/100/1000 Gigabit Switch with WebView
	SRW2048 - 48-Port 10/100/1000 Gigabit Switch with WebView
	SRW224G4 - 24-Port 10/100 Gigabit Switch with WebView
	SRW248G4 - 48-Port 10/100/1000 Gigabit Switch with WebView
Standards	802.3i 10BASE-T Ethernet, 802.3u 100BASE-TX Fast Ethernet, 802.3ab 1000BASE-T Gigabit Ethernet, 802.3z Gigabit Ethernet, 802.3x Flow Control
Ports	SRW2016 - 16 10/100/1000 RJ-45 ports and 2 shared MiniGBIC slots
	SRW2024 - 24 10/100/1000 RJ-45 ports and 2 shared MiniGBIC slots
	SRW2048 - 48 10/100/1000 RJ-45 ports and 2 shared MiniGBIC slots
	SRW224G4 - 24 10/100 RJ-45 ports and 2 10/100/1000 RJ-45 ports and 2 shared MiniGBIC slots
	SRW248G4 - 48 10/100 RJ-45 ports and 2 10/100/1000 RJ-45 ports and 2 shared MiniGBIC slots
Cabling Type	Cat5e or better
LEDs	Power, Link/Act, Speed
Security Features	ACL, 802.1x

WebView Switches

Dimensions	SRW2048 : 16.93" x 1.75" x 13.78" (430 mm x 44.45 mm x 350 mm)
	SRW248G4 : 16.93" x 1.75" x 13.78" (430 mm x 44.45 mm x 350 mm)
	SRW224G4 : 16.93" x 1.75" x 7.97" (430 mm x 44.45 mm x 202.5 mm)
Unit Weight	SRW2016 - 7.30 lbs. (3.31 kg)
	SRW2024 - 7.35 lbs. (3.33 kg)
	SRW2048 : 8.60 lbs. (3.9 kg)
	SRW248G4 : 8.60 lbs. (3.9 kg)
	SRW224G4 : 4.41 lbs. (2 kg)
Power	internal switching power
Certifications	FCC Part15 Class A, CE Class A, UL, cUL, CE mark, CB
Operating Temp.	0°C to 40°C (32°F to 104°F)
Storage Temp.	-20°C to 70°C (-4°F to 158°F)
Operating Humidity	10% to 90%, Non-Condensing
Storage Humidity	10% to 95% Non-Condensing

Appendix E: Warranty Information

LIMITED WARRANTY

Linksys warrants to You that, for a period of five years (the “Warranty Period”), your Linksys Product will be substantially free of defects in materials and workmanship under normal use. Your exclusive remedy and Linksys' entire liability under this warranty will be for Linksys at its option to repair or replace the Product or refund Your purchase price less any rebates. This limited warranty extends only to the original purchaser.

If the Product proves defective during the Warranty Period call Linksys Technical Support in order to obtain a Return Authorization Number, if applicable. **BE SURE TO HAVE YOUR PROOF OF PURCHASE ON HAND WHEN CALLING.** If You are requested to return the Product, mark the Return Authorization Number clearly on the outside of the package and include a copy of your original proof of purchase. **RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.** You are responsible for shipping defective Products to Linksys. Linksys pays for UPS Ground shipping from Linksys back to You only. Customers located outside of the United States of America and Canada are responsible for all shipping and handling charges.

ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE WARRANTY PERIOD. ALL OTHER EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF NON-INFRINGEMENT, ARE DISCLAIMED. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to You. This warranty gives You specific legal rights, and You may also have other rights which vary by jurisdiction.

This warranty does not apply if the Product (a) has been altered, except by Linksys, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Linksys, or (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident. In addition, due to the continual development of new techniques for intruding upon and attacking networks, Linksys does not warrant that the Product will be free of vulnerability to intrusion or attack.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL LINKSYS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF THE THEORY OF LIABILITY (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE PRODUCT (INCLUDING ANY SOFTWARE), EVEN IF LINKSYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL LINKSYS' LIABILITY EXCEED THE AMOUNT PAID BY YOU FOR THE PRODUCT. The foregoing limitations will apply even if any warranty or remedy provided under this Agreement fails of its essential purpose. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to You.

Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623.

Appendix F: Regulatory Information

FCC STATEMENT

This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

INDUSTRY CANADA (CANADA)

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

EC DECLARATION OF CONFORMITY (EUROPE)

In compliance with the EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC, and Amendment Directive 93/68/EEC, this product meets the requirements of the following standards:

- EN55022 Emission
- EN55024 Immunity

Safety Compliance



Warning: Fiber Optic Port Safety

When using a fiber optic port, never look at the transmit laser while it is powered on. Also, never look directly at the fiber TX port and fiber cable ends when they are powered on.



Avertissement: Ports pour fibres optiques - sécurité sur le plan optique

Ne regardez jamais le laser tant qu'il est sous tension. Ne regardez jamais directement le port TX (Transmission) à fibres optiques et les embouts de câbles à fibres optiques tant qu'ils sont sous tension.



Warnhinweis: Faseroptikanschlüsse - Optische Sicherheit

Niemals ein Übertragungslaser betrachten, während dieses eingeschaltet ist. Niemals direkt auf den Faser-TX-Anschluß und auf die Faserkabelenden schauen, während diese eingeschaltet sind.

Please read the following safety information carefully before installing the switch:

WARNING: Installation and removal of the unit must be carried out by qualified personnel only.

"The unit must be connected to an earthed (grounded) outlet to comply with international safety standards.

"Do not connect the unit to an A.C. outlet (power supply) without an earth (ground) connection.

"The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN 60320/IEC 320 appliance inlet.

"The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.

"This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.

France and Peru only

This unit cannot be powered from IT† supplies. If your supplies are of IT type, this unit must be powered by 230 V (2P+T) via an isolation transformer ratio 1:1, with the secondary connection point labeled Neutral, connected directly to earth (ground).

† Impédance à la terre

Power Cord Set	
U.S.A. and Canada	The cord set must be UL-approved and CSA certified.
	The minimum specifications for the flexible cord are: - No. 18 AWG, not longer than 2 meters, or 16 AWG. - Type SV or SJ - 3-conductor.
	The cord set must have a rated current capacity of at least 10 A
	The attachment plug must be an earth-grounding type with NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
Denmark	The supply plug must comply with Section 107-2-D1, Standard DK2-1a or DK2-5a.
Switzerland	The supply plug must comply with SEV/ASE 1011.
U.K.	The supply plug must comply with BS1363 (3-pin 13 A) and be fitted with a 5 A fuse which complies with BS1362.
	The mains cord must be <HAR> or <BASEC> marked and be of type H03VVF3G0.75 (minimum).
Europe	The supply plug must comply with CEE7/7 ("SCHUKO").
	The mains cord must be <HAR> or <BASEC> marked and be of type H03VVF3G0.75 (minimum).
	IEC-320 receptacle.

Veuillez lire à fond l'information de la sécurité suivante avant d'installer le Switch:

AVERTISSEMENT: L'installation et la dépose de ce groupe doivent être confiés à un

personnel qualifié.

Ne branchez pas votre appareil sur une prise secteur (alimentation électrique) lorsqu'il n'y a pas de connexion de mise à la terre (mise à la masse).

Vous devez raccorder ce groupe à une sortie mise à la terre (mise à la masse) afin de respecter les normes internationales de sécurité.

Le coupleur d'appareil (le connecteur du groupe et non pas la prise murale) doit respecter une configuration qui permet un branchement sur une entrée d'appareil EN 60320/IEC 320.

WebView Switches

La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.

L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme IEC 60950. Ces conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.

France et Pérou uniquement:

Ce groupe ne peut pas être alimenté par un dispositif à impédance à la terre. Si vos alimentations sont du type impédance à la terre, ce groupe doit être alimenté par une tension de 230 V (2 P+T) par le biais d'un transformateur d'isolement à rapport 1:1, avec un point secondaire de connexion portant l'appellation Neutre et avec raccordement direct à la terre (masse).

	Cordon électrique - Il doit être agréé dans le pays d'utilisation
Etats-Unis et Canada:	Le cordon doit avoir reAu l'homologation des UL et un certificat de la CSA.
	Les spécifications minimales pour un câble flexible sont AWG No. 18, ou AWG No. 16 pour un câble de longueur inférieure à 2 mètres. - type SV ou SJ - 3 conducteurs
	Le cordon doit être en mesure d'acheminer un courant nominal d'au moins 10 A.
	La prise femelle de branchement doit être du type à mise à la terre (mise à la masse) et respecter la configuration NEMA 5-15P (15 A, 125 V) ou NEMA 6-15P (15 A, 250 V).
Danemark:	La prise d'alimentation doit respecter la section 107-2 D1 de la norme DK2 1a ou DK2 5a.
Suisse:	La prise d'alimentation doit respecter la norme SEV/ASE 1011.
Europe	La prise secteur doit être conforme aux normes CEE 7/7 ("SCHUKO"). Le cordon secteur doit porter la mention <HAR> ou <BASEC> et doit être de type HO3VVF3GO.75 (minimum).

Bitte unbedingt vor dem Einbauen des Switches die folgenden Sicherheitsanweisungen durchlesen:

WARNUNG: Die Installation und der Ausbau des Geräts darf nur durch Fachpersonal erfolgen.

Das Gerät sollte nicht an eine ungeerdete Wechselstromsteckdose angeschlossen werden.

Das Gerät muß an eine geerdete Steckdose angeschlossen werden, welche die internationalen Sicherheitsnormen erfüllt.

WebView Switches

Der Gerätestecker (der Anschluß an das Gerät, nicht der Wandsteckdosenstecker) muß einen gemäß EN 60320/IEC 320 konfigurierten Geräteeingang haben.

Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.

Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 60950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.

	Stromkabel. Dies muss von dem Land, in dem es benutzt wird geprüft werden:
Schweiz	Dieser Stromstecker muß die SEV/ASE 1011 Bestimmungen einhalten.
Europe	Das Netzkabel muß vom Typ H03VVH3G0.75 (Mindestanforderung) sein und die Aufschrift <HAR> oder <BASEC> tragen. Der Netzstecker muß die Norm CEE 7/7 erfüllen ("SCHUKO").

Warnings and Cautionary Messages

Warning: This product does not contain any serviceable user parts.

Warning: When connecting this device to a power outlet, connect the field ground lead on the tri-pole power plug to a valid earth ground line to prevent electrical hazards.

Warning: This switch uses lasers to transmit signals over fiber optic cable. The lasers are compliant with the requirements of a Class 1 Laser Product and are inherently eye safe in normal operation. However, you should never look directly at a transmit port when it is powered on.

Caution: Wear an anti-static wrist strap or take other suitable measures to prevent electrostatic discharge when handling this equipment.

Caution: Do not plug a phone jack connector in the RJ-45 port. This may damage this device.

Caution: Use only twisted-pair cables with RJ-45 connectors that conform to FCC standards.

Caution: The PoE (Power over Ethernet), which is to be interconnected with other equipment that must be contained within the same building including the interconnected equipment's associated LAN connections.

Note: When selecting a fiber SFP device, considering safety, please make sure that it can function at a temperature that is not less than the recommended maximum operational temperature of the product. You must also use an approved Laser Class 1 SFP transceiver.

Hinweis: Bei der Wahl eines Glasfasertransceivers muß für die Beurteilung der Gesamtsicherheit beachtet werden, das die maximale Umgebungstemperatur des Transceivers für den Betrieb nicht niedriger ist als die für dieses Produkts. Der Glasfasertransceiver muß auch ein überprüftes Gerät der Laser Klasse 1 sein.

Environmental Statement

The manufacturer of this product endeavours to sustain an environmentally-friendly policy throughout the entire production process. This is achieved through the following means:

Adherence to national legislation and regulations on environmental production standards.

Conservation of operational resources.

Waste reduction and safe disposal of all harmful un-recyclable by-products.

Recycling of all reusable waste content.

Design of products to maximize recyclables at the end of the product's life span.

Continual monitoring of safety standards.

End of Product Life Span

This product is manufactured in such a way as to allow for the recovery and disposal of all included electrical components once the product has reached the end of its life.

Manufacturing Materials

There are no hazardous nor ozone-depleting materials in this product.

Documentation

All printed documentation for this product uses biodegradable paper that originates from sustained and managed forests. The inks used in the printing process are non-toxic.

Purpose

This guide details the hardware features of the switch, including its physical and performance-related characteristics, and how to install the switch.

Audience

WebView Switches

This guide is for system administrators with a working knowledge of network management. You should be familiar with switching and networking concepts.

Zielgruppe Dieser Anleitung ist fuer Systemadministratoren mit Erfahrung im Netzwerkmanagement. Sie sollten mit Switch- und Netzwerkkonzepten vertraut sein.

Appendix G: Contact Information

Need to contact Linksys?

Visit us online for information on the latest products and updates to your existing products at:

<http://www.linksys.com> or
<ftp.linksys.com>

Can't find information about a product you want to buy on the web? Do you want to know more about networking with Linksys products? Give our advice line a call at:
Or fax your request in to:

800-546-5797 (LINKSYS)
949-823-3002

If you experience problems with any Linksys product, you can call us at:

800-326-7114
support@linksys.com

Don't wish to call? You can e-mail us at:

If any Linksys product proves defective during its warranty period, you can call the Linksys Return Merchandise Authorization department for obtaining a Return Authorization Number at:
(Details on Warranty and RMA issues can be found in the Warranty Information section in this Guide.)

949-823-3000