KTI NETWORKS

Managed Switch
User's Manual

KS-2601

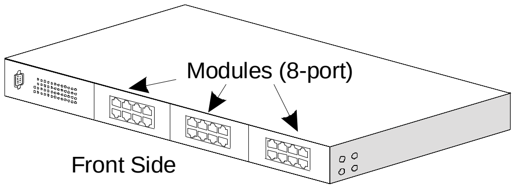
DOC.061214

We make no warranties with respect to this documentation and disclaim any implied warranties of merchantability, quality, or fitness for any particular purpose. The information in this document is subject to change without notice. We reserve the right to make revisions to this publication without obligation to notify any person or entity of any such changes.

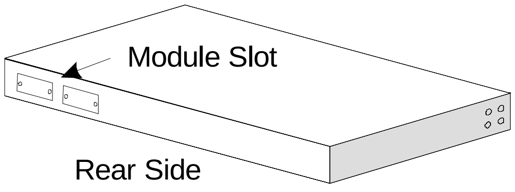
About this manual …

This manual is a general user’s manual for the managed switch:

24+2G fully-modularized model
It has three 8-port module slots at front panel. These 8-port modules can be 8* 10/100M TX ports or 8* 100M FX ports. It has flexible design for hardware configuration.



There are two Gigabit module slots at rear panel for gigabit extension.



Contents

1. Introduction

This managed switch is a Layer2 management switch with lots of advanced network functions including VLAN, trunking, spanning tree, mirror port, IP multicast, rate limit and port configuration. It supports console, telnet, http and SNMP interface for switch management. IEEE 802.1x is supported for port security application. These functions can meet most of the management request for current network.

1.1 Package Contents

- One Intelligent Switch
- One AC power cord (* for AC power model)
- One console cable
- Two rack-mount kits and screws (* for 24+2G model only)
- This user's manual

2. Where To Place the Managed Switch

This switch can be placed on a flat surface (your desk, shelf or table).
Place the Intelligent Switch at a location with these connection considerations in mind:

- The switch configuration does not break the rules as specified in Section 3.
- The switch is accessible and cables can be connected easily to it.
- The cables connected to the switch are away from sources of electrical interference such as radio, computer monitor, and light fixtures.
- There is sufficient space surrounding the switch to allow for proper ventilation.

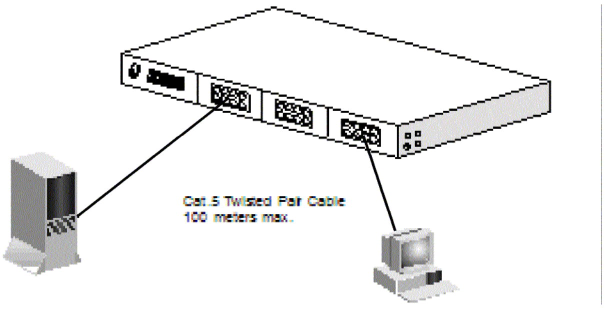
You can also install the 24+2G models Intelligent switch on a 19" rack with the rack-mount kits.

3. Configure Network Connection

3.1 Connecting Devices to the Intelligent Switch

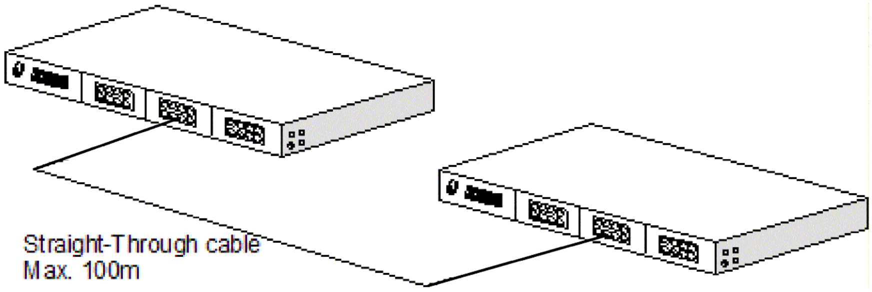
[Connection Guidelines:]

- For 10BaseT connection: Category 3 or 5 twisted-pair Ethernet cable
- For 100BaseTX connection: Category 5 twisted-pair Ethernet cable
- For 1000BaseTX connection: Category 5e or 6 twisted-pair Ethernet cable
- For UTP cable connection, always limit the cable distance to 100 meters (328 ft) as defined by IEEE specification
- If your switch has 100BaseFX/1000BaseSX/1000BaseLX ports, you can connect long distance fiber optic cable to the switch.
- Because this switch supports **Auto MDI/MDI-X** detection on each UTP port, you can use normal straight through cable for both workstation connection and hub/switch cascading.



3.2 Connecting to Another Ethernet Switch/Hub

This Intelligent Switch can be connected to existing 10Mbps / 100Mbps / 1000Mbps hubs/switches. Because all UTP ports on the Intelligent Switch support Auto MDI/MDI-X function, you can connect from any UTP port of the Intelligent Switch to the MDI or MDI-X port of another hub/switch with Straight Through or Crossover cables. If the switches have fiber-optic ports, you can cascade them with fiber optic cable.

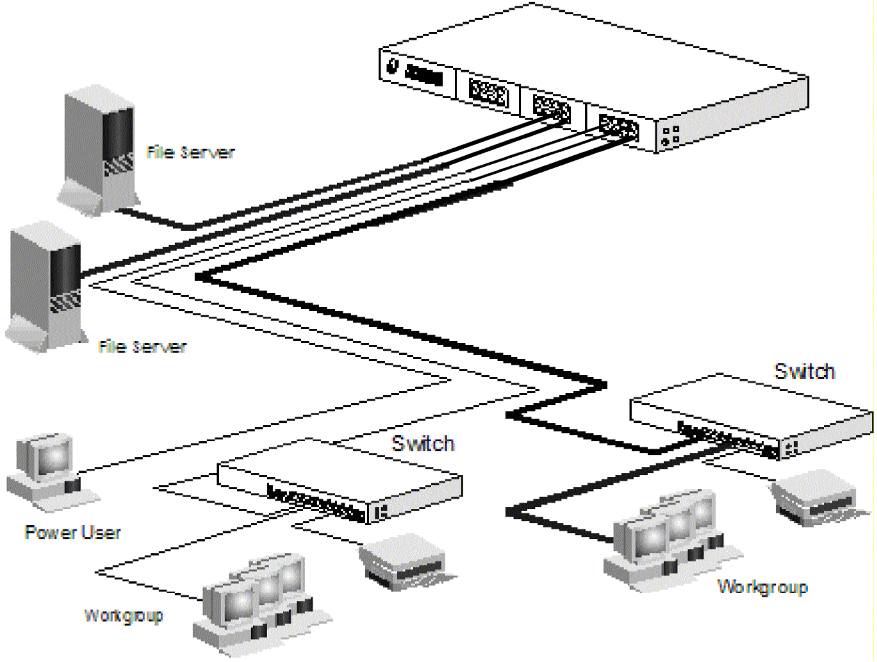


3.3 Application

A switch can be used to overcome the hub-to-hub connectivity limitations as well as improve overall network performance. Switches make intelligent decisions about where to send network traffic based on the destination address of the packet. As a result, the switch can significantly reduce unnecessary traffic.

The example below demonstrates the switch ability to segment the network. The number of nodes on each segment is reduced thereby minimizing network contention (collisions) and boosting the available bandwidth per port.

With management function of the switch, network administrator is easy to monitor network status and configure for different applications.



4. Add/Remove Module

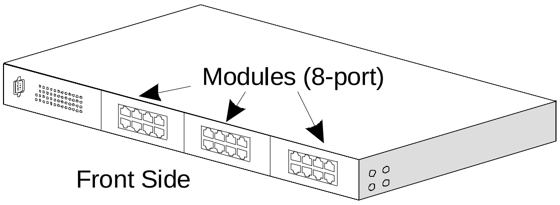
4.1 Add/Remove Module

[For 24+2G Fully Modulized Model]

This model supports three 8-port 10/100Mbps TX/FX modules at front panel and two 1-port gigabit TX/SX/LX modules at rear panel.

<u>Note</u>: This switch does not support hot-swap function. Turn off the switch first before adding or removing module. Otherwise, the switch and module could be damaged.

-- Modules at Front Side --



[Adding Modules to the Switch at Front Panel]

1. Power OFF the switch first.
2. If the switch is rack-mounted, you have to remove the switch from rack first.
3. Loosen the screws of the cover on the module slot with screwdriver. Two at the front side, one at bottom side.
4. Remove the cover of the module slot.
5. Follow the rails on both sides of the module slot to slide in the module slowly.
6. Push the module firmly to make the module connecting well with the connector in the switch.
7. Drive the screws to fix the module to the switch firmly with screwdriver. Two at the front side, one at bottom side.
8. If the switch is rack-mounted, you can put the switch back to rack.
9. Power ON the switch.
10. If 100FX module is added, please configure these FX ports to *100/Full* with “set port” command.
11. Connect network cables to the connectors on the module. If the connected devices are working, the Link/Act LED will be ON.

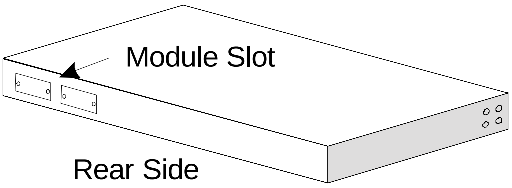
<u>Note</u>: We suggest you to keep these removed module slot covers. It can be use when these modules are removed in the future.

[Remove Modules from the Switch at Front Panel]

1. Power OFF the switch first.

2. If the switch is rack-mounted, you have to remove the switch from rack first.
3. Loosen the screws of the module with screwdriver. Two at the front side, one at bottom side.
4. Remove the module slowly from the module slot.
5. Put on the module cover and fix it to the switch by driving its screws with screwdriver. Two at the front side, one at bottom side.
6. If the switch is rack-mounted, you can put the switch back to rack.
7. Power ON the switch.

-- Modules at Rear Side --



[Adding Module to the Switch at Rear Panel]

1. Power OFF the switch first.
2. Loosen the screws of the cover on the module slot.
3. Remove the cover of the module slot.
4. Follow the rails on both sides of the module slot to slide in the module slowly.
5. Push the module firmly to make the module connecting well with the connector in the switch.
6. Drive the screws to fix the module to the switch firmly.
7. Power ON the switch.
8. Connect network cables to the connectors on the module. If the connected devices are working, the Link/Act LED will be ON.

Note: We suggest you to keep these removed module slot covers. It can be use when these modules are removed in the future.

[Remove Module from the Switch at Rear Panel]

1. Power OFF the switch first.
2. Loosen the screws of the module.
3. Remove the module slowly from the module slot.
4. Put on the module cover and fix it to the switch by driving its screws.
5. Power ON the switch.

5. LEDs Conditions Definition

5.1 LEDs Defined

The LEDs provide useful information about the switch and the status of all individual ports.

[For 24+2G fully modulized model]

LED	STATUS	CONDITION
Power	ON	Switch is receiving power.
Link / Act	ON	Port has established a valid link.
	Flashing	Data packets being received or sent.
FDX / Col	ON	The connection is Full Duplex.
	OFF	The connection is Half Duplex.
	Flashing	Collisions happen for half duplex connection

6. Manage / Configure the switch

6.1 Introduction of the management functions

This switch is a L2 management switch. It supports in-band management function from SNMP, Http and Telnet interface. It also supports out-band management function from RS232 console interface. Besides, it supports network configuration functions, like VLAN, Trunking, Port Mirror, QoS, spanning tree and software backup/update. Users can configure these functions for different network applications. The following is a brief introduction about these functions before the detail operation sections.

1. VLAN (Virtual LAN)

   VLAN can divide the switch to several broadcast domains to prevent network traffic between different user groups. This switch supports 802.1Q tag-based VLAN and port-based VLAN. Users in the same VLAN can transfer data to each other. The network traffic will be blocked if they are in different VLAN.

2. Trunk

   If two switches are cascaded together, the bottleneck will happen at the cascading connection. If more cables could be used for the cascading connection, it will reduce the bottleneck problem. In normal case, switches will become unstable because of traffic looping when more than one cable is connected between them. If the switches support trunk function, they can treat these cables as one connection between them. The traffic looping will not happen between these cables and the switches will work stable with bigger bandwidth between them.

   This switch supports trunk function and users can configure it with the following steps.

   a. Enable trunk function.

   b. Assign ports to a trunk. For example, assign Port 1,2,3 for Trunk 1.

   Notes: About redundant application

   The trunk connection supports redundant function. If any trunk cable is broken, the traffic going through that cable will be transferred to another trunk cable automatically. For example, if user port Port 6 is assigned to Port 1 in a Trunk and Port 1 connection breaks, Port 2 will take over the traffic for Port 6 automatically. (It could be used for redundant application.)

3. Spanning Tree Protocol

   Spanning tree is a protocol to prevent network loop in network topology. If network loop happens, it will cause switches in the network unstable because more and more traffic will loop in the network. If network loop happens, spanning tree protocol will block one connection in the loop automatically. But it will also cause a 30 seconds delay if any network connection is changed because of the network topology detection operation of the protocol.

   Because there could be more than one switch in the network, users can configure this function for their network spanning tree application.

4. Port Mirror

This switch operates in store-and-forward algorithm so it is not possible to monitor network traffic from another connection port. But the port mirror function could copy packets from some monitored port to another port for network monitor. This switch also provides DA/SA filtering function for monitoring the traffic to/from some user.

5. QoS

For Quality of Service request in a network, packets could be classified to different forwarding priorities. For real-time network traffic (like video, audio), it needs higher priority than normal network traffic. With the definition of packet priority, it could have 8 priority levels (from 0 to 7). This switch supports four priority level queues on each port. It could be configured for port-based or 802.1P tagged based. User can define the mapping (0 – 7) to the four priority queues.

6. Static Mac ID in ARL table

The switch can learn the Mac address from user's packets and keep these Mac address in the ARL table for store-and-forward table lookup operation. But these Mac addresses will be deleted from ARL table after some time when users do not send any packets to the switch. This operation is called aging and the time is called aging time. It is 5 minutes normally (it could be changed by users.) If users want to keep a Mac address always in ARL table for some port, they can assign the Mac address to ARL table. These Mac ID are called Static Mac address. This switch supports static Mac address assignment. *The static Mac address assignment will also limit the Mac address could be used or rejected on the assigned port only with the port security configuration function.* For example, assigning "00-00-01-11-22-33" to Port 5 will always keep this Mac ID alive on Port 5 but also limit this Mac address could work on Port 5 only or rejected from Port 5 - depending on the setting of its port security mode.

Note: About Static Mac Address Filter-in (port binding) function

There is a "Mac Security Configuration" function for port security mode. If it is set to Accept mode, only these static Mac addresses can access network through the assigned port. The other Mac addresses will be forbidden for network access through that port. This function can be used for port binding security application. Please refer to Section 6.2 / 6.3 for the details of the Mac address filter-in operation of the switch.

7. IEEE 802.1x Port Security Function

If the 802.1x function is enabled, the switch will act as an authenticator for users accessing network through the switch. It will need a RADIUS server for the authentication function. Users will be asked for username and password before network access. If the RADIUS server authenticates it, the switch will enable the port for network access. This function is very useful for network security application to prevent illegal users access network through the switch. This switch supports MD5, TLS and PEAP authentication types.

8. Rate Control

This function can limit the burst traffic rate for physical ports. The traffic could be ingress traffic or egress traffic. This function can protect the network bandwidth usage by different users.

9. IP Multicast with IGMP Snooping

IP multicast function can forward packets to a group of users connected on different ports. The user group is learned by the switch from the packets from IGMP active router with IGMP snooping function. It is often used for video applications.

10. Protected Port

This function can protect a port from communicating with some other ports. Even these ports are in the same VLAN. This protection is still valid. For example, Port 1,2,3,4 are marked as protected ports. Port 1,2,3,4 cannot communicate with each other, but they can communicate with the other ports. This is for port isolation application though they are in the same VLAN.

11. Software Backup/Update

This switch supports backup and update functions for its internal software and its network configuration. It could be done in three ways.

a. From console when booting: doing by Xmodem protocol and by terminal program for boot code and run-time code updating.

b. From console/Telnet when running: doing by TFTP protocol and it will need a TFTP server in network for run-time code and configuration backup/update.

c. From web browser: doing by http protocol and by web browser for run-time code and configuration backup/update.

6.2 Management with Console Connection

Please follow the steps to complete the console hardware connection first.

1. Connect from the console port of the switch to COM port of PC with the console cable.
2. Start the terminal program. Create a new connection and select COM port of PC used for the console. Set the configuration of the terminal as **[38400,8,N,1]**. (With Windows, you can find the terminal program in [Start] -> [Programs] -> [Accessory Programs] -> [Communication] -> [Terminal]. If you cannot find it, please install it from your Windows Installation Disk. Please refer to your Windows user manual for the installation.)
3. Power on the switch.

If everything is correct, the booting screen will appear in the terminal program when the switch is powered on. It will stop at the following screen after some initializing messages.

```
-----------------------------------------------------------------------------------------------------------
Booting Program Version 1.05.00, built at 14:44:03, Jul 29 2005

RAM: 0x00000000-0x00800000, 0x0000cc78-0x007f3000 available
FLASH: 0x05800000 - 0x05900000, 16 blocks of 0x00010000 bytes each.
==> enter ^C to abort booting within 3 seconds ......

Start to run system initialization task

[System Configuration]
Company Name     :
Model Name       : Intelligent Switch
MAC Address      : 00:00:01:23:45:67
Firmware Version : 3.02.02 < Mar 13 2006 15:13:36 >


Press <ENTER> key to start.
UCD-SNMP version 4.1.2
-----------------------------------------------------------------------------------------------------------
```

Press Enter key, user name and password will be requested. The default user name and password is "**admin**" / ”**123456**”.
After login the switch, a prompt will be shown. Because this switch supports command-line operation for console interface, you can press “**?**” or “**help**” to check the command list first.

Note: Management with **Telnet** connection has the same interface as console connection.

With **help** command, you can find the command list as follow.

```
----------------------------------------------------------------------------------------------------
>help
[Command List]
?.............. Help commands
help........... Help commands
set............ Set commands
show........... Show commands
default........ Restore to factory default setting
del............ Del commands
find........... Find commands
whoami......... Display current login user name
reset.......... Reset system
ping........... Ping a specified host with IP address
backup......... backup run-time firmware or configuration file
upgrade........ Upgrade run-time firmware or configuration file
exit........... Logout
logout......... Logout
----------------------------------------------------------------------------------------------------
```

Here is the detail about these commands.

1. **?** and **help** command
   This is help command and the switch will prompt command list for this command.

2. **set** command
   This command can be used to configure most functions of the switch. Lots of sub-commands are for this command.

   Enter "set" at the prompt, the sub-command list will be shown.

```
>set
[Command List]
?.............. Help commands
help........... Help commands
1qvlan......... Set 802.1q VLAN Configuration
admin.......... Set administrator name and password
age............ Set aging time of switch
arl............ Add a static MAC address in ARL table
automode....... Set Auto Negotiation or Auto Detect mode of port
dot1x.......... Set 802.1x configuration
guest.......... Set name and password for Guest
gvrp........... Set GVRP Protocol enable or disable
http........... Set HTTP Protocol enable or disable
idle........... Set idle time for Console.
igmp........... Set IGMP configuration
loopback....... Set Loopback Detection of port
mirror......... Set mirror configuration
net............ Set network IP configuration
port........... Set switch port configuration
protect........ Set protected port setting
pvlan.......... Set members of Port-based VLAN groups
```

```
qos............ Set QoS configuration
ratecontrol.... Set Rate Control configuration
rmon........... Set RMON Function configuration
security....... Set port security mode for Static MAC address
snmp........... Set snmp configuration
sta............ Set Spanning Tree configuration
stormcontrol... Set Storm Control configuration
trunk.......... Set Trunk function configuration
```

2.1 **set ?** and **set help** command

These two commands will show the sub-command list for set command.

2.2 **set 1qvlan** command

This command is used to configure 802.1Q VLAN of the switch.

Its syntax is . . .

```
>set 1qvlan
[Argument List]
enable......... Set 802.1Q VLAN enabled.
disable........ Set 802.1Q VLAN disabled.
ingressfilter.. Set ingress filter Enable or Disable.
create......... Create new 802.1Q vlan with specified VLAN ID and VLAN Name.
modify......... Modify the setting of a 802.1Q VLAN.
pvid........... Set the Port VLANID of specified port.
mgrpvid........ Set the Port VLANID of management port.
priority....... Set the priority for tag of specified port.
mode........... Set the VLAN Mode.
```

enable and **disable** sub-commands are used to enable/disable 802.1Q VLAN function of the switch.

ingressfilter sub-command is used to enable/disable VLAN filtering executed at ingress port.

Enable: the VLAN filtering function will be executed when packet is received at ingress port. If the ingress port is in the same VLAN of the received packet, this packet will go to forwarding stage. Otherwise, the packet will be discarded by VLAN filtering at ingress port.

Disable: the VLAN filtering function will be executed when packet is forwarded to egress port.

create sub-command is used to create a static 802.1Q VLAN. For example, “set 1qvlan create 20 ABC” will create a static 802.1Q VLAN with ID 20 and name “ABC”.

modify sub-command is used to modify a static 802.1Q VLAN setting.

Its syntax is . . .

```
>set 1qvlan modify
Syntax     : set 1qvlan modify [+|-] [port#] VLANID [1:<tagged>|0:<untagged>]
Examples   : Set 1qvlan +1+5-7 2 1
Description: Add port 1,5 to VLAN 2 as tagged port and remove port 7 from VLAN 2
```

pvid sub-command is used to set Port VLAN ID. The Port VLAN ID is used as the VLAN ID for tag adding when untagged packet is translated to tagged packet. For example, “set 1qvlan pvid 3 10” will set the PVID of Port 3 as 10.

mgrpvid sub-command is used to select the VLAN group that is allowed to management the switch. Only the users in the selected VLAN can manage the switch by Http, Telnet and SNMP. For example, “set 1qvlan mgrpvid 5” will allow the users in the VLAN with VLAN ID 5 to manage the switch remotely.

priority sub-command is used to set port priority for tag adding when untagged packet is translated to tagged packet. For example, “set 1qvlan priority 3 2” will set the port priority of Port 3 as 2. The priority information in tag will be filled with 2 when the untagged packet coming to Port 3 is translated to tagged packet.

mode sub-command is used to select the VLAN mode for 802.1Q VLAN operation. There are three modes for VLAN function –SVL (Shared VLAN), IVL (Individual VLAN) and SVL/IVL.

```
Syntax     : set 1qvlan mode [0:SVL|1:IVL]
Examples   : Set 1qvlan mode 0
Description: Set current vlan mode as SVL
        0: SVL mode
        1: IVL mode
        2: SVL/IVL mode
```

SVL mode – the switch will do packet forwarding according to its Mac address directly. It is the normal VLAN operation of switch.

IVL mode – the switch will do packet forwarding according to its Mac address and VLAN ID both. It is for some special VLAN applications.

SVL/IVL mode – its operation is the same as IVL mode but for untagged port is used as the uplink port in MDU/MTU application.

For most VLAN applications, SVL mode is suggested.

2.3 **set admin** command

This command is used to modify the user name and password for administrator.

2.4 **set age** command

This command is used to change the aging time of the switch.

Its syntax is . . .

```
>set age
Syntax: set age [time]
[time]: 0: disable aging operation
       1~65535: aging time in seconds, default is 300.
```

The aging time is 300 seconds default and its valid range is 0 ~ 65535. If [time] is set to 0, the aging function will be disabled.

(Notes: Disable aging is different from static Mac ID in ARL table. The connection port is fix for a static Mac ID, but the connection port could be changed for a Mac ID with no aging.)

2.5 **set arl** command

This command is for adding static Mac ID to ARL table of the switch.

Its syntax is . . .

```
>set arl
Set ARL [xx-xx-xx-xx-xx-xx] [port#]
```

For example, “set ARL 00-00-01-11-22-33 5” will add a static Mac ID “00-00-01-11-22-33” to ARL table for Port 5 and this Mac ID will never be aged out from Port 5.

Note: Because the static Mac address is fixed on the assigned port by the switch, the static Mac address can access network through the assigned port only. It will fail to access network through other ports of the switch.

2.6 **set automode** command

This command is used to set the auto mode function of connection port when it is forced to some special setting instead of fully auto-negotiation. There are two modes for it – an(auto negotiation) and ad(auto detection).

an mode – if the *auto.* function of a port is disabled in port configuration, the switch will disable its auto-negotiation function and the Auto-MDIX function of the port is also disabled. That is the real force-mode setting of the port.

ad mode – if the *auto.* function of a port is disabled in port configuration, the switch will not disable its auto-negotiation function but just modify its auto-negotiation attribute for the speed/duplex mode setting. And the Auto-MDIX function of the port is still enabled.

Its syntax is …

```
>set automode
Valid mode [an:Auto Negotiation|ad:Auto Detect]
```

[Application]
If the connected device is *auto-negotiation enabled* and you want to force the speed of the connection (for example, 10M/Half), you can select ad mode. If the connected device is in forced mode (for example, 10M/Half) and it is *auto-negotiation disabled*, you can use an mode and set the port to the same configuration as the device in port configuration function.

You can select an mode or ad mode depending on your applications. In most of connection cases, ad mode is suggested. But for 100FX connection, you should select an mode and disable Auto. Set the port to 100/Full.

2.7 **set dot1x** command

This command is used to configure 802.1x function of the switch.
Its syntax is . . .

```
>set dot1x
[Argument List]
enable......... Set 802.1x enable
disable........ Set 802.1x disable
authmode....... Set 802.1x Auth Mode of a specified port
authport....... Set Authenticate Port of Radius Server
quiettime...... Set 802.1x Quiet Timeout Period
re_au.......... Set 802.1x Re-authentication
reauthcnt...... Set 802.1x Re-authentication Max Count
```

```
reauthtime..... Set 802.1x Re-authentication Timeout Period
reqcnt......... Set 802.1x Max Request Count
rsip........... Set Radius Server Address
shkey.......... Set 802.1x Shared Key
supptime....... Set 802.1x Supplicant Timeout Period
svrtime........ Set 802.1x Server Timeout Period
transparent.... Set 802.1x as transparent mode
txtime......... Set 802.1x Tx Timeout Period
```

enable sub-commands is used to enable 802.1x authentication function.

disable sub-command is used to disable 802.1x function.

authmode sub-command is used to set the authentication mode for a physical port. Its syntax is . . .

```
set dot1x authmode [port#] [auto|fa|fu|no]
```

- auto: the authentication mode of the port depending on the authentication result of the port
- fa (force-authenticated): will force the port always being authentication successful in 802.1x process and the real authentication result will be ignored.
- fu (force-unauthenticated): will force the port always being authentication unsuccessful in 802.1x process and the real authentication result will be ignored.
- none: 802.1x function will not be executed on the port, i.e. disabled on the port.

authport sub-command is used to set the handshaking port number between the switch and RADIUS server. It could be different for different RADIUS servers.

quiettime sub-command is used to set the quiet time value between the switch and the user before next authentication process when authentication fail.

re_au sub-command is used to enable the re-authentication function of the switch. When the re-authentication time is up, the switch will start the re-authentication process.

reauthcnt sub-command is used to set max count for re-authentication request in the re-authentication process. If the max count is met, it will become un-authentication state. The valid value is 1~10.

reauthtime sub-command is used to set the timeout period of the re-authentication process.

reqcnt sub-command is used to set max request timeout count between the switch and RADIUS server before authentication fail. The valid value is 1~10.

rsip sub-command is used to set the IP address of RADIUS server.

shkey sub-command is used to set the security key between the switch and RADIUS server.

supptime sub-command is used to set the timeout value between the switch and users (called “supplicant” in 802.1x) after first identification. The valid value is 0~65535.

svrtime sub-command is used to set the request timeout value between the switch and RADIUS server. The valid value is 0~65535.

transparent sub-command is used to set the operation of 802.1x function to transparent mode. In this mode, the switch will forward the 802.1x packets only.
txtime sub-command is used to set the timeout value for the identification request from the switch to users. The request will be re-tried until the ***reauthcnt*** is met. After that, authentication fail message will be sent. The valid value is 0~65535.

Note: This switch supports MD5, TLS and PEAP authentication types.

2.8 **set guest** command

This command is used to modify the user name and password for guest. (The "guest" account is allowed to see the configuration/setting of the switch. But the "guest" is not allowed to make any modification.)

2.9 **set gvrp** command

This command is used to enable/disable the GVRP function for 802.1Q VLAN. If this function is enabled, this switch will learn the 802.1Q VLAN from another 802.1Q network devices if it receives their packets. The learned remote 802.1Q VLAN will be shown in the dynamic 802.1Q VLAN table.

Its syntax is . . .

```
>set gvrp
Syntax: set gvrp [1|0]  <1:enable,0:disable>
```

2.10 **set http** command

This command is used to enable/disable the http function of the switch. Because hacker or worm/virus (like ColdRed) often attacks http server, this command is provided to disable http to prevent it. (If this switch is installed in public Internet without any firewall protection, we suggest users to disable the http interface and use Telnet or SNMP instead.)

Its syntax is . . .

```
>set http
Syntax     : Set http enable
Description: Enable http protocol function.
Syntax     : Set http disable
Description: Disable http protocol function.
```

2.11 **set idle** command

This command is used to set idle time for console connection. If no any key operation in this idle time, the switch logout automatically for security.

Its syntax is . . .

```
Syntax: Set idle [time]
[time]: 30~3600 seconds
```

For example, "set idle 300" will change the idle time to 300 seconds. It is 10 minutes default. Its valid range is 30 ~ 3600 seconds.

2.12 **set igmp** command

This command is used to enable/disable IGMP snooping function for IP multicast operation.

Its syntax is . . .

```
>set igmp
[Command List]
enable......... Enable igmp snooping function
disable........ Disable igmp snooping function
```

2.13 **set loopback** command

This command is used to set the loopback detection function of the switch. If loopback condition happens at some connection port, all the transmitted packets will come back to the switch and cause packet storm in the switch. That may cause the switch unstable. If this function is enabled and loopback condition is found at some port, that port will be disabled by the switch. You can use "release" sub-command to enable the port after its loopback condition is removed.

Its syntax is …

```
Syntax: set loopback [enable|disable|release].
[enable] : enable loopback detection on port
[disable]: disable loopback detection on port
[release]: release the ports that loopback are detected
```

2.14 **set mirror** command

This command is used to configure mirror function of the switch. The following is the sub-command for it.

```
>set mirror
[Command List]
?.............. Help commands
help........... Help commands
enable......... Enable mirror function
disable........ Disable mirror function
ingress........ Set mirror ingress setting
egress......... Set mirror egress setting
port........... Set mirror capture port setting
```

2.14.1 **set mirror ?** and **set mirror help** command

This command can show the sub-command list for "set mirror" command.

2.14.2 **set mirror enable** command

This command is used to enable the mirror operation.

2.14.3 **set mirror disable** command

This command is used to disable the mirror operation.

2.14.4 **set mirror ingress** command

This command is used to configure the mirror operation for ingress traffic. Its syntax is . . .

```
>set mirror ingress
[Argument List]
div............ Set mirror ingress/egress [div=%d]
mode........... Set mirror ingress/egress [mode=ALL/SA/DA]
mac............ Set mirror ingress/egress [mac=xx-xx-xx-xx-xx-xx]
monitor........ Set mirror ingress/egress [monitor=xx,xx,xx]
```

set mirror ingress div x : every x packets, capture one for mirror. For example, "set mirror ingress div 10" will capture one packet from every ten packets from ingress traffic.
set mirror ingress mode xx : mirror all packets or mirror packets with some DA or SA only. For example, "set mirror ingress mode all" will mirror all packets.
set mirror ingress mac xx-xx-xx-xx-xx-xx : if the mirror mode is for the packets with some DA/SA, users can assign the DA/SA here.
set mirror ingress monitor xx,xx,xx : set the monitored ports here. For example, "set mirror ingress monitor 1,2,5" will mirror the ingress traffic from Port 1,2,5. (Notes: If the monitored traffic exceeds the maximum bandwidth of capture port, flow control function will work on these monitored ports.)

2.14.5 **set mirror egress** command

This command is used to configure the mirror operation for egress traffic. Its syntax is similar to the mirror operation for ingress traffic. Please refer to "**set mirror ingress** command" section.

2.14.6 **set mirror port** command

This command is used to set the capture port for mirror operation. For example, "set mirror port 3" will capture the mirror traffic to Port 3.

2.15 **set net** command

This command is used to configure IP settings of the switch.

Its syntax is . . .

```
>set net
[Argument List]
dhcp........... Set DHCP client
ip............. Set IP Address
netmask........ Set netmask
gateway........ Set gateway IP address
```

This switch supports static IP setting or dynamic DHCP IP assignment. If DHCP function is enable, this switch will try to get IP configuration from DHCP server. If DHCP server is not found, the switch will use its default IP configuration. You can check the IP configuration got from DHCP server by "show net" command.
For static IP setting, you can set the IP configuration of the switch with *ip*, *netmask* and *gateway* commands. For example, "set net ip 192.168.1.250

netmask 255.255.255.0 gateway 192.168.1.154" will set these parameters as the IP address configuration of the switch. After the command, you can use "show net" to verify the setting.

2.16 **set port** command

This command is used to change the connection configuration of ports.
Its syntax is . . .

```
>set port 2
[Argument List]
name........... Set port # name [string]
admin.......... Set port # admin [enable|disable]
speed.......... Set port # speed [auto|10|100|1000]
duplex......... Set port # duplex [full|half]
flowctrl....... Set port # flowctrl [ON|OFF]
```

User can configure the following items for each port.

a. *Name of a port* with "**name**" sub-command.
b. *Enable/Disable a port* with "**admin**" sub-command.
c. *Operation speed of a port* with "**speed**" sub-command.
d. *Duplex mode of a port* with "**duplex**" sub-command.
e. *Flow Control function of a port* with "**flowctrl**" sub-command.

For exampe, "set port 1 name YYY admin enable speed 10 duplex half" command will enable Port 1 and set it to 10Mbps/Half Duplex and name it as "YYY".
Note: For 100FX port, the port setting is allowed for 100/Full (100Mbps, Full duplex) only.

2.17 **set protected** command

This command can set protection enabled/disabled for each connection port. If a port is set as protected port, it cannot communicate with other protected ports. But it still can communicate with other unprotected ports if they are in the same VLAN.
For example, Port 1,2,3 are set as protected ports. Port 1,2,3 cannot communicate with each other, but they can communicate with other un-protected ports – e.g. Port 4,5,6. This function is often used to isolated ports in the same VLAN.

Its syntax is …

```
>set protect
[Argument List]
enable......... Set protect enable
disable........ Set protect disable
port........... Set protect port [port#] [1|0]
```

enable: enable this function
disable: disable this function
port: set a port as protected or un-protected

2.18 **set pvlan** command

This command is used to set the configuration for port-based VLAN. This switch supports both 802.1Q VLAN and port-based VLAN. If you want to apply port-based VLAN for the switch, you can use this command to configure it.

Its syntax is …

```
>set pvlan
Syntax     : Set pvlan [1:enable|0:disable]
Examples   : Set pvlan enable
Description: Enable the Port-based VLAN function.

Syntax     : Set pvlan name [vlan#] [vlan name]
Examples   : Set pvlan name 1 vlan_1
Description: Set name of vlan 1 as "vlan_1".

Syntax     : Set pvlan [+/-] [port#] [vlan#]
Examples   : Set pvlan +1+2+3+4+5-7 1
Description: Add port 1,2,3,4,5 to VLAN 1 and
             remove port 7 from VLAN 1
```

Note: If a port does not belong to any VLAN, that port will be isolated from other ports – including the internal management interface of the switch.

2.19 **set qos** command

This command is used to configure QoS function of the switch.
Its syntax is . . .

```
>set qos
[Argument List]
enable......... Set QoS enabled.
disable........ Set QoS disabled.
priority....... Set QoS priority of specified port.
dot1p.......... Set 802.1p enabled of specified port.
mapping........ Set 802.1p priority to priority queue mapping.
```

This switch supports four priority queues on each port – P0, P1, P2 and P3. And both port-based priority and 802.1P tag priority are supported. This command can be used to configure the QoS setting of the switch. Here are the details about these sub-commands.

2.19.1 **set qos enable** command

This command is used to enable QoS operation.

2.19.2 **set qos disable** command

This command is used to disable QoS operation.

2.19.3 **set qos priority** command

This command is used to configure port-based priority. All packets coming from high priority port will always be forwarded to highest priority queue P3. All packets coming from low priority port will always be forwarded to lowest priority queue P0. For example, “set qos priority 3 high” command will set Port 3 as a high priority port.

2.19.4 **set qos dot1p** command

This sub-command is used to enable/disable the 802.1P QoS operation for each connection port. For example, “set qos dot1p 3 on” will enable the 802.1P QoS operation at Port 3. If any tagged packet comes to Port 3, it will be forwarded with the priority setting in its tag.

2.19.5 **set qos mapping** command

This command is used to map the 802.1P priority 0~7 to the four priority queues. For example, “set qos mapping 3 1” command will map the 802.1P tag priority 3 to priority queue P1 and packets with tag priority 3 will be forwarded to priority queue P1 of egress port.

2.20 **set ratecontrol** command

This command is used to set the maximum traffic rate to/from connection ports of the switch.

Its syntax is . . .

```
>set ratecontrol
Syntax 1   : Set ratecontrol drop [0:disable|1:enable]
Examples   : Set ratecontrol drop 1
Description: Set Packet Drop for Ingress Limit.

Syntax 2   : Set ratecontrol [ingress|egress] [port#] [N:0-240]
Examples   : Set ratecontrol ingress 1 10
Description: Set port 1 ingress rate control with 10*64K=640K
             No Limit of rate control, with N=0.
             Rate = N*64 Kb,     with N=1~28.
             Rate = (N-27)*1Mb,  with N=29~127.
             Rate = (N-115)*8Mb, with N=128~240 (only for Gigabit port).
```

set ratecontrol drop [0|1] : this subcommand is used to enable/disable the packet dropping operation when ingress traffic exceeds the maximum ingress rate. If it is set to “disable”, flow control operation will be used instead of packet dropping when traffic rate is exceeded.

set ratecontrol [ingress|egress] [port#] [0-240] : this subcommand is used to set the maximum traffic rate for ingress/egress traffic through connection ports of the switch. The rate control could be from 64Kbps to 1000Mbps.

N=0: rate control is disable, rate = No Limit.

N=1~28: rate = Nx64Kbps, for 64K, 128K, …, 1792Kbps rate control

N=29~127: rate = (N-27)x1Mbps, for 2M, 3M, …, 100Mbps rate control

N=128~240: rate = (N-115)x8Mbps, for 104M, 112M, …, 1000Mbps

Note: N=128~240 is for Port 25, 26 gigabit ports only.

2.21 **set security** command

This command is used to set the security mode for static Mac address of connection port.

Its syntax is . . .

```
>set security
Syntax     : Set security [port#] [mode#]
```

```
Examples   : Set security 1 1
Description: Set Security mode of port 1 to Accept mode for Static Mac addresses.
        mode 0 = No Security
        mode 1 = Accept function
        mode 2 = Reject function
```

For examples, “set security 1 1” will set Port 1 to accept the users with the static Mac addresses configured on Port 1. Please refer to “set arl” command for static address setting. Or, you can set static address from the “Dynamic Mac Address Table” in web interface. The table will show the learned Mac addresses and you just need to select from the learned address list and add it to static address table.

Note: Here is an *Application Note* for Mac address filter-in function.
It needs two conditions for Mac address filter-in function working.
1. The port security mode is set to “Accept”.
2. Static Mac address is assigned on Port (for example, Mac 1 on Port 1).
In this case, only Mac 1 can access network through Port 1. But there is also a limitation for Mac 1 - it can access network through Port 1 only because it is a static fixed address on Port 1.

2.22 **set rmon** command

This command is used to configure the RMON function of the switch.
Its syntax is …

```
>set rmon
Syntax: set rmon [1|0]  <1:enable,0:disable>
```

You can enable/disable RMON function here.

2.23 **set snmp** command

This command is used to configure SNMP function of the switch.
Its syntax is . . .

```
set snmp
[Argument List]
name........... Set system name
location....... Set system location
contact........ Set system contact name
getcommunity... Set GET community
setcommunity... Set SET community
trapcommunity.. Set TRAP community
trapip......... Set TRAP IP address
txtrap......... Send Trap for test
```

User can use the command to configure the following items for SNMP operation.

a. *Name of the switch* with “**name**” sub-command.
b. *Location of the switch* with “**location**” sub-command.
c. *Contact for the switch* with “**contact**” sub-command.
d. *GET Community string* with “**getcommunity**” sub-command
e. *SET Community string* with “**setcommunity**” sub-command.

f. *TRAP Community string* with “**trapcommunity**” sub-command.
g. *TRAP IP Address* with “**tapip**” sub-command.
h. *Test TRAP Operation* with “**txtrp**” sub-command

For example, “set snmp name ABC location AAA-1F contact Jack” command will set these SNMP information to switch.

2.24 **set sta** command

This command is used to configure spanning tree protocol of the switch.
Its syntax is . . .

```
>set sta
[Command List]
?.............. Help commands
help........... Help commands
enable......... Enable Spanning Tree function
disable........ Disable Spanning Tree function
bridge......... Set Spanning Tree bridge configuration
port........... Set Spanning Tree port configuration
```

a. **set sta ?** and **set sta help** commands will show the sub-command list
b. **set sta enable** and **set sta disable** commands will enable/disable spanning tree function of the switch.
c. **set sta bridge** command is used to configure for the switch.
Its syntax is . . .

```
>set sta bridge
[Argument List]
priority....... Set bridge priority.
hello.......... Set bridge hello time
age............ Set bridge maximum age
delay.......... Set bridge forward delay time
```

priority (0~65535) : Bridge priority is for selecting the root device, root port, and designated port. The device with the highest priority (lowest value) becomes the STA root device. If all devices have the same priority, the device with the lowest MAC address will then become the root device.
hello (0~65535) : the period to send the spanning tree maintenance packet if the switch is the root of the spanning tree. Default is 2 seconds.
age (6~40) : the spanning tree aging time if no spanning tree maintenance packet is received. It will cause the spanning tree to re-create. Default is 20 seconds.
delay (4~30): the maximum waiting time before changing states (i.e., listening to learning to forwarding). This delay is required because every device must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a blocking state; otherwise, temporary data loops might result.

d. **set sta port** command is used to configure for ports of the switch.
Its syntax is . . .

```
>set sta port
Port number is missing!
Syntax: set sta port [port#] [cost=xxxx] [priority=xxxx]
```

cost (1~65535) : It is used to determine the best path between devices if looping happens. Lower values will be forwarded and should be assigned to ports with fast connections. Higher values will be blocked and should be assigned to ports with slow connections. The suggestion values are 100(50~600) for 10M, 19(10~60) for 100M and 4(3~10) for 1000M connections.
priority (0~255) : If the path cost for all ports on a switch are the same, the port with the highest priority (lowest value) will be forwarded when looping happens. If more than one ports have the same highest priority, the port with lowest port number will be forwarded.

2.25 **set stormcontrol** command

This switch supports broadcast and flooding storm control functions. With this command, you can configure the storm control function of the switch.

Its syntax is …

```
>set stormcontrol
[Argument List]
rate........... Set Suppression rate for Storm control.
bc............. Set Broadcast Control for each Port.
fd............. Set Flooding Control for each Port.
```

set stormcontrol rate : this subcommand is used to set the maximum storm rate that is allowed for the control.
Its syntax is …

```
>set stormcontrol rate
Syntax     : set stormcontrol rate [rate value]
Examples 1 : Set stormcontrol rate 10
Description: Set suppression rate for Storm Control function as 640Kb.
             Rate = No Limit,       with N=0.
             Rate = N*64 Kb,        with N=1~28.
             Rate = (N-27)*1Mb,  with N=29~127.
```

set stormcontrol bc : this subcommand is for broadcast storm control.
set stormcontrol fd : this subcommand is for flooding storm control.
Their syntax are …

```
>set stormcontrol bc
Syntax     : set stormcontrol [bc|fd] [all|none|byport|port#] [1|0]
Examples 1 : Set stormcontrol bc all
Description: Set storm control to suppress broadcast packet for all port.
Examples 2 : Set stormcontrol fd none
Description: Set storm control not to suppress flooding packet for all port.
Examples 3 : Set stormcontrol bc byport
Description: Set storm control to suppress broadcast packet according to each port
   setting.
Examples 4 : Set stormcontrol fd 1 1
Description: Set storm control to suppress flooding packet for port 1.
```

2.26 **set trunk** command

This switch supports three trunk groups (Trunk 1~3) maximum. They are disabled and null trunk groups default. Users can use this command to configure trunk function of the switch.

Its syntax is . . .

```
>set trunk
Syntax     : Set trunk [enable|disable]
Description: Enable/Disable trunk function.

Syntax     : Set trunk [1|2|3] [1:enable|0:disable]
Examples   : set trunk  1 1
Description: Enable trunk 1.

Syntax     : Set trunk [+/-] [port#] [trunk#]
Examples   : Set trunk +1+5-7 1
Description: Add port 1,5 to trunk group 1 and
             remove port 7 from trunk group 1
```

a. **enable** and **disable** sub-commands are used to enable/disable trunk function of the switch.
b. **set trunk [1|2|3] [1|0]** is sub-command to enable/disable each trunk connection.
c. **set trunk [+/-] [port#] [trunk#]** is sub-command to add/remove ports to/ from trunk groups. Only Port 1~8 is available for trunk operation.

3. **show** command

This command is used to show configurations of the switch. Here is the sub-command for showing different configuration.

```
>show
[Command List]
?.............. Help commands
help........... Help commands
1qvlan......... Show 802.1q VLAN configuration
age............ Show aging tim
arl............ Show ARL table
automode....... Show Auto mode setting
cfg............ Show system information
dot1x.......... Show 802.1x Protocol status
guest.......... Show name and password for Guest
gvrp........... Show GVRP Protocol setting
http........... Show HTTP Protocol setting
idle........... Show idle time for Console.
igmp........... Show IGMP configuration
loopback....... Show Loopback Detection setting
mirror......... Show mirror function configuration
net............ Show network IP configuration
port........... Show switch port configuration
protect........ Show protected port setting
pvlan.......... Show Port-based VLAN configuration
qos............ Show QoS configuration
ratecontrol.... Show Rate Control configuration
```

```
rmon........... Show RMON Function configuration
security....... Show port security mode for static MAC address
snmp........... Show snmp configuration
sta............ Show Spanning Tree setting
stormcontrol... Show Storm Control configuration
trunk.......... Show Trunk function configuration
```

3.1 **show ?** and **show help** commands will show the sub-command list.

3.2 **show 1qvlan** command will show current 802.1Q VLAN status and settings.

Its syntax is . . .

```
>show 1qvlan
Syntax: show 1qvlan [status|static|table|port]
    status : show 802.1q, Ingress Filter and GVRP protocol status
    static : show STATIC VLAN table content
    table  : show ALL VLAN table content
    port   : show the PVID and Priority for tag of ports
```

For example,

```
>show 1qvlan status
802.1Q VLAN   : Enable
Ingress Filter: Enable
VLAN Mode     : SVL

>show 1qvlan static
=================== Static 802.1Q VLAN Table ====================

VLAN ID  :    1(0x001) , VLAN Name: Default VLAN
Tagged Member Port   :
Untagged Member Port :  1  2  3  4  5  6  7  8  9 10 11 12 13 14
                       15 16 17 18 19 20 21 22 23 24 25 26

============================ Finish ============================

>show 1qvlan table
===================== All 802.1Q VLAN Table =====================

VLAN Type:   STATIC
VLAN ID  :    1(0x001) , VLAN Name: Default VLAN
Tagged Member Port   :
Untagged Member Port :  1  2  3  4  5  6  7  8  9 10 11 12 13 14
                       15 16 17 18 19 20 21 22 23 24 25 26

============================ Finish ============================

>show 1qvlan port
PORT       PVID    PRIORITY
=============================
  1        1(0x001)     0
  2        1(0x001)     0
  3        1(0x001)     0
  4        1(0x001)     0
  5        1(0x001)     0
  6        1(0x001)    0
  7        1(0x001)    0
  8        1(0x001)    0
  9        1(0x001)    0
 10        1(0x001)    0
 11        1(0x001)    0
 12        1(0x001)    0
 13        1(0x001)    0
 14        1(0x001)    0
 15        1(0x001)    0
…………………
======================
Management Port :   1
======================
```

Note: The PVID of Management Port is for the management interface of the switch. Only the users in the VLAN with VLAN ID equal to the PVID of Management Port can manage the switch from network because they are in the same VLAN.

3.3 **show age** command can show current aging time of switch.
For example,

```
>show age
Aging function: Enabled
Aging time    : 300
```

3.4 **show arl** command can show static Mac address set in ARL table and dynamic Mac address learned in ARL table.
Its syntax is …
>show arl
Syntax: show arl [static|dynamic].

static: show static Mac address set in ARL table
dynamic: show dynamic Mac address learned in ARL table

For example,

```
>show arl dynamic
[Dynamic Address Learning Table]
 Item  Port      Mac Address          VID
============================================
   1)   CPU     00-00-01-64-64-64      1(0x001)
   2)    8      00-00-e2-82-8c-e6      1(0x001)
   3)    4      00-20-14-95-0a-32      1(0x001)
============================================
```

3.5 **show automode** command will show current auto mode setting for port configuration. It could be **Auto Negotiation** and **Auto Detect**.
For *Auto Negotiation* mode, the switch will do auto-negotiation ON/OFF when the auto mode of port is enabled/disabled. But the Auto-MDIX function will also be disabled when the auto-negotiation function of port is OFF.

For *Auto Detect* mode, the switch will always keep auto-negotiation function ON but just modify its attribution if the auto mode of port is disabled. The Auto-MDIX function will be always enabled in this mode.
For applications, you should select *Auto Detect* mode if the connected device is auto-negotiation enabled. And you can select *Auto Negotiation* mode if the connected device is auto-negotiation disabled.
For most applications, *Auto Detect* mode is OK. But for 100FX connection, you should select *Auto Negotiation* mode and disable Auto. Set the port to 100/Full.

3.6 **show cfg** command will show Model Name, Mac ID of the switch and Firmware version. For example,

```
>show cfg
[System Configuration]
Company Name     :
Model Name       : Intelligent Switch
MAC Address      : 00:00:01:23:45:67
Firmware Version : 3.02.02 < Mar 13 2006 15:13:36 >
```

3.7 **show dot1x** command will show current 802.1x status and settings.
Its syntax is . . .

```
>show dot1x
Syntax: show dot1x [config|radius|port]
   config : show 802.1x protocol settings
   radius : show settings for radius server
   port   : show ALL ports status
```

For example,

```
>show dot1x config
[802.1x Protocol Configuration]
============================================
802.1x Protocol                 : Disabled
Re-authentication               : Disabled
Re-authentication Timeout Period: 3600
Re-authentication Max Count     : 2
Max Request Count               : 2
Server Timeout Period           : 30
Supplicant Timeout Period       : 30
Quiet Timeout Period            : 60
Tx Timeout Period               : 30
============================================

>show dot1x radius
[Redius Server Configuration]
====================================================
Redius Server IP Address : 192.168.1.222
Redius Server Port Number: 1812
Shared Key               : 12345678
====================================================

>show dot1x port
[802.1X Port Authentication Configuration]
=================================
PORT    Status    Auth.Mode
=================================
  1      Yes        FA
  2      Yes        FA
  3      Yes        FA
  4      Yes        FA
  5      Yes        FA
  6      Yes        FA
  7      Yes        FA
  8      Yes        FA
  9      Yes        FA
 10      Yes        FA
 11      Yes        FA
 12      Yes        FA
 13      Yes        FA
 14      Yes        FA
 15      Yes        FA
……………………..
=================================
```

The Auth. Mode could be Auto, FA(Forced Authenticated), FU(Forced Unauthenticated) and No(No 802.1x function).

3.8 **show guest** will show current username and password for guest account.
For example,

```
>show guest
[Guest configuration]
Username: guest
Password:
```

3.9 **show gvrp** command will show current GVRP function status for 802.1Q VLAN operation.
For example,

```
>show gvrp
GVRP Protocol : Disable
```

3.10 **show http** command will show http enable/disable state. If it is disabled, the web management interface of the switch will be OFF.
For example,

```
>show http
[HTTP Protocol Setting]
HTTP Setting: Enabled
```

3.11 **show idle** command will show the idle time for console to logout automatically. If no any keystroke in this time, the console and telnet interface will logout automatically for security.
For example,

```
>show idle
Current idle time: 600(Second)
```

3.12 **show igmp** command will show current IGMP snooping function enable/disable status and the IP multicast groups that learned by the switch. For example,

```
>show igmp
[IGMP Configuration]
IGMP Switch     : Enabled
Total Groups    : 3
=======================================================
[Group 1]  IP Address    :  224.0.0.9
           Member Port :  1
[Group 2]  IP Address    :  224.0.0.2
           Member Port :  1
[Group 3]  IP Address    :  224.2.188.136
           Member Port :  4,5
=======================================================
```

3.13 **show loopback** command will show current loopback function setting. (Loopback function can detect packet loopback problem happening at connection port. If loopback is found, the connection port will be disabled.)
For example,

```
>show loopback
[Loopback Detection]: Disable
```

3.14 **show mirror** command will show mirror function configuration of the switch. For example,

```
>show mirror
[Mirror Configuration]
Mirror Switch:Disabled
Capture port :1
Ingress DIV=3     Mode=SA  MAC=00-00-01-11-22-33
      Port List: 2
Egress  DIV=1     Mode=ALL MAC=00-00-00-00-00-00
      Port List:
```

This setting will mirror those packets that with source Mac address 00-00-01-11-22-33 ingress to Port 2 to Port 1 for every three matched packets.

3.15 **show net** command will show current IP address configuration of the switch. If DHCP is enabled, this command will show the IP configuration got from DHCP server. For example,

```
>show net
[net] Network Configuration:
DHCP      : DISABLE
IP Address: 192.168.1.5
Netmask   : 255.255.255.0
Gateway   : 192.168.1.120
```

3.16 **show port** command will show status and configuration of each connection port.
For example,

```
>show port
[Port Configuration]
```

```
Port Name            Status   Disable   Auto.  Speed   Duplex  Flow Control
==============================================================
  1  10/100M base-T    DOWN      NO       ON     10      Half       OFF
  2  10/100M base-T    DOWN      NO       ON     10      Half       OFF
  3  10/100M base-T    DOWN      NO       ON     10      Half       OFF
  4  10/100M base-T    UP        NO       ON     100     Full       OFF
  5  10/100M base-T    DOWN      NO       ON     10      Half       OFF
  6  10/100M base-T    DOWN      NO       ON     10      Half       OFF
  7  10/100M base-T    DOWN      NO       ON     10      Half       OFF
  8  10/100M base-T    UP        NO       ON     100     Full       OFF
  9  10/100M base-T    DOWN      NO       ON     10      Half       OFF
 10  10/100M base-T    DOWN      NO       ON     10      Half       OFF
 11  10/100M base-T    DOWN      NO       ON     10      Half       OFF
 12  10/100M base-T    DOWN      NO       ON     10      Half       OFF
 13  10/100M base-T    DOWN      NO       ON     10      Half       OFF
 14  10/100M base-T    DOWN      NO       ON     10      Half       OFF
 15  10/100M base-T    DOWN      NO       ON     10      Half       OFF
Press any key to continue ...
==============================================================
```

3.17 **show protect** command will show current protected port setting. (Protected ports cannot communicate with each other.)

For example,

```
>show protect
[Protected Port Setting]
Protected Function: Disabled
===================================
  Port No.          Protected
===================================
     1            Disabled
     2            Disabled
     3            Disabled
     4            Disabled
     5            Disabled
     6            Disabled
     7            Disabled
     8            Disabled
     9            Disabled
    10             Disabled
    11             Disabled
    12             Disabled
    13             Disabled
    14             Disabled
    15             Disabled
Press any key to continue ...
===================================
```

3.18 **show pvlan** command will show current port-based VLAN setting of the switch.

For example,

```
>show pvlan
[Port-based VLAN Configuration]
Port-based VLAN : Enabled
========================================================
[ID]    [Vlan Name]         [Port List]
====    ==============      ==================================
[ 1]                          1  2  3  4  5  6  7  8  9 10 11 12 13
                            14 15 16 17 18 19 20 21 22 23 24 25 26
[ 2]
[ 3]
[ 4]
[ 5]
[ 6]
[ 7]
[ 8]
[ 9]
[10]
[11]
[12]
[13]
[14]
[15]
Press any key to continue ...
========================================================
```

3.19 **show qos** command will show QoS configuration of the switch. For example,

```
[QoS Configuration]
Qos Function   : Disabled
================================
802.1p Priority 7 ==> P3
802.1p Priority 6 ==> P3
802.1p Priority 5 ==> P2
802.1p Priority 4 ==> P2
802.1p Priority 3 ==> P1
802.1p Priority 2 ==> P1
802.1p Priority 1 ==> P0
802.1p Priority 0 ==> P0
==============================================================
Port  Priority  Port  Priority  Port  Priority  Port  Priority
==============================================================
[ 1]    Low      [ 2]     Low      [ 3]    Low      [ 4]    Low
[ 5]    Low      [ 6]     Low      [ 7]    Low      [ 8]    Low
[ 9]    Low      [10]     Low     [11]    Low     [12]    Low
[13]    Low      [14]     Low     [15]    Low     [16]    Low
[17]    Low      [18]     Low     [19]    Low     [20]    Low
[21]    Low      [22]     Low     [23]    Low     [24]    Low
[25]    Low      [26]     Low
==============================================================
Port   802.1p   Port   802.1p   Port   802.1p   Port   802.1p
==============================================================
[ 1]     OFF       [ 2]     OFF      [ 3]    OFF       [ 4]    OFF
[ 5]     OFF       [ 6]     OFF      [ 7]    OFF       [ 8]    OFF
[ 9]     OFF      [10]     OFF     [11]    OFF      [12]    OFF
[13]     OFF      [14]     OFF     [15]    OFF      [16]    OFF
[17]     OFF      [18]     OFF     [19]    OFF      [20]    OFF
[21]     OFF      [22]     OFF     [23]    OFF      [24]    OFF
[25]     OFF      [26]     OFF
```

```
===============================================================
```

The first part is the mapping of 802.1P priority values 0~7 to the four priority queues of the switch.
The second part is the port-based priority setting.
The third part is the 802.1P priority function status for each port.

3.20 **show ratecontrol** command will show current rate control setting for each port. For example,

```
>show ratecontrol
[Rate Control Configuration]
Packet Drop for Ingress Limit: Disable
===========================================
  Port     Ingress       Egress
===========================================
   1     No Limit      No Limit
   2     No Limit      No Limit
   3     No Limit      No Limit
   4     No Limit      No Limit
   5       20Mb        No Limit
   6     No Limit      No Limit
   7     No Limit      No Limit
   8     No Limit      No Limit
   9     No Limit      No Limit
  10     No Limit      No Limit
  11     No Limit      No Limit
  12     No Limit      No Limit
  13     No Limit      No Limit
  14     No Limit        70Mb
  15     No Limit      No Limit
Press any key to continue ...
===========================================
```

3.21 **show rmon** command will show current RMON setting (enable/disable) of the switch.
Its syntax is …

```
>show rmon
RMON Funciton: Disabled
```

3.22 **show security** command will show current Mac address security mode for port.
Its syntax is . . .

```
>show security
[MAC Security Configuration]
===================================================================
  Port   Static MAC Number          Security Control
===================================================================
   1           0                     No Security
   2           0                     No Security
   3           0                     No Security
   4           0                     No Security
   5           0                     No Security
   6           0                     No Security
  7         0                        No Security
  8         0                        No Security
  9         0                        No Security
 10         0                        No Security
 11         0                        No Security
 12         0                        No Security
 13         0                        No Security
 14         0                        No Security
 15         0                        No Security
Press any key to continue ...
==========================================================
```

The “Security Control” could be *No*, *Accept*, *Reject* modes. “No” is for no Mac address security. “Accept” is for only the static Mac address can access. “Reject” is for only the static Mac address cannot access.

3.23 **show snmp** command will show SNMP configuration of the switch. For example,

```
>show snmp
[SNMP Configuration]
System Name   :
Location      :
Contact name  :
Get Community : public
Set Community : private
==========================================================
Trap  IP Address      Community
==========================================================
  1   0.0.0.0         public
  2   0.0.0.0         public
  3   0.0.0.0         public
  4   0.0.0.0         public
  5   0.0.0.0         public
==========================================================
```

3.24 **show sta** command will show spanning tree configuration of the switch. For example,

```
>show sta
[Spanning Tree Configuration]
Spanning Tree Function: Disabled
Bridge Priority       : 32768
Bridge Hello Time     : 2
Bridge Max Age        : 20
Bridge Forward Delay  : 15
=================================================================
Port  Priority  Path Cost    State      Designated Root
=================================================================
  1     128        19        None     00:00:00:00:00:00 [0]
  2     128        19        None     00:00:00:00:00:00 [0]
  3     128        19        None     00:00:00:00:00:00 [0]
  4     128        19        None     00:00:00:00:00:00 [0]
  5     128        19        None     00:00:00:00:00:00 [0]
  6     128        19        None     00:00:00:00:00:00 [0]
  7     128        19        None     00:00:00:00:00:00 [0]
```

```
 8    128     19       None    00:00:00:00:00:00 [0]
 9    128     19       None    00:00:00:00:00:00 [0]
10    128     19       None    00:00:00:00:00:00 [0]
Press any key to continue ...
==============================================================
```

It shows the Bridge and Port spanning tree configuration.

3.25 **show stormcontrol** command will show current packet storm control settings. This switch supports broadcast and flooding storm control functions. With this command, you can find the maximum storm rate setting and the port list doing the storm control.

For example,

```
>show stormcontrol
[Storm Control Configuration]
============================
Suppression Rate : No Limit
Broadcast Control: By Port
Flooding Control : By Port
 Port   Broadcast     Flooding
===========================================
   1        -            -
   2        -            -
   3        -            -
   4        -            -
   5        -            -
   6        -            -
   7        -            -
   8        -            -
   9        -            -
  10        -            -
  11        -            -
  12        -            -
  13       -             -
  14       -             -
  15       -             -
Press any key to continue ...
===========================================
```

3.26 **show trunk** command will show trunk configuration of the switch. For example,

```
>show trunk
[Trunk Group Setting]
Trunk Function       :  Disabled
Trunk 1(in port 1~24):  Disabled
Trunk 2(in port 1~24):  Disabled
Trunk 3(port 25,26)  :  Disabled
[TRUNK]  [Port List]
=======  ======================================
  [1]
  [2]
=======  ======================================
```

Note: Trunk 3 is the trunk for gigabit ports. For 8*FX+2G model, they are Port 9 and 10 for Trunk 3.

4. **default** command

This command will restore all the settings of switch to factory default.

```
>default
All current setting will be lost after restoring default!
Are you sure to restore default setting now?(Y/N)
```

5. **del** command

The “del” command can delete static entries in ARL table, delete a VLAN group, and delete a trunk connection.

Enter “del” at the prompt, the command syntax will be shown.

```
>del
[Command List]
?.............. Help commands
help........... Help commands
1qvlan......... Delete a 802.1q VLAN group
arl............ Delete a MAC address from ARL table
pvlan.......... Delete a Port-based VLAN group
trunk.......... Destroy a trunk connection
```

1qvlan: this sub-command can delete an 802.1Q VLAN.
Its syntax is …

```
>del 1qvlan
Syntax: del 1qvlan [Vid]
```

For example, “del 1qvlan 5” will delete the 802.1Q VLAN with VLAN ID 5.

arl: this sub-command can delete a static Mac address in ARL table.
Its syntax is …

```
>del arl
Del ARL [xx-xx-xx-xx-xx-xx] [port#]
```

For example, “del arl 00-11-22-33-44-55 3” will delete the static Mac ID “00-11-22-33-44-55” for Port 3 from ARL table.

pvlan: this sub-command can clear a port-based VLAN.
Its syntax is …

```
>del pvlan
Syntax: del pvlan [vlan#]
Valid vlan#: <1~26>
```

For example, “del pvlan 5” will clear the port-based VLAN with VLAN ID 5.

trunk: this sub-command can clear a trunk connection.
Its syntax is …

```
>del trunk
Syntax: Del TRUNK [trunk#]
```

For example, “del trunk 2” will clear the Trunk 2 connection

6. **find** command

The “find” command can find a Mac address in the ARL table.

Enter “find” at the prompt, the command syntax will be shown.

```
>find
```

```
[Command List]
?.............. Help commands
help........... Help commands
arl............ Search a specified MAC address in ARL table
```

The syntax is as follow.

```
>find arl
Find ARL [xx-xx-xx-xx-xx-xx]
```

If the Mac address is in ARL table, it will be shown as follow.

```
>find arl 00-00-01-11-22-33
This MAC [00-c0-f6-11-22-33] is DYNAMIC in port [2]!
```

If the Mac address is not in ARL table, it will be shown as follow.

```
>find arl 00-00-01-77-88-99
This MAC is not existed!
```

Note: “Dynamic” means the Mac address is dynamic learned and could be aged out by the switch. “Static” means the Mac address is fixed in ARL table.

7. **whoami** command

This command can show current login user name. It could be username for administrator or guest.
For example,

```
>whoami
Current USER: admin
```

8. **reset** command

This command can be used to reset switch. Enter “reset” at the prompt, you will be asked to confirm the reset operation.

```
>reset
Are you sure to reset switch now?(Y/N)
```

9. **ping** command

User can use this command to ping another network device to verify the network connection and activity.

Enter “ping” at the prompt, the command syntax will be shown.

```
>ping
Syntax: ping [-n count] [-l length] [-t] [-w timeout] ip
-n count  : Number of echo requests to send.
-l length : Send buffer size, and length is between 64~8148
-t        : Ping the specified host until stopped by <ESC> key.
-w         : Timeout in milliseconds to wait for each reply.
ip        : IP address (xxx.xxx.xxx.xxx)
```

For example, “ping 192.168.1.80”. “Ctrl-C” can be used to break continuous ping operation.

10. **backup** command

This switch supports TFTP protocol for firmware and configuration update and backup. You should select backup *firmware* or *configuration* first. And provide the IP address of the TFTP server and the backup file name for the backup operation.

Enter "backup" at the prompt, the command syntax will be shown.

```
>backup
Syntax: backup [firmware | config] ip filename
```

For example, "backup config 192.168.1.80 abcd" will backup the configuration to TFTP server 192.168.1.80 and its file name is "abcd".

11. **upgrade** command

This switch supports firmware or configuration upgrade with TFTP protocol. This command is used to upgrade firmware or configuration to the switch.
Its syntax is . . .

```
>upgrade
Syntax: upgrade [firmware | config] ip filename
```

ip is the IP address of TFTP server.
filename is the upgrade file name in the TFTP server.

For example, "upgrade config 192.168.1.80 abcd" command will load file "abcd" from TFTP server 192.168.1.80 as its configuration setting.

12. **exit** command

This is a logout command – the same as Logout command.

13. **logout** command

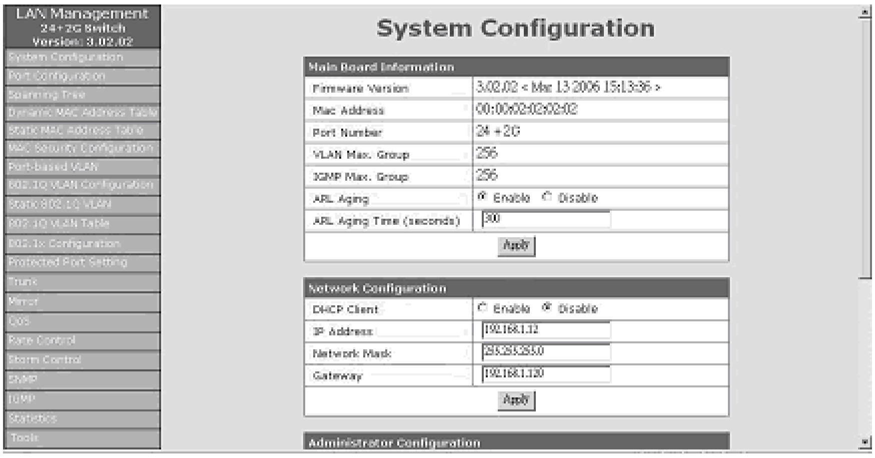
This is a logout command – the same as Exit command.

6.3 Management with Http Connection

You can manage the switch with Http Web Browser connection. Before http connection, IP address configuration of the switch should be done first.

Please follow the instruction in Section 6.2 to complete the console connection and use “**show net**” command to check IP address of the switch first. If users want to change the IP address of the switch, use “**set net ip xxx.xxx.xxx.xxx netmask xxx.xxx.xxx.xxx gateway xxx.xxx.xxx.xxx**” command to modify the IP address of the switch. The default IP configuration is 192.168.1.5 and mask 255.255.255.0.

After IP address configuration done and the switch is connected to network, you can start Http connection by entering IP address of the switch to the web address line in Web Browser. A login screen will be prompted for user name and password. The default user name and password is "**admin**" / ”**123456**”. Then the management homepage will appear.



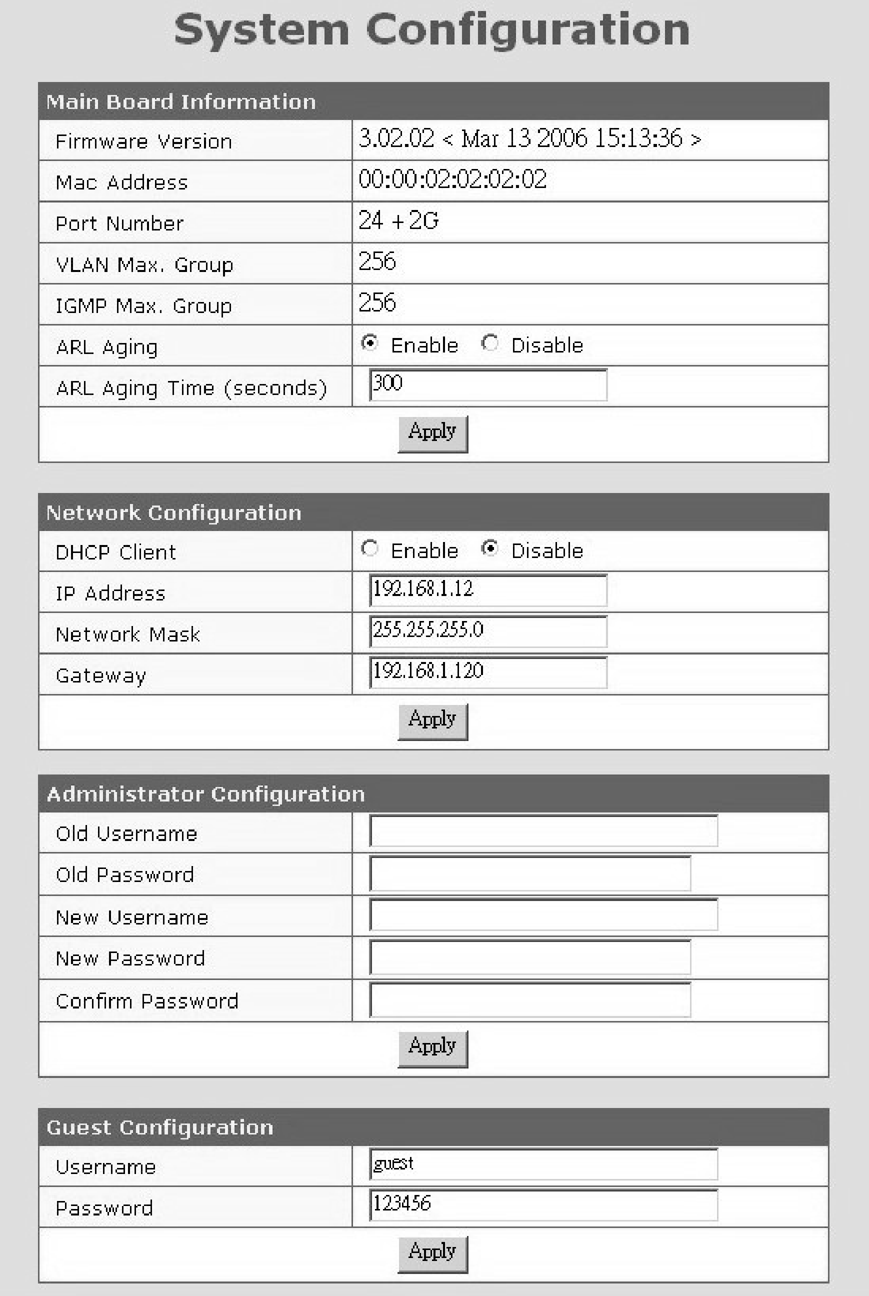
System Configuration

Main Board Information	
Firmware Version	3.02.02 < Mar 13 2006 15:13:36 >
Mac Address	00:00:02:02:02:02
Port Number	24 + 2G
VLAN Max. Group	256
IGMP Max. Group	256
ARL Aging	● Enable ○ Disable
ARL Aging Time (seconds)	300

Network Configuration	
DHCP Client	○ Enable ● Disable
IP Address	192.168.1.12
Network Mask	255.255.255.0
Gateway	192.168.1.120

Left part of the homepage is a function list. You can select one of them for status monitoring or switch configuration.
Upper part of the homepage is the link status of the switch. Three different colors are used to show different status of ports – Link Up, Link Down and Port Disable.
Middle part of homepage is the main operation area for each function.

1. System Configuration



System Configuration

Main Board Information	
Firmware Version	3.02.02 < Mar 13 2006 15:13:36 >
Mac Address	00:00:02:02:02:02
Port Number	24 + 2G
VLAN Max. Group	256
IGMP Max. Group	256
ARL Aging	● Enable ○ Disable
ARL Aging Time (seconds)	300
Apply	

Network Configuration	
DHCP Client	○ Enable ● Disable
IP Address	192.168.1.12
Network Mask	255.255.255.0
Gateway	192.168.1.120
Apply	

Administrator Configuration	
Old Username	
Old Password	
New Username	
New Password	
Confirm Password	
Apply	

Guest Configuration	
Username	guest
Password	123456
Apply	

“System Configuration” is the homepage of the switch.

You can find firmware version and Mac address of the switch in this page. And you can configure the following items in this page.

a. **ARL Aging Time**: You can enable/disable the aging operation of the switch and modify the aging time here. (Default is 300 seconds.)

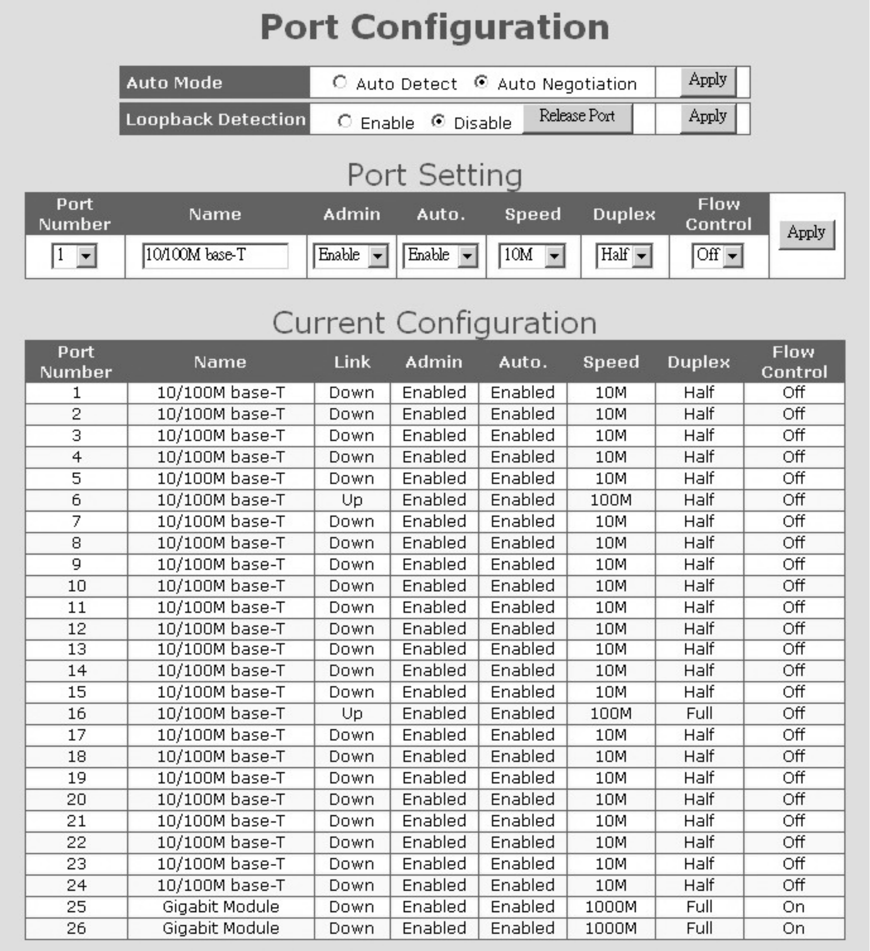
b. **DHCP / IP Address / Network Mask / Gateway**: You can set IP address configuration of the switch here. (By DHCP or static settings)

c. **Administrator Configuration**: This is for network administrator to change his/her username and password. (Default is admin/123456.)

d. **Guest Configuration**: This is for you to change the username and password for Guest account. (Default is guest/123456.) The Guest account can see the settings of switch only. He/she cannot modify anything.

If any modification, click [Apply] to activate the new setting.

2. Port Configuration



Port Configuration

Auto Mode ○ Auto Detect ● Auto Negotiation Apply

Loopback Detection ○ Enable ● Disable Release Port Apply

Port Setting

Port Number	Name	Admin	Auto.	Speed	Duplex	Flow Control	
1	10/100M base-T	Enable	Enable	10M	Half	Off	Apply

Current Configuration

Port Number	Name	Link	Admin	Auto.	Speed	Duplex	Flow Control
1	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
2	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
3	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
4	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
5	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
6	10/100M base-T	Up	Enabled	Enabled	100M	Half	Off
7	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
8	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
9	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
10	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
11	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
12	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
13	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
14	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
15	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
16	10/100M base-T	Up	Enabled	Enabled	100M	Full	Off
17	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
18	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
19	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
20	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
21	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
22	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
23	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
24	10/100M base-T	Down	Enabled	Enabled	10M	Half	Off
25	Gigabit Module	Down	Enabled	Enabled	1000M	Full	On
26	Gigabit Module	Down	Enabled	Enabled	1000M	Full	On

You can configure the operation of ports and find their status here.

1. Auto Mode

You can select the auto function for port forced setting here. (Port forced setting means forcing it to some special setting, e.g. 10M/Half, instead of fully auto-negotiation.)

For *Auto Negotiation* mode, the switch will do auto-negotiation ON/OFF when the auto mode of port is enabled/disabled.   But the Auto-MDIX function will also be disabled when the auto-negotiation function of port is OFF.

For *Auto Detect* mode, the switch will always keep auto-negotiation function ON but just modify its attribution if the auto mode of port is disabled. The Auto-MDIX function will be always enabled in this mode.

For applications, you should select *Auto Detect* mode if the connected device is auto-negotiation enabled. And you can select *Auto Negotiation* mode if the connected device is auto-negotiation disabled.

For most applications, *Auto Detect* mode is OK. But for 100FX connection, you should select *Auto Negotiation* mode and disable Auto. Set the port to 100/Full.

2. Loopback Detection

This switch can detect loopback condition happening on ports if this function is enabled. If loopback condition is found, the loopback port will be disabled. You can click [Release] button to release the disabled port when the loopback condition is removed.

3. Port Setting

You can set the port configuration here. Follow the steps to do it.
1). Select the port in “Port Number” first.
2). Modify the settings.
3). Click [Apply].

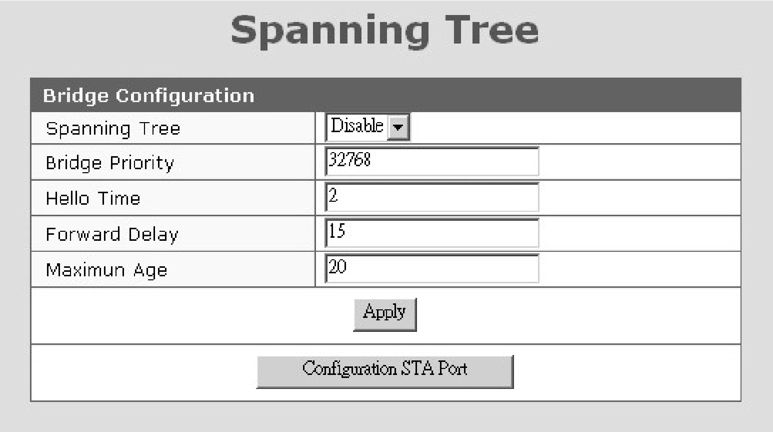
About these items …
Name: It is the name of the port. That will help users to identify the connection.
Admin: You can enable/disable a port here.
Auto: You can enable/disable the auto mode of ports here. If auto is disabled, the Speed and Duplex setting will become active. The auto mode could be auto-negotiation or auto-detect. You can select in “Auto Mode”.
Speed: You can select the operation speed here when Auto. is disabled.
Duplex: You can select the operation duplex mode when Auto. is disabled.
Flow Control: You can enable/disable flow control function here to prevent packet lost.

4. Current Configuration

You can find current port status here.

About these items …
Name: It is the name of ports.
Link: It shows the link status of ports.
Admin: It shows the enable/disable status of ports.
Auto: It shows the auto-negotiation enable/disable status of ports.
Speed: It shows current operation speed if the ports are link up.
Duplex: It shows current operation duplex mode if the ports are link up.
Flow Control: It shows current flow control status.

3. Spanning Tree

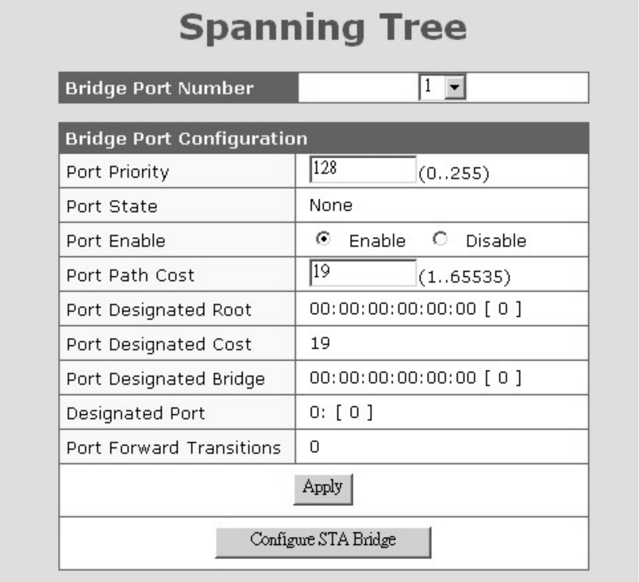


Spanning Tree

Bridge Configuration	
Spanning Tree	Disable ▾
Bridge Priority	32768
Hello Time	2
Forward Delay	15
Maximun Age	20

In the page, users can enable/disable spanning tree function and configure the bridge parameters. Please refer to **2.24 of Section 6.2** for the details of these parameters. Press [Apply] after any modification.

Configuring port parameters for spanning tree, press [Configuration STA Port] and the configuration page will appear.



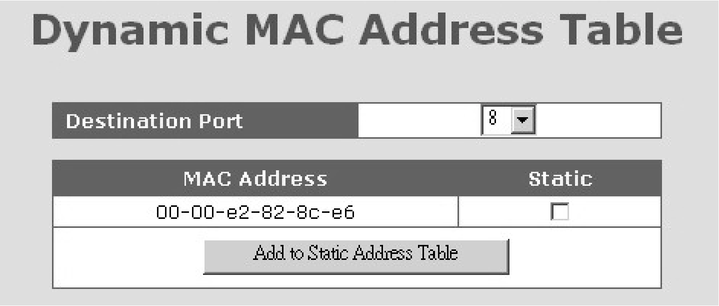
Spanning Tree

Bridge Port Number	1 ▾

Bridge Port Configuration	
Port Priority	128 (0..255)
Port State	None
Port Enable	● Enable ○ Disable
Port Path Cost	19 (1..65535)
Port Designated Root	00:00:00:00:00:00 [0]
Port Designated Cost	19
Port Designated Bridge	00:00:00:00:00:00 [0]
Designated Port	0: [0]
Port Forward Transitions	0

Users can select a port number and check its spanning tree status. Users can also modify these parameters. Please refer to **2.24 of Section 6.2** for the details of these parameters. Press [Apply] after any modification.

4. Dynamic Mac Address Table



Dynamic MAC Address Table

Destination Port	8

MAC Address	Static
00-00-e2-82-8c-e6	□

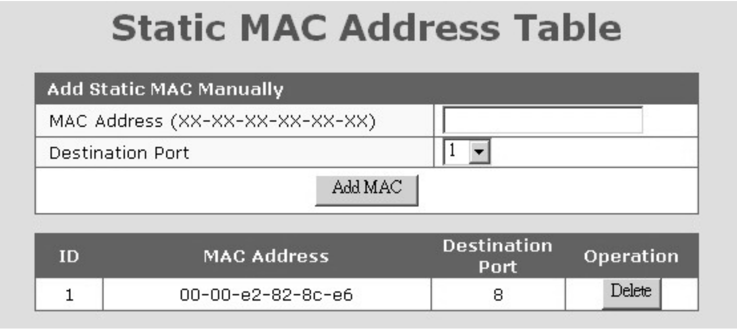
This web page will show the Mac address table content of the switch for connection ports. Select the port first and the Mac address learned by the switch on the port will be shown. Up to 128 Mac addresses will be shown.

You can select the Mac addresses that you want to assign them as static Mac addresses for the port. Click [Add to Static Address Table] after the selection. Then you can click "Static Address Table" at left side of the web page to check the static address assignment.

For the details about Static Address, please refer to Section for "Static Address Table".

Note: Because of *aging time operation* of switch, wrong Mac addresses could be found in the Mac Address Table sometimes. These wrong Mac addresses are the machines that had ever accessed to the port and the switch learns them into the learning table. The switch will clear them when the aging time is up. Users can shorten the aging time and refresh the web page when they want to get the correct Mac address table content. Then, recover the aging time when the correct Mac address table content is got.

5. Static Mac Address Table



Static MAC Address Table

Add Static MAC Manually	
MAC Address (XX-XX-XX-XX-XX-XX)	
Destination Port	1
Add MAC	

ID	MAC Address	Destination Port	Operation
1	00-00-e2-82-8c-e6	8	Delete

This switch supports static Mac address assignment. You can assign static Mac addresses by two methods.

a. Select from the Mac address list in “Dynamic Mac Address Table” page.

b. Assign manual. Enter a Mac address and select the port, then add this entry to the static Mac address table.

The switch will not age out these static Mac addresses. But there is a limitation for these static Mac addresses - *they are allowed to work on the assigned port only because they are static fixed on the assignment port*.

If you want to delete an entry in the static Mac address table, click [Delete] button of the entry and the static Mac address will be removed from the table.

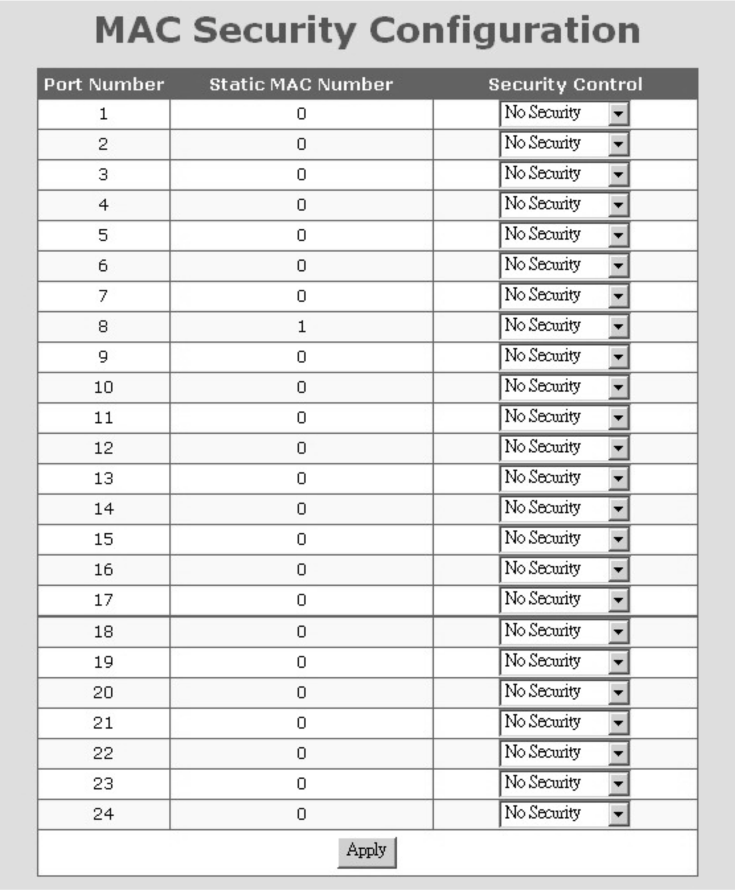
About Port Security function . . .

You can configure “Mac Security Configuration” function for port access security with Mac address. There are “Accept” and “Reject” modes for it.

“Accept” mode: Only the static address can access network via the port.

“Reject” mode: Only the static address cannot access network via the port.

6. Mac Security Configuration



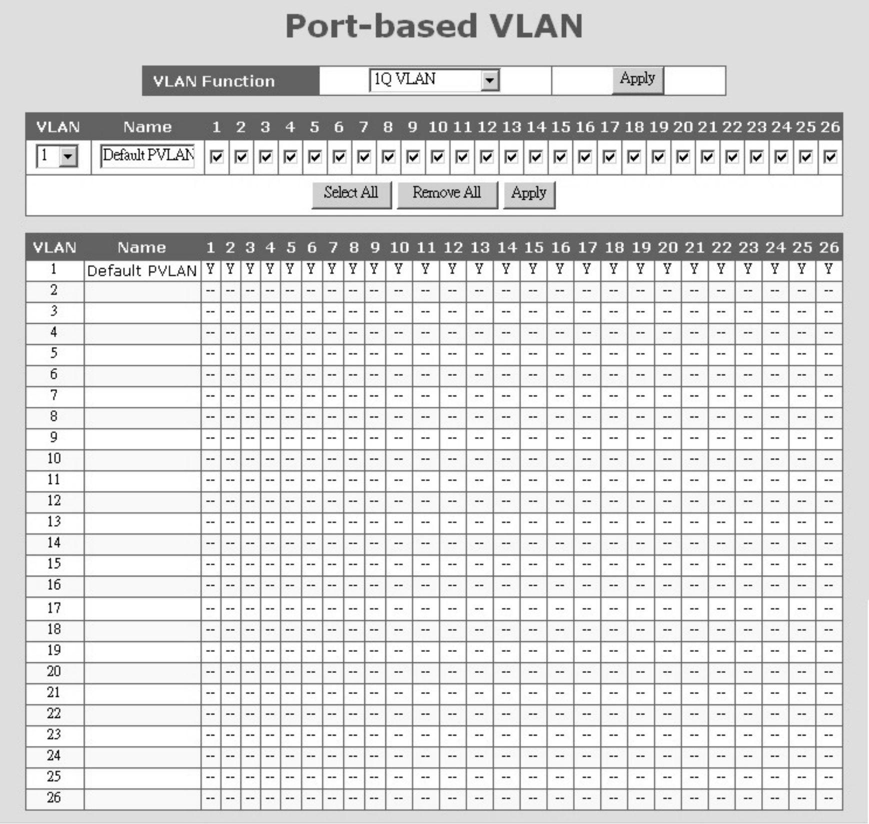
MAC Security Configuration

Port Number	Static MAC Number	Security Control
1	0	No Security
2	0	No Security
3	0	No Security
4	0	No Security
5	0	No Security
6	0	No Security
7	0	No Security
8	1	No Security
9	0	No Security
10	0	No Security
11	0	No Security
12	0	No Security
13	0	No Security
14	0	No Security
15	0	No Security
16	0	No Security
17	0	No Security
18	0	No Security
19	0	No Security
20	0	No Security
21	0	No Security
22	0	No Security
23	0	No Security
24	0	No Security

This function is used to set the security modes for static Mac address on the port. There could be three options for this function.

1. **No Security**: No any Mac address access limitation for the port, i.e. every Mac address could access network through the port.
2. **Accept function**: The port can accept the static Mac address only, i.e. only the user with the static Mac address can access network through the port.
3. **Reject function**: Only the static address will be rejected by the port, i.e. other Mac address except the static Mac address can access network through the port.

7. Port-based VLAN



Port-based VLAN

VLAN Function: 1Q VLAN ▾ | Apply

VLAN	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1 ▾	Default PVLAN	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑

Select All | Remove All | Apply

VLAN	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	Default PVLAN	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

This switch supports both 802.1Q VLAN and Port-based VLAN function. This web page is for you to configure port-based VLAN.

There are three parts in the page.

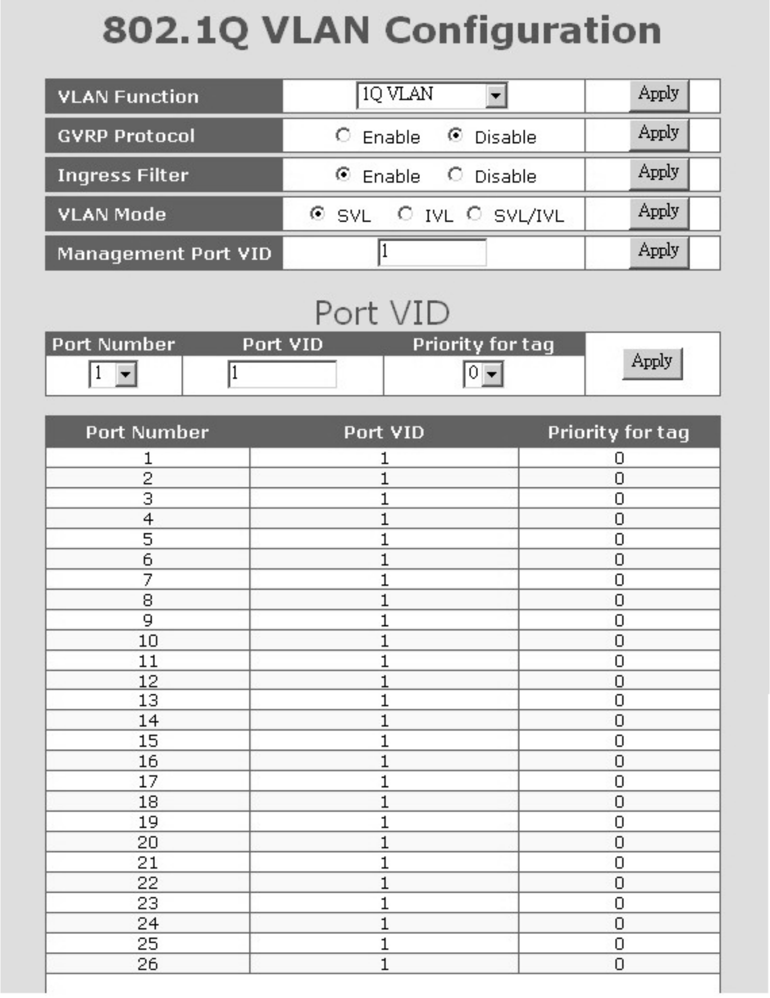
1. VLAN Mode Selecting:
   With "VLAN Function", you can change the VLAN mode as 802.1Q VLAN, Port-based VLAN and Disabled.

2. VLAN Creating/Modifying
   You can create/modify a Port-based VLAN with the following steps.
   a. Select the VLAN ID number.
   b. Enter the Name for the VLAN.
   c. Select the ports for the VLAN. (You can click [Select All] to select all ports or click [Remove All] to remove all ports from the VLAN.)

d. Click [Apply] to activate it.

3. Current Port-based VLAN Table
   You can see current Port-based VLAN settings in the table.

8. 802.1Q VLAN Configuration



802.1Q VLAN Configuration

VLAN Function	1Q VLAN	Apply
GVRP Protocol	○ Enable ● Disable	Apply
Ingress Filter	● Enable ○ Disable	Apply
VLAN Mode	● SVL ○ IVL ○ SVL/IVL	Apply
Management Port VID	1	Apply

Port VID

Port Number	Port VID	Priority for tag	
1	1	0	Apply

Port Number	Port VID	Priority for tag
1	1	0
2	1	0
3	1	0
4	1	0
5	1	0
6	1	0
7	1	0
8	1	0
9	1	0
10	1	0
11	1	0
12	1	0
13	1	0
14	1	0
15	1	0
16	1	0
17	1	0
18	1	0
19	1	0
20	1	0
21	1	0
22	1	0
23	1	0
24	1	0
25	1	0
26	1	0

This function is used to configure 802.1Q VLAN function.

VLAN Function: This function is used to select VLAN mode – 802.1Q VLAN, Port-based VLAN and Disabled.

GVRP Protocol: The GVRP protocol can learn remote 802.1Q VLAN on other devices and add to dynamic 802.1Q VLAN table. You can enable/disable the operation of this protocol.

Ingress Filter: The ingress-filter function is for doing VLAN filtering at ingress port. If the packet and its ingress port are in the same VLAN, it will go to forwarding process. Otherwise, it will be discarded.

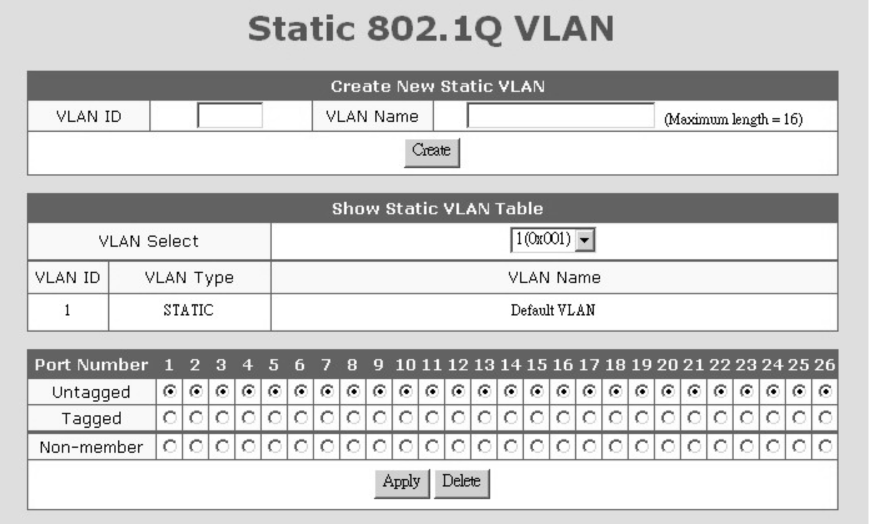
VLAN Mode: This function can select different VLAN modes of 802.1Q VLAN operation. There are three modes for 802.1Q VLAN function – SVL (Shared VLAN), IVL (Individual VLAN) and SVL/IVL.
SVL mode – the switch will do packet forwarding according to its Mac address only.
IVL mode – the switch will do packet forwarding according to its Mac address and its VLAN ID.
SVL/IVL mode – its operation is the same as IVL mode, but for untagged port is used as the uplink port in MDU/MTU application.
For most VLAN applications, SVL mode is OK.

Management Port VID: This is the VLAN ID for the switch management interface. Only users in the same VLAN can manage the switch by network. That could be applied for security of switch management.

Port VID: This setting is for untagged packet translated to tagged packet. The Port VID and Priority Setting will be used for tag adding in the translation. When untagged packet is forwarded to tagged port, tag will be added and the Port VID and Priority Setting will be applied to the tag.

Select the Port Number and set its “Port VID” and “Priority for Tag”. Then click [Apply] to activate it.

9. Static 802.1Q VLAN



Static 802.1Q VLAN

Create New Static VLAN

VLAN ID		VLAN Name		(Maximum length = 16)

Show Static VLAN Table

VLAN Select	1(0x001)

VLAN ID	VLAN Type	VLAN Name
1	STATIC	Default VLAN

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Untagged	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tagged	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Non-member	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Create an 802.1Q VLAN:

1. Input the VLAN ID and VLAN Name in “Create New Static VLAN”. Click [Create] to create the VLAN. The valid VLAN ID is 1 ~ 4094.
2. Select the VLAN in “Show Static VLAN Table”. The new VLAN is empty by default. You can select the ports for the VLAN and tagged/untagged for them. After that, click [Apply] to complete the VLAN configuration.

Modify an 802.1Q VLAN:

1. Select the VLAN in “Show Static VLAN Table”.
2. Modify its setting and click [Apply] to activate the new setting.

Delete an 802.1Q VLAN:

1. Select the VLAN in “Show Static VLAN Table”.
2. Click [Delete] to delete the 802.1Q VLAN.

About Tagged/Untagged

The tagged port will always send out packets with tag. If untagged packet is received, tag will be added with the PVID setting of ingress port before forwarded to tagged port. The 802.1Q VLAN information will be carried in the tag.

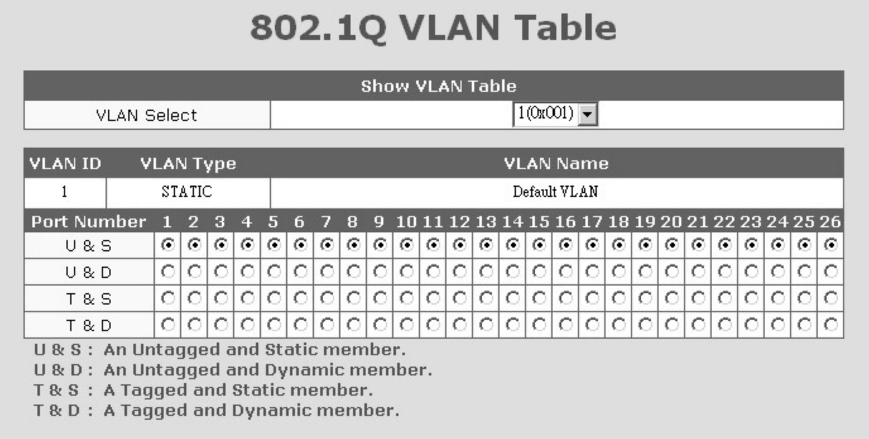
The untagged port will always send out packets without tag. If tagged packet is received, tag will be removed from the packet before forwarded to untagged port.

Note: Most network adapters or devices are untagged devices. If they are connected to tagged port, they will fail to access network because of the tag in packet.

About Switch Management from Users

Only the users in the same VLAN as Management Port PVID (set in “802.1Q VLAN Configuration” page) can manage the switch via Web/Telnet/SNMP. The users in other VLAN cannot manage the switch from network.

10. 802.1Q VLAN Table



802.1Q VLAN Table

Show VLAN Table	
VLAN Select	1(0x001) ▾

VLAN ID	VLAN Type	VLAN Name
1	STATIC	Default VLAN

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
U & S	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
U & D	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T & S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T & D	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

U & S : An Untagged and Static member.
U & D : An Untagged and Dynamic member.
T & S : A Tagged and Static member.
T & D : A Tagged and Dynamic member.

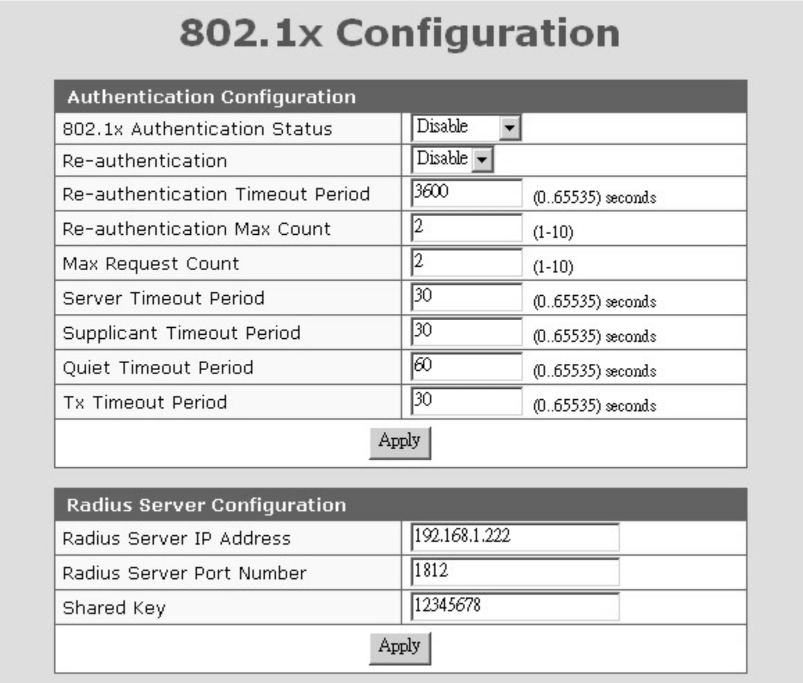
This table will show the activity of 802.1Q VLAN. Both static and dynamic 802.1Q VLAN will be shown in the table.

Follow the steps to show the 802.1Q VLAN.

1. Select a VLAN in “Show VLAN Table”.
2. The 802.1Q VLAN activity status will be shown for the selected VLAN.

If GVRP protocol is enabled, this table will also show the learned remote 802.1Q VLAN.

11. 802.1x Configuration



802.1x Configuration

Authentication Configuration	
802.1x Authentication Status	Disable
Re-authentication	Disable
Re-authentication Timeout Period	3600 (0..65535) seconds
Re-authentication Max Count	2 (1-10)
Max Request Count	2 (1-10)
Server Timeout Period	30 (0..65535) seconds
Supplicant Timeout Period	30 (0..65535) seconds
Quiet Timeout Period	60 (0..65535) seconds
Tx Timeout Period	30 (0..65535) seconds

Radius Server Configuration	
Radius Server IP Address	192.168.1.222
Radius Server Port Number	1812
Shared Key	12345678

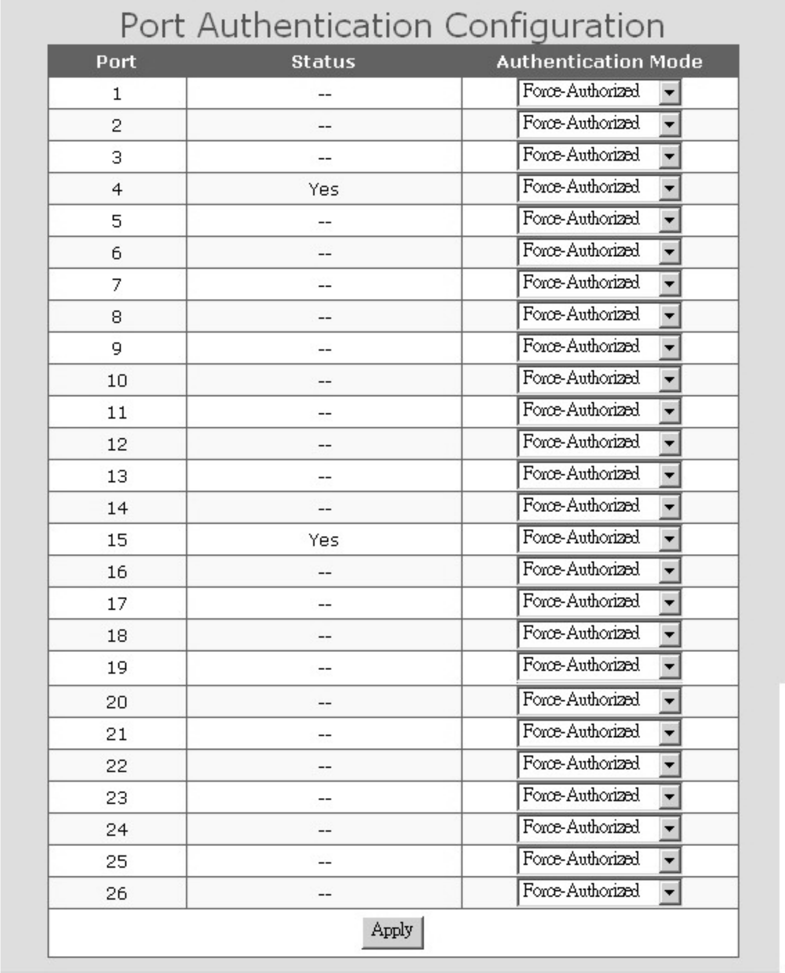
The 802.1x function can limit the port access for authentication users only. It needs a RADIUS server for the authentication process and the switch acts as an authenticator.

The function here is for 802.1x function configuration.

1. 802.1x Authentication Status: [Enable/Disable/Transparent]
   Enable: enable 802.1x function in authentication mode
   Disable: disable 802.1x function
   Transparent: only forwarding 802.1x packets
2. Re-authentication (enable/disable), Timeout Period and Max Count:
   The re-authentication function will re-authenticate users after the timeout period. The Max Count is the maximum re-try count between the switch and users before authentication fail.
3. Max Request Count and Server Timeout Period:
   The Server Timeout Period is the timeout period for the request between the switch and RADIUS server.
   The Max Request Count is the maximum re-try count between the switch and RADIUS server before authentication fail.
4. Supplicant Timeout Period:

This is the timeout value between the switch and users (called “supplicant” in 802.1x) after first identification. The valid value is 0~65535.

5. Quiet Timeout Period:
   This is the quiet time value between the switch and the user before next authentication process when authentication fails.
6. Tx Timeout Period:
   This is the timeout value for the identification request from the switch to users. The request will be re-tried until the **Re-authentication Max Count** is met. After that, authentication fail message will be sent. The valid value is 0~65535.
7. Radius Server Configuration:
   This function is for configuration between switch and RADIUS server.



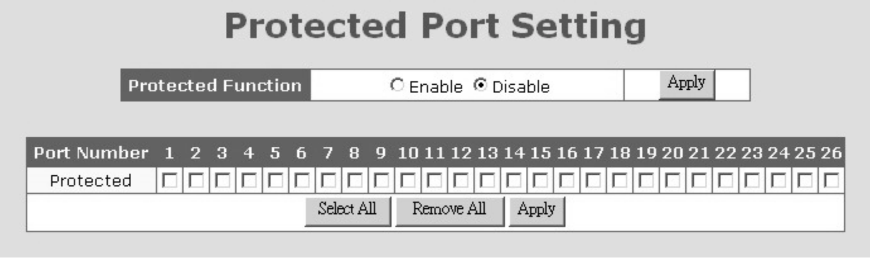
Port Authentication Configuration

Port	Status	Authentication Mode
1	--	Force-Authorized
2	--	Force-Authorized
3	--	Force-Authorized
4	Yes	Force-Authorized
5	--	Force-Authorized
6	--	Force-Authorized
7	--	Force-Authorized
8	--	Force-Authorized
9	--	Force-Authorized
10	--	Force-Authorized
11	--	Force-Authorized
12	--	Force-Authorized
13	--	Force-Authorized
14	--	Force-Authorized
15	Yes	Force-Authorized
16	--	Force-Authorized
17	--	Force-Authorized
18	--	Force-Authorized
19	--	Force-Authorized
20	--	Force-Authorized
21	--	Force-Authorized
22	--	Force-Authorized
23	--	Force-Authorized
24	--	Force-Authorized
25	--	Force-Authorized
26	--	Force-Authorized

The Port Authentication Configuration is used to select the authentication mode for each port of the switch.

1. Auto: This is the normal 802.1x operation mode. The authentication status (authenticated or unauthenticated) depends on the authentication result of port.
2. Force-Authorized: This mode will force the port always being authentication successful in 802.1x process and the real authentication result will be ignored.
3. Force-Unauthorized: This mode will force the port always being authentication fail in 802.1x process and the real authentication result will be ignored.
4. None: This mode will disable 802.1x operation on this port.

12. Protected Port Setting


Protected Port Setting

Protected Function: ○ Enable ● Disable

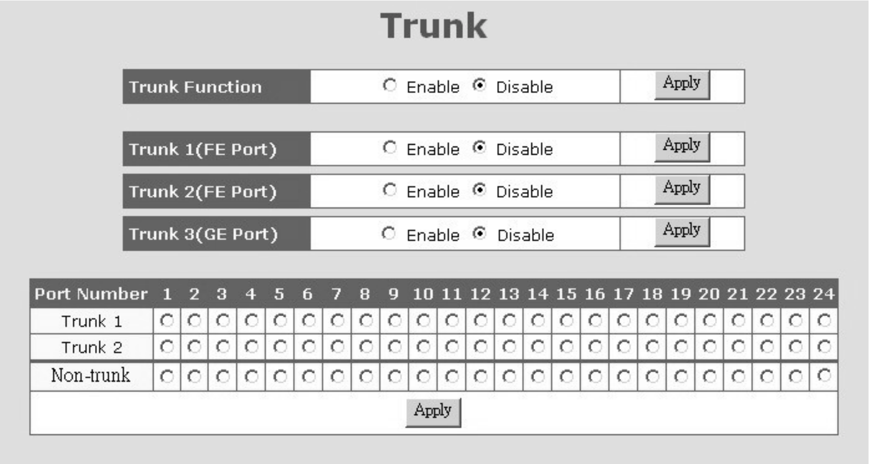
Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Protected	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□

The Protected Port function can isolate the traffic between these protected ports. For example, Port 1,2,3 are marked as protected. So the traffic between Port 1,2,3 will be blocked, even they are in the same VLAN. But they still can communicate with other ports in the same VLAN. This function is for security application of switch.

Follow the steps to enable this function and complete the setting.

1. Select “Enable” and click [Apply] in “Protected Function”.
2. Select the ports that will be isolated from each other and click [Apply]. (You can click [Select All] to select all ports and click [Remove All] to remove all the selections.)

13. Trunk



Trunk

Trunk Function	○ Enable ● Disable	Apply

Trunk 1(FE Port)	○ Enable ● Disable	Apply
Trunk 2(FE Port)	○ Enable ● Disable	Apply
Trunk 3(GE Port)	○ Enable ● Disable	Apply

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Trunk 1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trunk 2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Non-trunk	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

This switch supports three trunk connections and they are null by default. If users want to use trunk function, follow the steps to configure it.

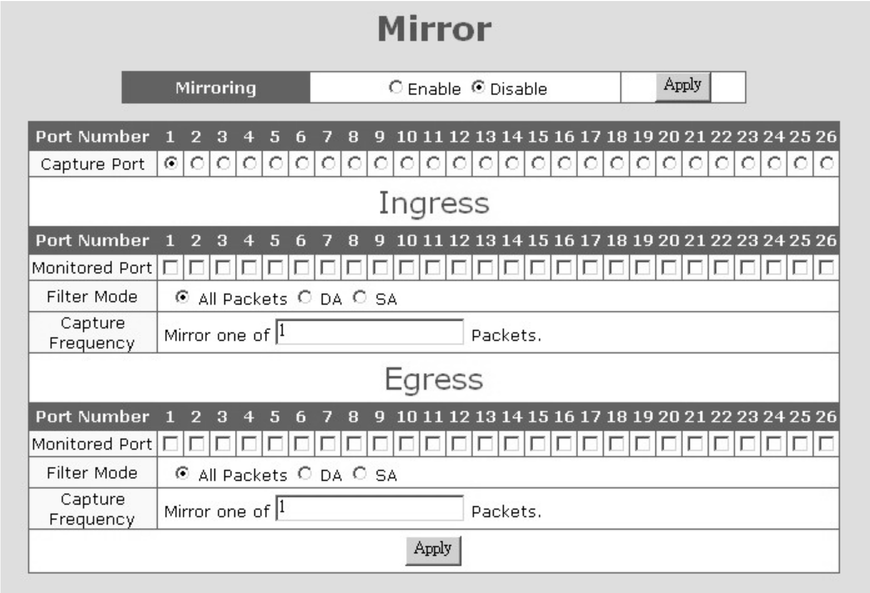
1. Select Enable in "Trunk Function" and click [Apply] to enable the function.
2. If you will create the trunk connection by 10/100M ports, you can enable Trunk 1 or Trunk 2.
   If you will create the trunk connection by gigabit ports, you can enable Trunk 3 and the gigabit ports will be in a trunk.
3. If Trunk 1 or Trunk 2 is selected, you can select the ports for them. And click [Apply] to activate it.

If you want to disable trunk function, select "Disable" and click [Apply] button. The switch will clear the Trunk configuration.

About redundant application . . .

The trunk connection supports redundant function. If any trunk cable is broken, the traffic going through that cable will be transferred to another trunk cable in the trunk connection automatically.

14. Mirror



Mirror

Mirroring	○ Enable ● Disable	Apply

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Capture Port	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Ingress

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Monitored Port	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Filter Mode	● All Packets ○ DA ○ SA																									
Capture Frequency	Mirror one of 1 Packets.																									

Egress

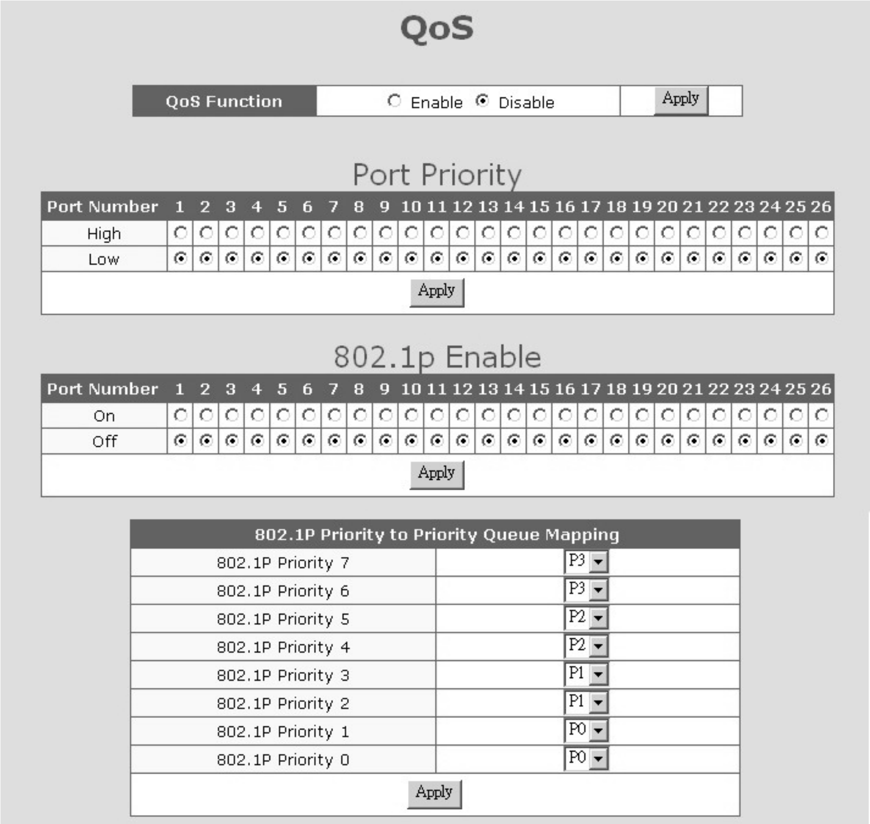
Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Monitored Port	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Filter Mode	● All Packets ○ DA ○ SA																									
Capture Frequency	Mirror one of 1 Packets.																									

Follow the steps to configure Mirror function.

1. Select Enable in “Mirroring” and click [Apply] to enable the function.
2. Select the capture port. (The monitored traffic will be forwarded to this port.)
3. Select the monitored port from Ingress or Egress table – depending on the traffic direction.
4. Select the capture mode – All packets or for some special DA/SA address. If DA/SA is selected, enter the special Mac address in “xx-xx-xx-xx-xx-xx” format.
5. Enter the capture frequency.
6. Click [Apply] button.

If you want to disable Mirror function, select Disable and click [Apply].

15. QoS



QoS

QoS Function	○ Enable ● Disable	Apply

Port Priority

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
High	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Low	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Apply

802.1p Enable

Port Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
On	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Off	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Apply

802.1P Priority to Priority Queue Mapping	
802.1P Priority 7	P3
802.1P Priority 6	P3
802.1P Priority 5	P2
802.1P Priority 4	P2
802.1P Priority 3	P1
802.1P Priority 2	P1
802.1P Priority 1	P0
802.1P Priority 0	P0

Apply

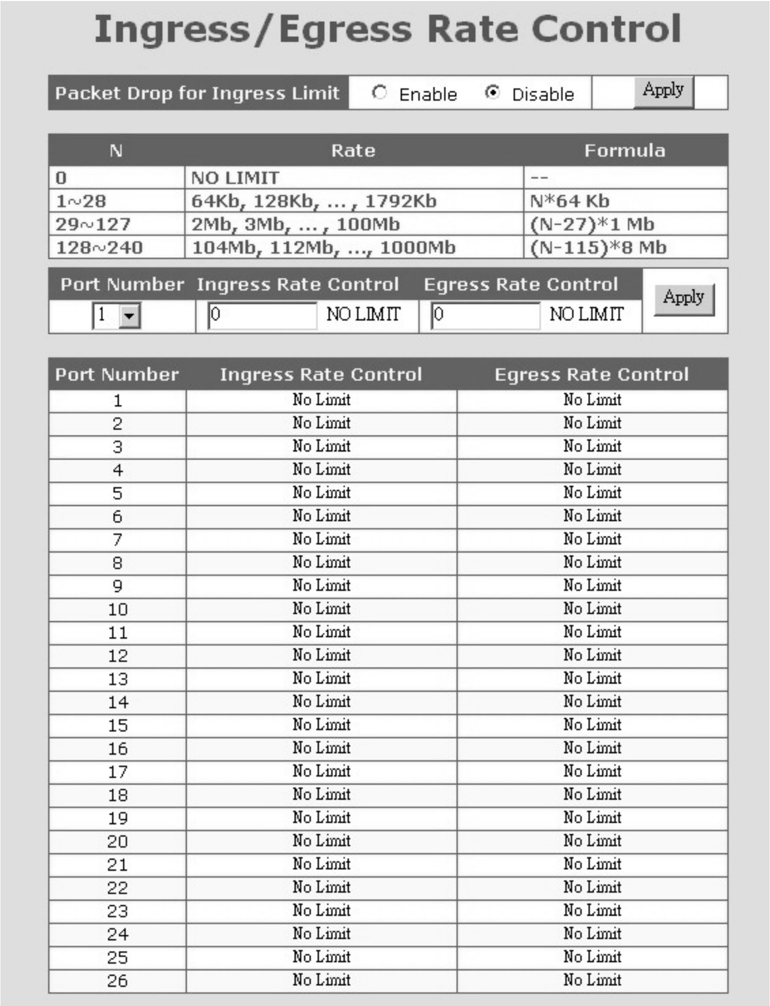
This switch supports four priority queues on each port for QoS operation.

Follow the steps to configure QoS function.

1. Select Enable in “QoS Function” and click [Apply] to enable the function.
2. If port-based priority is used, select ports for High and Low priorities. The packets from High priority port will be forwarded to highest priority queue on egress port. And the packets from Low priority port will be forwarded to lowest priority queue on egress port.
3. For 802.1P tagged packet, its priority value is 0 ~ 7. Select the ports that enable the 802.1P priority function, i.e. it will forward packet with the priority information in tag. Then you can configure the 802.1P priority mapping to priority queue of port.
4. Click [Apply] to activate the setting after configuration.

If you want to disable QoS operation, select Disable and click [Apply] button.

16. Rate Control



Ingress/Egress Rate Control

Packet Drop for Ingress Limit	○ Enable ● Disable	Apply

N	Rate	Formula
0	NO LIMIT	--
1~28	64Kb, 128Kb, ... , 1792Kb	N*64 Kb
29~127	2Mb, 3Mb, ... , 100Mb	(N-27)*1 Mb
128~240	104Mb, 112Mb, ..., 1000Mb	(N-115)*8 Mb

Port Number	Ingress Rate Control	Egress Rate Control	
1	0 NO LIMIT	0 NO LIMIT	Apply

Port Number	Ingress Rate Control	Egress Rate Control
1	No Limit	No Limit
2	No Limit	No Limit
3	No Limit	No Limit
4	No Limit	No Limit
5	No Limit	No Limit
6	No Limit	No Limit
7	No Limit	No Limit
8	No Limit	No Limit
9	No Limit	No Limit
10	No Limit	No Limit
11	No Limit	No Limit
12	No Limit	No Limit
13	No Limit	No Limit
14	No Limit	No Limit
15	No Limit	No Limit
16	No Limit	No Limit
17	No Limit	No Limit
18	No Limit	No Limit
19	No Limit	No Limit
20	No Limit	No Limit
21	No Limit	No Limit
22	No Limit	No Limit
23	No Limit	No Limit
24	No Limit	No Limit
25	No Limit	No Limit
26	No Limit	No Limit

The rate control function can limit the maximum traffic rate for each physical port. The traffic could be ingress traffic or egress traffic.

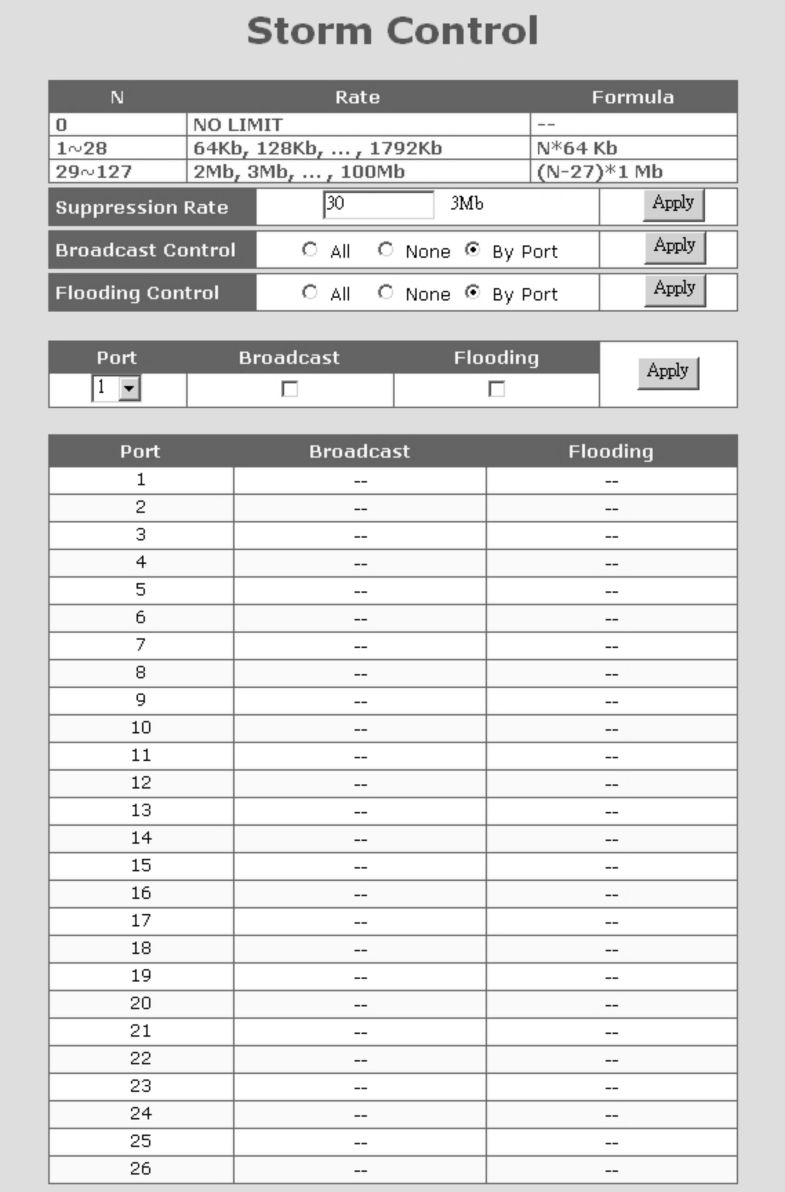
The rate control range is 64Kbps ~ 1000Mbps. Here is the rule for the setting.

Maximum Rate	Rate Control Number (N)	Rule
No Limit	0	0 means no limit.
64K,128K,192K,…,1792Kbps	1 ~ 28	Rate = N x 64Kbps
2M,3M,4M, …,100Mbps	29 ~ 127	Rate = (N-27) x 1Mbps
104M,112M,…,1000Mbps	128 ~ 240	Rate = (N-115) x 8Mbps

For example, if you want to limit the download traffic rate of Port 2 to 512Kbps, you should set the Egress Rate Control of Port 2 to 8 (8=512/64 and egress is for download operation and ingress is for upload operation).

The **Packet Drop for Ingress Limit** is for packet dropping operation when ingress traffic rate exceeds the Ingress Rate Control. If it is enabled, the extra packets will be dropped to limit the ingress traffic rate. If it is disabled, flow control function will be used to pause the ingress traffic.

17. Storm Control



Storm Control

N	Rate	Formula
0	NO LIMIT	--
1~28	64Kb, 128Kb, ... , 1792Kb	N*64 Kb
29~127	2Mb, 3Mb, ... , 100Mb	(N-27)*1 Mb

Suppression Rate	30 3Mb	Apply
Broadcast Control	○ All ○ None ● By Port	Apply
Flooding Control	○ All ○ None ● By Port	Apply

Port	Broadcast	Flooding	
1	□	□	Apply

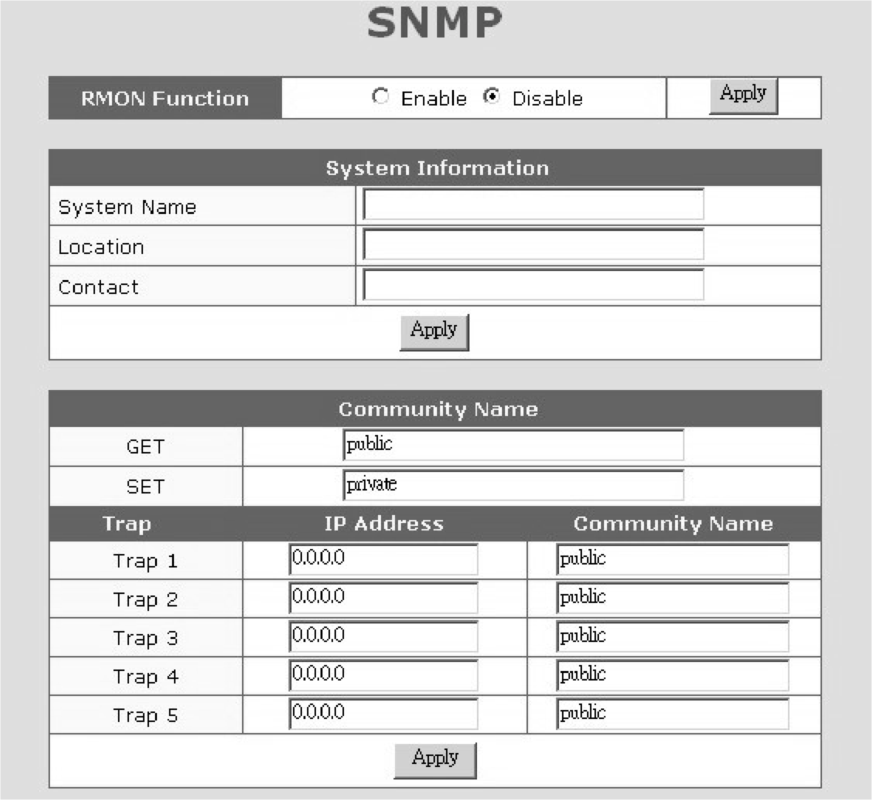
Port	Broadcast	Flooding
1	--	--
2	--	--
3	--	--
4	--	--
5	--	--
6	--	--
7	--	--
8	--	--
9	--	--
10	--	--
11	--	--
12	--	--
13	--	--
14	--	--
15	--	--
16	--	--
17	--	--
18	--	--
19	--	--
20	--	--
21	--	--
22	--	--
23	--	--
24	--	--
25	--	--
26	--	--

The storm control function can limit the maximum traffic rate for packet storm. There are two traffic storms could be limited – broadcast storm and flooding packet storm. You can enable the storm control by port. Follow the steps to do the storm control settings.

1. Set the suppression rate.
2. Select which storm will be controlled and which ports will be applied – all of the ports, none of the ports or selected by port in the table.
3. If “By Port” is selected, select the ports that will apply the storm control.

Note:
Broadcast – it is ”one to all” traffic. Every port will receive the packets.
Flooding - it is “one to all” traffic caused by Mac address not found in the switch. Every port will receive the packets.

18. SNMP



SNMP

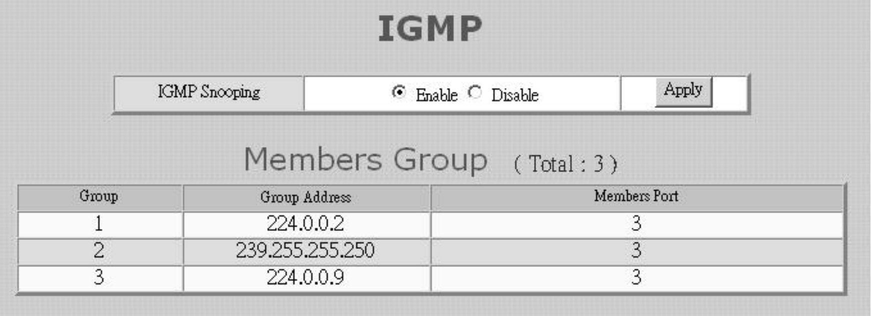
RMON Function	○ Enable ● Disable	Apply

System Information	
System Name	
Location	
Contact	

Community Name		
GET	public	
SET	private	
Trap	**IP Address**	**Community Name**
Trap 1	0.0.0.0	public
Trap 2	0.0.0.0	public
Trap 3	0.0.0.0	public
Trap 4	0.0.0.0	public
Trap 5	0.0.0.0	public

In this page, you can enable/disable RMON function; configure GET/SET/Trap Community Name and the IP address for trap operation. Then you can manage this switch with these settings from SNMP management program.

19. IGMP



IGMP

IGMP Snooping ● Enable ○ Disable

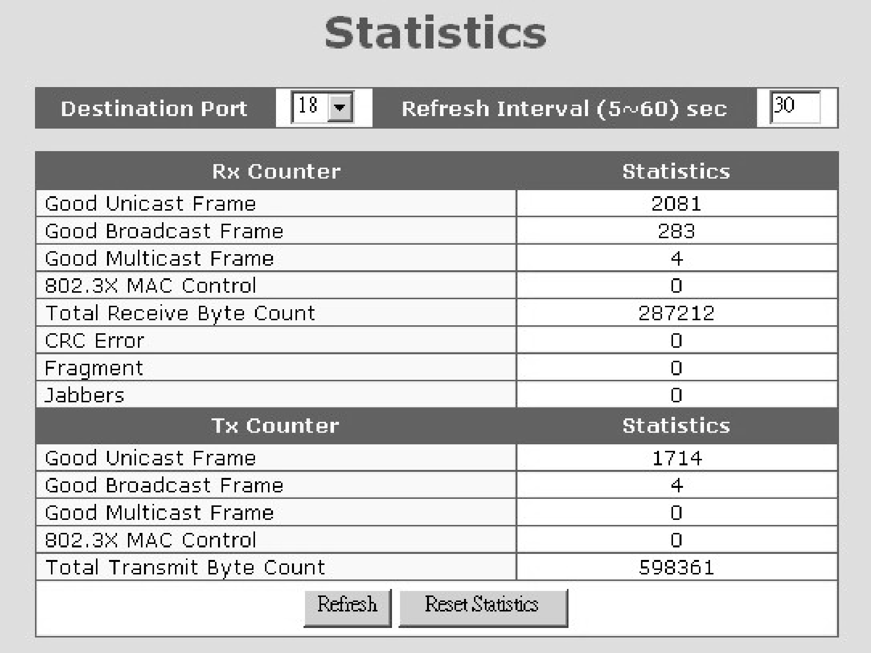
Members Group (Total : 3)

Group	Group Address	Members Port
1	224.0.0.2	3
2	239.255.255.250	3
3	224.0.0.9	3

The IGMP function is for IP multicast operation in network. This switch can do IGMP Snooping function to get the IP multicast group information from IGMP active device. The learned IP multicast member group will be shown in the IGMP web page. This switch will forward IP multicast traffic to these member ports that it learned in the group information.

The IGMP snooping function can be enabled/disabled in this page.

20. Statistics



Statistics

Destination Port: 18 | Refresh Interval (5~60) sec: 30

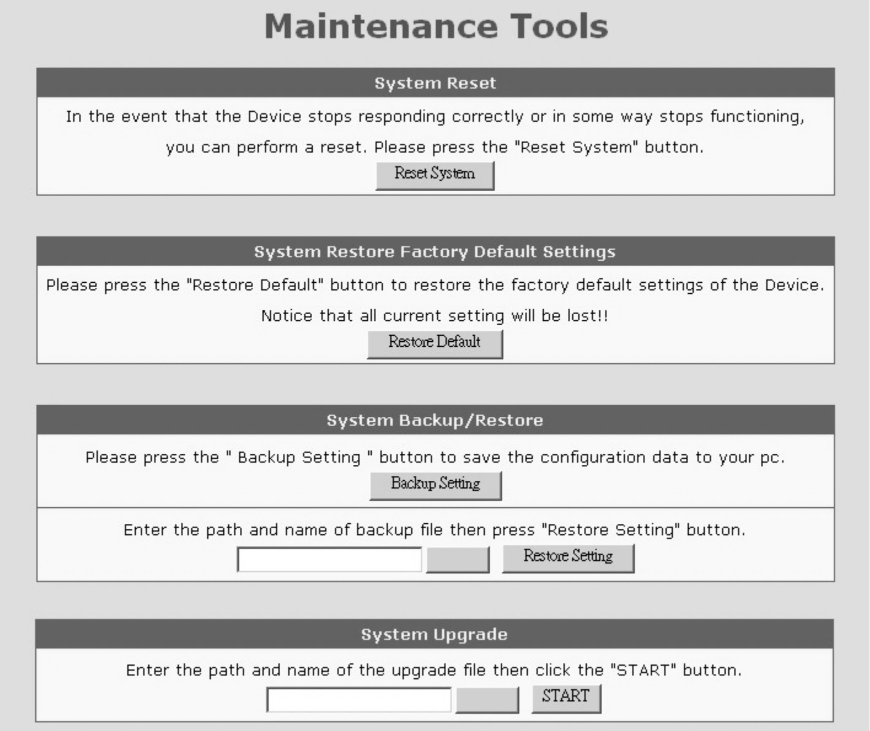
Rx Counter	Statistics
Good Unicast Frame	2081
Good Broadcast Frame	283
Good Multicast Frame	4
802.3X MAC Control	0
Total Receive Byte Count	287212
CRC Error	0
Fragment	0
Jabbers	0
Tx Counter	**Statistics**
Good Unicast Frame	1714
Good Broadcast Frame	4
Good Multicast Frame	0
802.3X MAC Control	0
Total Transmit Byte Count	598361

Users can find the traffic statistics here. Select port number to get the counters for different port.

Users can modify the refresh interval to get different counter updating period. Click “Refresh” button can update the counter immediately.

Users can reset counters to zero with the “Reset Statistics” button.

21. Tools



Maintenance Tools

System Reset

In the event that the Device stops responding correctly or in some way stops functioning, you can perform a reset. Please press the "Reset System" button.

System Restore Factory Default Settings

Please press the "Restore Default" button to restore the factory default settings of the Device. Notice that all current setting will be lost!!

System Backup/Restore

Please press the " Backup Setting " button to save the configuration data to your pc.

Enter the path and name of backup file then press "Restore Setting" button.

System Upgrade

Enter the path and name of the upgrade file then click the "START" button.

Four functions are supported as the system maintenance tools.

a. System Reset
This function will reset the switch.

b. System Restore Factory Default Settings
This function will restore the switch configuration to factory default setting.

c. System Backup/Restore
[Backup Setting] will backup the configuration of the switch to the web management PC.
[Restore Setting] will get the configuration backup file from the web management PC and restore it to the switch.

d. System Upgrade
This function will upgrade the system operation software from the web management PC.

6.4 About Telnet Interface

If you want to use Telnet to management the switch from remote site, you have to set the IP/Mask/Gateway address to the switch first from console. Then use "telnet <IP>" command in DOS. Its operation interface is the same as console interface.

6.5 About SNMP Interface

If you want to use NMS to management the switch from remote site, you have to set the IP/Mask/Gateway address to the switch and configure the SNMP setting of the switch from console first. Then you can use SNMP management program to manage this switch.

This switch supports SNMP Version 1 agent function and MIB II(Interface), Bridge MIB, Etherlike MIB and Private MIB. The default GET community name is “public” and SET community name is “private”.

This switch supports up to five trap receivers with different trap community names.

7. Software Update and Backup

This switch supports software/configuration backup and update/restore functions. It could be done in three ways.

1. **From console when booting**: by Xmodem protocol and doing by terminal program. This function can be used for run-time code and boot code updating. (Boot code works only at boot time - before the main program starts.)

   Press Ctrl-C when the switch is booting, the following message will be shown.

   ```
       Boot Menu
   ==========================
   0: Start the Run-time code
   1: Upgrade Run-time code
   2: Upgrade Boot Code

   => Select:
   ```

   a. *Start the Run-time code* : This option will continue the booting process.

   b. *Upgrade Run-time code*: This option will try to update run-time code (main code) from terminal program with Xmodem protocol. If this option is selected, the following message will be shown.
   "Waiting to receive file by Xmodem ...."
   Then you can select "Send File" function of terminal program and select Xmodem protocol and the update file, then start the file upgrade.

   c. *Upgrade Boot Code*: This option will try to update boot code from terminal program with Xmodem protocol. You can select "Send File" function of terminal program and select Xmodem protocol and the update file, then start the file upgrade.

2. **From console/Telnet when running**: Doing by TFTP protocol and it will need a TFTP server in network. Please refer to the description of "*Upgrade*" function in console operation in Section 6.2.

3. **From web browser**: Doing by http protocol and by web browser. Please refer to the description of "*Tools*" function in Section 6.3.

A. Product Specifications

[24+2G fully-modularized model]

Access Method	Ethernet, CSMA/CD
Standards Conformance	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE IEEE 802.3z, IEEE 802.3ab (1000Base)
Communication Rate	10/100/1000Mbps, Full / Half duplex (auto-negotiation)
Indicator Panel	LEDs - each unit : *Power* / each port : *Link/Act, Full/Col*
Number of Ports	3* 8-port modules, 2* gigabit modules ports
Dimensions	440W x 254D x 44H mm
Certification	CE Mark, FCC Class A
Input Power	Full range: 100 to 240V, 50 to 60 Hz
Temperature	Standard Operating: 0 to 50°C
Humidity	10% to 90% (Non-condensing)
Bridging Function	Filtering, forwarding and learning
Switching Method	Store-and-forward
Address Table	8K entries
Filtering/Forwarding Rate	Line speed
Maximum Packet Size	1536 Bytes (tagged packet)
Flow Control	802.3x for full duplex, backpressure for half duplex
VLAN	802.1Q VLAN, Port-based VLAN
QoS	4 priority queues per ports, for port-based/802.1P tagged-based priority operation
Spanning Tree	Support IEEE 802.1D protocol
Trunking	3 groups max.
Mirror Port	1 capture port for Ingress/Egress traffic, DA/SA filtering function is supported
SNMP	Ver. 1, Supports MIB II(Interface), Bridge MIB, Etherlike MIB, Private MIB
Static Mac ID Access Limit	Static Mac address access limit on port
802.1x	Yes, support Authentication and Transparent modes
Protected Port	Yes
Rate Control	Yes, from 64Kbps to 1000Mbps for both ingress and egress traffic
IGMP	Yes, IGMP snooping function
Out-band Management	Console
In-band Management	Telnet, http, SNMP
Software Update/Backup	by TFTP protocol, Xmodem, for firmware / configuration

B. Compliances

EMI Certification

FCC Class A Certification (USA)

Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are required to correct the interference.

CE Mark Declaration of Conformance for EMI and Safety

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

EMC:	EN55022(1988)/CISPR-22(1985)	class A
	EN60555-2(1995)	class A
	EN60555-3	
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1kV - (power line), 0.5kV - (signal line)