



24-Port + One Dual-Module Expansion Slot Stackable Managed Switch

MIL-SM2401M-STK

USER GUIDE

Regulatory Approval

- FCC Class A
- UL 1950
- CSA C22.2 No. 950
- EN60950
- CE
- EN55022 Class A
- EN55024

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1. Introduction

The MIL-SM2401M-STK managed switch is a multi-port switch that can be used to build high-performance switched workgroup networks. This switch is a store-and-forward device that offers low latency for high-speed networking. The switch is targeted at workgroup, department or backbone computing environments.

The switch features a “store-and-forward “ switching scheme. This allows the switch to auto-learn and store source addresses in an 8K-entry MAC address table.

The **MDI** (Medium Dependent Interface) port is also called an "uplink port". The MDI port does not cross transmit and receive lines, which is done by the regular ports (**MDI-X** ports) that connect to end stations. In general, **MDI** means connecting to another hub or switch while **MDIX** means connecting to a workstation or PC. Therefore, **Auto MDI/MDIX** means that you can connect to another switch or workstation without changing non-crossover or crossover cabling.

The MIL-SM2401M-STK switch provides 24 auto-sensing 10/100Base-TX RJ-45 ports plus one dual-port expansion slot for optional fiber, gigabit fiber, or gigabit UTP modules, which enables long-distance fiber connections or gigabit copper for higher connection speeds.

Features

- Conforms to IEEE802.3 10BASE-T, 802.3u 100BASE-TX/FX, 802.3ab 1000BASE-T, 802.3z Gigabit fiber
- 24 10/100 Ethernet ports plus one expansion slot
- IEEE802.3x Flow control
 - Flow control for full duplex
 - Backpressure for half duplex
- High back-plane bandwidth 8.8Gbps
- IEEE802.3ad Port trunk with LACP
- Broadcast storm filter
- Stack management via single IP address
- IGMP support for Multi Media application
- IEEE 802.1p class of service
- Port security
- Port bandwidth control
- IEEE 802.1d Spanning tree protocol
- GVRP function
- Port based VLAN/802.1Q VLAN
- IEEE 802.1x user authentication
- DHCP client
- SNMP, Telnet, Web and Local console management
- Provides command line interface for telnet and local console management
- Modules include: 2 x 100FX, 2 x 1000SX, 1000T + 1000SX, 1000T + 1000LX, 2 x 1000T, 2 MINI GBIC

Formatted: Bullets and Numbering

Software Features

Management	Provides SNMP, Web browser, Telnet and local RS-232 console management. The telnet and console also supports command line interface.
RFC Standard	RFC 1157 SNMP, RFC 1213 MIB II, RFC 1643 Ethernet like, RFC 1493 Bridge MIB, RFC 1757 RMON 1, RFC 1215 Trap, RFC 2674 VLAN MIB, private MIB.
SNMP Trap	Cold start, link down, link up, authorization fail, Trap station up to 3.
Software Upgrade	TFTP and Console firmware upgradeable
Port Trunk	Supports IEEE802.3ad with LACP function. Up to 7 trunk groups and group member up to 4. The trunk port within 24-port 10/100TX and extension module.
Spanning Tree	IEEE802.1d Spanning Tree
VLAN	Port based VLAN IEEE802.1Q Tag VLAN IEEE802.1v Protocol VLAN (IP, IPX, etc.) The static VLAN groups up to 256 and dynamic VLAN groups up to 2048, the VLAN ID can be assigned from 0 to 4094.
QOS Policy	Supports 8 priority levels ID for two priority queues
Class of Service	Per system supports high and low queues. The priority service rule: first come first service, all High before Low, WRR for high or low weight.

Port Based Priority	Supports 3 settings: "Disable, Low or High priority". When set to "Disable", the incoming packet will follow QoS policy; Otherwise, the packet will follow port priority setting to "High/Low" queue.
IGMP	Supports IGMP snooping for Multi-Media application and supports 256 groups
Port Security	Supports ingress and egress MAC address filter and static source MAC address lock.
Port Mirror	Global system supports 3 mirroring types: "RX, TX and Both packet". The maximum of port mirror entries is up to 25.
Bandwidth Control	Each port supports bandwidth control. Per level 100Kbps.
Stacking	Supports single IP management feature, stacked up to 8 units. Stacking and switch management can be through any port, including the uplink module.
802.1x	Supports IEEE802.1x User-Authentication and can report to RADIUS server. <ul style="list-style-type: none"> ■ Reject ■ Accept ■ Authorize ■ Disable
DHCP	DHCP Client
Packet filter	Broadcast storm

Package Contents

Unpack the contents of the package and verify them against the checklist below.

- MIL-SM2401M-STK Switch
- Power Cord
- Four Rubber Feet
- Rack Mount Ears
- RS-232 cable
- User Guide (CD Manual)
- Warranty Card

If any item is missing or damaged, please contact your local dealer for service.

Management Methods

The MIL-SM2401M-STK switch series supports the following management methods:

- Console and Telnet Management
- Web-based Management
- SNMP Network Management

Console and Telnet Management

Console Management is done through the RS-232 Console Port. Managing the switch in this method requires a direct connection between a PC and the switch. Telnet management requires a network connection. The default IP address is

192.168.1.77 with a subnet mask of 255.255.255.0. This default address can be used to login and change the configuration using Telnet.

Web-based Management

The switch provides an embedded HTML web server residing in flash memory. It offers advanced management features and allows users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer or Netscape.

SNMP Network Management

SNMP (Simple Network Management Protocol) provides a means to monitor and control network devices, and to manage configurations, statistic collection, performance, and security.

Ethernet Switching Technology

Ethernet Switching Technology dramatically boosted the total bandwidth of a network, eliminated congestion problems inherent with CSMA/CD (Carrier Sense multiple access with Collision Detection) protocol, and greatly reduced unnecessary transmissions.

This revolutionized networking. First, by allowing two-way, simultaneous transmissions over the same port (Full-duplex), that essentially doubled the bandwidth. Second, by reducing the collision domain to a single switch-port, that eliminated the need for carrier sensing. Third, by using the store-and-forward technology's approach of inspecting each packet to intercept corrupt or redundant data, switching eliminated unnecessary transmission that slow the network. By employing address learning, which replaced the inefficient receiving port.

Auto-negotiation regulates the speed and duplex of each port, based on the capability of both devices. Flow-control allows transmission from a 100Mbps node to a 10Mbps node without loss of data. Auto-negotiation and flow-control may require disablement for some networking operations involves legacy equipment. Disabling the auto-negotiation is accomplished by fixing the speed or duplex of a port.

Ethernet Switching Technology supplied higher performance at costs lower than other solutions. Wider bandwidth, no congestion, and the reduction in traffic is why switching is replacing expensive routers and inefficient hubs as the ultimate networking solution. Switching brought a whole new way of thinking to networking.

2. Hardware Description

Front Panel

The Front Panel of the MIL-SM2401M-STK switch series consists of 24 10/100Base-TX RJ-45 ports (Auto MDI/MDIX) and one expansion slot. The LED Indicators and console port are also located on the front panel of the switch.

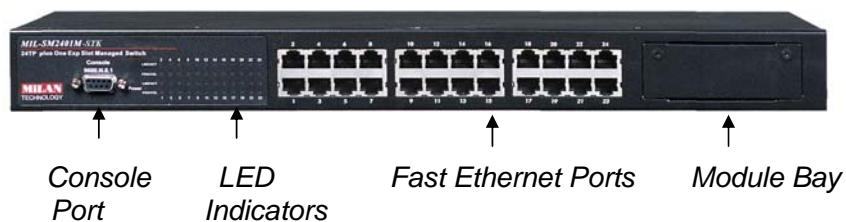


Figure 2-1. Front panel for MIL-SM2401M-STK

- **100BASE-TX UTP Ports:** The MIL-SM2401M-STK comes with 24 100Mbps Fast Ethernet UTP ports.
- **Modules:** The MIL-SM2401M-STK provides a broad range of expansion slot modules. Check with your MiLAN sales representative for details.
- **Console Port:** Console management can be done through the Console Port. It requires a direct connection between the switch and an end station (PC) via a RS-232 cable.

LED Indicators

The LED Indicators give real-time information of systematic operation status. The following table provides descriptions of LED statuses and their meaning.



Figure 2-2. LED Indicators

LED	Status	Description
Power	Green	Power On
	Off	Power is not connected
100M	Green	The port is in 100Mbps speed.
	Off	The port is in 10Mbps speed.
LNK/ACT	Green	The port is connecting with the device.
	Blinks	The port is receiving or transmitting data.
	Off	No device attached.
FDX/COL	Orange	The port is operating in Full-duplex mode.
	Blinks	Collision of Packets is occurring on the port.
	Off	The port is operating in half-duplex mode

Table 2-1. The Description of LED Indicators

Rear Panel

The 3-pronged power plug is located at the rear panel of the MIL-SM2401M-STK as shown in Figure 2-3. The Switch will work with AC in the range 100-240V AC, 50-60Hz.



Figure 2-3. The Rear Panel of the 24 10/100TX plus one Exp. Slot stackable switch

Desktop Installation

Set the switch on a sufficiently large flat space with a power outlet nearby. The surface where you put your switch should be clean, smooth, level and sturdy. Provide enough clearance around the switch to allow attachment of cables, power cord and allow air circulation.

Attaching Rubber Feet

- A. Make sure the mounting surface on the bottom of the switch is grease and dust free.
- B. Remove adhesive backing from your Rubber Feet.
- C. Apply the Rubber Feet to each corner on the bottom of the switch.

These footpads can prevent the switch from shock/vibration.

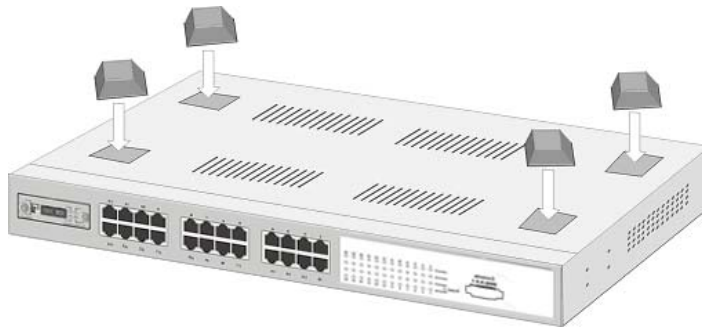


Figure 2-4. Attaching Rubber Feet to each corner on the bottom of the switch

Rack-mounted Installation

The MIL-SM2401M-STK switch come with a rack-mounted kid and can be mounted in an EIA standard size, 19-inch Rack. The switch can be placed in a wiring closet with other equipment.

Perform the following steps to rack mount the switch:

- A. Position one bracket to align with the holes on one side of the switch and secure it with the smaller bracket screws. Then attach the remaining bracket to the other side of the Switch.



Figure 2-5. Attach mounting brackets with screws

- B. After attaching both mounting brackets, position the MIL-SM2401M-STK in the rack by lining up the holes in the brackets with the appropriate holes on the rack. Secure the switch to the rack with a screwdriver and the rack-mounting screws.



Figure 2-6. Mount the switch in an EIA standard 19-inch Rack

Note: For proper ventilation, allow about at least 4 inches (10 cm) of clearance on the front and 3.4 inches (8 cm) on the back of the Switch. This is especially important for enclosed rack installation.

Power On

Connect the power cord to the power socket on the rear panel of the switch. Connect the other end of the power cord to an appropriate power outlet. The internal power supply of the switch works with voltage range of AC in the 100-240VAC, frequency 50~60Hz.

Press the power On/Off switch to the On position and check the power indicator on the front panel to see if power is properly supplied.

3.

Network Application

This section provides you a few samples of network topology in which the Switch is used. In general, the 24 10/100TX plus one Exp. Slot Single IP Stackable Switch is designed as a segment switch. That is, with its large address table (8000 MAC address) and high performance, it is ideal for interconnecting networking segments.

PC, workstations, and servers can communicate each other by directly connecting with 24 10/100TX plus one Exp. Slot Single IP Stackable Switch. The switch automatically learns nodes address, which are subsequently used to filter and forward all traffic based on the destination address.

By using Uplink port, the Switch can connect with another switch or hub to interconnect other small-switched workgroups to form a larger switched network. Meanwhile, you can also use fiber ports to connect switches. The distance between two switches via fiber cable can be up to 2 kilometer (multi-mode fiber) or 60 kilometer (single-mode fiber).

Small Workgroup

The MIL-SM2401M-STK switch can be used as a standalone switch to which personal computers, servers and printer servers are directly connected to form a small workgroup.

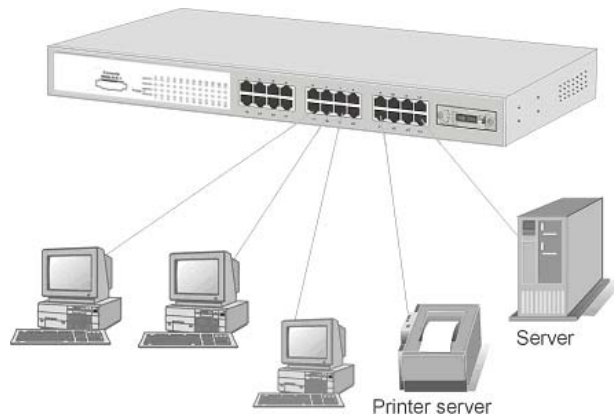


Figure 3-1. Small Workgroup Application

Segment Bridge

For enterprise networks where large data broadcasts are constantly processed, this switch is an ideal solution for department users to connect to the corporate backbone.

In the illustration below, two Ethernet switches with PCs, print servers, and local servers attached, are both connected to the switch. All the devices in this network can communicate with each other through the switch. Connecting servers to the switch allows other users to access the data on server.

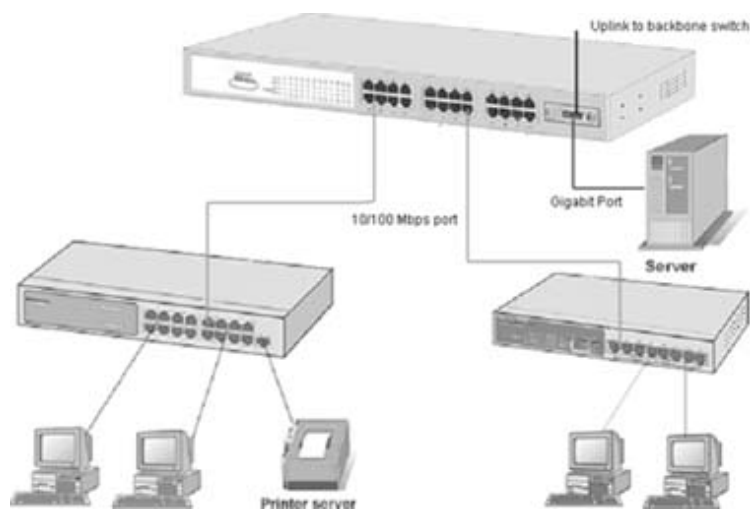


Figure 3-2 Department Bridge Application

Stacking Workgroup

Up to eight (8) individual MIL-SM2401M-STK switches can be connected to form a single logical unit using embedded stacking technology. The stack behaves as a single switching unit that is manageable by a master switch elected from one of the member switches.

The master switch serves as the control center for the stack and automatically creates and updates all of the switching tables. The remaining member switches act as forwarding processors and each switch in the stack is assigned to a single workgroup ID. In addition, a working stack can accept new members or delete old ones without service interruption or degraded performance.

No special tools, extra software, or expensive equipment is needed to form a Stacking Workgroup. With the MIL-SM2401M-STK, management applications represent the entire stack as a single device with simple point and click management.

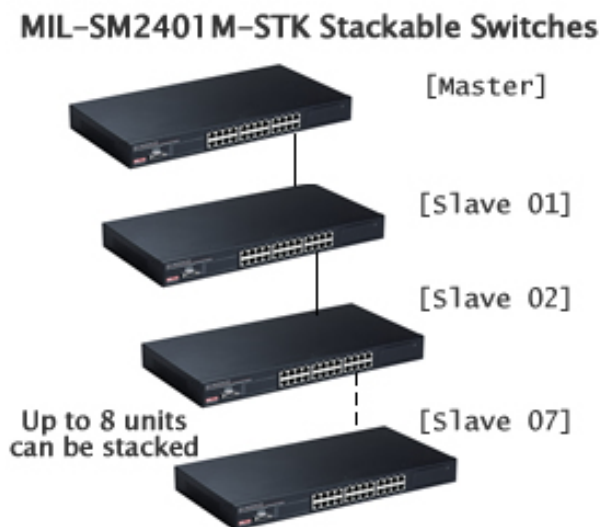


Figure 3-3. A stacking workgroup application

4. Console Management

Connecting a Terminal or PC to the Console Port

Console management involves the administration of the switch via a direct connection to the RS-232 console port. This port is a female DB-9 connector. From the main menu of the console program, the user has access to manage the functions of the switch.

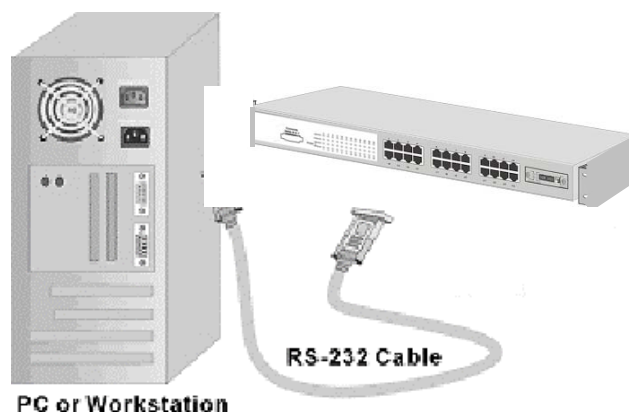


Figure 4-1. Connecting the switch to a terminal via RS-232 cable

Use the supplied RS-232 cable to connect a terminal or PC to the console port. The terminal or PC to be connected must support the terminal emulation program.

Communication Parameters

After the connection between Switch and PC is finished, turn on the PC and run a **terminal emulation program** or **Hyper Terminal** to match the following default characteristics of the console port:

Baud Rate: 9600 bps

Data Bits: 8

Parity: none

Stop Bit: 1

Control flow: None

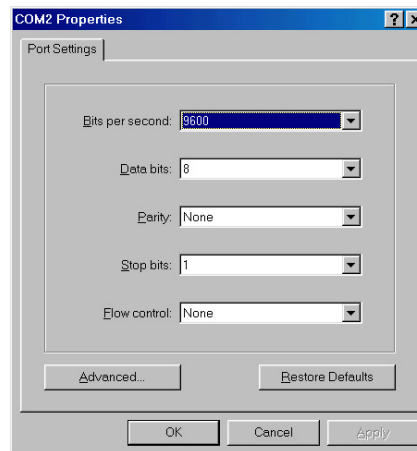


Figure 4-2. The settings of communication parameters

Console - Login

After you have entered the parameter settings, click **OK**. When the blank screen appears, press the **Enter** Key to access the login screen. Type the user name and password to login. The default user name is **root**; the default password is **root**.

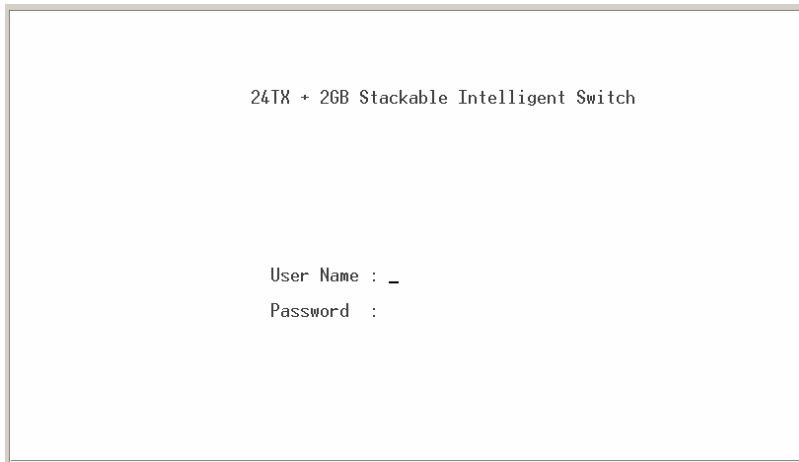


Figure 4-3. Console login screen

1. The switch also provides a serial interface to manage and monitor the switch. The user can follow the Console Port Information provided by the web to use the Windows HyperTerminal program to link the switch.
2. Type the user name and password to login. The default user name is **root**; the default password is **root**.
3. The timeout on the console port is 60 seconds. If no action is taken on the console screen for one minute, the program reverts back to the logon screen and a new login is necessary in order to continue.

4. The switch is shipped with a default IP address of 192.168.1.77. The default subnet mask is 255.255.255.0.

Console Management Options

The system supports two types of console management – CLI Command and Menu Selection. After you login to the system, you will see a command prompt.

To enter the Menu Selection management interface, type “**menu**” at the command prompt and you will see the main menu interface.

To enter CLI Command management interface, type “**enable**” at the command prompt.

5. CLI Management Interface

To enter CLI Command management interface, type “**enable**” at the command prompt. The following tables list the CLI commands and descriptions.

5-1. Commands Level

Modes	Access Method	Prompt	Exit Method	About This Mode1
User EXEC	Begin a session with your switch.	Switch>	Enter logout or quit.	The user commands available at the user level are a subset of those available at the privileged level. Use this mode to <ul style="list-style-type: none"> • Perform basic tests. • Display system information.
Privileged EXEC	Enter the enable command while in user EXEC mode.	Switch#	Enter disable to exit.	The privileged command is advance mode Privileged this mode to <ul style="list-style-type: none"> • Display advance function status • Save configures
Global Configuration	Enter the configure command	Switch (config)#	To exit to privileged EXEC	Use this mode to configure parameters that apply to your

	while in privileged EXEC mode.		mode, enter exit or end	switch as a whole.
VLAN database	Enter the vlan database command while in privileged EXEC mode.	Switch (vlan)#	To exit to user EXEC mode, enter exit.	Use this mode to configure VLAN-specific parameters.
Interface configuration	Enter the interface command (with a specific interface) while in global configuration mode	switch (config-if)#	To exit to global configuration mode, enter exit. To exist to privileged EXEC mode, or end.	Use this mode to configure parameters for the switch and Ethernet ports.

5-2. Commands Set List

5-2-1. System Commands Set

Commands	Command Level	Description	Defaults	Example
system name [systemname]	Global configuration mode	Set switch system name string		Switch (config)# system name xxx
system location [system location]	Global configuration mode	Set switch system location string		Switch (config)# system location xxx
system description [systemdescription]	Global configuration mode	Set switch system description string		Switch (config)# system description xxx
system contact [systemcontact]	Global configuration mode	Set switch system contact window string		Switch (config)# system contact xxx
ip address [ip-address] [subnet-mask] [gateway]	Global configuration mode	Use the ip address interface configuration command to set an IP address for a switch. Use the no form of this command to remove an IP address or to disable IP processing.		Switch (config)# ip address 192.168.1.1 255.255.255.0 192.168.1.254

reload	Global configuration mode	Halt and perform a cold restart		Switch (config)# reload
default	Global configuration mode	Restore to default		Switch (config)# Default
username [user-name]	Global configuration mode	Changes a login username. (maximum 10 words)		Switch (config)# username xxxxxx
password [password]	Global configuration mode	Specifies a password (maximum 10 words)		Switch (config)# Password xxxxxx
show system info	User EXEC	Show system information		Switch> show system info Name: switch1 location: lab Description: layer2 switch Contact: somewhere Serial NO: 1.00
show ip	Privileged EXEC	Show ip information		Switch# show ip Address ip: 192.168.1.1 Address subnet: 255.255.255.0 Address gateway: 192.168.1.254

show accounting	Privileged EXEC	Show username & password		Switch# show accounting Username: root Password: root
show version	User EXEC	Use the show version user EXEC command to display version information for the hardware and firmware.		Switch> show version Firmware version: 1.0 Hardware version: 3.0 Kernel version: 1.10
show terminal	Privileged EXEC	Use the show terminal command to display console information for the switch		Switch (config)# show terminal Baud rate (bits/sec): 9600 Data Bits: 8 Parity Check: none Stop Bits: 1 Flow Control: none

5-2-2. Port Commands Set

Commands	Command Level	Description	Defaults	Example
interface [FastEthernet /module Ethernet] [slot id] [id]	Interface configuration mode	Use the fast Ethernet interface configuration command		Switch (config)# interface fastEthernet 0/1
		Use the module Ethernet interface configuration command		Switch (config)# interface moduleEthernet 1/1
duplex [full half auto]	Interface configuration mode	Use the duplex configuration command to specify the duplex mode of operation for Fast Ethernet.	Auto	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# duplex full
		Use the duplex configuration command to specify the duplex mode of operation for module Ethernet.	Auto	Switch (config)# interface moduleEthernet 1/1 Switch (config-if)# duplex full

speed [10 100 1000 auto]	Interface configuration mode	Use the speed configuration command to specify the speed mode of operation for Fast Ethernet.	Auto	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# speed 10
speed [10 100 1000 auto]	Interface configuration mode	Use the speed configuration command to specify the speed mode of operation for module Ethernet. (The 100Base-FX module only supported for speed 100) (The 1000Base-FX module only supported for speed 1000 & auto)		Switch (config)# interface fastEthernet 1/2 Switch (config-if)# speed 1000
flowcontrol on or no flowcontrol	Interface configuration mode	Use the flow control configuration command on Ethernet ports to control traffic rates during congestion. Use the no form of this command to disable security on the port.	On	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# flowcontrol on

security on or no security	Interface configuration mode	Use the security configuration command on Ethernet ports. Use the no form of this command to disable security on the port.	Disable	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# security on
priority on [hi low] or no priority	Interface configuration mode	Use the priority configuration command on Ethernet ports. Use the no form of this command to disable security on the port.	Disable	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# priority on hi
Bandwidth [in out] [value]	Interface configuration mode	Set bandwidth in or out rate. The value range is (0~999), and zero of the value is disable (The module can't be setting)	Disable	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# bandwidth in 50

State [Enable Disable]	Interface configuration mode	Use the state interface configuration command to specify the state mode of operation for Ethernet ports. Use the disable form of this command to disable the port.	Enable	Switch (config)# interface fastEthernet 0/1 Switch (config-if)# state disable
show interface configuration	Interface configuration mode	show interface configuration status		Switch (config)# interface fastEthernet 0/1 Switch (config-if)# show interface configuration
show interface status	Interface configuration mode	show interface actual status		Switch (config)# interface fastEthernet 0/1 Switch (config-if)# show interface status
show interface accounting	Interface configuration mode	show interface statistic counter		Switch (config)# interface fastEthernet 0/1 Switch (config-if)# show interface accounting

show bandwidth	Interface configuration mode	Display the bandwidth of the values		Switch (config)# interface fastEthernet 0/1 Switch (config-if)# Show bandwidth
----------------	------------------------------	-------------------------------------	--	--

5-2-3. Trunk Commands Set

Commands	Command Level	Description	Defaults	Example
port group [group-number] [port-list] lacp [on off] workp [work ports] no port group [group-number] lacp [on off] workp [work ports]	Global configuration mode	Add trunking group. Use the no form of this command to delete trunking group.	Disable	LACP: Switch (config)# port group 1 1-4 lacp on workp 2 Trunk without LACP: Switch (config)# port group 1 1-4 lacp off workp 4
show group [group-ID]	Privileged EXEC mode	Display trunk group information. If there is no group-number in put, display all trunk groups.		Switch # show group 1 Group Trunk.1: Ports: 02 03 04 Priority: 0001 LACP: Enable Work ports: 0
port group [group-number] activityport [port-list]	Global configuration mode	Set trunking group port active		Switch (config)# port group 3 activityport 2-4 Trunk.1 LACP: Enable Check OK! NEW: 2 4

				Update finished!!
--	--	--	--	-------------------

5-2-4. VLAN Commands Set

Commands	Command Level	Description	Defaults	Example
vlan datatbase	Privileged EXEC mode	To enter the VLAN configuration interface		Switch# vlan database Switch(vlan)#
vlanmode [disable portbase 802.1q gvrp]	VLAN database mode	To set switch VLAN mode .Use the no form of this command to restore to default.	Disable	Switch (vlan)# vlanmode 802.1q
Port Base VLAN				
vlan [Group Name] grp-id [Group ID] port [Port Number]	VLAN database mode	Add new Port Base VLAN		Switch (vlan)# vlan v2 grp-id 2 port 1-4
no vlan Group Name] [Group ID]	VLAN database mode	Delete port base VLAN group		Switch (vlan)# no vlan v2 2
show vlan [GroupName] [GroupID] or show vlan	VLAN database mode	Show VLAN of Group Name or Group ID information		Switch (vlan)# Show vlan v2 2
vlan [Group name] add [port Number] [tagged untagged]	VLAN database mode	Set the port of some port group tagged or untagged		Switch (vlan)# vlan v2 add 5 tagged
vlan [Group name] delete	VLAN database	Remove the port from it's port group.		Switch (vlan)# vlan v2 delete 5

[port Number]	mode			
802.1Q 802.1Q with GVRP VLAN mode				
vlan [Group name] vlanid [Vlan ID] port [port Number] tag [port Number]	VLAN database mode	Add new 802.1Q VLAN [VLAN name]: VLAN name [VLAN ID]: 1 ~ 4094 [port ID]: port members 1~9		Switch(vlan)# vlan v2 vlanid 2 port 1-4 tag 2-4
no vlan [Group name] or [VLAN ID]	VLAN database mode	Delete 802.1Q VLAN group		Switch (vlan)# no vlan v2 Switch (vlan)# no vlan v2 2
vlan protocol [Group name] [protocol value] vlanid [VLAN ID] port [portNumber] tag [port Number]	VLAN database mode	Add protocol vlan [Group name]: vlan group name [protocol value] IP-ip , ARP-arp, Appletalk_AARP-ap p_arp , Novell_IPX-ipx , Banyan_vines-bany an_c4, Banyan_vines-bany an_c5, Banyan_vines-bany an_ad, Decent_mop_01-de cent_01, Decent_mop_02-de	6510,652 6	Switch (vlan)# vlan protocol v3 ip vlanid 2 port 5-8 tag 6,8

		cent_02, Decent_dpr-decent _dpr, Decent_LAT-decen t_lat, Decent_LAVC-dece nt_larc, IBM SNA-ibm, X.75 internet-x75, X.25 Layer3-x25 [VLAN ID]: 1 ~ 4094 [port Number]: port Number 1~24		
vlanidrange [VLANidrange]	VLAN database mode	Set VLAN ID range [1~255] range 0 [256~511] range 1 [512~767] range 2 [768~1023] range 3 [1024~1279] range 4 [1280~1535] range 5 [1536~1791] range 6 [1792~2047] range 7 [2048~2303] range 8 [2304~2559] range 9 [2560~2815] range		Switch (vlan)# vlanidrange 2 OLD: 0 NEW: 2

		10 [2816~3071] range 11 [3072~3327] range 12 [3328~3583] range 13 [3584~3839] range 14 [3840~4094] range 15		
VLAN protocol [Groupname] add [portNumber] [tagged untagged]	VLAN database mode	Set the port of some port group tagged or untagged		Switch (vlan)# vlan protocol v2 add 5 tagged
VLAN protocol [Groupname] delete [portNumber]	VLAN database mode	Remove the port from its port group.		Switch (vlan)# vlan protocol v2 delete 5
show vlan [Groupname] [GroupID] or show vlan	VLAN database mode	Show VLAN of Group Name or VLAN ID information vlanid: 1 ~ 4094		Switch (vlan)# show vlan v2 2
show vlan protocol	VLAN database mode	show protocol vlan Protocol ip ipx netbios		Switch (vlan)# show vlan protocol

port [port ID] pvid [port VID] ingressfilter1 [on off] ingressfilter2 [on off]	VLAN database mode	Set Port PVID and Ingress Filter Rules1 & Ingress Filter Rules2		Switch (vlan)# port 2 pvid 2 ingressfilter1 off ingressfilter2 on
show port [port ID]	VLAN database mode	show Port PVID and Ingress Filter Rules1 & Ingress Filter Rules2		Switch (vlan)# show port 2 Port ID: 2 Port Vid: 2 Ingress 1 Filter: Disable Ingress 2 Filter: Enable

5-2-5. Spanning Tree Commands Set

Commands	Command Level	Description	Defaults	Example
show spanning-tree	User EXEC mode	Display a summary of the spanning-tree states.		Switch> show spanning-tree System: Priority: 32768 Max Age: 20 Hello Time: 2 Forward Delay: 15 Priority: 32768 Mac Address: 004063800030 Root_Path_Cost: 0 Root Port: we are root Max Age: 20 Hello Time: 2 Forward Delay: 15
spanning-tree [on / off] or no spanning-tree	Global configuration mode	Use the spanning-tree global configuration command to enable Spanning Tree Protocol (STP). Use the no form of the command to restore to default	Disable	Switch (config)# spanning-tree on

<p>spanning-tree priority [number]</p>	<p>Global configuration mode</p>	<p>Use the spanning-tree max-age global configuration command to change the priority.</p> <p>Use the no form of this command to return to the default interval.</p>	<p>32768</p>	<p>Switch (config)# spanning-tree priority 32767</p>
<p>spanning-tree max-age [seconds]</p>	<p>Global configuration mode</p>	<p>Use the spanning-tree max-age global configuration command to change the interval between messages the spanning tree receives from the root switch. If a switch does not receive a bridge protocol data unit (BPDU) message from the root switch within this interval, it recomputes the Spanning Tree</p>	<p>20 sec</p>	<p>Switch (config)# spanning-tree max-age 15</p>

		Protocol (STP) topology. Use the no form of this command to return to the default interval.		
spanning-tree hello-time [seconds]	Global configuration mode	Use the spanning-tree hello-time global configuration command to specify the interval between hello bridge protocol data units (BPDUs). Use the no form of this command to return to the default interval.	2 sec.	Switch (config)# spanning-tree hello-time 3

<p>spanning-tree forward-time [seconds]</p>	<p>Global configuration mode</p>	<p>Use the spanning-tree forward-time global configuration command to set the forwarding-time for the specified spanning-tree instances. The forwarding time determines how long each of the listening and learning states last before the port begins forwarding. Use the no form of this command to return to the default value.</p>	<p>15 sec.</p>	<p>Switch (config)# spanning-tree forward-time 20</p>
<p>stp-path-cost [PortCost]</p>	<p>Interface configuration mode</p>	<p>Use the spanning-tree cost interface configuration command to set the path cost for Spanning Tree Protocol (STP) calculations. In the event of a loop, spanning tree</p>	<p>10 Mbps – 100 100 Mbps – 10</p>	<p>Switch (config)# interface fastEthernet 0/2 Switch (config-if)# stp-path-cost 20</p>

		<p>considers the path cost when selecting an interface to place into the forwarding state. Use the no form of this command to return to the default value.</p>		
<p>stp-path-priority [Port Priority]</p>	<p>Interface configuration mode</p>	<p>Use the spanning-tree port-priority interface configuration command to configure a port priority that is used when two switches tie for position as the root switch. Use the no form of this command to return to the default value.</p>	<p>128</p>	<p>Switch (config)# interface fastEthernet 0/2 Switch (config-if)# stp-path-priority 127</p>

5-2-6. QOS Commands Set

Commands	Command Level	Description	Defaults	Example
qos storm-control [5 10 15 20 25 off (%)] or no storm-control	Global configuration mode	Enable/Disable broadcast storm control. Use the no form of this command to restore to default.	OFF	Switch (config)# qos storm-control 5
qos low-priority-delay-bound [on off] [sec.] or no qos low-priority-delay-bound	Global configuration mode	Enable/Disable low priority delay bound. Use the no form of this command to restore to default.	Off	Switch (config)# qos low-priority-delay-bound on 1
qos queuepolicy [Policy] hi [Priority] low [Priority]	Global configuration mode	[Policy]:fcfs: first in and first out wrr: weight round robin sp: all high before low. [Priority] Hi:1~7 Low:1	WRR Hi 2 Low 1	WRR: Switch (config)# qos queuepolicy wrr hi 7 low 1 First Come First Served: Switch (config)# qos queuepolicy fcfs All High before Low: Switch (config)# qos queuepolicy sp

qos level [priority] enable	Global configuration mode	[Priority] 0~7	0~3 LOW 4~7 HI	Switch (config)# qos level 2,3 enable
no qos level [priority]	Global configuration mode	[Priority] 0~7	0~3 LOW 4~7 HI	Switch (config)# no qos level 0-7
qos bridge-delay-bo und [number] . no qos bridge-delay-bo und	Global configuration mode	Set qos bridge delay bound Use the no form of this command to restore to default.	OFF	Switch (config)# qos bridge-delay-bound 1
show qos storm-control	Global configuration mode	Show broadcast storm control.		Switch (config)# show qos storm-control QOS storm control mode: ENABLE
show qos low-priority-dela y-bound	Privileged EXEC mode	Show low priority delay board.		Switch (config)# show qos low-priority-delay-b ound Qos low priority delay bound: 1
show qos policy	Privileged EXEC mode	Show qos policy		Switch (config)# show qos policy Qos Mode: WRR

<pre>show qos bridge-delay-bo und</pre>	<pre>Privileged EXEC mode</pre>	<pre>Show bridge delay bound</pre>	<pre>Switch (config)# show qos bridge-delay-bound bridge-delay-bound 5</pre>
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5-2-7. IGMP Commands Set

Commands	Command Level	Description	Defaults	Example
igmp [on off]	Global configuration mode	Enable /Disable IGMP snooping function	Off	Switch (config)# igmp on
lgmp-query [auto enable disable]	Global configuration mode	Modify IGMP query mode	Disable	Switch (config)# lgmp-query enable
show ip igmp profile	Privileged EXEC mode	Displays the details of an IGMP profile entry.		Switch# show ip igmp profile IP VID Port 224.1.1.1 10 1,2,6

5-2-8. Mac / Filter Table Commands Set

Commands	Command Level	Description	Defaults	Example
<p>mac-address-table aging-time [on off]</p> <p>mac-address-table aging-time [sec.]</p> <p>or no mac-address-table aging-time</p>	Global configuration mode	<p>Use the mac-address-table aging-time global configuration command to set the length of time that a dynamic entry remains in the MAC address table after the entry is used or updated.</p> <p>Use the no form of this command to use the default aging-time interval. The aging time applies to all VLANs.</p>	300 secs	<p>(Enable)</p> <p>Switch (config)# mac-address-table aging-time on</p> <p>Switch (config)# mac-address-table aging-time 333</p> <p>(Disable)</p> <p>Switch (config)# mac-address-table aging-time off</p> <p>Or</p> <p>Switch(config)# no mac-address-table aging-time</p>
<p>mac-address-table table [static filter] hwaddr [MAC address] vlanid [VLAN-ID]</p>	Interface configuration mode	<p>Use the mac-address-table static to add static filter addresses to the MAC address table. Use the no form of this command to remove static entries from the</p>	N/A	<p>Switch (config)# interface fastEthernet 0/2</p> <p>Switch (config-if)# mac-address-table static hwaddr 004063112233 vlanid 10</p>

		MAC address table.		
no mac-address-table [static filter] hwaddr [MAC address] vlanid [VLAN-ID]	Interface configuration mode	Use the no mac-address-table privileged EXEC command to delete entries from the MAC address table.		Switch (config)# interface fastEthernet 0/2 Switch (config-if)# no mac-address-table static hwaddr 004063112233 vlanid 10
show mac-address-table [static filter]	Privileged EXEC mode	Use the show mac-address-table user EXEC command to display the MAC address table.		Switch (config)# show mac-address-table static
show mac-address-table aging-time	Privileged EXEC mode	Use the show mac-address-table user EXEC command to display the MAC address table.		Switch (config)# show mac-address-table aging-time 300 MAC Address aging-time: 300

5-2-9. SNMP Commands Set

Commands	Command Level	Description	Defaults	Example
snmp system-name [SystemName]	Global configuration mode	Set Snmp agent system name	N/A	Switch (config)# snmp system-name l2switch
snmp system-location [SystemLocation]	Global configuration mode	Set Snmp agent system location	N/A	Switch (config)# snmp system-location lab
snmp system-contact [SystemContact]	Global configuration mode	Set Snmp agent system contact	N/A	Switch (config)# snmp system-contact where
snmp community-strings [Community] right [RO RW] Or no snmp community-strings [Community]	Global configuration mode	Add snmp community string. Use the no form of this command to remove the specified community.	PUBLIC RO	Switch (config)# snmp community-strings public right RW

5-2-10. Port Mirroring Commands Set

Commands	Command Level	Description	Defaults	Example
port monitor [RX TX Both Disable] PortList Or no port monitor	Interface configuration mode	Use the port monitor interface configuration command to enable Switch Port Analyzer (SPAN) port monitoring on a port. Use the no form of this command to return the port to its default value.	N/A	Switch (config)# Interface fastEthernet 0/8 Switch (config-if)# port monitor both 3
show port monitor	Interface configuration mode	Use the show port monitor privileged EXEC command to display the ports for which Switched Port Analyzer (SPAN) port monitoring is enabled.		Switch (config-if)# show port monitor State: ENABLE AnalysisPortId: 8 Port 1 Rx: Monitor Port 1 Rx: Monitor Port 2 Rx: Port 2 Rx: Port 3 Rx: Monitor Port 3 Rx: Monitor Port 4 Rx: Port 4 Rx: Port 5 Rx: Port 5 Rx: Port 6 Rx:

				Port 6 Rx: Port 7 Rx: Port 7 Rx: Port 8 Rx: Analysis Port 8 Tx: Analysis Port 9 Rx: Port 9 Rx:
--	--	--	--	--

5-2-11. Stacking Commands Set

Commands	Command Level	Description	Defaults	Example
show stackinglist	User EXEC	Show IP stacking List		Switch>show stackinglist MAC = 00:22:33:44:55:66 [Master] No Slave!
Show stackinginfo [MAC address]	User EXEC	Show the stack information		Switch>show stackinginfo 00.22.33.44.55.66 GroupID: 3000 Stacking Mode: Disable System Information: test
stacking [MAC address]	User EXEC	Change to stacking mode		Switch>stacking 00.22.33.44.55.66 Switch(stacking-00.22.33.44.55.66)#
set idmode [ID] [mode]	Stacking Mode	Set the stack ID and mode ID range: 0~65535 Mode: 0 = Disable, 1 = Master, 2 = Slave		Switch(stacking-00.22.33.44.55.66)# set idmode 3000 0 Setting GroupID: 3000, stacking Mode = Disable

set information [name]	Stacking Mode	Set the information of the Stack		Switch(stacking-00.22.33. 44.55.66)# set information test Setting System Information: test
------------------------------	------------------	--	--	--

5-2-12. 802.1x Commands Set

Commands	Command Level	Description	Defaults	Example
show 8021x	User EXEC mode	Display a summary of the 802.1x properties and also the port sates.		Switch> show 8021x
8021x [on off]	Global configuration mode	Use the 802.1x global configuration command to enable 802.1x protocols. Use the no form of the command to restore to default	Disable	Switch (config)# 8021x on
8021x system radiusip [RadiusServerIP] Or no 8021x system radiusip	Global configuration mode	Use the 802.1x system radius IP global configuration command to change the radius server IP. Use the no form of this command to return to the default interval.		Switch (config)# 8021x system radiusip 192.168.1.1

<p>8021x system sharekey [Sharekey] or no 8021x system sharekey</p>	<p>Global configuration mode</p>	<p>Use the 802.1x system sharekey global configuration command to change the shared key value.</p> <p>Use the no form of this command to return to the default interval.</p>		<p>Switch (config)# 8021x system sharekey 123456</p>
<p>8021x misc quietperiod [quietperiod value] Or no 8021x misc quietperiod</p>	<p>Global configuration mode</p>	<p>Use the 802.1x misc quiet period global configuration command to specify the quiet period value of the switch.</p> <p>Use the no form of this command to return to the default interval.</p>		<p>Switch (config)# 8021x misc quietperiod 10</p>
<p>8021x misc txperiod [TXPeriod value] Or no 8021x txperiod</p>	<p>Global configuration mode</p>	<p>Use the 802.1x misc TX period global configuration command to set the TX period.</p> <p>Use the no form of this command to return to the default value.</p>		<p>Switch (config)# 8021x misc txperiod 5</p>
<p>8021x misc supptimeout [SEC]</p>	<p>Global configuration mode</p>	<p>Set the period of time the switch wait for a supplicant response to</p>		<p>Switch(config)# 8021x misc supptimeout 30</p>

Or no 8021x supptimeout		an EAP request.		
8021x misc servertimeout [SEC] Or no 8021x servertimeout	Global configuration mode	Set the period of time the switch wait for a server response to an authentication request.		Switch(config)# 8021x misc servertimeout 50
8021x misc maxrequest [Number] Or no 8021x maxrequest	Global configuration mode	Set the number of authentication that must time-out before authentication fails and the authentication session ends.		Switch(config)# 8021x misc maxrequest 2
8021x misc reauthperiod [SEC] Or no 8021x reauthperiod	Global configuration mode	Set the period of time after which clients connected must be re-authenticated..		Switch(config)# 8021x misc reauthperiod 20
8021x prostate [reject accept authorize disable]	Interface configuration mode	Use the 802.1x port state interface configuration command to set the state of the selected port. ■ Reject: the specified port is required to be held in the unauthorized state. ■ Accept: the specified		Switch (config)# interface fastethernet 0/3 Switch (config-if)# 8021x portstate accept

		<p>port is required to be held in the Authorized state.</p> <ul style="list-style-type: none"> ■ Authorized: the specified port is set to the Authorized or Unauthorized state in accordance with the outcome of an authentication exchange between the Supplicant and the authentication server. ■ Disable: The specified port is required to be held in the Authorized state. 		
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5-2-13. TFTP Commands Set

Commands	Command Level	Description	Defaults	Example
copy flash:config.text tftp [TFTP IP address] [file name]	Global configuration mode	Backup configure file command		Switch (config)# copy flash:config.text tftp >192.168.1.1 >backup.dat

tftp:config.text flash [TFTP IP address] [file name]	Global configuration mode	Restore configure file command	Switch(config)# Tftp:config.text flash >192.168.1.1 >restore.dat
tftp:firmware flash [TFTP IP address] [file name]	Global configuration mode	Update firmware command	Switch (config)# Tftp:firmware flash >192.168.1.1 >image.bin

6. Console Menu Management

To enter the Menu Selection management interface, type “**menu**” at the command prompt. The following sections show the menu interface screens and descriptions.

6-1. Main Menu

There are six items for selection as follows:

```
      Main Menu
      =====

      Status and Counters
      Switch Configuration
      Protocol Related Configuration
      System Reset Configuration
      Save Configuration
      Logout

      Show the status of the switch.
[Enter] Select Item
[Tab/BKSPC] Move Item
```

Status and Counters: Show the status of the switch.

Switch Configuration: Menus to configure the switch.

Protocol Related Configuration: Configures the protocol features.

System Reset Configuration: Restarts the system or resets switch to the default configuration.

Save Configuration: Saves the system configuration.

Logout: Exits the menu line program.

Formatted: Bullets and Numbering

<Control Key>

The control keys listed below are provided in all menus:

Tab: Move the cursor to next item.

Backspace: Move the cursor to previous item.

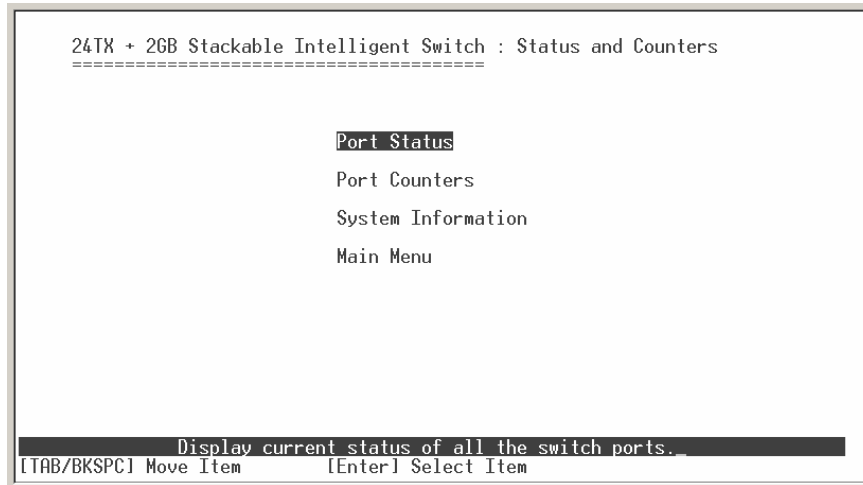
Enter: Selects item.

Space: Toggle selected item to next configuration or changes the value.

Esc: Exits the current action mode.

6-2. Status and Counters

In Status and Counters, you can view Port status, counters, and system information.



Press the “**Tab**” or “**Backspace**” to choose an item, and press “**Enter**” key to select item.

6-2-1. Port Status

```

24TX + 2GB Stackable Intelligent Switch : Port Status
=====

```

Port	Type	Link	State	Negotiation	Speed	Duplex	FC	BP	Band In	Width Out	Security Priority
Port.01	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.02	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.03	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.04	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.05	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.06	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.07	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF
Port.08	100TX	Down	Enable	Auto	100	Full	ON	OFF	OFF	OFF	Disable OFF

```

Actions->  <Previous Page>  <Next Page>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu

```

Type: Displays port connection speed.

Link: Displays the port's link status. When the port is connecting with the device and working normally, the link status is **"UP"**. When the port has no link, the link status is **"Down"**.

State: A port that is enabled will be displayed as **"Enable"**. A port that is disabled will be displayed as **"Disable"**.

Negotiation: Displays the state of Auto-negotiation as either **"Auto"** or **"Fixed"**.

Speed / Duplex: Displays the port speed and duplex mode.

FC: Displays the flow control for the port as being either on or off.

BP: Indicates if Back Pressure capability is enabled or disabled, only valid for HDX mode of operation.

Bandwidth In/Out: Indicates the Ingress bandwidth rate limiting speed in increments of 100 kbps, 0 indicates port is at full bandwidth in.

Priority: Indicates whether traffic received on this port is put into the high priority or low priority queue or do not care.

Security: Indicates whether or not source MAC address based traffic filtering is

enabled on the port.

Actions->

Press the **Tab** or **Backspace** key to choose action menu, and then press the **Enter** key to select the item.

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

<Quit>: Exits the port status page, and returns to previous menu.

6-2-2. Port Counters

The following information provides a view of the current status of the unit. Select

Refresh to view updated statistics or select **Clear** to reset all counters to 0.

```
24TX + 2GB Stackable Intelligent Switch : Port Counters
=====
```

Port	Type	Tx Good Packet	Tx Bad Packet	Rx Good Packet	Rx Bad Packet	Tx Abort Packet	Packet Collision
Port.01	100TX	0	0	0	0	0	0
Port.02	100TX	0	0	0	0	0	0
Port.03	100TX	0	0	0	0	0	0
Port.04	100TX	0	0	0	0	0	0
Port.05	100TX	0	0	0	0	0	0
Port.06	100TX	0	0	0	0	0	0
Port.07	100TX	0	0	0	0	0	0
Port.08	100TX	0	0	0	0	0	0

```
Actions-> <Refresh> <Clear> <Previous Page> <Next Page> <Quit>
          Configure the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

Press the **Tab** or **Backspace** key to choose action menu, and then press the **Enter** key to select item.

<Refresh>: Updates statistics on all counters.

<Clear>: Sets all counters to 0.

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

<Quit>: Exits the port counters page, and returns to previous menu.

6-2-3. System Information

```
24TX + 2GB Stackable Intelligent Switch : System Information
=====
System Name      :
System Location  :
System Description : 24 TX Port + 2 GB Stackable Intelligent Switch

Firmware Version : v0.00
Kernel Version   : v9.02
Hardware Version  : A7.00
MAC Address      : 0000001C0001

Module   Type   Description
-----
Port 25  N/A    N/A
Port 26  N/A    N/A

Actions->  <Quit>
Display the switch system information.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

System Name: Displays the name of the device.

System Location: Displays where the device is located.

System Description: Displays the device type.

Firmware Version: Displays the switch's firmware version.

Kernel Version: Displays the system kernel software version.

Hardware Version: Displays the switch's Hardware version.

MAC Address: The unique hardware address assigned by manufacturer.

Module Information: Displays the module type and description.

Actions->

<Quit>: Exits the system information page, and returns to previous menu.

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6-3. Switch Configuration

In Switch Configuration, there are 8 main functions – Administration, Port, Trunk, Port Mirroring, VLAN, Priority, MAC Address, and Misc. Configuration.

```
24TX + 2GB Stackable Intelligent Switch : Switch Configuration
=====
Administration Configuration
Port Configuration
Trunk Configuration
Port Mirroring Configuration
VLAN Configuration
Priority Configuration
MAC Address Configuration
Misc Configuration
Main Menu
-----
Configure the system, IP, and password.
[Tab/BKSPC] Move Item      [Enter] Select Item
```

Press the **Tab** or **Backspace** key to choose action menu, and then press the **Enter** key to select item.

6-3-1. Administration Configuration

In Administration Configuration, you can configure system parameters, IP, username and password.

```
24TX + 26B Stackable Intelligent Switch : Administration Configuration
=====

Device Information
IP Configuration
User Name Configuration
Password Configuration
Previous Menu

Configure the device information.
[Tab/BKSPC] Move Item      [Enter] Select Item
```

6-3-1-1. Device Information

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```
24TX + 2GB Stackable Intelligent Switch : Device Information
=====
Name      :
Description : 24 TX Port + 2 GB Stackable Intelligent Switch
Location  :
Contact   :

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Name: 10 characters can be used to give the switch a unique name in order to distinguish it on the network. After configuration this name will show at the top of each menu screen.

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Description: 32 characters can be used to describe the switch.

Location: 32 characters can be used to give a location of the switch.

Contact: 32 characters can be used to indicate the contact person or information.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured value.

<Quit>: Exits the device information page and returns to previous menu.

6-3-1-2. IP Configuration

This menu enables the user to change the default settings of the IP address, subnet mask and gateway. Rebooting the switch is necessary to have the configuration change take effect.

```
24Tx + 2GB Stackable Intelligent Switch : IP Configuration
=====
DHCP Client : Disable
IP Address  : 192.168.16.1
Subnet Mask : 255.255.255.0
Gateway     : 192.168.16.254

Actions->  <Edit>  <Save>  <Quit>
          Select the action menu.
[Tab/BKSPC] Move Item  [Enter] Select Item  [Esc] Previous Menu
```

DHCP: Disables or enables the DHCP client function.

IP Address: Assign the switch IP address. The default IP is 192.168.1.77.

Subnet Mask: Assigns the switch IP subnet mask.

Gateway: Assigns the switch gateway. The default value is 192.168.16.254.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits the IP configuration page and returns to previous menu.

Note: Rebooting the switch is necessary to have the configuration change take effect.

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6-3-1-3. User Name Configuration

Use this screen to change the User Name. The default user name is **root**.

```
24TX + 2GB Stackable Intelligent Switch : User Name Configuration
=====

User Name : root

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits the user name configuration page and returns to previous menu.

6-3-1-4. Password Configuration

Use this screen to change the Password. The default password is **root**.

```
24TX + 26B Stackable Intelligent Switch : Password Configuration
=====

Old Password :
New Password :
Enter Again  :

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits the password configuration page and returns to previous menu.

6-3-2. Port Configuration

This page can change every port status.

Press the **TAB** key to select each item and press the **SPACE** key to change the configuration of each item.

```
24TX + 2GB Stackable Intelligent Switch : Port Configuration
=====
```

Port	Type	Negotiation State	Speed Duplex	FC	BP	Band In	Width Out	Security Priority
Port.01	100TX	Enable	Auto	100 Full	OFF	OFF	0 0	Disable OFF
Port.02	100TX	Enable	Auto	100 Full	OFF	OFF	0 0	Disable OFF
Port.03	100TX	Enable	Auto	100 Full	ON	OFF	0 0	Disable OFF
Port.04	100TX	Enable	Auto	100 Full	ON	OFF	0 0	Disable OFF
Port.05	100TX	Enable	Auto	100 Full	ON	OFF	0 0	Disable OFF
Port.06	100TX	Enable	Auto	100 Full	ON	OFF	0 0	Disable OFF
Port.07	100TX	Enable	Auto	100 Full	ON	OFF	0 0	Disable OFF
Port.08	100TX	Enable	Auto	100 Full	ON	OFF	0 0	Disable OFF

```
Actions-> <Edit> <Save> <Previous Page> <Next Page> <Quit>
Select the Action menu.
[Tab/BKSPC] Move Item [Enter] Select Item [Esc] Previous Menu
```

State: Displays current port status. The port can be set to disable or enable mode. If the port setting is set to disable, the port will not receive or transmit any packets.

Negotiation: Displays current auto negotiation setting status of each port.

Speed/Duplex: Each port can be set for link speed and duplex mode.

FC / BP: User can set flow control function to enable or disable. FC (Flow control for full duplex link mode), BP (Backpressure for half duplex mode).

Bandwidth In/ Out: User can determine packet transmission rate control for each port. Per level is 100Kbps. Individual control method of TX and RX is supported.

Priority: User can set each port to high or low priority.

Security: User can enable or disable port security function.

Actions->

<**Edit**>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<**Save**>: Saves all configured values.

<**Previous Page**>: Displays previous page.

<**Next page**>: Displays next page.

<**Quit**>: Exits the port configuration page and returns to previous menu.

6-3-3. Trunk Configuration

This page can configure trunk groups.

Press the **TAB** key to select each item and press the **SPACE** key to change the configuration of each item.

```
24TX + 2GB Stackable Intelligent Switch : 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 25 26
T1 . . . . .
T2 . . . . .
T3 . . . . .
T4 . . . . .
T5 . . . . .
T6 . . . . .
T7 . . . . .

Trunk 1: Disable
Trunk 2: Disable
Trunk 3: Disable
Trunk 4: Disable
Trunk 5: Disable
Trunk 6: Disable
Trunk 7: Disable

Actions->  <Edit>  <Save>  <Quit>
          Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits the trunk configuration page and returns to previous menu.

6-3-4. Port Mirroring Configuration

Port mirroring is a method for monitoring traffic in switched networks. Traffic through ports can be monitored by one specific port. The traffic being received or transmitted by the monitored ports will be duplicated into the monitoring port. Press the **Space** key to change the configuration of an item.

```
24TX + 2GB Stackable Intelligent Switch : Port Mirroring
=====
Mirroring State : Both
Analysis Port : Port.04

Port State      Port State      Port State      Port State
-----
Port.04 -      Port.12 -      Port.20 -
Port.05 -      Port.13 -      Port.21 -
Port.06 -      Port.14 -      Port.22 -
Port.07 -      Port.15 -      Port.23 -
Port.08 -      Port.16 -      Port.24 -
Port.09 -      Port.17 -      Trunk.1 -
Port.10 -      Port.18 -
Port.11 -      Port.19 -

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Space] Toggle      [Esc] Previous Menu
```

Mirroring state: User can select Mirror mode for TX packet only, RX packet only or Both.

Analysis port: The port to which all traffic to be mirrored will be sent.

Press the **SPACE** key to mark each of the ports that should be mirrored.

Actions->

<Quit>: Exits the port mirroring configuration page and returns to previous menu.

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

6-3-5. VLAN Configuration

```
24TX + 2GB Stackable Intelligent Switch : VLAN Configuration
=====
VLAN Configure
Create VLAN Group
Edit/Delete VLAN Group
Group Sorted Mode
Previous Menu

Configure VLAN mode and ingress, egress rule.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

This page can set VLAN mode to port-based VLAN, 802.1Q VLAN or disable VLAN function.

All ports are automatically placed in VLAN 1, the default VLAN. To create new VLANs, use the Create a VLAN Group menu and add a VLAN. Make sure when you enter a VLAN name you do not leave spaces. For example VLAN2 is correct; VLAN 2 will give an error. The VLAN name can be any 15 alphanumeric characters. Special characters are not allowed.

NOTE: When changes are made to the VLAN mode, it is recommended that the device be rebooted to ensure system integrity.

6-3-5-1. VLAN Configure

Choose a VLAN

In the VLAN Configure menu select the type of VLAN you want to configure: VLAN Disabled (default), Port Based VLAN, or IRRR802.1Q Tag based VLAN. Save the configuration. There are 3 different options for VLANs to choose from using the space bar: Disabled, Port Based and 802.1Q.

To configure a new VLAN, select **Edit** and then use the tab key to select items you want to configure. The space bar allows you to select the different options.

After adding a VLAN group, the configuration option **Edit a VLAN Group** will allow you to change the membership by adding or deleting ports.

Port Based VLANs

These VLANs only apply to this switch. The VLANs can be overlapping, meaning that any port can belong to more than one VLAN. One configuration that is common for port based VLANs is to have all the ports on the switch on separate VLANs except for the port that has the server connected. The port connected to the server belongs to all the VLANs. This enables security between ports but allows all ports access to the server. Up to 256 different port based VLANs may be configured.

IEEE802.1Q VLANs

If IEEE802.1Q VLANs is selected, all the ports will belong to the default VLAN 1.

If more than one VLAN is necessary, the additional VLANs may be created.

Security VLANs

Security VLAN's allow for limiting telnet, SNMP and web access to the switch to a specific VLAN. The VID of the Security VLAN may be changed from 255 to another value after creating the VLAN. The new VID must not already exist on the box.

```
24TX + 2GB Stackable Intelligent Switch : VLAN Configure
=====
VLAN Mode : 802.1Q
VLAN ID Range : 1-255

Port      VLAN ID  Ingress Filter  Acceptable
-----
Port.04   1        Enable          All
Port.05   1        Enable          All
Port.06   1        Enable          All
Port.07   1        Enable          All
Port.08   1        Enable          All
Port.09   1        Enable          All
Port.10   1        Enable          All
Port.11   1        Enable          All

Actions->  <Edit>  <Save>  <Previous Page>  <Next Page>  <Quit>
Select the Action menu.
[Tab/BKSPC] Move Item      [Space] Toggle      [Esc] Previous Menu
```

PVID (Port VID): 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 don't support tagging. Only one untagged VLAN is allowed per port. Other VLANs need to be tagged.

Ingress Filter 1: If this is set, the port will only forward packets with VID (VLAN ID) matching this port's configured VID. Press the **Space** key to choose forward or drop the frame with the VID not matching this port's configured VID.

Ingress Filter 2: Drop untagged frame. Press the **Space** key to choose drop or forward the untagged frame.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

<Quit>: Exits this page and returns to previous menu.

6-3-5-2. Create a VLAN Group

Create Port-Based VLAN

Select **<Edit>** to create a port-based VLAN and add member/nonmember ports to it.

1. **VLAN Name:** Type a name for the new VLAN using 15 alphanumeric characters and no spaces.
2. **Group ID:** Type the VLAN group ID. The group ID range is 1~4096.
3. **Member:** Press the **Space** key to choose VLAN member type.
There are two selections:
 - Member: The port is member port.
 - NO: The port is NOT member port.
4. Press **"ESC"** to return to the action menu line.
5. Select **<Save>** to save all configured values.

NOTE: If the trunk groups exist, it will be displayed (ex: TRK1, TRK2...) after port26. The user can configure select if it is the member of the VLAN or not.

```
24TX + 26B Stackable Intelligent Switch : Create VLAN Group
=====

VLAN Name :          Group ID :

Port      Member
-----
Port.04   No
Port.05   No
Port.06   No
Port.07   No
Port.08   No
Port.09   No
Port.10   No
Port.11   No

Actions->  <Edit>  <Save>  <Previous Page>  <Next Page>  <Quit>
Select the Action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Create 802.1Q VLAN

Select **<Edit>** to create a 802.1Q VLAN and add tagged /untagged member ports to it.

1. **VLAN Name:** Type a name for the new VLAN using 15 alphanumeric characters and no spaces.
2. **VLAN ID:** Type a VID (between 1~4096). The default is 1. There are 256 VLAN groups provided to configure.
3. **Protocol VLAN:** Press the **Space** key to choose the protocol type.
4. **Member:** Press the **Space** key to choose the VLAN member. There are three selections:
 - UnTagged: This port is the member port of this VLAN group and outgoing frames are NO VLAN-Tagged frames.
 - Tagged: This port is the member port of this VLAN group and outgoing frames are VLAN-Tagged frames.
 - NO: The port is NOT member of this VLAN group.
5. Press **"ESC"** to return to the action menu line.
6. Select **<Save>** to save all configured values.

NOTE: If the trunk groups exist, it will be displayed (ex: TRK1, TRK2...) after port26. The user can configure select if it is the member of the VLAN or not.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

<Quit>: Exits this page and returns to previous menu.

```
24TX + 2GB Stackable Intelligent Switch : Create VLAN Group
=====

VLAN Name :                VLAN ID :
Protocol VLAN : None

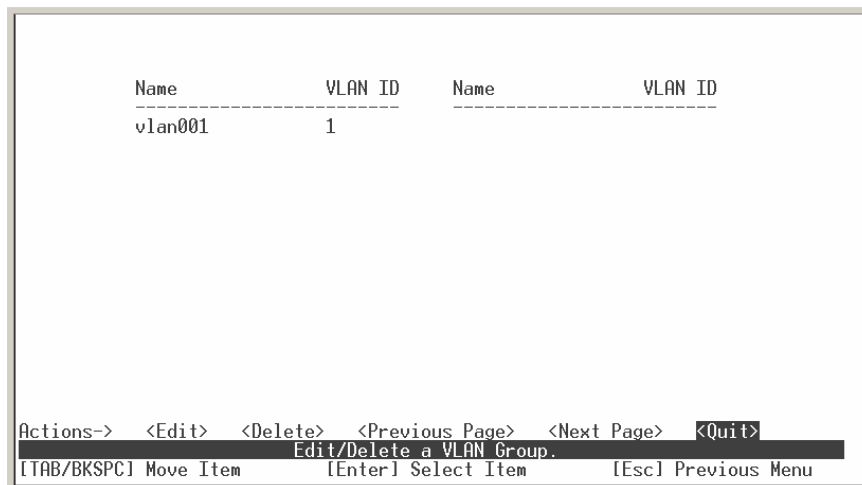
Port          Member
-----
Port.04      No
Port.05      No
Port.06      No
Port.07      No
Port.08      No
Port.09      No
Port.10      No
Port.11      No

Actions->  <Edit>  <Save>  <Previous Page>  <Next Page>  <Quit>
Select the Action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

6-3-5-3. Edit / Delete VLAN Group

Use this menu to edit or delete a VLAN group.

When editing the chosen VLAN, the user can change the protocol VLAN or a member port. A new protocol can be configured and the ports can be changed to tagged or untagged or deleted as member ports from this VLAN. In edit mode the VLAN Name and VLAN ID are read-only and cannot be modified. VLAN1, the default VLAN, can never be deleted.



1. Press **<Edit>** or **<Delete>** item.
2. Choose the VLAN group to edit or delete by using the **TAB** key, and then press **Enter**.
3. User can change the protocol VLAN or a member port.
4. After editing or deleting a VLAN, press the **<Save>** key to save all configured values.

NOTE: The VLAN Name and VLAN ID cannot be modified. The default VLAN cannot be deleted.

Actions->

<**Edit**>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<**Delete**>: Deletes selected VLAN Groups.

<**Previous Page**>: Displays previous page.

<**Next page**>: Displays next page.

<**Quit**>: Exits this page and returns to previous menu.

6-3-5-4. Group Sorted Mode

Use this menu to select the VLAN groups sorted mode. There are two selections:

Name: Sorted by name

VID: Sorted by VID

```
24TX + 2GB Stackable Intelligent Switch : Group Sorted Mode
=====
VLAN Group Sorted by : Name

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item  [Enter] Select Item  [Esc] Previous Menu
```

The results can be viewed on the Edit/Delete a VLAN Group screen.

NAME:	VID:	NAME:	VID:
DEFAULT	1		
A1	3		
B4	4		
U2	2		

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-3-6. Priority Configuration

Level (0-7): There are eight (0 to 7) priority levels that can be mapped as high or low priority queues.

QoS Mode: User can select the ratio of high priority packets and low priority packets by pressing the **Space** key.

High Low Queue service ratio: 1:1, 2:1, 3:1, 4:1, 5:1, 6:1, 7:1, FIFO, H→L

First In First Out (FIFO): The sequence of packets sent depends on arrival order.

High to Low (H→L): The high priority packets are sent before the low priority packets.

Ratio (1:1, 2:1, 3:1, 4:1, 5:1, 6:1, 7:1): 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.

```
24TX + 2GB Stackable Intelligent Switch : Priority Configuration
=====
Level 0 : Low
Level 1 : Low
Level 2 : Low
Level 3 : Low
Level 4 : High
Level 5 : High
Level 6 : High
Level 7 : High

QoS Mode : All High Before Low

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

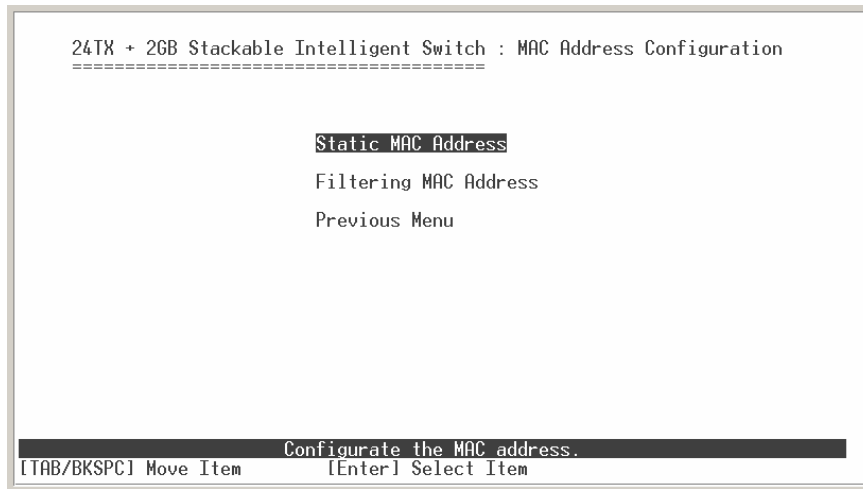
Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-3-7. MAC Address Configuration



6-3-7-1. Static MAC Address

When a static MAC address is added, 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 when the device is disconnected or powered-off and then becomes active again.

The menu shows the current configured static MAC addresses. The user can add, modify or delete a static MAC address. Once added, the MAC address will be listed on this page.

```
24TX + 2GB Stackable Intelligent Switch : Add Static MAC Address
=====

MAC Address :
Port No.    :

Actions->  <Edit>  <Save>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Add static MAC address

1. Press the **<Add>** key. Then press the **<Edit>** key on this menu to add a static MAC address.
2. Enter the MAC address to and from which the port should permanently forward traffic, regardless of the devices network activity.
3. In the Port num field, enter the port number for the device.
4. If tag-based (802.1Q) VLANs are configured, the static addresses are associated with individual VLANs. Enter the VID to associate with the MAC

address.

5. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

Edit static MAC address

1. Press **<Edit>** key to modify a static MAC address.
2. Choose the MAC address that you want to modify and then press enter.
3. Press the **<Edit>** key to modify all the items.
4. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

Delete static MAC address

1. Press the **<Delete>** key to delete a static MAC address.
2. Choose the MAC address that you want to delete and then press enter.
3. After delete static MAC address, you must press **<Save>** to complete the deletion.

Actions->

<Add>: Adds a static MAC address.

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

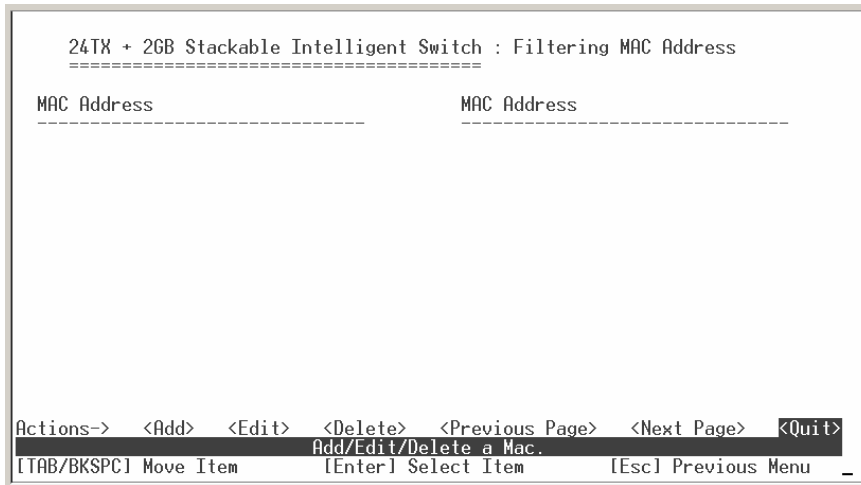
<Delete>: Deletes selected static MAC addresses.

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

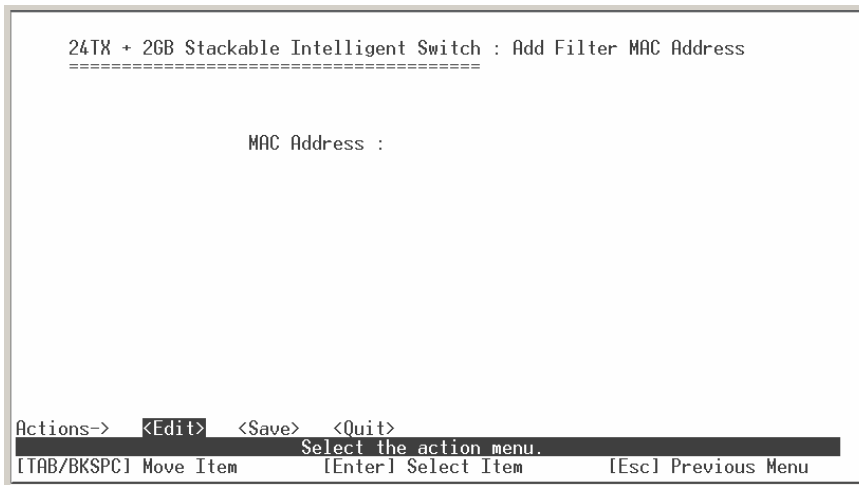
<Quit>: Exits this page and returns to previous menu.

6-3-7-2. Filtering MAC Address



Add Filtering MAC address

1. Press the **<Add>** key to add a static Filtering address.
2. Press the **<Edit>** key to enter the MAC address you want to filter.
3. Enter the MAC address and then press enter.
4. Press the **<Save>** key to modify all the items.
5. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.



Edit Filtering MAC address

1. Press the **<Edit>** key to modify a static Filtering address.
2. Choose the MAC address that you want to modify and then press enter.
3. Press the **<Edit>** key to modify all the items.
4. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

Delete Filtering MAC address

1. Press the **<Delete>** key to delete a Filtering MAC address.
2. Choose the MAC address that you want to delete and then press enter.
3. After delete Filtering MAC address, you must press **<Save>** to complete the deletion.

Actions->

<Add>: Adds a static filtering address.

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Delete>: Deletes selected static filtering addresses.

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

<Quit>: Exits this page and returns to previous menu.

6-3-8. Miscellaneous Configuration

Switch parameters and stacking functions can be configured using the miscellaneous configuration screens. The stacking function allows you to centralize control of the switch in the network.

```
24TX + 2GB Stackable Intelligent Switch : Misc Configuration
=====
MAC Address Ageing Time (0, 300..765) : 300
Broadcast Storm Filter Mode           : 5%
Max Bridge Transmit Delay Bound       : OFF
Low Queue Delay Bound                 : Disable
Low Queue Max Delay Time (1..255)    : 255
Collisions Retry Forever              : Enable
Hash Algorithm                       : CRC Hash
IFG Compensation                     : Enable
IP Stacking Group ID (0..65535)      : 0
IP Stacking Mode                     : Disable
Actions-> <Edit> <Save> <Quit>
          Select the action menu.
[Tab/BKSPC] Move Item [Enter] Select Item [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-3-8-1. MAC Address Ageing Time

To configure a different MAC Address Ageing Time, type the number of seconds that an inactive MAC address remains in the switch's address table before it is deleted. Once the address is removed from the table, a device will

have to send out broadcast packets to be relearned by the switch and have its address put in the table. The valid range is 300 to 765 seconds. Default is 300 seconds.

6-3-8-2. Broadcast Storm Filtering

Broadcast storm filtering is used to limit the amount of broadcast traffic on the network. An excessive amount of broadcast traffic can inhibit data packets from timely delivery.

The valid threshold values are 5%, 10%, 15%, 20%, 25% and N/A. If the broadcast traffic is greater than the configured value, broadcast packets will be dropped. The default is N/A. The default is set so that no broadcast packets are ever dropped no matter how many broadcast packets there are on the network.

6-3-8-3. Max Bridge Transmit Delay Bound

Max bridge transmit delay bound (0,1-4 sec): Limits the packets queuing time in the switch. If enabled, the packets exceeding the queuing time will be dropped. Press the **Space** key to set the time. Valid values are 1sec, 2sec, 4sec and OFF. The default is 1 second when this feature is enabled. This setting does not depend on what values are set in the "Priority Configuration" menu.

Low Queue Delay Bound: If this parameter is enabled, the "Max bridge transmit delay bound" must also be configured. This item allows you to limit queuing time of the low priority packets in the switch. When the low priority packets exceed the "Max Delay Time" they will be transmitted. Press the **Space** key to enable or disable this function. By default the Enable Delay Bound is set to OFF.

Low Queue Max Delay Time: Set the time that low priority packets are queued in the switch. The valid range is 0 to 255 ms. Since the default is OFF, the Max Delay Time is 0. This item must be set if “Low Queue Delay Bound” is enabled.

NOTE: “Max bridge transmit delay bound control” must be enabled before Low Queue Max Delay Bound is enabled.

6-3-8-4. Collision Retry Forever

Collisions Retry Forever: User can choose to disable collision retry forever and, if a collision occurs in half-duplex mode, the switch will attempt to send the packet 48 times and then drop the frame. When enabled, a collision that occurs in half-duplex mode will result in repeated attempts by the switch forever.

6-3-8-5. Hash Algorithm

This Hash Algorithm is for hardware maintenance on the MAC table calculation. This field should only be changed if an excessive amount of MAC address table collisions are seen. It changes the hashing algorithm for storing new MAC addresses in local memory.

6-3-8-6. IFG Compensation

IFG compensation: Disable or Enable

Provides the ability to compensate for shorter inter-frame gaps during rate limiting. It is recommended that this selection remain disabled.

6-3-8-7. IP Stacking Group ID (0...65535)

Assign a stacking group ID for the switch by entering a value between 0 and

65535. The switches must be assigned the same stacking group ID to be stacked as a group.

6-3-8-8. IP Stacking Mode

Select one of the 3 modes to enable or disable the stacking function. To configure the switch in the stacking group, use the Web GUI configuration interface.

Disable: The stacking function is not enabled.

Master: One switch must be selected to control all other switches in stacking group. Only one switch can be assigned to be the master switch in one stacking group. Once the stacking group is set up, the master switch will control all switches in the stacking group.

Slave: All remaining switches in a stacking group must be configured to slave mode. Once the stacking group is set up, the slave switches can only be configured through the master switch.

Note:

1. Before configuring the stacking function, make sure all stack switches are in the same network.
2. To configure the stacking function, enable the master switch first.
3. After you have configured the stacking function, use Cat. 5 cable to connect every switch in the stacking group.
4. To remove the master switch from stacking group, the slave switches must be removed first. When all slave switches are removed, the master switch can be removed from the stacking group.

6-4. Protocol Related Configuration

```
24TX + 2GB Stackable Intelligent Switch : Protocol Related Configuration
=====

  STP Configuration
  SNMP Configuration
  LACP Configuration
  IGMP/GVRP Configuration
  802.1x Configuration
  Previous Menu

  Configure the Spanning Tree Protocol.
[Tab/BKSPC] Move Item      [Enter] Select Item
```

6-4-1. STP

Spanning tree is a link management protocol that provides path redundancy while preventing undesirable loops in the network.

```
24TX + 2GB Stackable Intelligent Switch : STP Configuration
=====

  STP Setup
  System Configuration
  Per Port Setting
  Previous Menu

  Enable or disable Spanning Tree function.
[Tab/BKSPC] Move Item      [Enter] Select Item
```

6-4-1-1. STP Setup

This page enables or disables the Spanning Tree function. The Spanning Tree function must be enabled before the STP function can be configured.

```
24TX + 2GB Stackable Intelligent Switch : STP Setup
=====

STP : Disable

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-1-2. System Configuration

All devices in the spanning tree instance will utilize the same values as the root bridge to ensure consistency throughout the network. If this device becomes the root bridge, then the other switches in the STP instance will utilize its values.

```
24TX + 2GB Stackable Intelligent Switch : STP System Configuration
=====

Root Bridge Information          Configure Spanning Tree Parameters
-----
Priority      : 32768            Priority (0-65535)      : 32768
Mac Address   : 0000001C0001    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/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Spanning tree information for the Root Bridge on the left is for display only. Configure new values for the STP parameter on the right.

You must enable STP function before selecting the configuration menu.

Priority: The value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. Enter a number 1 through 65535.

Max Age: The number of seconds a bridge waits without receiving Spanning-Tree Protocol configuration messages before attempting a reconfiguration. Enter a number 6 through 40.

Hello Time: The number of seconds between the transmission of Spanning-Tree Protocol configuration messages. Enter a number 1 through 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 4 through 30.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-1-3. STP Per Port Setting

```
24TX + 2GB Stackable Intelligent Switch : STP Per Port Setting
=====
```

Port	State	Path Cost	Priority
Port.01	Forwarding	10	128
Port.02	Forwarding	10	128
Port.03	Forwarding	10	128
Port.04	Forwarding	10	128
Port.05	Forwarding	10	128
Port.06	Forwarding	10	128
Port.07	Forwarding	10	128
Port.08	Forwarding	10	128

```
Actions->  <Edit>  <Save>  <Previous Page>  <Next Page>  <Quit>
Select the Action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

State: Spanning tree status for each port is either forwarding or blocking.

PathCost: Specifies the path cost of the port that the switch uses to determine which ports are the forwarding ports. If you change the value, you need to restart the switch for valid value change to take effect.

Priority: Specifies the path cost of the port that the switch uses to determine which ports are the forwarding ports. The lowest number is picked as the forwarding port. The range is 1-65535 and the default value is based on IEEE802.1D standard.

The values should be in the range:

10Mb/s = 50-600

100Mb/s = 10-60.

If you change the value, you must reboot the switch to save the value change.

On the action menu line press **<Next Page>** to configure Port 9 through Port 26 or press **<Previous Page>** returns to last page.

Actions->

<**Edit**>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<**Save**>: Saves all configured values.

<**Previous Page**>: Displays the previous page.

<**Next Page**>: Displays the next page.

<**Quit**>: Exits this page and returns to previous menu.

6-4-2. SNMP

Any Network Management station running the Simple Network Management Protocol (SNMP) can manage the switch provided that the Management Information Base (MIB) is installed. SNMP is a protocol that governs the transfer of information between management and agent. The switch supports SNMP V1.

Use this menu to define management stations as trap managers and to enter SNMP community strings. Users can also define a name, location, and contact person for the switch.

```
24TX + 2GB Stackable Intelligent Switch : SNMP Configuration
=====
System Options
Community Strings
Trap Managers
Previous Menu

Configure the system information.
[Tab/BKSPC] Move Item      [Enter] Select Item
```

6-4-2-1. SNMP System Options

```
24TX + 2GB Stackable Intelligent Switch : SNMP System Options
=====

Name      :
Contact   :
Location  :

Actions->  <Edit>  <Save>  <Quit>
          Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Press **<Edit>** to enter all items, **ESC** to return to the action menu, and then press **<Save>** to save the configured values.

System Name: Enter a name to identify the switch.

System Contact: Enter the name of the contact person or organization.

System Location: Enter the location of the switch.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-2-2. Community Strings

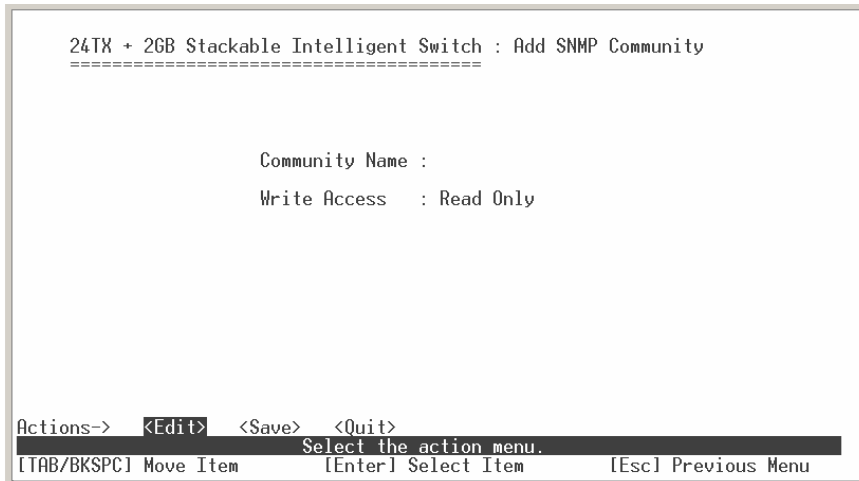
Community strings serve as passwords and can be entered as one of the following:

Community Name: Enter the name of current community strings. The default is “public”.

Write Access: Enables the permissions for Read Only or Read/Write.

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

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



Add Community Strings

1. Press the **<Add>** key. Then press the **<Edit>** key on this menu to add a SNMP Trap Manager.
2. Enter the Community Name and select the Write Access setting for the Community String.

3. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

```
24TX + 26B Stackable Intelligent Switch : Edit SNMP Community
=====
Community Name : public
Write Access   : Read Only

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Edit Community Strings

1. Press **<Edit>** key to modify a Community String.
2. Choose the Community Name that you want to modify and then press enter.
3. Enter the correct Community Name and Write Access setting.
4. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

Delete Community Strings

1. Press the **<Delete>** key to delete a Community String.
2. Choose the Community Name that you want to delete and then press enter.
3. After deleting the Community String, you must press **<Save>** to complete the deletion.

Actions->

<Add>: Creates a trap manager.

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Delete>: Deletes a community string. After deleting, press **<Save>** to complete the deletion.

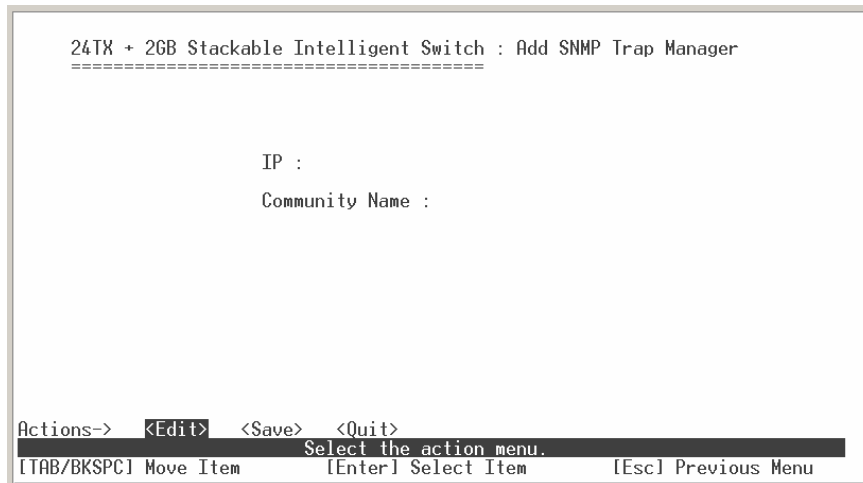
<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-2-3. Trap Managers

A trap manager is a management station that receives traps. The switch generates system alerts. 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.





Add SNMP Trap Managers

1. Press the **<Add>** key. Then press the **<Edit>** key on this menu to add a SNMP Trap Manager.
2. Enter the IP address and Community Name for the SNMP Trap Manager.
3. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

Edit SNMP Trap Managers

1. Press **<Edit>** key to modify a SNMP Trap Manager.
2. Choose the IP address and Community Name that you want to modify and then press enter.
3. Enter the correct IP Address and Community Name.
4. Press **ESC** to go back action menu line, and then select **<Save>** to save all configured values.

Delete SNMP Trap Managers

1. Press the **<Delete>** key to delete a SNMP Trap Manager.
2. Choose the IP Address and Community Name that you want to delete and then press enter.
3. After deleting the SNMP Trap Manager, you must press **<Save>** to complete the deletion.

Actions->

<Add>: Creates a trap manager.

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

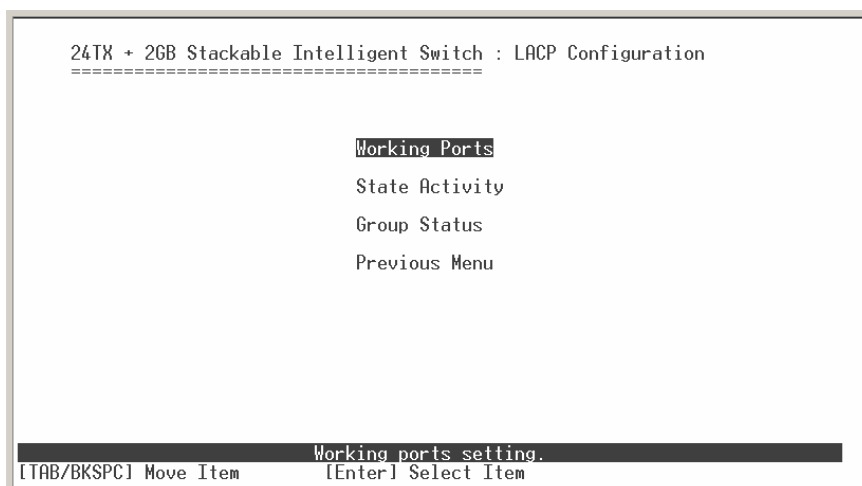
<Delete>: Deletes a trap manager. After deleting, press **<Save>** to complete the deletion.

<Save>: Saves all configured values.

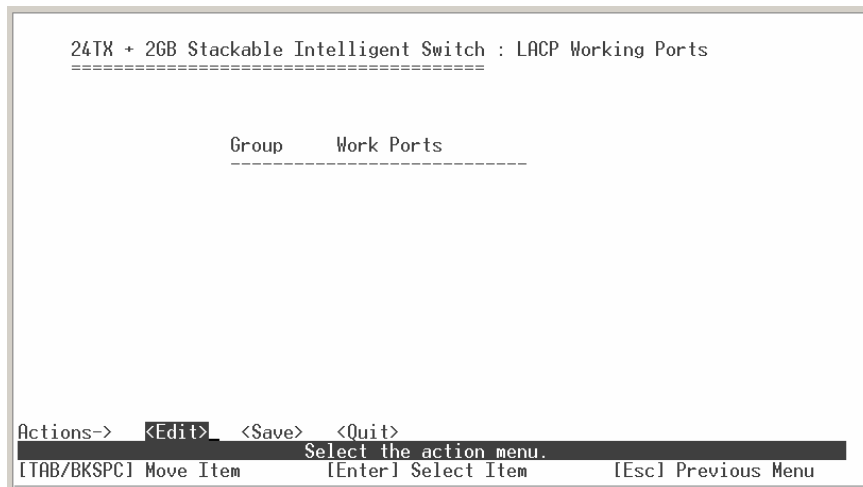
<Quit>: Exits this page and returns to previous menu.

6-4-3. LACP

The Link Aggregation Control Protocol (LACP) provides a standardized means for exchanging information between Partner Systems on a link to allow their Link Aggregation Control instances to reach agreement on the identity of the Link Aggregation Group to which the link belongs. Move the link to that Link Aggregation Group, and enable its transmission and reception functions in an orderly manner. 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.** For more information, please refer to IEEE 802.3ad.



6-4-3-1. LACP Working Ports



Group: Displays the trunk group ID.

LACP: Press the **Space** key to enable or disable LACP (Link Aggregation Control Protocol) support. If enabled, the group is an LACP static trunking group. If disabled, the group is a local static trunking group.

LACP Work Port Num: The maximum number of ports that can be aggregated at the same time. If the group is an LACP static trunking group, the exceed ports is standby and able to aggregate if the work ports fail. If the group is a local static trunking group, the number must be the same as group ports.

NOTE: Before setting LACP support, you must first set the trunk group using the *Port / Trunk Configuration* screen.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-3-2. LACP State Activity

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 the opposite device.

```
24TX + 2GB Stackable Intelligent Switch : LACP State Activity
=====
Port      State Activity      Port      State Activity
-----
Actions-> <Edit> <Save> <Quit>
          Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-3-3. Group Status

When setting a trunking group, the relationship status information may be seen on the LACP Group Status screen.

```
24TX + 2GB Stackable Intelligent Switch : LACP Group Status
=====
                                Static Trunking Group

Group Key   : 1
Port Member : 1 2 3 4

Actions->  <Previous Page>  <Next Page>  <Quit>
Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Previous Page>: Displays previous page.

<Next page>: Displays next page.

<Quit>: Exits this page and returns to previous menu.

6-4-4. IGMP/GVRP Configuration

Use the IGMP/GVRP Configuration screen to enable or disable IGMP, Query Mode and GVRP (GARP VLAN Registration Protocol) support.

Press the **Space** key to choose Enabled or Disabled.

```
24TX + 2GB Stackable Intelligent Switch : IGMP/GVRP Configuration
=====

IGMP      : Disable
Query Mode : Disable
GVRP      : Disable

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-5. 802.1x Configuration

```
24TX + 2GB Stackable Intelligent Switch : 802.1x Configuration
=====

      802.1x Setup
      System Configuration
      Per Port Setting
      Misc Configuration
      Previous Menu

Enable or disable 802.1x Protocol function.
[Tab/BKSPC] Move Item      [Enter] Select Item
```

6-4-5-1. 802.1x Setup

Use this screen to enable or disable 802.1x. Press the **Space** key to choose Enabled or Disabled mode.

```
24TX + 2GB Stackable Intelligent Switch : 802.1x Setup
=====

802.1x : Disable

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-5-2. 802.1x System Configuration

After enabling the IEEE 802.1x function, use the 802.1x System Configuration screen to configure the IEEE 802.1x parameters.

```
24TX + 2GB Stackable Intelligent Switch : 802.1x System Configuration
=====

Radius Server IP : 192.168.16.3
Shared Key       : 12345678
NAS, Identifier  : NAS_L2_SWITCH
Server Port      : 1812
Accounting Port  : 1813

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[Tab/BKSPC] Move Item  [Enter] Select Item  [Esc] Previous Menu
```

Radius Server IP: Enter the Radius Server IP address.

Shared Key: Enter an encryption key for use during authentication sessions with the specified radius server. This key must match the encryption key used on the Radius Server.

NAS, Identifier: Enter the identifier for the radius client.

Server Port: Enter the UDP destination port for authentication requests to the specified Radius Server.

Accounting Port: Enter the UDP destination port for accounting requests to the specified Radius Server.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-4-5-3. 802.1x Per Port Configuration

802.1x authentication state can be configured for each port as Disable, Accept, Reject or Authorize. Press the “**Space**” key to change the state value for each port.

Reject: The specified port is required to be held in the unauthorized state.

Accept: The specified port is required to be held in the Authorized state.

Authorized: The specified port is set to the Authorized or Unauthorized state in accordance with the outcome of an authentication exchange between the Supplicant and the authentication server.

Disable: The specified port is required to be held in the Authorized state.

Formatted: Bullets and Numbering

```
24TX + 2GB Stackable Intelligent Switch : 802.1x Per Port Setting
=====

Port          State
-----
Port.05      Disable
Port.06      Disable
Port.07      Disable
Port.08      Disable
Port.13      Disable
Port.14      Disable
Port.15      Disable
Port.16      Disable

Actions->  <Edit>  <Save>  <Previous Page>  <Next Page>  <Quit>
          Select the Action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Saves all configured values.

<Previous Page>: Displays previous page.

<Next Page>: Displays next page.

<Quit>: Exits this page and returns to previous menu.

6-4-5-4. 802.1x Miscellaneous Configuration

```
24TX + 2GB Stackable Intelligent Switch : 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
Reauthorize Maximum (1..10, Default=2)    : 2
Reauth Period (1..9999999, Default=3600) : 3600

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Quiet period: Enter the period during which the port doesn't try to acquire a supplicant.

TX period: Enter the period the port waits to retransmit next EAPOL PDU during an authentication session.

Supplicant timeout: Enter the period of time the switch waits for a supplicant response to an EAP request.

Server timeout: Enter the period of time the switch waits for a server response to an authentication request.

Reauthorize Maximum: Enter the number of authentication that must time-out before authentication fails and the authentication session ends.

Reauthorize period: Enter the period of time after which clients connected must be re-authenticated.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action

menu line.

<Save>: Saves all configured values.

<Quit>: Exits this page and returns to previous menu.

6-5. System Reset Configuration

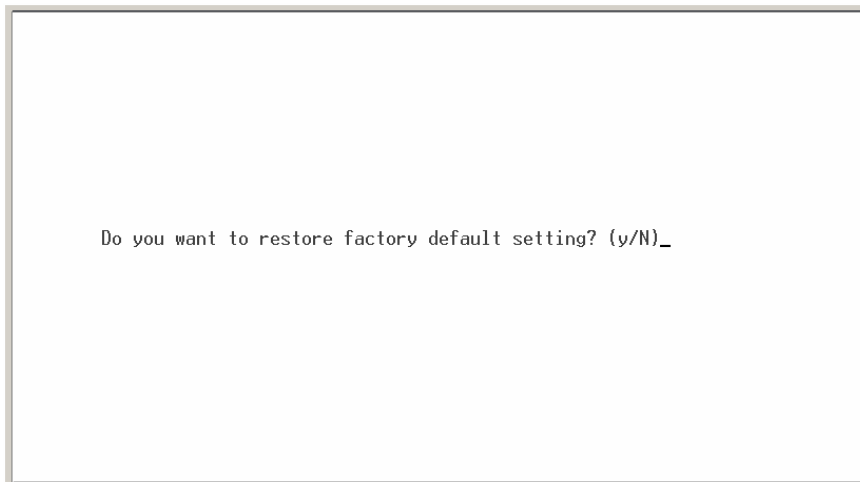
```
24TX + 2GB Stackable Intelligent Switch : System Reset Configuration
=====

Factory Default
System Reboot
TFTP Configuration
Previous Menu

Restore to factory default setting.
[Tab/BKSPC] Move Item      [Enter] Select Item
```


6-5-1. Factory Default

Use this menu to restore all factory default settings. Pressing **y** will reset the switch configuration settings to their factory defaults. Rebooting the switch is necessary for the new configurations to take effect.



y: Resets the switch to the factory default configuration. The software version that the switch will be reset to can be found on the “System Information” menu under the main menu “Status and Counters”.

N: Returns to the previous menu.

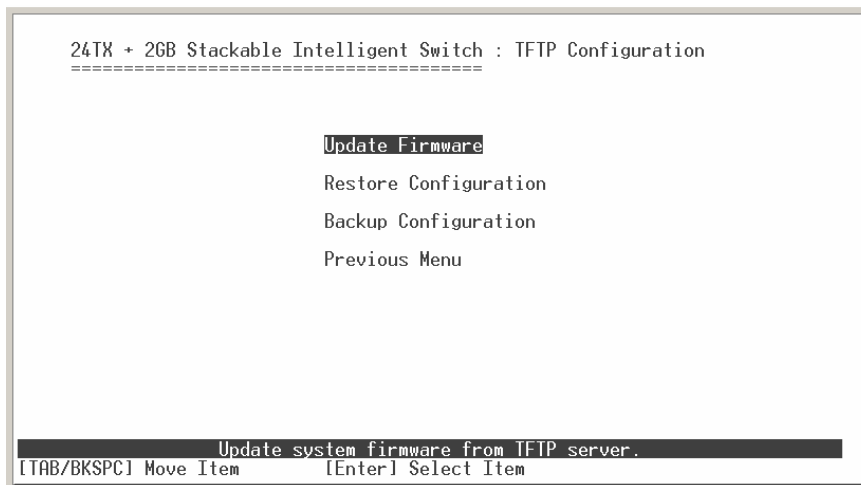
Warning: The unit must be allowed to complete restart process to restore the defaults without an interruption. Manually powering off the system before the process has been completed may result in corrupted memory and may cause the unit to not start or come up in an unknown state.

6-5-2. System Reboot

Reboots the switch to enable items that have been configured.

6-5-3. TFTP Configuration

Use this screen to update firmware, restore EEPROM values or upload current EEPROM value.



6-5-3-1. TFTP Update Firmware

Use this screen to update firmware from the TFTP server.

```
24TX + 2GB Stackable Intelligent Switch : TFTP Update Firmware
=====

TFTP Server IP      : 192.168.16.2
Firmware File Name  : image.bin

Actions->  <Edit>  <Save>  <Quit>
           Select the action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Start the TFTP server, and copy the firmware update version image file to TFTP server.

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

Firmware File Name: Enter the image file name.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Starts download of image file from the TFTP server. When the save is successful, the image is downloaded. Rebooting the switch is necessary to have the new firmware version take effect.

<Quit>: Exits this page and returns to previous menu.

6-5-3-2. TFTP Restore Configuration

Use this screen to restore an EEPROM value or save a previous version of the image file from the TFTP server.

```
24TX + 2GB Stackable Intelligent Switch : TFTP Restore Configuration
=====

TFTP Server IP      : 192.168.16.2
Restore File Name  : data.dat

Actions->  <Edit>  <Save>  <Quit>
          Select the action menu.
[Tab/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Start the TFTP server, and copy the firmware update version image file to TFTP server.

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

Restore File Name: Enter the image file name.

Actions->

<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Starts the download of the configuration file from the selected source file on the TFTP server. Reboot is necessary for the new configuration to take effect.

<Quit>: Exits this page and returns to previous menu.

6-5-3-3. TFTP Backup Configuration

Use this screen to save the current EEPROM value to an image file. Then go to the update configuration page to restore the EEPROM value.

```
24TX + 26B Stackable Intelligent Switch : TFTP Backup Configuration
=====

TFTP Server IP   : 192.168.16.2
Backup File Name : data.dat

Actions->  <Edit>  <Save>  <Quit>
          Select the action menu.
[TAB/BKSPC] Move Item      [Enter] Select Item      [Esc] Previous Menu
```

Start the TFTP server, and copy the firmware update version image file to TFTP server.

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

Restore File Name: Enter the image file name.

Actions->

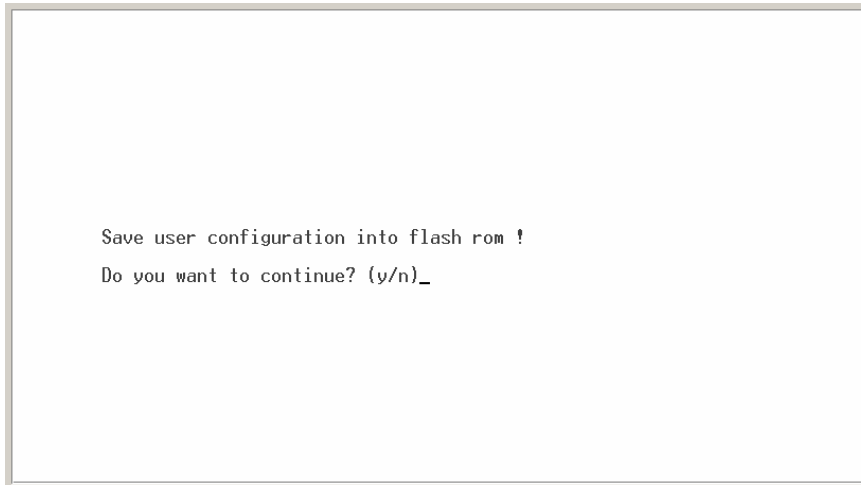
<Edit>: Configures all items. When finished, pressing **ESC** returns to the action menu line.

<Save>: Starts the upload of the current configuration to the selected destination file on the TFTP server.

<Quit>: Exits this page and returns to previous menu.

6-5-3-4. Save Configuration

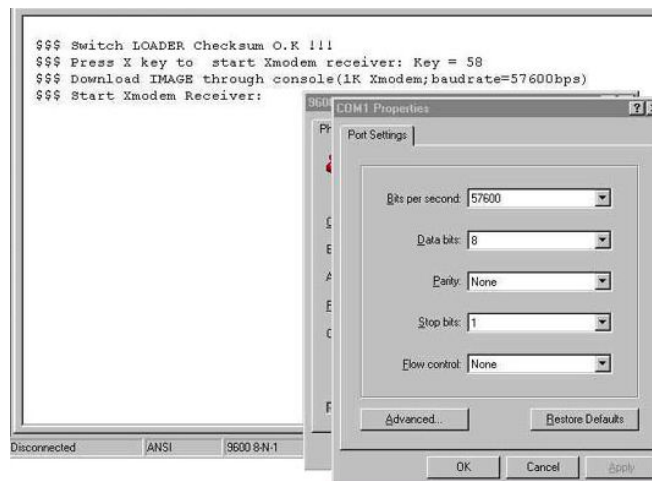
The configuration must be saved to the flash memory when it has been changed. Manually powering off the system before the process has been completed may result in corrupted memory and may cause the unit to not start or come up in an unknown state.



6-6. X-modem Upgrade

1. While booting the switch, press the **X** key to start the Xmodem routine on the device.
2. Pressing X will cause the switch Xmodem application to begin and cause the baud rate to change to 57600 bps. You will need to disconnect the cable connected to the serial port, and change the baud rate of your hyper-terminal application on your laptop to 57600 bps, then connect the cable and reconnect to the switch.

```
$$$ Switch LOADER Checksum O.K !!!  
$$$ Press X key to start Xmodem receiver:  
$$$ Download IMAGE through console(1K Xmodem;baudrate=57600bps)  
$$$ Start Xmodem Receiver:
```

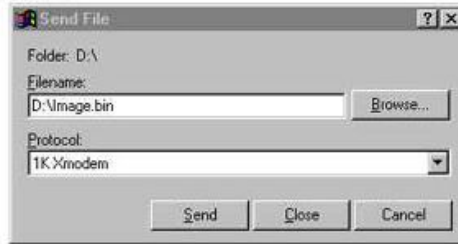


3. Select "send file" under the "transfer" menu from menu bar.
4. Press the "browse" button to select the path.
5. Select "1K Xmodem" of protocol and press the "Send" button.

```

$$$ Switch LOADER Checksum O.K !!!
$$$ Press X key to start Xmodem receiver: Key = 58
$$$ Download IMAGE through console(1K Xmodem;baudrate=57600bps)
$$$ Start Xmodem Receiver:

```



6. After successfully upgrading to the new firmware, change the baud rate back to the default 9600bps.

```

$$$ Switch LOADER Checksum O.K !!!
$$$ Press X key to start Xmodem receiver: Key = 78
$$$ Download IMAGE through console(1K Xmodem;baudrate=57600bps)
$$$ Start Xmodem Receiver: CCCCC
$$$ Download IMAGE ....O.K !!!
$$$ Update firmware .....
.....
.....
.....
$$$ Update firmware ....O.K !!!
$$$ Note: console baudrate of new image is 9600bps..
$$$ Reboot .....

```


7.

Web-Based Management

This section introduces the configuration and functions of the web-based management of MIL-SM2401M-STK switch series. The managed switch series provides an embedded HTML website residing in flash memory. It offers advanced management features and allow users to manage the device from anywhere on the network through a standard browser such as Internet Explorer or Netscape.

Web-Based Management supports Internet Explorer 5.0. It is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

***Note:** By default, Internet Explorer 5.0 or later versions do not allow Java Applets to open sockets. The user must explicitly modify the browser setting to enable Java Applets to use network ports.*

Preparing for Web Management

Before using the web-based management tool, check the default IP address of the switch via the Console Menu. Please refer to the **Console Management** chapter for console login instructions.

If necessary, use the console mode to modify the IP address the first time. The default values are listed below:

IP Address: **192.168.1.77**

Subnet Mask: **255.255.255.0**

Default Gateway: **192.168.16.254**

User Name: **root**

Password: **root**

Online Help

Online help is available by pressing the **Help** button for any configuration questions.

7-1. System Login

1. Launch Internet Explorer or Netscape.
2. Type http:// and the IP address of the switch in the Location or Address field.
The default IP Address is 192.168.1.77.
3. Press **Enter**.



Figure 5-1: The Password Window

4. In the login screen, type the user name and password. The default is **root** for both.
5. Press **Enter** or Click **OK** and the Home Page screen for web-based management will appear.



7-2. Port Status

Port Status

Port	Type	Link	State	Negotiation		Speed Duplex		Flow Control		Back Pressure		Band Width		Priority	Security
				Config	Actual	Config	Actual	Config	Actual	Config	Actual	In	Out		
Port.05	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.06	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.07	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.08	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.13	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.14	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.15	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.16	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.17	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.18	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.19	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.20	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.21	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.22	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.23	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Port.24	100TX	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF
Trunk.1	TRUNK	Up	Enable	Auto	Auto	100 Full	100 Full	ON	ON	ON	OFF	OFF	OFF	Disable	OFF
Trunk.3	TRUNK	Down	Enable	Auto	N/A	100 Full	N/A	ON	N/A	ON	N/A	OFF	OFF	Disable	OFF

Link: “Down” is “No Link”. “UP” is “Link”.

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State: Displays port status off or on depending on user setting. “Unlink” means the port is offline or “off”.

Auto Negotiation: Displays the auto negotiation mode. There are three selections: Auto, Force and Nway-force.

Speed Duplex: Displays link speeds of 1000Mbps or 100Mbps or 10Mbps and full duplex or half-duplex mode.

Flow Control: Displays the flow control status as enabled or disabled in full-duplex mode.

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Back Pressure: Displays the backpressure status as enabled or disabled in half-duplex mode.

Bandwidth: Displays the ports incoming and outgoing bandwidth.

Priority: Displays the port static priority status as High or Low or Disable.

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Port Security: Displays the port security as enabled or disabled.

Config: Displays the setting configured by the user.

Actual: Displays the negotiation result.

7-3. Port Statistics

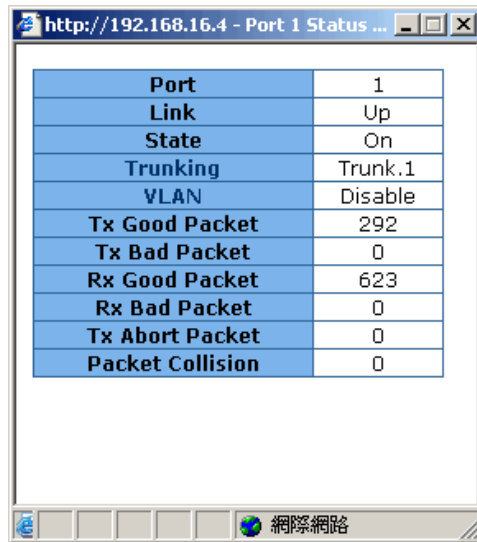
The following information provides a view of the current status of the unit.
Pressing the **Clear** button will return all counts to zero.

Port Statistics

Port	Type	Link	State	Tx Good Packet	Tx Bad Packet	Rx Good Packet	Rx Bad Packet	Tx Abort Packet	Packet Collision
Port.05	100TX	Down	Enable	0	0	0	0	0	0
Port.06	100TX	Down	Enable	0	0	0	0	0	0
Port.07	100TX	Down	Enable	0	0	0	0	0	0
Port.08	100TX	Down	Enable	0	0	0	0	0	0
Port.13	100TX	Down	Enable	0	0	0	0	0	0
Port.14	100TX	Down	Enable	0	0	0	0	0	0
Port.15	100TX	Down	Enable	0	0	0	0	0	0
Port.16	100TX	Down	Enable	0	0	0	0	0	0
Port.17	100TX	Down	Enable	0	0	0	0	0	0
Port.18	100TX	Down	Enable	0	0	0	0	0	0
Port.19	100TX	Down	Enable	0	0	0	0	0	0
Port.20	100TX	Down	Enable	0	0	0	0	0	0
Port.21	100TX	Down	Enable	0	0	0	0	0	0
Port.22	100TX	Down	Enable	0	0	0	0	0	0
Port.23	100TX	Down	Enable	761	0	0	0	0	0
Port.24	100TX	Down	Enable	0	0	0	0	0	0
Trunk.1	TRUNK	Up	Disable	1497	0	2694	0	0	0
Trunk.3	TRUNK	Down	Disable	0	0	0	0	0	0

Clear

Left click the mouse on the desired port on the graphical image of the switch to get specific information for that port.



The screenshot shows a web browser window with the address bar containing "http://192.168.16.4 - Port 1 Status ...". The main content area displays a table with the following data:

Port	1
Link	Up
State	On
Trunking	Trunk.1
VLAN	Disable
Tx Good Packet	292
Tx Bad Packet	0
Rx Good Packet	623
Rx Bad Packet	0
Tx Abort Packet	0
Packet Collision	0

The browser's taskbar at the bottom shows the Windows logo, several icons, and the text "網際網路" (Internet).

7-4. Administrator

The management functions include IP address, switch settings, console port information, port controls, trunking, filter database, VLAN configuration, spanning tree, port mirroring, SNMP, security manager, TFTP update firmware, configuration backup, system reset, and reboot.

7-4-1. IP Address

Entering new values and clicking the **Apply** button can change the IP Settings. The switch must be reset for the new IP address to take effect.

Default IP: 192.168.1.77

Default Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.6

IP Configuration

DHCP Client :

IP Address	192.168.16.4
Subnet Mask	255.255.255.0
Gateway	192.168.16.254

7-4-2. Switch Setting

7-4-2-1. Basic Switch Settings

System Name: Displays the name of switch.

System Location: Displays the physical location of the switch.

System Description: Displays the name of device type.

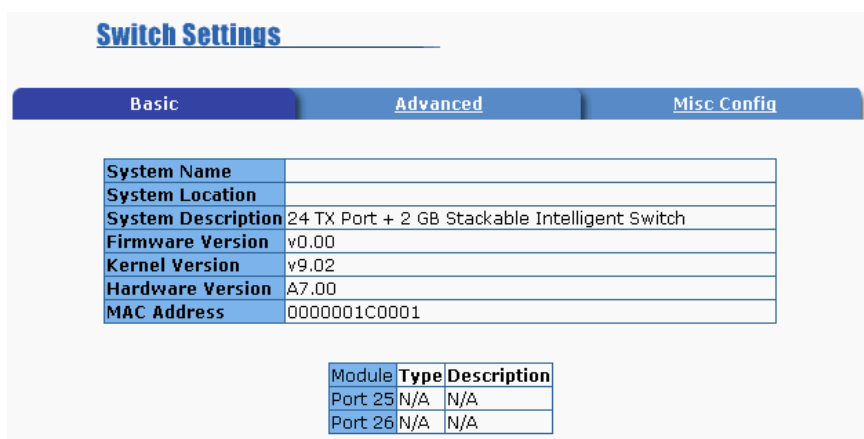
Firmware Version: Displays the switch's downloaded firmware version.

Kernel version: Displays write to default EEPROM value version.

Hardware Version: Displays the switch's hardware version.

MAC Address: Displays unique hardware address assigned by manufacturer.

Module: Displays the type and description of the switch module.



Switch Settings

Basic Advanced Misc Config

System Name	
System Location	
System Description	24 TX Port + 2 GB Stackable Intelligent Switch
Firmware Version	v0.00
Kernel Version	v9.02
Hardware Version	A7.00
MAC Address	0000001C0001

Module	Type	Description
Port 25	N/A	N/A
Port 26	N/A	N/A

7-4-2-2. Advanced Settings

Enable MAC Address Aging Out: Select to enable the MAC address aging out function.

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Age-Out Time: Enter the number of seconds that an inactive MAC address remains in the switch's address table. The valid range is 300 to 765 seconds. Default is 300 seconds.

Max Bridge Transmit Delay Bound: Limits the packets queuing time in the switch. If enabled, the packets that exceed the time limit in the queue will be dropped. This valid values are 1sec, 2 sec, 4 sec and off. Default is 1 second.

Enable Low Queue Delay Bound: Limits the low priority packets queuing time in switch. If a low priority packet in the switch exceeds the Max Delay Time, it will be sent. The valid range is 1 to 255 ms.

NOTE: Make sure the "Max bridge transit delay bound control" is enabled before enabling Delay Bound. The Enable Delay Bound only works under "Max bridge transit delay bound control is enabled" situation.

Broadcast Storm Filter: The threshold is the percentage of the port's total bandwidth used by broadcast traffic. To configure broadcast storm control, first enable it and then set the upper threshold for each individual port. When broadcast traffic for a port rises above the threshold set, broadcast storm control becomes active. The valid threshold values are 5%, 10%, 15%, 20%, 25% and OFF.

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Switch Settings

Basic **Advanced** Misc Config

Enable MAC Address Aging Out
Age-Out Time : seconds (300..765, must multiple of 3)

Max Bridge Transmit Delay Bound :

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

Broadcast Storm Filter Mode :

Priority Queue Service

802.1p Priority

First Come First Service

All High Before Low

Weight Round Ratio

Qos Policy (Checked for High Priority) :

Level0 Level1 Level2 Level3 Level4 Level5 Level6 Level7

Priority Queue Service Settings: Select the priority queue service type:

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First Come First Service: The sequence of packets sent is dependent on the order of arrival. The first packets in the queue are transmitted before any other packets.

All High before Low: The high priority packets are sent before the low priority packets.

Weighted Round Ratio: This option enables the user to choose a ratio of the number of high priority packets sent before one low priority packet is sent. For example, 2:1 (2 High : 1 Low) will have the switch send 2 high priority packets before sending 1 low priority packet.

Qos Policy: High Priority Levels: 0 to 7 priority level can map to a high or low queue. When the VLAN Tag number of a frame is mapping as a high priority level, this frame always has high priority. In this example, the QoS policy applies to the switch, not for a single port.

7-4-2-3. Miscellaneous Setting

The screenshot shows the 'Misc Config' tab of the 'Switch Settings' interface. The settings are as follows:

Setting	Value
Collisions Retry Forever	Enable
Hash Algorithm	CRC Hash
IFG Compensation	Enable
802.1x Protocol	Disable
IGMP Query Mode	Disable

Buttons: Apply, Default, Help

Collisions Retry Forever:

Disabled – In half duplex, if a collision occurs, the switch will retry 48 times and then drop frame.

Enabled – In half duplex, if a collision occurs, the switch will retry forever.

Hash Algorithm: CRC Hash or Direct Map for MAC address learning algorithm.

IFG Compensation: Select enable or disable for Internal Packet Gap time compensation configuration.

802.1x Protocol: Select enable or disable for 802.1x protocol.

IGMP Query Mode: Recognizes different queries from clients or servers to decide which Query will be the first priority. The modes are:

Auto Mode: Chooses the switch that has the smallest IP address to be set for the IGMP Query mode.

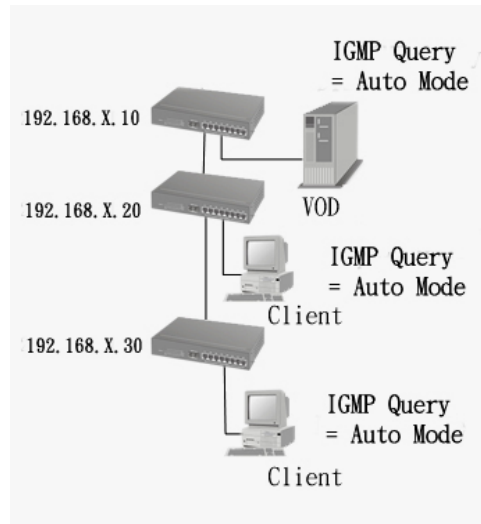
Enable Mode: Enables the switch to be the IGMP Querier.

Disable Mode: Disables all other switches from being the IGMP Querier.

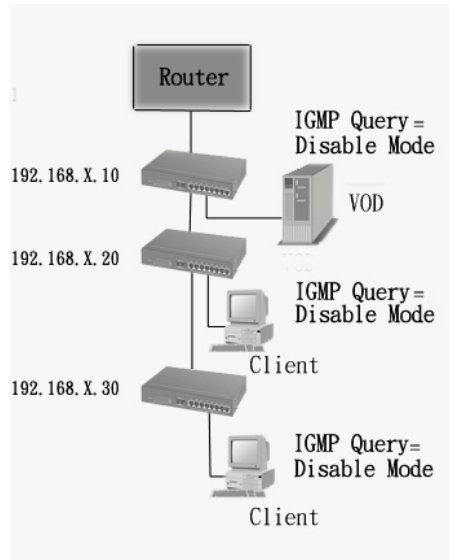
IGMP Theory of Operation

The following three topologies detail how IGMP Query works and to be configured within a network:

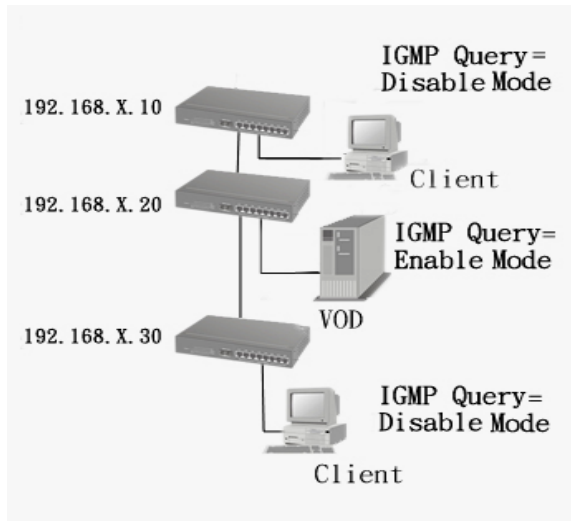
1. Auto mode needs to be enabled when the router's IP address is smaller than other switches in the subnet.



2. IGMP needs to be enabled when the router's IP address is not smaller than other switches in the subnet. This Router supports IGMP protocol, but IGMP has to be enabled, and the Router has to be the Querier.



3. The following topology must be set when the IP address of the switch is not the smallest in the subnet. The network will cause a multi-cast storm from the IGMP client report if it is in Auto mode. All switches must be in disable mode when the VOD server is configured for IGMP Querier.



Note: It is suggested that the VOD server switch have the smallest IP address.

7-4-3. Console Port Information

Console is a standard UART interface to communicate with a serial port.

The Windows HyperTerminal program can be used to link the switch with the console port. In order to change any of these parameters, you must be connected to the console port.

Baud rate (bits/sec): 9600

Data Bits: 8

Parity Check: none

Stop Bits: 1

Flow Control: none

Console Port Information

Baud Rate (bps)	9600
Parity Check	none
Data Bits (bit)	8
Stop Bits (bit)	1
Flow Control	none

7-4-4. Port Controls

The Port Controls menu allows changing of port configurations.

Port Controls

Port	State	Negotiation	Speed	Duplex	Flow Control	Back Pressure	Band Width		Priority	Security
							In	Out		
Port.01	Enable	Auto	100	Full	OFF	OFF	0	0	Disable	<input type="checkbox"/>
Port.02										
Port.03										
Port.04										

Port	Type	Link	State	Negotiation		Speed Duplex		Flow Control		Back Pressure		Band Width		Priority	Security
				Config	Actual	Config	Actual	Config	Actual	Config	Actual	In	Out		
Port.01	100TX	Up	Enable	Auto	Auto	100 Full	100 Full	ON	ON	ON	OFF	OFF	OFF	Disable	OFF

State: User can disable or enable each port.

Negotiation: User can set auto negotiation mode for each port to Auto, Nway (specify the speed/duplex on this port and enable auto-negotiation) or Force.

Speed: User can set 100Mbps or 10Mbps speed on Ports 1 to 24. User can set 1000Mbps, 100Mbps or 10Mbps speed on Ports 25 and 26, depending on module installed.

Duplex: User can set full-duplex or half-duplex mode for each port.

Flow control: User can set flow control function to enabled (ON) or disabled (OFF) in Full Duplex mode.

Back Pressure: User can set back pressure to enabled (ON) or disabled (OFF) in Half Duplex mode.

Band Width: Ports 1 to 24 support by-port ingress and egress rate control. For example, if port 1 is set to 10Mbps, you can set its effective egress rate to 1Mbps and ingress rate to 500Kbps. The MIL-SM2401M-STK will perform flow control or backpressure to confine the ingress rate to meet the specified rate.

In: Enter the port effective ingress rate. The valid range is 0 to 1000. The unit is 100K.

0: disable rate control.

1 to 1000: valid rate value

Out: Enter the port effective egress rate. The valid range is 0 to 1000. The unit is 100K.

0: disable rate control.

1 to 1000: valid rate value.

Priority: This static priority is based on each port setting. If the port priority is set high, incoming frames from this port will always be high priority frames.

Security: A port in security mode will be “locked” unless address learning is enabled. Only the incoming packets with SMAC already existing in the address table can be forwarded normally. User can disable the port from learning any new MAC addresses, and then use the static MAC addresses screen to define a list of MAC addresses that can use the secure port.

Enter the settings, then click the **Apply** button to save the changes on this page.

7-4-5. Trunking

The Link Aggregation Control Protocol (LACP) standardized means for exchanging information between Partner Systems on a link to allow their Link Aggregation Control instances. To reach agreement on the identity of the Link Aggregation Group to which the link belongs, move the link to that Link Aggregation Group, and enable its transmission and reception functions in an orderly manner. Link aggregation allows grouping of 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.** For more detailed information refer to IEEE 802.3ad.

If there are two trunk groups A and B, and B group is enabled LACP, and then it will act as a redundant link (Backup group for Trunk group A). If trunk group A fails, Group B will be its backup.

7-4-5-1. Aggregator Setting

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.

The screenshot shows a web-based configuration interface for Trunking. At the top, there are three tabs: "Aggregator Setting" (selected), "Aggregator information", and "State Activity". Below the tabs, there is a "System Priority" section with a text input field containing the value "1". Underneath is a table with three rows: "Group ID" with a dropdown menu set to "Trunk.1" and a "Select" button; "Lacp" with a dropdown menu set to "Disable"; and "Work Ports" with a text input field containing "0". Below the table, there are two buttons: "<<Add" and "Remove>>". To the right of these buttons is a list box containing port names from "Port.01" to "Port.09". At the bottom of the interface, there are three buttons: "Apply", "Delete", and "Help".

To create a trunk across two or more ports:

1. **Group ID:** Choose the "Group ID" and click the **Select** button.
2. **LACP:** If enabled, the group supports LACP. If disabled, the group is a local static trunking group between two switches. All ports support LACP dynamic trunking group. If connecting to another device that also supports LACP, the LACP dynamic trunking group will be created automatically.
3. **Work Ports:** Enter the maximum number of ports that can be aggregated at the same time. If the group is an LACP static trunking group, the exceeded ports are on standby and able to aggregate if work ports fail. If the group is a local static trunking group, the number must be the same as group ports.
4. Select the ports to join the trunking group and click the **Add** button. If LACP is enabled, you can configure LACP Active/Passive status for each port. To

remove a port, select the port to be removed from the Work Ports column and click the **Remove** button.

5. Click the **Apply** button to save the new configuration.

6. Click the **Delete** button to remove a trunking Group ID.

7-4-5-2. Aggregator Information

The LACP Aggregator relation information is displayed as shown.

Trunking

Aggregator Setting Aggregator information State Activity

Static Trunking Group	
Group Key	1
Port Member	1 2 3

Static Trunking Group	
Group Key	3
Port Member	7 8 9

7-4-5-3. State Activity

Trunking

Aggregator Setting Aggregator information **State Activity**

Port	LACP State Activity	Port	LACP State Activity
1	N/A	2	N/A
3	N/A	4	<input checked="" type="checkbox"/> Active
5	<input checked="" type="checkbox"/> Active	6	<input checked="" type="checkbox"/> Active
7	N/A	8	N/A
9	N/A	10	N/A
11	N/A	12	N/A
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

Apply Help

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

Passive (not selected): The passive port does not automatically send LACP protocol packets, but responds only if it receives LACP protocol packets from the other device.

A link having either two active LACP ports or one active port can perform dynamic LACP trunking. A link that has two passive LACP ports will not perform dynamic LACP trunking because both ports are waiting for an LACP protocol packet from the opposite device.

If the port has active LACP's, and you select the trunking port, the active status will be created automatically.

7-4-6. Forwarding and Filtering

7-4-6-1. IGMP Snooping

The screenshot shows a web interface for configuring IGMP Snooping. At the top, there is a blue header with the text "Forwarding and Filtering" and three tabs: "IGMP Snooping" (selected), "Static MAC Addresses", and "MAC Filtering". Below the tabs, there is a table with three columns: "IP Address", "VLAN ID", and "Member Port". The table is currently empty. Below the table, there is a dropdown menu labeled "IGMP Protocol:" with "Disable" selected. At the bottom, there is an "Apply" button.

The switch supports IP multicasting. You can enable IGMP via the web management's configuration screen. In addition, you can view different multicast groups, VLANs and member ports, and IP multicast addresses that range from 224.0.0.0 through 239.255.255.255.

The Internet Group Management Protocol (IGMP) is an internal protocol of the Internet Protocol (IP) suite. IP manages multicast traffic by using switches, routers, and hosts that support IGMP. Enabling IGMP allows the ports to detect IGMP queries and report packets and manage IP multicast traffic through the switch. IGMP has three fundamental types of messages.

Message	Description
Query	A message sent from the querier (IGMP router or switch) asking for a response from each host belonging to the multicast group.
Report	A message sent by a host to the querier 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 querier to indicate that the host has stopped being a member of a specific multicast group.

7-4-6-2. Static MAC Address

The screenshot shows a web interface for configuring static MAC addresses. At the top, there are three tabs: 'IGMP Snooping', 'Static MAC Addresses' (which is selected), and 'MAC Filtering'. Below the tabs is a table with columns for 'MAC Address', 'Port', and 'VLAN ID'. The table is currently empty. Below the table is a form with three input fields: 'MAC Address' (a text box), 'Port No.' (a dropdown menu with 'Port.01' selected), and 'VLAN ID' (a text box with 'N/A' entered). At the bottom of the form are three buttons: 'Add', 'Delete', and 'Help'.

When a static MAC address is added, it remains in the switch's address table, regardless of whether or not the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address when the device is disconnected or powered-off.

To add a static MAC address:

1. Click on **Administrator** on the main menu.
2. Click on **Filter Database**.
3. Click **Static MAC Addresses**. In the MAC address box, enter the MAC address to and from which the port should permanently forward traffic, regardless of the devices network activity.
4. In the **Port Number** box, select a port number.
5. 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.

6. Click the **Add** button.

7. To delete a MAC address, highlight the selection in the table you want to delete and then click the **Delete** button.

7-4-6-3. MAC Filtering

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

The screenshot shows a web interface titled "Forwarding and Filtering". It has three tabs: "IGMP Snooping", "Static MAC Addresses", and "MAC Filtering". The "MAC Filtering" tab is active. Below the tabs is a table with two columns: "MAC Address" and "VLAN ID". The table is currently empty. Below the table are two input fields: "MAC Address" and "VLAN ID". The "VLAN ID" field contains the text "N/A". At the bottom of the form are three buttons: "Add", "Delete", and "Help".

Steps to specify a MAC address to filter:

1. In the MAC Address box, enter the MAC address to filter.
2. If tag-based (802.1Q) VLAN are set up on the switch, in the VLAN ID box, type the VID to associate with the MAC address.
3. Click the **Add** button.
4. To delete a MAC address, highlight the selection in the table you want to delete and then click the **Delete** button.

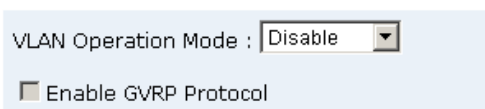
NOTE: Changing the VLAN type in the Advanced Switch Setting menu will cause the contents of this table to clear.

7-4-7. VLAN Configuration

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. It allows you to isolate network traffic so only members of the VLAN receive traffic from the same VLAN members. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

The MIL-SM2401M-STK supports port-based, 802.1Q (tag-based) and protocol-based VLANs. VLAN support is Disabled and all ports belong to a single broadcast domain by default.

VLAN Configuration



VLAN Operation Mode :

Enable GVRP Protocol

VLAN NOT ENABLE

NOTE: Rebooting the switch is necessary for changes to take effect.

Port-based VLANs

Ethernet frames received on a port are sent only to ports belonging to the same VLAN group of ports. All ports default belonging to the same VLAN group. The VLAN information included in Ethernet frames tagged with VLAN IDs is ignored by the switch in Port Based VLAN mode.

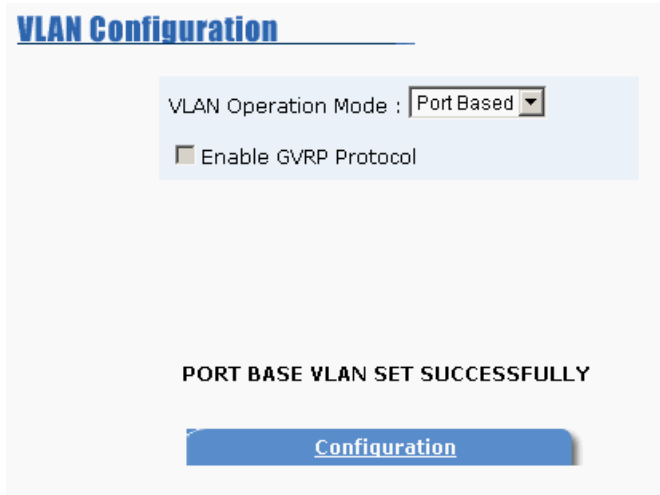
Tag-based VLAN (IEEE 802.1Q VLAN)

The IEEE 802.1Q specification is the standard for Port-based Tagging. Therefore, it is possible to create a VLAN across devices from different switch suppliers. IEEE 802.1Q VLAN uses a technique to insert a “tag” into the Ethernet frames. The tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.

Protocol-based VLAN

In order for an end station to send packets to different VLANs, it has to be either capable of tagging the packets it sends with VLAN tags OR be attached to a VLAN-aware bridge. The VLAN-aware bridge must be capable of classifying and tagging the packet with different VLAN ID. The classification and tagging of the packets is based on default PVID and other information about the packet, such as the protocol.

MIL-SM2401M-STK will support 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 some degree of programmable protocol matching capability.



Create a VLAN and add tagged member ports to it.

1. Click the **Add** button to create a new VLAN group.
2. Enter the VLAN name, group ID and select the members for the new VLAN.
3. Click the **Apply** button.
4. If the number of groups exceeds the limit for a single page, click the **NextPage** button to view other VLAN groups.

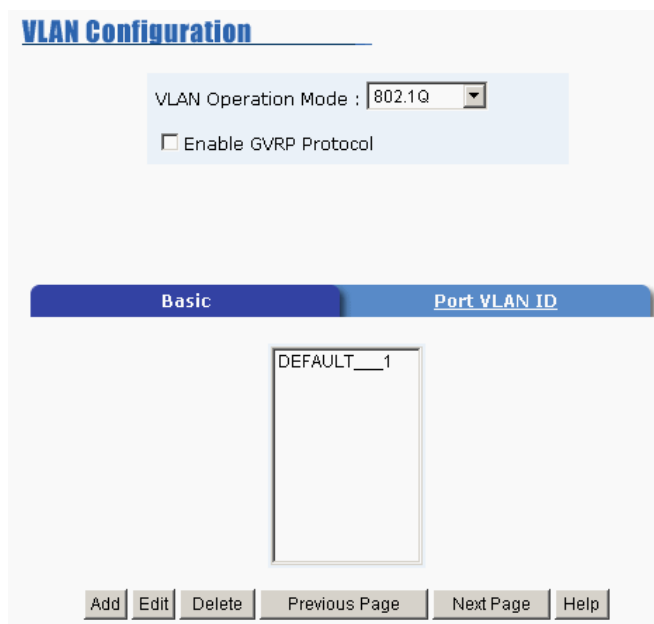
NOTE: Use the **Edit** button to view and modify existing VLAN Groups.

7-4-7-1. VLAN Operation Mode 802.1Q (802.1Q VLAN)

On this page, the user can create Tag-based VLANs, and enable or disable GVRP protocol. There are 256 VLAN groups provided to configure. If 802.1Q VLAN is enabled, then all ports on the switch belong to the default VLAN1. The default VLAN1 can't be deleted.

GVRP (GARP VLAN Registration Protocol)

GVRP allows automatic VLAN configuration between the switch and nodes. A GVRP request can be sent using the VID of a VLAN defined on the switch when the switch is connected to a device with GVRP enabled. The switch will automatically add that device to the existing VLAN.



Security VLANs

Security VLAN's allow for limiting telnet, SNMP and web access to the switch to a specific VLAN. The VID of the Security VLAN may be changed from 255 to another value after creating the VLAN. The new VID must not already exist on the box.

VLAN Configuration

VLAN Operation Mode : 802.1Q

Enable GVRP Protocol

Enable Security VLAN

Basic

Port VLAN ID

DEFAULT__1
Security_VLAN__255

Add Edit Delete Previous Page Next Page Help

Basic

The screenshot shows the 'VLAN Configuration' window with the 'Basic' tab selected. At the top, 'VLAN Operation Mode' is set to '802.1Q' and 'Enable GVRP Protocol' is unchecked. Below this are two tabs: 'Basic' (active) and 'Port VID'. The 'Basic' tab contains the following fields: 'Group Name' (empty text box), 'VLAN ID' (text box containing '1'), and 'Protocol VLAN' (dropdown menu set to 'NONE'). Below these fields is a list of ports from 'Port.01' to 'Port.12' in a scrollable box. To the right of this list is an empty text box. Between the list and the empty box are 'Add' and 'Remove' buttons. At the bottom of the 'Basic' tab are 'Next' and 'Help' buttons.

To create a VLAN and add tagged member ports to it:

1. Select the **Add** button to create a new VLAN.
2. Enter a name for the new VLAN.
3. Enter a VLAN ID (2 to 4094). The default is 1.
4. Choose the protocol type. Default is NONE.
5. From the Available ports box, select ports to add to the switch and click **Add**.

If the trunk groups exist, you can see it here (ex:Trunk1,Trunk2...) and configure it as a member of the VLAN or not.

6. Click the **Next** button.

Use this page to set the outgoing frames are VLAN-Tagged frames or not, and then click the **Apply** button.

Tag: Outgoing frames with VLAN-Tagged.

Untag: Outgoing frames without VLAN-Tagged.

VLAN Configuration

VLAN Operation Mode : 802.1Q ▼
 Enable GVRP Protocol

VLAN Name	v002		
VLAN ID	2		
UnTag Member			
Port.01	Untag ▼	Port.02	Untag ▼
Port.04	Untag ▼		

Apply

Port VID

To configure port VID settings:

From the main **802.1Q** VLAN page, select **Port VLAN ID** Settings.

VLAN Configuration

VLAN Operation Mode : 802.1Q

Enable GVRP Protocol

Basic | **Port VLAN ID**

Port	Port VLAN ID	Ingress Filter	Acceptable Frame Type	VLAN ID Range
Port.01				
Port.02	1	Enable	All	256~511
Port.03				
Port.04				

Apply Default Help

Port	VLAN ID	Ingress Filter	Acceptable Frame Type
Port.03	1	Enable	All

Port VLAN ID

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. Only one untagged VLAN is allowed per port. Other VLANs need to be tagged. The VLAN ID must be the same as the VLAN ID of the port that belongs to 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.

Enable: Forward only packets with VID matching this port's configured VID.

Disable: Disable Ingress filter function.

Acceptable Frame Type

ALL: All packets are acceptable.

Tag Only: Only packets that match the VLAN ID will have permission to go through the port.

VLAN ID Range

Ports assigned to the same VLAN ID will be in the same VLAN group. Select the range for the VLAN ID for the group.

Click the **Apply** button to save the configuration. Click the **Default** button to return the settings to the default configuration.

7-4-8. Spanning Tree

The Spanning-Tree Protocol (STP) is a standardized method (IEEE 802.1D) for avoiding loops in switched networks. When STP is enabled it ensures that only one path at a time is active between any two nodes on the network.

Spanning-Tree Protocol can be enabled using web management's switch setting advanced item, and selecting enable Spanning-Tree protocol. By default, spanning tree is disabled on the switch.

It is recommended that STP be enabled on all switches to ensure a single active path on the network.

7-4-8-1. System Configuration

Spanning Tree

System Configuration **Per Port Configuration**

STP State	<input type="checkbox"/>
Priority (0-65535)	<input type="text" value="32768"/>
Max Age (6-40)	<input type="text" value="20"/>
Hello Time (1-10)	<input type="text" value="2"/>
Forward Delay Time (4-30)	<input type="text" value="15"/>

Root Bridge Information

Priority	32768
Mac Address	00000001C0001
Root Path Cost	0
Root Port	Root
Max Age	20
Hello Time	2
Forward Delay	15

Spanning Tree information for the Root Bridge at the bottom is for display only. Configure new values for the STP parameters at the top.

STP State: Enable the Spanning Tree function by marking the box.

Priority: The value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. Enter a number 1 through 65535.

Max Age: The number of seconds a bridge waits without receiving Spanning-Tree Protocol configuration messages before attempting a reconfiguration. Enter a number 6 through 40.

Hello Time: The number of seconds between the transmission of Spanning-Tree Protocol configuration messages. Enter a number 1 through 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 4 through 30.

Click the **Apply** button to save the new configuration.

7-4-8-2. Per Port Configuration

The path cost and priority can be configured for each port.

Spanning Tree

System Configuration
Per Port Configuration

Port	Path Cost (1-65535)	Priority (0-255)
<div style="border: 1px solid #ccc; padding: 2px;"> Port.01 ▲ Port.02 Port.03 Port.04 Port.05 ▼ </div>	<input style="width: 50px; height: 20px;" type="text" value="10"/>	<input style="width: 50px; height: 20px;" type="text" value="128"/>

Apply
Help

STP Port Status

Port	Path Cost	Priority	State
Port.01	10	0	Forwarding
Port.02	10	0	Forwarding
Port.03	10	0	Forwarding
Port.04	10	0	Forwarding
Port.05	10	0	Forwarding
Port.06	10	0	Forwarding
Port.07	10	0	Forwarding
Port.08	10	0	Forwarding
Port.09	10	0	Forwarding
Port.10	10	0	Forwarding
Port.11	10	0	Forwarding
Port.12	10	0	Forwarding
Port.13	10	0	Forwarding
Port.14	10	0	Forwarding
Port.15	10	0	Forwarding
Port.16	10	0	Forwarding
Port.17	10	0	Forwarding
Port.18	10	0	Forwarding
Port.19	10	0	Forwarding
Port.20	10	0	Forwarding
Port.21	10	0	Forwarding
Port.22	10	0	Forwarding
Port.23	10	0	Forwarding
Port.24	10	0	Forwarding

1. Select the port to be configured in the Port menu list by clicking on it.
2. Enter the Path Cost and Port Priority settings:

PathCost: Path Cost specifies the path cost of the port that the switch uses to determine which ports are the forwarding ports. The lowest number becomes the forwarding port. The range is 1-65535 and the default value is based on IEEE802.1D.

10Mb/s = 50-600 100Mb/s = 10-60

The switch must be rebooted if the values are changed.

Port Priority: A change to the Port Priority affects which port will be the root port. The lowest number has the highest priority. The range is 0-255 and the default setting for all ports is 128. The switch must be rebooted if the values are changed.

3. Click the **Apply** button to save the new configuration.

7-4-9. Port Mirroring

The Port Mirroring feature is disabled by default. Selecting enable from the pull down menu will cause the selected traffic from the selected monitor ports to be mirrored to the selected analysis port. Press the **Apply** button to submit the changes.

Port Mirroring

Port Mirroring State : <input type="text" value="Disable"/>	
Analysis Port : <input type="text" value="None"/>	
Monitor Port	State
Port.01	<input type="checkbox"/>
Port.02	<input type="checkbox"/>
Port.03	<input type="checkbox"/>
Port.04	<input type="checkbox"/>
Port.05	<input type="checkbox"/>
Port.06	<input type="checkbox"/>
Port.07	<input type="checkbox"/>
Port.08	<input type="checkbox"/>
Port.09	<input type="checkbox"/>
Port.10	<input type="checkbox"/>
Port.11	<input type="checkbox"/>
Port.12	<input type="checkbox"/>
Port.13	<input type="checkbox"/>
Port.14	<input type="checkbox"/>
Port.15	<input type="checkbox"/>
Port.16	<input type="checkbox"/>
Port.17	<input type="checkbox"/>
Port.18	<input type="checkbox"/>
Port.19	<input type="checkbox"/>
Port.20	<input type="checkbox"/>
Port.21	<input type="checkbox"/>
Port.22	<input type="checkbox"/>
Port.23	<input type="checkbox"/>
Port.24	<input type="checkbox"/>

Port Mirroring State: Enables or Disables the port mirroring function.

Enabled states include RX, TX or Both.

Analysis Port: All mirrored traffic is sent out this port.

Monitor Port: The ports you want to mirror. All source port traffic will be copied to a mirror port. You can select a maximum of 25 source ports in the switch. If you want to disable the function, you must select monitor port to none.

7-4-10. SNMP Management

A SNMP is a protocol that governs the transfer of information between management and agent. The switch supports SNMP V1. Any Network Management station running the Simple Network Management Protocol (SNMP) can manage the switch provided that the Management Information Base (MIB) is installed.

Use this menu to define management stations as trap managers and to enter SNMP community strings. Users can also define community strings for a name, location, and contact person for the switch.

SNMP Management

System Options

Name :	<input type="text"/>
Location :	<input type="text"/>
Contact :	<input type="text"/>

Community Strings

Current Strings : <div style="border: 1px solid #ccc; padding: 5px; min-height: 40px;">public__RO private__RW</div>	<input type="button" value="Add"/> <input type="button" value="Remove"/>	New Community String : String : <input style="width: 90%;" type="text"/> <input checked="" type="radio"/> RO <input type="radio"/> RW
---	---	---

Trap Managers

Current Managers : <div style="border: 1px solid #ccc; padding: 5px; min-height: 40px;">(none)</div>	<input type="button" value="Add"/> <input type="button" value="Remove"/>	New Manager : IP Address : <input style="width: 90%;" type="text"/> Community : <input style="width: 90%;" type="text"/>
--	---	---

7-4-10-1. System Options

Enter the Name location and contact information for the switch. Each field allows entry of 26 characters.

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

Location: Enter the location of the switch.

Contact: Enter the name of a person or organization.

Click the **Apply** button to save the System Option information.

7-4-10-2. Community Strings

Community Strings serve as a password between the trap manager and the switch.

New Community String: Enter a unique community string and select one of the following options:

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.

Click the **Add** button to add the new community string. To remove a community string, select it from the list of current strings and click the **Remove** button.

7-4-10-3. Trap Managers

A trap manager is a management station that receives traps. Traps are the system alerts generated by the switch. If no trap manager is defined, no traps are

Formatted: Bullets and Numbering

issued. Create a trap manager by entering the IP address of the station and a community string.

IP Address: Enter the IP Address of the Trap Device.

Community: Enter the Community String for the Trap Device.

Click the **Add** button to add the new trap manager. To remove a trap manager, select it from the list of current managers and click the **Remove** button.

7-4-11. Security Manager

The user can change the user name and password to keep the switch secure. After entering a new user name and password, click the **Apply** button to submit the changes. The default user name and password are below.

User Name: **root**

Password: **root**

Security Manager

User Name :	<input type="text" value="root"/>
New Password :	<input type="password" value="...."/>
Confirm Password :	<input type="password" value="...."/>
	<input type="button" value="Apply"/>

7-4-12. 802.1X

When the IEEE 802.1x function is enabled, the parameters may be configured here.

7-4-12-1. System Configuration

802.1x Configuration		
System Configuration	Per Port Configuration	Misc Configuration
Radius Server IP	<input type="text" value="192.168.16.3"/>	
Server Port	<input type="text" value="1812"/>	
Accounting Port	<input type="text" value="1813"/>	
Shared Key	<input type="text" value="12345678"/>	
NAS, Identifier	<input type="text" value="NAS_L2_SWITCH"/>	

Radius Server IP: Set the Radius Server IP address.

Server Port: Set the UDP destination port for authentication requests to the specified Radius Server.

Accounting Port: Set the UDP destination port for accounting requests to the specified Radius Server.

Shared Key: Set an encryption key for use during authentication sessions with the specified radius server. This key must match the encryption key used on the Radius Server.

NAS, Identifier: Set the identifier for the radius client.

Click the **Apply** button to save the System Configuration information.

7-4-12-2. Per Port Configuration

802.1x Configuration

System Configuration | **Per Port Configuration** | Misc Configuration

Port	State
Port.01 ▲	Authorize ▼
Port.02	
Port.03	
Port.04	
Port.05 ▼	

Apply | Help

Port Authorization

Port	State
Port.01	Disable
Port.02	Disable
Port.03	Disable
Port.04	Disable
Port.05	Disable
Port.06	Disable
Port.07	Disable
Port.08	Disable
Port.09	Disable
Port.10	Disable
Port.11	Disable
Port.12	Disable
Port.13	Disable
Port.14	Disable
Port.15	Disable
Port.16	Disable
Port.17	Disable
Port.18	Disable
Port.19	Disable
Port.20	Disable
Port.21	Disable
Port.22	Disable
Port.23	Disable
Port.24	Disable

Each port can be configured to one of the following four states:

Reject: The specified port is required to be held in the Unauthorized state.

Accept: The specified port is required to be held in the Authorized state.

Authorized: The specified port is set to the Authorized or Unauthorized state in accordance with the outcome of an authentication exchange between the Supplicant and the authentication server.

Disable: The specified port is required to be held in the Authorized state.

Click the **Apply** button to save the Per Port Configuration information.

7-4-12-3. 802.1x Miscellaneous Configuration

802.1x Configuration

System Configuration | **Per Port Configuration** | Misc Configuration

Quiet Period	60
Tx Period	30
Supplicant Timeout	30
Server Timeout	30
Max Requests	2
Reauth Period	3600

Apply Help

Quiet period: Set the period during which the port doesn't try to acquire a supplicant.

TX period: Set the period the port waits to retransmit next EAPOL PDU during an authentication session.

Supplicant timeout: Set the period of time the switch waits for a supplicant response to an EAP request.

Server timeout: Set the period of time the switch waits for a server response to an authentication request.

Max requests: Set the number of authentication that must time-out before authentication fails and the authentication session ends.

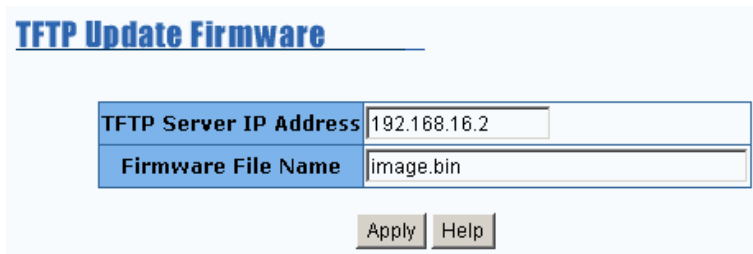
Reauth period: Set the period of time after which clients connected must be re-authenticated.

Click the **Apply** button to save the Per Port Configuration information.

7-4-13. TFTP Update Firmware

The following menu options provide some system control functions to allow a user to update firmware and remotely boot the switch system:

- Executing TFTP software
- Copy firmware update version image.bin to TFTP software directory.
- In web management select **Administrator—TFTP update firmware**.
- Download new image.bin file. In web management, press **<update firmware>**.



The screenshot shows a web interface titled "TFTP Update Firmware". It contains two input fields: "TFTP Server IP Address" with the value "192.168.16.2" and "Firmware File Name" with the value "image.bin". Below the fields are two buttons: "Apply" and "Help".

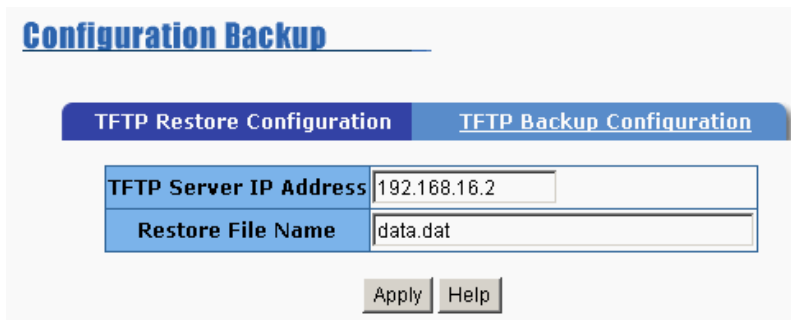
TFTP Update Firmware	
TFTP Server IP Address	192.168.16.2
Firmware File Name	image.bin

Apply Help

7-4-14. Configuration Backup

7-4-14-1. TFTP Restore Configuration

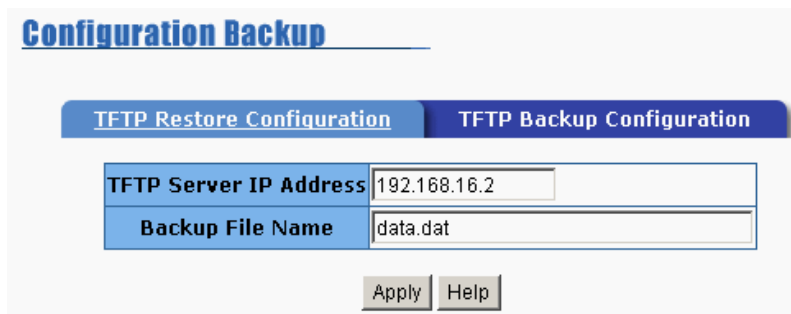
Use this screen to set TFTP server IP address. You can restore EEPROM value from here, but you must put the image back in the TFTP server. The switch will download back flash image.



The screenshot shows a web interface titled "Configuration Backup". It has two tabs: "TFTP Restore Configuration" (selected) and "TFTP Backup Configuration". Below the tabs are two input fields: "TFTP Server IP Address" with the value "192.168.16.2" and "Restore File Name" with the value "data.dat". At the bottom are "Apply" and "Help" buttons.

7-4-14-2. TFTP Configuration Backup

Use this screen to set the TFTP server IP address. You can save current EEPROM value from here, then go to the **TFTP Restore Configuration** screen to restore the EEPROM value.



The screenshot shows a web interface titled "Configuration Backup". It has two tabs: "TFTP Restore Configuration" and "TFTP Backup Configuration" (selected). Below the tabs are two input fields: "TFTP Server IP Address" with the value "192.168.16.2" and "Backup File Name" with the value "data.dat". At the bottom are "Apply" and "Help" buttons.

7-4-15. Factory Default

Resets the Switch to default configuration.

Default IP Address: 192.168.1.77

Default Gateway: 192.168.16.254

Subnet mask: 255.255.255.0

All other settings default to either Disabled or no value.

Factory Default

Please click [**Default**] button to restore factory default setting.

Default

7-4-16. System Reboot

Select **Reboot** to restart the system with the current saved configuration.

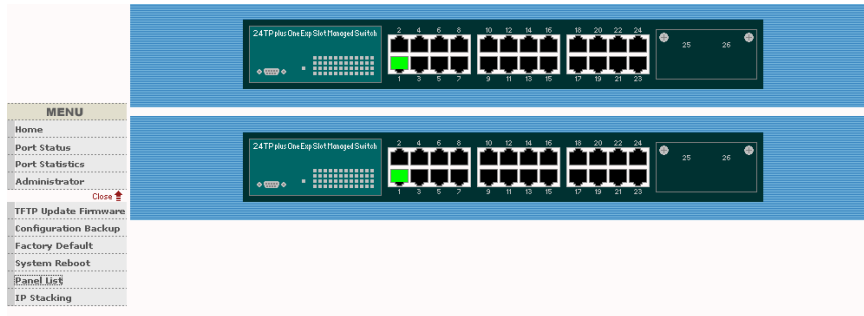
System Reboot

Please click [**Reboot**] button to restart switch device.

Reboot

7-5. Panel List

The Panel list option will display the switch panel in a GUI interface format. When stacking has been enabled, the display will include the slave switches in the display. Clicking on each port will give the current port status information.



7-6. IP Stacking

The IP stacking function allows up to eight MIL-SM2401M-STK switches to be joined as a single unit group. The stackable switches can then be managed through a single IP address. When configuring the stacking function, please review the following guidelines.

- Any port on the switch can be used for stacking.
- All switches which are to be stacked together must be in the same network before the stacking function can be configured.
- The master switch must be configured first, followed by the slave switches.
- Slave switches can be viewed independently as read-only data. Updates must be made through the master switch.
- To remove the master switch from a stacking group, remove all slave switches first and then remove the master switch from stacking group.
- If the master switch has been removed from the stacking group before the slave switches, use the **Console Interface Menu** to **EITHER** re-configure the switch configuration for each slave switch **OR** re-configure one of the slave switches as the master switch.

7-6-1. Setting up an IP Stacking Group

Select **IP Stacking** in the menu bar and enter the following information for the master switch in the stack. Click the **Apply** button to save the new configuration.

Group ID (0...65535): Assign a group ID for stacking group. The switches in the same stacking group have same group ID.

Stacking Mode: Select one of the following as the stacking mode for each switch.

Disable: The stacking function is not enabled.

Master: One switch must be selected to control all other switches in stacking group. Only one switch can be assigned to be the master switch in one stacking group. Once the stacking group is set up, the master switch will control all switches in the stacking group.

Slave: All remaining switches in a stacking group must be configured to slave mode. Once the stacking group is set up, the slave switches can only be configured through the master switch.

System Information: Enter a brief description of the switch.

IP Stacking

MAC = 00:00:00:1c:00:01 [Disabled]

Group ID (0..65535)	<input type="text" value="1"/>
Stacking Mode	<input type="text" value="Disable"/>
System Information	<input type="text"/>

Apply

Once the stacking function has been configured for the master switch, use Cat. 5 cable to connect each switch in the stacking group. Wait a few minutes for the master switch to communicate and collect the data from the slave switches.

Connect to the master switch through the Web-based interface to access the following screen.

00:00:00:1c:00:01 [Master]
00:00:00:1c:00:02 [slave_01]

00:00:00:1c:00:02 [slave_01]

IP Configuration

DHCP Client: [Disable ▼]

IP Address	192.168.16.4
Subnet Mask	255.255.255.0
Gateway	192.168.16.254

[Apply] [Help]

1. The web-based interface menu bar for the master switch is used to configure each of the slave switches in the stacking group.
2. To configure a switch in the stacking group, click on the link at the top of screen and log in to the switch to be configured.
3. Follow the same procedure for configuring each of the slave switches.

8. Troubleshooting

This section is intended to help you solve some common problems encountered while using the MIL-SM2401M switch series.

Incorrect connections

The switch auto-detects the polarity and direction of the UTP cable attached. If no link is seen, then check the following:

- **Faulty or loose cables**

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try different cables.

- **Non-standard cables**

Non-standard and miswired cables may cause numerous network collisions and other network problems. This can seriously impair network performance. A category 5 cable tester is a recommended tool for every network installation.

- **Improper Network Topologies**

It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and too many repeaters or hubs between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two end nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact your network performance.

Diagnostic LED Indicators

The switch can be easily monitored through panel indicators to assist in identifying problems.

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with power outlet or power cord. However, if the switch powers off after running for a while check for loose power connections, power losses or surges at power outlet. If you still cannot resolve the problem, contact your local dealer for assistance.

■ Cabling

RJ-45 ports: Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100 Ω Category 3, 4 or 5 cable for 10Mbps connections or 100 Ω Category 5 cable for 100Mbps connections. Be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

100BASE-FX and 1000BASE-X Fiber port: Multi-mode fiber connector types must use 50/125 or 62.5/125 μm multi-mode fiber cable. Two devices may be connected over a 2-kilometer distance. Single-mode fiber connector types must use 9/125 μm single mode fiber cable. Two devices may be connected over a 15 to 60-kilometer distance in full duplex operation in single mode.

1000Base-TX ports use all 8 wires for communication and require Cat-5 or better cable quality.

9. Technical Specifications

This section provides the specifications of MIL-SM2401M-STK switch product.

Standard	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX/100BASE-FX IEEE802.3z Gigabit SX/LX IEEE802.3ab Gigabit 1000T IEEE802.3x Flow Control and Back pressure IEEE802.3ad Port trunk with LACP IEEE802.1d Spanning tree protocol IEEE802.1w Rapid Spanning Tree IEEE802.1p Class of service IEEE802.1Q VLAN Tagging IEEE 802.1x user authentication
Switch architecture	Store and forward switch architecture.
Back plane	8.8Gbps
LED Indicators	System Power 10/100TX RJ-45 Port: 100Mbps,Link/Active, Full-duplex/Collision Gigabit Fiber: Link/ Activity Gigabit Copper: Link/Activity, Full duplex/collision,

	<p>1000Mbps, 100Mbps</p> <p>100FX module: Link/Activity, Full duplex1000Mbps, 100Mbps</p> <p>100FX module: Link/Activity, Full duplex</p>
Connector	<p>10/100TX: RJ-45</p> <p>100FX(Multi /Single Mode) module: SC</p> <p>Gigabit SX/LX module: SC</p> <p>Gigabit 1000T module: RJ-45</p>
MAC address	8K MAC address table with Auto learning function
Memory	3Mbits for packet buffer
CPU	ARM-7
Flash ROM	1 Mbytes
System memory	8Mbytes
Power Consumption	34Watts(Maximum)
Dimensions	440mm(W) x 161mm(D) x 44mm(H)
Power Supply	100-240V AC, 50-60Hz, 0.8A(maximum)
EMI	FCC Class A, CE
Safety	UL, cUL, CE/EN60950



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