Lantech

3-slot Modularized Fast Ethernet L2 + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch

MODEL: LES-2400-RPS

User Guide

Contents

1. Introduction

The 3-slot Modularized Fast Ethernet L2 plus + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch is a modular 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 environment.

The 3-slot Modularized Fast Ethernet L2 plus + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch features a “store-and-forward” switching scheme. This allows the switch to auto-learn and store source address in an 8K-entry MAC address table.

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 3-slot Modularized Fast Ethernet L2 plus + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch has 3-module slots. User can purchase the modules in accordance with their needs which give elasticity on network application.

Features

- Conforms to IEEE802.3 10BASE-T, 802.3u 100BASE-TX/FX, 802.3ab 1000BASE-T, 802.3z Gigabit SX/LX
- 3 slots for 8 ports 10/100TX, 8 ports 100Mbps multi mode fiber module, or 8 ports 100Mbps single mode fiber module
- IEEE802.3x Flow control
  - Flow control for full duplex

  - Backpressure for half duplex
- High back-plane bandwidth 8.8Gbps
- Supports IEEE802.3ad Port trunk with LACP
- Broadcast storm filter supported
- Stack management via one IP address, easy management by Web GUI
- IGMP supports for Multi Media application
- Supports IEEE 802.1p class of service
- Port security supported
- Port bandwidth control supported
- Supports IEEE 802.1d Spanning tree protocol
- Supports GVRP function
- Port Base VLAN/802.1Q VLAN supported
- IEEE 802.1X user authentication
- Supports DHCP client
- Web/ SNMP / Telnet / CLI management
- Optional Module for slot:
  - 8 ports 10/100TX module
  - 8 ports 100FX single mode module
  - 8 ports 100FX multi mode module

Software Features

Management	SNMP v1/v2c/v3, Web, Telnet, CLI, RMON1, Menu Driven**
Software Upgrade	TFTP and Console firmware upgradeable
MIB	RFC 3418 SNMP MIB RFC 1213 MIBII RFC 2011 MIB RFC 1493 Bridge MIB RFC 2674 VLAN

	RFC 1215 Trap MIB RFC 1643 Ethernet like RMON1 Private MIB
SNMP Trap	Cold/warm start trap, link down/link up trap, authorization fail trap, fan fail trap. power event trap
Port Trunk	Supports IEEE802.3ad with LACP function. Up to 13 trunk groups, trunk member up to 4 ports and include 2 uplink ports
Spanning Tree	IEEE802.1d spanning tree, IEEE 802.1w Rapid Spanning tree protocol
VLAN	Port based VLAN, up to 24 groups IEEE802.1Q Tag VLAN Static VLAN groups up to 256, Dynamic VLAN group up to 2048, VLAN ID from 1 to 4094. GVRP up to 256 groups
QOS Policy	Port based, Tag based, IPv4 Type of service, IPv4 Different service.
Class of Service	Per port 4 queues, High/ low queue. Service rule: first come first service; all High before Low, WRR for High or low weight. Weight round ratio (WRR): 8:4:2:1
IGMP	It supports IGMP V1 and V2 snooping; IGMP Snooping for Multi-Media application, IGMP group supports 256 groups and IGMP query
Port Security	Support 50 entries of MAC address for static MAC and another 50 for MAC filter
Port Mirror	Support 3 mirroring types: “RX, TX and Both packet”

Bandwidth Control	Per port support ingress rate limiting and egress rate shaping control. The rate limiting and rate shaping can be setting from 0~100Mbps
802.1x Authentication	Support IEEE802.1x User-Authentication and can report to RADIUS server. ■ Reject ■ Accept ■ Authorize ■ Disable
DHCP	DHCP Client/Server
Packet filter	Broadcast storm control

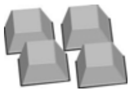
** Optional

Package Contents

Unpack the contents of the 3-slot intelligent chassis switch and verify them against the checklist below.

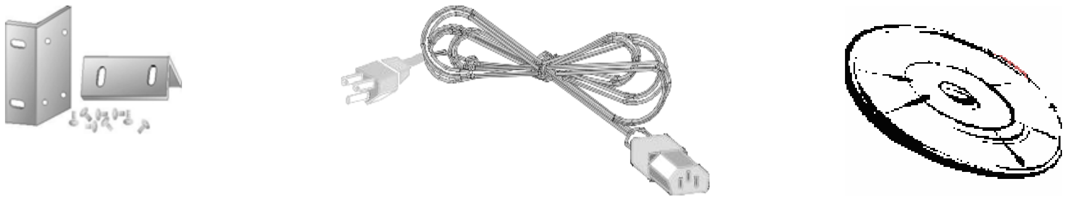
- 3-slot intelligent chassis switch
- Power Cord
- Four Rubber Feet
- RS-232 cable
- Rack-mounted kit
- User Guide CD-ROM

3-slot intelligent chassis switch



Four Rubber Feet

RS-232 Cable



Rack-mounted Kit **Power Cord** **User Guide CD-ROM**

Package Contents

Compare the contents of your 3-slot intelligent chassis switch package with the standard checklist above. IF any item is missing or damaged, please contact your local dealer for service.

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) essentially doubled the bandwidth. Second, by reducing the collision domain to a single switch-port 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 eliminated unnecessary transmission that slow the network. By employing address learning 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

This Section mainly describes the hardware of the 3-slot intelligent chassis switch, and gives a physical and functional overview of the switch.

Physical Dimension

The 3-slot intelligent chassis switch physical dimension is **440mm(W) x 280mm(D) x 44mm(H)**.

Front Panel

The Front Panel of the 3-slot intelligent chassis switch consists of 3 module slots.

LED Indicators

The LED Indicators gives real-time information of systematic operation status. The LED indicators are located in every module. The LED indicators will be different for different module. The following table provides descriptions of LED status and their meaning.

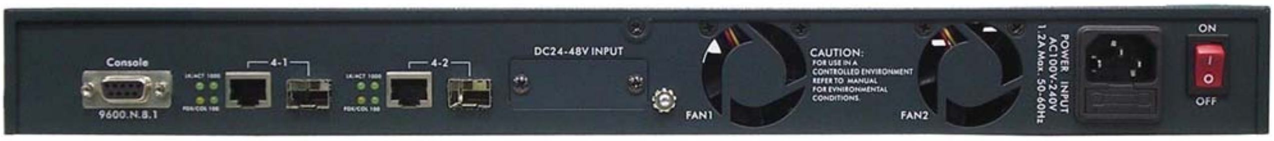
LED	Status	Description
PWR	Green	Power On
	Off	Power is not connected

LK/ACT	Green	The port is connecting with the device.
	Blinks	The port is receiving or transmitting data.
	Off	No device attached.
FD/COL	Yellow	The port is operating in Full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	In half-duplex mode

The Description of LED Indicators

Rear Panel

The 3-pronged power plug, 2 fans, DC power input, 2 Gigabit Copper/mini-GBIC combo port, and one RS-232 console port are located at the rear Panel of the 3-slot intelligent chassis switch as shown in Figure 2-1. The Switch will work with AC power in the range of 100-240V AC, 50-60Hz.



The Rear Panel of the 3-slot intelligent chassis switch

Desktop Installation

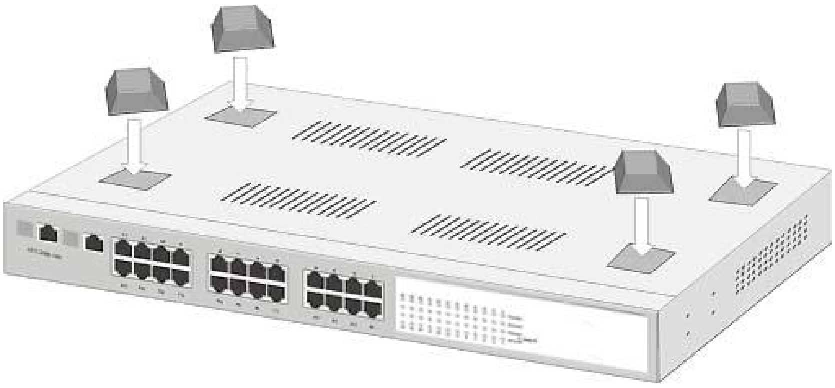
Set the Switch on a sufficiently large flat space with a power outlet nearby. The surface where you put your Switch should be clean, smooth, level and sturdy. Make sure there is enough clearance around the Switch to allow attachment of cables, power cord and allow air circulation.

Attaching Rubber Feet

A. Make sure 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.



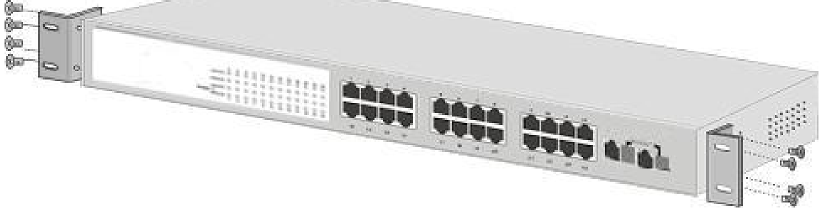
Attaching Rubber Feet to each corner on the bottom of the Switch

Rack-mounted Installation

The 3-slot intelligent chassis 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.

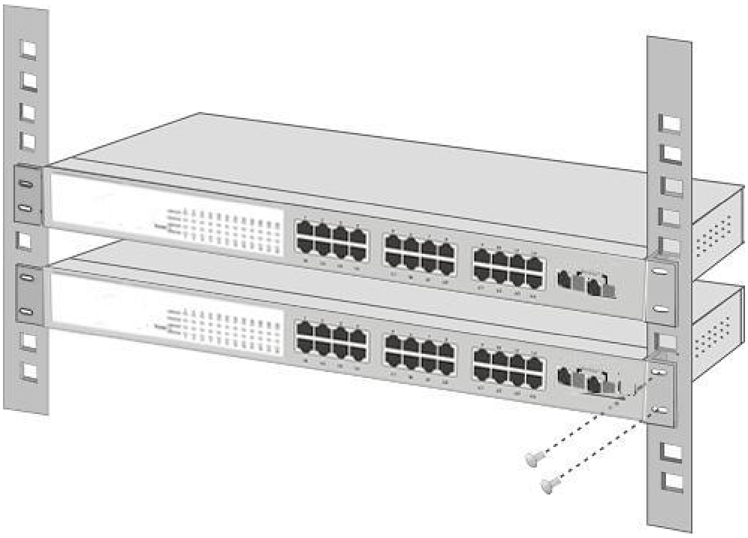
Perform the following steps to rack mount the switch:

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.



Attach mounting brackets with screws

B. After attached both mounting brackets, position the switch 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.



Mount the Switch in 19” Rack

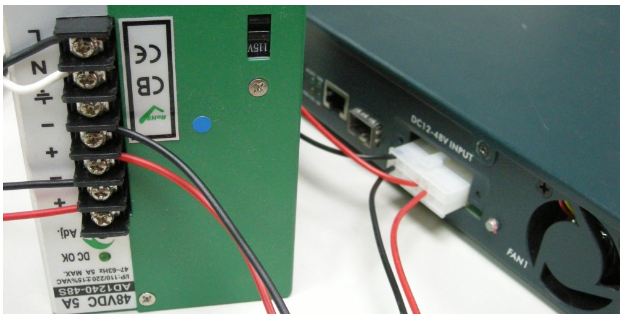
Note: For proper ventilation, allow about at least 4 inches (10 cm) of clearance on the front and 3.4 inches (8 cm) on the back of the Switch. This is especially important for enclosed rack installation.

Power On

Connect the power cord to the power socket on the rear panel of the Switch. The other side of power cord connects to the power outlet. The internal power supply of the Switch works with voltage range of AC in the 100-240VAC, frequency 50~60Hz. Check the power indicator on the front panel to see if power is properly supplied.

Redundant Power

Connect the optional redundant power cord to the redundant power socket on the rear panel of the Switch. The other side of redundant power cord connects to the power supply. The Switch works with power supply of 12-48 VDC.



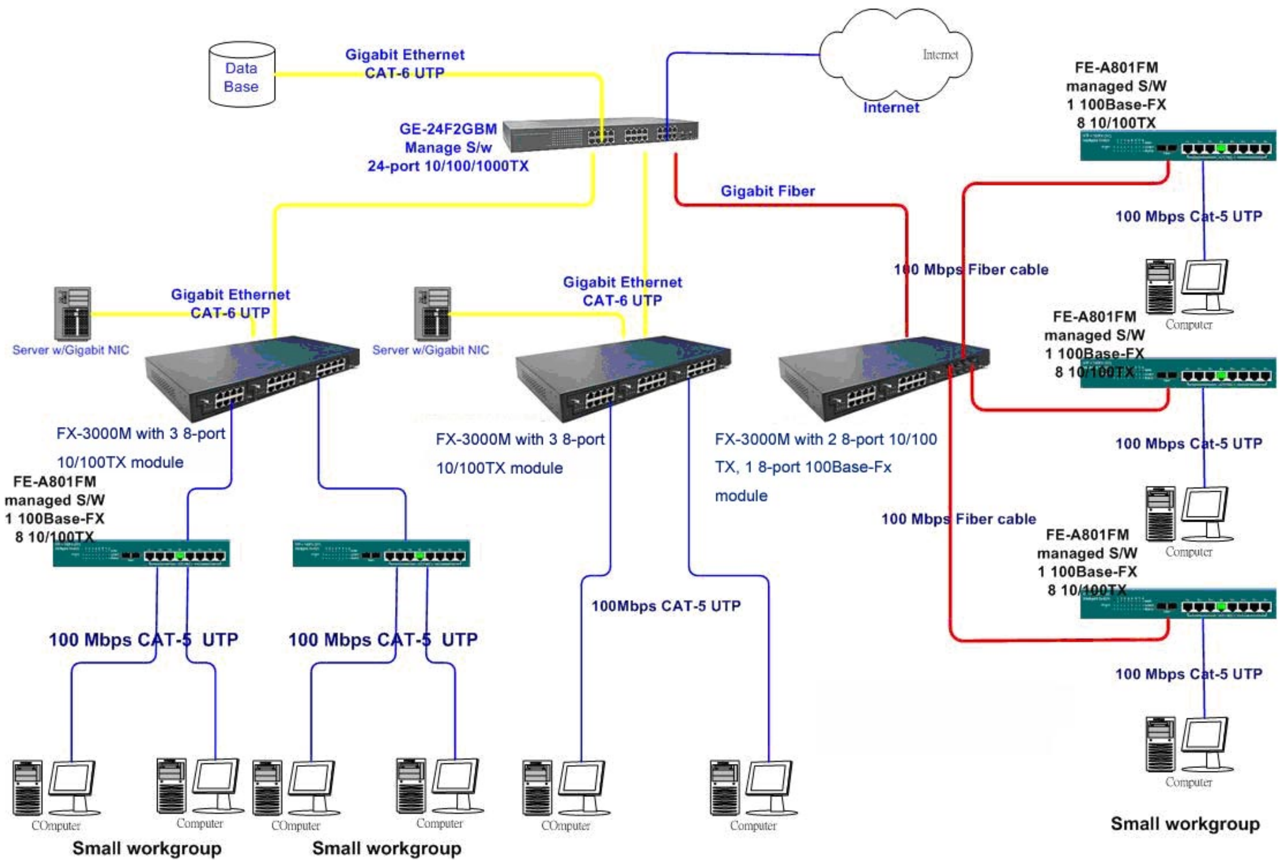
Please make sure the connection on power supply is correct when using the optional redundant power cord. Red cord should be connected to “+” and black cord should be connect to “-”.

3. Network Application

This section provides you a few samples of network topology in which the Switch is used. In general, the 3-slot intelligent chassis 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 3-slot intelligent chassis switch. The switch automatically learns nodes address, which are subsequently used to filter and forward all traffic based on the destination address.

By using Gigabit copper/mini-GBIC combo port (on the rear side of the switch), 10/100Mbps copper, or Ethernet Fiber 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 Ethernet or fiber ports to connect switches. The following figure is an example of the 3-slot intelligent chassis switch application topology.


Data Base
Gigabit Ethernet CAT-6 UTP
GE-24F2GBM Manage S/w 24-port 10/100/1000TX
Internet
Internet
FE-A801FM managed S/W 1 100Base-FX 8 10/100TX
Gigabit Fiber
100 Mbps Cat-5 UTP
100 Mbps Fiber cable
Server w/Gigabit NIC
Gigabit Ethernet CAT-6 UTP
Server w/Gigabit NIC
Gigabit Ethernet CAT-6 UTP
Computer
FE-A801FM managed S/W 1 100Base-FX 8 10/100TX
FX-3000M with 3 8-port 10/100TX module
FX-3000M with 3 8-port 10/100TX module
FX-3000M with 2 8-port 10/100 TX, 1 8-port 100Base-Fx module
100 Mbps Cat-5 UTP
FE-A801FM managed S/W 1 100Base-FX 8 10/100TX
100 Mbps Fiber cable
Computer
FE-A801FM managed S/W 1 100Base-FX 8 10/100TX
100Mbps CAT-5 UTP
100 Mbps CAT-5 UTP
100 Mbps CAT-5 UTP
100 Mbps Cat-5 UTP
Computer
COmputer
Computer
COmputer
Computer
COmputer
Computer
Small workgroup
Small workgroup
Small workgroup

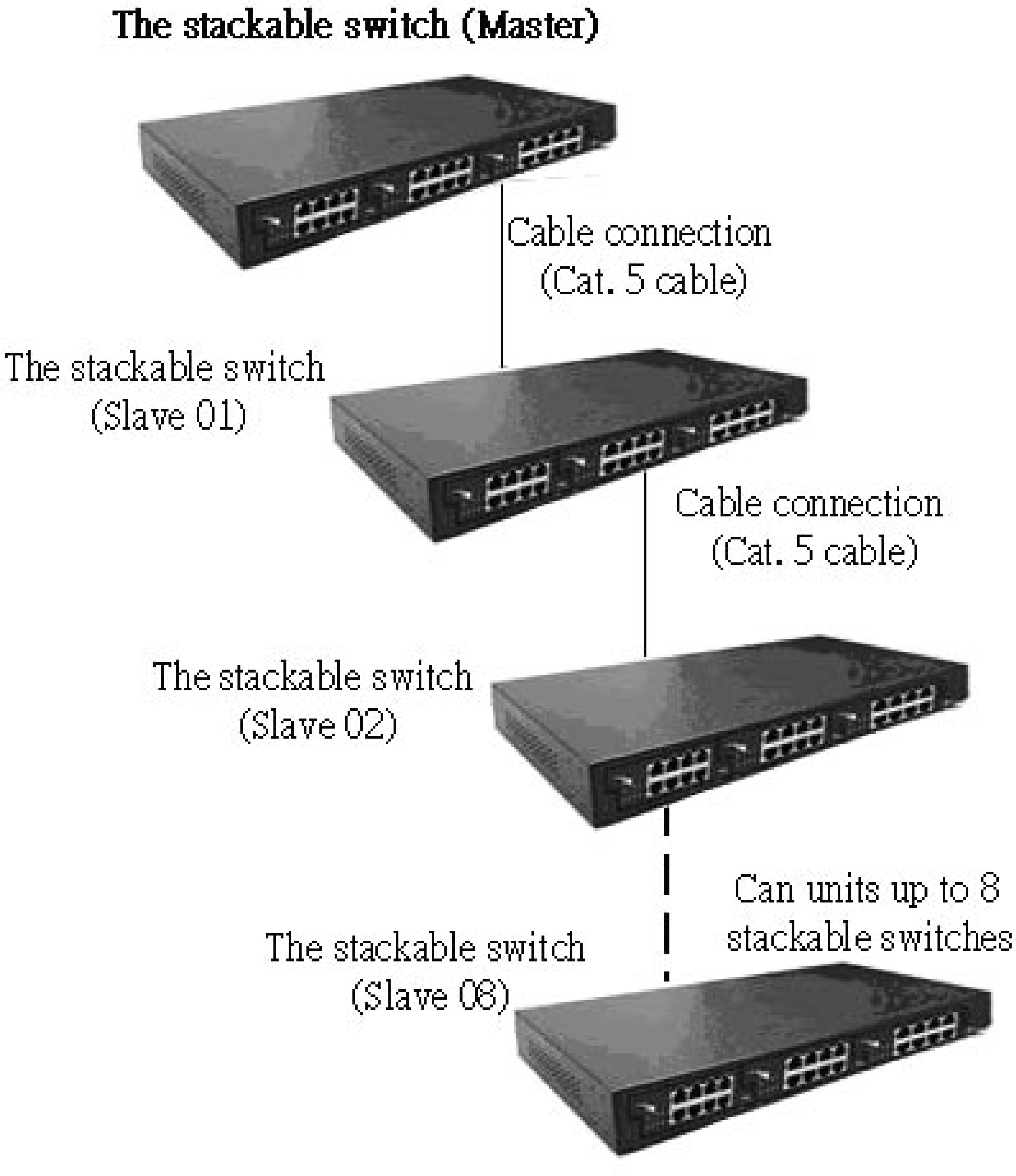
The example of application topology

Stacking Workgroup

With stackable technology can unites up to eight individual stackable switches into a single logical unit, using cables and with stacking software supported. The stack behaves as a single switching unit that is managed by a master switch elected from one of the member switches. The master switch automatically creates and updates all the switching tables. A working stack can accept new members or delete old ones without service interruption

Each switch in the stack has the capability to behave as a master or subordinate in the hierarchy. The master switch is elected and serves as the control center for the stack. The subordinates act as forwarding processors. Each switch is assigned to a one workgroup ID. Up to eight separate switches can be joined together as a workgroup. The stack can have switches added and removed without affecting stack performance.

There are no special tools, extra software, or expensive equipment needed to form a Stacking workgroup. It provides single image management for entire Stack (fewer devices to manage); management applications represent the Stack as a single device, and simple point and click management. Stackable technology allows you to increase the resiliency and the versatility of your network edge to accommodate evolution for speed and converged applications. Following figures are the example of stacking workgroup application.



A stacking workgroup application

Connecting to the Switch

The Console port is a female DB-9 connector that enables a connection to a PC or terminal for monitoring and configuring the Switch. Use the supplied RS-232 cable with a male DB-9 connector to connect a terminal or PC to the Console port.

The Console configuration (out of band) allows you to set Switch for remote terminal as if the console terminal were directly connected to it.

4. Console Management

Login in the Console Interface

When the connection between Switch and PC is ready, turn on the PC and run a terminal emulation program or **Hyper Terminal** and configure its **communication parameters** to match the following default characteristics of the console port:

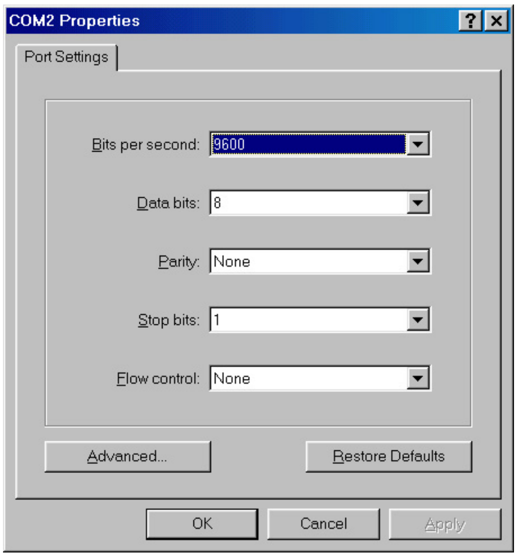
Baud Rate: 9600 bps

Data Bits: 8

Parity: none

Stop Bit: 1

Control flow: None



Bits per second: 9600

Data bits: 8

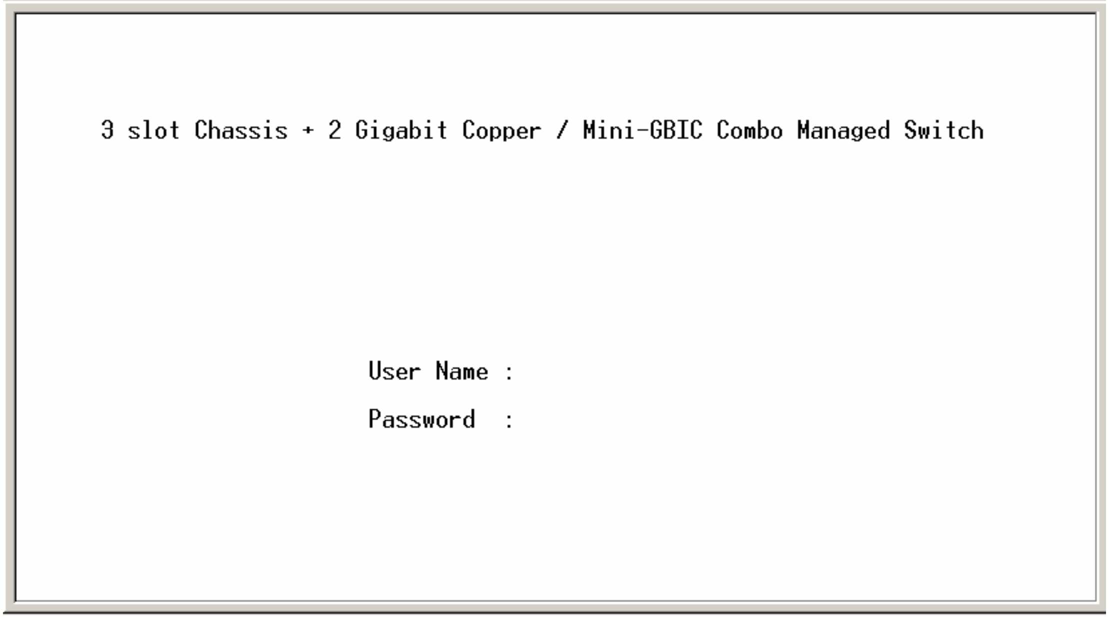
Parity: None

Stop bits: 1

Flow control: None

The settings of communication parameters

After finishing the parameter settings, click “**OK**“. When the blank screen shows up, press Enter key to bring out the login prompt. Key in the “**root**“(default value) for the both User name and Password (use **Enter** key to switch), then press Enter key and the Main Menu of console management appears. Please see below figure for login screen.

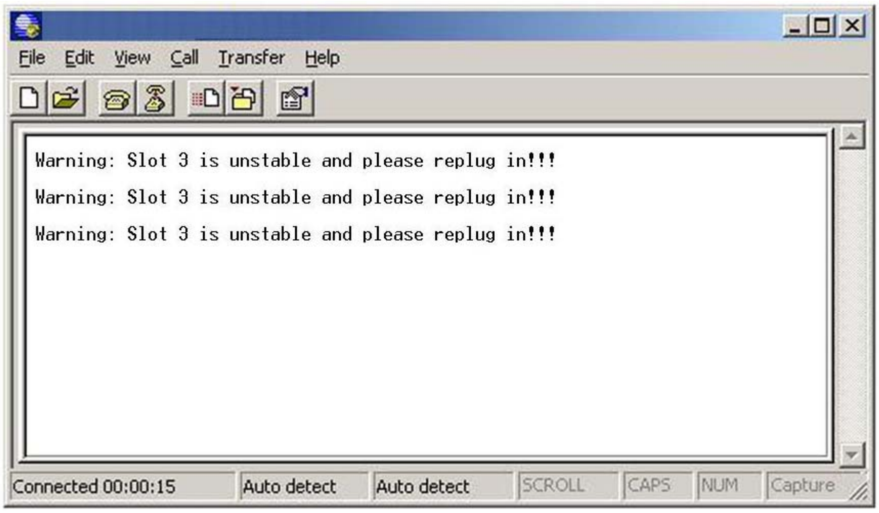


```
3 slot Chassis + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch




                    User Name :
                    Password  :
```

Console login screen

Module Hot-Swapping

The 3-slot Modularized Fast Ethernet L2 plus + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch supports module hot-swapping. User can insert or pull the module out of the slot without powering down the switch. Once the module is not fully inserted, the LEDs on the module panel will all light on at the same time. Meanwhile, the switch also sends warning message to the connected PC, work station or terminal via console port. Please see the picture as below for reference.



```
Warning: Slot 3 is unstable and please replug in!!!
Warning: Slot 3 is unstable and please replug in!!!
Warning: Slot 3 is unstable and please replug in!!!
```

Warning message interface

5. Web-Based Management

This section introduces the configuration and functions of the Web-Based management.

About Web-based Management

Inside the CPU board of the switch, there exists an embedded HTML web site residing in flash memory. It offers advanced management features and allow users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer.

The Web-Based Management supports Internet Explorer 6.0. It is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

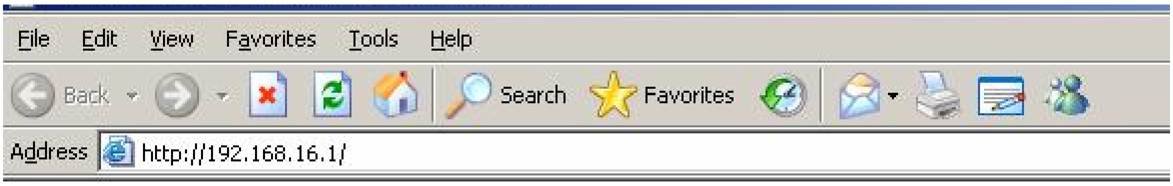
Preparing for Web Management

Before use web management, you can use console to login the switch checking the default IP of the Switch. Please refer to **Console Management** Chapter for console login. If you need change IP address in first time, you can use console mode to modify it. The default value is as below:

IP Address: **192.168.16.1**
Subnet Mask: **255.255.255.0**
Default Gateway: **192.168.16.254**
User Name: **root** Password: **root**

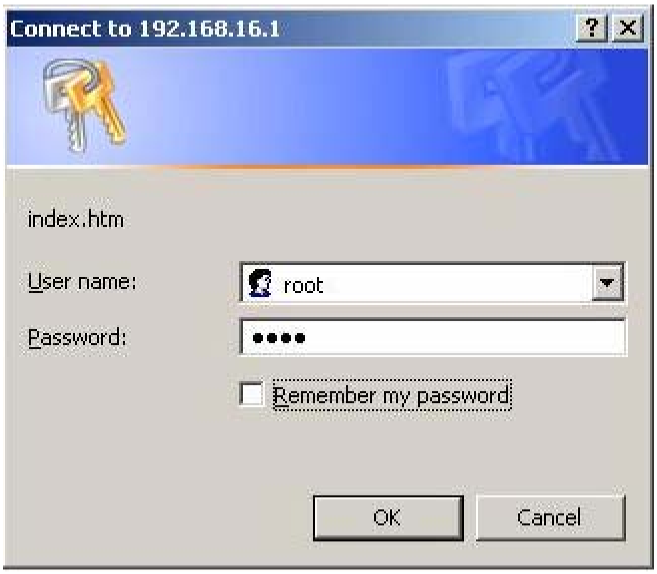
System Login

1. Launch the Internet Explorer on the PC
2. Key in "http:// "+" the IP address of the switch", and then Press "**Enter**".



Address: http://192.168.16.1/

3. The login screen will appear right after
4. Key in the user name and password. The default user name and password are the same as "**root**"



Connect to 192.168.16.1

index.htm

User name: root

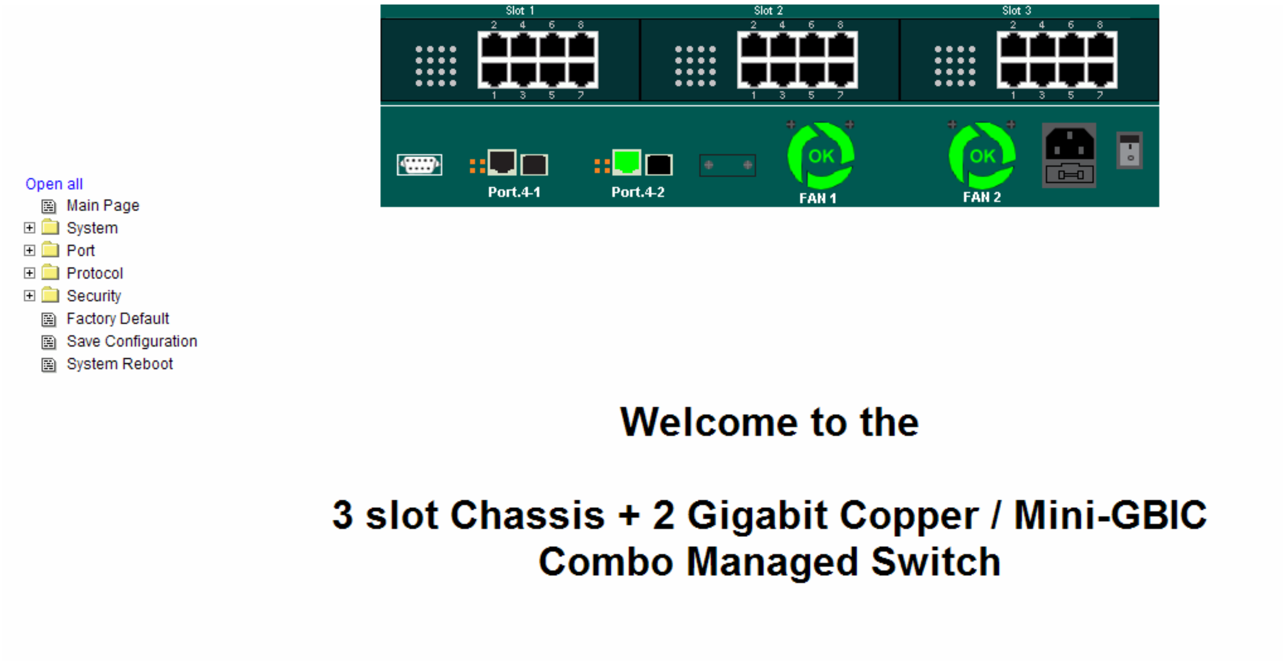
Password: ••••

☐ Remember my password

Login screen

5. Press "**Enter**" key or click **OK** button, and then the home screen of the Web-based management appears as below:

Main interface



Welcome to the

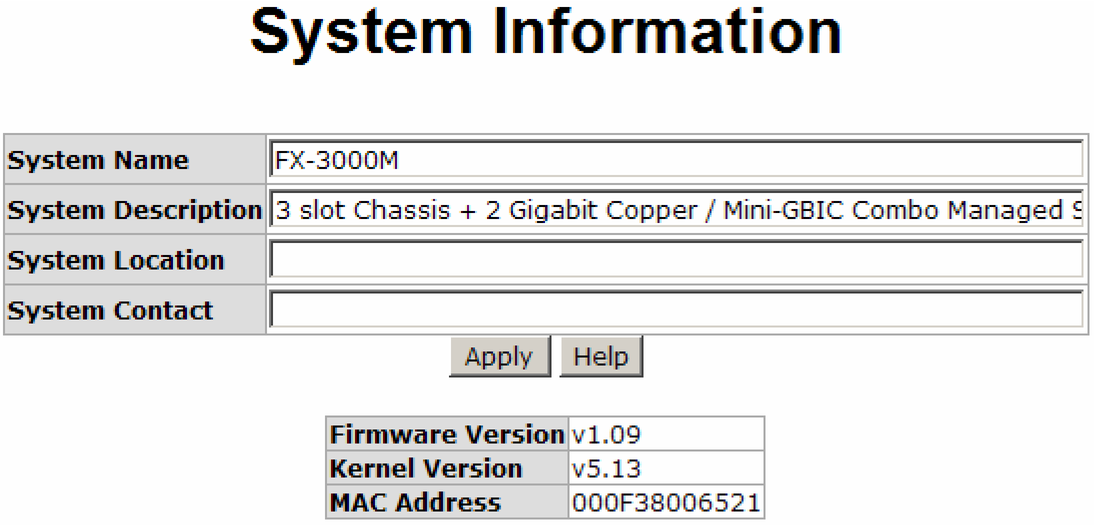
3 slot Chassis + 2 Gigabit Copper / Mini-GBIC Combo Managed Switch

Main interface

System Information

Assigning the system name, location and view the system information

- **System Name:** Assign the name of switch. The maximum length is 64 bytes
- **System Description:** Display the description of switch. Read only cannot be modified
- **System Location:** Assign the switch physical location. The maximum length is 64 bytes
- **System Contact:** Enter the name of contact person or organization
- **Firmware Version:** Display the switch's firmware version
- **Kernel Version:** Display the kernel software version
- **MAC Address:** Display the unique hardware address assigned by manufacturer (default)



System Information

System Name	FX-3000M
System Description	3 slot Chassis + 2 Gigabit Copper / Mini-GBIC Combo Managed S
System Location	
System Contact	

Firmware Version	v1.09
Kernel Version	v5.13
MAC Address	000F38006521

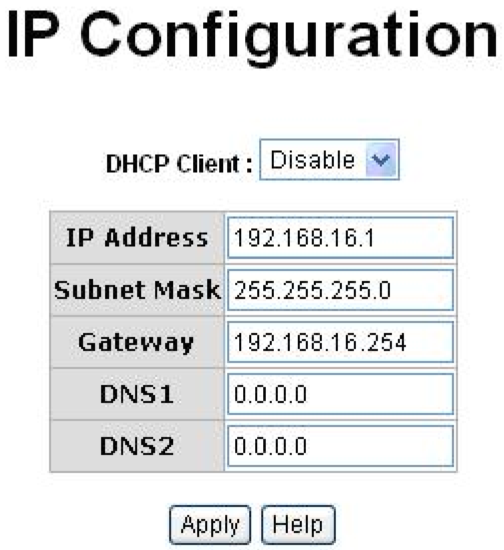
System information interface

IP Configuration

User can configure the IP Settings and DHCP client function

- **DHCP Client:** To enable or disable the DHCP client function. When DHCP client function is enabled, the industrial switch will be assigned an IP address from the network DHCP server. The default IP address will be replaced by the IP address which assigned by DHCP server. After user click "Apply" button, a popup dialog show up. It is to inform the user that when the DHCP client is enabled, the current IP will lose and user should find the new IP on the DHCP server.

- **IP Address:** Assign the IP address that the network is using. If DHCP client function is enabled, and then user needn't assign the IP address manually. And, the network DHCP server will assign the IP address for the industrial switch and display it here. The default IP is 192.168.16.1
- **Subnet Mask:** Assign the subnet mask of the IP address. If DHCP client function is enabled, and then user needn't assign the subnet mask manually.
- **Gateway:** Assign the network gateway for the industrial switch. The default gateway is 192.168.16.254
- **DNS1:** Assign the primary DNS IP address
- **DNS2:** Assign the secondary DNS IP address
- And then, click Apply



IP Configuration

DHCP Client : Disable

IP Address	192.168.16.1
Subnet Mask	255.255.255.0
Gateway	192.168.16.254
DNS1	0.0.0.0
DNS2	0.0.0.0

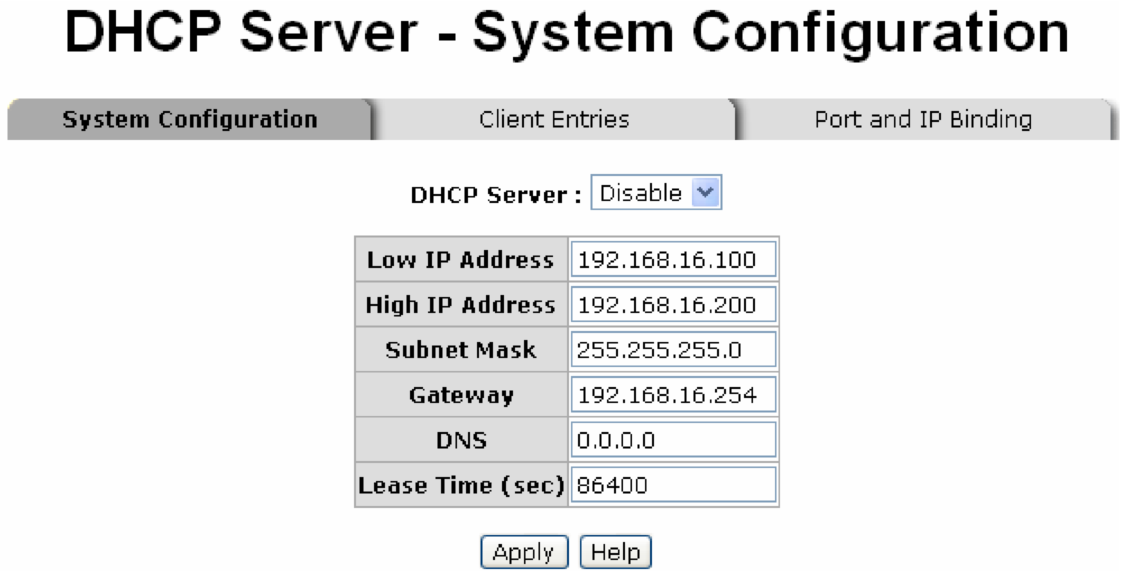
IP configuration interface

DHCP Server – System configuration

The system provides the DHCP server function. Enable the DHCP server function, the switch system will be a DHCP server.

- **DHCP Server:** Enable or Disable the DHCP Server function. Enable – the switch will be the DHCP server on your local network.
- **Low IP Address:** the dynamic IP assign range. Low IP address is the beginning of the dynamic IP assigns range. For example: dynamic IP assign range is from 192.168.1.100 ~ 192.168.1.200. 192.168.1.100 will be the Low IP address.

- **High IP Address:** the dynamic IP assign range. High IP address is the end of the dynamic IP assigns range. For example: dynamic IP assign range is from 192.168.1.100 ~ 192.168.1.200. 192.168.1.200 will be the High IP address.
- **Subnet Mask:** the dynamic IP assign range subnet mask.
- **Gateway:** the gateway in your network.
- **DNS:** Domain Name Server IP Address in your network.
- **Lease Time (sec):** It is the time period that system will reset the dynamic IP assignment to ensure the dynamic IP will not been occupied for a long time or the server doesn't know that the dynamic IP is idle.
- And then, click Apply



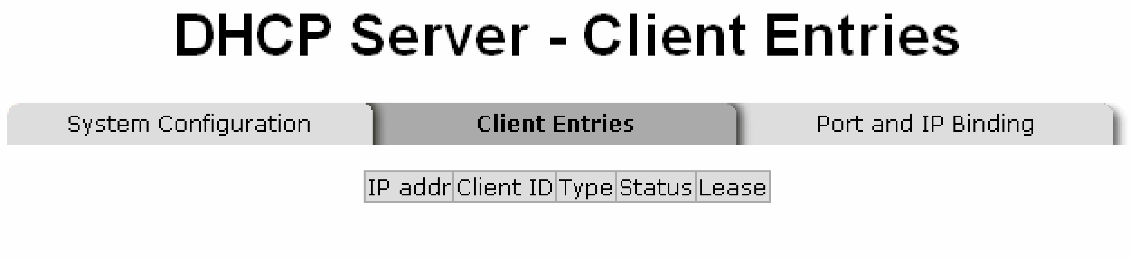
DHCP Server : Disable

Low IP Address	192.168.16.100
High IP Address	192.168.16.200
Subnet Mask	255.255.255.0
Gateway	192.168.16.254
DNS	0.0.0.0
Lease Time (sec)	86400

DHCP Server Configuration interface

DHCP Client – System Configuration

When the DHCP server function is active, the system will collect the DHCP client information and display in here.

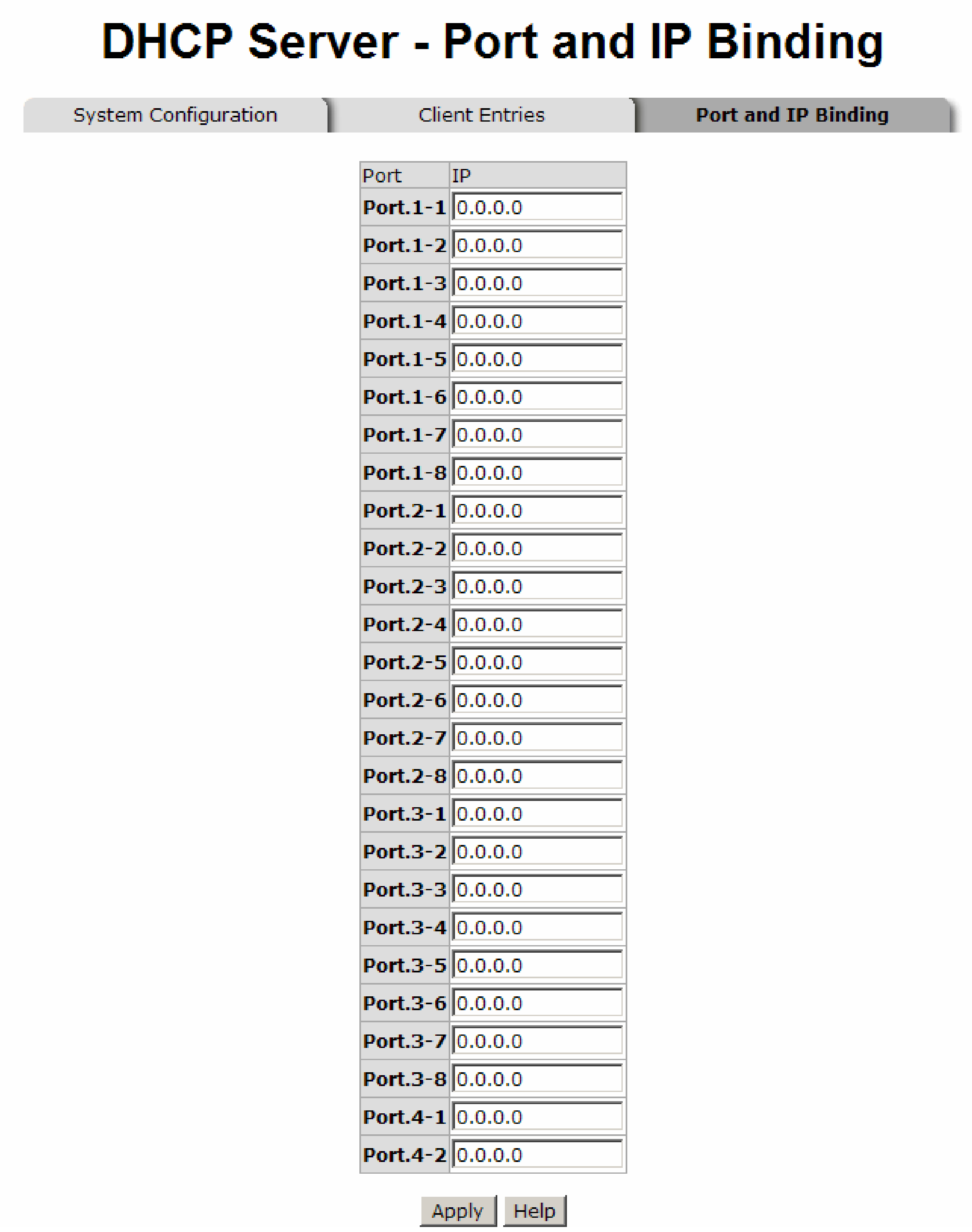


IP addr	Client ID	Type	Status	Lease

DHCP Client Entries interface

DHCP Server - Port and IP Bindings

You can assign the specific IP address that is one of the IP in dynamic IP pool to the specific port. When the device is connected to the port and asks for dynamic IP assignment, the system will assign the IP address that had been assigned before to the connected device.



DHCP Server - Port and IP Binding

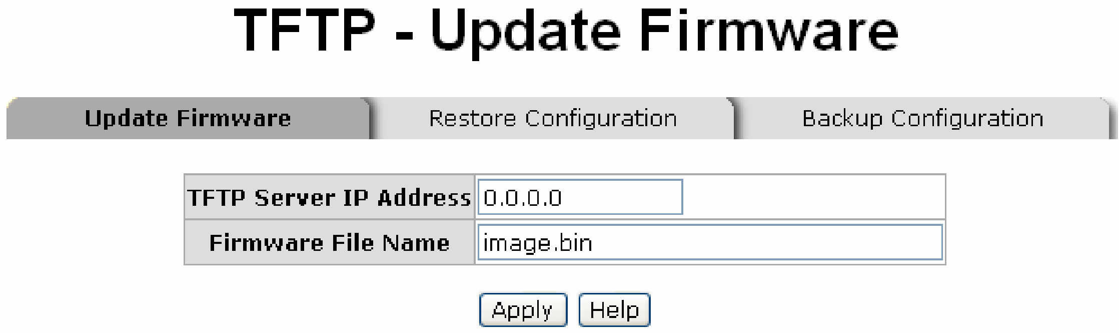
Port	IP
Port.1-1	0.0.0.0
Port.1-2	0.0.0.0
Port.1-3	0.0.0.0
Port.1-4	0.0.0.0
Port.1-5	0.0.0.0
Port.1-6	0.0.0.0
Port.1-7	0.0.0.0
Port.1-8	0.0.0.0
Port.2-1	0.0.0.0
Port.2-2	0.0.0.0
Port.2-3	0.0.0.0
Port.2-4	0.0.0.0
Port.2-5	0.0.0.0
Port.2-6	0.0.0.0
Port.2-7	0.0.0.0
Port.2-8	0.0.0.0
Port.3-1	0.0.0.0
Port.3-2	0.0.0.0
Port.3-3	0.0.0.0
Port.3-4	0.0.0.0
Port.3-5	0.0.0.0
Port.3-6	0.0.0.0
Port.3-7	0.0.0.0
Port.3-8	0.0.0.0
Port.4-1	0.0.0.0
Port.4-2	0.0.0.0

Port and IP Bindings interface

TFTP - Update Firmware

The functions allow a user to update the switch firmware. Before updating, make sure you have your TFTP server ready; and the firmware image is on the TFTP server.

1. **TFTP Server IP Address:** fill in your TFTP server IP.
2. **Firmware File Name:** the name of firmware image.
3. Click Apply.



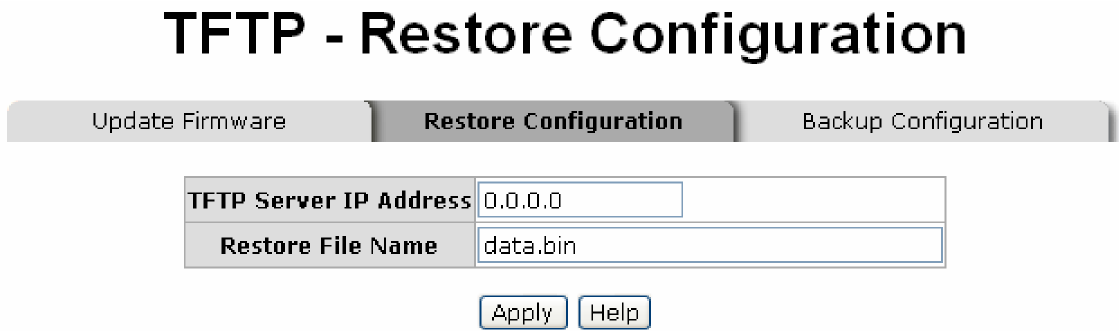
TFTP Server IP Address	0.0.0.0
Firmware File Name	image.bin

Update Firmware interface

TFTP – Restore Configuration

You can restore EEPROM value of the switch from TFTP server. Before doing this, you must have a prior backup of configuration in TFTP server then switch can restore the backup file to its EEPROM.

1. **TFTP Server IP Address:** fill in the TFTP server IP.
2. **Restore File Name:** fill in the correct restore file name.
3. Click Apply.



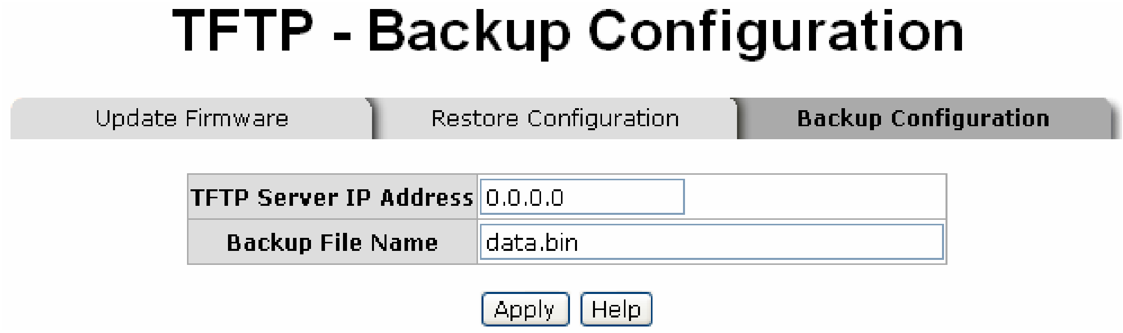
TFTP Server IP Address	0.0.0.0
Restore File Name	data.bin

Restore Configuration interface

TFTP - Backup Configuration

You can save current EEPROM value from the switch to TFTP server for restoring again afterward.

1. **TFTP Server IP Address:** fill in the TFTP server IP
2. **Backup File Name:** fill the file name
3. Click Apply.



TFTP - Backup Configuration

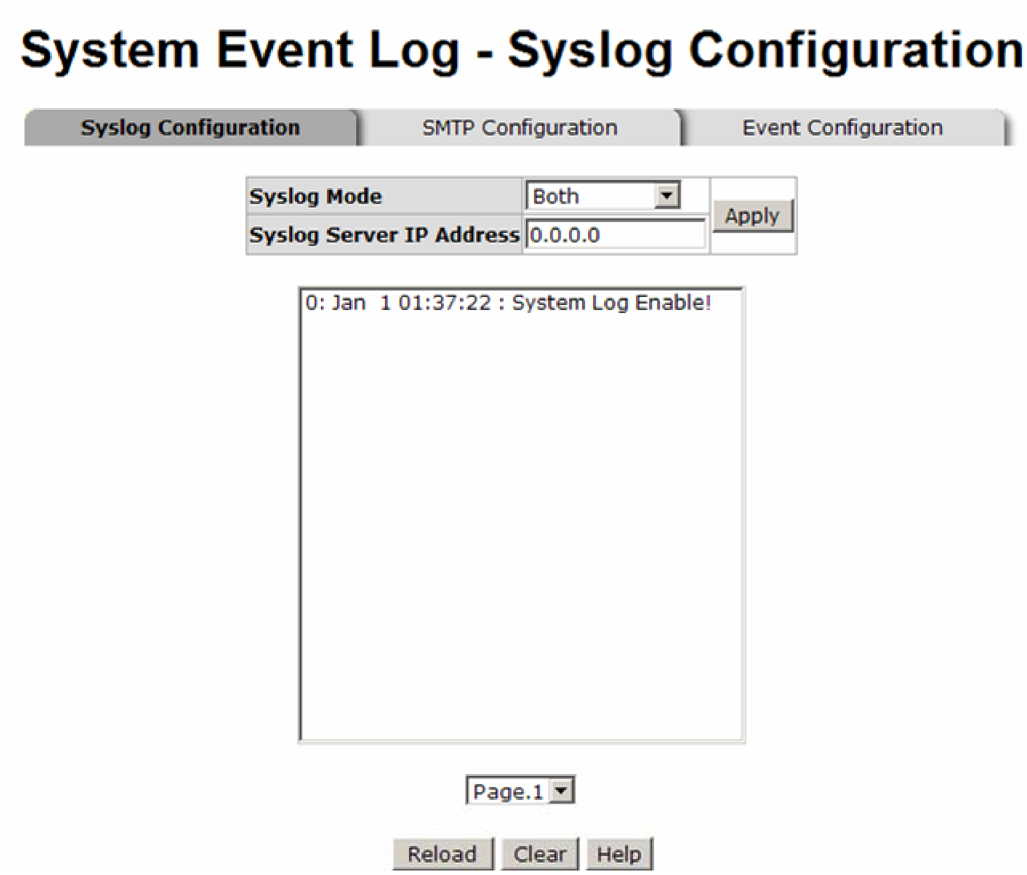
TFTP Server IP Address	0.0.0.0
Backup File Name	data.bin

Backup Configuration interface

System Event Log – Syslog Configuration

Configure the system event mode, that you want to collect, and system log server IP.

1. **Syslog Client Mode:** select the system log mode – client only, server only, or both S/C.
2. **System Log Server IP Address:** assigned the system log server IP.
3. Click Reload to refresh the events log.
4. Click Clear to clear all current events log.
5. After configuring, Click Apply.



System Event Log - Syslog Configuration

Syslog Mode: Both

Syslog Server IP Address: 0.0.0.0

```
0: Jan  1 01:37:22 : System Log Enable!
```

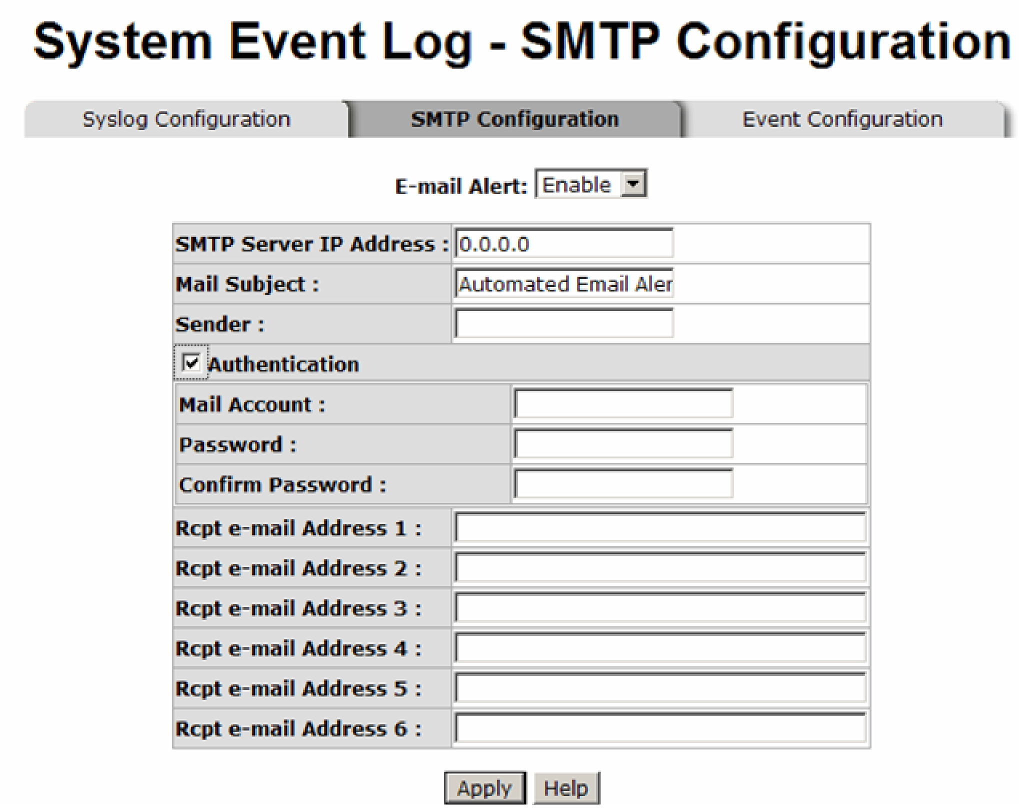
Syslog Configuration interface

System Event Log - SMTP Configuration

You can set up the mail server IP, mail account, account password, and forwarded email account for receiving the event alert.

1. **Email Alert:** enable or disable the email alert function.
2. **SMTP Server IP:** set up the mail server IP address (when **Email Alert** enabled, this function will then be available).
3. **Authentication:** mark the check box to enable and configure the email account and password for authentication (when **Email Alert** enabled, this function will then be available)..
4. **Mail Account:** set up the email account, e.g. johnadmin@123.com, to receive the alert. It must be an existing email account on the mail server, which you had set up in **SMTP Server IP Address** column.
5. **Password:** The email account password.

6. **Confirm Password:** reconfirm the password.
7. **Rcpt e-mail Address 1 ~ 6:** you can assign up to 6 e-mail accounts also to receive the alert.
8. Click Apply.



System Event Log - SMTP Configuration

E-mail Alert: Enable

SMTP Server IP Address :	0.0.0.0
Mail Subject :	Automated Email Aler
Sender :	
☑ Authentication	
Mail Account :	
Password :	
Confirm Password :	
Rcpt e-mail Address 1 :	
Rcpt e-mail Address 2 :	
Rcpt e-mail Address 3 :	
Rcpt e-mail Address 4 :	
Rcpt e-mail Address 5 :	
Rcpt e-mail Address 6 :	

SMTP Configuration interface

System Event Log - Event Configuration

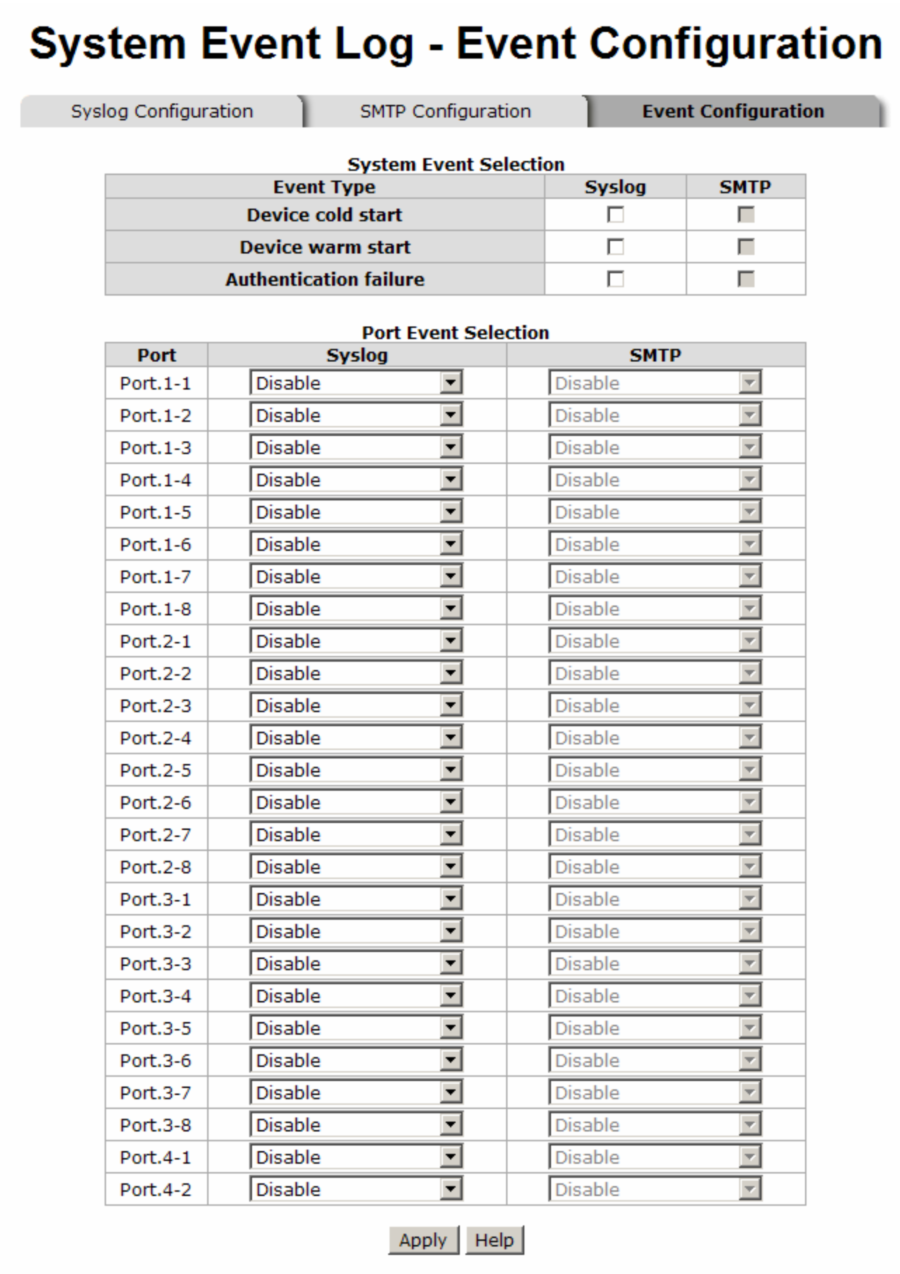
You can select the system log events and SMTP events. When selected events occur, the system will send out the log information. Also, per port log and SMTP events can be selected. After configure, Click Apply.

- **System event selection:** 4 selections – Device cold start, Device warm start, SNMP Authentication Failure, and X-ring topology change. Mark the checkbox to select the event. When selected events occur, the system will issue the logs.
  - **Device warm start:** when the device executes warm start, the system will

issue a log event.

- **Authentication Failure:** when the SNMP authentication fails, the system will issue a log event.

- **Port event selection:** select the per port events and per port SMTP events. It has 3 selections – Link UP, Link Down, and Link UP & Link Down. Disable means no event is selected.
  - **Link UP:** the system will issue a log message when port connection is up only.
  - **Link Down:** the system will issue a log message when port connection is down only.
  - **Link UP & Link Down:** the system will issue a log message when port connection is up and down.



System Event Log - Event Configuration

System Event Selection

Event Type	Syslog	SMTP
Device cold start	□	□
Device warm start	□	□
Authentication failure	□	□

Port Event Selection

Port	Syslog	SMTP
Port.1-1	Disable	Disable
Port.1-2	Disable	Disable
Port.1-3	Disable	Disable
Port.1-4	Disable	Disable
Port.1-5	Disable	Disable
Port.1-6	Disable	Disable
Port.1-7	Disable	Disable
Port.1-8	Disable	Disable
Port.2-1	Disable	Disable
Port.2-2	Disable	Disable
Port.2-3	Disable	Disable
Port.2-4	Disable	Disable
Port.2-5	Disable	Disable
Port.2-6	Disable	Disable
Port.2-7	Disable	Disable
Port.2-8	Disable	Disable
Port.3-1	Disable	Disable
Port.3-2	Disable	Disable
Port.3-3	Disable	Disable
Port.3-4	Disable	Disable
Port.3-5	Disable	Disable
Port.3-6	Disable	Disable
Port.3-7	Disable	Disable
Port.3-8	Disable	Disable
Port.4-1	Disable	Disable
Port.4-2	Disable	Disable

Event Configuration interface

SNTP Configuration

You can configure the SNTP (Simple Network Time Protocol) settings. The SNTP allows you to synchronize switch clocks in the Internet.

1. **SNTP Client:** enable or disable SNTP function to get the time from the SNTP server.
2. **Daylight Saving Time:** enable or disable daylight saving time function. When

daylight saving time is enabling, you need to configure the daylight saving time period..

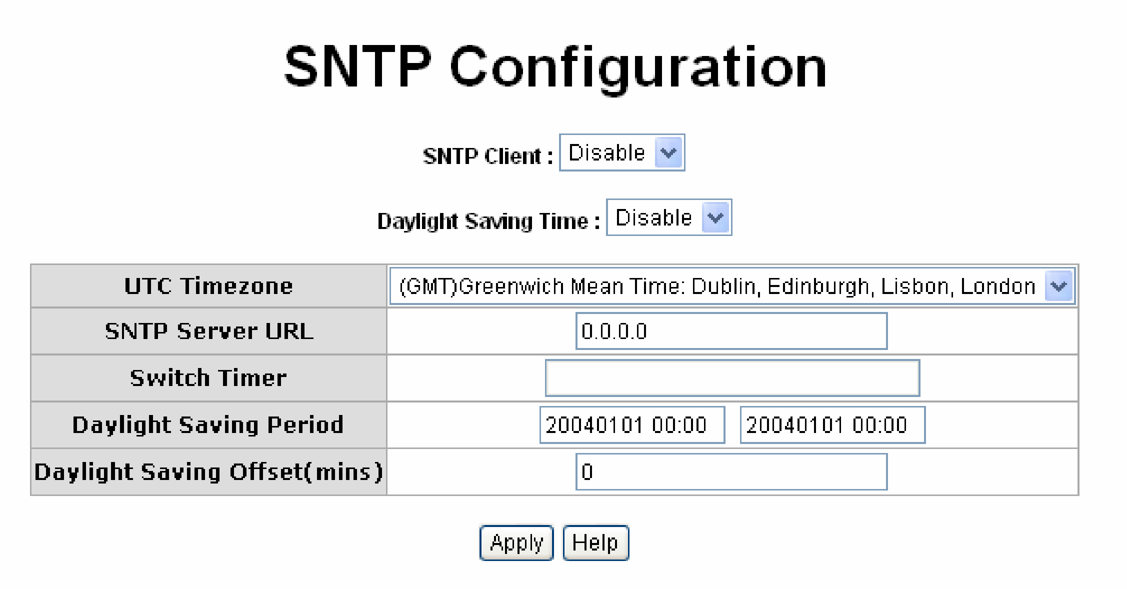
3. **UTC Timezone:** set the switch location time zone. The following table lists the different location time zone for your reference.

Local Time Zone	Conversion from UTC	Time at 12:00 UTC
November Time Zone	- 1 hour	11am
Oscar Time Zone	-2 hours	10 am
ADT - Atlantic Daylight	-3 hours	9 am
AST - Atlantic Standard EDT - Eastern Daylight	-4 hours	8 am
EST - Eastern Standard CDT - Central Daylight	-5 hours	7 am
CST - Central Standard MDT - Mountain Daylight	-6 hours	6 am
MST - Mountain Standard PDT - Pacific Daylight	-7 hours	5 am
PST - Pacific Standard ADT - Alaskan Daylight	-8 hours	4 am
ALA - Alaskan Standard	-9 hours	3 am
HAW - Hawaiian Standard	-10 hours	2 am
Nome, Alaska	-11 hours	1 am

CET - Central European FWT - French Winter MET - Middle European MEWT - Middle European Winter SWT - Swedish Winter	+1 hour	1 pm
EET - Eastern European, USSR Zone 1	+2 hours	2 pm
BT - Baghdad, USSR Zone 2	+3 hours	3 pm
ZP4 - USSR Zone 3	+4 hours	4 pm
ZP5 - USSR Zone 4	+5 hours	5 pm
ZP6 - USSR Zone 5	+6 hours	6 pm
WAST - West Australian Standard	+7 hours	7 pm
CCT - China Coast, USSR Zone 7	+8 hours	8 pm
JST - Japan Standard, USSR Zone 8	+9 hours	9 pm
EAST - East Australian Standard GST Guam Standard, USSR Zone 9	+10 hours	10 pm
IDLE - International Date Line NZST - New Zealand Standard NZT - New Zealand	+12 hours	Midnight

4. **SNTP Sever URL:** set the SNTP server IP address.

5. **Daylight Saving Period:** set up the Daylight Saving beginning time and Daylight Saving ending time. Both will be different in every year.
6. **Daylight Saving Offset (mins):** set up the offset time.
7. **Switch Timer:** display the switch current time.
8. Click Apply .



SNTP Configuration

SNTP Client : Disable

Daylight Saving Time : Disable

UTC Timezone	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
SNTP Server URL	0.0.0.0
Switch Timer	
Daylight Saving Period	20040101 00:00 20040101 00:00
Daylight Saving Offset(mins)	0

SNTP Configuration interface

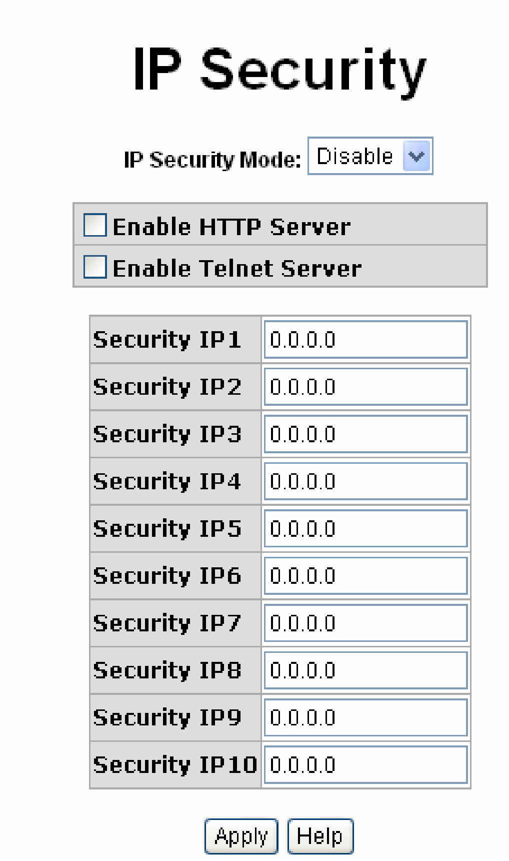
IP Security

IP security function allows user to assign 10 specific IP addresses that have permission to access the switch through the web browser for the securing switch management.

- **IP Security Mode:** When this option is in **Enable** mode, the **Enable HTTP Server** and **Enable Telnet Server** check boxes will then be available.
- **Enable HTTP Server:** When this check box is checked, the IP addresses among Security IP1 ~ IP10 will be allowed to access via HTTP service.
- **Enable Telnet Server:** When checked, the IP addresses among Security IP1 ~ IP10 will be allowed to access via Telnet service.
- **Security IP 1 ~ 10:** Assign up to 10 specific IP address. Only these 10 IP address can access and manage the switch through the Web browser

- And then, click Apply button to apply the configuration

[NOTE] Remember to execute the "Save Configuration" action, otherwise the new configuration will lose when switch powers off.



IP Security

IP Security Mode: Disable

□ Enable HTTP Server

□ Enable Telnet Server

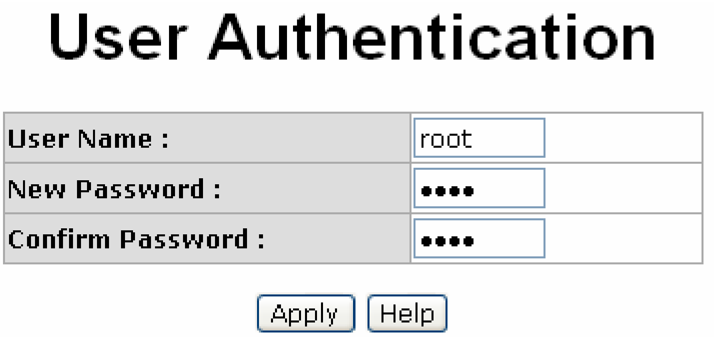
Security IP1	0.0.0.0
Security IP2	0.0.0.0
Security IP3	0.0.0.0
Security IP4	0.0.0.0
Security IP5	0.0.0.0
Security IP6	0.0.0.0
Security IP7	0.0.0.0
Security IP8	0.0.0.0
Security IP9	0.0.0.0
Security IP10	0.0.0.0

IP Security interface

User Authentication

Change web management login user name and password for the management security issue

1. **User name:** Key in the new user name(The default is "root")
2. **Password:** Key in the new password(The default is "root")
3. **Confirm password:** Re-type the new password
4. And then, click Apply



User Authentication

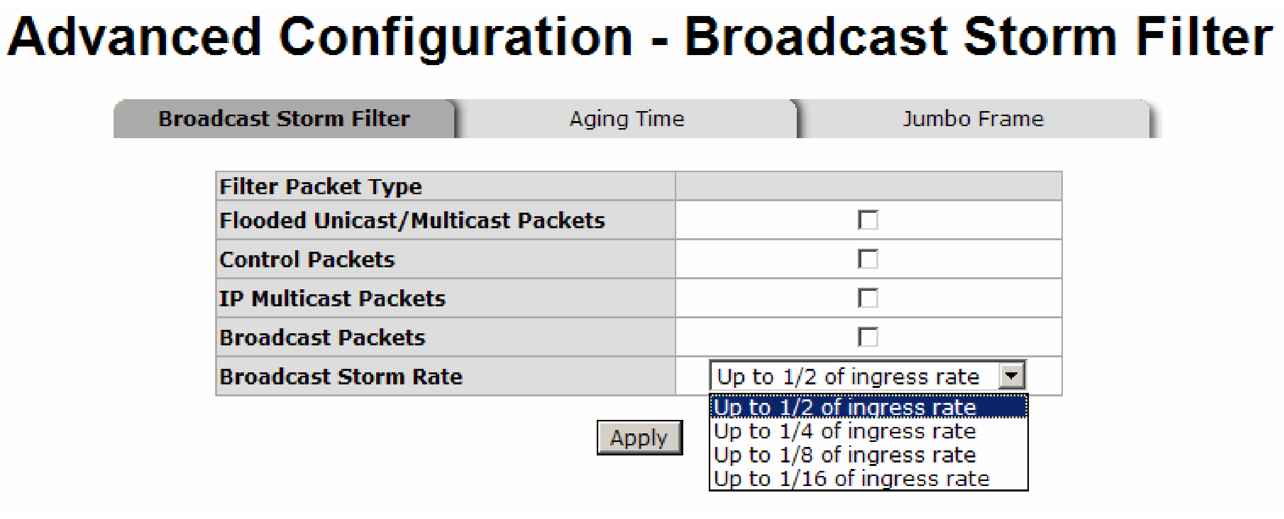
User Name :	root
New Password :	••••
Confirm Password :	••••

User Authentication interface

Advanced Configuration-Broadcast Storm Filter

This page enables user to select the filter packet type. All the packet types filtering conditions could be selected at the same time.

1. **Flooded Unicast/Multicast Packets:** When this check box is marked, the switch will filter the packet type of **Flooded Unicast/Multicast**.
2. **Control Packets:** When this check box is marked, the switch will filter the packet type of **Control**.
3. **IP Multicast Packets:** When this check box is marked, the switch will filter the packet type of **IP Multicast**.
4. **Broadcast Packets:** When this check box is marked, the switch will filter the packet type of **Flooded Unicast/Multicast**.
5. **Broadcast Storm Rate:** User can set the filtering rate range from 1/2 of ingress to 1/16 of ingress.
6. And then, click Apply


Broadcast Storm Filter
Aging Time
Jumbo Frame
Apply
Up to 1/2 of ingress rate
Up to 1/4 of ingress rate
Up to 1/8 of ingress rate
Up to 1/16 of ingress rate

Advanced Configuration - Broadcast Storm Filter

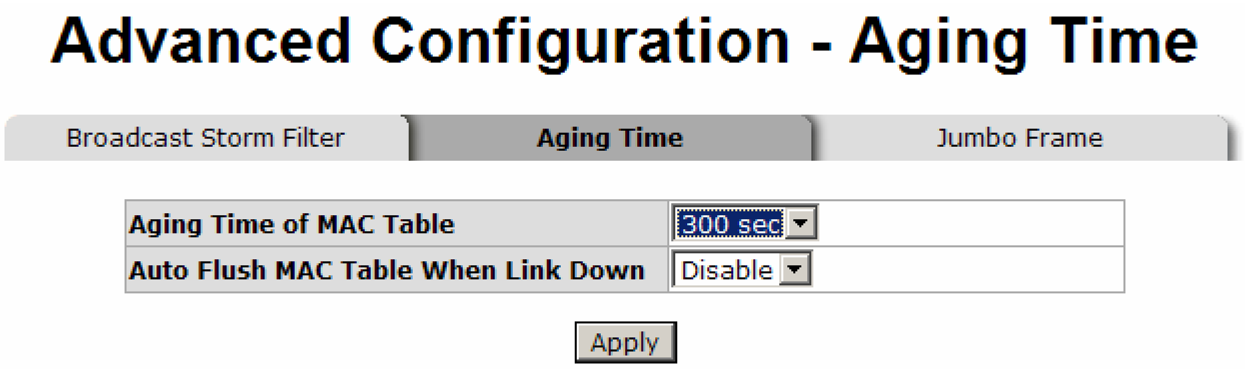
Filter Packet Type	
Flooded Unicast/Multicast Packets	☐
Control Packets	☐
IP Multicast Packets	☐
Broadcast Packets	☐
Broadcast Storm Rate	Up to 1/2 of ingress rate

Broadcast Storm Filter

Advanced Configuration-Aging Time

This tab is used to assign the aging time of MAC table.

- **Aging Time of MAC Table**: Select the aging time as OFF, 150 sec, 300 sec, or 600 sec. When MAC table is not used within the aging time, the MAC address table will then be cleared.
- **Auto Flush MAC Table When Link Down**: When this item is enabled, the switch will flush its MAC address table when link down.
- Click Apply button to make the setting effective.



Advanced Configuration - Aging Time

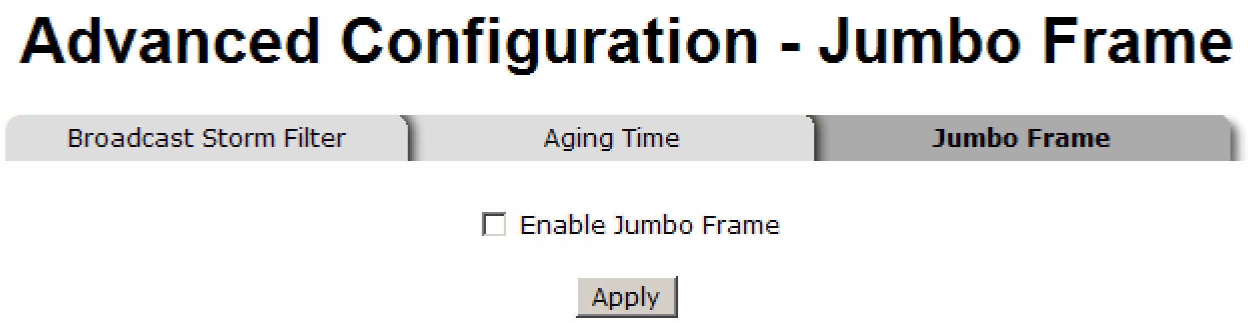
Aging Time of MAC Table	300 sec
Auto Flush MAC Table When Link Down	Disable

Aging Time Setting

Advanced Configuration-Jumbo Frame

This tab is used to enable the jumbo frame function.

- **Enable Jumbo Frame**: When this item is marked, the Gigabit port of the switch (on the rear panel) extends the frame to 9022bytes.
- Click Apply button to make the setting effective.



Advanced Configuration - Jumbo Frame

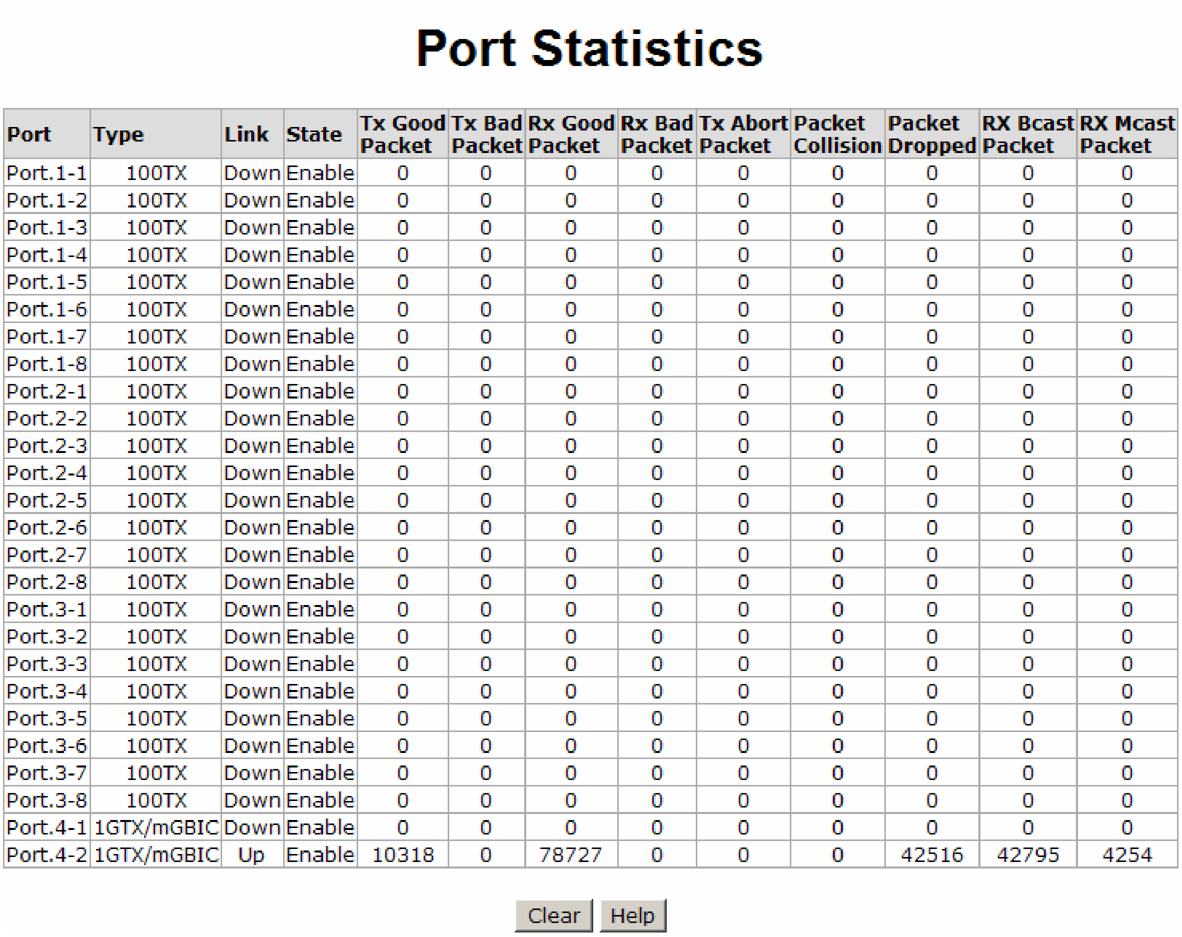
☐ Enable Jumbo Frame

Jumbo Frame Setting

Port Statistics

The following information provides the current port statistic information

- Click Clear button to clean all counts



Port Statistics

Port	Type	Link	State	Tx Good Packet	Tx Bad Packet	Rx Good Packet	Rx Bad Packet	Tx Abort Packet	Packet Collision	Packet Dropped	RX Bcast Packet	RX Mcast Packet
Port.1-1	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-2	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-3	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-4	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-5	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-6	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-7	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.1-8	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-1	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-2	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-3	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-4	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-5	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-6	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-7	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.2-8	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-1	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-2	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-3	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-4	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-5	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-6	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-7	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.3-8	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.4-1	1GTX/mGBIC	Down	Enable	0	0	0	0	0	0	0	0	0
Port.4-2	1GTX/mGBIC	Up	Enable	10318	0	78727	0	0	0	42516	42795	4254

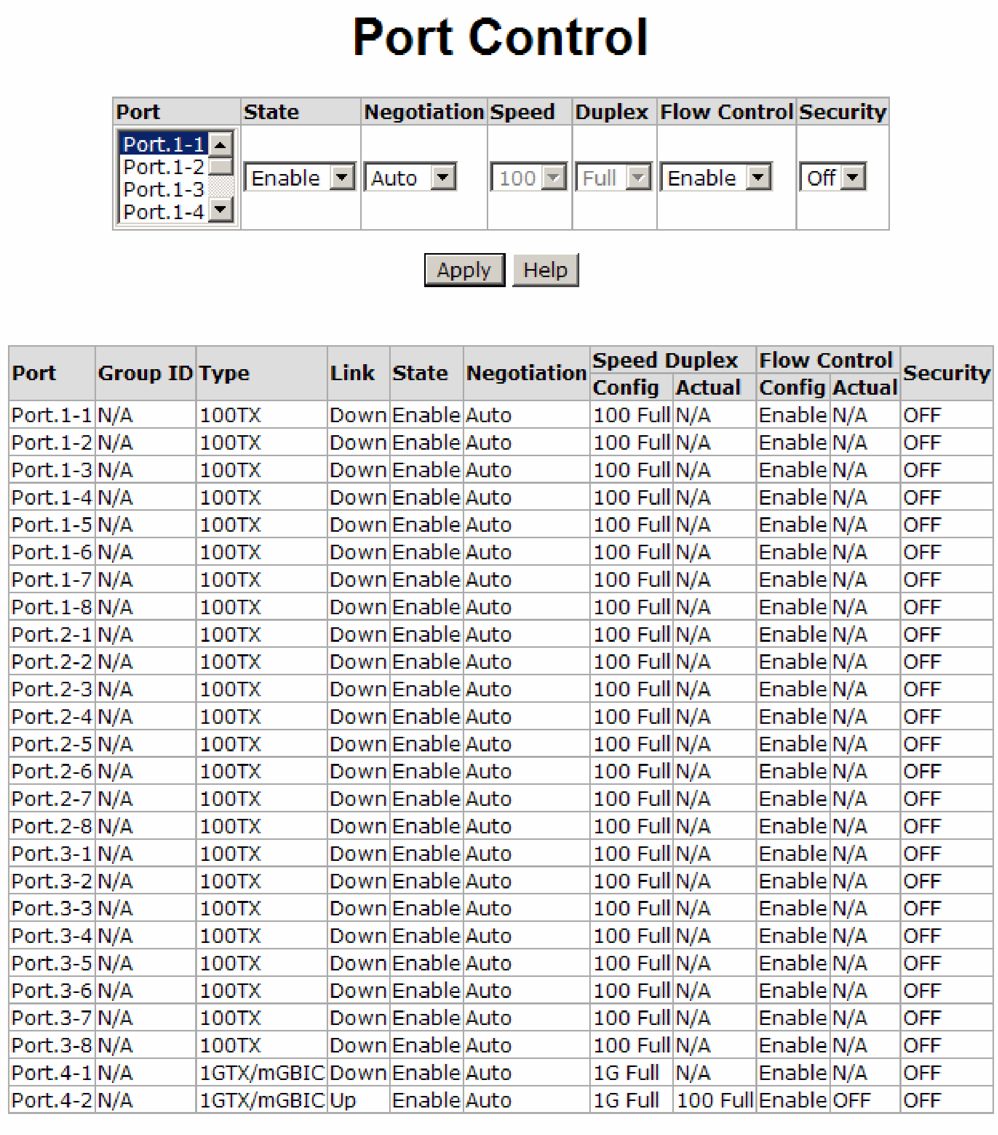
Port Statistics interface

Port Control

In Port control, you can view every port status that depended on user setting and the negotiation result.

1. **Port:** select the port that you want to configure.
2. **State:** Current port status. The port can be set to disable or enable mode. If the port setting is disable then will not receive or transmit any packet.
3. **Negotiation:** set auto negotiation status of port.
4. **Speed:** set the port link speed.

5. **Duplex:** set full-duplex or half-duplex mode of the port.
6. **Flow Control:** set flow control function is **Symmetric** or **Asymmetric** in Full Duplex mode. The default value is **Disable**.
7. **Security:** When its state is “**On**”, means this port accepts only one MAC address.
8. Click Apply .



Port Control

Port	State	Negotiation	Speed	Duplex	Flow Control	Security
Port.1-1 Port.1-2 Port.1-3 Port.1-4	Enable	Auto	100	Full	Enable	Off

Port	Group ID	Type	Link	State	Negotiation	Speed Duplex		Flow Control		Security
						Config	Actual	Config	Actual	
Port.1-1	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-2	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-3	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-4	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-5	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-6	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-7	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.1-8	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-1	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-2	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-3	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-4	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-5	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-6	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-7	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.2-8	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-1	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-2	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-3	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-4	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-5	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-6	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-7	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.3-8	N/A	100TX	Down	Enable	Auto	100 Full	N/A	Enable	N/A	OFF
Port.4-1	N/A	1GTX/mGBIC	Down	Enable	Auto	1G Full	N/A	Enable	N/A	OFF
Port.4-2	N/A	1GTX/mGBIC	Up	Enable	Auto	1G Full	100 Full	Enable	OFF	OFF

Port Control interface

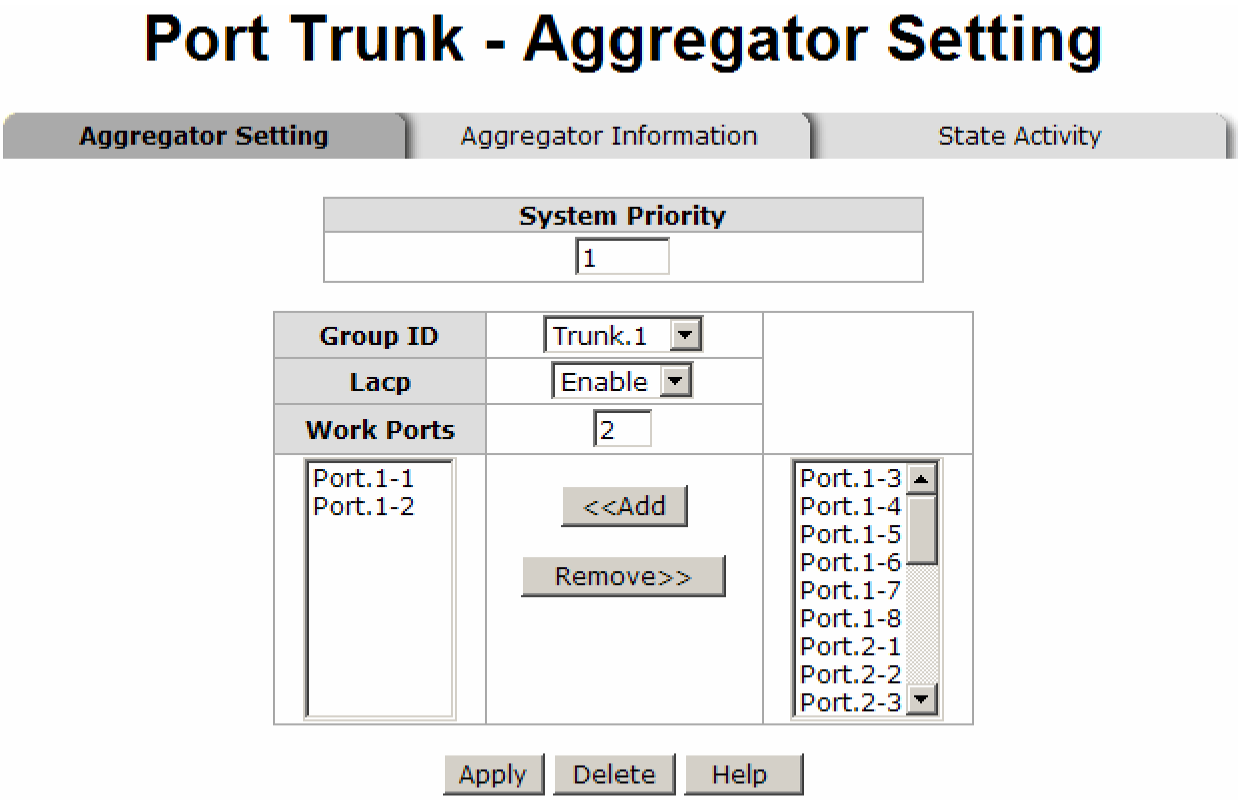
Port Trunk

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 seven consecutive ports into two dedicated connections. This feature can expand bandwidth to a device on the network. **LACP operation requires full-duplex mode,** more detail information refers to IEEE 802.3ad.

Aggregator setting

1. **System Priority:** a value used to identify the active LACP. The switch with the lowest value has the highest priority and is selected as the active LACP.
2. **Group ID:** There are three trunk groups to provide configure. Choose the "**Group ID**" and click Select.
3. **LACP:** If enable, the group is LACP static trunk group. If disable, the group is local static trunk group. All ports support LACP dynamic trunk group. If connecting to the device that also supports LACP, the LACP dynamic trunk group will be created automatically.
4. **Work ports:** allow max four ports can be aggregated at the same time. With LACP static trunk group, the exceed ports are standby and can be aggregated if work ports fail. If it is local static trunk group, the number of ports must be the same as the group member ports.
5. Select the ports to join the trunk group. Allow max four ports can be aggregated at the same time. Click Add button to add the port. To remove unwanted ports, select the port and click Remove button.
6. If LACP enabled, you can configure LACP Active/Passive status in each ports on State Activity page.
7. Click Apply.
8. Use Delete button to delete Trunk Group. Select the Group ID and click Delete button.



Port Trunk - Aggregator Setting

System Priority: 1

Group ID	Trunk.1
Lacp	Enable
Work Ports	2

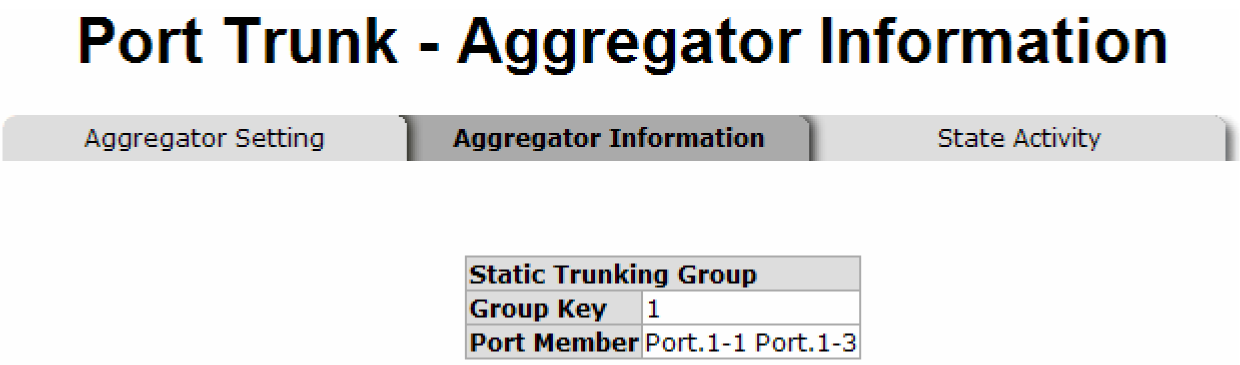
Port.1-1
Port.1-2

Port.1-3
Port.1-4
Port.1-5
Port.1-6
Port.1-7
Port.1-8
Port.2-1
Port.2-2
Port.2-3

Port Trunk—Aggregator Setting interface

Aggregator Information

When you have set the LACP aggregator, you will see the related information here.



Port Trunk - Aggregator Information

Static Trunking Group	
Group Key	1
Port Member	Port.1-1 Port.1-3

Port Trunk – Aggregator Information interface

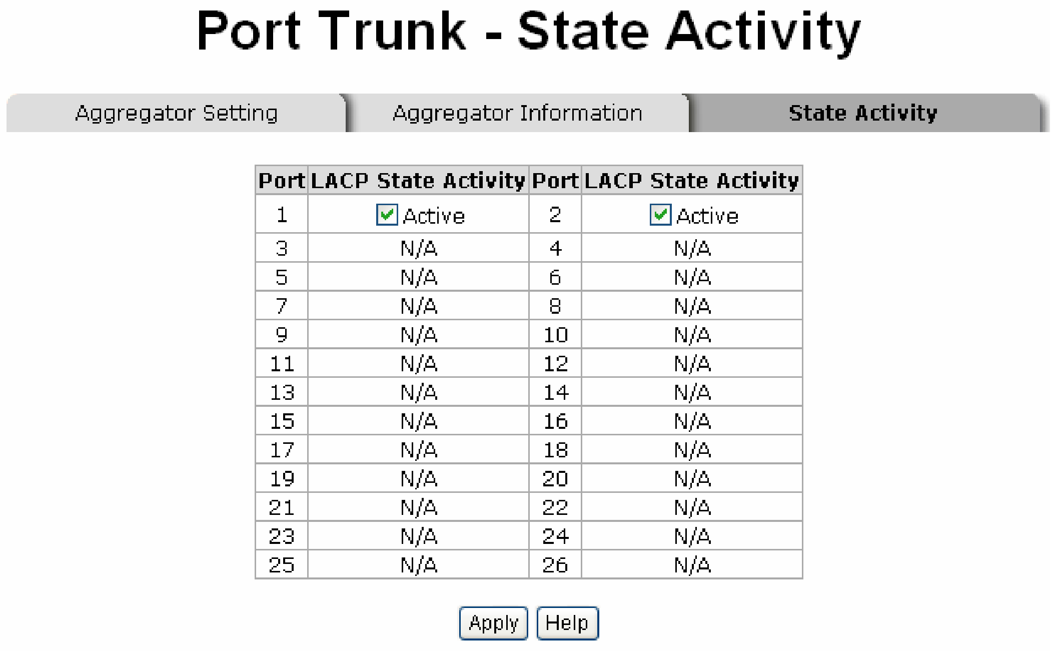
State Activity

When you have set up the LACP aggregator, you can configure port state activity. You can mark or un-mark the port. When you mark the port and click Apply button the port state activity will change to **Active**. Opposite is **Passive**.

- **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.

[NOTE]

1. A link having either two active LACP ports or one active port can perform dynamic LACP trunk.
2. A link has two passive LACP ports will not perform dynamic LACP trunk because both ports are waiting for an LACP protocol packet from the opposite device.
3. If you are active LACP's actor, after you have selected trunk port, the active status will be created automatically.



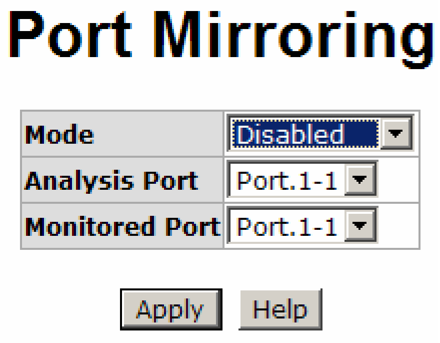
Port	LACP State Activity	Port	LACP State Activity
1	☑ Active	2	☑ Active
3	N/A	4	N/A
5	N/A	6	N/A
7	N/A	8	N/A
9	N/A	10	N/A
11	N/A	12	N/A
13	N/A	14	N/A
15	N/A	16	N/A
17	N/A	18	N/A
19	N/A	20	N/A
21	N/A	22	N/A
23	N/A	24	N/A
25	N/A	26	N/A

Port Trunk – State Activity interface

Port Mirroring

The Port mirroring is a method for monitoring traffic in switched networks. Traffic through ports can be monitored by one specific port. That means traffic goes in or out monitored (source) ports will be duplicated into analysis (mirror) port.

- **Mode:** Select the mirroring mode by pulling down the selection item menu: **RX**, **TX or Both RX／TX.**
- **Analysis Port:** Select one port to be the analysis (mirror) port for monitoring RX only, TX only or both RX and TX traffic which come from source port. User can connect analysis port to LAN analyzer or Netxray
- **Monitored Port:** The ports that user wants to monitor. All monitored port traffic will be copied to analysis (mirror) port. User can select one monitored port by pulling down the selection item menu.
- And then, click Apply button.



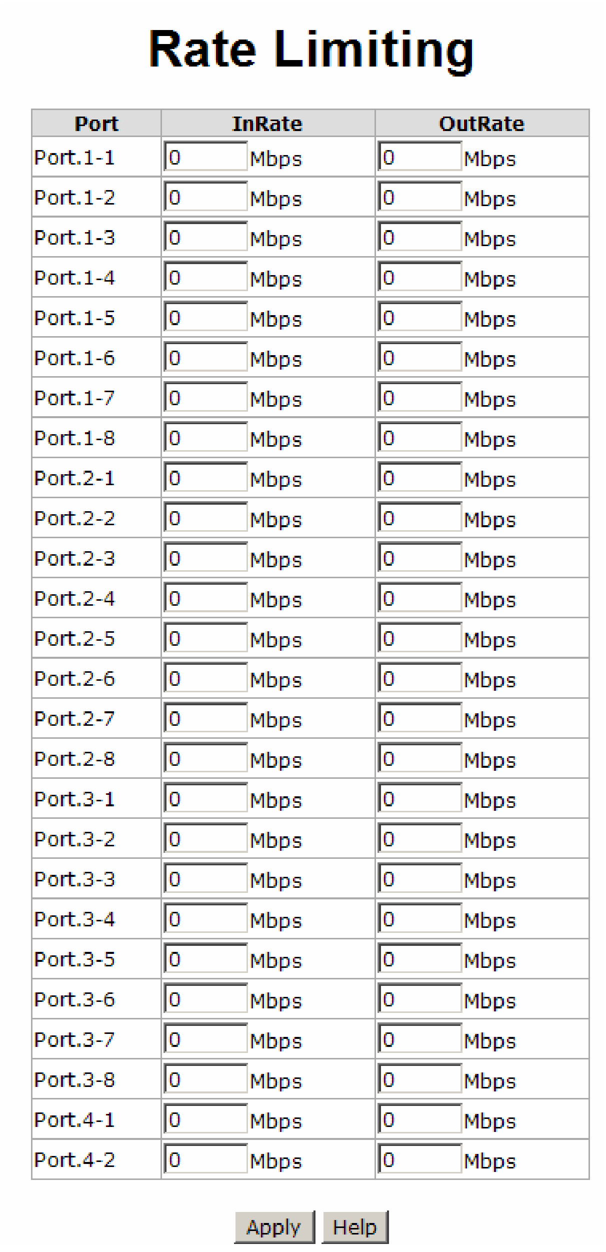
Port Mirroring

Mode	Disabled
Analysis Port	Port.1-1
Monitored Port	Port.1-1

Port Trunk – Port Mirroring interface

Rate Limiting

You can set up every port’s bandwidth rate here.



Rate Limiting

Port	InRate	OutRate
Port.1-1	0 Mbps	0 Mbps
Port.1-2	0 Mbps	0 Mbps
Port.1-3	0 Mbps	0 Mbps
Port.1-4	0 Mbps	0 Mbps
Port.1-5	0 Mbps	0 Mbps
Port.1-6	0 Mbps	0 Mbps
Port.1-7	0 Mbps	0 Mbps
Port.1-8	0 Mbps	0 Mbps
Port.2-1	0 Mbps	0 Mbps
Port.2-2	0 Mbps	0 Mbps
Port.2-3	0 Mbps	0 Mbps
Port.2-4	0 Mbps	0 Mbps
Port.2-5	0 Mbps	0 Mbps
Port.2-6	0 Mbps	0 Mbps
Port.2-7	0 Mbps	0 Mbps
Port.2-8	0 Mbps	0 Mbps
Port.3-1	0 Mbps	0 Mbps
Port.3-2	0 Mbps	0 Mbps
Port.3-3	0 Mbps	0 Mbps
Port.3-4	0 Mbps	0 Mbps
Port.3-5	0 Mbps	0 Mbps
Port.3-6	0 Mbps	0 Mbps
Port.3-7	0 Mbps	0 Mbps
Port.3-8	0 Mbps	0 Mbps
Port.4-1	0 Mbps	0 Mbps
Port.4-2	0 Mbps	0 Mbps

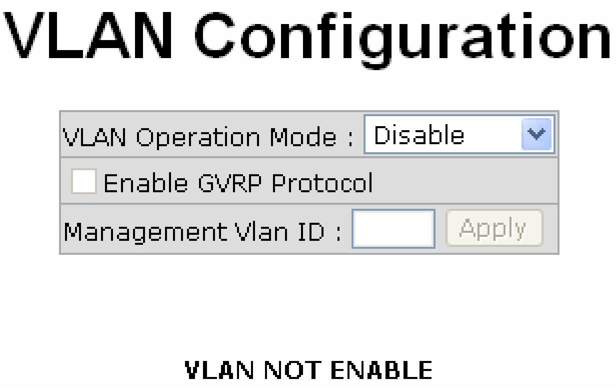
Rate Limiting interface

- All the ports support packet ingress and egress rate control. For example, assume port 1 is 10Mbps, users can set it's effective egress rate is 2Mbps, ingress rate is 1Mbps. The switch performs the ingress rate by packet counter to meet the specified rate
  - **InRate:** Enter the port effective ingress rate(The default value is "0")
  - **OutRate:** Enter the port effective egress rate(The default value is "0")
- And then, click Apply to apply the settings

VLAN configuration

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain, which would allow you to isolate network traffic, so only the members of the VLAN will receive traffic from the members of the same VLAN. 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 industrial switch supports port-based and 802.1Q (tagged-based) VLAN. The default configuration of VLAN operation mode is “**Disable**”.



VLAN Configuration

VLAN Operation Mode : Disable

□ Enable GVRP Protocol

Management Vlan ID :

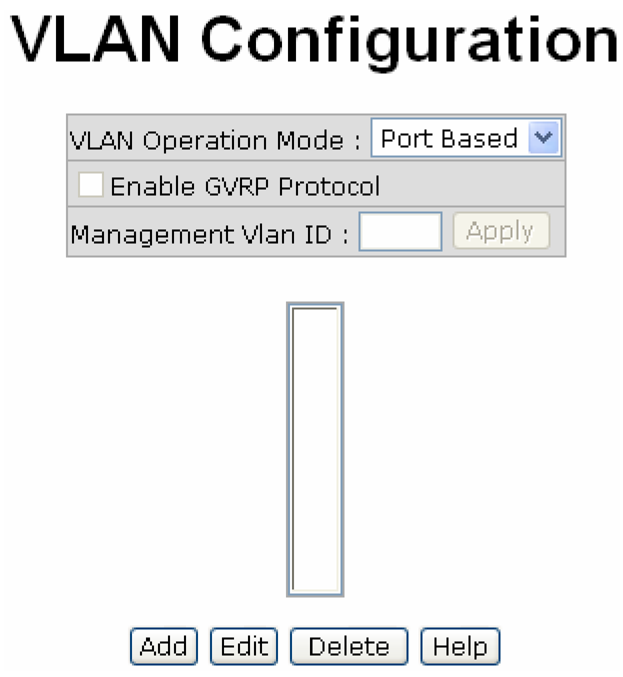
VLAN NOT ENABLE

VLAN Configuration interface

VLAN configuration - Port-based VLAN

Packets can go among only members of the same VLAN group. Note all unselected ports are treated as belonging to another single VLAN. If the port-based VLAN enabled, the VLAN-tagging is ignored.

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



VLAN Configuration

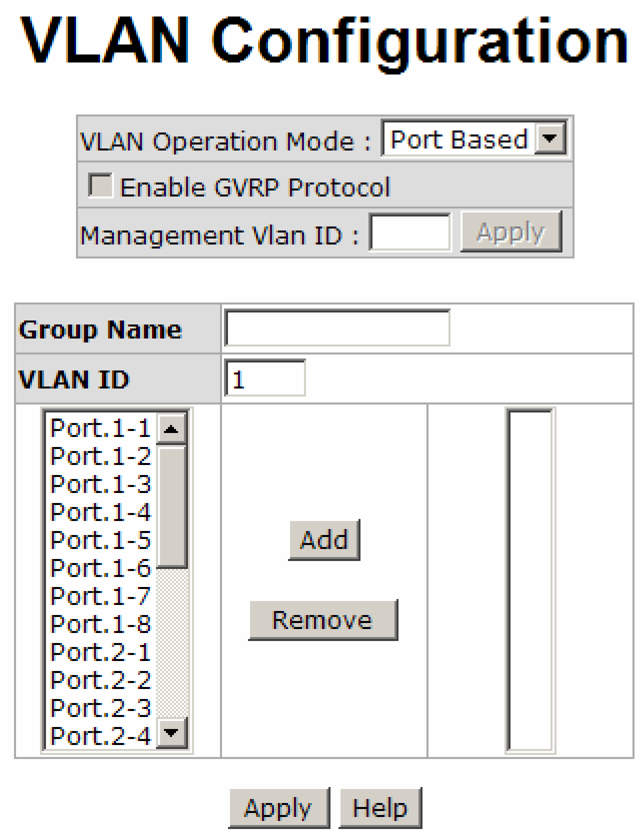
VLAN Operation Mode : Port Based

□ Enable GVRP Protocol

Management Vlan ID :

VLAN – Port Based interface

- Click Add to add a new VLAN group(The maximum VLAN group is up to 64 VLAN groups)
- Entering the VLAN name, group ID and grouping the members of VLAN group
- And then, click Apply



VLAN Configuration

VLAN Operation Mode : Port Based

□ Enable GVRP Protocol

Management Vlan ID :

Group Name

VLAN ID: 1

Port.1-1
Port.1-2
Port.1-3
Port.1-4
Port.1-5
Port.1-6
Port.1-7
Port.1-8
Port.2-1
Port.2-2
Port.2-3
Port.2-4

VLAN—Port Based Add interface

- You will see the VLAN displays.
- Use Delete button to delete unwanted VLAN.
- Use Edit button to modify existing VLAN group.

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when switch powers off.

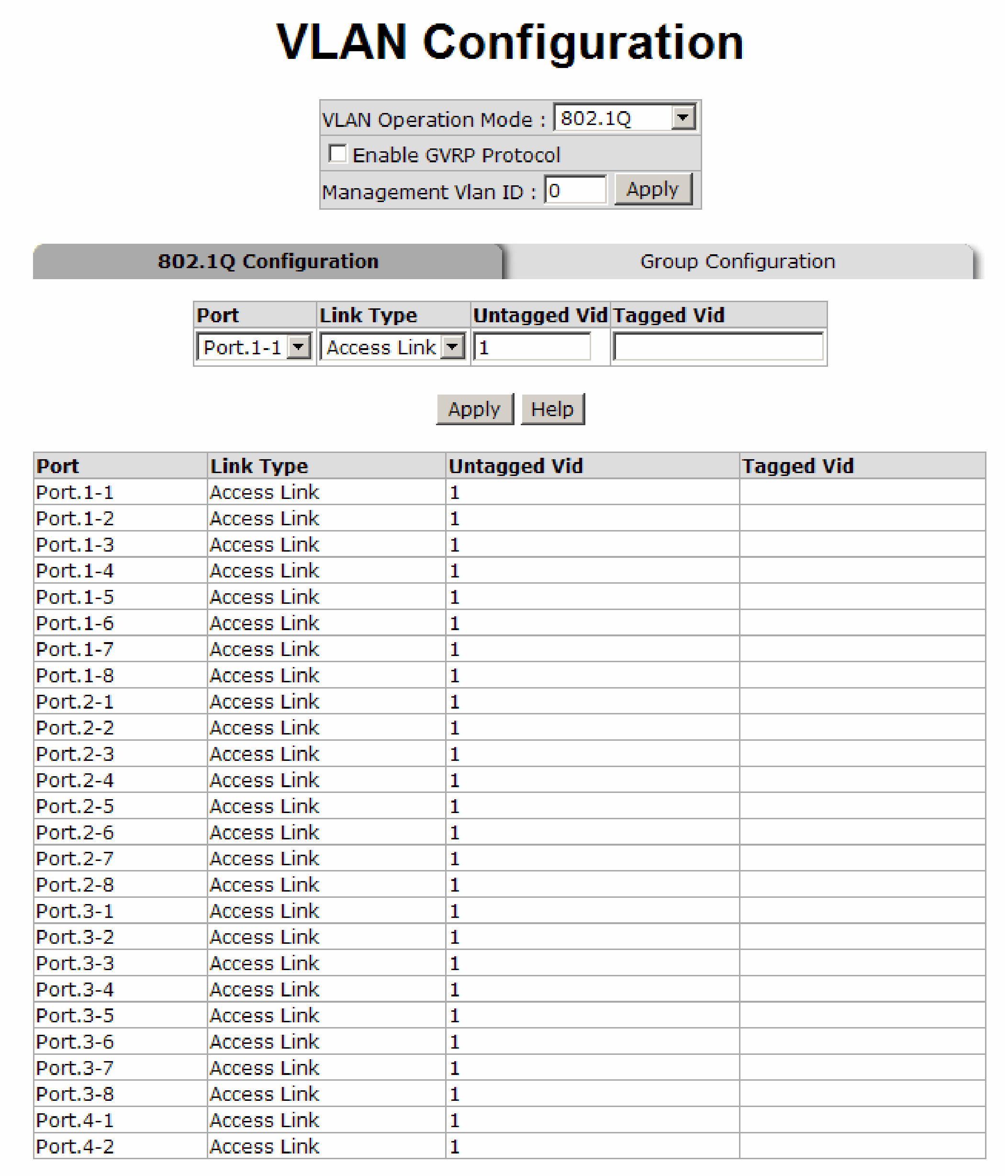
802.1Q VLAN

Tagged-based VLAN is an IEEE 802.1Q specification standard. Therefore, it is possible to create a VLAN across devices from different switch venders. IEEE 802.1Q VLAN uses a technique to insert a “tag” into the Ethernet frames. Tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.
You can create Tag-based VLAN, and enable or disable GVRP protocol. There are 256 VLAN groups to provide configuration. Enable 802.1Q VLAN, the all ports on the switch belong to default VLAN, VID is 1. The default VLAN can’t be deleted.

GVRP allows automatic VLAN configuration between the switch and nodes. If the switch is connected to a device with GVRP enabled, you can send a GVRP request using the VID of a VLAN defined on the switch; the switch will automatically add that device to the existing VLAN.

802.1Q Configuration

1. **Enable GVRP Protocol:** check the check box to enable GVRP protocol.
2. Select the port that you want to configure.
3. **Link Type**: there are 3 types of link type.
   - **Access Link:** single switch only, allow user to group ports by setting the same VID.
   - **Trunk Link:** extended application of **Access Link**, allow user to group ports by setting the same VID with 2 or more switches.
   - **Hybrid Link:** Both **Access Link** and **Trunk Link** are available.
4. **Untagged VID:** assign the untagged frame VID.
5. **Tagged VID:** assign the tagged frame VID.
6. Click Apply



VLAN Configuration

VLAN Operation Mode : 802.1Q

□ Enable GVRP Protocol

Management Vlan ID : 0 Apply

Port	Link Type	Untagged Vid	Tagged Vid
Port.1-1	Access Link	1	

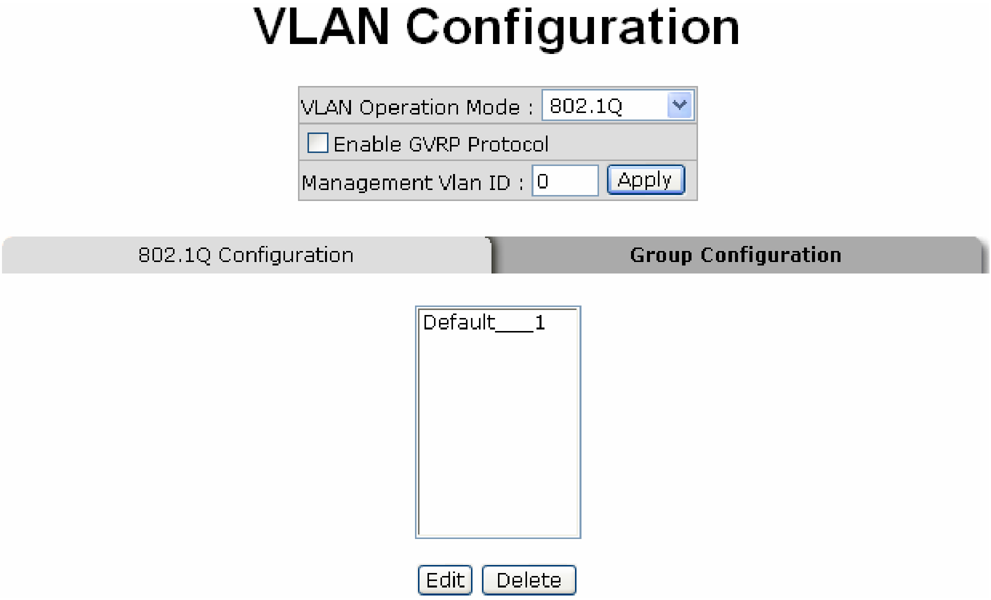
Port	Link Type	Untagged Vid	Tagged Vid
Port.1-1	Access Link	1	
Port.1-2	Access Link	1	
Port.1-3	Access Link	1	
Port.1-4	Access Link	1	
Port.1-5	Access Link	1	
Port.1-6	Access Link	1	
Port.1-7	Access Link	1	
Port.1-8	Access Link	1	
Port.2-1	Access Link	1	
Port.2-2	Access Link	1	
Port.2-3	Access Link	1	
Port.2-4	Access Link	1	
Port.2-5	Access Link	1	
Port.2-6	Access Link	1	
Port.2-7	Access Link	1	
Port.2-8	Access Link	1	
Port.3-1	Access Link	1	
Port.3-2	Access Link	1	
Port.3-3	Access Link	1	
Port.3-4	Access Link	1	
Port.3-5	Access Link	1	
Port.3-6	Access Link	1	
Port.3-7	Access Link	1	
Port.3-8	Access Link	1	
Port.4-1	Access Link	1	
Port.4-2	Access Link	1	

802.1q VLAN interface

Group Configuration

Edit the existing VLAN Group.

1. Select the VLAN group in the table list.
2. Click Edit



VLAN Configuration

VLAN Operation Mode : 802.1Q

□ Enable GVRP Protocol

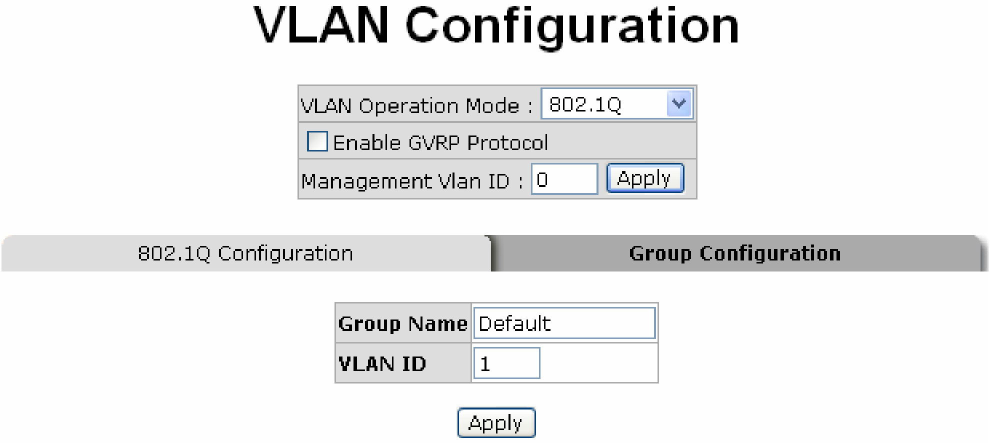
Management Vlan ID : 0

Default___1

Group Configuration interface

3. You can Change the VLAN group name and VLAN ID.

4. Click Apply .



VLAN Configuration

VLAN Operation Mode : 802.1Q

□ Enable GVRP Protocol

Management Vlan ID : 0

Group Name	Default
VLAN ID	1

Group Configuration interface

Rapid Spanning Tree

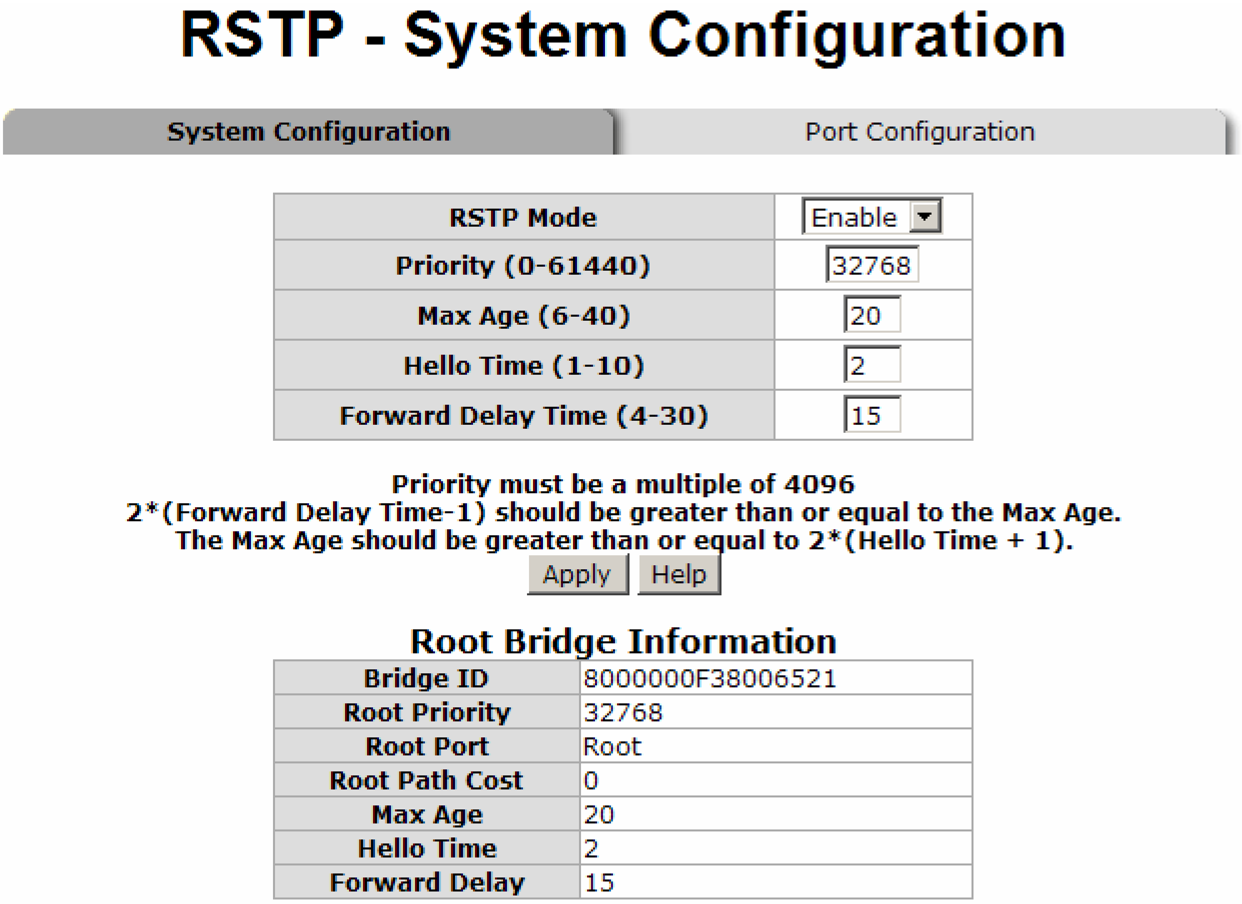
The Rapid Spanning Tree Protocol (RSTP) is an evolution of the Spanning Tree Protocol and provides for faster spanning tree convergence after a topology change. The system also supports STP and the system will auto detect the connected device that is running STP or RSTP protocol.

RSTP - System Configuration

- User can view spanning tree information about the Root Bridge
- User can modify RSTP state. After modification, click Apply button
  - **RSTP mode:** user must enable or disable RSTP function before configure the related parameters
  - **Priority (0-61440):** a value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. If the value changes, user must reboot the switch. The value must be multiple of 4096 according to the protocol standard rule
  - **Max Age (6-40):** the number of seconds a bridge waits without receiving Spanning-tree Protocol configuration messages before attempting a reconfiguration. Enter a value between 6 through 40
  - **Hello Time (1-10):** the time that controls switch sends out the BPDU packet to check RSTP current status. Enter a value between 1 through 10
  - **Forward Delay Time (4-30):** the number of seconds a port waits before changing from its Rapid Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a value between 4 through 30

[NOTE] Follow the rule to configure the MAX Age, Hello Time, and Forward Delay Time.

2 x (Forward Delay Time value –1) > = Max Age value >= 2 x (Hello Time value +1)



RSTP - System Configuration

RSTP Mode	Enable
Priority (0-61440)	32768
Max Age (6-40)	20
Hello Time (1-10)	2
Forward Delay Time (4-30)	15

Priority must be a multiple of 4096
2*(Forward Delay Time-1) should be greater than or equal to the Max Age.
The Max Age should be greater than or equal to 2*(Hello Time + 1).

Root Bridge Information

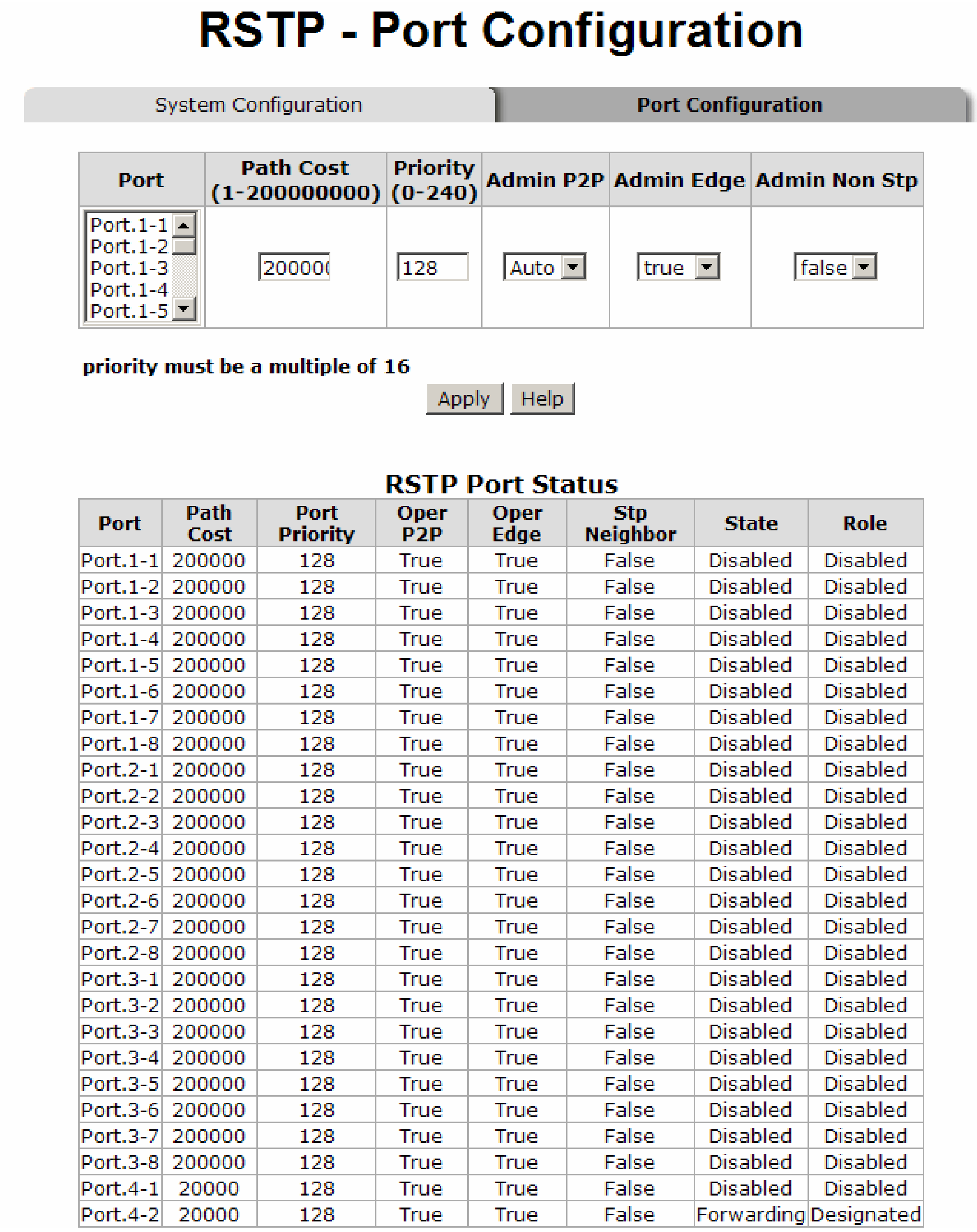
Bridge ID	8000000F38006521
Root Priority	32768
Root Port	Root
Root Path Cost	0
Max Age	20
Hello Time	2
Forward Delay	15

RSTP System Configuration interface

RSTP - Port Configuration

You can configure path cost and priority of every port.

1. Select the port in Port column.
1. **Path Cost:** The cost of the path to the other bridge from this transmitting bridge at the specified port. Enter a number 1 through 200000000.
2. **Priority:** Decide which port should be blocked by priority in LAN. Enter a number 0 through 240. The value of priority must be the multiple of 16.
3. **Admin P2P:** Some of the rapid state transactions that are possible within RSTP are dependent upon whether the port concerned can only be connected to exactly one other bridge (i.e. it is served by a point-to-point LAN segment), or can be connected to two or more bridges (i.e. it is served by a shared medium LAN segment). This function allows the P2P status of the link to be manipulated administratively. True is P2P enabling. False is P2P disabling.



RSTP - Port Configuration

Port	Path Cost (1-200000000)	Priority (0-240)	Admin P2P	Admin Edge	Admin Non Stp
Port.1-1 Port.1-2 Port.1-3 Port.1-4 Port.1-5	20000(	128	Auto	true	false

priority must be a multiple of 16

RSTP Port Status

Port	Path Cost	Port Priority	Oper P2P	Oper Edge	Stp Neighbor	State	Role
Port.1-1	200000	128	True	True	False	Disabled	Disabled
Port.1-2	200000	128	True	True	False	Disabled	Disabled
Port.1-3	200000	128	True	True	False	Disabled	Disabled
Port.1-4	200000	128	True	True	False	Disabled	Disabled
Port.1-5	200000	128	True	True	False	Disabled	Disabled
Port.1-6	200000	128	True	True	False	Disabled	Disabled
Port.1-7	200000	128	True	True	False	Disabled	Disabled
Port.1-8	200000	128	True	True	False	Disabled	Disabled
Port.2-1	200000	128	True	True	False	Disabled	Disabled
Port.2-2	200000	128	True	True	False	Disabled	Disabled
Port.2-3	200000	128	True	True	False	Disabled	Disabled
Port.2-4	200000	128	True	True	False	Disabled	Disabled
Port.2-5	200000	128	True	True	False	Disabled	Disabled
Port.2-6	200000	128	True	True	False	Disabled	Disabled
Port.2-7	200000	128	True	True	False	Disabled	Disabled
Port.2-8	200000	128	True	True	False	Disabled	Disabled
Port.3-1	200000	128	True	True	False	Disabled	Disabled
Port.3-2	200000	128	True	True	False	Disabled	Disabled
Port.3-3	200000	128	True	True	False	Disabled	Disabled
Port.3-4	200000	128	True	True	False	Disabled	Disabled
Port.3-5	200000	128	True	True	False	Disabled	Disabled
Port.3-6	200000	128	True	True	False	Disabled	Disabled
Port.3-7	200000	128	True	True	False	Disabled	Disabled
Port.3-8	200000	128	True	True	False	Disabled	Disabled
Port.4-1	20000	128	True	True	False	Disabled	Disabled
Port.4-2	20000	128	True	True	False	Forwarding	Designated

RSTP Port Configuration interface

4. **Admin Edge:** The port directly connected to end stations cannot create bridging loop in the network. To configure the port as an edge port, set the port to "**True**" status.
5. **Admin Non Stp:** The port includes the STP mathematic calculation. **True** is not including STP mathematic calculation. **False** is including the STP mathematic calculation.
6. Click Apply.

SNMP Configuration

Simple Network Management Protocol (SNMP) is the protocol developed to manage nodes (servers, workstations, routers, switches and hubs etc.) on an IP network. SNMP enables network administrators to manage network performance, find and solve network problems, and plan for network growth. Network management systems learn of problems by receiving traps or change notices from network devices implementing SNMP.

System Configuration

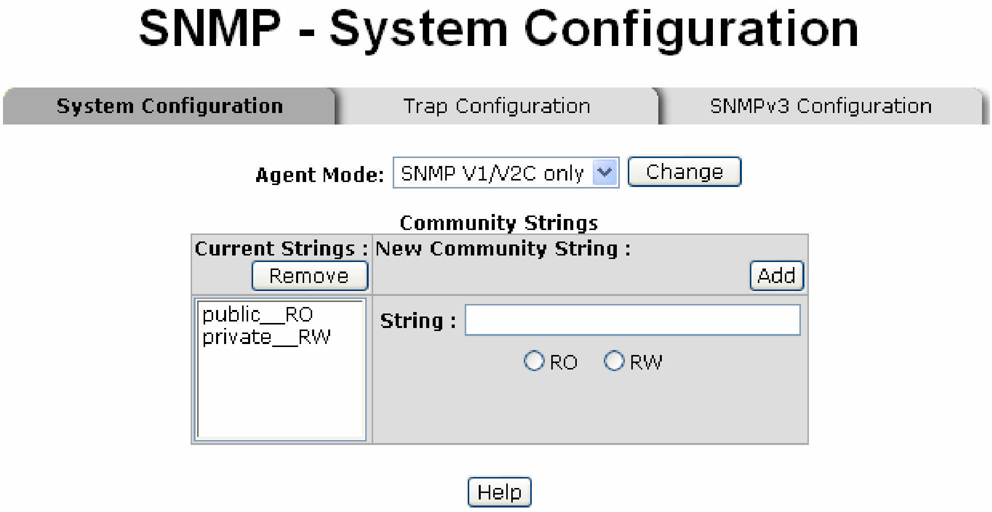
- **Community Strings**

You can define new community string set and remove unwanted community string.

- **Agent Mode:** Select the SNMP version that you want to use it. And then click Change to switch to the selected SNMP version mode.

1. **String:** fill the name of string.
2. **RO:** Read only. Enables requests accompanied by this string to display MIB-object information.
3. **RW:** Read write. Enables requests accompanied by this string to display MIB-object information and to set MIB objects.

1. Click Add.
2. To remove the community string, select the community string that you have defined and click Remove. You cannot remove the default community string set.



Agent Mode: SNMP V1/V2C only

Community Strings

Current Strings :
public__RO
private__RW

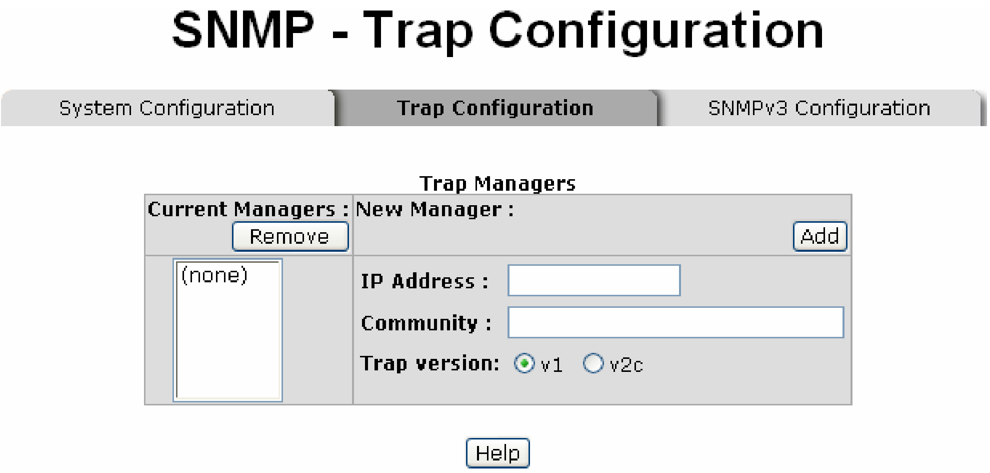
New Community String :
String :
○ RO ○ RW

SNMP System Configuration interface

Trap Configuration

A trap manager is a management station that receives traps, the system alerts generated by the switch. If no trap manager is defined, no traps will issue. Create a trap manager by entering the IP address of the station and a community string. To define management stations as trap manager and enter SNMP community strings and selects the SNMP version.

1. **IP Address:** enter the IP address of trap manager.
2. **Community:** enter the community string.
3. **Trap Version:** select the SNMP trap version type – v1 or v2.
4. Click Add.
5. To remove the community string, select the community string that you have defined and click Remove. You cannot remove the default community string set.



SNMP - Trap Configuration

Trap Managers

Current Managers : (none)

New Manager :

IP Address :

Community :

Trap version: ● v1 ○ v2c

Trap Managers interface

SNMPV3 Configuration

Configure the SNMP V3 function including **Context Table**, **User Profile**, **Group Table**, **Access Table** and **MIBView Table**.

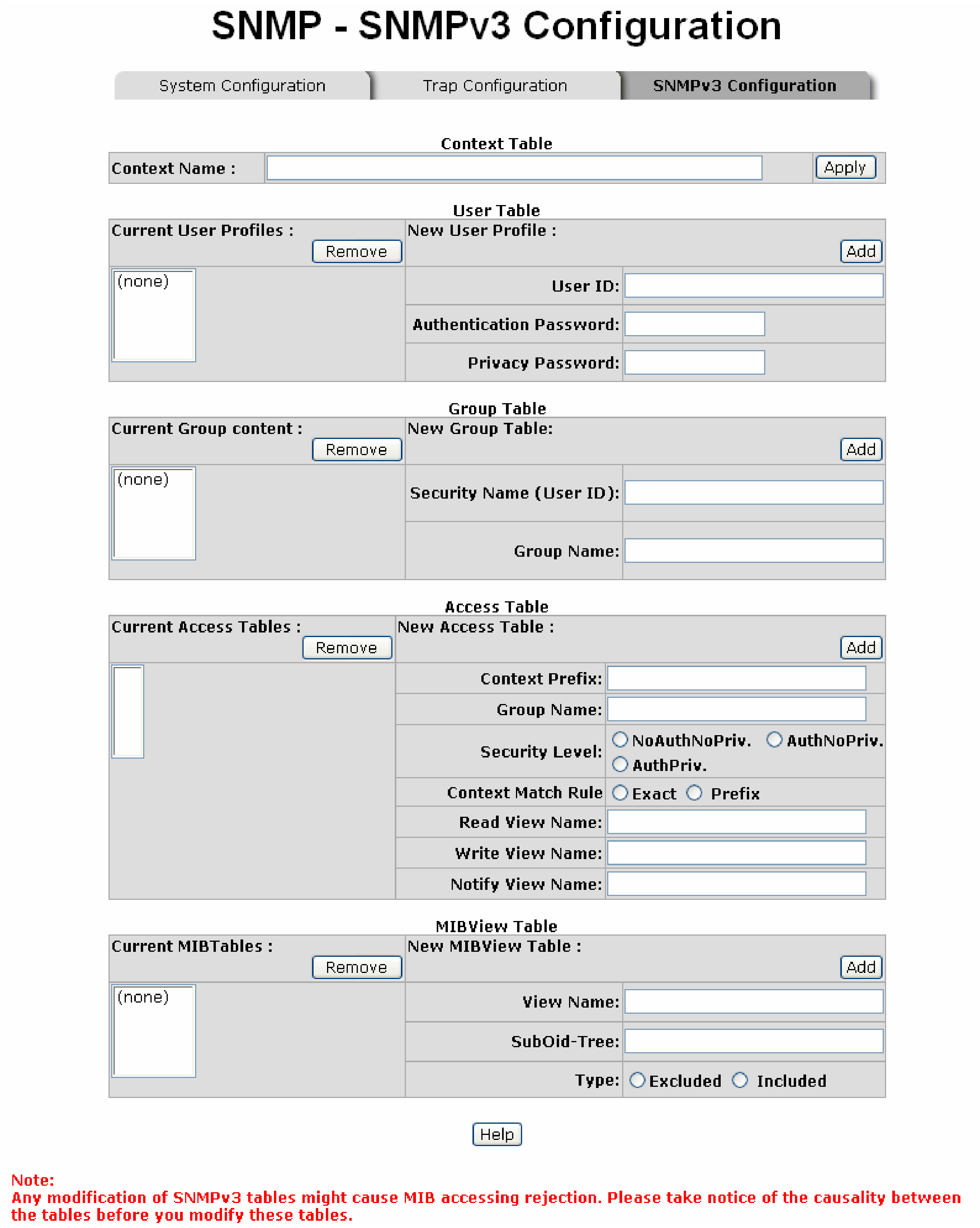
Context Table

Configure SNMP v3 context table. Assign the context name of context table. Click Add to add context name. Click Remove to remove unwanted context name.

User Profile

Configure SNMP v3 user table..

- **User ID:** set up the user name.
- **Authentication Password:** set up the authentication password.
- **Privacy Password:** set up the private password.
- Click Add to add context name.
- Click Remove to remove unwanted context name.



SNMP - SNMPv3 Configuration

Context Table

Context Name :

User Table

Current User Profiles :

(none)

New User Profile :

User ID:

Authentication Password:

Privacy Password:

Group Table

Current Group content :

(none)

New Group Table:

Security Name (User ID):

Group Name:

Access Table

Current Access Tables :

New Access Table :

Context Prefix:

Group Name:

Security Level: ○ NoAuthNoPriv. ○ AuthNoPriv. ○ AuthPriv.

Context Match Rule ○ Exact ○ Prefix

Read View Name:

Write View Name:

Notify View Name:

MIBView Table

Current MIBTables :

(none)

New MIBView Table :

View Name:

SubOid-Tree:

Type: ○ Excluded ○ Included

Note:
Any modification of SNMPv3 tables might cause MIB accessing rejection. Please take notice of the causality between the tables before you modify these tables.

SNMP V3 configuration interface

Group Table

Configure SNMP v3 group table.

- **Security Name (User ID):** assign the user name that you have set up in user table.
- **Group Name:** set up the group name.
- Click Add to add context name.
- Click Remove to remove unwanted context name.

Access Table

Configure SNMP v3 access table.

- **Context Prefix:** set up the context name.
- **Group Name:** set up the group.
- **Security Level:** select the access level.
- **Context Match Rule:** select the context match rule.
- **Read View Name:** set up the read view.
- **Write View Name:** set up the write view.
- **Notify View Name:** set up the notify view.
- Click Add to add context name.
- Click Remove to remove unwanted context name.

MIBview Table

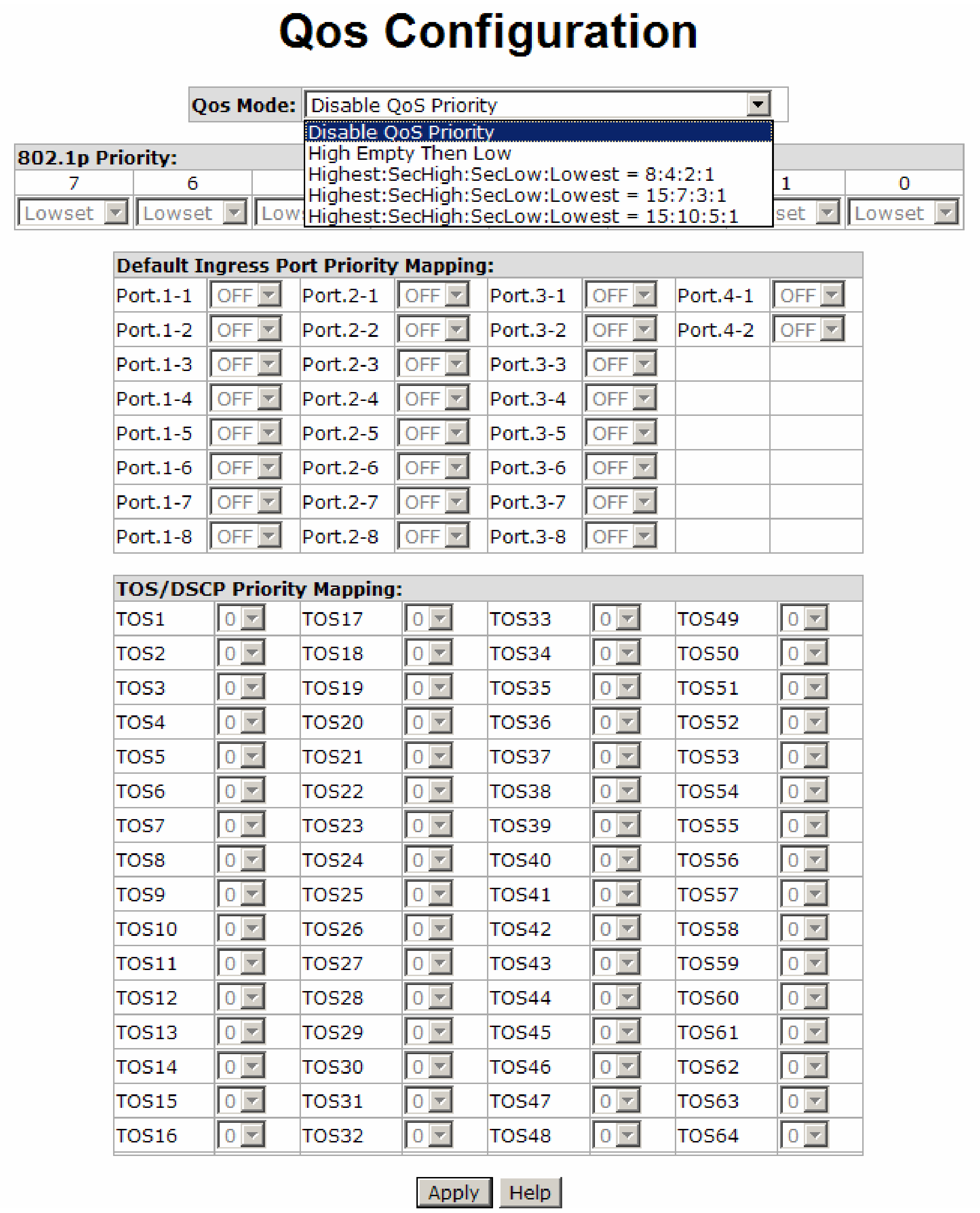
Configure MIB view table.

- **ViewName:** set up the name.
- **Sub-Oid Tree:** fill the Sub OID.
- **Type:** select the type – exclude or included.
- Click Add to add context name.
- Click Remove to remove unwanted context name.

QoS Configuration

You can configure **Qos mode**, **802.1p priority [7-0]** setting, **Static Port Ingress Priority** setting and **TOS** setting.

- **Select the Qos Mode:** Select the Qos policy rule
  - **Disable QoS Priority:** The default status of Qos Priority is disabled.
  - **High Empty Then Low:** When all the high priority packets are empty in queue, low priority packets will be processed then.
  - **Highest:SecHigh:SecLow:Lowest:8:4:2:1:** The switch will follow 8:4:2:1 rate to process priority queue from Highest to lowest queue.
  - Use an 8,4,2,1 weighted fair queuing scheme: The switch will follow 8:4:2:1 rate to process priority queue from High to Lowest queue. For example, as the system processes 1 frames of the lowest queue, 2 frames of the low queue, 4 frames of the middle queue, and 8 frames of the high queue will be processed at the same time in accordance with the 8,4,2,1 policy rule.
  - **Highest:SecHigh:SecLow:Lowest:15:7:3:1:** The process order is in compliance with the transfer rate of 15:7:3:1.
  - **Highest:SecHigh:SecLow:Lowest:15:10:5:1:** The process order is in compliance with the transfer rate of 15:10:5:1.
- **802.1p priority [7-0]:** Configure per priority level.
  - **Priority 0 ~ 7:** each priority has 4 priority levels – Highest, SecHigh, SecLow, and Lowest.
- **Static Port Ingress Priority:** The port ingress level is from 0 to 7.
- **TOS:** the system provides 0~63 TOS priority level. Each level has 8 priorities – 0~7. The default value is “0” priority for each level. When the IP packet is received, the system will check the TOS level value in the IP packet that has received. For example: user set the TOS level 25 is 0. The port 1 is following the TOS priority policy only. When the port 1 packet received, the system will check the TOS value of the received IP packet. If the TOS value of received IP packet is 25(priority = 0), and then the packet priority will have highest priority.
- Click Apply .



Qos Configuration

Qos Mode: Disable QoS Priority

- Disable QoS Priority
- High Empty Then Low
- Highest:SecHigh:SecLow:Lowest = 8:4:2:1
- Highest:SecHigh:SecLow:Lowest = 15:7:3:1
- Highest:SecHigh:SecLow:Lowest = 15:10:5:1

802.1p Priority:

7	6		1	0
Lowset	Lowset	Low	set	Lowset

Default Ingress Port Priority Mapping:

Port.1-1	OFF	Port.2-1	OFF	Port.3-1	OFF	Port.4-1	OFF
Port.1-2	OFF	Port.2-2	OFF	Port.3-2	OFF	Port.4-2	OFF
Port.1-3	OFF	Port.2-3	OFF	Port.3-3	OFF		
Port.1-4	OFF	Port.2-4	OFF	Port.3-4	OFF		
Port.1-5	OFF	Port.2-5	OFF	Port.3-5	OFF		
Port.1-6	OFF	Port.2-6	OFF	Port.3-6	OFF		
Port.1-7	OFF	Port.2-7	OFF	Port.3-7	OFF		
Port.1-8	OFF	Port.2-8	OFF	Port.3-8	OFF		

TOS/DSCP Priority Mapping:

TOS1	0	TOS17	0	TOS33	0	TOS49	0
TOS2	0	TOS18	0	TOS34	0	TOS50	0
TOS3	0	TOS19	0	TOS35	0	TOS51	0
TOS4	0	TOS20	0	TOS36	0	TOS52	0
TOS5	0	TOS21	0	TOS37	0	TOS53	0
TOS6	0	TOS22	0	TOS38	0	TOS54	0
TOS7	0	TOS23	0	TOS39	0	TOS55	0
TOS8	0	TOS24	0	TOS40	0	TOS56	0
TOS9	0	TOS25	0	TOS41	0	TOS57	0
TOS10	0	TOS26	0	TOS42	0	TOS58	0
TOS11	0	TOS27	0	TOS43	0	TOS59	0
TOS12	0	TOS28	0	TOS44	0	TOS60	0
TOS13	0	TOS29	0	TOS45	0	TOS61	0
TOS14	0	TOS30	0	TOS46	0	TOS62	0
TOS15	0	TOS31	0	TOS47	0	TOS63	0
TOS16	0	TOS32	0	TOS48	0	TOS64	0

QoS Configuration interface

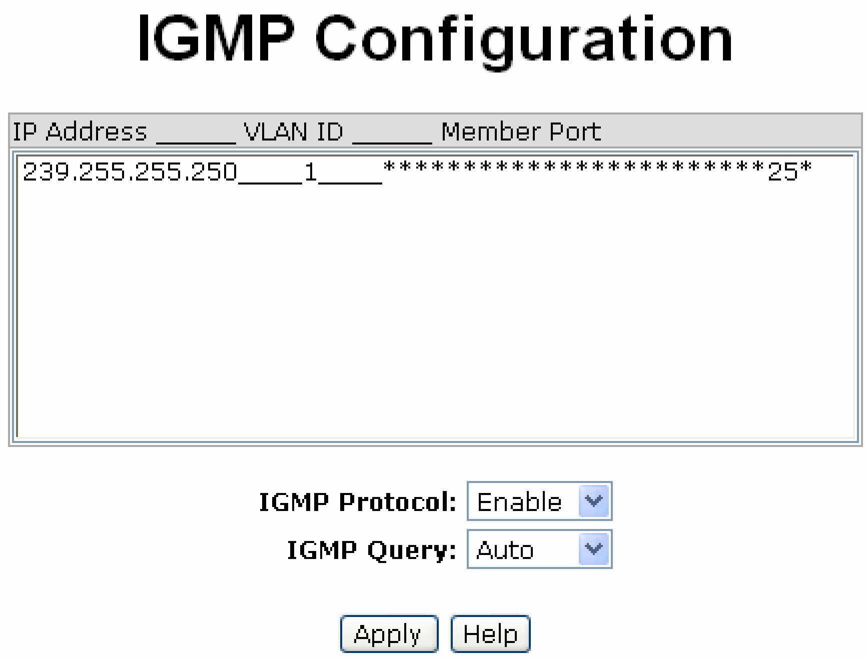
IGMP Configuration

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 have three fundamental types of message as follows:

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 quit being a member of a specific multicast group.

The switch support IP multicast, you can enable IGMP protocol on web management's switch setting advanced page, then display the IGMP snooping information. IP multicast addresses range from 224.0.0.0 through 239.255.255.255.

- **IGMP Protocol:** enable or disable the IGMP protocol.
- **IGMP Query:** Select the IGMP query function as Enable or Auto to set the switch as a querier for IGMP version 2 multicast network.
- Click Apply.



IGMP Configuration

```
IP Address ______ VLAN ID ______ Member Port
239.255.255.250____1____************************25*
```

IGMP Protocol: Enable

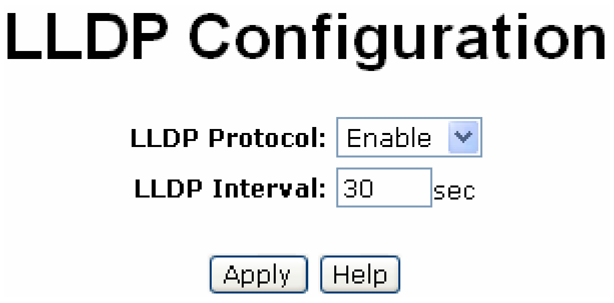
IGMP Query: Auto

IGMP Configuration interface

LLDP

LLDP (Link Layer Discovery Protocol) function allows the switch to advertise its information to other nodes on the network and store the information it discovers.

- **LLDP Protocol:** Disable or enable LLDP function.
- **LLDP Interval:** Set the interval of learning the information time in second.
- Click Apply.



LLDP Configuration

LLDP Protocol: Enable

LLDP Interval: 30 sec

LLDP Configuration interface

Security

In this section, you can configure 802.1x and MAC address table.

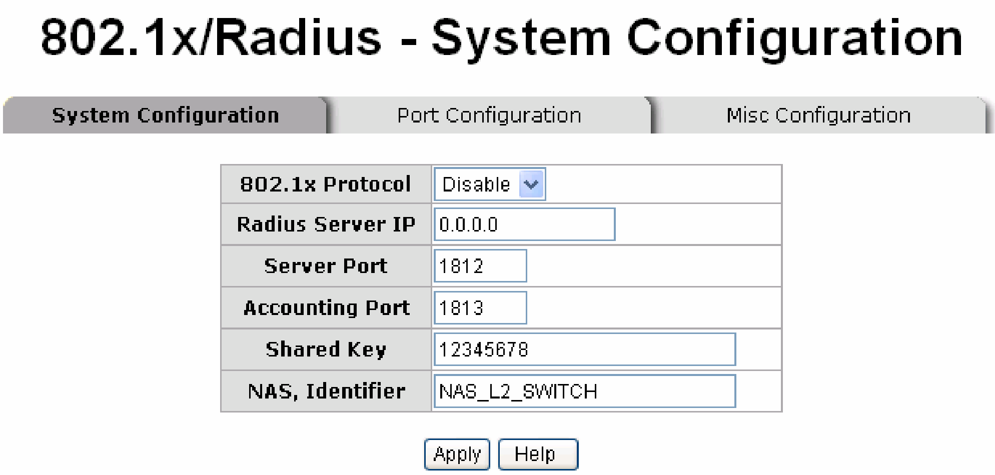
802.1X/Radius Configuration

802.1x is an IEEE authentication specification that allows a client to connect to a wireless access point or wired switch but prevents the client from gaining access to the Internet until it provides authority, like a user name and password that are verified by a separate server.

System Configuration

After enabling the IEEE 802.1X function, you can configure the parameters of this function.

1. **IEEE 802.1x Protocol:** .enable or disable 802.1x protocol.
2. **Radius Server IP:** set the Radius Server IP address.
3. **Server Port:** set the UDP destination port for authentication requests to the specified Radius Server.
4. **Accounting Port:** set the UDP destination port for accounting requests to the specified Radius Server.
5. **Shared Key:** set an encryption key for using during authentication sessions with the specified radius server. This key must match the encryption key used on the Radius Server.
6. **NAS, Identifier:** set the identifier for the radius client.
7. Click Apply .



802.1x/Radius - System Configuration

802.1x Protocol	Disable
Radius Server IP	0.0.0.0
Server Port	1812
Accounting Port	1813
Shared Key	12345678
NAS, Identifier	NAS_L2_SWITCH

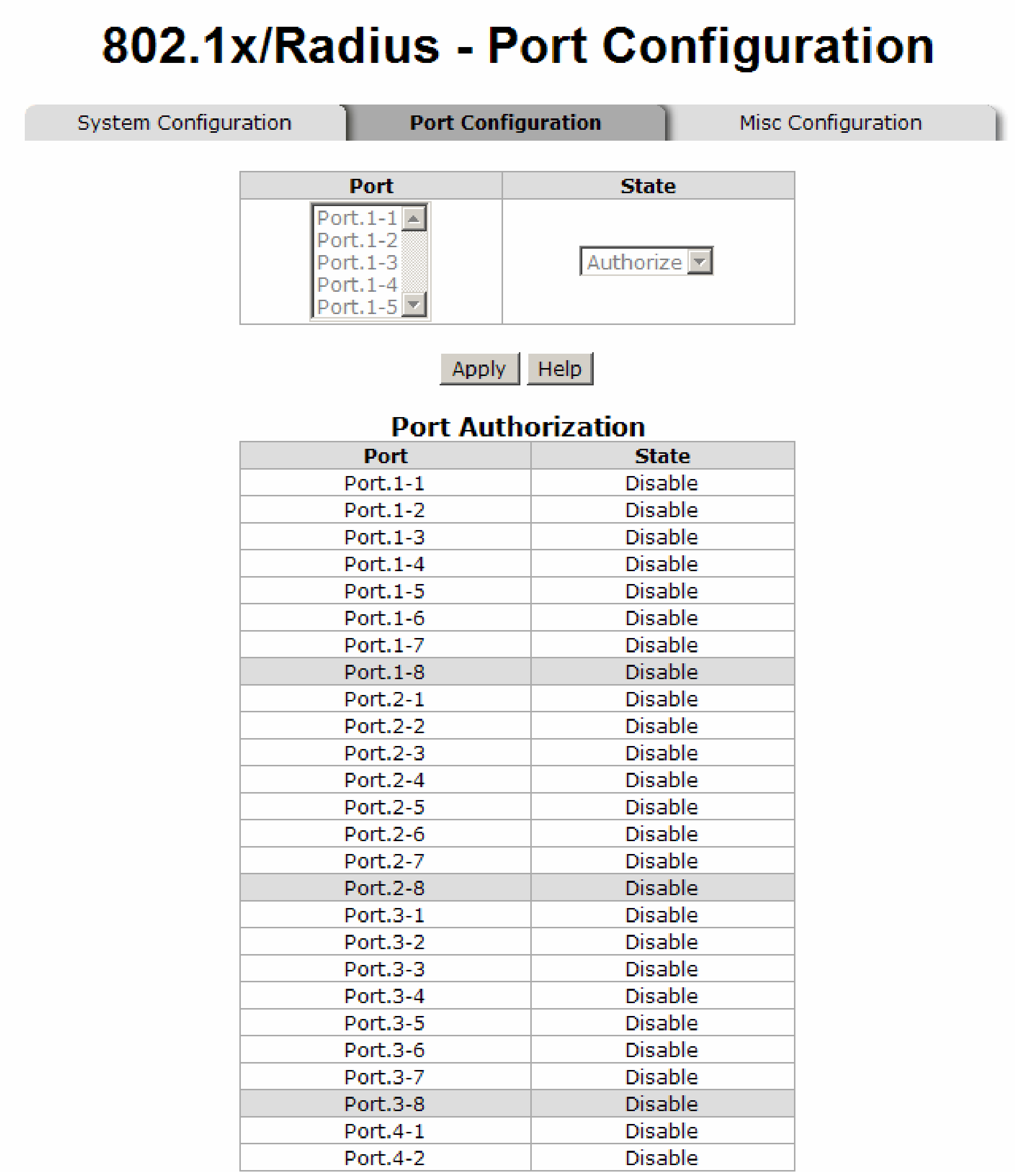
802.1x System Configuration interface

802.1x Port Configuration

You can configure 802.1x authentication state for each port. The State provides

Disable, Accept, Reject and Authorize. Use “**Space**” key change the state value.

- **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 Apply.



802.1x/Radius - Port Configuration

Port	State
Port.1-1 Port.1-2 Port.1-3 Port.1-4 Port.1-5	Authorize

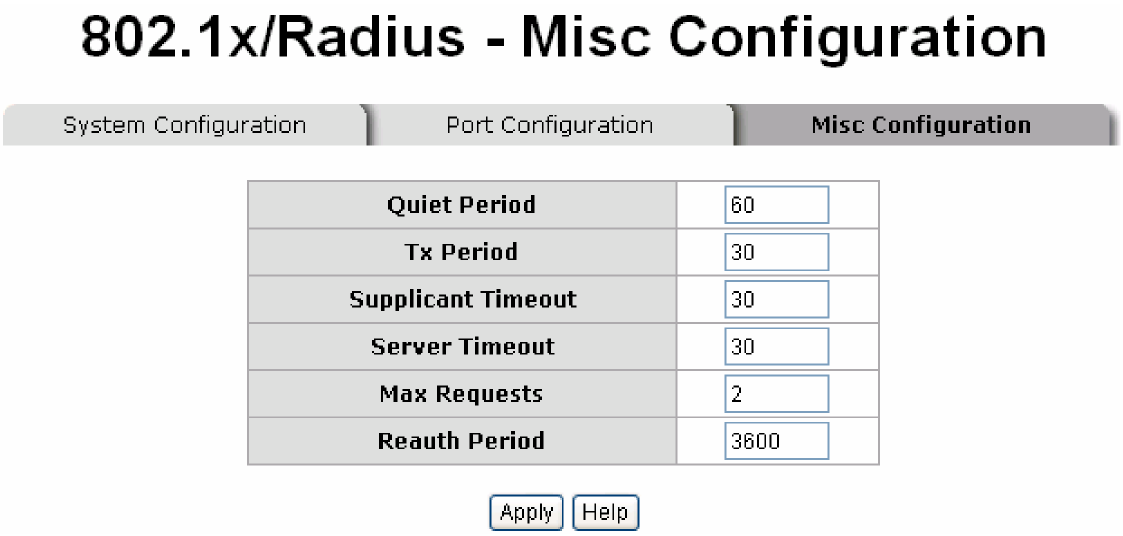
Port Authorization

Port	State
Port.1-1	Disable
Port.1-2	Disable
Port.1-3	Disable
Port.1-4	Disable
Port.1-5	Disable
Port.1-6	Disable
Port.1-7	Disable
Port.1-8	Disable
Port.2-1	Disable
Port.2-2	Disable
Port.2-3	Disable
Port.2-4	Disable
Port.2-5	Disable
Port.2-6	Disable
Port.2-7	Disable
Port.2-8	Disable
Port.3-1	Disable
Port.3-2	Disable
Port.3-3	Disable
Port.3-4	Disable
Port.3-5	Disable
Port.3-6	Disable
Port.3-7	Disable
Port.3-8	Disable
Port.4-1	Disable
Port.4-2	Disable

802.1x Per Port Setting interface

Misc Configuration

1. **Quiet Period:** set the period during which the port doesn't try to acquire a supplicant.
2. **TX Period:** set the period the port wait for retransmit next EAPOL PDU during an authentication session.
3. **Supplicant Timeout:** set the period of time the switch waits for a supplicant response to an EAP request.
4. **Server Timeout:** set the period of time the switch waits for a server response to an authentication request.
5. **Max Requests:** set the number of authentication that must time-out before authentication fails and the authentication session ends.
6. **Reauth period:** set the period of time after which clients connected must be re-authenticated.
7. Click Apply.



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

802.1x Misc Configuration interface

MAC Address Table

Use the MAC address table to ensure the port security.

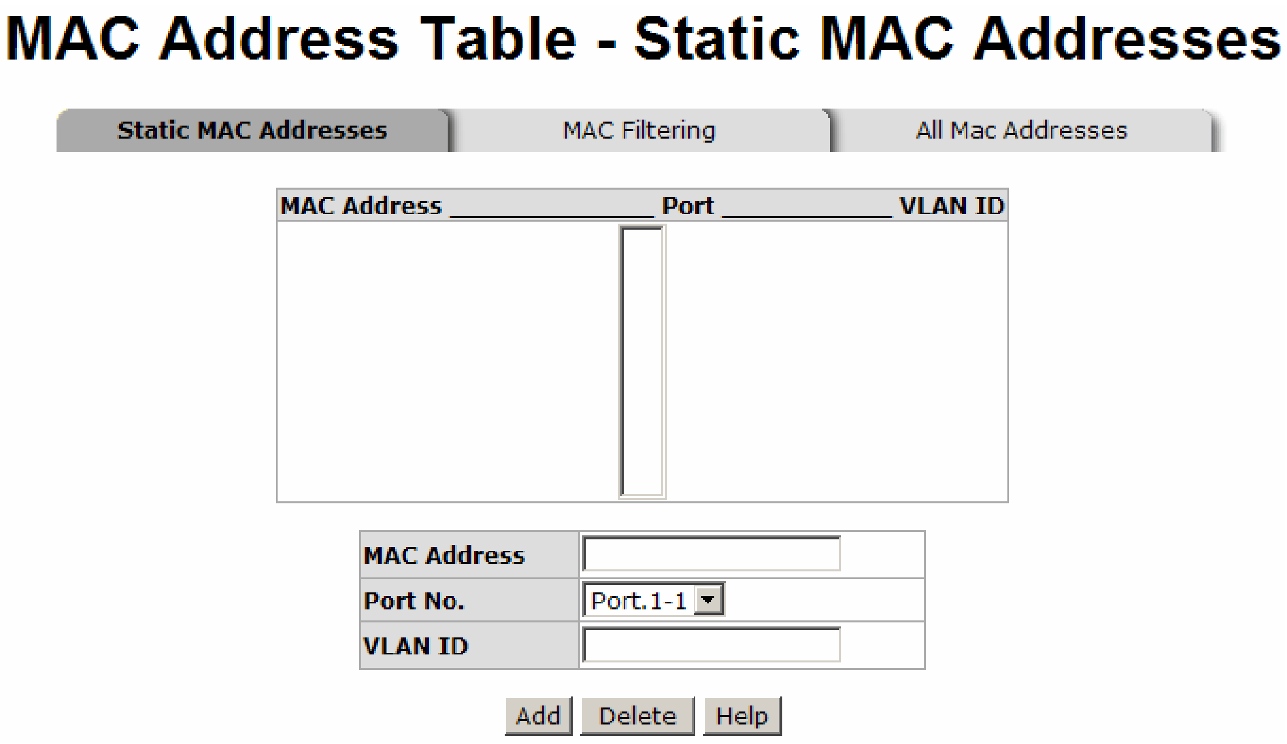
Static MAC Address

You can add a static MAC address; it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address when the disconnected or powered-off device is active on the network again. You can add / modify / delete a static MAC address.

■ Add the Static MAC Address

You can add static MAC address in switch MAC table.

1. **MAC Address:** Enter the MAC address of the port that should permanently forward traffic, regardless of the device network activity.
2. **VID:** Type in VID of the MAC address.
3. **Port No.:** pull down the selection menu to select the port number.
4. Click Add .
5. If you want to delete the MAC address from filtering table, select the MAC address and click Delete .



MAC Address Table - Static MAC Addresses

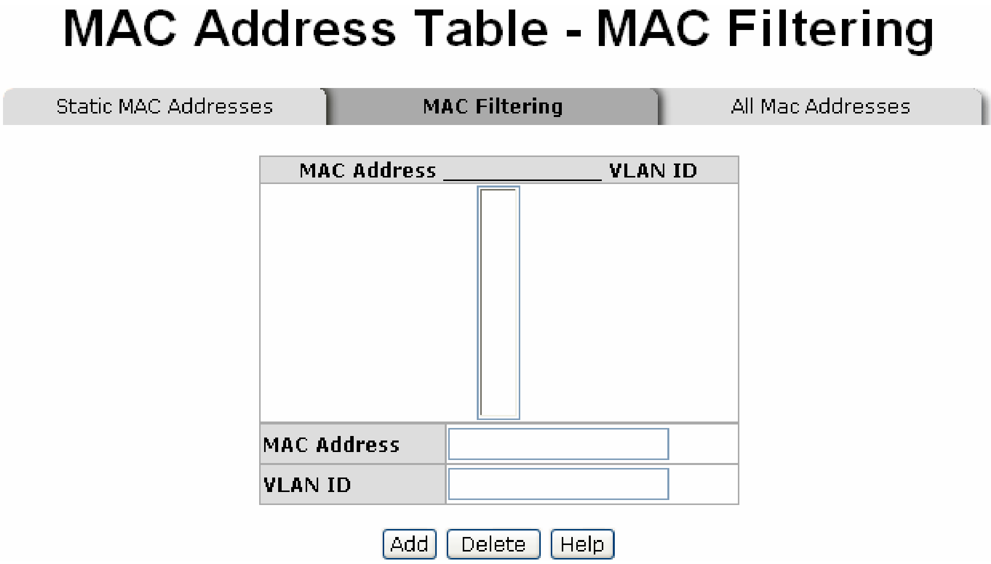
MAC Address	Port	VLAN ID

MAC Address	
Port No.	Port.1-1
VLAN ID	

Static MAC Addresses interface

MAC Filtering

By filtering MAC address, the switch can easily filter pre-configure MAC address and reduce the un-safety. You can add and delete filtering MAC address.



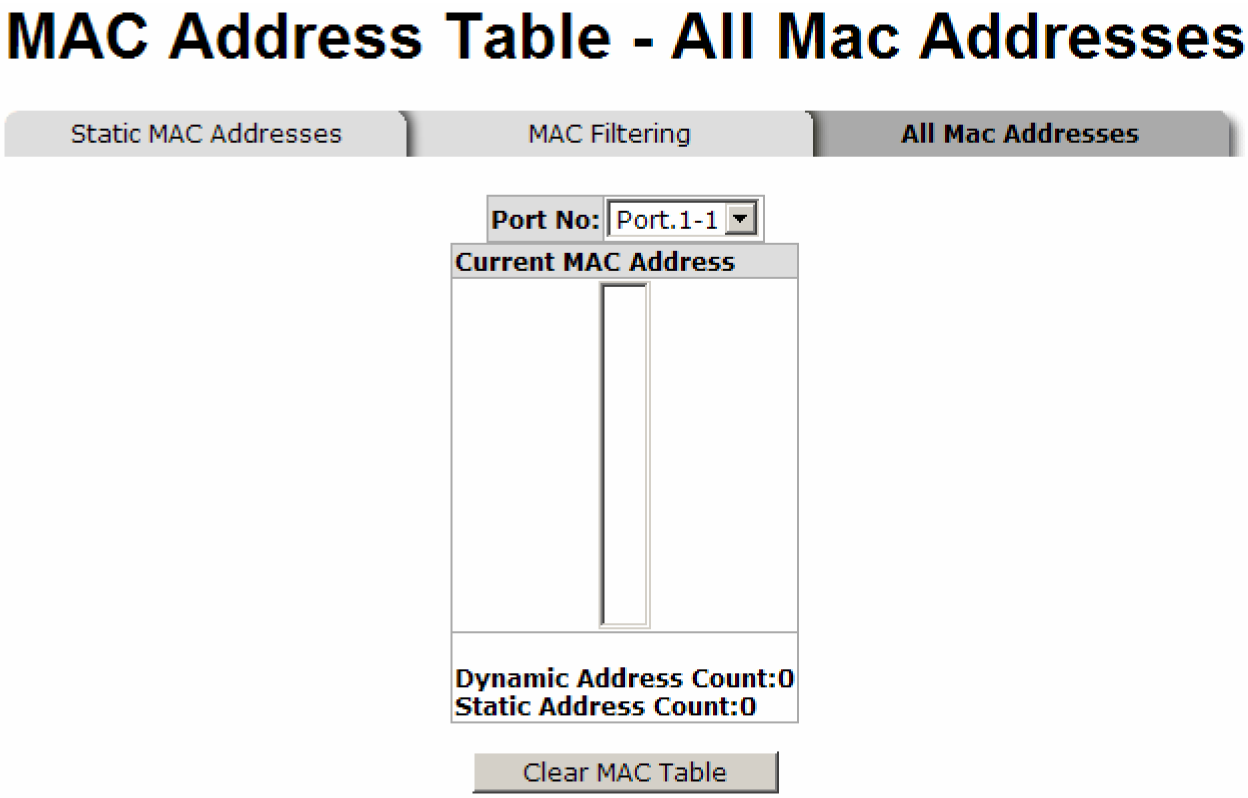
MAC Filtering interface

1. **MAC Address:** Enter the MAC address that you want to filter.
2. **VID:** Type in the VID of the MAC address.
3. Click Add.
4. If you want to delete the MAC address from filtering table, select the MAC address and click Delete.

All MAC Addresses

You can view the port that connected device's MAC address and related devices' MAC address.

1. Select the port.
2. The selected port of static MAC address information will display.
3. Click Clear MAC Table to clear the current port static MAC address information on screen.



MAC Address Table - All Mac Addresses

Port No: Port.1-1

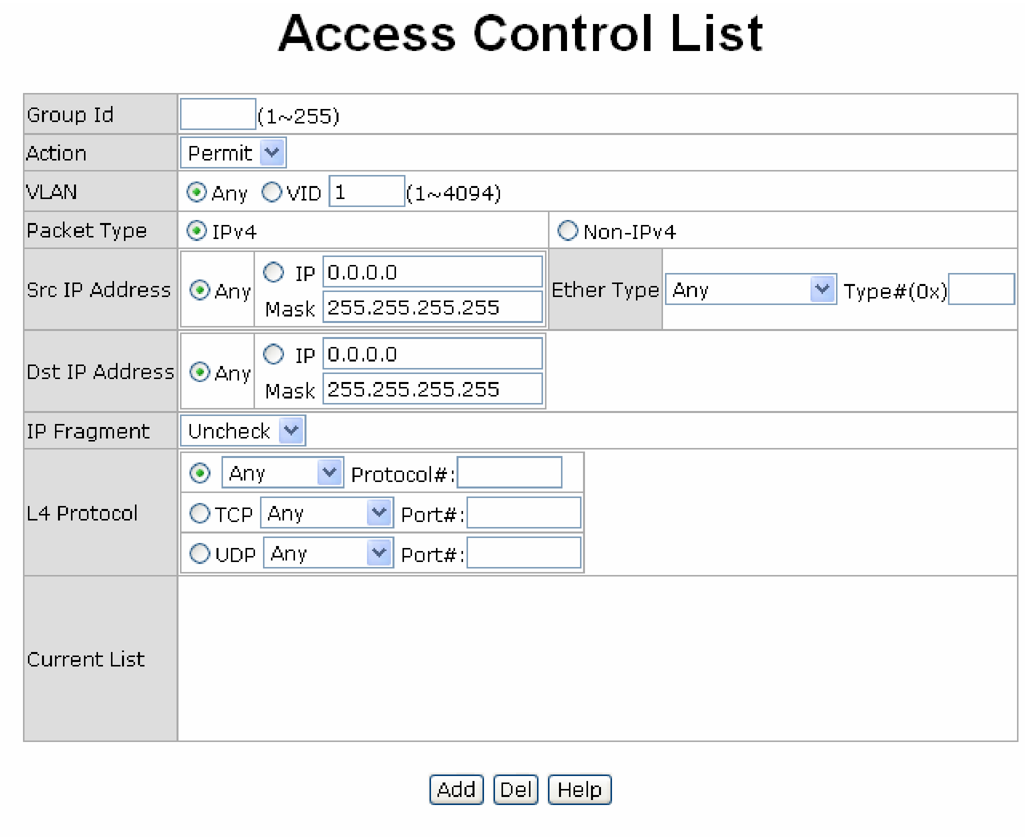
Current MAC Address

Dynamic Address Count:0
Static Address Count:0

All MAC Address interface

Access Control List

- **Group Id:** Type in the Group ID from 1 to 255.
- **Action:** Permit and Deny.
- **VLAN:** Select any or a particular VID.
- **Packet type:** Select packet type – IPv4 or Non-IPv4
- **Src IP Address:** Select any or assign an IP address with Subnet Mask for source IP address.
- **Dst IP Address:** Select any or assign an IP address with Subnet Mask for destination IP address.
- **Ether Type:** Pull down the select menu for Any, ARP or IPX.
- **IP Fragment:** Set this item as to whether the fragment is checked or not.
- **L4 Protocol:** Assign the L4 protocol from among ICMP(1), IGMP(2), TCP or UDP.
- **Current List:** Display the current list information.



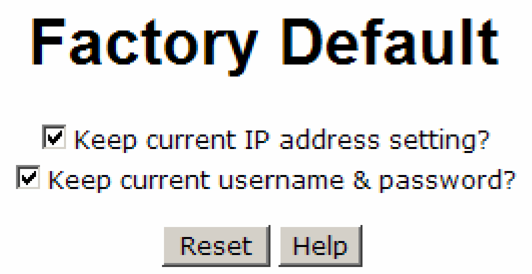
Access Control List

Group Id	(1~255)		
Action	Permit		
VLAN	● Any ○ VID 1 (1~4094)		
Packet Type	● IPv4	○ Non-IPv4	
Src IP Address	● Any ○ IP 0.0.0.0 Mask 255.255.255.255	Ether Type	Any Type#(0x)
Dst IP Address	● Any ○ IP 0.0.0.0 Mask 255.255.255.255		
IP Fragment	Uncheck		
L4 Protocol	● Any Protocol#: ○ TCP Any Port#: ○ UDP Any Port#:		
Current List			

Access Control List interface

Factory Default

Reset switch to default configuration. Click Reset to reset all configurations to the default value.



Factory Default

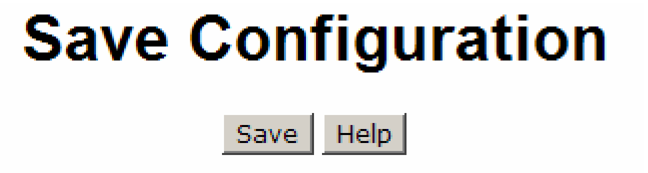
☑ Keep current IP address setting?

☑ Keep current username & password?

Factory Default interface

Save Configuration

Save all configurations that you have made in the system. To ensure the all configuration will be saved. Click Save to save the all configuration to the flash memory.

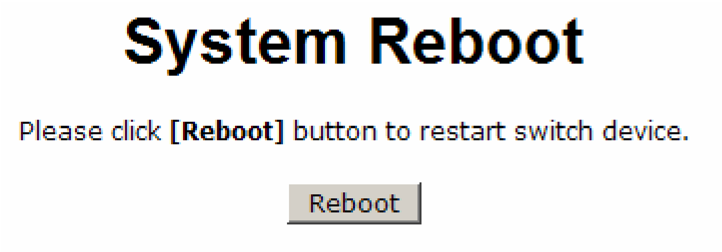


Save Configuration

Save Configuration interface

System Reboot

Reboot the switch in software reset. Click Reboot to reboot the system.



System Reboot

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

System Reboot interface

6. Troubleshooting

This section is intended to help you solve the most common problems on the 3-slot intelligent chassis switch.

Incorrect connections

The switch port can auto-detect straight or crossover cable when you link switch with other Ethernet device. For the RJ-45 connector should use correct UTP or STP cable, 10/100Mbps port use 2-pair twisted cable and Gigabit 1000T port use 4-pair twisted cable. If the RJ-45 connector is not correct pin on right position then the link will fail. For fiber connection, please notice that fiber cable mode and fiber module should be match.

■ 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 a different cable.

■ Non-standard cables

Non-standard and miss-wired cables may cause numerous network collisions and other network problem, and can seriously impair network performance. A category 5 cable tester is a recommended tool for every 100Base-T 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 (hubs) between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two ends 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.

Diagnosing LED Indicators

The Switch can be easily monitored through panel indicators to assist in identifying problems, which describes common problems you may encounter and where you can find possible solutions.

IF the power indicator does 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 shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 cable for 10Mbps connections, 100Ω Category 5 cable for 100Mbps or 100Ω Category 5e cable for 1000Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet). The length does not exceed 100 meters.

7. Technical Specification

This section provides the specifications of the 3-slot intelligent chassis switch, and the following table lists these specifications.

Standard	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX/100BASE-FX IEEE802.3z Gigabit SX/LX IEE802.3ab 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 protocol IEEE802.1p Class of service IEEE802.1q VLAN Tagging IEEE802.1x User authentication IEEE802.1ab LLDP**
Switch architecture	Store and forward switch architecture.
Back plane	8.8Gbps
LED Indicators	System Power(Green) 8 10/100TX module: Link/Activity (Green), Full duplex/collision (Yellow) 8 100Base-FX module: Link (Green)/Activity (Green Blinking) Gigabit Copper: Link/Activity (Green), 1000Mbps (Green), 100Mbps (Green), Full duplex/collision (Yellow) MINI GBIC: Link/Activity(Green), 1000Mbps (Green)

Connector	RS-232 console: Female DB-9 8-port 10/100TX module: RJ-45 8-port 100FX(Multi /Single Mode) module: SC 2 Gigabit Copper + 2 MINI GBIC Combo: 2 x RJ-45 + 2 x 3.3v MINI GBIC [Multi-Mode] power budget : Min: 9dB , MAX: 19dB. [Single-Mode] power budget : Min: 19dB , MAX: 26dB.
Expansion module	■ 8 port 10/100TX module with RJ-45 connector ■ 8 port 100Mbps multi mode fiber module with SC connector ■ 8 port 100Mbps single mode fiber module with SC connector
MAC address	8K MAC address table with Auto learning function
Packet Buffer	4Mbits for packet buffer
Flash ROM	4Mbytes
DRAM	16Mbytes
Jumbo Frame	9022bytes (only for Gigabit ports)
Power Consumption	50Watts (Maximum)
Dimensions	440mm (W) x 280mm (D) x 44mm (H)
Power Supply	100~240V$_{AC}$, 50 /60Hz, 0.8A (maximum)
Ventilation	2 x DC cooling fan with auto-detect function
Operating temperature	-0℃~45℃, 5%~95%RH

Storage temperature	-40℃~70℃, 5% ~ 95% RH
EMI	FCC Class A, CE
Safety	UL, cUL, CE/EN60950-1

** Optional