

ESM-24T02Mx SNMP

Switch

User's Manual

Ver 1.2

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ESM-24T02M SNMP Switch User Menu

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1. Introduction

The ESM-24T02M switch is a high performance web-managed SNMP Layer 2 switch that provides users with 24 10/100Mbps Ethernet ports and a single module port into which either 100BaseFX or Gigabit modules can be installed. Several optional modules are available in single or dual port configurations. The Switch has SNMP management and remote control capabilities. Gigabit modules, can be copper or fiber media types supporting 1000BASE-SX, 1000BASE-LX or 1000BASE-T, allowing users to increase their network response time at gigabit speeds and with great flexibility. An RS-232 serial port provides out of band configuration for the initial set-up.

Non-blocking, Maximum wire speed performance is achieved on all ports with support for Auto-Negotiation and Auto-MDIX functions on all switched 24 10/100M RJ-45 ports and both Gigabit Copper ports in both half or full duplex mode.

The ESM-24T02M switch provides convenient web browser management of its layer 2 features. The User-friendly drop-down menu allows the user to easily learn, control and monitor the switch. It supports not only traditional SNMP functions, but also RMON 1,2,3,9 groups for advanced network analysis.

The Switch also supports both port-based and Tag-based VLAN's, as well as Trunking on upto 4 ports at a time with 7 trunking groups. Trunked ports provide fail-over functionality, so that if one port fails a backup port can be added into the group.

The Front Panel Design provides a full LED status display to quickly diagnose port status or any potential problems. Extra LED's are used to indicate fan status and avoid fan failures and over-heating issues.

1.1 Unpacking

Open the shipping carton of the Switch and carefully unpack its contents, the carton should contain the following items:

- One ESM-24T02M, 24 port Fast Ethernet Layer 2 Switch.
- Mounting Kit: 2 mounting brackets and screws
- Four rubber feet with adhesive backing.
- One AC power cord.
- One RS-232 cable
- This Quick Installation Guide and CD.

1.2 Installation

Follow the guidelines below to install the Switch.

- Do not place any object weighted more than 3Kg (6.6 lb) on the Switch.
- Connect the power cord to the Switch and the power outlet.
- Leave at least 10 cm (4 inches) of space around the Switch for heat dissipation.

Desktop or Shelf Installation:

When installing the Switch on the desktop or shelf, please attach the rubber feet to the Switch. Peel off the protective paper on the pads and attach them on the bottom of the Switch (one at each corner).

Rack Installation:

The ESM-24T02M Switch is rack-mountable and can be installed on an EIA-19 inch equipment rack. To do this, first install the mounting brackets on the Switch's side panels (one on each side), secure them with the included screws, and then use the screws provided with the equipment rack to mount the Switch on the 19 inch rack.

Power On the Switch:

The ESM-24T02M Switch has a universal power supply ranging from 90V to 260V AC, 50 ~ 60Hz power source. The AC power cord connector is located at the rear of the unit and the On/Off switch is next to the connector. Connect the power cord from the power outlet to the Switch and push the On/Off Switch to “ON” position to power on the Switch. After the Switch is powered on, it will perform a “self-diagnostic” (POSD). This process takes about 100 seconds to complete, during this process, the “DIAG” LED will blink green and the Switch will not respond to any further configuration or any network connections. When the process is completed, the “DIAG” LED will stay on solid green.

Below is a table that describes the meaning of each LED indicator.

LED indicators information

LED		Color	Status	
			Solid	Blinking
Power		Green	Power is applied to this device	N/A
DIAG		Green	Self diagnostics was successful	Performing self diagnostics (after Power On)
Cooling Fans	FAN1	Red	Left cooling fan failed	N/A
	FAN2	Red	Right cooling fan failed	N/A
LINK/ACT (1 ~24 port)		Green	10Mbps Ethernet connection speed	TX/RX activity or Collision
100M (1 ~24 port)		Green	100Mbps Fast Ethernet connection speed	N/A
		Off	10Mbps connection speed	N/A
10/100/1000Mbps Copper Gigabit Port (Optional Module)				
Top LED		Orange	100Mbps Fast Ethernet connection speed (with Middle LED off)	N/A
Middle LED		Green	10Mbps Ethernet connection. (with Top LED off)	N/A
Bottom LED		Green	N/A	TX/RX activity or collision
Top+Middle LEDs		Orange + Green	1000Mbps Gigabit connection speed	N/A

1.3 Initial set up for management

There are two ways to perform the initial setup for the Switch; one is “Out-of-Band Configuration” (connect your PC’s serial port to the Switch’s console port with the included RS-232 serial cable and run terminal communication program) and the other is “In-Band Configuration” (network a PC to the Switch and run web browser or telnet). The sections below describe how to perform both operations.

1.3.1 Out-of-Band Terminal Mode Configuration

If you are using Microsoft Windows, boot up the computer, go to “Start”, “Programs”, “Accessories”, “Communications”, and open the “HyperTerminal”. After that follow the instructions below to setup a new terminal connection for the Switch. If you are using other communication software, please select the correct COM port and setup the connection properties according to step 3 below.

1. Type in a name for the connection (e.g. SNMP Switch), select an icon for the connection, and click “OK”.
2. Select the COM port that you are using for this connection and click “OK”.
3. Setup the COM port properties by using the information below and click “OK”.

Bits Rate per Second = 57600

Data Bits = 8

Parity = None

Stop Bit = 1

Flow Control = None

4. Connect the included serial cable from the computer’s COM port to the Switch’s console port.
5. Power on the Switch, you should see some boot-up messages displayed within your “HyperTerminal” session. The Switch’s Power On Self Diagnostic (POSD) takes about 100 seconds to complete. After that, you will see the login screen.
If the Switch is already powered on and finished its self-diagnostic, after running the terminal communication program, please hit “Enter” once to get the login prompt.
6. At the “username” field type in **admin** and hit “Enter”.
7. At the “password” field type in **admin** and hit “Enter”. You are now logged

into the Switch's configuration program.

8. On the lower portion of the screen, you will see descriptions of the navigation keys (e.g. Tab, Space Bar, and Enter). Please use these keys to move around the configuration program.

User Interface
EtherGuard ESM-24T02M

Username: —
Password: —

1.3.2 In-band management through Ethernet

In addition to terminal mode configuration, the ESM-24T02M Switch also supports In-Band Configuration using a Web Browser. Compared with terminal mode configuration, web browser configuration is more convenient and easier. You can simply connect a network-ready PC to the Switch, open the web browser, go to the Switch's configuration page (Switch's IP address), and configure the Switch by clicking on the subject on the menu.

Before you can access the switch through in-band, you must make sure the computer connecting to the Switch has a web browser and the TCP/IP protocol (with valid IP address) is bound to the network adapter. After that, you can either change your computer's IP address to the same class as the Switch's IP address, or you can login to the Switch with the "out-of-band" method described in the previous section and configure the Switch's IP address to the same class as your computer's IP address.

Below, is the Switch's default IP information:

IP Address: 192.168.0.100

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Modify Switch's IP address via Out-of-Band method

1. Login the console (note: default User Name: admin, Password: admin).
2. Use "Tab" key to select (highlight) "Switch Static Configuration" and hit "Enter".
3. Use "Tab" key to select "Administration Configuration" and hit "Enter".
4. Use "Tab" key to select "IP Configuration" and hit "Enter".
5. Use "Tab" key to select "Edit" and hit "Enter".

6. Use "Tab" key to highlight "IP Address", enter the desired IP address (e.g. 192.168.1.100), and hit "Enter".
7. The "Subnet Mask" is now highlighted, enter the correct subnet mask, and hit "Enter".
8. Input the Gateway address and hit "Enter".
9. Press and hold "Ctrl" and then hit "A" to go to the "Action Menu".
10. Use "Tab" key to select "Save" and hit "Enter".
11. The screen will prompt you to "restart the system...", turn off the Switch, wait for 10 seconds, and then turn the Switch's power back on.

After the Switch finishes the self-diagnostic, open your computer's web browser and at the "Address:" field, enter the Switch's IP address (e.g. **http://192.168.0.100**), hit "Enter" or click on "Go", and the Switch's configuration page will prompt you to enter "User Name" and "Password" to login.

(Note: default User Name: **admin**, Password: **admin**).

Modify Network Adapter's IP address

You can change the network adapter's IP address in the Network Adapter's "Properties". We suggest that you change the network adapter's IP to the following settings:

IP Address: 192.168.0.101

Subnet Mask: 255.255.255.0

(Note: you don't need to enter Gateway address at the moment.)

Reboot the computer if necessary. After the computer boots back up, open the web browser and at the "Address" field, enter **http://192.168.0.100** , hit "Enter" or click on "Go", and the Switch's configuration page will prompt you to enter "User Name" and

Password” to login.

(Note: default User Name: **admin**, Password: **admin**).



A screenshot of a login dialog box. The title bar shows a key icon and the text "index.htm". The dialog has a light gray background. It contains the following elements:

- User name:** A text input field with a dropdown arrow on the right, containing the text "admin".
- Password:** A text input field containing five black dots.
- Remember my password
- OK** button
- Cancel** button

1.3.3 Telnet management

In addition to local terminal mode operation, the [ESM-24T02M](#) switch supports remote management through Telnet, over the Ethernet LAN network or even over internet. In this mode, the user needs to perform the same initial IP setup on the switch as previously discussed. (refer: 'Modify Switch's IP address via Out-of-Band method')

Telnet IP Address of Switch

The following dialogue appears within the Telnet Window. Once again enter the username and password to continue. To find out more about configuring the Switch in this mode, please refer the instructions in chapter 3 of this manual.

User Interface EtherGuard ESM-24T02M	
Username:	—
Password:	—

2. Web Management Function

2-1. Web Management Home Overview

This is the Home Page.



This is the initial startup page. The top section of this page will display active links on any of the ports by overlaying an inserted RJ-45 connector. Clicking on individual icons will popup port statistics information.

2-2. Port Status

2-3. Port Statistics

2-4. Administrator

2-5. TFTP Update Firmware

2-6. Configuration Backup

2-7. Reset System

2-8. Reboot

2-2. Port status

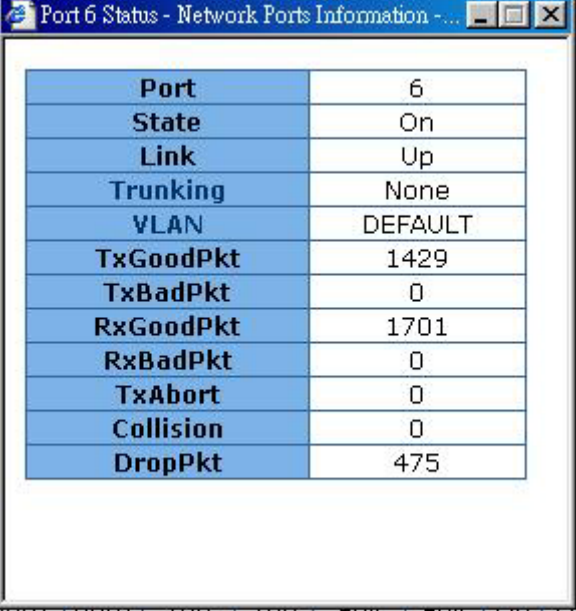
This page displays the current status of every port. It will display the users selection for each port followed by the actual discovered settings.

Port Status																
The following information provides a view of the current status of the unit.																
Port	State		Link	Negotiation		Speed		Duplex		Flow Control			Rate Control(100K)		Priority	Security
	Config	Atual		Config	Atual	Config	Atual	Config	Atual	Config		Atual	Atual			
			Full							Half	Ingr		Egr			
PORT1	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT2	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT3	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT4	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT5	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT6	On	On	Up	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT7	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT8	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT9	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT10	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT11	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT12	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT13	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT14	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT15	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT16	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT17	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT18	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT19	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off
PORT20	On	On	Down	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off

- State:** Display port status: **On or Off** , Off indicates port is disabled.
- Link Status:** Down indicates “No Link”, Up indicates “Link”.
- Auto Negotiation:** Display the auto negotiation mode: Auto/Force/Nway-forced.
- Speed Status:** Displays 1000Mbps, 100Mbps or 10Mbps speeds.
Note: port 1- 24 are 10/100Mbps, Port 25-26 are 10/100/1000Mbps.
- Duplex Status:** Displays full-duplex or half-duplex mode.
- Flow Control:** Full: Displays flow control status in Full Duplex mode.
Half: Displays flow control status in Half Duplex mode.
- Rate Control:** Displays the current rate control setting of the selected port.
Ingr: Display the effective port ingress rate as defined by the user.
Egr: Display the effective port egress rate as defined by the user.
- Port Security:** Displays the status of port security.
- Config: (configured)** Displays the state defined by the user.
- Atual: (actual)** Displays the negotiation result.

2.2.1 Port Statistics and Status Popup Window

Clicking on individual ports within the top most section of the page will present a popup page showing port statistics information as shown below.

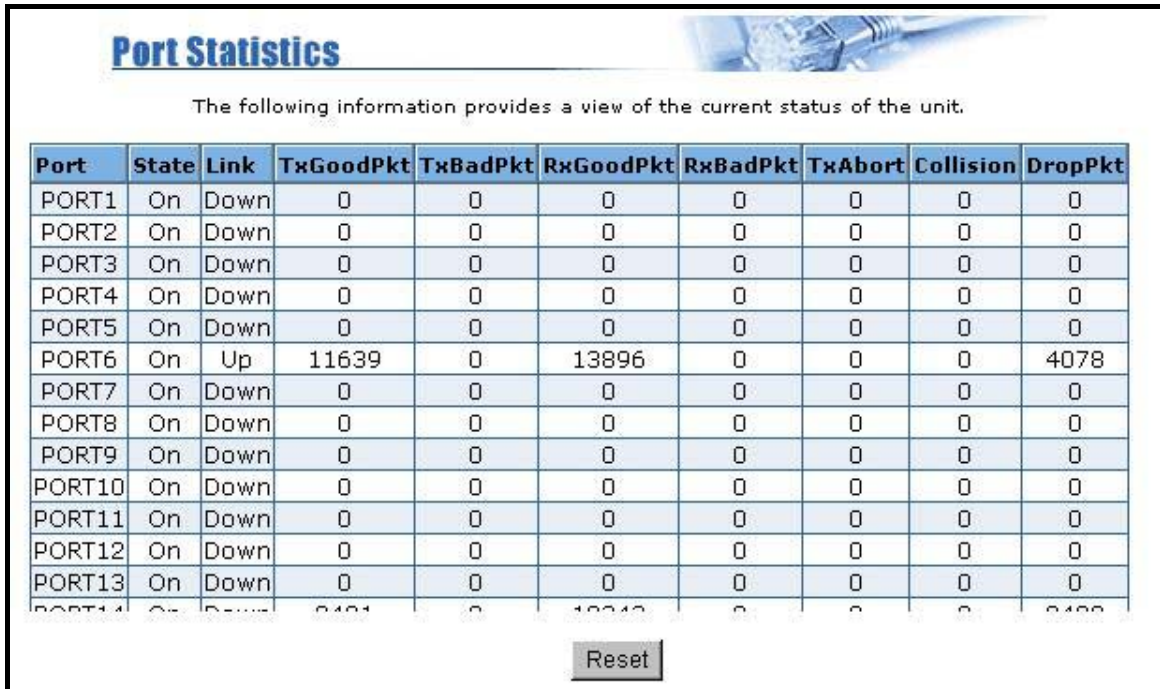


The image shows a screenshot of a web browser popup window. The title bar of the window reads "Port 6 Status - Network Ports Information". Inside the window, there is a table with two columns: the first column lists various port statistics and status indicators, and the second column shows their corresponding values. The table is as follows:

Port	6
State	On
Link	Up
Trunking	None
VLAN	DEFAULT
TxGoodPkt	1429
TxBadPkt	0
RxGoodPkt	1701
RxBadPkt	0
TxAbort	0
Collision	0
DropPkt	475

2-3. Port Statistics

The Port Statistics page provides a view of the current status of every port on the switch. Pressing the “Reset” button will reset all port counters to zero.



The screenshot displays the "Port Statistics" page. At the top, there is a header "Port Statistics" in blue. Below the header, a sub-header reads "The following information provides a view of the current status of the unit." Below this is a table with 10 columns: Port, State, Link, TxGoodPkt, TxBadPkt, RxGoodPkt, RxBadPkt, TxAbort, Collision, and DropPkt. The table lists ports from PORT1 to PORT14. PORT6 is the only port with non-zero values: TxGoodPkt is 11639, RxGoodPkt is 13896, and DropPkt is 4078. All other ports have zero values. At the bottom of the page, there is a "Reset" button.

Port	State	Link	TxGoodPkt	TxBadPkt	RxGoodPkt	RxBadPkt	TxAbort	Collision	DropPkt
PORT1	On	Down	0	0	0	0	0	0	0
PORT2	On	Down	0	0	0	0	0	0	0
PORT3	On	Down	0	0	0	0	0	0	0
PORT4	On	Down	0	0	0	0	0	0	0
PORT5	On	Down	0	0	0	0	0	0	0
PORT6	On	Up	11639	0	13896	0	0	0	4078
PORT7	On	Down	0	0	0	0	0	0	0
PORT8	On	Down	0	0	0	0	0	0	0
PORT9	On	Down	0	0	0	0	0	0	0
PORT10	On	Down	0	0	0	0	0	0	0
PORT11	On	Down	0	0	0	0	0	0	0
PORT12	On	Down	0	0	0	0	0	0	0
PORT13	On	Down	0	0	0	0	0	0	0
PORT14	On	Down	0	0	0	0	0	0	0

2-4. Administrator

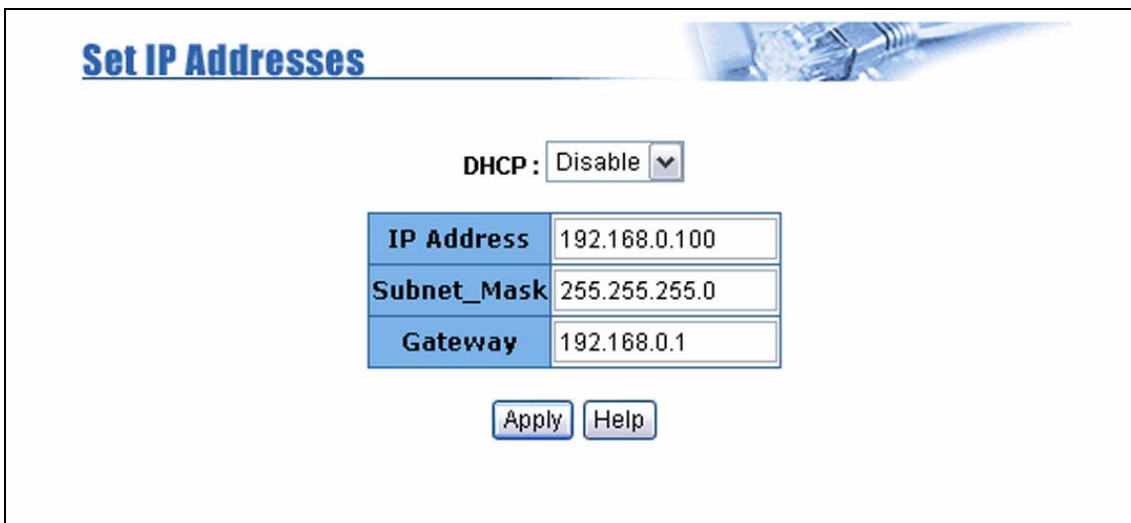
The following list of functions can be performed from the administrator section of the web management:

- ◆ IP address/Subnet Mask/Gateway
- ◆ Switch Settings
- ◆ Console Port Information
- ◆ Port Controls
- ◆ Trunking
- ◆ Filter Database
- ◆ VLAN Configuration
- ◆ Spanning Tree
- ◆ Port Sniffer
- ◆ SNMP/Trap Manager
- ◆ Security Manager
- ◆ 802.1x Configuration

2-4-1. IP Address/Subnet Mask/Gateway

From within this page, users can modify the switch IP address settings.

[note] Any changes to values within this page will require a switch ‘reboot’ to activate.



Set IP Addresses

DHCP:

IP Address	192.168.0.100
Subnet_Mask	255.255.255.0
Gateway	192.168.0.1

2-4-2 Switch Settings

2-4-2-1 Basic

All information in the **Basic** menu is read only.

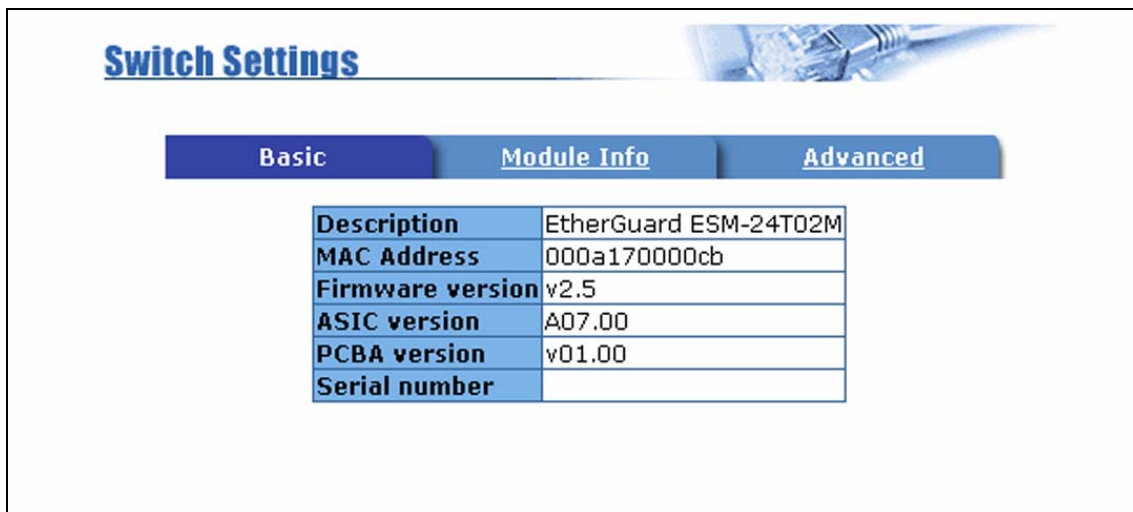
Description: Display the family name of the switch.

MAC Address: The unique hardware address of the switch.

Firmware Version: Displays the switch's firmware version.

Hardware Version: Displays the switch's ASIC Hardware version. (Switch controller)

Displays the switch's PCBA Hardware version. (Circuit board)



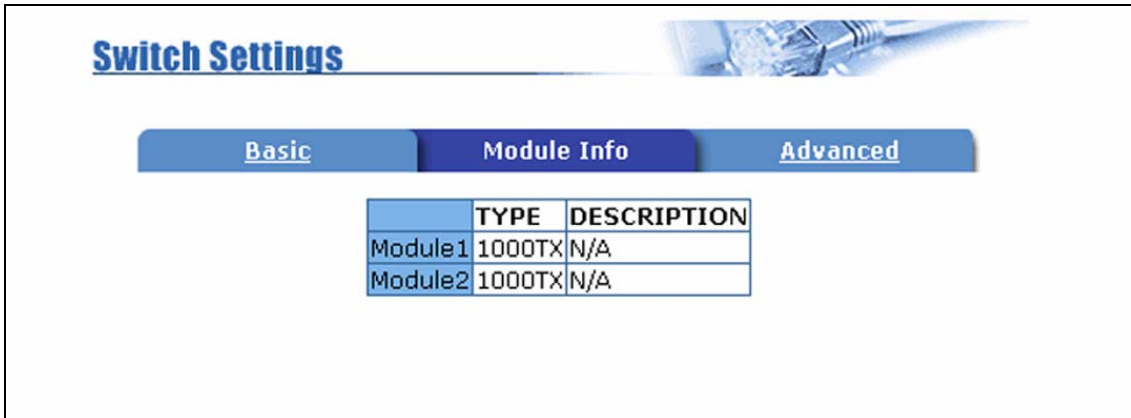
Switch Settings

Basic Module Info Advanced

Description	EtherGuard ESM-24T02M
MAC Address	000a170000cb
Firmware version	v2.5
ASIC version	A07.00
PCBA version	v01.00
Serial number	

2-4-2-2 Module Info

All information in the **Module Info** menu is read only.



	TYPE	DESCRIPTION
Module1	1000TX	N/A
Module2	1000TX	N/A

2-4-2-3 Advanced

◆ Miscellaneous Setting:

MAC Address Age-out Time: Type the number of seconds that an inactive MAC address remains in the switch's address table. The valid range is 300~765 seconds. Default is 300 seconds.

Max bridge transmit delay bound control: This Limits the packets queuing time. If enabled, packets that are queued longer than this setting will be dropped. Valid values for this are 1sec, 2 sec, 4 sec and off. Default is 1 seconds.

NOTE: Make sure the “Max bridge transit delay bound” control is enabled before enabling the “Low Queue Delay Bound” option.

Low Queue Delay Bound: This controls how low priority packets are queued in the switch. The **Max Delay Time** setting defines when a low priority packet is given more priority to send.

Broadcast Storm Filter: To configure broadcast storm control, enable it and set the upper threshold for individual ports. The threshold is the percentage of the port's total bandwidth used by broadcast traffic. When broadcast traffic for a port rises above the threshold you set, broadcast storm control becomes active. The valid threshold values are 5%, 10%, 15%, 20%, 25% and [off](#).

Switch Settings

Basic | Module Info | **Advanced**

Enter the settings, then click Submit to apply the changes on this page.

MAC Table Address Entry
Age-Out Time: seconds (300~765, must multiple of 3)

Max bridge transmit delay bound control:

Enable Low Queue Delay Bound ----- Max Delay Time: (1~255, 2ms/unit)

Broadcast Storm Filter Mode:

◆ **Priority Queue Service settings (802.1p):**

First Come First Service: The sequence of packets sent is dependant on the order in which they arrived.

All High before Low: High priority packets are sent before Low priority packets.

WRR: Weighted Round Robin. Select the preference given to packets in the switch's high-priority queue. These options represent the number of high priority packets sent before one low priority packet is sent. For example, 5 High - 2 Low means that the switch sends 5 high-priority packets before sending 2 low priority packets.

Qos Policy: High Priority Levels: This is used to map the 0~7 priority levels to either High or Low queues.

Collisions Retry Forever: (this setting only affects Half Duplex connections)

Disable – Any collisions are retried for a maximum of 48 times, after which the packet will be dropped.

Enable – Collision will be retried indefinitely.

802.1x Protocol: Enables or disables the 802.1x port security protocol.

The screenshot shows a configuration window titled "Priority Queue Service:". It contains several sections:

- 802.1p Priority:** Three radio button options: "Fisrt Come First Service" (selected), "All High before Low", and "WRR ----- High weight: [2] Low weight: [1]".
- Qos Policy: High Priority Levels:** A row of checkboxes for Level0 through Level7. Level4, Level5, Level6, and Level7 are checked.
- Collisions Retry Forever:** A dropdown menu currently set to "Disable".
- 802.1x Protocol:** A dropdown menu currently set to "Disable".

At the bottom of the window are three buttons: "Apply", "Default", and "Help".

2-4-3 Console Port Information

The Console port on the EMS-24T02M is a standard RS-232 UART interface. This is used to connect to the serial interface on your PC, or terminal.

You can use Windows HyperTerminal program to link the switch to your PC. The following settings need to be configured into your Terminal Application:

- Bits per seconds: 57000
- Data bits: 8
- Parity: none
- Stop Bits: 1
- Flow control: none

2-4-4 Port Controls

The Port Controls page allows the user to modify the operational mode of each port.

Port Controls

Port	State	Negotiation	Speed	Duplex	Flow Control		Rate Control (100K)		Priority	Security
					Full	Half	Ingress	Egress		
PORT3										
PORT4	Enable	Auto	100	Full	Enable	Enable	0	0	Disable	<input type="checkbox"/>
PORT5										
PORT6										

Port	State		Link	Negotiation		Speed		Duplex		Flow Control			Rate Control(100K)		Priority	Security
	Config	Atual		Config	Atual	Config	Atual	Config	Atual	Config	Atual					
								Full	Half		Ingr	Egr				
PORT6	On	On	Up	Auto	Auto	100	100	Full	Full	On	On	On	Off	Off	Disable	Off

1. **State:** Used to enable or disable this port.
2. **Auto Negotiation:** Used to set the auto-negotiation mode.
Settings are: Auto, Nway and Forced.
Auto instructs the switch to learn the parameters of the device connected.
Nway instructs the switch to use the Nway protocol to instruct devices connected to the port of its defined parameters. (Speed and Duplex should be defined)
Forced does not negotiate with the connected device its parameters.
3. **Speed:** Used to set the port speed to either 100Mbps or 10Mbps on Port1~Port24. 1000Mbps, 100Mbps or 10Mbps speed on Port25 and Port26 (depending on module card used).
4. **Duplex:** Used to set full-duplex or half-duplex mode of the port.
5. **Flow control:**
 - Full:** Used to enable or disable flow control when in full duplex mode.
 - Half:** Used to enable or disable backpressure flow control when in half duplex mode.
6. **Rate Control:** Ports1 ~ port 24, support ingress and egress rate control (inwards and outwards). For example, assume that port 1 is connected at 10Mbps. The switch administrator could set the effective port throughput levels by using the Rate Control function on that port to 1Mbps egress (outwards) and 500Kbps ingress (inwards). An example of where to use this could possibly be to limit the internet bandwidth to a FTP

server.

The switch will perform full duplex flow control or half duplex backpressure flow control to confine the port speeds to match specified ingress/egress rates.

Ingress: Specify the ports effective ingress rate. Valid range is 0 ~ 1000.

The unit is 100K.

0: disable rate control.

Egress: Specify the ports effective egress rate. Valid range is 0~1000.

The unit is 100K.

0: disable rate control.

7. **Port Priority:** This is used to force any non prioritized packets to either High, Low, or Disabled states.
8. **Port Security:** Setting a ports security mode to on (by ticking the check box) will lock it to all unauthorized MAC addresses. This disables the address learning functionality on the port and then only incoming packets with a known source MAC addresses will be forwarded by the port. Administrators can disable the port from learning any new MAC addresses, then use the static MAC addresses table entry screen to define a list of MAC addresses that can be used by the secure port.

2-4-5 Trunking

The Link Aggregation Control Protocol (LACP) provides a standardized means for exchanging information between Partner Systems that require high speed redundant links.

Link aggregation lets you group up to eight consecutive ports into a single dedicated connection. This feature can expand bandwidth to a device on the network. **LACP operation requires full-duplex mode**, more detail information refer to the IEEE 802.3ad standard.

2-4-5-1 Aggregator setting

Link aggregation lets you group up to 4 consecutive ports into a single dedicated connection. This feature can expand bandwidth to a device on the network, such as another switch or a server, and also provide redundancy features.

The screenshot shows a web interface for configuring trunking. At the top, there is a header 'Trunking' and three tabs: 'Aggregator Setting', 'Aggregator information', and 'State Activity'. The 'Aggregator information' tab is active. Below the tabs, there is a 'System Priority' section with a text input field containing the value '1'. Below that is a table with three columns. The first column contains 'Group ID' with a dropdown menu set to 'Group1' and a '<< Get' button. The second column contains 'Lacp' with a dropdown menu set to 'Enable'. The third column contains 'Work Ports' with a text input field containing '4', a '<< Add <<' button, a 'Remove >>' button, and a list of ports from PORT5 to PORT13. The first column also contains a list of ports from PORT1 to PORT4.

1. **System Priority:** A value used to identify the active LACP. The switch with the lowest value has the highest priority and is selected as the active LACP.
2. **Group ID:** There are seven trunk groups provided. Choose the "group id" and click "Get" to display the group settings.
3. **LACP:** If enabled, the group defined in the 'Work Ports' is a LACP static trunking group. If disabled, the group is a LOCAL static trunking group (not LACP aware). By default all ports support LACP dynamic trunking. If the switch is connecting to a device that also supports LACP, then the LACP dynamic trunking group will be created automatically.
4. **Work ports:** Allows a maximum of four ports to be aggregated at the same time. If the group is defined as a LACP static trunking group, then any extra ports selected are placed in a standby mode for redundancy if one of the other ports fails. If the group is defined as a local static trunking group, then the number of ports must be the same as the group member ports.
 Note: If LACP is enabled, you can configure LACP Active/Passive status in each port on State Activity page.

2-4-5-2 Aggregator Information

This page displays a summary report on the current LACP aggregator status.

1. In this example there is no group active. LACP is not operational.

Trunking

Aggregat^{or} Setting Aggregat^{or} information State Activity

The following information provides a view of LACP current status.

NO GROUP ACTIVE

2. In this example there are 2 Static Trunking groups.

Trunking

Aggregat^{or} Setting Aggregat^{or} information State Activity

The following information provides a view of LACP current status.

Static Trunking Group	
Group Key	1
Port_No	1 2 3 4

Static Trunking Group	
Group Key	2
Port_No	9 10 11 12

3. In this example there is an active LACP trunking group.

Trunking

Aggregat^{or} Setting Aggregat^{or} information State Activity

The following information provides a view of LACP current status.

Group2						
Actor				Partner		
Priority	1			1		
MAC	004063809988			004063808899		
PortNo	Key	Priority	Active	PortNo	Key	Priority
PORT5	514	1	selected	PORT5	514	1
PORT6	514	1	selected	PORT6	514	1
PORT7	514	1	selected	PORT7	514	1
PORT8	514	1	selected	PORT8	514	1

2-4-5-3 State Activity

Active (selected): The port automatically sends LACP protocol packets.

N/A (not selected): The port does not automatically send LACP protocol packets, and

responds only if it receives an LACP protocol packet from a remote device.

Note: Work Ports defined as LACP enabled in the 'Aggregator Settings' page will automatically have their LACP Activity State enabled.

Port	LACP State Activity	Port	LACP State Activity
1	<input checked="" type="checkbox"/> Active	2	<input checked="" type="checkbox"/> Active
3	<input checked="" type="checkbox"/> Active	4	<input checked="" type="checkbox"/> Active
5	N/A	6	N/A
7	N/A	8	N/A
9	<input checked="" type="checkbox"/> Active	10	<input checked="" type="checkbox"/> Active
11	<input checked="" type="checkbox"/> Active	12	<input checked="" type="checkbox"/> Active
13	N/A	14	N/A
15	N/A	16	N/A
17	N/A	18	N/A
19	N/A	20	N/A
21	N/A	22	N/A
23	N/A	24	N/A
25	N/A	26	N/A

2-4-6. Filter Database

2-4-6-1. IGMP Snooping

The [ESM-24T02M](#) switch supports IP multicasting via the IGMP protocol. Administrators can enable IGMP within the web management's "Forwarding and Filtering" page, then display the IGMP snooping information. Multicast groups, VID and member port information.

IP multicast addresses range from 224.0.0.0 through to 239.255.255.255.

Forwarding and Filtering

IGMP Snooping Static MAC Addresses MAC Filtering

Multicast Group

Ip_Address	VID	MemberPort
224.001.001.002	0	*****g*****
224.001.001.003	0	*****g*****
224.001.001.004	0	*****g*****
224.001.001.005	0	*****g*****
224.001.001.006	0	*****g*****
224.001.001.007	0	*****g*****
224.001.001.008	0	*****g*****
224.001.001.009	0	*****g*****
224.001.001.010	0	*****g*****
224.001.001.011	0	*****g*****

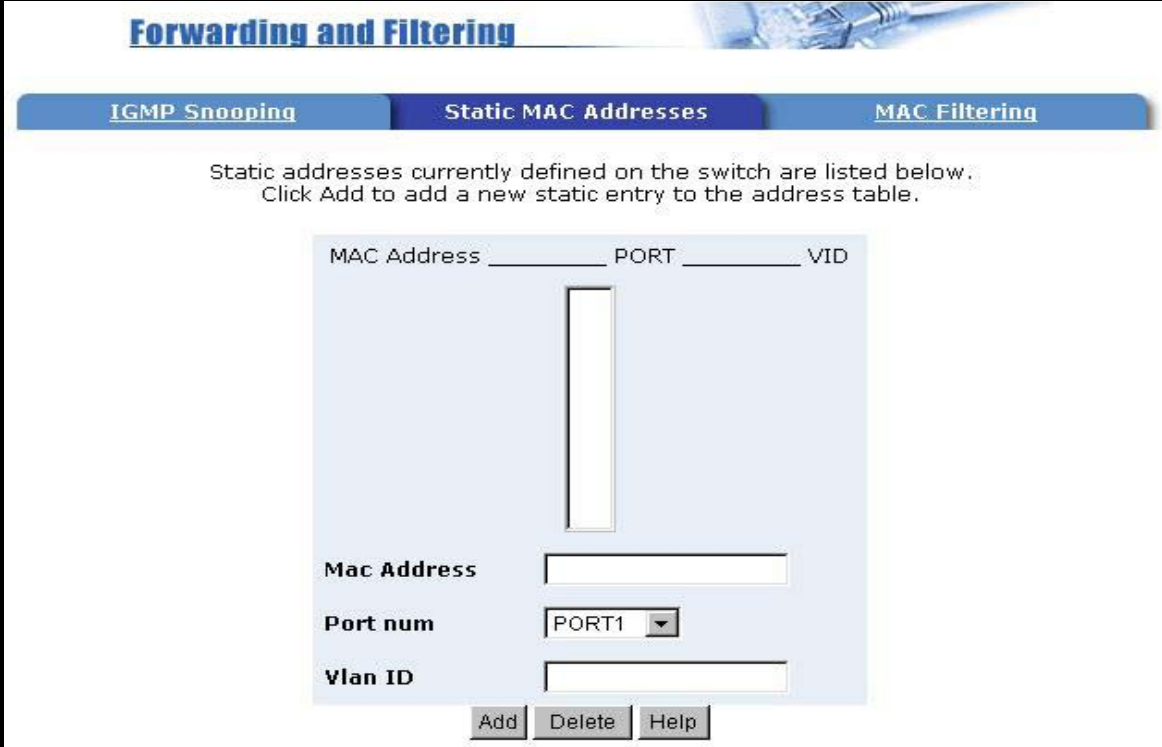
IGMP Protocol:

The Internet Group Management Protocol (IGMP) is a protocol of the Internet Protocol (IP) suite. IP manages multicast traffic by using switches, routers, and hosts that support IGMP. Enabling IGMP allows the switch to detect IGMP queries and IGMP Report packets to manage IP multicast traffic through the switch. IGMP has three fundamental types of message as follows:

Message	Description
Query	A message sent from the queries (IGMP router or switch) asking for a response from each host belonging to a multicast group.
Report	A message sent by a host to the queries to indicate that the host wants to be, or is a member of, a given group indicated in the report message.
Leave Group	A message sent by a host to the queries to indicate that the host has quit being a member of a specific multicast group.

2-4-6-2. Static MAC Address

When you add a static MAC address, it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address after it has been disconnected or powered-off from the network, and then reconnected at some time later.



The screenshot displays the 'Forwarding and Filtering' configuration interface. The 'Static MAC Addresses' tab is active. A message states: 'Static addresses currently defined on the switch are listed below. Click Add to add a new static entry to the address table.' Below this is a form with three input fields: 'MAC Address', 'PORT', and 'VID'. The 'PORT' field is a dropdown menu currently showing 'PORT1'. Below the form are three buttons: 'Add', 'Delete', and 'Help'.

1. At the main menu, click administrator → Filter Database → Static MAC Addresses.
2. In the MAC address box, enter the MAC address to and from which the port should permanently forward traffic, regardless of the device's network state.
3. In the Port Number box, enter a port number.
4. If tag-based (IEEE 802.1Q) VLANs are set up on the switch, static addresses are associated with individual VLANs. Type the VID (tag-based VLANs) to associate with the MAC address.
5. Click Add.

2-4-6-3 MAC filtering

MAC address filtering allows the switch to drop unwanted traffic. Traffic is filtered based on the destination addresses.

The screenshot shows the 'Forwarding and Filtering' configuration page. It has three tabs: 'IGMP Snooping', 'Static MAC Addresses', and 'MAC Filtering'. The 'MAC Filtering' tab is active. Below the tabs, it says 'Specify a MAC address to filter.' There is a table with three rows of MAC addresses and their corresponding VLAN IDs. The first row is selected. Below the table are two input fields: 'Mac Address' and 'Vlan ID'. At the bottom are three buttons: 'Add', 'Delete', and 'Help'.

MAC Address	Vlan ID
000000000001	1
000000000002	2
000000000003	3

Mac Address

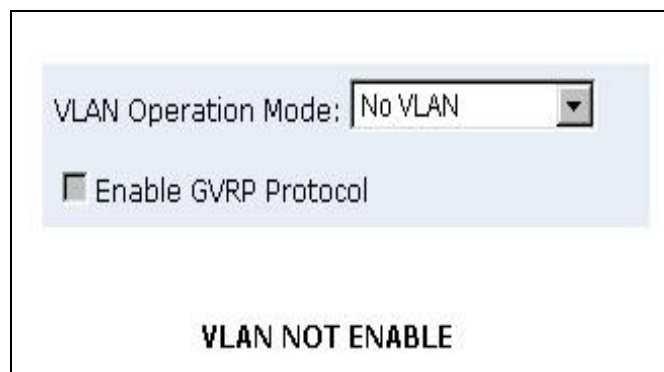
Vlan ID

1. In the MAC Address box, enter the MAC address that you want to filter out.
2. If tag-based (802.1Q) VLAN's are set up on the switch, in the VLAN ID box, type the VID to associate with the MAC address.
3. Click Add.
4. To Delete a MAC address entry from the filtering table, simply select it and click Delete.

2-4-7. VLAN configuration

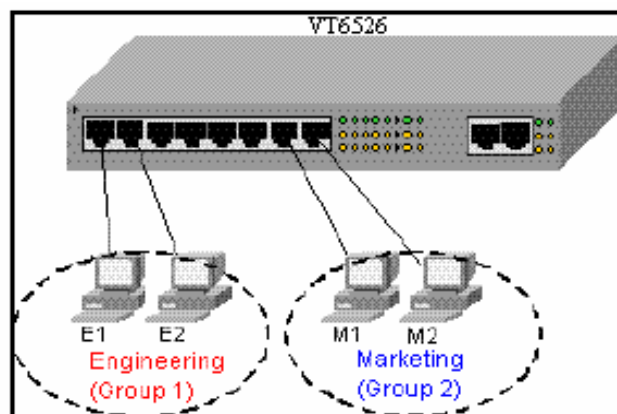
A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain within the switch. It allows you to isolate network traffic so that members of a certain VLAN only receive traffic from other members of the same VLAN.

The [ESM-24T02M](#) switch supports port-based, 802.1Q (tagged-based) and protocol-based VLANs. In the default configuration, VLAN support is disabled.



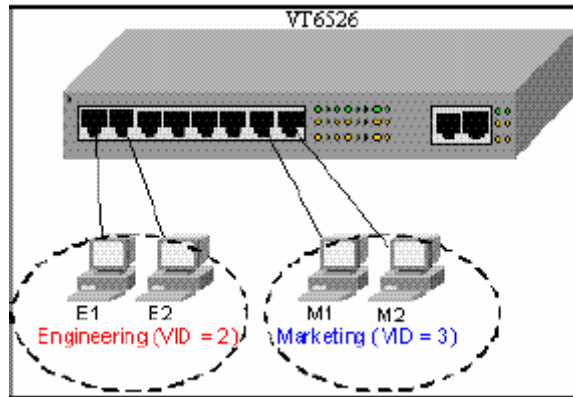
◆ Support Port-based VLAN

Packets can only be broadcast among other members of the same VLAN group. Note all unselected ports are treated as belonging to the default system VLAN. If port-based VLAN's are enabled, then VLAN-tagging is ignored.



◆ **Support Tag-based VLAN (IEEE 802.1Q VLAN)**

Tagged-based VLAN is an IEEE 802.1Q specification standard. Therefore, it is possible to create a VLAN across devices from different switch vendors. IEEE 802.1Q VLAN's use a technique to insert a "tag" into the Ethernet frames. The "tag" contains a VLAN Identifier (VID) that indicates the VLAN number that the packet belongs to.



◆ **Support Protocol-based VLAN**

In order for a workstation to send packets to different VLANs, it has to be either capable of tagging packets it sends with VLAN tags or attached to a VLAN-aware bridge that is capable of classifying and tagging the packet with a different VLAN ID based on not only default PVID but also other information about the packet, such as the protocol.

ESM-24T02M switch supports protocol-based VLAN classification by means of both built-in knowledge of layer 2 packet formats used by selected popular protocols, such as Novell IPX and AppleTalk's EtherTalk, and a programmable protocol matching capability.

2-4-7-1. Port Based VLAN

VLAN Configuration

VLAN Operation Mode: Port Based VLAN

Enable GVRP Protocol

VLAN Information

vlan1__1

Add Edit Delete PrePage NextPage

1. Click Add to create a new VLAN group.
2. Enter the VLAN name, group ID and select the members for the new VLAN.
3. Click Apply.
4. If there are more groups than the display will allow, then you can click the “Next Page” to view additional VLAN groups.

NOTE: If a trunk groups exist, it will be visible as TRK1, TRK2, etc.... The Trunk groups can also be members of selected VLANs.

2-4-7-2. 802.1Q VLAN

By selecting 802.1Q VLAN mode, Administrators can create Tag-based VLANs and enable or disable use of the GVRP protocol.

There are upto 256 configurable VLAN groups. By default when 802.1Q is enabled, all ports on the switch belong to default VLAN (VID 1). The default VLAN cannot be deleted.

VLAN Configuration

VLAN Operation Mode: 802.1Q

Enable GVRP Protocol

Basic | Port VID

VLAN Information

DEFAULT__1

Add Edit Delete PrePage NextPage Help

GVRP (GARP [Generic Attribute Registration Protocol] VLAN Registration Protocol)

GVRP allows automatic VLAN configuration between the switch and its nodes. If the switch is connected to a device with GVRP support, then a GVRP request can be issued from the device to the switch using a valid VID of a VLAN defined on the switch. The switch will then automatically add the device to the existing VLAN entries.

Basic

Create a VLAN and add a tagged member port to it.

1. From the main menu, click Administrator → VLAN configuration, click Add then you will see the page as follow.

The screenshot shows a web interface for VLAN configuration. The 'Basic' tab is active. The 'VLAN Name' field is empty. The 'VID' field contains the number '1'. The 'Protocol Vlan' dropdown menu is set to 'NONE'. On the left, there is a scrollable list of ports from PORT1 to PORT12. In the center, there are two buttons: 'Add >>' and '<< Remove'. At the bottom, there are 'Next' and 'Help' buttons.

2. Type a name for the new VLAN.
3. Type a VID (between 2-4094). The default is 1.
4. Choose the protocol type.
5. From the Available ports box, select ports to add to the VLAN and click “Add >>”.
If a trunk groups exist, you can see it here (ex: TRK1, TRK2...)
6. Click Next to view the following page:

VLAN Name:	v1		
VLAN ID:	2		
Tag Member			
PORT1	Tag	PORT2	Tag
PORT3	Tag	PORT4	Untag
PORT5	Untag		
Apply			

7. Use this page to control how the outgoing frames are VLAN-Tagged. Then click Apply.

Tag: outgoing frames will be VLAN-Tagged.

Untag: outgoing frames will not be VLAN-Tagged.

Port VID

Configure port VID settings

From the main Tag-based (IEEE 802.1Q) VLAN page, click “Port VID” Menu.

Assign a Port VLAN ID (1~255) for untagged traffic on each port, then click Submit to apply the changes on this page.

Ingress Filtering Rule 1
(Forward only packets with VID matching this port's configured VID)

Ingress Filtering Rule 2
(Drop Untagged Frame)

NO	PVID	Ingress Filtering 1	Ingress Filtering 2
PORT1	1	Enable	Disable
PORT2			
PORT3			
PORT4			
PORT1	1	ENABLE	DISABLE
PORT2	1	ENABLE	DISABLE
PORT3	1	ENABLE	DISABLE
PORT4	1	ENABLE	DISABLE

Apply Default Help

Port VID (PVID)

Set the port VLAN ID that will be assigned to untagged traffic on a given port. This feature is useful for accommodating devices that you want to participate in the VLAN but that don't support tagging. [ESM-24T02M](#) switch allows each port to set one PVID, the range is 1~255, default PVID is 1. The PVID must be the same as the VLAN ID that the port was defined as belonging to in the VLAN group, or the untagged traffic will be dropped.

Ingress Filtering

Ingress filtering lets frames belonging to a specific VLAN to be forwarded if the port belongs to that VLAN. The switch has two ingress filtering rules as follows:

Ingress Filtering Rule 1: A forward only packets with VID matching this port's configured VID.

Ingress Filtering Rule 2: Drop Untagged Frame.

2-4-8. Rapid Spanning Tree

The Rapid Spanning-Tree Protocol (RSTP) is a standardized method (IEEE 802.1w) for avoiding loops in switched networks. You would enable RSTP to ensure that only one path at a time is active between any two nodes on the network.

You can enable Rapid Spanning-Tree Protocol on the web management's switch setting advanced menu, select enable Rapid Spanning-Tree protocol.

1. You can view Root Bridge spanning tree information from the follow table.

Priority	32768
Mac Address	000a17223104
Root_Path_Cost	0
Root Port	0
Max Age	20
Hello Time	2
Forward Delay	15

2. You can view spanning tree status from the following table.

PortNum	PathCost	Priority	PortState
PORT1	10	128	FORWARDING
PORT2	10	128	FORWARDING
PORT3	10	128	FORWARDING
PORT4	10	128	FORWARDING
PORT5	10	128	FORWARDING
PORT6	10	128	FORWARDING
PORT7	10	128	FORWARDING
PORT8	10	128	FORWARDING
PORT9	10	128	FORWARDING
PORT10	10	128	FORWARDING
PORT11	10	128	FORWARDING
PORT12	10	128	FORWARDING
PORT13	10	128	FORWARDING
PORT14	10	128	FORWARDING
PORT15	10	128	FORWARDING

3. You can set new values for STP parameters.

System Configuration
PerPort Configuration

Configure Rapid Spanning Tree Parameters

Note1: $2 * (\text{Forward Delay} - 1) \geq \text{Max Age}$
 Note2: $\text{Max Age} \geq 2 * (\text{Hello Time} + 1)$

RSTP Enable	<input checked="" type="checkbox"/>
Priority (0-65535)	32768 ▼
Max Age (6-40)	20
Hello Time (1-10)	2
Forward_Delay_Time(4-30)	15

Root Bridge Information

Priority	32768
Mac Address	000a17223104
Root_Path_Cost	0
Root Port	0
Max Age	20
Hello Time	2
Forward Delay	15

Parameter	Description
Priority	A value used to identify the root bridge. The bridge with lowest value has the highest priority and is selected as the root. Enter a number from 1 through to 65535.
Max Age	The number of seconds the bridge waits without receiving any Spanning-Tree Protocol configuration messages before attempting a reconfiguration. Enter a number from 6 through to 40.
Hello Time	The number of seconds between the transmission of Spanning-Tree Protocol configuration messages. Enter a number from 1 through to 10.
Forward Delay time	The number of seconds a port waits before changing from its Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a number from 4 through to 30.

4. The following parameters can be configured for each.

Set Rapid Spanning Tree

System Configuration		PerPort Configuration	
Configure Rapid Spanning Tree Port Parameters			
Port Number	Path Cost (0 - 200000000; Default 19)	Priority (0 - 255; Default 128)	Edge Port (Yes:No; Default No)
PORT1 ▲ PORT2 ▲ PORT3 ▲ PORT4 ▲ PORT5 ▼	19	128 ▲ 144 ▲ 160 ▲ 176 ▲ 192 ▼	<input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="button" value="Apply"/> <input type="button" value="Help"/>			

STP Port Status

PortNum	PathCost	Priority	PortState	EdgePort
PORT1	200000	128	DISCARDING	NO
PORT2	200000	128	DISCARDING	NO
PORT3	200000	128	DISCARDING	NO
PORT4	200000	128	FORWARDING	NO
PORT5	200000	128	DISCARDING	NO
PORT6	200000	128	DISCARDING	NO
PORT7	200000	128	DISCARDING	NO

Parameter	Description
Port Priority	Defines if this port is more or less likely to become the root port. The range is from 0 to 255, the default setting is 128 The lower number has the highest priority.
Path Cost	Specifies the path cost of the port. The switch uses this parameter to help determine which port will become a forwarding port. Lower numbers will be used as forwarding ports first. The range is from 1 to 65535. The default values based on IEEE802.1D are: 10Mb/s = 50-600, 100Mb/s = 10-60, 1000Mb/s = 3-10

2-4-9. Port Sniffer (Port Mirroring)

The Port Sniffer is used to monitor traffic in a switched network. Traffic passed through ports can be monitored by one specific port. i.e. Traffic inbound or outbound on a monitored port will be duplicated into the configured sniffer port.

1. **Sniffer Mode:** Selects sniffer mode: Disable \Rx \Tx \Both.
2. **Analysis Port:** Use this option to select the destination port for monitored traffic. This is the port that your network analyzer would be connected to.
3. **Monitored Port:** Based on the Sniffer Mode selection made previously, traffic from the selected port option boxes will be mirrored onto the Analysis port. A maximum of 25 monitored ports can be configured.

Port Sniffer

Roving Analysis State:		DISABLE ▾	
Analysis Port:		None	
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> DISABLE RX TX BOTH </div>	
Port	Monitor	Port	Monitor
PORT1	<input type="checkbox"/>	PORT2	<input type="checkbox"/>
PORT3	<input type="checkbox"/>	PORT4	<input type="checkbox"/>
PORT5	<input type="checkbox"/>	PORT6	<input type="checkbox"/>
PORT7	<input type="checkbox"/>	PORT8	<input type="checkbox"/>
PORT9	<input type="checkbox"/>	PORT10	<input type="checkbox"/>
PORT11	<input type="checkbox"/>	PORT12	<input type="checkbox"/>
PORT13	<input type="checkbox"/>	PORT14	<input type="checkbox"/>
PORT15	<input type="checkbox"/>	PORT16	<input type="checkbox"/>
PORT17	<input type="checkbox"/>	PORT18	<input type="checkbox"/>
PORT19	<input type="checkbox"/>	PORT20	<input type="checkbox"/>
PORT21	<input type="checkbox"/>	PORT22	<input type="checkbox"/>
PORT23	<input type="checkbox"/>	PORT24	<input type="checkbox"/>

Apply
Default
Help

2-4-10. SNMP/Trap Manager

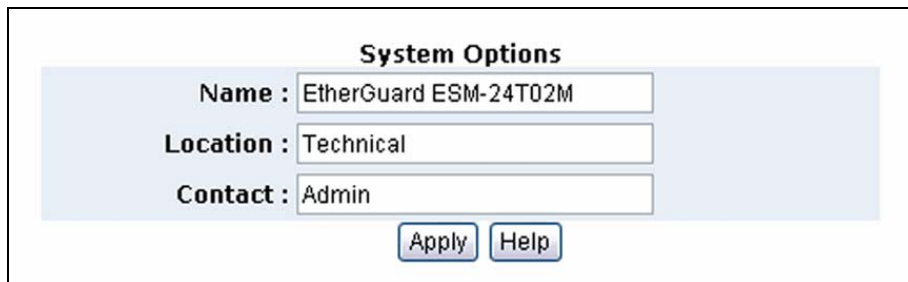
The [ESM-24T02M](#) can be managed from any Simple Network Management Protocol (SNMP) application. If using the Management Information Base (MIB) within your SNMP application, then the information can be reported in a more intuitive manner. SNMP is a Protocol that governs the transfer of information between the management station (application) and the agent (the [ESM-24T02M](#) switch).

- 1. System Options.** Used to define a logical name to the switch, the location of the switch, and contact person for administration of the switch. This information is used in Enterprise SNMP management, where the network can be very widespread, potentially even in other countries. To know where the unit is physically located, and who to contact in the event of a problem is critical.

Name: Enter a name to be used for the switch.

Location: Enter the location of the switch.

Contact: Enter the name of the person or organization that maintains the switch.



The screenshot shows a window titled "System Options". It contains three text input fields: "Name" with the value "EtherGuard ESM-24T02M", "Location" with the value "Technical", and "Contact" with the value "Admin". Below the fields are two buttons: "Apply" and "Help".

- 2. Community strings** serve as passwords and can be entered as one of the following:

RO: Read only. Enables requests accompanied by this string to display MIB-object information.

RW: Read write. Enables requests accompanied by this string to display MIB-object information and to set MIB objects.



The screenshot shows a window titled "Community Strings". It is divided into two main sections. On the left, under "Current Strings :", there is a list box containing "public__RO" and "private__RW". Below this list box are two buttons: "<< Add <<" and "Remove". On the right, under "New Community String :", there is a text input field labeled "String :". Below this field are two radio buttons: "RO" (which is selected) and "RW".

- 3. Trap Manager** A trap manager is a management station (SNMP application) that receives traps (the system alerts generated by the switch). If no trap manager is defined, no traps are issued. Create a trap manager by entering the IP address of the station and a community string.



The screenshot shows a web-based configuration interface titled "Trap Managers". It is divided into two main sections: "Current Managers" and "New Manager".

- Current Managers:** A list box containing the text "(none)".
- New Manager:** A section for adding a new manager, featuring two input fields: "IP Address" and "Community".
- Buttons:** There are three buttons: "<< Add <<" (to add a new manager), "Remove" (to remove a manager from the list), and "Add >>" (to add a manager to the current list).

2-4-11 Security Manager

This page allows you to change the user name and password for administration of the switch.

1. **User name:** Type the new user name.
2. **Password:** Type the new password.
3. **Reconfirm password:** Retype the new password.
4. **Click Apply.**



The screenshot shows a web interface titled "Security Manager" with a blue header and a background image of a network cable. Below the header is a light blue form area containing three input fields and an "Apply" button. The first field is labeled "User Name:" and contains the text "admin". The second field is labeled "Assign/Change password:" and contains three asterisks "***". The third field is labeled "Reconfirm pssword:" and also contains three asterisks "***". Below the third field is a grey button labeled "Apply".

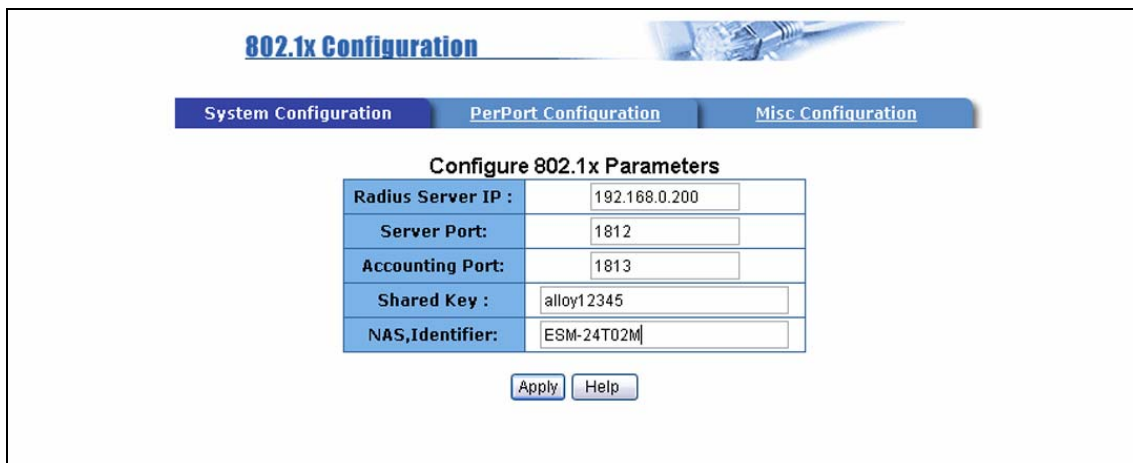
User Name:	<input type="text" value="admin"/>
Assign/Change password:	<input type="password" value="***"/>
Reconfirm pssword:	<input type="password" value="***"/>
	<input type="button" value="Apply"/>

2-4-12 802.1x Configuration

System Configuration

802.1x makes use of the physical access characteristics of IEEE802 LAN infrastructures in order to provide a means of authenticating and authorizing devices attached to a LAN port that has point-to-point connection characteristics, and of preventing access to that port in cases in which the authentication and authorization process fails.

To enable 802.1x : From **Administrator \Switch setting \Advanced** fill in the authentication server information:



Configure 802.1x Parameters	
Radius Server IP :	192.168.0.200
Server Port:	1812
Accounting Port:	1813
Shared Key :	alloy12345
NAS,Identifier:	ESM-24T02M

Apply Help

Radius Server IP Address: the IP address of the authentication server.

Server Port: The UDP port number used by the authentication server to authenticate.

Accounting Port: The UDP port number used by the authentication server to retrieve accounting information.

Shared Key: A key shared between this switch and authentication server.

NAS, Identifier: A string used to identify this switch.

Perport Configuration

In this page, you can select the specific port and configure the Authorization State.

Each port can have a selection of four kinds of Authorization State:

Configure 802.1x Per Port State

Port Number	Port State
PORT2 PORT4 PORT5	Au

Apply Help

Fu - Force the specific port to be unauthorized.

Fa - Force the specific port to be authorized.

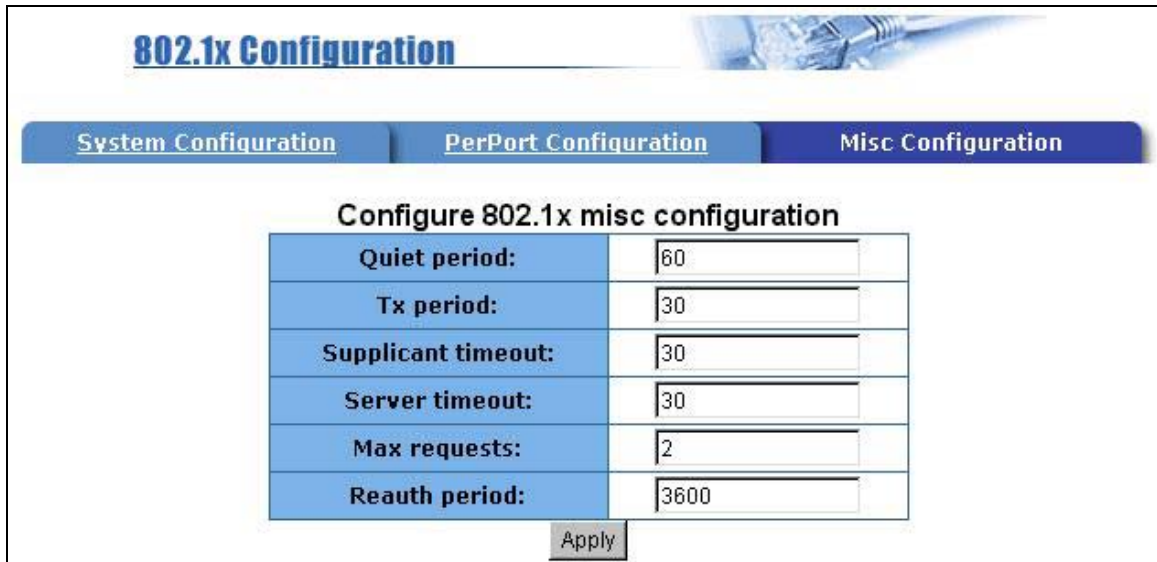
Au - The state of the specific port was determined by the outcome of the authentication.

No - The specific port does not support 802.1x functions.

Misc Configuration

(Alloy recommends that these parameters not be changed, unless you have extensive knowledge of 802.1x configuration)

This allows you to change the default configuration for the 802.1x standard:



The screenshot shows a web-based configuration interface for 802.1x. At the top, there is a header "802.1x Configuration" with a background image of a network cable. Below the header are three tabs: "System Configuration", "PerPort Configuration", and "Misc Configuration". The "Misc Configuration" tab is selected. The main content area is titled "Configure 802.1x misc configuration" and contains a table with six rows, each representing a configuration parameter. The parameters and their values are: Quiet period: 60, Tx period: 30, Supplicant timeout: 30, Server timeout: 30, Max requests: 2, and Reauth period: 3600. An "Apply" button is located at the bottom right of the table.

Configure 802.1x misc configuration	
Quiet period:	60
Tx period:	30
Supplicant timeout:	30
Server timeout:	30
Max requests:	2
Reauth period:	3600

Apply

Quiet Period - Used to define periods of time during which it will not attempt to acquire a supplicant (Default time is 60 seconds).

Tx Period - Used to determine when an EAPOL PDU is to be transmitted (Default value is 30 seconds).

Supplicant Timeout - Used to determine timeout conditions in the exchanges between the supplicant and authentication server (Default value is 30 seconds).

Server Timeout - Used to determine timeout conditions in the exchanges between the authenticator and authentication server (Default value is 30 seconds).

ReAuthMax - Used to determine the number of re-authentication attempts that are permitted before the specific port becomes unauthorized (Default value is 2 times).

Reauth Period used to determine a nonzero number of seconds between periodic re-authentication of the supplications (Default value is 3600 seconds).

2-5. TFTP Update Firmware

1. The TFTP menu option allows you to load a new firmware image into the switch:

- Install TFTP program (TFTP applications can be found on the internet).
- Copy the updated firmware **image.bin** into the TFTP server's upload/download directory.
- Start the TFTP application, you should see a “waiting for connection” type prompt within the application.
- In web management select administrator—TFTP update firmware.
- Download the new **image.bin** file by pressing <apply>. (the file name needs to match the name of the file copied into the TFTP upload/download directory).
- After the update has finished, press <reboot> to restart switch.

TFTP Download New Image

TFTP Server IP Address	<input type="text" value="192.168.0.99"/>
Firmware File Name	<input type="text" value="image.bin"/>

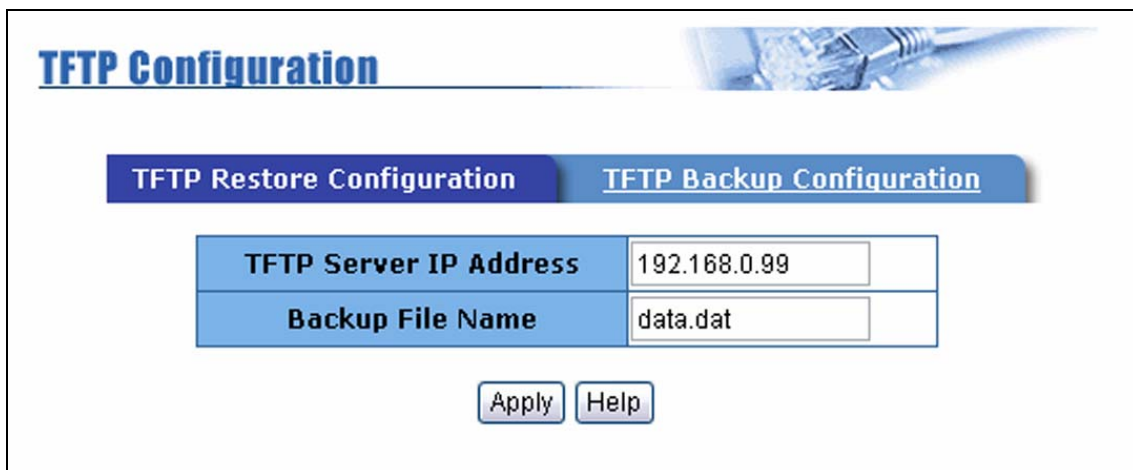
Image download complete.
Would you make sure to update firmware?

Reboot Switch System

2-6. Configuration Backup

2-6-1. TFTP Restore Configuration

The TFTP restore configuration menu, functions much the same way as the TFTP update firmware function. But its purpose is to restore to flash memory, the system configuration from a previous backup operation.



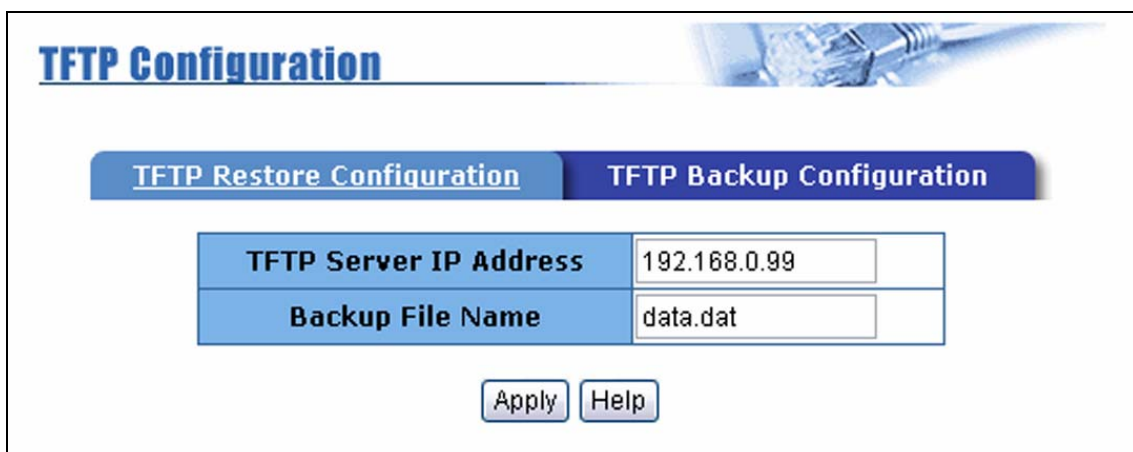
TFTP Configuration

TFTP Restore Configuration **TFTP Backup Configuration**

TFTP Server IP Address	192.168.0.99
Backup File Name	data.dat

2-6-2. TFTP Backup Configuration

The TFTP backup configuration menu, functions much the same way as the TFTP update firmware function. But its purpose is to backup from flash memory the system configuration, so that you have a permanent configuration that can be easily restored if necessary.



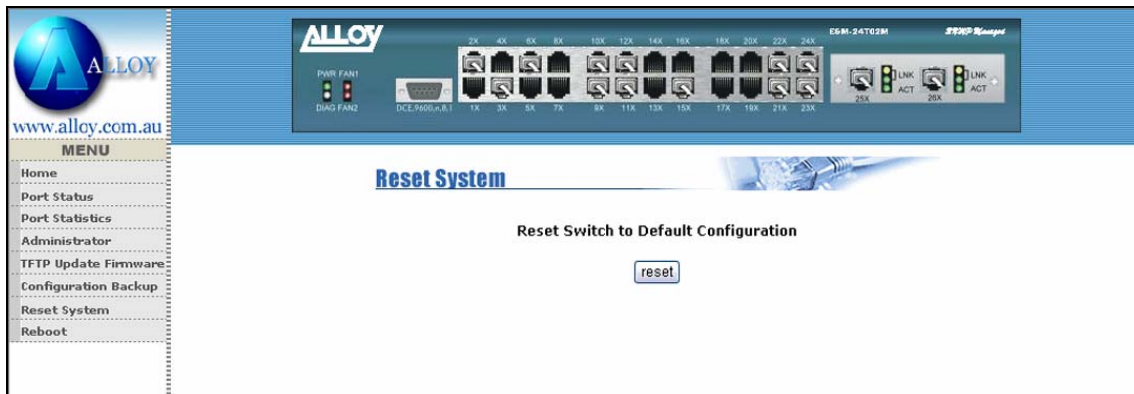
TFTP Configuration

TFTP Restore Configuration **TFTP Backup Configuration**

TFTP Server IP Address	192.168.0.99
Backup File Name	data.dat

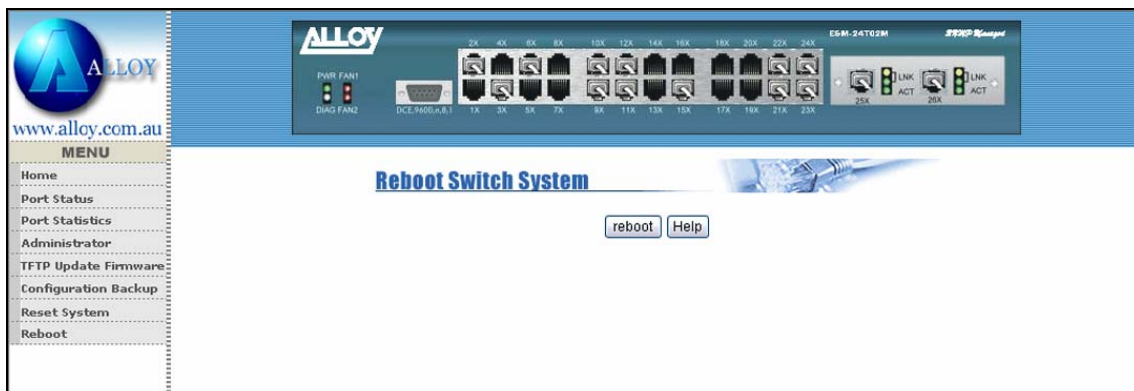
2-7. Reset System

The Reset System menu option will default all configuration values.



2-8. Reboot

The Reboot menu option initiates a switch software reset.



3. Console -- 1K Xmodem update firmware

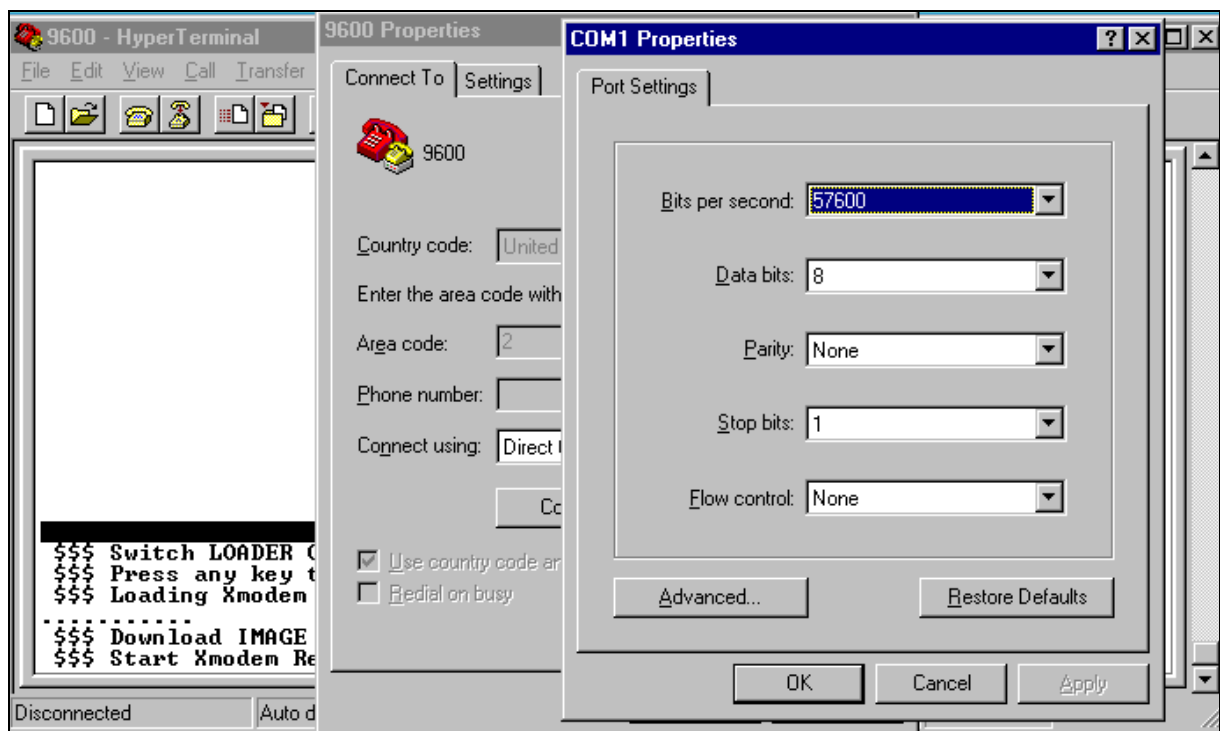
The [ESM-24T02Mx](#) provides the ability to perform a 1k X modem firmware update feature from the RS-232 console port. 1K X modem only works in 57600bps mode.

There are 2 situations where the 1k X modem update feature can be used:

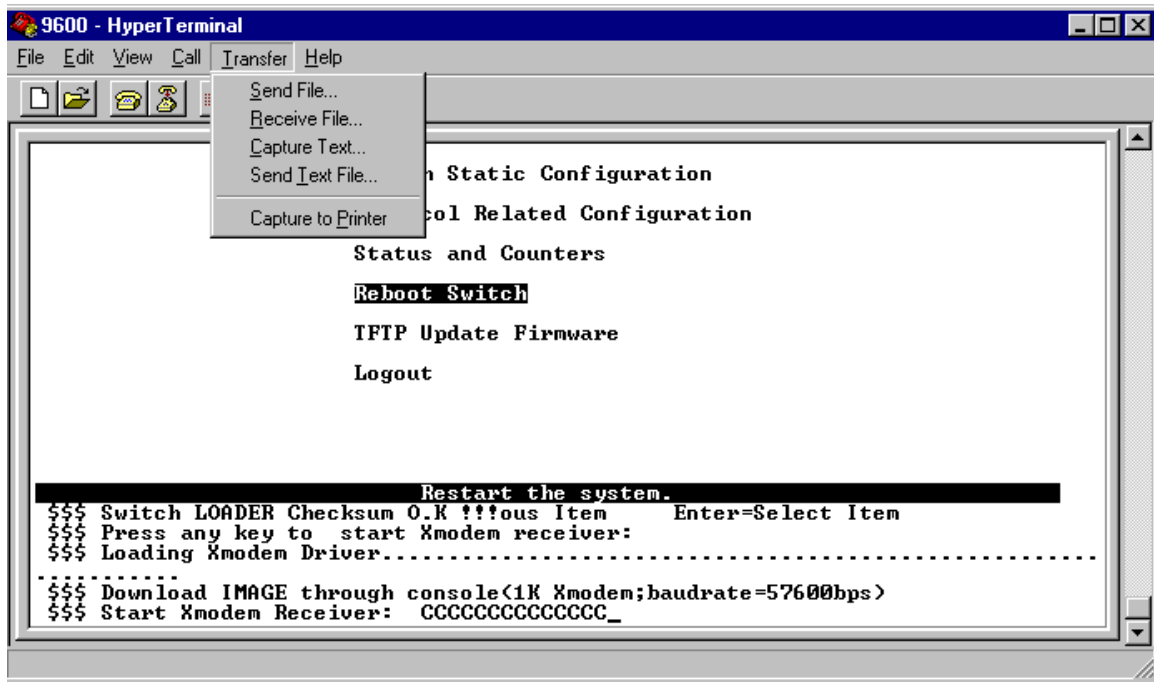
- a. The Administrator enters "1K X modem receiver mode" by pressing any key within 5 seconds after system is powered on.
- b. The system automatically enters "1K X modem receiver mode" if it detects a firmware checksum failure while booting.

1. When you initially start the "1K X modem mode" from one of the 2 options above, please ensure that you are connected a 57600bps

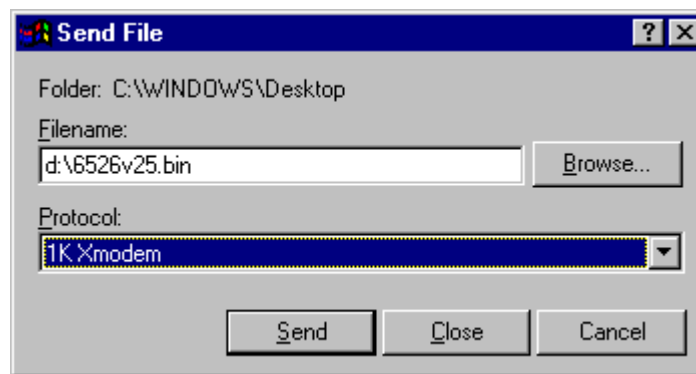
Select **File -> Properties**, and change the baud-rate to 57600bps, then press **OK**.



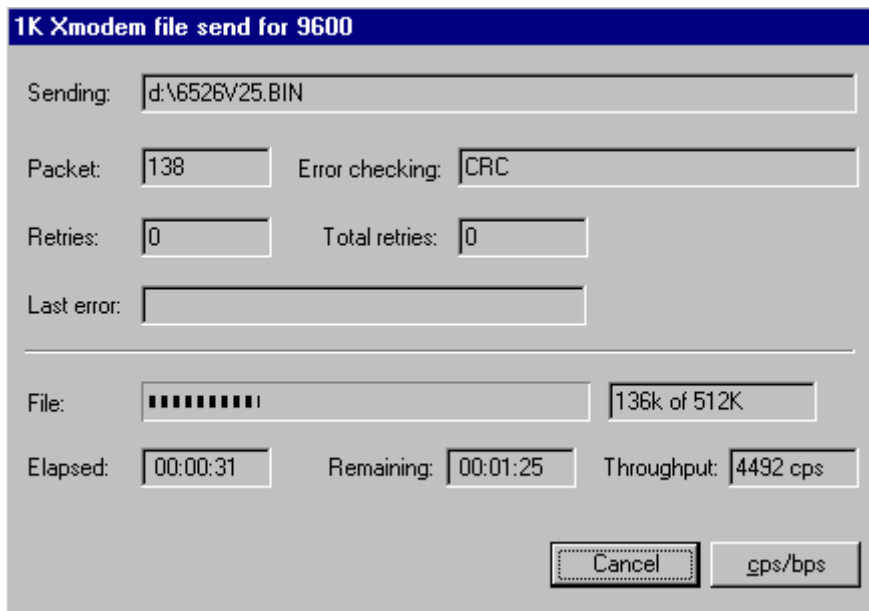
2. Press the connected icon, you will see “CCCC...”displayed on the console.
Then select **Transfer** , Send **File**.



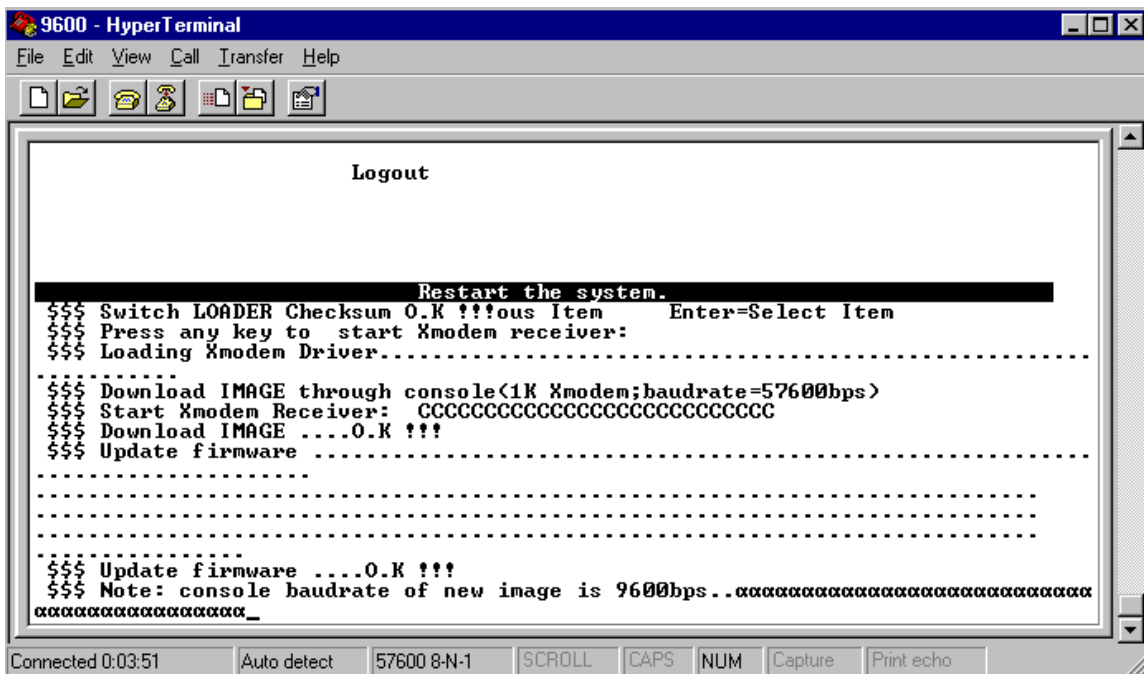
3. Select “**1K Xmodem**” in the **Protocol** item, and browse to the firmware file you will be loading and then Press the **Send** button.



4. The firmware image will start downloading.



5. When the image has finished downloading, the switch system will update firmware automatically. You should see a message “Update firmware ok” and the switch will then reboot.



4. Out-of-band Terminal mode management

1. The **ESM-24T02M** switch also provides a serial interface to manage and monitor the switch. The following Console Port Information can be used by the system administrator to configure the switch via a terminal application.

NOTE: Detailed descriptions of the various functions are not provided in the *Console Configuration* documentation. Please see the *Web Configuration* documentation above (pages 13 to 49) for more detailed information.

2. You need to provide the administrator user name and password to login. The default user name is “**admin**”, the default password is “**admin**”.

User Interface EtherGuard ESM-24T02M	
Username:	—
Password:	—

4-1 Main Menu

There are six items within the Main Menu selection:

```

Main Menu
=====

Switch Static Configuration
Protocol Related Configuration
Status and Counters
Reboot Switch
TFTP Update Firmware
Logout

Configure the switch.
Tab=Next Item      Backspace=Previous Item      Enter=Select Item
```

Switch Static Configuration: Configures the advanced Layer 2 switching functions.

Protocol Related Configuration: Configures the switches IP address settings.

Status and Counters: Displays status/statistical information about the switch.

Reboot Switch: Restart the system or reset switch to default configuration.

TFTP Update Firmware: Use TFTP to download a new firmware image.

Logout: Exit the console configuration program.

<Control Keys>

The following keys perform various functions within the console management:

Tab: Move the cursor to next item.

Backspace: Move the cursor to previous item.

Enter: Select the current item.

Space: Toggle selected item to next option.

4-2 Switch Static Configuration

```
Switch Configuration

Port Configuration
Trunk Configuration
VLAN Configuration
Misc Configuration
Administration Configuration
Port Mirroring Configuration
Priority Configuration
MAC Address Configuration
Main Menu

Display or change port configuration.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

<-Actions->

Many of the following configuration pages use the following <-Action-> options.

- <Quit>: Exit the page and return to previous menu.
- <Edit>: Configure the options displayed.
- <Save>: Save all configured values.
- <Previous Page>: Return to previous page (previous ports).
- <Next page>: Go to the next page (next ports).

To exit out of Edit mode:

Ctrl+A : Exit configuration more , Go Back to action menu line.

4-2-1. Port Configuration

Edit / View the port configuration.

Port Configuration									
Port	Type	InRate (100K)	OutRate (100K)	Enable	Auto	Spd/Dpx		FlowControl	
						Full	Half		
PORT1	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT2	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT3	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT4	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT5	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT6	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT7	100Tx	0	0	Yes	AUTO	100	Full	On	On
PORT8	100Tx	0	0	Yes	AUTO	100	Full	On	On

actions-> <Quit> <Edit> <Save> <Previous Page> <Next Page>
 Select the Action menu.
 Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item

1. InRate (100K/unit):

0: disable rate control.

1~1000: valid rate value.

2. OutRate (100K/unit):

0: disable rate control.

1~1000: valid rate value.

3. Enabled:

[Enables](#) or [Disables](#) this port in the switch.

“**Yes**” = Enable.

“**No**” = Disable.

4. Auto:

Define Auto negotiation mode. Options: “**Auto**”, “**Nway_Force**”, “**Force**”

Spd/Dpx:

Define the port speed and Duplex.

5. Flow Control:

Full: [Enables](#) or [Disables](#) Full Duplex flow control

Half: [Enables](#) or [Disables](#) Half Duplex flow control. ([backpressure](#))

4-2-2. Trunk Configuration

This page can be used to create a maximum of up to seven trunk groups. Users can arbitrarily select up to four ports from port 1 to port 26 to build a trunk group.

Trunk Configuration																										
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	M1	M2
1	v	v	v	v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	v	v	v	v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	v	-	v	-	-	-	-	-	-	-	-	-	-

TRK1 Static
TRK2 LACP
TRK3 Disable
TRK4 Disable
TRK5 Disable
TRK6 Disable
TRK7 Static

actions-> <Edit> <Save> <Quit>

Select the action menu.

Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item

4-2-3. VLAN Configuration

```
VLAN Configuration

VLAN Configure
Create a VLAN Group
Edit/Delete a VLAN Group
Group Sorted Mode
Previous Menu

Configure the VLAN pvid and ingress, egress Rule.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

4-2-3-1. VLAN Configure

Two modes of VLAN can be selected. Port-based VLAN or 802.1Q VLAN

```
VLAN Support Configuraton

VLAN Mode :PortBased

actions-> <Quit> <Edit> <Save> <Previous Page> <Next Page>
Select the Action menu.
Tab=Next Item BackSpace=Previous Item Space=Toggle Ctrl+A=Action menu
```

If set to [802.1Q VLAN](#), then you will need to define PVID, ingress filtering 1 and ingress filtering 2.

```

                                VLAN Support Configuraton

VLAN Mode :802.1Q

Port          PVID          IngressFilter1      IngressFilter2
NonMember Pkt      Untagged Pkt
-----
PORT1         1             Forward             Drop
PORT2         3             Forward             Forward
PORT3         1             Drop                Forward
PORT4         1             Drop                Forward
PORT5         1             Drop                Forward
PORT6         1             Drop                Forward
PORT7         1             Drop                Forward
PORT8         1             Drop                Forward

actions->      <Quit>      <Edit>      <Save>      <Previous Page>      <Next Page>
                Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item

```

4-2-3-2. Create a VLAN Group

Create a Port-Based VLAN

To create a port-based VLAN you need to add member/nonmember ports to it.

1. **VLAN Name:** Type a name for the new VLAN.
2. **Grp ID:** Type the VLAN group ID. The group ID range is 1~4094.
3. **Member:** Press the <Space> key to choose VLAN members.

```

                                Add an VLAN Group
                                -----
VLAN Name: [vlan2          ] Grp ID: [2    ] (1~4094)

Port          Member
-----
PORT1        Member
PORT2        Member
PORT3        No
PORT4        Member
PORT5        No
PORT6        No
PORT7        No
PORT8        No

actions->    <Quit>    <Edit>    <Save>    <Previous Page>    <Next Page>
Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item

```

Create 802.1Q VLAN

To create an 802.1Q VLAN you need to add member/nonmember ports to it.

1. **VLAN Name:** Type a name for the new VLAN.
2. **VLAN ID:** Type a VID (between 1~4094). The default is 1.

There can be up to 256 VLAN groups defined.

3. **Protocol VLAN:** Press **Space** key to choose protocol type.
4. **Member:** Press **Space** key to choose VLAN members and their mode.

```

                                Add an VLAN Group
                                -----
VLAN Name: [vlan2                ] VLAN ID: [2      ] (1~4094)

Protocol VLAN : None

Port          Member
-----
PORT1         UnTagged
PORT2         Tagged
PORT3         UnTagged
PORT4         No
PORT5         No
PORT6         No
PORT7         No
PORT8         No

actions->    <Quit>      <Edit>      <Save>      <Previous Page>  <Next Page>
                Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item

```

4-2-3-3. Edit / Delete a VLAN Group

This page allows administrators to edit or delete VLAN group entries.

```
NAME:          VID:          NAME:          VID:
-----          -          -----          -
DEFAULT        1
vlan2          2

actions->  <Quit>  <Edit>  <Delete>  <Previous Page>  <Next Page>
Edit/Delete a VLAN Group.
Tab=Next Item  BackSpace=Previous Item  CTRL+A=Action menu  Enter=Select Item
```

```
                                Edit an VLAN Group
                                -----
VLAN Name: [vlan2          ] VLAN ID: [2          ] (1~4094)
Protocol VLAN : AppleTalk/NetBIOS

Port          Member
-----          -
PORT1          UnTagged
PORT2          Tagged
PORT3          UnTagged
PORT4          No
PORT5          No
PORT6          No
PORT7          No
PORT8          No

actions->  <Quit>  <Edit>  <Save>  <Previous Page>  <Next Page>
select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-2-3-4. Groups Sorted Mode

This page, allows for easier access to VLAN groups when there are numerous entries. They can be sorted by either Name or VID, and then edited as normal.

4-2-4. Misc Configuration

```

Misc Configuration

MAC Age Interval
Broadcast Storm Filtering
Max bridge transmit delay bound
Port Security
Previous Menu

Configure the MAC aging time.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-2-4-1. MAC Age Interval

Type the number of seconds that an inactive MAC address remains in the switch's address table. The valid range is 300~765 seconds. Default is **300** seconds.

```
MAC Aging Time

MAC Age Interval (sec) [600] : 600
(disable:0,valid value:300~765)

actions->      <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

4-2-4-2. Broadcast Storm Filtering

Configuring broadcast storm control.

Valid threshold values are 5%, 10%, 15%, 20%, 25% and NO. Default is 5%.

```
Broadcast Storm Filter Mode

Broadcast Storm Filter Mode :5

actions->      <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item quit=Previous menu Enter=Select Item
```

4-2-4-3. Max bridge transmit delay bound

Max bridge transmit delay bound control: This Limits the packets queuing time. If enable, packets that are queued longer than this setting will be dropped. Valid values for this are 1sec, 2 sec, 4 sec and off. Default is 1 seconds.

NOTE: Make sure the “Max bridge transit delay bound” control is enabled before enabling the “Low Queue Delay Bound” option.

Low Queue Delay Bound: This controls how low priority packets are queued in the switch. The **Max Delay Time** setting defines when a low priority packet is given more priority to send.

```
Max Bridge Transmit Delay Bound

Max bridge transmit delay bound :OFF
Low Queue Delay Bound :Disabled
Low Queue Max Delay Time :255

actions->      <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```


4-2-4-4. Port Security

Port Security: Setting a ports security mode to on (enabled) will lock it to all unauthorized MAC addresses. This disables the address learning functionality on the port and then only incoming packets with a known source MAC addresses will be forwarded by the port. Administrators can disable the port from learning any new MAC addresses, then use the static MAC addresses table entry screen to define a list of MAC addresses that can be used by the secure port.

```
Port Security

Port          Enable Security
              (disable for MAC Learning)
-----
PORT1         enabled
PORT2         enabled
PORT3         enabled
PORT4         Disabled
PORT5         Disabled
PORT6         Disabled
PORT7         Disabled
PORT8         Disabled

actions->    <Quit>    <Edit>    <Save>    <Previous Page>    <Next Page>
Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-2-4-4. Collision's Retry Forever

(This setting only affects Half Duplex connections)

Disable – Any collisions are retried for a maximum of 48 times, after which the packet will be dropped.

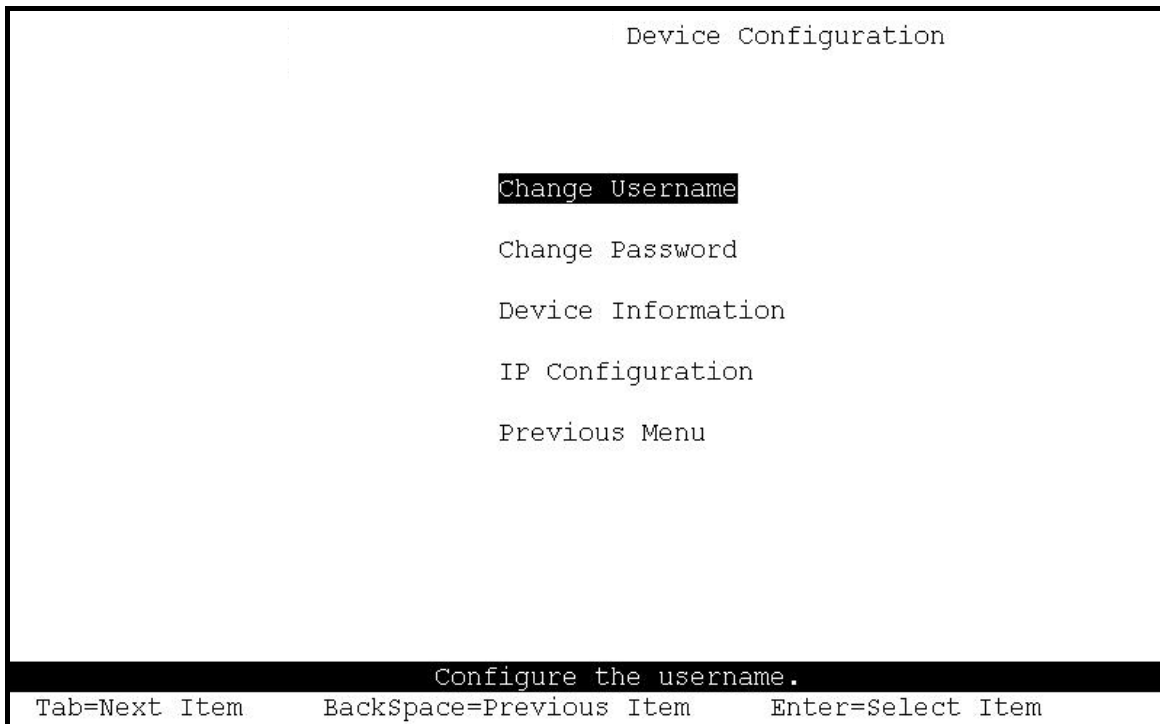
Enable – Collision will be retried indefinitely.

```
Collisions Retry Forever

Collisions Retry Forever : Enable

actions->      <Edit>          <Save>          <Quit>
                Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-2-5. Administration Configuration



Configure the following options.

- **Change Username**
- **Change Password**
- **Device Information** (name, description, location, content)
- **IP Configuration** (IP address, Mask, Gateway)

4-2-6. Port Mirroring Configuration

The Port Sniffer is used to monitor traffic in a switched network. Traffic passed through ports can be monitored by one specific port. i.e. Traffic inbound or outbound on a monitored port will be duplicated into the configured sniffer port

- 1. Sniffer Mode:** Press **Space** key to set sniffer mode Disable, Rx, Tx or Both.
- 2. Monitoring Port (Analysis Port):** Use this option to select the destination port for monitored traffic. This is the port that your network analyzer would be connected to.
- 3. Monitored Port:** Based on the Sniffer Mode selection made previously, traffic from the selected port will be mirrored onto the Analysis port. A maximum of 25 monitored ports can be configured. Press **Space** key to choose member port, “V” – is the member, “-“ = not a member.

```
Port Sniffer

Sniffer Mode: Rx
Monitoring Port : PORT1
Monitored Port :

Port      member
-----
PORT1     -
PORT2     v
PORT3     -
PORT4     v
PORT5     -
PORT6     -
PORT7     v
PORT8     -

actions->  <Quit>    <Edit>    <Save>    <Previous Page>  <Next Page>
                Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-2-7. Priority Configuration

```

                                     The Priority configuration

                                     Port Static Priority
                                     802.1p priority
                                     Previous Menu

Configure port static priority.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-2-7-1. Port Static Priority

Port Priority: This is used to force any non prioritized packets to either High, Low, or Disabled states on the particular port.

```

                                     Port Priority

Port          Priority
-----
PORT1         Low
PORT2         High
PORT3         Low
PORT4         High
PORT5         High
PORT6         Low
PORT7         High
PORT8         Low

actions->    <Quit>    <Edit>    <Save>    <Previous Page>    <Next Page>
                                     Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-2-7-2. 802.1p Priority Configuration

There are 0~7-priority levels that can be mapped to either the high or low queues.

QosMode Options: First Come First Served, All High before Low, High/Low Queue Service Ratio.

The “High/Low Queue Service Ratio” enables the switch administrator to determine the ratio of high priority packets sent against low priority packets.

```
802.1p Priority Configuration

Will be overwritten by port-priority!!

Priority 0 : Low
Priority 1 : Low
Priority 2 : Low
Priority 3 : Low
Priority 4 : High
Priority 5 : High
Priority 6 : High
Priority 7 : High

QosMode : High/Low Queue Service Ratio
=> H:[2] L:[1]

actions-> <Edit> <Save> <Quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

4-2-8. MAC Address Configuration

```
MAC Address Configuration

Static MAC Address
Filtering MAC Address
Previous Menu

Configure the MAC address.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-2-8-1. Static MAC Address

When you add a static MAC address, it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address after it has been disconnected or powered-off from the network, and then reconnected at some time later.

```
Static MAC Address Configuration

Mac Address      Port num  Vlan ID      Mac Address      Port num  Vlan ID
-----
actions-> <Quit> <Add> <Edit> <Delete> <Previous Page> <Next Page>
Add/Edit/Delete a Mac.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

●Add static MAC address

Actions->

1. In the MAC address box, enter the MAC address to and from which the port should permanently forward traffic, regardless of the device's network state.
2. Press the Space key to select the Port Number
3. If tag-based (IEEE 802.1Q) VLANs are set up on the switch, static addresses are associated with individual VLANs. Type the VID (tag-based VLANs) to associate with the MAC address.

```
                                Add Static MAC Address

                                Mac Address :0090CC26BBAA
                                Port num    :PORT3
                                Vlan ID     :2

actions->      <Edit>          <Save>          <Quit>
                Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```


●Edit static MAC address

Actions->

1. Press <Edit> key.
2. Choose the MAC address that you want to modify and then press enter.

```
Static MAC Address Configuration

Mac Address   Port num  Vlan ID           Mac Address   Port num  Vlan ID
-----
0090CC26BBAA PORT3         2
005000100001 PORT10       4

actions-> <Quit> <Add> <Edit> <Delete> <Previous Page> <Next Page>
Add/Edit/Delete a Mac.
Tab=Next Item BackSpace=Previous Item Space=Toggle Ctrl+A=Action menu
```

```
Static MAC Address Configuration

Mac Address : 0090CC26BBAA
Port num    : PORT3
Vlan ID     : 2

actions-> <Edit> <Save> <Quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item Space=Toggle Ctrl+A=Action menu
```

●Delete static MAC address

Actions->

1. Select the <Delete> action.
2. Choose the MAC address that you want to delete and then press enter.

Static MAC Address Configuration

Mac Address	Port num	Vlan ID	Mac Address	Port num	Vlan ID
0090CC26BBAA	PORT3	2			
005000100001	PORT10	4			

actions-> <Quit> <Add> <Edit> <Delete> <Previous Page> <Next Page>
Add/Edit/Delete a Mac.

Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item

4-2-8-2. Filtering MAC Address

MAC address filtering allows the switch to drop unwanted traffic. Traffic is filtered based on the destination addresses.

This page allows the administrator to add, modify or delete MAC address filters.

```
Filter MAC Address Configuration

Mac Address      Vlan ID          Mac Address      Vlan ID
-----

actions->  <Quit>  <Add>  <Edit>  <Delete>  <Previous Page>  <Next Page>
Add/Edit/Delete a Mac.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

● Add filter MAC address

Actions->

1. Press <Add> --> <Edit> key to add a filtered MAC address.
2. **MAC Address:** Type the MAC address to filter.
3. **Vlan ID:** If tag-based (802.1Q) VLAN's are set up on the switch, type the VID to associate with the MAC address.

```
Add Filter MAC Address

Mac Address :000000001A01
Vlan ID     :2

actions->          <Edit>          <Save>          <Quit>
Save successfully!press any key to return!
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

● Edit filter MAC address

```
Filter MAC Address Configuration

Mac Address      Vlan ID          Mac Address      Vlan ID
-----
0000000000001   1
0000000000002   2
0000000000003   3

actions->  <Quit>  <Add>  <Edit>  <Delete>  <Previous Page>  <Next Page>
Add/Edit/Delete a Mac.
Tab=Next Item  BackSpace=Previous Item  Space=Toggle  Ctrl+A=Action menu
```

```
Edit Filter MAC Address

Mac Address :0000000000001
Vlan ID    :1

actions->          <Edit>          <Save>          <Quit>
Can not modify for Read Only item.
Tab=Next Item  BackSpace=Previous Item  Space=Toggle  Ctrl+A=Action menu
```

●Delete filter MAC address

Actions->

1. Press <Delete> key to delete a filter MAC address.
2. Choose the MAC address that you want to delete and then press enter.
3. Pressing <Enter> once will complete deletion.

```
Filter MAC Address Configuration

Mac Address      Vlan ID          Mac Address      Vlan ID
-----
0000000000001   1
0000000000002   2
0000000000003   3

actions-> <Quit> <Add> <Edit> <Delete> <Previous Page> <Next Page>
Add/Edit/Delete a Mac.
Tab=Next Item Backspace=Previous Item Quit=Previous menu Enter=Select Item
```

4-3. Protocol Related Configuration

```
The Protocol Related configuration

STP
SNMP
GVRP
IGMP
DHCP
LACP
802.1X
Previous Menu

Configure the Spanning Tree Protocol.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-3-1. RSTP

The Rapid Spanning-Tree Protocol (RSTP) is a standardized method (IEEE 802.1w) for avoiding loops in switched networks. You would enable RSTP to ensure that only one path at a time is active between any two nodes on the network.

```
Spanning Tree Protocol

STP Enable
System Configuration
Perport Configuration
Previous Menu

Enabled or disabled the Spanning Tree Protocol.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-3-1-1. RSTP Enable

This page shows how to enable or disable Spanning Tree function.

Press the **Space** key to enable or disable RSTP.

```
STP Enabled/Disabled Configuration

STP :Enabled

actions->      <Edit>          <Save>          <Quit>
                Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

4-3-1-2. RSTP System Configuration

```
STP System Configuration

Root Bridge Information          Configure Spanning Tree Parameters
-----
Priority      : 32768             Priority (0-65535)   :32768
Mac Address   : 000A17000001     Max Age (6-40)      :20
Root_Path_Cost: 0                 Hello Time (1-10)   :2
Root_Port    : Root              Forward_Delay_Time (4-30) :15
Max Age       : 20
Hello Time    : 2
Forward Delay : 15

actions->      <Edit>          <Save>          <Quit>
                Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```


4-3-2. SNMP

The [ESM-24T02M](#) can be managed from any Simple Network Management Protocol (SNMP) application. If using the Management Information Base (MIB) within your SNMP application, then the information can be reported in a more intuitive manner. SNMP is a Protocol that governs the transfer of information between the management station (application) and the agent (the [ESM-24T02M](#) switch).

```
SNMP Configuration

System Options
Community Strings
Trap Managers
Previous Menu

Configure the system information.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-3-2-1. System Options

```
System Options Configuration

System Name :
System Contact :
  Root
System Location :
  Local

actions->          <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  CTRL+A=Action menu  Enter=Select Item
```

4-3-2-2. Community Strings

Use this page to Add/ Edit/ Delete SNMP community strings.

1. **Community Name:** The current community name strings.
2. **Write Access:** Enable read only or read-write access.

Restricted: Read only, enables requests accompanied by this string to display MIB-object information.

Unrestricted: Read write, enables requests accompanied by this string to display MIB-object information and to set MIB objects.

```
SNMP Community Configuration

Community Name      Write Access
-----
public             Restricted
private            Unrestricted

actions->          <Add>          <Edit>          <Delete>          <Quit>
                  Add/Edit/Delete community strings.
Tab=Next Item  BackSpace=Previous Item  CTRL+A=Action menu  Enter=Select Item
```

- **Add Community Name**

1. Select the **<Add>** --> **<Edit>** option.
2. **Community Name:** Type the community name.
3. **Write Access:** Press **Space** key to select restricted or unrestricted.

```
                                Add SNMP Community

Community Name :Command1
Write Access   :Restricted

actions->          <Edit>          <Save>          <Quit>
                  Select the action menu.
Tab=Next Item BackSpace=Previous Item Space=Toggle Ctrl+A=Action menu
```

- **Edit Community Name**

1. Select the **<Edit>** option, choose the item that you want to modify and then press **Enter**.
2. **Community Name:** Type the new name.
3. **Write Access:** Press **<Space>** key to change the access (restricted or unrestricted)

```
                                Edit SNMP Community

Community Name :public
Write Access   :Restricted

actions->          <Edit>          <Save>          <Quit>
                  Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

- **Delete Community Name**

1. Select the **<Delete>** option.
2. Choose the community name that you want to delete and then press **Enter**.

```
SNMP Community Configuration

Community Name      Write Access
-----
public              Restricted
private             Unrestricted
Command1            Restricted

actions->          <Add>                <Edit>                <Delete>                <Quit>
Delete SNMP community strings.
Tab=Next Item  BackSpace=Previous Item  CTRL+A=Action menu  Enter=Select Item
```

4-3-2-3. Trap Managers

A trap manager is a management station that receives traps, the system alerts generated by the switch. If no trap manager is defined, no traps are issued. Create a trap manager by entering the IP address of the station and a community string.

```
Trap Managers Configuration

IP          Community Name
-----

actions->  <Add>          <Edit>          <Delete>        <Quit>
Add/Edit/Delete trap managers.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

- **Add SNMP trap manager**

1. Select the **<Add>** --> **<Edit>** option to add a Trap Manager.
2. **IP:** Type the IP address of the Trap Manager
3. **Community Name:** Enter the community name.

```
Add SNMP Trap Manager

IP :192.168.1.234
Community Name :public

actions->  <Edit>          <Save>          <quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item CTRL+A=Action menu Enter=Select Item
```

- **Edit trap managers**

1. Select the **<Edit>** option, and then choose the item that you want to modify.
2. **IP:** Type the new IP address.
3. **Community Name:** Type the community name.

```

#                                     Edit Trap Managers

                                     IP :192.168.1.234

                                     Community Name :public

actions->          <Edit>              <Save>              <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

- **Delete trap manager**

1. Select the **<Delete>** option.
2. Choose the trap manager that you want to delete and then press **Enter**.

```

#                                     Trap Managers Configuration

IP                                     Community Name
-----
192.168.1.234                         public

actions->          <Add>              <Edit>              <Delete>          <Quit>
Delete SNMP trap managers.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-3-3. GVRP

GVRP (GARP [Generic Attribute Registration Protocol] VLAN Registration Protocol)

GVRP allows automatic VLAN configuration between the switch and its nodes. If the switch is connected to a device with GVRP support, then a GVRP request can be issued from the device to the switch using a valid VID of a VLAN defined on the switch. The switch will then automatically add the device to the existing VLAN entries.

From this page you can enable or disable the GVRP (GARP VLAN Registration Protocol) support.

```
GVRP Configuration

GVRP : Enabled

actions->          <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Space=Toggle  Ctrl+A=Action menu
```

Note: GVRP must also be enabled on participating network nodes.

4-3-4. IGMP

The [ESM-24T02M](#) switch supports IP multicasting via the IGMP protocol. Administrators can enable IGMP and then display the IGMP snooping information. Multicast groups, VID and member port information.

This page allows administrators to enable or disable the IGMP support.

```
IGMP Configuration

IGMP : Enabled

actions->          <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Space=Toggle  Ctrl+A=Action menu
```


4-3-5. LACP (Link Aggregation Control Protocol)

Use this page to configure and view all the LACP parameters.

```
LACP Configuration

Working Ports Setting

State Activity

LACP Status

Previous Menu

LACP setting.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

Note: All ports support LACP dynamic trunking. If connecting to a device that also supports LACP, the LACP dynamic trunking function will automatically create a trunk group.

4-3-5-1. Working Port Setting

Use this page to set the ports in trunk group.

```
LACP Group Configuration

Group      LACP Work Port Num
-----
TRK2      2

<Edit>      <Save>      <Quit>
Select the action menu.
m BackSpace=Previous Item  Space=Toggle  Ctrl+A=Action menu
```

4-3-5-2. State Activity

LACP Port State Active Configuration			
Port	State Activity	Port	State Activity
5	Active		
6	Active		
7	Passive		
8	Passive		

Options-> <Edit> <Save> <Quit>

Save successfully!press any key to return!

=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item

Active: The port automatically sends LACP protocol packets.

Passive: The port does not automatically send LACP protocol packets, and responds only if it receives LACP protocol packets from a connected device.

NOTE: If LACP mode is configured in the trunk group, all of the member ports of this trunk group will be set "Active" automatically.

4-3-5-3. LACP Status

From this screen you can view the current trunking group status.

Static trunk group

```

LACP Group Status

Static Trunking Group

Group Key : 1
Port_No   : 1 2 3 4

<Quit>    <Previous Page>    <Next Page>
Select the action menu.
m BackSpace=Previous Item Quit=Previous menu Enter=Select Item_

```

LACP trunk group

```

LACP Group Status

[Actor]          Group          [Partner]

Priority:        1                      1
MAC :           004063809988          004063808899

Port_No  Key   Priority  Active  Port_No  Key   Priority
5        514   1        selected  5        514   1
6        514   1        selected  6        514   1
7        514   1        selected  7        514   1
8        514   1        selected  8        514   1

actions->    <Quit>    <Previous Page>    <Next Page>
Select the action menu.
ab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item

```

4-3-6. 802.1x Protocol

From this page administrators can configure and view all 802.1x parameters.

```
802.1x protocol

802.1x Enable
System Configuration
Misc Configuration
Previous Menu

Enabled or disabled the 802.1x Protocol.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-3-6-1. 802.1x Enable

```
802.1x Enabled/Disabled Configuration

802.1x : Enabled

actions->      <Edit>      <Save>      <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

4-3-6-2. 802.1x System Configuration

```
802.1x System Configuration

Radius Server IP : 192.168.221.72

Shared Key : 12345678

NAS,Identifier: NAS_L2_SWITCH

Server Port: 1812

Accounting Port: 1813

(Force Unauth=Fu, Force Auth=Fa, Auto=Au, None=No):
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 M1 M2
No No Au Au Au No No No No No No No No No No No No No No No No No No No

actions->      <Edit>          <Save>          <Quit>
                Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

- 1.**Radius Server IP Address:** the IP address of the authentication server.
- 2.**Shared Key:** A key shared between this switch and authentication server.
- 3.**NAS, Identifier:** A string used to identify this switch.
- 4.**Server Port:** The UDP port number used by the authentication server.
- 5.**Accounting Port:** The UDP port number used by the authentication server to retrieve accounting information.

Note:

- Fu** Force the specific port to be unauthorized.
- Fa** Force the specific port to be authorized.
- Au** The state of the specific port is determined by the outcome of the authentication.
- No** The specific port does not support 802.1x functions.

4-3-6-3. 802.1x Misc Configuration

```
802.1x Misc Configuration

Quiet-period <0..65535,default=60>      : 60
Tx-period <0..65535,default=30>          : 30
Supplicant-timeout <1..300,default=30>   : 30
Server-timeout <1..300,default=30>       : 30
ReAuthMax <1..10,default=2>              : 2
Reauth-period <1..9999999,default=3600>  :3600

actions->      <Edit>          <Save>          <Quit>
                Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

1. **Quiet Period:** Used to define periods of time during which it will not attempt to acquire a supplicant (Default time is 60 seconds).
2. **Tx Period:** Used to determine when an EAPOL PDU is to be transmitted (Default value is 30 seconds).
3. **Supplicant Timeout:** Used to determine timeout conditions in the exchanges between the supplicant and authentication server (Default value is 30 seconds).
4. **Server Timeout:** Used to determine timeout conditions in the exchanges between the authenticator and authentication server (Default value is 30 seconds).
5. **ReAuthMax:** Used to determine the number of re-authentication attempts that are permitted before the specific port becomes unauthorized (Default value is 2 times).
6. **Reauth Period:** Used to determine a nonzero number of seconds between periodic re-authentication of the supplications (Default value is 3600 seconds).

4-4. Status and Counters

```

                                     Status and Counters

                                     Port Status
                                     Port Counters
                                     System Information
                                     Main Menu

Display current status of all the switch ports.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-4-1. Port Status

This page displays port status information.

```

                                     Port Status

Port      Link      InRate  OutRate  Enable  Auto      Spd/Dpx  Flow
Status    (100K)  (100K)  Enable   Auto     Spd/Dpx  Control
-----
PORT1    Down      0        0        Yes     AUTO     10 Half  Off
PORT2    Down      0        0        Yes     AUTO     10 Half  Off
PORT3    Down      0        0        Yes     AUTO     10 Half  Off
PORT4    Down      0        0        Yes     AUTO     10 Half  Off
PORT5    Down      0        0        Yes     AUTO     10 Half  Off
PORT6    Down      0        0        Yes     AUTO     10 Half  Off
PORT7    Down      0        0        Yes     AUTO     10 Half  Off
PORT8    Down      0        0        Yes     AUTO     10 Half  Off

actions->      <Quit>      <Previous Page>      <Next Page>
                                     Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Link Status: Down indicates “No Link”, Up indicates “Link”.

InRate: Display the input rate control (100K/unit) value.

OutRate: Display the output rate control (100K/unit) value.

Enabled: Display port status Yes or No, No indicates port is disabled.

Auto: Display which mode the port is auto-negotiated with: Auto/Forced/Nway-forced.

Spd/Dpx: Display the port speed and duplex.

FlowCtrl: In Auto or Nway modes, display the flow control status after negotiation.

In Forced mode, the flow control status is enabled or disabled based on the switch configured setting.

4-4-2. Port Counters

The following view provides statistical information about the switch.

Port Counters							
Port	TxGoodPkt	TxBadPkt	RxGoodPkt	RxBadPkt	TxAbort	Collision	DropPkt
PORT1	0	0	0	0	0	0	0
PORT2	0	0	0	0	0	0	0
PORT3	0	0	0	0	0	0	0
PORT4	0	0	0	0	0	0	0
PORT5	0	0	0	0	0	0	0
PORT6	0	0	0	0	0	0	0
PORT7	0	0	0	0	0	0	0
PORT8	0	0	0	0	0	0	0

actions-> <Quit> <Reset All> <Previous Page> <Next Page>

Configure the action menu.

Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item

4-4-3. System Information

MAC Address: The unique hardware address (MAC).

Firmware Version: Display the switch's firmware version.

ASIC Version: Display the switch's Hardware version.

PCBA version: Display the switch printed circuit board number.

Serial number: Display the serial number assigned.

Module 1 Type: Display module 1, port 1 information:

1000Tx, 1000Fx or 100Fx ext. Depending on the module card used.

Module 1 information: Information as saved in eeprom of module.

Module 2 Type: Display module 1, port 2 information.

1000Tx, 1000Fx or 100Fx ext. Depending on the module card used.

Module 2 information: Information as saved in eeprom of module.

```

                                     System Information

MAC Address           : 004063809988
Firmware version     : 2.5
ASIC version         : A7.0
PCBA version         : 1.0
Serial number        :
Module 1 Type        : 1000Tx
Module 1 information  : N/A
Module 2 Type        : 1000Tx
Module 2 information  : N/A

Display the switch system.
Esc=Previous menu

```

4-5. Reboot Switch

```
Restart Configuration

Default
Restart
Previous Menu

Recovering to default.
Tab=Next Item      BackSpace=Previous Item      Enter=Select Item
```

4-5-1. Default

This will Reset the switch to its default configuration.

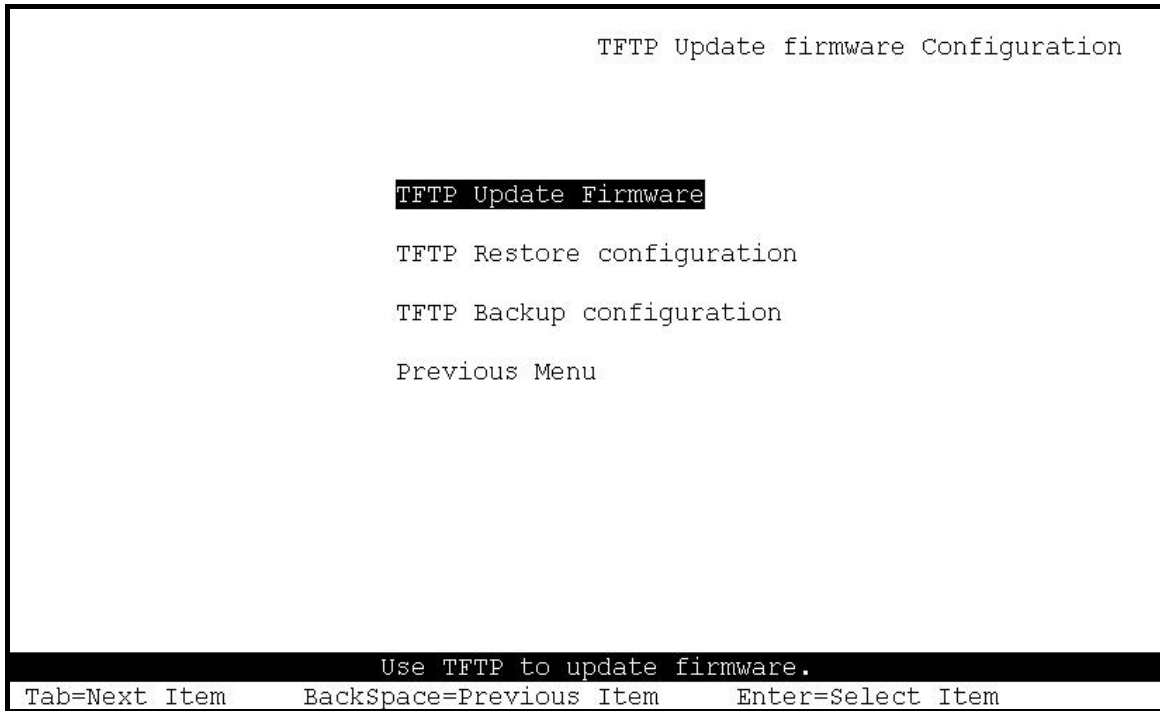
```
Resetting to the default will restart the system automatically!
Do you want to continue? (y/n)
```

4-5-2. Restart

This will reboot the switch (i.e. software reset).

4-6. TFTP Update Firmware

This page provides TFTP firmware update, configuration backup and configuration restore options.



4-6-1. TFTP Update Firmware

This page allows the administrator to perform a TFTP firmware update.

```
TFTP Update Firmware

TFTP Server      : 192.168.223.99
Remote File Name : image.bin

actions->      <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Actions->

1. Start the TFTP server, and copy the updated firmware version image file to the TFTP servers work directory.
2. Press **<Edit>** on this page.
3. **TFTP Server:** Enter the IP address of the TFTP server.
4. **Remote File Name:** Enter the name of the image file.
5. Press **Ctrl+A** go to action line.
6. Select the **<Save>** Option. This will start the download of the image file.
7. When successfully downloaded the image file will be permanently saved to the eeprom.
8. Restart the switch.

4-6-2. Restore Configure File

This page allows the administrator to perform a TFTP configuration restore.

This can be used to restore a previously backed up configuration.

```
Restore Configuration File

TFTP Server      : 192.168.223.99
Remote File Name : data.dat

actions->      <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

Actions->

1. Start the TFTP server.
2. Select the **<Edit>** option on this page.
3. **TFTP Server:** Type the IP address of the TFTP server.
4. **Remote File Name:** Type the image file name.
5. Press **Ctrl+A** go to action line.
6. Select the **<Save>** Option. This will start the download of the configuration file.
7. When successfully downloaded the image file will be permanently saved to the eeprom.
8. Restart the switch.

4-6-3. Backup Configure File

This page allows the administrator to perform a TFTP configuration backup. This can be used to backup the current configuration.

```
Backup Configuration File

TFTP Server      : 192.168.223.99
Remote File Name : data.dat

actions->      <Edit>          <Save>          <Quit>
Select the action menu.
Tab=Next Item BackSpace=Previous Item Quit=Previous menu Enter=Select Item
```

Actions->

1. Start the TFTP server.
2. Select the <Edit> option on this page.
3. **TFTP Server:** Type the IP address of the TFTP server.
4. **Remote File Name:** Type the image file name.
5. Press **Ctrl+A** go to action line.
6. Select the <Save> option. This will start the upload of the configuration file.
7. When successfully uploaded, the image file will be saved on the TFTP server.

5.0 Application Examples:

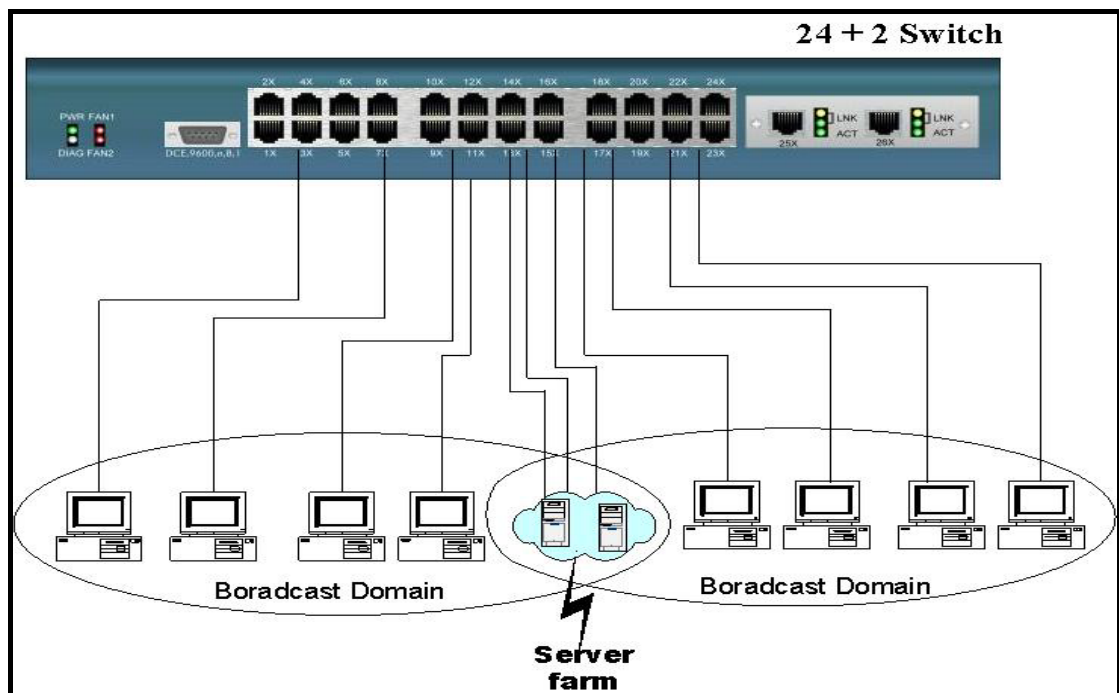
1.1 VLAN applications used with switch.

A VLAN is a simple option to protect your network against broadcast storms by creating segments based on Layer2 Ethernet information. It avoids the complexity and heavy processing requirements of Layer3 IP based routers, while providing some similar functionality.

Each VLAN grouping forms a separate isolated Broadcast Domain. These Domains (VLAN's) can overlap to allow multiple VLAN groups to access servers, which need to exist in all VLAN groups.

Virtual LAN, or VLAN's should be created where broadcast traffic needs to be limited to within certain groupings of nodes. Adding VLAN's will improve the efficiency of your network, as individual PC's will receive and respond to fewer broadcast packets. They also provide security, by not forwarding packets between VLAN's.

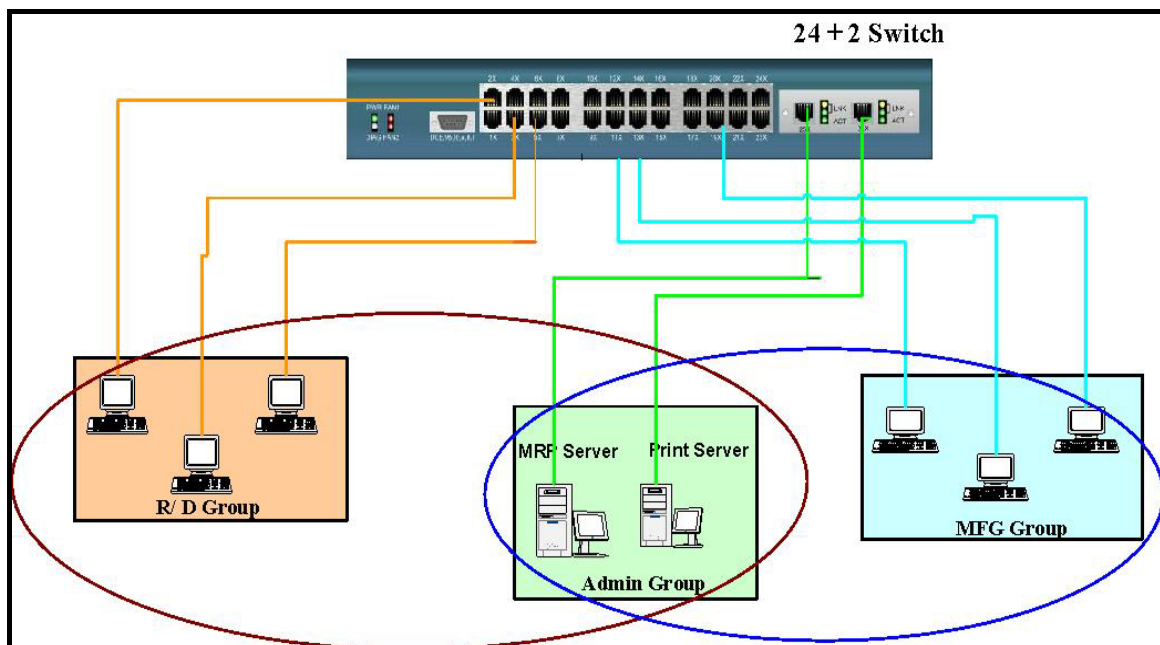
Example: You have 2 serviced offices within one building. 2 companies operate from the one building. You want to allow both to use the Internet via your site proxy server, but do not want the PC's in one office to be able to connect to any of the PC's in the other office. If you grouped the 2 offices in their own VLAN's, and then grouped the proxy server in both VLAN's, you have secured the site.



Benefits of VLANs

- Grouping users into logical networks for performance enhancement.
- Provides effective broadcast containment between segmented ports, this can prevent network broadcast flooding issues.
- Offers security by completely isolating different Broadcast Domains.
- Can preserve existing investment in equipment and cabling.
- Provides an easy, flexible, and economic way to modify users into groups as needed.
- Network administrators can easily "fine tune" the network.
- Separates network structure from the physical topology of the cabling.
- Makes large networks more manageable.

You can group users according to some shared characteristic, such as a common business function or a common protocol. A single switch may have several independent VLANs within it. Below is an example with a R&D, Manufacturing and Administration department, that has been partitioned into two different VLAN groups. Members from the R&D group cannot directly talk to the Manufacturing group, but they still share the same Server, Printer, Internet connection, or any other shared devices that you would need.



5.2 Trunking Applications used with the switch:

Trunking allows you to increase the available bandwidth between switches by grouping ports into a trunk. Trunks can also be used to connect servers to switches for higher bandwidth pipes, or you can use trunking to improve the throughput between different switches. Additionally trunking provides fail-over functionality. When one of the links of a trunk has failed, the traffic originally going through that link will be automatically be re-directed to other links of the trunk, this gives the trunk redundancy.

