NetAtlas Enterprise

Ethernet Switch Manager

User's Guide

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ZyXEL

www.zyxel.com

About This User's Guide

Intended Audience

This manual is intended for people who want to configure the EMS using the web configurator. You should have at least a basic knowledge of TCP/IP networking concepts and topology.

Related Documentation

- Quick Start Guide

  The Quick Start Guide is designed to help you get up and running right away. It contains information on setting up your software.

It is recommended you use the web configurator to configure the EMS.

- Supporting Disk

  Refer to the included CD for support documents.
- ZyXEL Web Site

  Please refer to www.zyxel.com for additional support documentation and product certifications.

User Guide Feedback

Help us help you. Send all User Guide-related comments, questions or suggestions for improvement to the following address, or use e-mail instead. Thank you!

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Document Conventions

Warnings and Notes

These are how warnings and notes are shown in this User's Guide.

Warnings tell you about things that could harm you or your device.

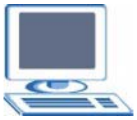
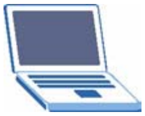
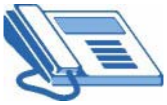
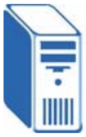
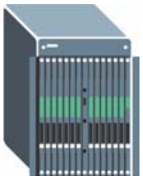
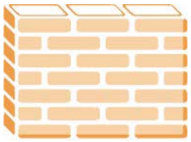
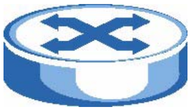
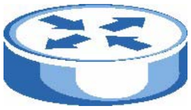
Notes tell you other important information (for example, other things you may need to configure or helpful tips) or recommendations.

Syntax Conventions

- The NetAtlas Enterprise may be referred to as the "EMS", the "device" or the "system" in this User's Guide.
- Product labels, screen names, field labels and field choices are all in **bold** font.
- A key stroke is denoted by square brackets and uppercase text, for example, [ENTER] means the "enter" or "return" key on your keyboard.
- "Enter" means for you to type one or more characters and then press the [ENTER] key. "Select" or "choose" means for you to use one of the predefined choices.
- A right angle bracket (>) within a screen name denotes a mouse click. For example, **Maintenance** > **Log** > **Log Setting** means you first click **Maintenance** in the navigation panel, then the **Log** sub menu and finally the **Log Setting** tab to get to that screen.
- Units of measurement may denote the "metric" value or the "scientific" value. For example, "k" for kilo may denote "1000" or "1024", "M" for mega may denote "1000000" or "1048576" and so on.
- "e.g.," is a shorthand for "for instance", and "i.e.," means "that is" or "in other words".

Icons Used in Figures

Figures in this User's Guide may use the following generic icons. The EMS icon is not an exact representation of your device.

Computer 	Notebook computer 	Telephone 
Server 	DSLAM 	Firewall 
Switch 	Router 	

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PART I

Introduction

- Introduction (29)
- Main EMS Screen (33)

1

Introduction

This chapter introduces and shows you how to access the EMS (Element Management System).

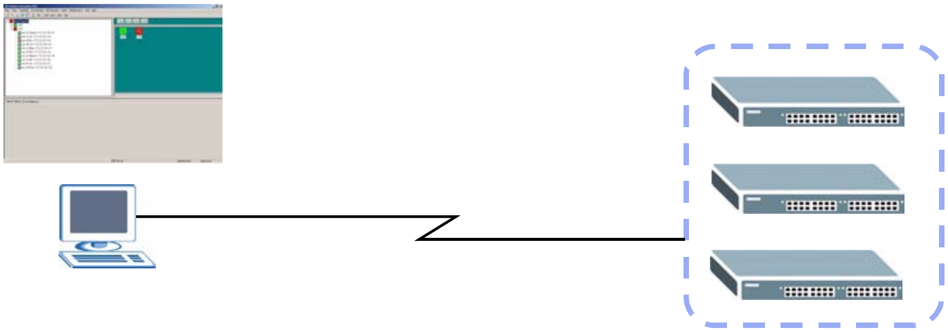
1.1 Overview

The Element Management System (EMS) retrieves management information from switches using SNMP protocol.

An EMS is composed of Network Elements (NE) that represent resources in a Network Management System (NMS). The network elements can represent a physical piece of equipment on the network, the components of a device on the network, or parts of the network itself.

The following figure shows a network example.

Figure 1 EMS Network Example

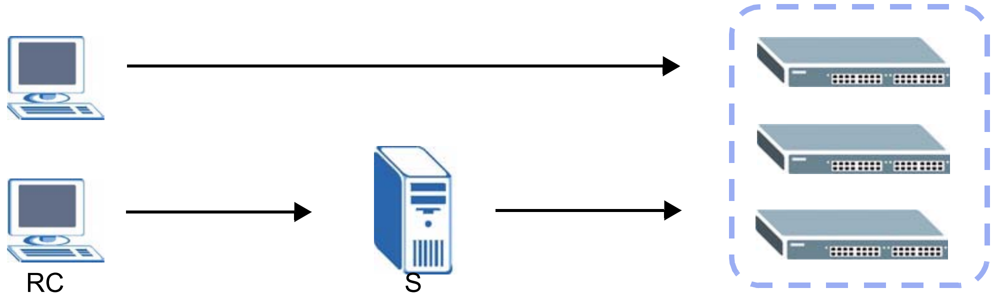


1.1.1 EMS Components

The EMS consists of two components: the EMS server and the EMS remote client. You must install the EMS server, which provides all the functions to use the EMS. You can install the EMS remote client on other computers if you want to use EMS on them as well.

You can send SNMP messages to managed devices from an EMS remote client (**RC**) or through the EMS server (**S**). The following figure shows a network example.

Figure 2 EMS Server and Remote Clients



1.1.2 SNMPc Network Manager

SNMPc is network management software produced by Castle Rock.

You must have SNMPc properly installed before you can use the EMS. Refer to the appendix in this User's Guide; go to the Castle Rock web site at www.castlerock.com or see your SNMPc user's guide.

1.1.3 Device Firmware Versions Supported

The EMS supports the devices and device firmware versions as listed in the following tale.

Table 1 Device Firmware Versions Supported

MODEL	FIRMWARE VERSION
ES-2108	360ABK2C0/370ABK0C0 or later versions
ES-2108G	360ABL2C0/370ABL0C0 or later versions
ES-2108PWR	360ABS2C0/370ABS1C0 or later versions
ES-2024A	360TX1C0/370TX0C0 or later versions
GS-2024	360LT1C0 or later versions
ES-3124	360TP3C0/370TP1C0 or later versions
ES-3124PWR	360TY4C0/370TY0C0 or later versions
ES-3148	360TZ1C0/370TZ0C0 or later versions
GS-4012	360TS3C0/370TS0C0 or later versions
GS-4024	360LL3C0/370LL0C0 or later versions
ES-4124	360AIC0C0/370AIC0C0 or later versions

1.2 System Requirements and EMS Installation

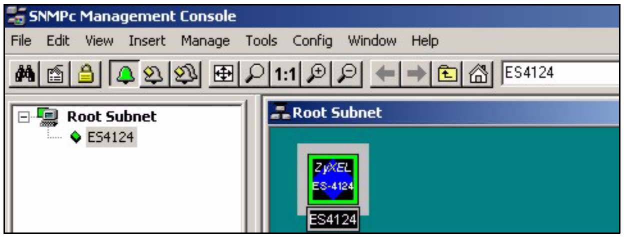
Refer to the quick start guide for a list of system requirements and the installation procedure for EMS.

1.3 Accessing EMS

Follow the steps below to access EMS.

1 In the SNMPc main screen, double-click the switch icon.

Figure 3 SNMPc: Switch Device List Icon


SNMPc Management Console
File Edit View Insert Manage Tools Config Window Help
ES4124
Root Subnet
ES4124
Root Subnet
ZyXEL
ES-4124
ES4124

2 Click the **Switch Manager** icon to display the main EMS screen.

Figure 4 NetAtlas Main Screen

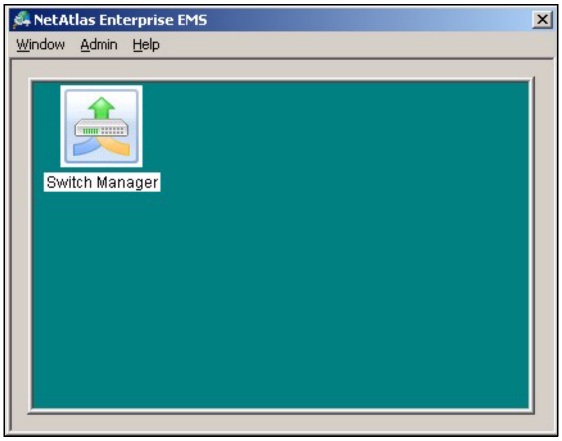
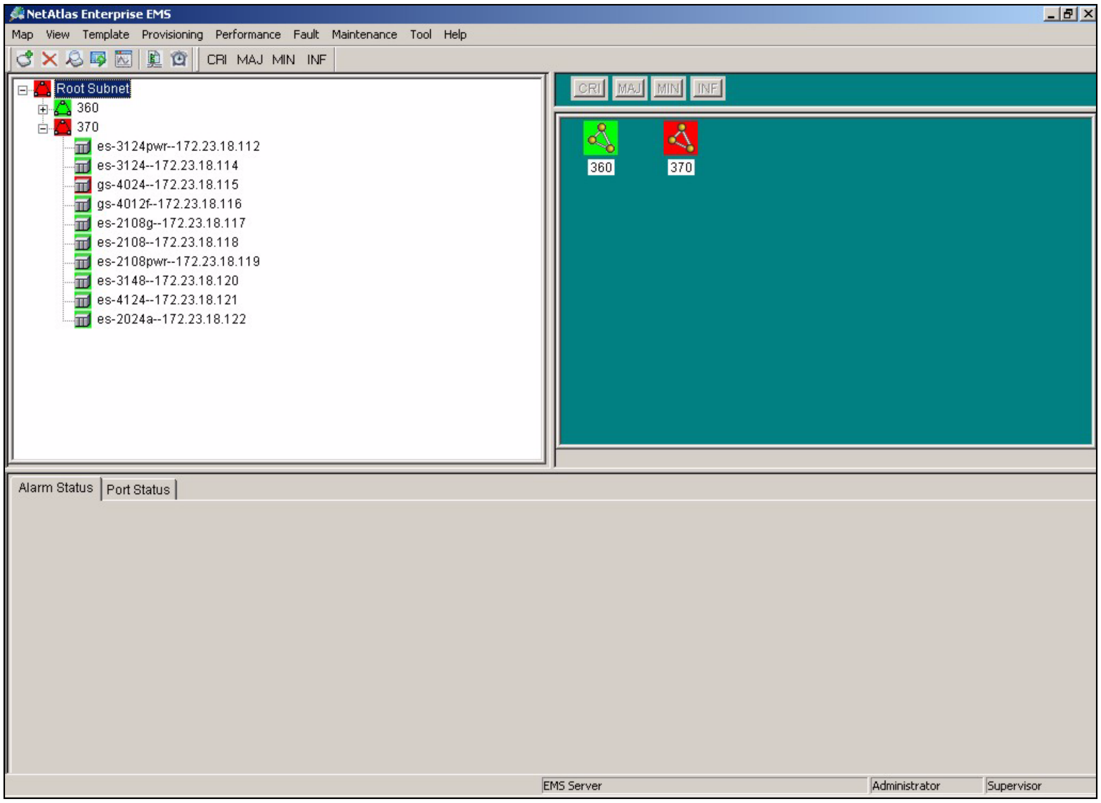

NetAtlas Enterprise EMS
Window Admin Help
Switch Manager

Figure 5 EMS: Main Screen


NetAtlas Enterprise EMS
Map
View
Template
Provisioning
Performance
Fault
Maintenance
Tool
Help
CRI
MAJ
MIN
INF
Root Subnet
360
370
es-3124pwr--172.23.18.112
es-3124--172.23.18.114
gs-4024--172.23.18.115
gs-4012f--172.23.18.116
es-2108g--172.23.18.117
es-2108--172.23.18.118
es-2108pwr--172.23.18.119
es-3148--172.23.18.120
es-4124--172.23.18.121
es-2024a--172.23.18.122
CRI
MAJ
MIN
INF
360
370
Alarm Status
Port Status
EMS Server
Administrator
Supervisor

2

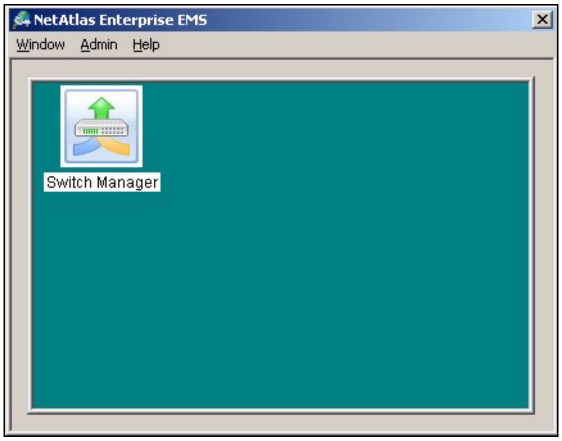
Main EMS Screen

This chapter describes the main screens you use to view access logs and maintain databases.

2.1 Main Screen Overview

In SNMPc, double-click on a device icon to display the main screen as shown.

Figure 6 Main Screen



The following table describes the options in the switch manager screen.

Table 2 Main Screen Menu Overview

LABEL	SUB-MENU		DESCRIPTION
Window	Exit		Click **Exit** to close the switch manager screen.
Admin	Access Log		Use this screen to display logs.
	Database Management	Backup and Restore (EMS & SNMPc DB)	Use this screen to backup or restore a switch's configuration to the EMS and SNMPc database.
		Log Storage Configuration (EMS DB)	Use this screen to enable logging and specify how many logs to store in the EMS database.
		Scheduled Backup Configuration (EMS & SNMPc DB)	Use this screen to specify when to store logs in the EMS and SNMPc database.

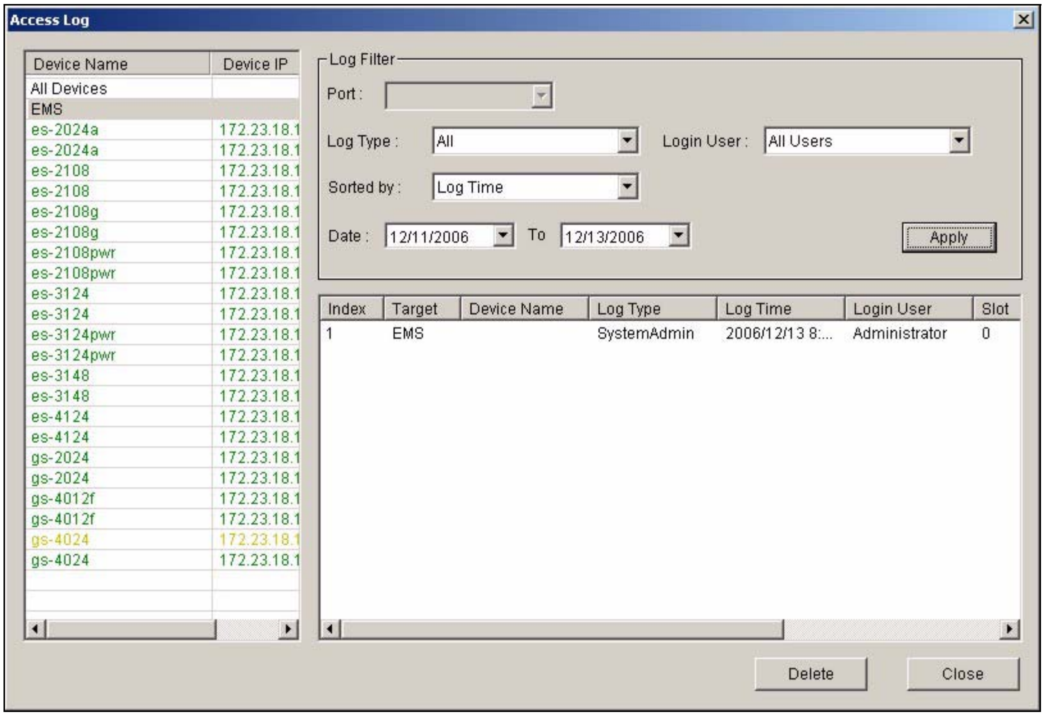
Table 2 Main Screen Menu Overview (continued)

LABEL	SUB-MENU		DESCRIPTION
	SNMP Operation Mode		Use this screen to specify whether SNM P messages can be sent directly from an EMS remote client computer or through the EMS server.
Help	On-line Help		Click **On-line Help** to display an EMS help file.

2.2 Access Log

To view access logs, click **Admin** > **Access Log**.

Figure 7 Admin: Access Log



Device Name	Device IP
All Devices	
EMS	
es-2024a	172.23.18.1
es-2024a	172.23.18.1
es-2108	172.23.18.1
es-2108	172.23.18.1
es-2108g	172.23.18.1
es-2108g	172.23.18.1
es-2108pwr	172.23.18.1
es-2108pwr	172.23.18.1
es-3124	172.23.18.1
es-3124	172.23.18.1
es-3124pwr	172.23.18.1
es-3124pwr	172.23.18.1
es-3148	172.23.18.1
es-3148	172.23.18.1
es-4124	172.23.18.1
es-4124	172.23.18.1
gs-2024	172.23.18.1
gs-2024	172.23.18.1
gs-4012f	172.23.18.1
gs-4012f	172.23.18.1
gs-4024	172.23.18.1
gs-4024	172.23.18.1

Log Filter

Port:

Log Type: All

Login User: All Users

Sorted by: Log Time

Date: 12/11/2006 To 12/13/2006

Index	Target	Device Name	Log Type	Log Time	Login User	Slot
1	EMS		SystemAdmin	2006/12/13 8:...	Administrator	0

The following table describes the fields in this screen.

Table 3 Admin: Access Log

LABEL	DESCRIPTION
Log Filter	
Port	Select a port or **All Ports** for which you want to view switch login data via the EMS.
Log Type	Select the type of logs which you want to view for the selected switch and port(s).
Login User	Select **All Users** to view logs for all access attempts to a switch via the EMS. Select **Administrator** to view only the EMS administrator access attempts.
Sorted by	Select **By Device Name** to sort the logs displayed in alphabetical order according to the names of the switch(es). Select **Log Time** to sort the logs displayed according to the times received on the switch(es).

Table 3 Admin: Access Log (continued)

LABEL	DESCRIPTION
Date	Select a start date and end date from the list boxes to display logs for that period.
Apply	Click **Apply** to display logs with the criteria set above.
Index	This field displays the log number.
Target	This field displays a reason for the generated log.
Device Name	This field displays name of the switch that generated the log(s).
Log Type	This field displays the type of log the switch generated.
Log Time	This field displays the time a log was generated by a switch.
Login User	This field displays the EMS user that logged into the switch
Slot	This field is currently not supported.
Port	This field displays the selected switch port number on which the log was generated.
Description	This field displays further information about the log.
Delete	Click **Delete** to delete a selected log from the list of log entries.
Close	Click **Close** to close this screen.

2.3 Database Management

The following information is stored in the EMS database.

- Event and access logs
- EMS configuration
- Device configuration and status information

Use the **Database Management** screens to back up logs and EMS and SNMPc configurations and restore selected backed up files.

2.3.1 Database Synchronization

The EMS is able to synchronize the device tree and device status information with SNMPc. This means that when you add a device in EMS, the same change also applies in SNMPc and the new device icon is created in both the EMS and SNMPc screens. In addition, device status changes are reflected in both the EMS and the SNMPc screens.

EMS database is synchronized:

- when you launch the Switch Manager screen.
- when you click **Map > Sync Map DB** in EMS.
- automatically everyday at mid-night (this schedule is not configurable).

2.3.2 Filename Convention

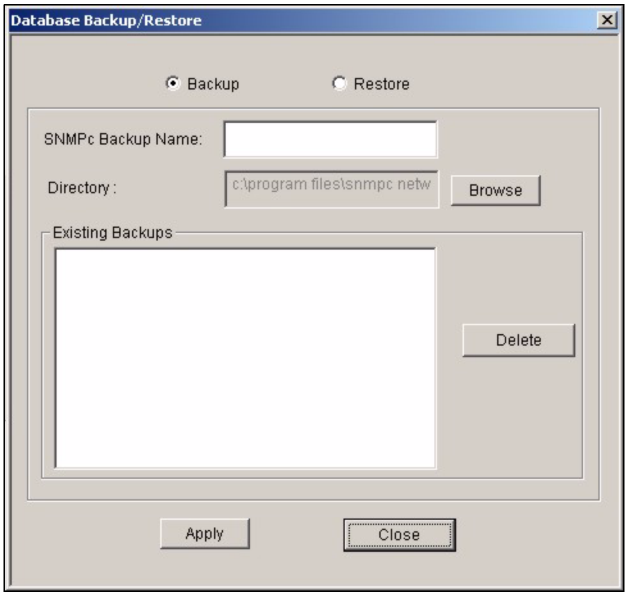
The EMS follows a pre-defined naming convention for backup files. Data is backed up in plain text format with a “txt” filename extension. The general structure of the filename is `<type>.txt` (for example, `AccessLog.txt`).

2.3.3 Database Backup and Restore

Use the **Database Backup/Restore** screen to back up current EMS and SNMPc databases or restore the database information. Backup data is stored as a series of files in the specified directory on your computer.

Click **Admin > Database Management** > **Backup/Restore (EMS & SNMPc DB)** to display the configuration screen.

Figure 8 Admin: Database Management: Backup/Restore



The following table describes the fields in this screen.

Table 4 Admin: Database Management: Backup/Restore

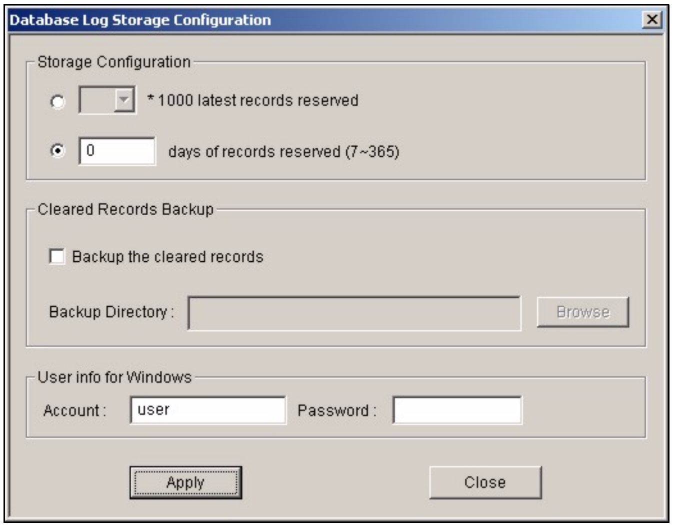
LABEL	DESCRIPTION
Backup	Select **Backup** to transfer the database file from the EMS to the computer.
Restore	Select **Restore** to transfer the backed up files from your computer to the EMS.
SNMPc Backup Name	Specify a backup file name for the SNMPc database to store on your computer. Enter a descriptive name for identification purposes.
Directory	This field displays the default directory to back up or restore database files. Specify the location you wish the EMS to restore from or back up to on your computer or click **Browse** to locate it.
Existing Backups	This field is applicable when you select the Restore option. This field displays the list of backup files available for restore.
Delete	Click Delete to remove the selected backup file.
Apply	Click **Apply** to backup or restore the database files.
Close	Click **Close** to close the screen.

2.3.4 Database Log Storage Configuration

Use the **Database Log Storage Configuration** screen to maintain logs on the EMS.

Click **Admin > Database Management** > **Log Storage Configuration (EMS DB)** to display the following screen.

Figure 9 Admin: Database Management: Log Storage



Database Log Storage Configuration

Storage Configuration

○ * 1000 latest records reserved

● 0 days of records reserved (7~365)

Cleared Records Backup

☐ Backup the cleared records

Backup Directory :

User info for Windows

Account : user Password :

The following table describes the fields in this screen.

Table 5 Admin: Database Management: Log Storage

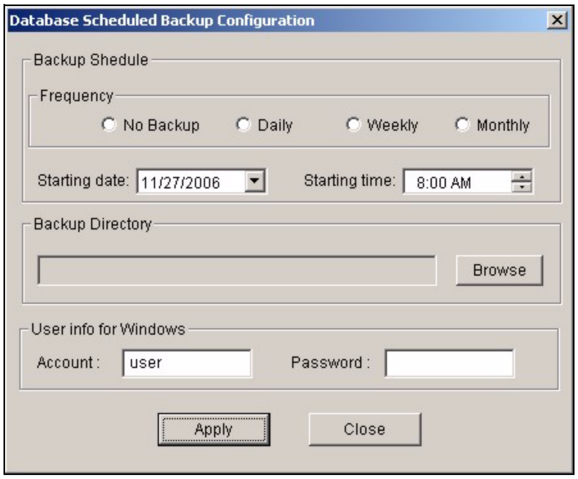
LABEL	DESCRIPTION
Storage Configuration	Configure the following fields to retain daily records. Select the first radio button and a number (in thousands) from the drop-down list box to retain that number of records. All records prior to these records are cleared every 24 hours. Or Select the second radio button and a number (from 7 to 365) in the field provided. All records up to the start of the period selected are cleared every 24 hours.
Cleared Records Backup	If you do not configure this section, all records (excluding the latest reserved records) will be cleared after 24 hours and therefore cannot be retrieved later.
Backup the cleared records	Select the check box and type the path and file name or click **Browse** to locate the folder you wish to save all records after 24 hours. The records are cleared but saved in the backup file.
Backup Directory	Type the path and file name of the record file you wish to back up to your computer in the **Backup Directory** text box or click **Browse** to locate it.
User info for Windows	
Account	Enter the account user name to log into your Windows computer.
Password	Enter a password in this field for the administrator **Account** above.
Apply	Click **Apply** to save changes to the EMS.
Close	Click **Close** to close the screen.

2.3.5 Database Scheduled Backup Configuration

Use this screen to schedule regular backups for database files. The EMS creates a scheduled task on your Windows computer for this action. To look at scheduled tasks in Windows 2000, click **Start** > **Settings** > **Control Panel** > **Scheduled Tasks**. The steps are similar for other versions of Windows.

Click **Admin** > **Database Management** > **Backup and Restore (EMS & SNMPc DB)** to display the following screen.

Figure 10 Admin: Database Management: Scheduled Backup



Starting date: 11/27/2006

Starting time: 8:00 AM

Account : user

The following table describes the fields in this screen.

Table 6 Admin: Database Management: Scheduled Backup

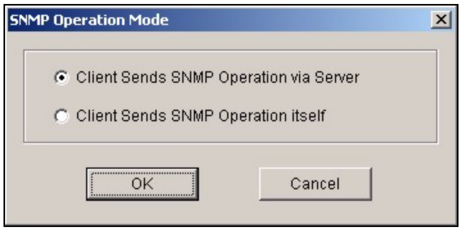
LABEL	DESCRIPTION
Backup Schedule	
Frequency	Scheduled backups can be performed **Daily**, **Weekly** or **Monthly**. Select a radio button to schedule database backups starting from the date and time specified below. The default setting is **No Backup**.
Starting date	Specify the starting date to begin database backup for the selected device(s). Select a date from the drop-down list box.
Starting time	Specify the starting time to begin database backup for the selected device(s). Select a time from the selection box or enter a time (hh:mm:ss AM/PM format).
Backup Directory	Type the path to which you wish to back up the database files on your computer in the **Backup Directory** text box or click **Browse** to locate it.
User info for Windows	
Account	Specify a Windows administrator login account user name.
Password	Enter a password in this field for the administrator **Account** above.
Apply	Click **Apply** to save changes to the EMS.
Close	Click **Close** to close the screen.

2.4 SNMP Operation Mode

When you install EMS remote client on a computer, you can use the **SNMP Operation Mode** screen to specify whether you want to allow the EMS remote client computer to send SNMP messages directly to managed ZyXEL devices or through the EMS server.

Click **Admin** > **SNMP Operation Mode** to display the screen as shown.

Figure 11 Admin: SNMP Operation Mode


SNMP Operation Mode
● Client Sends SNMP Operation via Server
○ Client Sends SNMP Operation itself
OK
Cancel

The following table describes the fields in this screen.

Table 7 Admin: SNMP Operation

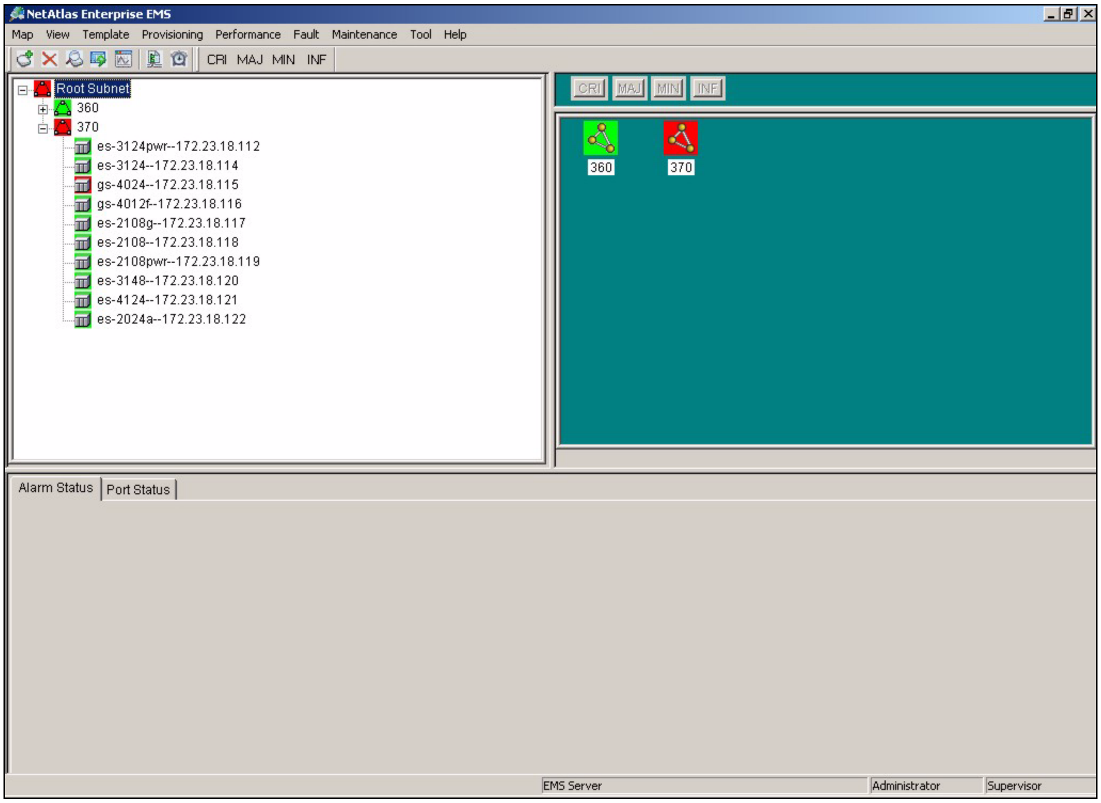
LABEL	DESCRIPTION
Client Sends SNMP Operation via Server	Select this option to set the EMS remote client computer(s) to send SNMP messages to managed ZyXEL devices through the EMS server. Select this option if the remote client computer(s) is not in the same subnet as the managed devices.
Client Sends SNMP Operation itself	Select this option to allow the EMS remote client computer(s) to send SNMP messages directly to managed ZyXEL devices. Select this option if the remote client computer(s) is in the same subnet as the managed devices.
OK	Click **OK** to save changes to the EMS.
Cancel	Click **Cancel** to discard the change and close the screen.

2.5 Accessing the Switch Manager Screen

To display the EMS main screen, click on the device icon in the main screen.

The EMS polls for all the available switches. Select a device icon to display a graphic of the switch in the Device Panel. You can only display one switch in the Device Panel at one time.

Figure 12 Switch Manager: Main Screen


NetAtlas Enterprise EMS
Map View Template Provisioning Performance Fault Maintenance Tool Help
CRI MAJ MIN INF
Root Subnet
360
370
es-3124pwr--172.23.18.112
es-3124--172.23.18.114
gs-4024--172.23.18.115
gs-4012f--172.23.18.116
es-2108g--172.23.18.117
es-2108--172.23.18.118
es-2108pwr--172.23.18.119
es-3148--172.23.18.120
es-4124--172.23.18.121
es-2024a--172.23.18.122
CRI MAJ MIN INF
360
370
Alarm Status
Port Status
EMS Server
Administrator
Supervisor

PART II

Switch Manager

- Switch Manager (43)
- Map (53)
- View (57)
- Template (77)
- Provisioning (85)
- Performance (89)
- Fault (101)
- Maintenance (107)
- Tools (119)

3

Switch Manager

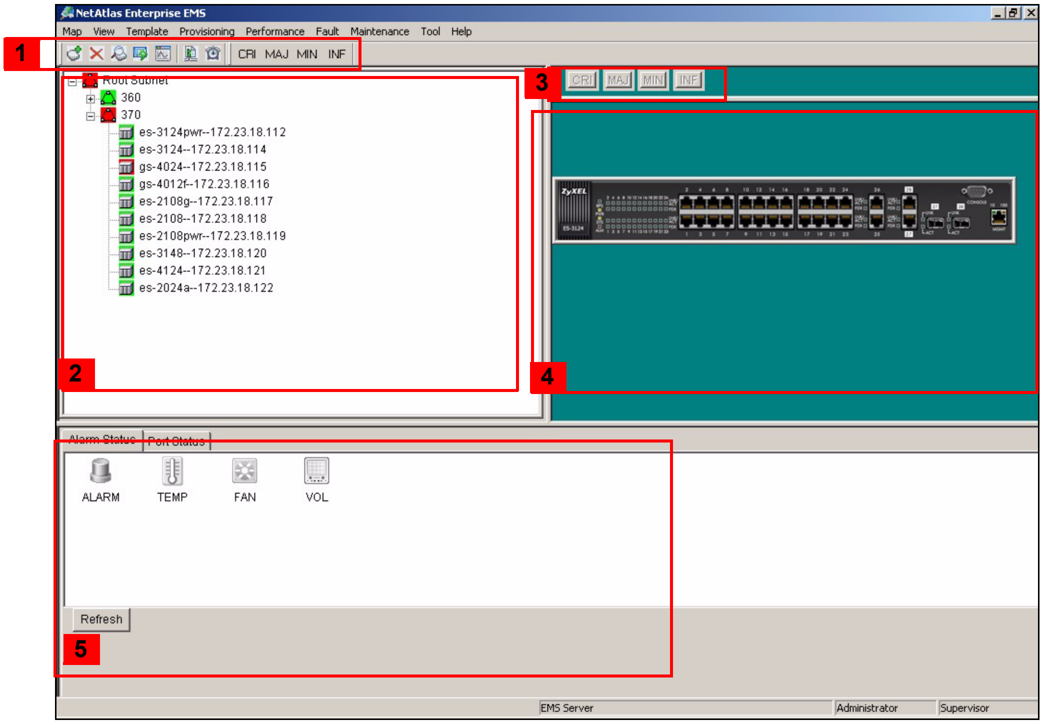
This chapter describes the Switch Manager screens and shows you some basic features.

3.1 Switch Manager Overview

To display the **Switch Manager** screen, double-click the **Switch Manager** icon in the main **NetAtlas Enterprise EMS** screen.

The EMS main screen varies depending on the selected switch model.

Figure 13 EMS Main Screen Overview


NetAtlas Enterprise EMS
Map View Template Provisioning Performance Fault Maintenance Tool Help
1
CRI MAJ MIN INF
Root Subnet
360
370
es-3124pwr--172.23.18.112
es-3124--172.23.18.114
gs-4024--172.23.18.115
gs-4012f--172.23.18.116
es-2108g--172.23.18.117
es-2108--172.23.18.118
es-2108pwr--172.23.18.119
es-3148--172.23.18.120
es-4124--172.23.18.121
es-2024a--172.23.18.122
2
3
CRI MAJ MIN INF
4
Alarm Status
Port Status
ALARM
TEMP
FAN
VOL
Refresh
5
EMS Server
Administrator
Supervisor

The following table describes the elements in the EMS screen.

Table 8 EMS Main Screen Overview

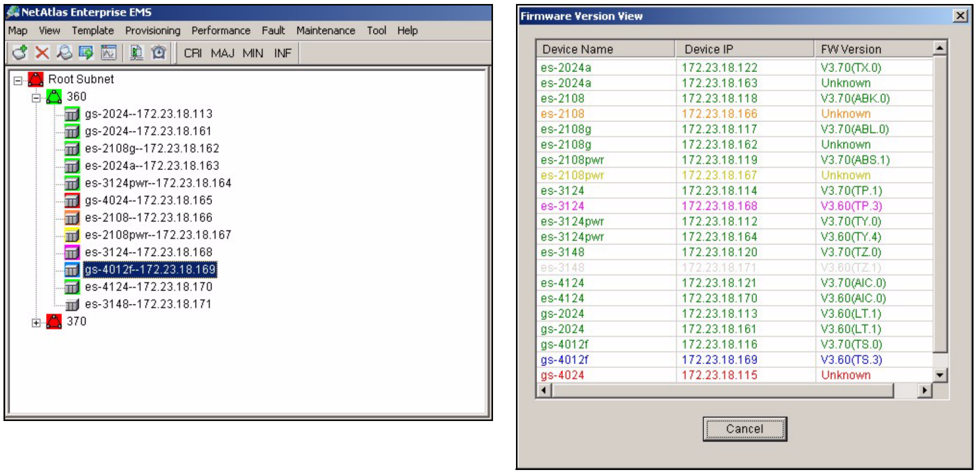
	ELEMENT	FUNCTION
1	Menu Shortcut Bar	Use these buttons to execute common commands quickly. Hold the cursor over an icon to see a tool tip. The **CRI**, **MAJ**, **MIN** and **INF** buttons are colored if a related event log has not been acknowledged yet. The event status is updated every 30 seconds.
2	Device List Panel	View devices in a tree structure. The colors of the device icons indicate the status of the devices. Refer to the document that comes with SNMPc for more information. Click on a device to retrieve updated information from the device. Double-click on a device to update device information to the EMS database.
3	Alarm Severity Icons	These icons indicate the presence of any alarm/event logs. Click on an active icon to view the **Event Log** screen.
4	Device Panel	This is a graphical device display. Double-click on a switch to display the EMS GUI management window for the switch.
5	System Message Panel	View the alarm status[A] and port status of the selected switch.

A. Not available on all models at the time of writing.

3.2 Device List and Icon Colors

In the Device List and Device panels, the colors of the device indicate the status of the represented devices stored in the database. The colors and the event status correspond to the settings in SNMPc. To update the device status, double-click on a device icon.

Figure 14 Device List and Icon Colors: Example



- Root Subnet
  - 360
    - gs-2024--172.23.18.113
    - gs-2024--172.23.18.161
    - es-2108g--172.23.18.162
    - es-2024a--172.23.18.163
    - es-3124pwr--172.23.18.164
    - gs-4024--172.23.18.165
    - es-2108--172.23.18.166
    - es-2108pwr--172.23.18.167
    - es-3124--172.23.18.168
    - gs-4012f--172.23.18.169
    - es-4124--172.23.18.170
    - es-3148--172.23.18.171
  - 370

Device Name	Device IP	FW Version
es-2024a	172.23.18.122	V3.70(TX.0)
es-2024a	172.23.18.163	Unknown
es-2108	172.23.18.118	V3.70(ABK.0)
es-2108	172.23.18.166	Unknown
es-2108g	172.23.18.117	V3.70(ABL.0)
es-2108g	172.23.18.162	Unknown
es-2108pwr	172.23.18.119	V3.70(ABS.1)
es-2108pwr	172.23.18.167	Unknown
es-3124	172.23.18.114	V3.70(TP.1)
es-3124	172.23.18.168	V3.60(TP.3)
es-3124pwr	172.23.18.112	V3.70(TY.0)
es-3124pwr	172.23.18.164	V3.60(TY.4)
es-3148	172.23.18.120	V3.70(TZ.0)
es-3148	172.23.18.171	V3.60(TZ.1)
es-4124	172.23.18.121	V3.70(AIC.0)
es-4124	172.23.18.170	V3.60(AIC.0)
gs-2024	172.23.18.113	V3.60(LT.1)
gs-2024	172.23.18.161	V3.60(LT.1)
gs-4012f	172.23.18.116	V3.70(TS.0)
gs-4012f	172.23.18.169	V3.60(TS.3)
gs-4024	172.23.18.115	Unknown

3.3 System Message Panel Alarm Status

The colors of the alarm icons (in the System Message Panel) indicate the real-time status of the current selected device. The following table describes the alarm states used.

Table 9 System Message Panel Alarm Status

PANEL ALARMS	ALARM OFF	ALARM ON
ALARM	When this icon is grayed out, the device fan, temperature or voltage alarm is off.	The fan, temperature and voltage alarms are all on. A serious hardware problem exists.
FAN	When this icon is grayed out, the device fans are functioning properly.	One or more of the device fans has a problem.
TEMP	When this icon is grayed out, temperatures at all sensor points in the switch are within the threshold temperature range.	The temperature at a sensor point in the switch has risen above or below the threshold temperature range.
VOL	When this icon is grayed out, the power supply at all sensor points in the switch is within the tolerance range.	The power supply at a sensor point in the switch has fallen out of the tolerance range.

If an alarm turns on, click the **Port Status** tab in the System Message Panel or proceed to Section 5.1 on page 57 for hardware troubleshooting.

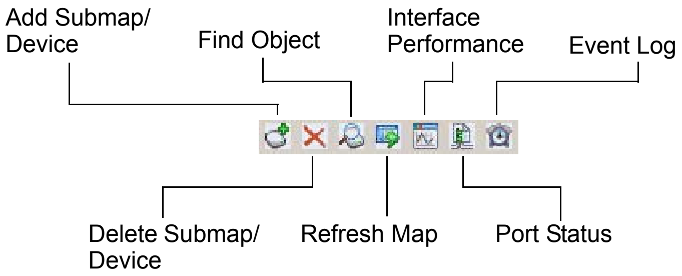
3.4 System Message Panel Port Status

Proceed to Section 5.4 on page 62 for information on the details displayed in this screen.

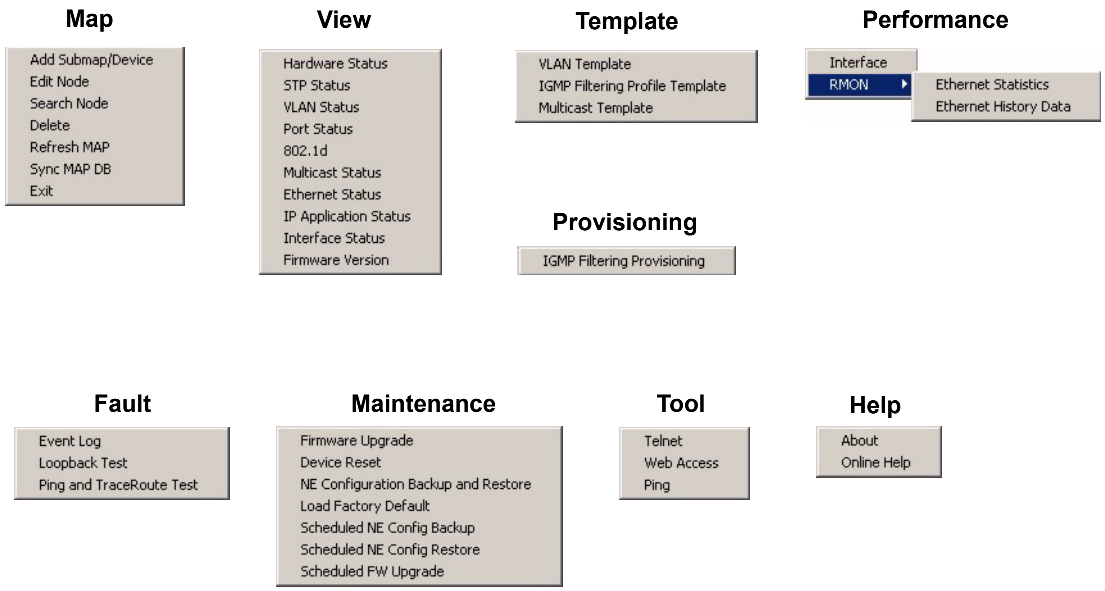
3.5 Menu Shortcut Buttons

The following is a brief overview of the menu shortcut buttons.

Figure 15 EMS Main Screen Shortcut Bar



3.6 EMS Main Menu Summary


Map
Add Submap/Device
Edit Node
Search Node
Delete
Refresh MAP
Sync MAP DB
Exit
View
Hardware Status
STP Status
VLAN Status
Port Status
802.1d
Multicast Status
Ethernet Status
IP Application Status
Interface Status
Firmware Version
Template
VLAN Template
IGMP Filtering Profile Template
Multicast Template
Performance
Interface
RMON
Ethernet Statistics
Ethernet History Data
Provisioning
IGMP Filtering Provisioning
Fault
Event Log
Loopback Test
Ping and TraceRoute Test
Maintenance
Firmware Upgrade
Device Reset
NE Configuration Backup and Restore
Load Factory Default
Scheduled NE Config Backup
Scheduled NE Config Restore
Scheduled FW Upgrade
Tool
Telnet
Web Access
Ping
Help
About
Online Help

The following table summarizes the sub-links in the navigation panel.

Screens, screen labels and fields vary depending on your switch model.

Table 10 EMS Navigation Panel Sub-link Descriptions

LABEL	DESCRIPTION
MAP	
Add Submap/Device	Select this to add a device or a submap folder to the EMS Device List Panel.
Edit Node	Select this to edit device or sub-map folder properties.
Search Node	Select this to search for a device or a submap folder.
Delete	Select this to delete a submap folder or devices within a folder.
Refresh Map	Select this to update the device status in the EMS device map.
Sync MAP DB	Select this to synchronize the submaps and switches in the EMS with the folders and switches in SNMPc Network Manager.
Exit	Select this to close the Switch Manager screen.
View	
Hardware Status	Select this to view the hardware status of a device.
STP Status	Select this to view the Spanning Tree Protocol (STP) status of a device.
VLAN Status	Select this to view the VLAN status of a device.
Port Status	Select this to view the port status of a device.

Table 10 EMS Navigation Panel Sub-link Descriptions (continued)

LABEL	DESCRIPTION
802.1d	Select this to view the MAC addresses (and types) of devices attached to what ports and VLAN IDs or view the MAC addresses – IP address resolution table.
Multicast Status	Select this to view the multicast traffic status of a device.
Ethernet Status	Select this view Ethernet port statistics.
IP Application Status	Select this to view IP routing domain status.
Interface Status	Select this to view IP routing interface status.
Firmware Version	Select this to view the firmware versions of the managed devices.
Template	
VLAN Template	Select this to configure a VLAN template for upload to multiple devices.
IGMP Filtering Profile Template	Select this to configure an IGMP filter template for upload to multiple devices.
Multicast Template	Select this to configure a multicast template for upload to multiple devices.
Provisioning	
IGMP Filtering Provisioning	Select this to apply IGMP filtering templates.
Performance	
Interface	Select this to configure interface performance graphs and tables.
RMON	Select this to view RMON Ethernet and history statistics.
Fault	
Event Log	Select this to configure an alarm filter.
Loopback Test	Select this to perform a loopback test.
Ping and Traceroute	Select this to test connections using a ping or traceroute test.
Maintenance	
Firmware Upgrade	Select this to perform a device firmware upgrade.
Device Reset	Select this to reboot a device.
NE Configuration Backup and Restore	Select this to back up or restore device configuration.
Load Factory Default	Select this to reset a device back to the factory default settings.
Scheduled NE Config Backup	Select this when you want to configure a schedule to back up a switch configuration file.
Scheduled NE Config Restore	Select this when you want to configure a schedule to restore a switch configuration file.
Scheduled FW Upgrade	Select this when you want to configure a schedule to perform firmware upgrade on a switch.
Tool	
Telnet	This link takes you to a screen where you can access a device Telnet service.
Web Access	This link takes you to a screen where you can access a device Web configurator.

Table 10 EMS Navigation Panel Sub-link Descriptions (continued)

LABEL	DESCRIPTION
Ping	This link takes you to a screen where you can ping a device directly through the EMS.
Help	
About	This link takes you to a screen where you can view the version number of the EMS.
On-line Help	This link opens the EMS user's guide in PDF format.

3.7 Common EMS Command Buttons

The following table shows common command buttons found on most EMS screens.

Table 11 Common EMS Command Buttons

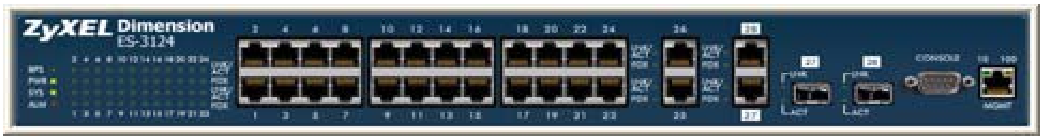
LABEL	DESCRIPTION
Apply	Click **Apply** to save the changes back to the switch.
OK	Click **OK** to save your changes and close the screen.
Cancel	Click **Cancel** to discard all changes and close the screen.
Close	Click **Close** to close the screen.

3.8 View the Switch

To display the selected switch, double-click the appropriate switch graphic in the Device List Panel or on the switch icon in the Device Panel. You can only display one switch in the device Panel window at a time. Refer to the appropriate chapters or sections for the descriptions of each menu screen.

The following figure shows an example.

Figure 16 Switch View

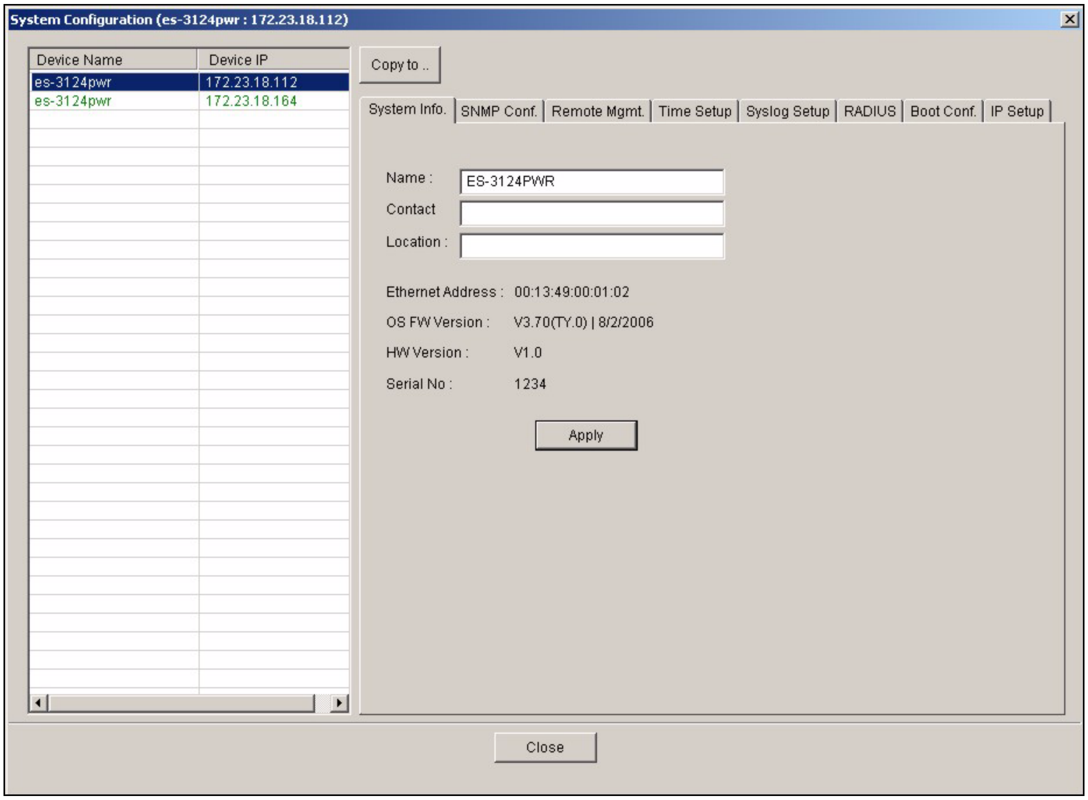


3.9 Switch Information

Follow the steps to display information on a switch.

1. Right-click on the switch icon in the Device List Panel.
2. Click **Configuration** > **System** > **System Info**. The switch information window displays as shown next.
3. Choose a switch from the list located on the left-hand side of the screen.

Figure 17 Configuration: System Configuration: System Info.



System Configuration (es-3124pwr : 172.23.18.112)

Device Name	Device IP
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164

Name : ES-3124PWR

Contact

Location :

Ethernet Address : 00:13:49:00:01:02

OS FW Version : V3.70(TY.0) | 8/2/2006

HW Version : V1.0

Serial No : 1234

The following table describes the labels in this screen.

Table 12 Configuration: Switch Configuration: System Info.

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Name	Enter a descriptive name for identification purposes. If you want to change the name, enter up to 32 printable characters; spaces are not allowed.
Contact	Enter the name (up to 32 characters) of the person in charge of the selected switch.
Location	Enter the geographic location (up to 32 characters) of the selected switch.
Ethernet Address	This field displays the switch Ethernet MAC address in six hexadecimal character pair format.
OS FW Version	This field displays the firmware version of the selected switch.
HW Version	This field displays the hardware version of the selected switch.
Serial No.	This field displays the unique device serial number.
Apply	Click **Apply** to save the changes back to the switch.
Close	Click **Close** to close the screen.

3.10 Configuration Save

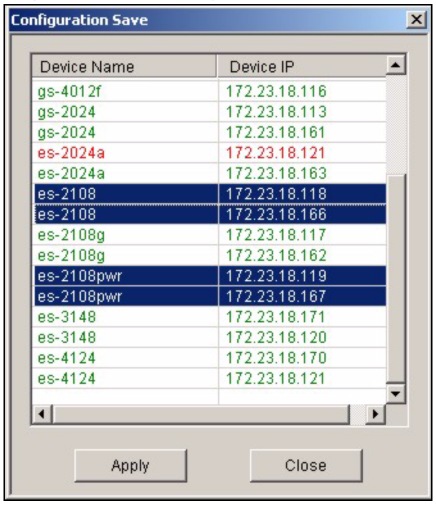
You must save the current configuration in the EMS to the selected switch(es) to make the changes take effect.

If an administrator is currently logged into the device via the console port or the CLI (Command Line Interface), you cannot save the device settings from the EMS. Do NOT turn off the switch during the updating process, as it may corrupt the firmware and make your switch unusable.

---

1. To save the current switch configuration, select and right-click on the switch icon in the Device List Panel.
2. Click **Configuration Save**.
3. Choose a switch from the list in the screen. You can select more than one switch by pressing [CTRL] and click at the same time. Note that switches that are online are displayed in green. Off line switches are displayed in red.

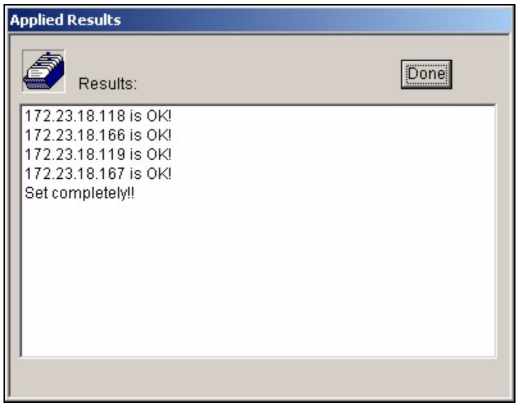
Figure 18 Configuration Save



Device Name	Device IP
gs-4012f	172.23.18.116
gs-2024	172.23.18.113
gs-2024	172.23.18.161
es-2024a	172.23.18.121
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3148	172.23.18.171
es-3148	172.23.18.120
es-4124	172.23.18.170
es-4124	172.23.18.121

4. Click **Apply** to save the current configuration. All settings configured on the EMS will be saved to the selected switch(es).
5. A screen displays showing the configuration save result. Click **Done** to close the screen.

Figure 19 Configuration Save: Result



Applied Results
Results:
Done

```
172.23.18.118 is OK!
172.23.18.166 is OK!
172.23.18.119 is OK!
172.23.18.167 is OK!
Set completely!!
```

4

Map

This chapter describes the Map screens you use to add, edit or delete device mappings in the EMS.

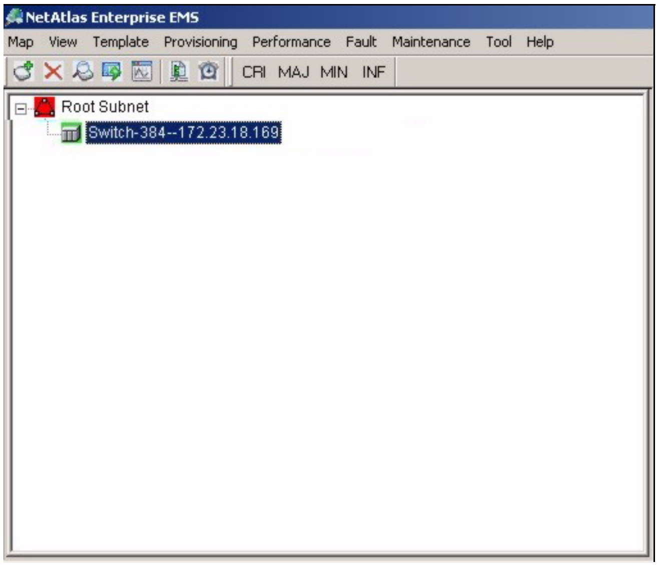
4.1 Root Subnet and Device Mapping

The EMS mapping displays logical hierarchy for the ZyXEL switch(es) in the EMS. When started, the EMS automatically synchronizes device map information with SNMPc and creates the Root Subnet and the icons for your ZyXEL switch(es) in the Device List Panel.

You can add device or submaps in EMS or SNMPc.

The following figure shows the "Root Subnet" folder. The managed devices are mapped to the "Root Subnet" folder.

Figure 20 Submaps and Device Mapping


NetAtlas Enterprise EMS
Map View Template Provisioning Performance Fault Maintenance Tool Help
CRI MAJ MIN INF
Root Subnet
Switch-384--172.23.18.169

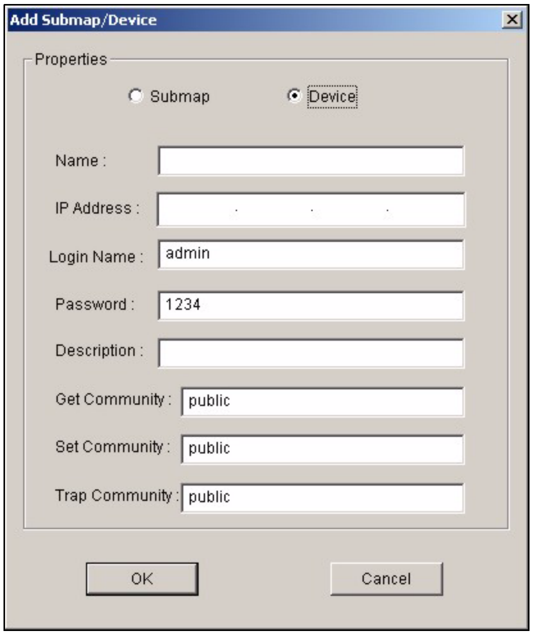
You cannot create, edit or delete the Root Subnet.

4.1.1 Adding a Submap or Device

To add a new submap or a new device, select the Root Subnet or a submap icon in the Device List Panel.

Click **Map** > **Add Submap/Device** to display the following screen.

Figure 21 Map: Add Submap/Device



○ Submap ● Device

Name :
IP Address : . . .
Login Name : admin
Password : 1234
Description :
Get Community : public
Set Community : public
Trap Community : public

The following table describes the labels in this screen.

Table 13 Map: Add Submap/Device

LABEL	DESCRIPTION
Properties	These options are not applicable when you edit the properties of an existing submap or device. Select the **Submap** or **Device** radio button to add a new submap or device icon to the Device List Panel. If you select **Submap,** only the **Name** and **Description** fields display are applicable; all other fields appear as read-only.
Name	Enter a descriptive name (up to 30 characters) for identification purposes.
IP Address	This field is not applicable when you select **Submap**. Enter the IP address of the device.
Login Name	Enter the administrator account user name to log into the switch.
Password	Enter the administrative password (up to 30 characters) you use to log in to the switch. This password is used by the EMS administrator for device firmware upload.
Description	Enter a description (up to 30 characters) about the device.
Get Community	Enter the get community, which is the password for the incoming Get- and GetNext- requests from the management station.
Set Community	Enter the set community, which is the password for incoming Set- requests from the management station.
Trap Community	Enter the trap community, which is the password sent with each trap to the SNMP manager.

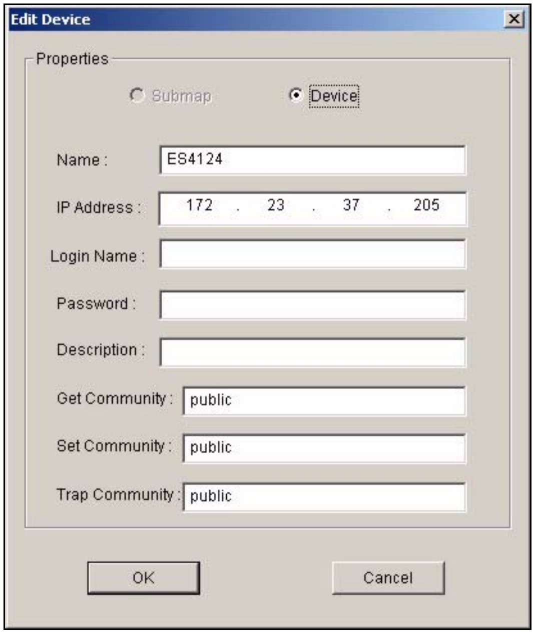
Table 13 Map: Add Submap/Device (continued)

LABEL	DESCRIPTION
OK	Click **OK** to save the changes and close the screen.
Cancel	Click **Cancel** to discard the changes and close the screen.

4.1.2 Editing a Node

Select a device or submap icon in the Device List Panel and then click **Map** > **Edit Node**.

Figure 22 Map: Edit Node



● Device

Name : ES4124

IP Address : 172 . 23 . 37 . 205

Login Name :

Password :

Description :

Get Community : public

Set Community : public

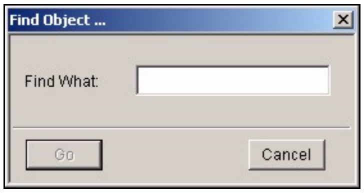
Trap Community : public

Refer to Table 13 on page 54 for the field descriptions.

4.1.3 Finding an Object

To find or locate a device (or node), click **Map** > **Find Object**.

Figure 23 Map: Find Object

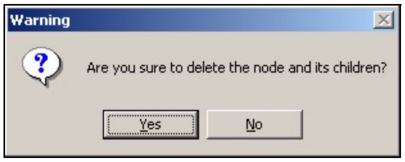


Enter a descriptive text (for example, the node name) in the **Find What** field and click **OK** to start the search.

4.1.4 Deleting a Submap

To delete a submap, select the submap icon in the Device List Panel and click **Map** > **Delete**.

Figure 24 Map: Delete Warning



Are you sure to delete the node and its children?

If you delete a submap, all devices under a submap will be removed.

4.1.5 Deleting a Device

To remove a device from the Device List Panel, select the device icon and click **Map** > **Delete**.

4.1.6 Updating Device Map

Click **Map > Refresh Map** to update information in the device panel from the EMS database.

4.1.7 Synchronizing Device Map Database

Click **Map > Synch MAP DB** to synchronize the device map information in EMS with the device map information in SNMPc database.

4.2 Exit

Click **Map** > **Exit** to close the Switch Manager screen.

5

View

This chapter describes the various **View** screens.

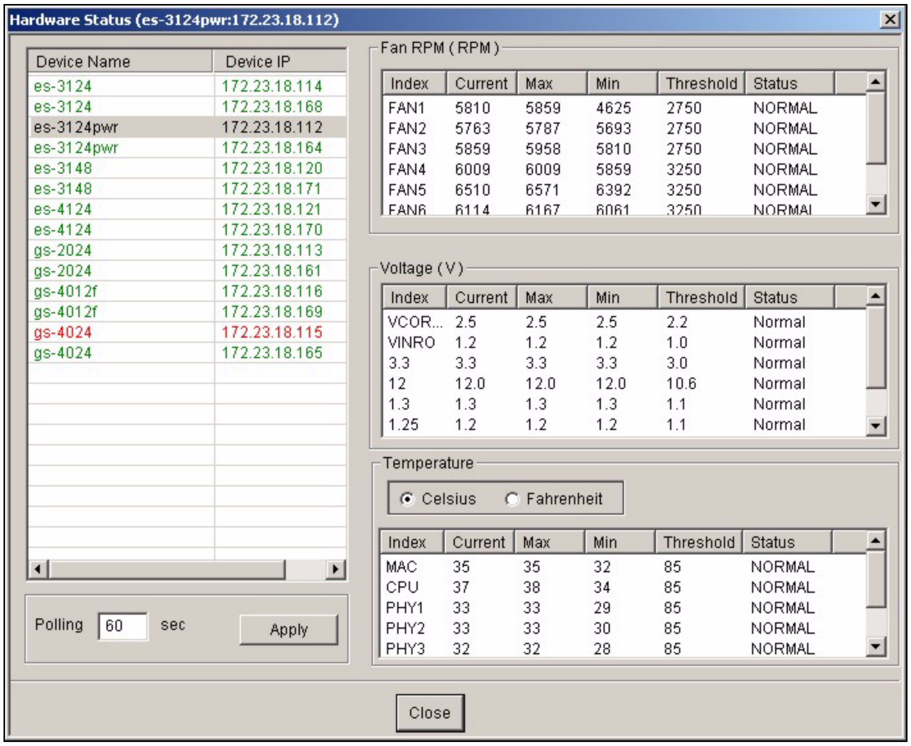
5.1 Hardware Status

View fan speeds, voltage levels and temperatures of a selected switch in the **Hardware Monitor** screen.

Click **View** > **Hardware Status** and select a switch from the device list located on the left-hand side of the screen. The device hardware status displays.

It may take a few seconds to update the screen.

Figure 25 View: Hardware Status



Hardware Status (es-3124pwr:172.23.18.112)

Device Name	Device IP
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Polling 60 sec

Fan RPM (RPM)

Index	Current	Max	Min	Threshold	Status
FAN1	5810	5859	4625	2750	NORMAL
FAN2	5763	5787	5693	2750	NORMAL
FAN3	5859	5958	5810	2750	NORMAL
FAN4	6009	6009	5859	3250	NORMAL
FAN5	6510	6571	6392	3250	NORMAL
FAN6	6114	6167	6061	3250	NORMAL

Voltage (V)

Index	Current	Max	Min	Threshold	Status
VCOR...	2.5	2.5	2.5	2.2	Normal
VINRO	1.2	1.2	1.2	1.0	Normal
3.3	3.3	3.3	3.3	3.0	Normal
12	12.0	12.0	12.0	10.6	Normal
1.3	1.3	1.3	1.3	1.1	Normal
1.25	1.2	1.2	1.2	1.1	Normal

Temperature

● Celsius ○ Fahrenheit

Index	Current	Max	Min	Threshold	Status
MAC	35	35	32	85	NORMAL
CPU	37	38	34	85	NORMAL
PHY1	33	33	29	85	NORMAL
PHY2	33	33	30	85	NORMAL
PHY3	32	32	28	85	NORMAL

The following table describes the labels in this screen.

Table 14 Status: Hardware Status

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Fan RPM (RPM)	A properly functioning fan is an essential component (along with a sufficiently ventilated, cool operating environment) in order for the device to stay within the temperature threshold. Each fan has a sensor that is capable of detecting and reporting if the fan speed falls below the threshold shown.
Index	This field displays the fan number.
Current	This field displays this fan’s current speed in Revolutions Per Minute (RPM).
Max	This field displays this fan’s maximum speed recorded in Revolutions Per Minute (RPM).
Min	This field displays this fan’s minimum speed recorded in Revolutions Per Minute (RPM).
Threshold	This field displays the minimum speed at which a normal fan should work.
Status	**NORMAL** indicates that this fan is functioning above the minimum speed. **ERROR** indicates that this fan is functioning below the minimum speed.
Voltage (V)	The power supply for each voltage has a sensor that is capable of detecting and reporting if the voltage falls out of the tolerance range.
Index	This field displays the first voltage sensor number.
Current	This is the current voltage reading in volts.
Max	This field displays the maximum voltage recorded at this sensor in volts.
Min	This field displays the minimum voltage recorded at this sensor in volts.
Threshold	This field displays the minimum voltage percentage at which the switch should work.
Status	**NORMAL** indicates that the voltage is within an acceptable operating range at this point; otherwise **ERROR** is displayed. **ABSENT** indicates that there is no power reading at a sensor(s).
Temperature	The switch has temperature sensors that are capable of detecting and reporting if the temperature rises above the threshold. You may choose the temperature unit (in degrees Celsius or Fahrenheit).
Celsius	Select this option to display the temperature in degrees Centigrade.
Fahrenheit	Select this option to display the temperature in degrees Fahrenheit.
Index	This field displays the temperature sensor number.
Current	This shows the current temperature at this sensor.
Max	This field displays the maximum temperature recorded at this sensor.
Min	This field displays the minimum temperature recorded at this sensor.
Threshold	This field displays the upper temperature limit at this sensor.
Status	This field displays **NORMAL** for temperatures below the threshold and **ERROR** for those above.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.2 STP/RSTP

(R)STP detects and breaks network loops and provides backup links between switches, bridges or routers. It allows a switch to interact with other (R)STP -compliant switches in your network to ensure that only one path exists between any two stations on the network.

In this user's guide, "STP" refers to both STP and RSTP.

5.2.1 STP Terminology

The root bridge is the base of the spanning tree; it is the bridge with the lowest identifier value (MAC address).

Path cost is the cost of transmitting a frame onto a LAN through that port. It is assigned according to the speed of the link to which a port is attached. The slower the media, the higher the cost - see the next table.

Table 15 STP Path Costs

LINK SPEED	RECOMMENDED VALUE	RECOMMENDED RANGE	ALLOWED RANGE
4Mbps	250	100 to 1000	1 to 65535
10Mbps	100	50 to 600	1 to 65535
16Mbps	62	40 to 400	1 to 65535
100Mbps	19	10 to 60	1 to 65535
1Gbps	4	3 to 10	1 to 65535
10Gbps	2	1 to 5	1to 65535

On each bridge, the root port is the port through which this bridge communicates with the root. It is the port on this switch with the lowest path cost to the root (the root path cost). If there is no root port, then this switch has been accepted as the root bridge of the spanning tree network.

For each LAN segment, a designated bridge is selected. This bridge has the lowest cost to the root among the bridges connected to the LAN.

5.2.2 STP Port States

STP assigns five port states (see next table) to eliminate packet looping. A bridge port is not allowed to go directly from blocking state to forwarding state so as to eliminate transient loops.

Table 16 STP Port States

PORT STATE	DESCRIPTION
Disabled	STP is disabled (default).
Blocking	Only configuration and management BPDUs are received and processed.
Listening	All BPDUs are received and processed.

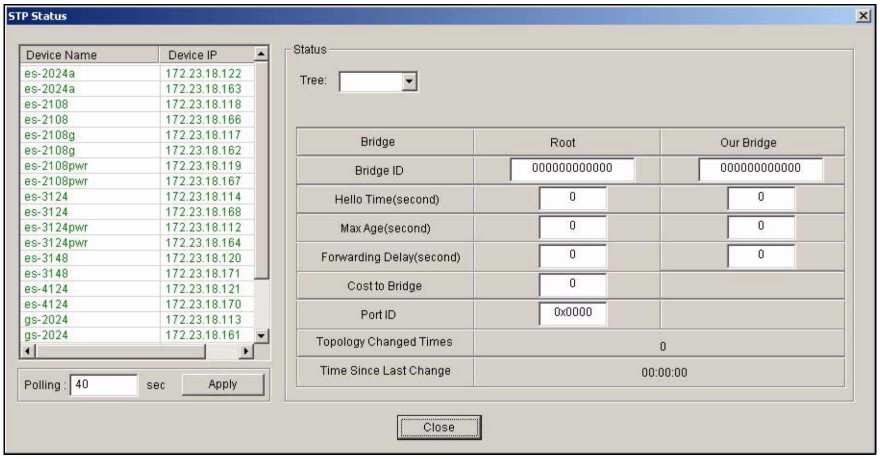
Table 16 STP Port States

PORT STATE	DESCRIPTION
Learning	All BPDUs are received and processed. Information frames are submitted to the learning process but not forwarded.
Forwarding	All BPDUs are received and processed. All information frames are received and forwarded.

5.2.3 STP Status

View current STP information in the **STP Status** screen. Click **Status** > **STP Status** and select a switch from the device list located on the left-hand side of the screen. The STP status displays in the table on the right.

Figure 26 View: STP Status



STP Status

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161

Polling : 40 sec

Status

Tree:

Bridge	Root	Our Bridge
Bridge ID	000000000000	000000000000
Hello Time(second)	0	0
Max Age(second)	0	0
Forwarding Delay(second)	0	0
Cost to Bridge	0	
Port ID	0x0000	
Topology Changed Times	0	
Time Since Last Change	00:00:00	

The following table describes the labels in this screen.

Table 17 View: STP Status

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Tree	Select the index number of the spanning tree whose status you want to display.
Bridge	**Root** refers to the base of the spanning tree (the root bridge).
Bridge ID	This is the unique identifier for this bridge, consisting of bridge priority plus MAC address.
Hello Time (second)	This is the time interval (in seconds) at which the root device transmits a configuration message. The root bridge determines Hello Time, Max Age and Forwarding Delay
Max Age (second)	This is the maximum time (in seconds) a switch can wait without receiving a configuration message before attempting to reconfigure.
Forwarding Delay (second)	This is the time (in seconds) the root switch will wait before changing states (that is, listening to learning to forwarding).
Cost to Bridge	This is the path cost from the root port on this switch to the root switch.
Port ID	This is the priority and number of the port on the switch through which this switch must communicate with the root of the spanning tree.

Table 17 View: STP Status (continued)

LABEL	DESCRIPTION
Topology Changed Times	This is the number of times the spanning tree has been reconfigured.
Time Since Last Change	This is the time since the spanning tree was last reconfigured.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.3 VLAN Status

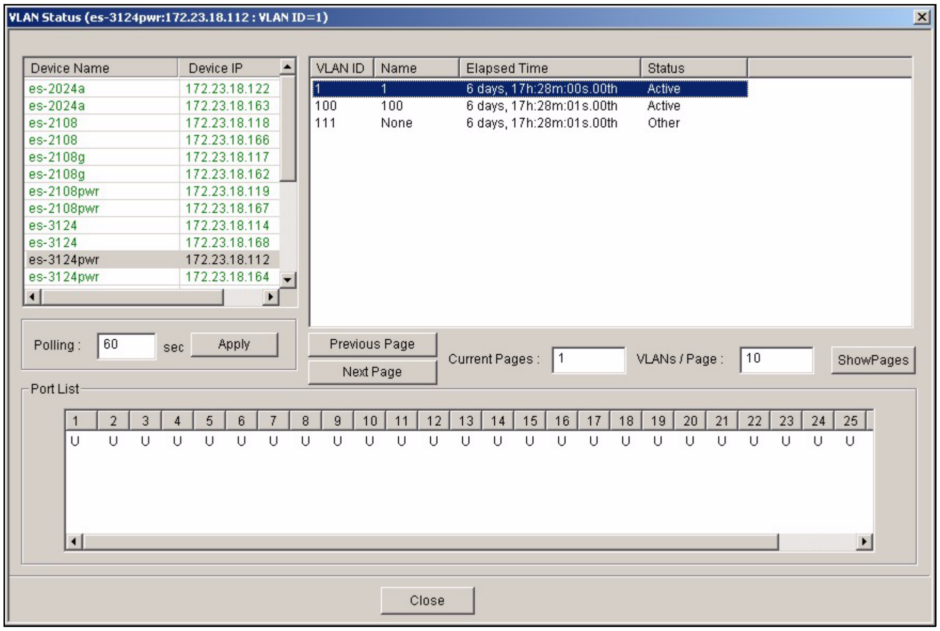
Follow the steps below to view the VLAN status of a switch.

The VLAN Status screen only displays static IEEE 802.1q VLAN information.

1 Click **View** > **VLAN Status**.

2 Choose a switch from the list located on the left-hand side of the screen.

Figure 27 View: VLAN Status



VLAN Status (es-3124pwr:172.23.18.112 : VLAN ID=1)

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164

VLAN ID	Name	Elapsed Time	Status
1	1	6 days, 17h:28m:00s.00th	Active
100	100	6 days, 17h:28m:01s.00th	Active
111	None	6 days, 17h:28m:01s.00th	Other

Polling : 60 sec

Current Pages : 1

VLANs / Page : 10

Port List

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

The following table describes the labels in this screen.

Table 18 View: VLAN Status

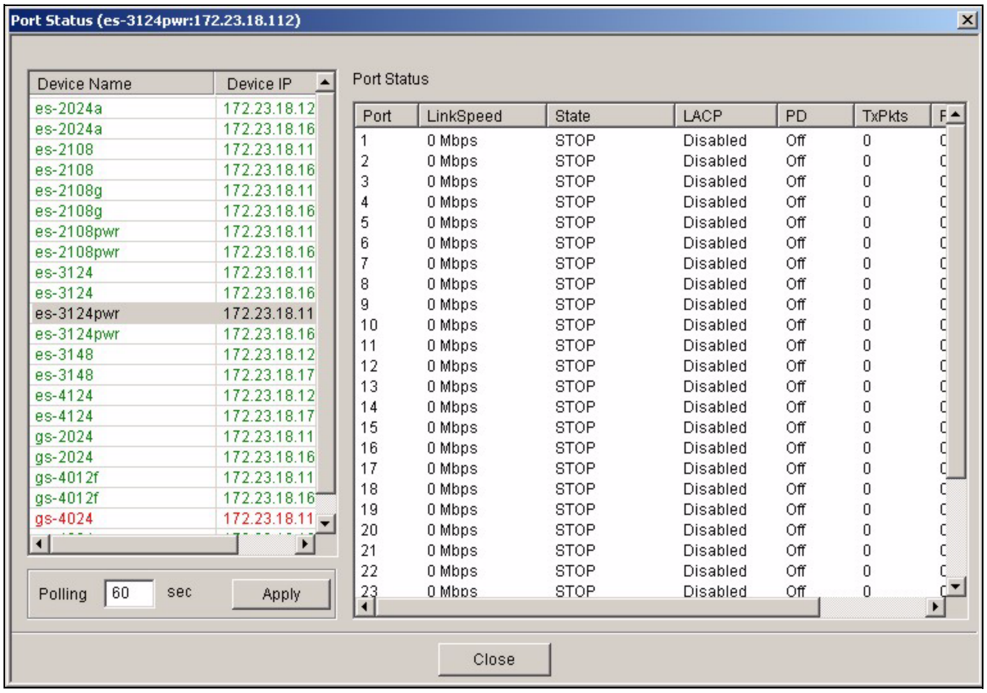
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
VLAN ID	This field displays the identification number of the VLAN.
Name	This field displays a unique number for identification purposes.
Elapsed Time	This field displays the time since the VLAN was created.
Status	This field displays **Static** if the VLAN is active and will remain so after the next reset of the device. This field displays **GVRP** if the VLAN is active and will remain so until removed by GVRP. This field is **Other** if the VLAN is active, but is not permanent or created by GVRP.
Previous Page	Click Previous Page to display the previous VLAN ID screen.
Next Page	Click Next Page to display the next VLAN ID screen.
Current Page	This field displays the current page number. Enter a number and click **Show Page** to display that page.
VLANs/Page	This field displays the number of VLAN entries to display in one page. Enter a number (1-99) and click **Show Page** to display that number of VLAN entries in a page.
Port List	This table displays port VLAN settings. A tagged port is marked **T**, an untagged port is marked **U** and a port not participating in a VLAN is marked **-**.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.4 Port Status

Follow the steps below to view the port status of a switch.

1. Click **View** > **Port Status**.
2. To view the port status of a switch choose a switch from the list located on the left-hand side of the screen.

Figure 28 View: Port Status



Device Name	Device IP
es-2024a	172.23.18.12
es-2024a	172.23.18.16
es-2108	172.23.18.11
es-2108	172.23.18.16
es-2108g	172.23.18.11
es-2108g	172.23.18.16
es-2108pwr	172.23.18.11
es-2108pwr	172.23.18.16
es-3124	172.23.18.11
es-3124	172.23.18.16
es-3124pwr	172.23.18.11
es-3124pwr	172.23.18.16
es-3148	172.23.18.12
es-3148	172.23.18.17
es-4124	172.23.18.12
es-4124	172.23.18.17
gs-2024	172.23.18.11
gs-2024	172.23.18.16
gs-4012f	172.23.18.11
gs-4012f	172.23.18.16
gs-4024	172.23.18.11

Port	LinkSpeed	State	LACP	PD	TxPkts
1	0 Mbps	STOP	Disabled	Off	0
2	0 Mbps	STOP	Disabled	Off	0
3	0 Mbps	STOP	Disabled	Off	0
4	0 Mbps	STOP	Disabled	Off	0
5	0 Mbps	STOP	Disabled	Off	0
6	0 Mbps	STOP	Disabled	Off	0
7	0 Mbps	STOP	Disabled	Off	0
8	0 Mbps	STOP	Disabled	Off	0
9	0 Mbps	STOP	Disabled	Off	0
10	0 Mbps	STOP	Disabled	Off	0
11	0 Mbps	STOP	Disabled	Off	0
12	0 Mbps	STOP	Disabled	Off	0
13	0 Mbps	STOP	Disabled	Off	0
14	0 Mbps	STOP	Disabled	Off	0
15	0 Mbps	STOP	Disabled	Off	0
16	0 Mbps	STOP	Disabled	Off	0
17	0 Mbps	STOP	Disabled	Off	0
18	0 Mbps	STOP	Disabled	Off	0
19	0 Mbps	STOP	Disabled	Off	0
20	0 Mbps	STOP	Disabled	Off	0
21	0 Mbps	STOP	Disabled	Off	0
22	0 Mbps	STOP	Disabled	Off	0
23	0 Mbps	STOP	Disabled	Off	0

The following table describes the labels in this screen.

Table 19 View: Port Status

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Port	This identifies the Ethernet port.
Link Speed	This field displays the speed (either 10M for 10Mbps, 100M for 100Mbps or 1000M for 1000Mbps).
State	This field displays the STP state of the port. See the Spanning Tree Protocol chapter for details on STP port states.
LACP	This field displays whether LACP is activated.
PD	This field displays the power device (PD) module status on the switch. If **N/A** is displayed, the switch does not include a PD module. This field displays **On** if the switch has a PD and it is in use. This field displays **Off** if the switch has a PD, but it is not in use.
TxPkts	This field shows the number of transmitted frames on this port.
RxPkts	This field shows the number of received frames on this port.
Errors	This field shows the number of received errors on this port.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.5 802.1D

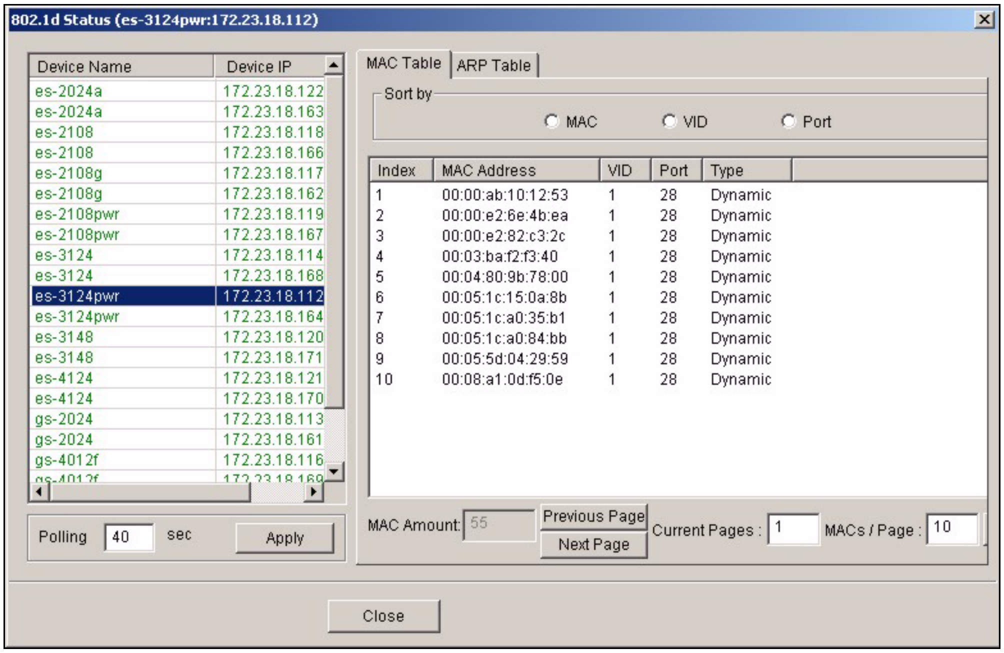
Use the **802.1D** screens to view a table of MAC address entries or to view a table of IP address mappings.

5.5.1 MAC Table

Follow the steps below to view the MAC table.

1. Click **View** > **802.1d**.
2. To view the MAC table of a switch choose a switch from the list located on the left-hand side of the screen.
3. Click the **MAC Table** tab.

Figure 29 View: 802.1d: MAC Table



802.1d Status (es-3124pwr:172.23.18.112)

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116

Polling 40 sec

Sort by: ○ MAC ○ VID ○ Port

Index	MAC Address	VID	Port	Type
1	00:00:ab:10:12:53	1	28	Dynamic
2	00:00:e2:6e:4b:ea	1	28	Dynamic
3	00:00:e2:82:c3:2c	1	28	Dynamic
4	00:03:ba:f2:f3:40	1	28	Dynamic
5	00:04:80:9b:78:00	1	28	Dynamic
6	00:05:1c:15:0a:8b	1	28	Dynamic
7	00:05:1c:a0:35:b1	1	28	Dynamic
8	00:05:1c:a0:84:bb	1	28	Dynamic
9	00:05:5d:04:29:59	1	28	Dynamic
10	00:08:a1:0d:f5:0e	1	28	Dynamic

MAC Amount: 55

Current Pages : 1

MACs / Page : 10

The following table describes the labels in this screen.

Table 20 View: 802.1d: MAC Table

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Sort by	Click one of the following buttons to display and arrange the data according to that button type. The information is then displayed in the summary table below.
MAC	Click this button to display and arrange the data according to MAC address.
VID	Click this button to display and arrange the data according to VLAN group.
Port	Click this button to display and arrange the data according to port number.
Index	This is the incoming frame index number.
MAC Address	This is the MAC address of the device from which this incoming frame came.
VID	This is the VLAN group to which this MAC address belongs.

Table 20 View: 802.1d: MAC Table (continued)

LABEL	DESCRIPTION
Port	This is the port from which the above MAC address was learned.
Type	This shows whether the MAC address is dynamic (learned by the switch) or static (manually entered in the **Static MAC Forwarding** screen).
MAC Amount	This field displays the number of MAC address entries in the MAC table.
Previous Page	Click Previous Page to display the previous screen.
Next Page	Click Next Page to display the next screen.
Current Page	This field displays the current page number. Enter a number and click **Show Page** to display that page.
MACs/Page	This field displays the number of MAC address entries to display in one page. Enter a number (1-99) and click **Show Page** to display that number of MAC address entries in a page.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.5.2 ARP Table

Address Resolution Protocol (ARP) is a protocol for mapping an Internet Protocol address (IP address) to a physical machine address, also known as a Media Access Control or MAC address, on the local area network.

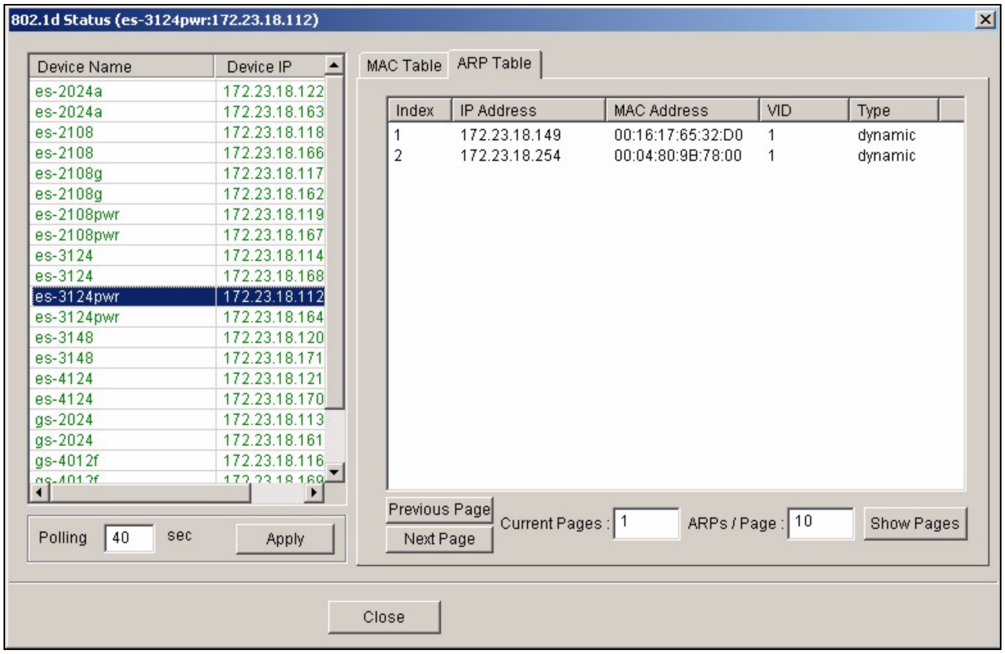
Follow the steps below to view the ARP table.

1 Click **View** > **802.1d**.

2 To view the ARP table of a switch choose a switch from the list located on the left-hand side of the screen.

3 Click the **ARP Table** tab.

Figure 30 View: 802.1d: ARP Table



802.1d Status (es-3124pwr:172.23.18.112)

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116

Polling 40 sec

Index	IP Address	MAC Address	VID	Type
1	172.23.18.149	00:16:17:65:32:D0	1	dynamic
2	172.23.18.254	00:04:80:9B:78:00	1	dynamic

Current Pages : 1

ARPs / Page : 10

The following table describes the labels in this screen.

Table 21 View: 802.1d: ARP Table

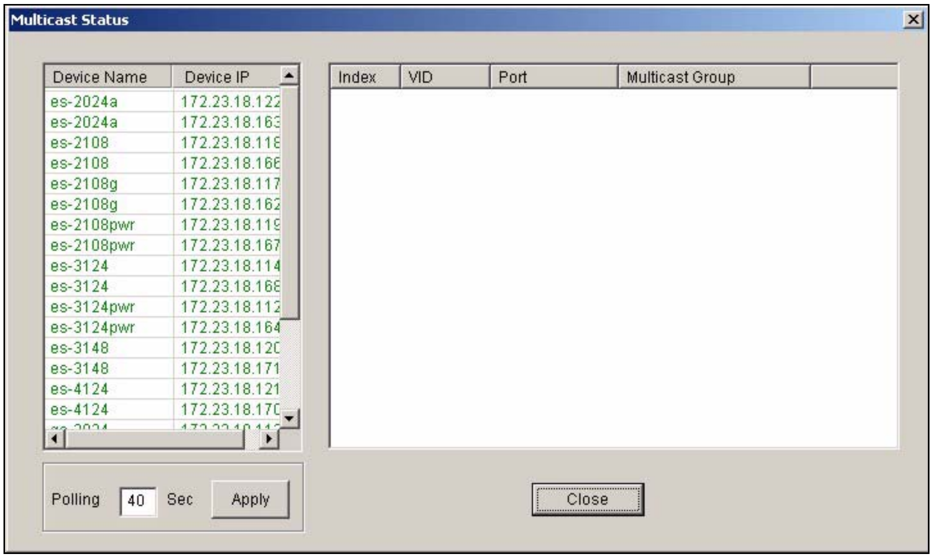
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This is the ARP table entry number.
IP Address	This is the learned IP address of a device connected to a switch port with corresponding MAC address below.
MAC Address	This is the MAC address of the device with corresponding IP address above.
VID	This is the VLAN group to which this ARP entry belongs.
Type	This shows whether the MAC address is dynamic (learned by the switch) or static (manually entered in the **Static MAC Forwarding** screen).
Previous Page	Click Previous Page to display the previous screen.
Next Page	Click Next Page to display the next screen.
Current Page	This field displays the current page number. Enter a number and click **Show Page** to display that page.
ARPs/Page	This field displays the number of ARP entries to display in one page. Enter a number (1-99) and click **Show Page** to display that number of ARP entries in a page.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.6 Multicast Status

View the IGMP multicast group membership information in the **Multicast Status** screen.

Click **View** > **Multicast Status** to display the screen as shown. Select a switch model in the device list to display the multicast group membership information.

Figure 31 View: Multicast Status



Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170

Polling 40 Sec

The following table describes the labels in this screen.

Table 22 View: Multicast Status

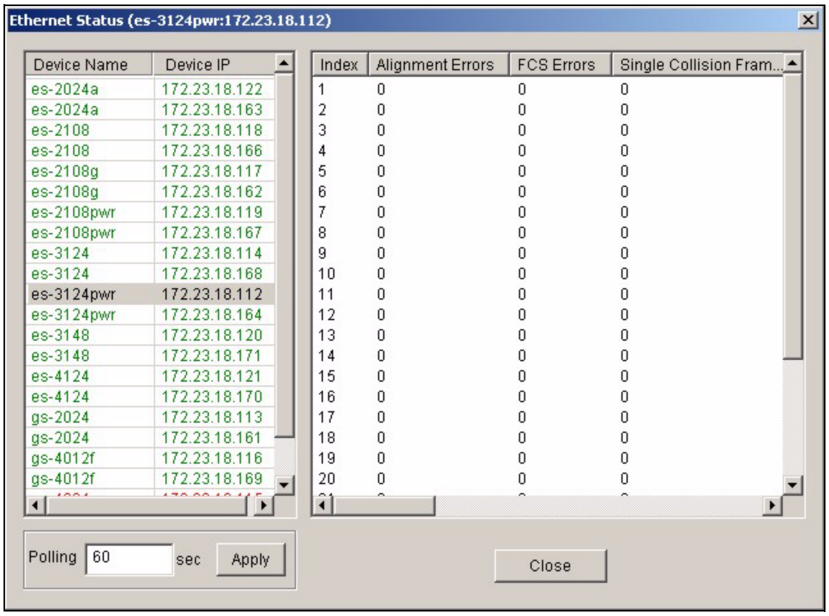
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This field displays the index number.
VID	This field displays the multicast VLAN ID.
Port	This field displays the port number(s) that belongs to the multicast group.
Multicast Group	This field displays the multicast group address.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.7 Ethernet Port Status

You can view Ethernet port statistics in the **Ethernet Status** screen.

Click **View > Ethernet Status** and select a device to display the information.

Figure 32 View: Ethernet Status



Ethernet Status (es-3124pwr:172.23.18.112)

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169

Index	Alignment Errors	FCS Errors	Single Collision Fram...
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0

Polling: 60 sec

The following table describes the labels in this screen.

Table 23 View: Ethernet Status

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This field displays the index number.
Alignment Errors	This field displays the number of frames received with alignment errors.
FCS Errors	This field displays the number of frames received with Frame Check Sequence (FCS) errors.
Single Collision Frames	This field displays the number of frames with 1 collision detected.
Multiple Collision Frames	This field displays the number of frames with 2 to 15 collisions detected.
SQE Test Errors	This field displays the number of frames with Signal Quality Error (SQC) errors.
Deferred Transmissions	This field displays the number of frames that were delayed due to deferred transmission.
Late Collisions	A late collision is counted when a device detects a collision after it has sent the 512th bit of its frame. This field displays the number of times such a collision is detected.
Excessive Collisions	This field displays the number of packets with in excess of 15 collisions detected.
Mac Transmission Errors	This field displays the number of packets with internet MAC sublayer transmission error.
Carrier Sense Errors	This field displays the number of times a carrier sense error occurred.
Frame Too Longs	This field displays the number of frames dropped because they were bigger than the maximum frame size.
Mac Receive Errors	This field displays the number of frames received with MAC address errors.

Table 23 View: Ethernet Status (continued)

LABEL	DESCRIPTION
Ether Chip Set	This field identifies the Ethernet chipset used for the interface.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.8 IP Application Status

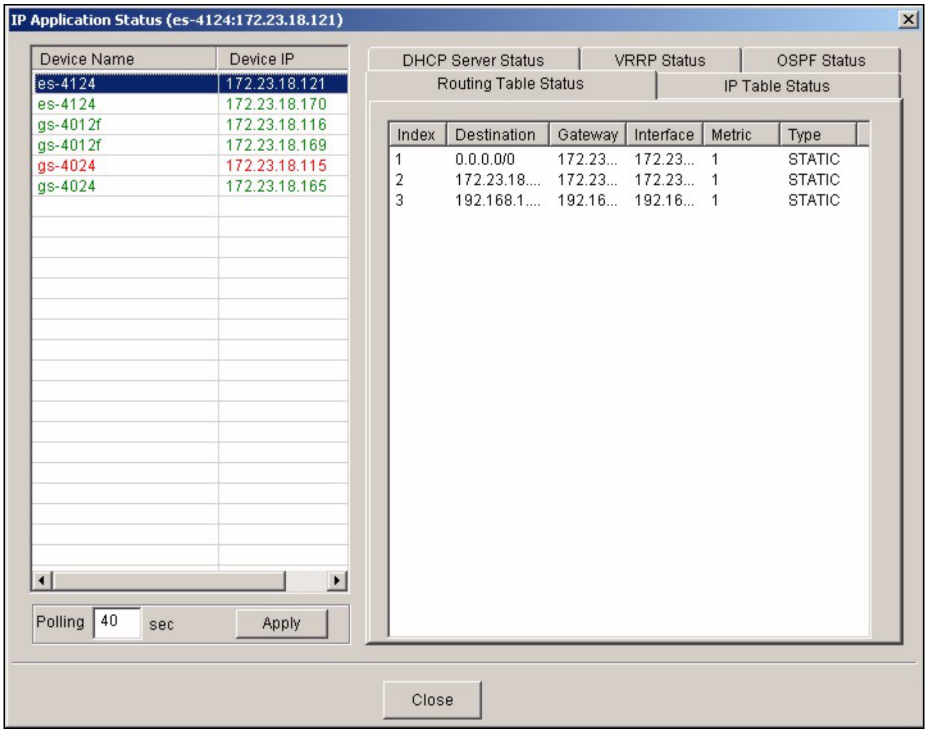
Use the **IP Application Status** screens to view the routing table, IP table, DHCP server, VRRP and OSPF status on layer3 switches (the GS or ES 4000 series).

5.8.1 Routing Table Status

Follow the steps below to view the routing table of a selected device.

1. Click **View** > **IP Application Status**.
2. Select a switch from the list located on the left-hand side of the screen.
3. Click the **Routing Table Status** tab.

Figure 33 View: IP Application Status: Routing Table Status



IP Application Status (es-4124:172.23.18.121)

Device Name	Device IP
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Polling 40 sec

Index	Destination	Gateway	Interface	Metric	Type
1	0.0.0.0/0	172.23...	172.23...	1	STATIC
2	172.23.18....	172.23...	172.23...	1	STATIC
3	192.168.1....	192.16...	192.16...	1	STATIC

The following table describes the labels in this screen.

Table 24 View: IP Application Status: Routing Table Status

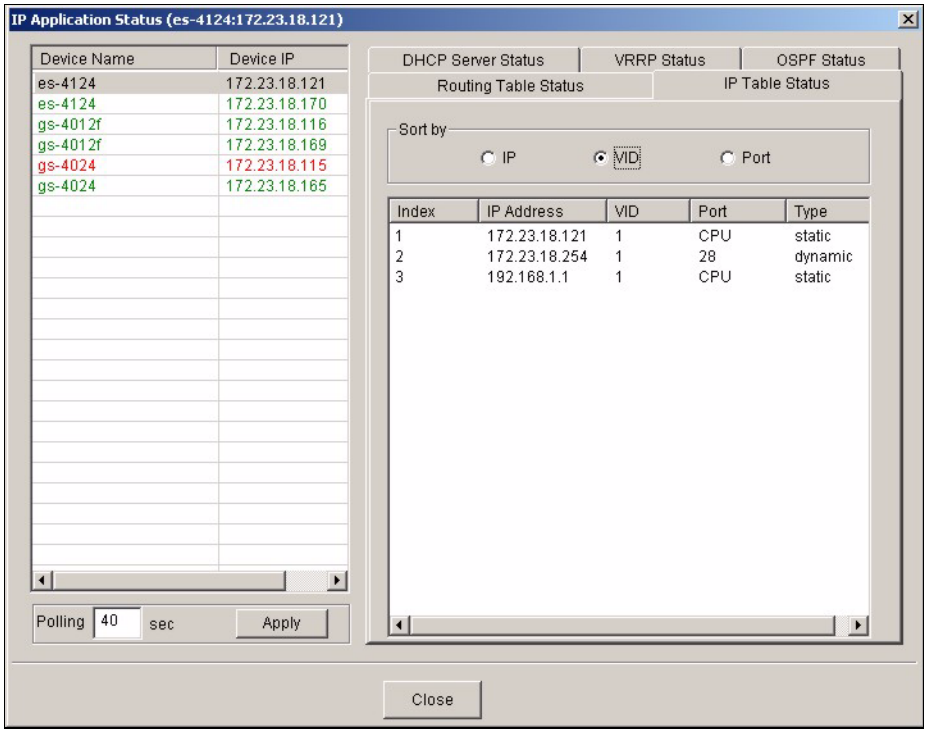
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This field displays the index number.
Destination	This field displays the destination IP routing domain.
Gateway	This field displays the IP address of the gateway device.
Interface	This field displays the IP interface to which this route belongs.
Metric	This field displays the cost of the route.
Type	This field displays the method used to learn the route.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.8.2 IP Table Status

Follow the steps below to view the IP table of a selected device.

1. Click **View** > **IP Application Status**.
2. Select a switch from the list located on the left-hand side of the screen.
3. Click the **IP Table Status** tab.

Figure 34 View: IP Application Status: IP Table Status



IP Application Status (es-4124:172.23.18.121)

Device Name	Device IP
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Sort by: ○ IP ● VID ○ Port

Index	IP Address	VID	Port	Type
1	172.23.18.121	1	CPU	static
2	172.23.18.254	1	28	dynamic
3	192.168.1.1	1	CPU	static

Polling 40 sec

The following table describes the labels in this screen.

Table 25 View: IP Application Status: IP Table Status

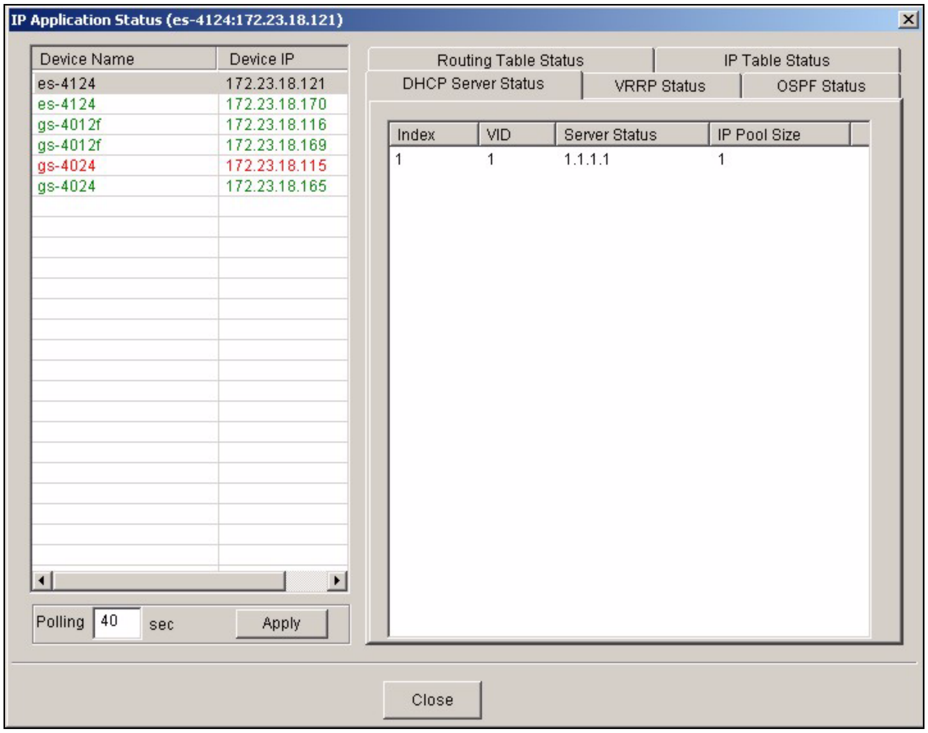
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Sort by	Click one of the following buttons to display and arrange the data according to that button type. The information is then displayed in the summary table below.
IP	Click this button to display and arrange the data according to IP address.
VID	Click this button to display and arrange the data according to VLAN group.
Port	Click this button to display and arrange the data according to port number.
Index	This field displays the index number.
IP Address	This is the IP address of the device from which the incoming packets came.
VID	This is the VLAN group to which the packet belongs.
Port	This is the port from which the above IP address was learned. This field displays **CPU** to indicate the IP address belongs to the switch.
Type	This shows whether the IP address is **dynamic** (learned by the switch) or **static** (belonging to the switch).
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking the **Apply** button.
Close	Click **Close** to close the screen.

5.8.3 DHCP Server Status

Follow the steps below to view the DHCP server status of a selected device.

1. Click **View** > **IP Application Status**.
2. Select a switch from the list located on the left-hand side of the screen.
3. Click the **DHCP Server Status** tab.

Figure 35 View: IP Application Status: DHCP Server Status



Device Name	Device IP
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Index	VID	Server Status	IP Pool Size
1	1	1.1.1.1	1

Polling 40 sec

The following table describes the labels in this screen.

Table 26 View: IP Application Status: DHCP Server Status

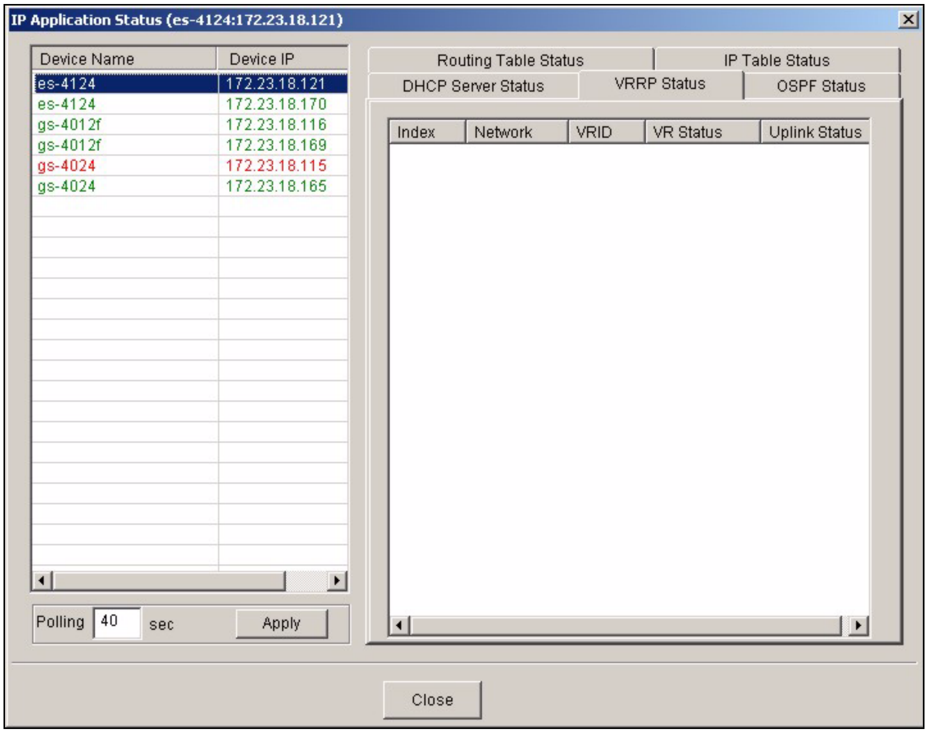
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This is the index number.
VID	This field displays the ID number of the VLAN group to which this DHCP settings apply.
Server Status	This field displays the starting DHCP client IP address.
IP Pool Size	This field displays the size of the DHCP client IP address pool.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking **Apply**.
Close	Click **Close** to close this screen.

5.8.4 VRRP Status

Follow the steps below to view the VRRP status of a selected device.

1. Click **View** > **IP Application Status**.
2. Select a switch from the list located on the left-hand side of the screen.
3. Click the **VRRP Status** tab.

Figure 36 View: IP Application Status: VRRP Status



IP Application Status (es-4124:172.23.18.121)

Device Name	Device IP
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Polling 40 sec

The following table describes the labels in this screen.

Table 27 View: IP Application Status: VRRP Status

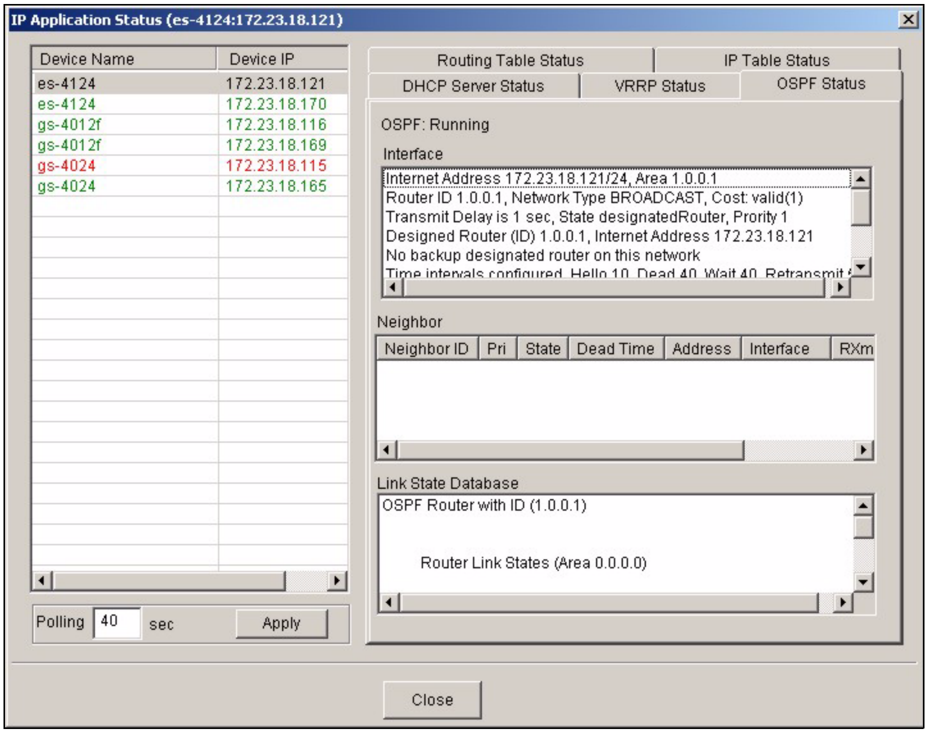
LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This field displays the index number of a rule.
Network	This field displays the IP address and the subnet mask bits of an IP routing domain that is associated to a virtual router.
VRID	This field displays the ID number of the virtual router.
VR Status	This field displays the status of the virtual router. This field is **Master** indicating that this switch functions as the master router. This field is **Backup** indicating that this switch functions as a backup router. This field displays **Init** when this switch is initiating the VRRP protocol or when the **Uplink Status** field displays **Dead**.
Uplink Status	This field displays the status of the link between this switch and the uplink gateway. This field is **Alive** indicating that the link between this switch and the uplink gateway is up. Otherwise, this field is **Dead**. This field displays **Probe** when this switch is check for the link state.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking **Apply**.
Close	Click **Close** to close this screen.

5.8.5 OSPF Status

Follow the steps below to view the OSPF status of a selected device.

1 Click **View** > **IP Application Status**.
2 Select a switch from the list located on the left-hand side of the screen.
3 Click the **OSPF Status** tab.

Figure 37 View: IP Application Status: OSPF Status



Device Name	Device IP
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

OSPF: Running

```
Internet Address 172.23.18.121/24, Area 1.0.0.1
Router ID 1.0.0.1, Network Type BROADCAST, Cost: valid(1)
Transmit Delay is 1 sec, State designatedRouter, Prority 1
Designed Router (ID) 1.0.0.1, Internet Address 172.23.18.121
No backup designated router on this network
Time intervals configured, Hello 10, Dead 40, Wait 40, Retransmit
```

Neighbor ID	Pri	State	Dead Time	Address	Interface	RXm

```
OSPF Router with ID (1.0.0.1)


        Router Link States (Area 0.0.0.0)
```

The following table describes the labels in this screen.

Table 28 View: IP Application Status: OSPF Status

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
OSPF	This field displays whether the OSPF feature is active or not.
Interface	This field displays the OSPF interface status on the switch.
Neighbor	
Neighbor ID	This field displays the router ID of the neighbor.
Pri	This field displays the priority of the neighbor. This number is used in the designated router election.
State	This field displays the state of the neighbor (**backup** or **DR** (designated router)).
Dead Time	This field displays the dead time in seconds.
Address	This field displays the IP address of a neighbor.
Interface	This field displays the MAC address of a device.
RXmtL	This field displays the count of LS (Link State) retransmits.
RqstL	This field displays the count of LS (Link State) requests.
DBsmL	This field displays the count of DB (Database) summary.

Table 28 View: IP Application Status: OSPF Status (continued)

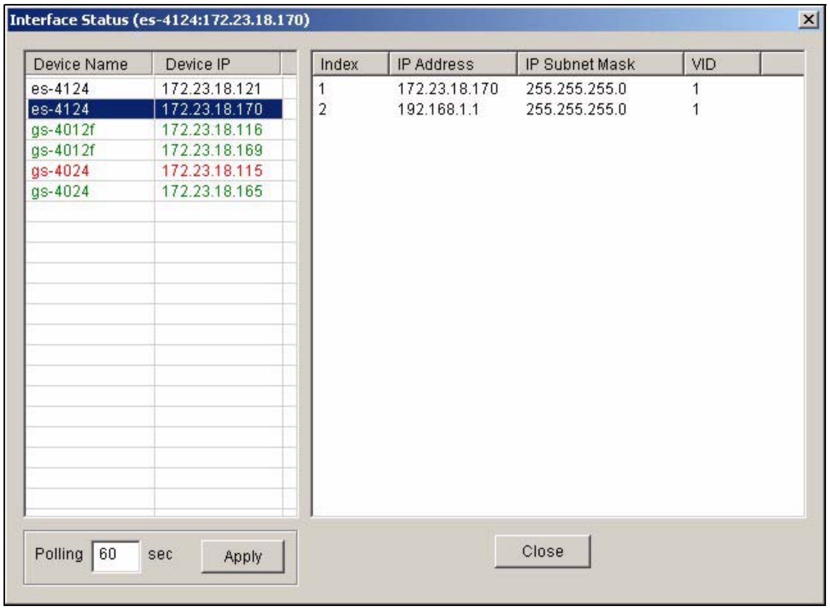
LABEL	DESCRIPTION
Link State Database	This field displays the link state database information such as the number of links.
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking **Apply**.
Close	Click **Close** to close this screen.

5.9 Interface Status

Follow the steps below to view the IP interface status of a selected device.

1. Click **View** > **Interface Status**.
2. Select a switch from the list located on the left-hand side of the screen.

Figure 38 View: Interface Status



Interface Status (es-4124:172.23.18.170)

Device Name	Device IP
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Index	IP Address	IP Subnet Mask	VID
1	172.23.18.170	255.255.255.0	1
2	192.168.1.1	255.255.255.0	1

Polling 60 sec

The following table describes the labels in this screen.

Table 29 View: Interface Status

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Index	This field displays the index number of an entry.
IP Address	This field displays IP address of the switch in the IP domain.
IP Subnet Mask	This field displays the subnet mask of the switch in the IP domain.
VID	This field displays the VLAN identification number of the IP domain on the switch.

Table 29 View: Interface Status (continued)

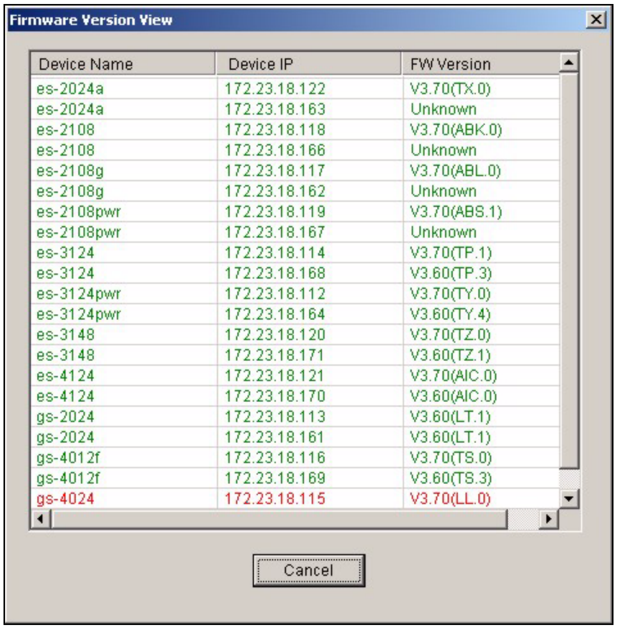
LABEL	DESCRIPTION
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking **Apply**.
Close	Click **Close** to close this screen.

5.10 Firmware Version

You can view the firmware version of all managed devices in the Firmware Version screen. You can also view firmware version for a single device in the System Info screen (see Figure 17 on page 49).

Click **View > Firmware Version** to display the screen.

Figure 39 View: Firmware Version



Device Name	Device IP	FW Version
es-2024a	172.23.18.122	V3.70(TX.0)
es-2024a	172.23.18.163	Unknown
es-2108	172.23.18.118	V3.70(ABK.0)
es-2108	172.23.18.166	Unknown
es-2108g	172.23.18.117	V3.70(ABL.0)
es-2108g	172.23.18.162	Unknown
es-2108pwr	172.23.18.119	V3.70(ABS.1)
es-2108pwr	172.23.18.167	Unknown
es-3124	172.23.18.114	V3.70(TP.1)
es-3124	172.23.18.168	V3.60(TP.3)
es-3124pwr	172.23.18.112	V3.70(TY.0)
es-3124pwr	172.23.18.164	V3.60(TY.4)
es-3148	172.23.18.120	V3.70(TZ.0)
es-3148	172.23.18.171	V3.60(TZ.1)
es-4124	172.23.18.121	V3.70(AIC.0)
es-4124	172.23.18.170	V3.60(AIC.0)
gs-2024	172.23.18.113	V3.60(LT.1)
gs-2024	172.23.18.161	V3.60(LT.1)
gs-4012f	172.23.18.116	V3.70(TS.0)
gs-4012f	172.23.18.169	V3.60(TS.3)
gs-4024	172.23.18.115	V3.70(LL.0)

The following table describes the labels in this screen.

Table 30 View: Firmware Version

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Firmware Version	This field displays the version number of the firmware the device is currently using.
Cancel	Click **Cancel** to close this screen.

6

Template

This chapter describes how to configure VLAN, IGMP filtering and multicast templates.

6.1 Template Overview

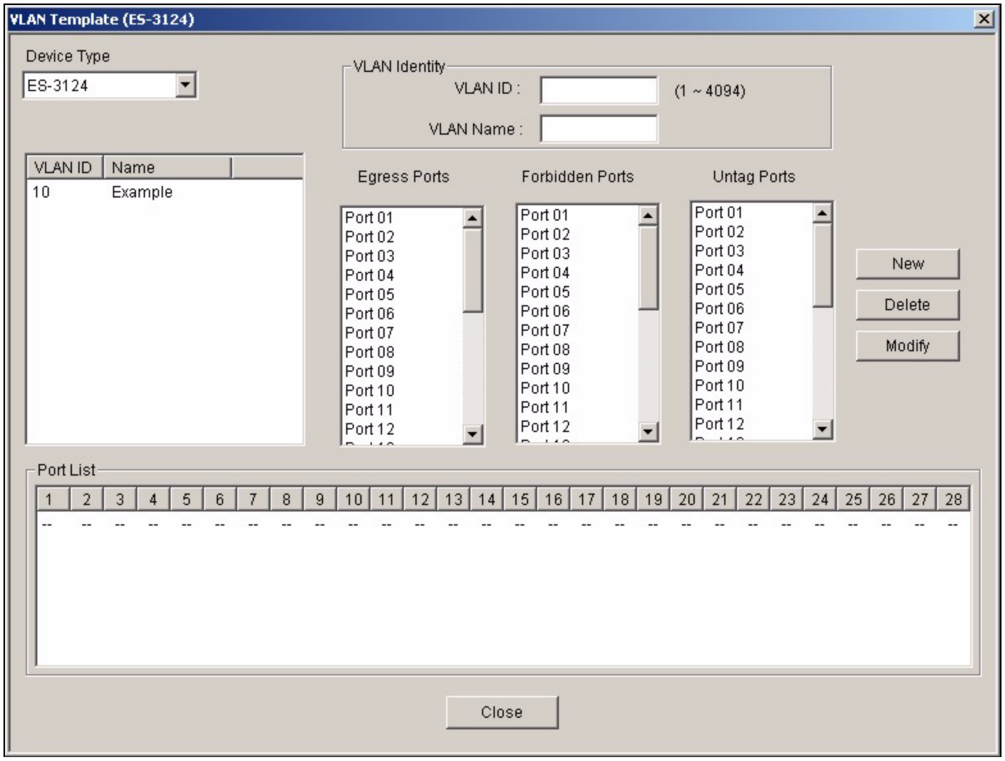
A template is a pre-configured set of configuration settings. Templates allow you to configure device VLANs, IGMP filers and multicast groups efficiently. The template can then be uploaded to one or more devices thus removing the need to configure the corresponding settings for each device.

6.2 VLAN Template

Refer to Section 15.1 on page 157 for more background information on VLAN.

Click **Template** > **VLAN Template** to display the configuration screen. Use this screen to configure, delete or view a VLAN template.

Figure 40 Template: VLAN Template


VLAN Template (ES-3124)
Device Type
VLAN Identity
VLAN ID :
(1 ~ 4094)
VLAN Name :
Egress Ports
Forbidden Ports
Untag Ports
Port 01
Port 02
Port 03
Port 04
Port 05
Port 06
Port 07
Port 08
Port 09
Port 10
Port 11
Port 12
New
Delete
Modify
Port List
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Close

Device Type: ES-3124

VLAN ID	Name
10	Example

The following table describes the labels in this screen.

Table 31 Template: VLAN

LABEL	DESCRIPTION
Device Type	Select a device for which you want to configure a VLAN template.
VLAN Identity	
VLAN ID	Enter a unique number to identify the VLAN.
VLAN Name	Enter a descriptive name for identification purposes.
Egress Ports	A port that is in the egress list in a VLAN. Only select this if the subscriber's DSL modem or router supports IEEE 802.1Q VLAN. Select the ports which you want to be egress ports from the list provided.
Forbidden Ports	A port that is blocked from joining a VLAN group. No frames are transmitted through this port. A forbidden port cannot be an egress port and cannot add tags to outgoing traffic. Select the ports which you want to be forbidden ports from the list provided.
Untag Ports	A port that does not tag all outgoing frames transmitted. An egress port can be untagged. Select the ports which you want to be untagged ports from the list provided.
New	Click **New** to create a new VLAN. You must enter a **VLAN ID** and a **VLAN Name** to create a new **VLAN**. The new VLAN and name is displayed in the left-hand column in this screen.
Delete	Click on a VLAN in the left-hand column of this screen and then click the **Delete** button to remove it from the VLAN template.

Table 31 Template: VLAN (continued)

LABEL	DESCRIPTION
Modify	Click on a VLAN in the left-hand column of this screen. Change the **VLAN Name** or change the configuration of the egress, forbidden and untagged ports. Click the **Modify** button to save the changes to the switch. If you want to change the **VLAN ID** of a VLAN configuration, you can only delete the VLAN configuration or create a new VLAN configuration using a different **VLAN ID**.
Port List	Click on a port in the **Egress Ports** list to add the selected port to the port list. If a port is not selected from any of the three port lists, then it is a normal tagged port. This table displays port VLAN settings. A tagged port is marked **T**, an untagged port is marked **U** and a port not participating in a VLAN is marked **-**.
Close	Click **Close** to close the screen.

6.2.1 Creating a New VLAN Template

Follow the steps below to create a new VLAN template for a switch.

1. Click **Template > VLAN Template**.
2. A screen displays. Select a switch model in the **Device List** field.
3. Enter a unique number (between 1 and 4094) in the **VLAN ID** field.
4. Enter a descriptive name (up to 12 characters) in the **VLAN Name** field for identification purposes.
5. Configure the port VLAN settings. Select the port(s) in the **Egress Ports**, **Forbidden Ports** and **Untag Ports** fields. The VLAN port settings automatically displays in the **Port List** table.
6. Click **New**.
7. If the VLAN is created successfully, a screen displays. Click **OK**.

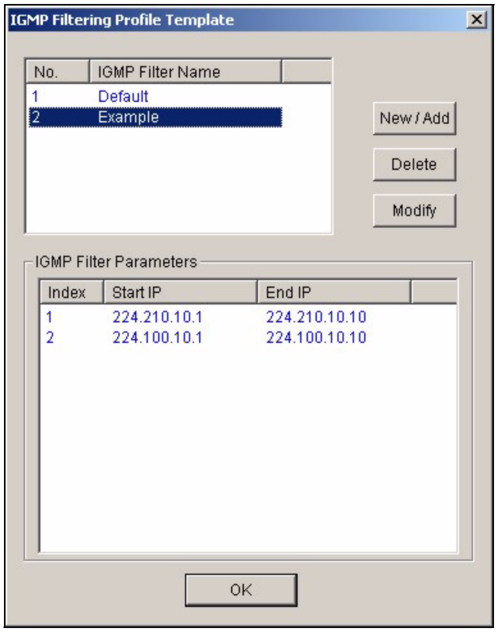
6.3 IGMP Filtering Profile Template

With IGMP filtering, you can control which IGMP groups a subscriber on a port can join. This allows you to control the distribution of multicast services (such as content information distribution) based on service plans and types of subscription.

You can set the switch to filter the multicast group join reports on a per-port basis by configuring an IGMP filtering profile and associating the profile to a port.

Click **Template** > **IGMP Filtering Profile Template** to display the screen as shown.

Figure 41 Template: IGMP Filtering Profile Template



No.	IGMP Filter Name
1	Default
2	Example

Index	Start IP	End IP
1	224.210.10.1	224.210.10.10
2	224.100.10.1	224.100.10.10

The following table describes the labels in this screen.

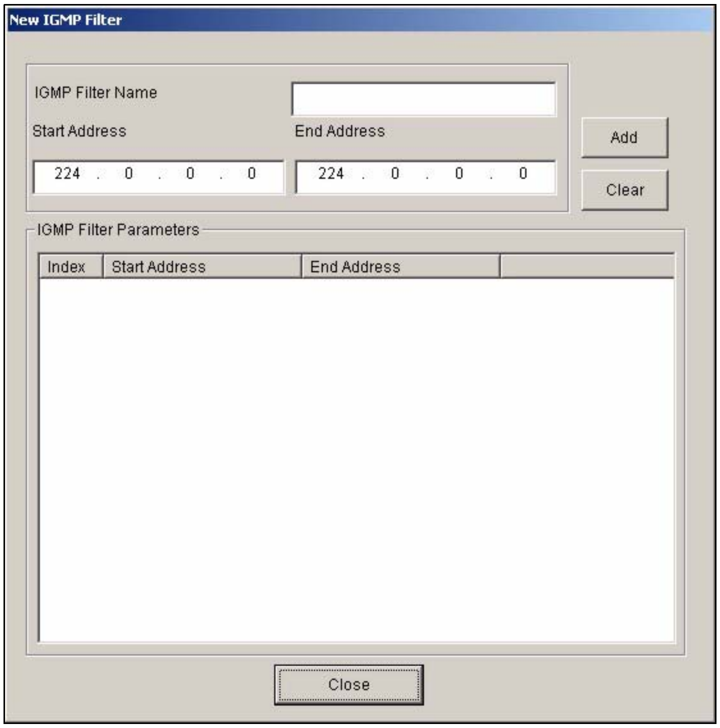
Table 32 Template: IGMP Filter Template

LABEL	DESCRIPTION
No.	This field displays the index number.
IGMP Filter Name	This name identifies the IGMP filter profile.
New/Add	Click **New/Add** to create an IGMP filter profile.
Delete	Click **Delete** to remove one or more selected IGMP filter profiles.
Modify	Click **Modify** to edit a selected IGMP filter profile.
IGMP Filter Parameters	This table displays the settings of the selected IGMP filter above.
Index	This is the number of the IGMP filter profile.
Start IP	This field displays the starting multicast IP address for a range of multicast IP addresses to which you want this IGMP filter profile to allow access.
End IP	This field displays the ending multicast IP address for a range of IP addresses to which you want this IGMP filter profile to allow access.
OK	Click **OK** to save your changes.

6.3.1 Configuring an IGMP Filter Template

Click **New/Add** in the **IGMP Filtering Template** screen to display the screen as shown.

Figure 42 Template: New IGMP Filter


New IGMP Filter
IGMP Filter Name
Start Address
End Address
224 . 0 . 0 . 0
224 . 0 . 0 . 0
Add
Clear
IGMP Filter Parameters
Index
Start Address
End Address
Close

The following table describes the labels in this screen.

Table 33 Template: New IGMP Filter

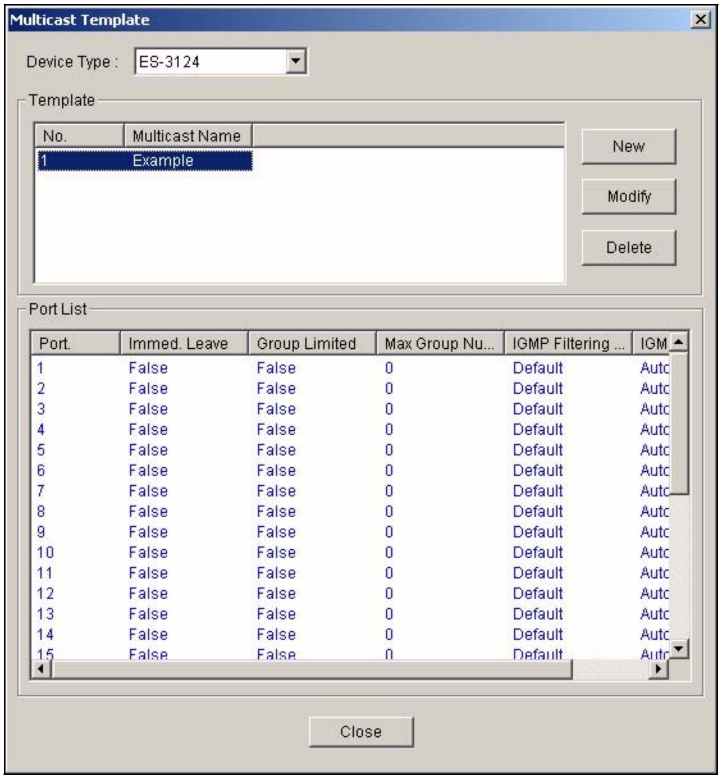
LABEL	DESCRIPTION
IGMP Filter Name	Type a name (up to 31 printable characters) to identify the IGMP filter profile.
Start Address	Enter the starting multicast IP address for a range of multicast IP addresses to which you want this IGMP filter profile to allow access.
End Address	Enter the ending multicast IP address for a range of IP addresses to which you want this IGMP filter profile to allow access. If you want to add a single multicast IP address, enter it in both the **Start IP** and **End IP** fields.
Add	Click **Add** to create a new IGMP filter.
Clear	Click **Clear** to remove the selected IGMP filter template.
IGMP Filter Parameters	
Index	This is the number of the IGMP filter profile. Double-click a profile’s index number to edit the profile.
Start Address	This field displays the starting multicast IP address for a range of multicast IP addresses to which you want this IGMP filter profile to allow access.
End Address	This field displays the ending multicast IP address for a range of IP addresses to which you want this IGMP filter profile to allow access.
Close	Click **Close** to close this screen.

6.4 Static Multicast Group Template

Use the static multicast filter to allow incoming frames based on multicast MAC address(es) that you specify. This feature can be used in conjunction with IGMP snooping to allow multicast MAC address(es) that are not learned by IGMP snooping. Use the static multicast filter to pass routing protocols, such as RIP and OSPF.

Click **Template** > **Multicast Template** to display the screen as shown.

Figure 43 Template: Multicast Template



Device Type : ES-3124

No.	Multicast Name
1	Example

Port.	Immed. Leave	Group Limited	Max Group Nu...	IGMP Filtering ...	IGM
1	False	False	0	Default	Aut
2	False	False	0	Default	Aut
3	False	False	0	Default	Aut
4	False	False	0	Default	Aut
5	False	False	0	Default	Aut
6	False	False	0	Default	Aut
7	False	False	0	Default	Aut
8	False	False	0	Default	Aut
9	False	False	0	Default	Aut
10	False	False	0	Default	Aut
11	False	False	0	Default	Aut
12	False	False	0	Default	Aut
13	False	False	0	Default	Aut
14	False	False	0	Default	Aut
15	False	False	0	Default	Aut

The following table describes the labels in this screen.

Table 34 Template: Multicast

LABEL	DESCRIPTION
Device Type	Select a device from the drop-down list box to view the device's VLAN configuration.
Template	
No.	This field displays the index number.
Multicast Name	This field displays the descriptive name for the multicast template.
New	Click **New** to create a new multicast template.
Modify	Click **Modify** to change the settings of the selected multicast template.
Delete	Click **Delete** to remove the selected multicast template.
Port List	
Port	This field displays the port number.
Immed. Leave	This field displays **True** when the switch is set to remove this port from the multicast tree when an IGMP version 2 leave message is received on this port. This field displays **False** when the feature is disabled.

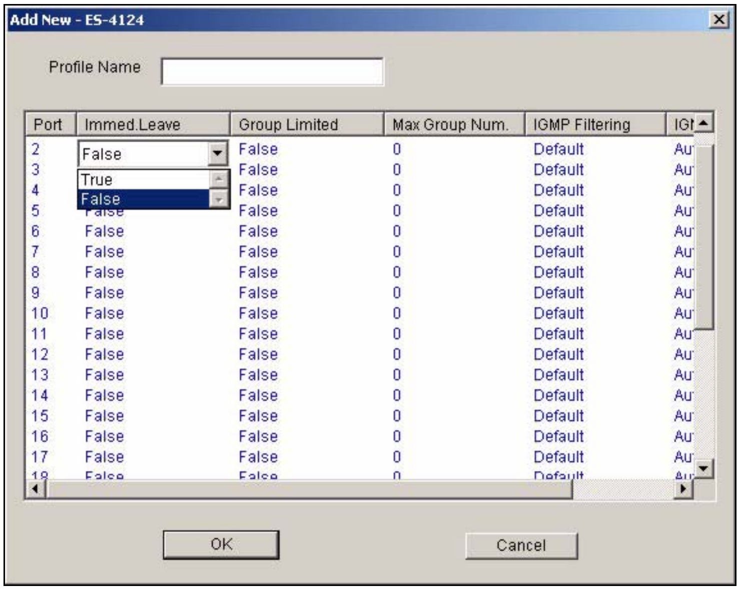
Table 34 Template: Multicast (continued)

LABEL	DESCRIPTION
Group Limit	This field shows whether the switch limit the number of multicast groups this port is allowed to join or not. Once a port is registered in the specified number of multicast groups, any new IGMP join report frame(s) is dropped on this port.
Max. Group Number	This field displays the number of multicast groups this port is allowed to join.
IGMP Filtering	This field displays the name of the IGMP filtering profile to use for this port.
IGMP Querier Mode	This field displays the IGMP querier mode for this port.
Close	Click **Close** to close this screen.

6.4.1 Configuring a Multicast Template

To create a new multicast template, click **New** in the **Multicast Template** screen.

Figure 44 Template: New Multicast



Profile Name

Port	Immed.Leave	Group Limited	Max Group Num.	IGMP Filtering	IGI
2	False	False	0	Default	Au
3		False	0	Default	Au
4		False	0	Default	Au
5	False	False	0	Default	Au
6	False	False	0	Default	Au
7	False	False	0	Default	Au
8	False	False	0	Default	Au
9	False	False	0	Default	Au
10	False	False	0	Default	Au
11	False	False	0	Default	Au
12	False	False	0	Default	Au
13	False	False	0	Default	Au
14	False	False	0	Default	Au
15	False	False	0	Default	Au
16	False	False	0	Default	Au
17	False	False	0	Default	Au
18	False	False	0	Default	Au

The following table describes the labels in this screen.

Table 35 Template: New Multicast

LABEL	DESCRIPTION
Profile Name	Enter a descriptive name for the new multicast template.
Port	This field displays the port number.
Immed. Leave	Double-click this field and specify whether the switch is to remove this port from the multicast tree when an IGMP version 2 leave message is received on this port. Select **True** from the drop-down list box to activate the immediate leave feature. Select **False** to disable this feature.

Table 35 Template: New Multicast (continued)

LABEL	DESCRIPTION
Group Limit	Double-click to configure this field. Select **True** to limit the number of multicast groups this port is allowed to join. Once a port is registered in the specified number of multicast groups, any new IGMP join report frame(s) is dropped on this port. Select **False** to disable this feature.
Max. Group Number	Double-click this field and enter a number to limit the number of multicast groups this port is allowed to join. Once a port is registered in the specified number of multicast groups, any new IGMP join report frame(s) is dropped on this port.
IGMP Filter	Double-click this field to select the name of the IGMP filtering profile to use for this port.
IGMP Querier Mode	The switch treats an IGMP query port as being connected to an IGMP multicast router (or server). The switch forwards IGMP join or leave packets to an IGMP query port. Select **Auto** to have the switch use the port as an IGMP query port if the port receives IGMP query packets. Select **Fixed** to have the switch always use the port as an IGMP query port. Select this when you connect an IGMP multicast server to the port. Select **Edge** to stop the switch from using the port as an IGMP query port. The switch will not keep any record of an IGMP router being connected to this port. The switch does not forward IGMP join or leave packets to this port.
OK	Click **OK** to save the settings and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

7

Provisioning

This chapter shows you how to use the **Provisioning** screens to apply templates.

7.1 Overview

After you have created an IGMP filter profile (or template) in the Template screens, you can use the Provisioning screens to apply or delete IGMP filter profiles to or from a device.

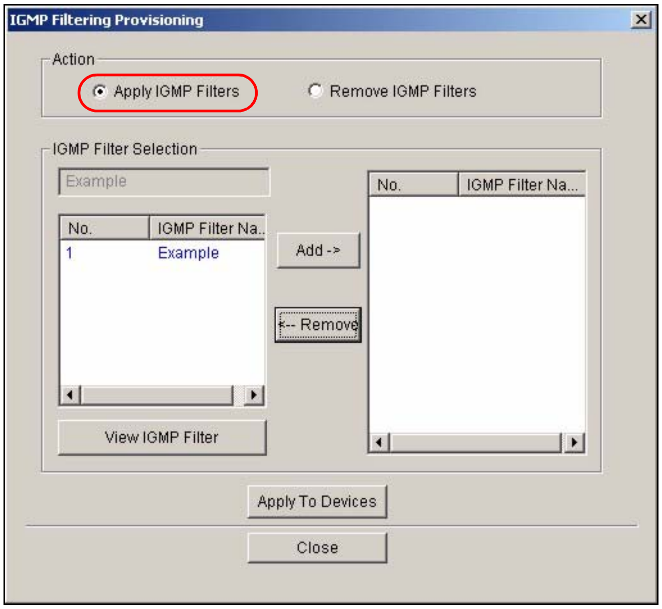
You must first create IGMP filtering templates before you can apply them using the Provisioning **screen. Refer to the chapter on creating templates for more information.**

7.2 Applying an IGMP Filter Profile

Follow the steps below to apply an IGMP filter to a device.

1. Click **Provisioning** > **IGMP Filter Provisioning** to display the screen as shown.
2. Select **Apply IGMP Filters** under **Action**.
3. Select a profile you want to use on the left and click **Add**. You can view the profile settings by clicking **View IGMP Filter**. Refer to the chapter on IGMP filter template settings for field descriptions.

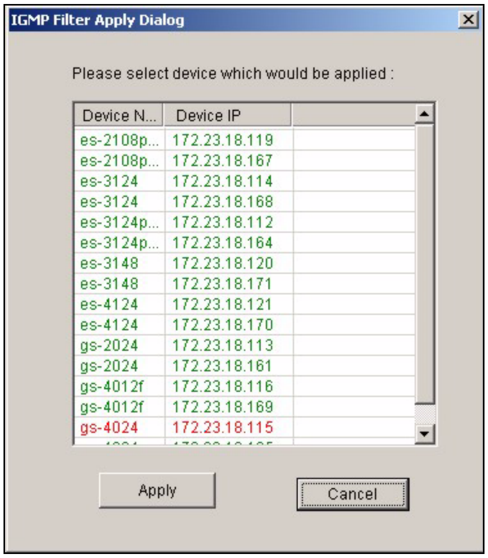
Figure 45 Provisioning: IGMP Filter


IGMP Filtering Provisioning
Action
● Apply IGMP Filters
○ Remove IGMP Filters
IGMP Filter Selection
Example
No.
IGMP Filter Na...
1
Example
Add ->
<-- Remove
No.
IGMP Filter Na...
View IGMP Filter
Apply To Devices
Close

4 Click **Apply To Devices** to apply the selected IGMP filer profile(s).

5 A screen displays as shown. Select the device(s) to which you want to apply the IGMP filter(s). To select more than one device, press [SHIFT] or [CTRL] and select at the same time.

Figure 46 Provisioning: IGMP Filter: Apply to Devices


IGMP Filter Apply Dialog
Apply
Cancel

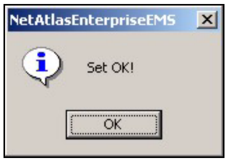
Please select device which would be applied :

Device N...	Device IP
es-2108p...	172.23.18.119
es-2108p...	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124p...	172.23.18.112
es-3124p...	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115

6 Click **Apply** to copy the IGMP filter profile settings to the selected device(s).

7 A screen displays showing the profile copy status. Click **OK** to close this screen.

Figure 47 Provisioning: IGMP Filter: Apply to Devices: Successful


NetAtlasEnterpriseEMS
OK

Set OK!

7.3 Removing an IGMP Filter Profile

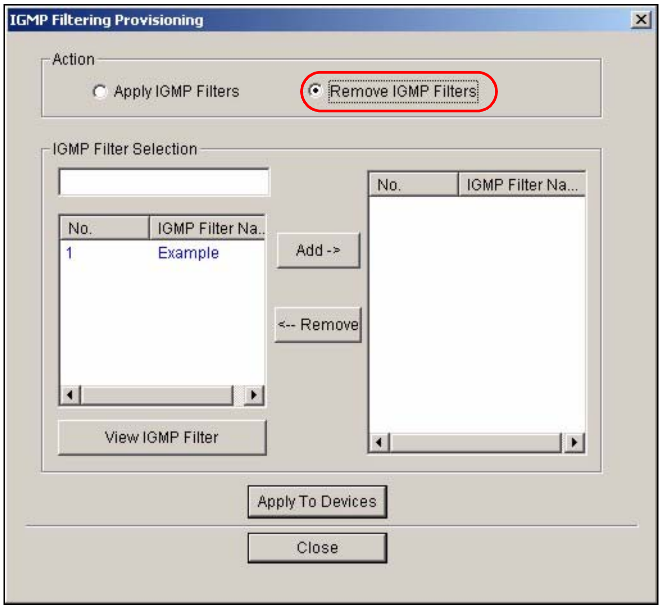
Follow the steps below to remove an IGMP filter from a device.

1 Click **Provisioning** > **IGMP Filter Provision** to display the screen as shown.

2 Select **Remove IGMP Filters** under **Action**.

3 Select a profile you want to remove and click **Add**. You can view the profile settings by clicking **View IGMP Filter**. Refer to the chapter on IGMP filter template settings for field

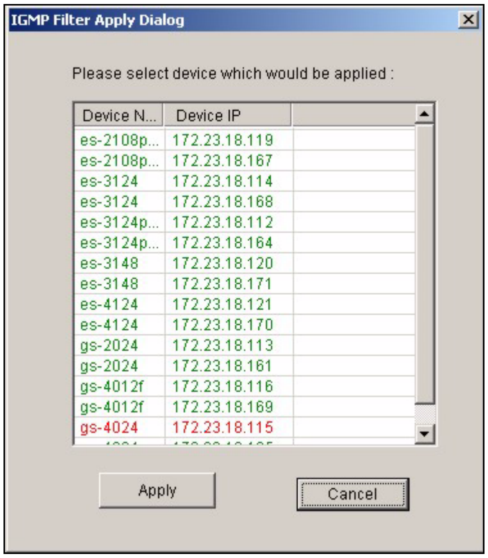
Figure 48 Provisioning: IGMP Filter: Remove From Devices


IGMP Filtering Provisioning
Action
○ Apply IGMP Filters
● Remove IGMP Filters
IGMP Filter Selection
No.
IGMP Filter Na...
1
Example
Add ->
<-- Remove
No.
IGMP Filter Na...
View IGMP Filter
Apply To Devices
Close

4 Click **Apply To Devices**.

5 A screen displays as shown. Select the device(s) from which you want to remove the IGMP filter(s). To select more than one device, press [SHIFT] or [CTRL] and select at the same time.

Figure 49 Provisioning: IGMP Filter: Remove From Devices: Select Device



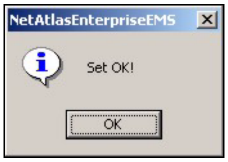
Please select device which would be applied :

Device N...	Device IP
es-2108p...	172.23.18.119
es-2108p...	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124p...	172.23.18.112
es-3124p...	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115

6 Click **OK** to remove the IGMP filter profile settings from the selected device(s).

7 A **Result** screen displays showing the profile removal status. Click **Close** to close this screen.

Figure 50 Provisioning: IGMP Filter: Remove From Devices: Successful



Set OK!

8

Performance

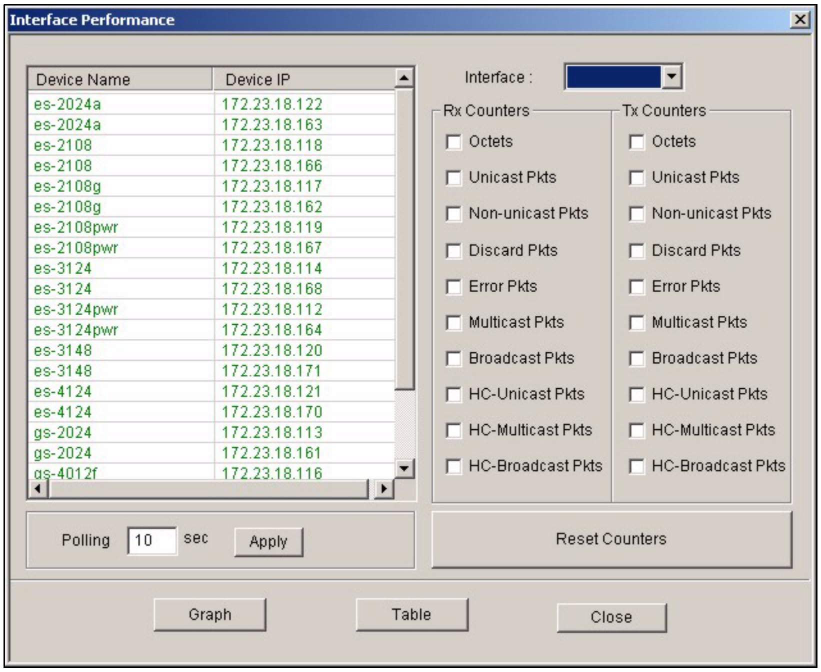
This chapter describes the interface performance screen, graph setup and table setup. View Ethernet history statistics for your switch network.

8.1 Interface Performance

This section shows you how to configure what you want to display in a performance table or graph.

Click **Performance** > **Interface** in the EMS main menu.

Figure 51 Performance: Interface


Interface Performance
Interface :
Rx Counters
Octets
Unicast Pkts
Non-unicast Pkts
Discard Pkts
Error Pkts
Multicast Pkts
Broadcast Pkts
HC-Unicast Pkts
HC-Multicast Pkts
HC-Broadcast Pkts
Tx Counters
Octets
Unicast Pkts
Non-unicast Pkts
Discard Pkts
Error Pkts
Multicast Pkts
Broadcast Pkts
HC-Unicast Pkts
HC-Multicast Pkts
HC-Broadcast Pkts
Apply
Reset Counters
Graph
Table
Close

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116

Polling 10 sec

The following table describes the labels in this screen.

Table 36 Performance: Interface

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name of a device.
Device IP	This field displays the IP address of a device
Interface	Select an interface (or port) from the drop-down list box.

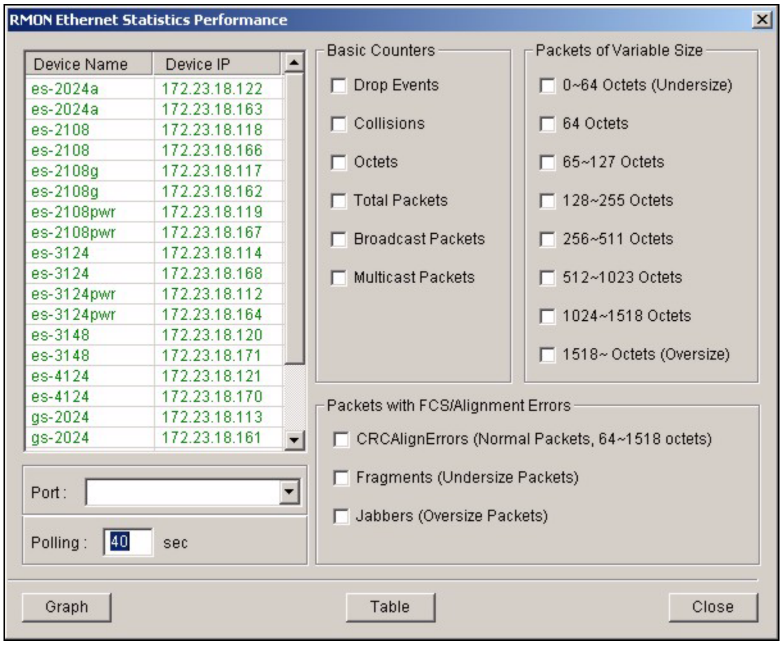
Table 36 Performance: Interface (continued)

LABEL	DESCRIPTION
Rx Counters	The following fields display the types of packet counters received on this interface.
Tx Counters	This following fields display the types of packet counters transmitted on this interface.
Octets	Select this option to show the total number of octets received or transmitted.
Unicast Pkts	Select this option to show the total number of good unicast packets received or transmitted that were dropped.
Non-unicast Pkts	Select this option to show the total number of good non-unicast packets received or transmitted that were dropped.
Discard Pkts	Select this option to show the total number of packets received or transmitted that were dropped.
Error Pkts	Select this option to show the total number of error packets received or transmitted.
Multicast Pkts	Select this option to show the total number of good multicast packets received or transmitted.
Broadcast Pkts	Select this option to show the total number of good broadcast packets received or transmitted.
HC-Unicast Pkts	Select this option to show the number of unicast packets (High Capacity (HC) 64 ~ 1518 octets long) dropped because they either had a bad Frame Check Sequence (FCS) or non-integer number of octets (alignment error).
HC-Multicast Pkts	Select this option to show the number of multicast packets (High Capacity (HC) 64 ~ 1518 octets long) dropped because they either had a bad Frame Check Sequence (FCS) or non-integer number of octets (alignment error).
HC-Broadcast Pkts	Select this option to show the number of broadcast packets (High Capacity (HC) 64 ~ 1518 octets long) dropped because they either had a bad Frame Check Sequence (FCS) or non-integer number of octets (alignment error).
Polling	The text box displays how often (in seconds) this screen refreshes. You may change the refresh interval by typing a new number in the text box and then clicking **Apply**.
Close	Click **Close** to close this screen.
Reset Counters	Click **Reset Counters** to clear the counters.
Graph	Click the **Graph** button to create a graph based on the above selections.
Table	Click the **Table** button to create a table based on the above selections.
Close	Click **Close** to close the screen.

8.2 RMON Ethernet Statistics

Use this screen to look at network traffic on an Ethernet port since the last time the switch was reset. To open this screen, click **Performance** > **RMON** > **Ethernet Statistics**.

Figure 52 Performance: RMON: Ethernet Statistics


RMON Ethernet Statistics Performance
Basic Counters
☐ Drop Events
☐ Collisions
☐ Octets
☐ Total Packets
☐ Broadcast Packets
☐ Multicast Packets
Packets of Variable Size
☐ 0~64 Octets (Undersize)
☐ 64 Octets
☐ 65~127 Octets
☐ 128~255 Octets
☐ 256~511 Octets
☐ 512~1023 Octets
☐ 1024~1518 Octets
☐ 1518~ Octets (Oversize)
Packets with FCS/Alignment Errors
☐ CRCAlignErrors (Normal Packets, 64~1518 octets)
☐ Fragments (Undersize Packets)
☐ Jabbers (Oversize Packets)
Graph
Table
Close

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161

Port :

Polling : 40 sec

The following table describes the labels in this screen.

Table 37 Performance: RMON: Ethernet Statistics

LABEL	DESCRIPTION
Device Name	This field displays the name of each switch. Select a switch to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the switch.
Port	Select the port at whose statistics you want to look.
Polling	Select how often you want the EMS to update the statistics it displays.
Basic Counters	
Drop Events	Select this to display the total number of packets that were dropped.
Octets	Select this to display the total number of octets received.
Collisions	Select this to display the total number of collisions occurred.
Total Packets	Select this to display the total number of all good packets received.
Broadcast Packets	Select this to display the total number of good broadcast packets received.
Multicast Packets	Select this to display the total number of good multicast packets received.
Packets of Variable Size	
0 ~ 64 Octets (Undersize)	Select this to display the number of packets (including bad packets) received that were between 0 and 64 octets in length.
64 Octets	Select this to display the number of packets (including bad packets) received that were 64 octets in length.
65 ~ 127 Octets	Select this to display the number of packets (including bad packets) received that were between 65 and 127 octets in length.
128 ~ 255 Octets	Select this to display the number of packets (including bad packets) received that were between 128 and 255 octets in length.

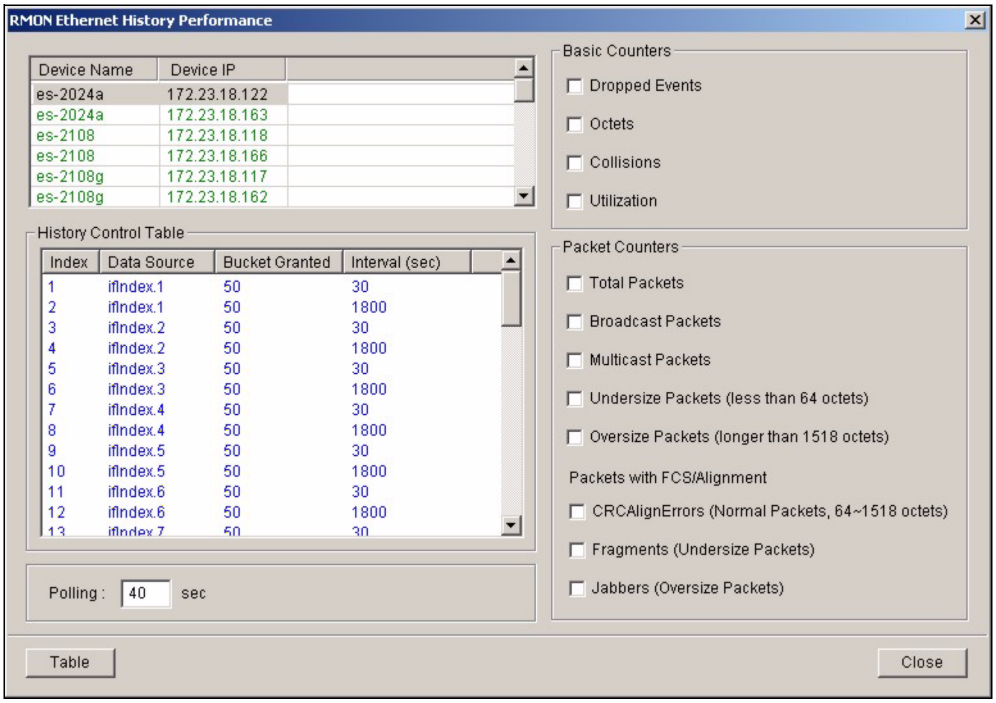
Table 37 Performance: RMON: Ethernet Statistics (continued)

LABEL	DESCRIPTION
256 ~ 511 Octets	Select this to display the number of packets (including bad packets) received that were between 256 and 511 octets in length.
512 ~ 1023 Octets	Select this to display the number of packets (including bad packets) received that were between 512 and 1023 octets in length.
1024 ~ 1518 Octets	Select this to display the number of untagged packets (including bad packets) received that were between 1024 and 1518 octets in length. This number also includes tagged packets received that were 1522 octets in size.
1518 ~Octets (Oversize)	Select this to display the number of untagged packets (including bad packets) received that were greater than 1518 octets in length.
Packets with FCS/Alignment Errors	
CRCAlignErrors (Normal Packets, 64~1518)	Select this to display the number of packets (between 64 ~ 1518 octets long) dropped because they either had bad Frame Check Sequence (FCS) or non-integral number of octets (alignment error).
Fragments (Undersize Packets)	Select this to display the number of frames dropped because they were less than 64 octets long, and contained an invalid FCS, including non-integral and integral lengths.
Jabbers (Oversize Packets)	Select this to display the number of frames dropped because they were longer than 1518 octets and contained an invalid FCS, including alignment errors.
Graph	Select this to create a graph based on the above selection(s).
Table	Select this to create a table based on the above selection(s).
Close	Click this to close the screen.

8.3 RMON History Data

Use this screen to look at historical network traffic on an Ethernet port. To open this screen, click **Performance** > **RMON** > **History Data**.

Figure 53 Performance: RMON: History Data


RMON Ethernet History Performance
Basic Counters
☐ Dropped Events
☐ Octets
☐ Collisions
☐ Utilization
Packet Counters
☐ Total Packets
☐ Broadcast Packets
☐ Multicast Packets
☐ Undersize Packets (less than 64 octets)
☐ Oversize Packets (longer than 1518 octets)
Packets with FCS/Alignment
☐ CRCAlignErrors (Normal Packets, 64~1518 octets)
☐ Fragments (Undersize Packets)
☐ Jabbers (Oversize Packets)
Table
Close

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162

History Control Table

Index	Data Source	Bucket Granted	Interval (sec)
1	ifIndex.1	50	30
2	ifIndex.1	50	1800
3	ifIndex.2	50	30
4	ifIndex.2	50	1800
5	ifIndex.3	50	30
6	ifIndex.3	50	1800
7	ifIndex.4	50	30
8	ifIndex.4	50	1800
9	ifIndex.5	50	30
10	ifIndex.5	50	1800
11	ifIndex.6	50	30
12	ifIndex.6	50	1800
13	ifIndex.7	50	30

Polling : 40 sec

The following table describes the labels in this screen.

Table 38 Performance: RMON: History Data

LABEL	DESCRIPTION
Device Name	This field displays the name of each IP DSLAM. Select an IP DSLAM to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the IP DSLAM.
History Control Table	
Index	This field displays the configuration index number.
Data Source	This field displays the port of the IP DSLAM that the EMS will poll for data.
Bucket Granted	This field displays the number of data samplings the probe allows to stores.
Interval (sec)	This field displays the time between data samplings.
Polling	Select how often you want the EMS to update the statistics it displays.
Basic Counters	
Dropped Events	Select this to display the total number of packets that were dropped.
Octets	Select this to display the total number of octets received.
Collisions	Select this to display the total number of collisions occurred.
Utilization	Select this to display the utilization of the LAN ports.
Packet Counters	
Total Packets	Select this to display the total number of all good packets received.
Broadcast Packets	Select this to display the total number of good broadcast packets received.

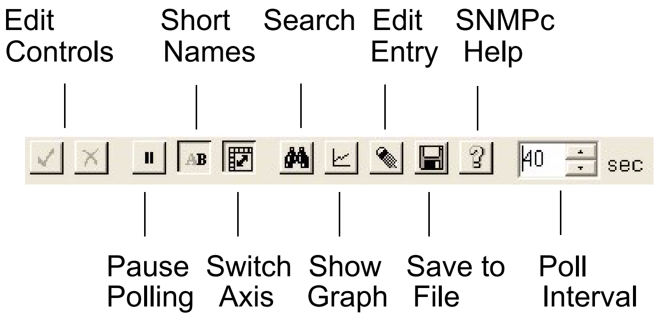
Table 38 Performance: RMON: History Data (continued)

LABEL	DESCRIPTION
Multicast Packets	Select this to display the total number of good multicast packets received.
Undersize Packets (less than 64 octets)	Select this to display the number of packets dropped because they were too short (shorter than 64 octets).
Oversize Packets (longer than 1518 octets)	Select this to display the number of packets dropped because they were too big (bigger than the maximum frame size).
Packets with FCS/Alignment Errors	
CRCAlignErrors (Normal Packets, 64 ~1518 octets)	Select this to show the number of packets (between 64 ~ 1518 octets long) dropped because they either had bad Frame Check Sequence (FCS) or non-integral number of octets (alignment error).
Fragments (Undersize Packets)	Select this to display the number of frames dropped because they were less than 64 octets long, and contained an invalid FCS, including non-integral and integral lengths.
Jabbers (Oversize Packets)	Select this to display the number of frames dropped because they were longer than 1518 octets (non VLAN) or 1522 octets (VLAN) and contained an invalid FCS, including alignment errors.
Table	Select this to create a table based on the above selection(s).
Close	Click this to close the screen.

8.4 Table Menu Bar

The following figure displays the table menu bar icons. These icons are common to all screens that display information in tabular format.

Figure 54 Table Menu Bar Icons

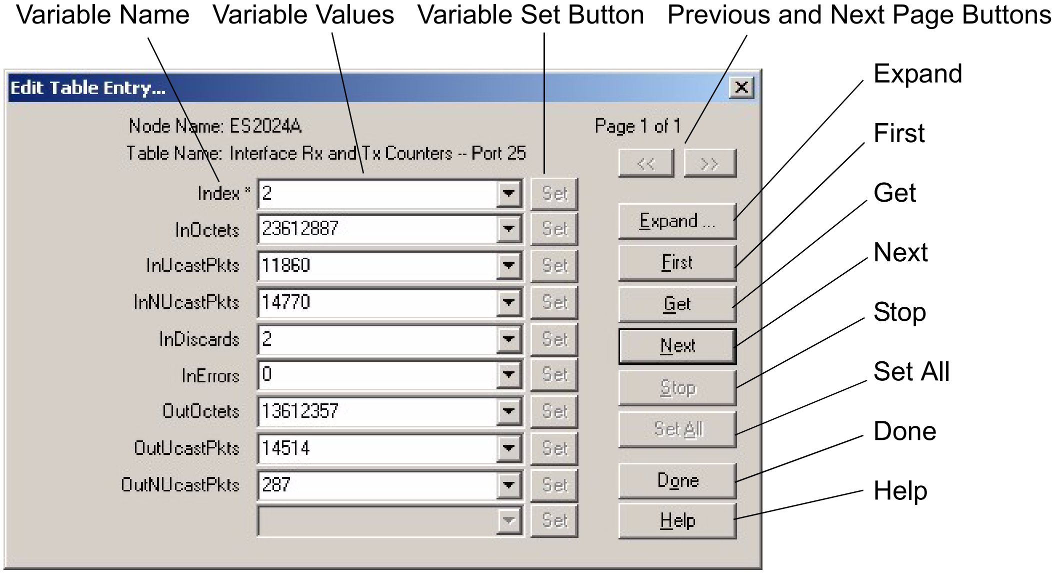


8.4.1 Editing a Table Entry

You can edit a table entry in all screens that display information in tabular format.

In any tabulated screen display, click the **Edit** icon in the menu bar icon to display the **Edit Table Entry** screen and edit any field in a table. There is a set of variable names, value and set button controls that operate on the fields of the selected table. There is also a set of function control buttons on the right. For tables that have more than ten entries, the **Edit Table Entry** screen supports multiple pages.

Figure 55 Edit Table Entry


Variable Name
Variable Values
Variable Set Button
Previous and Next Page Buttons
Edit Table Entry...
Page 1 of 1
<<
>>
Set
Expand ...
First
Get
Next
Stop
Set All
Done
Help
Expand
First
Get
Next
Stop
Set All
Done
Help

Node Name: ES2024A
Table Name: Interface Rx and Tx Counters -- Port 25

Index * 2
InOctets 23612887
InUcastPkts 11860
InNUcastPkts 14770
InDiscards 2
InErrors 0
OutOctets 13612357
OutUcastPkts 14514
OutNUcastPkts 287

The following table describes the labels in this screen.

Table 39 Edit Table Entry

COMMAND	DESCRIPTION
Variable Names	The first vertical column contains the variable names; these are the names of fields in the selected table. These names are set by SNMPc and cannot be changed. Some tables have variable names with an asterisk to the right of the name. These variables are used as indices into the table. All index variables must be specified to perform a Set operation.
Variable Values	The second vertical column contains the variable values in pull down list boxes. You can change the value by typing into the pull down edit box. If the variable has integer aliases defined in the MIB, you can select an alias by clicking on the down arrow and selecting an item from the drop down list. You must enter the variable value in the proper format. Use the expand button (see next section) to view the variable type.

Table 39 Edit Table Entry (continued)

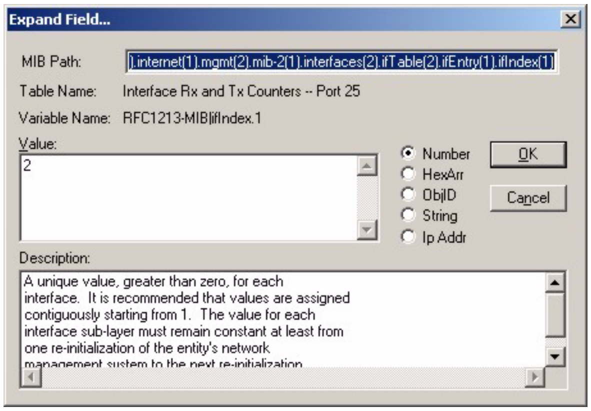
COMMAND	DESCRIPTION
Variable Set Button	Each variable value has a small Set button to the right. Click this **Set** button to perform an SNMP set on only one variable. Set buttons are grayed for variables that are read-only.
Previous/Next Page Buttons	Each page shows up to ten variables. The page number and total number of pages are displayed in the top right corner. Use the **>>** button to move to the next page and click the **<<** button to move to the previous page.
Expand	Click the **Expand** button to expand the view of the active variable value edit box. First click on the edit box, then select the **Expand** button.
First	Click the **First** button to obtain the first entry of the table from the node. The variable values will be updated. You do not need to enter index values - they will be ignored.
Get	Click the **Get** button to obtain the selected table entry. Enter all of the index values to select a table entry. If you have already displayed an entry, and perhaps modified the value boxes, you can Click the **Get** button to refresh the variable values.
Next	Click the **Next** button to obtain the next entry of the table from the node, using an SNMP GetNext operation. The variable values are updated. If there are no more entries in the table, a message is displayed. You can specify a starting point for the GetNext by entering index values. You do not need to enter all index values, but if you enter the Nth index value, you must also enter the 1st through (N-1)th index values.
Stop	Click the **Stop** button to abort the current SNMP operation. This button can be used to stop a command when a node is not responding and you don't want to wait for the timeout period.
Set All	Click the **Set** All button to set all writable variable values to the node. You must enter all of the index values (those with an asterisk to the right of the variable name) to select the table entry. If you do not know the proper index values, you can first find the entry you want to change by using the First and Get, Next buttons. Some nodes do not allow set operations to all variables that are defined as writable in the MIB. For these nodes, you will have to individually set table entry variables using the variable Set buttons.
Done	Click this button when you’re done editing this dialog box.
Help	Click this button for online help.

You can only use the variable Set button (via the EMS) to update system contact, system name, system location and the administrative status of each port.

8.4.2 Expand Dialog Box

In the **Edit Table Entry** screen click the **Expand** button to expand the view of the active variable value edit box. First click on the edit box, then click **Expand**.

Figure 56 Expand Field



MIB Path:).internet(1).mgmt(2).mib-2(1).interfaces(2).ifTable(2).ifEntry(1).ifIndex(1)

Table Name: Interface Rx and Tx Counters -- Port 25

Variable Name: RFC1213-MIB|ifIndex.1

Value: 2

● Number ○ HexArr ○ ObjID ○ String ○ Ip Addr

Description:

A unique value, greater than zero, for each interface. It is recommended that values are assigned contiguously starting from 1. The value for each interface sub-layer must remain constant at least from one re-initialization of the entity's network management system to the next re-initialization

The **Expand** screen shows the variable value in a larger edit box, so you can more easily enter a long value. It also shows the variable type and a description from the MIB source file. Possible variable types are shown in the following table.

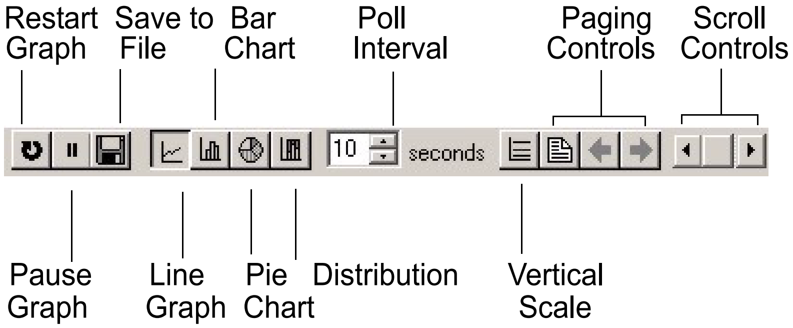
Table 40 Variable Types

TYPE	DESCRIPTION
Number	This can be an INTEGER, COUNTER, GAUGE or Time Ticks. Data is normally represented as a decimal number. However, in cases where INTEGER aliases are defined in the MIB, an ASCII word will be displayed. For example, the value for ifOperStatus is displayed as UP or DOWN.
HexArr	OCTET PRIM TYPE. Data is formatted as a list of two digit hexadecimal numbers, representing one byte each, and separated by a single space, for example 22 3E 44 A1 10.
ObjID	OBJECT IDENTIFIER. Data is formatted in MIB dot format, optionally with a leading text identifier, for example sysObjectID.0 or 1.3.6.1.2.1.1.2.0.
String	This is OCTET PRIM TYPE with printable (ASCII string) data (DisplayString).
IP Addr	IP ADDRESS PRIM TYPE in dotted decimal notation, for example, 128.9.118.0.

8.5 Graph Menu Bar Icons

These graphical menu bar icons are common to all screens that display information in graphical format.

Figure 57 Graph Menu Bar



8.5.1 Graph Styles

Use one of the style buttons to change the graph style to one of the following:

Table 41 Edit Table Entry

STYLE	DESCRIPTION
Line	Each variable is displayed as a line, with time as the horizontal axis. The vertical axis represents the size of each polled value for each poll interval.
Bar	The cumulative average value for each variable is displayed as a vertical bar.
Pie	All variables are displayed as relative sized portions of a pie diagram. The entire display represents a single poll interval.
Distribution	Each variable is displayed as a stacked vertical bar. Each segment of the bar represents the amount of time that the variable value is within a certain range (as a percent). The legend on the right side of the display shows the corresponding range for each color. The entire display represents a single poll interval.

8.5.2 Chart Format Display Variable

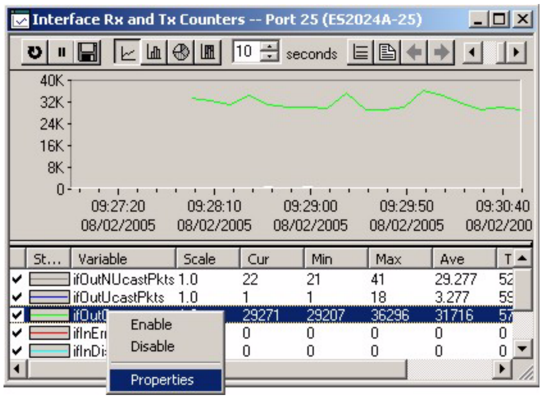
Choose which variables to display in chart format by doing one of the following:

1 Click a variable cell in a table and click the bar chart icon.

2 Display the chart menu and then deselect variables (all are displayed by default).

3 Right-click a variable's cell and select **Properties**.

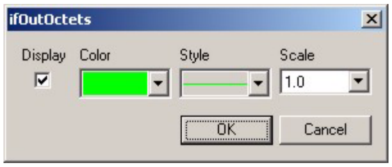
Figure 58 Cell Properties Select


Interface Rx and Tx Counters -- Port 25 (ES2024A-25)
10
seconds
40K
32K
24K
16K
8K
0
09:27:20
08/02/2005
09:28:10
08/02/2005
09:29:00
08/02/2005
09:29:50
08/02/2005
09:30:40
08/02/200
Enable
Disable
Properties

	St...	Variable	Scale	Cur	Min	Max	Ave	T
✓		ifOutNUcastPkts	1.0	22	21	41	29.277	52
✓		ifOutUcastPkts	1.0	1	1	18	3.277	59
✓		ifOut		29271	29207	36296	31716	57
✓		ifInEr		0	0	0	0	0
✓		ifInDi		0	0	0	0	0

4 A display properties dialog box opens. Select the **Display** check box.

Figure 59 Chart Color Codes and Line Styles


ifOutOctets
Display
Color
Style
Scale
OK
Cancel

Display ☑ Scale 1.0

You may also edit the color code and line style for a variable in the dialog box as described in the following table.

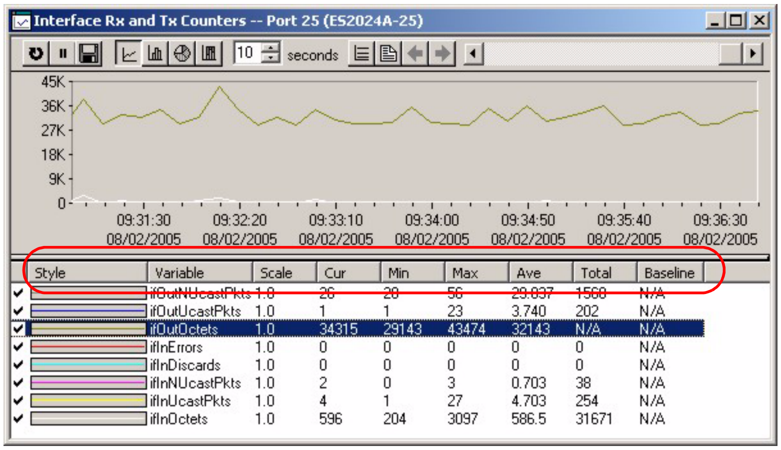
Table 42 Edit Style Dialog Box

FIELD	DESCRIPTION
Display	Check Display to view information about this variable in chart format.
Color	Choose a color from this drop down list.
Style	Choose a line style from this drop down list.
Scale	Select the scaling multiplier from this drop down list. This factor is applied to each value in the line before it is displayed and can be used to keep all graph lines within a similar range of values. The range is from 0.0001 to 1000.0.

8.5.3 Graph Labels

In the **Interface** screen click the **Graph** button to display the following screen.

Figure 60 Graph Variables



Style	Variable	Scale	Cur	Min	Max	Ave	Total	Baseline
✓	ifOutNUcastPkts	1.0	26	28	56	29.037	1560	N/A
✓	ifOutUcastPkts	1.0	1	1	23	3.740	202	N/A
✓	ifOutOctets	1.0	34315	29143	43474	32143	N/A	N/A
✓	ifInErrors	1.0	0	0	0	0	0	N/A
✓	ifInDiscards	1.0	0	0	0	0	0	N/A
✓	ifInNUcastPkts	1.0	2	0	3	0.703	38	N/A
✓	ifInUcastPkts	1.0	4	1	27	4.703	254	N/A
✓	ifInOctets	1.0	596	204	3097	586.5	31671	N/A

The following table describes the labels in this screen.

Table 43 Graph Variables

LABEL	DESCRIPTION
Style	This is the line style discussed above.
Variable	This is the variable being represented by the line style discussed above.
Scale	This is the scaling multiplier.
Cur	This is the current value of the variable.
Min	This is the minimum value of the variable.
Max	This is the maximum value of the variable.
Ave	This is the average value of the variable.
Total	This is the total value of the variable.
Baseline	This is a measure of the typical variable behavior. After a learning period has transpired, SNMPc can automatically generate baseline alarms when variable values exceed the baseline.

9

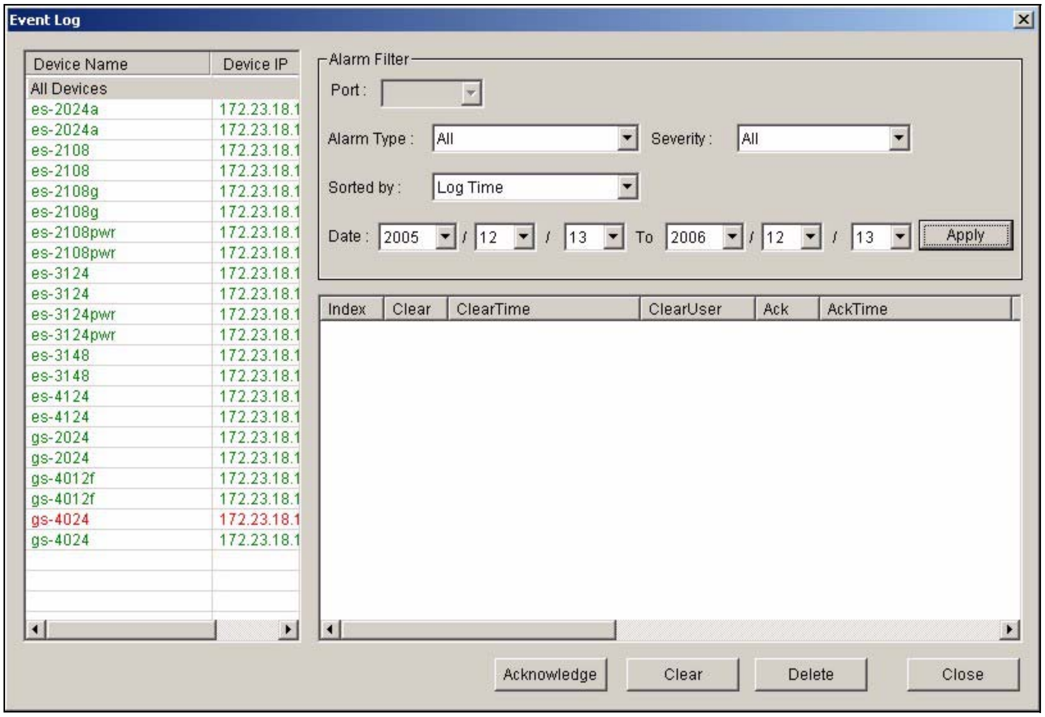
Fault

This chapter describes the event logs and how to perform loopback tests using the Fault screens.

9.1 Event Log

To display system event logs click **Fault** > **Event Log** to view the following screen.

Figure 61 Fault: Event Log



Device Name	Device IP
All Devices	
es-2024a	172.23.18.1
es-2024a	172.23.18.1
es-2108	172.23.18.1
es-2108	172.23.18.1
es-2108g	172.23.18.1
es-2108g	172.23.18.1
es-2108pwr	172.23.18.1
es-2108pwr	172.23.18.1
es-3124	172.23.18.1
es-3124	172.23.18.1
es-3124pwr	172.23.18.1
es-3124pwr	172.23.18.1
es-3148	172.23.18.1
es-3148	172.23.18.1
es-4124	172.23.18.1
es-4124	172.23.18.1
gs-2024	172.23.18.1
gs-2024	172.23.18.1
gs-4012f	172.23.18.1
gs-4012f	172.23.18.1
gs-4024	172.23.18.1
gs-4024	172.23.18.1

Alarm Type : All
Severity : All
Sorted by : Log Time
Date : 2005 / 12 / 13 To 2006 / 12 / 13

The following table describes the labels in this screen.

Table 44 Fault: Event Log

LABEL	DESCRIPTION
Device Name	This field displays the name of each IP DSLAM. Select an IP DSLAM to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the IP DSLAM.
Alarm Filter	
Port	To display event logs of a port, select the port from the drop-down list box.

Table 44 Fault: Event Log (continued)

LABEL	DESCRIPTION
Alarm Type	Select the type of logs from the drop-down list box. Choices are **All**, **Communication**, **QualityOfService**, **ProcessingError**, **Equipment** and **Environmental**. Select **All** for system event logs generated by all alarm types. Select **Communication** for transmission and signal logs. Select **QualityOfService** for performance logs. Select **Processing Error** for software and configuration problem logs. Select **Equipment** for hardware-related logs. Select **Environmental** for environmental logs. See the appendix for a more detailed list of possible alarm causes.
Severity	Select the severity level of the logs you want to display from the drop-down list box. The choices and associated colors are as follows: • Critical - Red • Major - Orange • Minor - Yellow • Information - Blue
Sorted by	Select **Log Time** to sort event logs by the time at which they were generated or select **Device Name** to sort event logs by the device from which they were generated.
Date / To	Specify the time range to display the event logs.
Apply	Click **Apply** to display event logs generated within the specified time period.
Index	This field displays the index number of the event log.
Clear	This field displays whether this log was cleared.
ClearTime	This field displays when this log was cleared.
ClearUser	This field displays the name of the user who cleared this log.
Ack	This field displays whether a log has been acknowledged so that EMS users will know when a log has been dealt with by an administrator.
AckTime	This field displays the date and time this log was acknowledged.
AckUser	This field displays the name of the user who acknowledged this log.
Type	This field displays the type of the event log.
Severity	This field displays the severity of the event log.
Device Name	This field displays the name of the device on which the event log was generated.
Port	This field displays the port number on which the event log was generated.
Date Time	This field displays the date and time when the event log was generated.
Description	This field displays some information about the event log.
Acknowledge	Click **Acknowledge** to acknowledge any selected log messages.
Delete	Click **Delete** to remove the selected log.
Close	Click **Close** to close this screen.

9.2 Loopback Test

Follow the steps below to perform an internal loopback test.

1 Click **Fault** > **Loopback Test**.

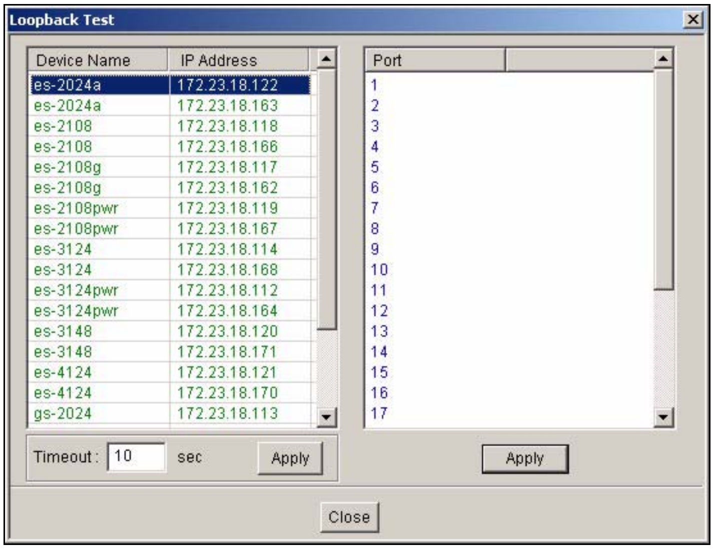
2 Choose a switch from the list located on the left-hand side of the screen.

3 Choose a port from the list located on the right-hand side of the screen.

4 In the **Timeout** field, accept the default or specify a connection timeout period (in seconds).

5 Click **Apply** to start the loopback test.

Figure 62 Fault: Loopback Test



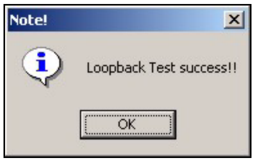
Device Name	IP Address
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113

Port
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

Timeout : 10 sec

6 A screen displays showing the test result. Click **OK** to close the screen.

Figure 63 fault: Loopback: Result



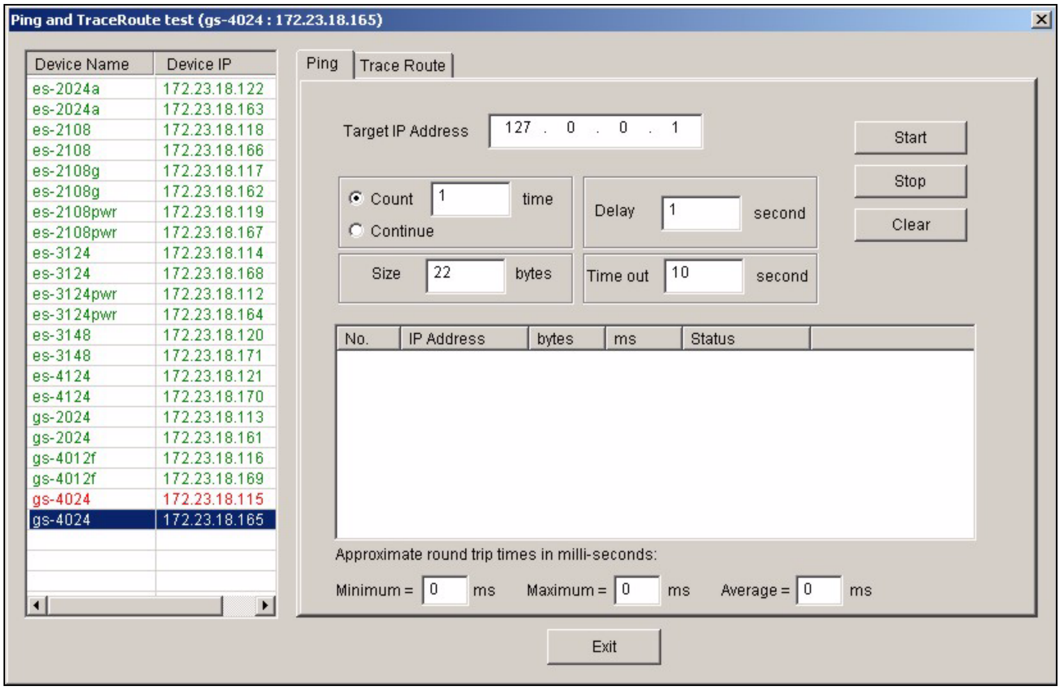
Loopback Test success!!

9.3 Ping Test

You can use the **Ping** screen to test connection from the selected switch to a specified IP address.

Click **Fault > Ping and TraceRoute Test** and click the **Ping** tab to display the screen.

Figure 64 Fault: Ping and TraceRoute Test: Ping



Ping and TraceRoute test (gs-4024 : 172.23.18.165)

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Target IP Address 127 . 0 . 0 . 1

● Count 1 time

○ Continue

Delay 1 second

Size 22 bytes

Time out 10 second

No.	IP Address	bytes	ms	Status

Approximate round trip times in milli-seconds:

Minimum = 0 ms Maximum = 0 ms Average = 0 ms

The following table describes the labels in this screen.

Table 45 Fault: Ping and TraceRoute Test: Ping

LABEL	DESCRIPTION
Device Name	This field displays the name of each switch. Select a switch to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the switch.
Target IP Address	Enter the IP address of the device to which you want to test the connection from the selected switch.
Count	Select this option and enter the number of ping test (1-15) to perform.
Delay	Enter the number of seconds (1-30) the switch is to wait between ping tests.
Continue	Select this option to perform ping tests continuously until you click **Stop**.
Size	Specify the size of the ping packet (0-1472 bytes) to send.
Timeout	Specify the time (1-30 seconds) the switch is to wait for a reply from the remote device before declaring this a failed ping test.
Start	Click **Start** to begin the ping connection test.
Stop	Click **Stop** to end the ping connection test if you select the **Continue** option.
Clear	Click **Clear** to reset the fields in this part of the screen.
No.	This field displays the index number.
IP Address	This field displays the destination IP address for this ping test.
bytes	This field displays the number of bytes sent for this ping test.
ms	This field displays the round trip time in mili-seconds (ms).
Status	This field indicates whether this ping test is successful or not.
Approximate round trip times in mili-seconds:	

Table 45 Fault: Ping and TraceRoute Test: Ping (continued)

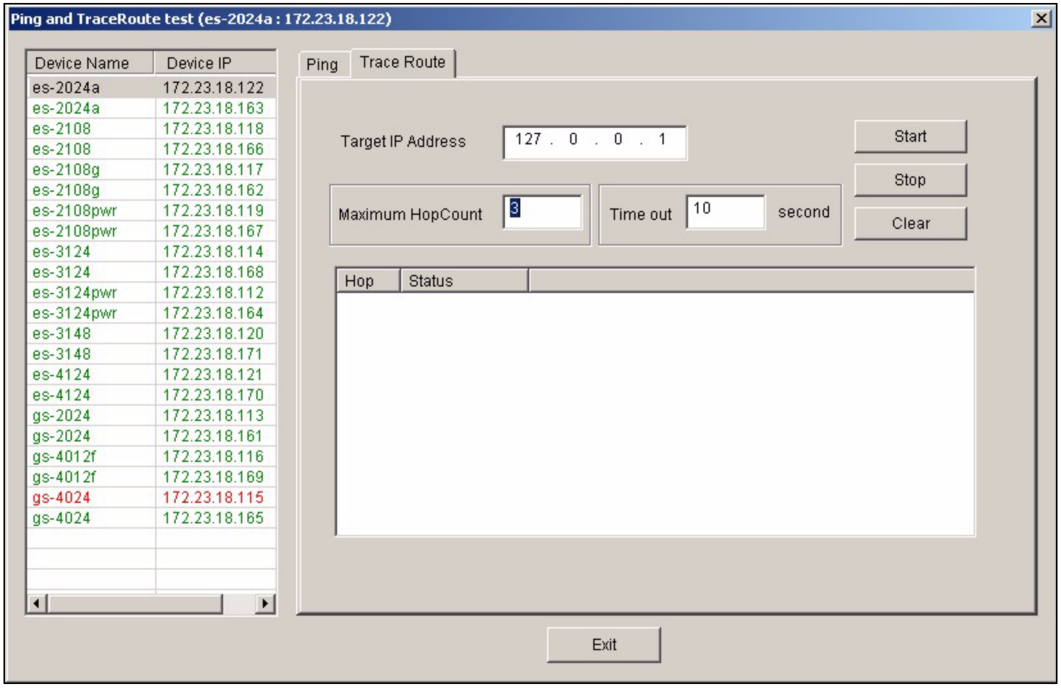
LABEL	DESCRIPTION
Minimum	This field displays the shortest round-trip time (the time it takes to send a packet from a switch to the destination and back).
Maximum	This field displays the longest round-trip time.
Average	This field displays the average round-trip time.
Exit	Click **Exit** to close this screen.

9.4 Traceroute Test

You can use the **Trace Route** screen to test connection from the selected switch to a specified IP address.

Click **Fault > Ping and TraceRoute Test** and click the **Trace Route** tab to display the screen.

Figure 65 Fault: Ping and TraceRoute Test: Trace Route



Ping and TraceRoute test (es-2024a : 172.23.18.122)

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

Target IP Address: 127 . 0 . 0 . 1

Maximum HopCount: 3

Time out: 10 second

The following table describes the labels in this screen.

Table 46 Fault: Ping and TraceRoute Test: Ping

LABEL	DESCRIPTION
Device Name	This field displays the name of each switch. Select a switch to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the switch.
Target IP Address	Enter the IP address of the device to which you want to test the connection from the selected switch.
Maximum Hop Count	Specify the maximum number of hops (intermediary devices) you want to trace. Enter a number between 1 and 10.

Table 46 Fault: Ping and TraceRoute Test: Ping (continued)

LABEL	DESCRIPTION
Timeout	Specify the time (1-60 seconds) the switch is to wait for a reply from the remote device before declaring this a failed traceroute test.
Start	Click **Start** to begin the ping connection test.
Stop	Click **Stop** to end the ping connection test if you select the **Continue** option.
Clear	Click **Clear** to reset the fields in this part of the screen.
Hop	This field displays the index number.
Status	This field indicates whether this ping test is successful or not.
Exit	Click **Exit** to close this screen.

10

Maintenance

This chapter tells you how to backup and restore your configuration file as well as upload new firmware and configuration files.

10.1 Firmware Upgrade

You must be logged in with system administrator rights to use this function.

Do NOT turn off the switch during the updating process, as it may corrupt the firmware and make the selected switch unusable.

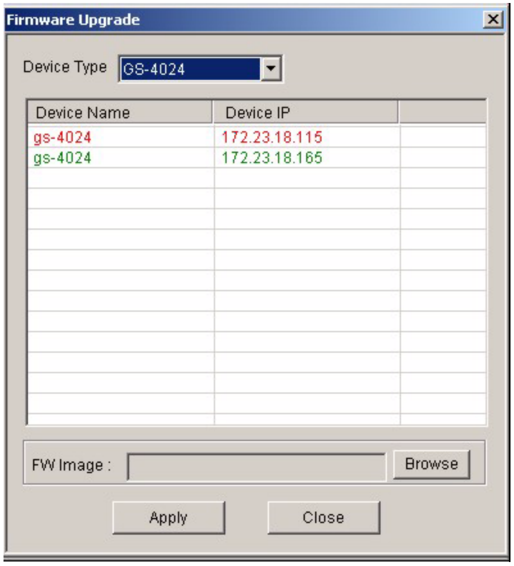
10.1.1 Procedure to Update Firmware

You can perform firmware upgrade on all switches of the same type simultaneously on the EMS. To update firmware, first download the latest firmware, then unzip and store it on your computer. You can use this EMS FTP client to connect to a selected switch.

Do NOT turn off the switch during the updating process, as it may corrupt the firmware and make your switch unusable.

1. Click **Maintenance** > **Firmware Upgrade**.
2. Select a device type in the **Device Type** field.
3. The list displays the switches of the selected type. Select a switch or multiple switches on which you want to upgrade the firmware.
4. Type the path and file name of the firmware file you wish to upload to the switch in the **FW Image** text box or click **Browse** to locate it. After you have specified the file, click **Apply**.

Figure 66 Maintenance: Firmware Upgrade

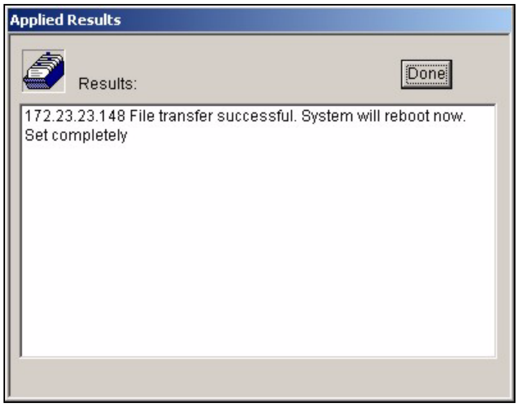


Device Type: GS-4024

Device Name	Device IP
gs-4024	172.23.18.115
gs-4024	172.23.18.165

5 After the file transfer is complete, a screen displays showing the result. Click **Done** to close the screen. When the firmware upgrade process is complete, the switch(es) automatically restarts (the **SYS** LED blinks).

Figure 67 Maintenance: Firmware Upgrade: Result



Results:

```
172.23.23.148 File transfer successful. System will reboot now.
Set completely
```

6 Wait until the switch(es) has finished rebooting before accessing it again. Check the firmware version on the switch to make sure that the firmware is updated successfully.

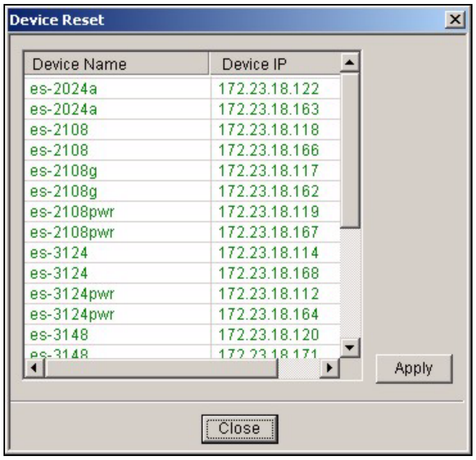
10.2 Device Reset

Use the **Reboot System** screen to restart a switch without physically turning the power off.

1 Click **Maintenance** > **Device Reset**.

2 Select a device from the list and click **Apply**.

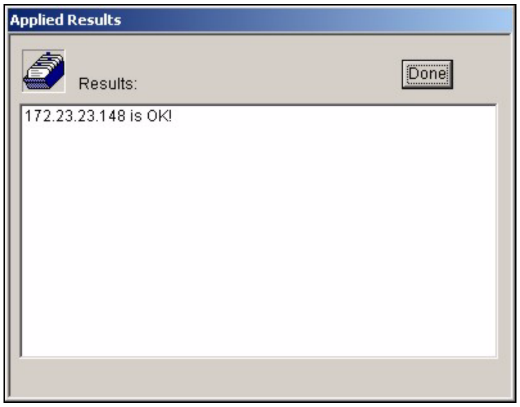
Figure 68 Maintenance: Device Reset



Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171

3 A screen displays. Click **Done**. The switch will restart. This takes up to two minutes. This does NOT affect the switch's configuration.

Figure 69 Maintenance: Device Reset: Result



172.23.23.148 is OK!

10.3 NE Configuration Backup and Restore

A Network Element (NE) is a network device that provides support or services to the user.

Follow the steps below to backup or restore a switch configuration file to your computer.

1 Click **Maintenance** > **NE Configuration Backup and Restore**.

2 Select **All Devices** or a device model from the drop-down list box and select a switch in the list box.

3 Under **Directory/File Name**, type the path and file name of the file you wish to restore to the switch or backup to your computer in the text box provided or click **Browse** to locate it.

4 Select the **Save running-config to configuration** check box to save the current switch configuration if you want to back up to your computer.

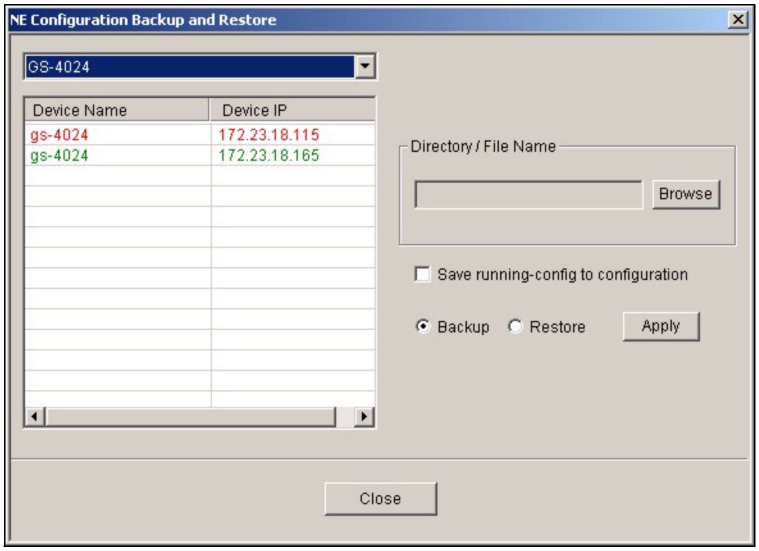
5 Select **Backup** to save the configuration to your computer. Or select **Restore** to restore the configuration file back to the switch.

6 Click **Apply**.

7 If you chose **Restore**, the switch automatically restarts when the configuration file upload is complete.

8 Click **Close** to close this screen.

Figure 70 Maintenance: Configuration Backup/Restore


NE Configuration Backup and Restore
Directory / File Name
Browse
Save running-config to configuration
Backup
Restore
Apply
Close

GS-4024

Device Name	Device IP
gs-4024	172.23.18.115
gs-4024	172.23.18.165

☐ Save running-config to configuration

● Backup ○ Restore

The following table describes the labels in this screen.

Table 47 Maintenance: Configuration Backup/Restore

LABEL	DESCRIPTION
Device Name	This field displays the name of each IP DSLAM. Select an IP DSLAM to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the IP DSLAM.
Directory/File Name	Type the path and file name of the configuration file you wish to restore to the switch or backup to your computer in the **Directory / File Name** text box or click **Browse** to locate it.
Save running-config to configuration	This field is applicable when you select **Backup**. Select the **Save running-config to configuration** text box to save the most recently updated configuration to a file specified in the **Directory/File Name** field.
Backup	Click the **Backup** radio button to transfer the configuration file from your switch to a computer.
Restore	Click the **Restore** radio button to transfer the configuration file from your computer to a switch.
Apply	Click **Apply** to backup or restore the switch(es) configuration file.
Close	Click **Close** to close this screen.

10.4 Load Factory Default

Follow the steps below to reset a switch configuration to the factory defaults.

1 Click **Maintenance** > **Load Factory Default**.

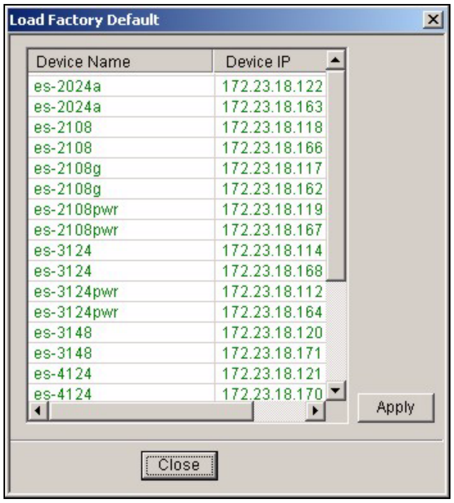
2 Select a switch from the list of devices shown.

3 Click **Apply** to clear all configuration information and return the switch to the factory defaults.

This may take up to two minutes. If you want to access the switch web configurator again, you may need to change the IP address of your computer to be in the same subnet as that of the default switch IP address.

4 Click **Close** to close this screen.

Figure 71 Maintenance: Load Factory Defaults


Load Factory Default
Apply
Close

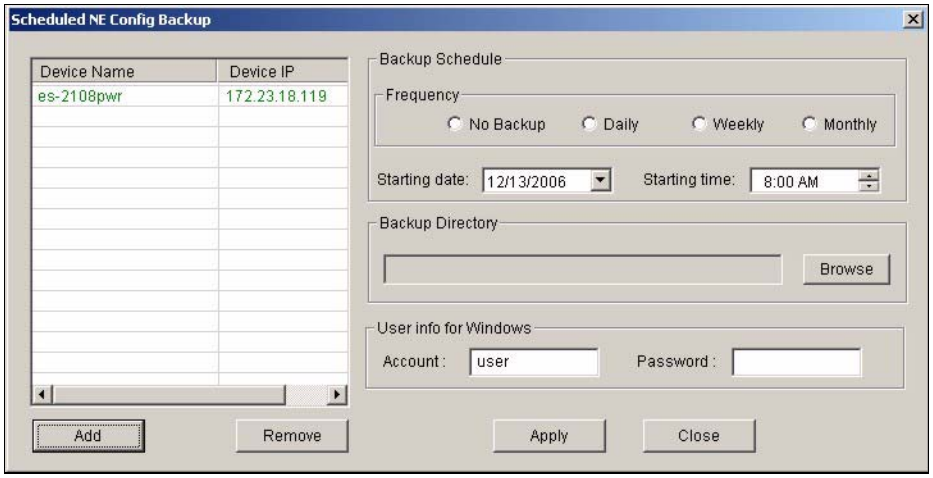
Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170

10.5 Scheduled Network Element Configuration Backup

Perform configuration backups according to a schedule. Set the frequency, time and date of the backup and the location where you want to backup the configuration file.

Click **Maintenance** > **Scheduled NE Config Backup** to display the configuration screen as shown.

Figure 72 Maintenance: Scheduled NE Config Backup


Scheduled NE Config Backup
Backup Schedule
Frequency
Backup Directory
Browse
User info for Windows
Add
Remove
Apply
Close

Device Name	Device IP
es-2108pwr	172.23.18.119

○ No Backup ○ Daily ○ Weekly ○ Monthly

Starting date: 12/13/2006

Starting time: 8:00 AM

Account : user

Password :

The following table describes the labels in this screen.

Table 48 Maintenance: Scheduled NE Config Backup

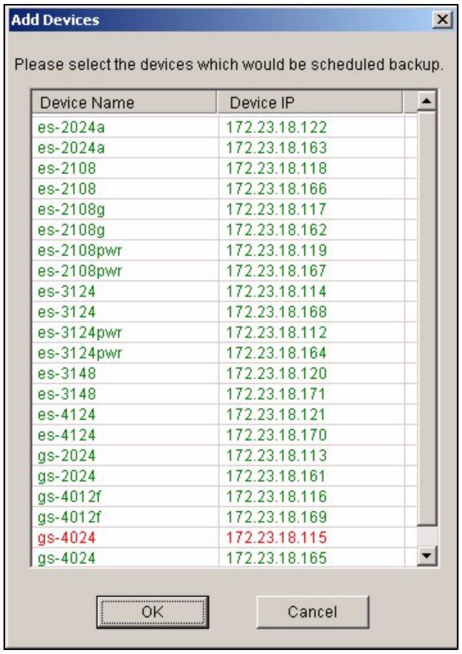
LABEL	DESCRIPTION
Device Name	This field displays the name of each IP DSLAM. Select an IP DSLAM to look at statistics for one of its ports.
Device IP	This field displays the corresponding IP address of the IP DSLAM.
Add	Click the **Add** button to add a switch to the list of devices in the backup schedule.
Remove	Click the **Remove** button to remove a switch from the list of devices in the backup schedule.
Backup Schedule	
Frequency	Scheduled backups can be performed on a **Daily**, **Weekly** or **Monthly** basis. Select a radio button to schedule configuration backups starting at the date and time specified below. Select **No Backup** to disable this feature.
Starting date	Specify the starting date to begin a configuration file backup for the selected device(s). Select a date from the drop-down list box.
Starting time	Specify the starting time to begin a configuration file backup for the selected device(s). Select a time from the selection box or enter a time (hh:mm:ss AM/PM format).
Backup Directory	Type the path and file name of the configuration file you wish to backup to your computer in the **Backup Directory** text box or click **Browse** to locate it.
User info for Windows	To perform scheduled backups, you need to specify your Windows administrator account information. This allows the EMS to add a scheduled task in Windows.
Account	Enter the Windows administrator account login username.
Password	Enter a password in this field for the administrator **Account** above.
Apply	Click **Apply** to save changes to the EMS.
Close	Click **Close** to close this screen.

10.5.1 Configuring Scheduled NE Configuration Backup

Follow the steps below to add a device to the list of devices in the **Scheduled NE Configuration Backup** screen.

1. Click the **Add** button in the **Scheduled NE Config Backup** screen.
2. Select one or more switches whose configuration you want to back up. Click **OK**.

Figure 73 Maintenance: Scheduled NE Config Backup: Add Devices



Please select the devices which would be scheduled backup.

Device Name	Device IP
es-2024a	172.23.18.122
es-2024a	172.23.18.163
es-2108	172.23.18.118
es-2108	172.23.18.166
es-2108g	172.23.18.117
es-2108g	172.23.18.162
es-2108pwr	172.23.18.119
es-2108pwr	172.23.18.167
es-3124	172.23.18.114
es-3124	172.23.18.168
es-3124pwr	172.23.18.112
es-3124pwr	172.23.18.164
es-3148	172.23.18.120
es-3148	172.23.18.171
es-4124	172.23.18.121
es-4124	172.23.18.170
gs-2024	172.23.18.113
gs-2024	172.23.18.161
gs-4012f	172.23.18.116
gs-4012f	172.23.18.169
gs-4024	172.23.18.115
gs-4024	172.23.18.165

10.5.2 Removing a Scheduled NE Configuration Backup

Follow the steps below to remove the selected device(s) from the configuration backup schedule.

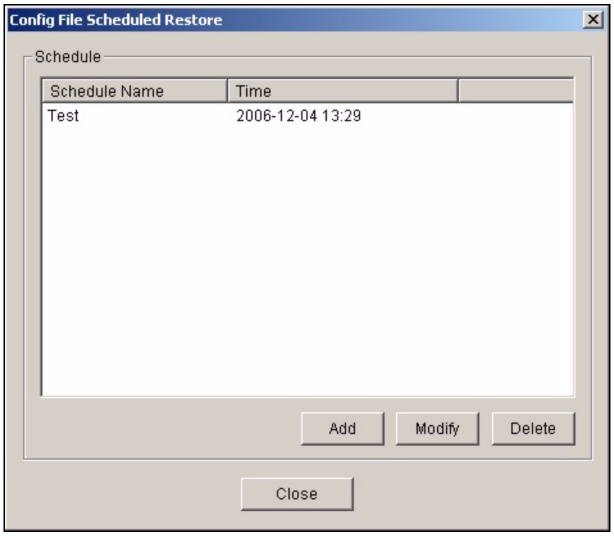
1. Click **Maintenance** > **Scheduled NE Configuration Backup**.
2. Select a device or devices you want to exclude from the backup schedule.
3. Click **Remove**.

10.6 Scheduled Device Configuration Restore

Use this screen to restore the configuration of one or more switches at a scheduled time. Set the time and date of the restore and the location of the configuration file you want to restore. Each schedule can restore configuration files for multiple switches, and you can set up multiple schedules to restore configuration files at more than one scheduled time.

To open this screen, click **Maintenance** > **Scheduled Device Configuration Restore**.

Figure 74 Maintenance: Scheduled Device Configuration Restore



Schedule Name	Time
Test	2006-12-04 13:29

The following table describes the labels in this screen.

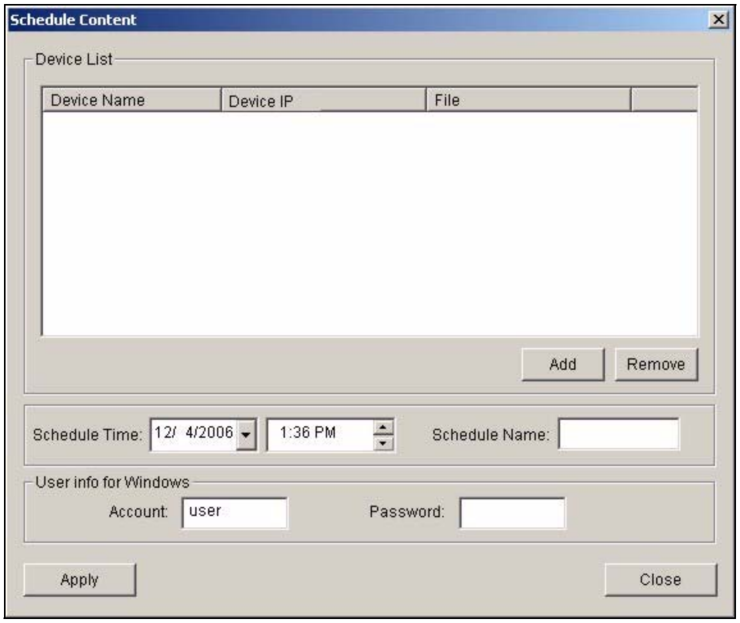
Table 49 Maintenance: Scheduled Device Configuration Restore

LABEL	DESCRIPTION
Schedule Name	This field displays the name of each schedule for restoring configuration files.
Time	This field displays when the configuration files will be restored.
Add	Click this to create a new schedule for restoring configuration files.
Modify	Select an existing schedule, and click this to edit it.
Delete	Select one or more schedules, and click this to remove them.
Close	Click this to close this screen.

10.6.1 Schedule Content Screen

Use the **Schedule Content** screen to configure a schedule for restoring configuration files. Click **Maintenance > Scheduled Device Configuration Restore**. Click **Add** to create a new schedule or click **Modify** to edit the selected schedule.

Figure 75 Maintenance: Scheduled Device Configuration Restore: Add/Modify



The following table describes the labels in this screen.

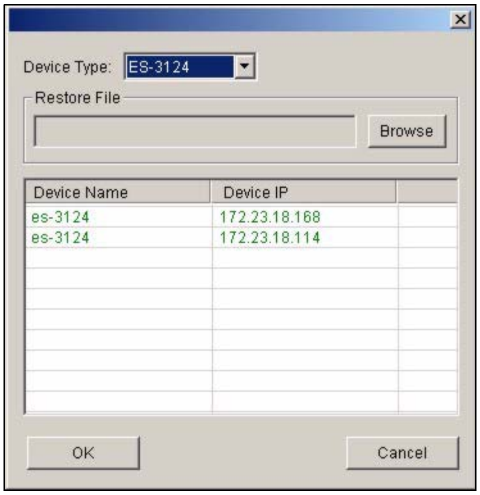
Table 50 Maintenance: Scheduled Device Configuration Restore: Add/Modify

LABEL	DESCRIPTION
Device List	
Device Name	This field displays the name of each switch in the schedule.
Device IP	This field displays the corresponding IP address of the switch.
File	This field displays the full path and name of the configuration file that will be restored to the switch.
Add	Click this to add one or more switches to the schedule.
Remove	Select one or more switches, and click this to remove them from the schedule.
Schedule Time	Specify when the configuration files should be restored. This is based on the current date and time of the computer on which the EMS is running, not the current date and time of the switch(es).
Schedule Name	This field is grayed out unless you are creating a new schedule. Type a name to create a new profile. You can use 1-31 alphanumeric characters, underscores (_), or dashes(-). Spaces are not allowed.
User info for Windows	
Account	Enter the user name for the Windows account.
Password	Enter the password for the Windows account.
Apply	Click this to save your changes.
Close	Click this to discard any unsaved changes and close this screen.

10.6.2 Schedule Content Screen

Use this screen to add one or more switches to a schedule for restoring configuration files. To open this screen, click **Add** when you are creating a new schedule or editing an existing one.

Figure 76 Maintenance: Scheduled Device Configuration Restore: Add/Modify


Restore File
Browse
OK
Cancel

Device Type: ES-3124

Device Name	Device IP
es-3124	172.23.18.168
es-3124	172.23.18.114

The following table describes the labels in this screen.

Table 51 Maintenance: Scheduled Device Configuration Restore: Add/Modify

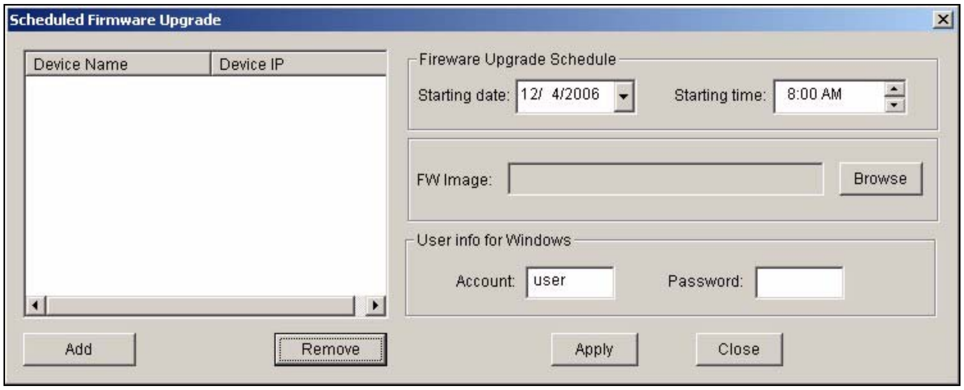
LABEL	DESCRIPTION
Device Type	Select the model of the switch you want to add to the schedule.
Restore Directory	Enter the full path and name of the configuration file that will be restored to the switch, or click **Browse** to locate it.
Device Name	Select one or more switches to which you want to restore the specified configuration file. Use the **Shift** key or **Ctrl** key to select more than one switch.
Device IP	This field displays the IP address of the switch.
OK	Click this to save your changes and return to the previous screen.
Cancel	Click this to discard any changes and return to the previous screen.

10.7 Scheduled FW Upgrade

Use this screen to upload firmware to one or more switches at a scheduled time. Set the time and date of the upload and the location of the firmware you want to upload to each of them. Each schedule can upload firmware for multiple switches.

To open this screen, click **Maintenance** > **Scheduled FW Upgrade**.

Figure 77 Maintenance: Scheduled FW Upgrade


Scheduled Firmware Upgrade
Device Name
Device IP
Fireware Upgrade Schedule
FW Image:
Browse
User info for Windows
Password:
Add
Remove
Apply
Close

Starting date: 12/ 4/2006

Starting time: 8:00 AM

Account: user

The following table describes the labels in this screen.

Table 52 Maintenance: Scheduled FW Upgrade

LABEL	DESCRIPTION
Device Name	This field displays the name of each switch in the schedule.
Device IP	This field displays the corresponding IP address of the switch.
Add	Click **Add** to specify the switch(es) to include in this schedule.
Remove	Click **Remove** to delete the selected switch from this schedule.
Firmware Upgrade Schedule	
Starting Date	Specify the date the firmware should be uploaded. This is based on the current date of the computer on which the EMS is running, not the current date of the switch(es).
Starting Time	Specify the time the firmware should be uploaded. This is based on the current time of the computer on which the EMS is running, not the current time of the switch(es).
FW Image	Click **Browse** to specify the full path and file name of the firmware that will be uploaded to the switch(es).
User info for Windows	
Account	Enter the user name for the Windows account.
Password	Enter the password for the Windows account.
Apply	Click this to save the settings. When a **Success** screen displays, click **OK**.
Close	Click this to close this screen.

11

Tools

This chapter shows you how to access a switch via Telnet or web configurator directly through the EMS. You may need to do this to test the switch network connection for example.

11.1 Accessing the Switch

Access the switch remotely via Telnet or web browser.

When you access a switch via Telnet or the web configurator, you **CANNOT** make any changes to that switch using the EMS.

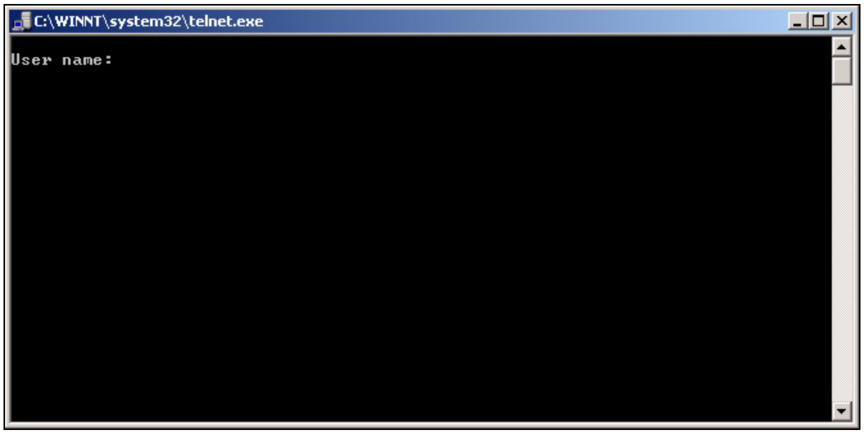
11.1.1 Telnet

Telnet is the login and terminal emulation protocol common on the Internet and in UNIX environments. It operates over TCP/IP networks. Its primary function is to allow users to log into remote host systems.

The administrator uses Telnet from a computer on a remote network to access the switch. You can use remote Telnet access as shown next.

1. Select a switch from the list of devices shown in the Device List Panel.
2. Click **Tool** > **Telnet** to open a console session for Telnet access to the switch.
3. Type the switch user name and password to access the CLI.

Figure 78 Tool: Telnet



```
User name:
```

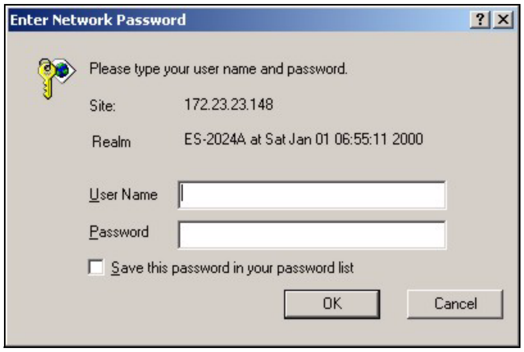
4 Refer to the switch User's Guide for information on the commands used in this screen.

11.1.2 Web Access

Configure the switch using the web configurator as shown.

1 Select a switch from the list of devices shown in the Device List Panel.
2 Click **Tool** > **Web Access** to open the switch web configurator password screen. From here you can log in directly to the switch.
3 Type the switch **User name** and **Password** to access the web configurator.

Figure 79 Tool: Web Access



Please type your user name and password.

Site: 172.23.23.148

Realm ES-2024A at Sat Jan 01 06:55:11 2000

4 Refer to the switch User's Guide for information on the web configurator main screen.

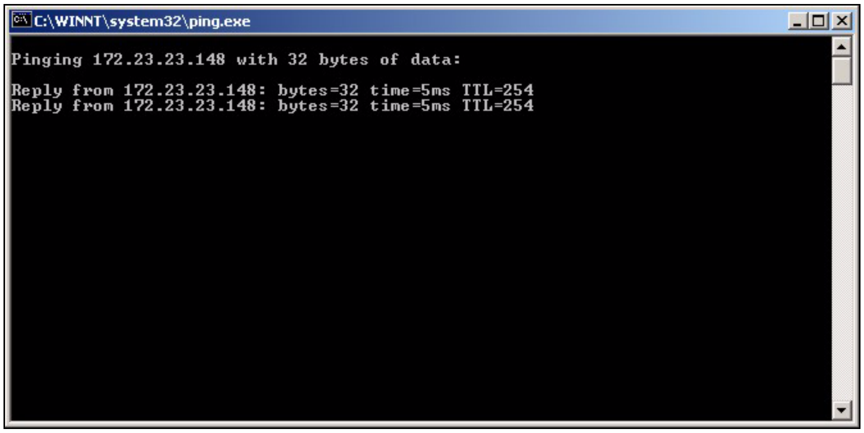
11.2 Ping

Ping the host to see if the links and TCP/IP protocol on both your computer and the switch is working. Follow the steps below:

1 Select a switch from the list of devices shown in the Device List Panel.
2 Click **Tool** > **Ping** to have the computer ping the IP address of the selected device.
3 The Command Prompt window automatically closes after the computer pings the selected switch three times.

The device IP address varies according to whether the switch is connected to the EMS computer using an in-band or an out-of-band IP address.

Figure 80 Tool: Ping



```
Pinging 172.23.23.148 with 32 bytes of data:

Reply from 172.23.23.148: bytes=32 time=5ms TTL=254
Reply from 172.23.23.148: bytes=32 time=5ms TTL=254
```

PART III

Switch Configuration and Troubleshooting

Device Menu Overview (125)
System Configuration (131)
Switch Configuration (143)
VLAN (157)
Ethernet Port Configuration (163)
Multicast Configuration (179)
Configuration (191)
IP Configuration (199)
Troubleshooting (221)

12

Device Menu Overview

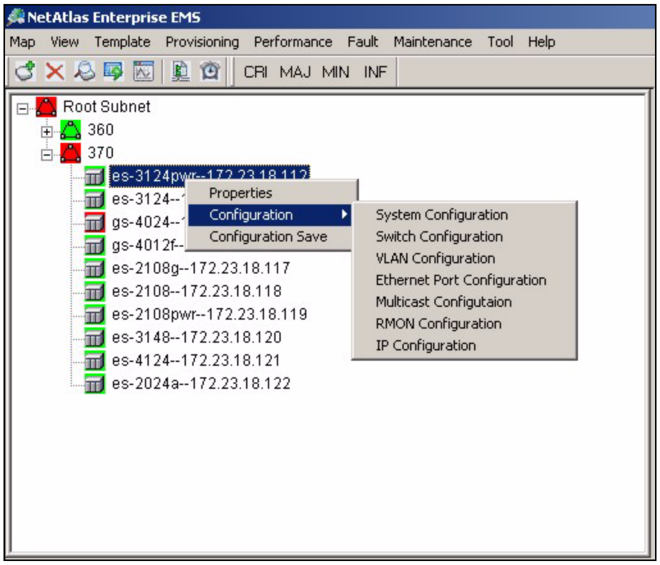
This chapter introduces the device configuration menus.

12.1 Device Menu Summary

To select a device configuration menu, right-click on a device in the Device List Panel.

Available screens and fields vary depending on your switch model and the switch firmware version. Example configuration screens are shown.

Figure 81 Device Panel List Menus


NetAtlas Enterprise EMS
Map View Template Provisioning Performance Fault Maintenance Tool Help
CRI MAJ MIN INF
Root Subnet
360
370
es-3124pwr--172.23.18.112
es-3124--1
gs-4024--1
gs-4012f--
es-2108g--172.23.18.117
es-2108--172.23.18.118
es-2108pwr--172.23.18.119
es-3148--172.23.18.120
es-4124--172.23.18.121
es-2024a--172.23.18.122
Properties
Configuration
Configuration Save
System Configuration
Switch Configuration
VLAN Configuration
Ethernet Port Configuration
Multicast Configutaion
RMON Configuration
IP Configuration

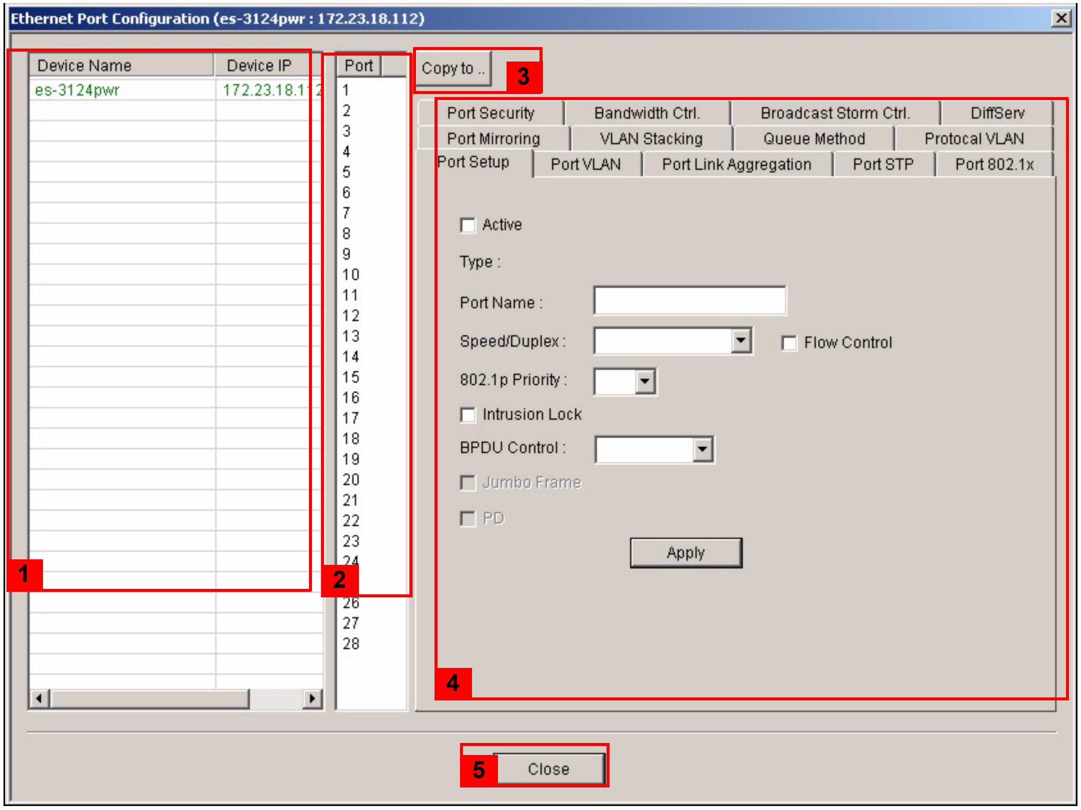
12.2 Property Configuration

See Section 4.1.2 on page 55 for information on the **Edit Device** screen.

12.3 Introducing the Device Configuration Window

The following example screen displays the main features used to configure EMS-managed devices. See the individual screen selections for details on switch feature configuration.

Figure 82 Configuration Window



Ethernet Port Configuration (es-3124pwr : 172.23.18.112)

Device Name	Device IP
es-3124pwr	172.23.18.112

Port
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
26
27
28
Copy to ..
Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
☐ Active
Type :
Port Name :
Speed/Duplex :
☐ Flow Control
802.1p Priority :
☐ Intrusion Lock
BPDU Control :
☐ Jumbo Frame
☐ PD
Apply
Close
1
2
3
4
5

The following table describes the elements in this screen.

Table 53 Configuration Window

	LABEL	DESCRIPTION
1	Device Panel	This panel displays all devices (of the same type) currently managed by the EMS. The color of the text indicates the device status.
2	Port List Panel	This field displays a list of switch ports. This list displays in the Ethernet Port Configuration screens only. To make configuration changes to each port or ports, select a port number or multiple port numbers (by pressing the [CTRL] key and clicking at the same time) in the Port List Panel.
3	Copy to..	Click the **Copy to..** button to copy the configuration from the switch that you are currently configuring to the port(s) on the same switch or other switch(es) of the same model. Port configurations can also be copied to other device ports in the Ethernet Port Configuration screens.

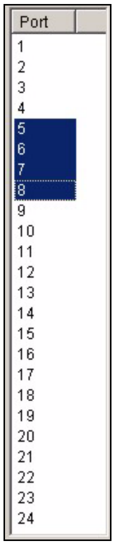
Table 53 Configuration Window

	LABEL	DESCRIPTION
4	Configuration Panel	Use this panel to make configuration changes to a device based on a port or multiple ports selected in the Port List Panel. If the screen does not have a Port List Panel, then use this panel to make configuration changes to a device selected in the Device Panel. Click **Apply** to save configuration changes.
5	Close	Click **Close** to close a configuration screen. If you close a screen without first clicking **Apply**, configuration changes will not be saved.

12.3.1 Port List Multiple Port Configuration

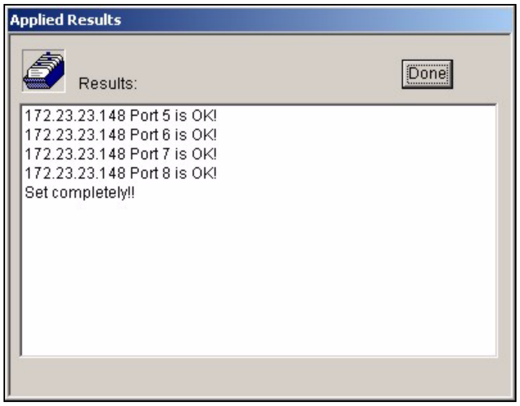
Configure more than one port at the same time by pressing the [CTRL] key and clicking at the same time in the Port List panel.

Figure 83 Configuration Window: Port List: Multiple Port Select



Click **Apply** when you are satisfied with the configuration changes. A screen displays showing the configuration result.

Figure 84 Applied Results



```
172.23.23.148 Port 5 is OK!
172.23.23.148 Port 6 is OK!
172.23.23.148 Port 7 is OK!
172.23.23.148 Port 8 is OK!
Set completely!!
```

4 Click **Done** to close the screen.

12.3.2 The Copy to.. Button

The **Copy to..** button allows you to copy the configuration from the switch you are currently configuring to one or more switches of the same model.

12.3.2.1 Copy Configuration to Other Switches

You can copy the screen settings (in the configuration group listed below) from one switch to another switch of the same model.

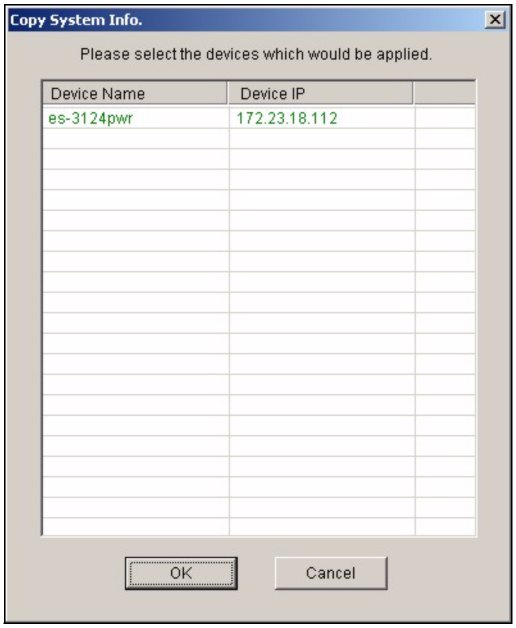
- System configuration
- Switch configuration
- Multicast configuration
- RMON configuration

Follow the steps below to copy settings between switches.

1 In a configuration screen in the configuration group listed above), click the **Copy to ..** button to display the switch select screen as shown.

2 Select one or more switches and click **OK** to copy the settings.

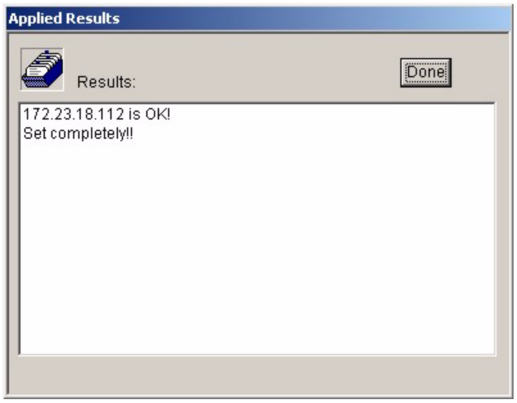
Figure 85 Copy Switch Setting: Example



Device Name	Device IP
es-3124pwr	172.23.18.112

3 After the process is complete, a status screen displays. Click **Done**.

Figure 86 Switch Configuration Copy: Success


Applied Results
Results:
Done

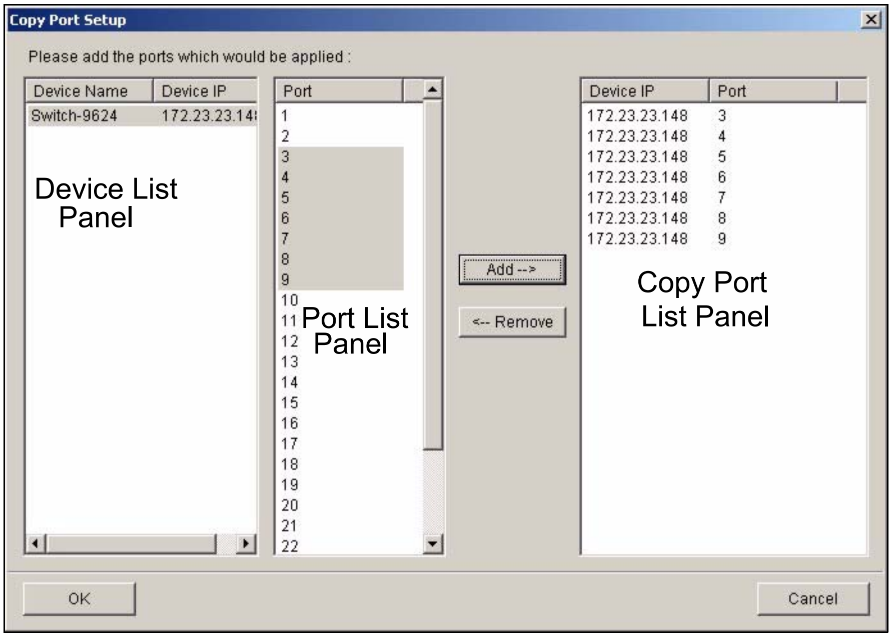
172.23.18.112 is OK!
Set completely!!

12.3.2.2 Copy Configuration to Other Switch Ports

In an **Ethernet Port Configuration** screen, click the **Copy to ..** button to copy a port's configuration to another port on the same or a different switch.

1. In the Device Panel list, select a device that you want configure.
2. Select a tab in the Configuration Panel.
3. Select a port or multiple ports (by pressing the [CTRL] key and clicking at the same time) from the Port List Panel.
4. Make your configuration changes in the Configuration Panel and click the **Apply** button.
5. Click the **Copy to..** button. The following screen displays.

Figure 87 Copy Port Setting: Example


Copy Port Setup
Please add the ports which would be applied :
Device List Panel
Port List Panel
Add -->
<-- Remove
Copy Port List Panel
OK
Cancel

Device Name	Device IP
Switch-9624	172.23.23.14

Port
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

Device IP	Port
172.23.23.148	3
172.23.23.148	4
172.23.23.148	5
172.23.23.148	6
172.23.23.148	7
172.23.23.148	8
172.23.23.148	9

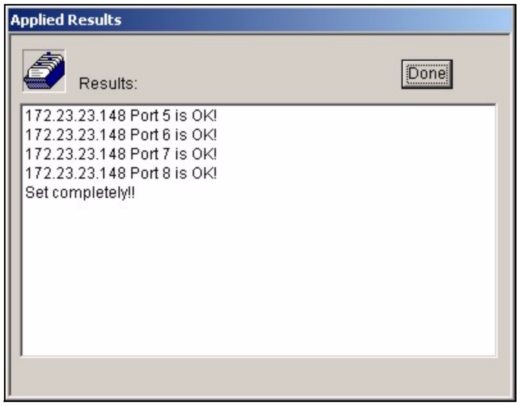
The following table describes this screen.

Table 54 Copy Port Setup

LABEL	DESCRIPTION
Device List	Select a device to which you want to copy from the switch you are currently configuring.
Port List Panel	Select one port or multiple ports (by pressing the [CTRL] key and clicking at the same time) from the Port List Panel.
Add	Click **Add** to display the port(s) to which you want to copy from the switch you are currently configuring.
Remove	Click **Remove** to move a selected port(s) from the Copy Port List Panel list to the Port List Panel.
Copy Port List Panel	This panel displays the device port(s) to which you want to copy from the switch you are currently configuring.
OK	Click **OK** to copy the configuration from the current switch to the device port(s) displayed in the Copy Port List Panel.
Cancel	Click **Cancel** to return to the previous screen.

6 Click **OK** to display the following screen.

Figure 88 Copy Successful



```
172.23.23.148 Port 5 is OK!
172.23.23.148 Port 6 is OK!
172.23.23.148 Port 7 is OK!
172.23.23.148 Port 8 is OK!
Set completely!!
```

7 Click **Done** to close the screen.

13

System Configuration

This chapter shows you how to view general system information, configure SNMP, remote management and time setup.

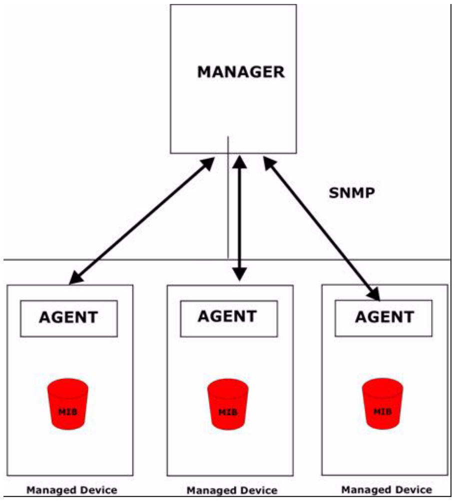
13.1 System Info

See Section 3.9 on page 48 for information about the switch.

13.2 SNMP

Simple Network Management Protocol is a protocol used for exchanging management information between network switches. SNMP is a member of TCP/IP protocol suite. A manager station can manage and monitor the switch through the network via SNMP version 2c. The next figure illustrates an SNMP management operation. SNMP is only available if TCP/IP is configured.

Figure 89 SNMP Management Model


MANAGER
SNMP
AGENT
MIB
Managed Device
AGENT
MIB
Managed Device
AGENT
MIB
Managed Device

An SNMP managed network consists of two main components: agents and a manager.

An agent is a management software module that resides in a managed switch (your Ethernet switch). An agent translates the local management information from the managed switch into a form compatible with SNMP. The manager is the console through which network administrators perform network management functions. It executes applications that control and monitor managed devices.

The managed devices contain object variables/managed objects that define each piece of information to be collected about a switch. Examples of variables include such as number of packets received, node port status etc. A Management Information Base (MIB) is a collection of managed objects. SNMP allows a manager and agents to communicate for the purpose of accessing these objects.

SNMP itself is a simple request/response protocol based on the manager/agent model. The manager issues a request and the agent returns responses using the following protocol operations:

Table 55 SNMP Commands

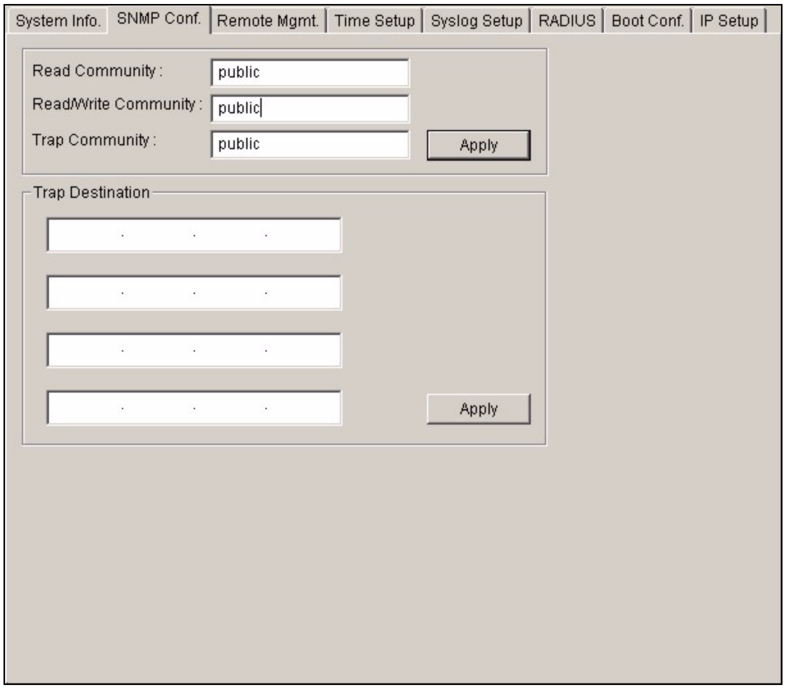
COMMAND	DESCRIPTION
Get	Allows the manager to retrieve an object variable from the agent.
GetNext	Allows the manager to retrieve the next object variable from a table or list within an agent. In SNMP, when a manager wants to retrieve all elements of a table from an agent, it initiates a Get operation, followed by a series of GetNext operations.
Set	Allows the manager to set values for object variables within an agent.
Trap	Used by the agent to inform the manager of some events.

See the switch User’s Guide for a list of supported traps.

13.2.1 Configuring SNMP

To open display the **SNMP Config** screen, right-click on a switch in the Device List Panel, and click **Configuration** > **System Configuration** > **SNMP Conf.**.

Figure 90 System Configuration: SNMP Conf.



Read Community : public

Read/Write Community : public

Trap Community : public

The following table describes the labels in this screen.

Table 56 System Configuration: SNMP Conf.

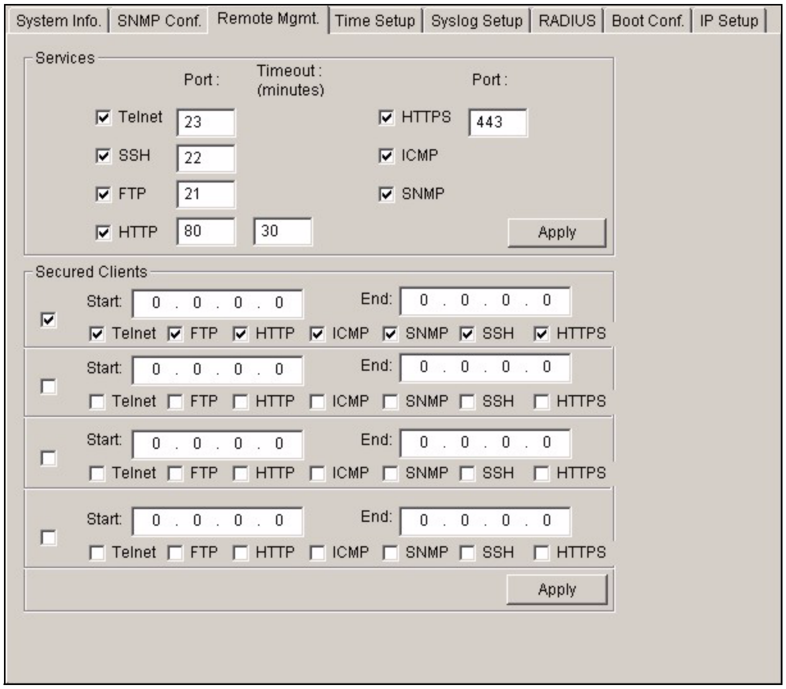
LABEL	DESCRIPTION
Read Community	Enter the get community, which is the password for the incoming Get- and GetNext- requests from the management station.
Read/Write Community	Enter the set community, which is the password for incoming Set- requests from the management station.
Trap Community	Enter the trap community, which is the password sent with each trap to the SNMP manager.
Apply	Click **Apply** to save your changes back to the switch.
Trap Destination	Enter the IP addresses of up to four stations to send your SNMP traps to.
Apply	Click **Apply** to save the trap destination changes back to the switch.

13.3 Remote Management

Remote management allows you to determine which services/protocols can access which device interface (if any) from which computers. You can customize the service port and the secured client IP address to enhance security and flexibility.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **System Configuration** > **Remote Mgmt.**.

Figure 91 System Configuration: Remote Management



☑ Telnet 23
☑ SSH 22
☑ FTP 21
☑ HTTP 80 30
☑ HTTPS 443
☑ ICMP
☑ SNMP

☑ Start: 0 . 0 . 0 . 0 End: 0 . 0 . 0 . 0
☑ Telnet ☑ FTP ☑ HTTP ☑ ICMP ☑ SNMP ☑ SSH ☑ HTTPS

☐ Start: 0 . 0 . 0 . 0 End: 0 . 0 . 0 . 0
☐ Telnet ☐ FTP ☐ HTTP ☐ ICMP ☐ SNMP ☐ SSH ☐ HTTPS

☐ Start: 0 . 0 . 0 . 0 End: 0 . 0 . 0 . 0
☐ Telnet ☐ FTP ☐ HTTP ☐ ICMP ☐ SNMP ☐ SSH ☐ HTTPS

☐ Start: 0 . 0 . 0 . 0 End: 0 . 0 . 0 . 0
☐ Telnet ☐ FTP ☐ HTTP ☐ ICMP ☐ SNMP ☐ SSH ☐ HTTPS

The following table describes the labels in this screen.

Table 57 System Configuration: Remote Management

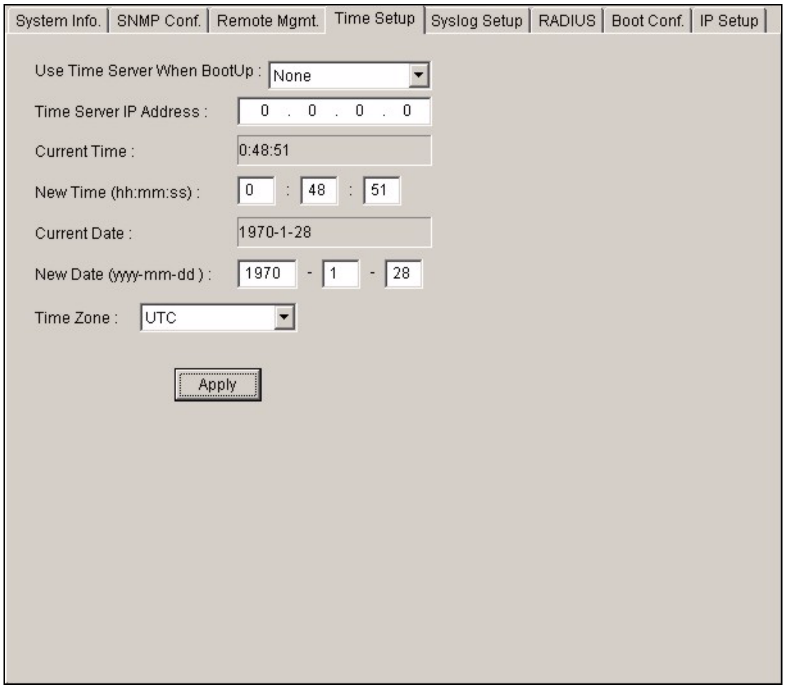
LABEL	DESCRIPTION
Services	This panel displays the services that you may use to remotely manage the switch. Select the check box(es) to allow remote management using the service(s).
Port	Enter the server port number to use with the corresponding service.
Timeout	For HTTP and HTTPS, you can also specify the administrative idle timeout (in minutes).
Apply	Click **Apply** to save the changes back to the switch.
Secured Clients	Select the check box(es) to enable the client set.
Start	To allow a range of computers to use Telnet, FTP, HTTP, ICMP, SSH or HTTPS services, enter the first IP address in the range here.The default value for a start and end address is 0.0.0.0, which means you don't care which host is trying to use a service (Telnet, FTP, HTTP, SNMP, ICMP, SSH or HTTPS).If you enter an IP address in this field, the switch will check if the client IP address matches the value here when a (Telnet, FTP, HTTP, SNMP, ICMP, SSH or HTTPS) session is up. If it does not match, the session is disconnected immediately.
End	To allow a range of computers to use Telnet, FTP, Web, SNMP or ICMP services, enter the **End** IP address in the range here. To allow a single computer to use Telnet, FTP, HTTP, SNMP, ICMP, SSH or HTTPS services, enter the same IP address here as in the **Start** field.
Telnet, FTP, HTTP, ICMP, SNMP, ICMP, SSH, HTTPS	Select the check box to allow the trusted computer(s) in the IP address range specified above to use this service to manage the switch.
Apply	Click **Apply** to save the changes back to the switch.
Close	Click **Close** to close the screen.

13.4 Time Setup

The switch keeps track of the time and date. There is also a software mechanism to set the time manually or get the current time and date from an external server when you log in to the switch. Use the **Time Setup** screen to update the time and date settings in the EMS and then save the settings to the switch. The real time is then displayed in the system messages.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **System Configuration** > **Time Setup**.

Figure 92 System Configuration: Time Setup



Use Time Server When BootUp : None
Time Server IP Address : 0 . 0 . 0 . 0
Current Time : 0:48:51
New Time (hh:mm:ss) : 0 : 48 : 51
Current Date : 1970-1-28
New Date (yyy-mm-dd) : 1970 - 1 - 28
Time Zone : UTC

The following table describes the labels in this screen.

Table 58 System Configuration: Time Setup

LABEL	DESCRIPTION
Use Time Server When BootUp	Select the time service protocol that your time server sends when you start the switch. Not all time servers support all protocols, so you may have to check with your ISP/network administrator or use trial and error to find a protocol that works. The main differences between them are the format. When you select the Daytime (RFC 867) format, the switch displays the day, month, year and time with no time zone adjustment. When you use this format it is recommended that you use a Daytime timeserver within your geographical time zone. **Time (RFC-868)** format displays a 4-byte integer giving the total number of seconds since 1970/1/1 at 0:0:0. **NTP (RFC-1305)** is similar to **Time (RFC-868)**. **None** is the default; enter the time manually.
Time Server IP Address	Enter the IP address of your time server. Check with your ISP/network administrator if you are unsure of this information.
Current Time	This field displays an updated time only when you reenter this menu.
New Time (hh:mm:ss)	Enter the new time in hour, minute and second format.

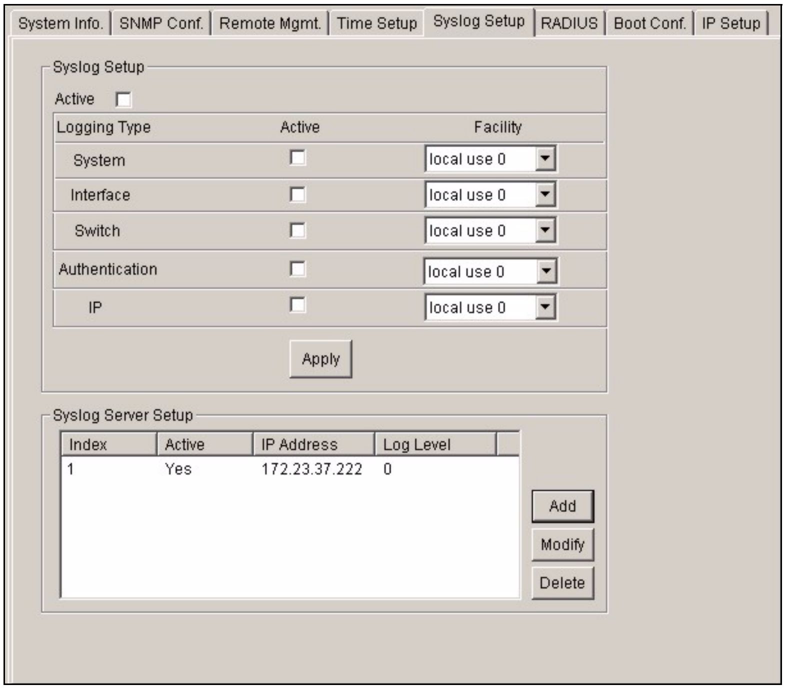
Table 58 System Configuration: Time Setup (continued)

LABEL	DESCRIPTION
Current Date	This field displays an updated date only when you re-enter this menu.
New Date (yyyy:mm:dd)	Enter the new date in year, month and day format.
Time Zone	Select the time difference between your time zone and Universal Time Coordinate (UTC) formerly known as Greenwich Mean Time (GMT).
Apply	Click **Apply** to save the changes.

13.5 Syslog Setup

Use this screen to configure syslog settings for a switch. To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **System Configuration** > **Syslog**.

Figure 93 System Configuration: Syslog Setup



Syslog Setup

Active ☐

Logging Type	Active	Facility
System	☐	local use 0
Interface	☐	local use 0
Switch	☐	local use 0
Authentication	☐	local use 0
IP	☐	local use 0

Syslog Server Setup

Index	Active	IP Address	Log Level
1	Yes	172.23.37.222	0

The following table describes the labels in this screen.

Table 59 System Configuration: Syslog Setup

LABEL	DESCRIPTION
Syslog Setup	
Active	Select **Active** to enable the syslog feature.
Logging Type	This field displays the name of the log type.
Active	Select **Active** to enable to create and store logs of the selected type.
Facility	Select the log facility. The log facility allows you to log the messages to different files in the syslog server. See your syslog manual for more information
Apply	Click **Apply** to save your changes.

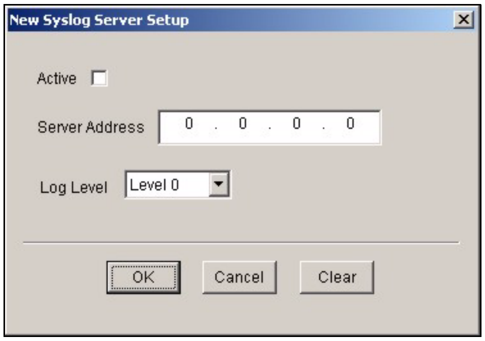
Table 59 System Configuration: Syslog Setup (continued)

LABEL	DESCRIPTION
Syslog Server Setup	
Index	This field displays the index number.
Active	This field indicates whether the syslog server setting is enabled or not.
IP Address	This field displays the IP address of the syslog server.
Log Level	This field displays the severity level of the logs which is to be stored on the syslog server.
Add	Click **Add** to configure a new syslog server.
Modify	Click **Modify** to change the settings of a selected syslog server.
Delete	Click **Delete** to remove the selected syslog server.

13.5.1 Configuring a Syslog Server

You must specify a syslog server for the switch to send logs. In the Syslog Setup screen, click Add to create a new syslog server entry or click Modify to edit an existing one.

Figure 94 System Configuration: Syslog Setup: Add



New Syslog Server Setup

Active ☐

Server Address 0 . 0 . 0 . 0

Log Level Level 0

The following table describes the labels in this screen.

Table 60 System Configuration: Syslog Setup: Add

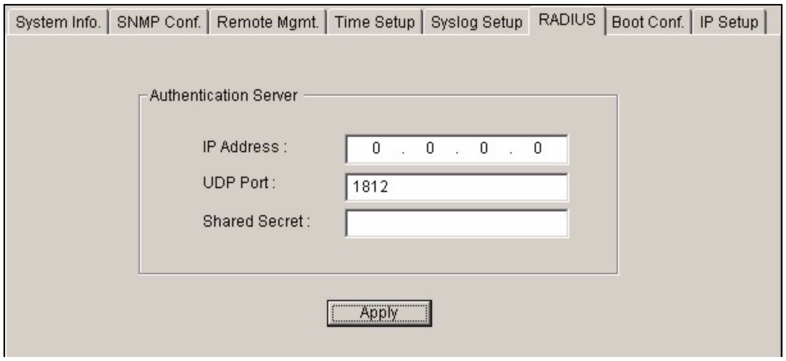
LABEL	DESCRIPTION
Active	Select **Active** to enable the settings of the syslog server.
Server Address	Enter the IP address of a syslog server in dotted decimal notation.
Log Level	Select the severity level of the logs to be stored on the syslog server.
OK	Click **OK** to save the changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.
Clear	Click **Clear** to start configuring this screen again.

13.6 RADIUS

RADIUS (Remote Authentication Dial-In User Service) authentication is a popular protocol used to authenticate users by means of an external server instead of (or in addition to) an internal device user database that is limited to the memory capacity of the device. In essence, RADIUS authentication allows you to validate an unlimited number of users from a central location.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **System Configuration** > **RADIUS**.

Figure 95 System Configuration: RADIUS



IP Address : 0 . 0 . 0 . 0

UDP Port : 1812

Shared Secret :

The following table describes the labels in this screen.

Table 61 System Configuration: RADIUS

LABEL	DESCRIPTION
Authentication Server	
IP Address	Enter the IP address of the external RADIUS server in dotted decimal notation.
UDP Port	The default port of the RADIUS server for authentication is 1812. You need not change this value unless your network administrator instructs you to do so.
Shared Secret	Specify a password (up to 32 alphanumeric characters) as the key to be shared between the external RADIUS server and the switch. This key is not sent over the network. This key must be the same on the external RADIUS server and the switch.
Apply	Click **Apply** to save your changes.

13.7 Boot Config

You can store up to two configuration files on the switch. Only one configuration file is used at a time. By default the switch uses the first configuration file (with an index number of 1). You can set the switch to use another configuration file.

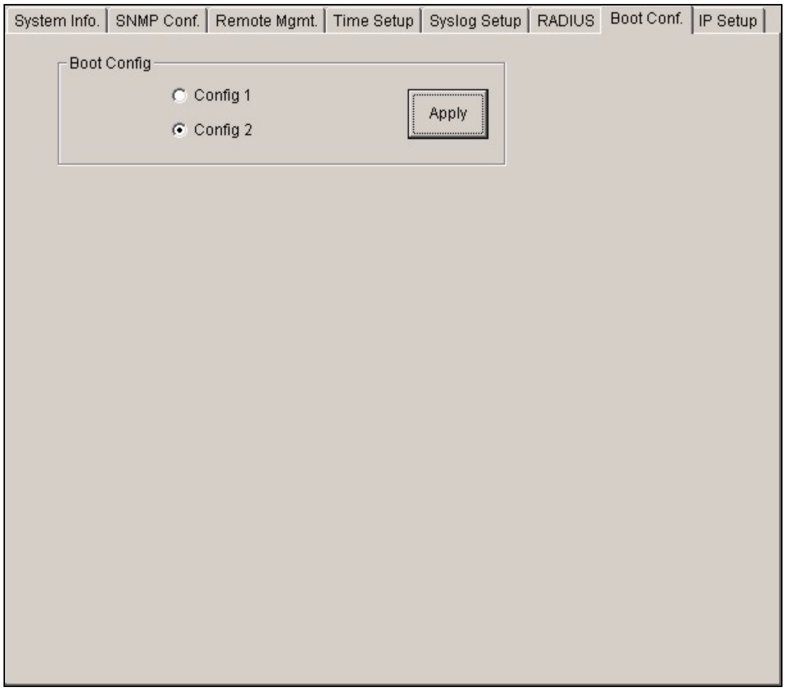
Use the **Boot Config** screen to select which configuration file you want the switch to use after the next system reboot.

1. Right-click on a switch and click **Configuration > System Configuration** and the **Boot Config** tab.

2 Specify which configuration the switch is to use after a reboot. Select **Config 1** or **Config 2**.

3 Click **Apply** to save the setting.

Figure 96 System Configuration: Boot Config


System Info.
SNMP Conf.
Remote Mgmt.
Time Setup
Syslog Setup
RADIUS
Boot Conf.
IP Setup
Apply

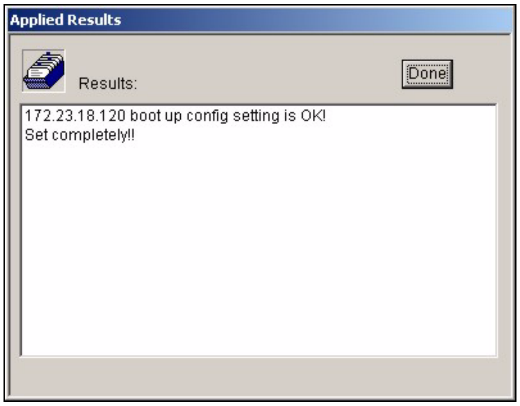
Boot Config

○ Config 1

● Config 2

4 When the setting is successful, a result screen displays. Click Done.

Figure 97 System Configuration: Boot Config


Applied Results
Results:
Done

```
172.23.18.120 boot up config setting is OK!
Set completely!!
```

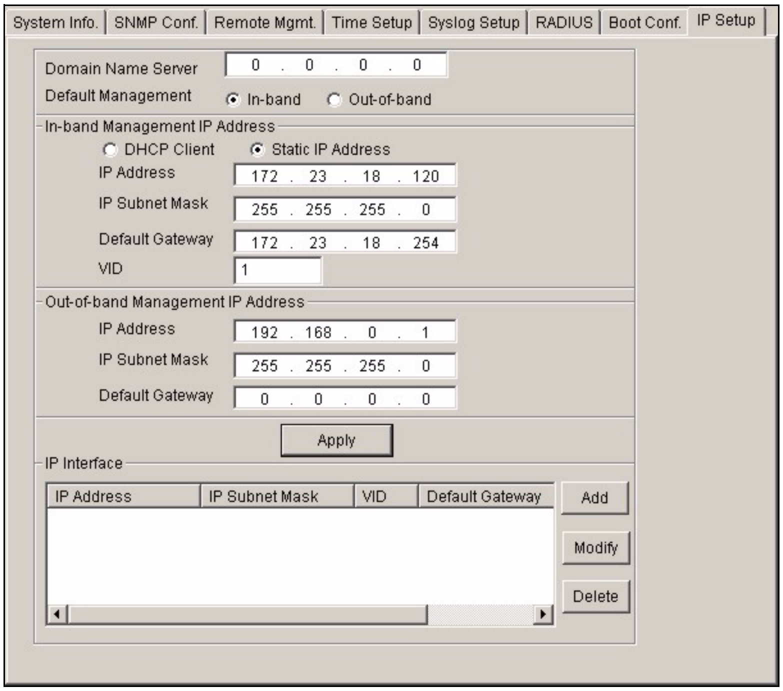
5 Reboot the switch to have it use the selected configuration file.

13.8 IP Setup

Use the **IP Setup** screen to configure the default gateway device, the default domain name server and add IP domains.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **System Configuration** > **IP Setup**.

Figure 98 System Configuration: IP Setup



Domain Name Server 0 . 0 . 0 . 0
Default Management ● In-band ○ Out-of-band

In-band Management IP Address
○ DHCP Client ● Static IP Address
IP Address 172 . 23 . 18 . 120
IP Subnet Mask 255 . 255 . 255 . 0
Default Gateway 172 . 23 . 18 . 254
VID 1

Out-of-band Management IP Address
IP Address 192 . 168 . 0 . 1
IP Subnet Mask 255 . 255 . 255 . 0
Default Gateway 0 . 0 . 0 . 0

The following table describes the labels in this screen.

Table 62 System Configuration: IP Setup

LABEL	DESCRIPTION
IP Setup	
Domain Name Server	DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. Enter a domain name server IP address in order to be able to use a domain name instead of an IP address.
Default Management	Specify which traffic flow (**In-Band** or **Out-of-band**) the switch is to send packets originating from itself (such as SNMP traps) or packets with unknown source. Select **Out-of-band** to have the switch send the packets to the management port labelled **MGMT**. This means that device(s) connected to the other port(s) do not receive these packets. Select **In-Band** to have the switch send the packets to all ports except the management port (labelled **MGMT**) to which connected device(s) do not receive these packets.
In-band Management IP Address Use these fields to set the settings for the in-band management port.	
DHCP Client	Select this option to have the switch automatically obtain an IP address from a DHCP server.
Static IP Address	Select this option to specify a fixed IP address for the switch and configure the fields below.
IP Address	Enter the in-band management IP address of your switch in dotted decimal notation. For example, 192.168.0.1.
IP Subnet Mask	Enter the IP subnet mask of your switch in dotted decimal notation for example 255.255.255.0.
Default Gateway	Enter the IP address of the default outgoing gateway in dotted decimal notation, for example 192.168.0.254
VID	Enter the VLAN ID to which this IP address belongs.

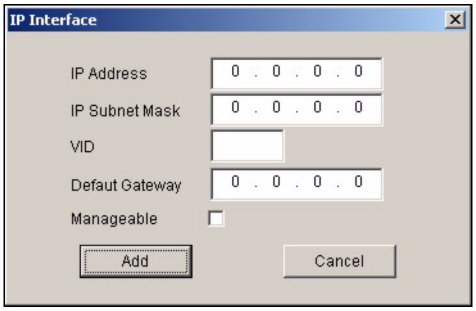
Table 62 System Configuration: IP Setup (continued)

LABEL	DESCRIPTION
Out-of-band Management IP Address Use these fields to set the settings for the out-of-band management port.	
IP Address	Enter the out-of-band management IP address of your switch in dotted decimal notation. For example, 192.168.0.1.
IP Subnet Mask	Enter the IP subnet mask of your switch in dotted decimal notation for example 255.255.255.0.
Default Gateway	Enter the IP address of the default outgoing gateway in dotted decimal notation, for example 192.168.0.254
Apply	Click **Apply** to save the settings for this part of the screen.
IP Interface	
Index	This field displays the index number of an entry.
IP Address	This field displays IP address of the switch in the IP domain.
Subnet Mask	This field displays the subnet mask of the switch in the IP domain.
VID	This field displays the VLAN identification number of the IP domain on the switch.
Default Gateway	This field displays the IP address of the gateway device.
Manageable	
Add	Click **Add** to configure a new IP interface.
Modify	Click **Modify** to change the settings of a selected IP interface.
Delete	Click **Delete** to remove a selected IP interface.

13.8.1 Configuring an IP Interface

To create a new IP interface, click **Add** in the **IP Setup** screen.

Figure 99 System Configuration: IP Setup: Add



IP Address 0 . 0 . 0 . 0
IP Subnet Mask 0 . 0 . 0 . 0
VID
Defaut Gateway 0 . 0 . 0 . 0
Manageable ☐

The following table describes the labels in this screen.

Table 63 System Configuration: IP Setup: Add

LABEL	DESCRIPTION
IP Address	Enter the IP address of your switch in dotted decimal notation for example 192.168.1.1. This is the IP address of the switch in an IP routing domain.
IP Subnet Mask	Enter the IP subnet mask of an IP routing domain in dotted decimal notation. For example, 255.255.255.0.
VID	Enter the VLAN identification number to which the IP address belongs.

Table 63 System Configuration: IP Setup: Add

LABEL	DESCRIPTION
Default Gateway	Enter the IP address of the gateway device.
Manageable	Select this option to allow device management using this IP address. This means that you can access the device for management through this IP address. Clear this check box to disable this feature.
Add	Click **Add** to save the settings and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

14

Switch Configuration

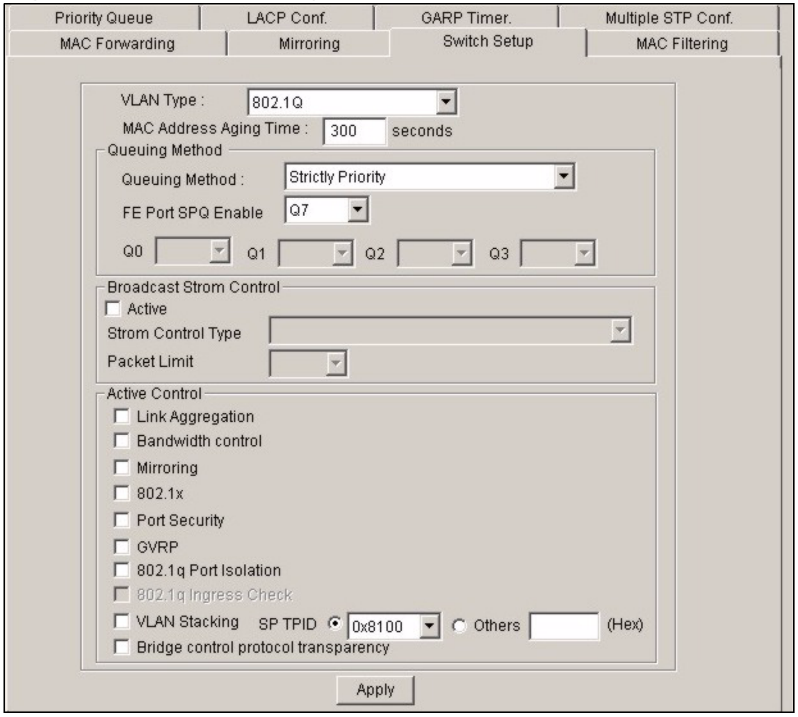
This chapter shows how to configure switch settings such as priority queuing, STP, link aggregation and GARP timer.

14.1 Switch Setup

Use the switch setup screen to set a VLAN type, a queuing method and enable or disable features in the **Active Control** panel.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **Switch Configuration** > **Switch Setup**.

Figure 100 Switch Configuration: Switch Setup


Priority Queue
LACP Conf.
GARP Timer.
Multiple STP Conf.
MAC Forwarding
Mirroring
Switch Setup
MAC Filtering
Apply

VLAN Type : 802.1Q
MAC Address Aging Time : 300 seconds

Queuing Method
Queuing Method : Strictly Priority
FE Port SPQ Enable Q7
Q0 Q1 Q2 Q3

Broadcast Strom Control
☐ Active
Strom Control Type
Packet Limit

Active Control
☐ Link Aggregation
☐ Bandwidth control
☐ Mirroring
☐ 802.1x
☐ Port Security
☐ GVRP
☐ 802.1q Port Isolation
☐ 802.1q Ingress Check
☐ VLAN Stacking SP TPID ● 0x8100 ○ Others (Hex)
☐ Bridge control protocol transparency

The following table describes the related labels in the screen.

Table 64 Switch Configuration: Switch Setup

LABEL	DESCRIPTION
VLAN Type	Choose **802.1Q** or **Port Based** from the drop-down list box. The VLAN Setup screen changes depending on whether you choose **802.1Q** or **Port Based** VLAN type in this screen. See Section 16.3 on page 165 and the VLAN chapter for more information on VLANs.
MAC Address Aging Time	MAC address learning reduces outgoing traffic broadcasts. For MAC address learning to occur on a port, the port must be active. Enter a time from 10 to 3000 seconds. This is how long all dynamically learned MAC addresses remain in the MAC address table before they age out (and must be relearned).
Queuing Method	Select a queuing method. Choices vary depending on your switch models. **Strict Priority Queuing** (SPQ) services queues based on priority only. When the highest priority queue empties, traffic on the next highest-priority queue begins. The default queuing method is **Strictly Priority.** **Weighted Fair Scheduling** is used to guarantee each queue's minimum bandwidth based on their bandwidth portion (weight) (the number you configure in the **Weight** field). Queues with larger weights get more guaranteed bandwidth than queues with smaller weights. **Weighted Round Robin Scheduling** (WRR) services queues on a rotating basis based on their queue weight (the number you select from the drop-down list box for the corresponding queue). Queues with larger weights get more service than queues with smaller weights.
FE Port SPQ Enable	This field is applicable only when you select **WFQ** or **WRR**. Select a queue (**Q0** to **Q7**) to have the switch use **Strictly Priority** to service the subsequent queue(s) after and including the specified queue for the 10/100 Mbps Ethernet ports. For example, if you select **Q5**, the switch services traffic on **Q5**, **Q6** and **Q7** using **Strictly Priority**. Select **None** to always use **WFQ** or **WRR** for the 10/100 Mbps Ethernet ports.
Q0-Q3	These fields are applicable only for switches that use **WRR** and for switches that assign queue weights for the entire system (not per port). Use the drop down list boxes to choose queue weights (1-15). Bandwidth is divided across the different traffic queues according to their weights.
Broadcast Storm Control	These fields are not available on all switch models. Set the fields below to configure traffic storm control.
Active	Select **Active** to enable traffic storm control on the switch.
Storm Control Type	Specify the traffic type in this field. Select **Broadcast Only**, **Broadcast and multicast**, **Broadcast and unknown unicast** or **Broadcast, multicast and unknown unicast** from the drop-down list box.
Packet Limit	From the drop-down list box, select the number of packets (of the type chosen above) a port can receive per second.
Active Control	
Link Aggregation	Select the check box to activate link aggregation.
Bandwidth control	Select the check box to activate bandwidth control.
Mirroring	Select the check box to activate port mirroring.
802.1x	Select the check box to activate IEEE 802.1x authentication.
Port Security	Select the check box to activate port security.

Table 64 Switch Configuration: Switch Setup (continued)

LABEL	DESCRIPTION
GVRP	Select the check box to permit VLANs groups beyond the local switch on this port. GVRP (GARP VLAN Registration Protocol) is a registration protocol that defines a way for switches to register necessary VLAN members on ports across the network.
802.1q Port Isolation	Port Isolation allows each port to communicate with the CPU port, uplink ports and stacking ports (if available) but not communicate with each other. This option is the most limiting but also the most secure.
802.1q Ingress Check	Select this check box to set the switch to discard incoming frames for VLANs that do not have this port as a member
VLAN Stacking	Select the check box to enable VLAN stacking. In the **SP TPID** drop-down list box, select a standard Ethernet type code to identify the frame and indicate whether the frame carries IEEE 802.1Q tag information. Or select **Others** and then enter a four-digit hexadecimal number from 0x0000 to 0xFFFF. 0x denotes a hexadecimal number. It does not have to be typed in the **Others** field.
Bridge control protocol transparency	Select the check box to allow the switch to handle bridging control protocols (STP for example). You also need to define how to treat a BPDU in the **Port Setup** screen.
Apply	Click **Apply** to save your changes back to the switch.

14.2 Priority Queue

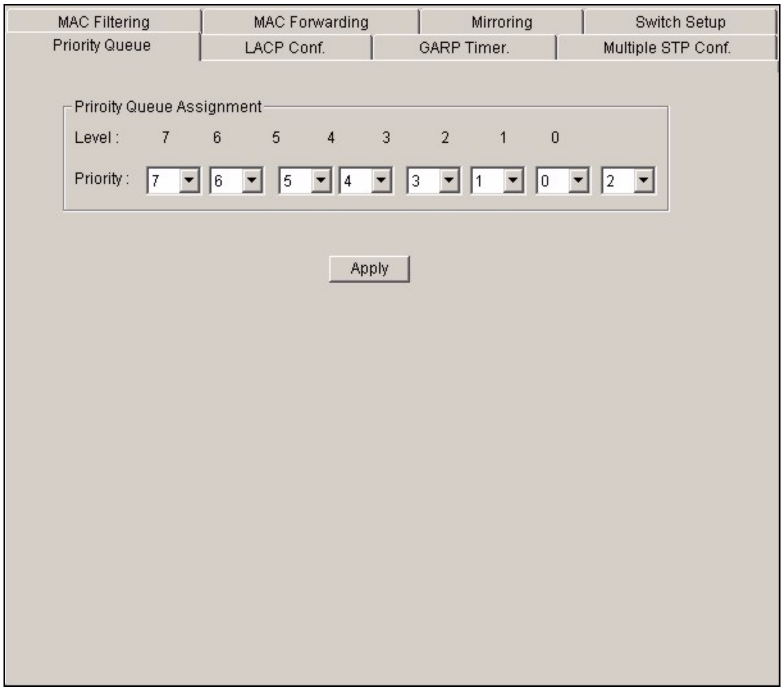
Queuing is used to help solve performance degradation when there is network congestion.

Configure queuing algorithms for outgoing traffic in the **Switch Setup** screen. Queuing algorithms allow switches to maintain separate queues for packets from each individual source or flow and prevent a source from monopolizing the bandwidth.

Follow the steps below to configure priority queuing.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **Switch Configuration** > **Priority Queue** to display the following screen.

Figure 101 Switch Configuration: Priority Queue



Level : 7 6 5 4 3 2 1 0

Priority : 7 6 5 4 3 1 0 2

The following table describes the labels in this screen.

Table 65 Switch Configuration: Priority Queue

LABELS	DESCRIPTION
Priority Queue Assignment	IEEE 802.1p defines up to 8 separate traffic types by inserting a tag into a MAC-layer frame that contains bits to define class of service. Frames without an explicit priority tag are given the default priority of the ingress port. Use these fields to configure the priority level-to-physical queue mapping. On the switch, traffic assigned to higher index queues gets through faster while traffic in lower index queues is dropped if the network is congested.
Priority Level	The following descriptions are based on the traffic types defined in the IEEE 802.1D standard (which incorporates 802.1p). Select a level from the drop-down list box(es).
Level 7	Typically used for network control traffic such as router configuration messages.
Level 6	Typically used for voice traffic that is especially sensitive to jitter (jitter is the variations in delay).
Level 5	Typically used for video that consumes high bandwidth and is sensitive to jitter.
Level 4	Typically used for controlled load, latency-sensitive traffic such as SNA (Systems Network Architecture) transactions.
Level 3	Typically used for “excellent effort” or better than best effort and would include important business traffic that can tolerate some delay.
Level 2	This is for “spare bandwidth”.
Level 1	This is typically used for non-critical “background” traffic such as bulk transfers that are allowed but that should not affect other applications and users.
Level 0	Typically used for best-effort traffic.
Apply	Click **Apply** to save your changes back to the switch.

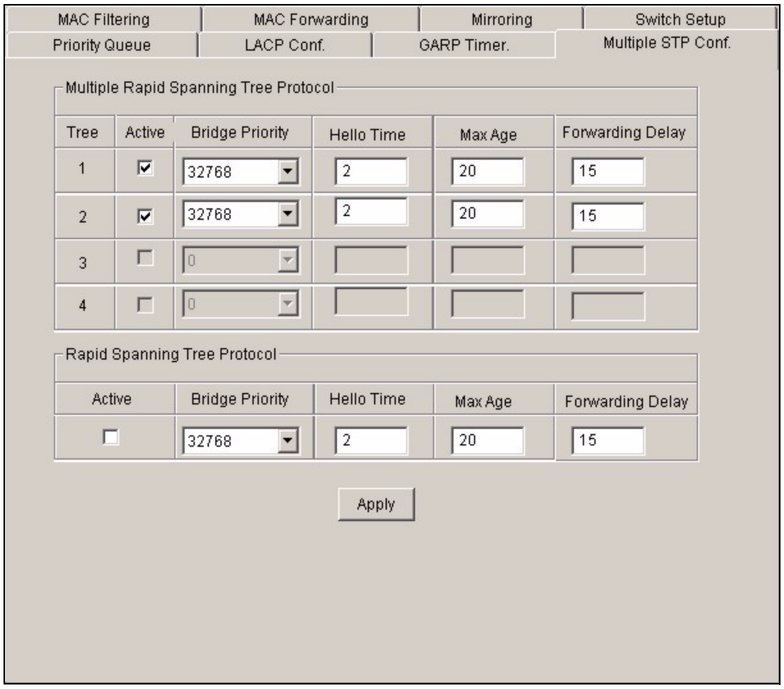
14.3 Multiple/ Rapid STP Configuration

STP (Spanning Tree Protocol) detects and breaks network loops and provides backup links between switches, bridges or routers. It allows a device to interact with other STP-aware devices in your network to ensure that only one path exists between any two stations on the network. Refer to the user's guide that comes with your switch for more information.

Use the **Multiple STP Conf.** screen to configure STP and/or multiple STP settings on the switch.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **Switch Configuration** > **Multiple STP Conf.**.

Figure 102 Switch Configuration: STP Conf.



Multiple Rapid Spanning Tree Protocol

Tree	Active	Bridge Priority	Hello Time	Max Age	Forwarding Delay
1	☑	32768	2	20	15
2	☑	32768	2	20	15
3	☐	0			
4	☐	0			

Rapid Spanning Tree Protocol

Active	Bridge Priority	Hello Time	Max Age	Forwarding Delay
☐	32768	2	20	15

The following table describes the labels in this screen.

Table 66 Switch Configuration: Multiple STP Conf.

LABEL	DESCRIPTION
Multiple Rapid Spanning Tree Protocol	
Tree	This field displays the index number of a spanning tree.
Active	Select this option to enable the tree.
Bridge Priority	Priority is used in determining the root device, root port and designated port. The device with the highest priority (lowest numeric value) becomes the RSTP root device. If all devices have the same priority, the device with the lowest MAC address will then become the root device. The allowed range is 0 to 65535 (32768 is the default). The lower the numeric value you assign, the higher the priority for this bridge. **Priority** determines the root bridge, which in turn determines **Hello Time**, **Max Age** and **Forward Delay**.

Table 66 Switch Configuration: Multiple STP Conf. (continued)

LABEL	DESCRIPTION
Hello Time	This is the maximum time (in seconds) a device can wait without receiving a BPDU before attempting to reconfigure. All device ports (except for designated ports) should receive BPDUs at regular intervals. Any port that ages out STP information (provided in the last BPDU) becomes the designated port for the attached LAN. If it is a root port, a new root port is selected from among the device ports attached to the network. The allowed range is 6 to 40 seconds (20 is the default).
Max Age	This is the time interval in seconds between BPDU (Bridge Protocol Data Units) configuration message generations (by all devices in RSTP or the root device in STP). The allowed range is 1 to 10 seconds (2 is the default).
Forwarding Delay	This is the maximum time (in seconds) a device will wait before changing states. This delay is required because every device must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a blocking state; otherwise, temporary data loops might result. The allowed range is 4 to 30 seconds (15 is the default).
Rapid Spanning Tree Protocol	
Active	Select this option to enable STP.
Bridge Priority	Priority is used in determining the root device, root port and designated port. The device with the highest priority (lowest numeric value) becomes the RSTP root device. If all devices have the same priority, the device with the lowest MAC address will then become the root device. The allowed range is 0 to 65535 (32768 is the default). The lower the numeric value you assign, the higher the priority for this bridge. **Priority** determines the root bridge, which in turn determines **Hello Time**, **Max Age** and **Forward Delay**.
Max Age	This is the maximum time (in seconds) a device can wait without receiving a BPDU before attempting to reconfigure. All device ports (except for designated ports) should receive BPDUs at regular intervals. Any port that ages out STP information (provided in the last BPDU) becomes the designated port for the attached LAN. If it is a root port, a new root port is selected from among the device ports attached to the network. The allowed range is 6 to 40 seconds (20 is the default).
Hello Time	This is the time interval in seconds between BPDU (Bridge Protocol Data Units) configuration message generations (by all devices in RSTP or the root device in STP). The allowed range is 1 to 10 seconds (2 is the default).
Forwarding Delay	This is the maximum time (in seconds) a device will wait before changing states. This delay is required because every device must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a blocking state; otherwise, temporary data loops might result. The allowed range is 4 to 30 seconds (15 is the default).
Apply	Click **Apply** to save your changes back to the switch.

14.4 Link Aggregation

Link aggregation (trunking) is the grouping of physical ports into one logical higher-capacity link. You may want to trunk ports if for example, it is cheaper to use multiple lower-speed links than to under-utilize a high-speed, but more costly, single-port link.

However, the more ports you aggregate then the fewer available ports you have. A link aggregation group is one logical link containing multiple ports.

The first port must be physically connected when forming a trunk group.

14.4.1 Dynamic Link Aggregation

This feature is not available on all models.

The switch adheres to the IEEE 802.3ad standard for static and dynamic (LACP) port trunking.

The switch supports the link aggregation IEEE 802.3ad standard. This standard describes the Link Aggregate Control Protocol (LACP), which is a protocol that dynamically creates and manages trunk groups.

When you enable LACP link aggregation on a port, the port can automatically negotiate with the ports at the remote end of a link to establish trunk groups. LACP also allows port redundancy, that is, if an operational port fails, then one of the “standby” ports become operational without user intervention

Please note that:

- You must connect all ports point-to-point to the same Ethernet switch and configure the ports for LACP trunking.
- LACP only works on full-duplex links.
- All ports in the same trunk group must have the same media type, speed, duplex mode and flow control settings.

Configure trunk groups or LACP before you connect the Ethernet switch to avoid causing network topology loops.

14.4.2 Link Aggregation ID

LACP aggregation ID consists of the following information:

Table 67 Aggregation ID Local Switch

Local switch [(0000,00-00-00-00-00-00,0000,00,0000)]				
0000	00-00-00-00-00	0000	00	0000
System priority	MAC address	Key	Port Priority	Port Number

Table 68 Aggregation ID Peer Switch

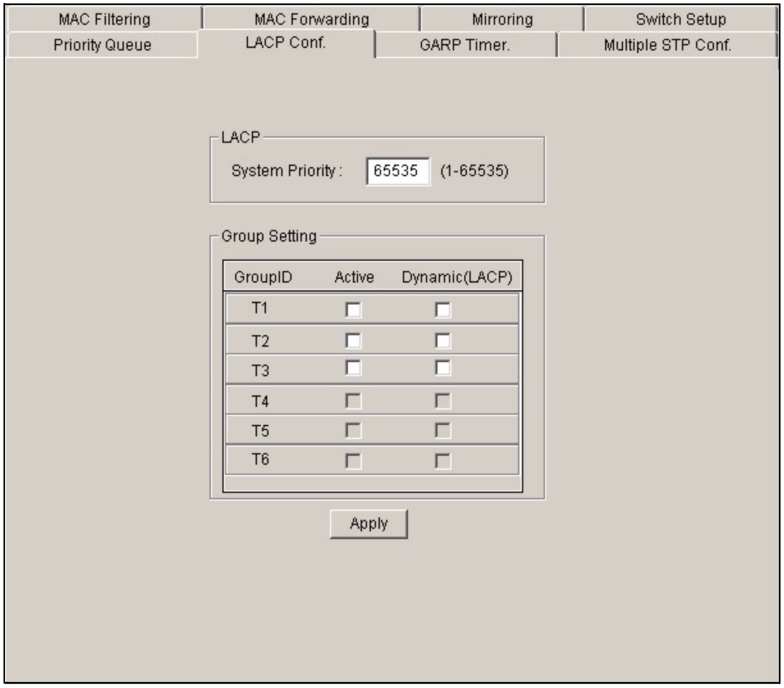
Peer switch [(0000,00-00-00-00-00-00,0000,00,0000)]				
0000	00-00-00-00-00	0000	00	0000
System priority	MAC address	Key	Port Priority	Port Number

14.4.3 Configuring Link Aggregation

1. First activate link aggregation in the **Switch Setup** screen.
2. To open the **LACP Conf.** screen, right-click on the switch in the Device List Panel, and click **Configuration** > **Switch Configuration** > **LACP Conf.** to display the configuration screen.

The number of link aggregation groups varies depending on your switch models.

Figure 103 Switch Configuration: Link Aggregation


MAC Filtering
MAC Forwarding
Mirroring
Switch Setup
Priority Queue
LACP Conf.
GARP Timer.
Multiple STP Conf.
LACP
Group Setting
Apply

System Priority : 65535 (1-65535)

GroupID	Active	Dynamic(LACP)
T1	☐	☐
T2	☐	☐
T3	☐	☐
T4	☐	☐
T5	☐	☐
T6	☐	☐

The following table describes the labels in this screen.

Table 69 Switch Configuration: Link Aggregation

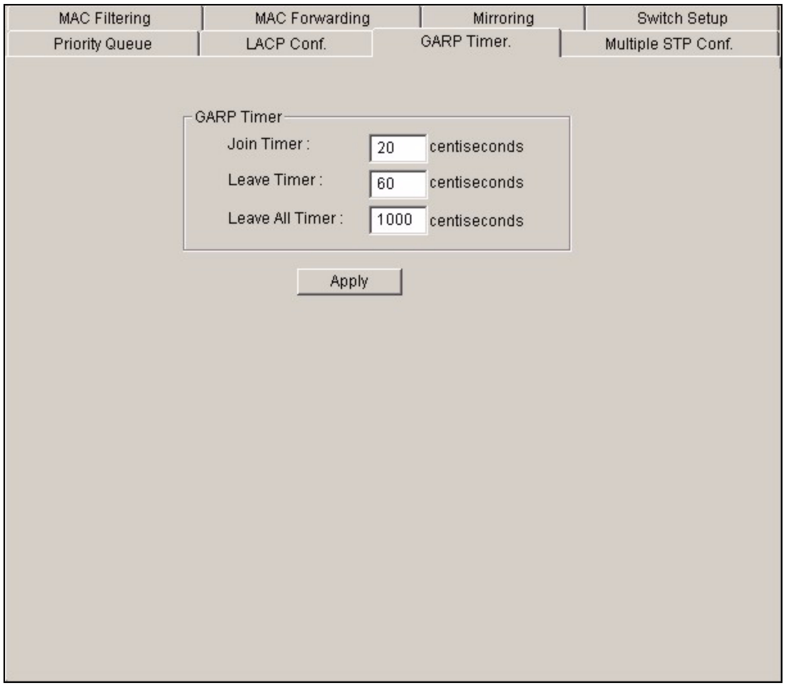
TABLE	DESCRIPTION
LACP	
System Priority	LACP system priority is a number between 1 and 65,535. The switch with the lowest system priority (and lowest port number if system priority is the same) becomes the LACP "server". The LACP "server" controls the operation of LACP setup. Enter a number to set the priority of an active port using Link Aggregate Control Protocol (LACP). The smaller the number, the higher the priority level.
Group Setting	
Group ID	The field identifies the link aggregation group, that is, one logical link containing multiple ports
Active	Select this option to activate a trunk group.
Dynamic (LACP)	Select this check box to enable LACP for a trunk.
Apply	Click **Apply** to save your changes.

14.5 GARP Timer

Switches join VLANs by making a declaration. A declaration is made by issuing a Join message using GARP. Declarations are withdrawn by issuing a Leave message. A Leave All message terminates all registrations. GARP timers set declaration timeout values. See the chapter on VLAN setup for more background information.

1. In the Device Panel list, select a device and then right-click.
2. Click **Configuration** > **Switch Configuration** > **Switch Setup**.
3. Select the **GARP Timer** check box and then click **Apply**.
4. Click **Configuration** > **Switch Configuration** > **GARP Timer** to display the following screen.

Figure 104 Switch Configuration: GARP Timer



Join Timer : 20 centiseconds
Leave Timer : 60 centiseconds
Leave All Timer : 1000 centiseconds

The following table describes the labels in this screen.

Table 70 Switch Configuration: GARP Timer

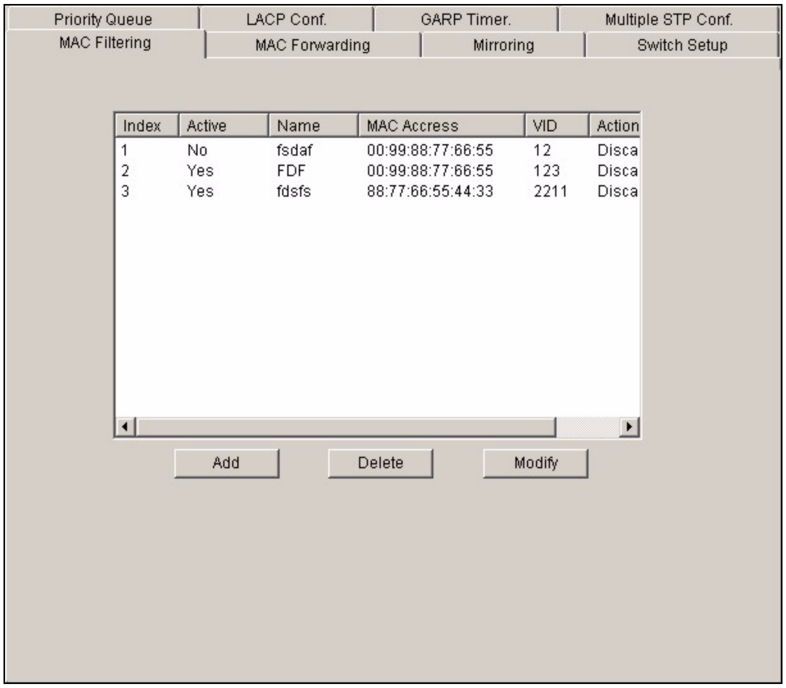
LABEL	DESCRIPTION
Join Timer	**Join Timer** sets the duration of the join period timer for GVRP in milliseconds. Each port has a join period timer. The allowed join time range is between 10 and 6553 centiseconds; the default is 20 centiseconds. See the chapter on VLAN setup for more background information.
Leave Timer	**Leave Timer** sets the duration of the leave period timer for GVRP in milliseconds. Each port has a single leave period timer. Leave time must be at least two times larger than **Join Timer**; the default is 60 centiseconds.
Leave All Timer	**Leave All Timer** sets the duration of the Leave All Period timer for GVRP in milliseconds. Each port has a single Leave All Period timer. Leave All Timer must be larger than **Leave Timer**; the default is 1000 centiseconds.
Apply	Click **Apply** to save your changes.

14.6 Filtering

Filtering means forwarding (not supported on all models) or discarding packets based on the MAC addresses and VLAN group.

To open the **MAC Filtering** screen, right-click on the switch in the Device List Panel, and click **Configuration** > **Switch Configuration** > **Filtering** to display the following screen.

Figure 105 Switch Configuration: Filtering



Index	Active	Name	MAC Access	VID	Action
1	No	fsdaf	00:99:88:77:66:55	12	Disca
2	Yes	FDF	00:99:88:77:66:55	123	Disca
3	Yes	fdsfs	88:77:66:55:44:33	2211	Disca

The following table describes the labels in this screen.

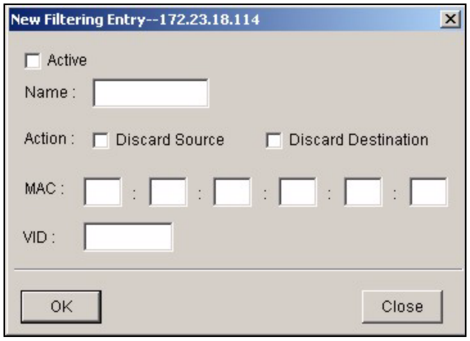
Table 71 Switch Configuration: Filtering

LABEL	DESCRIPTION
Index	This field displays the index number.
Active	This field displays whether the filter is enabled (Yes) or not (No).
Name	This field displays the descriptive name for this filter.
MAC Address	This field displays the MAC address of a device whose traffic is forwarded or blocked.
VID	This field displays the ID of the VLAN group to which the MAC address belongs.
Action	This field displays the action on the matching packets.
Add	Click **Add** to create a new filter.
Delete	Click **Delete** to remove the selected filter.

14.6.1 Creating a New Filter

To create a new filter, click **Add** in the **Filtering** screen. A configuration screen displays as shown.

Figure 106 Switch Configuration: Filtering: Add


New Filtering Entry--172.23.18.114
☐ Active
Name :
Action : ☐ Discard Source ☐ Discard Destination
MAC : : : : : :
VID :
OK
Close

The following table describes the related labels in this screen.

Table 72 Switch Configuration: Filtering: Add

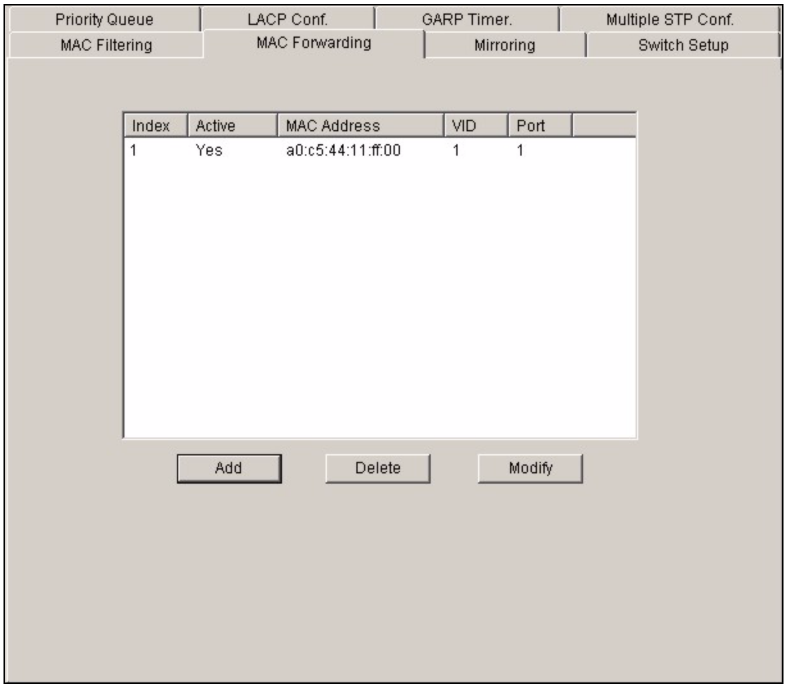
LABEL	DESCRIPTION
Active	Make sure to select this check box to activate your rule. You may temporarily deactivate a rule without deleting it by deselecting this check box.
Name	Type a descriptive name (up to 32 printable ASCII characters) for this rule. This is for identification purpose only.
Action	If the options are not applicable, packets that match the MAC address and VLAN ID specified will be discarded. Select **Discard source** to drop frame from the source MAC address (specified in the **MAC** field). The switch can still send frames to the MAC address. Select **Discard destination** to drop frames intended for the destination MAC address (specified in the **MAC** field). The switch can still receive frames originating from the MAC address. Select **Discard source** and **Discard destination** to block traffic to/from the MAC address specified in the **MAC** field.
MAC	Type a MAC address in valid MAC address format, that is, six hexadecimal character pairs.
VID	Type the VLAN group identification number.
OK	Click **OK** to save the changes and close this screen.
Close	Click **Close** to close this screen. All unsaved settings will be lost.

14.7 MAC Forwarding

A static MAC address entry is an address that has been manually entered in the MAC address learning table. Static MAC addresses do not age out. When you set up static MAC address rules, you are setting static MAC addresses for a port. Devices that match static MAC address rules on a port can only receive traffic on that port and cannot receive traffic on other ports. This may reduce unicast flooding.

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration** > **Switch Configuration** > **MAC Forwarding**.

Figure 107 Switch Configuration: MAC Forwarding



Index	Active	MAC Address	VID	Port
1	Yes	a0:c5:44:11:ff:00	1	1

The following table describes the labels in this screen.

Table 73 Switch Configuration: MAC Forwarding

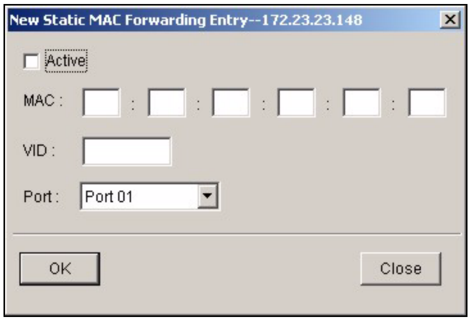
LABEL	DESCRIPTION
Index	Click an index number to modify a static MAC address rule for a port.
Active	This field displays whether this static MAC address forwarding rule is active (**Yes**) or not (**No**). You may temporarily deactivate a rule without deleting it.
MAC Address	This field displays the MAC address that will be forwarded and the VLAN identification number to which the MAC address belongs.
VID	This field displays the VLAN identification number.
Port	This field displays the port where the MAC address shown in the next field will be forwarded.
Add	Click the **Add** button to create a MAC forwarding rule.
Delete	Select the rule(s) that you want to remove in the MAC Forwarding table and then click the **Delete** button.

14.7.1 Configuring a Static MAC Address Entry

To add a new rule, click **Add** in the **MAC Forwarding** screen.

To change the settings of a rule, select a rule and click **Add** in the **MAC Forwarding** screen.

Figure 108 Switch Configuration: MAC Forwarding: Add


New Static MAC Forwarding Entry--172.23.23.148
☐ Active
MAC : ___ : ___ : ___ : ___ : ___ : ___
VID :
Port : Port 01
OK
Close

The following table describes the labels in this screen.

Table 74 Switch Configuration: MAC Forwarding: Add

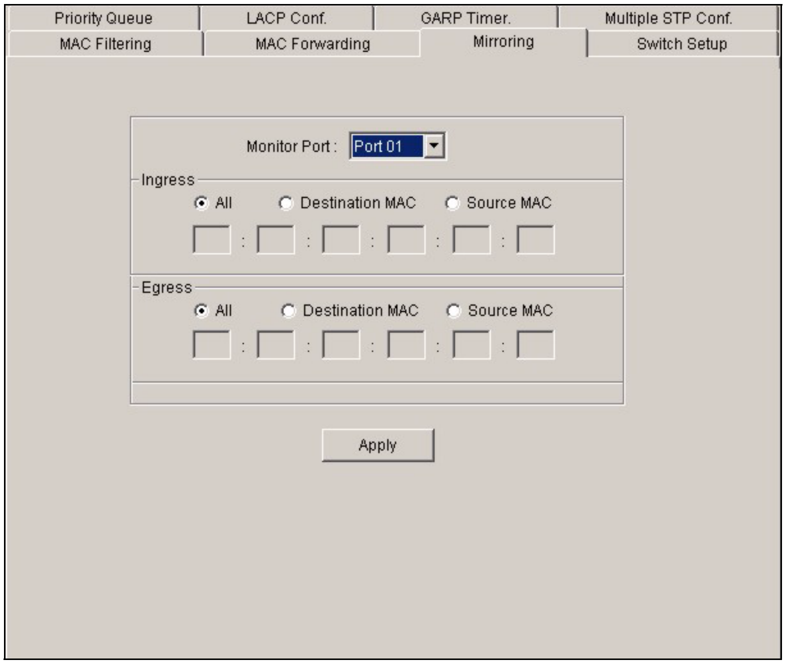
LABEL	DESCRIPTION
Active	Select this check box to activate your rule. You may temporarily deactivate a rule without deleting it by clearing this check box.
MAC	Enter the MAC address in valid MAC address format, that is, six hexadecimal character pairs. Static MAC addresses do not age out.
VID	Enter the VLAN group identification number.
Port	Select a port where the MAC address entered in the previous field will be automatically forwarded.
OK	Click **OK** to save the settings.
Close	Click **Close** to close the screen. All unsaved settings will be lost.

14.8 Mirroring

Port mirroring allows you to copy a traffic flow to a mirror port (the port you copy the traffic to) in order that you can examine the traffic from the mirror port without interference.

Click **Configuration** > **Switch Configuration** > **Mirroring** to display the configuration screen.

Figure 109 Switch Configuration: Mirroring



Monitor Port : Port 01

Ingress
● All ○ Destination MAC ○ Source MAC

Egress
● All ○ Destination MAC ○ Source MAC

The following table describes the labels in this screen.

Table 75 Switch Configuration: Mirroring

LABEL	DESCRIPTION
Monitor Port	The monitor port is the port you copy the traffic to in order to examine it in more detail without interfering with the traffic flow on the original port(s). Select a port from the drop-down list box.
Mirrored Port	Select a port from the drop-down list box to mirror the traffic on a port.
Direction	Select the traffic direction from the drop-down list box. Choices are **Ingress** (incoming) or **Egress** (outgoing).
Ingress	You can specify to copy all incoming traffic or traffic to/from a specified MAC address. Select **All** to copy all incoming traffic from the mirrored port(s). Select **Destination MAC** to copy incoming traffic to a specified MAC address on the mirrored port(s). Enter the destination MAC address in the fields provided. Select **Source MAC** to copy incoming traffic from a specified MAC address on the mirrored port(s). Enter the source MAC address in the fields provided.
Egress	You can specify to copy all outgoing traffic or traffic to/from a specified MAC address. Select **All** to copy all outgoing traffic from the mirrored port(s). Select **Destination MAC** to copy outgoing traffic to a specified MAC address on the mirrored port(s). Enter the destination MAC address in the fields provided. Select **Source MAC** to copy outgoing traffic from a specified MAC address on the mirrored port(s). Enter the source MAC address in the fields provided.
Apply	Click **Apply** to save the changes.

15

VLAN

This chapter describes how to view VLAN status, add and edit VLANs and how to use the VLAN template. The type of screen you see here depends on the **VLAN Type** you selected in the **Switch Setup** screen.

15.1 Introduction to VLANs

A VLAN (Virtual Local Area Network) allows a physical network to be partitioned into multiple logical networks. Devices on a logical network belong to one group. A device can belong to more than one group. With VLAN, a device cannot directly talk to or hear from devices that are not in the same group(s); the traffic must first go through a router.

In MTU (Multi-Tenant Unit) applications, VLAN is vital in providing isolation and security among the subscribers. When properly configured, VLAN prevents one subscriber from accessing the network resources of another on the same LAN, thus a user will not see the printers and hard disks of another user in the same building.

VLAN also increases network performance by limiting broadcasts to a smaller and more manageable logical broadcast domain. In traditional switched environments, all broadcast packets go to each and every individual port. With VLAN, all broadcasts are confined to a specific broadcast domain.

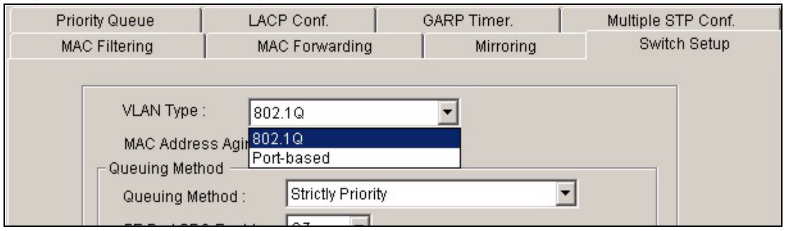
Note that VLAN is unidirectional; it only governs outgoing traffic.

15.2 Configuring 802.1Q VLAN

Follow the steps below to set the **802.1Q VLAN Type** on the switch.

1. In the Device Panel list, select a device and then right-click.
2. Click **Configuration** > **Switch Configuration** > **Switch Setup**.
3. Select **802.1Q** as the **VLAN Type** and then click **Apply**.

Figure 110 Selecting a VLAN Type

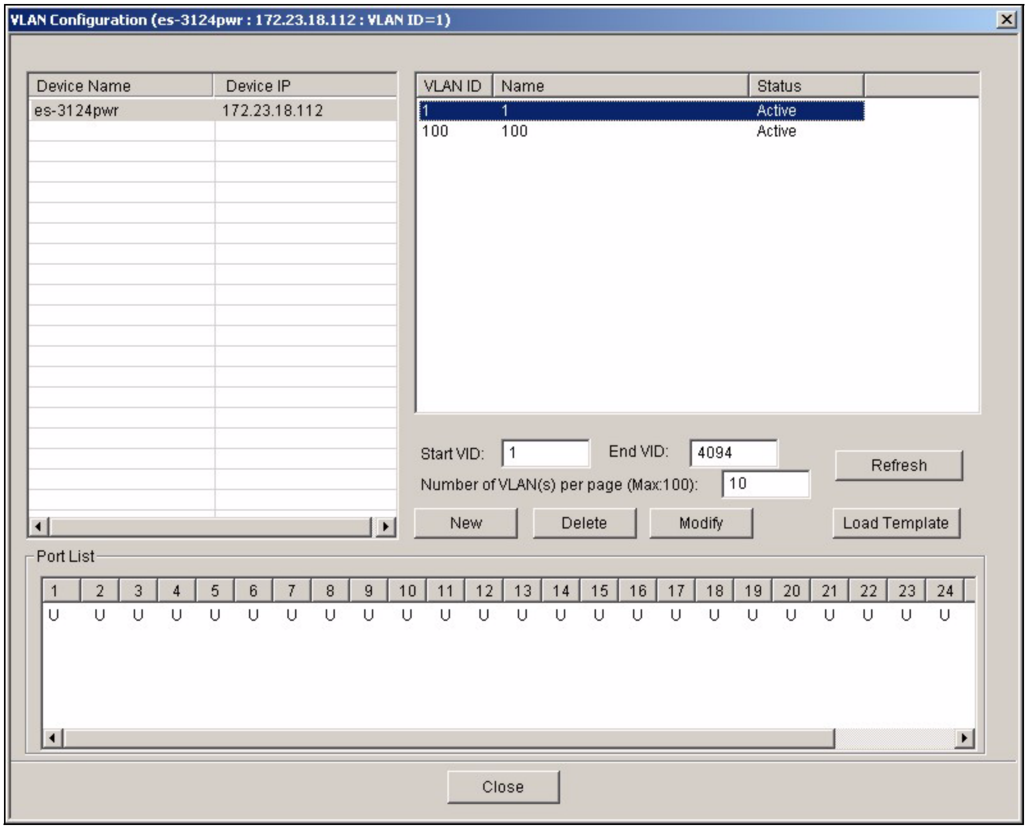


VLAN Type : 802.1Q

Queuing Method : Strictly Priority

4. Click **Configuration** > **VLAN Configuration** to display the configuration screen.

Figure 111 VLAN Configuration: 802.1Q



VLAN Configuration (es-3124pwr : 172.23.18.112 : VLAN ID=1)

Device Name	Device IP
es-3124pwr	172.23.18.112

VLAN ID	Name	Status
1	1	Active
100	100	Active

Start VID: 1

End VID: 4094

Number of VLAN(s) per page (Max:100): 10

Port List

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

The following table describes the labels in this screen.

Table 76 VLAN Configuration: 802.1Q

LABEL	DESCRIPTION
Device Name	This field displays the descriptive name for the device.
Device IP	This field displays the IP address of the device.
VLAN ID	This field displays the ID of the VLAN.
Name	This field displays the name of the VLAN.
Status	This field displays **Active** if the VLAN is active and will remain so after the next reset of the device. This field is **DynamicGVRP** if the VLAN is active and will remain so until removed by GVRP. This field is **Other** if the VLAN is active, but is not permanent or created by GVRP.
Start VID	Enter the first VID in the range of VLAN IDs you want to display.
End VID	Enter the last VID in the range of VLAN IDs you want to display.
Numbers of VLAN(s) per page (Max 100)	Enter the number of VLAN IDs (between 1 and 100) you want to display at a time.
Refresh	Click **Refresh** to update the VID list.
New	Click **New** to create a new VLAN. You must enter a **VLAN ID** and a **VLAN Name** to create a new **VLAN**. The new VLAN and name is displayed in the left-hand column in this screen.
Delete	Click on a VLAN in the left-hand column of this screen and then click the **Delete** button to remove it from the VLAN template.

Table 76 VLAN Configuration: 802.1Q (continued)

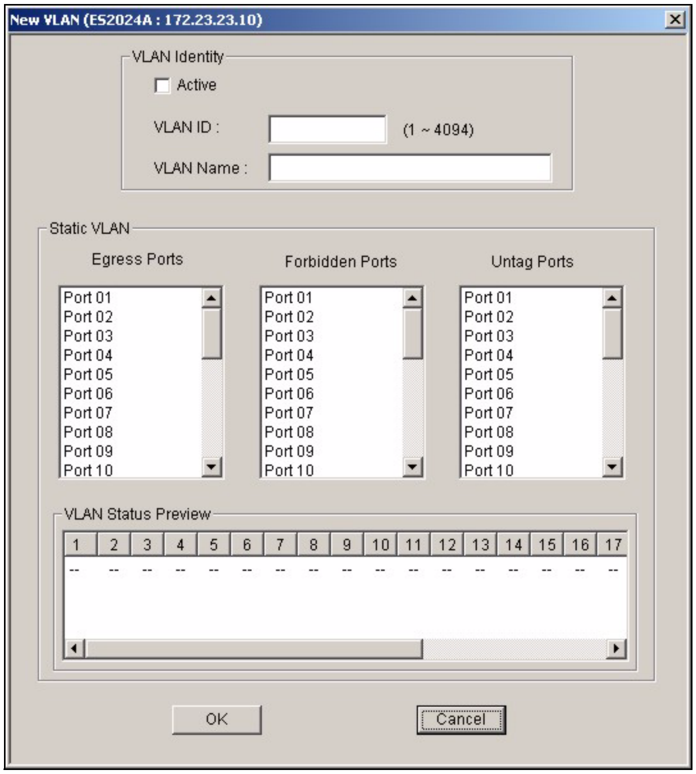
LABEL	DESCRIPTION
Modify	Click on a VLAN in the left-hand column of this screen. Change the **VLAN ID**, **VLAN Name** or change the configuration of the egress, forbidden and untagged ports. Click the **Modify** button to save the changes.
Load Template	Use a VLAN template to overwrite existing selected VLANs. Select one or more VLANs and click the **Load Template** button. See Section 6.2 on page 77 for more information.
Port List	Click on a port in the **Egress Ports** list to add the selected port to the port list. If a port is not selected from any of the three port lists, then it is a normal tagged port. Refer to Table 77 on page 159 for the VLAN port type descriptions.
Close	Click **Close** to close the screen.

15.2.1 Configuring an 802.11Q VLAN

Ports are assigned membership in a VLAN by associating a VLAN ID with the ports.

In the **VLAN Configuration** screen, click **New** or **Modify** to display the setup screen.

Figure 112 VLAN Configuration: 802.1Q: New or Modify


New VLAN (ES2024A : 172.23.23.10)
VLAN Identity
☐ Active
VLAN ID :
(1 ~ 4094)
VLAN Name :
Static VLAN
Egress Ports
Forbidden Ports
Untag Ports
Port 01
Port 02
Port 03
Port 04
Port 05
Port 06
Port 07
Port 08
Port 09
Port 10
VLAN Status Preview
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
-- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
OK
Cancel

The following table describes the labels in this screen.

Table 77 VLAN Configuration: 802.1Q: Modify

LABEL	DESCRIPTION
VLAN Identity	
Active	Select **Active** to enable this VLAN.
VLAN ID	This field displays a unique number to identify the VLAN.

Table 77 VLAN Configuration: 802.1Q: Modify (continued)

LABEL	DESCRIPTION
VLAN Name	Enter a descriptive name for identification purposes.
Static VLAN	Click on a port in a list to add the selected port to the port list. If a port is not on any of the three port lists, then it is a normal tagged port. Refer to the following table for the VLAN port type descriptions.
Egress Ports	Select the port(s) to belong to this VLAN.
Forbidden Ports	This is a port that is blocked from joining a VLAN group. No frames are transmitted through this port.
Untag Port	This is a port that does not tag all outgoing frames transmitted.
VLAN Status Preview	Click on a port in the **Egress Ports** list to add the selected port to the VLAN Status Preview list. If a port is not selected from any of the three port lists, then it is a normal tagged port. Refer to Table 78 on page 160 for the VLAN port type descriptions.
OK	Click **OK** to save the changes and close this screen.
Cancel	Click **Cancel** to close this screen. All unsaved changes will be lost.

A forbidden port cannot be an egress port.

The following table describes the labels in this screen for each VLAN port type.

Table 78 VLAN Port Type Descriptions

LABEL	DESCRIPTION
Egress Ports	A port that is in the egress list in a VLAN. Only select this if the connected device supports IEEE 802.1Q VLAN.
Forbidden Ports	A port that is blocked from joining a VLAN group. No frames are transmitted through this port.
Untag Ports	A port that does not tag all outgoing frames transmitted.
Normal Tagged Port	A port that joins a VLAN group using GVRP. Outgoing frames are tagged on this port.

15.2.2 Removing a VLAN

In the **VLAN Configuration** screen, select a VLAN and click **Delete**.

15.3 Introduction to Port-based VLANs

Port-based VLANs are VLANs where the packet forwarding decision is based on the destination MAC address and its associated port.

Port-based VLANs require allowed outgoing ports to be defined for each port. Therefore, if you wish to allow two subscriber ports to talk to each other, for example, between conference rooms in a hotel, you must define the egress (an egress port is an outgoing port, that is, a port through which a data packet leaves) for both ports.

Port-based VLANs are specific only to the switch on which they were created.

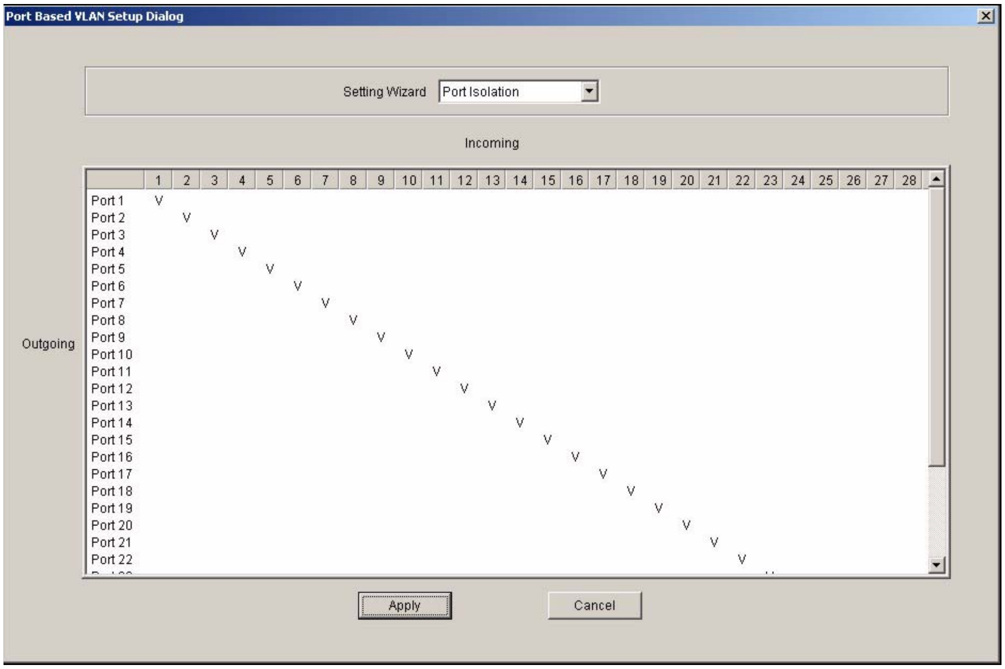
The port-based VLAN setup screen is shown next. The CPU management port forms a VLAN with all Ethernet ports.

15.3.1 Configuring Port Based VLAN

Follow the steps below to set the **Port Based VLAN Type** on the switch.

1. In the Device Panel list, select a device and then right-click.
2. Click **Configuration** > **Switch Configuration** > **Switch Setup**.
3. Select **Port Based** as the **VLAN Type** and then click **Apply**.
4. Select a device, right-click and click **Configuration** > **VLAN Configuration** to display the screen as shown next.

Figure 113 VLAN Configuration: Port Based



Setting Wizard: Port Isolation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Port 1	V																											
Port 2		V																										
Port 3			V																									
Port 4				V																								
Port 5					V																							
Port 6						V																						
Port 7							V																					
Port 8								V																				
Port 9									V																			
Port 10										V																		
Port 11											V																	
Port 12												V																
Port 13													V															
Port 14														V														
Port 15															V													
Port 16																V												
Port 17																	V											
Port 18																		V										
Port 19																			V									
Port 20																				V								
Port 21																					V							
Port 22																						V						

The following table describes the labels in this screen.

Table 79 VLAN Configuration: Port Based

LABEL	DESCRIPTION
Timeout (seconds)	The text box displays how long (in seconds) an SNMP request times out. You may change the timeout by typing a new number in the text box and then clicking the **Apply** button.
Setting Wizard	Choose from **All connected** or **Port isolation**. **All connected** means all ports can communicate with each other, that is, there are no virtual LANs. All incoming and outgoing ports are selected. This option is the most flexible but also the least secure. **Port isolation** means that each port can only communicate with the **CPU** management port and cannot communicate with each other. All incoming ports are selected while only the **CPU** outgoing port is selected. This option is the most limiting but also the most secure. After you make your selection, click **Apply** to display the screens as mentioned above. You can still customize these settings by adding/deleting incoming or outgoing ports, but you must also click **Apply** at the bottom of the screen.
Incoming	These are the ingress ports; an ingress port is an incoming port, that is, a port through which a data packet enters. If you wish to allow two subscriber ports to talk to each other, you must define the ingress port for both ports. The numbers in the top row denote the incoming port for the corresponding port listed on the left (its outgoing port). **CPU** refers to the switch management port. By default it forms a VLAN with all Ethernet ports. If it does not form a VLAN with a particular port then the switch cannot be managed from that port.
Outgoing	These are the egress ports; an egress port is an outgoing port, that is, a port through which a data packet leaves. If you wish to allow two subscriber ports to talk to each other, you must define the egress port for both ports. **CPU** refers to the switch management port. By default it forms a VLAN with all Ethernet ports. If it does not form a VLAN with a particular port then the switch cannot be managed from that port.
Apply	Click **Apply** to save the changes, including the “wizard settings”.
Cancel	Click **Cancel** to start configuring the screen again.

16

Ethernet Port Configuration

This chapter shows how to configure the Ethernet port settings.

16.1 Overview

Use the **Ethernet Port Configuration** screens to set port-related settings (such as port VLAN, STP and security, etc.).

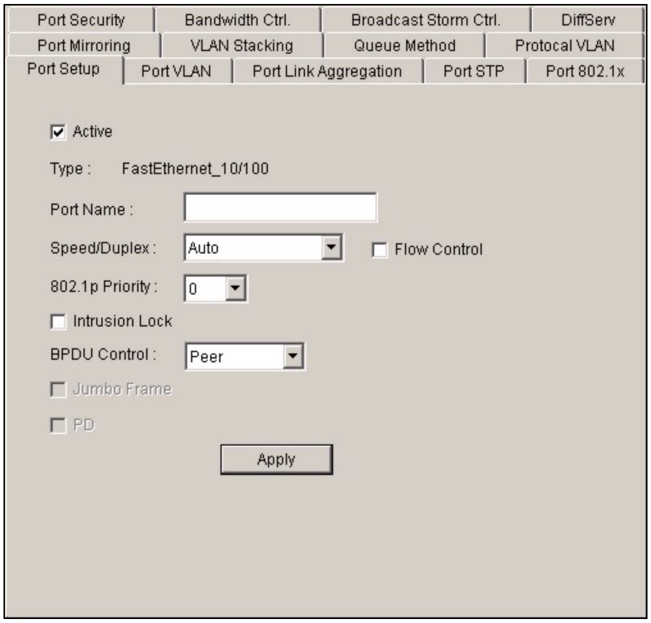
Once you configure a feature on a port, you must enable that feature on the switch in the **Switch Setup** screen.

16.2 Port Setup

Use the **Port Setup** screen to activate and configure switch port settings.

To open this screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port > Port Setup**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 114 Ethernet Port Configuration: Port Setup


Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Apply

☑ Active

Type : FastEthernet_10/100

Port Name :

Speed/Duplex : Auto ☐ Flow Control

802.1p Priority : 0

☐ Intrusion Lock

BPDU Control : Peer

☐ Jumbo Frame

☐ PD

The following table describes the fields in this screen.

Table 80 Ethernet Port Configuration: Port Setup

LABEL	DESCRIPTION
Active	Select this check box to enable a port. The factory default for all ports is enabled. A port must be enabled for data transmission to occur.
Type	This field displays the port type and port speed.
Port Name	Enter a descriptive name for identification purposes.
Speed/ Duplex	Select the speed and the duplex mode of the Ethernet connection on this port. Choices are **Auto**, **10M/Half Duplex**, **10M/Full Duplex**, **100M/Half Duplex**, **100M/Full Duplex** and **1000M/Full Duplex** (for Gigabit/mini-GBIC ports only). Selecting **Auto** (auto-negotiation) makes one Ethernet port able to negotiate with a peer automatically to obtain the connection speed and duplex mode that both ends support. When auto-negotiation is turned on, an Ethernet port on the switch negotiates with the peer automatically to determine the connection speed and duplex mode. If the peer Ethernet port does not support auto-negotiation or turns off this feature, the switch determines the connection speed by detecting the signal on the cable and using half duplex mode. When the switch's auto-negotiation is turned off, an Ethernet port uses the pre-configured speed and duplex mode when making a connection, thus requiring you to make sure that the settings of the peer Ethernet port are the same in order to connect.
Flow Control	A concentration of traffic on a port decreases port bandwidth and overflows buffer memory causing packet discards and frame losses. Flow Control is used to regulate transmission of signals to match the bandwidth of the receiving port. The switch uses IEEE 802.3x flow control in full duplex mode and backpressure flow control in half duplex mode. IEEE 802.3x flow control is used in full duplex mode to send a pause signal to the sending port, causing it to temporarily stop sending signals when the receiving port memory buffers fill. Back Pressure flow control is typically used in half duplex mode to send a "collision" signal to the sending port (mimicking a state of packet collision) causing the sending port to temporarily stop sending signals and resend later. Select **Flow Control** to enable it.
802.1p Priority	The switch uses this priority value for incoming frames without an IEEE 802.1p priority queue tag. The switch uses this priority value internally and does not add an IEEE 802.1p priority tag.
Intrusion Lock	Select the **Intrusion Lock** check box to enable this security feature on a selected port on the switch. If an Ethernet cable is disconnected from the port, intrusion locking prevents access once a cable is reconnected. This limits risk from unauthorized access such as hacking. Note: You cannot access a port with intrusion locking enabled after a cable is disconnected and then reconnected. You must clear and re-select the **Intrusion Lock** check box to allow access to the port again.
BPDU Control	Configure the way to treat BPDUs received on this port. You must activate bridging control protocol transparency in the **Switch Setup** screen first. Select **Peer** to process any BPDU (Bridge Protocol Data Units) received on this port. Select **Tunnel** to forward BPDUs received on this port. Select **Discard** to drop any BPDU received on this port. Select **Network** to process a BPDU with no VLAN tag and forward a tagged BPDU.

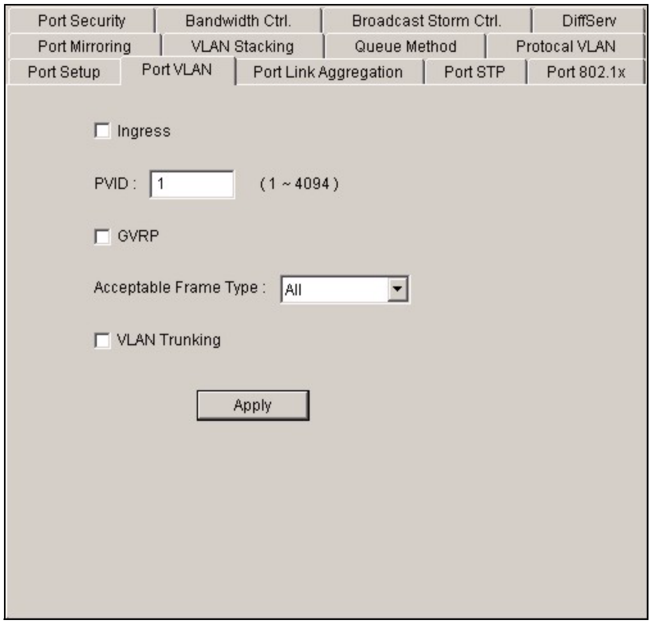
Table 80 Ethernet Port Configuration: Port Setup (continued)

LABEL	DESCRIPTION
Jumbo Frame	Jumbo frames are used to forward non-standard packet sizes on your network. These frames can deliver frames of up to 9216 bytes instead of standard Ethernet frames of 1522 bytes. Fewer packets are required for large data transfer, improving traffic throughput on the port. Select this option to allow a port to send and receive jumbo frames. Note: The peer device must also support non-standard packet traffic.
PD	A powered device (PD) is a device such as an access point or a switch, that supports PoE (Power over Ethernet) so that it can receive power from another device through a 10/100Mbps Ethernet port. Select the check box to allow a powered device (connected to the port) to receive power from the switch.
Apply	Click **Apply** to save your changes.

16.3 Port VLAN

To open the **Port VLAN** screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Port VLAN**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 115 Ethernet Port Configuration: Port VLAN


Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Apply

☐ Ingress

PVID : 1 (1 ~ 4094)

☐ GVRP

Acceptable Frame Type : All

☐ VLAN Trunking

The following table describes the labels in this screen.

Table 81 Ethernet Port Configuration: Port VLAN

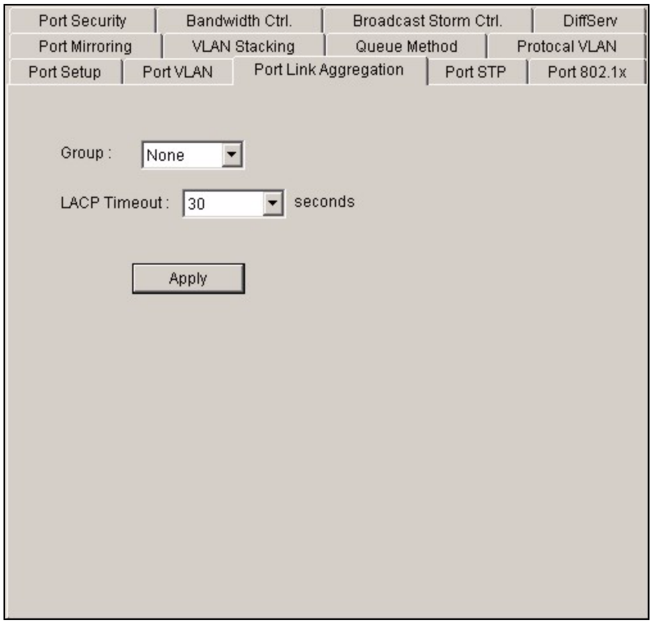
LABEL	DESCRIPTION
Ingress	This feature is not supported on all models. If this check box is selected for a port, the device discards incoming frames for VLANs that do not include this port in its member set.
PVID	Each port on the switch is capable of passing tagged or untagged frames. To forward a frame from an IEEE 802.1Q VLAN-unaware switch to an IEEE 802.1Q VLAN-aware switch, the switch first decides where to forward the frame, and then inserts a VLAN tag reflecting the default ingress port's VLAN ID, the PVID. The default PVID is VLAN 1 for all ports, but this can be changed to any number between 1 and 4094.
GVRP	Select the check box to permit VLAN groups beyond the local switch on this port. GVRP (GARP VLAN Registration Protocol) is a registration protocol that defines a way for switches to register necessary VLAN members on ports across the network.
Acceptable Frame Type	Specify the type of frames allowed on a port. Choices are **All** and **Tag Only**. Select **All** to accept all frames with untagged or tagged frames on this port. This is the default setting. Select **Tag Only** to accept only tagged frames on this port. All untagged frames are dropped.
VLAN Trunking	Enable VLAN trunking on ports connected to other switches or routers (but not ports directly connected to end users) to allow frames belonging to unknown VLAN groups to pass through the switch.
Apply	Click **Apply** to save the changes.

16.4 Port Link Aggregation

Use the **Port Link Aggregation** screen to configure a port trunk group and set LACP timeout.

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Port Link Aggregation**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 116 Ethernet Port Configuration: Port Link Aggregation



Group : None

LACP Timeout : 30 seconds

The following table describes the fields in this screen.

Table 82 Ethernet Port Configuring: Port Link Aggregation

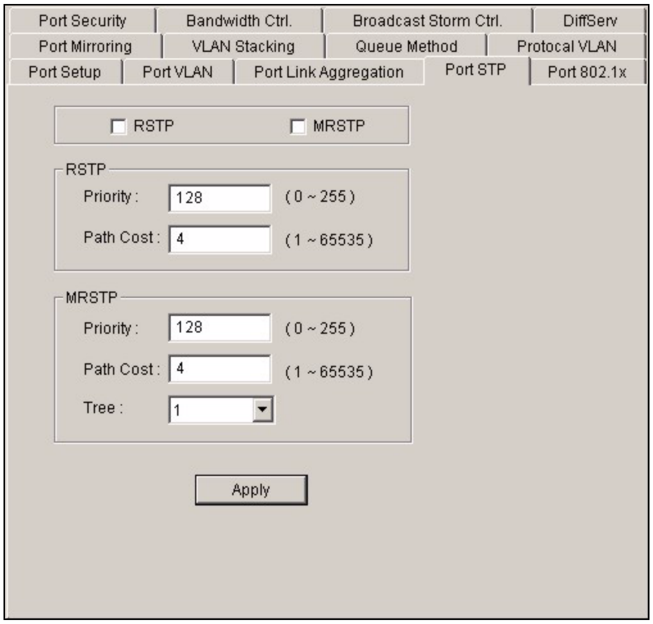
LABEL	DESCRIPTION
Group	Select the trunk group to which a port belongs.
LACP Timeout	Timeout is the time interval between the individual port exchanges of LACP packets in order to check that the peer port in the trunk group is still up. If a port does not respond after three tries, then it is deemed to be “down” and is removed from the trunk. Set a short timeout (one second) for busy trunked links to ensure that disabled ports are removed from the trunk group as soon as possible. Select from 1 second to 30 seconds.
Apply	Click **Apply** to save the changes.

16.5 Port STP

Use the **Port STP** screen to set multiple/Rapid STP for the selected port(s).

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Port STP**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 117 Ethernet Port Configuration: Port STP



Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Apply

☐ RSTP ☐ MRSTP

RSTP
Priority : 128 (0 ~ 255)
Path Cost : 4 (1 ~ 65535)

MRSTP
Priority : 128 (0 ~ 255)
Path Cost : 4 (1 ~ 65535)
Tree : 1

The following table describes the fields in this screen.

Table 83 Ethernet Port Configuration: Port STP

LABEL	DESCRIPTION
RSTP	Select this check box to activate Rapid STP (RSTP) on this port.
MRSTP	Select this check box to activate Multiple Rapid STP (MRSTP) on this port.
RSTP	

Table 83 Ethernet Port Configuration: Port STP (continued)

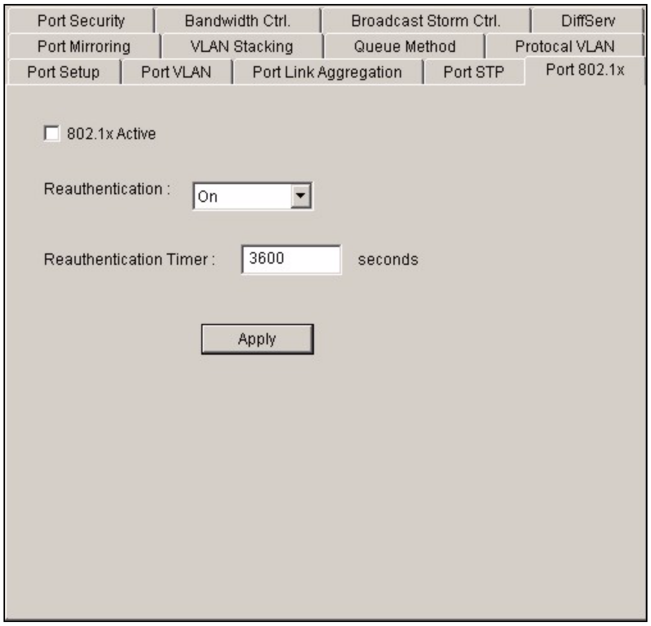
LABEL	DESCRIPTION
Priority	Priority is used in determining the root device, root port and designated port. The device with the highest priority (lowest numeric value) becomes the STP root device. If all devices have the same priority, the device with the lowest MAC address will then become the root device. The allowed range is 0 to 255. The lower the numeric value you assign, the higher the priority for this device.
Path Cost	Path cost is the cost of transmitting a frame on to a LAN through that port. It is assigned according to the speed of the link. The slower the media, the higher the cost (refer to the table on path cost in the section on STP).
MRSTP	
Priority	Priority is used in determining the root device, root port and designated port. The device with the highest priority (lowest numeric value) becomes the STP root device. If all devices have the same priority, the device with the lowest MAC address will then become the root device. The allowed range is 0 to 255. The lower the numeric value you assign, the higher the priority for this device.
Path Cost	Path cost is the cost of transmitting a frame on to a LAN through that port. It is assigned according to the speed of the link. The slower the media, the higher the cost (refer to the table on path cost in the section on STP).
Tree	Select the index number of the spanning tree to which this port belongs.
Apply	Click **Apply** to save the changes.

16.6 Port 802.1x

Use the **Port 802.1x** screen to configure reauthentication for selected ports.

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Port 802.1x**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 118 Ethernet Port Configuration: Port 802.1x



☐ 802.1x Active

Reauthentication : On

Reauthentication Timer : 3600 seconds

The following table describes the fields in this screen.

Table 84 Ethernet Port Configuration: Port 802.1x

LABEL	DESCRIPTION
802.1x Active	Select this check box to permit IEEE 802.1x authentication on this port. You must first allow IEEE 802.1x authentication on the switch before configuring it on each port.
Reauthentication	Select **On** from the drop-down list box to periodically prompt a subscriber to re-enter his or her username and password to stay connected to the port.
Reauthentication Timer	Specify how often a client has to re-enter his or her username and password to stay connected to the port.
Apply	Click **Apply** to save the changes.

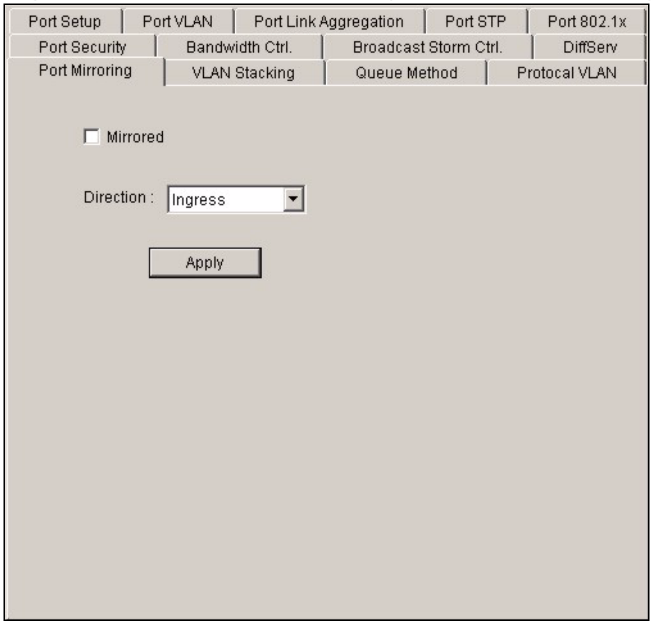
16.7 Port Mirroring

Port mirroring allows you to copy traffic going from one or all ports to another or all ports in order that you can examine the traffic from the mirror port (the port you copy the traffic to) without interference.

You must first select a monitor port. A monitor port is a port that copies the traffic of another port. After you select a monitor port, configure a mirroring rule in the related fields.

To open the **Port Mirroring** screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Port Mirroring**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 119 Ethernet Port Configuration: Port Mirroring


Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Apply

☐ Mirrored

Direction : Ingress

The following table describes the fields in this screen.

Table 85 Ethernet Port Configuration: Port Mirroring

LABEL	DESCRIPTION
Mirrored	Select this option to mirror the traffic on a port.
Direction	Specify the direction of the traffic to mirror. Select **Egress** (outgoing), **Ingress** (incoming) or **Both** from the drop-down list box.
Apply	Click **Apply** to save the changes.

16.8 VLAN Stacking

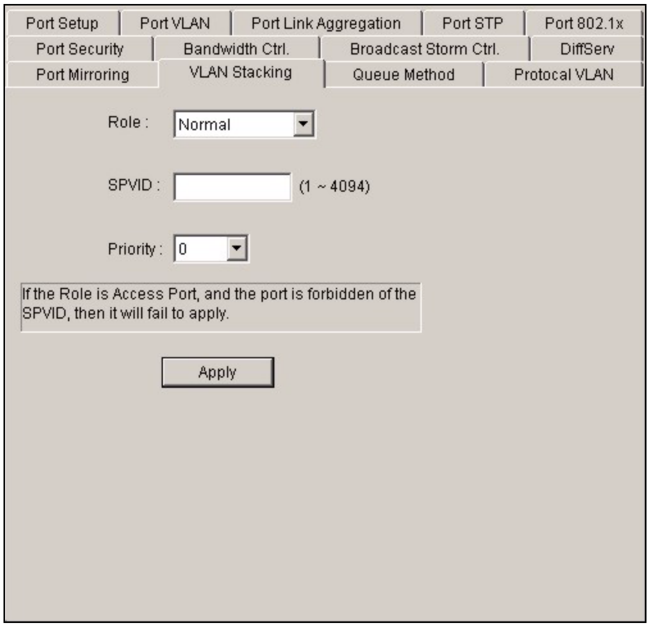
A service provider can use VLAN stacking to allow it to distinguish multiple customers VLANs, even those with the same (customer-assigned) VLAN ID, within its network.

Use VLAN stacking to add an outer VLAN tag to the inner IEEE 802.1Q tagged frames that enter the network. By tagging the tagged frames ("double-tagged" frames), the service provider can manage up to 4,094 VLAN groups with each group containing up to 4,094 customer VLANs. This allows a service provider to provide different service, based on specific VLANs, for many different customers.

A service provider's customers may require a range of VLANs to handle multiple applications. A service provider's customers can assign their own inner VLAN tags on ports for these applications. The service provider can assign an outer VLAN tag for each customer. Therefore, there is no VLAN tag overlap among customers, so traffic from different customers is kept separate.

To open the **VLAN Stacking** screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **VLAN Stacking**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 120 Ethernet Port Configuration: VLAN Stacking



Role : Normal

SPVID : (1 ~ 4094)

Priority : 0

If the Role is Access Port, and the port is forbidden of the SPVID, then it will fail to apply.

The following table describes the fields in this screen.

Table 86 Ethernet Port Configuration: VLAN Stacking

LABEL	DESCRIPTION
Role	Select **Normal** to have the switch ignore frames received (or transmitted) on this port with VLAN stacking tags. Anything you configure in **SPVID** and **Priority** is ignored. Select **Access Port** to have the switch add the **SP TPID** tag to all incoming frames received on this port. Select **Access Port** for ingress ports at the edge of the service provider's network. Select **Tunnel Port** (available for Gigabit ports only) for egress ports at the edge of the service provider's network. In order to support VLAN stacking on a port, the port must be able to allow frames of 1526 Bytes (1522 Bytes + 4 Bytes for the second tag) to pass through it.
SPVID	**SPVID** is the service provider's VLAN ID (the outer VLAN tag). Enter the service provider ID (from 1 to 4094) for frames received on this port. See the chapter on VLANs for more background information on VLAN ID.
Priority	Select the priority level of the inner IEEE 802.1Q tag. "0" is the lowest priority level and "7" is the highest.
Apply	Click **Apply** to save the changes.

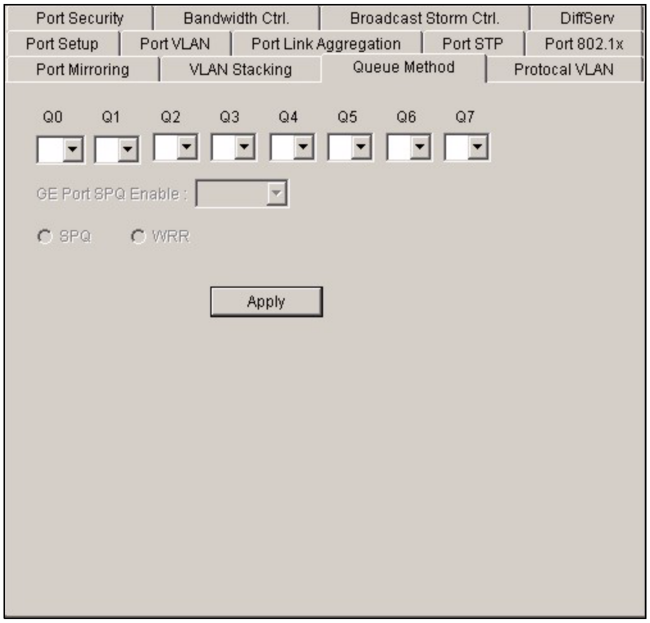
16.9 Queue Method

Queuing is used to help solve performance degradation when there is network congestion.

Depending on your device model, use the **Switch Setup** screen to configure queuing algorithms for outgoing traffic (refer to Section 14.1 on page 143).

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port > Queue Method**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 121 Ethernet Port Configuration: Queue Method


Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Q0
Q1
Q2
Q3
Q4
Q5
Q6
Q7
GE Port SPQ Enable :
○ SPQ
○ WRR
Apply

The following table describes the fields in this screen.

Table 87 Ethernet Port Configuration: Queue Method

LABEL	DESCRIPTION
Q0 - Q7	For **Weighted Fair Scheduling**, select the queue weight here. Bandwidth is divided across the different traffic queues according to their weights. Queues with larger weights get more guaranteed bandwidth than queues with smaller weights. For Gigabit/ Mini-GBIC ports, if you select **0** for the queue weight, the switch uses **Strictly Priority** to service the queue.
GE Port SPQ Enable	
SPQ	Select **SPQ** (Strict Priority Queuing) to service queues based on priority only. When the highest priority queue empties, traffic on the next highest-priority queue begins. The default queuing method is **Strictly Priority.** **Weighted Fair Scheduling** is used to guarantee each queue's minimum bandwidth based on their bandwidth portion (weight) (the number you configure in the **Weight** field). Queues with larger weights get more guaranteed bandwidth than queues with smaller weights.
WRR	Select **WRR** (Weighted Round Robin Scheduling) to service queues on a rotating basis based on their queue weight (the number you select from the drop-down list box for the corresponding queue). Queues with larger weights get more service than queues with smaller weights.
Apply	Click **Apply** to save the changes.

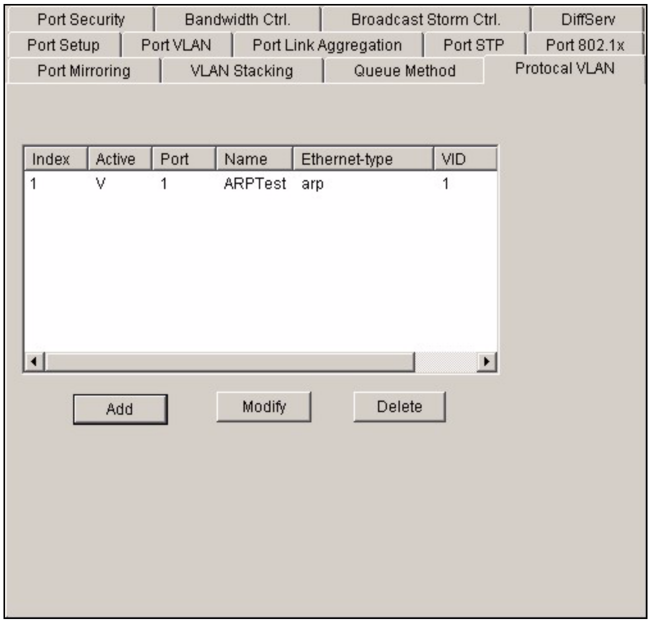
16.10 Protocol VLAN

Protocol based VLANs allow you to group traffic into logical VLANs based on the protocol you specify. When an upstream frame is received on a port (configured for a protocol based VLAN), the switch checks if a tag is added already and its protocol. The untagged packets of the same protocol are then placed in the same protocol based VLAN. One advantage of using protocol based VLANs is that priority can be assigned to traffic of the same protocol.

Note: Protocol based VLAN applies to un-tagged packets and is applicable only when you use IEEE 802.1Q tagged VLAN.

To open the **Protocol VLAN** screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Protocol VLAN**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 122 Ethernet Port Configuration: Protocol VLAN


Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Add
Modify
Delete

Index	Active	Port	Name	Ethernet-type	VID
1	V	1	ARPTest	arp	1

The following table describes the fields in this screen.

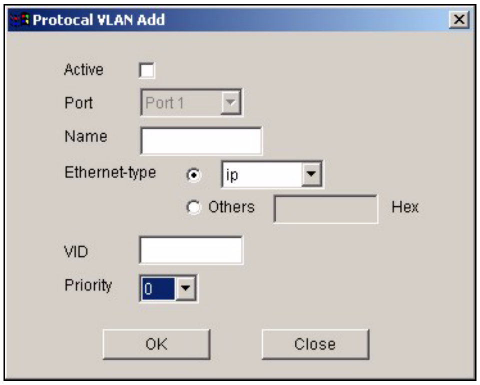
Table 88 Ethernet Port Configuration: Protocol VLAN

TABLE	DESCRIPTION
Index	This is the index number identifying this protocol based VLAN.
Active	This field shows whether the protocol based VLAN is active or not.
Port	This field shows which port belongs to this protocol based VLAN.
Name	This field shows the name the protocol based VLAN.
Ethernet Type	This field shows which Ethernet protocol is part of this protocol based VLAN.
VID	This field shows the VLAN ID of the port.
Priority	This field shows the priority which is assigned to frames belonging to this protocol based VLAN.
Add	Click **Add** to create a new protocol VLAN entry.
Modify	Click **Modify** to change the settings of a selected protocol VLAN.
Delete	Click **Delete** to remove the selected protocol based VLANs.

16.10.1 Configuring a Protocol VLAN

To create a new protocol VLAN, click **Add** in the **Protocol VLAN** screen. Click **Modify** to change the settings of the selected entry. The **Protocol VLAN Add** or **Protocol VLAN Modify** screen displays.

Figure 123 Ethernet Port Configuration: Protocol VLAN Add



The following table describes the fields in this screen.

Table 89 Ethernet Port Configuration: Protocol VLAN

TABLE	DESCRIPTION
Active	Check this box to activate this protocol based VLAN.
Port	This read-only field displays the port number to which this protocol VLAN setting is applied.
Name	Enter up to 32 alphanumeric characters to identify this protocol based VLAN.
Ethernet-type	Use the drop down list box to select a predefined protocol to be included in this protocol based VLAN or select **Others** and type the protocol number in hexadecimal notation. For example the IP protocol in hexadecimal notation is 0800, and Novell IPX protocol is 8137. **Note:** Protocols in the hexadecimal number range of 0x0000 to 0x05ff are not allowed to be used for protocol based VLANs.
VID	Enter the ID of a VLAN to which the port belongs. This must be an existing VLAN which you defined in the **Advanced Applications**, **VLAN** screens.
Priority	Select the priority level that the switch will assign to frames belonging to this VLAN.
OK	Click **OK** to save the settings and close this screen.
Close	Click **Close** to discard all changes and close this screen.

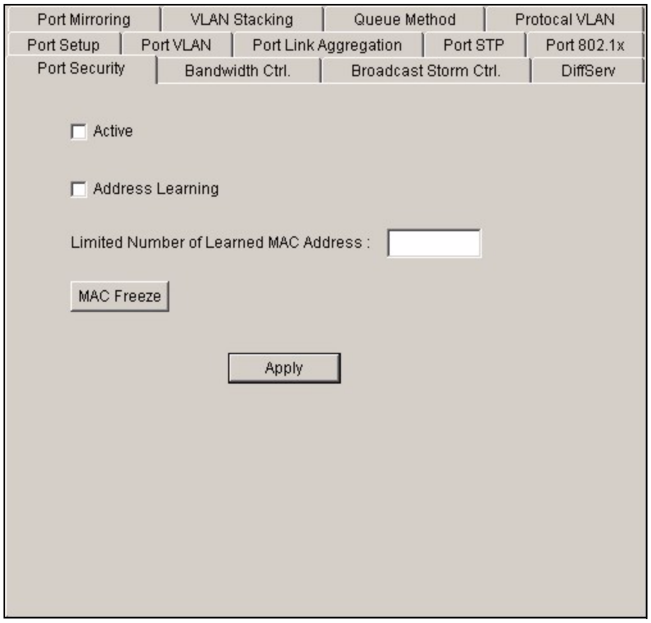
16.11 Port Security

Port security allows only packets with dynamically learned MAC addresses and/or configured static MAC addresses to pass through a port on the switch.

For maximum port security, enable this feature, disable MAC address learning and configure static MAC address(es) for a port. It is not recommended you disable Port Security together with MAC address learning as this will result in many broadcasts. By default, MAC address learning is still enabled even though the port security is not activated.

To open the **Port Security** screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Port Security**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 124 Ethernet Port Configuration: Port Security


Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
☐ Active
☐ Address Learning
Limited Number of Learned MAC Address :
MAC Freeze
Apply

The following table describes the fields in this screen.

Table 90 Ethernet Port Configuration: Port Security

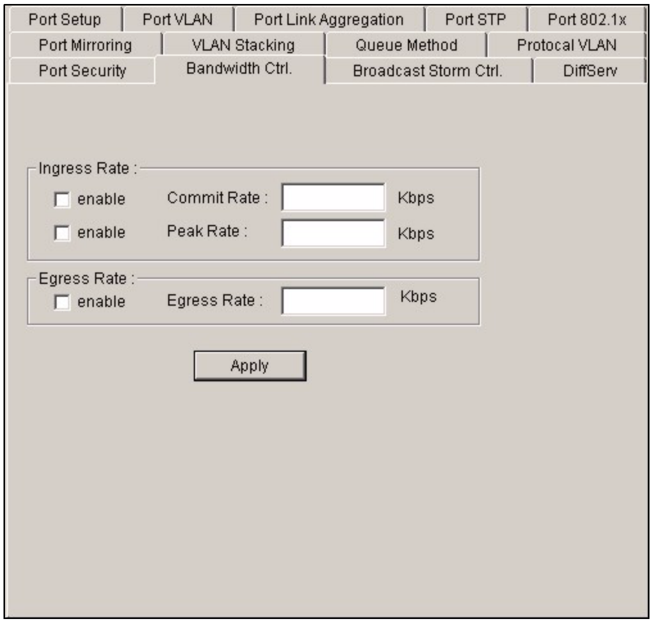
TABLE	DESCRIPTION
Active	Select this check box to enable the port security feature on selected ports.
Address Learning	MAC address learning reduces outgoing broadcast traffic. For MAC address learning to occur on a port, the port itself must be active with address learning enabled. Select the **Address Learning** check box.
Limited Number of Learned MAC Address	Use this field to limit the number of (dynamic) MAC addresses that may be learned on a port. For example, if you set this field to "5" on port 2, then only the devices with these five learned MAC addresses may access port 2 at any one time. A sixth device would have to wait until one of the five learned MAC addresses aged out. MAC-address aging out time can be set in the **Switch Setup** screen. The valid range is from 0 to 16K. 0 means this feature is disabled, so the switch will learn MAC addresses up to the global limit of 16K.
MAC Freeze	Click **MAC Freeze** to convert all current dynamic MAC addresses to static MAC addresses. When you click the **MAC Freeze** button, the **MAC Address Learning** check box is cleared but port security becomes **Active**.
Apply	Click **Apply** to save the changes.

16.12 Bandwidth Control

Bandwidth control means defining a maximum allowable bandwidth for incoming and/or outgoing traffic flows on a port.

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Bandwidth Ctrl.**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 125 Ethernet Port Configuration: Bandwidth Ctrl.


Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Ingress Rate :
☐ enable
Commit Rate :
Kbps
☐ enable
Peak Rate :
Kbps
Egress Rate :
☐ enable
Egress Rate :
Kbps
Apply

The following table describes the labels in this screen.

Table 91 Ethernet Port Configuration: Bandwidth Ctrl.

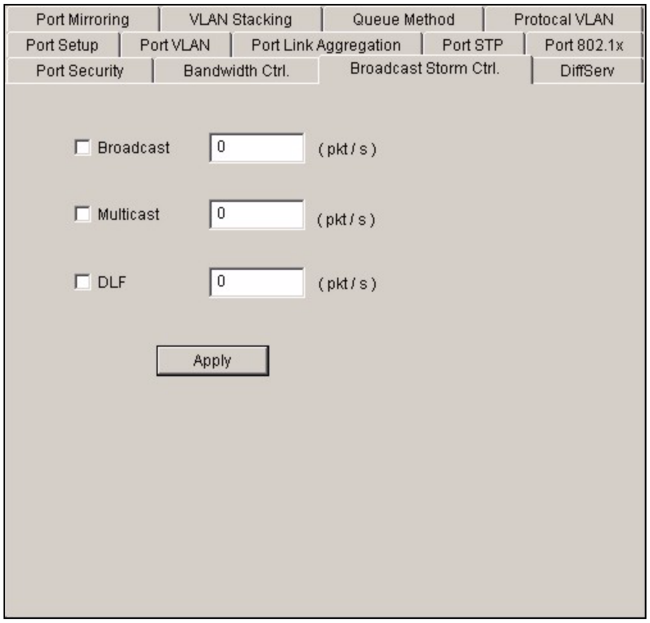
LABEL	DESCRIPTION
Enable	Select this check box to enable ingress and/or egress bandwidth control. You may temporarily deactivate a rule without deleting it by clearing this check box.
Ingress Rate	Type the maximum bandwidth allowed in kilobits per second (Kbps) for traffic coming into this port.
Commit Rate	Specify the guaranteed bandwidth allowed in kilobits per second (Kbps) for the incoming traffic flow on a port. The commit rate should be less than the peak rate. The sum of commit rates cannot be greater than or equal to the uplink bandwidth.
Peak Rate	Specify the maximum bandwidth allowed in kilobits per second (Kbps) for the incoming traffic flow on a port.
Egress Rate	Type the maximum bandwidth allowed in kilobits per second (Kbps) for traffic going out of this port.
Apply	Click **Apply** to save the changes.

16.13 Broadcast Storm Control

Broadcast storm control limits the number of broadcast, multicast and destination lookup failure (DLF) packets the switch receives per second on the ports. When the maximum number of allowable broadcast, multicast and/or DLF packets is reached per second, the subsequent packets are discarded. Enable this feature to reduce broadcast, multicast and/or DLF packets in your network.

To open the configuration screen, right-click on the switch in the Device List Panel, and click **Configuration > Ethernet Port** > **Broadcast Storm Ctrl.**. Then select a device and the port(s) to which you want to apply this configuration.

Figure 126 Ethernet Port Configuration: Broadcast Storm Ctrl.


Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
Apply

☐ Broadcast 0 (pkt / s)

☐ Multicast 0 (pkt / s)

☐ DLF 0 (pkt / s)

The following table describes the labels in this screen.

Table 92 Ethernet Port Configuration: Broadcast Storm Ctrl.

LABEL	DESCRIPTION
Broadcast	Select this option and specify how many broadcast packets the port receives per second.
Multicast	Select this option and specify how many multicast packets the port receives per second.
DLF	Select this option and specify how many destination lookup failure (DLF) packets the port receives per second.
Apply	Click **Apply** to save the changes.

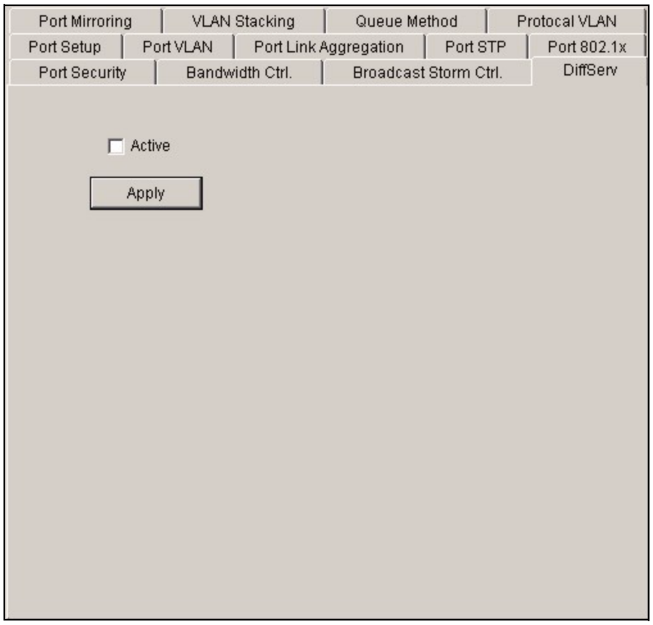
16.14 DiffServ

DiffServ is a class of service (CoS) model that marks packets so that they receive specific per-hop treatment at DiffServ-compliant network devices along the route based on the application types and traffic flow. Packets are marked with DiffServ Code Points (DSCPs) indicating the level of service desired. This allows the intermediary DiffServ-compliant network devices to handle the packets differently depending on the code points without the need to negotiate paths or remember state information for every flow. In addition, applications do not have to request a particular service or give advanced notice of where the traffic is going.

Enable DiffServ in the **DiffServ** screen.

1. In the Device Panel list, select a device and then right-click.
2. Click **Configuration** > **Ethernet Port Configuration** > **DiffServ**.
3. Select **Active** to enable the DSCP-to-IEEE 802.1q mapping. Set the mapping in the **IP Configuration: DSCP** screen (refer to Section 19.2 on page 201).
4. Click **Apply** to save the changes.

Figure 127 Ethernet Port Configuration: DiffServ


Port Mirroring
VLAN Stacking
Queue Method
Protocal VLAN
Port Setup
Port VLAN
Port Link Aggregation
Port STP
Port 802.1x
Port Security
Bandwidth Ctrl.
Broadcast Storm Ctrl.
DiffServ
☐ Active
Apply

17

Multicast Configuration

This chapter shows you how to configure multicast settings and MVR (Multicast VLAN Registration) groups.

17.1 Overview

Traditionally, IP packets are transmitted in one of either two ways - Unicast (1 sender to 1 recipient) or Broadcast (1 sender to everybody on the network). Multicast delivers IP packets to just a group of hosts on the network.

IGMP (Internet Group Multicast Protocol) is a session-layer protocol used to establish membership in a multicast group - it is not used to carry user data. Refer to RFC 1112 and RFC 2236 for information on IGMP versions 1 and 2 respectively.

17.1.1 IP Multicast Addresses

In IPv4, a multicast address allows a device to send packets to a specific group of hosts (multicast group) in a different subnetwork. A multicast IP address represents a traffic receiving group, not individual receiving devices. IP addresses in the Class D range (224.0.0.0 to 239.255.255.255) are used for IP multicasting. Certain IP multicast numbers are reserved by IANA for special purposes (see the IANA web site for more information).

17.1.2 IGMP Snooping

A switch can passively snoop on IGMP Query, Report and Leave (IGMP version 2) packets transferred between IP multicast routers/switches and IP multicast hosts to learn the IP multicast group membership. It checks IGMP packets passing through it, picks out the group registration information, and configures multicasting accordingly. IGMP snooping allows the switch to learn multicast groups without you having to manually configure them.

The switch forwards multicast traffic destined for multicast groups (that it has learned from IGMP snooping or that you have manually configured) to ports that are members of that group. IGMP snooping generates no additional network traffic, allowing you to significantly reduce multicast traffic passing through your switch.

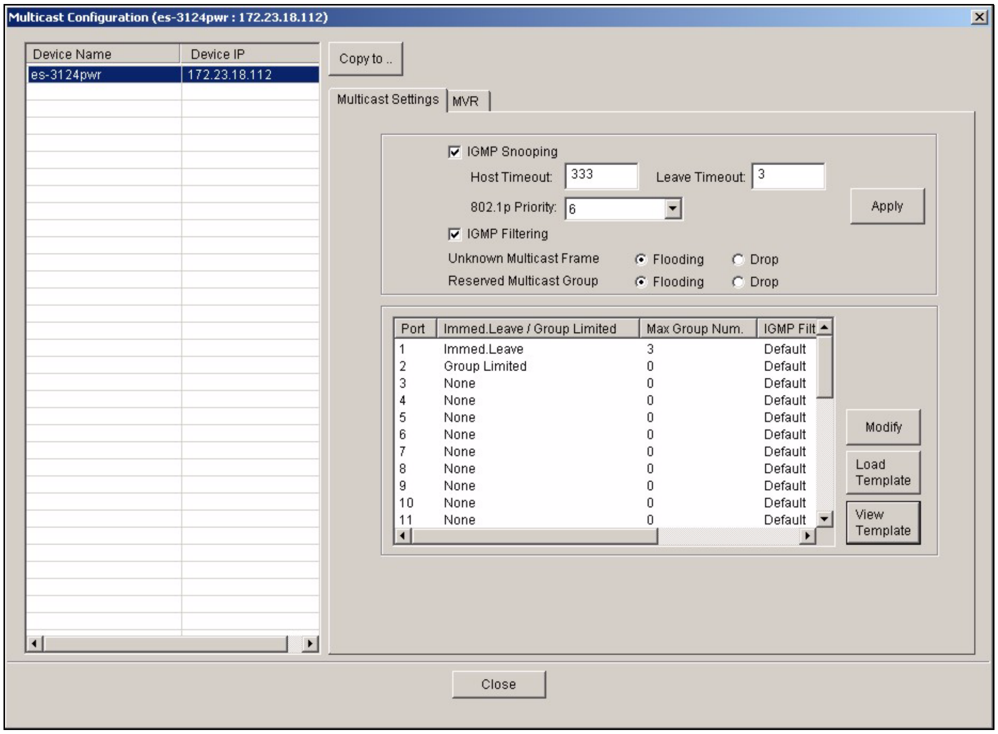
For background information on IGMP filtering, refer to Section 6.3 on page 79.

17.2 Multicast Settings

To configure multicast settings, click **Configuration** > **Multicast Configuration** to display the configuration screen.

For devices that do not support the multicast feature, this screen only allows you to configure the **IGMP Snooping** option.

Figure 128 Multicast Configuration: Multicast Settings



Device Name	Device IP
es-3124pwr	172.23.18.112

☑ IGMP Snooping

Host Timeout: 333

Leave Timeout: 3

802.1p Priority: 6

☑ IGMP Filtering

Unknown Multicast Frame ● Flooding ○ Drop

Reserved Multicast Group ● Flooding ○ Drop

Port	Immed.Leave / Group Limited	Max Group Num.	IGMP Filt
1	Immed.Leave	3	Default
2	Group Limited	0	Default
3	None	0	Default
4	None	0	Default
5	None	0	Default
6	None	0	Default
7	None	0	Default
8	None	0	Default
9	None	0	Default
10	None	0	Default
11	None	0	Default

The following table describes the labels in this screen.

Table 93 Multicast Configuration: Multicast Settings

LABEL	DESCRIPTION
IGMP Snooping	Select **Active** to enable IGMP snooping to forward group multicast traffic only to ports that are members of that group.
Host Timeout	Specify the time (from 1 to 16,711,450) in seconds that elapses before the switch removes an IGMP group membership entry if it does not receive report messages from the port.
Leave Timeout	Enter an IGMP leave timeout value (from 1 to 16,711,450) in seconds. This defines how many seconds the switch waits for an IGMP report before removing an IGMP snooping membership entry when an IGMP leave message is received from a host.
802.1p Priority	Select a priority level (0-7) to which the switch changes the priority in outgoing IGMP control packets. Otherwise, select **No-Change** to not replace the priority.
IGMP Filtering	Select **Active** to enable IGMP filtering to control which IGMP groups a subscriber on a port can join.

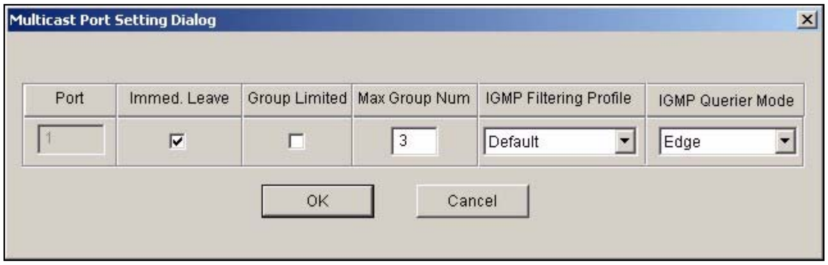
Table 93 Multicast Configuration: Multicast Settings (continued)

LABEL	DESCRIPTION
Unknown Multicast Frame	Specify the action to perform when the switch receives an unknown multicast frame. Select **Drop** to discard the frame(s). Select **Flooding** to send the frame(s) to all ports.
Reserved Multicast Group	Multicast addresses (224.0.0.0 to 224.0.0.255) are reserved for the local scope. For examples, 224.0.0.1 is for all hosts in this subnet, 224.0.0.2 is for all multicast routers in this subnet, etc. A router will not forward a packet with the destination IP address within this range. See the IANA web site for more information. Specify the action to perform when the switch receives a frame with a reserved multicast address. Select **Drop** to discard the frame(s). Select **Flooding** to send the frame(s) to all ports.
Apply	Click **Apply** to save the settings in this part of the screen.
Port	This field displays the port number.
Immed. Leave/ Group Limited	This field displays whether the switch is set to remove this port from the multicast tree when an IGMP version 2 leave message is received on this port. This field also displays whether the port is set to join a limited number of groups.
Max Group Num.	This field displays number of multicast groups this port is allowed to join. Once a port is registered in the specified number of multicast groups, any new IGMP join report frame(s) is dropped on this port.
IGMP Filtering Profile	This field displays the name of the IGMP filtering profile this port uses. The default profile (**Default**) prohibits the port from joining any multicast group.
IGMP Querier Mode	This field displays the IGMP querier mode on the port.
Modify	Click **Modify** to change the multicast settings of the selected port.
Load Template	Click **Load Template** to display a screen you use to select a multicast template.
View Profile	Click **View Profile** to display the settings of a selected multicast template.

17.2.1 Configuring Port Multicast Settings

To change the multicast settings of a port, select a port in the **Multicast Setting** screen and click **Modify**. A configuration screen displays.

Figure 129 Multicast Configuration: Multicast Settings: Modify



Port	Immed. Leave	Group Limited	Max Group Num	IGMP Filtering Profile	IGMP Querier Mode
1	☑	☐	3	Default	Edge

The following table describes the labels in this screen.

Table 94 Multicast Configuration: Multicast Settings: Modify

LABEL	DESCRIPTION
Port	This field displays the port number.
Immed. Leave	Select this option to set the switch to remove this port from the multicast tree when an IGMP version 2 leave message is received on this port. Select this option if there is only one host connected to this port.
Group Limited	Select this option to limit the number of multicast groups this port is allowed to join.
Max Group Num.	Enter the number of multicast groups this port is allowed to join. Once a port is registered in the specified number of multicast groups, any new IGMP join report frame(s) is dropped on this port. Enter **0** to allow a port to join any number of multicast groups.
IGMP Filtering Profile	Select the name of the IGMP filtering profile to use for this port. Otherwise select **Default** to prohibit the port from joining any multicast group.
IGMP Querier Mode	The switch treats an IGMP query port as being connected to an IGMP multicast router (or server). The switch forwards IGMP join or leave packets to an IGMP query port. Select **Auto** to have the switch use the port as an IGMP query port if the port receives IGMP query packets. Select **Fixed** to have the switch always use the port as an IGMP query port. Select this when you connect an IGMP multicast server to the port. Select **Edge** to stop the switch from using the port as an IGMP query port. The switch will not keep any record of an IGMP router being connected to this port. The switch does not forward IGMP join or leave packets to this port.
OK	Click **OK** to save your changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

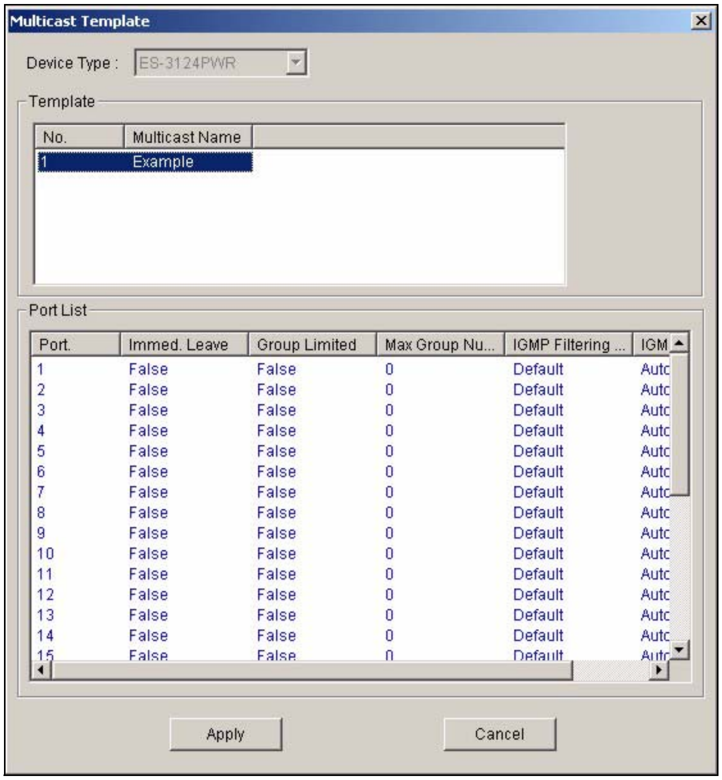
17.2.2 Applying a Multicast Template

After you create a multicast template using the Template screen, you can apply the template to the switch in the **Multicast Setting** screen.

When you apply a multicast template, all custom port multicast settings will be erased.

In the **Multicast Setting** screen, select a device in the device list panel and click **Load Template**. A screen displays as shown.

Figure 130 Multicast Configuration: Multicast Settings: Load Template



Device Type : ES-3124PWR

Template

No.	Multicast Name
1	Example

Port List

Port	Immed. Leave	Group Limited	Max Group Nu...	IGMP Filtering ...	IGM
1	False	False	0	Default	Autc
2	False	False	0	Default	Autc
3	False	False	0	Default	Autc
4	False	False	0	Default	Autc
5	False	False	0	Default	Autc
6	False	False	0	Default	Autc
7	False	False	0	Default	Autc
8	False	False	0	Default	Autc
9	False	False	0	Default	Autc
10	False	False	0	Default	Autc
11	False	False	0	Default	Autc
12	False	False	0	Default	Autc
13	False	False	0	Default	Autc
14	False	False	0	Default	Autc
15	False	False	0	Default	Autc

The following table describes the labels in this screen.

Table 95 Multicast Configuration: Multicast Settings: Load Template

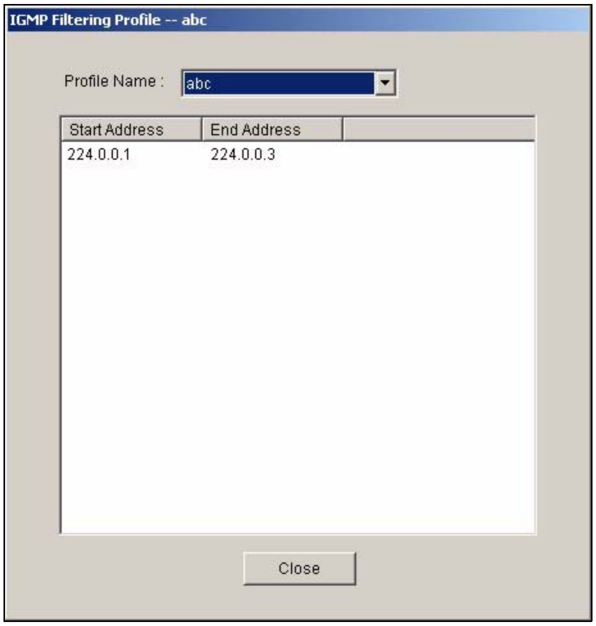
LABEL	DESCRIPTION
Device Type	Select a device type from the drop-down list box.
Template	
No.	This field displays the index number.
Multicast Name	This field displays the name of a multicast template you create using the **Template** screen.
PortList	This table displays the template settings. Refer to Figure 128 on page 180 for more information.
Apply	Click **Apply** to save the settings and close this screen.
Cancel	Click **Cancel** to discard the changes and close this screen.

17.2.3 Displaying IGMP Filter Profile

You can create IGMP filter templates in the **IGMP Filter Template** screen (refer to Section 6.3 on page 79) and apply IGMP filter templates in the **Multicast Template** screen.

In the **Multicast Setting** screen, select a port number and click **View Profile** to display IGMP filter profile settings.

Figure 131 Multicast Configuration: Multicast Settings: View Profile



The following table describes the labels in this screen.

Table 96 Multicast Configuration: Multicast Settings: View Profile

LABEL	DESCRIPTION
Profile Name	Select a profile name from the drop-down list box.
Start Address	This field displays the starting multicast IP address for a range of multicast IP addresses to which you want this IGMP filter profile to allow access.
End Address	This field displays the ending multicast IP address for a range of IP addresses to which you want this IGMP filter profile to allow access.
Close	Click **Close** to close this screen.

17.3 MVR

Multicast VLAN Registration (MVR) is designed for applications (such as Media-on-Demand (MoD)) that use multicast traffic across a service provider network.

MVR allows one single multicast VLAN to be shared among different subscriber VLANs on the network. While isolated in different subscriber VLANs, connected devices can subscriber to and unsubscribe from the multicast stream in the multicast VLAN. This improves bandwidth utilization with reduced multicast traffic in the subscriber VLANs and simplifies multicast group management.

You must enable IGMP snooping to use MVR. However, MVR only responds to IGMP join and leave control messages from multicast groups that are configured under MVR. Join and leave reports from other multicast groups are managed by IGMP snooping.

17.3.1 Types of MVR Ports

In MVR, a source port is a port on the switch that can send and receive multicast traffic in a multicast VLAN while a receiver port can only receive multicast traffic. Once configured, the switch maintains a forwarding table that matches the multicast stream to the associated multicast group.

17.3.2 MVR Modes

You can set your switch to operate in either dynamic or compatible mode.

In dynamic mode, the switch sends IGMP leave and join reports through the source port(s) to the other multicast devices (such as multicast routers or servers) in the multicast VLAN. This allows the multicast devices to update the multicast forwarding table to forward or not forward multicast traffic to the receiver ports.

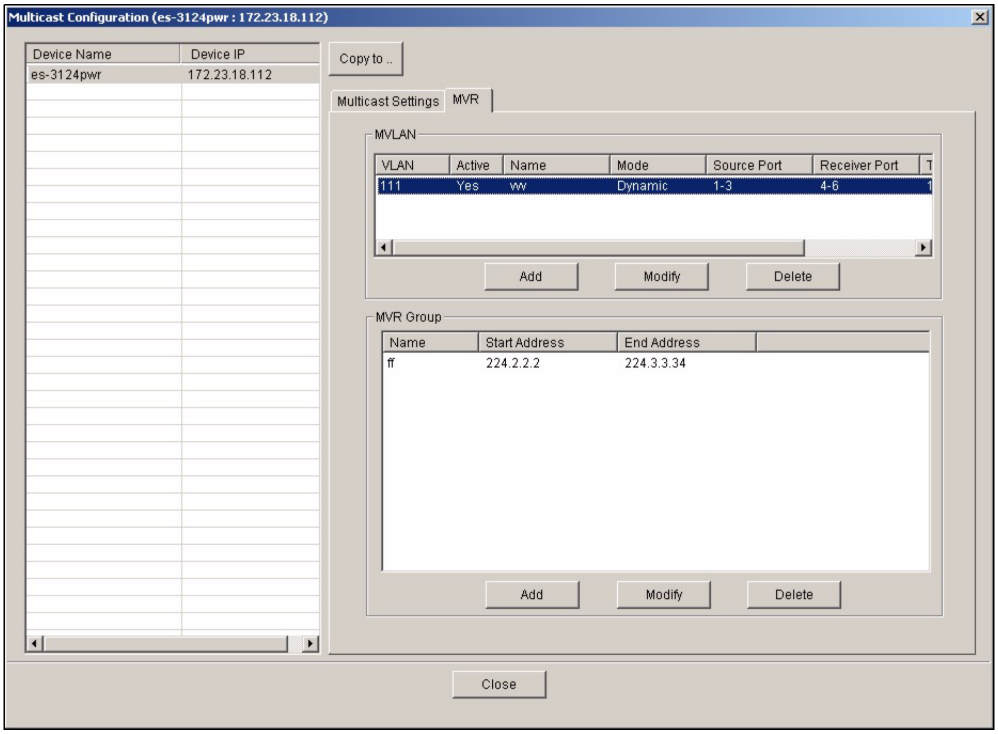
In compatible mode, the switch does not send any IGMP reports through the source port(s). In this case, you must manually configure the forwarding settings on the multicast devices in the multicast VLAN.

Refer to the user's guide that comes with your switch for more background information.

17.3.3 Viewing MVR Settings

Click **Configuration** > **Multicast Configuration** > **MVR** to display the screen as shown.

Figure 132 Multicast Configuration: MVR



Device Name	Device IP
es-3124pwr	172.23.18.112

MVLAN

VLAN	Active	Name	Mode	Source Port	Receiver Port	T
111	Yes	vv	Dynamic	1-3	4-6	1

MVR Group

Name	Start Address	End Address
ff	224.2.2.2	224.3.3.34

The following table describes the labels in this screen.

Table 97 Multicast Configuration: MVR

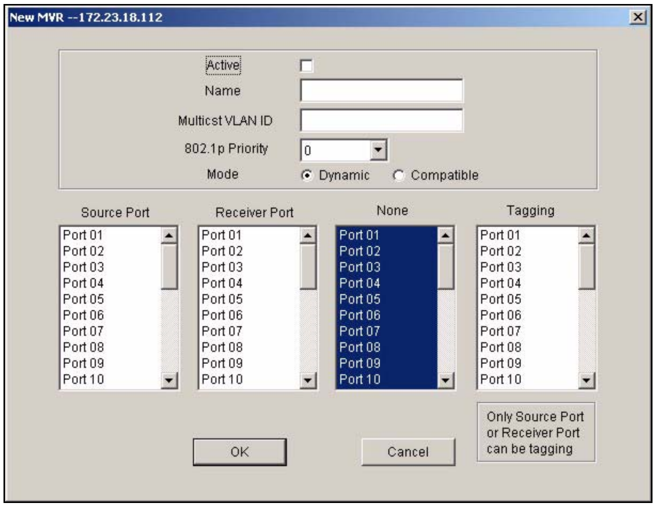
LABEL	DESCRIPTION
MVLAN	This table displays the settings the multicast VLAN settings.
VLAN	This field displays the multicast VLAN ID.
Active	This field displays whether the multicast group is enabled or not.
Name	This field displays the descriptive name for this setting.
Mode	This field displays the MVR mode.
Source Port	This field displays the source port number(s).
Receiver Port	This field displays the receiver port number(s).
Tagging Port	This field displays the port number(s) that adds the VLAN ID tag to all outgoing frames transmitted.
802.1p	This field displays the priority level.
Add	Click **Add** to add a new entry.
Modify	Click **Modify** to change the settings of the selected MVLAN.
Delete	Click **Delete** to remove the selected MVLAN.
MVR Group	This table displays the MVR group settings.
Name	This field displays the descriptive name for this MVR group.
Start Address	This field displays the starting IP address of the MVR group.
End Address	This field displays the ending IP address of the MVR group.
Add	Click **Add** to add a new entry.
Modify	Click **Modify** to change the settings of the selected MVR.
Delete	Click **Delete** to remove the selected MVR.

17.3.4 Creating a New Multicast VLAN

Follow the steps below to create a new multicast VLAN.

1 In the **MVR** screen, click **Add** under **MVLAN**. A screen displays as shown.

Figure 133   Multicast Configuration: MVR: Add MVLAN


New MVR --172.23.18.112
Active
Name
Multicst VLAN ID
802.1p Priority
Mode
Dynamic
Compatible
Source Port
Receiver Port
None
Tagging
Port 01
Port 02
Port 03
Port 04
Port 05
Port 06
Port 07
Port 08
Port 09
Port 10
Only Source Port or Receiver Port can be tagging
OK
Cancel

Active ☐

802.1p Priority: 0

Mode: ● Dynamic ○ Compatible

2 Select **Active** to enable this multicast VLAN setting.

3 In the **Name** field, enter a descriptive name (up to 32 ASCII characters) for identification purposes.

4 Specify a VLAN ID in the **Multicast VLAN ID** field. Enter a number between 1 and 4094.

5 In the **802.1p Priority** field, select a priority level (0-7) with which the switch replaces the priority in outgoing IGMP control packets (belonging to this multicast VLAN).

6 In the **Mode** field, select **Dynamic** to send IGMP reports to all MVR source ports in the multicast VLAN. Select **Compatible** to set the switch not to send IGMP reports.

7 In the **Source Port** list box, select the MVR source port that sends and receives multicast traffic.

8 In the **Receiver Port** list box, select the port(s) that only receives multicast traffic.

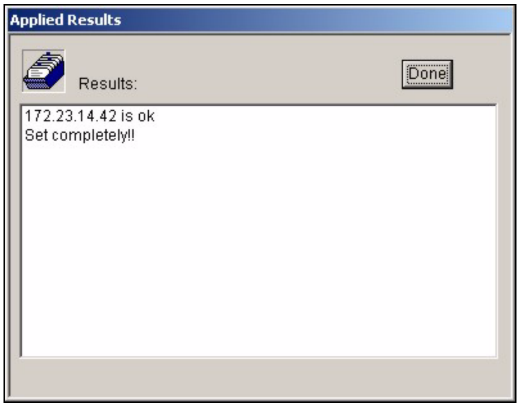
9 In the **None** list box, select the port(s) not to participate in MVR. No MVR multicast traffic is sent or received on the port(s).

10 In the **Tagging** list box, select the port(s) to add the VLAN ID tag to all outgoing frames.

11 Click **OK** to save the settings and close this screen. Otherwise, click **Cancel** to discard the settings and close this screen.

12 A screen displays showing the configuration result. Click **Done** to close the screen.

Figure 134   Multicast Configuration: MVR: Add MVLAN: Result


Applied Results
Results:
Done

```
172.23.14.42 is ok
Set completely!!
```

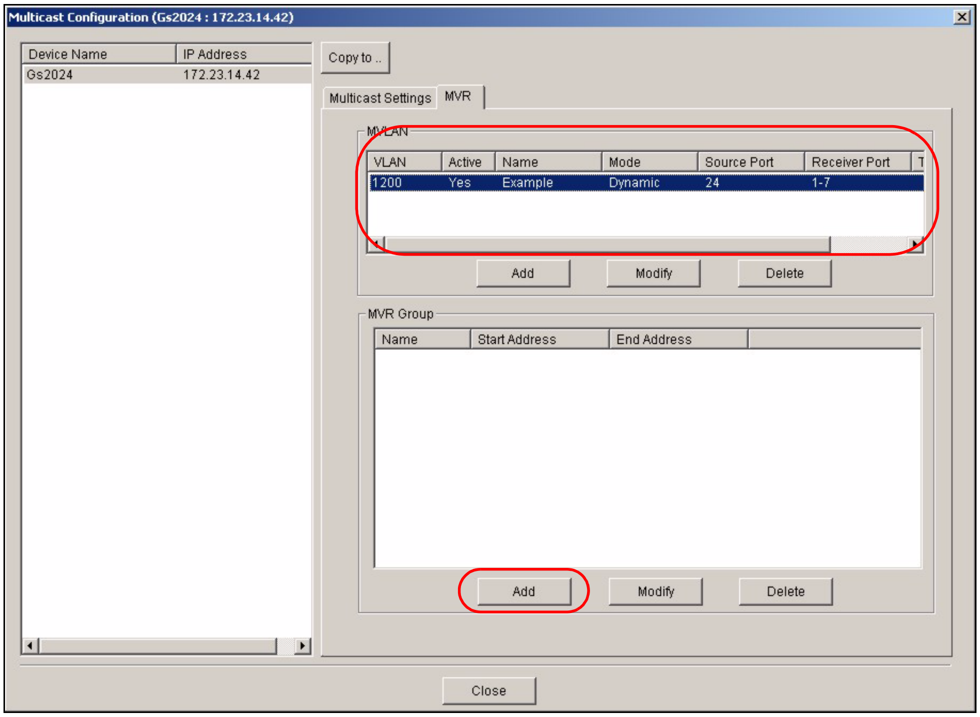
17.3.5 Creating a New MVR Group

Follow the steps below to create a new MVR group.

1 In the **MVR** screen, select one entry in the **MVLAN** list table.

2 Click **Add** under **MVR Group**.

Figure 135 Multicast Configuration: MVR: Select MVLAN


Multicast Configuration (Gs2024 : 172.23.14.42)
Copy to ..
Multicast Settings
MVR
MVLAN
Add
Modify
Delete
MVR Group
Add
Modify
Delete
Close

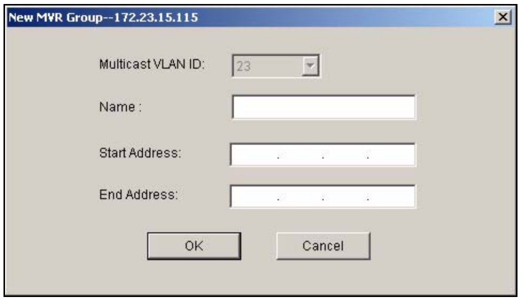
Device Name	IP Address
Gs2024	172.23.14.42

VLAN	Active	Name	Mode	Source Port	Receiver Port	T
1200	Yes	Example	Dynamic	24	1-7	

Name	Start Address	End Address

3 A screen displays as shown. The **Multicast VLAN ID** field displays the VLAN ID to which this MVR group setting applies. In the **Name** field, enter a descriptive name for identification purposes.

Figure 136 Multicast Configuration: MVR: Add


New MVR Group--172.23.15.115
OK
Cancel

Multicast VLAN ID: 23

Name :

Start Address: . . .

End Address: . . .

4 In the **Start Address** field, enter the starting IP multicast address of the multicast group in dotted decimal notation.

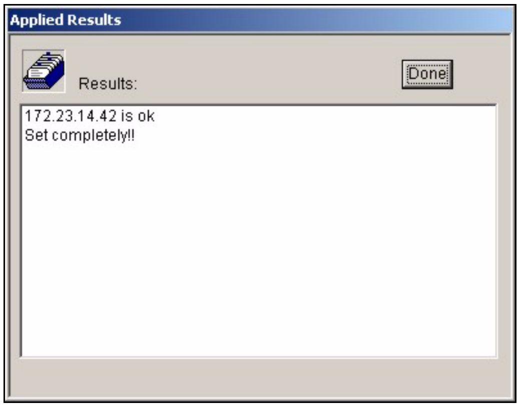
5 In the **End Address** field, enter the ending IP multicast address of the multicast group in dotted decimal notation.

Enter the same IP address as the **Start Address** field if you want to configure only one IP address for a multicast group.

6 Click **OK** to save the settings and close this screen. Otherwise, click **Cancel** to discard the settings and close this screen.

7 A screen displays showing the configuration result. Click **Done** to close the screen.

Figure 137 Multicast Configuration: MVR: Add MVR Group: Result



172.23.14.42 is ok
Set completely!!

18

Configuration

Use this menu item to look at and configure RMON (Remote Network Monitor) on a switch.

18.1 RMON Overview

Similar to SNMP, RMON (Remote Network Monitor) allows you to gather and monitor network traffic.

Both SNMP and RMON use an agent, known as a probe, which are software processes running on network devices to collect information about network traffic and store it in a local MIB (Management Information Base). With SNMP, a network manager has to constantly poll the agent to obtain MIB information. With RMON, the probe is located on a remote device (the MSC), so a network manager (the EMS) does not need to constantly poll the probe for information. The probe communicates with the network manager via SNMP.

RMON groups contain detailed information about specific activities. The following table describes the four RMON groups that your IES supports.

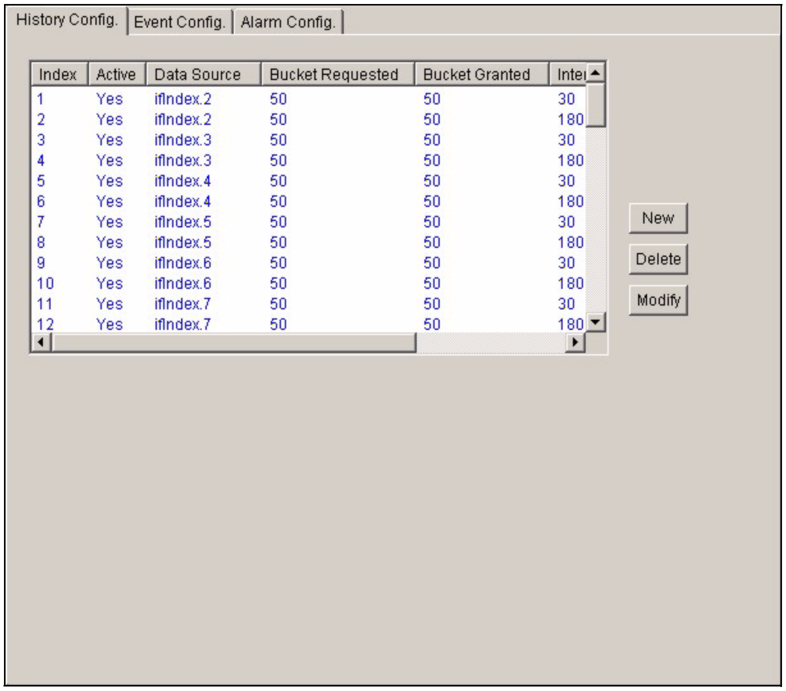
Table 98 Supported RMON Groups

GROUP	DESCRIPTION
History	Records network traffic information on a specified Ethernet port.
Alarm	Provides alerts when configured alarm conditions are met.
Event	Defines event generation and resulting actions to be taken based on an alarm.

18.2 History Config

Use this screen to view and configure RMON history configuration settings. To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **RMON Configuration** > **History Config**. Then, select the switch that you want to configure.

Figure 138 RMON Configuration: History Config.



Index	Active	Data Source	Bucket Requested	Bucket Granted	Inte
1	Yes	ifIndex.2	50	50	30
2	Yes	ifIndex.2	50	50	180
3	Yes	ifIndex.3	50	50	30
4	Yes	ifIndex.3	50	50	180
5	Yes	ifIndex.4	50	50	30
6	Yes	ifIndex.4	50	50	180
7	Yes	ifIndex.5	50	50	30
8	Yes	ifIndex.5	50	50	180
9	Yes	ifIndex.6	50	50	30
10	Yes	ifIndex.6	50	50	180
11	Yes	ifIndex.7	50	50	30
12	Yes	ifIndex.7	50	50	180

The following table describes the labels in this screen.

Table 99 RMON Configuration: History Config.

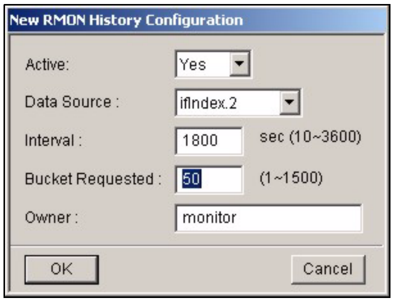
LABEL	DESCRIPTION
Index	This field displays the configuration index number.
Active	This field displays **Yes** if the history setting is enabled. Otherwise, it displays **No**.
Data Source	This is the port of the IP DSLAM that the EMS will poll for data.
Bucket Requested	This field displays the number of data samplings the network manager requests the probe to store.
Bucket Granted	This field displays the number of data samplings the probe allows to stores.
Interval (sec)	This field displays the time between data samplings.
Owner	This field displays the application that creates this entry.
New	Click this to add a new history configuration.
Delete	Click this to remove the selected history configuration.
Modify	Click this to change the setting of the selected history configuration.

18.2.1 Configuring an RMON History

To configure a new RMON history, click **New** in the **History Config.** screen.

To change the settings of a selected RMON history, click **Modify** in the **History Config.** screen.

Figure 139 RMON Configuration: History Config.: New



New RMON History Configuration

Active: Yes

Data Source : ifIndex.2

Interval : 1800 sec (10~3600)

Bucket Requested : 50 (1~1500)

Owner : monitor

The following table describes the labels in this screen.

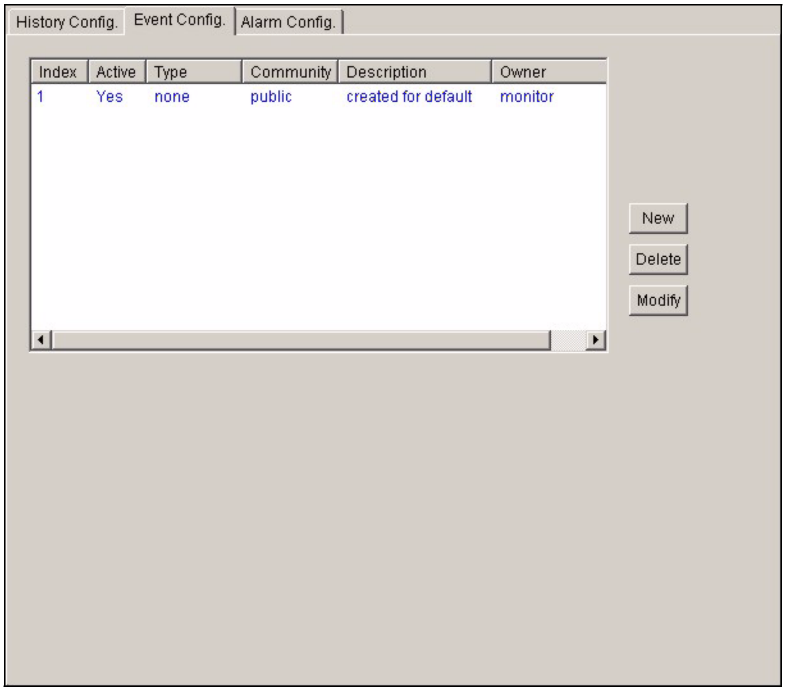
Table 100 RMON Configuration: History Config.: New

LABEL	DESCRIPTION
Active	Select **Yes** to enable this rule. Select **No** to disable this rule.
Data Source	Select the port of the switch that the EMS polls for data. The probe sends data from this port.
Interval	Enter the time (in seconds) between data samplings.
Bucket Requested	Specify the number of data samplings (between 1 and 100) the network manager requests the probe to store.
Owner	Enter a descriptive name of the application that creates this entry. You can use 1-31 printable characters. Spaces are allowed.
OK	Click this to save the settings and close this screen.
Cancel	Click this to discard all changes and close the screen.

18.3 Event Config

Use the **Event Config** screen to configure the actions that a switch takes when an alarm is triggered. To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **RMON Configuration** > **Event Config**. Then, select the switch that you want to configure.

Figure 140 RMON Configuration: Event Config.



Index	Active	Type	Community	Description	Owner
1	Yes	none	public	created for default	monitor

The following table describes the labels in this screen.

Table 101 RMON Configuration: Event Config.

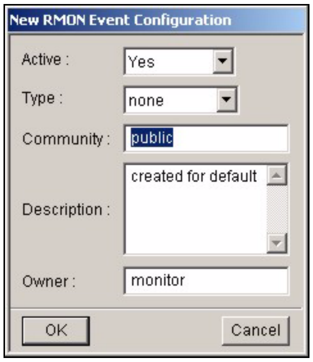
LABEL	DESCRIPTION
Index	This field displays an event index number.
Active	This field display whether an event is enabled (**Yes**) or not (**No**).
Type	This field displays the event type (**log**, **snmp-trap** or **log&trap**).
Community	This field displays the community (or password).
Description	This field displays a description of the event.
Owner	Enter a descriptive name of the application that creates this entry.
New	Click this to add a new event configuration.
Delete	Click this to remove the selected event configuration.
Modify	Click this to change the settings of the selected event configuration.

18.3.1 Configuring an RMON Event

To create a new RMON event, click **New** in the **Event Config.** screen.

To change the settings of a selected RMON event, click **Modify** in the **Event Config.** screen.

Figure 141 RMON Configuration: Event Config.: New



Active : Yes

Type : none

Community : public

Description : created for default

Owner : monitor

The following table describes the labels in this screen.

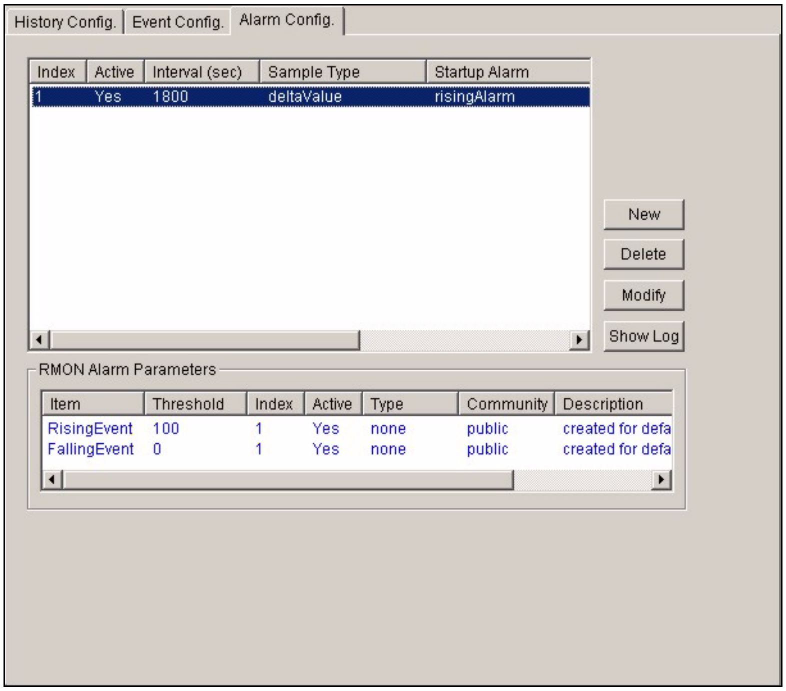
Table 102 RMON Configuration: Event Config.: New

LABEL	DESCRIPTION
Active	Select **Yes** to enable this event. Otherwise, select **No**.
Type	Select an event type. Choices are **Log** and **Trap**. Select **Log** to generate a log when an associated alarm is generated. Select **Trap** to generate a trap when an associated alarm is generated. Select both **Log** and **Trap** to generate a log entry and trap when an associated alarm is generated.
Community	This field displays the community (or password). You can use 1-31 printable ASCII characters. Spaces are allowed.
Description	Enter a description of the event. You can use 1-127 printable ASCII characters. Spaces are allowed. You can also leave this field blank.
Owner	Enter a descriptive name of the application that creates this entry. You can use 1-31 printable ASCII characters. Spaces are allowed.
OK	Click this to save the settings and close this screen.
Cancel	Click this to discard all changes and close the screen.

18.4 Alarm Config

Use this screen to configure alarms that occur when the sampled data exceeds the specified threshold. To open this screen, right-click on the switch in the Device List Panel, and click **Configuration** > **RMON Configuration** > **Alarm Config**. Then, select the switch that you want to configure.

Figure 142 RMON Configuration: Alarm Config.



Index	Active	Interval (sec)	Sample Type	Startup Alarm
1	Yes	1800	deltaValue	risingAlarm

RMON Alarm Parameters

Item	Threshold	Index	Active	Type	Community	Description
RisingEvent	100	1	Yes	none	public	created for defa
FallingEvent	0	1	Yes	none	public	created for defa

The following table describes the labels in this screen.

Table 103 RMON Configuration: Alarm Config.

LABEL	DESCRIPTION
Index	This field displays the alarm configuration index number.
Active	This field displays **Yes** if an alarm configuration is enabled. Otherwise, it displays **No**.
Interval (sec)	This field displays the time interval (in seconds) between data samplings.
Sample Type	This field displays the method of obtaining the sample value (**Absolute** or **Delta**).
Startup Alarm	This field displays the alarm type (**Rising**, **Falling**, **R/F**) that can be sent when this alarm is first activated.
Port	This field displays the port number.
Variable	This field displays the name of the MIB field whose data is to be sampled.
Owner	This field displays the name of the application that creates this entry.
New	Click this to add a new history configuration.
Delete	Click this to remove the selected history configuration.
Modify	Click this to change the setting of the selected history configuration.
Show Log	Click this to view logs.
RMON Alarm Parameters	
Item	This field indicates the type of alarm.
Threshold	This field displays the threshold setting for the type of alarm. The meaning depends on the type of alarm.
Index	This field displays the event index number.
Active	This field display whether an alarm is enabled (**Yes**) or not (**No**).

Table 103 RMON Configuration: Alarm Config. (continued)

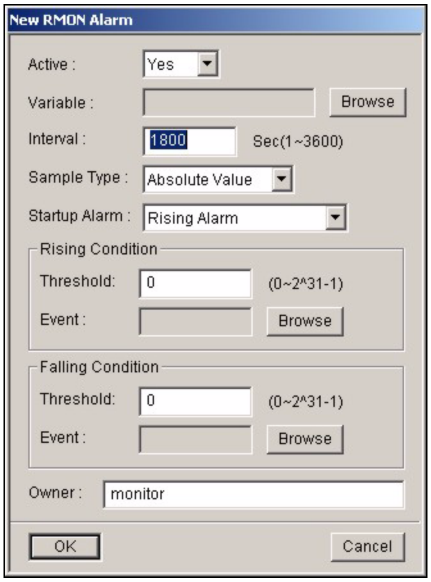
LABEL	DESCRIPTION
Type	This field displays the alarm type (**log**, **snmp-trap** or **log&trap**).
Community	This field displays the community (or password).
Description	This field displays a description of the alarm.
Owner	This field displays the name of the application that creates this entry.

18.4.1 Configuring an RMON Alarm

To create a new RMON alarm, click **New** in the **Alarm Config.** screen.

To change the settings of a selected RMON alarm, click **Modify** in the **Alarm Config.** screen.

Figure 143 RMON Configuration: Alarm Config.: New



Active : Yes
Variable :
Interval : 1800 Sec(1~3600)
Sample Type : Absolute Value
Startup Alarm : Rising Alarm
Rising Condition Threshold: 0 (0~2^31-1)
Rising Condition Event :
Falling Condition Threshold: 0 (0~2^31-1)
Falling Condition Event :
Owner : monitor

The following table describes the labels in this screen.

Table 104 RMON Configuration, Alarm Config., New

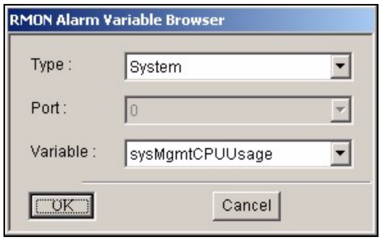
LABEL	DESCRIPTION
Active	Select **Yes** to enable this alarm. Otherwise, select **No**.
Variable	Click **Browse** to select the variable whose data is sampled. The following screen appears. **Figure 144** RMON Configuration: Alarm Config.: New: Browse  Type : System Port : 0 Variable : sysMgmtCPUUsage Select the type, port, and variable whose data should be sampled, and click **OK**.
Interval	Specify the time between data samplings.

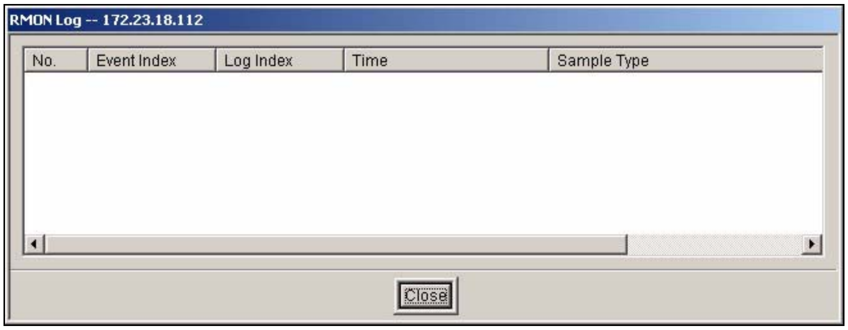
Table 104 RMON Configuration, Alarm Config., New (continued)

LABEL	DESCRIPTION
Sample Type	Select the method of obtaining the sample value. Choices are **Absolute Value** and **Delta Value**.
Startup Alarm	Select the startup alarm type (**Rising Alarm**, **Falling Alarm**, **Rising Or Falling Alarm**).
Rising Condition	
Rising Threshold	Specify a rising threshold (between 0 and 2147483647). When a value that is greater or equal to this threshold, the probe triggers an alarm.
Rising Event	Click **Browse** to select an index number of a rising event.
Falling Condition	
Falling Threshold	Specify the falling threshold (between 0 and 2147483647). When a value that is smaller or equal to this threshold, the probe triggers an alarm.
Falling Event	Click **Browse** to select an index number of a falling event.
Owner	Enter a descriptive name of the application that creates this entry. You can use 1-31 printable ASCII characters. Spaces are allowed.
OK	Click this to save the settings and close this screen.
Cancel	Click this to discard all changes and close the screen.

18.4.2 RMON Alarm Event Log

Use this screen to display alarm logs. To open this screen, click **Configuration**, **RMON Configuration**, **Alarm Config**, **Show Log**.

Figure 145 RMON Configuration: Alarm Config.: Show Log



The following table describes the labels in this screen.

Table 105 RMON Configuration: Alarm Config.: Show Log

LABEL	DESCRIPTION
No.	This field displays an index number.
Event Index	This field displays an event index number.
Log Index	This field displays a log index number.
Time	This field displays the time a log was generated.
Sample Type	This field displays the method of obtaining the sample value.
Close	Click this to close this screen.

19

IP Configuration

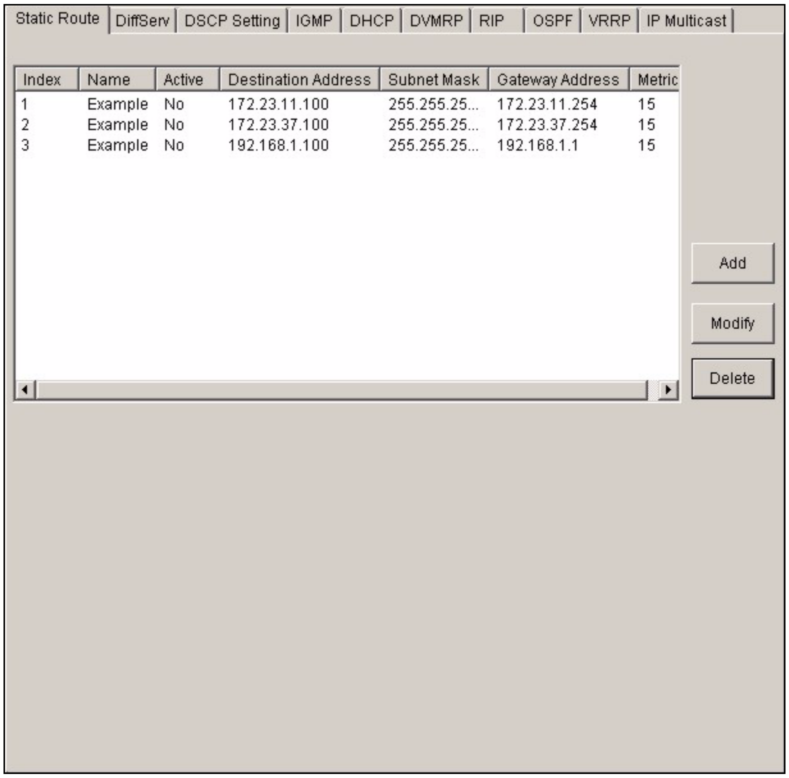
This chapter shows you how to configure the routing functions using the IP Configuration screens.

19.1 Static Route

Static routes tell the switch how to forward IP traffic when you configure the TCP/IP parameters manually.

1. In the Device Panel list, right-click on a device.
2. Click **Configuration** > **IP Configuration** > **Static Route**.

Figure 146 IP Configuration: Static Route


Static Route
DiffServ
DSCP Setting
IGMP
DHCP
DVMRP
RIP
OSPF
VRRP
IP Multicast
Add
Modify
Delete

Index	Name	Active	Destination Address	Subnet Mask	Gateway Address	Metric
1	Example	No	172.23.11.100	255.255.25...	172.23.11.254	15
2	Example	No	172.23.37.100	255.255.25...	172.23.37.254	15
3	Example	No	192.168.1.100	255.255.25...	192.168.1.1	15

The following table describes the labels in the summary table.

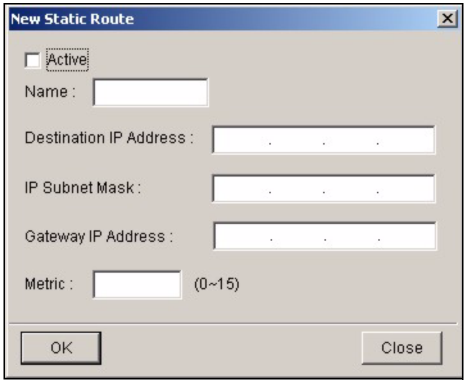
Table 106 Routing Configuration: Static Route

LABEL	DESCRIPTION
Index	This field displays the index number of the route.
Name	This field displays the descriptive name for this route. This is for identification purposes only.
Active	This field displays **Yes** when the static route is activated and **No** when is it deactivated.
Destination Address	This field displays the IP network address of the final destination.
Subnet Mask	This field displays the subnet mask for this destination.
Gateway Address	This field displays the IP address of the gateway. The gateway is an immediate neighbor of your switch that will forward the packet to the destination.
Metric	This field displays the cost of transmission for routing purposes.
Add	Click the **Add** button to create a new static route.
Modify	Select the rule(s) that you want to change and click the **Modify** button.
Delete	Select the rule(s) that you want to remove in the **Delete** column, and then click the **Delete** button.

19.1.1 Configuring a Static Route

Click the **Add** button or select a static route and click the **Modify** button in the **Routing Configuration** screen to display the following screen.

Figure 147 Routing Configuration: Static Route: Add



The following table describes the labels in this screen.

Table 107 Routing Configuration: Static Route: Add or Modify

LABEL	DESCRIPTION
Active	This field allows you to activate/deactivate this static route.
Name	Enter a descriptive name for this route. This is for identification purposes only.
Destination IP Address	This parameter specifies the IP network address of the final destination. Routing is always based on network number. If you need to specify a route to a single host, use a subnet mask of 255.255.255.255 in the subnet mask field to force the network number to be identical to the host ID.
IP Subnet Mask	Enter the subnet mask for this destination.

Table 107 Routing Configuration: Static Route: Add or Modify (continued)

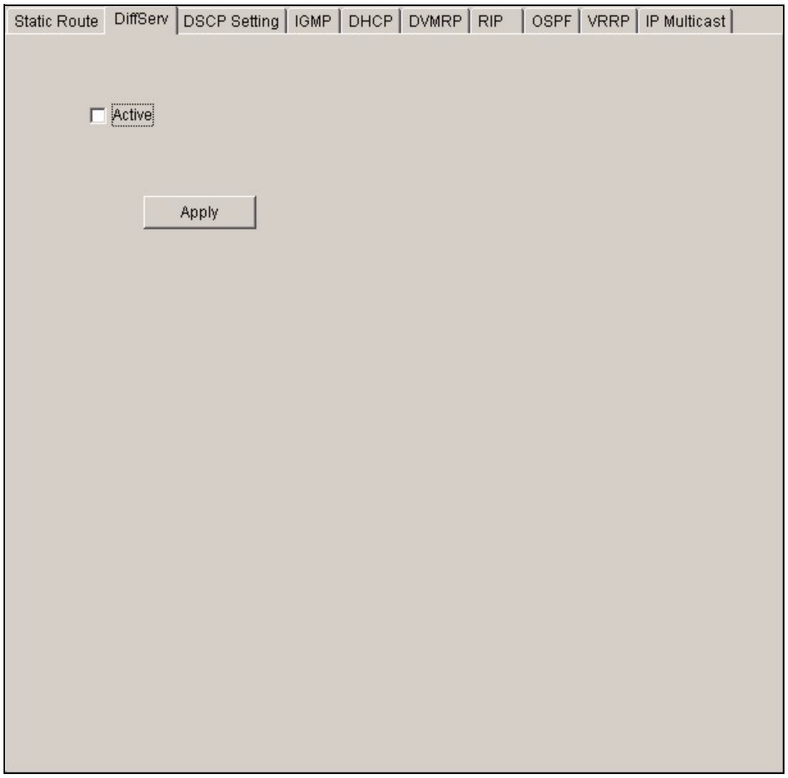
LABEL	DESCRIPTION
Gateway IP Address	Enter the IP address of the gateway. The gateway is an immediate neighbor of your switch that will forward the packet to the destination. The gateway must be a router on the same segment as your switch.
Metric	The metric represents the “cost” of transmission for routing purposes. IP routing uses hop count as the measurement of cost, with a minimum of 1 for directly connected networks. Enter a number that approximates the cost for this link. The number need not be precise, but it must be between 1 and 15. In practice, 2 or 3 is usually a good number.
OK	Click **OK** to save the settings and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

19.2 DiffServ

DiffServ is a class of service (CoS) model that marks packets so that they receive specific per-hop treatment at DiffServ-compliant network devices along the route based on the application types and traffic flow. Packets are marked with DiffServ Code Points (DSCPs) indicating the level of service desired. This allows the intermediary DiffServ-compliant network devices to handle the packets differently depending on the code points without the need to negotiate paths or remember state information for every flow. In addition, applications do not have to request a particular service or give advanced notice of where the traffic is going.

Enable this feature in the **DiffServ** screen. Click **IP Configuration > DiffServ** to display the screen as shown.

Figure 148 IP Configuration: DiffServ



The following table describes the labels in this screen.

Table 108 DiffServ: DSCP Setting

LABEL	DESCRIPTION
Active	Select **Active** to enable DiffServ on the port.
Apply	Click **Apply** to save the changes.

19.3 DSCP Setting

You can configure the DSCP to IEEE802.1p mapping to allow the switch to prioritize all traffic based on the incoming DSCP value according to the DiffServ to IEEE802.1p mapping table.

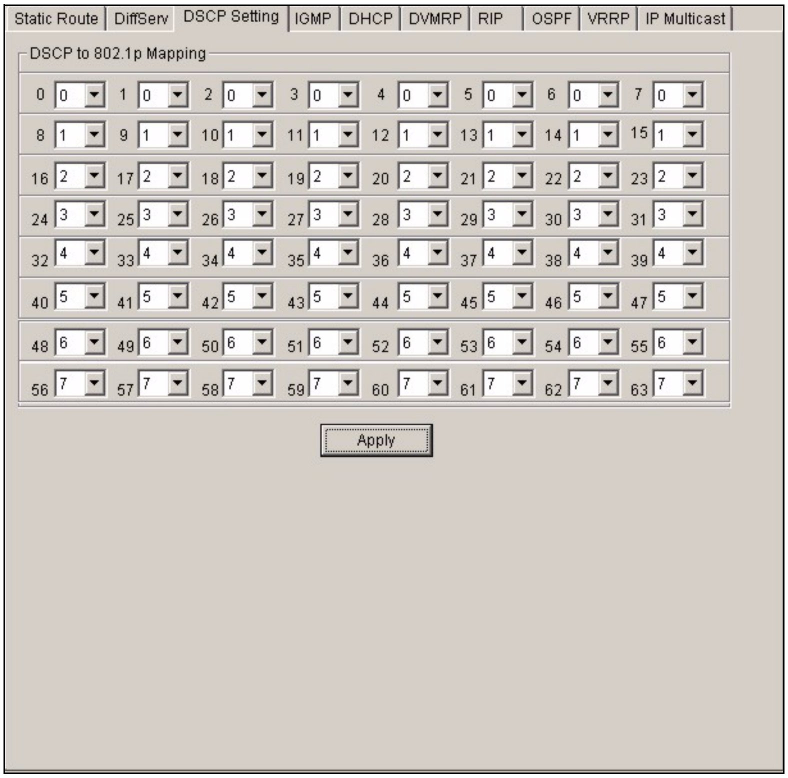
The following table shows the default DSCP-to-IEEE802.1P mapping.

Table 109 Default DSCP-IEEE802.1p Mapping

DSCP VALUE	0 – 7	8 – 15	16 – 23	24 – 31	32 – 39	40 – 47	48 – 55	56 – 63
IEEE802.1P	0	1	2	3	4	5	6	7

Configure DSCP mappings in the **DSCP Setting** screen.

Figure 149 IP Configuration: DiffServ


Static Route
DiffServ
DSCP Setting
IGMP
DHCP
DVMRP
RIP
OSPF
VRRP
IP Multicast
DSCP to 802.1p Mapping
Apply

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

The following table describes the labels in this screen.

Table 110 DiffServ: DSCP Setting

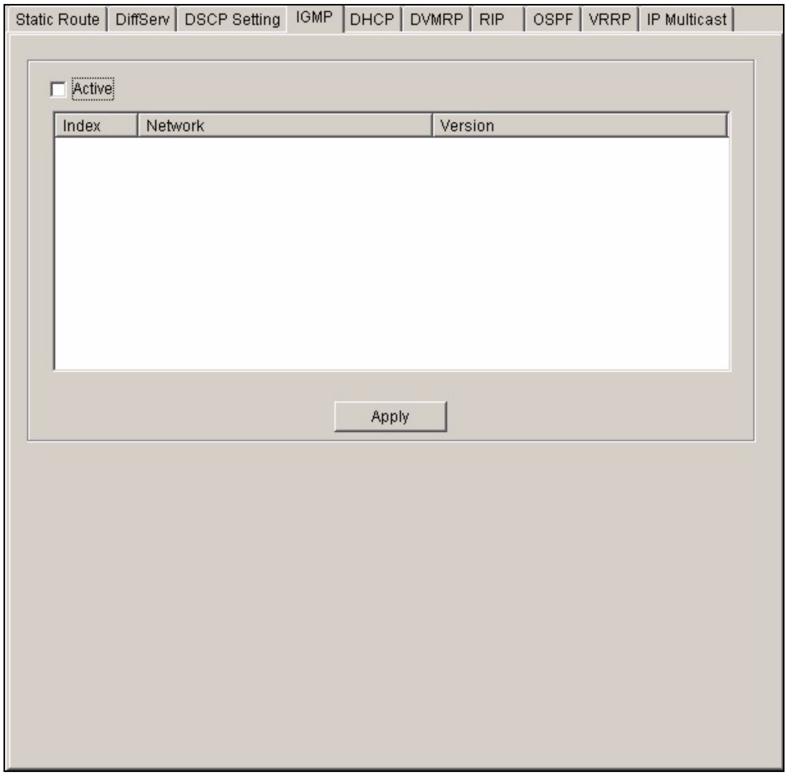
LABEL	DESCRIPTION
DSCP to 802.1p Mapping	
0 … 63	This is the DSCP classification identification number. To set the IEEE802.1p priority mapping, select the priority level from the drop-down list box.
Apply	Click **Apply** to save the changes.

19.4 IGMP

IGMP (Internet Group Multicast Protocol) is a session-layer protocol used to establish membership in a multicast group - it is not used to carry user data. Refer to *RFC 1112* and *RFC 2236* for information on IGMP versions 1 and 2 respectively.

Right-click on a device in the Device Panel and click **Configuration** > **IP Configuration** > **IGMP** to display the configuration screen.

Figure 150 IP Configuration: IGMP


Static Route
DiffServ
DSCP Setting
IGMP
DHCP
DVMRP
RIP
OSPF
VRRP
IP Multicast
☐ Active
Index
Network
Version
Apply

The following table describes the labels in this screen.

Table 111 IP Configuration: IGMP

LABEL	DESCRIPTION
Active	Select this check box to enable IGMP on the switch. Note: You *cannot* enable both IGMP snooping and IGMP at the same time. Refer to the section on IGMP snooping.
Index	This field displays an index number of an entry.
Network	This field displays the IP domain configured on the switch. Refer to Section 13.8 on page 139 for more information on configuring IP domains.
Version	Select an IGMP version from the drop-down list box. Choices are **IGMP-v1**, **IGMP-v2** and **None**.
Apply	Click **Apply** to save your changes.

19.5 DHCP

DHCP (Dynamic Host Configuration Protocol RFC 2131 and RFC 2132) allows individual computers to obtain TCP/IP configuration at start-up from a server. You can configure the switch as a DHCP server or disable it. When configured as a server, the switch provides the TCP/IP configuration for the clients. If you disable the DHCP service, you must have another DHCP server on your LAN, or else the computer must be manually configured.

19.5.1 DHCP modes

Depending on your switch model, your switch can be configured as a DHCP server or DHCP relay agent.

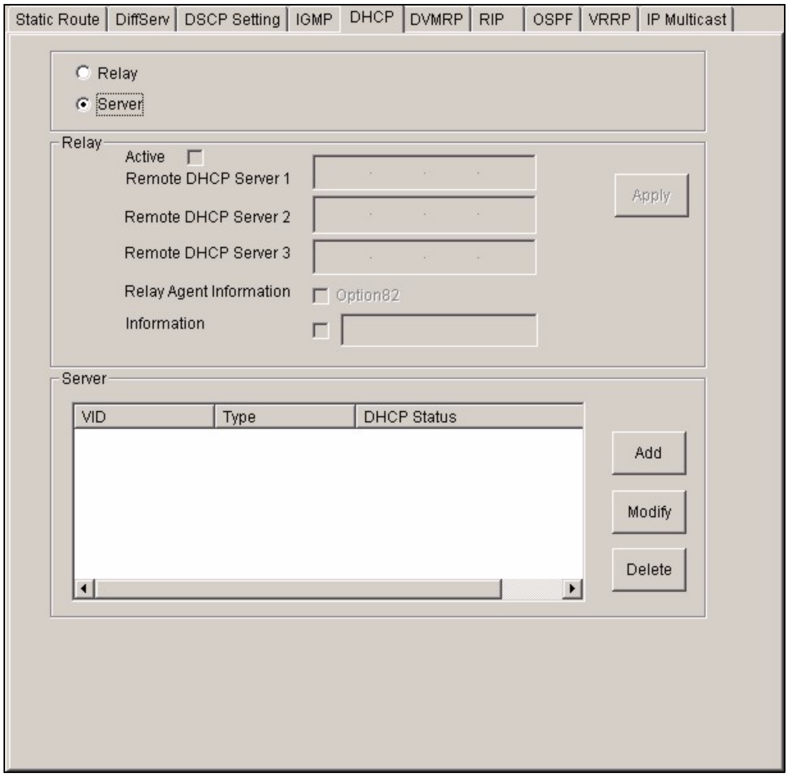
- If you configure the switch as a DHCP server, it will maintain the pool of addresses and distribute them to your LAN computers.
- If there is an Ethernet device that performs the DHCP server function for your network, then you can configure the switch as a DHCP relay agent. When the switch receives a request from a computer on your network, it contacts the Ethernet device (the DHCP server) for the necessary IP information, and then relays the assigned information back to the computer.

19.5.2 Configuring DHCP Server

Follow the steps below to set the switch as a DHCP server.

1. In the Device Panel list, right-click on a device.
2. Click **Configuration** > **IP Configuration** > **DHCP**.
3. Select **Server**.

Figure 151 IP Configuration: DHCP: Server


Static Route
DiffServ
DSCP Setting
IGMP
DHCP
DVMRP
RIP
OSPF
VRRP
IP Multicast
○ Relay
● Server
Relay
Active ☐
Remote DHCP Server 1
Remote DHCP Server 2
Remote DHCP Server 3
Relay Agent Information ☐ Option82
Information ☐
Apply
Server
VID
Type
DHCP Status
Add
Modify
Delete

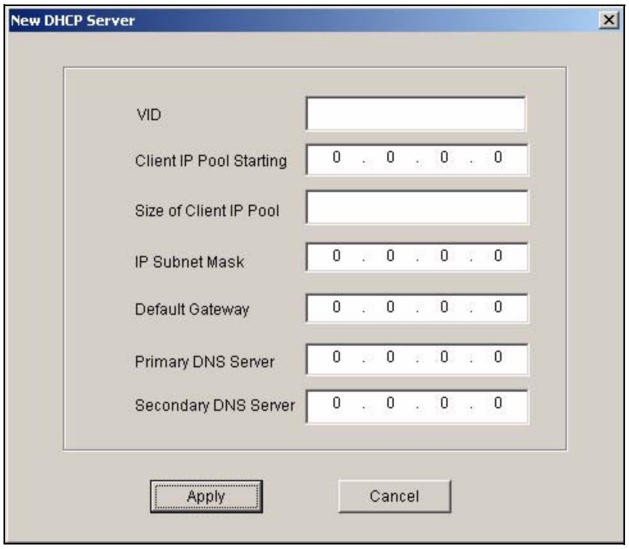
The following table describes the related labels in this screen.

Table 112 IP Configuration: DHCP: Server

LABEL	DESCRIPTION
Server	
VID	This field displays the ID number of the VLAN group to which this DHCP settings apply.
Type	This field displays **Server** for the DHCP mode.
DHCP Status	This field displays the starting and the size of DHCP client IP address.
Add	Click **Add** to configure DHCP client pool settings.
Modify	Click **Modify** to change the settings of the selected DHCP client pool.
Delete	Click **Delete** to remove the selected DHCP client pool setting.

4 Click **Add** to configure DHCP client pool information.

Figure 152 IP Configuration: DHCP: Server: New


New DHCP Server
VID
Client IP Pool Starting
0 . 0 . 0 . 0
Size of Client IP Pool
IP Subnet Mask
0 . 0 . 0 . 0
Default Gateway
0 . 0 . 0 . 0
Primary DNS Server
0 . 0 . 0 . 0
Secondary DNS Server
0 . 0 . 0 . 0
Apply
Cancel

The following table describes the labels in this screen.

Table 113 IP Configuration: DHCP: Server: New

LABEL	DESCRIPTION
VID	Enter the ID number of the VLAN group to which this DHCP settings apply.
Client IP Pool Starting	Specify the first of the contiguous addresses in the IP address pool.
Size of Client IP Pool	Specify the size, or count of the IP address pool.
IP Subnet Mask	Enter the subnet mask of the DHCP server.
Default Gateway	Enter the IP address of the default gateway device.
Primary/ Secondary DNS Server	Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask.
Apply	Click **Apply** to save the changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

19.5.3 Configuring DHCP Relay

Configure DHCP relay on the switch if the DHCP clients and the DHCP server are not in the same subnet. During the initial IP address leasing, the switch helps to relay network information (such as the IP address and subnet mask) between a DHCP client and a DHCP server. Once the DHCP client obtains an IP address and can connect to the network, network information renewal is done between the DHCP client and the DHCP server without the help of the switch.

19.5.3.1 DHCP Relay Agent Information

The switch can add information to client DHCP requests that it relays to a DHCP server. This helps provide authentication about the source of the requests. You can also specify additional information for the switch to add to the client DHCP requests that it relays to the DHCP server. Please refer to RFC 3046 for more details.

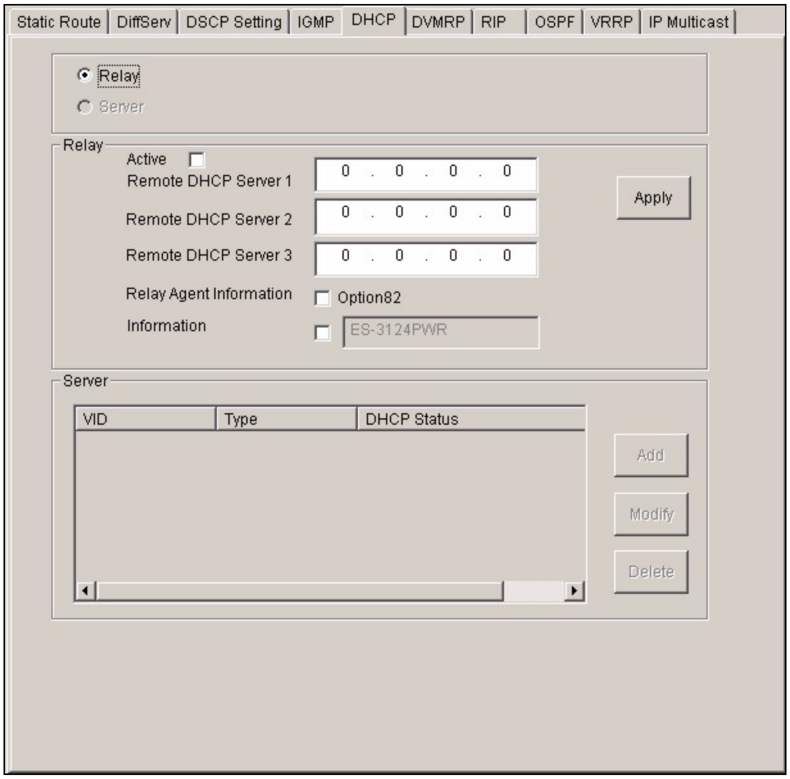
The DHCP relay agent information feature adds an Agent Information field to the option 82 field of the DHCP headers of client DHCP request frames that the switch relays to a DHCP server. The following lists the DHCP relay agent option 82 information that the switch sends to the DHCP server:

- Slot ID (1 byte)
- Port ID (1 byte)
- VLAN ID (2 bytes)
- System name (up to 32 bytes, this is optional)

Follow the steps below to set the switch as a DHCP server.

1 In the Device Panel list, right-click on a device.
2 Click **Configuration** > **IP Configuration** > **DHCP**.
3 Select **Relay**.

Figure 153 IP Configuration: DHCP: Relay


Static Route
DiffServ
DSCP Setting
IGMP
DHCP
DVMRP
RIP
OSPF
VRRP
IP Multicast
Relay
Server
Apply
VID
Type
DHCP Status
Add
Modify
Delete

● Relay
○ Server

Relay
Active ☐
Remote DHCP Server 1: 0 . 0 . 0 . 0
Remote DHCP Server 2: 0 . 0 . 0 . 0
Remote DHCP Server 3: 0 . 0 . 0 . 0
Relay Agent Information: ☐ Option82
Information: ☐ ES-3124PWR

The following table describes the related labels in this screen.

Table 114 IP Configuration: DHCP: Relay

LABEL	DESCRIPTION
Relay	
Active	Select this check box to enable DHCP relay.
Remote DHCP Server 1 .. 3	Enter the IP address of a DHCP server in dotted decimal notation.
Relay Agent Information	Select the **Option 82** check box to have the switch add information (slot number, port number and VLAN ID) to client DHCP requests that it relays to a DHCP server.
Information	This read-only field displays the system name you configure in the **System Information** screen (refer to Section 14.1 on page 143). Select the check box for the switch to add the system name to the client DHCP requests that it relays to a DHCP server.
Apply	Click **Apply** to save the changes.

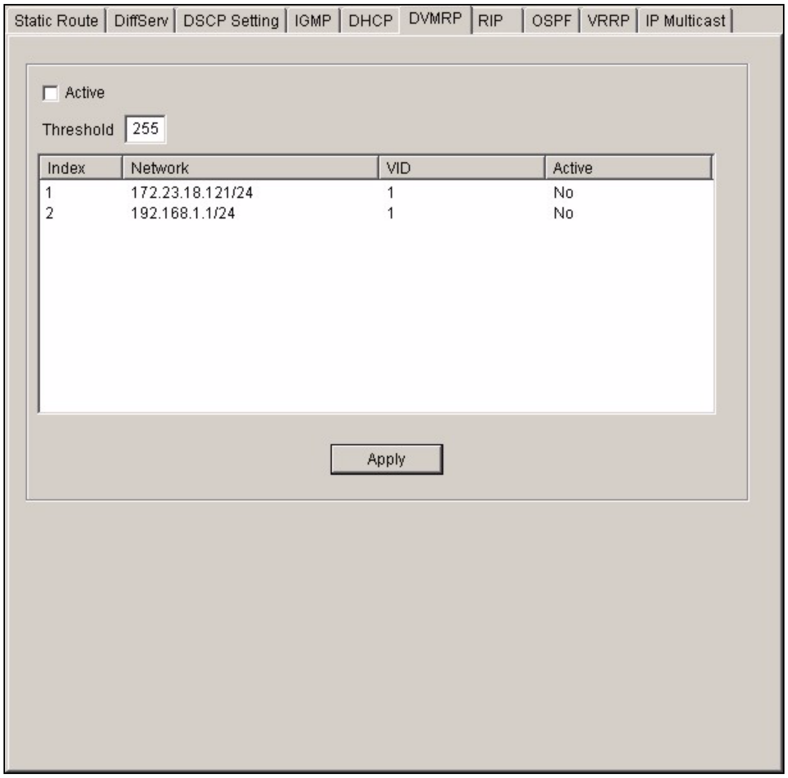
19.6 DVMRP

DVMRP (Distance Vector Multicast Routing Protocol) is a protocol used for routing multicast data within an autonomous system (AS). This DVMRP implementation is based on draft-ietf-idmr-dvmrp-v3-10. DVMRP provides multicast forwarding capability to a layer 3 switch that runs both the IPv4 protocol (with IP Multicast support) and the IGMP protocol. The DVMRP metric is a hop count of 32.

IGMP is a protocol used for joining or leaving a multicast group. You must have IGMP enabled when you enable DVMRP.

To open the **DVMRP** screen, right-click on a switch in the Device Panel list and click **Configuration > IP Configuration > DVMRP**.

Figure 154 IP Configuration: DVMRP



Threshold 255

Index	Network	VID	Active
1	172.23.18.121/24	1	No
2	192.168.1.1/24	1	No

The following table describes the labels in this screen.

Table 115 IP Configuration: DVMRP

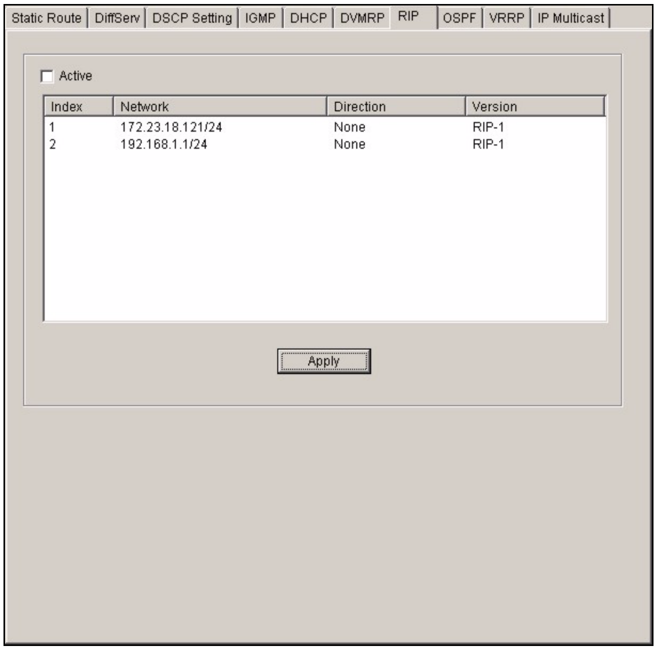
LABEL	DESCRIPTION
Active	Select **Active** to enable DVMRP on the switch. You should do this if you want the switch to act as a multicast router.
Threshold	Threshold is the maximum time to live (TTL) value. TTL is used to limit the scope of multicasting. You should reduce this value if you do not wish to flood Layer 3 devices many hops away with multicast traffic. This applies only to multicast traffic this switch sends out.
Index	Index is the DVMRP configuration for the IP routing domain defined under **Network**. The maximum number of DVMRP configurations allowed is the maximum number of IP routing domains allowed on the switch. See Section 13.8 on page 139 for more information on IP routing domains.
Network	This is the IP routing domain IP address and subnet mask you set up in **IP Setup**.
VID	DVMRP cannot be enabled on the same VLAN group across different IP routing domains, that is, you cannot have duplicate VIDs for different DVMRP configurations.
Active	Select **Yes** to enable DVMRP on this IP routing domain. Select **No** to disable this feature.
Apply	Click **Apply** to save these changes.

19.7 RIP

RIP (Routing Information Protocol allows a routing device to exchange routing information with other routers.

To open the **RIP** screen, right-click on a switch in the Device Panel list and click **Configuration** > **IP Configuration** > **RIP**.

Figure 155 IP Configuration: RIP



☐ Active

Index	Network	Direction	Version
1	172.23.18.121/24	None	RIP-1
2	192.168.1.1/24	None	RIP-1

The following table describes the labels in this screen.

Table 116 IP Configuration: RIP

LABEL	DESCRIPTION
Active	Select this check box to enable RIP on the switch.
Index	This field displays the index number of an IP interface.
Network	This field displays the IP interface configured on the switch. Refer to the section on IP Setup for more information on configuring IP domains.
Direction	The **Direction** field controls the sending and receiving of RIP packets. When set to: • **Both -** the switch will broadcast its routing table periodically and incorporate the RIP information that it receives. • **Incoming -** the switch will not send any RIP packets but will accept all RIP packets received. • **Outgoing -** the switch will send out RIP packets but will not accept any RIP packets received. • **None** - the switch will not send any RIP packets and will ignore any RIP packets received.
Version	Select the RIP version from the drop-down list box. Choices are **RIP-1**, **RIP-2B** and **RIP-2M**.
Apply	Click **Apply** to save the changes.

19.8 OSPF

OSPF (Open Shortest Path First) is a link-state protocol designed to distribute routing information within an autonomous system (AS). An autonomous system is a collection of networks using a common routing protocol to exchange routing information.

OSPF offers some advantages over traditional vector-space routing protocols (such as RIP). The following table summarizes some of the major differences between OSPF and RIP.

Table 117 OSPF vs. RIP

	OSPF	**RIP**
Network Size	Large	Small (with up to 15 routers)
Metrics	Bandwidth, hop count, throughput, round trip time and reliability.	Hop count
Convergence	Fast	Slow

19.8.1 OSPF Autonomous Systems and Areas

An OSPF autonomous system can be divided into logical areas. Each area represents a group of adjacent networks. All areas are connected to a backbone (also known as area 0). The backbone is the transit area to route packets between two areas. A stub area, at the edge of an AS, is not a transit area since there is only one connection to the stub area.

19.8.2 Interfaces and Virtual Links

An OSPF interface is a link between a layer 3 device and an OSPF network. An interface has state information, an IP address and subnet mask associated with it. When you configure an OSPF interface, you first set an interface to transmit OSPF traffic and add the interface to an area.

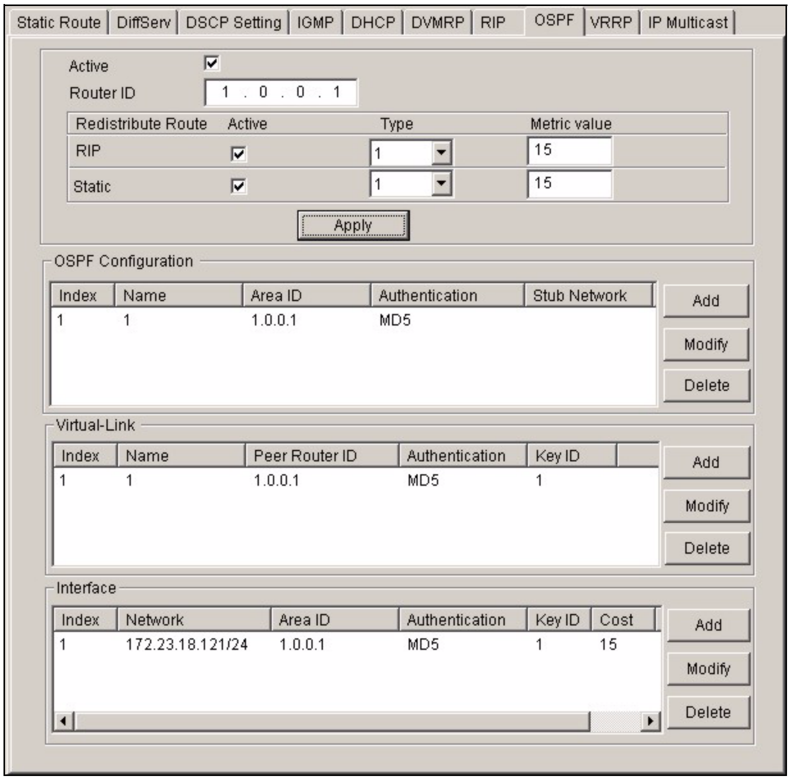
You can configure a virtual link to establish/maintain connectivity between a non-backbone area and the backbone. The virtual ink must be configured on both layer 3 devices in the non-backbone area and the backbone.

19.8.3 Configuring Basic OSPF Settings

Follow the steps below to activate OSPF and configure basic settings.

1. In the Device Panel list, right-click on a device.
2. Click **Configuration > IP Configuration** > **OSPF**.

Figure 156 IP Configuration: OSPF



Active ☑

Router ID 1 . 0 . 0 . 1

Redistribute Route	Active	Type	Metric value
RIP	☑	1	15
Static	☑	1	15

OSPF Configuration

Index	Name	Area ID	Authentication	Stub Network
1	1	1.0.0.1	MD5	

Virtual-Link

Index	Name	Peer Router ID	Authentication	Key ID
1	1	1.0.0.1	MD5	1

Interface

Index	Network	Area ID	Authentication	Key ID	Cost
1	172.23.18.121/24	1.0.0.1	MD5	1	15

The follow table describes the related labels in this screen.

Table 118 IP Configuration: OSPF

LABEL	DESCRIPTION
Active	OSPF is disabled by default. Select this option to enable it.
Router ID	Router ID uniquely identifies the switch in an OSPF. Enter a unique ID (that uses the format of an IP address in dotted decimal notation) for the switch.
Redistribute Route	Route redistribution allows your switch to import and translate external routes learned through other routing protocols (**RIP** and **Static**) into the OSPF network transparently.
Active	Select this option to activate route redistribution for routes learnt through the selected protocol.
Type	Select **1** for routing protocols (such as RIP) whose external metrics are directly comparable to the internal OSPF cost. When selecting a path, the internal OSPF cost is added to the AB boundary router to the external metrics. Select **2** for routing protocols whose external metrics are not comparable to the OSPF cost. In this case, the external cost of the AB boundary router is used in path decision to a destination.
Metric Value	Enter a route cost (between 0 and 16777214).
Apply	Click **Apply** to save the changes.
OSPF Configuration	
Index	This field displays the index number of an area.
Name	This field displays the descriptive name of an area.
Area ID	This field displays the area ID (that uses the format of an IP address in dotted decimal notation) that uniquely identifies an area. An area ID of **0.0.0.0** indicates the backbone.

Table 118 IP Configuration: OSPF (continued)

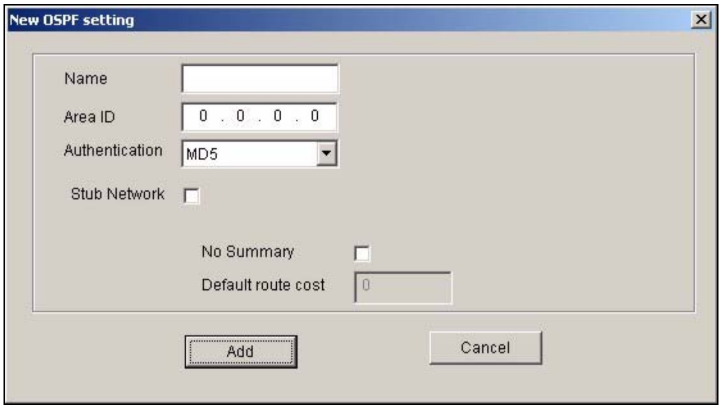
LABEL	DESCRIPTION
Authentication	This field displays the authentication method used (**None**, **Simple** or **MD5**).
Stub Network	This field displays whether an area is a stub network (**Yes**) or not (**No**).
Add	Click **Add** to create a new OSPF area.
Modify	Click **Modify** to change the settings of the selected OSPF area.
Delete	Click **Delete** to remove the selected OSPF area.
Virtual-Link	
Index	This field displays an index number of an entry.
Name	This field displays a descriptive name of a virtual link.
Peer Router ID	This field displays the ID (that uses the format of an IP address in dotted decimal notation) of a peer border router.
Authentication	This field displays the authentication method used (**Same-as-Area**, **None**, **Simple** or **MD5**).
Key ID	When the **Authentication** field displays **MD5**, this field displays the identification number of the key used.
Add	Click **Add** to create a new OSPF virtual link.
Modify	Click **Modify** to change the settings of the selected OSPF virtual link.
Delete	Click **Delete** to remove the selected OSPF virtual link.
Interface	
Index	This field displays the index number for an interface.
Network	This field displays the IP interface information.
Area ID	This field displays the area ID (that uses the format of an IP address in dotted decimal notation) of an area to associate the interface to that area.
Authentication	This field displays the authentication method used (**Same-as-Area**, **None**, **Simple** or **MD5**).
Key ID	When the **Authentication** field displays **MD5**, this field displays the identification number of the key used.
Cost	This field displays the interface cost used for calculating the routing table.
Priority	This field displays the priority of the interface.
Add	Click **Add** to create a new OSPF interface.
Modify	Click **Modify** to change the settings of the selected OSPF interface.
Delete	Click **Delete** to remove the selected OSPF interface.

19.8.4 Configuring a New OSPF Area

Follow the steps below to create a new OSPF area.

1 In the Device Panel list, right-click on a device.
2 Click **Configuration** > **IP Configuration** > **OSPF**.
3 Click **Add** in the **OSPF Configuration** pane.

Figure 157 IP Configuration: OSPF: New OSPF Setting



0 . 0 . 0 . 0

MD5

0

The following table describes the related labels in this screen.

Table 119 IP Configuration: OSPF: New OSPF Setting

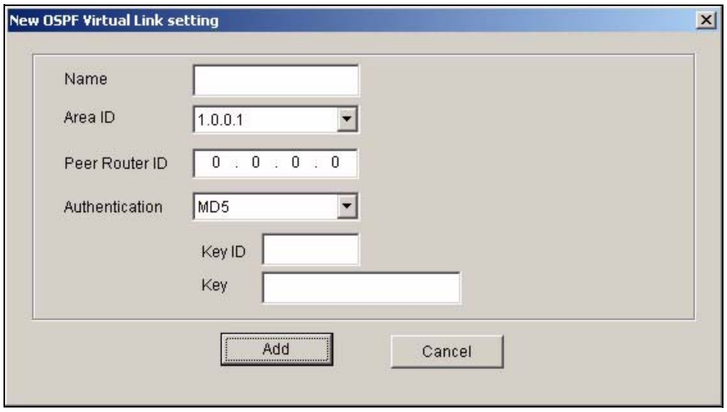
LABEL	DESCRIPTION
Name	Enter a descriptive name (up to 32 printable ASCII characters) for identification purposes.
Area ID	Enter a 32-bit ID (that uses the format of an IP address in dotted decimal notation) that uniquely identifies an area. A value of **0.0.0.0** indicates that this is a backbone (also known as Area 0). You can create only one backbone area on the switch.
Authentication	Select an authentication method (**Simple** or **MD5**) to activate authentication. Select **None** to disable authentication. Interface(s) and virtual interface(s) must use the same authentication method as the associated area.
Stub Network	Select this option to set the area as a stub area. If you enter **0.0.0.0** in the **Area ID** field, the settings in the **Stub Network** fields are ignored.
No Summary	Select this option to set the switch to not send/receive LSAs.
Default Route Cost	Specify a cost (between 0 and 16777214) used to add a default route into a stub area for routes which are external to an OSPF domain. If you do not set a route cost, no default route is added.
Add	Click **Add** to apply the changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

19.8.5 Configuring a New OSPF Virtual Link

Follow the steps below to create a new OSPF virtual link.

1. In the Device Panel list, right-click on a device.
2. Click **Configuration** > **IP Configuration** > **OSPF**.
3. Click **Add** in the **Virtual Link** pane.

Figure 158 IP Configuration: OSPF: New Virtual Link



New OSPF Virtual Link setting

Name

Area ID 1.0.0.1

Peer Router ID 0 . 0 . 0 . 0

Authentication MD5

Key ID

Key

The following table describes the labels in this screen.

Table 120 IP Configuration: OSPF: New Virtual Link

LABEL	DESCRIPTION
Name	Enter a descriptive name (up to 32 printable ASCII characters) for identification purposes.
Area ID	Select the area ID (that uses the format of an IP address in dotted decimal notation) of an area to associate the interface to that area.
Peer Router ID	Enter the ID of a peer border router.
Authentication	Note: Virtual interface(s) must use the same authentication method within the same area. Select an authentication method. Choices are **Same-as-Area**, **None** (default), **Simple** and **MD5**. To exchange OSPF packets with peer border router, you must set the authentication method and/or password the same as the peer border router. Select **Same-as-Area** to use the same authentication method within the area and set the related fields when necessary. Select **None** to disable authentication. This is the default setting. Select **Simple** to authenticate OSPF packets transmitted through this interface using a simple password. Select **MD5** to authenticate OSPF packets transmitted through this interface using MD5 authentication.
Key ID	When you select **MD5** in the **Authentication** field, specify the identification number of the authentication you want to use.
Key	When you select **Simple** in the **Authentication** field, enter a password eight-character long. When you select **MD5** in the **Authentication** field, enter a password 16-character long.
Add	Click **Add** to apply the changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

19.8.6 Configuring a New OSPF Interface

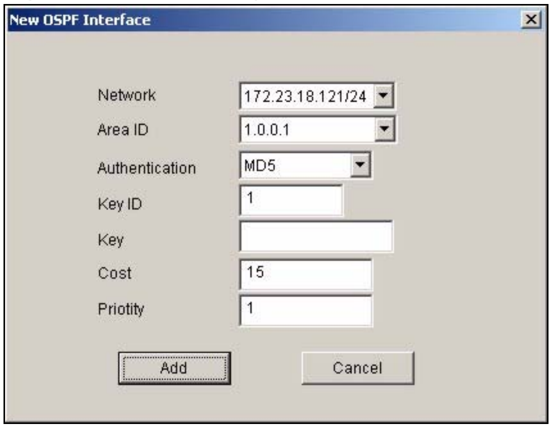
Follow the steps below to create a new OSPF interface.

1 In the Device Panel list, right-click on a device.

2 Click **Configuration** > **IP Configuration** > **OSPF**.

3 Click **Add** in the **Interface** pane.

Figure 159 IP Configuration: OSPF: New Interface



Network 172.23.18.121/24
Area ID 1.0.0.1
Authentication MD5
Key ID 1
Key
Cost 15
Priotity 1

The following table describes the labels in this screen.

Table 121 IP Configuration: OSPF: New Interface

LABEL	DESCRIPTION
Network	Select an IP interface.
Area ID	Select the area ID (that uses the format of an IP address in dotted decimal notation) of an area to associate the interface to that area.
Authentication	Note: OSPF Interface(s) must use the same authentication method within the same area. Select an authentication method. Choices are **Same-as-Area**, **None** (default), **Simple** and **MD5**. To participate in an OSPF network, you must set the authentication method and/or password the same as the associated area. Select **Same-as-Area** to use the same authentication method within the area and set the related fields when necessary. Select **None** to disable authentication. This is the default setting. Select **Simple** and set the **Key** field to authenticate OSPF packets transmitted through this interface using simple password authentication. Select **MD5** and set the **Key ID** and **Key** fields to authenticate OSPF packets transmitted through this interface using MD5 authentication.
Key ID	When you select **MD5** in the **Authentication** field, specify the identification number of the authentication you want to use.
Key	When you select **Simple** in the **Authentication** field, enter a password eight-character long. Characters after the eighth character will be ignored. When you select **MD5** in the **Authentication** field, enter a password 16-character long.
Cost	The interface cost is used for calculating the routing table. Enter a number between 0 and 65535.
Priority	The priority you assign to the interface is used in router elections to decide which router is going to be the Designated Router (DR) or the Backup Designated Router (BDR). You can assign a number between 0 and 255. A priority of 0 means that the router will not participate in router elections.

Table 121 IP Configuration: OSPF: New Interface (continued)

LABEL	DESCRIPTION
Add	Click **Add** to apply the changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

19.9 VRRP

Virtual Router Redundancy Protocol (VRRP), defined in RFC 2338, allows you to create redundant backup gateways to ensure that the default gateway of a host is always available.

In VRRP, a virtual router (VR) represents a number of physical layer-3 devices. An IP address is associated with the virtual router. A layer-3 device having the same IP address is the preferred master router while the other Layer-3 devices are the backup routers. The master router forwards traffic for the virtual router. When the master router becomes unavailable, a backup router assumes the role of the master router until the master router comes back up and takes over.

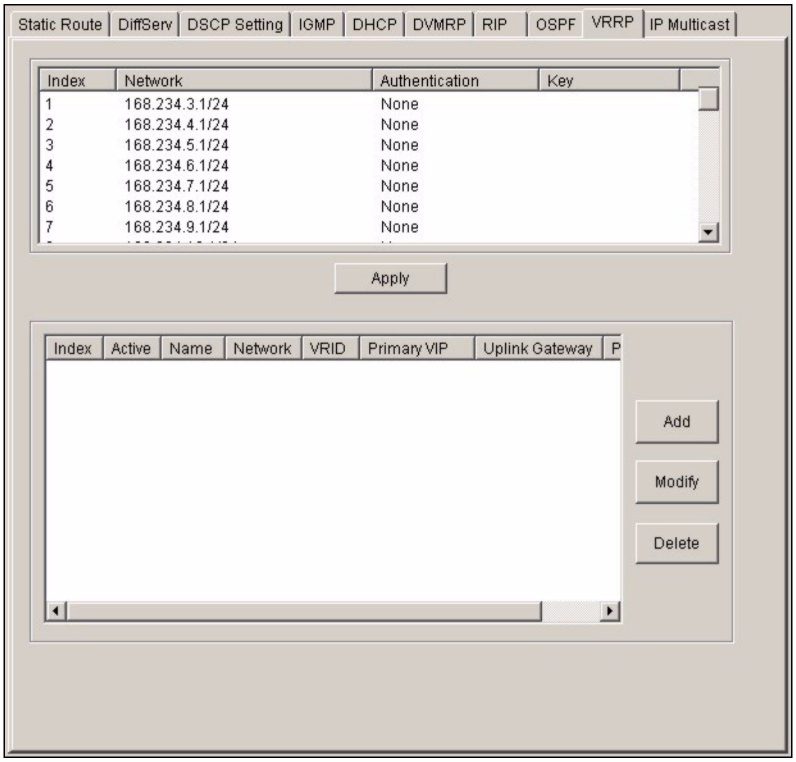
19.9.1 Configuring Interface VRRP Settings

Follow the steps below to configure VRRP settings on an interface.

1 In the Device Panel list, right-click on a device.

2 Click **Configuration** > **IP Configuration** > **VRRP**.

Figure 160 IP Configuration: VRRP



Index	Network	Authentication	Key
1	168.234.3.1/24	None	
2	168.234.4.1/24	None	
3	168.234.5.1/24	None	
4	168.234.6.1/24	None	
5	168.234.7.1/24	None	
6	168.234.8.1/24	None	
7	168.234.9.1/24	None	

Index	Active	Name	Network	VRID	Primary VIP	Uplink Gateway	P

The following table describes the labels in this screen.

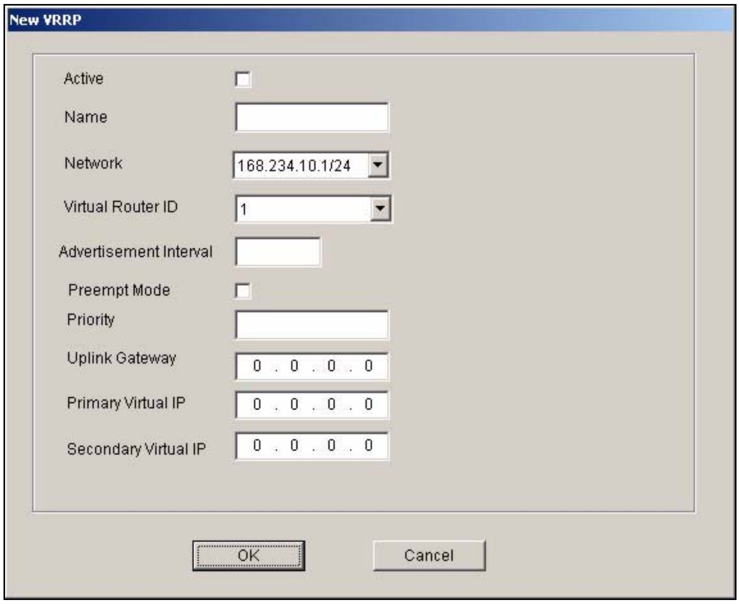
Table 122 IP Configuration: VRRP

LABEL	DESCRIPTION
Index	This field displays the index number of an entry.
Network	This field displays the IP address and number of subnet mask bit of an IP domain.
Authentication	Select **None** to disable authentication. This is the default setting. Select **Simple** to use a simple password to authenticate VRRP packet exchanges on this interface.
Key	When you select **Simple** in the **Authentication** field, enter a password key (up to eight printable ASCII character long) in this field.
Apply	Click **Apply** to save the changes.
Index	This field displays the index number of an entry.
Active	This field shows whether a VRRP entry is enabled (**Yes**) or disabled (**No**).
Name	This field displays a descriptive name of an entry.
Network	This field displays the IP address and subnet mask of an interface.
VRID	This field displays the ID number of a virtual router.
Primary VIP	This field displays the IP address of the primary virtual router.
Uplink Gateway	This field displays the IP address of the uplink gateway.
Priority	This field displays the priority level (1 to 255) of the entry.
Add	Click **Add** to create a new VRRP interface.
Modify	Click **Modify** to change the settings of the selected VRRP interface.
Delete	Click **Delete** to remove the selected VRRP interface.

19.9.2 Configuring a VRRP Interface

1. In the Device Panel list, right-click on a device.
2. Click **Configuration** > **IP Configuration** > **VRRP**.

Figure 161 IP Configuration: VRRP: New



Active	☐
Name	
Network	168.234.10.1/24
Virtual Router ID	1
Advertisement Interval	
Preempt Mode	☐
Priority	
Uplink Gateway	0 . 0 . 0 . 0
Primary Virtual IP	0 . 0 . 0 . 0
Secondary Virtual IP	0 . 0 . 0 . 0

The following table describes the labels in this screen.

Table 123 IP Configuration: VRRP: New

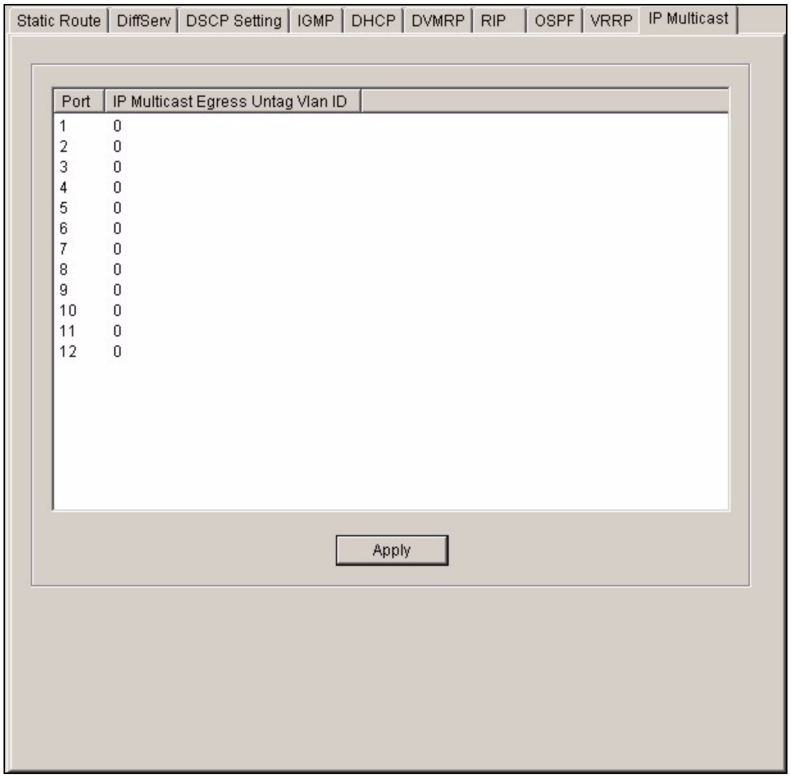
LABEL	DESCRIPTION
Active	Select this option to enable this VRRP interface.
Name	Enter a descriptive name (up to 32 printable ASCII characters) for identification purposes.
Network	Select an IP domain to which this VRRP entry applies.
Virtual Router ID	Select a virtual router number (1 to 7) for which this VRRP entry is created. You can configure up to seven virtual routers for one network.
Advertisement Interval	Specify the number of seconds between Hello message transmissions. The default is **1**.
Preempt Mode	Select this option to activate preempt mode.
Priority	Enter a number (between 1 and 254) to set the priority level. The bigger the number, the higher the priority. This field is **100** by default.
Uplink Gateway	Enter the IP address of the uplink gateway in dotted decimal notation. The switch checks the link to the uplink gateway.
Primary Virtual IP	Enter the IP address of the primary virtual router in dotted decimal notation.
Secondary Virtual IP	This field is optional. Enter the IP address of a secondary virtual router in dotted decimal notation. This field is ignored when you enter **0.0.0.0**.
OK	Click **OK** to apply the changes and close this screen.
Cancel	Click **Cancel** to discard all changes and close this screen.

19.10 IP Multicast

You can configure the switch to untag (remove the VLAN tags from) IP multicast packets that the switch forwards. This allows the switch to send packets to Ethernet devices that are not VLAN-aware.

To display the IP Multicast screen, right-click on a switch in the Device Panel list and click **Configuration** > **IP Configuration** > **IP Multicast**.

Figure 162 IP Configuration: IP Multicast



Port	IP Multicast Egress Untag Vlan ID
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0

The following table describes the labels in this screen.

Table 124 IP Configuration: IP Multicast

LABEL	DESCRIPTION
Port	This read-only field displays the port number.
IP Multicast Egress Untag Vlan ID	The switch removes the VLAN tag from IP multicast packets belonging to the specified VLAN before transmission on this port. Enter a VLAN group ID in this field. Enter **0** to set the switch not to remove any VLAN tags from the packets.
Apply	Click **Apply** to save the settings.

20

Troubleshooting

This chapter covers potential problems and the corresponding remedies.

20.1 Installation Problems

Table 125 General Installation Problems

PROBLEM	CORRECTIVE ACTION
The EMS or PostgreSQL will not install properly	Make sure that the computer meets the minimum hardware and software requirements. See the quick start guide for more information. Close all programs before the installation. Remove any previous versions of the EMS software from your computer. See Section 20.4 on page 222 for information on how to do this. Re-install the EMS.

20.2 Problems Accessing the EMS

Table 126 Problems Accessing the EMS

PROBLEM	CORRECTIVE ACTION
When I click the Switch Manager icon, I cannot access the EMS	Make sure the ODBC driver is configured properly to connect to the EMS database. Refer to the Quick Start Guide for more information. Shut down and restart both PostgreSQL and the SNMPc manager. EMS may already be running. Check your Windows task bar.

20.3 Problems Finding a Device

Table 127 Problems Accessing the EMS

PROBLEM	CORRECTIVE ACTION
In the SNMPc Management Console I cannot find my device	Check that you have compiled and added the MIBs correctly. Check that you have enabled auto-discovery. Check that the map object properties are correct for initial installation. Make sure the IP address entered is the IP address of the switch you want to manage via the EMS. Check that the ODBC driver is correctly configured. Make sure that PostgreSQL is running. Make sure that the computer you have installed the EMS on, is connected to the network where the switch is located. Make sure your computer's Ethernet card is working properly. If the problem still persists, uninstall and re-install the EMS software.

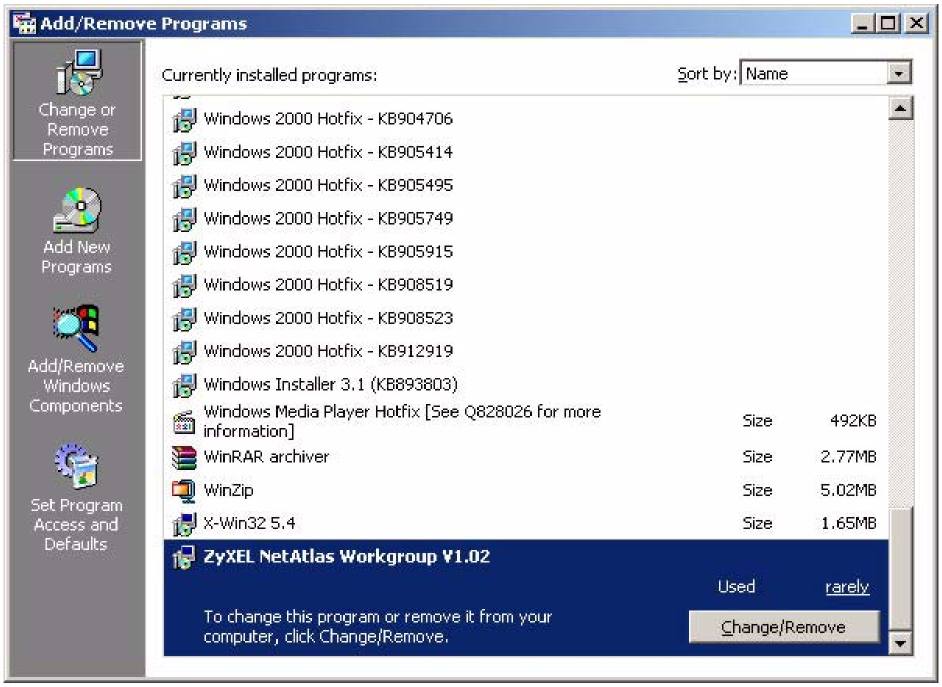
20.4 Uninstalling the EMS

When you install a new EMS version, the setup program automatically detects and uninstalls a previous EMS version.

Or you can manually uninstall the EMS. Follow the steps below.

1 Click **Start** > **Settings** > **Control Panel** > **Add/Remove Programs**. The **Add or Remove Programs** dialog box opens.

Figure 163 EMS: Remove


Add/Remove Programs
Change or Remove Programs
Add New Programs
Add/Remove Windows Components
Set Program Access and Defaults
Currently installed programs:
Sort by: Name
Change/Remove

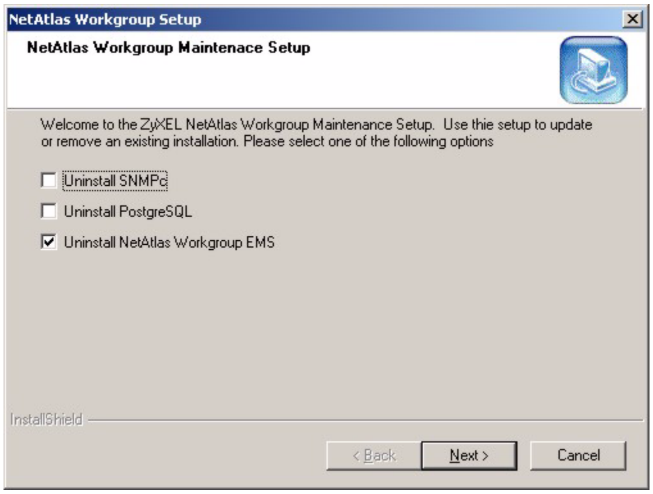
Windows 2000 Hotfix - KB904706		
Windows 2000 Hotfix - KB905414		
Windows 2000 Hotfix - KB905495		
Windows 2000 Hotfix - KB905749		
Windows 2000 Hotfix - KB905915		
Windows 2000 Hotfix - KB908519		
Windows 2000 Hotfix - KB908523		
Windows 2000 Hotfix - KB912919		
Windows Installer 3.1 (KB893803)		
Windows Media Player Hotfix [See Q828026 for more information]	Size	492KB
WinRAR archiver	Size	2.77MB
WinZip	Size	5.02MB
X-Win32 5.4	Size	1.65MB
ZyXEL NetAtlas Workgroup V1.02		
	Used	rarely

To change this program or remove it from your computer, click Change/Remove.

2 Select **ZyXEL NetAtlas Workgroup V1.02** and then click **Change/Remove** (or **Add/ Remove** depending on your version of Windows).

3 Screen displays as shown. Specify whether you also want to remove SNMPc and/or PostgreSQL. Click **Next** to continue.

Figure 164 EMS: Remove: Select Application



NetAtlas Workgroup Setup
NetAtlas Workgroup Maintenace Setup

Welcome to the ZyXEL NetAtlas Workgroup Maintenance Setup. Use thie setup to update or remove an existing installation. Please select one of the following options

☐ Uninstall SNMPc

☐ Uninstall PostgreSQL

☑ Uninstall NetAtlas Workgroup EMS

InstallShield
< Back
Next >
Cancel

4 Click **Yes** when asked to confirm removal. The **Uninstall Shield** now runs.

5 Click **OK** when the uninstall has successfully completed. Restart the computer when prompted.

PART IV

Appendices and Index

SNMPc Network Manager (227)
Alarm Types and Causes (231)
Legal Information (233)
Customer Support (235)
Index (239)

A

SNMPc Network Manager

This appendix gives a brief overview of the SNMPc Network Manager.

Starting the SNMPc Network Manager

You must have SNMPc properly installed before you can use the EMS; please refer to the Castle Rock web site at www.castlerock.com or see your SNMPc user's guide.

You may start the SNMPc Network Manager manually or automatically each time you turn on your computer.

Manual Startup

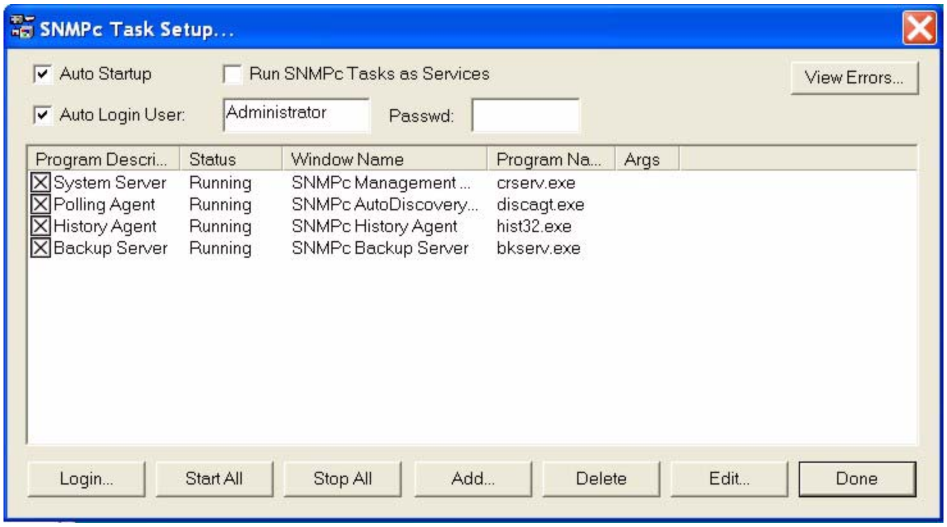
Click **Start**, **Programs**, **SNMPc**, **Startup System** to manually start the SNMPc network manager. This is the default location of the SNMPc network manager.

Automatic Startup

To automatically start the SNMPc network manager each time you turn on your computer:

1. In SNMPc main window, click **Config**, **System Startup**.
2. Select the **Auto Startup** check box and click **Done**.

Figure 165 Automatic Startup



☑ Auto Startup ☐ Run SNMPc Tasks as Services

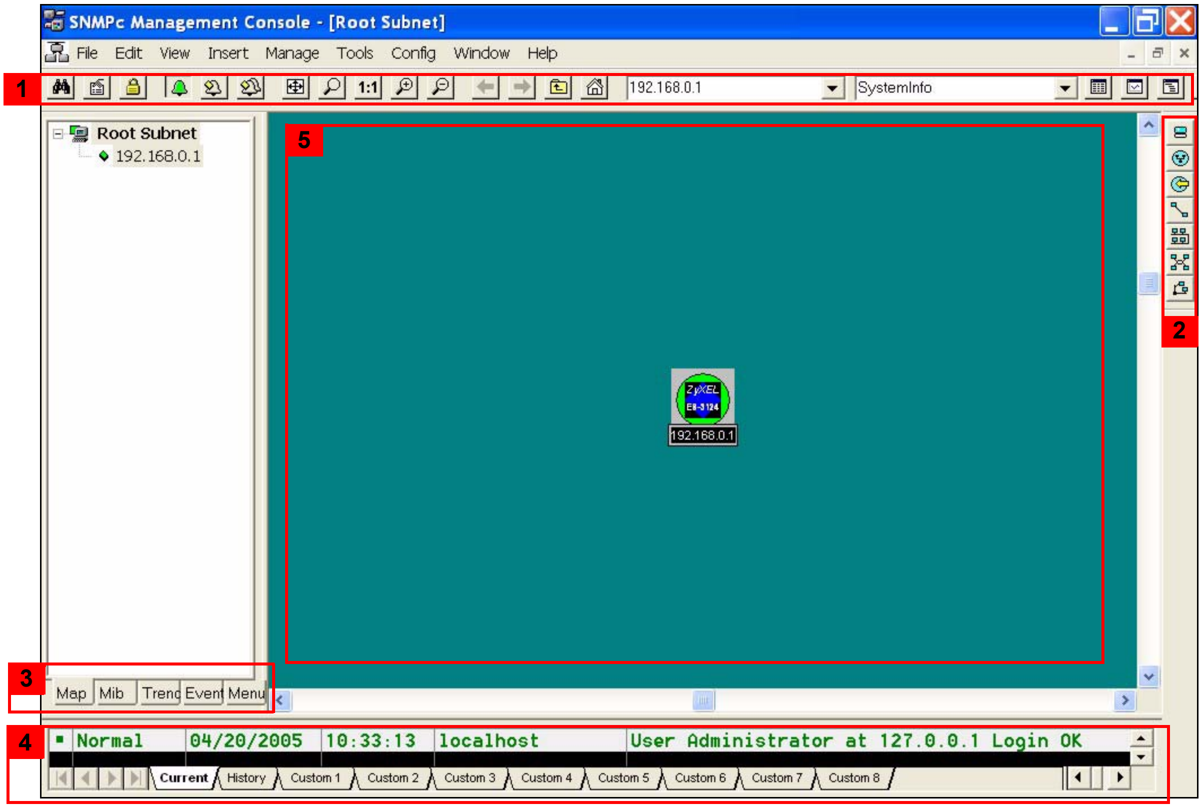
☑ Auto Login User: Administrator Passwd:

Program Descri...	Status	Window Name	Program Na...	Args
☒ System Server	Running	SNMPc Management ...	crserv.exe	
☒ Polling Agent	Running	SNMPc AutoDiscovery...	discagt.exe	
☒ History Agent	Running	SNMPc History Agent	hist32.exe	
☒ Backup Server	Running	SNMPc Backup Server	bkserv.exe	

SNMPc Main Window

The following figure and table show the elements of the SNMPc main window.

Figure 166 SNMPc Main Windows


SNMPc Management Console - [Root Subnet]
File
Edit
View
Insert
Manage
Tools
Config
Window
Help
1:1
192.168.0.1
SystemInfo
Root Subnet
192.168.0.1
ZyXEL
ES-3124
192.168.0.1
Map
Mib
Trend
Event
Menu
Current
History
Custom 1
Custom 2
Custom 3
Custom 4
Custom 5
Custom 6
Custom 7
Custom 8
1
2
3
4
5

```
Normal  04/20/2005  10:33:13  localhost  User Administrator at 127.0.0.1 Login OK
```

Table 128 SNMPc Main Window

	ELEMENT	FUNCTION
1	Main Button Bar	Buttons and controls to execute common commands quickly. Hold the cursor over an icon to see a tool tip.
2	Edit Button Bar	Buttons to quickly insert map elements. Hold the cursor over an icon to see a tool tip.
3	Selection Tool	Tabbed control for selection of objects within different SNMPc functional modules.
4	Event Log Tool	Tabbed control for display of filtered event log entries.
5	View Window Area	Map View, Mib Tables and Mib Graph windows are shown here.

Selection Tool

If you can't see the selection tool, click **View**, **Selection Tool** to display it. Use the selection tool to manipulate objects from one of several databases. Use the drag control at the right of the selection tool to change its size. Select one of the selection tool tabs to display a tree control for the database. Right-click on an icon inside a selection tree for database-specific commands.

Table 129 Selection Tool

TAB	DESCRIPTION
Map	Map Object database, including devices and subnets.
Mib	Compiled SNMP Mibs, Custom Tables and Custom Mib Expressions.
Trend	Report profiles that define long-term polling procedures and scheduled reports.
Event	Event filters used to determine what happens when an event is received.
Menu	Custom menus that appear in the Manage, Tools and Help SNMPc menus.

Event Log Tool

The event log tool displays different filtered views of the SNMPc event log. If you can't see the event log tool, click **View**, **Event Log Tool** to display it.

- Select the **Current** tab to show unacknowledged (current) events. These events have a colored box at the left side of the log entry. The color of map objects is determined by the highest priority unacknowledged event for that object.
- Select the **History** tab to show all events, including acknowledged and unacknowledged events.
- Select one of the **Custom** tabs and use the right-click **Filter View** menu to specify what events should be displayed for that tab.
- Double-click an event entry to display a **Map View** window with the corresponding device icon visible.
- To quickly view events for a particular device, first select the device and then use one of the **View Events** buttons (or the **View**, **Active Events** and **View**, **History Events** menus). This will show the device events in a separate window in the View Windows area.
- To remove one or more events, select the events and click the **Delete** key.
- To acknowledge (remove current status of) an event, right-click on an event entry and click **Acknowledge**.
- To completely clear the event log, click **File** and **Clear Events**.

View Window Area

The View Window Area is the main interface for viewing the SNMPc map and command results. This area uses the Multi-Document-Interface (MDI) specification to display multiple windows at the same time. Click **Window** and select **Cascade**, **Tile Horizontally** or **Tile Vertically** to rearrange the windows in the View Window Area in a way that makes them all visible.

Windows in this area can be in one of several states:

- A **Maximized** window uses the entire area and hides any other windows behind it. If you close a maximized window, the next top-most window will still be displayed in the maximized state. You need to be careful when using maximized windows because it is easy to lose track of how many windows you have open and there is an upper limit. Use the Windows menu to see a list of windows. Click **Windows** and select either **Tile Horizontally** or **Tile Vertically** to view all windows at the same time.
- An **Overlapped** window does not take up the entire area. One window will be completely visible and other windows are partially hidden behind it. This is the most common situation for the View Window area because it lets you view maps, tables and graphs at the same time and quickly move between them. Click **Windows** and select **Cascade**.
- A **Minimized** window is displayed as a small title bar with window open/close buttons. Windows are not typically minimized within the View Window Area because, as with the maximized case, they can easily be lost behind other windows.

Main and Edit Button Bar Icons

The following figure is a brief overview of the SNMPc main button and edit button bar icons.

Figure 167 SNMPc Main Button Bar Icons

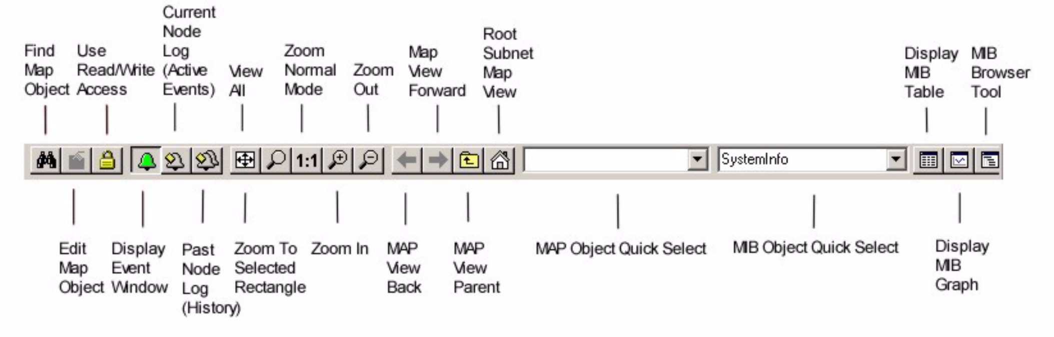
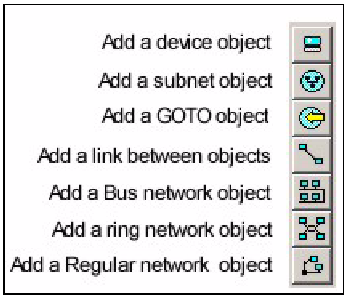

Find Map Object
Use Read/Write Access
Current Node Log (Active Events)
View All
Zoom Normal Mode
Zoom Out
Map View Forward
Root Subnet Map View
Display MIB Table
MIB Browser Tool
SystemInfo
Edit Map Object
Display Event Window
Past Node Log (History)
Zoom To Selected Rectangle
Zoom In
MAP View Back
MAP View Parent
MAP Object Quick Select
MIB Object Quick Select
Display MIB Graph

Figure 168 SNMPc Edit Button Bar Icons


Add a device object
Add a subnet object
Add a GOTO object
Add a link between objects
Add a Bus network object
Add a ring network object
Add a Regular network object

For more detailed information, please see www.castlerock.com.

B

Alarm Types and Causes

This appendix shows examples of probable alarm types and causes.

Table 130 Alarm Types and Causes

ALARM TYPE	PROBABLE CAUSES	
Communications	• Loss of signal • Loss of frame • Framing error • Local node transmission error • Remote node transmission error • Call establishment error	• Degraded signal • Communications subsystem failure • Communications protocol error • LAN error • DTE-DCE interface error
Quality of service	• Response time excessive • Queue size exceeded • Bandwidth reduced • Retransmission rate excessive	• Threshold crossed • Performance degraded • Congestion • Resource at or nearing capacity
Processing error	• Storage capacity problem • Version mismatch • Corrupt data • CPU cycles limit exceeded • Software error • Software program error	• Software program abnormally terminated • File error • Out of memory • Underlying resource unavailable • Application subsystem failure • Configuration or customization error
Equipment	• Power problem • Timing problem • Processor problem • Dataset or modem error • Multiplexer problem • Receiver failure • Transmitter failure	• Receive failure • Transmit failure • Output device error • Input device error • I/O device error • Equipment malfunction • Adapter error
Environmental	• Temperature unacceptable • Humidity unacceptable • Heating/ventilation/cooling system problem • Fire detected • Flood detected • Toxic leak detected	• Leak detected • Pressure unacceptable • Excessive vibration • Material supply exhausted • Pump failure • Enclosure door open

C

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- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

Corporate Headquarters (Worldwide)

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- Fax: +886-3-578-2439
- Web Site: www.zyxel.com, www.europe.zyxel.com
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United Kingdom

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- Sales E-mail: sales@zyxel.co.uk
- Telephone: +44-1344 303044, 08707 555779 (UK only)
- Fax: +44-1344 303034
- Web Site: www.zyxel.co.uk
- FTP Site: ftp.zyxel.co.uk
- Regular Mail: ZyXEL Communications UK, Ltd.,11 The Courtyard, Eastern Road, Bracknell, Berkshire, RG12 2XB, United Kingdom (UK)

“+” is the (prefix) number you dial to make an international telephone call.

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