LINKSYS®
A Division of Cisco Systems, Inc.

SFE1000P 8-port 10/100 Ethernet Switch with PoE Administration Guide

March 2008

SFE1000P 8-port 10/100 Ethernet Switch with PoE Administration Guide

CISCO

SFE1000P 8-PORT 10/100 ETHERNET SWITCH WITH POE ADMINISTRATION GUIDE

Document Revision History

Revision	Date	Description
1.0	March 2008	Initial release

Chapter 1: Preface 1
Audience 1
Purpose 1
Organization 1

Chapter 2: Getting Started 3
Starting the Application 3
Understanding the Interface 5
Device Representation 6
Using the Linksys Management Buttons 7
Using Screen and Table Options 7
Adding Device Information 7
Modifying Device Information 8
Deleting Device Information 8
Resetting the Device 9
Logging Off The Device 9

Chapter 3: Managing Device Information 10
Understanding the Device Zoom View 10
Defining General System Information 11
Resetting the Device 11

Chapter 4: Managing Power-over-Ethernet Devices 13
Defining PoE Settings 13

Chapter 5: Configuring Device Security 15
Passwords Management 15
Modifying the Local User Settings 17
Defining Authentication 17
Defining Authentication Profiles 18
Modify the Authentication Profile 19
Mapping Authentication Profiles 19
Defining TACACS+ 20
Modifying TACACS+ Settings 22
Defining RADIUS 22
Modifying RADIUS Server Settings 24
Defining Access Method 24
Defining Access Profiles 24
Defining Profile Rules 26
Modifying Profile Rules 28
Defining Traffic Control 29
Defining Storm Control 29
Modifying Storm Control 30
Defining Port Security 30
Modifying Port Security 31

Defining 802.1x 32
Defining Port Authentication 33
Modifying 8021X Security 34
Defining Multiple Hosts 35
Modifying Multiple Host Settings 35
Defining Authenticated Host 36
Defining Access Control 36
Defining MAC Based ACL 37
Adding Rule to MAC Based ACL 38
Defining IP Based ACL 38
Adding an IP Based Rule 40
Defining ACL Binding 40
Modifying ACL Binding 41
Defining DoS Prevention 41
Global Settings 42
Defining Martian Addresses 42

Chapter 6: Configuring Device Interfaces 44
Defining Port Settings 44
Modifying Port Settings 44
Defining LAG Management 45
Modifying LAG Membership 47
Defining LAG Settings 48
Configuring LACP 49
Modify LACP Parameter Settings 50

Chapter 7: Configuring VLANs 51
Defining VLAN Properties 52
Modifying VLANs 53
Defining VLAN Membership 53
Modifying VLAN Membership 54
Defining Interface Settings 54
Modifying VLAN Interface Settings 55
Configuring GVRP Settings 55
Modifying GVRP Settings 56
Defining VLAN Protocol Group 57
Modifying Protocol Groups 58
Defining VLAN Protocol Port 58

Chapter 8: Configuring IP Information 60
Domain Name System 60
Defining DNS Server 60
Mapping DNS Hosts 62
Configuring Layer 2IP Addresses 63
Configuring IP Addressing 63
Defining IP Interfaces 63

Enabling ARP 64
Modifying ARP Settings 65

Chapter 9: Defining Address Tables 66
Defining Static Addresses 66
Defining Dynamic Addresses 67

Chapter 10: Configuring Multicast Forwarding 69
IGMP Snooping 69
Modifying IGMP Snooping 70
Defining Multicast Bridging Groups 70
Modifying a Multicast Group 72
Defining Multicast Forwarding 72
Modifying Multicast Forwarding 73

Chapter 11: Configuring Spanning Tree 74
Defining STP Properties 75
Defining Interface Settings 76
Modifying Interface Settings 77
Defining Rapid Spanning Tree 78
Modifying RTSP 79
Defining Multiple Spanning Tree 79
Defining MSTP Properties 80
Mapping MSTP Instances to VLAN 81
Defining MSTP Instance Settings 82
Defining MSTP Interface Settings 83

Chapter 12: Configuring SNMP 85
Configuring SNMP Security 86
Defining the SNMP Engine ID 86
Defining SNMP Views 87
Defining SNMP Users 88
Modifying SNMP Users 89
Define SNMP Groups 89
Modifying SNMP Group Profile Settings 90
Defining SNMP Communities 91
Modifying SNMP Community Settings 92
Defining Trap Management 93
Defining Trap Settings 93
Configuring Station Management 93
Modifying SNMP Notifications Settings 96
Defining SNMP Filter Settings 96

Chapter 13: Configuring Quality of Service 98
Defining General Settings 99
Defining CoS 100

Modifying Interface Priorities 100
Defining Queue 101
Mapping CoS to Queue 101
Mapping DSCP to Queue 102
Configuring Bandwidth 103
Defining Advanced Mode 104
Configuring DSCP Mapping 105
Defining Class Mapping 106
Defining Aggregate Policer 107
Modifying QoS Aggregate Policer 108
Configuring Policy Table 109
Modifying the QoS Policy Profile 110
Defining Policy Binding 111
Modifying QoS Policy Binding Settings 112
Defining QoS Basic Mode 112

Chapter 14: Managing System Files 114
File Management Overview 114
File Management 115
Firmware Upgrade 115
Save Configuration 116
Copy Files 117
Active Image 118

Chapter 15: Managing System Logs 119
Enabling System Logs 119
Viewing the Device Memory Logs 121
Clearing Message Logs 121
Viewing the Flash Logs 122
Clearing Message Logs 122
Viewing Remote Logs 123
Modify Syslog Server Settings 124

Chapter 16: Configuring System Time 125
Defining System Time 125
Defining SNTP Settings 126
Defining SNTP Authentication 127

Chapter 17: Viewing Statistics 128
Viewing Ethernet Statistics 128
Defining Ethernet Interface 128
Resetting Interface Statistics Counters 129
Viewing Etherlike Statistics 129
Resetting Etherlike Statistics Counters 129
Viewing GVRP Statistics 130
Resetting GVRP Statistics Counters 130

Viewing EAP Statistics 131
Managing RMON Statistics 132
Viewing RMON Statistics 132
Resetting RMON Statistics Counters 132
Configuring RMON History 133
Defining RMON History Control 133
Modify History Control Settings 134
Viewing the RMON History Table 134
Configuring RMON Events 135
Defining RMON Events Control 135
Modify Event Control Settings 136
Viewing the RMON Events Logs 137
Defining RMON Alarms 137
Modify RMON Alarm Settings 139

Chapter 18: Managing Device Diagnostics 140
Viewing Integrated Cable Tests 140
Performing Optical Tests 141
Configuring Port Mirroring 142
Modifying Port Mirroring 143
Defining CPU Utilization 143

Appendix A: Console Interface Configuration 144
Overview 144
Configuring the HyperTerminal Application 144
Connecting to the SFE1000P through a Telnet Session 147

Appendix B: Contacts 148
US/Canada Contacts 148
EU Contacts 148

Appendix C: Warranty Information 149
LIMITED WARRANTY 149
Exclusions and Limitations 149
Obtaining Warranty Service 150
Technical Support 151

Appendix D: Regulatory Information 152
Federal Communications Commission Interference Statement 152
Industry Canada Statement 152
Règlement d'Industry Canada 153
EC Declaration of Conformity (Europe) 153
User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE) 153

Appendix E: Environmental Specifications 161

Appendix F: Safety Information 162
Meaning of the Warning Symbol 162
General Safety Information 162

Appendix G: Software License Agreement 164
Software in Linksys Products: 164
Software Licenses: 164
Schedule 1 Linksys Software License Agreement 164
Schedule 2 166
Schedule 3 171

Preface

Audience

This publication is designed for people who have some experience installing networking equipment such as routers, hubs, servers, and switches. We assume the person installing and troubleshooting the SFE1000P is familiar with electronic circuitry and wiring practices and has experience as an electronic or electromechanical technician.

Purpose

This guide documents the features of the Linksys Business Series SFE1000P Gigabit Ethernet Switch (SFE1000P). It describes the administration of the SFE1000P, explains how to install the SFE1000P, and provides configuration information.

Organization

This guide is organized into the following chapters:

- Chapter 2, "Getting Started,"is an introduction to the user interface.
- Chapter 3, "Managing Device Information,"provides information for defining both basic and advanced system information.
- Chapter 4, "Managing Power-over-Ethernet Devices,"describes configuring PoE settings.
- Chapter 5, "Configuring Device Security,"describes password management, defining authentication, access method, traffic control, 802.1x protocols, access control, and Denial of service prevention.
- Chapter 6, "Configuring Device Interfaces,"describes defining port settings, LAG management, LAG settings, and configuring LACP.
- Chapter 7, "Configuring VLANs," provides information for defining VLAN properties, VLAN memberships, interface settings, and GVRP settings.
- Chapter 8, "Configuring IP Information," provides information for defining device IP addresses.
- Chapter 9, "Defining Address Tables," contains information for defining both static and dynamic Forwarding Database entries.
- Chapter 10, "Configuring Multicast Forwarding," contains information on configuring IGMP snooping, defining multicast bridging groups, and multicast forwarding.
- Chapter 11, "Configuring Spanning Tree," contains information on configuring Spanning Tree Protocol with classic STP, Rapid STP, and Multiple STP.
- Chapter 12, "Configuring SNMP," describes how to configure SNMP security and define trap management.

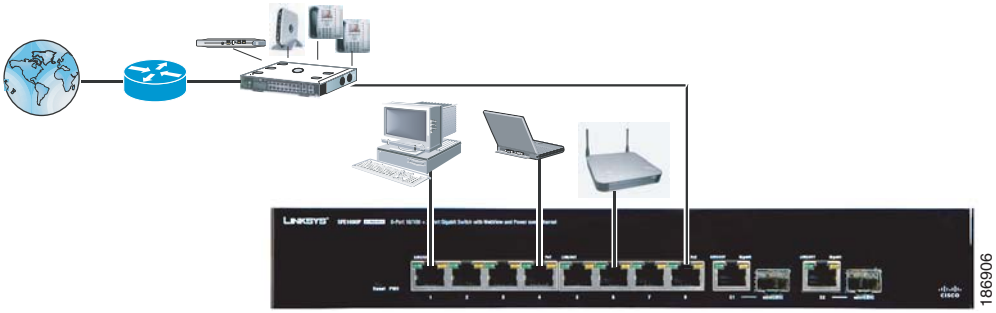
- Chapter 13, "Configuring Quality of Service," shows how to define Quality of Service general settings, advanced mode settings, and basic mode settings. It also describes configuring policy tables.
- Chapter 14, "Managing System Files," describes working with file management, logs, and diagnostics.
- Chapter 15, "Managing System Logs," shows how to enable system logs, view device memory logs, flash logs, and remote logs.
- Chapter 16, "Configuring System Time," provides information for configuring the system time, and includes defining system time, SNTP settings, and SNTP authentication.
- Chapter 17, "Viewing Statistics," describes viewing and managing device statistics for RMON, interfaces, GVRP, EAP, and Etherlike statistics.
- Chapter 18, "Managing Device Diagnostics," contains information for configuring port mirroring, running cable tests, and viewing device operational information.
- Appendix B, "Contacts," is a listing of support resources and contact information for such.
- Appendix C, "Warranty Information," is the Linksys warranty.

Getting Started

This section provides an introduction to the user interface, and includes the following topics:

- Starting the Application
- Understanding the Interface
- Using the Linksys Management Buttons
- Using Screen and Table Options
- Resetting the Device
- Logging Off The Device

The following diagram illustrates how the SFE1000P fits into your network.



Starting the Application

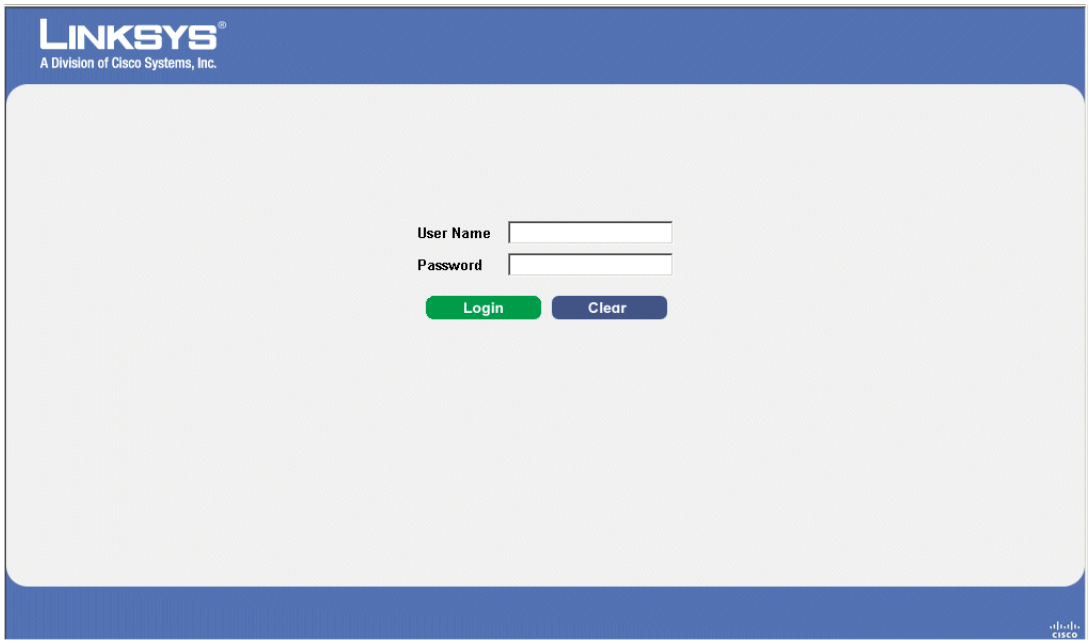
This section contains information for starting the Linksys User Interface.

NOTE: By default, the IP address of the device is assigned dynamically. The IP address can be changed.

To open the User Interface:

1. Open a web browser.
2. Enter the device's IP address in the address bar and press Enter. An "Enter Network Password Page" opens:

Enter Network Password Page

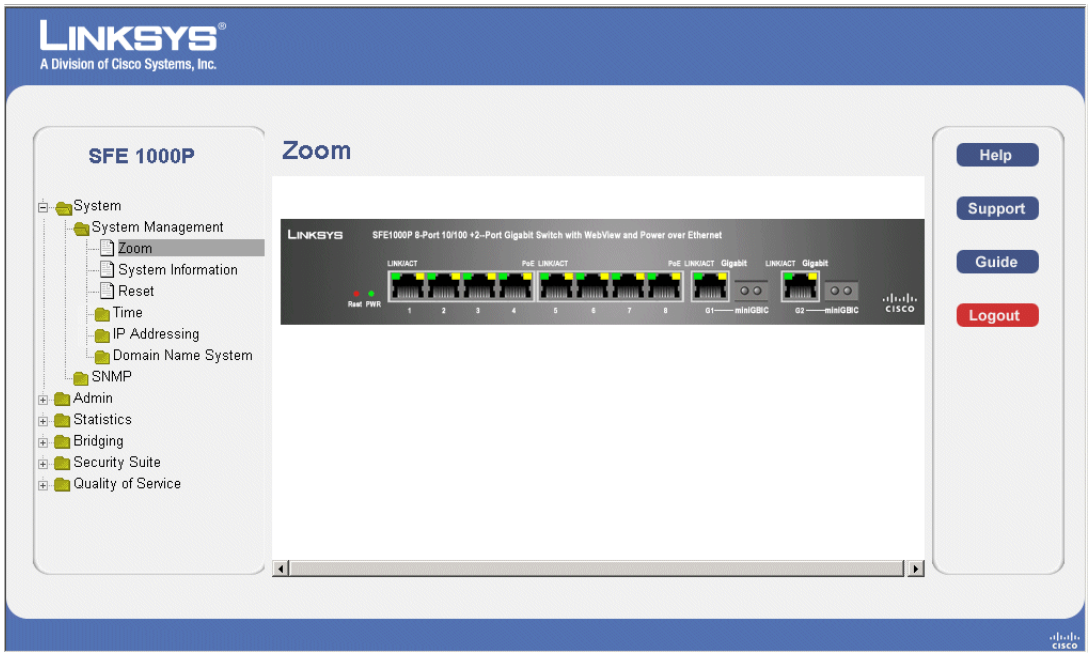


3. Enter a user name and password. The default user name is "admin". The device is not configured with a default password, and can be configured without entering a password. Passwords are both case sensitive and alpha-numeric.

4. Click Login The *Embedded Web System Home Page* opens:

NOTE: If you have logged in automatically via the Service Router user interface, the Tree and Device views appear and allow you to navigate through the various areas of the web interface. However, the following page will appear within the frame provided by the Service Router user interface.

Embedded Web System Home Page



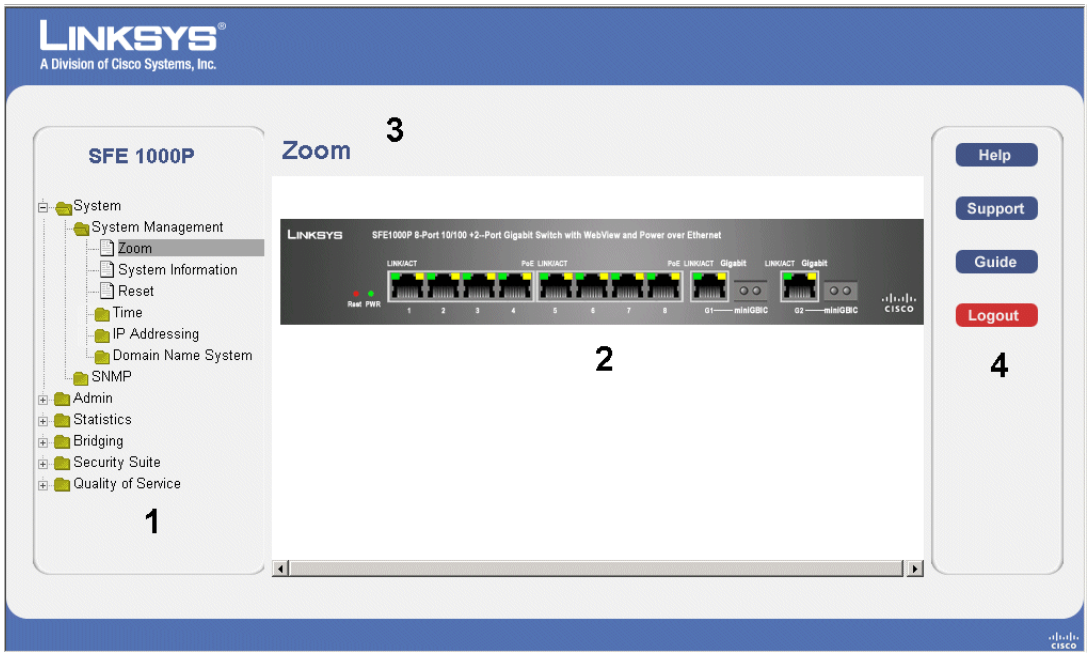
Understanding the Interface

The following table lists the interface components with their corresponding numbers:

Interface Components

Component	Description
1 Tree View	The Tree View provides easy navigation through the configurable device features.The main branches expand to provide the subfeatures.
2 Device View	The device view provides information about device ports, current configuration and status, table information, and feature components.The device view also displays other device information and dialog boxes for configuring parameters.
3 Table Area	The Table area enables navigating through the different device features. Click the tabs to view all the components under a specific feature.
4 EWS Information	The EWS information tabs provide access to the online help, contains information about the EWS.

Linksys User Interface Components



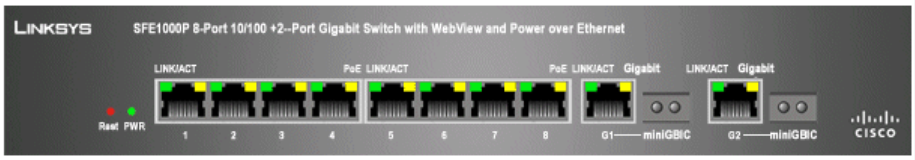
This section provides the following additional information:

- **Device Representation** — Provides an explanation of the Linksys user interface buttons, including both management buttons and task icons.
- **Using the Linksys Management Buttons** — Provides instructions for adding, modifying, and deleting device parameters.

Device Representation

The Linksys home page displays a graphical representation of the device:

Device Representation



The Linksys home page contains a graphical SFE1000 and SFE1000P front panel illustration.

Using the Linksys Management Buttons

Device Management buttons and icons provide an easy method of configuring device information, and include the following:

Device Management Buttons

Button Name	Button	Description
Apply	Apply	Applies changes to the device.
Clear Counters	Clear Counters	Clears statistic counters
Clear Logs	Clear Logs	Clears log files
Add	Add	Opens an Add page
Delete	Delete	Removes entries from tables
Reset	Reset	Resets the settlings of a selected port to the default settings
Test	Test	Performs cable tests immediately.

Using Screen and Table Options

Linksys contains screens and tables for configuring devices. This section contains the following topics:

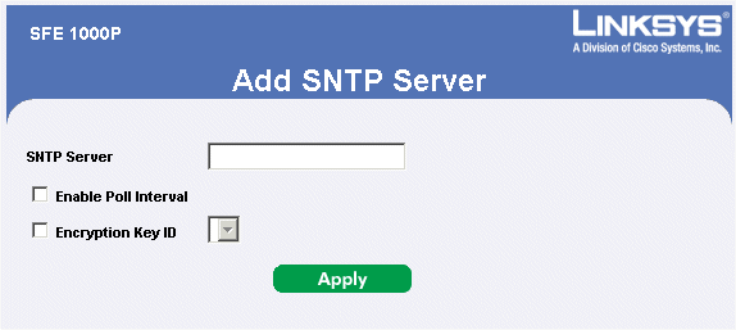
- Adding Device Information
- Modifying Device Information
- Deleting Device Information

Adding Device Information

User defined information can be added to specific EWS pages, by opening a new Add page. To add information to tables or EWS pages:

1. Open an EWS page.
2. Click the **Add** button. An add page opens, for example, the *Add SNTP Server Page*:

Add SNTP Server

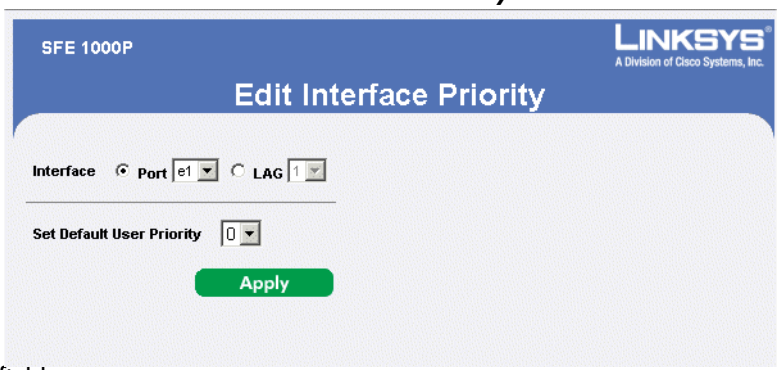


3. Define the fields.
4. Click **Apply**. The configuration information is saved, and the device is updated.

Modifying Device Information

1. Open the EWS page.
2. Select a table entry.
3. Click the **Edit** Button. A Modify page opens, for example, the *Interface Priority Page* opens:

Edit Interface Priority



4. Define the fields.
5. Click **Apply**. The fields are modified, and the information is saved to the device.

Deleting Device Information

1. Open the EWS page.
2. Select a table row.
3. Check the Remove checkbox.

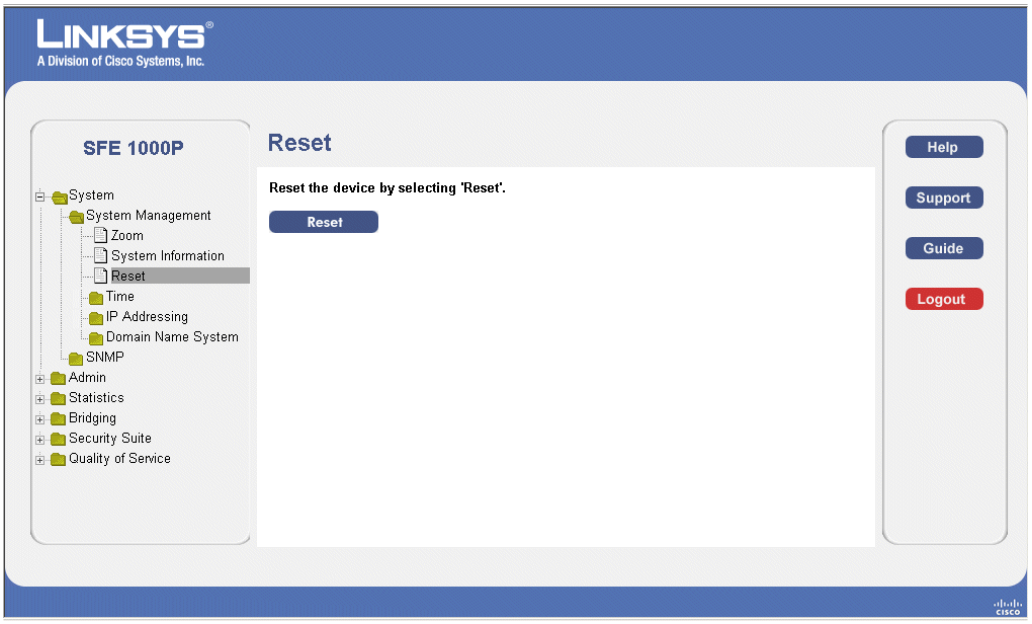
4. Click the Delete button. The information is deleted, and the device is updated.

Resetting the Device

The *Reset* page enables the device to be reset from a remote location. Save all changes to the Running Configuration file before resetting the device. This prevents the current device configuration from being lost. To reset the device:

1. Click **System > General > Reset**. The *Reset* page opens.

Reset Page



2. Click the **Reset** button. The device is reset, and a prompt for a user name and password is displayed.

3. Enter a user name and password to reconnect to the Web Interface, if the device is not part of a full Linksys One system. If the device is part of a Linksys One system, login is automatically done from the Service Router.

Logging Off The Device

Click Logout. The system logs off. The *Embedded Web System Home Page* closes.

Managing Device Information

This section provides information for defining both basic and advanced system information. This section contains the following topics:

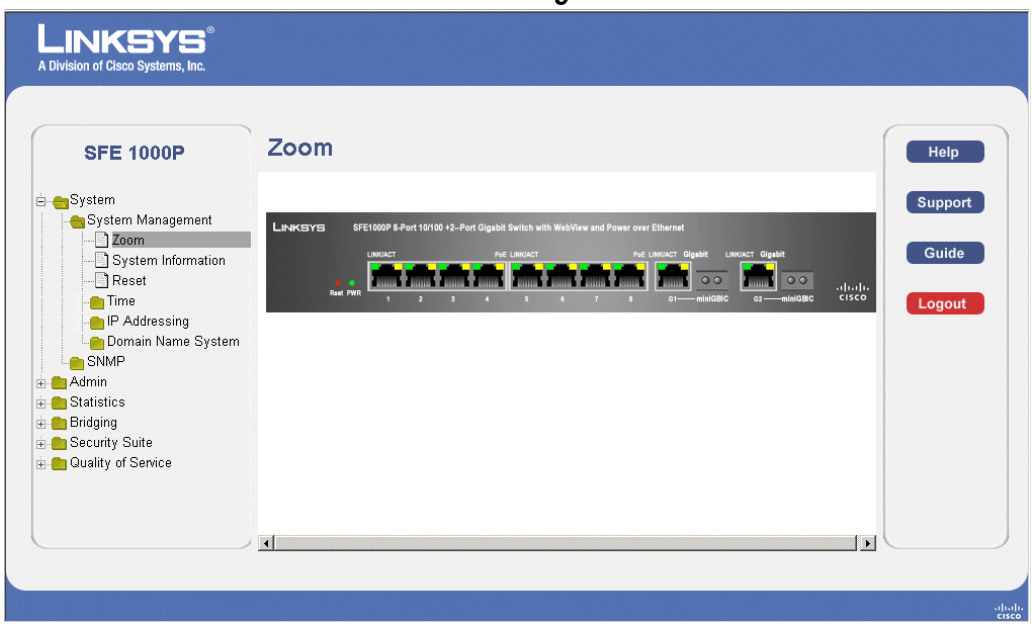
- Understanding the Device Zoom View
- Defining General System Information
- Resetting the Device

Understanding the Device Zoom View

The *Zoom Page* is the main window used for viewing the device. To open the Zoom Page:

Click the **System** > **System Management** > **Zoom**. The *Zoom Page* opens:

Zoom Page



The *Zoom Page* contains the following port indicators:

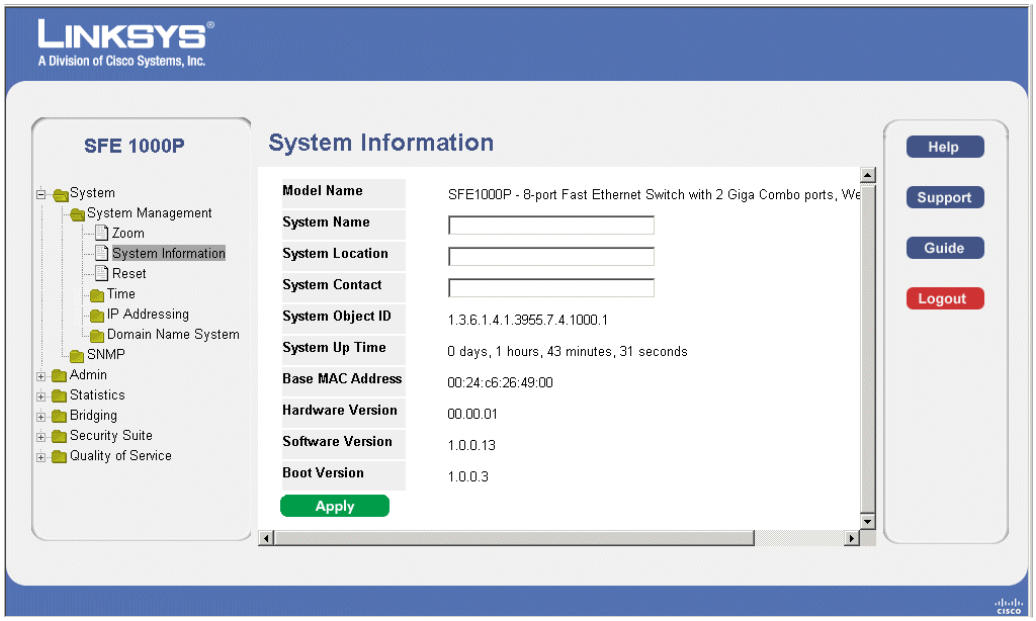
- **Green** — Indicates the port is currently operating.

Defining General System Information

The *System Information Page* contains parameters for configuring general device information.

1. Click the **System** > **System Management** > **System Information**. The *System Information Page* opens:

System Information Page



2. Enter information into the appropriate fields and press **Apply**.

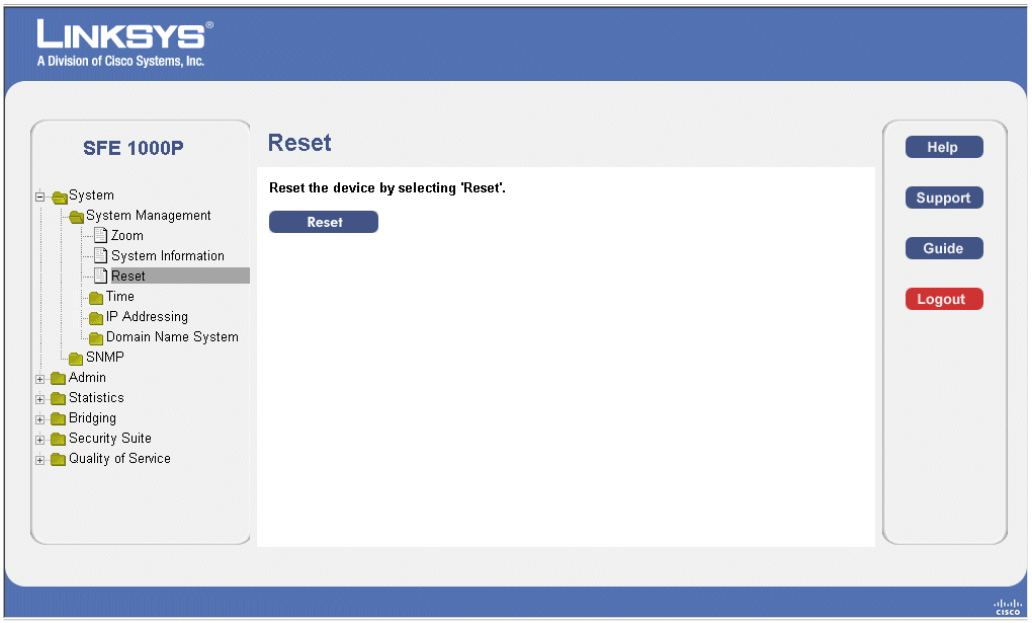
Resetting the Device

The *Reset* page enables the device to be reset from a remote location. Save all changes to the Startup Configuration file before resetting the device. This prevents the current device configuration from being lost.

To reset the device:

1. Click **System > General > Reset**. The *Reset* page opens.

Reset Page



2. Click the **Reset** button.

3. Enter a user name and password to reconnect to the Web Interface. If the device is part of a Linksys One system, login is automatically done from the Service Router.

Managing Power-over-Ethernet Devices

Power-over-Ethernet (PoE) provides power to devices over existing LAN cabling, without updating or modifying the network infrastructure. Power-over-Ethernet removes the necessity of placing network devices next to power sources.

Power-over-Ethernet can be used in the following applications:

- IP Phones
- Wireless Access Points
- IP Gateways
- PDAs
- Audio and video remote monitoring

Defining PoE Settings

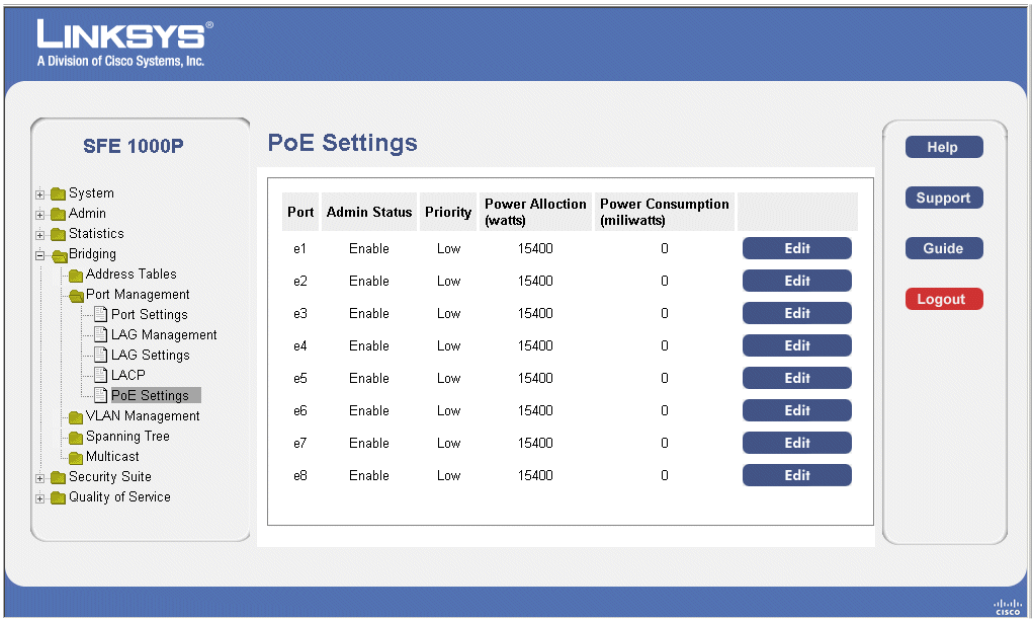
Powered Devices are devices which receive power from the device power supplies, for example IP phones. Powered Devices are connected to the device via Ethernet ports. Guard Band protects the device from exceeding the maximum power level. For example, if 400W is maximum power level, and the Guard Band is 20W, if the total system power consumption exceeds 380W no additional PoE components can be added. The accumulated PoE components power consumption is rounded down for display purposes, therefore remove value after decimal point.

NOTE: Due to hardware limitations, the power measurement accuracy is 4%.

The *PoE Settings Page* contains system PoE information for enabling PoE on the device, monitoring the current power usage, and enabling PoE traps.

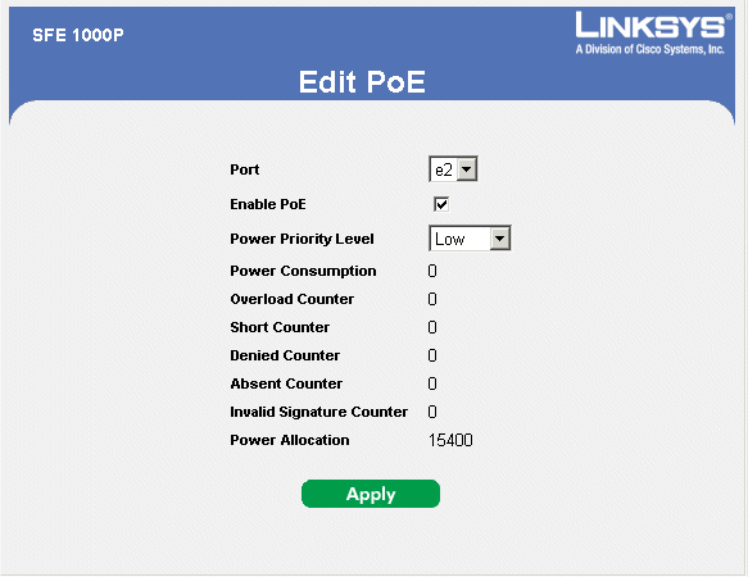
1. Click **Bridging** > **Port Management** > **PoE Settings**. The *PoE Settings Page* opens:

PoE Settings Page



2. Click the **Edit** button. The *Edit PoE* opens:

Edit PoE



3. Define the relevant fields.

4. Click **Apply**. The PoE Settings are defined, and the device is updated.

Configuring Device Security

The Security Suite contains the following sections:

- Passwords Management
- Defining Authentication
- Defining Access Method
- Defining Traffic Control
- Defining 802.1x
- Defining Access Control
- Defining DoS Prevention

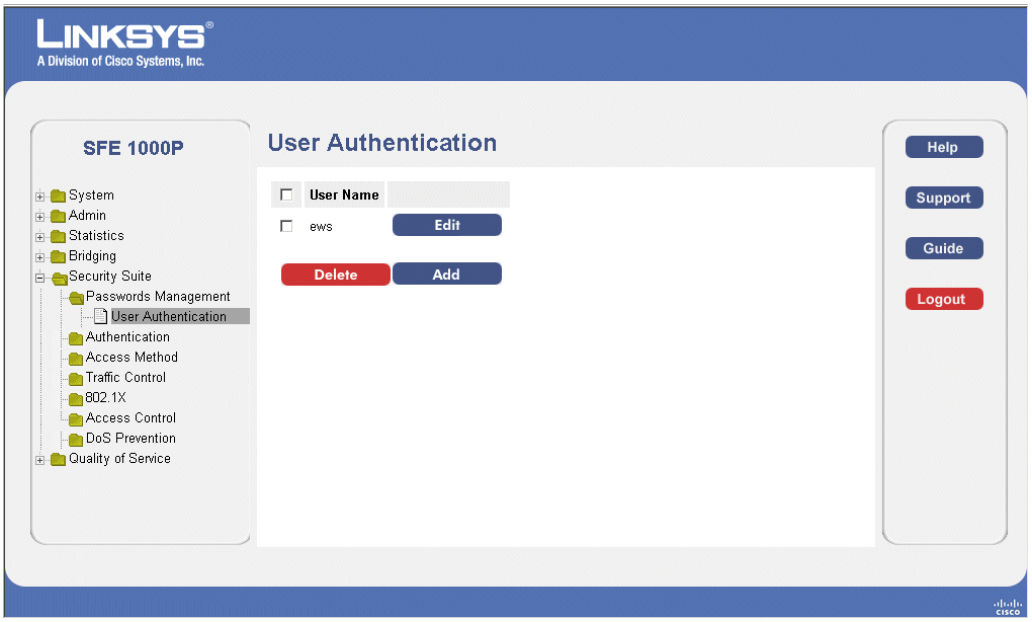
Passwords Management

This section contains information for defining passwords. Passwords are used to authenticate users accessing the device.

NOTE: By default, a single user name is defined, "admin", with no password. An additional user name/ password is configured for use in the system.

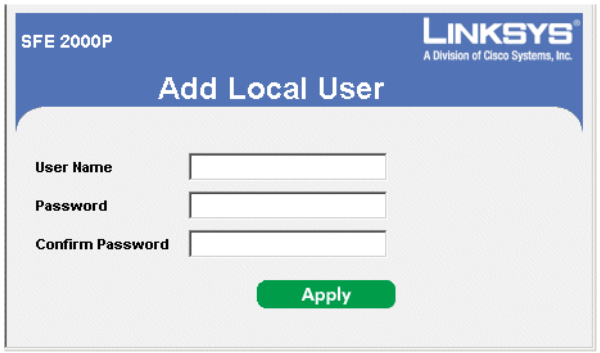
1. Click **Security Suite** > **Passwords Management** > **User Authentication**. The *User Authentication Page* opens:

User Authentication Page.



2. Click the **Add** button. The *Add Local User Page* opens:

Add Local User Page



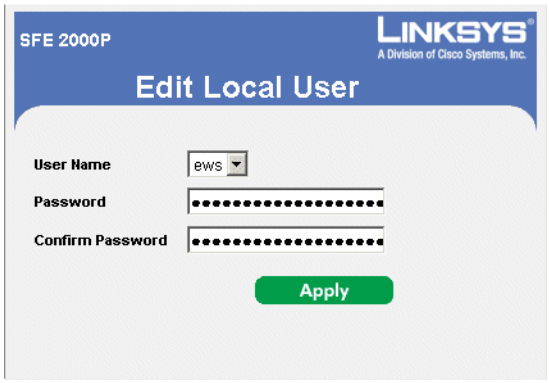
3. Define the relevant fields.

4. Click **Apply**. The local user settings are modified.

Modifying the Local User Settings

1. Click **Security Suite** > **Passwords Management** > **User Authentication**. The *User Authentication Page Opens:*
2. Click the **Edit** Button. The *Edit Local User Page* opens:

Edit Local User Page



3. Define the relevant fields.
4. Click **Apply**. The local user settings are modified, and the device is updated.

Defining Authentication

The Authentication section contains the following pages:

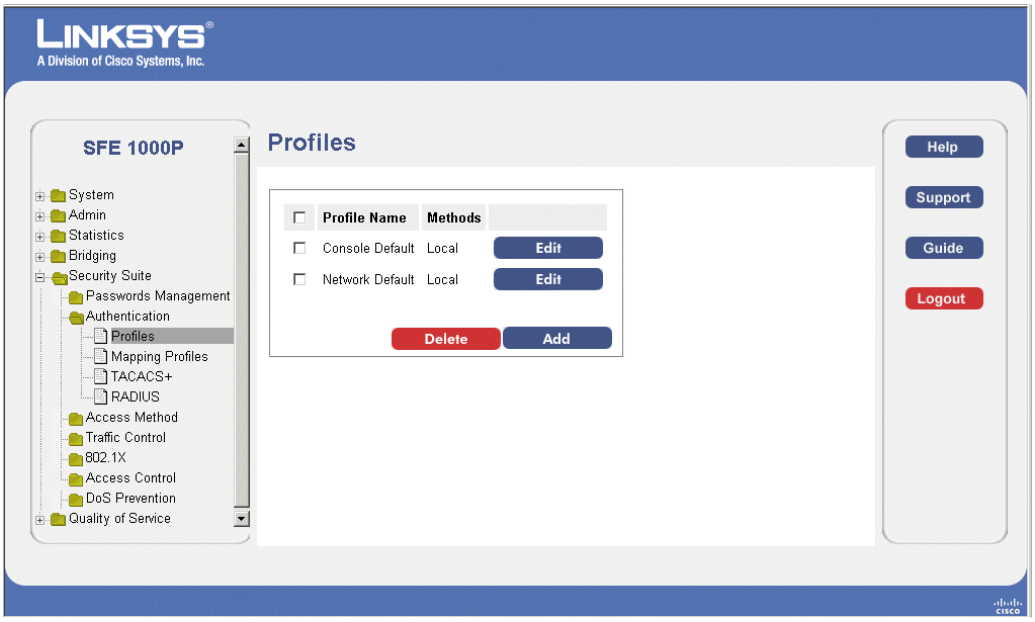
- Defining Authentication Profiles
- Mapping Authentication Profiles
- Defining TACACS+
- Defining RADIUS

Defining Authentication Profiles

Authentication profiles allow network administrators to assign authentication methods for user authentication. User authentication can be performed locally or on an external server. User authentication occurs in the order the methods are selected. If the first authentication method is not available, the next selected method is used. For example, if the selected authentication methods are RADIUS and Local, and the RADIUS server is not available, then the user is authenticated locally.

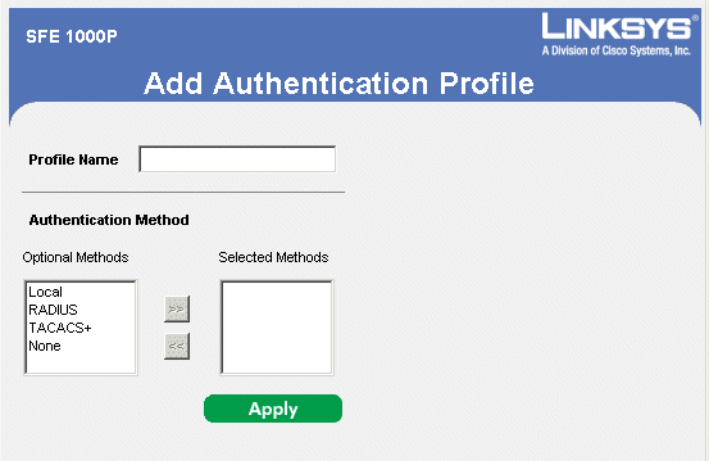
1. Click **Security Suite** > **Authentication** > **Profiles**. The *Profiles Page* opens:

Profiles Page



2. Click the **Add** button. The *Add Authentication Profile Page* opens:

Add Authentication Profile Page



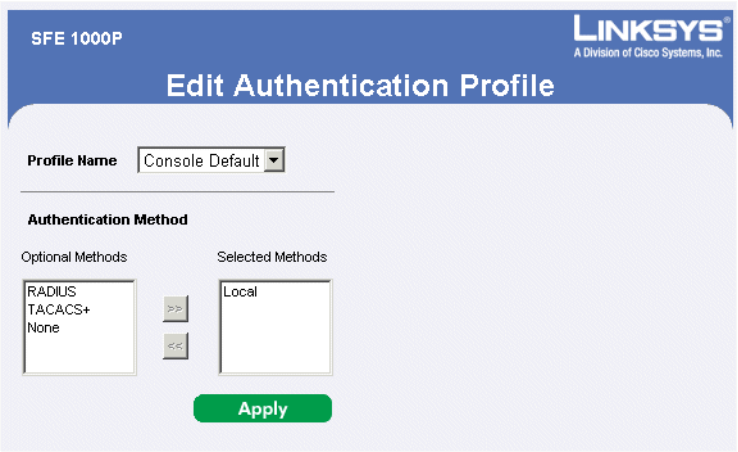
3. Define the relevant fields.

4. Click **Apply**. The settings are modified, and the device is updated.

Modify the Authentication Profile

1. Click **Security Suite** > **Authentication** > **Profiles**. The *Profiles Page* opens:
2. Click the **Edit** Button. The *Edit Authentication Profile Page opens:*

Edit Authentication Profile Page



3. Define the relevant fields.
4. Click **Apply**. The authentication profile is defined, and the device is updated.

Mapping Authentication Profiles

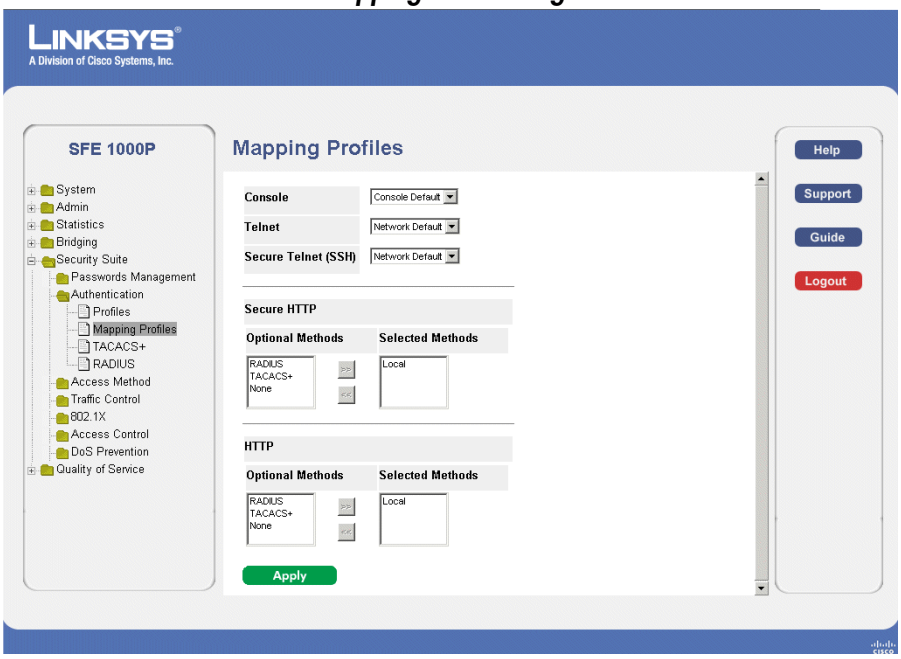
After authentication profiles are defined, they can be applied to management access methods. For example, console users can be authenticated by one authentication profile, while Telnet users are authenticated by another authentication profile.

Authentication methods are selected using arrows. The order in which the methods are selected is the order by which the authentication methods are used.

The *Mapping Profiles Page* contains parameters for mapping authentication methods.

1. Click **Security Suite** > **Authentication > Mapping Profiles**. The *Mapping Profiles Page* opens:

Mapping Profiles Page



2. Define the relevant fields.

3. Click **Apply**. Mapping Profiles is defined, and the device is updated.

Defining TACACS+

The devices provide Terminal Access Controller Access Control System (TACACS+) client support. TACACS+ provides centralized security for validation of users accessing the device. TACACS+ provides a centralized user management system, while still retaining consistency with RADIUS and other authentication processes. TACACS+ provides the following services:

- **Authentication** — Provides authentication during login and via user names and user-defined passwords.

- **Authorization** — Performed at login. Once the authentication session is completed, an authorization session starts using the authenticated user name. The TACACS server checks the user privileges.

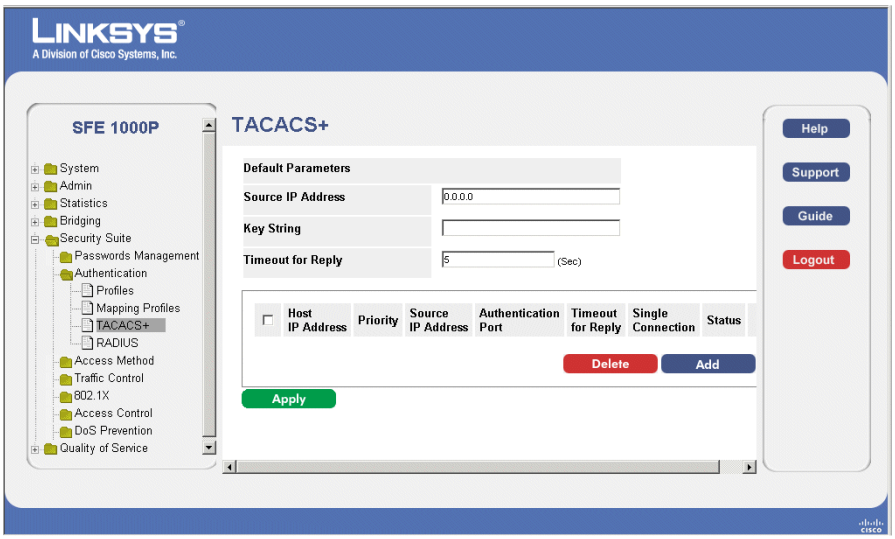
The TACACS+ protocol ensures network integrity through encrypted protocol exchanges between the device and TACACS+ server.

The TACACS+ default parameters are user-assigned 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+ new servers. The *TACACS+ Page* contains fields for assigning the Default Parameters for the TACACS+ servers.

To define TACACS+:

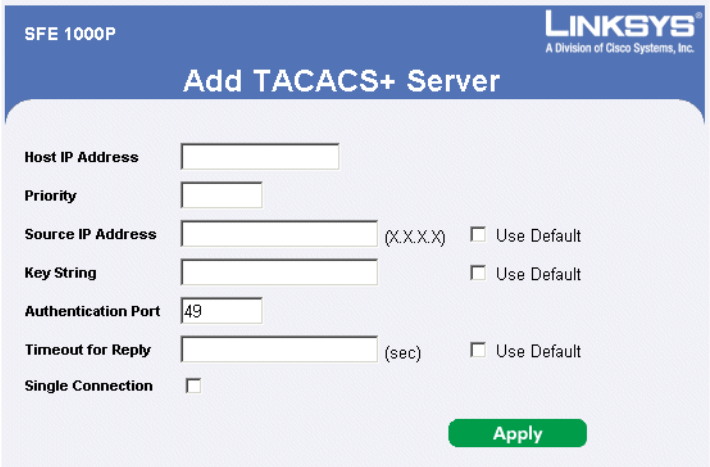
1. Click **Security Suite** > **Authentication > TACACS+**. The *TACACS+ Page* opens:

TACACS+ Page



2. Click The **Add** button. The *Add TACACS+ Server Page* opens:

Add TACACS+ Server Page



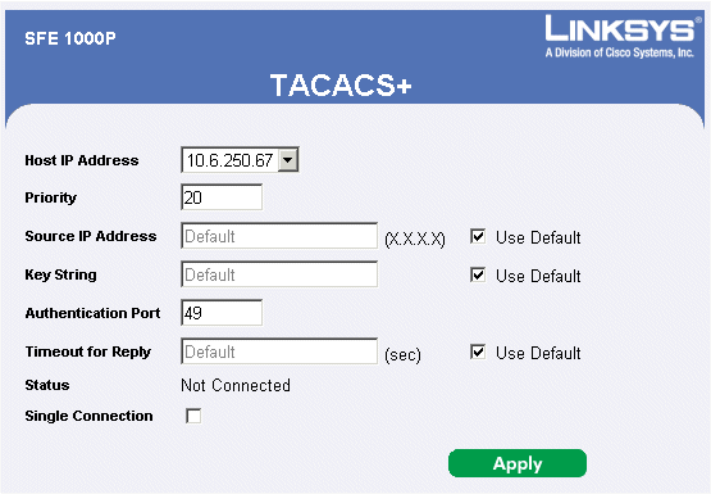
3. Add a TACACS+ server.

4. Click **Apply**. The TACACS+ server is added, and the device is updated.

Modifying TACACS+ Settings

1. Click **Security Management** > **Security Suite** > **Authentication**. The *TACACS+ Page* opens:
2. Click the **Edit** Button. The *TACACS+ Page* opens:

TACACS+ Page



3. Define the relevant fields.
4. Click **Apply**. The TACACS+ settings are modified, and the device is updated.

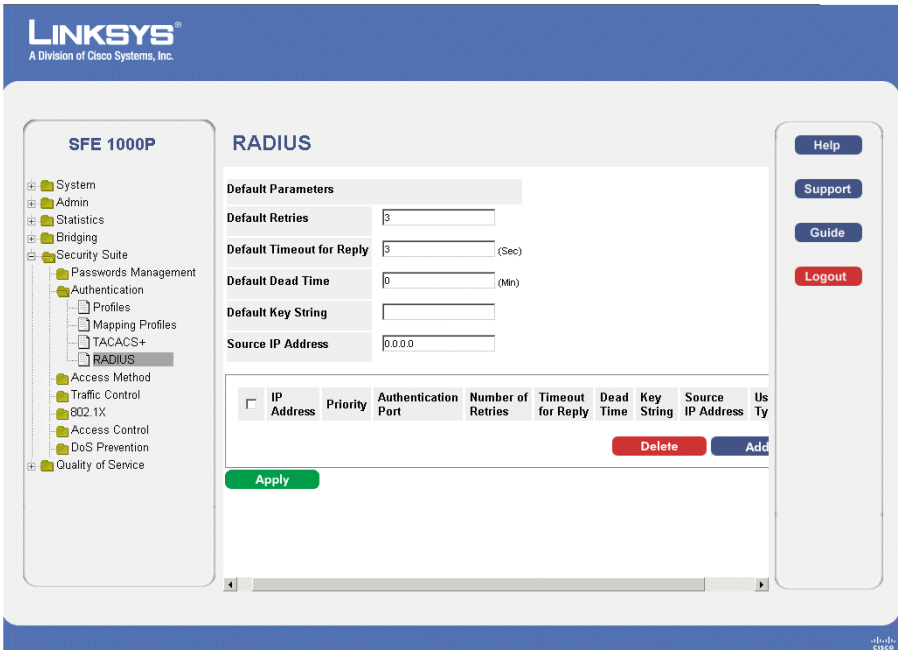
Defining RADIUS

Remote Authorization Dial-In User Service (RADIUS) servers provide additional security for networks. RADIUS servers provide a centralized authentication method for web access. The default parameters are user-defined, and are applied to newly defined RADIUS servers. If new default parameters are not defined, the system default values are applied to newly defined RADIUS servers.

To define RADIUS:

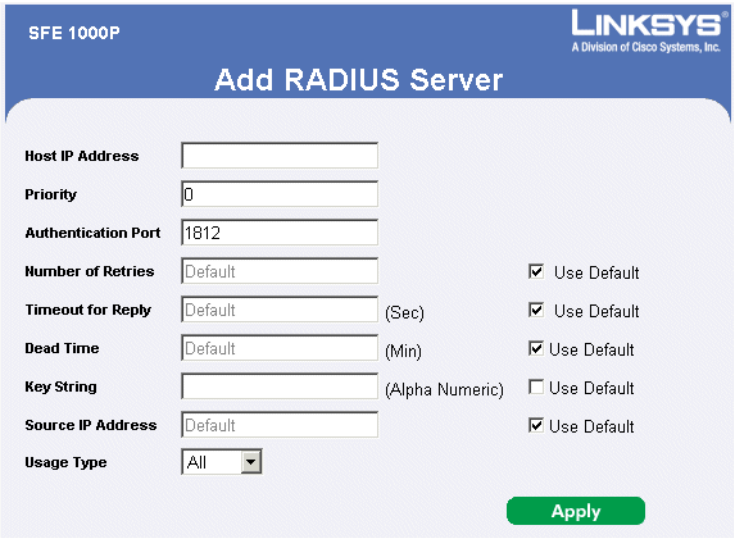
1. Click **Security Suite** > **Authentication > RADIUS**. The *RADIUS Page* opens:

RADIUS Page



2. Click the **Add** button. The *Add Radius Server Page* opens:

Add Radius Server Page



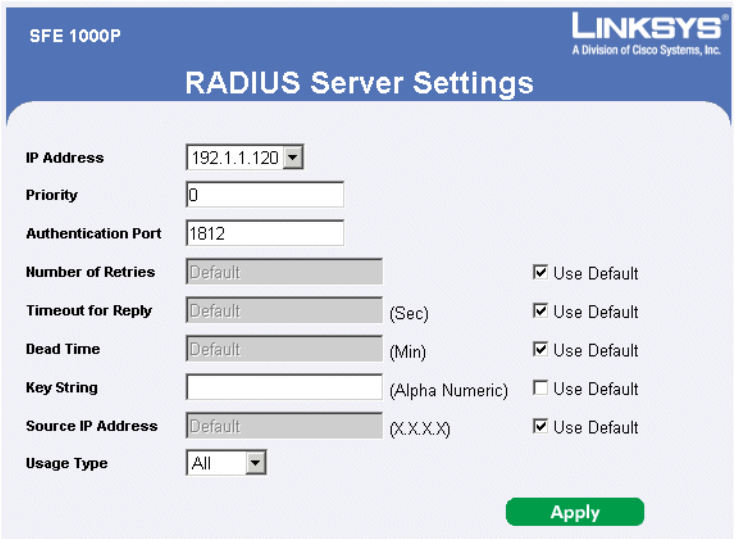
3. Define the relevant fields.

4. Click **Apply**. The Radius Server is added, and the device is updated.

Modifying RADIUS Server Settings

1. Click **Security Suite** > **Authentication > RADIUS**. The *RADIUS Page* opens:
2. Click the **Edit** button. The *Edit RADIUS Settings Page* opens:

Edit RADIUS Settings Page



3. Define the relevant fields.
4. Click **Apply**. The RADIUS Server settings are modified, and the device is updated.

Defining Access Method

The access method section contains the following pages:

- Defining Access Profiles
- Defining Profile Rules

Defining Access Profiles

Access profiles are profiles and rules for accessing the device. Access to management functions can be limited to user groups. User groups are defined for interfaces according to IP addresses or IP subnets. Access profiles contain management methods for accessing and managing the device. The device management methods include:

- All
- Telnet
- Secure Telnet (SSH)
- HTTP

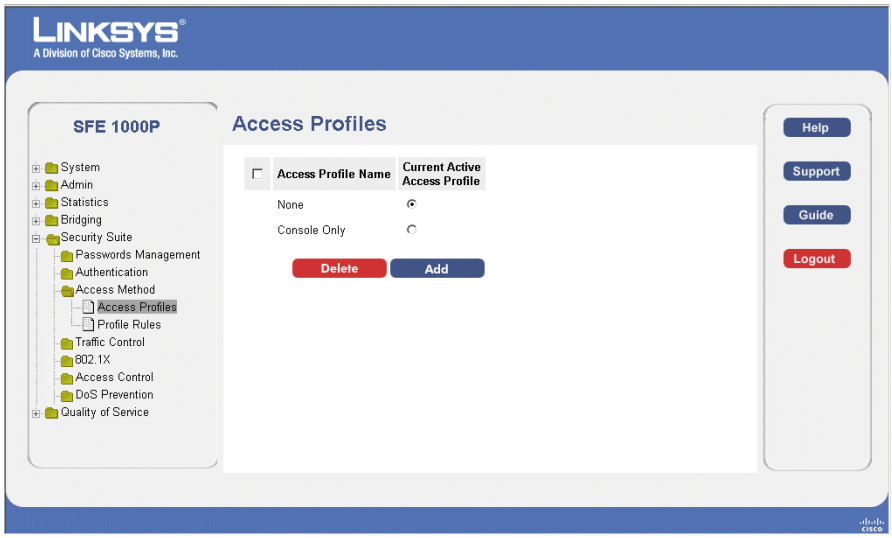
- Secure HTTP (HTTPS)
- SNMP

Management access to different management methods may differ between user groups. For example, User Group 1 can access the switch module only via an HTTPS session, while User Group 2 can access the switch module via both HTTPS and Telnet sessions. The Access Profile Page contains the currently configured access profiles and their activity status. Assigning an access profile to an interface denies access via other interfaces. If an access profile is assigned to any interface, the device can be accessed by all interfaces.

To define access profiles:

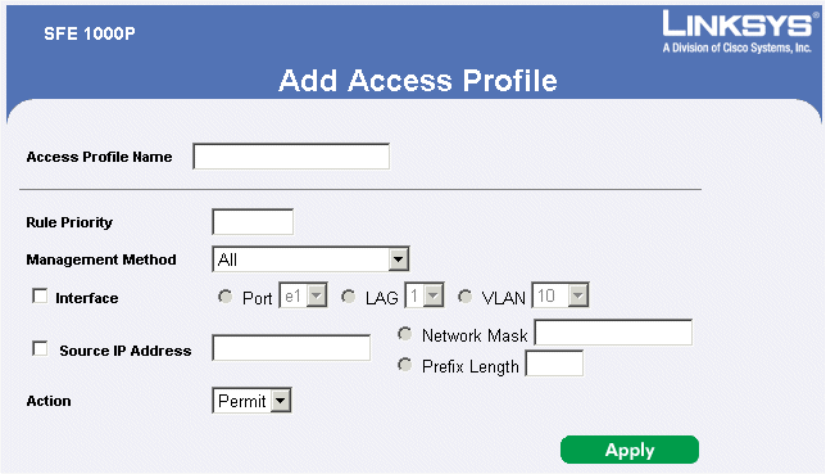
1. Click **Security Suite** > **Access Method** > **Access Profiles**. The *Access Profiles Page* opens:

Access Profiles Page



2. Click the **Add** button. The *Add Access Profile Page* opens:

Add Access Profile Page



3. Define the relevant fields.
4. Click **Apply**. The access profile is added, and the device is updated.

Defining Profile Rules

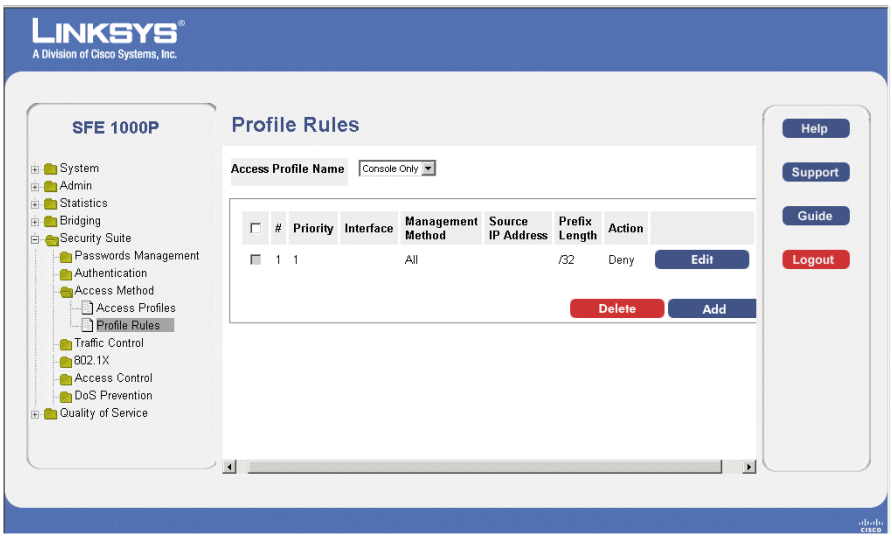
Access profiles can contain up to 128 rules that determine which users can manage the switch module, and by which methods. Users can also be blocked from accessing the device. Rules are composed of filters including:

- Rule Priority
- Interface
- Management Method
- IP Address
- Prefix Length
- Forwarding Action

To define profile rules:

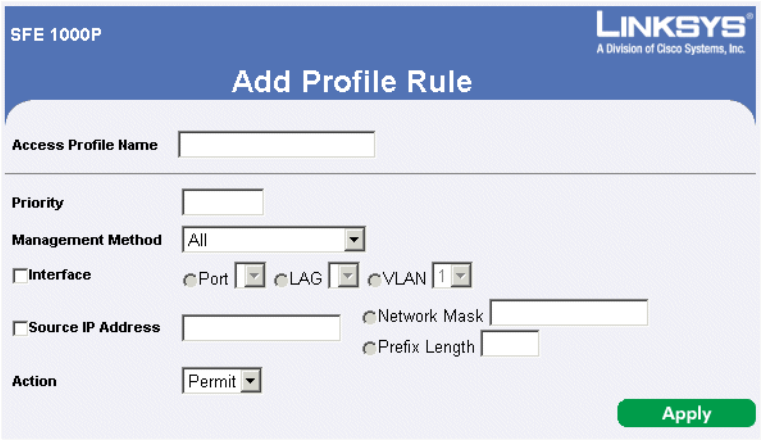
1. Click **Security Suite** > **Access Method** > **Profile Rules**. The *Profile Rules Page* opens:

Profile Rules Page



2. Click the **Add** button. The *Add Profile Rule Page* opens:

Add Profile Rule Page



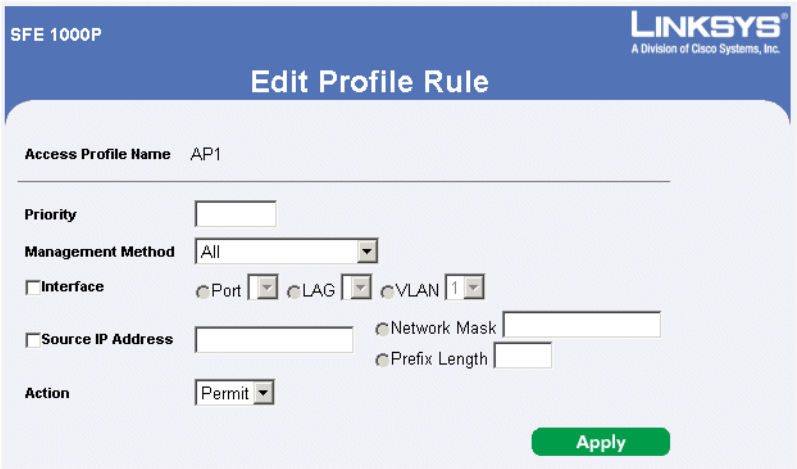
3. Define the relevant fields.

4. Click **Apply**. The profile rule settings are added, and the device is updated.

Modifying Profile Rules

1. Click **Security Suite** > **Access Method** > **Profile Rules**. The *Profile Rules Page* opens:
2. Click the **Edit** button. The *Edit Profile Rule Page* opens:

Edit Profile Rule Page



3. Define the relevant fields.
4. Click **Apply**. The profile rules are defined, and the device is updated.

Defining Traffic Control

The Traffic Control section contains the following pages:

- Defining Storm Control
- Defining Port Security

Defining Storm Control

Storm Control enables limiting the amount of Multicast and Broadcast frames accepted and forwarded by the device. When Layer 2 frames are forwarded, Broadcast and Multicast frames are flooded to all ports on the relevant VLAN. This occupies bandwidth, and loads all nodes connected on all ports.

A Broadcast Storm is a result of an excessive amount of broadcast messages simultaneously transmitted across a network by a single port. Forwarded message responses are heaped onto the network, straining network resources or causing the network to time out.

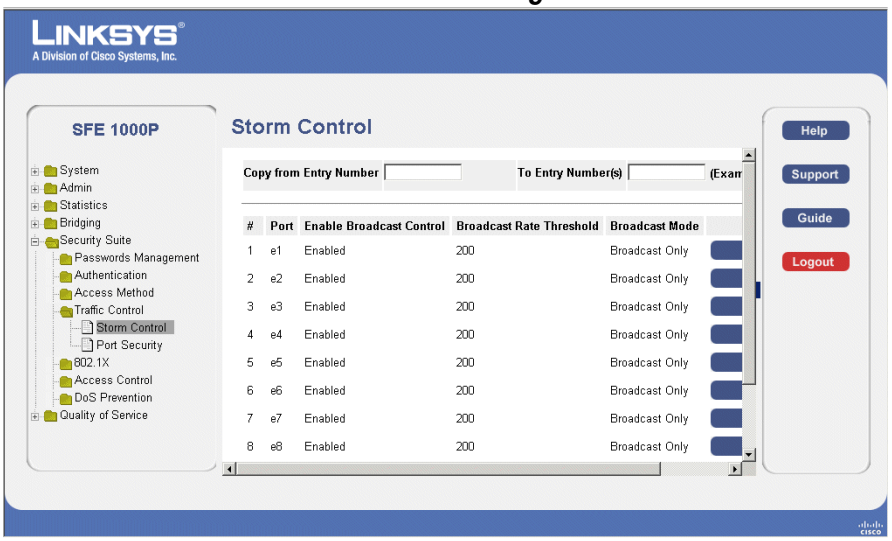
Storm Control is enabled per all ports by defining the packet type and the rate the packets are transmitted. The system measures the incoming Broadcast and Multicast frame rates separately on each port and discards the frames when the rate exceeds a user-defined rate.

The Storm Control Page provides fields for configuring Broadcast Storm Control.

To define storm control:

1. Click **Security Suite** > **Traffic Control** > **Storm Control**. The *Storm Control Page* opens:

Storm Control Page



2. Define the relevant fields.
3. Click **Apply**. Storm control is enabled, and the device is updated.

Modifying Storm Control

1. Click **Security Suite** > **Traffic Control** > **Storm Control**. The *Storm Control Page* opens:
2. Click the **Edit** Button. The *Edit Storm Control Page* opens:

Edit Storm Control Page

3. Modify the relevant fields.
4. Click **Apply**. Storm control is modified, and the device is updated.

Defining Port Security

Network security can be increased by limiting access on a specific port only to users with specific MAC addresses. The MAC addresses can be dynamically learned or statically configured. Locked port security monitors both received and learned packets that are received on specific ports. Access to the locked port is limited to users with specific MAC addresses. These addresses are either manually defined on the port, or learned on that port up to the point when it is locked. When a packet is received on a locked port, and the packet source MAC address is not tied to that port (either it was learned on a different port, or it is unknown to the system), the protection mechanism is invoked, and can provide various options. Unauthorized packets arriving at a locked port are either:

- Forwarded
- Discarded with no trap
- Discarded with a trap
- Cause the port to be shut down.

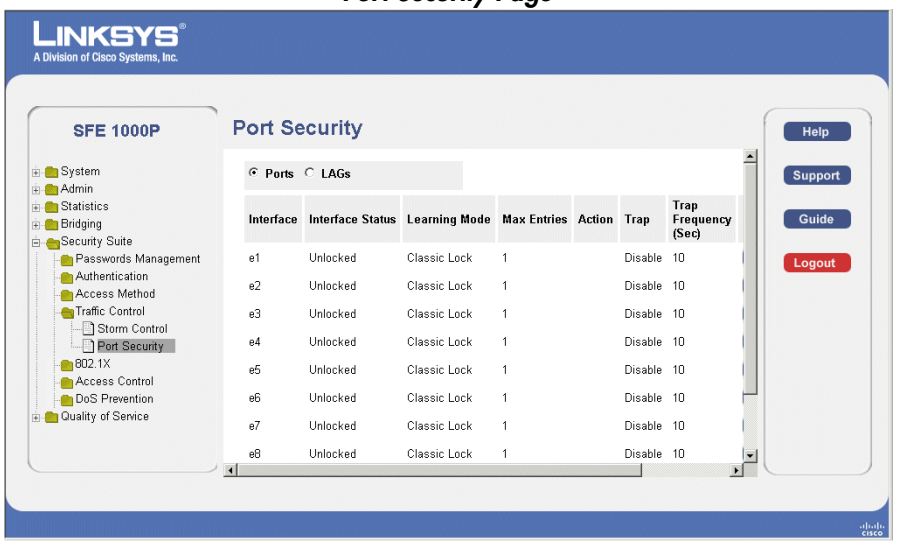
Locked port security also enables storing a list of MAC addresses in the configuration file. The MAC address list can be restored after the device has been reset. Disabled ports are activated from the *Port Management* page.

NOTE: To configure port lock, 802.1x multiple host mode must be enabled.

Perform the following to define port security:

1. Click **Security Suite** > **Traffic Control** > **Port Security**. The *Port Security Page* opens:

Port Security Page

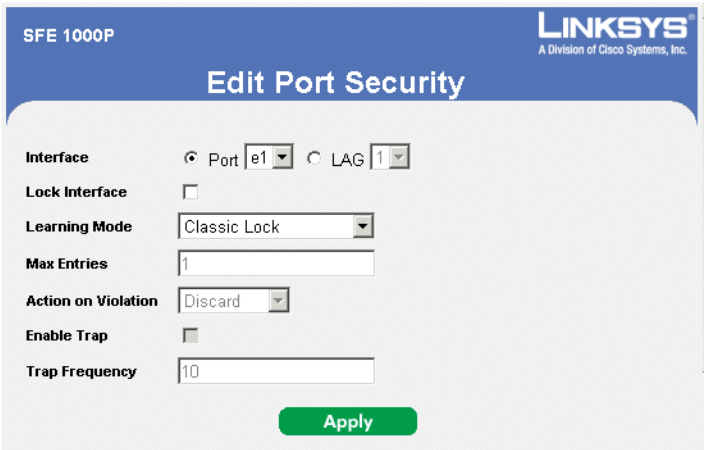


2. Define the relevant fields.
3. Click **Apply**. Port security is defined, and the device is updated.

Modifying Port Security

1. Click **Security Suite** > **Traffic Control** > **Port Security**. The *Port Security Page* opens:
2. Click the **Edit** Button. The *Edit Port Security Page* opens:

Edit Port Security Page



3. Modify the relevant fields.
4. Click **Apply**. Port security is modified, and the device is updated.

Defining 802.1x

Port based authentication enables authenticating system users on a per-port basis via a external server. Only authenticated and approved system users can transmit and receive data. Ports are authenticated via the RADIUS server using the Extensible Authentication Protocol (EAP). Port Authentication includes:

- **Authenticators** — Specifies the port, which is authenticated before permitting system access.
- **Supplicants** — Specifies host connected to the authenticated port requesting to access the system services.
- **Authentication Server** — Specifies the external server, for example, the RADIUS server that performs the authentication on behalf of the authenticator, and indicates whether the supplicant is authorized to access system services.

Port based authentication creates two access states:

- **Controlled Access** — Permits communication between the supplicant and the system, if the supplicant is authorized.
- **Uncontrolled Access** — Permits uncontrolled communication regardless of the port state.

The 802.1x page configures port to use Extensible Authentication Protocol (EAP).

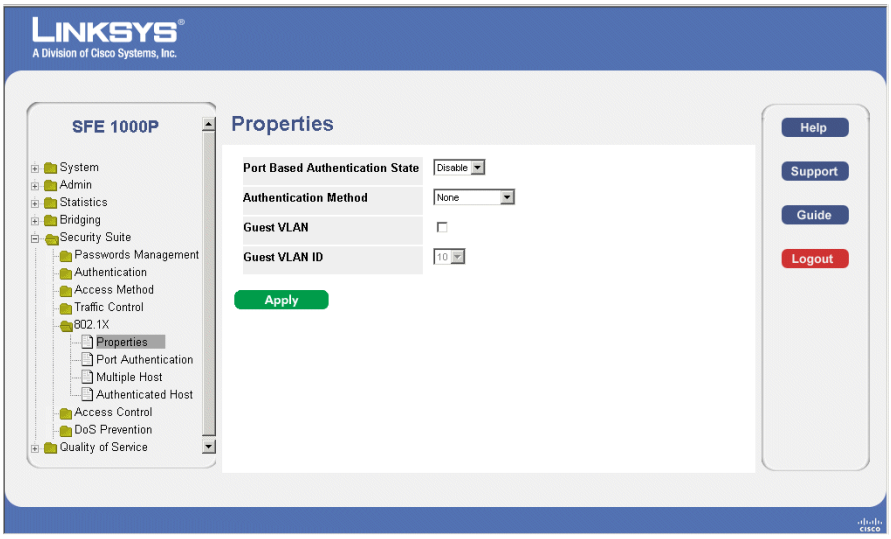
The 802.1x section contains the following pages:

- Defining 802.1X Properties
- Defining Port Authentication
- Defining Multiple Hosts
- Defining Authenticated Host

The *802.1x* page configures port to use Extensible Authentication Protocol (EAP).

1. Click **Security Suite** > **802.1X** > **Properties**. The *802.1X Properties Page* opens:

802.1X Properties Page



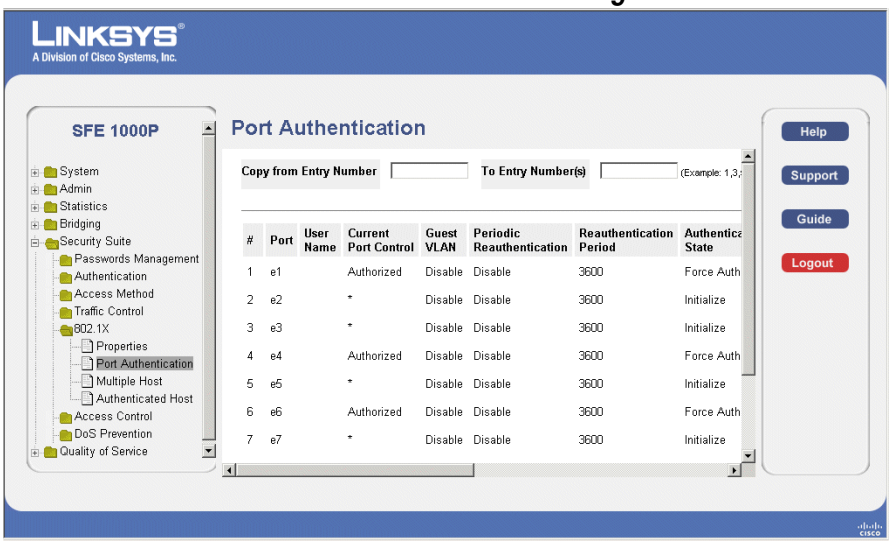
2. Define the relevant fields.

3. Click **Apply**. The 802.1X properties are defined, and the device is updated.

Defining Port Authentication

1. Click **Security Suite** > **802.1X** > **Port Authentication**. The *802.1X Properties Page* opens:

802.1X *Port Authentication Page*



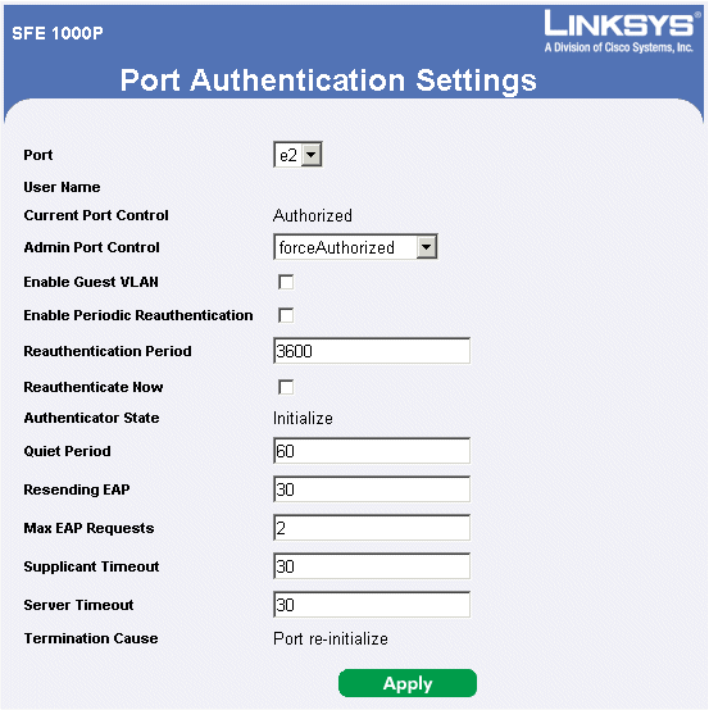
2. Define the relevant fields.

3. Click **Apply**. The port authentication settings are modified, and the device is updated.

Modifying 8021X Security

1. Click **Security Suite** > **802.1X** > **Properties**. The *802.1X Properties Page* opens:
2. Click the **Edit** button. The *Port Authentication Settings Page* opens:

Port Authentication Settings Page



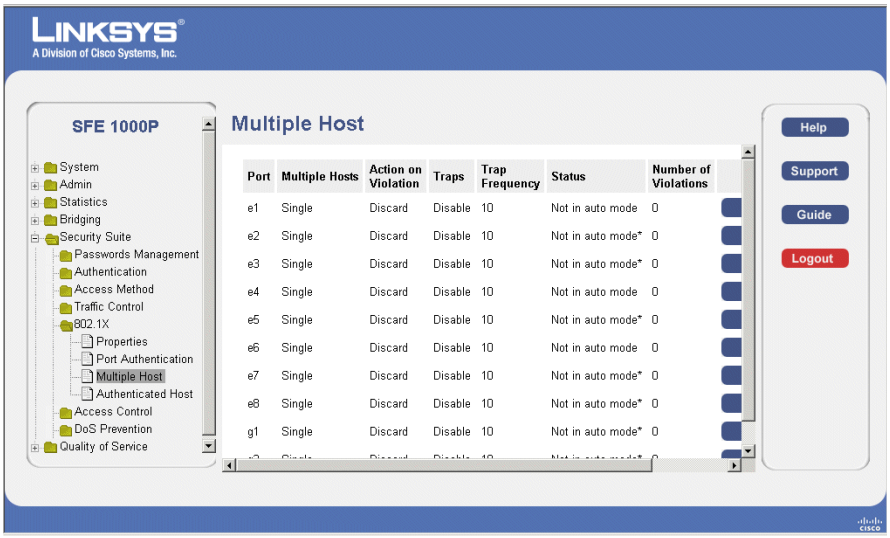
3. Modify the relevant fields.
4. Click **Apply**. The port authentication settings are defined, and the device is updated.

Defining Multiple Hosts

The *802.1X Multiple Host Page* allows network managers to configure advanced port-based authentication settings for specific ports and VLANs.

1. Click **Security Suite** > **802.1X** > **Multiple Host**. The *802.1X Multiple Host Page* opens:

802.1X Multiple Host Page

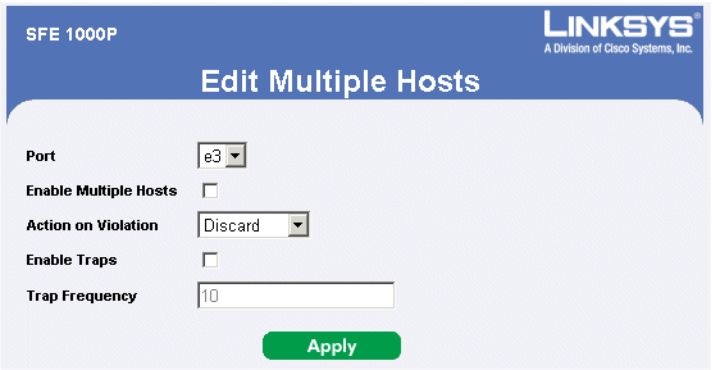


2. Define the relevant fields.
3. Click **Apply**. The host settings are modified, and the device is updated.

Modifying Multiple Host Settings

1. Click **Security Suite** > **802.1X** > **Multiple Host**. The *802.1X Properties Page* opens:
2. Click the **Edit** button. The *Edit Multiple Host Page* opens:

Edit Multiple Host Page



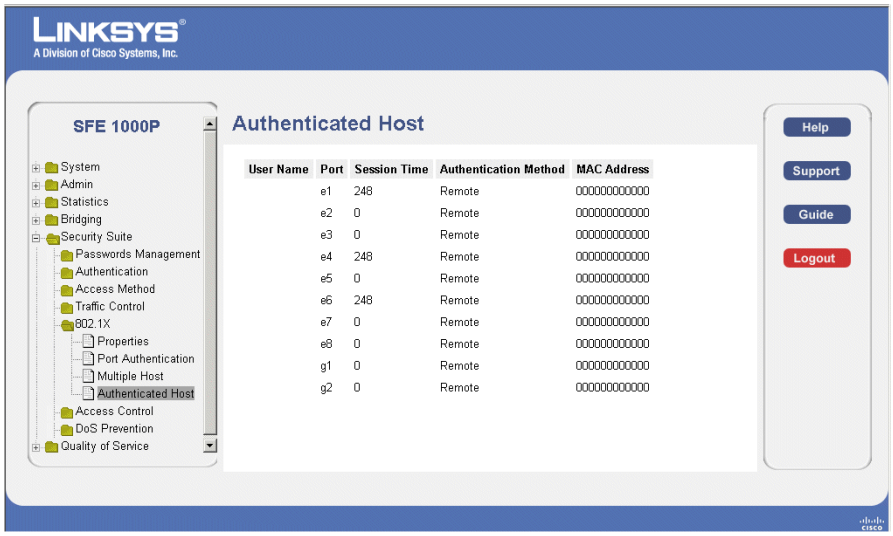
3. Modify the relevant fields.
4. Click **Apply**. The multiple host settings are defined, and the device is updated.

Defining Authenticated Host

The *Authenticated Host Page* contains a list of authenticated users.

1. Click **Security Suite** > **802.1X** > **Authenticated Host**. The *Authenticated Host Page* opens:

Authenticated Host Page



2. Define the relevant fields.

3. Click **Apply**. The authenticated host settings are defined, and the device is updated.

Defining Access Control

Access Control Lists (ACL) allow network managers to define classification actions and rules for specific ingress ports. Your switch supports up to 256 ACLs. Packets entering an ingress port, with an active ACL, are either admitted or denied entry. If they are denied entry, the user can disable the port. ACLs are composed of access control entries (ACEs) that are made of the filters that determine traffic classifications. The total number of ACEs that can be defined in all ACLs together is 256.

The Access Control section contains the following pages:

- Defining MAC Based ACL
- Defining IP Based ACL
- Defining ACL Binding

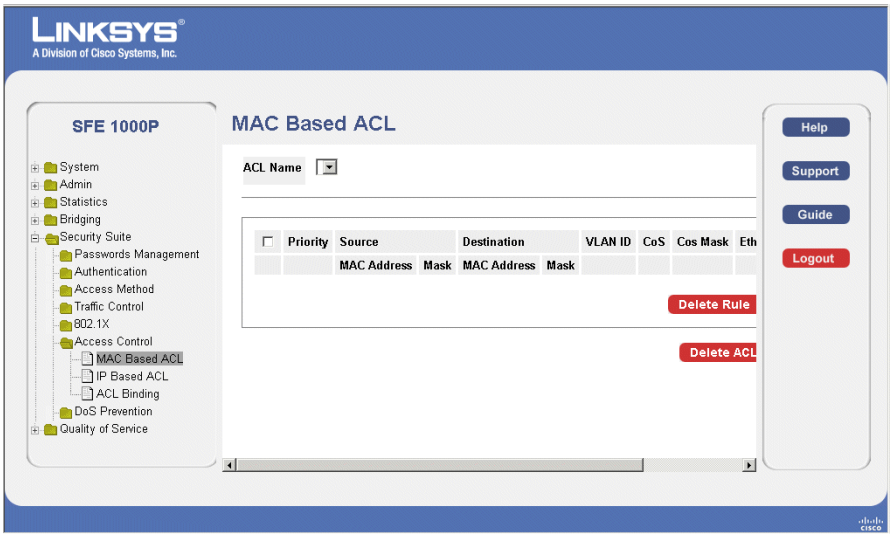
Defining MAC Based ACL

The *MAC Based ACL Page* page allows a MAC-based Access Control List (ACL) to be defined. The table lists Access Control Elements (ACE) rules, which can be added only if the ACL is not bound to an interface.

To define the MAC Based ACL:

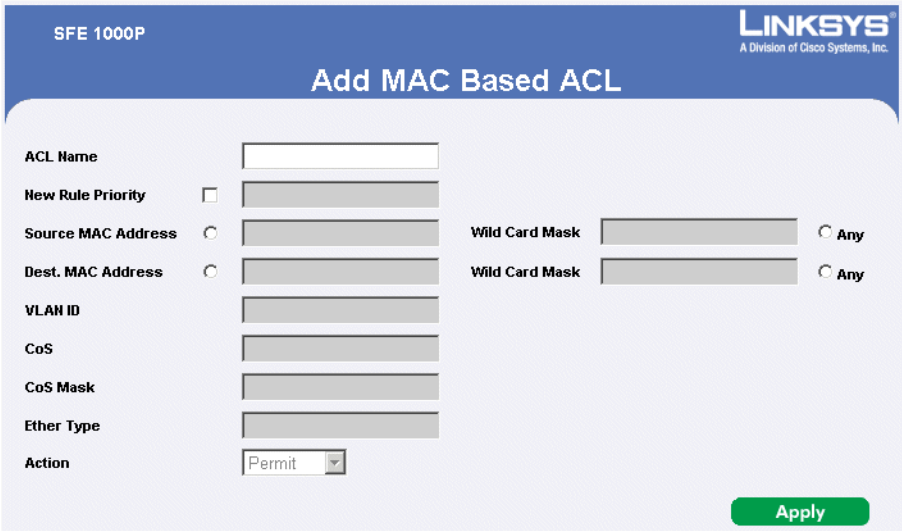
1. Click **Security Suite** >**Access Control** > **MAC Based ACL**. The *MAC Based ACL Page* opens:

MAC Based ACL Page



2. Click the **Add ACL** button. The *Add MAC Based ACL Page* opens:

Add MAC Based ACL Page



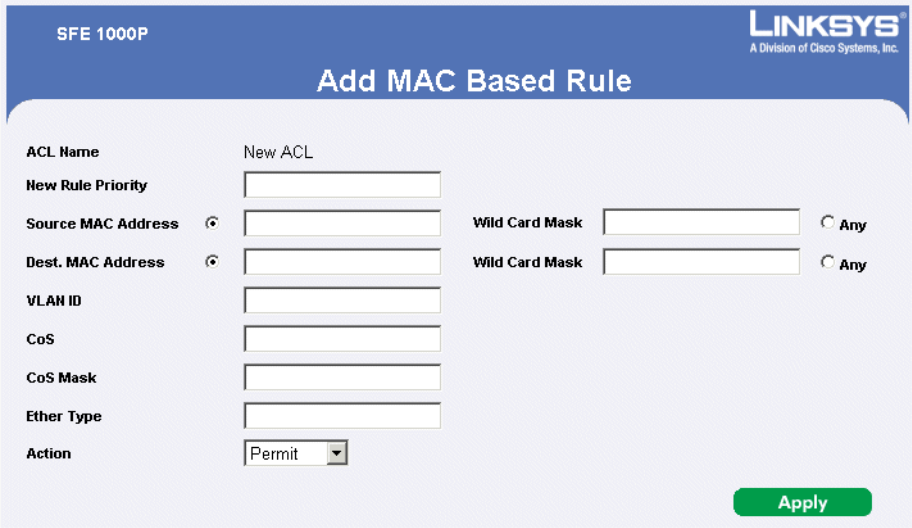
3. Define the relevant fields.

4. Click **Apply**. The MAC Based ACL is defined, and the device is updated.

Adding Rule to MAC Based ACL

1. Select an existing ACL.
2. Click the Add Rule button. The *Add MAC Based Rule Page* opens:

Add MAC Based Rule Page



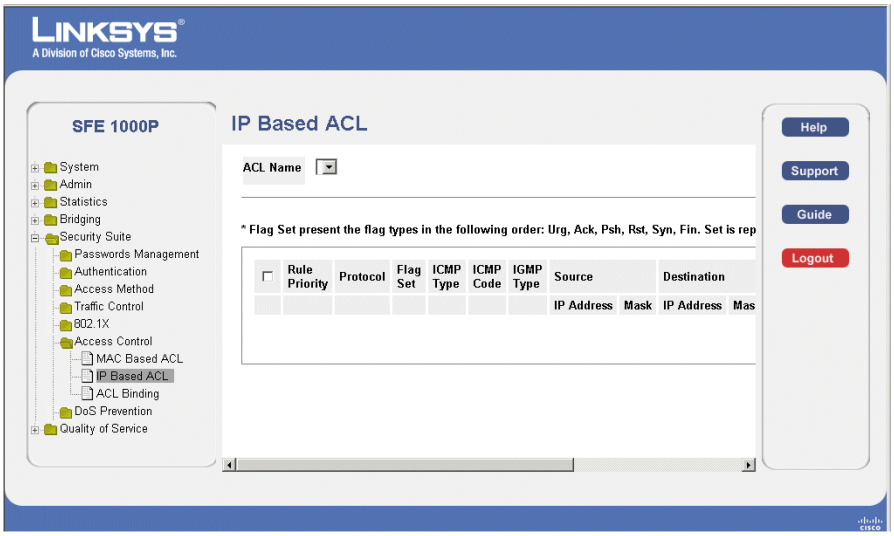
3. Define the relevant fields.
4. Click **Apply**. The ACL Rule is defined, and the device is updated.

Defining IP Based ACL

The *IP Based ACL Page* contains information for defining IP Based ACLs, including defining the ACEs defined for IP Based ACLs.

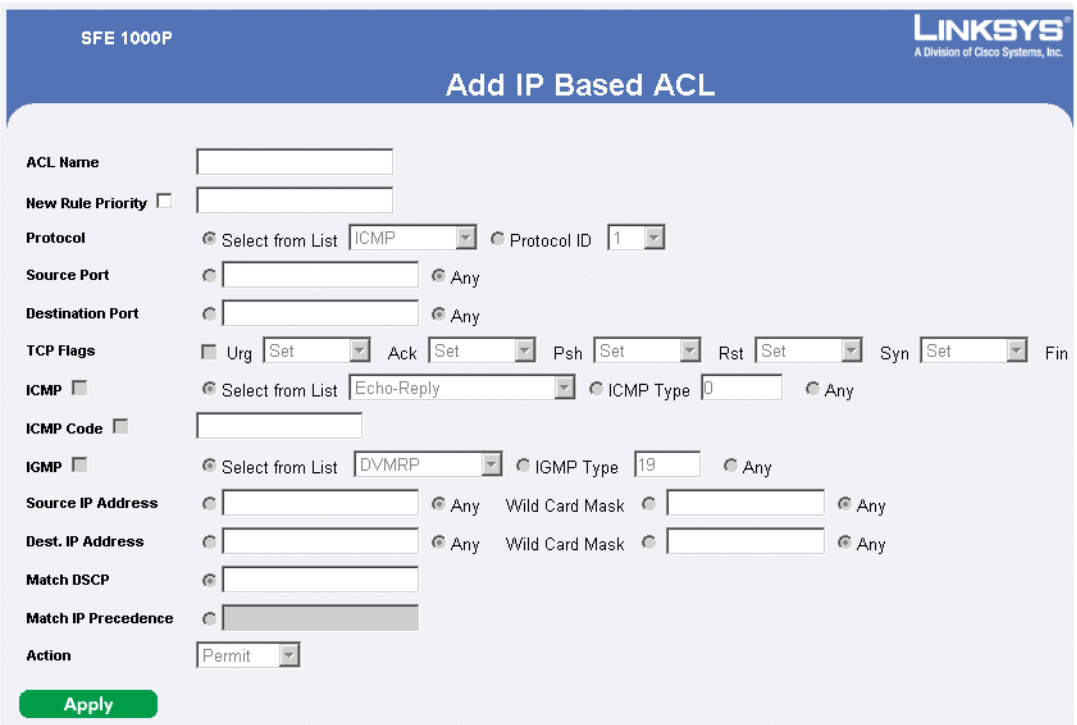
1. Click **Security Suite >Access Control** > **IP Based ACL**. The *IP Based ACL Page* opens:

IP Based ACL Page



2. Click the **Add** Button. The *Add IP Based ACL Page* opens:

Add IP Based ACL Page



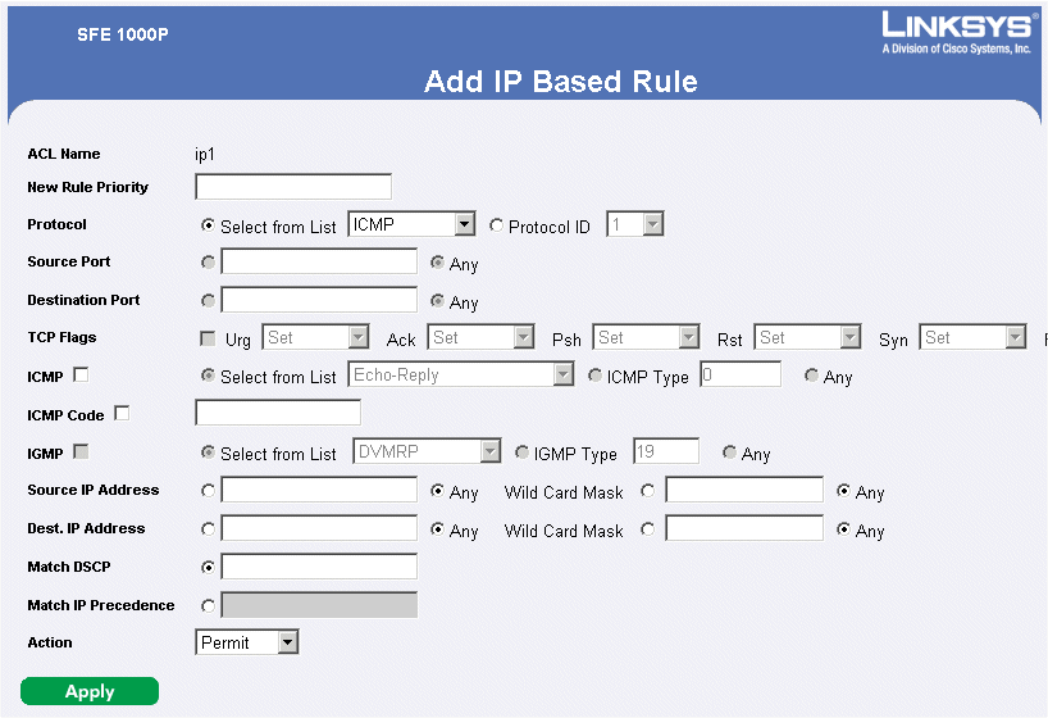
3. Define the relevant fields,

4. Click **Apply**. The IP Based ACL is defined, and the device is updated.

Adding an IP Based Rule

1. Click **Security Suite** > **Access Control** > **IP Based ACL**. The *IP Based ACL Page* opens:
2. Click the **Add ACL Rule** button. The *Add IP Based Rule Page* opens:

Add IP Based Rule Page



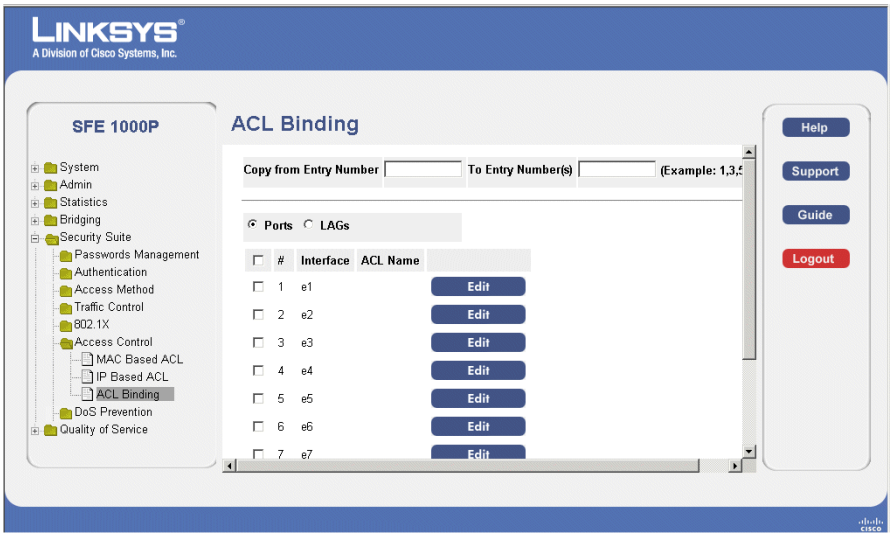
3. Select either **Match DSCP** or **Match IP.**
4. Click **Apply**. The IP based rule settings are modified, and the device is updated.

Defining ACL Binding

When an ACL is bound to an interface, all the ACE rules that have been defined are applied to the selected interface. Whenever an ACL is assigned on a port or a LAG flows from that ingress interface that do not match the ACL are matched to the default rule, which is Drop unmatched packets.

1. Click **Security Suite** > **Access Control** > **ACL Binding**. The *ACL Binding Page* opens

ACL Binding Page



2. Define the relevant fields.

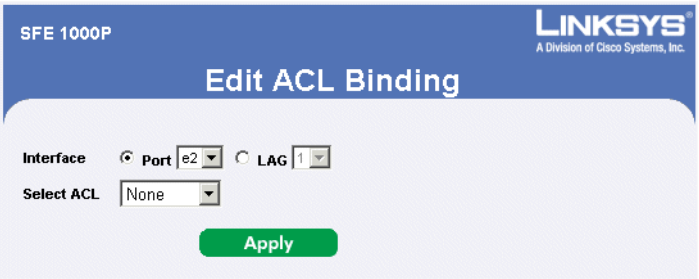
3. Click **Apply**. The ACL binding settings are modified, and the device is updated.

Modifying ACL Binding

1. Click **Security Suite** > **Access Control** > **ACL Binding**. The *ACL Binding Page* opens:

2. Click the **Edit** button. The *Edit ACL Binding Page* opens:

Edit ACL Binding Page



3. Define the relevant fields.

4. Click **Apply.** ACL binding is defined, and the device is updated.

Defining DoS Prevention

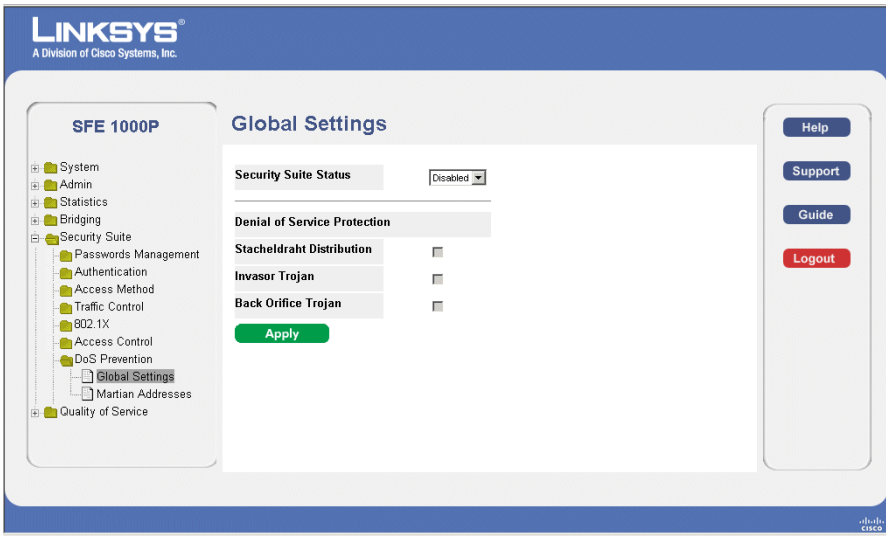
The DoS Prevention section contains the following pages:

- Global Settings
- Defining Martian Addresses

Global Settings

1. Click **Security Suite** > **Dos Prevention** > **Global Settings**. The *Global Settings Page* opens:

Global Settings Page



2. Define the relevant fields.
3. Click **Apply**. The Dos prevention global settings are defined, and the device is updated.

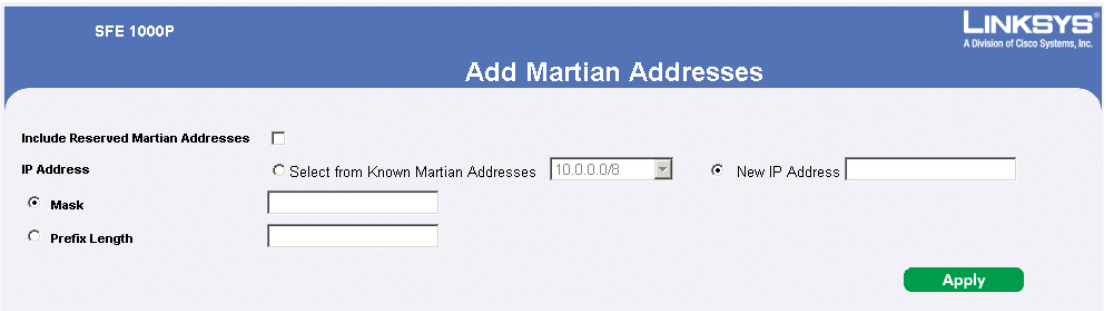
Defining Martian Addresses

1. Click **Security Suite** > **Dos Prevention** > **Martian Addresses**. The *Martian Addresses Page* opens:

Martian Addresses Page

2. Click the **Add** button. The *Add Martian Addresses Page* opens:

Add Martian Addresses Page



3. Define the relevant fields.

4. Click **Apply**. The martian addresses are added, and the device is updated.

Configuring Device Interfaces

This section contains information for configuring ports and contains the following topic:

- Defining Port Settings
- Defining LAG Management
- Defining LAG Settings
- Configuring LACP

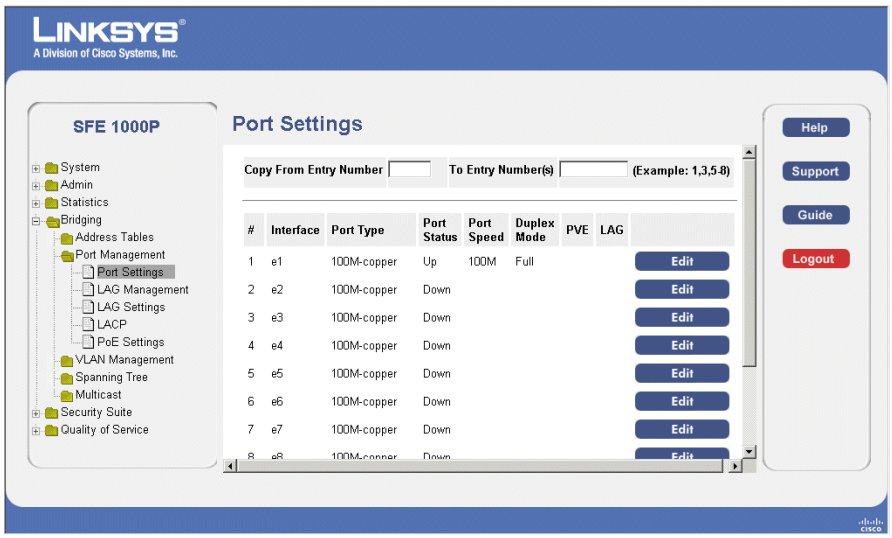
Defining Port Settings

The Port Settings Page contains fields for defining port parameters.

To define port settings:

1. Click **Bridging** > **Port Management** > **Port Settings**. The Port Settings Page opens:

Port Settings Page

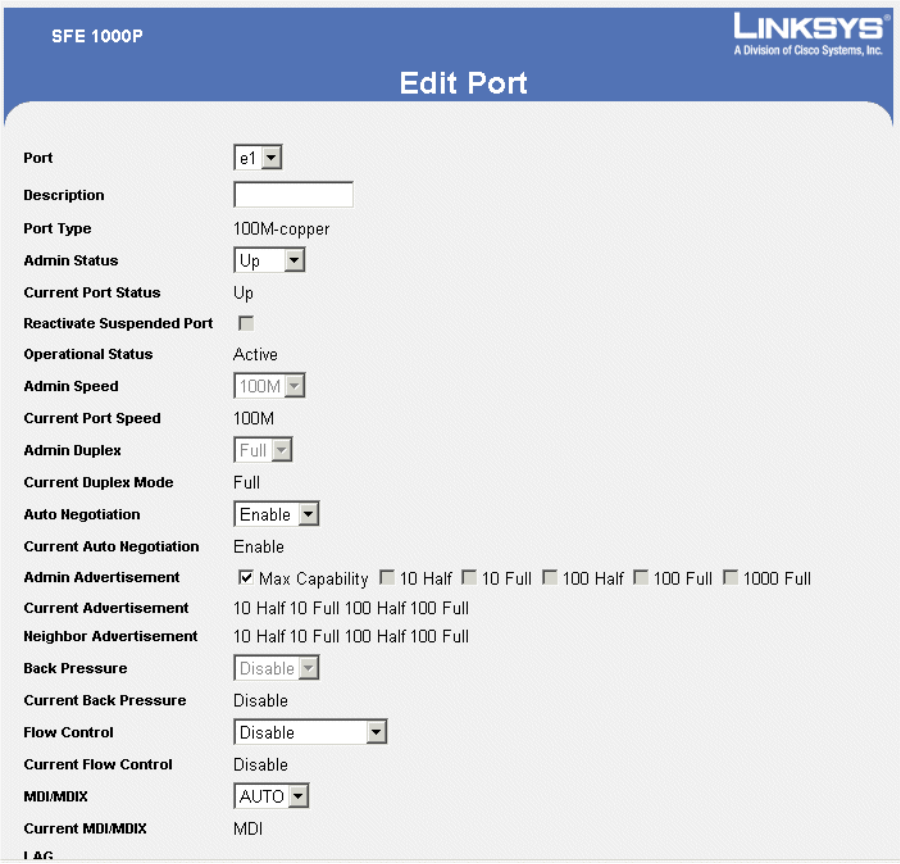


2. Define the relevant fields.
3. Click **Apply**. Port Settings are defined, and the device is updated.

Modifying Port Settings

1. Click **Bridging** > **Port Management** > **Port Settings**. The Port Settings Page opens:
2. Click the **Edit** button. The *Edit Port Settings Page* opens:

Edit Port Settings Page



3. Define the relevant fields.

4. Click **Apply**. The Port Settings are modified, and the device is updated.

Defining LAG Management

Link Aggregation optimizes port usage by linking a group of ports together to form a single LAG. Aggregating ports multiplies the bandwidth between the devices, increases port flexibility, and provides link redundancy.

The device supports both static LAGs and *Link Aggregation Control Protocol* (LACP) LAGs. LACP LAGs negotiate aggregating port links with other LACP ports located on a different device. If the other device ports are also LACP ports, the devices establish a LAG between them. Ensure the following:

- All ports within a LAG must be the same media type.
- A VLAN is not configured on the port.
- The port is not assigned to a different LAG.
- Auto-negotiation mode is not configured on the port.

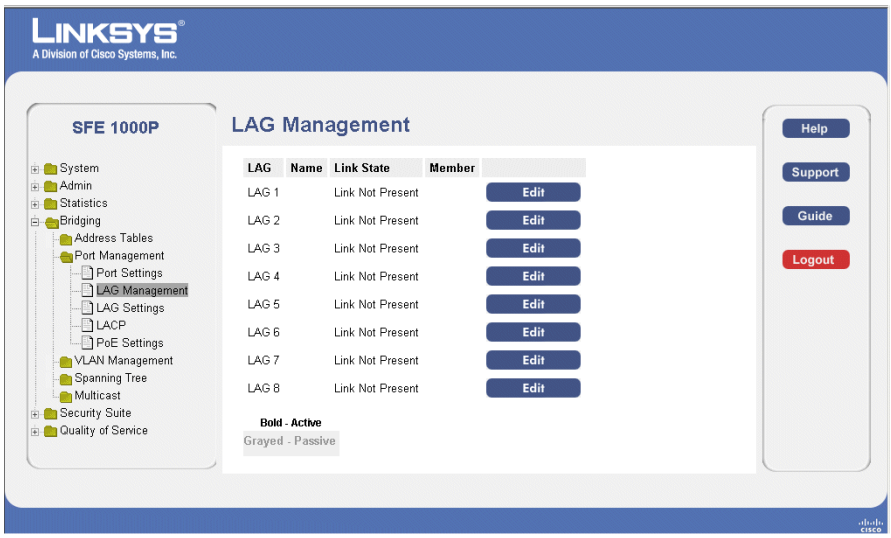
- The port is in full-duplex mode.
- All ports in the LAG have the same ingress filtering and tagged modes.
- All ports in the LAG have the same back pressure and flow control modes.
- All ports in the LAG have the same priority.
- All ports in the LAG have the same transceiver type.
- The device supports up to 8 LAGs, and eight ports in each LAG.
- Ports can be configured as LACP ports only if the ports are not part of a previously configured LAG.

Ports added to a LAG lose their individual port configuration. When ports are removed from the LAG, the original port configuration is applied to the ports.

To define LAG management:

1. Click **Bridging** > **Port Management** > **LAG Management.** The *LAG Management Page* opens:

LAG Management Page

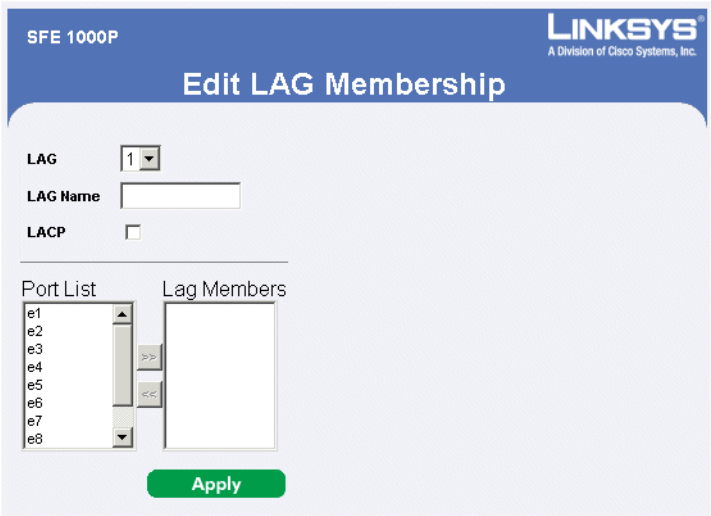


2. Define the relevant fields.
3. Click **Apply**. LAG Management is defined, and the device is updated.

Modifying LAG Membership

1. Click **Bridging** > **Port Management** > **LAG Management.** The *LAG Management Page* opens:
2. Click the **Edit** button. The *Edit LAG Membership Page* opens:

Edit LAG Membership Page



3. Define the relevant fields.
4. To assign ports to a LAG, click the port numbers in the Port List and then click the Right Arrow button. The port number then appears in the LAG Members list.

   Conversely, to remove a port from a LAG, click the port number in the LAG Members list and then click the Left Arrow button.
5. Click **Apply**. The LAG membership is defined, and the device is updated.

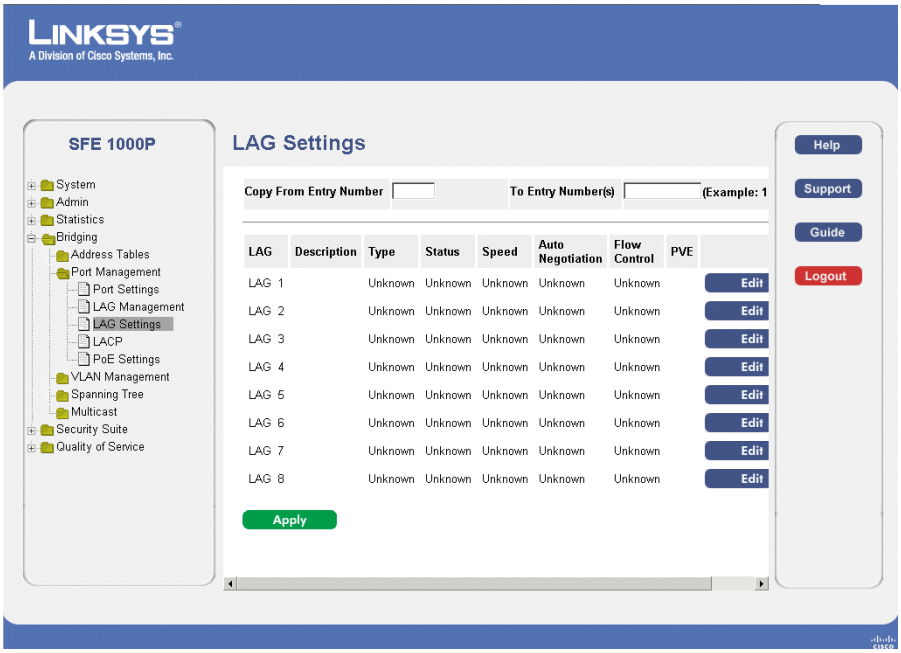
Defining LAG Settings

Link Aggregated Groups optimize port usage by linking a group of ports together to form a single aggregated group. Link aggregated groups multiply the bandwidth between the devices, increase port flexibility, and provide link redundancy.

The *LAG Settings Page* contains fields for configuring parameters for configured LAGs. The device supports up to eight ports per LAG, and eight LAGs per system.

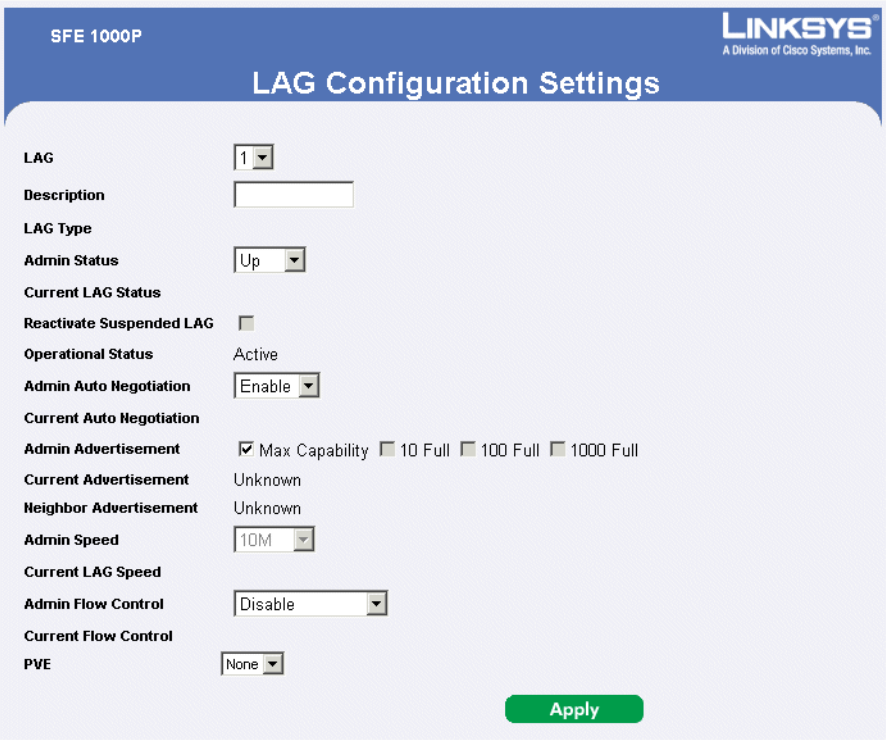
1. Click **Bridging** > **Port Management** > **LAG Settings**. The *LAG Settings Page* opens:

LAG Settings Page



2. Click the **Edit** button. The *LAG Configuration Settings* opens:

LAG Configuration Settings



3. Define the relevant fields.

4. Click **Apply**. The LAG configuration settings are modified, and the device is updated.

Configuring LACP

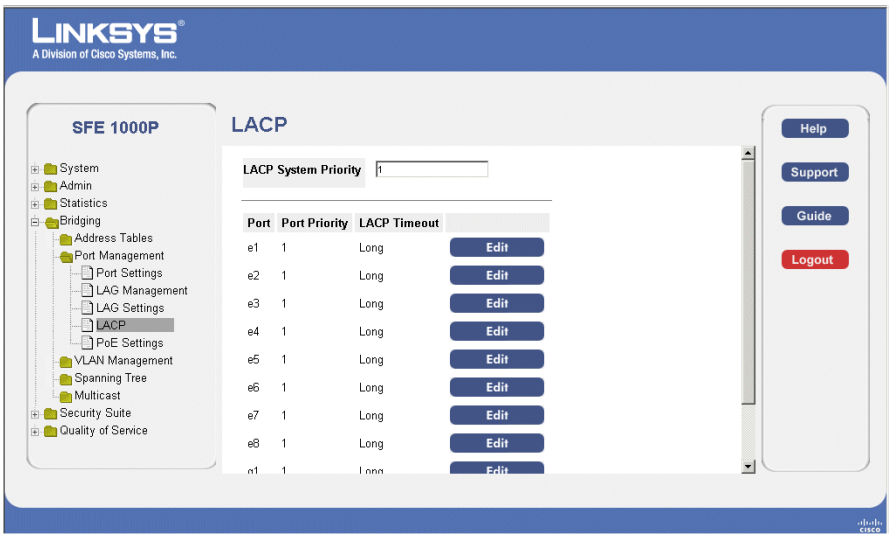
Aggregate ports can be linked into link-aggregation port-groups. Each group is comprised of ports with the same speed, set to full-duplex operations.

Aggregated Links can be manually setup or automatically established by enabling Link Aggregation Control Protocol (LACP) on the relevant links. Aggregate ports can be linked into link-aggregation port-groups. Each group is comprised of ports with the same speed.

To define LACP:

1. Click **Bridging** > **Port Managing** > **LACP**. The *LACP Page* opens:

LACP Page

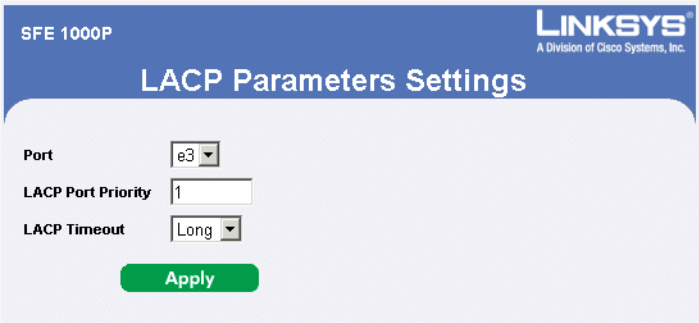


2. Define the relevant fields.
3. Click **Apply**. The LACP settings are modified, and the device is updated.

Modify LACP Parameter Settings

1. Click **Bridging** > **Port Managing** > **LACP**. The *LACP Page* opens:
2. Click the **Edit** button. The *Edit LACP Page* opens:

Edit LACP Page



3. Define the relevant fields.
4. Click **Apply**. The LACP Parameters settings are defined, and the device is updated.

Configuring VLANs

VLANs are logical subgroups with a Local Area Network (LAN) which combine user stations and network devices into a single unit, regardless of the physical LAN segment to which they are attached. VLANs allow network traffic to flow more efficiently within subgroups. VLANs use software to reduce the amount of time it takes for network changes, additions, and moves to be implemented.

VLANs have no minimum number of ports, and can be created per unit, per device, or through any other logical connection combination, since they are software-based and not defined by physical attributes.

VLANs function at Layer 2. Since VLANs isolate traffic within the VLAN, a Layer 3 router working at a protocol level is required to allow traffic flow between VLANs. Layer 3 routers identify segments and coordinate with VLANs. VLANs are Broadcast and Multicast domains. Broadcast and Multicast traffic is transmitted only in the VLAN in which the traffic is generated.

VLAN tagging provides a method of transferring VLAN information between VLAN groups. VLAN tagging attaches a 4-byte tag to packet headers. The VLAN tag indicates to which VLAN the packets belong. VLAN tags are attached to the VLAN by either the end station or the network device. VLAN tags also contain VLAN network priority information.

Combining VLANs and GARP (Generic Attribute Registration Protocol) allows network managers to define network nodes into Broadcast domains. The VLAN Management section contains the following pages:

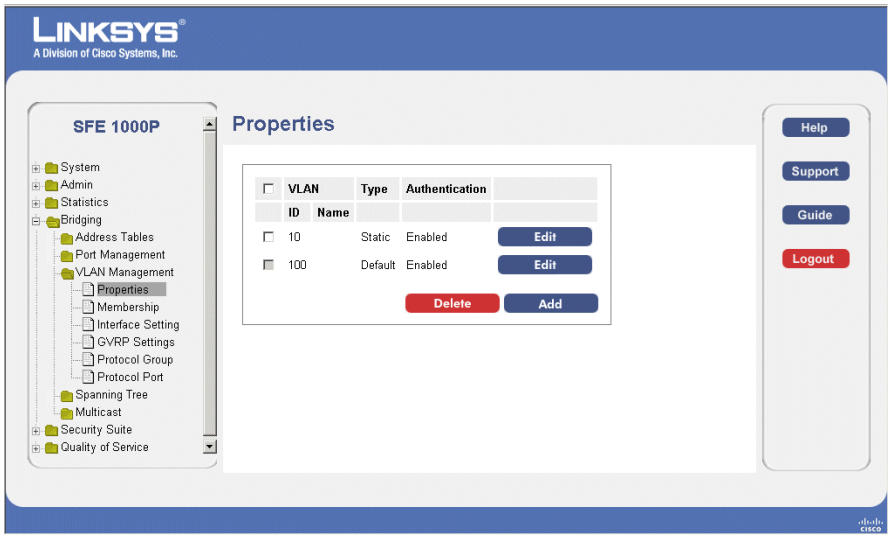
- Defining VLAN Properties
- Defining VLAN Membership
- Defining Interface Settings
- Configuring GVRP Settings

Defining VLAN Properties

The VLAN *Properties Page* provides information and global parameters for configuring and working with VLANs.

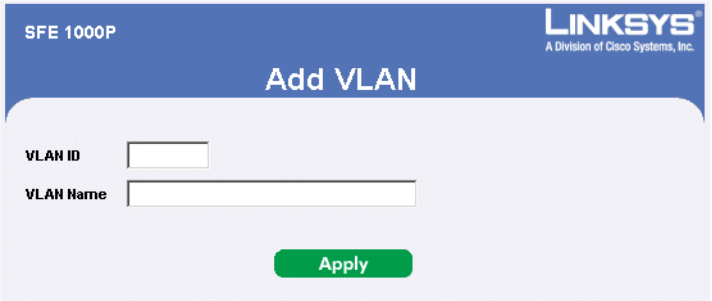
1. Click **Bridging** > **VLAN Management** > **Properties**. The *Properties Page* opens.

Properties Page



2. Click **the Add** button. The *Add VLAN Page* opens:

Add VLAN Page

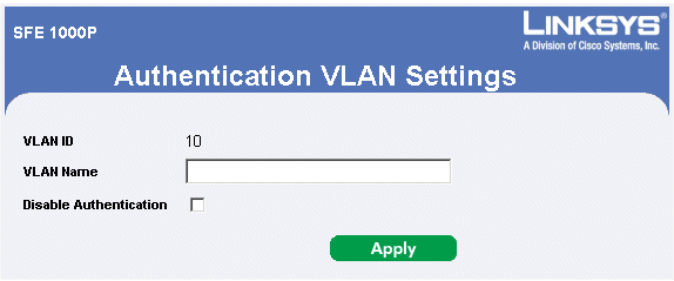


3. Define the relevant fields.
4. Click Apply. The add VLAN settings are modified, and the device is updated.

Modifying VLANs

1. Click **Bridging** > **VLAN Management** > **Properties**. The *Properties Page* opens.
2. Click **Edit.** The *Edit VLAN Page* opens:

Edit VLAN Page



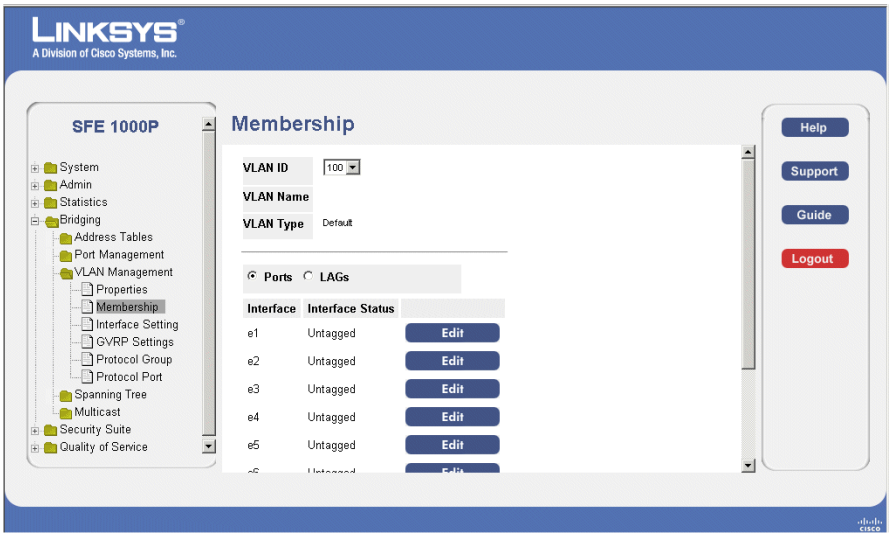
3. Define the relevant fields.
4. Click **Apply**. The VLAN Settings are defined, and the device is updated.

Defining VLAN Membership

The VLAN *Membership Page* contains a table that maps VLAN parameters to ports. Ports are assigned VLAN membership by toggling through the Port Control settings.

1. Click **Bridging** > **VLAN Management** > **Membership**. The *VLAN Membership Page* opens:

Membership Page

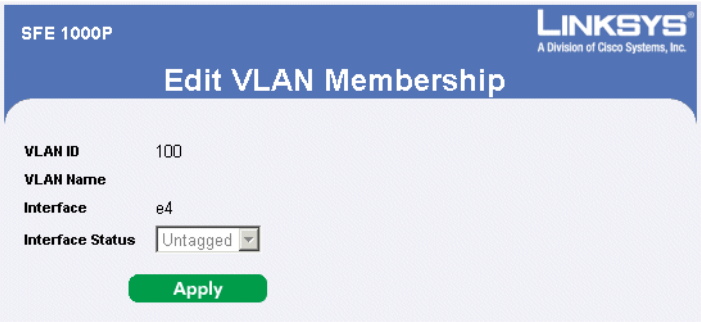


2. Define the relevant fields.
3. Click **Apply**. VLAN membership is defined, and the device is updated.

Modifying VLAN Membership

1. Click **Bridging** > **VLAN Management** > **Membership**. The *VLAN Membership Page* opens:
2. Click the **Edit** button. The *Edit VLAN Membership Page* opens:

Edit VLAN Membership Page



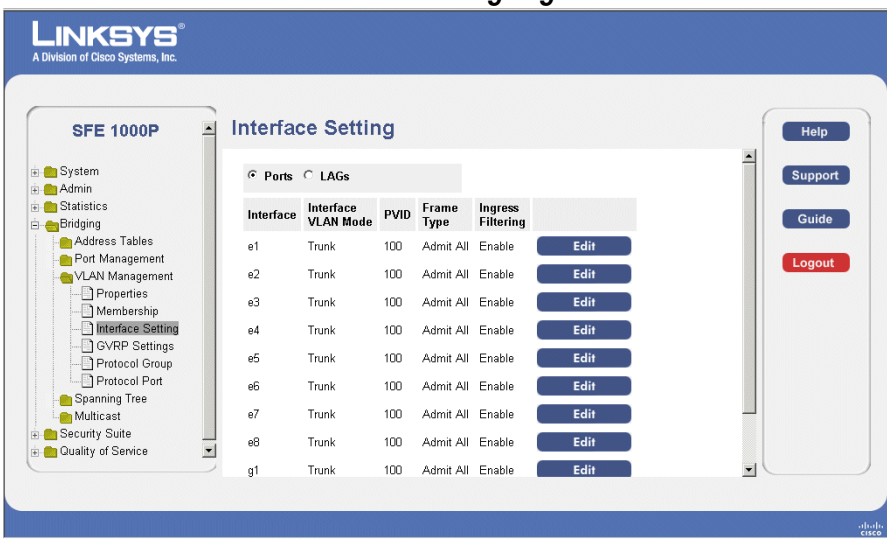
3. Define the relevant fields.
4. Click **Apply.** VLAN Membership is modified, and the device is updated.

Defining Interface Settings

The VLAN *Interface Setting Page* provides parameters for managing ports that are part of a VLAN. The port default VLAN ID (PVID) is configured on the VLAN *Port Settings* page. All untagged packets arriving to the device are tagged by the ports PVID.

1. Click **Bridging** > **VLAN Management** > **Interface Setting**. The VLAN *Interface Setting Page* opens:

Interface Setting Page



2. Define the relevant fields.

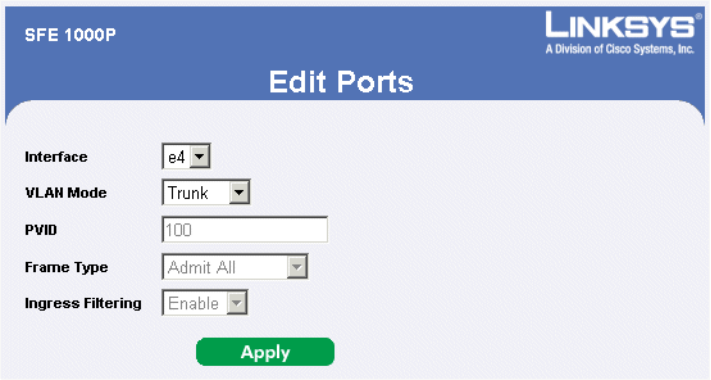
3. Click **Apply**. The VLAN Interface Settings are defined, and the device is updated.

Modifying VLAN Interface Settings

1. Click **Bridging** > **VLAN Management** > **Interface Setting**. The VLAN *Interface Setting Page* opens:

2. Click the **Edit** button. The *Edit Ports Page* opens:

Edit Ports Page



3. Define the relevant fields.

4. Click **Apply**. The VLAN Interface settings are modified, and the device is updated.

Configuring GVRP Settings

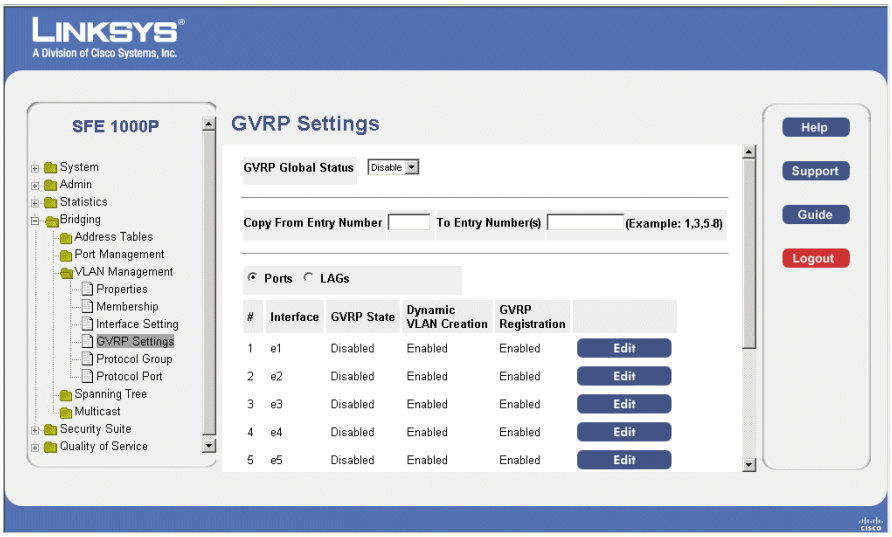
GARP VLAN Registration Protocol (GVRP) is specifically provided for automatic distribution of VLAN membership information among VLAN-aware bridges. GVRP allows VLAN-aware bridges to automatically learn VLANs to bridge ports mapping, without having to individually configure each bridge and register VLAN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

NOTE: The Global System LAG information displays the same field information as the ports, but represent the LAG GVRP information.

To define GVRP:

1. Click **Bridging** > **VLAN Management** > **GVRP Settings**. The *GVRP Settings Page* opens:

GVRP Settings Page

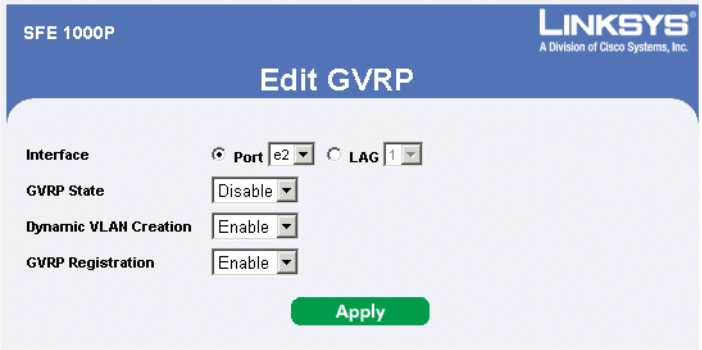


2. Define the relevant fields.
3. Click Apply. The GVRP Settings are defined, and the device is updated.

Modifying GVRP Settings

1. Click **Bridging** > **VLAN Management** > **GVRP Settings**. The *GVRP Settings Page* opens:
2. Click the **Edit** button. The *Edit GVRP Page* opens:

Edit GVRP Page



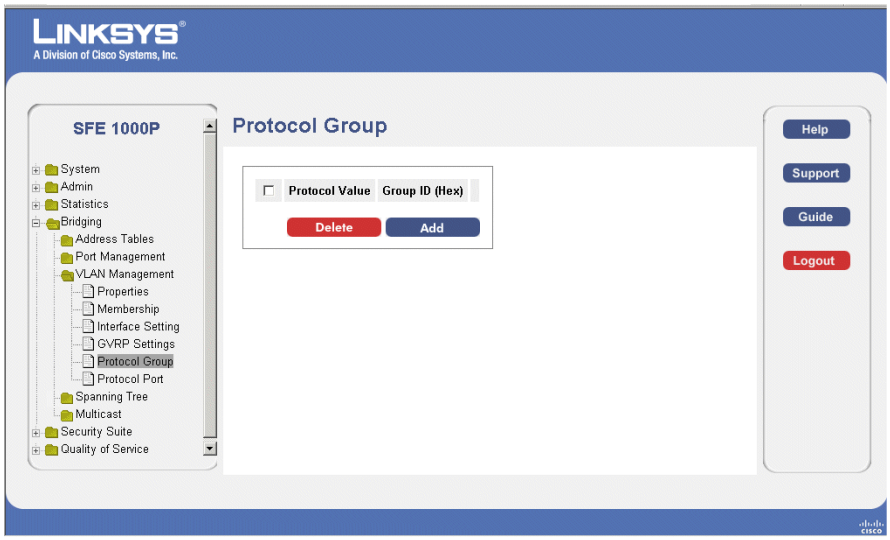
3. Define the relevant fields.
4. Click **Apply**. GVRP settings are modified, and the device is updated.

Defining VLAN Protocol Group

The *Protocol Group Page* contains information defining protocol names and the VLAN Ethernet type. Interfaces can be classified as a specific protocol based interface.

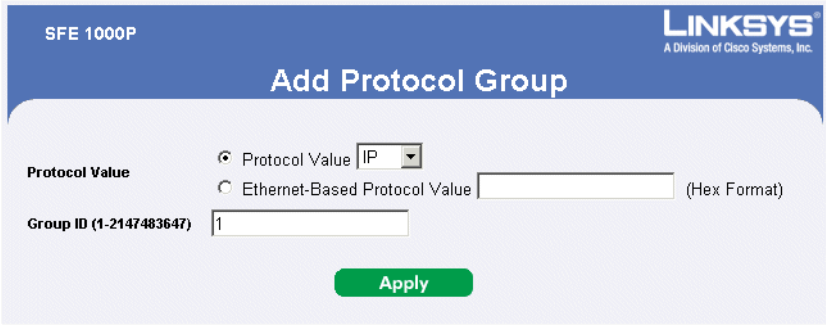
1. Click **Bridging > VLAN Management** > **Protocol Group**. The *Protocol Group Page* opens:

Protocol Group Page



2. Click the **Add** Button. The *Add Protocol Group Page* opens:

Add Protocol Group Page



3. Define the relevant fields.

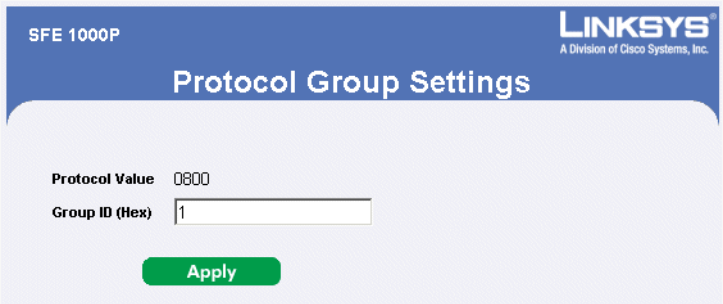
4. Click **Apply**. The Protocol Group is added, and the device is updated.

Modifying Protocol Groups

The *Protocol Group Settings Page* provides information for configuring existing VLAN protocol groups.

1. Click **Bridging > VLAN Management** > **Protocol Group**. The *Protocol Group Page* opens:
2. Click the **Edit** Button. The *Protocol Group Settings Page* opens:

Protocol Group Settings Page



3. Define the relevant fields.
4. Click **Apply**. The Protocol group is modified, and the device is updated.

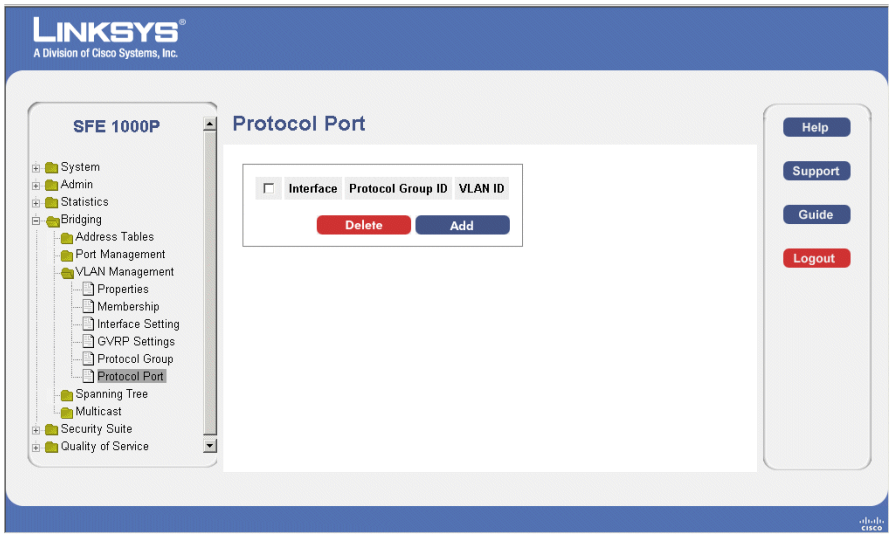
Defining VLAN Protocol Port

The *Protocol Port Page* adds interfaces to Protocol groups.

To define the protocol port:

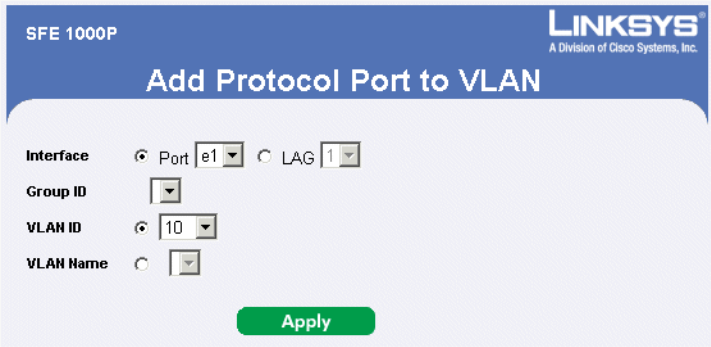
1. Click **Bridging > VLAN Management** > **Protocol Port**. The *Protocol Port Page* opens:

Protocol Port Page



2. Click the **Add** Button. The *Add Protocol Port to VLAN Page* opens:

Add Protocol Port to VLAN Page



3. Define the relevant fields.
4. Click **Apply**. The protocol ports are mapped to VLANs, and the device is updated.

Configuring IP Information

This section provides information for defining device IP addresses, and includes the following topics:

- Domain Name System
- Configuring Layer 2IP Addresses
- Configuring Layer 3

Domain Name System

Domain Name System (DNS) converts user-defined domain names into IP addresses. Each time a domain name is assigned, the DNS service translates the name into a numeric IP address. For example, **www.ipexample.com** is translated into 192.87.56.2. DNS servers maintain databases of domain names and their corresponding IP addresses. The Domain Name System contains the following windows:

- Defining DNS Server
- Mapping DNS Hosts

Defining DNS Server

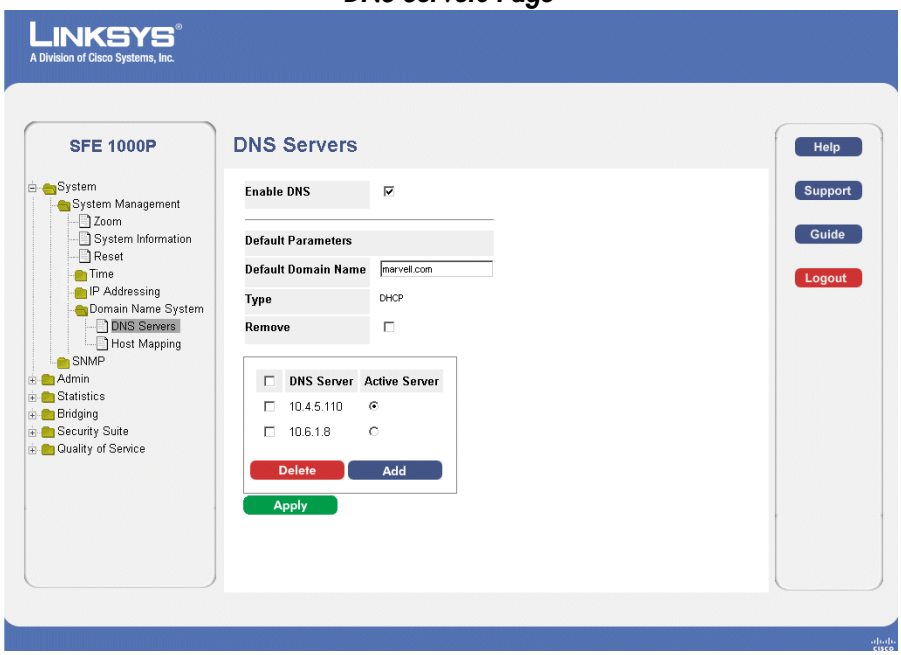
Domain Name System (DNS) converts user-defined domain names into IP addresses. Each time a domain name is assigned, the DNS service translates the name into a numeric IP address. For example, **www.ipexample.com** is translated into 192.87.56.2. DNS servers maintain databases of domain names and their corresponding IP addresses.

The *DNS Servers Page* contains fields for enabling and activating specific DNS servers.

To enable a DNS client:

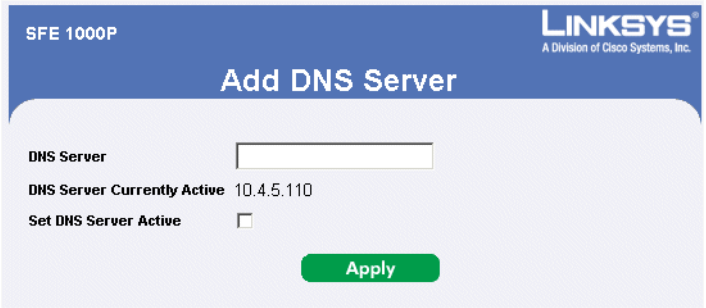
1. Click **System** > **System Management** > **Domain Name System** > **DNS Servers**. The *DNS Servers Page* opens:

DNS Servers Page



2. Click the **Add** button. The *Add DNS Server Page* opens:

Add DNS Server Page



3. Define the relevant fields.

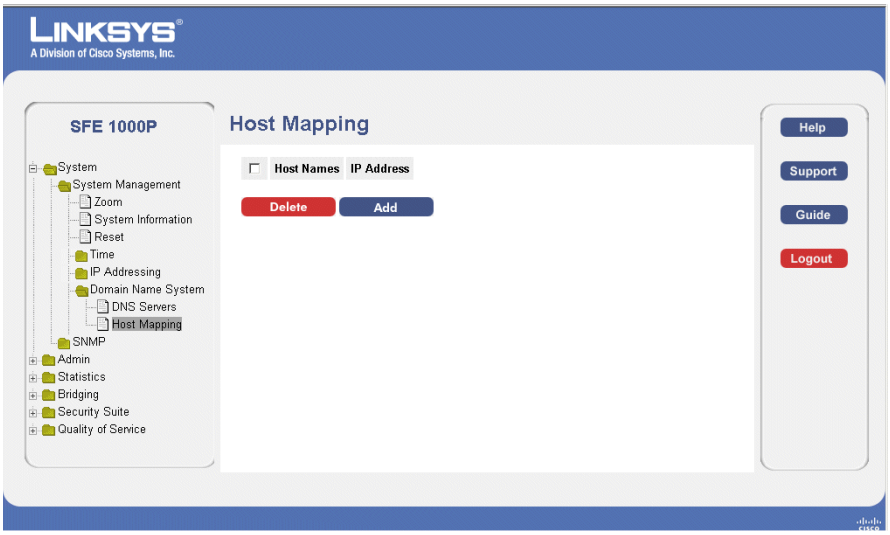
4. Click **Apply.** The DNS server is added, and the device is updated.

Mapping DNS Hosts

The *Host Mapping Page* provides information for defining DNS Host Mapping.

1. Click **System** > **System Management** > **Domain Name System** > **Host Mapping**. The *Host Mapping Page* opens:

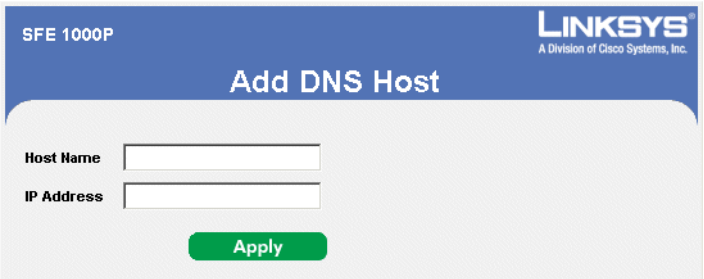
Host Mapping Page



2. Click the **Add** button. The *Add DNS Host Page opens:*

   The *Add DNS Host Page* provides information for defining DNS Host Mapping.

Add DNS Host Page



3. Define the relevant fields.

4. Click **Apply**. The DNS Host settings are defined, and the device is updated.

Configuring Layer 2IP Addresses

The IP address and default gateway can be either dynamically or statically configured. In Layer 2, a static IP address is configured on the *VLAN Management Properties Page*. The Management VLAN is set to VLAN 100 by default, but can be modified.

This section provides information for configuring Layer 2 features, and includes the following topics:

- Configuring IP Addressing
- Defining IP Routing

Configuring IP Addressing

The IP Addressing subsection contains the following pages:

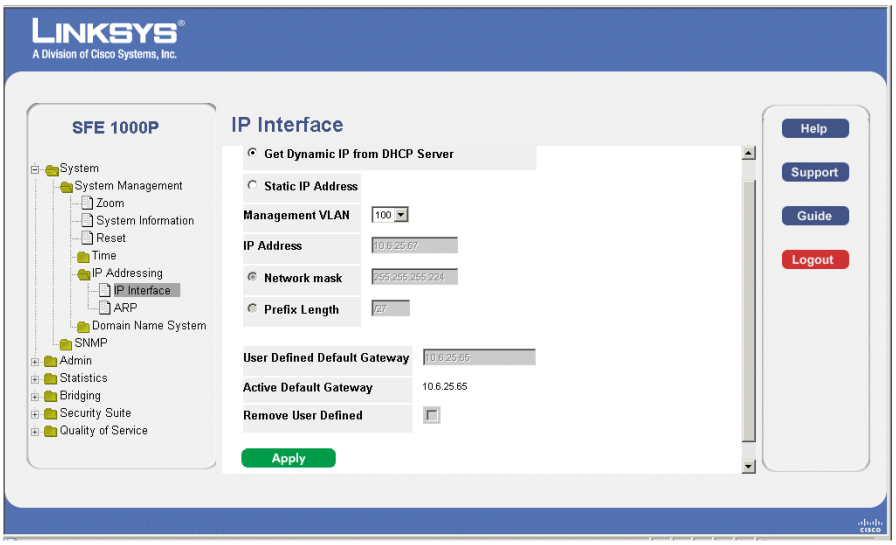
- Defining IP Interfaces
- Enabling ARP

Defining IP Interfaces

The *IP Interface Page* contains fields for assigning IP addresses. Packets are forwarded to the default IP when frames are sent to a remote network. The configured IP address must belong to the same IP address subnet of one of the IP interfaces.

1. Click **System** > **System Management** > **IP Addressing** > **IP Interface**. The *IP Interface Page* opens:

IP Interface Page



2. Define the relevant fields.
3. Click **Apply**. The IP Interface settings are modified, and the device is updated.

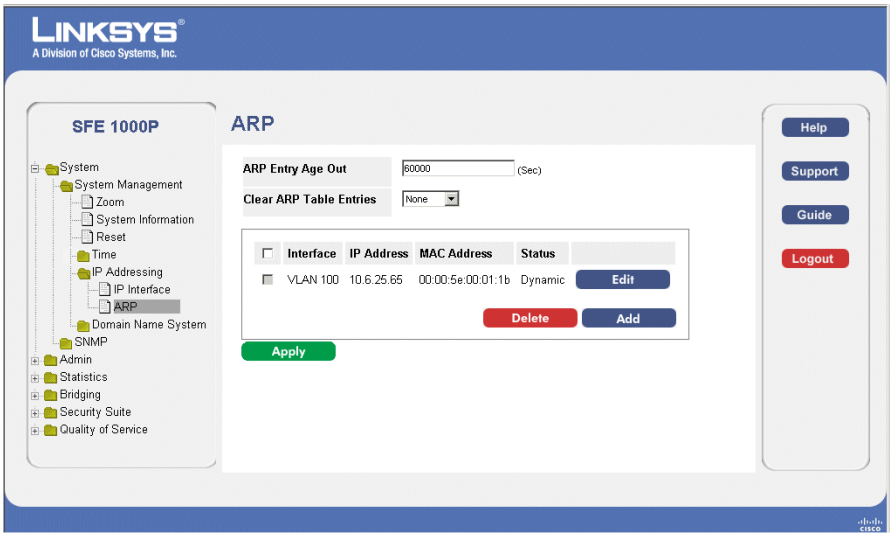
Enabling ARP

The *Address Resolution Protocol* (ARP) is a TCP/IP protocol that converts IP addresses into physical addresses. The ARP table is used to maintain a correlation between each MAC address and its corresponding IP address. The ARP table can be filled in statically by the user. When a static ARP entry is defined, a permanent entry is put in the table, which the system uses to translate IP addresses to MAC addresses.

To define ARP:

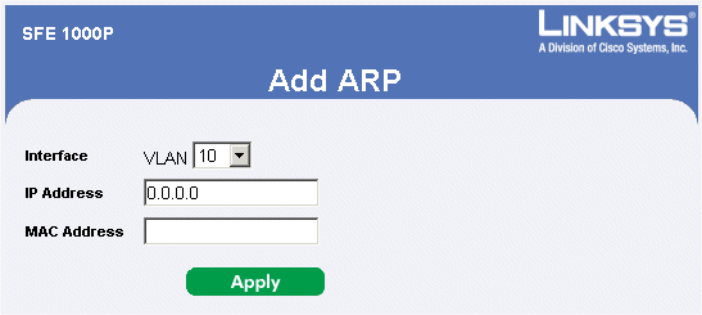
1. Click **System** > **System Management** > **IP Addressing** > **ARP**. The *ARP Page* opens:

ARP Page



2. Click on the **Add ARP** button. The *Add ARP Page* opens:

Add ARP Page



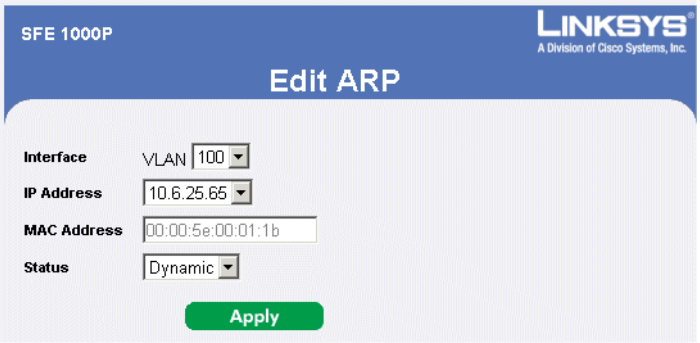
3. Define the relevant fields.

4. Click **Apply.** The ARP Settings are defined, and the device is updated.

Modifying ARP Settings

1. Click **System** > **System Management** > **IP Addressing** > **ARP**. The *ARP Page* opens:
2. Click the **Edit** button. The *Edit ARP Page* opens:

Edit ARP Page



3. Define the relevant fields.
4. Click **Apply.** The ARP Settings are modified, and the device is updated.

Defining Address Tables

MAC addresses are stored in either the Static Address or the Dynamic Address databases. A packet addressed to a destination stored in one of the databases is forwarded immediately to the port. The Dynamic Address Table can be sorted by interface, VLAN, and MAC Address. MAC addresses are dynamically learned as packets from sources arrive at the device. Addresses are associated with ports by learning the ports from the frames source address. Frames addressed to a destination MAC address that is not associated with any port, are flooded to all ports of the relevant VLAN. Static addresses are manually configured. In order to prevent the bridging table from overflowing, dynamic MAC addresses, from which no traffic is seen for a certain period, are erased.

This section contains information for defining both static and dynamic Forwarding Database entries, and includes the following topics:

- Defining Static Addresses
- Defining Dynamic Addresses

Defining Static Addresses

A static address can be assigned to a specific interface on this switch. Static addresses are bound to the assigned interface and cannot be moved. When a static address is seen on another interface, the address will be ignored and will not be written to the address table.

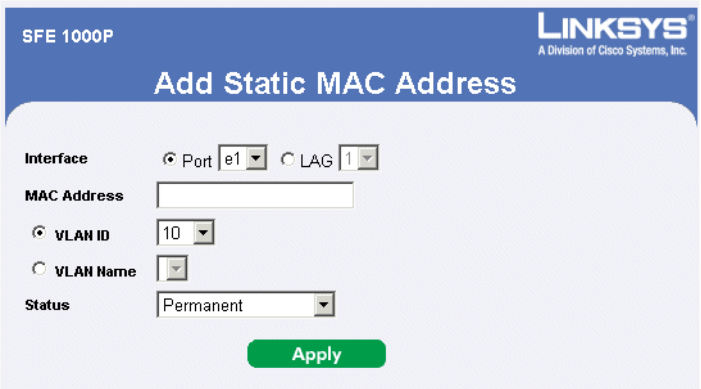
To define static addresses:

1. Click **Bridging** > **Address Tables** > **Static**. The *Static Page* opens:

Static Page

2. Click the **Add** button. The *Add Static MAC Address Page* opens:

Add Static MAC Address Page



3. Define the relevant fields.

4. Click **Apply**. The Static MAC Address is added, and the device is updated.

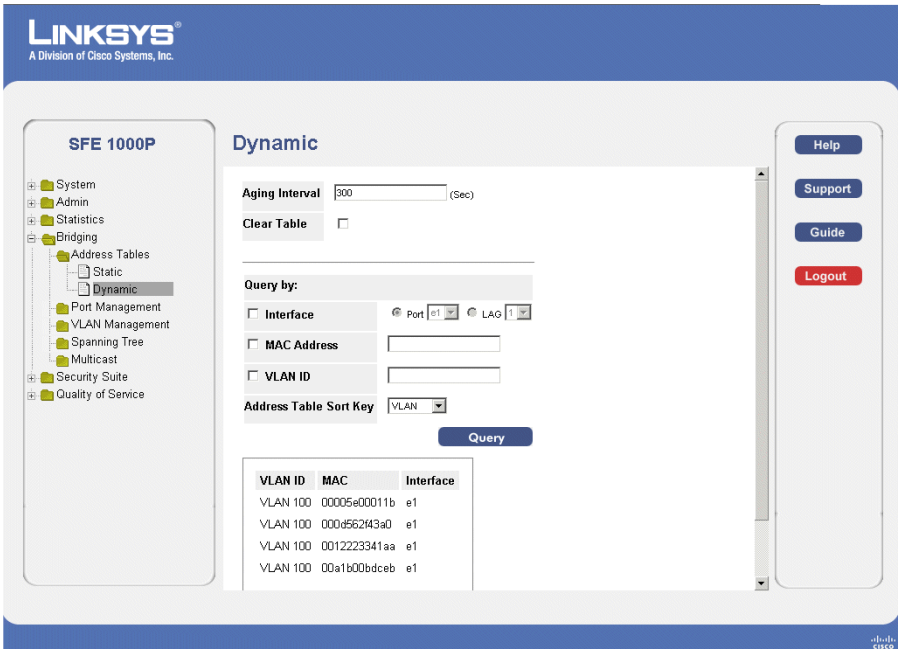
Defining Dynamic Addresses

The Dynamic Address Table contains the MAC addresses learned by monitoring the source address for traffic entering the switch. When the destination address for inbound traffic is found in the database, the packets intended for that address are forwarded directly to the associated port. Otherwise, the traffic is flooded to all ports.

The *Dynamic Page* contains parameters for querying information in the Dynamic MAC Address Table, including the interface type, MAC addresses, VLAN, and table storing. The Dynamic MAC Address table contains information about the aging time before a dynamic MAC address is erased, and includes parameters for querying and viewing the Dynamic MAC Address table. The Dynamic MAC Address table contains address parameters by which packets are directly forwarded to the ports. The Dynamic Address Table can be sorted by interface, VLAN, and MAC Address.

1. Click **Bridging** > **Address Tables** > **Dynamic**. The *Dynamic Page* opens:

Dynamic Page



2. Define the relevant fields.
3. Click **Query**. The Dynamic MAC Address Table is queried, and the results are displayed.
4. Click **Apply**. Dynamic addressing is defined, and the device is updated.

Configuring Multicast Forwarding

The Multicast section contains the following pages:

- IGMP Snooping
- Defining Multicast Bridging Groups
- Defining Multicast Forwarding

IGMP Snooping

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

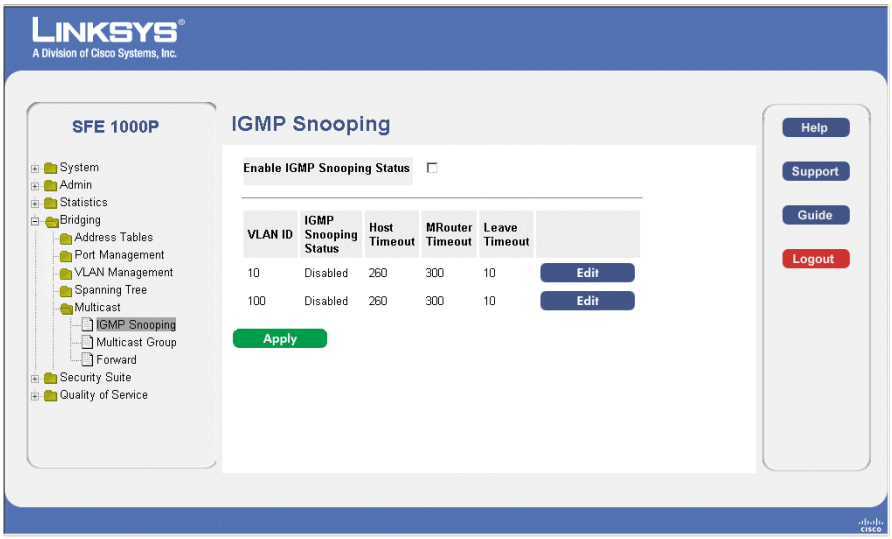
- Which ports want to join which Multicast groups.
- Which ports have Multicast routers generating IGMP queries.
- Which routing protocols are forwarding packets and Multicast traffic.

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.

To enable IGMP Snooping:

1. Click **Bridging** > **Multicast** > **IGMP Snooping**. The *IGMP Snooping Page* opens:

IGMP Snooping Page

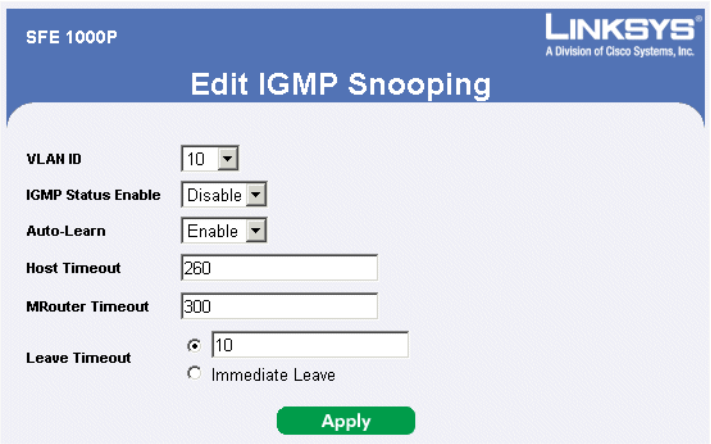


2. Define the relevant fields.
3. Click **Apply**. The IGMP Global Parameters are updated, and the device is updated.

Modifying IGMP Snooping

1. Click **Bridging** > **Multicast** > **ICMP Snooping**. The *IGMP Snooping Page* opens:
2. Click the **Edit** button. The *Edit IGMP Snooping Page*:

Edit IGMP Snooping Page



3. Define the relevant fields.
4. Click **Apply**. The IGMP Global Parameters are modified, and the device is updated.

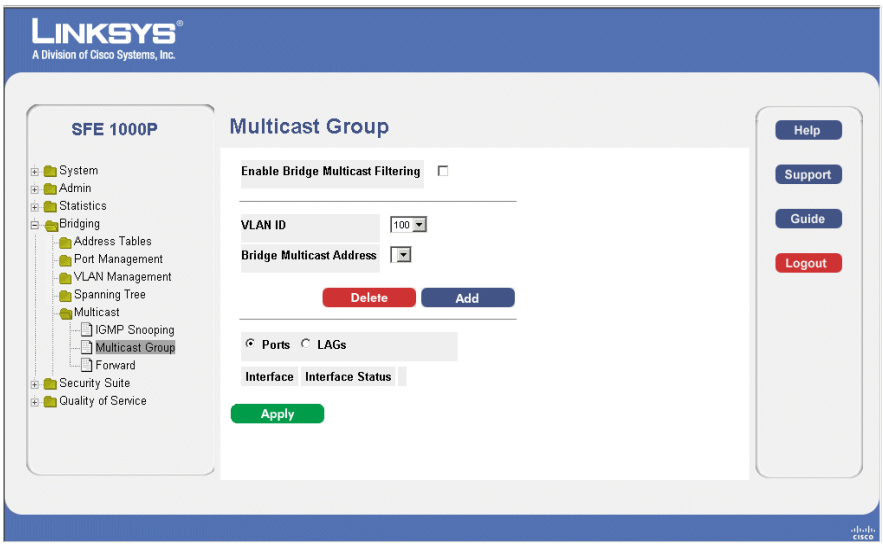
Defining Multicast Bridging Groups

The *Multicast Group* page displays the ports and LAGs that are members of Multicast service groups. The Port and LAG tables also reflect the manner in which the port or LAGs joined the Multicast group. Ports can be added either to existing groups or to new Multicast service groups. The *Multicast Group Page* permits new Multicast service groups to be created. The *Multicast Group Page* also assigns ports to a specific Multicast service address group.

To define Multicast groups:

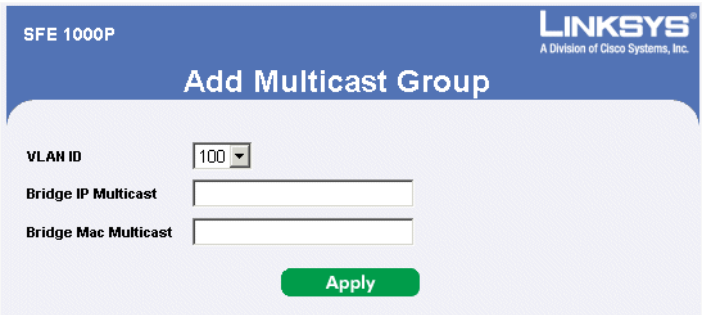
1. Click **Bridging > Multicast> Multicast Groups**. The *Multicast Group Page* opens:

Multicast Group Page



2. Click the **Add** button. The *Add Multicast Group Page* opens:

Add Multicast Group Page



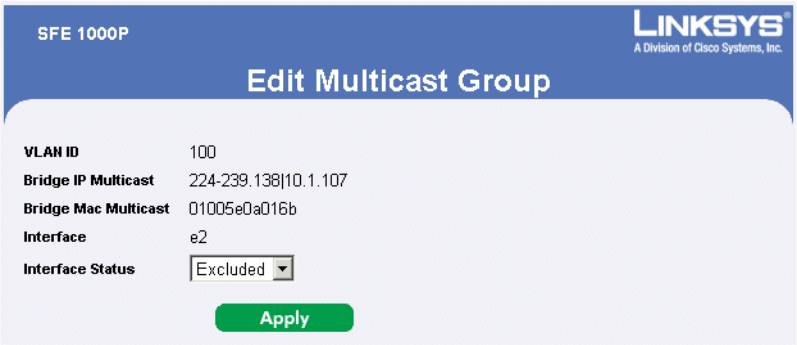
3. Define the relevant fields.

4. Click **Apply**. The Multicast Group settings are modified, and the device is updated.

Modifying a Multicast Group

1. Click **Bridging > Bridge Multicast> Multicast Groups**. The *Multicast Group Page* opens:
2. Click the *Edit* button. The *Edit Multicast Group Page* opens.

Edit Multicast Group Page



3. Define the Multicast Group Port Settings.
4. Click **Apply.** The Multicast group parameters are saved, and the device is updated.

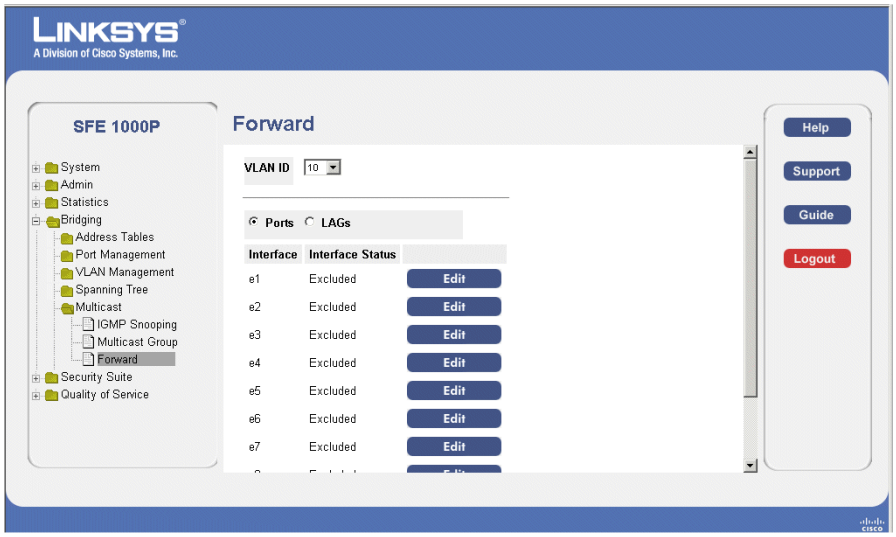
Defining Multicast Forwarding

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

To define Multicast forward settings:

1. Click **Bridging > Multicast > Forward**. The *Multicast Forward Page* opens:

Multicast Forward Page



2. Define the relevant fields.
3. Click **Apply**. The multicast forward all settings are defined, and the device is updated.

Modifying Multicast Forwarding

1. Click **Bridging > Multicast > Forward**. The *Multicast Forward Page* opens:
2. Click the **Edit** button. The *Edit Multicast Forward All Page* opens:

Edit Multicast Forward All Page

3. Define the relevant fields.
4. Click **Apply**. The multicast forward all settings are defined, and the device is updated.

Configuring Spanning Tree

The Spanning Tree Protocol (STP) provides tree topography for any arrangement of bridges. STP also provides one path between end stations on a network, eliminating loops.

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 device supports the following Spanning Tree versions:

- **Classic STP** — Provides a single path between end stations, avoiding and eliminating loops.
- **Rapid STP** — Detects and uses network topologies that provide faster convergence of the spanning tree, without creating forwarding loops.
- **Multiple STP** — 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.
- The Spanning Tree section contains the following pages:
- Defining STP Properties
- Defining Interface Settings
- Defining Rapid Spanning Tree
- Defining Multiple Spanning Tree

Defining STP Properties

The *STP Properties Page* contains parameters for enabling STP on the device. The *STP Properties Page* is divided into three areas, Global Settings, Bridge Settings. and Designated Root.

1. Click **Bridging** > **Spanning Tree** > **Properties**. The *STP Properties Page* opens:

STP Properties Page

2. Define the relevant fields.

3. Click **Apply**. STP is enabled, and the device is updated.

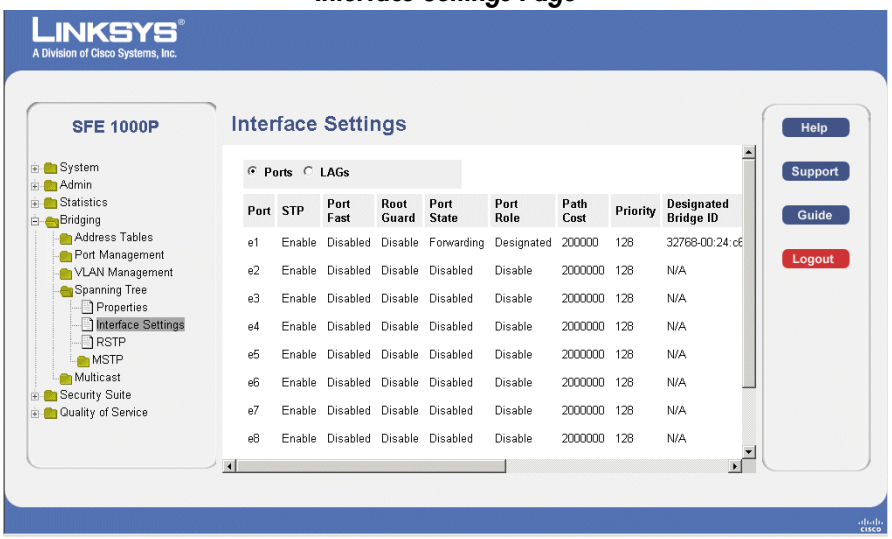
Defining Interface Settings

Network administrators can assign STP settings to specific interfaces using the *STP Interface Settings Page*.

To assign STP settings to an interface:

1. Click **Bridging** > **Spanning Tree** > **Interface Settings**. The *Interface Settings Page* opens:

Interface Settings Page

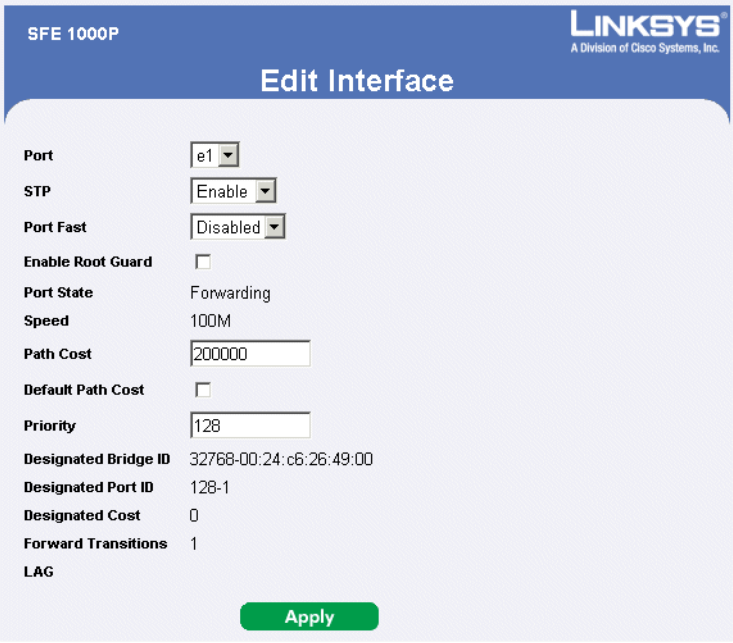


2. Define the relevant fields.
3. Click **Apply**. STP is enabled on the interface, and the device is updated.

Modifying Interface Settings

1. Click **Bridging** > **Spanning Tree** > **Interface Settings**. The *Interface Settings Page* opens:
2. Click the **Edit** button. The *Edit Interface Settings Page* opens:

Edit Interface Settings Page



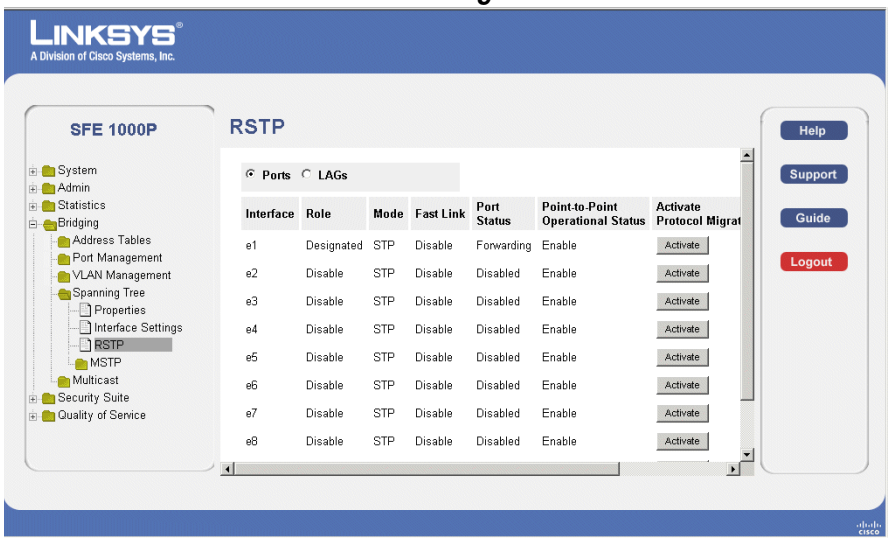
3. Define the relevant fields.
4. Click **Apply**. The interface settings are modified, and the device is updated.

Defining Rapid Spanning Tree

While the classic spanning tree prevents Layer 2 forwarding loops in a general network topology, convergence can take between 30-60 seconds. This time may delay detecting possible loops, and propagating status topology changes. Rapid Spanning Tree Protocol (RSTP) detects and uses network topologies that allow a faster STP convergence without creating forwarding loops.

1. Click **Bridging** > **Spanning Tree** > **RSTP**. The *RSTP Page* opens:

RSTP Page



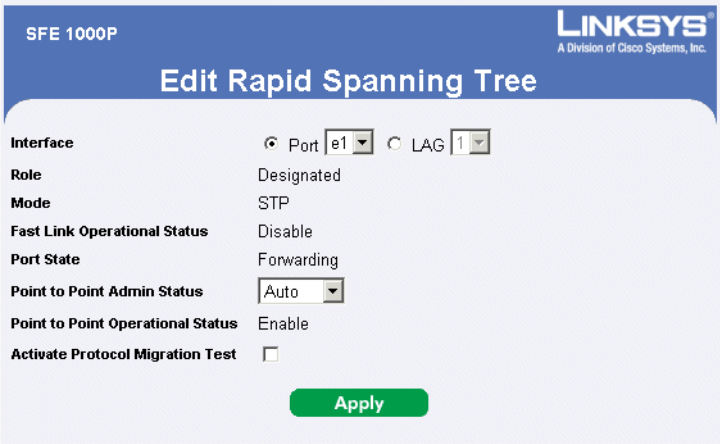
2. Define the relevant fields.

3. Click **Apply**. The Rapid Spanning Tree Settings are defined, and the device is updated.

Modifying RTSP

1. Click **Bridging** > **Spanning Tree** > **RSTP**. The *RSTP Page* opens:
2. Click the **Edit** button. The *Edit Rapid Spanning Tree Page* opens:

Edit Rapid Spanning Tree Page



3. Define the relevant fields.
4. Click **Apply**. The Rapid Spanning Tree Settings are modified, and the device is updated.

Defining Multiple Spanning Tree

MSTP provides differing load balancing scenarios. For example, while port A is blocked in one STP instance, the same port is placed in the Forwarding State in another STP instance. The *MSTP Properties* page contains information for defining global MSTP settings, including region names, MSTP revisions, and maximum hops.

The MSTP section contains the following pages:

- Defining MSTP Properties
- Mapping MSTP Instances to VLAN
- Defining MSTP Instance Settings
- Defining MSTP Interface Settings

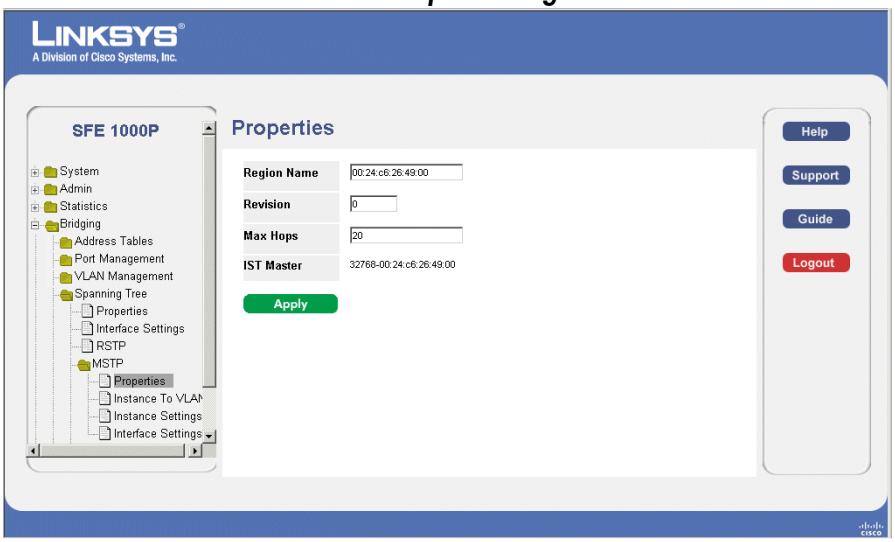
Defining MSTP Properties

The *MSTP Properties Page* contains information for defining global MSTP settings, including region names, MSTP revisions, and maximum hops.

To define MSTP:

1. Click **Bridging** > **Spanning Tree** > **MSTP** > **Properties**. The *MSTP Properties Page* opens:

MSTP Properties Page



2. Define the relevant fields.

3. Click **Apply**. The MSTP properties are defined, and the device is updated.

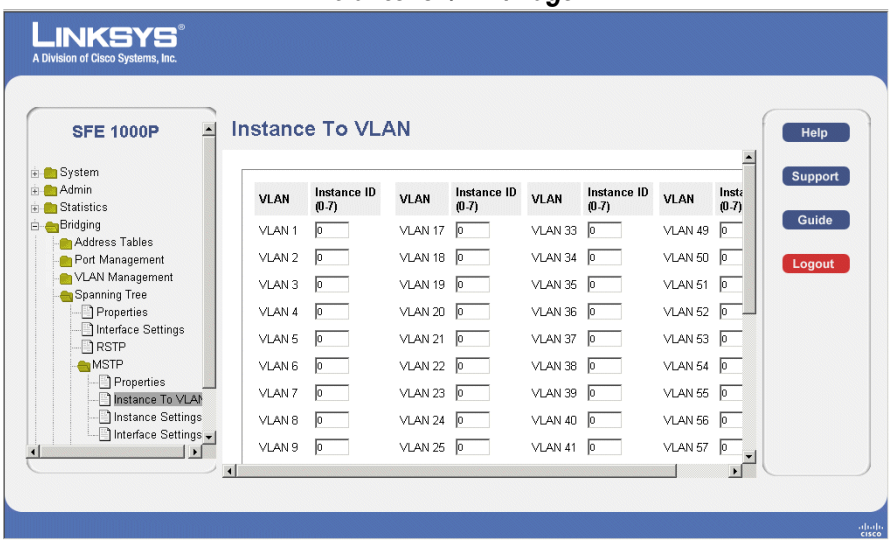
Mapping MSTP Instances to VLAN

MSTP maps VLANs into STP instances. Packets assigned to various VLANs are transmitted along different paths within *Multiple Spanning Tree Regions* (MST Regions). Regions are one or more Multiple Spanning Tree bridges by which frames can be transmitted. In configuring MSTP, the MST region to which the device belongs is defined. A configuration consists of the name, revision, and region to which the device belongs.

The VLAN screen enables mapping VLANs to MSTP Instances.

1. Click **Bridging** > **Spanning Tree** > **MSTP** > **Instance to VLAN**. The *Instance to VLAN Page* opens:

Instance to VLAN Page



2. .Define the relevant fields.

3. Click **Apply**. The local user settings are modified, and the device is updated.

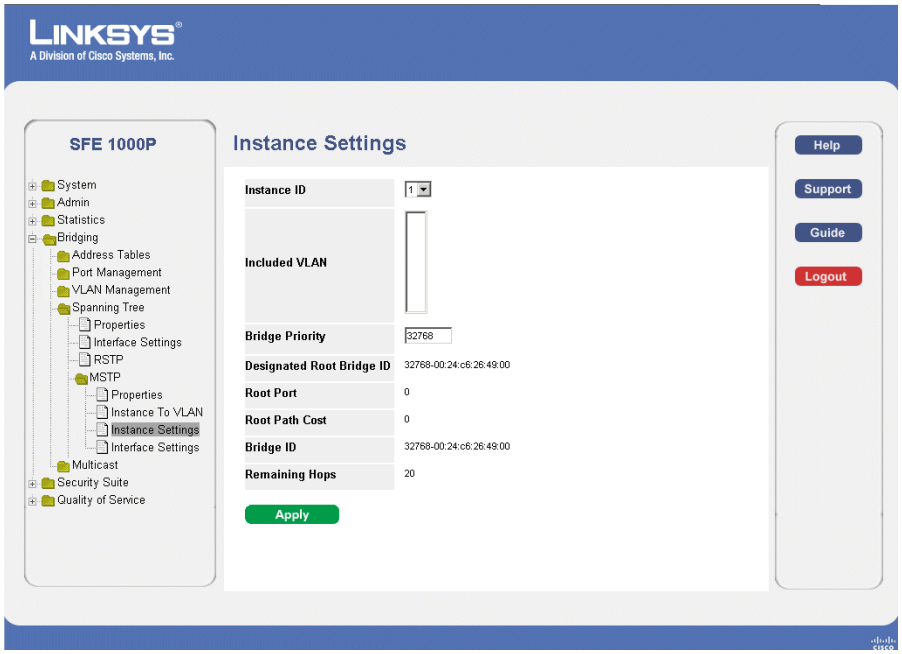
Defining MSTP Instance Settings

MSTP maps VLANs into STP instances. Packets assigned to various VLANs are transmitted along different paths within *Multiple Spanning Tree Regions* (MST Regions). Regions are one or more Multiple Spanning Tree bridges by which frames can be transmitted. In configuring MSTP, the MST region to which the device belongs is defined. A configuration consists of the name, revision, and region to which the device belongs.

Network Administrators can define MSTP Instances settings using the *MSTP Instance Settings Page*.

1. **Click Bridging > Spanning Tree > MSTP** > **Instance Settings**. The *MSTP Instance Settings Page* opens:

MSTP Instance Settings Page



2. Define the relevant fields.

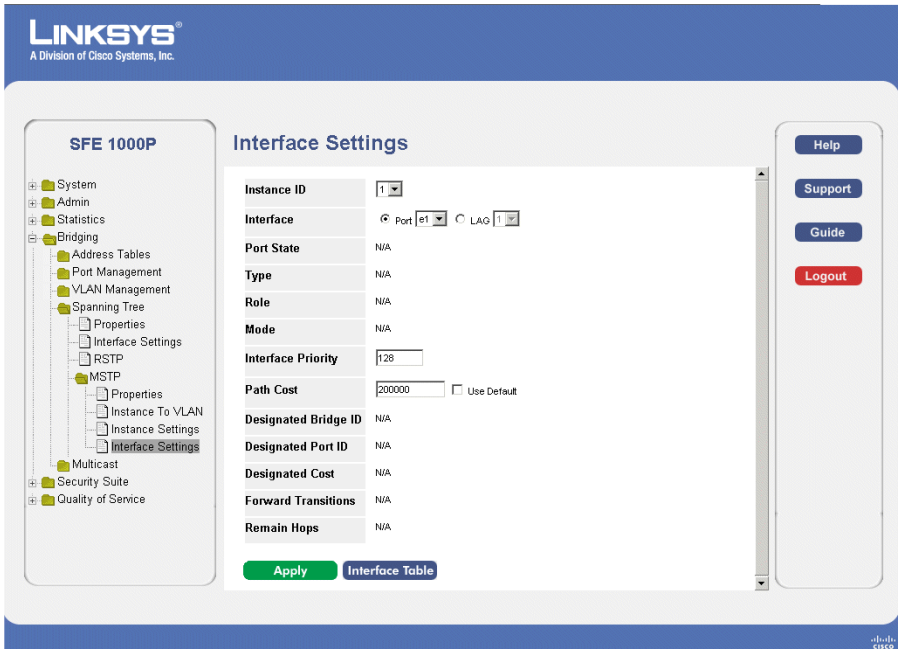
3. Click **Apply**. The local user settings are modified, and the device is updated.

Defining MSTP Interface Settings

Network Administrators can define MSTP Instances settings using the *MSTP Interface Settings Page*.

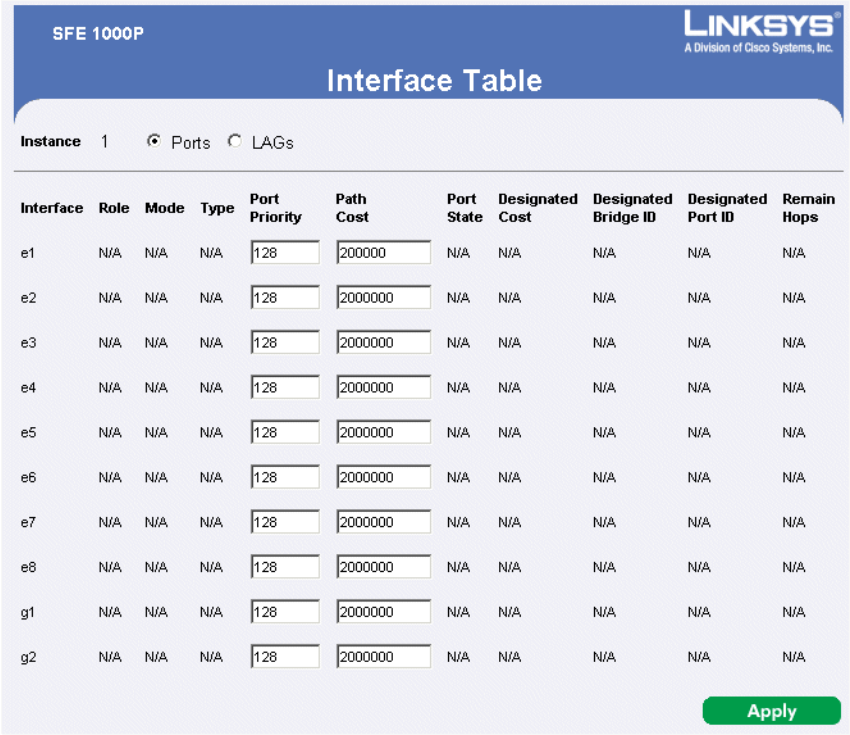
1. Click **Bridging** > **Spanning Tree** > **MSTP** > **Interface Settings**. The *MSTP Interface Settings Page* opens:

MSTP Interface Settings Page



2. Click the **Interface Table** button. The *Interface Table Page* opens:

Interface Table Page



Interface	Role	Mode	Type	Port Priority	Path Cost	Port State	Designated Cost	Designated Bridge ID	Designated Port ID	Remain Hops
e1	N/A	N/A	N/A	128	200000	N/A	N/A	N/A	N/A	N/A
e2	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
e3	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
e4	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
e5	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
e6	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
e7	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
e8	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
g1	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A
g2	N/A	N/A	N/A	128	2000000	N/A	N/A	N/A	N/A	N/A

3. Define the relevant fields.
4. Click **Apply**. The Interface settings are modified, and the device is updated.

Configuring SNMP

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

SNMP v1 and v2

SNMP agents maintain a list of variables that are used to manage the device. 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) is defined for SNMPv3 and includes:

- **Authentication** — Provides data integrity and data origin authentication.
- **Privacy** — Protects against disclosure message content. Cipher Bock-Chaining (CBC) is used for encryption. Either authentication is enabled on an SNMP message, or both authentication and privacy are enabled on a SNMP message. However privacy cannot be enabled without authentication.
- **Timeliness** — Protects against message delay or message redundancy. The SNMP agent compares the incoming message to the message time information.
- **Key Management** — Defines key generation, key updates, and key use. The device supports SNMP notification filters based on Object IDs (OID). OIDs are used by the system to manage device features. SNMP v3 supports the following features:
  - Security
  - Feature Access Control
  - Traps

The device generates copy traps.

The SNMP section contains the following sections:

- Configuring SNMP Security
- Defining Trap Management

Configuring SNMP Security

The Security section contains the following pages:

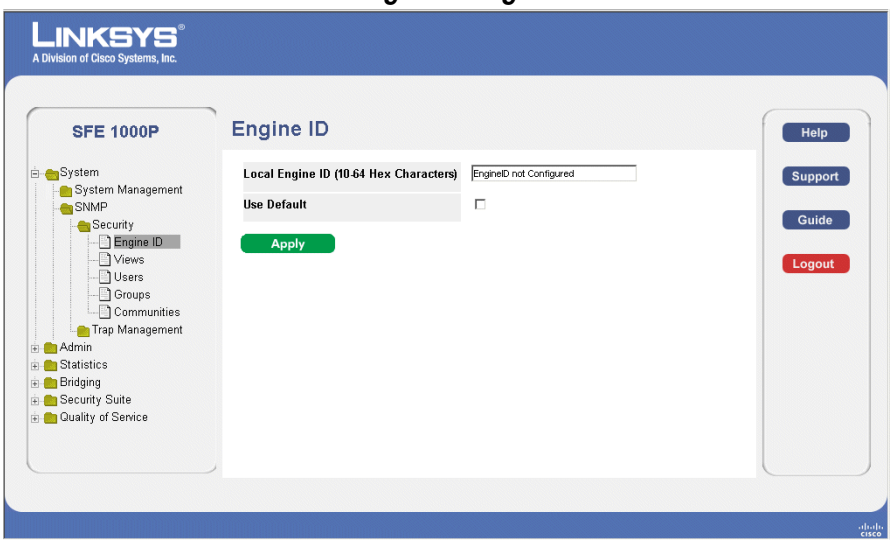
- Defining the SNMP Engine ID
- Defining SNMP Views
- Defining SNMP Users
- Define SNMP Groups
- Defining SNMP Communities

Defining the SNMP Engine ID

The *Engine ID Page* provides information for defining the device engine ID.

1. Click **System** > **SNMP** > **Security** > **Engine IP**. The *Engine ID Page* opens:

Engine ID Page



2. Define the relevant fields.
3. Click **Apply**. The Engine ID settings are modified, and the device is updated.

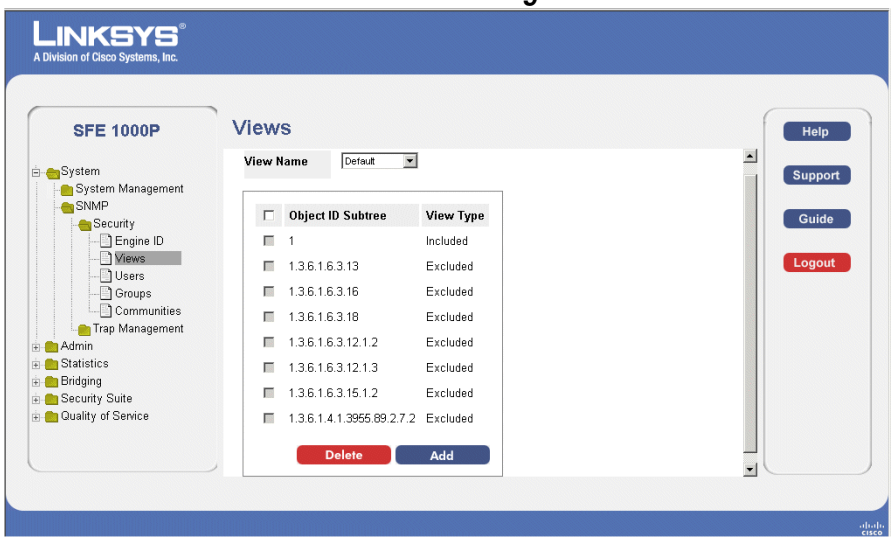
Defining SNMP Views

SNMP Views provide access or block access to device features or feature aspects. For example, a view can be defined that 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:

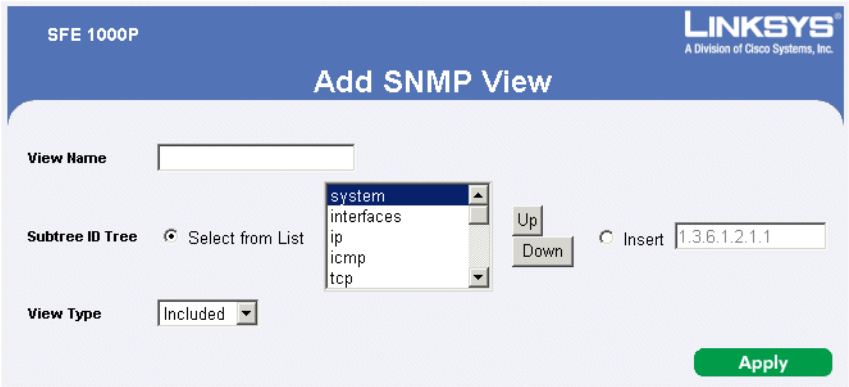
1. Click **System** > **SNMP** > **Security** > **Views**. The *SNMP Views Page* opens:

SNMP Views Page



2. Click the **Add** button. The *Add SNMP View Page* opens:

Add SNMP View Page



3. Define the relevant fields.

4. Click **Apply**. The SNMP views are defined, and the device is updated.

Defining SNMP Users

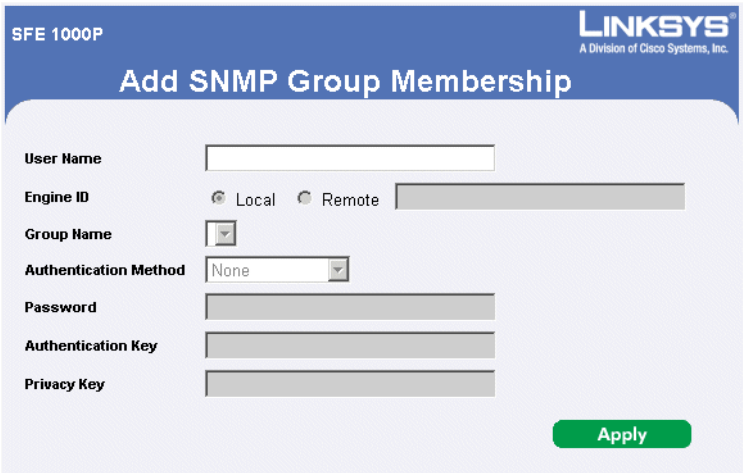
The *SNMP Users Page* provides information for creating SNMP groups, and assigning SNMP access control privileges to SNMP groups. Groups allow network managers to assign access rights to specific device features, or feature aspects.

1. Click **System** > **SNMP** > **Security** > **Users**. The *SNMP Users Page* opens:

SNMP Users Page

2. Click the **Add** button. The Add SNMP Group Membership Page opens:

Add SNMP Group Membership Page



3. Define the relevant fields.

4. Click **Apply**. The SNMP Group Membership settings are modified, and the device is updated.

Modifying SNMP Users

The *Edit SNMP User Page* provides information for assigning SNMP access control privileges to SNMP groups. The *Edit SNMP User Page* contains the following fields.

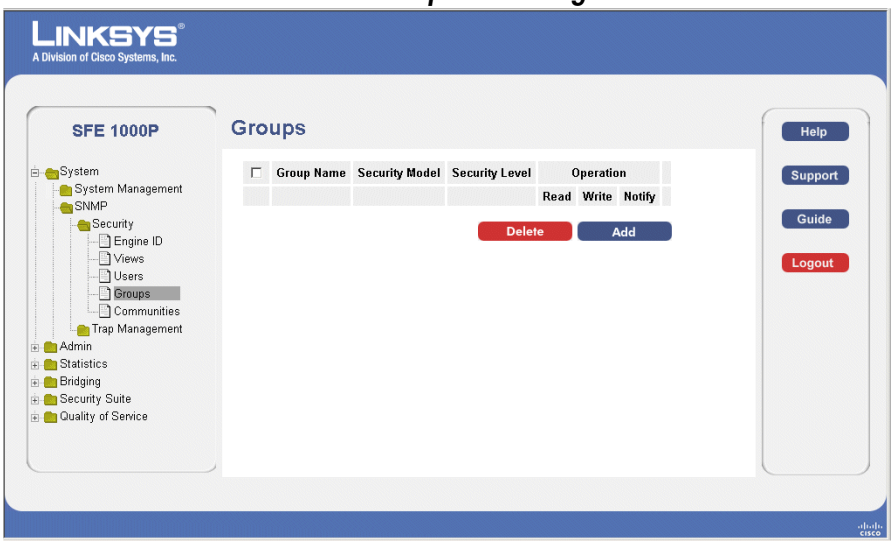
1. Click **System** > **SNMP** > **Security** > **Users** to open the *Edit SNMP User Page*
2. Define the relevant fields.
3. Click **Apply**. The SNMP User is modified, and the device is updated.

Define SNMP Groups

The *SNMP Groups Profile Page* 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.

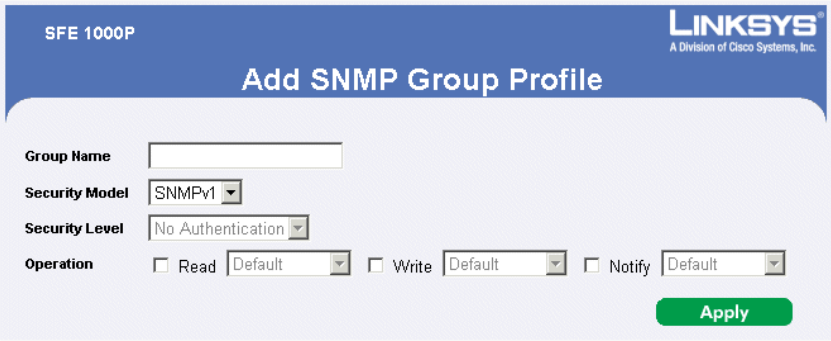
1. Click **System** > **SNMP** > **Security** > **Groups**. The *SNMP Groups Profile Page* opens:

SNMP Groups Profile Page



2. Click the **Add** button. The *Add SNMP Group Profile Page* opens:

Add SNMP Group Profile Page

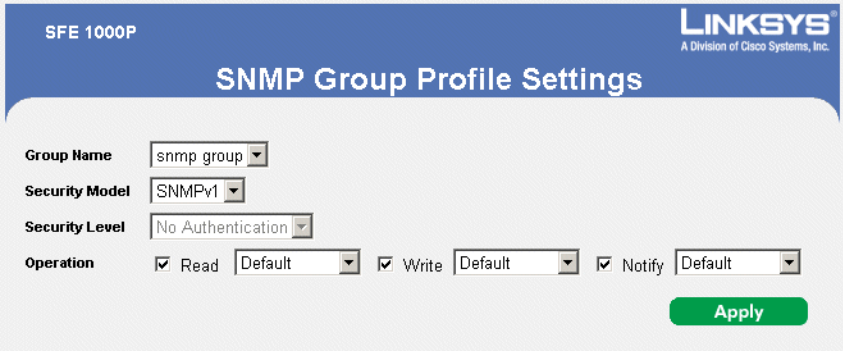


3. Define the relevant fields.
4. Click **Apply**. The SNMP settings are modified, and the device is updated.

Modifying SNMP Group Profile Settings

1. Click **System** > **SNMP** > **Security** > **Groups**. The *SNMP Groups Profile Page* opens:
2. Click the **Edit** Button. The *Edit SNMP Group Profile Page* opens:

Edit SNMP Group Profile Page



3. Define the relevant fields.
4. Click **Apply**. The SNMP settings are modified, and the device is updated.

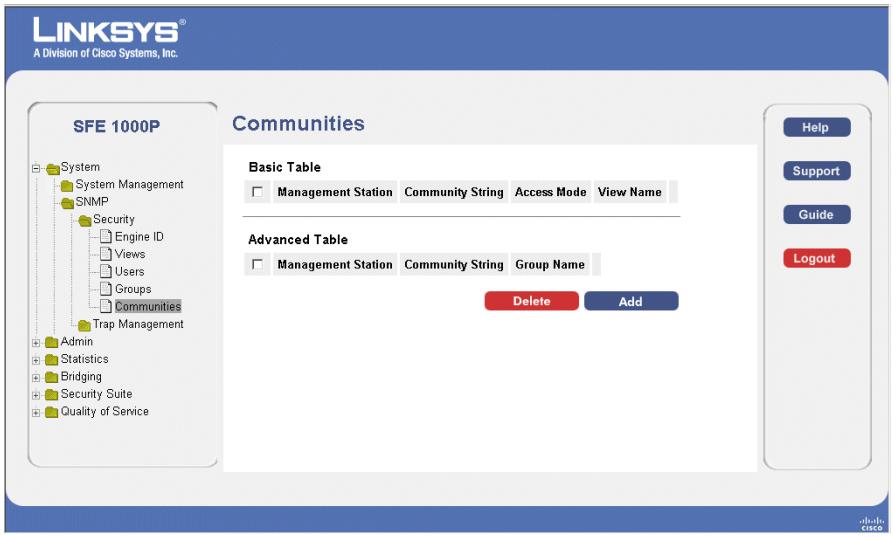
Defining SNMP Communities

The Access rights are managed by defining communities in the *SNMP Communities Page*. When the community names are changed, access rights are also changed. SNMP communities are defined only for SNMP v1 and SNMP v2c.

To define SNMP Communities:

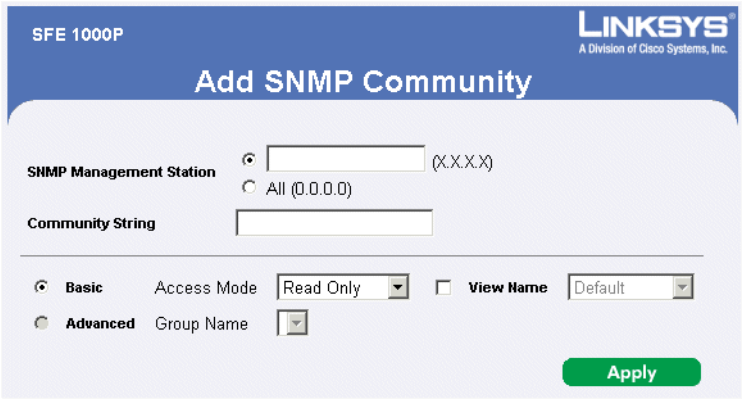
1. Click **System** > **SNMP** > **Security** > **Communities**. The *SNMP Communities Page* opens:

SNMP Communities Page



2. Click the **Add** button. The *Add SNMP Community Page* opens.

Add SNMP Community Page



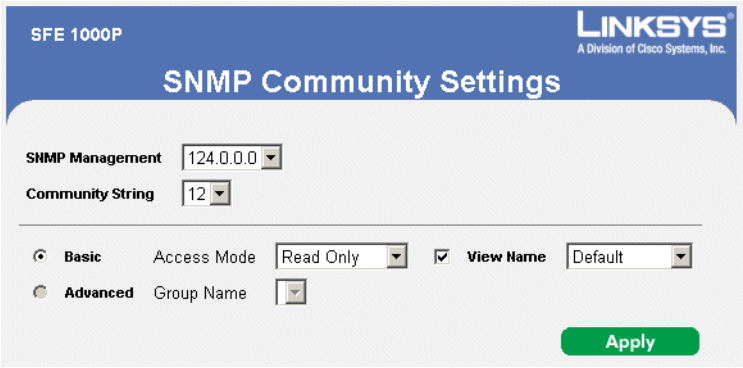
3. Define the relevant fields.

4. Click **Apply**. The SNMP settings are modified, and the device is updated.

Modifying SNMP Community Settings

1. Click **System** > **SNMP** > **Security** > **Communities**. The *SNMP Communities Page* opens:
2. Click the **Edit** Button. The *Edit SNMP Community Page*:

Edit SNMP Community Page



3. Define the relevant fields.
4. Click **Apply**. The SNMP Community settings are defined, and the device is updated.

Defining Trap Management

The Defining Trap Management section contains the following pages:

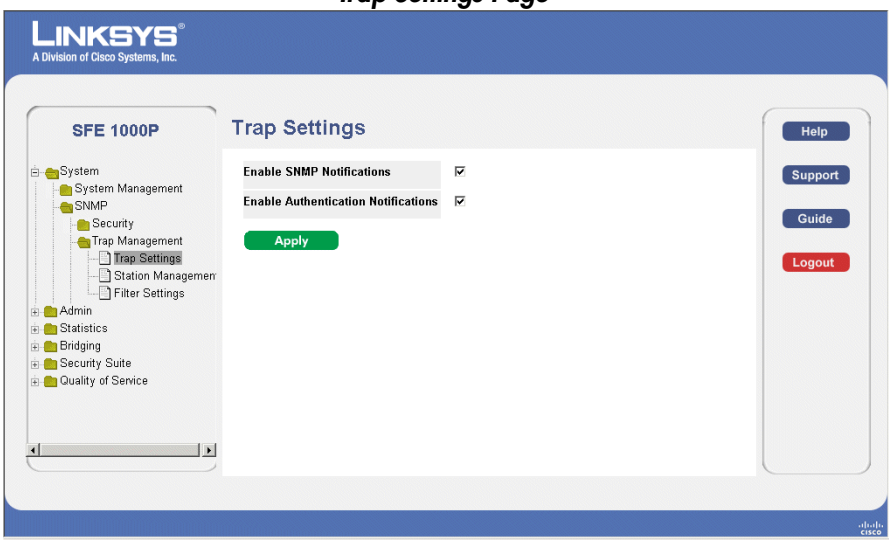
- Defining Trap Settings
- Configuring Station Management
- Defining SNMP Filter Settings

Defining Trap Settings

The *Trap Settings Page* contains parameters for defining SNMP notification parameters.

1. Click **System** > **SNMP** > **Security** > **Trap Management > Trap Settings**. The *Trap Settings Page* opens:

Trap Settings Page



2. Define the relevant fields.
3. Click **Apply**. The trap settings are modified, and the device is updated.

Configuring Station Management

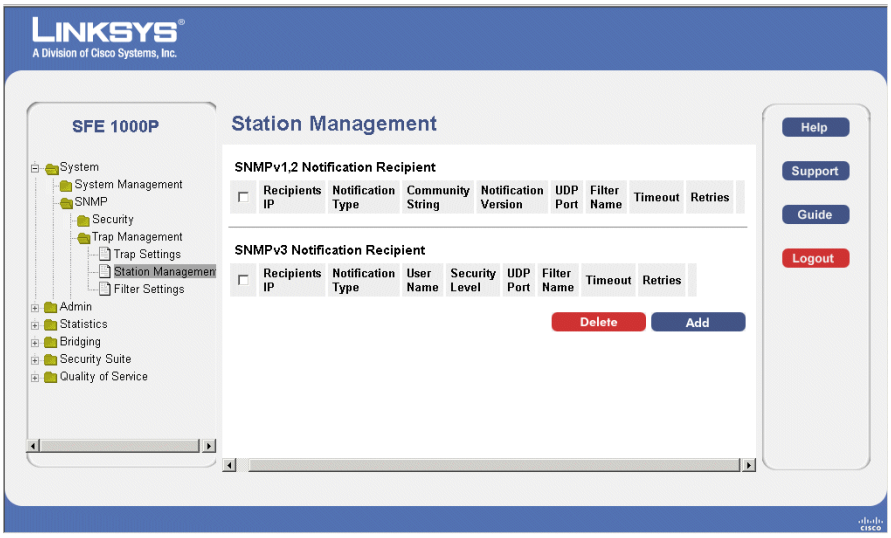
The *Station Management Page* contains information for defining filters that determine whether traps are sent to specific users, and the trap type sent. SNMP notification filters provide the following services:

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

Traps indicating status changes are issued by the switch to specified trap managers. Specify the trap managers so that key events are reported by this switch to the management station. Specify up to five management stations that receive authentication failure messages and other trap messages from the switch.

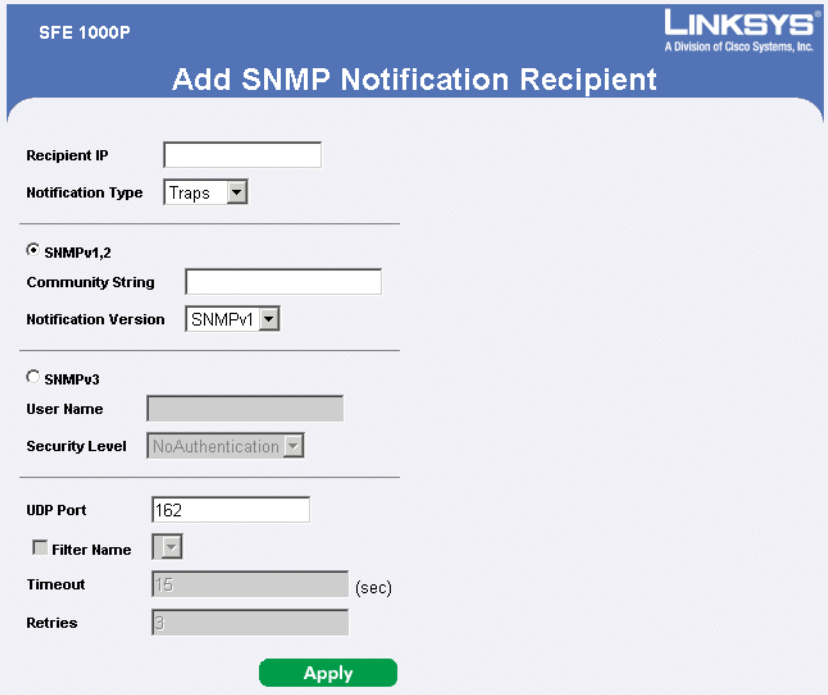
1. Click **System** > **SNMP** > **Security** > **Trap Management > Station Management**. The *Station Management Page* opens:

Station Management Page



2. Click the **Add** button. The *Add SNMP Notification Recipient Page* opens.

Add SNMP Notification Recipient Page



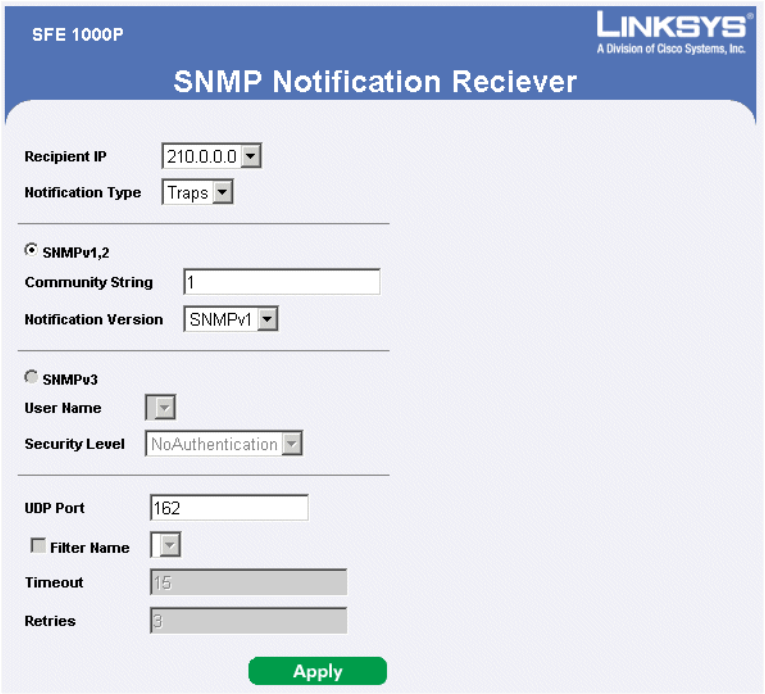
3. Define the relevant fields.
4. Click **Apply**. The SNMP Notification Recipient settings are defined, and the device is updated.

Modifying SNMP Notifications Settings

The *Edit SNMP Notification Page* allows system administrators to define notification settings. The *Edit SNMP Notification Page* is divided into four areas, Notification Recipient, SNMPv1,2 Notification Recipient, SNMPv3 Notification Recipient and UDP Port Notification Recipient.

1. Click **System** > **SNMP** > **Security** > **Trap Management > Station Management**.
2. Click the **Edit** button. The *Edit SNMP Notification Page* opens:

Edit SNMP Notification Page



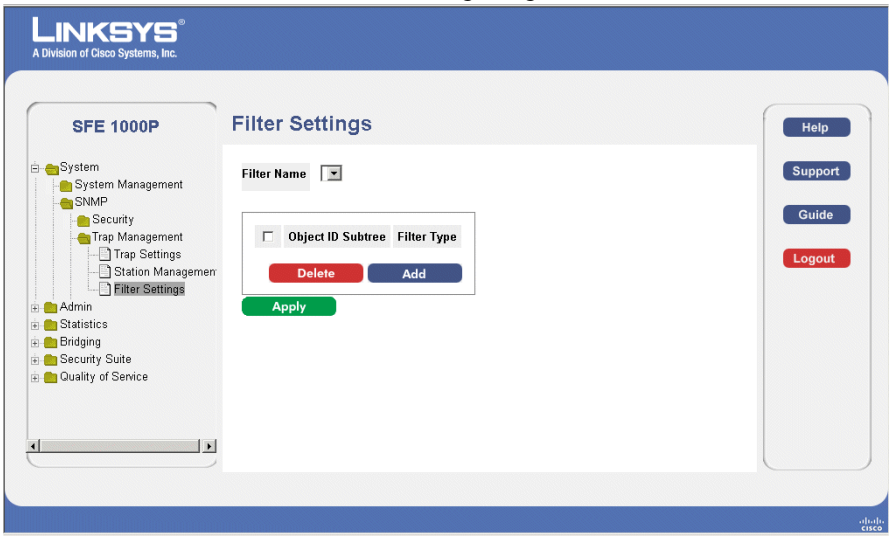
3. Define the relevant fields.
4. Click **Apply**. The SNMP Notification Receivers are defined, and the device is configured.

Defining SNMP Filter Settings

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

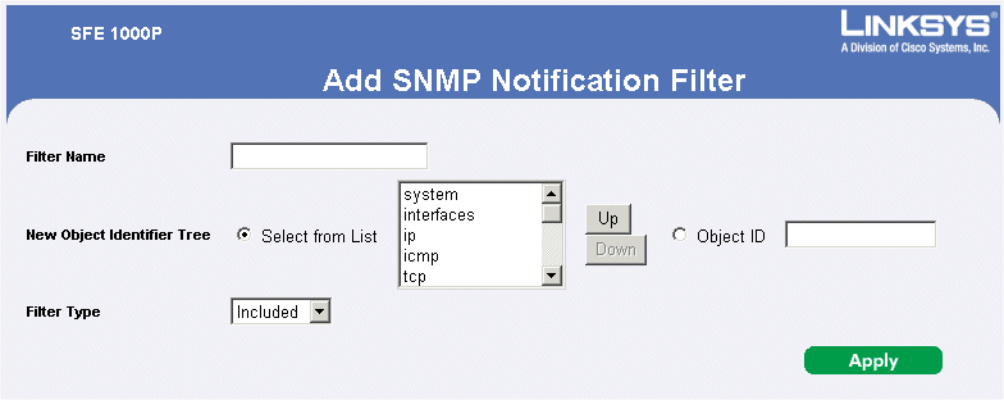
1. Click **System** > **SNMP** > **Security** > **Trap Management > Filter Settings**. The *Filter Settings Page* opens:

Filter Settings Page



2. Click the **Add** button. The *Add SNMP Notification Filter Page* opens:

Add SNMP Notification Filter Page



3. Define the relevant fields.

4. Click **Apply.** The SNMP Notification Filter is added to the list, and the device is updated.

Configuring Quality of Service

Network traffic is usually unpredictable, and the only basic assurance that can be offered is best effort traffic delivery. To overcome this challenge, Quality of Service (QoS) is applied throughout the network. This ensures that network traffic is prioritized according to specified criteria, and that specific traffic receives preferential treatment. QoS in the network optimizes network performance and entails two basic facilities:

- Classifying incoming traffic into handling classes, based on an attribute, including:
  - The ingress interface
  - Packet content
  - A combination of these attributes
- Providing various mechanisms for determining the allocation of network resources to different handling classes, including:
  - The assignment of network traffic to a particular hardware queue
  - The assignment of internal resources
  - Traffic shaping

The terms Class of Service (CoS) and QoS are used in the following context:

- CoS provides varying Layer 2 traffic services. CoS refers to classification of traffic to traffic-classes, which are handled as an aggregate whole, with no per-flow settings. CoS is usually related to the 802.1p service that classifies flows according to their Layer 2 priority, as set in the VLAN header.
- QoS refers to Layer 2 traffic and above. QoS handles per-flow settings, even within a single traffic class.

The QoS facility involves the following elements:

- **Access Control Lists (ACLs)** — Used to decide which traffic is allowed to enter the system, and which is to be dropped. Only traffic that meets this criteria are subject to CoS or QoS settings. ACLs are used in QoS and network security.
- **Traffic Classification** — Classifies each incoming packet as belonging to a given traffic class, based on the packet contents and/or the context.
- **Assignment to Hardware Queues** — Assigns incoming packets to forwarding queues. Packets are sent to a particular queue for handling as a function of the traffic class to which they belong, as defined by the classification mechanism.
- **Traffic Class-Handling Attributes** — Applies QoS/CoS mechanisms to different classes, including: Bandwidth Management

The Quality of Service section contains the following section:

- Defining General Settings
- Defining Advanced Mode
- Defining QoS Basic Mode

The section also contains the following pages:

- Configuring Policy Table
- Configuring Policy Table

Defining General Settings

The QoS General Settings section contains the following pages:

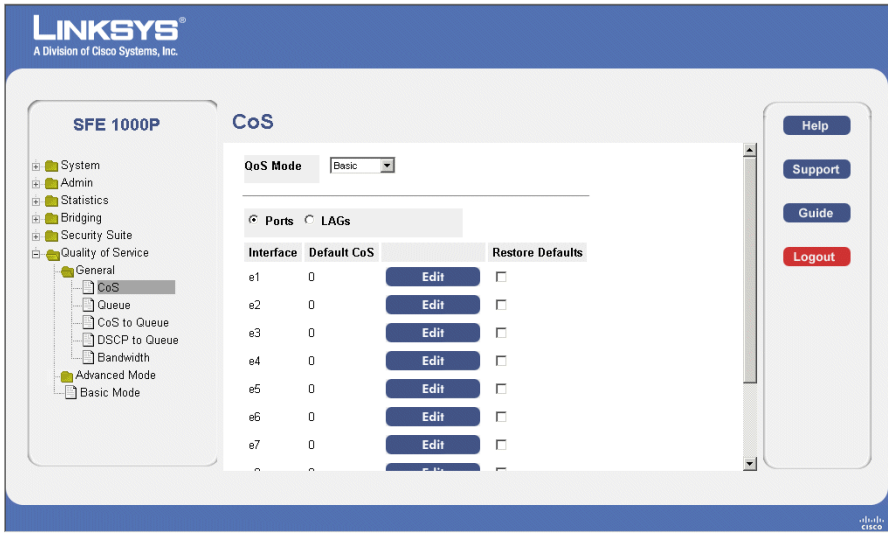
- Defining CoS
- Defining Queue
- Mapping CoS to Queue
- Mapping DSCP to Queue
- Configuring Bandwidth

Defining CoS

The *CoS Page* contains fields for enabling or disabling CoS (Basic or Advanced mode). In addition, the default CoS for each port or LAG is definable.

1. Click **Quality of Service** > **General** > **CoS**. The *CoS Page* opens:

CoS Page

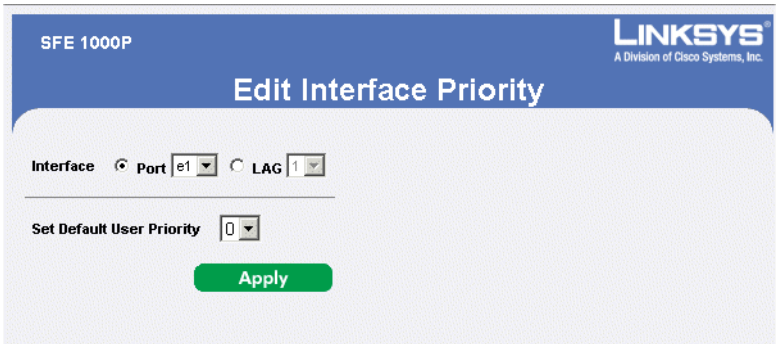


2. Define the relevant fields.
3. Click **Apply**. The CoS settings are modified, and the device is updated.

Modifying Interface Priorities

1. Click **Quality of Service** > **General** > **CoS**. The *CoS Page* opens:
2. Click the **Edit** button. The *Edit Interface Priority Page* opens:

Edit Interface Priority Page



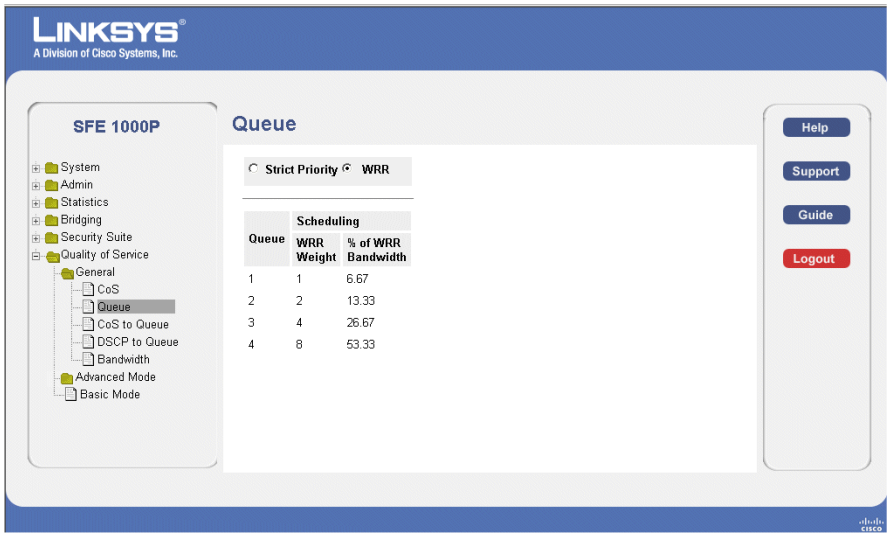
3. Modify the Interface priority.
4. Click **Apply**. The Interface priority is set, and the device is updated.

Defining Queue

The *Queue Page* contains fields for defining the QoS queue forwarding types.

1. Click **Quality of Service** > **General** > **Queues**. The *Queue Page* opens:

Queue Page



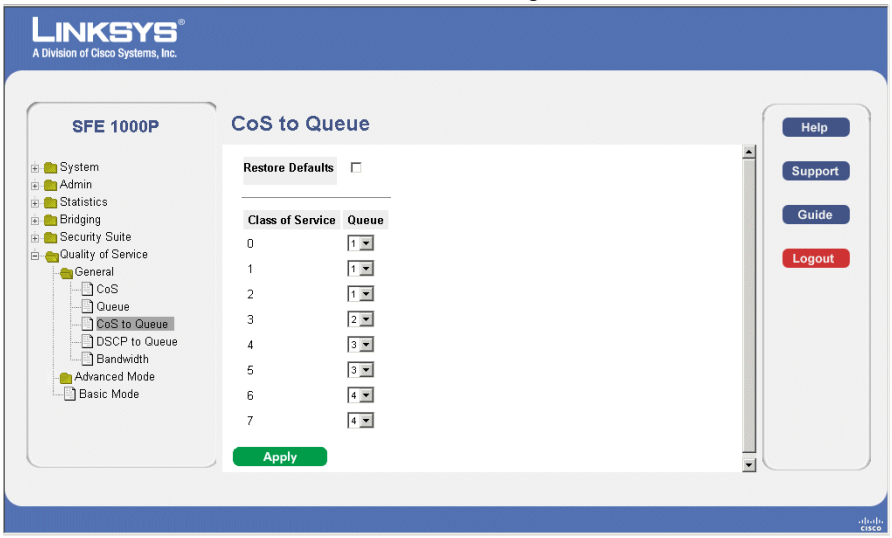
2. Define the queues.
3. Click **Apply**. The queues are defined, and the device is updated.

Mapping CoS to Queue

The *Cos to Queue Page* contains fields for classifying CoS settings to traffic queues.

1. Click **Quality of Service** > **General** > **CoS to Queue**. The *Cos to Queue Page* opens:

Cos to Queue Page



2. Define the relevant fields.

3. Click **Apply**. CoS to queues are mapped, and the device is updated.

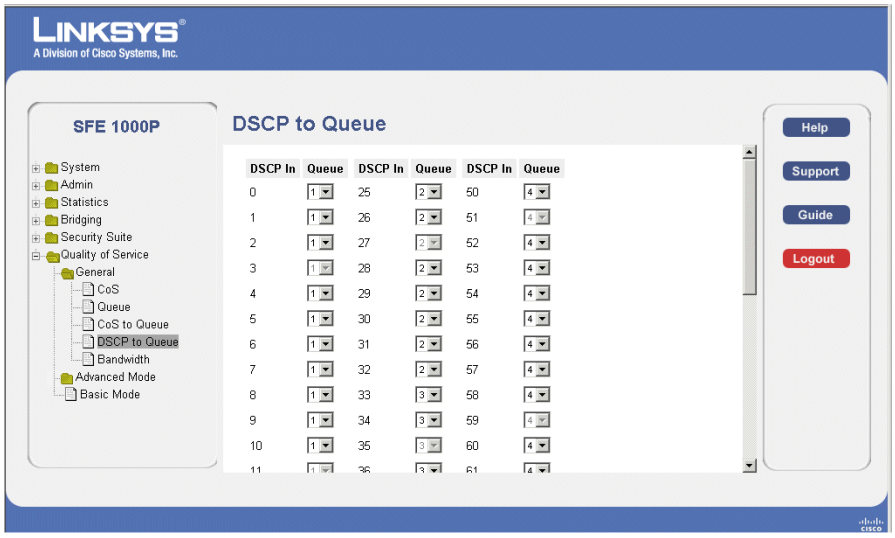
Mapping DSCP to Queue

The *DSCP to Queue Page* enables mapping DSCP values to specific queues.

To map DCSP to Queues:

1. Click **Quality of Service** > **General** > **DSCP to Queue**. The *DSCP to Queue Page* opens:

DSCP to Queue Page



2. Define the relevant fields.

3. Click **Apply**. DSCP to queues are mapped, and the device is updated.

Configuring Bandwidth

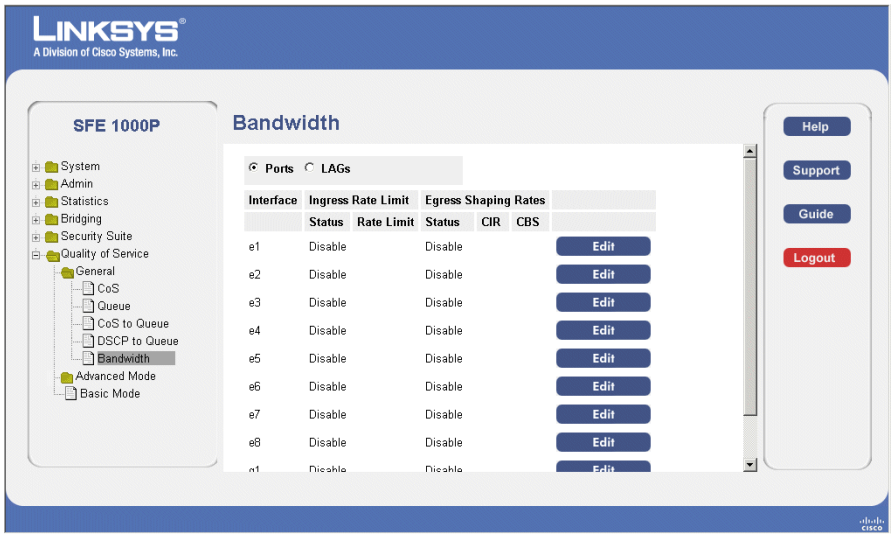
The *Bandwidth Page* allows network managers to define the bandwidth settings for specified egress and ingress interfaces.

Rate Limits and Shaping are defined per interface:

- Rate Limit sets the maximum bandwidth allowed on ingress interfaces.
- Shaping Rate sets the maximum bandwidth allowed on egress interfaces. On GE ports, traffic shape for burst traffic (CbS) can also be defined.

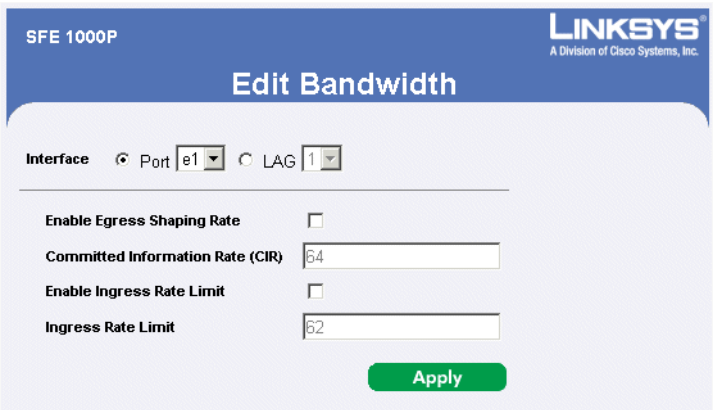
1. Click **Quality of Service** > **General** > **Bandwidth**. The *Bandwidth Page* opens:

Bandwidth Page



2. Click the **Edit** button. The *Edit Bandwidth Page* opens:

Edit Bandwidth Page



3. Modify the relevant fields.

4. Click **Apply**. The bandwidth settings are modified, and the device is updated.

Defining Advanced Mode

Advanced QoS mode provides rules for specifying flow classification and assigning rule actions that relate to bandwidth management. The rules are defined in classification control lists (CCL).

CCLs are set according to the classification defined in the ACL, and they cannot be defined until a valid ACL is defined. When CCLs are defined, ACLs and CCLs can be grouped together in a more complex structure, called policies. Policies can be applied to an interface. Policy ACLs/CCLs are applied in the sequence they appear within the policy. Only a single policy can be attached to a port.

In advanced QoS mode, ACLs can be applied directly to an interface. However, a policy and ACL cannot be simultaneously applied to an interface.

After assigning packets to a specific queue, services such as configuring output queues for the scheduling scheme, or configuring output shaping for burst size, CIR, or CbS per interface or per queue, can be applied.

The *Advanced Mode* section contains the following pages:

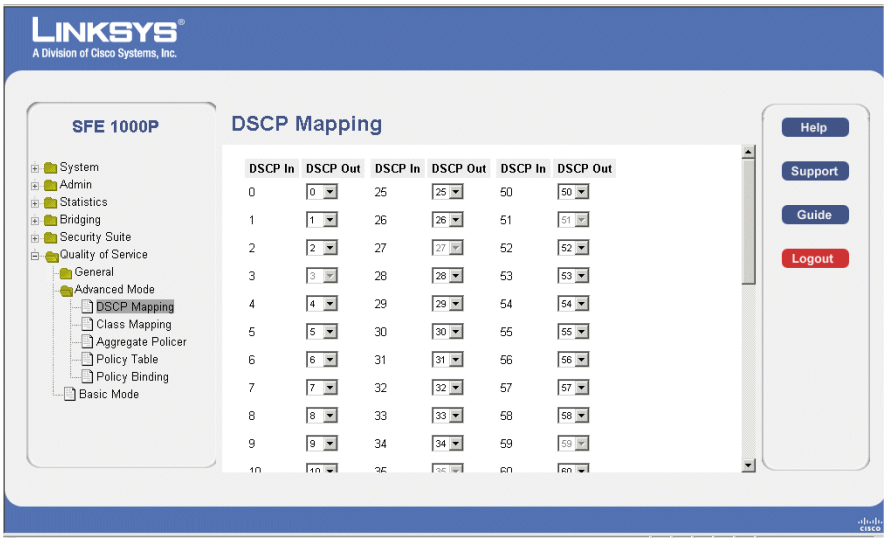
- Configuring DSCP Mapping
- Defining Class Mapping
- Defining Aggregate Policer
- Configuring Policy Table
- Defining Policy Binding

Configuring DSCP Mapping

The *DSCP Mapping Page* enables mapping Differentiated Services Code Point (DSCP) values from incoming packets to DSCP values in outgoing packets. This information is important when traffic exceeds user-defined limits.

1. Click **Quality of Service** > **Advanced Mode** > **DSCP Mapping**. The *DSCP Mapping Page* opens:

DSCP Mapping Page



2. Define the relevant fields.

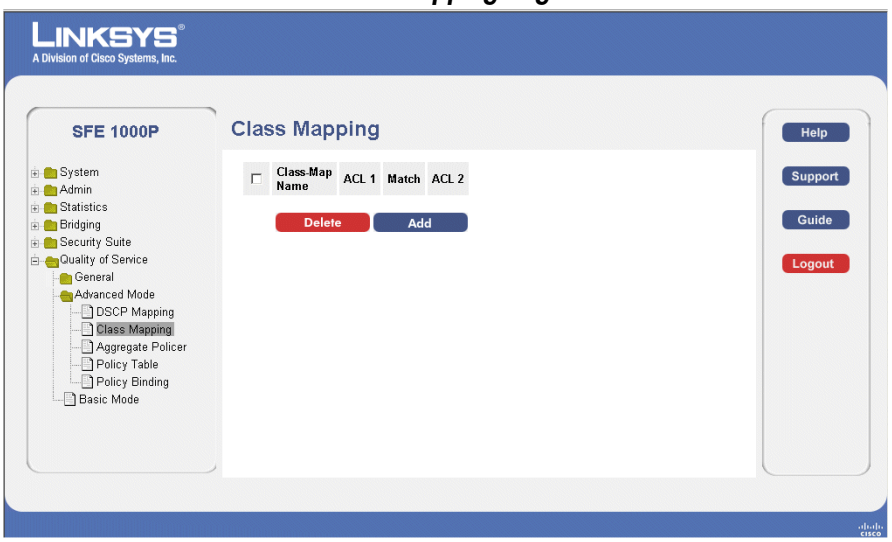
3. Click **Logout**. The DSCP settings are modified, and the device is updated.

Defining Class Mapping

The *Class Mapping Page* contains parameters for defining class maps. One IP ACL and/or one MAC ACL comprise a class map. Class maps are configured to match packet criteria, and are matched to packets on a first-fit basis. For example, Class Map A is assigned to packets based only on an IP-based ACL or a MAC-based ACL. Class Map B is assigned to packets based on both an IP-based and a MAC-based ACL.

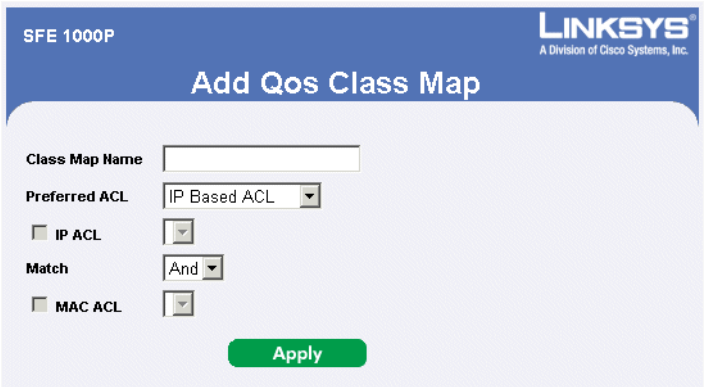
1. Click **Quality of Service** > **Advanced Mode** > **Class Mapping**. The *Class Mapping Page* opens:

Class Mapping Page



2. Click the **Add** button. The *Add QoS Class Map Page* opens:

Add QoS Class Map Page



3. Define the relevant fields.

4. Click **Apply**. QoS mapping is added, and the device is updated.

Defining Aggregate Policer

A policy is a collection of classes, each of which is a combination of a class map and a QoS action to apply to matching traffic. Classes are applied in a first-fit manner within a policy.

Before configuring policies for classes whose match criteria are defined in a class map, a class map must first be defined, or the name of the policy map to be created, added to, or modified must first be specified. Class policies can be configured in a policy map only if the classes have defined match criteria.

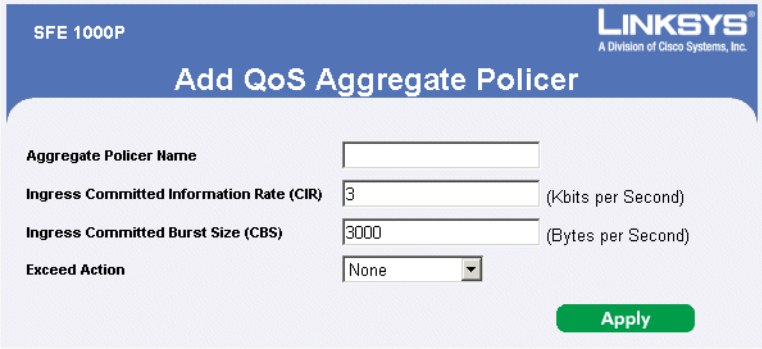
An aggregate policer can be applied to multiple classes in the same policy map, but an aggregate policer cannot be used across different policy maps. Define an aggregate policer if the policer is shared with multiple classes. Policers in one port cannot be shared with other policers in another device. Traffic from two different ports can be aggregated for policing purposes.

1. Click **Quality of Service** > **Advanced Mode** > **Aggregate Policer**. The *Aggregate Policer Page* opens:

Aggregate Policer Page

2. Click the **Add** button. The *Add QoS Aggregate Policer Page opens:*

Add QoS Aggregate Policer Page

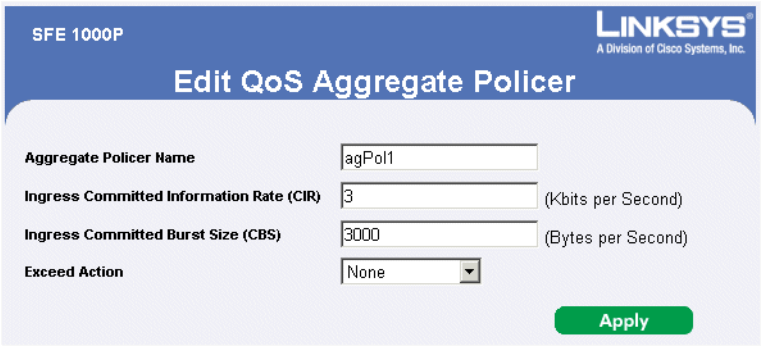


3. Define the relevant fields.
4. Click **Apply**. The Aggregate policer is added, and the device is updated.

Modifying QoS Aggregate Policer

1. Click **Quality of Service** > **Advanced** > **Aggregate Policer**. The *Aggregate Policer Page* opens:
2. Click the **Edit** Button. The *Edit QoS Aggregate Policer Page* opens:

Edit QoS Aggregate Policer Page



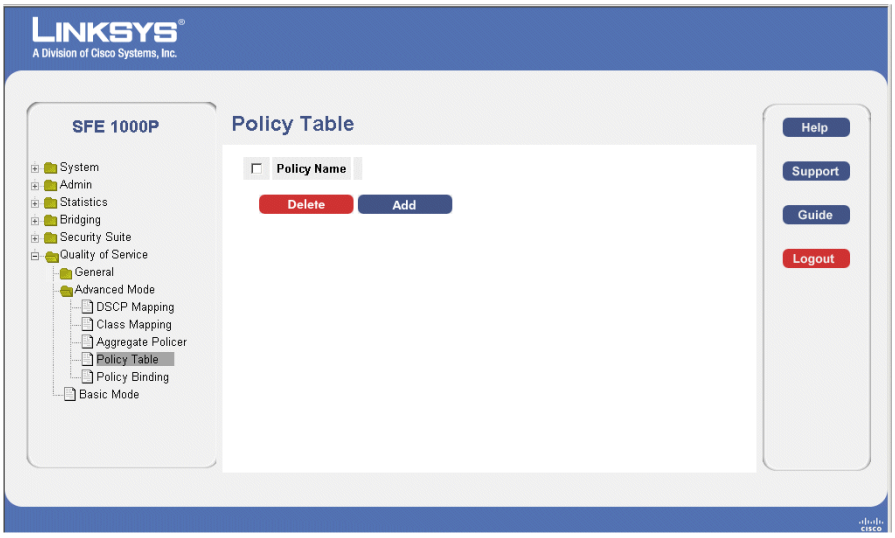
3. Modify the relevant fields.
4. Click **Apply**. QoS aggregate policer settings are modified, and the device is updated.

Configuring Policy Table

In the *Policy Table Page,* QoS policies are set up and assigned to interfaces.

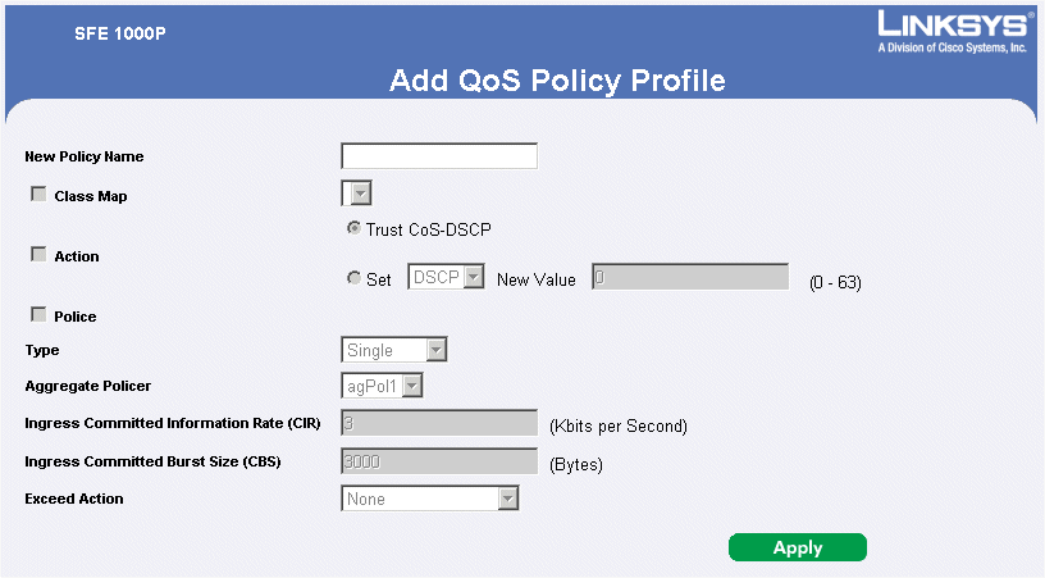
1. Click **Quality of Service** > **Advanced** > **Policy Table**. The *Policy Table Page* opens:

Policy Table Page



2. Click the **Add** button. The *Add QoS Policy Profile Page* opens:

Add QoS Policy Profile Page

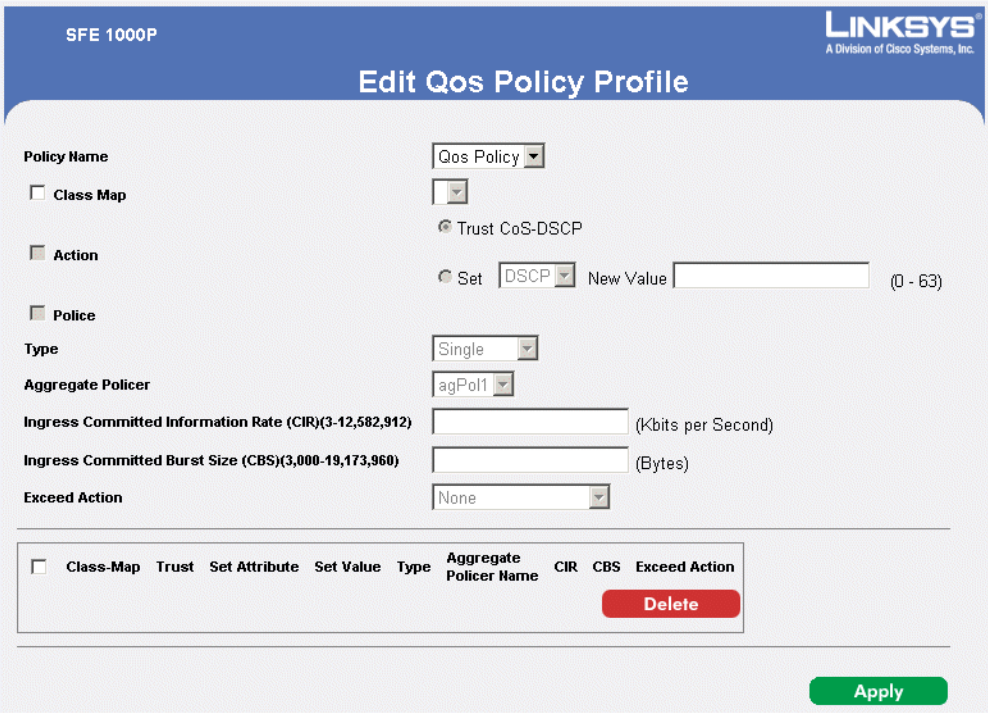


3. Add a QoS policy profile.
4. Click **Apply**. The QoS policy profile is added, and the device is updated.

Modifying the QoS Policy Profile

1. Click **Quality of Service** > **Advanced** > **QoS Policy Profile**. The *Edit QoS Aggregate Policer Page* opens:

Edit QoS Policy Profile Page



2. Define the relevant fields.

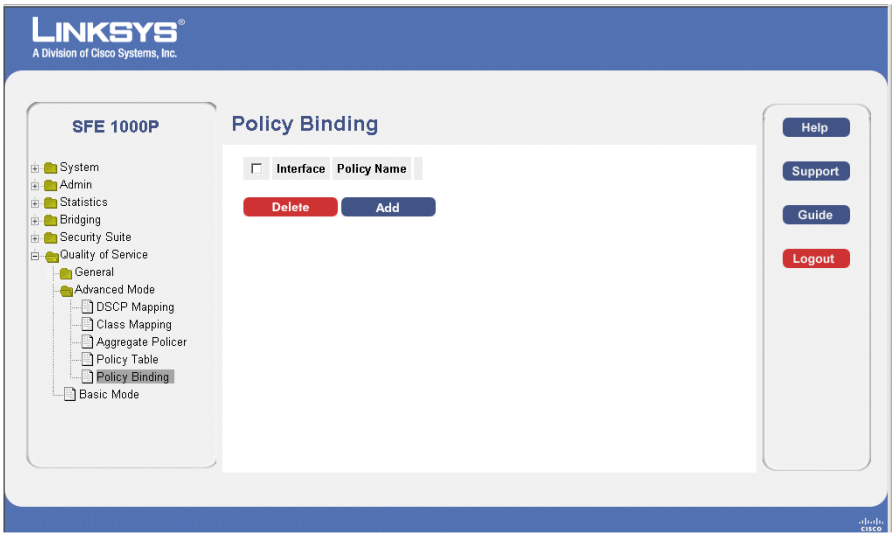
3. Click **Apply.** The QoS policy profile is defined, and the device is updated.

Defining Policy Binding

In the *Policy Binding Page*, QoS policies are associated with specific interfaces.

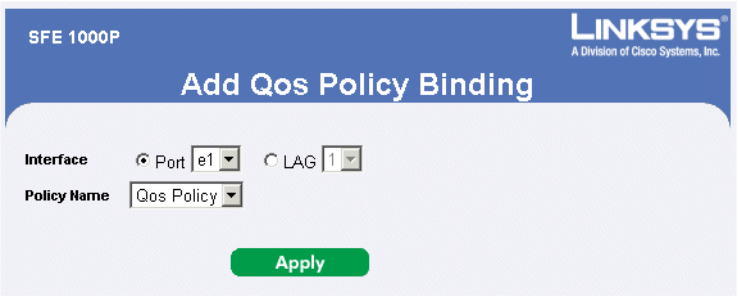
1. Click **Quality of Service** > **Advanced** > **Policy Binding**. The *Policy Binding Page* opens:

Policy Binding Page



2. Click the **Add** button. The *Add QoS Policy Binding Page* opens:

Add QoS Policy Binding Page

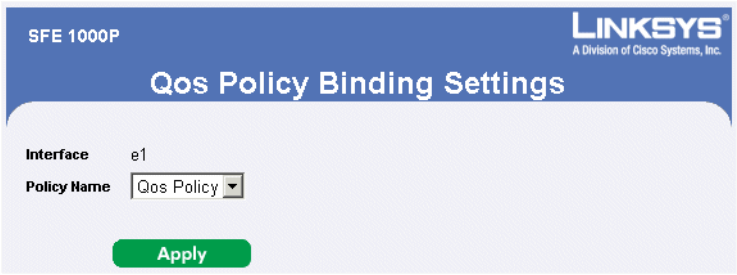


3. Define the relevant fields.
4. Click **Apply**. The QoS Policy Binding is defined, and the device is updated.

Modifying QoS Policy Binding Settings

1. Click **Quality of Service** > **Advanced** > **Policy Binding**. The *Policy Binding Page* opens:
2. Click the **Edit** button. The *Edit QoS Policy Binding Page* opens:

Edit QoS Policy Binding Page



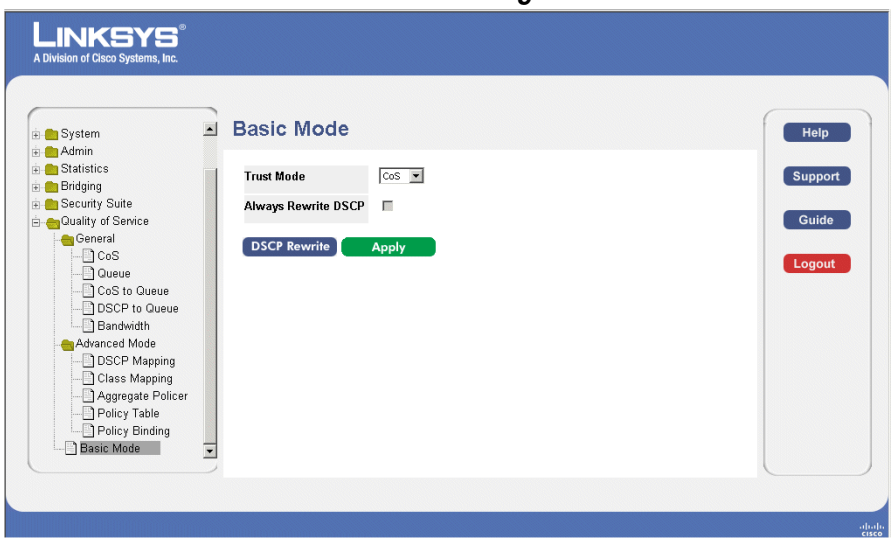
3. Define the relevant fields.
4. Click **Apply**. The QoS policy binding is defined, and the device is updated.

Defining QoS Basic Mode

The *Basic Mode Page* contains information for enabling Trust on the device. Packets entering a QoS domain are classified at the edge of the QoS domain.

1. Click **Quality of Service** > **Basic Mode**. The *Basic Mode Page* opens:

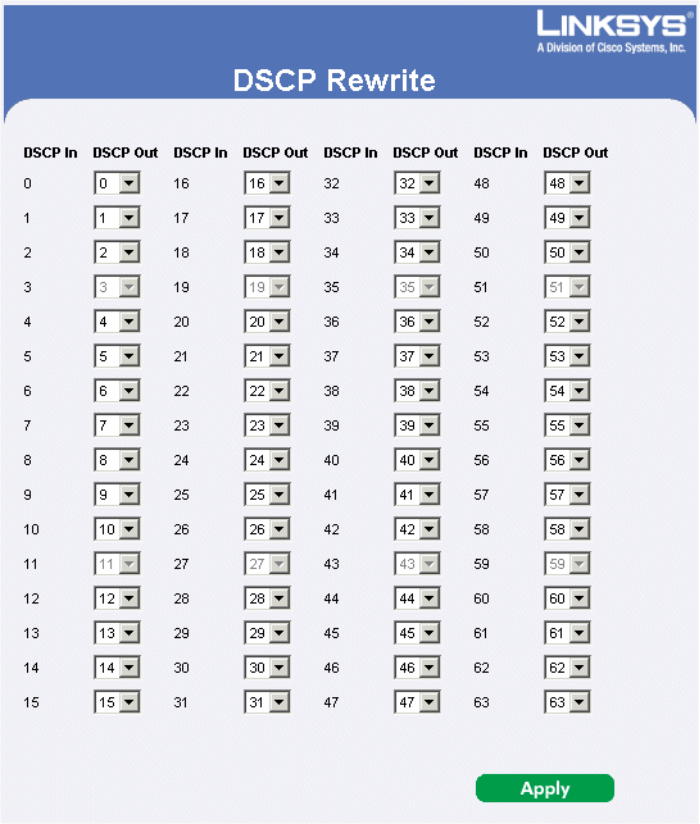
Basic Mode Page



In the *DSCP Mapping Page*, define the Differentiated Services Code Point (DSCP) tag to use in place of the incoming DSCP tags.

2. Click the **DSCP Rewrite** button. The *DSCP Mapping Page* opens:

DSCP Mapping Page



DSCP In	DSCP Out	DSCP In	DSCP Out	DSCP In	DSCP Out	DSCP In	DSCP Out
0	0	16	16	32	32	48	48
1	1	17	17	33	33	49	49
2	2	18	18	34	34	50	50
3	3	19	19	35	35	51	51
4	4	20	20	36	36	52	52
5	5	21	21	37	37	53	53
6	6	22	22	38	38	54	54
7	7	23	23	39	39	55	55
8	8	24	24	40	40	56	56
9	9	25	25	41	41	57	57
10	10	26	26	42	42	58	58
11	11	27	27	43	43	59	59
12	12	28	28	44	44	60	60
13	13	29	29	45	45	61	61
14	14	30	30	46	46	62	62
15	15	31	31	47	47	63	63

3. Define the DSCP mappings.
4. Click **Apply**. The DSCP mappings are defined, and the device is updated.

Managing System Files

The Managing System Files section contains the following sections:

- File Management
- Logs
- Diagnostics

File Management Overview

The configuration file structure consists of the following configuration files:

- Startup Configuration File — Contains the commands required to reconfigure the device to the same settings as when the device is powered down or rebooted. The Startup file is created by copying the configuration commands from the Running Configuration file or the Backup Configuration file.
- Running Configuration File — Contains all configuration file commands, as well as all commands entered during the current session. After the device is powered down or rebooted, all commands stored in the Running Configuration file are lost. During the startup process, all commands in the Startup file are copied to the Running Configuration File and applied to the device. During the session, all new commands entered are added to the commands existing in the Running Configuration file. Commands are not overwritten. To update the Startup file, before powering down the device, the Running Configuration file must be copied to the Startup Configuration file. The next time the device is restarted, the commands are copied back into the Running Configuration file from the Startup Configuration file.
- Backup Configuration File — Contains a backup copy of the device configuration. The Backup file is generated when the Running Configuration file or the Startup file is copied to the Backup file. The commands copied into the file replaces the existing commands saved in the Backup file. The Backup file contents can be copied to either the Running configuration or the Startup Configuration files.
- Image files — Software upgrades are used when a new version file is downloaded. The file is checked for the right format, and that it is

This section contains information for defining File maintenance and includes both configuration file management as well as device access.

File Management

The File Management section contains the following pages:

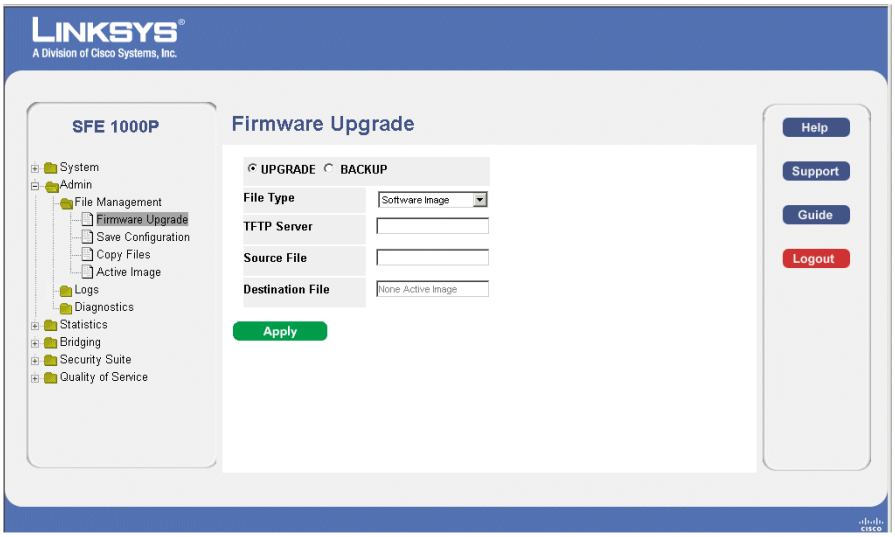
- Firmware Upgrade
- Save Configuration
- Copy Files
- Active Image

Firmware Upgrade

Firmware files are downloaded as required for upgrading the firmware version or for backing up the system configuration. File names cannot contain slashes (\ or /), the leading letter of the file name should not be a period (.), and the maximum length for file names on the TFTP server is 127 characters or 31 characters for files on the switch. (Valid characters: A-Z, a-z, 0-9, ".", "-", "_"). The *Firmware Upgrade Page* contains parameters for downloading system files.

1. Click **Admin** > **File Management** > **Firmware Upgrade**. The *Firmware Upgrade Page* opens:

Firmware Upgrade Page



2. Define the relevant fields.
3. Click **Apply**. Firmware upgrade is defined, and the device is updated.

Save Configuration

The configuration files control the operation of the switch, and contain the functional settings at the device and the port level. Configuration files are one of the following types:

- **Factory Default** — Contains preset default parameter definitions which are downloaded with a new or upgraded version.
- **Running Configuration** — Contains the parameter definitions currently defined on the device. This includes any configuration changes made since the device was started or rebooted. When the device shuts down or reboots the next time, this configuration becomes the Starting Configuration.
- **Starting configuration** — Contains the parameter definitions which were valid in the Running Configuration when the system last rebooted or shut down.
- **Backup configuration** — Contains a copy of the system configuration for protection against system shutdown, or for maintenance of a specific operating state.

File names cannot contain slashes (\ or /), the leading letter of the file name should not be a period (.), and the maximum length for file names on the TFTP server is 127 characters or 31 characters for files on the switch. (Valid characters: A-Z, a-z, 0-9, ".", "-", "_"). In the *Save Configuration Page*, define the parameters of the system configuration files.

1. Click **Admin** > **File Management** > **Save Configuration**. The *Save Configuration Page* opens:

Save Configuration Page

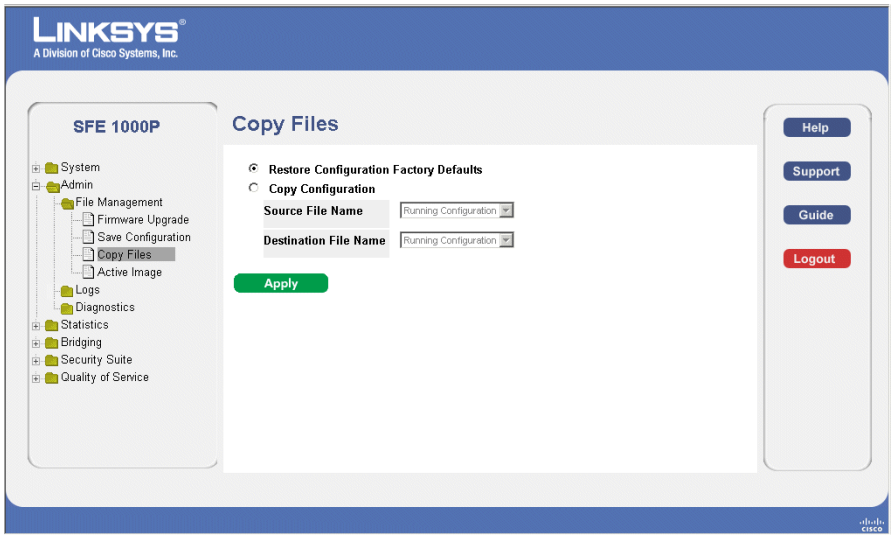
2. Define the relevant files.
3. Click **Apply**. The save configuration is defined, and the device is updated.

Copy Files

In the *Copy Files Page*, network administrators can copy configuration files from one device to another.

1. Click **Admin** > **File Management** > **Copy Files**. The *Copy Files Page* opens:

Copy Files Page



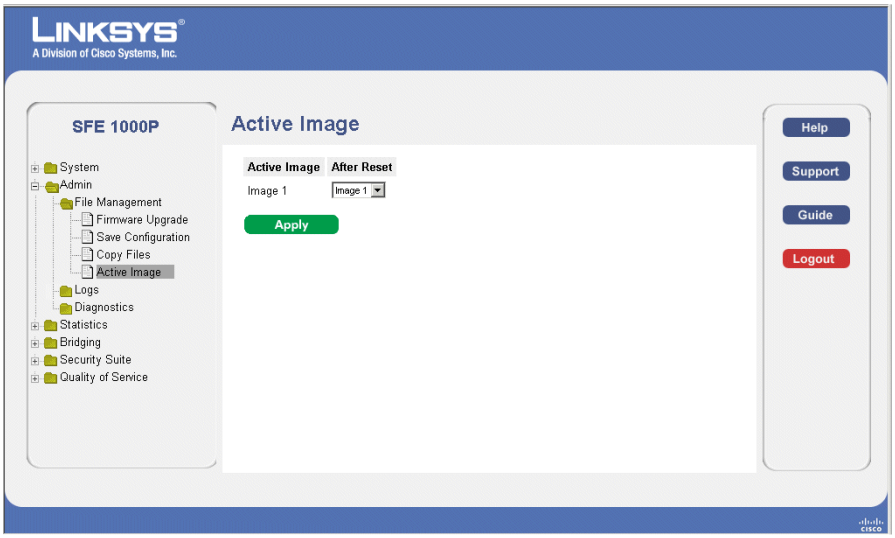
2. Define the relevant fields.
3. Click **Apply.** Copy Files is configured, and the device is updated.

Active Image

The *Active Image Page* allows network managers to select the Image files.

1. Click **Admin** > **File Management** > **Active Image**. The *Active Image Page* opens:

Active Image Page



2. Define the relevant fields.
3. Click **Apply**. Active image is define, and the device is updated.

Managing System Logs

The System Logs enable viewing device events in real time, and recording the events for later usage. System Logs record and manage events and report errors or informational messages.

Event messages have a unique format, as per the SYSLOG protocols recommended message format for all error reporting. For example, Syslog and local device reporting messages are assigned a severity code, and include a message mnemonic, which identifies the source application generating the message. It allows messages to be filtered based on their urgency or relevancy. Each message severity determines the set of event logging devices that are sent per each event logging.

This section contains the following pages:

- Enabling System Logs
- Viewing the Device Memory Logs
- Viewing the Flash Logs
- Viewing Remote Logs

Enabling System Logs

In the *Log Settings Page*, define the levels of event severity that are recorded to the system event logs.

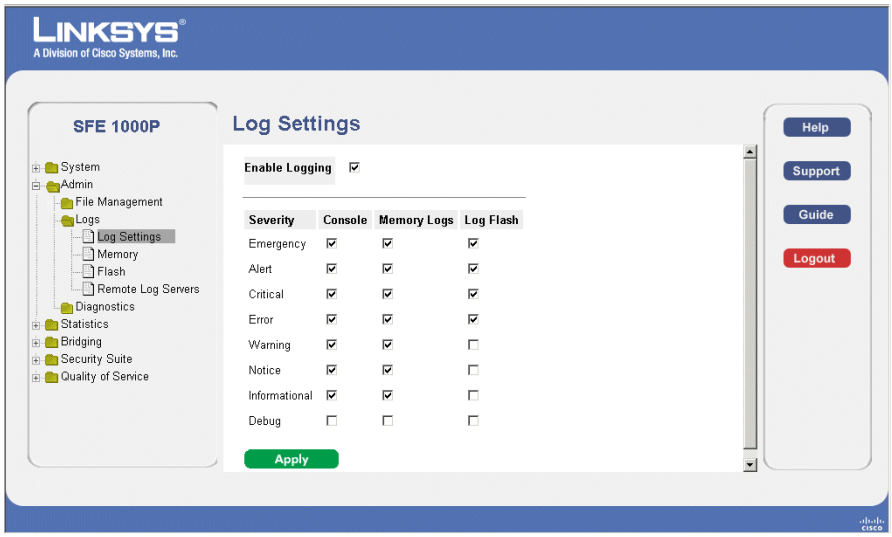
The event severity levels are listed on this page in descending order from the highest severity to the lowest. When a severity level is selected to appear in a log, all higher severity events will automatically be selected to appear in the log. Conversely, when a security level is not selected, no lower severity events will appear in the log.

For example, if Warning is selected, all severity levels higher and including Warning will appear in the log. Additionally, no events with a lower severity level than Warning will be listed.

To define Log Global Parameters:

1. Click **Admin > Logs > Logs Settings**. The *Log Settings Page* opens.

Log Settings Page



2. Define the relevant fields.
3. Click **Apply**. The global log parameters are set, and the device is updated.

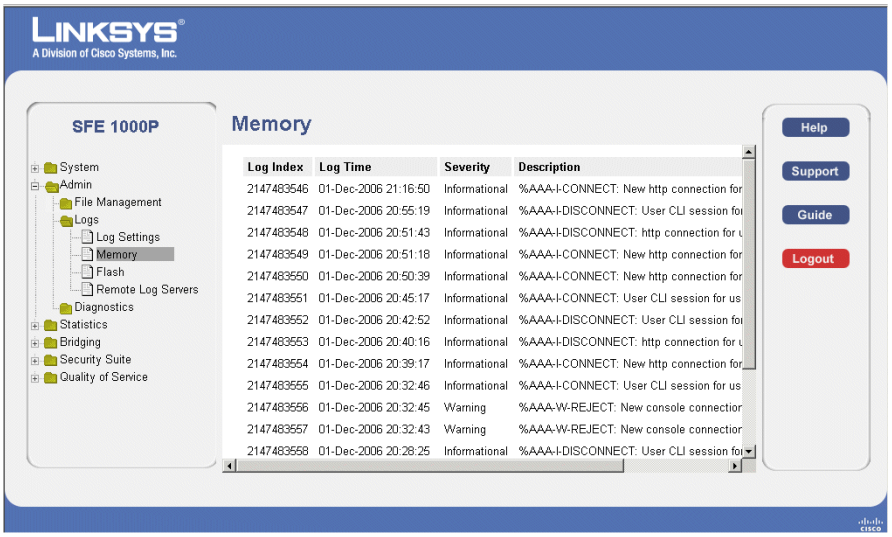
Viewing the Device Memory Logs

The *Memory Page* contains all system log entries in chronological order that are saved in RAM (Cache). After restart, these log entries are deleted.

To open the *Memory Page:*

1. Click **Admin > Logs > Memory**. The *Memory Page* opens.

Memory Page



2. Observe the log files and look for any pertinent information.

Clearing Message Logs

Message Logs can be cleared from the *Memory Page*. To clear the *Memory Page*:

1. Click **Admin > Logs > Memory**. The *Memory Page* opens.
2. Click the **Clear Logs** button**.** The message logs are cleared.

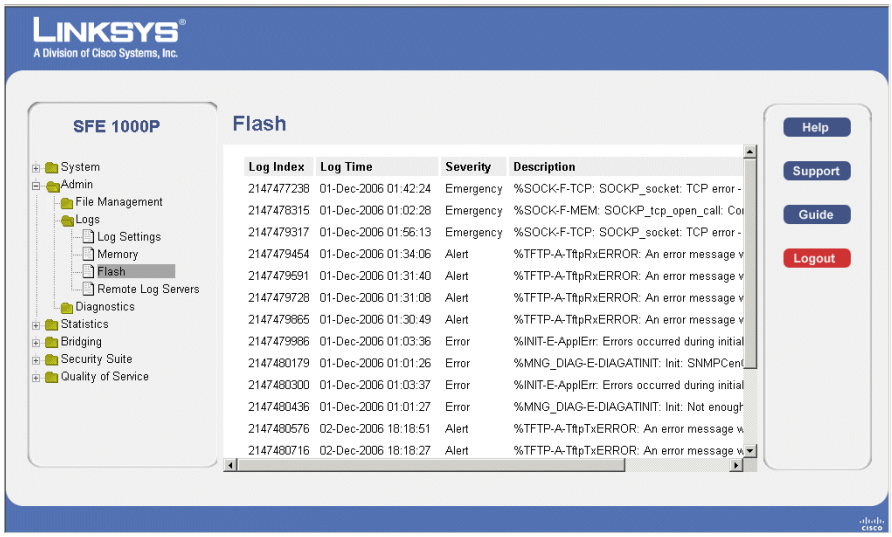
Viewing the Flash Logs

The *Flash Page* contains information about log entries saved to the Log File in FLASH, including the time the log was generated, the event severity, and a description of the log message. The Message Log is available after reboot.

To view the Flash Logs:

1. Click **Admin** > **Logs** > **Flash**. The *Flash Page* opens:

Flash Page



2. Observe the log files and look for any pertinent information.

Clearing Message Logs

Message Logs can be cleared from the *FLASH Log Page*. To clear the Flash Page:

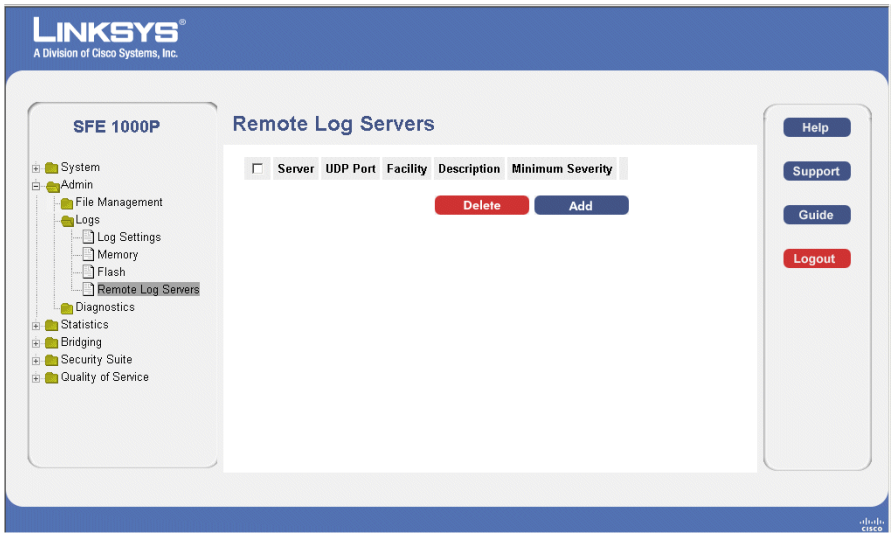
1. Click **Admin > Logs > FLASH**. The *Flash Page* opens.
2. Click **Clear Logs**. The message logs are cleared.

Viewing Remote Logs

The *Remote Log Servers Page* contains information for viewing and configuring the Remote Log Servers. New log servers and the minimum severity level of events sent to them may be added.

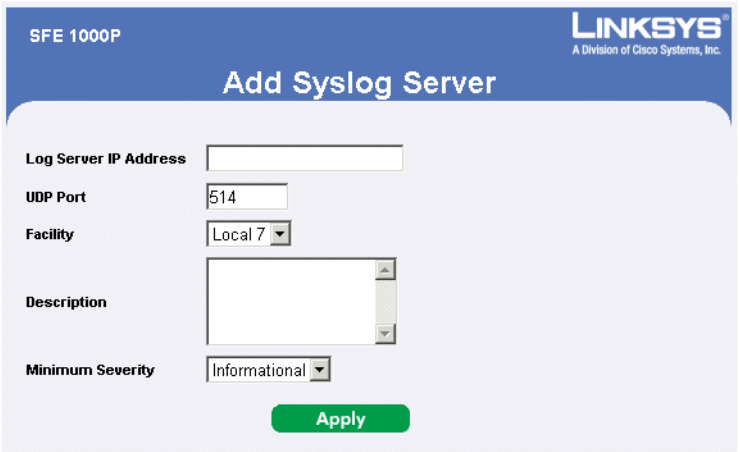
1. Click **Admin** > **Logs** > **Remote Log Servers**. The *Remote Log Servers Page* opens:

Remote Log Servers Page



2. Click the **Add** button. The *Add Syslog Server Page* opens:

Add Syslog Server Page



The *Add Syslog Server Page* contains fields for defining new Remote Log Servers.

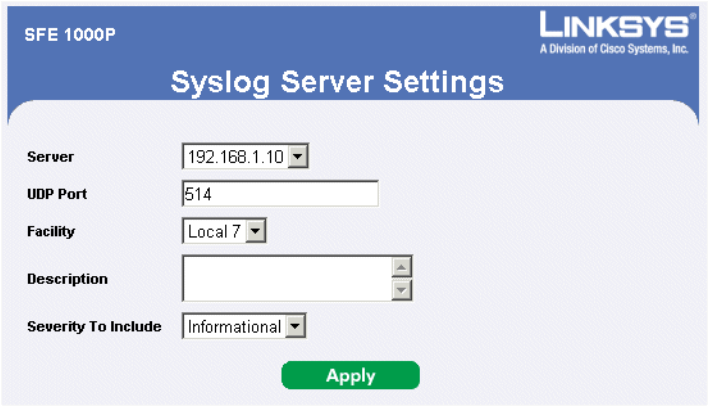
3. Define the relevant fields.

4. Click **Apply.** The *Add Syslog Server Page* closes, the syslog server is added, and the device is updated.

Modify Syslog Server Settings

1. Click **Admin** > **Logs** > **Remote Log Servers**. The *Remote Log Servers Page* opens:
2. Click the **Edit** button. The *Edit Syslog Server Page* opens:

Edit Syslog Server Page



The *Edit Syslog Server Page* contains fields for modifying Remote Log Server settings.

3. Define the relevant fields.
4. Click **Apply**. The Syslog Server settings are modified, and the device is updated.

Configuring System Time

The device supports the *Simple Network Time Protocol* (SNTP). SNTP assures accurate network device clock time synchronization up to the millisecond. Time synchronization is performed by a network SNTP server. The device operates only as an SNTP client, and cannot provide time services to other systems.

This section provides information for configuring the system time, and includes the following topics: including:

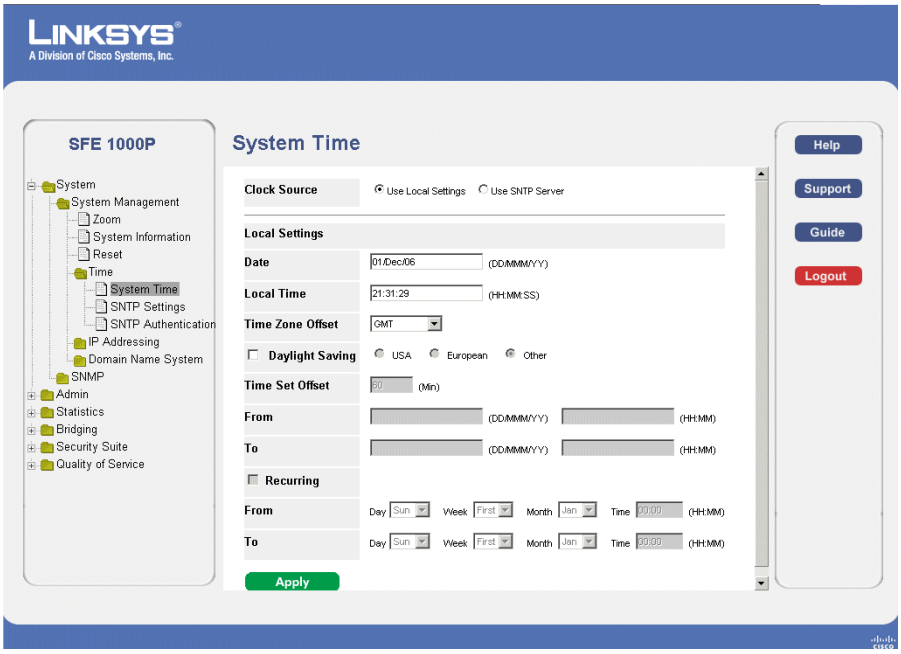
- Defining System Time
- Defining SNTP Settings
- Defining SNTP Authentication

Defining System Time

The *System Time Page* contains fields for defining system time parameters for both the local hardware clock, and the external SNTP clock. If the system time is kept using an external SNTP clock, and the external SNTP clock fails, the system time reverts to the local hardware clock. Daylight Savings Time can be enabled on the device. To define system time:

1. Click **System** > **System Management** > **Time** > **System Time**. The *System Time Page* opens:

System Time Page



2. Define the relevant fields.
3. Click **Apply**. The Time Settings are defined, and the device is updated.

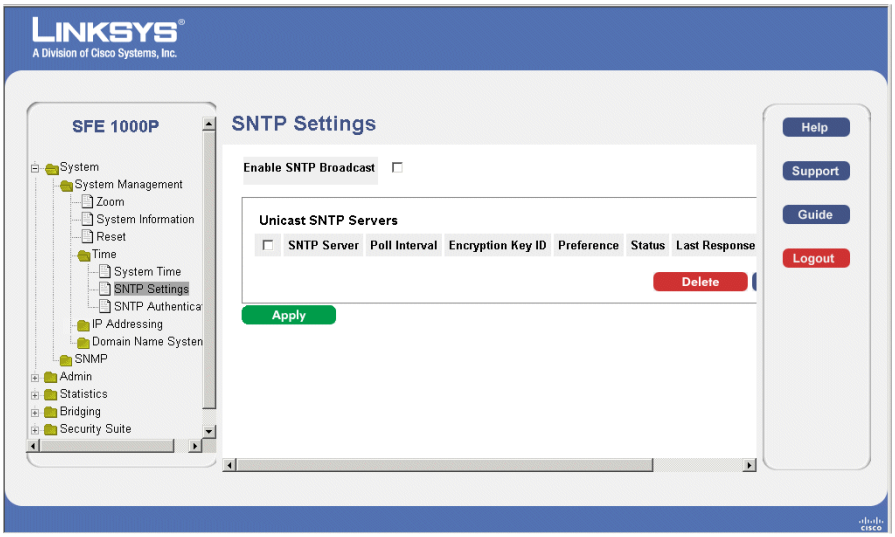
Defining SNTP Settings

The *SNTP Settings Page* contains information for enabling SNTP servers, as well as adding new SNTP servers. In addition, the *SNTP Settings Page* enables the device to request and accept SNTP traffic from a server.

To define SNTP global settings:

1. Click **System** > **System Management** > **Time** > **SNTP Settings**. The *SNTP Settings Page* opens:

SNTP Settings Page



2. Click the **Add** button. The *Add SNTP Server Page* opens:

Add SNTP Server Page

3. Define the relevant fields.

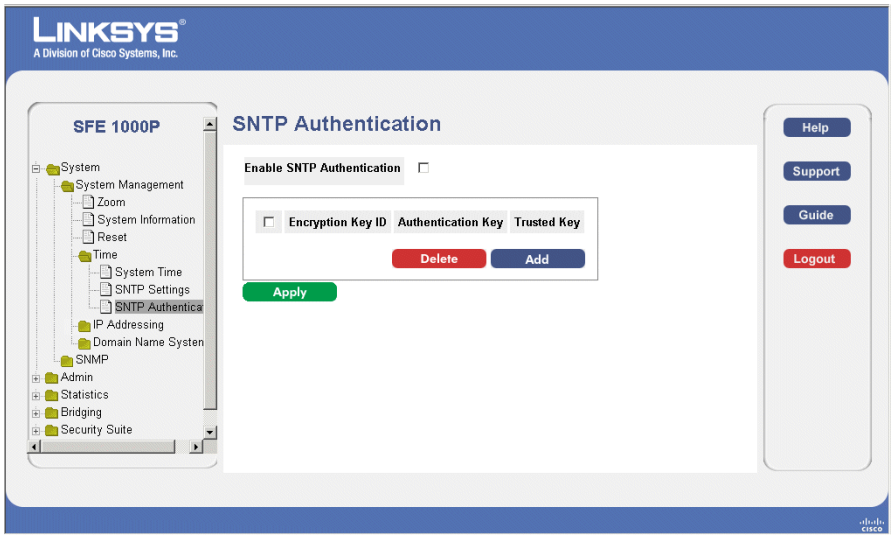
4. Click **Apply**. The SNTP Server is added, and the device is updated.

Defining SNTP Authentication

The *SNTP Authentication Page* provides parameters for performing authentication of the SNTP server.

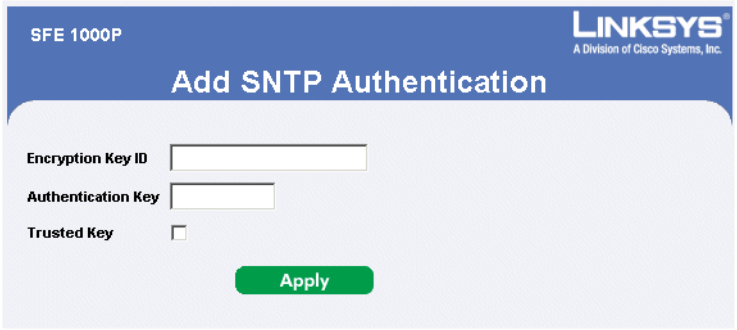
1. Click **System** > **System Management** > **Time** > **SNTP Authentication**. The *SNTP Authentication Page* opens:

SNTP Authentication Page



2. Click the **Add** button. The *Add SNTP Authentication Page* opens:

Add SNTP Authentication Page



3. Define the relevant fields.

4. Click **Apply**. The SNTP Authentication is defined, and the device is updated.

Viewing Statistics

This section describes device statistics for RMON, interfaces, GVRP, EAP, and Etherlike statistics. This section contains the following topics:

- Viewing Ethernet Statistics
- Managing RMON Statistics

Viewing Ethernet Statistics

The Ethernet section contains the following pages:

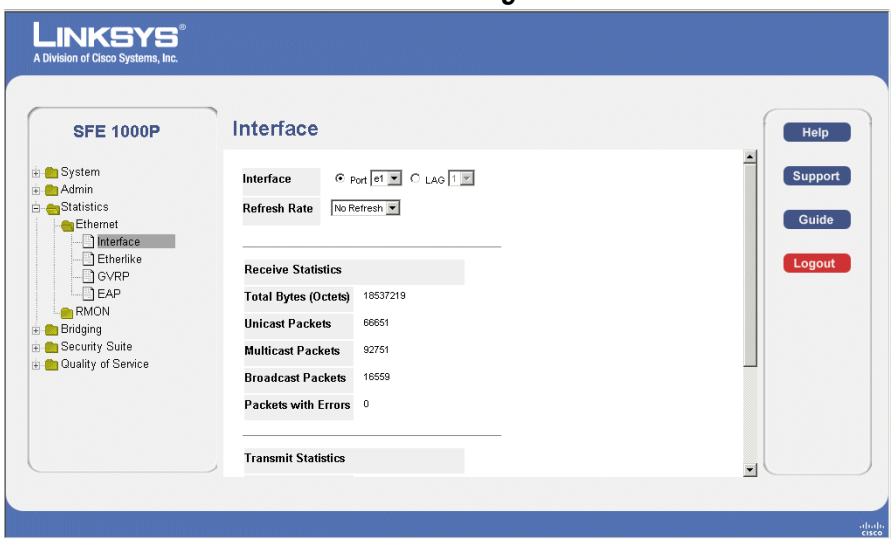
- Defining Ethernet Interface
- Viewing Etherlike Statistics
- Viewing GVRP Statistics
- Viewing EAP Statistics

Defining Ethernet Interface

The *Interface Page* contains statistics for both received and transmitted packets. The *Interface Page* is divided into three areas, General Information, Receive Statistics and Transmit Statistics.

1. Click **Statistics** > **Ethernet** > **Interface**. The *Interface Page* opens:

Interface Page



2. Click the appropriate radio buttons and pulldowns to select an interface.

Resetting Interface Statistics Counters

1. Click **Statistics** > **Ethernet** > **Interface**. The *Interface Page* opens:
2. Click the **Clear Counters** button. The interface statistics counters are cleared.

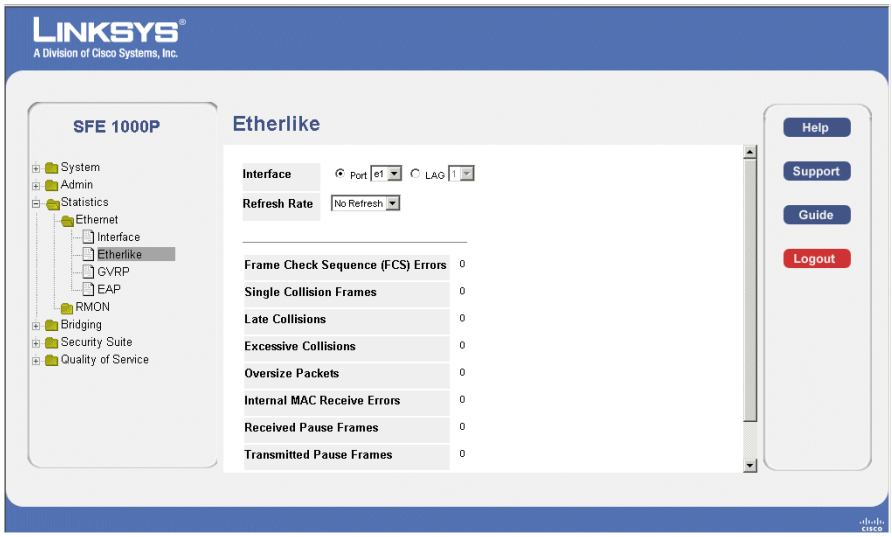
Viewing Etherlike Statistics

The *Etherlike Page* contains interface statistics.

To view Etherlike Statistics:

1. Click **Statistics** > **Ethernet** >**Etherlike**. The *Etherlike Page* opens:

Etherlike Page



2. Click the appropriate radio buttons and pulldowns to select an interface.

Resetting Etherlike Statistics Counters

1. Click **Statistics** > **Ethernet** > **Etherlike**. The *Etherlike Page* opens:
2. Click the **Clear Counters** button. The interface statistics counters are cleared.

Viewing GVRP Statistics

The *GVRP Page* contains statistics for GVRP communication on the device.

To view GVRP statistics:

1. Click **Statistics > GVRP Statistics**. The *GVRP Page* opens.

GVRP Page

2. Click the appropriate radio buttons and pulldowns to select an interface.

Resetting GVRP Statistics Counters

1. Click **Statistics > GVRP Statistics**. The *GVRP Page* opens.
2. Click **Clear Counters**. The GVRP statistics counters are cleared.

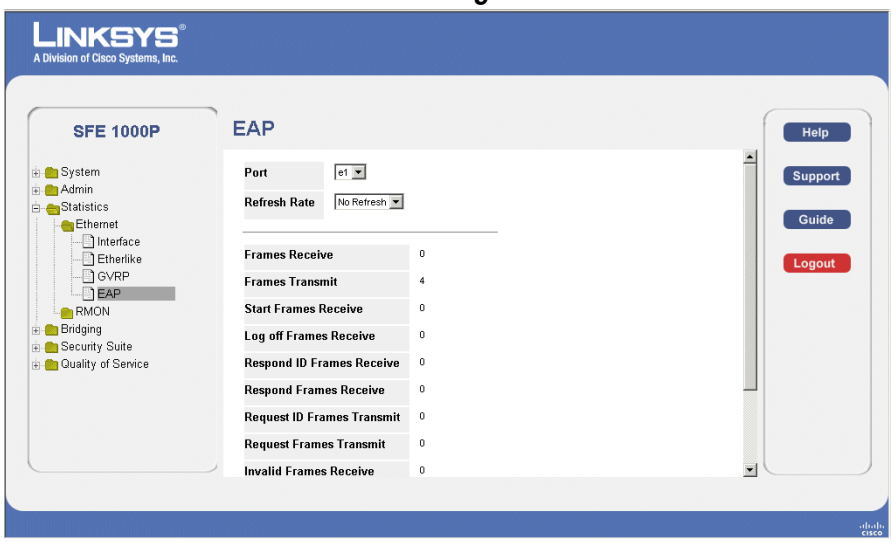
Viewing EAP Statistics

The *EAP Page* contains information about EAP packets received on a specific port.

To view the EAP Statistics:

1. Click **Statistics > Ethernet > EAP Statistics**. The *EAP Page* opens.

EAP Page



2. Click the appropriate pulldowns to select an interface.

Managing RMON Statistics

The RMON section contains the following pages:

- Viewing RMON Statistics
- Configuring RMON History
- Configuring RMON Events
- Viewing the RMON Events Logs

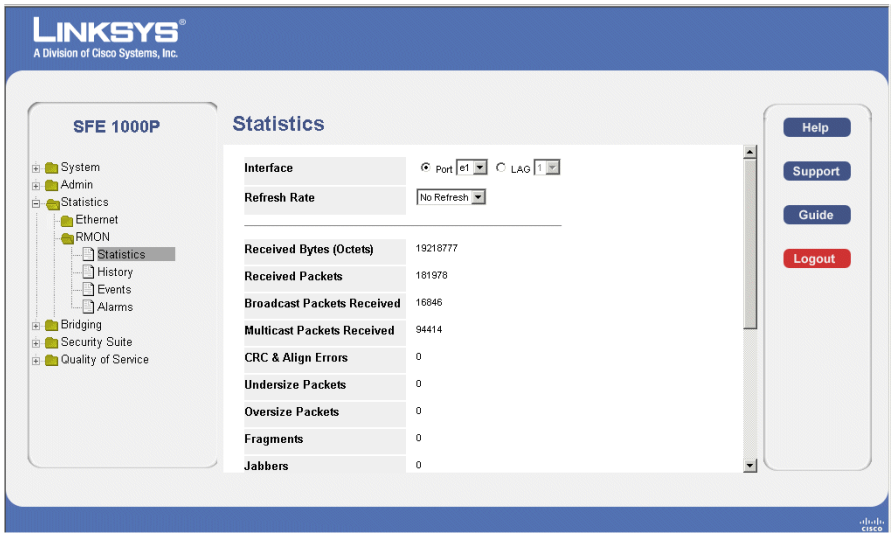
Viewing RMON Statistics

The *RMON Statistics Page* contains fields for viewing information about device utilization and errors that occurred on the device.

To view the RMON statistics:

1. Click **Statistics** > **RMON** > **Statistics**. The *RMON Statistics Page* opens:

RMON Statistics Page



2. Select an interface in the *Interface* field. The RMON statistics are displayed.

Resetting RMON Statistics Counters

1. Click **Statistics** > **RMON** > **Statistics**. The *RMON Statistics Page* opens:
2. Click the **Reset Counters** button. The RMON statistics counters are cleared.

Configuring RMON History

This section contains the following topics:

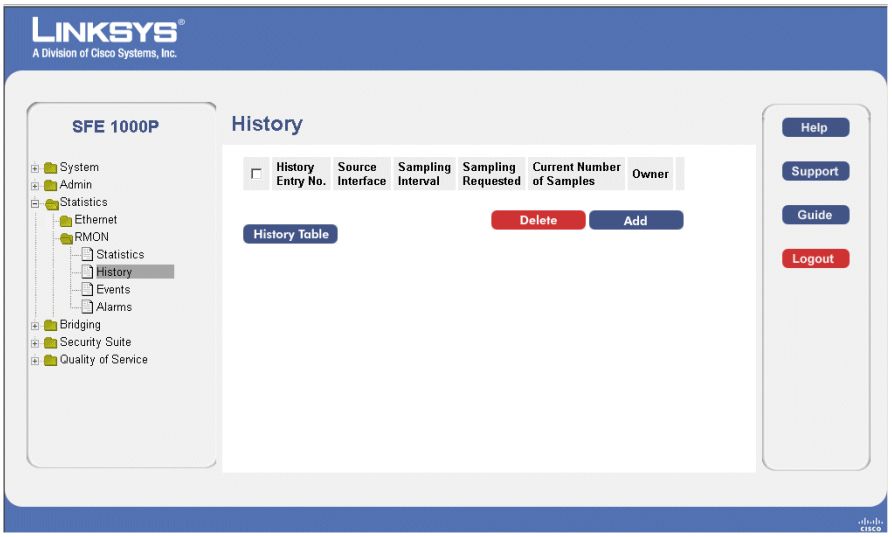
- Defining RMON History Control
- Viewing the RMON History Table

Defining RMON History Control

The *RMON History Control Page* contains information about samples of data taken from ports. For example, the samples may include interface definitions or polling periods. To view RMON history information:

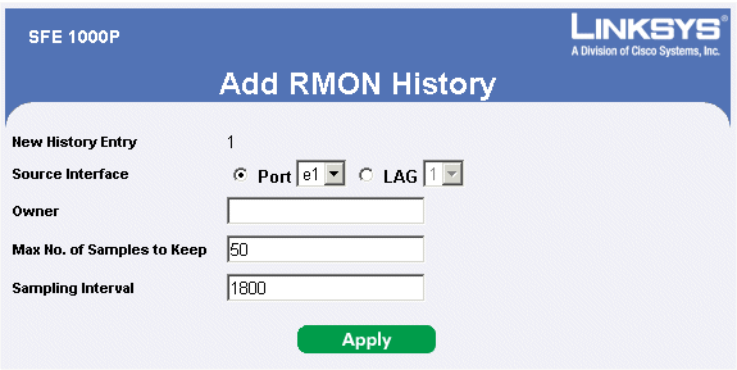
1. Click **Statistics > RMON > History**. The *RMON History Control Page* opens.

RMON History Control Page



2. Click the **Add** button. The *Add RMON History Page* opens:

Add RMON History Page



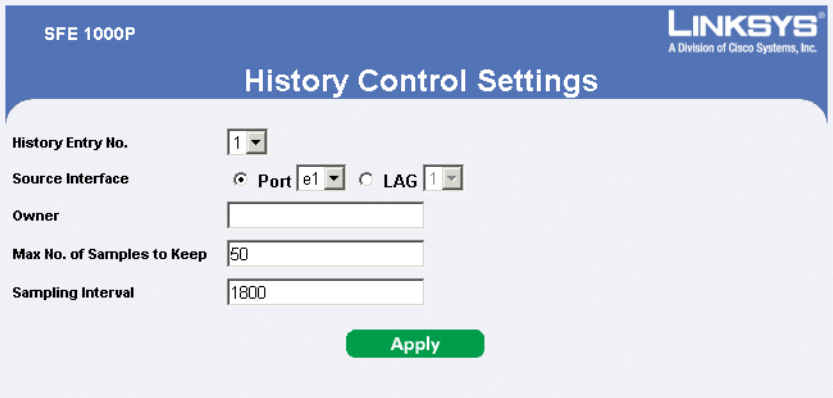
3. Define the relevant fields.

4. Click **Apply**. The entry is added to the *RMON History Control Page*, and the device is updated.

Modify History Control Settings

1. Click **Statistics > RMON > History**. The *RMON History Control Page* opens.
2. Click the **Edit** button. The *Edit RMON History Page* opens:

Edit RMON History Page



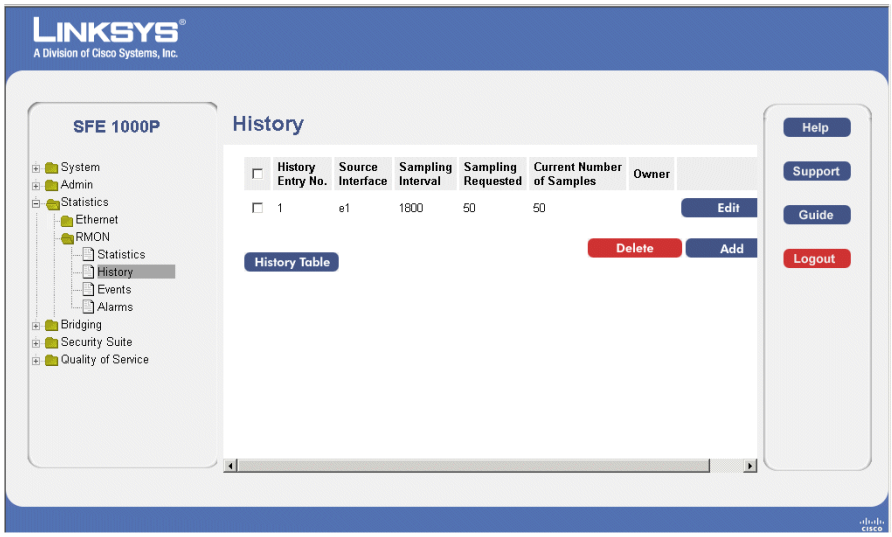
3. Define the relevant fields.
4. Click **Apply**. The history control settings are defined, and the device is updated.

Viewing the RMON History Table

The *RMON History Table Page* contains interface specific statistical network samplings. Each table entry represents all counter values compiled during a single sample.

1. Click **Statistics > RMON > History**. The *RMON History Control Page* opens:
2. Click the **History Table** button. The *RMON History Table Page* opens:

RMON History Table Page



3. To return to the *RMON History Control Page*, click the **Interface Table** button.

Configuring RMON Events

This section includes the following topics:

- Defining RMON Events Control
- Viewing the RMON Events Logs

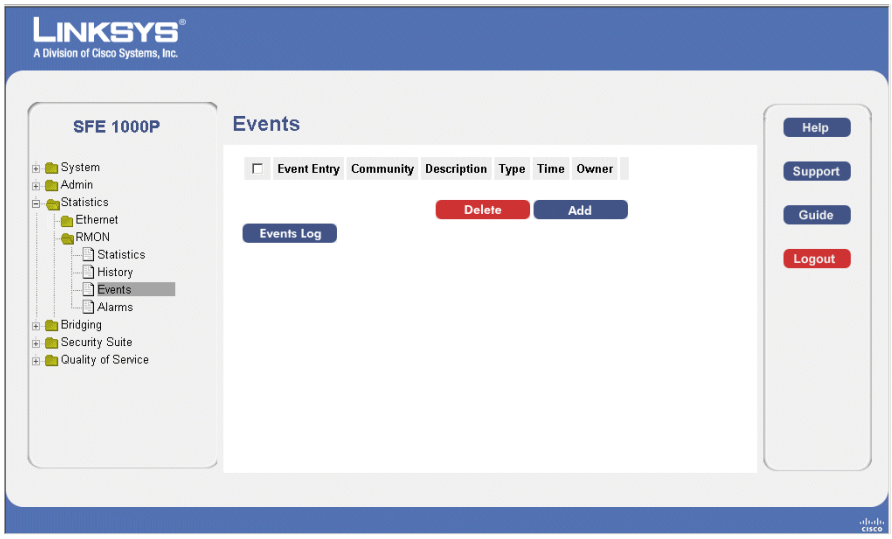
Defining RMON Events Control

The *RMON Events Page* contains fields for defining RMON events.

To view RMON events:

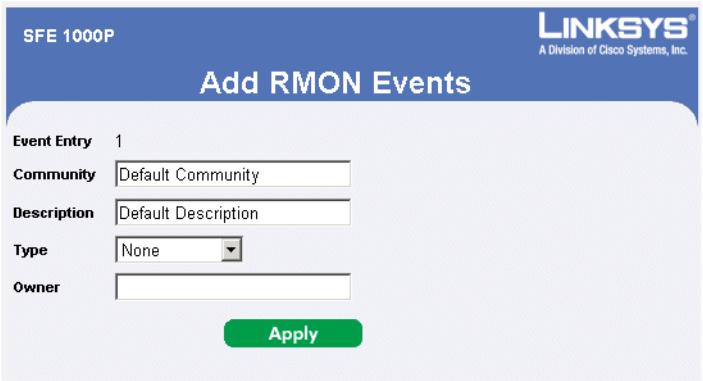
1. Click **Statistics > RMON > Events**. The *RMON Events Page* opens:

RMON Events Page



2. Click the **Add** button. The *Add RMON Events Page* opens:

Add RMON Events Page

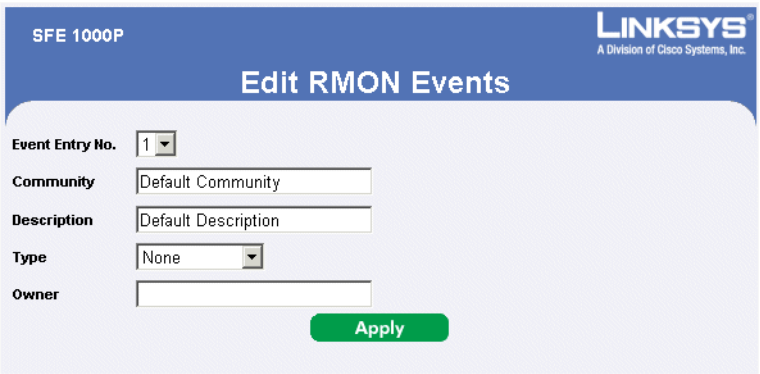


3. Define the relevant fields.
4. Click **Apply**. The RMON event is added, and the device is updated.

Modify Event Control Settings

1. Click **Statistics > RMON > Events**. The *RMON Events Page* opens:
2. Click **Edit**. The *Edit RMON Events Page* opens:

Edit RMON Events Page



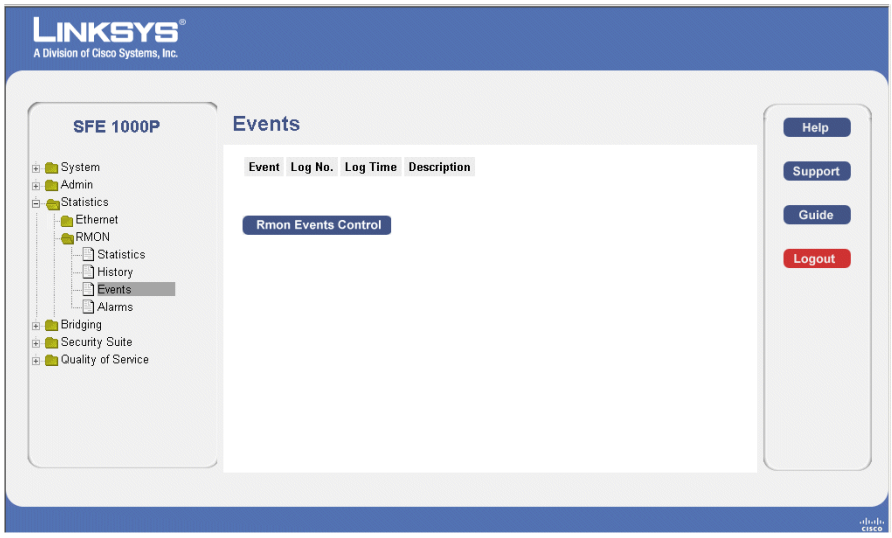
3. Define the relevant fields.
4. Click **Apply.** The event control settings are modified. and the device is updated.

Viewing the RMON Events Logs

The RMON *Events Log Page* contains a list of RMON events.

1. Click **Statistics > RMON > Events.** The *Events Log Page* opens:
2. Click the **Events Log** button**.** The *Events Log Page* opens :

Events Log Page



3. To return to the *RMON Events Page*, click the **RMON Events Control** button.

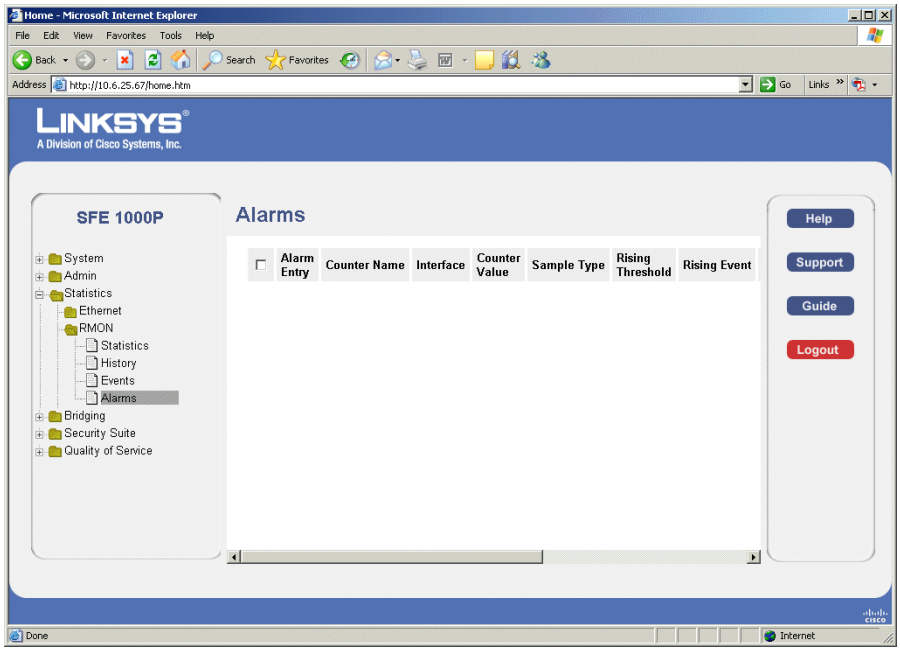
Defining RMON Alarms

The *RMON Alarms Page* contains fields for setting network alarms. Network alarms occur when a network problem, or event, is detected. Rising and falling thresholds generate events.

To set RMON alarms:

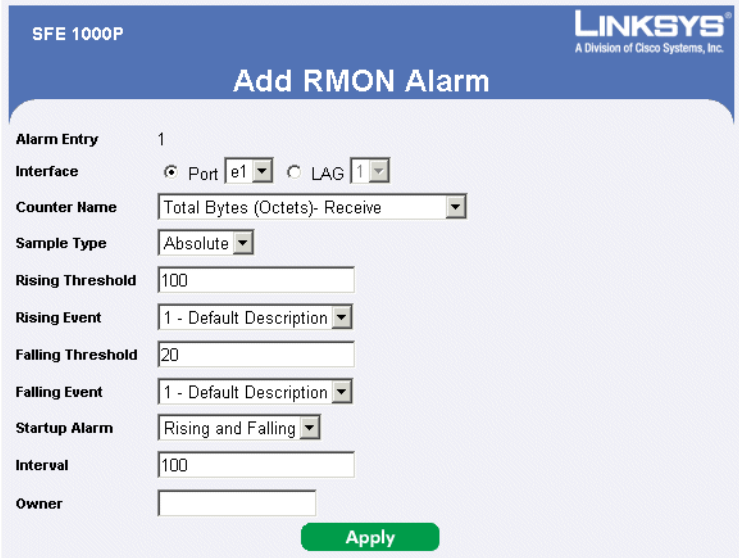
1. Click **Statistics** > **RMON** > **Alarms**. The *RMON Alarms Page* opens:

RMON Alarms Page



2. Click the **Add** button. The Add RMON Alarm Page opens:

Add RMON Alarm Page



3. Define the relevant fields.

4. Click **Apply**. The RMON alarm is added, and the device is updated.

Modify RMON Alarm Settings

1. Click **Statistics** > **RMON** > **Alarms**. The *RMON Alarms Page* opens:
2. Click the **Edit** Button. The *Edit RMON Alarms Page* opens:

Edit RMON Alarms Page

3. Define the relevant fields.
4. Click **Apply**. The RMON alarms are modified, and the device is updated.

Managing Device Diagnostics

This section contains information for configuring port mirroring, running cable tests, and viewing device operational information, and includes the following topics:

- Viewing Integrated Cable Tests
- Performing Optical Tests
- Configuring Port Mirroring
- Defining CPU Utilization

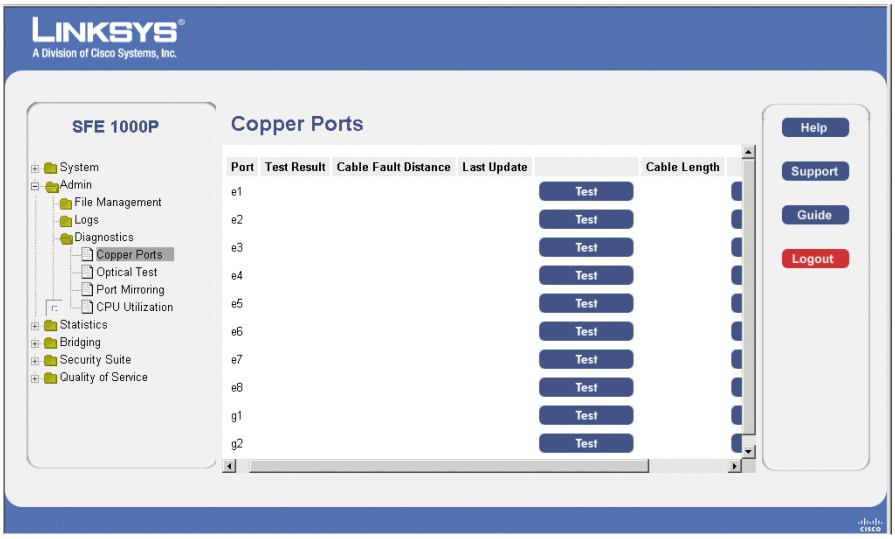
Viewing Integrated Cable Tests

The *Copper Ports Page* contains fields for performing tests on copper cables. Cable testing provides information about where errors occurred in the cable, the last time a cable test was performed, and the type of cable error that occurred. The tests use Time Domain Reflectometry (TDR) technology to test the quality and characteristics of a copper cable attached to a port. Cables up to 100 meters long can be tested. Cables are tested when the ports are in the down state, with the exception of the Approximated Cable Length test.

To test cables:

1. Click **Admin** > **Diagnostics** > **Copper Ports**. The *Copper Ports Page* opens:

Copper Ports Page



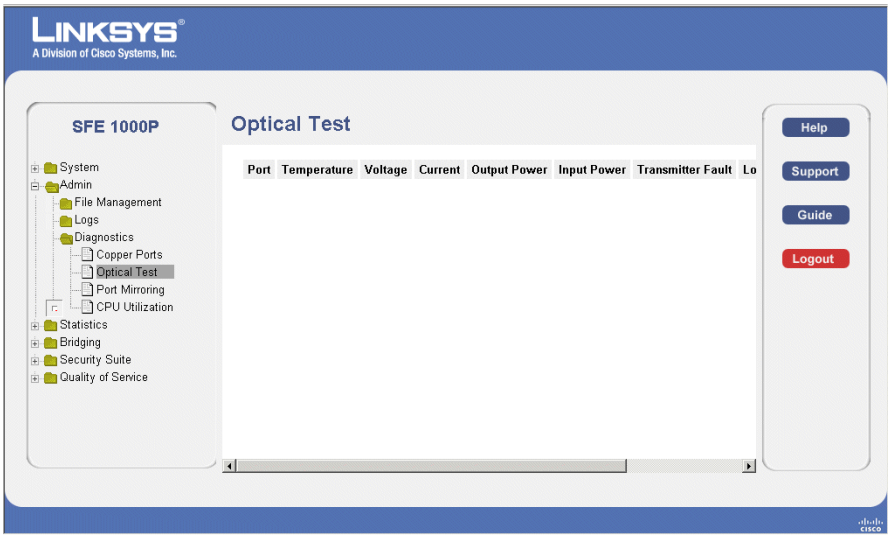
2. Click the **Test** button to run the cable test. The results of the test appear.

Performing Optical Tests

The *Optical Test Page* allows network managers to perform tests on Fiber Optic cables. Optical transceiver diagnostics can be performed only when the link is present. During the port test, the port moves to a down state.

1. Click **Admin** > **Diagnostics** > **Optical Test**. The *Optical Tests Page* opens:

Optical Test Page



2. Observe the output for any discrepancies.

Configuring Port Mirroring

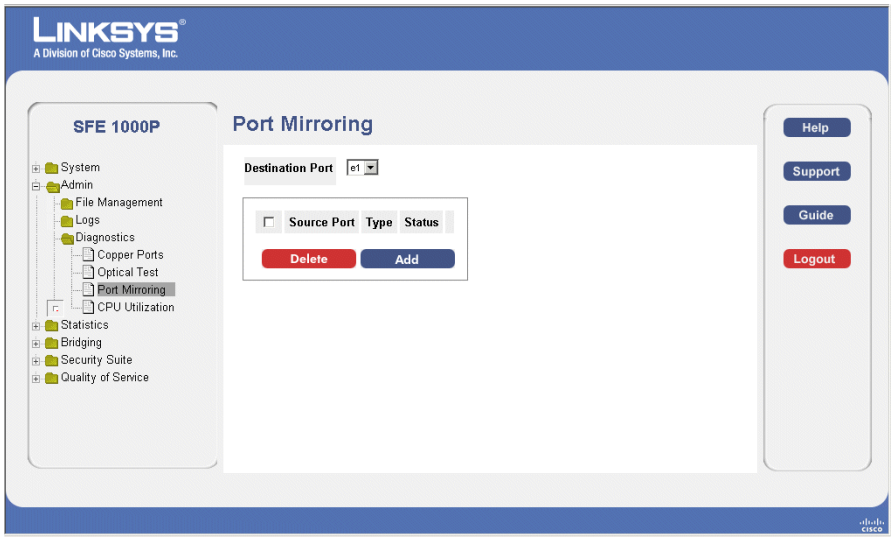
Port Mirroring monitors and mirrors network traffic by forwarding copies of incoming and outgoing packets from one port to a monitoring port. Port mirroring can be used as diagnostic tool and/or a debugging feature. Port mirroring also enables switch performance monitoring.

Network administrators configure port mirroring by selecting a specific port to copy all packets, and different ports from which the packets are copied.

To enable port mirroring:

1. Click **Admin** > **Diagnostics** > **Port Mirroring**. The *Port Mirroring Page* opens:

Port Mirroring Page



2. Click the **Add** button. The *Add Port Mirroring Page* opens:

Add Port Mirroring Page

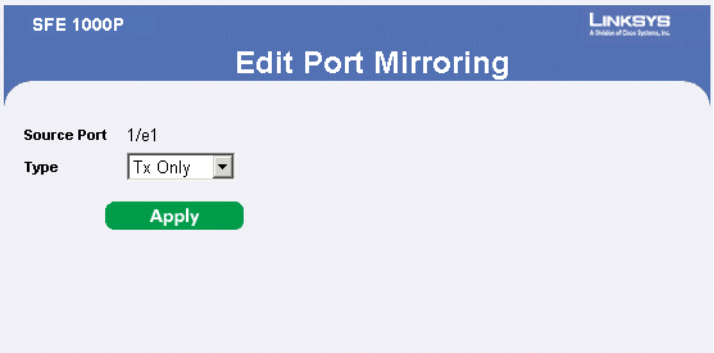
3. Define the relevant fields.

4. Click **Apply**. Port mirroring is added, and the device is updated.

Modifying Port Mirroring

1. Click **Admin** > **Diagnostics** > **Port Mirroring**. The *Port Mirroring Page* opens:
2. Click the **Edit** Button. The *Edit Port Mirroring Page* opens:

Edit Port Mirroring Page



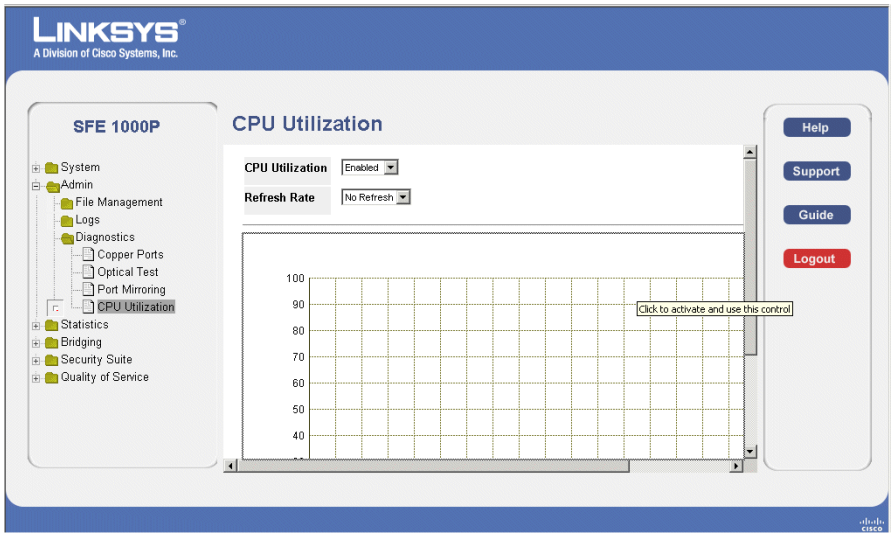
3. Define the relevant fields.
4. Click **Apply**. The Port mirroring is modified, and the device is updated.

Defining CPU Utilization

The ***CPU Utilization Page*** contains information about the system's CPU utilization.

1. Click **Admin** > **Diagnostics** > **CPU Utilization**. The *CPU Utilization Page* opens

CPU Utilization Page



2. Click the appropriate pulldowns and observe the output.

Console Interface Configuration

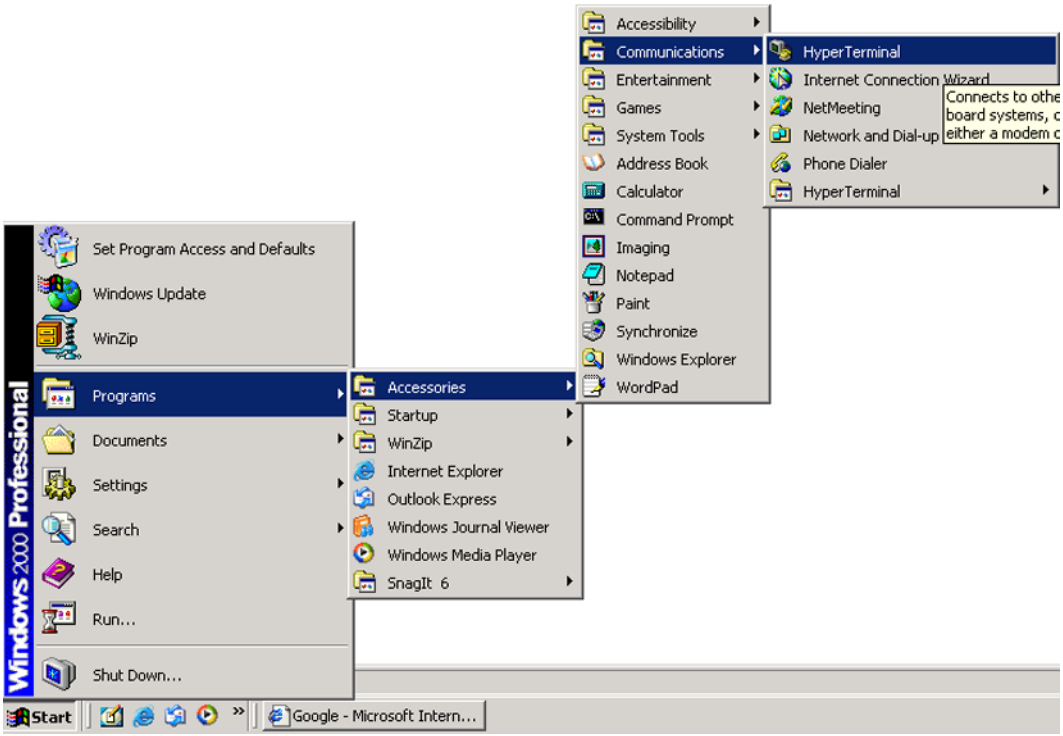
Overview

The SFE1000P 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.

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.



Finding HyperTerminal

2. On the *Connection Description* screen, enter a name for this connection. In the example, the name of connection is SFE1000P. Select an icon for the application. Then, click the **OK** button.

Connection Description

3. On the *Connect To* screen, select a port to communicate with the Switch: **COM1**, **COM3**, or **TCP/IP**.

Connect To Screen

4. Set the serial port settings as follows:

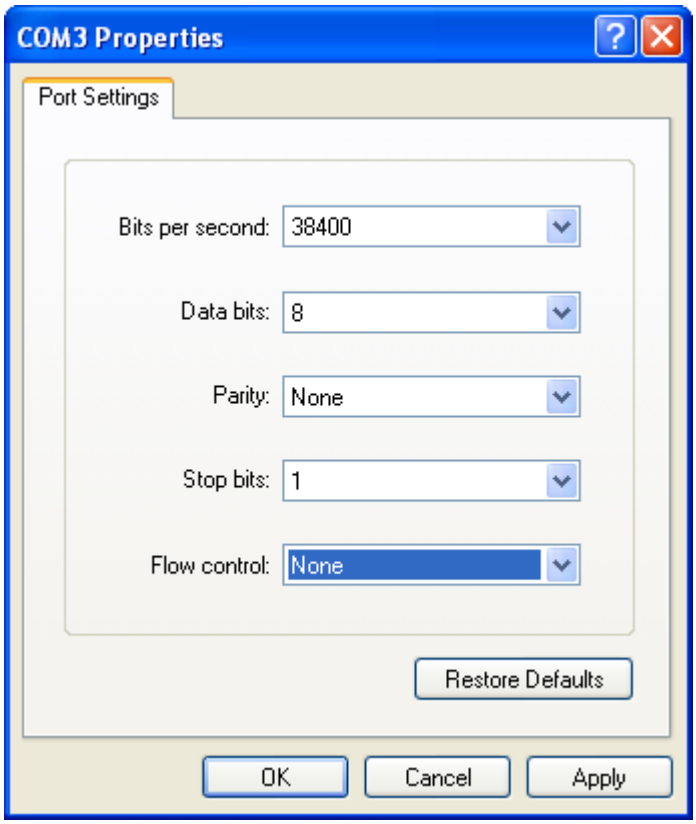
   Bits per second: **38400**

   Data bits: **8**

   Parity: **None**

   Stop bits: **1**

   Flow control: **None**



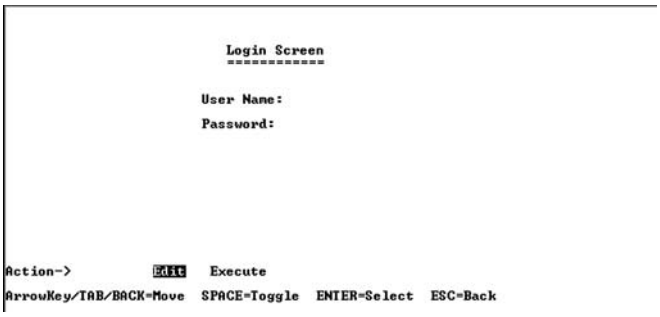
Serial Port Settings

Then, click the **OK** button.

Connecting to the SFE1000P through a Telnet Session

1. Open a command line editor and enter **telnet *<ip address of the device>***. Then, press the **Enter** key.

2. The *Login* screen will now appear. The first time you open the command line interface, select **Edit** and hit Enter. Enter **admin** in the *User Name* field. Leave the *Password* field blank.



3. Press the **Esc** button and you will return to the login screen. Use the right arrow button to navigate to **Execute** and press the **Enter** button to enter the CLI interface.

Contacts

For additional information or troubleshooting help, refer to the User Guide on the CD-ROM. Additional support is also available by phone or online.

US/Canada Contacts

- 24-Hour Technical Support: 800-326-7114
- RMA (Return Merchandise Authorization): http://www.linksys.com/warranty
- Website: http://www.linksys.com
- FTP Site: ftp://ftp.linksys.com
- Support: http://www.linksys.com/support
- Sales Information: 800-546-5797 (800-LINKSYS)

EU Contacts

- Website: http://www.linksys.com/international
- Product Registration: http://www.linksys.com/registration

Warranty Information

LIMITED WARRANTY

Linksys warrants this Linksys hardware product against defects in materials and workmanship under normal use for the Warranty Period, which begins on the date of purchase by the original end-user purchaser and lasts for the period specified for this product at www.linksys.com/warranty. The internet URL address and the web pages referred to herein may be updated by Linksys from time to time; the version in effect at the date of purchase shall apply.

This limited warranty is non-transferable and extends only to the original end-user purchaser. Your exclusive remedy and Linksys entire liability under this limited warranty will be for Linksys, at its option, to (a) repair the product with new or refurbished parts, (b) replace the product with a reasonably available equivalent new or refurbished Linksys product, or (c) refund the purchase price of the product less any rebates. Any repaired or replacement products will be warranted for the remainder of the original Warranty Period or thirty (30) days, whichever is longer. All products and parts that are replaced become the property of Linksys.

Exclusions and Limitations

This limited warranty does not apply if: (a) the product assembly seal has been removed or damaged, (b) the product has been altered or modified, except by Linksys, (c) the product damage was caused by use with non.Linksys products, (d) the product has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Linksys, (e) the product has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident, (f) the serial number on the Product has been altered, defaced, or removed, or (g) the product is supplied or licensed for beta, evaluation, testing or demonstration purposes for which Linksys does not charge a purchase price or license fee.

ALL SOFTWARE PROVIDED BY LINKSYS WITH THE PRODUCT, WHETHER FACTORY LOADED ON THE PRODUCT OR CONTAINED ON MEDIA ACCOMPANYING THE PRODUCT, IS PROVIDED AS IS WITHOUT WARRANTY OF ANY KIND. Without limiting the foregoing, Linksys does not warrant that the operation of the product or software will be uninterrupted or error free. Also, due to the continual development of new techniques for intruding upon and attacking networks, Linksys does not warrant that the product, software or any equipment, system or network on which the product or software is used will be free of vulnerability to intrusion or attack. The product may include or be bundled with third party software or service offerings. This limited warranty shall not apply to such third party software or service offerings. This limited warranty does not guarantee any continued availability of a third party's service for which this product's use or operation may require.

TO THE EXTENT NOT PROHIBITED BY LAW, ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY 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, BUT NOT LIMITED TO, 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 limited warranty gives you specific legal rights, and you may also have other rights which vary by jurisdiction.

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 limited warranty 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.

Obtaining Warranty Service

If you have a question about your product or experience a problem with it, please go to www.linksys.com/support where you will find a variety of online support tools and information to assist you with your product. If the product proves defective during the Warranty Period, contact the Value Added Reseller (VAR) from whom you purchased the product or Linksys Technical Support for instructions on how to obtain warranty service. The telephone number for Linksys Technical Support in your area can be found in the product User Guide and at www.linksys.com. Have your product serial number and proof of purchase on hand when calling. A DATED PROOF OF ORIGINAL PURCHASE IS REQUIRED TO PROCESS WARRANTY CLAIMS. If you are requested to return your product, you will be given a Return Materials Authorization (RMA) number. You are responsible for properly packaging and shipping your product to Linksys at your cost and risk. You must include the RMA number and a copy of your dated proof of original purchase when returning your product. Products received without a RMA number and dated proof of original purchase will be rejected. Do not include any other items with the product you are returning to Linksys. Defective product covered by this limited warranty will be repaired or replaced and returned to you without charge. Customers outside of the United States of America and Canada are responsible for all shipping and handling charges, custom duties, VAT and other associated taxes and charges. Repairs or replacements not covered under this limited warranty will be subject to charge at Linksys' then-current rates.

Technical Support

This limited warranty is neither a service nor a support contract. Information about Linksys' current technical support offerings and policies (including any fees for support services) can be found at: www.linksys.com/support. This limited warranty is governed by the laws of the jurisdiction in which the Product was purchased by you. Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623

Regulatory Information

This appendix includes the following regulatory statements:

- "Federal Communications Commission Interference Statement," on page 152
- "Industry Canada Statement," on page 152
- "Règlement d'Industry Canada," on page 153
- "EC Declaration of Conformity (Europe)," on page 153
- "User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE)," on page 153

Federal Communications Commission Interference Statement

This product has been tested and complies with the specifications for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference 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 Statement

This device complies with Industry Canada ICES-003 rule.

Operation is subject to the following two conditions:

This device may not cause interference and

This device must accept any interference, including interference that may cause undesired operation of the device.

Règlement d'Industry Canada

Cet appareil est conforme à la norme NMB003 d'Industrie Canada.

Le fonctionnement est soumis aux conditions suivantes :

- Ce périphérique ne doit pas causer d'interférences;
- Ce périphérique doit accepter toutes les interférences reçues, y compris celles qui risquent d'entraîner un fonctionnement indésirable..

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

The following acknowledgements pertain to this software license.

User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE)

This document contains important information for users with regards to the proper disposal and recycling of Linksys products. Consumers are required to comply with this notice for all electronic products bearing the following symbol:

English - Environmental Information for Customers in the European Union

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Български (Bulgarian) - Информация относно опазването на околната среда за потребители в Европейския съюз

Европейска директива 2002/96/ЕС изисква уредите, носещи този символ върху изделието и/или опаковката му, да не се изхвърля т с несортирани битови отпадъци. Символът обозначава, че изделието трябва да се изхвърля отделно от сметосъбирането на обикновените битови отпадъци. Ваша е отговорността този и другите електрически и електронни уреди да се изхвърлят в предварително определени от държавните или общински органи специализирани пунктове за събиране. Правилното изхвърляне и рециклиране ще спомогнат да се предотвратят евентуални вредни за околната среда и здравето на населението последствия. За по-подробна информация относно изхвърлянето на вашите стари уреди се обърнете към местните власти, службите за сметосъбиране или магазина, от който сте закупили уреда.

Ceština (Czech) - Informace o ochranì _ivotního prostøedí pro zákazníky v zemích Evropské unie

Evropská smìrnice 2002/96/ES zakazuje, aby zaøízení oznaèené tímto symbolem na produktu anebo na obalu bylo likvidováno s netøídìným komunálním odpadem. Tento symbol udává, _e daný produkt musí být likvidován oddìlenì od bì_ného komunálního odpadu. Odpovídáte za likvidaci tohoto produktu a dalších elektrických a elektronických zaøízení prostøednictvím urèených sbìrných míst stanovených vládou nebo místními úøady. Správná likvidace a recyklace pomáhá pøedcházet potenciálním negativním dopadùm na _ivotní prostøedí a lidské zdraví. Podrobnìjší informace o likvidaci starého vybavení si laskavì vy_ádejte od místních úøadù, podniku zabývajícího se likvidací komunálních odpadù nebo obchodu, kde jste produkt zakoupili.

Dansk (Danish) - Miljøinformation for kunder i EU

EU-direktiv 2002/96/EF kræver, at udstyr der bærer dette symbol på produktet og/eller emballagen ikke må bortskaffes som usorteret kommunalt affald. Symbolet betyder, at dette produkt skal bortskaffes adskilt fra det almindelige husholdningsaffald. Det er dit ansvar at bortskaffe dette og andet elektrisk og elektronisk udstyr via bestemte indsamlingssteder udpeget af staten eller de lokale myndigheder. Korrekt bortskaffelse og genvinding vil hjælpe med til at undgå mulige skader for miljøet og menneskers sundhed. Kontakt venligst de lokale myndigheder, renovationstjenesten eller den butik, hvor du har købt produktet, angående mere detaljeret information om bortskaffelse af dit gamle udstyr.

Deutsch (German) - Umweltinformation für Kunden innerhalb der Europäischen Union

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist , nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Eesti (Estonian) - Keskkonnaalane informatsioon Euroopa Liidus asuvatele klientidele

Euroopa Liidu direktiivi 2002/96/EÜ nõuete kohaselt on seadmeid, millel on tootel või pakendil käesolev sümbol , keelatud kõrvaldada koos sorteerimata olmejäätmetega. See sümbol näitab, et toode tuleks kõrvaldada eraldi tavalistest olmejäätmevoogudest. Olete kohustatud kõrvaldama käesoleva ja ka muud elektri- ja elektroonikaseadmed riigi või kohalike ametiasutuste poolt ette nähtud kogumispunktide kaudu. Seadmete korrektne kõrvaldamine ja ringlussevõtt aitab vältida võimalikke negatiivseid tagajärgi keskkonnale ning inimeste tervisele. Vanade seadmete kõrvaldamise kohta täpsema informatsiooni saamiseks võtke palun ühendust kohalike ametiasutustega, jäätmekäitlusfirmaga või kauplusega, kust te toote ostsite.

Español (Spanish) - Información medioambiental para clientes de la Unión Europea

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

ξλληνικά (Greek) - Στοιχεία περιβαλλοντικής προστασίας για πελάτες εντός της Ευρωπαϊκής Ένωσης

Η Κοινοτική Οδηγία 2002/96/EC απαιτεί ότι ο εξοπλισμός ο οποίος φέρει αυτό το σύμβολο στο προϊόν και/ή στη συσκευασία του δεν πρέπει να απορρίπτεται μαζί με τα μικτά κοινοτικά απορρίμματα. Το σύμβολο υποδεικνύει ότι αυτό το προϊόν θα πρέπει να απορρίπτεται ξεχωριστά από τα συνήθη οικιακά απορρίμματα. Είστε υπεύθυνος για την απόρριψη του παρόντος και άλλου ηλεκτρικού και ηλεκτρονικού εξοπλισμού μέσω των καθορισμένων εγκαταστάσεων συγκέντρωσης απορριμμάτων οι οποίες παρέχονται από το κράτος ή τις αρμόδιες τοπικές αρχές. Η σωστή απόρριψη και ανακύκλωση συμβάλλει στην πρόληψη πιθανών αρνητικών συνεπειών για το περιβάλλον και την υγεία. Για περισσότερες πληροφορίες σχετικά με την απόρριψη του παλιού σας εξοπλισμού, παρακαλώ επικοινωνήστε με τις τοπικές αρχές, τις υπηρεσίες απόρριψης ή το κατάστημα από το οποίο αγοράσατε το προϊόν.

Français (French) - Informations environnementales pour les clients de l'Union européenne

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets des ménages. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano (Italian) - Informazioni relative all'ambiente per i clienti residenti nell'Unione Europea

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

Latviešu valoda (Latvian) - Ekoloģiska informācija klientiem Eiropas Savienības jurisdikcijā

Direktīvā 2002/96/EK ir prasība, ka aprīkojumu, kam pievienota zīme uz paša izstrādājuma vai uz tā iesaiņojuma, nedrīkst izmest nešķirotā veidā kopā ar komunālajiem atkritumiem (tiem, ko rada vietēji iedzīvotāji un uzņēmumi). Šī zīme nozīmē to, ka šī ierīce ir jāizmet atkritumos tā, lai tā nenonāktu kopā ar parastiem mājsaimniecības atkritumiem. Jūsu pienākums ir šo un citas elektriskas un elektroniskas ierīces izmest atkritumos, izmantojot īpašus atkritumu savākšanas veidus un līdzekļus, ko nodrošina valsts un pašvaldību iestādes. Ja izmešana atkritumos un pārstrāde tiek veikta pareizi, tad mazinās iespējamais kaitējums dabai un cilvēku veselībai. Sīkākas ziņas par novecojuša aprīkojuma izmešanu atkritumos jūs varat saņemt vietējā pašvaldībā, atkritumu savākšanas dienestā, kā arī veikalā, kur iegādājāties šo izstrādājumu.

Lietuvškai (Lithuanian) - Aplinkosaugos informacija, skirta Europos Sąjungos vartotojams

Europos direktyva 2002/96/EC numato, kad įrangos, kuri ir kurios pakuotė yra pažymėta šiuo simboliu (įveskite simbolį), negalima šalinti kartu su nerūšiuotomis komunalinėmis atliekomis. Šis simbolis rodo, kad gaminį reikia šalinti atskirai nuo bendro buitinių atliekų srauto. Jūs privalote užtikrinti, kad ši ir kita elektros ar elektroninė įranga būtų šalinama per tam tikras nacionalinės ar vietinės valdžios nustatytas atliekų rinkimo sistemas. Tinkamai šalinant ir perdirbant atliekas, bus išvengta galimos žalos aplinkai ir žmonių sveikatai. Daugiau informacijos apie jūsų senos įrangos šalinimą gali pateikti vietinės valdžios institucijos, atliekų šalinimo tarnybos arba parduotuvės, kuriose įsigijote tą gaminį.

Malti (Maltese) - Informazzjoni Ambjentali ghal Klijenti fl-Unjoni Ewropea

Id-Direttiva Ewropea 2002/96/KE titlob li t-taghmir li jkun fih is-simbolu fuq il-prodott u/jew fuq l-ippakkjar ma jistax jintrema ma' skart municipali li ma giex isseparat. Is-simbolu jindika li dan il-prodott ghandu jintrema separatament minn ma' l-iskart domestiku regolari. Hija responsabbiltà tieghek li tarmi dan it-taghmir u kull taghmir iehor ta' l-elettriku u elettroniku permezz ta' facilitajiet ta' gbir appuntati apposta mill-gvern jew mill-awtoritajiet lokali. Ir-rimi b'mod korrett u r-riciklagg jghin jipprevjeni konsegwenzi negattivi potenzjali ghall-ambjent u ghas-sahha tal-bniedem. Ghal aktar informazzjoni dettaljata dwar ir-rimi tat-taghmir antik tieghek, jekk joghgbok ikkuntattja lill-awtoritajiet lokali tieghek, is-servizzi ghar-rimi ta' l-iskart, jew il-hanut minn fejn xtrajt il-prodott.

Magyar (Hungarian) - Környezetvédelmi információ az európai uniós vásárlók számára

A 2002/96/EC számú európai uniós irányelv megkívánja, hogy azokat a termékeket, amelyeken, és/vagy amelyek csomagolásán az alábbi címke megjelenik, tilos a többi szelektálatlan lakossági hulladékkal együtt kidobni. A címke azt jelöli, hogy az adott termék kidobásakor a szokványos háztartási hulladékelszállítási rendszerektől elkülönített eljárást kell alkalmazni. Az Ön felelõssége, hogy ezt, és más elektromos és elektronikus berendezéseit a kormányzati vagy a helyi hatóságok által kijelölt gyûjtõredszereken keresztül számolja fel. A megfelelõ hulladékfeldolgozás segít a környezetre és az emberi egészségre potenciálisan ártalmas negatív hatások megelõzésében. Ha elavult berendezéseinek felszámolásához további részletes információra van szüksége, kérjük, lépjen kapcsolatba a helyi hatóságokkal, a hulladékfeldolgozási szolgálattal, vagy azzal üzlettel, ahol a terméket vásárolta.

Nederlands (Dutch) - Milieu-informatie voor klanten in de Europese Unie

De Europese Richtlijn 2002/96/EC schrijft voor dat apparatuur die is voorzien van dit symbool op het product of de verpakking, niet mag worden ingezameld met niet-gescheiden huishoudelijk afval. Dit symbool geeft aan dat het product apart moet worden ingezameld. U bent zelf verantwoordelijk voor de vernietiging van deze en andere elektrische en elektronische apparatuur via de daarvoor door de landelijke of plaatselijke overheid aangewezen inzamelingskanalen. De juiste vernietiging en recycling van deze apparatuur voorkomt mogelijke negatieve gevolgen voor het milieu en de gezondheid. Voor meer informatie over het vernietigen van uw oude apparatuur neemt u contact op met de plaatselijke autoriteiten of afvalverwerkingsdienst, of met de winkel waar u het product hebt aangeschaft.

Norsk (Norwegian) - Miljøinformasjon for kunder i EU

EU-direktiv 2002/96/EF krever at utstyr med følgende symbol avbildet på produktet og/eller pakningen, ikke må kastes sammen med usortert avfall. Symbolet indikerer at dette produktet skal håndteres atskilt fra ordinær avfallsinnsamling for husholdningsavfall. Det er ditt ansvar å kvitte deg med dette produktet og annet elektrisk og elektronisk avfall via egne innsamlingsordninger slik myndighetene eller kommunene bestemmer. Korrekt avfallshåndtering og gjenvinning vil være med på å forhindre mulige negative konsekvenser for miljø og helse. For nærmere informasjon om håndtering av det kasserte utstyret ditt, kan du ta kontakt med kommunen, en innsamlingsstasjon for avfall eller butikken der du kjøpte produktet.

Polski (Polish) - Informacja dla klientów w Unii Europejskiej o przepisach dotyczących ochrony środowiska

Dyrektywa Europejska 2002/96/EC wymaga, aby sprzęt oznaczony symbolem znajdującym się na produkcie i/lub jego opakowaniu nie był wyrzucany razem z innymi niesortowanymi odpadami komunalnymi. Symbol ten wskazuje, że produkt nie powinien być usuwany razem ze zwykłymi odpadami z gospodarstw domowych. Na Państwu spoczywa obowiązek wyrzucania tego i innych urządzeń elektrycznych oraz elektronicznych w punktach odbioru wyznaczonych przez władze krajowe lub lokalne. Pozbywanie się sprzętu we właściwy sposób i jego recykling pomogą zapobiec potencjalnie negatywnym konsekwencjom dla środowiska i zdrowia ludzkiego. W celu uzyskania szczegółowych informacji o usuwaniu starego sprzętu, prosimy zwrócić się do lokalnych władz, służb oczyszczania miasta lub sklepu, w którym produkt został nabyty.

Português (Portuguese) - Informação ambiental para clientes da União Europeia

A Directiva Europeia 2002/96/CE exige que o equipamento que exibe este símbolo no produto e/ou na sua embalagem não seja eliminado junto com os resíduos municipais não separados. O símbolo indica que este produto deve ser eliminado separadamente dos resíduos domésticos regulares. É da sua responsabilidade eliminar este e qualquer outro equipamento eléctrico e electrónico através das instalações de recolha designadas pelas autoridades governamentais ou locais. A eliminação e reciclagem correctas ajudarão a prevenir as consequências negativas para o ambiente e para a saúde humana. Para obter informações mais detalhadas sobre a forma de eliminar o seu equipamento antigo, contacte

as autoridades locais, os serviços de eliminação de resíduos ou o estabelecimento comercial onde adquiriu o produto.

Română (Romanian) - Informații de mediu pentru clienții din Uniunea Europeană

Directiva europeană 2002/96/CE impune ca echipamentele care prezintă acest simbol pe produs şi/sau pe ambalajul acestuia să nu fie casate împreună cu gunoiul menajer municipal. Simbolul indică faptul că acest produs trebuie să fie casat separat de gunoiul menajer obişnuit. Este responsabilitatea dvs. să casați acest produs şi alte echipamente electrice şi electronice prin intermediul unităților de colectare special desemnate de guvern sau de autoritățile locale. Casarea şi reciclarea corecte vor ajuta la prevenirea potențialelor consecințe negative asupra sănătății mediului şi a oamenilor. Pentru mai multe informații detaliate cu privire la casarea acestui echipament vechi, contactați autoritățile locale, serviciul de salubrizare sau magazinul de la care ați achiziționat produsul.

Slovenčina (Slovak) - Informácie o ochrane životného prostredia pre zákazníkov v Európskej únii

Podľa európskej smernice 2002/96/ES zariadenie s týmto symbolom na produkte a/alebo jeho balení nesmie byť likvidované spolu s netriedeným komunálnym odpadom. Symbol znamená, že produkt by sa mal likvidovať oddelene od bežného odpadu z domácností. Je vašou povinnosťou likvidovať toto i ostatné elektrické a elektronické zariadenia prostredníctvom špecializovaných zberných zariadení určených vládou alebo miestnymi orgánmi. Správna likvidácia a recyklácia pomôže zabrániť prípadným negatívnym dopadom na životné prostredie a zdravie ľudí. Ak máte záujem o podrobnejšie informácie o likvidácii starého zariadenia, obráťte sa, prosím, na miestne orgány, organizácie zaoberajúce sa likvidáciou odpadov alebo obchod, v ktorom ste si produkt zakúpili.

Slovenèina (Slovene) - Okoljske informacije za stranke v Evropski uniji

Evropska direktiva 2002/96/EC prepoveduje odlaganje opreme, oznaèene s tem simbolom – na izdelku in/ali na embala_i – med obièajne, nerazvršèene odpadke. Ta simbol opozarja, da je treba izdelek odvreèi loèeno od preostalih gospodinjskih odpadkov. Vaša odgovornost je, da to in preostalo elektrièno in elektronsko opremo odnesete na posebna zbirališèa, ki jih doloèijo dr_avne ustanove ali lokalna uprava. S pravilnim odlaganjem in recikliranjem boste prepreèili morebitne škodljive vplive na okolje in zdravje ljudi. Èe _elite izvedeti veè o odlaganju stare opreme, se obrnite na lokalno upravo, odpad ali trgovino, kjer ste izdelek kupili.

Suomi (Finnish) - Ympäristöä koskevia tietoja EU-alueen asiakkaille

EU-direktiivi 2002/96/EY edellyttää, että jos laitteistossa on tämä symboli itse tuotteessa ja/tai sen pakkauksessa, laitteistoa ei saa hävittää lajittelemattoman yhdyskuntajätteen mukana. Symboli merkitsee sitä, että tämä tuote on hävitettävä erillään tavallisesta kotitalousjätteestä. Sinun vastuullasi on hävittää tämä elektroniikkatuote ja muut vastaavat elektroniikkatuotteet viemällä tuote tai tuotteet viranomaisten määräämään keräyspisteeseen. Laitteiston oikea hävittäminen estää mahdolliset kielteiset vaikutukset ympäristöön ja ihmisten terveyteen. Lisätietoja vanhan laitteiston oikeasta hävitystavasta saa paikallisilta viranomaisilta, jätteenhävityspalvelusta tai siitä myymälästä, josta ostit tuotteen.

Svenska (Swedish) - Miljöinformation för kunder i Europeiska unionen

Det europeiska direktivet 2002/96/EC kräver att utrustning med denna symbol på produkten och/eller förpackningen inte får kastas med osorterat kommunalt avfall. Symbolen visar att denna produkt bör kastas efter att den avskiljts från vanligt hushållsavfall. Det faller på ditt ansvar att kasta denna och annan elektrisk och elektronisk utrustning på fastställda insamlingsplatser utsedda av regeringen eller lokala myndigheter. Korrekt kassering och återvinning skyddar mot eventuella negativa konsekvenser för miljön och personhälsa. För mer detaljerad information om kassering av din gamla utrustning kontaktar du dina lokala myndigheter, avfallshanteringen eller butiken där du köpte produkten.

Environmental Specifications

Dimensions	12.01"x1.73"x6.69" (305 mm x 44 mm x 170 mm)
Unit Weight	3.02 lbs. or 48.33 oz (1.37 kg)
Power	48 VDC, 100-240V 3.5A
Certification	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47), Class A EN60950 (2001)
Security	ACL, 802.1x
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% relative humidity, Non-Condensing
Storage Humidity	10% to 95% relative humidity, Non-Condensing

Safety Information

The following statements are warnings or safety guidelines. A warning means danger. You are in a situation that could cause bodily injury. Before working on equipment, be aware of the hazards involved with electrical circuitry and standard safety practices to prevent accidents.

Meaning of the Warning Symbol

IMPORTANT SAFETY INSTRUCTIONS
This warning symbol means danger. This symbol is used to indicate a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

General Safety Information

WARNING: Work During Lightning Activity
Do not work on the system or connect or disconnect cables during periods of lightning

WARNING: Installation Instructions
Read the installation instructions before connecting the system to the power source

WARNING: SELV Circuit
To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

WARNING: Equipment Installation
Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

WARNING: Local National Electrical Codes
Installation of the equipment must comply with local and national electrical codes.

WARNING: Product Disposal
Ultimate disposal of this product should be handled according to all national laws and regulations.

Power Safety Information

WARNING: TN Power
The device is designed to work with TN power systems.

WARNING: Warning Ground Conductor Warning
Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

WARNING: Power Supply Installation Warning
The power supply must be placed indoors.

WARNING: Circuit Breaker
This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 120 VAC, 15A U.S. (240 VAC, 10A international)

WARNING: Warning Main Disconnecting Device
The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

Software License Agreement

Software in Linksys Products:

This product from Cisco-Linksys LLC or from one of its affiliates Cisco Systems-Linksys (Asia) Pt. Ltd. or Cisco-Linksys K.K. ("Linksys") contains software (including firmware) originating from Linksys and its suppliers and may also contain software from the open source community. Any software originating from Linksys and its suppliers is licensed under the Linksys Software License Agreement contained at Schedule 1 below. You may also be prompted to review and accept that Linksys Software License Agreement upon installation of the software.

Any software from the open source community is licensed under the specific license terms applicable to that software made available by Linksys at www.linksys.com/gpl or as provided for in Schedules 2 and 3 below.

Where such specific license terms entitle you to the source code of such software, that source code is upon request available at cost from Linksys for at least three years from the purchase date of this product and may also be available for download from www.linksys.com/gpl. For detailed license terms and additional information on open source software in Linksys products please look at the Linksys public web site at: www.linksys.com/gpl/ or Schedule 2 below as applicable.

BY DOWNLOADING OR INSTALLING THE SOFTWARE, OR USING THE PRODUCT CONTAINING THE SOFTWARE, YOU ARE CONSENTING TO BE BOUND BY THE SOFTWARE LICENSE AGREEMENTS BELOW. IF YOU DO NOT AGREE TO ALL OF THESE TERMS, THEN YOU MAY NOT DOWNLOAD, INSTALL OR USE THE SOFTWARE. YOU MAY RETURN UNUSED SOFTWARE (OR, IF THE SOFTWARE IS SUPPLIED AS PART OF ANOTHER PRODUCT, THE UNUSED PRODUCT) FOR A FULL REFUND UP TO 30 DAYS AFTER ORIGINAL PURCHASE, SUBJECT TO THE RETURN PROCESS AND POLICIES OF THE PARTY FROM WHICH YOU PURCHASED SUCH PRODUCT OR SOFTWARE.

Software Licenses:

The software Licenses applicable to software from Linksys are made available at the Linksys public web site at: www.linksys.com and www.linksys.com/gpl/ respectively. For your convenience of reference, a copy of the Linksys Software License Agreement and the main open source code licenses used by Linksys in its products are contained in the Schedules below.

Schedule 1 Linksys Software License Agreement

THIS LICENSE AGREEMENT IS BETWEEN YOU AND CISCO-LINKSYS LLC OR ONE OF ITS AFFILIATES CISCO SYSTEMS-LINKSYS (ASIA) PTE LTD. OR CISCO-LINKSYS K.K. ("LINKSYS") LICENSING THE SOFTWARE INSTEAD OF CISCO-LINKSYS LLC. BY DOWNLOADING OR INSTALLING THE SOFTWARE, OR USING THE PRODUCT CONTAINING THE SOFTWARE, YOU ARE CONSENTING TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT AGREE TO ALL OF THESE TERMS, THEN YOU MAY NOT DOWNLOAD, INSTALL OR USE THE SOFTWARE. YOU MAY RETURN UNUSED SOFTWARE (OR, IF THE SOFTWARE IS SUPPLIED AS PART OF ANOTHER PRODUCT, THE UNUSED PRODUCT) FOR A FULL REFUND UP TO 30 DAYS AFTER ORIGINAL

PURCHASE, SUBJECT TO THE RETURN PROCESS AND POLICIES OF THE PARTY FROM WHICH YOU PURCHASED SUCH PRODUCT OR SOFTWARE.

License. Subject to the terms and conditions of this Agreement, Linksys grants the original end user purchaser of the Linksys product containing the Software ("You") a nonexclusive license to use the Software solely as embedded in or (where authorized in the applicable documentation) for communication with such product. This license may not be sublicensed, and is not transferable except to a person or entity to which you transfer ownership of the complete Linksys product containing the Software, provided you permanently transfer all rights under this Agreement and do not retain any full or partial copies of the Software, and the recipient agrees to the terms of this Agreement.

"Software" includes, and this Agreement will apply to (a) the software of Linksys or its suppliers provided in or with the applicable Linksys product, and (b) any upgrades, updates, bug fixes or modified versions ("Upgrades") or backup copies of the Software supplied to You by Linksys or an authorized reseller, provided you already hold a valid license to the original software and have paid any applicable fee for the Upgrade.

Protection of Information. The Software and documentation contain trade secrets and/or copyrighted materials of Linksys or its suppliers. You will not copy or modify the Software or decompile, decrypt, reverse engineer or disassemble the Software (except to the extent expressly permitted by law notwithstanding this provision), and You will not disclose or make available such trade secrets or copyrighted material in any form to any third party. Title to and ownership of the Software and documentation and any portion thereof, will remain solely with Linksys or its suppliers.

Collection and Processing of Information. You agree that Linksys and/or its affiliates may, from time to time, collect and process information about your Linksys product and/or the Software and/or your use of either in order (i) to enable Linksys to offer you Upgrades; (ii) to ensure that your Linksys product and/or the Software is being used in accordance with the terms of this Agreement; (iii) to provide improvements to the way Linksys delivers technology to you and to other Linksys customers; (iv) to enable Linksys to comply with the terms of any agreements it has with any third parties regarding your Linksys product and/or Software and/or (v) to enable Linksys to comply with all applicable laws and/or regulations, or the requirements of any regulatory authority or government agency. Linksys and/ or its affiliates may collect and process this information provided that it does not identify you personally. Your use of your Linksys product and/or the Software constitutes this consent by you to Linksys and/or its affiliates' collection and use of such information and, for EEA customers, to the transfer of such information to a location outside the EEA.

Software Upgrades etc. If the Software enables you to receive Upgrades, you may elect at any time to receive these Upgrades either automatically or manually. If you elect to receive Upgrades manually or you otherwise elect not to receive or be notified of any Upgrades, you may expose your Linksys product and/or the Software to serious security threats and/or some features within your Linksys product and/or Software may become inaccessible. There may be circumstances where we apply an Upgrade automatically in order to comply with changes in legislation, legal or regulatory requirements or as a result of requirements to comply with the terms of any agreements Linksys has with any third parties regarding your Linksys product and/or the Software. You will always be notified of any Upgrades being delivered to you. The terms of this license will apply to any such Upgrade unless the Upgrade in question is accompanied by a separate license, in which event the terms of that license will apply.

Open Source Software. The GPL or other open source code incorporated into the Software and the open source license for such source code are available for free download at http://www.linksys.com/gpl. If You would like a copy of the GPL or other open source code in this Software on a CD, Linksys will mail to You a CD with such code for $9.99 plus the cost of shipping, upon request.

Term and Termination. You may terminate this License at any time by destroying all copies of the Software and documentation. Your rights under this License will terminate immediately without notice from Linksys if You fail to comply with any provision of this Agreement.

Limited Warranty. The warranty terms and period specified in the applicable Linksys Product User Guide shall also apply to the Software.

Disclaimer of Liabilities. IN NO EVENT WILL LINKSYS OR ITS SUPPLIERS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF CAUSE (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE 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 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.

Export. Software, including technical data, may be subject to U.S. export control laws and regulations and/or export or import regulations in other countries. You agree to comply strictly with all such laws and regulations.

U.S. Government Users. The Software and documentation qualify as "commercial items" as defined at 48 C.F.R. 2.101 and 48 C.F.R. 12.212. All Government users acquire the Software and documentation with only those rights herein that apply to non-governmental customers.

General Terms. This Agreement will be governed by and construed in accordance with the laws of the State of California, without reference to conflict of laws principles. The United Nations Convention on Contracts for the International Sale of Goods will not apply. If any portion of this Agreement is found to be void or unenforceable, the remaining provisions will remain in full force and effect. This Agreement constitutes the entire agreement between the parties with respect to the Software and supersedes any conflicting or additional terms contained in any purchase order or elsewhere.

END OF SCHEDULE 1

Schedule 2

If this Linksys product contains open source software licensed under Version 2 of the "GNU General Public License" then the license terms below in this Schedule 2 will apply to that open source software. The license terms below in this Schedule 2 are from the public web site at http://www.gnu.org/copyleft/gpl.html

---

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the

Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order,

agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND

PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

END OF SCHEDULE 2

Schedule 3

If this Linksys product contains open source software licensed under the OpenSSL license then the license terms below in this Schedule 3 will apply to that open source software. The license terms below in this Schedule 3 are from the public web site at http://www.openssl.org/source/license.html

---

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

OpenSSL License

/* ==========

Copyright (c) 1998-2007 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. All advertising materials mentioning features or use of this software must display the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)"

4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.

5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.

6. Redistributions of any form whatsoever must retain the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

==========

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License

Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)

All rights reserved.

This package is an SSL implementation written by Eric Young (eay@cryptsoft.com).

The implementation was written so as to conform with Netscape's SSL.

This library is free for commercial and non-commercial use as long as the following conditions are aheared to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the SSL code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson (tjh@cryptsoft.com).

Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed.

If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used. This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. All advertising materials mentioning features or use of this software must display the following acknowledgement:

"This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)"

The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related :-).

4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement: "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The licence and distribution terms for any publicly available version or derivative of this code cannot be changed. i.e. this code cannot simply be copied and put under another distribution licence [including the GNU Public Licence.]

END OF SCHEDULE 3

LINKSYS®
A Division of Cisco Systems, Inc.

 March2008Rev1.0-CH

CISCO