ENTERASYS WEBVIEW

WEB-BASED MANAGEMENT
FOR THE VH-2402S/VH-2402S2

WEB MANAGEMENT GUIDE

9033821

ENTERASYS
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1. OVERVIEW

Enterasys WebView Description

This user guide describes Enterasys WebView, a web browser-based utility which allows you to remotely configure and manage Enterasys Networks products, including the VH-2402S/VH-2402S2 stackable switches. There is no software to install as Web management capability is built into the unit's VH-SMGMT/VH-SMGMT2 Management Module.

Enterasys WebView provides a graphical, real-time representation of the front panel on a switch. This graphic, along with additionally defined areas of the browser interface, allow you to interactively configure a switch, monitor its status, and view statistical information.

Enterasys WebView provides a simple, intuitive method for managing the VH-2402S/VH-2402S2 stackable switches. These switches can also be managed via the serial console, Telnet, or SNMP.

Features

- Switch configuration and monitoring from any Java-enabled browser (Preferred browsers include Internet Explorer 4.0 or above, or Netscape Navigator 4.0 or above)
- Easy to navigate menuing system
- Detailed parameter descriptions using the Help button
- Switch operating status viewing front panel color indications
- Alarm configuration capability
- Web management enable

System Requirements

The requirements for running Enterasys WebView are relatively simple. You will need a Java-enabled, frames-capable Web browser and a TCP/IP network connection to the switch, whether over a local network, a remote private network, or over the Internet.

When connecting over the Internet, the integrity of your connection will have an impact on the speed and performance of tasks. If your connection is subject to prohibitive periods of network congestion, or experiences high packet loss, you may need to consider a different Internet service provider.

In addition, Enterasys WebView uses SNMP for some of its communications with the switch. This may cause problems when the application is run across some Internet firewalls, which may be configured to disallow SNMP access.

Conventions

This guide uses the following user input conventions:

- When you read “Select,” use the mouse to either select the link identified by a hand icon, or select the identified button or area.
- When you read “Enter,” type in the text and select the button identified in the procedure.

2. USING WEB-BASED MANAGEMENT

Setting Up Web Management

Before running Web-based management, some basic configuration of the switch may need to be performed. The following information at a minimum must be configured or known for the switch and connected stack to be managed:

- IP Address
- Administrator password
- HTTP Server Enable

In addition, several other parameters may need to be configured or known to properly communicate with the switch or allow full management capability. These include:

- Default Gateway
- Trap Destination and Community Name

Configuration of these items may be made from the User Interface, which is accessible via either the serial console or Telnet. Refer to the User Guide that came with your system for more information about setting up either of these connections to the switch. The following subsections describe the required configuration.

Setting an IP Address

The IP address for the switch in the stack containing the management agent must be set before it can be managed with Enterasys WebView. The switch IP address may be automatically set using BootP protocol, in which case the actual address assigned to the switch must be known. Refer to the Management Guide.

The IP address may alternatively be set manually as follows:

1. Starting at the Main Menu of the User Interface, select Management Setup Menu / Network Configuration / IP Configuration.
2. Select IP Address from the menu and enter the IP address.
3. Select Subnet Mask from the menu and enter the appropriate mask.
4. Press <APPLY>.

Setting a Default Gateway

The default gateway parameter defines the IP address of a router or other network device to which IP packets are to be sent if destined for a subnet outside of that in which the switch is operating. This parameter must be set if you are attempting to manage the switch using Enterasys WebView from a remote network or across the Internet.

1. Starting at the Main Menu of the User Interface, select Management Setup Menu / Network Configuration / IP Configuration.
2. Select Gateway IP from the menu and enter the router IP address. Press <APPLY>.

Setting the Administrator Password

Management access to the switch using Enterasys WebView is restricted based on the an administrator password. Administrators have read/write access for parameters governing the SNMP agent. You should therefore assign a password to the default administrator (User Name: ADMIN) as soon as possible, and store it in a safe place. (If for some reason your password is lost, or you cannot gain access to the system's configuration program, contact your Enterasys distributor for assistance.)

1. Starting at the Main Menu of the User Interface, select Management Setup Menu / Console Login Configuration.
2. Move to the Password field for the User Name "ADMIN" in this menu, and enter the password. Press <APPLY>.

Setting Trap Destinations

If you wish to record SNMP traps, or events, generated by the switch, you must configure the destination for IP Trap Managers. A trap destination is the IP address of the system being used to manage the device, in this case the IP address of the computer system on which Enterasys WebView is being run.

1. Starting at the Main Menu of the User Interface, select Management Setup Menu / SNMP Configuration / IP Trap Managers.
2. Select an entry for an IP Trap Manager from the menu, then enter the IP address and community name.
3. Move to the Status field, and use the Space bar to select ENABLED.
4. Press <APPLY>.

Enabling Web Management

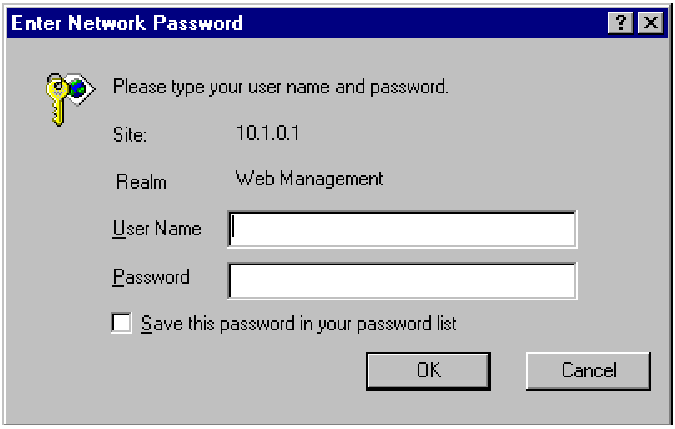
The HTTP Configuration menu is used to enable or disable the ability to manage the switch with Web management. The HTTP Server parameter must be set to ENABLED before Enterasys WebView can be used to manage the switch. If it is desired to disallow Web management of the switch, this parameter should be set to DISABLED

1. Starting at the Main Menu of the User Interface, select Management Setup Menu / Network Configuration / HTTP Configuration.
2. Select HTTP Server, and use the Space bar to toggle between ENABLED and DISABLED.

Starting and Stopping Enterasys WebView

Do the following to use Enterasys WebView:

1. Start a Java-enabled Web browser from any machine with network access to the switch. (Preferred browsers include Internet Explorer 4.0 or above, or Netscape Navigator 4.0 or above.)
2. Enter the IP address for the switch you want to manage in the URL field of the browser.
3. The screen shown below will appear, prompting you to enter the user name and password for management access.



Enter Network Password

Please type your user name and password.

Site: 10.1.0.1

Realm Web Management

User Name

Password

☐ Save this password in your password list

   Use the name for the default administrator (ADMIN), and the password previously entered in the Setting Up Web Management section. This will allow read/write access to the switch.

   The full application will now launch. A four-frame page will display with the product graphic located in the upper right hand frame.

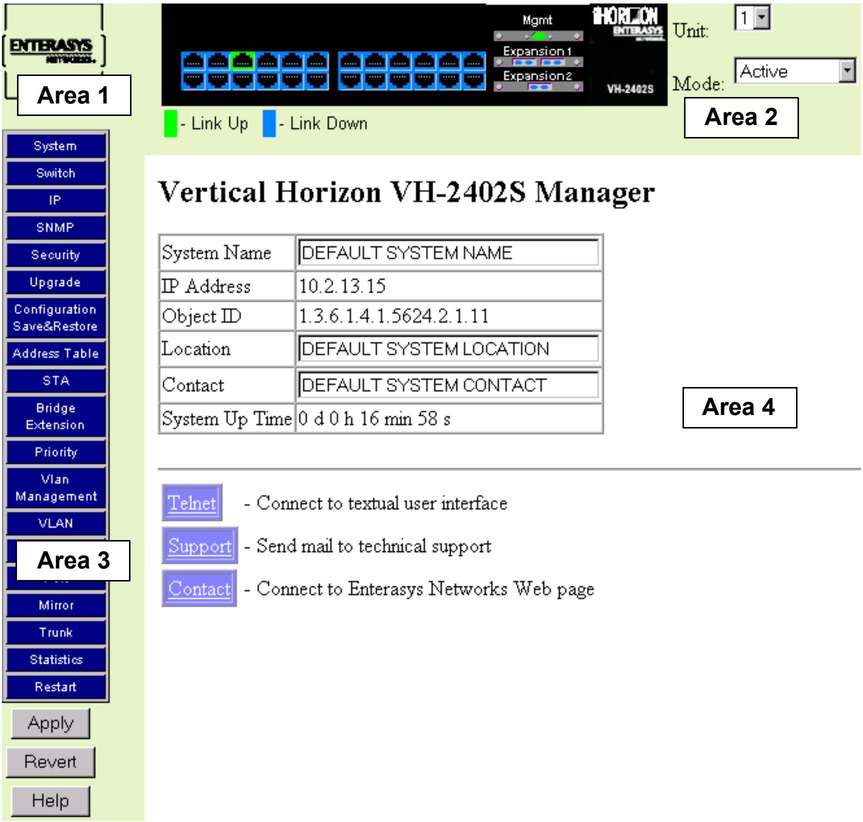
4. To stop Enterasys WebView, close the Web browser application.

Enterasys WebView User Interface

The Enterasys WebView user interface provides access to various switch configuration and management screens, allows you to view performance statistics, and permits you to graphically monitor system status.

Areas of the User Interface

Figure 2-1 shows the Enterasys WebView user interface. The user interface is divided into four distinct areas as described in Table 2-1.



Vertical Horizon VH-2402S Manager

System Name	DEFAULT SYSTEM NAME
IP Address	10.2.13.15
Object ID	1.3.6.1.4.1.5624.2.1.11
Location	DEFAULT SYSTEM LOCATION
Contact	DEFAULT SYSTEM CONTACT
System Up Time	0 d 0 h 16 min 58 s

Telnet - Connect to textual user interface

Support - Send mail to technical support

Contact - Connect to Enterasys Networks Web page

Figure 2-1. Enterasys WebView User Interface

Table 2-1. Areas of the User Interface

Area	Function
1	Displays the Enterasys Networks logo. Selecting this area takes you directly to the Enterasys Networks Web site.
2	Presents a graphical near real-time image of the front panel of the selected switch. This area displays the switch's ports and expansion modules, showing port activity, duplex mode, or flow control, depending on the specified mode. Various areas of the graphic can be selected for performing management functions, including the ports, expansion modules, management module, or the case.
3	Displays a list of links allowing you to go to the associated menu or screen by selecting the item.
4	Presents switch information based on your selection.

Table 2-2 describes configuration and system information functions available In Area 3.

Table 2-2. Area 3 Functions

Function	Description
System	Provides basic system description, including contact information.
Switch	Shows hardware/firmware version numbers, power status, and expansion modules in use.
IP	Includes boot state, IP address, and Telnet session count.
SNMP	Configures communities and trap managers; and activates traps.
Security	Sets password for system access.
Upgrade	Downloads new version of firmware to update your system.
Configuration Save&Restore	Allows you to save/restore the switch configuration to a file on a server.
Address Table	Provides full listing or unicast addresses, sorted by address or VLAN.
STA	Enables Spanning Tree Algorithm; also sets parameters for switch priority, hello time, maximum message age, and forward delay; as well as port priority and path cost.
Bridge Extension	Displays/configures extended bridge capabilities provided by this switch, including support for traffic classes, GMRP multicast filtering, and VLAN extensions.
Priority	Configures default port priorities and queue assignments.
VLAN Management	Allows you to restrict management access to the switch to one VLAN.
VLAN	Configures VLAN group members, automatic registration with GVRP, and other port-specific VLAN settings.
IGMP	Configures IGMP multicast filtering.
Port	Enables any port, sets communication mode to auto-negotiation, full duplex or half duplex, and enables/disables flow control.
Mirror	Sets the source and target ports for mirroring.
Trunk	Specifies ports to group into aggregate trunks.

Function	Description
Statistics	Displays statistics on network traffic passing through the selected port.
Restart	

Configuration Options

Web pages that include selection options have a drop-down list with a “Select” button to confirm the selection. Configurable parameters have a dialog box or a drop-down list. Once a configuration change has been made on a page, be sure to click on the “Apply” button at the bottom of the page to confirm the new setting. The following table summarizes the Web page configuration buttons.

Table 2-3. Web Page Configuration Buttons

Button	Action
Select	Sets the selected option from the drop-down list.
Apply	Sets specified values in the SNMP agent.
Revert	Cancels specified values prior to pressing the “Apply” button.
Refresh	Immediately updates values from the SNMP agent.
Help	Provides help on using the Web management interface.

Using Help

General Enterasys WebView help guidelines are available by using the Help button in Area 3.

3. CONFIGURING AND MONITORING THE SWITCH

This section, arranged by topic, describes how to perform common monitoring and configuration tasks on an VH-2402S/VH-2402S2 switch using Enterasys WebView. After you have properly configured the switch, and started Enterasys WebView, you can perform any of the tasks described in the following sections.

Screen Hierarchy

The contents of this chapter are arranged following the structure shown in Figure 3-1.

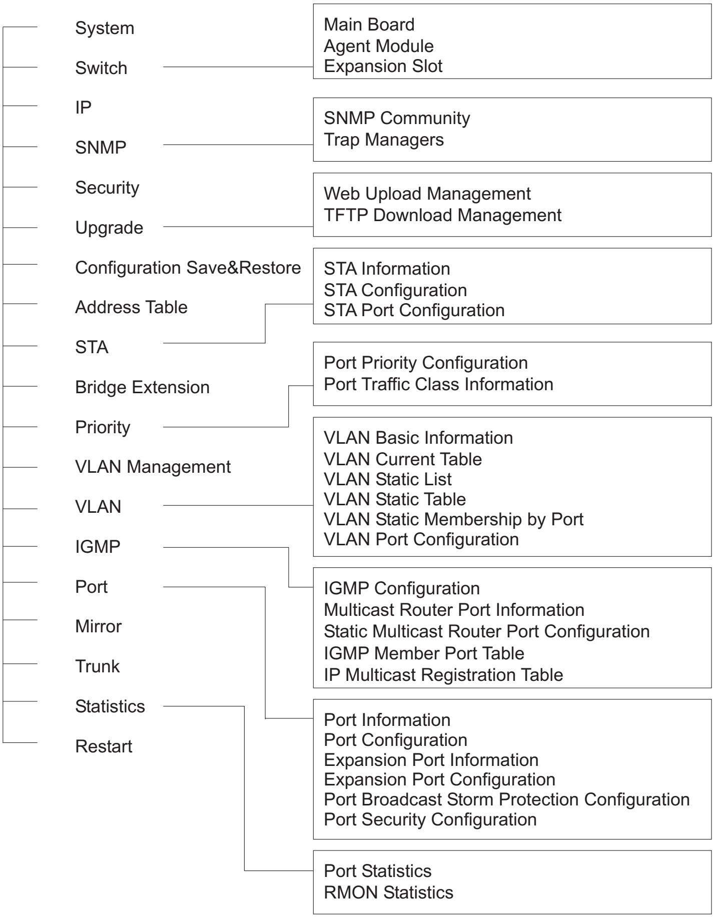
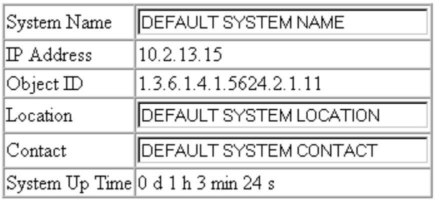


Figure 3-1. Enterasys WebView Screen Hierarchy

System Information

Use the System Information screen to display descriptive information about the switch, or for quick system identification as shown in the following figure and table.



System Name	DEFAULT SYSTEM NAME
IP Address	10.2.13.15
Object ID	1.3.6.1.4.1.5624.2.1.11
Location	DEFAULT SYSTEM LOCATION
Contact	DEFAULT SYSTEM CONTACT
System Up Time	0 d 1 h 3 min 24 s

Figure 3-2. System Information

Parameter	**Description**
System Name[1]	Name assigned to the switch system.
IP Address[2]	IP address of the agent you are managing. The agent module supports SNMP over UDP/IP transport protocol. In this environment, all systems on the Internet, such as network interconnection devices and any PC accessing the agent module (or running management software) must have an IP address. Valid IP addresses consist of four numbers, of 0 to 255, separated by periods. Anything outside of this format will not be accepted by the configuration program.
Object ID	MIB II object identifier for switch's network management subsystem.
Location[1]	Specifies the area or location where the system resides.
Contact[1]	Contact person for the system.
System Up Time	Length of time the current management agent has been running.

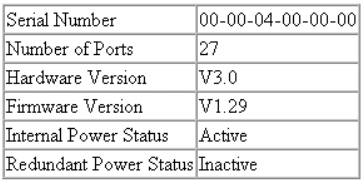
[1] Maximum string length is 255, but the screen only displays 45 characters. You can use the arrow keys to browse the whole string.

[2] The default value is 10.1.0.1

Switch Information

Use the Switch Information screen to display hardware/firmware version numbers for the main board and agent module, as well as the power status and modules plugged into the system.

Main Board

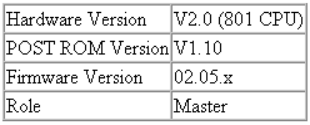


Serial Number	00-00-04-00-00-00
Number of Ports	27
Hardware Version	V3.0
Firmware Version	V1.29
Internal Power Status	Active
Redundant Power Status	Inactive

Figure 3-3. Switch Information - Main Board

Parameter	Description
Serial Number	Serial number of the main board.
Number of Ports	Number of ports in this unit (including modules).
Hardware Version	Hardware version of the main board.
Firmware Version	System firmware version in ROM.
Internal Power Status	Power status for the switch.
Redundant Power Status	Redundant power status for the switch.

Agent Module

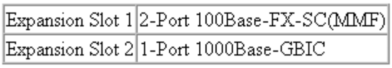


Hardware Version	V2.0 (801 CPU)
POST ROM Version	V1.10
Firmware Version	02.05.x
Role	Master

Figure 3-4. Switch Information - Agent Module

Parameter	Description
Hardware Version	Hardware version of the agent module.
POST ROM Version	Agent module’s Power-On Self-Test version.
Firmware Version	Agent module’s firmware version.
Role	Shows if this module is Master or Backup Master.

Expansion Slot



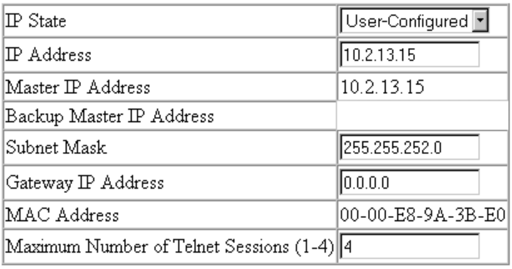
Expansion Slot 1	2-Port 100Base-FX-SC(MMF)
Expansion Slot 2	1-Port 1000Base-GBIC

Figure 3-5. Switch Information - Expansion Slot

Parameter	**Description**
Expansion Slot 1	Shows module type if inserted (100Base-FX, 1000Base-SX, 1000Base-LX, 1000Base-T, or 1000Base-GBIC).
Expansion Slot 2	Shows module type if inserted (100Base-FX, 1000Base-SX, 1000Base-LX, 1000Base-T, 1000Base-GBIC, or Stack).

IP Configuration

Use the IP Configuration screen to set the bootup option, configure the Ethernet IP address for the agent module, or set the number or concurrent Telnet sessions allowed. The screen shown below is described in the following table.



IP State	User-Configured
IP Address	10.2.13.15
Master IP Address	10.2.13.15
Backup Master IP Address	
Subnet Mask	255.255.252.0
Gateway IP Address	0.0.0.0
MAC Address	00-00-E8-9A-3B-E0
Maximum Number of Telnet Sessions (1-4)	4

Figure 3-6. IP Configuration

Parameter	Default	Description
IP State	USER-CONFIG	Specifies whether IP functionality is enabled via manual configuration, or set by Boot Protocol (BootP). Options include: BootP Get IP - IP is enabled but will not function until a BootP reply has been received. BootP requests will be periodically broadcast by the switch in an effort to learn its IP address. (BootP values include the IP address, default gateway, and subnet mask.) USER-CONFIG - IP functionality is enabled based on the default or user specified IP Configuration. (This is the default setting.)
IP Address	10.1.0.1	IP address of the agent you are managing. The agent module supports SNMP over UDP/IP transport protocol. In this environment, all systems on the Internet, such as network interconnection devices and any PC accessing the agent module (or running management software) are assigned an IP address. Valid IP addresses consist of four numbers, of 0 to 255, separated by periods. Anything outside of this format will not be accepted by the configuration program.
Master IP		Shows the IP address of the switch in the stack operating as Master.
Backup Master IP		Shows the IP address of the switch in the stack operating as Backup Master. (Not implemented in the current firmware release.)
Subnet Mask	255.255.0.0	Subnet mask of the agent you have selected. This mask identifies the host address bits used for routing to specific subnets.

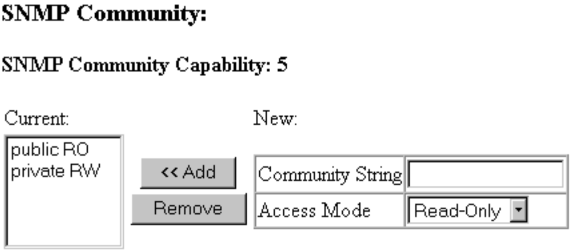
Parameter	Default	Description
Gateway IP	0.0.0.0	Gateway used to pass trap messages from the switch's agent to the management station. Note that the gateway must be defined if the management station is located in a different IP segment.
MAC Address		Physical address of the agent module.
Number of Telnet sessions	4	Sets the number of concurrent Telnet sessions allowed to access the agent module.

SNMP Configuration

Use the SNMP Configuration screen to display and modify parameters for the Simple Network Management Protocol (SNMP). The switch includes an on-board SNMP agent which monitors the status of its hardware, as well as the traffic passing through its ports. A computer attached to the network, called a Network Management Station (NMS), can be used to access this information. Access rights to the on-board agent are controlled by community strings. To communicate with the switch, the NMS must first submit a valid community string for authentication. The options for configuring community strings and related trap functions are described in the following figures and table.

SNMP Community

The following figure and table describe how to configure the community strings authorized for management access. Up to 5 community names may be entered.


SNMP Community:

SNMP Community Capability: 5

Current:

public RO
private RW

New:

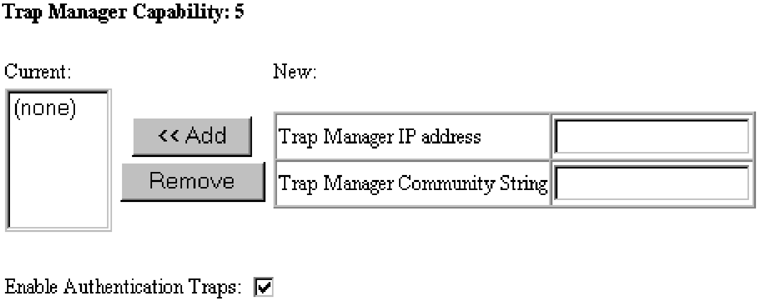
Community String	
Access Mode	Read-Only

Figure 3-7. SNMP Community

Parameter	Description
SNMP Community Capability	Up to 5 community strings may be used.
Add/Remove	Add/remove strings from the active list.
Community String	A community entry authorized for management access. (The maximum string length is 20 characters).
Access Mode	Management access is restricted to Read Only or Read/Write.

Trap Managers

The following figure and table describe how to specify management stations that will receive authentication failure messages or other trap messages from the switch. Up to 5 trap managers may be entered.



Trap Manager Capability: 5

Current:

(none)

New:

Trap Manager IP address	
Trap Manager Community String	

Enable Authentication Traps: ☑

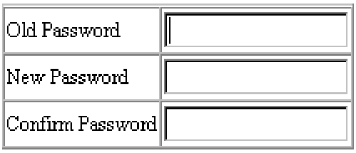
Figure 3-8. Trap Managers

Parameter	Description
Trap Manager Capability	Up to 5 trap managers may be used.
Trap Manager IP Address	IP address of the trap manager.
Trap Manager Community String	A community authorized to receive trap messages.
Add/Remove	Add/remove strings from the active list.
Enable Authentication Traps	Issues a trap message to specified IP trap managers whenever authentication of an SNMP request fails. Default: enabled

Security Configuration

Use the Security Configuration screen to restrict management access based on a specified password. The Administrator has write access for parameters governing the SNMP agent. You should therefore assign a password to the Administrator as soon as possible, and store it in a safe place. (If for some reason your password is lost, or you cannot gain access to the system’s configuration program, contact your Enterasys distributor for assistance.)

Change Password



Old Password	
New Password	
Confirm Password	

Figure 3-9. Change Password

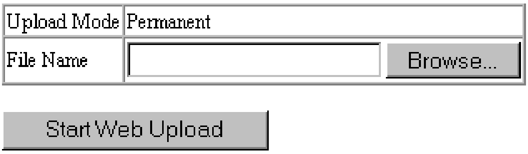
This password is for the system Administrator, with access privilege of Read/Write for all screens. Passwords can consist of up to 11 alphanumeric characters and are not case sensitive.
(User name: admin; default password: null)

Firmware Upgrade Options

You can upgrade system firmware via a Web browser, a TFTP server, or a direct connection to the console port (see the VH-2402S/VH-2402S2 Management Guide).

Web Upload Management

Use the Web Upload Management menu to load software updates into the switch. The upload file should be an VH-2402S/VH-2402S2 binary file from Enterasys; otherwise the agent will not accept it. The success of the upload operation depends on the quality of the network connection. After uploading the new software, the agent will automatically restart itself. Parameters shown on this screen are indicated in the following figure and table.



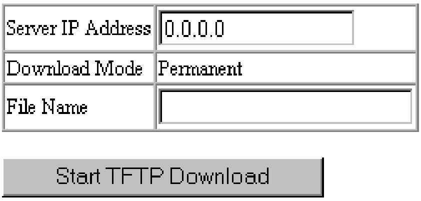
Upload Mode	Permanent
File Name	

Figure 3-10. Web Upload Management

Parameter	Description
Upload Mode	Indicates an upload to permanent flash ROM.
File Name	The binary file to download. Use the browse button to locate the file on your local network.
Start Web Upload	Starts uploading the file over the network.

TFTP Download Management

Use the TFTP Download Management menu to load software updates into the switch. The download file should be an VH-2402S/VH-2402S2 binary file from Enterasys; otherwise the agent will not accept it. The success of the download operation depends on the accessibility of the TFTP server and the quality of the network connection. After downloading the new software, the agent will automatically restart itself. Parameters shown on this screen are indicated in the following figure and table.



Server IP Address	0.0.0.0
Download Mode	Permanent
File Name	

Figure 3-11. TFTP Download Management

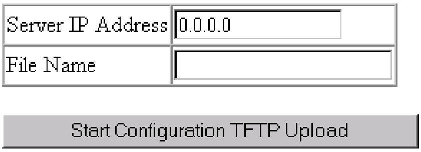
Parameter	Description
Server IP Address	IP address of a TFTP server.
Download Mode	Indicates a download to permanent flash ROM.
File Name	The binary file to download.
Start TFTP Download	Issues request to TFTP server to download the specified file.

Configuration Save and Restore

Use the Configuration Save&Restore screen to save the switch configuration settings to a file on a TFTP server. The file can be later downloaded to the switch to restore the switch's settings. The success of the operation depends on the accessibility of the TFTP server and the quality of the network connection.

Configuration Upload Management

Use the Configuration Upload Management to save the switch configuration to a file on a TFTP sever. Parameters shown on this screen are indicated in the following figure and table.



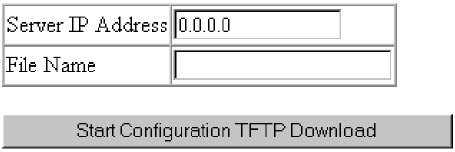
Server IP Address	0.0.0.0
File Name	

Figure 3-12. Configuration Upload Management

Parameter	Description
Server IP Address	IP address of a TFTP server.
File Name	The name of the file to contain the switch configuration settings.
Start Configuration TFTP Upload	Issues a request to upload the configuration settings to the specified file on the TFTP server.

Configuration Download Management

Use the Configuration Download Management to restore switch configuration settings from a file on a TFTP sever. Parameters shown on this screen are indicated in the following figure and table.



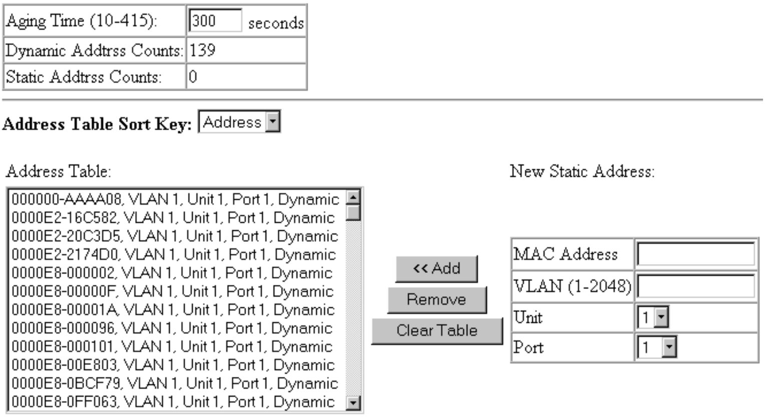
Server IP Address	0.0.0.0
File Name	

Figure 3-13. Configuration Download Management

Parameter	Description
Server IP Address	IP address of the TFTP server.
File Name	The name of the file that contains the switch configuration settings you wish to restore.
Start Configuration TFTP Download	Issues a request to the TFTP server to download the specified file.

Address Table Configuration

The Address Table contains the unicast MAC addresses and VLAN identifier associated with each port (that is, the source port associated with the address and VLAN), sorted by MAC address or VLAN. You can also clear the entire address table, or information associated with a specific address; or set the aging time for deleting inactive entries. The information displayed in the Address Table is indicated in the following figure and table.



Aging Time (10-415):	300 seconds
Dynamic Addtrss Counts:	139
Static Addtrss Counts:	0

Address Table Sort Key: Address

Address Table:

```
000000-AAAA08, VLAN 1, Unit 1, Port 1, Dynamic
0000E2-16C582, VLAN 1, Unit 1, Port 1, Dynamic
0000E2-20C3D5, VLAN 1, Unit 1, Port 1, Dynamic
0000E2-2174D0, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-000002, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-00000F, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-00001A, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-000096, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-000101, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-00E803, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-0BCF79, VLAN 1, Unit 1, Port 1, Dynamic
0000E8-0FF063, VLAN 1, Unit 1, Port 1, Dynamic
```

New Static Address:

MAC Address	
VLAN (1-2048)	
Unit	1
Port	1

Figure 3-14. Address Table

Parameter	Description
Aging Time	Time-out period in seconds for aging out dynamically learned forwarding information. Range: 10 - 415 secs; default: 300 secs.
Dynamic Address Counts	The number of dynamically learned addresses currently in the table.
Static Address Counts	The number of static addresses currently in the table.
Address Table	All entries, sorted by address or VLAN ID.
Address Table Sort Key	The system displays the MAC address of each node, the switch unit and port whose address table includes this MAC address, the associated VLAN(s), and the address status (i.e., dynamic or static).
New Static Address	Use these fields to add or remove a static entry to the address table. Indicate the address, stack unit, port and VLAN group when adding a new entry.
Add/Remove	Adds/removes selected address.
Clear Table	Removes all addresses from the address table.

STA (Spanning Tree Algorithm)

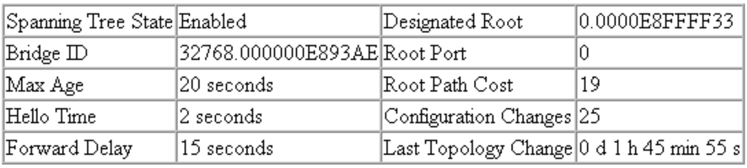
The Spanning Tree Algorithm can be used to detect and disable network loops, and to provide backup links between switches, bridges or routers. This allows the switch to interact with other bridging devices (that is, STA compliant switch, bridge or router) in your network to ensure that only one route exists between any two stations on the network. For a more detailed description of how to use this algorithm, refer to Appendix A, “Spanning Tree Concepts,” in the VH-2402S/VH-2402S2 Management Guide.

Spanning Tree Information

The Spanning Tree Information screen displays a summary of the STA information for the overall bridge or for a specific port or module. To make any changes to the parameters for the Spanning Tree, use the Spanning Tree Configuration menu. Also note that this screen cannot be accessed unless you have already enabled the Spanning Tree Algorithm via the Spanning Tree Configuration menu (page 24).

Spanning Tree

The parameters shown in the following figure and table describe the current bridge STA Information.



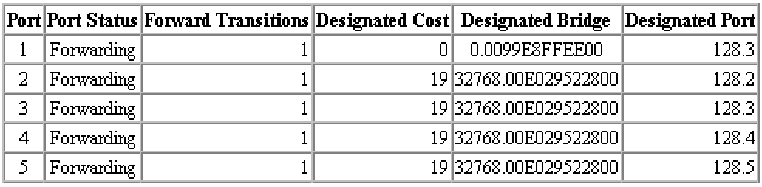
Spanning Tree State	Enabled	Designated Root	0.0000E8FFFF33
Bridge ID	32768.000000E893AE	Root Port	0
Max Age	20 seconds	Root Path Cost	19
Hello Time	2 seconds	Configuration Changes	25
Forward Delay	15 seconds	Last Topology Change	0 d 1 h 45 min 55 s

Figure 3-15. STA Information - Spanning Tree

Parameter	Description
Spanning Tree State	Shows if the switch is enabled to participate in an STA-compliant network.
Bridge ID	A unique identifier for this bridge, consisting of bridge priority plus MAC address (where the address is normally taken from Port 1).
Max Age	The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure.
Hello Time	The time interval (in seconds) at which the root device transmits a configuration message.
Forward Delay	The maximum time (in seconds) the root device will wait before changing states (i.e., listening to learning to forwarding).
Root Port	The number of the port on this switch that is closest to the root. This switch communicates with the root device through this port. If there is no root port, then this switch has been accepted as the root device of the spanning tree network.
Designated Root	The priority and MAC address of the device in the spanning tree that this switch has accepted as the root device.
Root Path Cost	The path cost from the root port on this switch to the root device.
Configuration Changes	The number of times the spanning tree has been reconfigured.
Last Topology Change	The time since the spanning tree was last reconfigured.

Ports

The parameters shown in the following figure and table are for port or module STA Information (Port 1~28).



Port	Port Status	Forward Transitions	Designated Cost	Designated Bridge	Designated Port
1	Forwarding	1	0	0.0099E8FFEE00	128.3
2	Forwarding	1	19	32768.00E029522800	128.2
3	Forwarding	1	19	32768.00E029522800	128.3
4	Forwarding	1	19	32768.00E029522800	128.4
5	Forwarding	1	19	32768.00E029522800	128.5

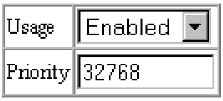
Figure 3-16. STA Information - Ports

Parameter	Description
Port Status	Displays the current state of this port within the spanning tree: No Link There is no valid link on the port. Disabled Port has been disabled by the user or has failed diagnostics. Blocked Port receives STA configuration messages, but does not forward packets. Listening Port will leave blocking state due to topology change, starts transmitting configuration messages, but does not yet forward packets. Learning Has transmitted configuration messages for an interval set by the Forward Delay parameter without receiving contradictory information. Port address table is cleared, and the port begins learning addresses. Forwarding The port forwards packets, and continues learning addresses. The rules defining port status are: • A port on a network segment with no other STA-compliant bridging device is always forwarding. • If two ports of a switch are connected to the same segment and there is no other STA device attached to this segment, the port with the smaller ID forwards packets and the other is blocked. • All ports are blocked when the switch is booted, then some of them change state to listening, to learning, and then to forwarding.
Forward Transitions	The number of times the port has changed status to forwarding state.
Designated Cost	The cost for a packet to travel from this port to the root in the current spanning tree configuration. The slower the media, the higher the cost.
Designated Bridge	The priority and MAC address of the device through which this port must communicate to reach the root of the spanning tree.
Designated Port	The priority and number of the port on the designated bridging device through which this switch must communicate with the root of the spanning tree.

Spanning Tree Configuration

The following figures and tables describe Bridge STA configuration.

Switch

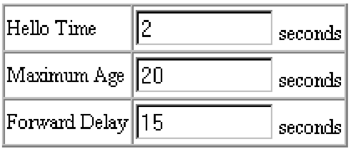


Usage	Enabled
Priority	32768

Figure 3-17. STA Configuration - Switch

Parameter	Default	Description
Usage	Enabled	Enable this parameter to participate in an STA-compliant network.
Priority	32,768	Device priority is used in selecting the root device, root port, and designated port. The device with the highest priority becomes the STA root device. (Remember that the lower the numeric value, the higher the priority.) However, if all devices have the same priority, the device with the lowest MAC address will then become the root device. Range: 0 - 65535

When the Switch Becomes Root



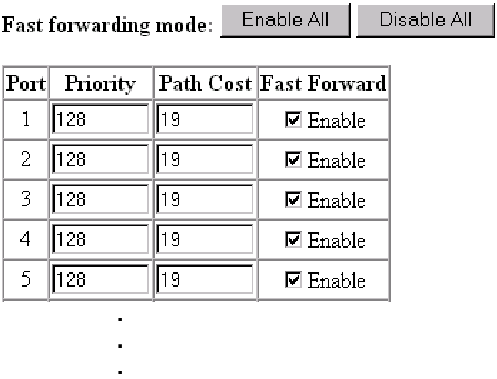
Hello Time	2	seconds
Maximum Age	20	seconds
Forward Delay	15	seconds

Figure 3-18. STA Configuration - When the Switch Becomes Root

Parameter	Default	Description
Hello Time	2	The time interval (in seconds) at which the root device transmits a configuration message. The minimum value is 1. The maximum value is the lower of 10 or [(Max. Message Age / 2) -1].
Max (Message) Age	20	The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. All device ports (except for designated ports) should receive configuration messages at regular intervals. Any port that ages out STA information (provided in the last configuration message) 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 minimum value is the higher of 6 or [2 x (Hello Time + 1)]. The maximum value is the lower of 40 or [2 x (Forward Delay - 1)].
Forward Delay	15	The maximum time (in seconds) the root device will wait before changing states (i.e., listening to learning to forwarding). 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. Maximum value is 30. Minimum value is the higher of 4 or [(Max. Message Age / 2) + 1].

STA Port Configuration

The following figure and table describe STA configuration for ports or modules.



Fast forwarding mode: Enable All Disable All

Port	Priority	Path Cost	Fast Forward
1	128	19	☑ Enable
2	128	19	☑ Enable
3	128	19	☑ Enable
4	128	19	☑ Enable
5	128	19	☑ Enable

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.
.

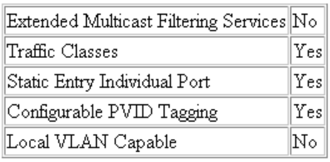
Figure 3-19. STA Port Configuration

Parameter	Default	Description
Fast forwarding mode (all ports)	ENABLED	Allows you to enable or disable fast forwarding for all ports on the switch.
Priority	128	Defines the priority for the use of a port in the STA algorithm. If the path cost for all ports on a switch are the same, the port with the highest priority (i.e., lowest value) will be configured as an active link in the spanning tree. Where more than one port is assigned the highest priority, the port with lowest numeric identifier will be enabled. The range is 0 - 255.
(Path) Cost	100/19/4	This parameter is used by the STA algorithm to determine the best path between devices. Therefore, lower values should be assigned to ports attached to faster media, and higher values assigned to ports with slower media. The default and recommended range is: Standard Ethernet: 100 (50~600) Fast Ethernet: 19 (10~60) Gigabit Ethernet: 4 (3~10) The full range is 1 - 65535. Note: Path cost takes precedence over port priority.
Fast Forward	ENABLED	This parameter is used to enable/disabled the Fast Spanning Tree mode for the port. In this mode, ports skip the Blocked, Listening and Learning states and proceed straight to Forwarding. Fast Forwarding enables end-node workstations and servers to overcome time-out problems when the Spanning Tree Algorithm is implemented in a network. Therefore, Fast Forwarding should only be enabled for ports that are connected to an end-node device.

Configuring Bridge MIB Extensions

The Bridge MIB includes extensions for managed devices that support Traffic Classes, Multicast Filtering and Virtual LANs. To configure these extensions, use the Extended Bridge Configuration screen as shown below:

Bridge Capability

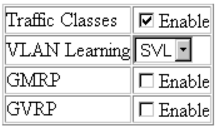


Extended Multicast Filtering Services	No
Traffic Classes	Yes
Static Entry Individual Port	Yes
Configurable PVID Tagging	Yes
Local VLAN Capable	No

Figure 3-20. Bridge Capability

Parameter	Description
Extended Multicast Filtering Services	Indicates that this switch does not support the filtering of individual multicast addresses based on GMRP (GARP Multicast Registration Protocol). Note that this function is not available for the current firmware release.
Traffic Classes	This switch provides mapping of user priorities to multiple traffic classes. (Refer to the Priority menu on page 29.)
Static Entry Individual Port	This switch allows static filtering for unicast and multicast addresses. (Refer to the Address Table Configuration on page 19.)
Configurable PVID Tagging	This switch allows you to override the default PVID setting (Port VLAN ID used in frame tags) and its egress status (VLAN-Tagged or Untagged) on each port. (Refer to VLAN Port Configuration on page 37.)
Local VLAN Capable	This switch does not support multiple local bridges (that is, multiple Spanning Trees).

Bridge Settings



Traffic Classes	☑ Enable
VLAN Learning	SVL
GMRP	□ Enable
GVRP	□ Enable

Figure 3-21. Bridge Settings

Parameter	Description
Traffic Class*	Multiple traffic classes are supported by this switch as indicated under Bridge Capabilities. However, you can disable this function by clearing this checkbox.
VLAN Learning	As default this switch uses Shared VLAN Learning (SVL), whereby all ports share one VLAN filtering database. However, you can set the switch to use Independent VLAN Learning (IVL), where each port maintains its own filtering database. Note that when you change from one method to the other, the switch will automatically reset and the current VLAN configuration will be lost..
GMRP*	GARP Multicast Registration Protocol (GMRP) allows network devices to register endstations with multicast groups. Note that this function is not available for the current firmware release. The Internet Group Management Protocol (IGMP) is currently used by this switch to provide automatic multicast filtering.
GVRP*	GARP VLAN Registration Protocol (GVRP) defines a way for switches to exchange VLAN information in order to register necessary VLAN members on ports across the network. This function should be enabled to permit VLANs groups which extend beyond the local switch.

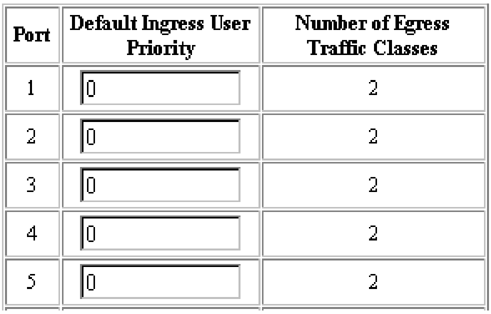
*** Not implemented in the current firmware release.**

Priority

IEEE 802.1p defines up to 8 separate traffic classes. This switch supports Quality of Service (QoS) by using two priority queues, with strict priority queuing for each port. You can use the Priority menu to configure the default priority for each port, or to display the mapping for the traffic classes as described in the following sections.

Port Priority Configuration

The default priority for all ingress ports is zero. Therefore, any inbound frames that do not have priority tags will be placed in the low priority output queue. Default priority is only used to determine the output queue for the current port; no priority tag is actually added to the frame. You can use the Port Priority Configuration screen to adjust default priority for any port as shown below:



Port	Default Ingress User Priority	Number of Egress Traffic Classes
1	0	2
2	0	2
3	0	2
4	0	2
5	0	2

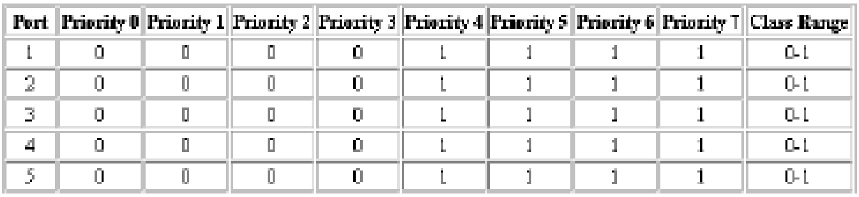
.
.
.

Figure 3-22. Port Priority Configuration

Parameter	Description
Port	Numeric identifier for switch port.
Default Ingress User Priority	Default priority can be set to any value from 0~7, where 0~3 specifies the low priority queue and 4~7 specifies the high priority queue.
Number of Egress Traffic Classes	Indicates that this switch supports two priority output queues.

Port Traffic Class Information

This switch provides two priority levels with strict priority queuing for port egress. This means that any frames with a default or user priority from 0~3 are sent to the low priority queue “0” while those from 4~7 are sent to the high priority queue “1” as shown in the following screen:



Port	Priority 0	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5	Priority 6	Priority 7	Class Range
1	0	0	0	0	1	1	1	1	0-1
2	0	0	0	0	1	1	1	1	0-1
3	0	0	0	0	1	1	1	1	0-1
4	0	0	0	0	1	1	1	1	0-1
5	0	0	0	0	1	1	1	1	0-1

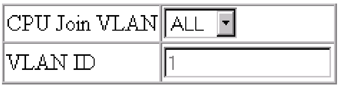
.
.
.

Figure 3-23. Port Traffic Class Information

Parameter	Description
Port	Numeric identifier for switch port.
User Priority	Shows that user priorities 0~3 specify the low priority queue and 4~7 specify the high priority queue.

VLAN Management

Use the VLAN Management screen to define which VLAN has management access to the switch. Parameters shown on this screen are indicated in the following figure and table.:



CPU Join VLAN	ALL
VLAN ID	1

Figure 3-24. VLAN Management

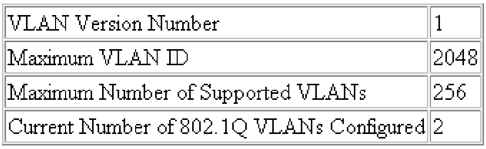
Parameter	Default	Description
CPU Join VLAN	All	Select ALL to give all VLANs access to switch management, or ONE to restrict access to a specified VLAN. If you select just one VLAN, you must specify its VLAN ID on the following line.
VLAN ID	1	Specifies the VLAN ID that has access to switch management.

Configuring Virtual LANs

You can use the VLAN configuration menu to assign any port on the switch to any of up to 256 LAN groups. In conventional networks with routers, broadcast traffic is split up into separate domains. Switches do not inherently support broadcast domains. This can lead to broadcast storms in large networks that handle a lot of IPX and NetBeui traffic. By using IEEE 802.1Q compliant VLANs and GARP VLAN Registration Protocol, you can organize any group of network nodes into separate broadcast domains, confining broadcast traffic to the originating group. This also provides a more secure and cleaner network environment. For more information on how to use VLANs, refer to “Virtual LANs” in the VH-2402S/VH-2402S2 Management Guide. The VLAN configuration screens are described in the following sections.

VLAN Basic Information

The VLAN Basic Information screen displays basic information on the VLAN type supported by this switch.



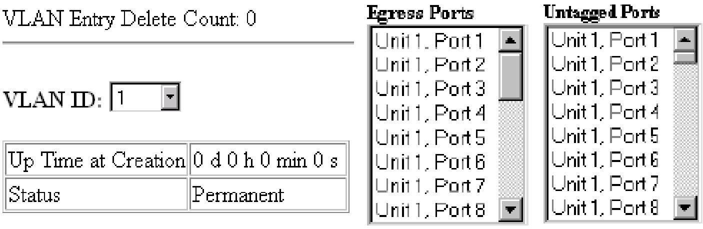
VLAN Version Number	1
Maximum VLAN ID	2048
Maximum Number of Supported VLANs	256
Current Number of 802.1Q VLANs Configured	2

Figure 3-25. VLAN Basic Information

Parameter	**Description**
VLAN Version Number	The VLAN version used by this switch as specified in the IEEE 802.1Q standard.
MAX VLAN ID	Maximum VLAN ID recognized by this switch.
MAX Supported VLANs	Maximum number of VLANs that can be configured on this switch.
Current Number of VLANs Configured	The number of VLANs currently configured on this switch.

VLAN Current Table

This screen shows the current port members of each VLAN and whether or not the port supports VLAN tagging. Ports assigned to a large VLAN group that crosses several switches should use VLAN tagging. However, if you just want to create a small port-based VLAN for one or two switches, you can assign ports to the same untagged VLAN (page 37). The current configuration is shown in the following screen.



VLAN Entry Delete Count: 0

VLAN ID: 1

Up Time at Creation	0 d 0 h 0 min 0 s
Status	Permanent

Egress Ports

Unit 1, Port 1
Unit 1, Port 2
Unit 1, Port 3
Unit 1, Port 4
Unit 1, Port 5
Unit 1, Port 6
Unit 1, Port 7
Unit 1, Port 8

Untagged Ports

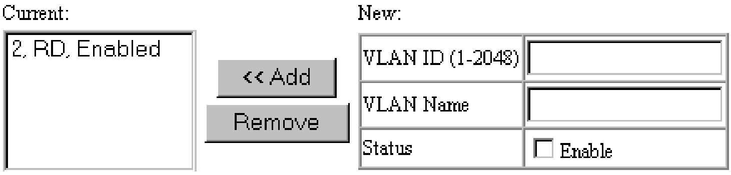
Unit 1, Port 1
Unit 1, Port 2
Unit 1, Port 3
Unit 1, Port 4
Unit 1, Port 5
Unit 1, Port 6
Unit 1, Port 7
Unit 1, Port 8

Figure 3-26. VLAN Current Table

Parameter	Description
VLAN Entry Delete Count	The number of times a VLAN entry has been deleted from this table.
VLAN ID	The ID for the VLAN currently displayed.
Up Time at Creation	The value of sysUpTime (System Up Time) when this VLAN was created.
Status	Shows how this VLAN was added to the switch: Dynamic GVRP: Automatically learned via GVRP. Permanent: Added as a static entry.
Egress Ports	Shows the ports which have been added to the displayed VLAN group.
Untagged Ports	Shows the untagged VLAN port members.

VLAN Static List

Use this screen to create or remove VLAN groups.



Current:

2, RD, Enabled

New:

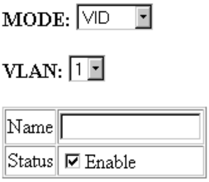
VLAN ID (1-2048)	
VLAN Name	
Status	□ Enable

Figure 3-27. VLAN Static List

Parameter	Description
Current	Lists all the current VLAN groups created for this system. Up to 256 VLAN groups can be defined. To allow this switch to participate in external VLAN groups, you must use the VLAN ID for the concerned external groups.
New	Allows you to specify the name and numeric identifier for a new VLAN group. (The VLAN name is only used for management on this system; it is not added to the VLAN tag.)
Status	Enables/disables the specified VLAN.
Add	Adds a new VLAN group to the current list.
Remove	Removes a VLAN group from the current list. If any port is assigned to this group as untagged, it will be reassigned to VLAN group 1 as untagged.

VLAN Static Table

Use this screen to modify the settings for an existing VLAN. You can add/ delete port members for a VLAN from any unit in the stack, disable or enable VLAN tagging for any port, or prevent a port from being automatically added to a VLAN via the GVRP protocol. (Note that VLAN 1 is fixed as an untagged VLAN containing all ports in the stack, and cannot be modified via this screen.)



MODE: VID

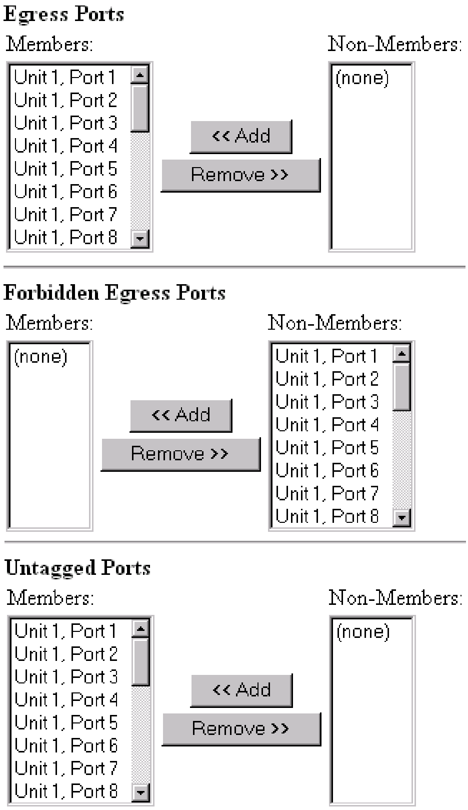
VLAN: 1

Name	
Status	☑ Enable

Figure 3-28. VLAN Static Table - Add/Modify VLAN

Parameter	Description
MODE	Indicates if displayed VLAN is selected by VLAN ID or VLAN name.
VLAN	The ID for the VLAN currently displayed. Range: 1-2048
Name	A user-specified symbolic name for this VLAN. String length: 8 alphanumeric characters
Status	Enables/disables the specified VLAN.

Use the screens shown below to assign ports to the specified VLAN group as an IEEE 802.1Q tagged port. Assign ports as tagged if they are connected to 802.1Q VLAN compliant devices. If the port is connected to VLAN-unaware devices, frames will passed to the untagged VLAN group this port has been assigned to under VLAN Port Configuration (page 37).



Egress Ports

Members:
Unit 1, Port 1
Unit 1, Port 2
Unit 1, Port 3
Unit 1, Port 4
Unit 1, Port 5
Unit 1, Port 6
Unit 1, Port 7
Unit 1, Port 8

Non-Members:
(none)

Forbidden Egress Ports

Members:
(none)

Non-Members:
Unit 1, Port 1
Unit 1, Port 2
Unit 1, Port 3
Unit 1, Port 4
Unit 1, Port 5
Unit 1, Port 6
Unit 1, Port 7
Unit 1, Port 8

Untagged Ports

Members:
Unit 1, Port 1
Unit 1, Port 2
Unit 1, Port 3
Unit 1, Port 4
Unit 1, Port 5
Unit 1, Port 6
Unit 1, Port 7
Unit 1, Port 8

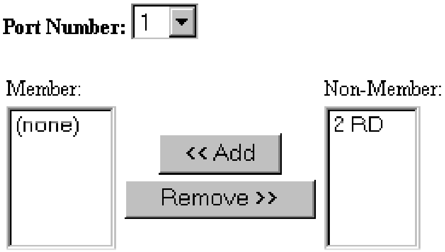
Non-Members:
(none)

Figure 3-29. VLAN Static Table - Port Assignment

Parameter	Description
Egress Ports	Adds ports to the specified VLAN.
Forbidden Egress Ports	Prevents a port from being automatically added to this VLAN via GVRP.
Untagged Ports	Adds ports to the specified VLAN as untagged.

VLAN Static Membership by Port

Use the screen shown below to assign VLAN groups to the selected port. To perform detailed port configuration for a specific VLAN, use the VLAN Static Table (page 34).


Port Number: 1

Member: (none)

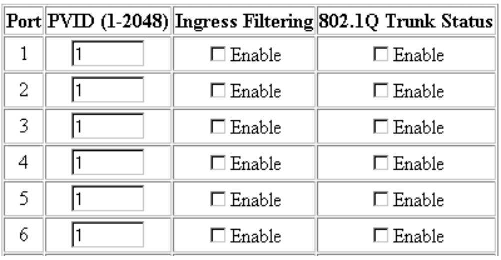
Non-Member: 2 RD

Figure 3-30. VLAN Static Membership by Port

Parameter	Description
Port Number	Port number on the switch selected from the upper display panel.
Add/Remove	Add or remove selected VLAN groups for the port indicated in the Port Number field.

VLAN Port Configuration

Use this screen to configure port-specific settings for IEEE 802.1Q VLAN features.



Port	PVID (1-2048)	Ingress Filtering	802.1Q Trunk Status
1	1	□ Enable	□ Enable
2	1	□ Enable	□ Enable
3	1	□ Enable	□ Enable
4	1	□ Enable	□ Enable
5	1	□ Enable	□ Enable
6	1	□ Enable	□ Enable

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.
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Figure 3-31. VLAN Port Configuration

Parameter	Description
PVID	The VLAN ID assigned to untagged frames received on this port. Use the PVID to assign ports to the same untagged VLAN.
Ingress Filtering*	If enabled, incoming frames for VLANs which do not include this port in their member set will be discarded at the inbound port.
802.1Q Trunk Status	Used to enable/disable the VLAN trunk status for the port. A VLAN Trunk link between two VLAN-aware switches will carry traffic from all VLANs, allowing VLAN tagged frames to maintain their VLAN ID across multiple switches. When enabled, a port joins all configured VLANs and the untagged port VLAN ID (PVID) is set to 4000, a reserved VLAN ID for trunk ports.

*** This control does not affect VLAN independent BPDU frames, such as GVRP or STP. However, it does affect VLAN dependent BPDU frames, such as GMRP.**

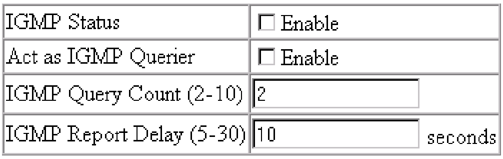
IGMP Multicast Filtering

Multicasting is used to support real-time applications such as video conferencing or streaming audio. A multicast server does not have to establish a separate connection with each client. It merely broadcasts its service to the network, and any hosts which want to receive the multicast register with their local multicast switch/router. Although this approach reduces the network overhead required by a multicast server, the broadcast traffic must be carefully pruned at every multicast switch/router it passes through to ensure that traffic is only passed on the hosts which subscribed to this service.

This switch uses IGMP (Internet Group Management Protocol) to query for any attached hosts who want to receive a specific multicast service. The switch looks up the IP Multicast Group used for this service and adds any port which received a similar request to that group. It then propagates the service request on to any neighboring multicast switch/router to ensure that it will continue to receive the multicast service. (For more information, see “IP Multicast Filtering” in the VH-2402S/VH-2402S2 Management Guide.)

Configuring IGMP

This protocol allows a host to inform its local switch/router that it wants to receive transmissions addressed to a specific multicast address group. Use the IGMP Configuration screen to set key parameters for multicast filtering as shown below.



IGMP Status	□ Enable
Act as IGMP Querier	□ Enable
IGMP Query Count (2-10)	2
IGMP Report Delay (5-30)	10 seconds

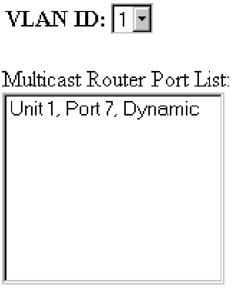
Figure 3-32. IGMP Configuration

Parameter	Description
IGMP Status	If enabled, the switch will monitor network traffic to determine which hosts want to receive multicast traffic.
Act as IGMP Querier	If enabled, the switch can serve as the “querier,” which is responsible for asking hosts if they want to receive multicast traffic.
IGMP Query Count	The maximum number of queries issued for which there has been no response before the switch takes action to solicit reports.
IGMP Report Delay	The time (in minutes) between receiving an IGMP Report for an IP multicast address on a port before the switch sends an IGMP Query out that port and removes the entry from its list.

Note: The default values are indicated in the sample screen.

Multicast Router Port Information

You can use the Multicast Router Port Information screen to display the ports on this switch that are attached to a neighboring multicast router/ switch for each VLAN ID.



VLAN ID: 1

Multicast Router Port List:

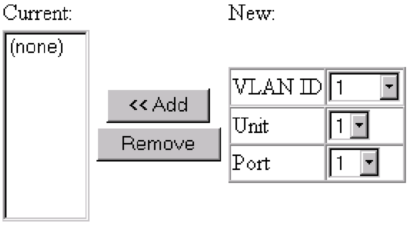
Unit 1, Port 7, Dynamic

Figure 3-33. Multicast Router Port Information

Parameter	Description
VLAN ID	The VLAN ID assigned to the multicast group in the displayed port list.
Multicast Router Port List	The list of switch ports that are attached to a neighboring multicast router/switch.

Static Multicast Router Port Configuration

You can use the Static Multicast Router Port Configuration screen to assign ports that are attached to a neighboring multicast router/switch.



Current:

(none)

New:

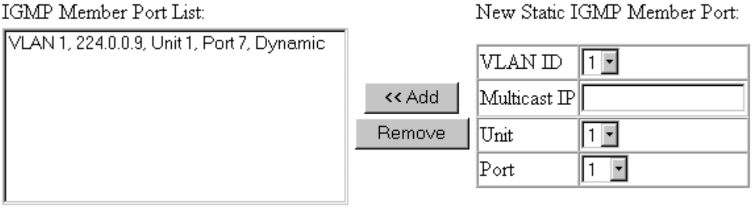
VLAN ID	1
Unit	1
Port	1

Figure 3-34. Static Multicast Router Port Configuration

Parameter	Description
Current	A list of the switch ports that have been manually configured as being attached to a neighboring multicast router/switch.
VLAN ID	The VLAN ID assigned to the multicast group that is to be added/ removed from the list.
Unit	The stack unit ID of a port to be added/removed from the list.
Port	The port number of a port to be added/removed from the list.
Add	Adds a new router port to the current list.
Remove	Removes a router port from the current list.

IGMP Member Port Table

You can use the IGMP Member Port Table screen to assign ports that are attached to hosts who want to receive a specific multicast service.


IGMP Member Port List:

VLAN 1, 224.0.0.9, Unit 1, Port 7, Dynamic

New Static IGMP Member Port:

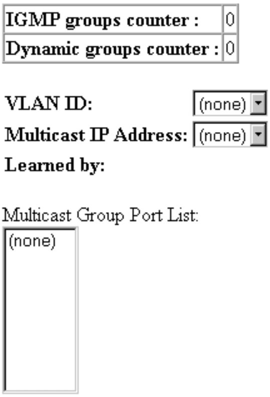
VLAN ID	1
Multicast IP	
Unit	1
Port	1

Figure 3-35. IGMP Member Port Table

Parameter	**Description**
IGMP Member Port List	The current switch ports that are listed as being attached to a IGMP host.
VLAN ID	The VLAN ID assigned to this multicast group.
Multicast IP	The IP address of a specific multicast service requested by the host.
Unit	The stack unit ID of a port to be added/removed from the list.
Port	The port number of a port to be added/removed from the list.
Add	Adds a new host port to the current list.
Remove	Removes a host port from the current list.

IP Multicast Registration Table

Use the IP Multicast Registration Table to display all the multicast groups active on this switch, including multicast IP addresses and the corresponding VLAN ID.



IGMP groups counter :	0
Dynamic groups counter :	0

VLAN ID: (none)

Multicast IP Address: (none)

Learned by:

Multicast Group Port List:

(none)

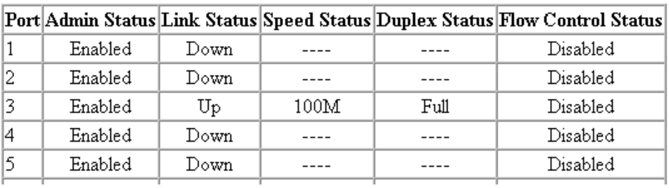
Figure 3-36. IP Multicast Registration Table

Parameter	Description
IGMP groups counter	The total number of multicast groups learned by IGMP.
Dynamic groups counter	The total number of multicast groups learned dynamically.
VLAN ID	VLAN ID assigned to this multicast group.
Multicast IP Address	IP address for specific multicast services.
Learned by	Indicates the manner in which this address was learned: dynamic or IGMP.
Multicast Group Port List	The switch ports registered for the indicated multicast service.

Port Menus

Port Information

The Port Information screen displays the port status, link state, the communication speed and duplex mode, as well as the flow control status. To change any of the port settings, use the Port Configuration menu. The parameters shown in the following figure and table are for the RJ-45 ports.



Port	Admin Status	Link Status	Speed Status	Duplex Status	Flow Control Status
1	Enabled	Down	----	----	Disabled
2	Enabled	Down	----	----	Disabled
3	Enabled	Up	100M	Full	Disabled
4	Enabled	Down	----	----	Disabled
5	Enabled	Down	----	----	Disabled

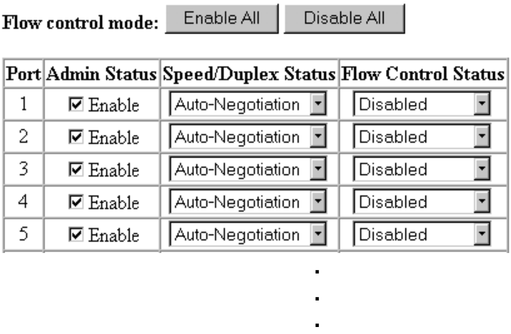
.
.
.

Figure 3-37. Port Information

Parameter	Description
Admin Status	Shows if the port is enabled or not.
Link Status	Indicates if the port has a valid connection to an external device.
Speed Status	Shows the port speed (10M or 100M).
Duplex Status	Displays the current duplex mode.
Flow Control Status	Shows the flow control type in use. Flow control can eliminate frame loss by “blocking” traffic from end stations connected directly to the switch. Back pressure is used for half duplex and IEEE 802.3x for full duplex. Note that flow control should not be used if a port is connected to a hub.

Port Configuration

Use the Port Configuration menus to configure any port on the switch.



Flow control mode: Enable All Disable All

Port	Admin Status	Speed/Duplex Status	Flow Control Status
1	☑ Enable	Auto-Negotiation	Disabled
2	☑ Enable	Auto-Negotiation	Disabled
3	☑ Enable	Auto-Negotiation	Disabled
4	☑ Enable	Auto-Negotiation	Disabled
5	☑ Enable	Auto-Negotiation	Disabled

.
.
.

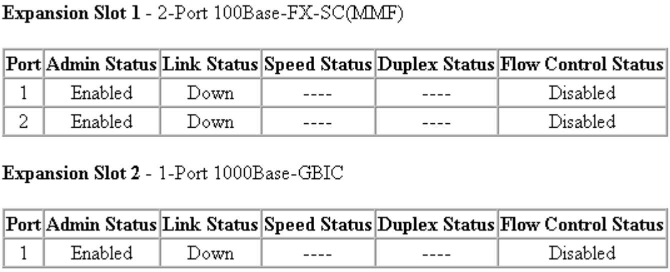
Figure 3-38. Port Configuration

Parameter	Default	Description
Flow Control Mode	Disabled	Allows you enable/disable flow control for all ports on the switch.
Admin Status	Enable	Allows you to disable a port due to abnormal behavior (e.g., excessive collisions), and then re-enable it after the problem has been resolved. You may also disable a port for security reasons.
Speed/Duplex Status	Auto-Negotiation	Used to set the current port speed, duplex mode, and auto-negotiation. The default for RJ-45 ports is auto-negotiation.
Flow Control Status	Disabled	Used to enable or disable flow control. Flow control can eliminate frame loss by “blocking” traffic from end stations or segments connected directly to the switch when its buffers fill. Back pressure is used for half duplex and IEEE 802.3x for full duplex. Note that flow control should not be used if a port is connected to a hub.

Note: Auto-negotiation is not available for 100BASE-FX ports.

Expansion Port Information

The Expansion Port Information screen displays the port status, link state, the communication speed and duplex mode, as well as the flow control status. To change any of the port settings, use the Expansion Port Configuration menu. The parameters shown in the following figure and table are for expansion ports.



Expansion Slot 1 - 2-Port 100Base-FX-SC(MMF)

Port	Admin Status	Link Status	Speed Status	Duplex Status	Flow Control Status
1	Enabled	Down	----	----	Disabled
2	Enabled	Down	----	----	Disabled

Expansion Slot 2 - 1-Port 1000Base-GBIC

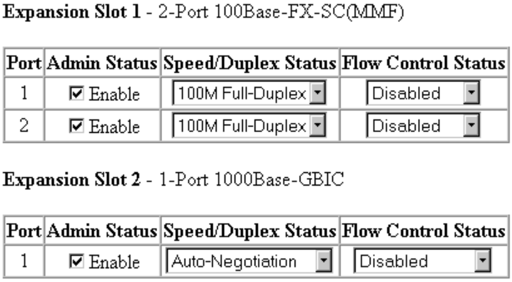
Port	Admin Status	Link Status	Speed Status	Duplex Status	Flow Control Status
1	Enabled	Down	----	----	Disabled

Figure 3-39. Expansion Port Information

Parameter	Description
Admin Status	Shows in the port is enabled or not.
Link Status	Indicates if the port has a valid connection to an external device.
Speed Status	Shows the port speed (10M, 100M, or 1000M).
Duplex Status	Displays the current duplex mode (half or full duplex).
Flow Control Status	Shows the flow control type in use. Flow control can eliminate frame loss by “blocking” traffic from end stations connected directly to the switch. Back pressure is used for half duplex and IEEE 802.3x for full duplex. Note that flow control should not be used if a port is connected to a hub.

Expansion Port Configuration

Use the Expansion Port Configuration menus to configure any port or module on the switch.



Expansion Slot 1 - 2-Port 100Base-FX-SC(MMF)

Port	Admin Status	Speed/Duplex Status	Flow Control Status
1	☑ Enable	100M Full-Duplex	Disabled
2	☑ Enable	100M Full-Duplex	Disabled

Expansion Slot 2 - 1-Port 1000Base-GBIC

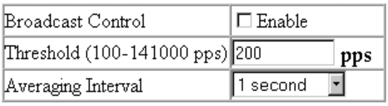
Port	Admin Status	Speed/Duplex Status	Flow Control Status
1	☑ Enable	Auto-Negotiation	Disabled

Figure 3-40. Expansion Port Configuration

Parameter	Default	Description
Admin Status	Enable	Allows you to disable a port due to abnormal behavior (e.g., excessive collisions), and then re-enable it after the problem has been resolved. You may also disable a port for security reasons.
Speed/Duplex Status	Auto-Negotiation	Used to set the port to full- or half-duplex mode, or auto-negotiation. The default for Gigabit ports is auto-negotiation. However, note that auto-negotiation is not available for the 100Mbps fiber ports.
Flow Control Status	Disabled	Used to enable or disable flow control. Flow control can eliminate frame loss by “blocking” traffic from end stations or segments connected directly to the switch when its buffers fill. Back pressure is used for half duplex and IEEE 802.3x for full duplex. Note that flow control should not be used if a port is connected to a hub.

Port Broadcast Storm Protection Configuration

Use the Port Broadcast Storm Protection Configuration screen to configure broadcast storm control for all ports in the switch stack.



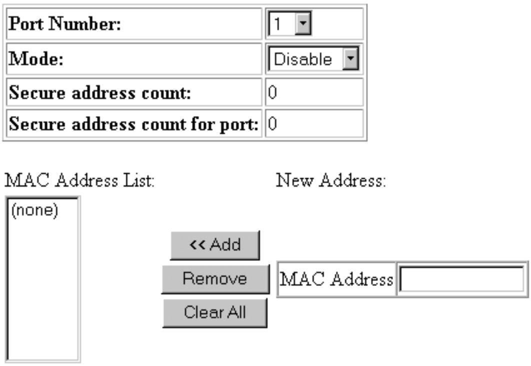
Broadcast Control	□ Enable
Threshold (100-141000 pps)	200 pps
Averaging Interval	1 second

Figure 3-41. Port Broadcast Storm Protection Configuration

Parameter	Description
Broadcast Control	Allows you to enable/disable broadcast storm control for all ports in the switch stack. When enabled, the switch stack will employ a broadcast-control mechanism if the packet-per-second threshold is exceeded. This mechanism drops all broadcast packets from the stack for the time period specified in the “Averaging Interval” field. (Default is Disabled.)
Threshold	The packet-per-second threshold for broadcast packets received on all ports in the switch stack. (Default is 200 pps.)
Averaging Interval	Specifies the time period for which broadcast packets will be dropped from the switch stack. Values can be 200 ms, 500 ms, 1, 5, or 10 seconds. (Default is 1 second.)

Port Security Configuration

Use the Port Security Configuration screen to enable and configure port security for the switch. Port Security allows you to configure each port with a list of MAC addresses of devices that are authorized to access the network through that port.



Port Number:	1
Mode:	Disable
Secure address count:	0
Secure address count for port:	0

MAC Address List: (none)

New Address: MAC Address

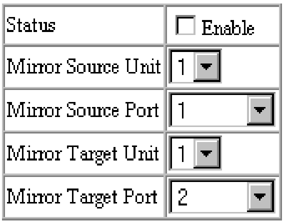
Figure 3-42. Port Security Configuration

Parameter	Description
Port Number	The port number on the unit.
Mode	Port security can set to three states; Static, Disable, or Learning. When set to Static, the switch will drop packets from the port if the source MAC address does not match one of the addresses in the MAC Address list. If set to Learning, the switch will add the source MAC address of all packets received on the port to the authorized MAC Address list.
Secure address count	The total number of authorized MAC addresses configured.
Secure address count for port	The number of authorized MAC addresses configured for the specified port.
MAC Address List	A list of the current authorized MAC addresses that can access the network through the specified port.
MAC Address	A specific MAC address to be added or deleted from the list.
Add	Adds a new MAC address to the current list.
Remove	Removes a MAC address from the current list.
Clear All	Clears all the MAC addresses for the current port.

Using a Port Mirror for Analysis

You can mirror traffic from any source port to a target port for real-time analysis. You can then attach a logic analyzer or RMON probe to the target port and study the traffic crossing the source port in a completely unobtrusive manner. When mirroring port traffic, note that the target port must be configured in the same VLAN and be operating at the same speed as the source port (see VLAN Static List on page 33). If the target port is operating at a lower speed, the source port will be forced to drop its operating speed to match that of the target port.

You can use the port mirror configuration screen to designate a single RJ-45 port pair for mirroring as shown below:



Status	□ Enable
Mirror Source Unit	1
Mirror Source Port	1
Mirror Target Unit	1
Mirror Target Port	2

Figure 3-43. Mirror Port Configuration

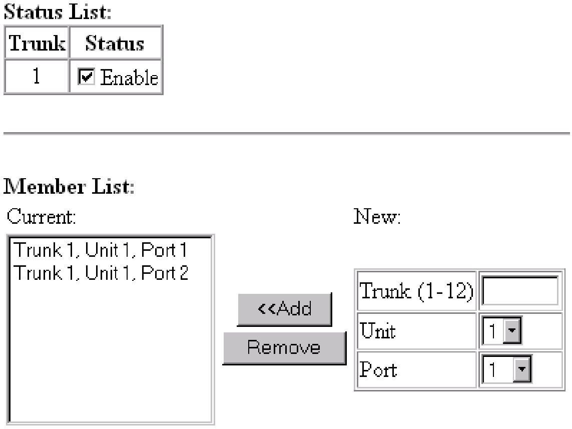
Parameter	Description
Status	Enables/disables port mirroring.
Mirror Source Unit	The switch containing the mirror source port.
Mirror Source Port	The port whose traffic will be monitored.
Mirror Target Unit	The switch containing the mirror target port.
Mirror Target Port	The port that will duplicate or “mirror” all the traffic happening on the monitored port.

Port Trunk Configuration

Port trunks can be used to increase the bandwidth of a network connection or to ensure fault recovery. You can configure up five trunk connections (combining 2~4 ports into a fat pipe) between any two standalone VH-2402S/VH-2402S2 switches, or up to 12 for an entire stack. However, before making any physical connections between devices, use the Trunk Configuration menu to specify the trunk on the devices at both ends. When using a port trunk, note that:

- The ports used in a trunk must all be of the same media type (RJ-45, 100Mbps fiber, or 1000Mbps fiber). The ports that can be assigned to the same trunk also have certain other restrictions (see the next page).
- Ports can only be assigned to one trunk.
- The ports at both ends of a connection must be configured as trunk ports.
- The ports at both ends of a trunk must be configured in an identical manner, including speed, duplex mode, and VLAN assignments.
- None of the ports in a trunk can be configured as a mirror source port or mirror target port.
- All the ports in a trunk have to be treated as a whole when moved from/to, added or deleted from a VLAN.
- The Spanning Tree Algorithm will treat all the ports in a trunk as a whole.
- Enable the trunk prior to connecting any cable between the switches to avoid creating a loop.
- Disconnect all trunk port cables or disable the trunk ports before removing a port trunk to avoid creating a loop.

Use the Port Trunking Configuration screen to set up port trunks as shown below:



Status List:

Trunk	Status
1	☑ Enable

Member List:

Current:

Trunk 1, Unit 1, Port 1
Trunk 1, Unit 1, Port 2

New:

Trunk (1-12)	
Unit	1
Port	1

Figure 3-44. Port Trunk Configuration

Parameter	Description
Trunk Number	A unique identifier for this trunk. You can configure up to five trunks per standalone switch, or up to 12 for an entire stack.
Unit	The switch unit this trunk is configured for.
Port	The port members of this trunk. Select from 2 ~ 4 ports per trunk.

The RJ-45 ports used for each trunk must all be on the same internal switch chip. The port groups permitted include:

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

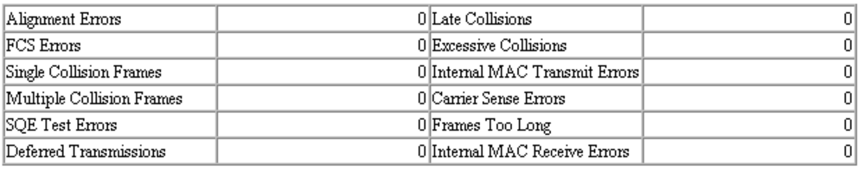
Only two 100Mbps fiber ports can be configured as a trunk and these must be on the same module. 1000Base-SX/LX ports can be trunked to any other like uplink port in the stack.

Port Statistics

Use the Port Statistics menu to display Etherlike or RMON statistics for any port in the stack. Select the required stack unit, and port or module. The statistics displayed are indicated in the following figure and table.

Etherlike Statistics

Etherlike Statistics display key statistics from the Ethernet-like MIB for each port. Error statistics on the traffic passing through each port are displayed. This information can be used to identify potential problems with the switch (such as a faulty port or unusually heavy loading). Values displayed have been accumulated since the last system reboot.



Alignment Errors	0	Late Collisions	0
FCS Errors	0	Excessive Collisions	0
Single Collision Frames	0	Internal MAC Transmit Errors	0
Multiple Collision Frames	0	Carrier Sense Errors	0
SQE Test Errors	0	Frames Too Long	0
Deferred Transmissions	0	Internal MAC Receive Errors	0

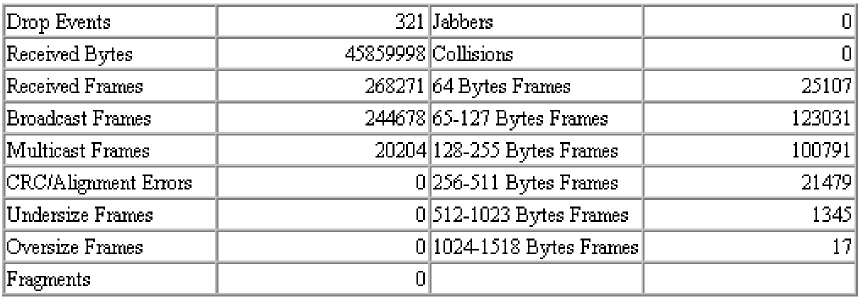
Figure 3-45. Etherlike Statistics

Parameter	Description
Alignment Errors	For 10 Mbps ports, this counter records alignment errors (mis-synchronized data packets). For 100 Mbps ports, this counter records the sum of alignment errors and code errors (frames received with rxerror signal).
FCS Errors	The number of frames received that are an integral number of octets in length but do not pass the FCS check.
Single Collision Frames*	The number of successfully transmitted frames for which transmission is inhibited by exactly one collision.
Multiple Collision Frames*	A count of successfully transmitted frames for which transmission is inhibited by more that one collision.
SQE Test Errors*	A count of times that the SQE TEST ERROR message is generated by the PLS sublayer.
Deferred Transmissions*	A count of frames for which the first transmission attempt on a particular interface is delayed because the medium was busy.
Late Collisions	The number of times that a collision is detected later than 512 bit-times into the transmission of a packet.
Excessive Collisions*	The number of frames for which transmission failed due to excessive collisions.
Internal Mac Transmit Errors*	The number of frames for which transmission failed due to an internal MAC sublayer transmit error.
Carrier Sense Errors*	The number of times that the carrier sense condition was lost or never asserted when attempting to transmit a frame.
Frames Too Long	The number of frames received that exceed the maximum permitted frame size.
Internal Mac Receive Errors	The number of frames for which reception failed due to an internal MAC sublayer receive error.

*** The reported values will always be zero because these statistics are not supported by the internal chip set.**

RMON Statistics

RMON Statistics display key statistics for each port or media module from RMON group 1. (RMON groups 2, 3 and 9 can only be accessed using SNMP management software.) The following screen displays overall statistics on traffic passing through each port. RMON statistics provide access to a broad range of statistics, including a total count of different frame types passing through each port. Values displayed have been accumulated since the last system reboot.



Drop Events	321	Jabbers	0
Received Bytes	45859998	Collisions	0
Received Frames	268271	64 Bytes Frames	25107
Broadcast Frames	244678	65-127 Bytes Frames	123031
Multicast Frames	20204	128-255 Bytes Frames	100791
CRC/Alignment Errors	0	256-511 Bytes Frames	21479
Undersize Frames	0	512-1023 Bytes Frames	1345
Oversize Frames	0	1024-1518 Bytes Frames	17
Fragments	0		

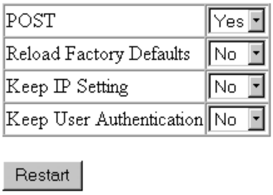
Figure 3-46. RMON Statistics

Parameter	Description
Drop Events	The total number of events in which packets were dropped due to lack of resources.
Received Bytes	Total number of bytes of data received on the network. This statistic can be used as a reasonable indication of Ethernet utilization.
Received Frames	The total number of frames (bad, broadcast and multicast) received.
Broadcast Frames	The total number of good frames received that were directed to the broadcast address. Note that this does not include multicast packets.
Multicast Frames	The total number of good frames received that were directed to this multicast address.
CRC/Alignment Errors	For 10Mbs ports, the counter records CRC/alignment errors (FCS or alignment errors). For 100Mbs ports, the counter records the sum of CRC/alignment errors and code errors (frame received with rxerror signal).
Undersize Frames	The total number of frames received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well formed.
Oversize Frames	The total number of frames received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.
Fragments	The total number of frames received that were less than 64 octets in length (excluding framing bits, but including FCS octets) and had either an FCS or alignment error.

Parameter	Description
Jabbers	The total number of frames received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS or alignment error.
Collisions	The best estimate of the total number of collisions on this Ethernet segment.
64 Byte Frames	The total number of frames (including bad packets) received and transmitted that were 64 octets in length (excluding framing bits but including FCS octets).
65-127 Byte Frames	The total number of frames (including bad packets) received and transmitted that were between 65 and 127 octets in length inclusive (excluding framing bits but including FCS octets).
128-255 Byte Frames	The total number of packets (including bad packets) received and transmitted that were between 128 and 255 octets in length inclusive (excluding framing bits but including FCS octets).
256-511 Byte Frames	The total number of packets (including bad packets) received and transmitted that were between 256 and 511 octets in length inclusive (excluding framing bits but including FCS octets).
512-1023 Byte Frames	The total number of packets (including bad packets) received and transmitted that were between 512 and 1023 octets in length inclusive (excluding framing bits but including FCS octets).
1024-1518 Byte Frames	The total number of packets (including bad packets) received and transmitted that were between 1024 and 1518 octets in length inclusive (excluding framing bits but including FCS octets).

System Restart

Use the Restart screen to reset the management agent. The reset screen includes options as shown in the following figure and table.



POST	Yes
Reload Factory Defaults	No
Keep IP Setting	No
Keep User Authentication	No

Figure 3-47. System Restart Screen

Parameter	Description
POST	Runs the Power-On Self-Test
Reload Factory Defaults	Reloads the factory defaults
Keep IP Setting	Retains the settings defined in the IP Configuration menu.
Keep User Authentication	Retains the user names and passwords defined in the Console Login Configuration menu.

APPENDIX A. TROUBLESHOOTING

This appendix describes problems potentially encountered when using Enterasys WebView and presents suggested solutions for correcting these problems.

Troubleshooting

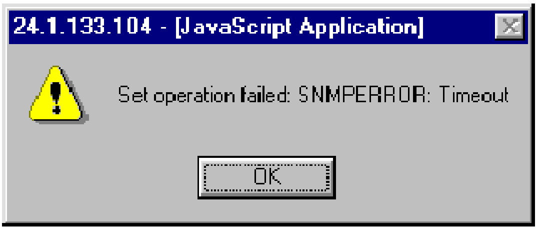
Cannot Connect to the Switch

If you attempt to connect to the switch and the main window does not appear, make sure that the correct IP address is entered in the URL field of the browser.

- Check the network connections of both your workstation and the switch.
- Try to Ping the IP address to see If it's indeed reachable.
- Set the IP gateway if necessary.
- Make sure the correct password is entered.
- Make sure the HTTP Server parameter is set to "ENABLED."

System is Disconnected from the Switch

If your workstation is disconnected from the switch during an active session, you may see the following messages:



24.1.133.104 - [JavaScript Application]

Set operation failed: SNMPERROR: Timeout

or, "Device is not responding to SNMP queries"

- Reconnect the workstation to the switch. You may need to re-enter your latest changes, but the user interface should become available again for use.
- If the user interface does not become available after reconnecting, close the Enterasys WebView window and start a new session.

Frequently Asked Questions

Can I Open More Than One Window for Same Switch?

Yes. You can start multiple browser sessions with the switch at once.

Will Network Congestion Prevent Use of Enterasys Web-View?

It could. If there is significant network delay after a configuration command is issued, the system could time out. In addition, excessive delays when gathering switch statistics could interfere with the accuracy of performance statistics.

How Do I Confirm a Successful Software Download?

After the download is complete, go to the Switch Information screen to verify that the software version running on the switch is the same as the software just upgraded. If the version has not been upgraded, retry the procedure.

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