



User Manual

GSS Series 16/24 Port Gigabit Web Managed Switch

(GSS-16T4SFP & GSS-24T4SFP)



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Caution

Electronic Circuit devices are sensitive to static electricity. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electric charge.

To protect your switch, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you handle the switch.
- Pick up the switch by holding it on the left and right edges only.

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

European Community (CE) Electromagnetic Compatibility Directive

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022/EN60555-2 and the Generic European Immunity Standard EN50082-1.

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

Australian C-Tick Compliance.

This equipment is compliant with the required Australian C-Tick standards

About this User Manual

This User Manual will guide you on procedures to install, configure and monitor Alloy 16 port Gigabit (GSS-16T4SFP) and 24 port (GSS-24T4SFP) Gigabit web Managed Switch models utilizing the built-in web management interface.

The two models GSS-16T4SFP and GSS-24T4SFP differ in terms of port density – the former model offering 16x 10/100/1000Mbps Gigabit Ethernet ports, and the latter 24x ports of the same specification. In all other respects (web management interface, for example) the two models share identical characteristics.

Overview of the User Manual

- Chapter 1 “Introduction” describes the features of the GSS series of Gigabit Web Managed switches
- Chapter 2 “Installation”
- Chapter 3 “Operation of the Web-based Management”

1. Introduction

1.1 Overview

Alloy 16/24 Port Gigabit Switches meet all IEEE 802.3/u/x/z standards Gigabit and Fast Ethernet specifications. The 16 Port Gigabit Switch model features 16x 10/100/1000Mbps copper RJ-45 ports and 4x Gigabit Ethernet SFP Ports. The SFP ports can be used to install a range of optional mini-GBIC Gigabit Ethernet Port Modules (which provide the ability to connect multimode and/or single mode fibre optic cable links – see below); the SFP ports are each paired with one of the 10/100/1000Mbps copper RJ-45 ports. The 24 Port Gigabit Switch is identical other than featuring 24x 10/100/1000Mbps copper RJ-45 ports. Both switches are managed through any of their Ethernet RJ-45 ports, using a web-based browser such as Internet Explorer.

The SFP ports can support the following optional mini-GBIC modules for fibre optic cable connections (either single mode or multimode terminated in LC type connectors):

- 1000Mbps multimode 1000Base-SX, 850nm, max. range 500m
- 1000Mbps single mode 1000Base-LX, 1310nm, max. range 10Km
- 1000Mbps single mode 1000Base-LHX, 1310nm, max. range 40Km
- 1000Mbps single mode 1000Base-LHX, 1550nm, max. range 40Km
- 1000Mbps single mode 1000Base-ZX, 1550nm, max. range 70Km
- 1000Mbps single mode 1000Base-EZX, 1550nm, max. range 120Km
- 1000Mbps WDM single mode/single core 1310nm, max. range 20Km
- 1000Mbps WDM single mode/single core 1550nm, max. range 20Km
- 1000Mbps WDM single mode/single core 1310nm, max. range 40Km
- 1000Mbps WDM single mode/single core 1550nm, max. range 40Km
- 1000Mbps CWDM single mode/single core 1470 - 1610nm, max. range 70Km

*Notes: * The two WDM (Wave Division Multiplexer) mini-GBIC modules are designed to facilitate a link over a single core of single mode fibre cable. The two units must be used in a paired manner, one at either end of the link.*

** Mini-GBIC modules that are designed to the relevant standards should be compatible with any make of switch with SFP ports. If you have concerns regarding compatibility, please contact the supplier of your mini-GBIC product.*

The 10/100/1000Mbps copper ports meet all IEEE 802.3/u/x/z Gigabit and Fast Ethernet specifications.

The 1000Mbps SFP Fibre ports via optional mini-GBIC modules are compliant with all IEEE 802.3z and 1000Base-SX/LX/LHX/ZX/EZX standards.

1000Mbps single fibre WDM transceivers are designed with an optic Wavelength Division Multiplexing (WDM) technology that transports bi-directional full duplex signals over a single fibre core.

1.2 Key Features

- 16 or 24 10/100/1000Mbps Gigabit Ethernet Ports all compliant with IEEE802.3, 802.3u, 802.3z and 802.3ab
- 4 Paired TP/SFP fibre ports
- Web Based Management
- Port Based VLAN and Tag-based (IEEE802.1q) VLAN
- 802.1p Class of Service with 2 level priority queuing
- Port Trunking with flexible load distribution and failover function
- Port mirroring function

1.3 Checklist

Before you start installing your switch, verify that the package contains the following:

- A GSS-16T4SFP or GSS-24T4SFP Gigabit Web Managed Switch
- Mounting Accessories (for 19" Rack Shelf mounting)
- CD-ROM
- AC Power Cord

Please notify your supplier immediately if any of the aforementioned items are missing or damaged.

1.4 Overview of the GSS range of switches



Fig. 1.1 Front view of the GSS-16T4SFP switch



Fig. 1.2 Front view of the GSS-24T4SFP switch

1.4.1 User interfaces on the front panel

The front panel of the GSS-16T4SFP and GSS-24T4SFP consists of 16x or 24x 10/100/1000Mbps Copper Gigabit Ethernet ports, 4x SFP fibre ports and 1x reset button to restore factory configuration.

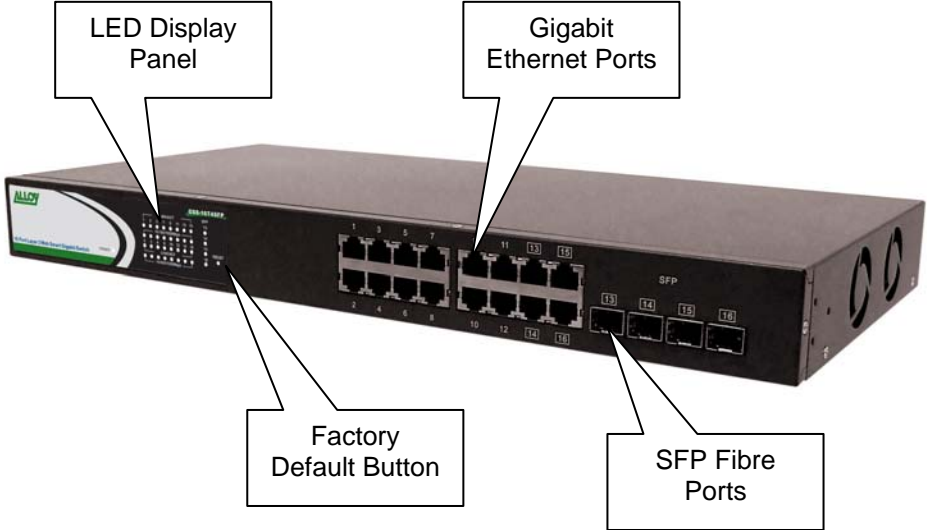


Fig. 1.3 Front Panel of the GSS-16T4SFP

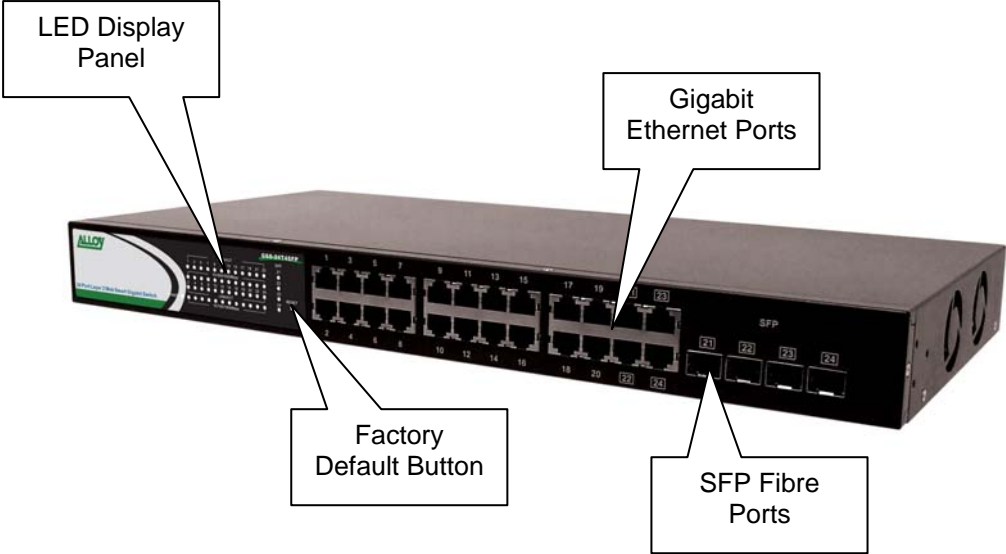


Fig. 1.4 Front Panel of the GSS-24T4SFP

LED Indicators

LED	COLOUR	FUNCTION
System LED's		
Power	Green	Lit when Power is active
Gigabit Copper Ports		
Link/Act	Green	Lit when link is active, flashes when traffic is present
10/100/1000Mbps	Green/Amber	Lit green when 1000Mb link Lit amber when 100Mb link Off when 10Mb link or no link present
Gigabit Fibre Ports		
SFP(LINK/ACT)	Green	Lit when link is active, flashes when traffic present

Note: All SFP ports are paired with one of the 10/100/1000Mbps copper RJ-45 ports. Only one of the paired ports can be used.

1.4.2 User interfaces on the rear panel



Fig. 1.5 Rear Panel of the GSS-16T4SFP & GSS-24T4SFP

1.5. Overview of the Optional SFP Modules

With the GSS-16T4SFP switch, the SFP ports are paired with RJ-45 copper ports 13, 14, 15 and 16. In the case of the GSS-24T4SFP, the SFP ports are paired with RJ-45 copper ports 21, 22, 23 and 24. Only one of any given paired port can be used. In this manner, these paired ports can be seen as 'Dual Media' ports that support 10/100/1000Mbps or 1000Mbps fibre via the SFP interfaces.

Optional 1000Mbps mini-GBIC fibre transceiver modules can be used for high-speed uplink connections to fibre backbones or servers, when installed in the SFP ports. A range of optional Alloy mini-GBIC modules are available:

Alloy Part No.	Description
MGBIC-MLC	1000Mbps multimode 1000Base-SX, 850nm, max. range 500m
MGBIC-SLC10	1000Mbps single mode 1000Base-LX, 1310nm, max. range 10Km
MGBIC-SLC4013	1000Mbps single mode 1000Base-LHX, 1310nm, max. range 40Km
MGBIC-SLC4015	1000Mbps single mode 1000Base-LHX, 1550nm, max. range 40Km
MGBIC-SLC70	1000Mbps single mode 1000Base-ZX, 1550nm, max. range 70Km
MGBIC-SLC120	1000Mbps single mode 1000Base-EZX, 1550nm, max. range 120Km
MGBIC-WDMS3.20	1000Mbps WDM single mode/single fibre 1310nm, max. range 20Km
MGBIC-WDMS5.20	1000Mbps WDM single mode/single fibre 1550nm, max. range 20Km
MGBIC-WDMS3.40	1000Mbps WDM single mode/single fibre 1310nm, max. range 40Km
MGBIC-WDMS5.40	1000Mbps WDM single mode/single fibre 1550nm, max. range 40Km
MGBIC-CWDM-70	1000Mbps CWDM single mode/single fibre 1470 -1610nm, max. range 70Km

- Notes:
- * The WDM (Wave Division Multiplexer) mini-GBIC modules are designed to facilitate a link over a single core of single mode fibre cable. The two units must be used in a paired manner, one at either end of the link.
 - * Mini-GBIC modules that are designed to the relevant standards should be compatible with any make of switch with SFP ports. If you have concerns regarding compatibility, please contact the supplier of your mini-GBIC product.
 - * The information given in the table above is current at time of publication; availability of individual Alloy mini-GBIC modules may vary over time.



Fig. 1.4: Front View of 1000Base-SX/LX LC, SFP Fibre Transceiver



Fig. 1.5: Front View of 1000Base-LX WDM LC, SFP Fibre Transceiver

2. Installation

2.1. Starting the GSS Series Switches

This section provides a quick start guide for:

- Hardware and Cable Installation
- Management Station Installation
- Software booting and configuration

2.1.1. Hardware and Cable Installation

Please Note:

- ⇒ Wear a grounding strap to avoid damaging the switch with electrostatic discharge
- ⇒ Be sure that the power switch is in the 'OFF' position before you insert the power cord

• Installing Optional SFP Mini-GBIC Modules

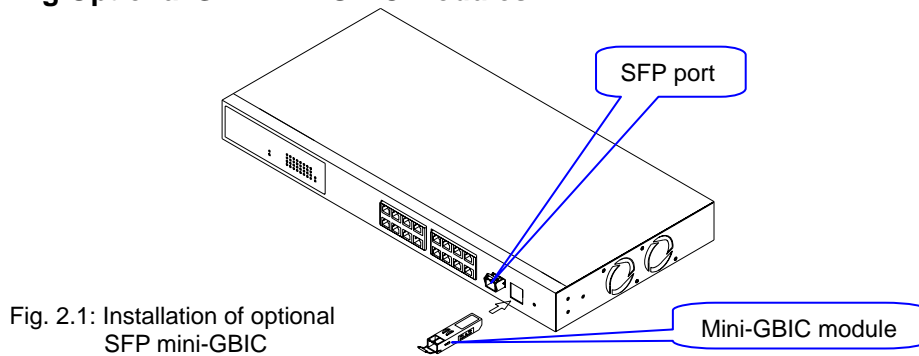


Fig. 2.1: Installation of optional SFP mini-GBIC

• Connecting the SFP Mini-GBIC Module to the Chassis:

The optional SFP Mini-GBIC modules are hot-swappable, so you can plug or unplug them while the power is applied to the switch.

1. Verify that the mini-GBIC module is compatible with the SFP port on the switch (for example, some switch manufacturers design their mini-GBIC modules to be operable only in their branded devices).
2. Verify that the type of mini-GBIC you have selected for use will be compatible with the type of fibre optic cable that is to be used.
3. Verify that the type of mini-GBIC you have selected for use will be compatible with the fibre optic transceiver at the other end of the link (e.g. – compatible wavelength and standard)
4. Slide the module along the slot and ensure that the module is properly seated against the SFP slot socket/connector.
5. Install the media cable for network connection
6. Repeat the above steps, as needed, for each module to be installed into the switch

• Copper Ports - Cable Installation

Please Note:

- ⇒ *The RJ-45 ports on the GSS Series Gigabit Switches support MDI/MDI-X auto-crossover functionality. This enables use of either straight-through or crossover UTP cable types; the RJ-45 ports will automatically be configured to suit the characteristics of the device at the remote end of the link.*
- ⇒ *The RJ-45 ports on Alloy 16/24 Port Gigabit Switches support Nway auto-negotiation; the ports will automatically be configured to be compatible with the speed and duplex settings of the device at the remote end of the link.*
- ⇒ *The minimum grade of cable for use with the switch is Cat.5e grade UTP or STP. Higher grades of UTP/STP cable may also be used to connect to the copper RJ-45 ports.*

1. Depress the clip on the RJ-45 connector and push into the RJ-45 port. Release connector and ensure that the cable connector is securely locked into the RJ-45 port.
2. Repeat the above steps, as needed, for each RJ-45 port to be connected.

• Power On

Please Note:

- ⇒ *Alloy GSS series switches use a 100-240 VAC, 50-60 Hz power supply. The power supply will automatically convert your local AC power source to DC power for use by the switch.*

1. Ensure that the power switch is turned off before connecting mains power
2. Connect the power cord supplied with the switch to your nearest mains outlet
3. Connect the other end of the power cord into the IEC power port on the switch
4. Lock the power cable into place using the power cable clamp mounted on the IEC power port
5. Turn the switch on
6. When initial power is applied, all the LED indicators will light up for a brief period while the system performs its startup tests. Once the initial tests have completed all except the power LED should return to an off state.

• Firmware Loading

After power on, the boot-loader will load the switch firmware into the main operational memory. This process will take about 30 seconds. Once completed, the switch will flash all the LED's once and then switch to a ready state.

2.1.2. Cabling Requirements

To help ensure a successful installation and keep network performance at optimum levels, take care to use Cat.5E grade or higher cabling. Ensure that stranded core UTP cable, if used, runs for no more than 10 metres, and that solid core runs for a maximum of 100metres. Poor cabling is the most common cause for network dropouts or poor performance.

2.1.2.1. Cabling Requirements for UTP Ports

- For Ethernet copper network connections, the UTP cable used must be Cat.3 grade as a minimum, with a maximum length of 100 metres
- For Fast Ethernet copper network connections, the UTP cable used must be Cat.5 grade as a minimum, with a maximum length of 100 metres
- For Gigabit Ethernet copper network connection, UTP cable used must be Cat.5 grade or higher, with a maximum length of 100 metres. Cat.5e grade UTP cable is recommended.

2.1.2.2. Cabling Requirements for 1000SX/LX/ZX SFP Modules

There are two categories of fibre optic cable - multimode (MM) and single mode (SM). The later is categorised into several classes by the distance it supports. These are SX, LX, LHX, ZX and EZX. The majority of mini-GBIC modules available use a LC type connector. The connector types used currently on Alloy mini-GBIC modules are LC and WDM SC, for the following module types:

- Gigabit Fibre with multimode LC mini-GBIC modules
- Gigabit Fibre with single mode LC mini-GBIC modules
- Gigabit Fibre with single mode/single core WDM SC 1310nm mini-GBIC modules
- Gigabit Fibre with single mode/single core WDM SC 1550nm mini-GBIC modules

The following table; lists the types of fibre optic cable that are supported by SFP mini-GBIC modules installed in the GSS series switches. Other cable types not listed here may be supported; please contact the supplier of your switch for details.

IEEE 802.3z Gigabit Ethernet 1000SX 850nm	Multimode Fibre Cable and Modal Bandwidth			
	Multimode 62.5/125µm		Multimode 50/125µm	
	Modal Bandwidth	Range	Modal Bandwidth	Range
	160MHz-Km	220m	400MHz-Km	500m
	200MHz-Km	275m	500MHz-Km	550m
1000Base- LX/LHX/XD/ZX	Single mode Fibre 9/125µm			
	Single mode transceiver 1310nm 10Km, 40Km			
	Single mode transceiver 1550nm 40Km, 70Km, 120Km			
1000Base-LX Single Fibre (WDM SC)	Single mode *20Km, 40Km	TX(Transmit) 1310nm		
		RX(Receive) 1550nm		
	Single mode *20Km, 40Km	TX(Transmit) 1550nm		
		RX(Receive) 1310nm		

Cont.

Please Note:

- ⇒ *Further information can be found in section 1.5 on page 7*
- ⇒ *All figures denoting the range a given cable type can achieve must be treated as maximum values. A number of variables can limit the actual range that can be achieved – grade of cable used, quality of cable, and presence of joins in cable runs, for example*

3. Operation of the Web Based Management

The following chapter allows the administrator to monitor and manage the GSS series through the web management interface. Management functionality such as Port Based and 802.1q VLAN, Port Aggregation (Trunking), QoS, Port configuration and much more can all be configured quickly and easily via any port of the GSS series switches.

To access the web management open a web browser such as Internet Explorer or Mozilla Firefox and enter the default IP address into the address bar.

The default network settings for the GSS Series are shown below:

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.254

Password: admin

Once you have entered the IP address of the GSS Series switch into a web browser you will be prompted with a login screen where you will need to enter a valid password to gain access to the switch. The default password is shown above.

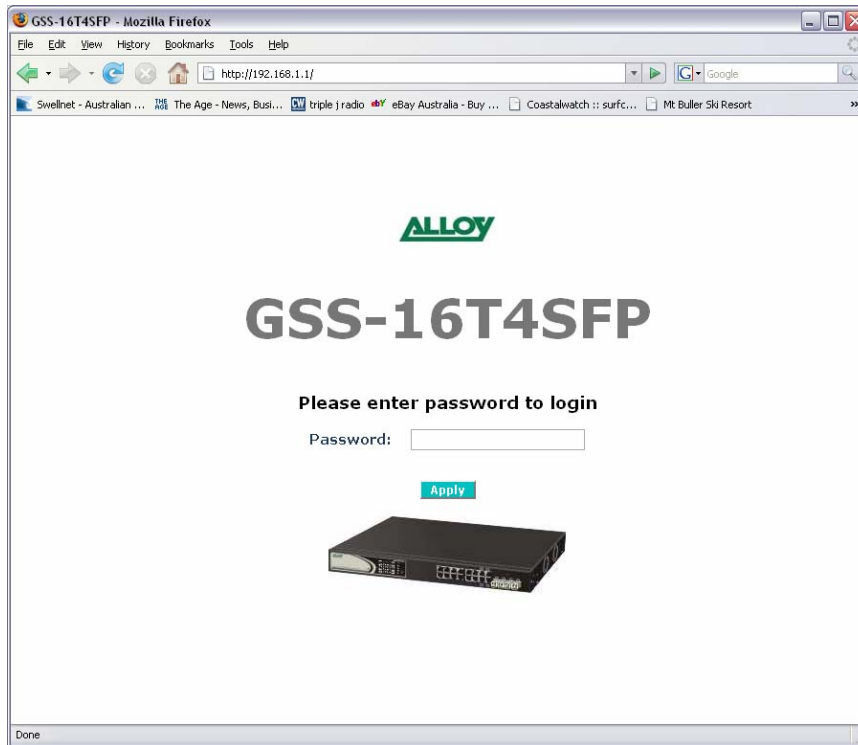


Fig. 3.1

3.1 Web Management Home Overview

Once you have entered a valid password and logged into the switch the System Configuration page will be displayed, this is the default page, it will be displayed every time that you log into the switch.

On the left hand side of the screen you will see a menu structure used to Configure, Monitor and manage your switch. There are three main menu categories Configuration, Monitoring and Maintenance.

Configuration

- **System** – Displays system information including Model Name, Firmware Version, Hardware Version, MAC Address etc. Also used to configure IP and SNMP settings.
- **Ports** – Displays link status of each port and also used to configure port speed, flow control and jumbo frame settings.
- **VLAN Mode** – Used to select the VLAN mode. Modes available are Tag-Based, Port Based and Metro Mode.
- **VLAN Group** - Used to configure VLAN settings.
- **Aggregation** – Used to configure port trunk groups.
- **LACP** – Used to configure LACP (Link Aggregation Control Protocol) settings.
- **802.1x** – Used to configure 802.1x authentication settings.
- **IGMP Snooping** – Used to configure IGMP settings.
- **Mirror** – Used to configure Port Mirroring features.
- **QoS** – Used to configure QoS settings.
- **Filter** – Used to configure filtering features.
- **Rate Limit** – Used to configure Rate Limiting settings.
- **Storm Control** – Used to configure Storm Control settings.
- **SNMP** – Used to configure SNMP settings.

Monitoring

- **Detailed Port Statistics** – Used to view detailed traffic statistics on each port.
- **LACP Status** – Displays LACP status.
- **RSTP Status** – Displays RSTP status.
- **IGMP Status** – Displays IGMP status.
- **Ping** – Used to test connectivity between other network devices.

Maintenance

- **Warm Restart** – Used to restart the switch.
- **Factory Default** – Used to reset the switch to factory default settings.
- **Software Upgrade** – Used to upgrade the firmware in the switch.
- **Configuration File Transfer**– Used to backup and restore the configuration of the switch.
- **Logout** – Used to Logout of the web management.

3.2 Configuration

3.2.1 System Information

The System Information configuration page is used to display basic switch information including the Model Name, MAC Address, Firmware Version, Hardware Version, IP and SNMP information.

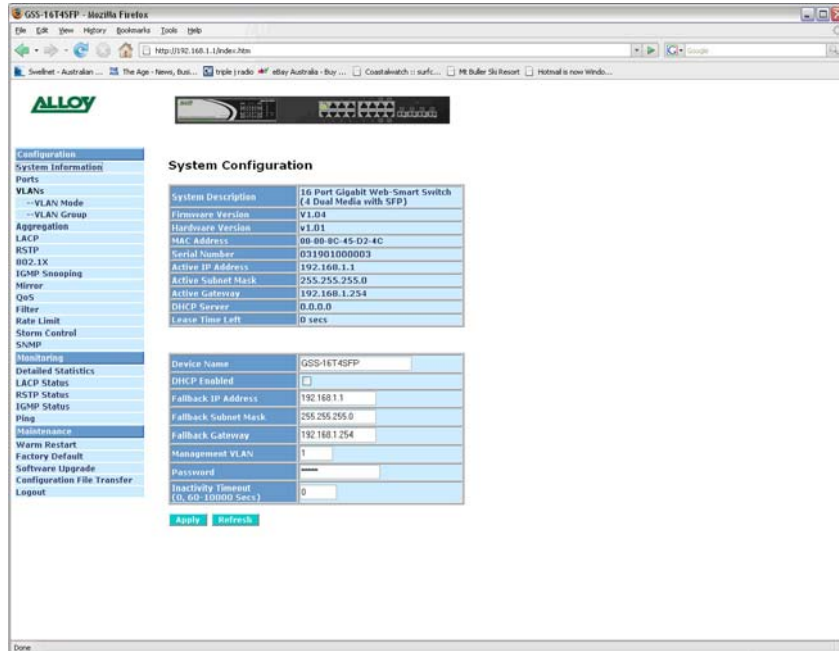


Fig. 3.2

- System Desc:** Displays a brief description of the switch. (Read Only)
- F/W Version:** Displays the current firmware loaded into the switch. (Read Only)
- H/W Version:** Displays the current hardware version. (Read Only)
- MAC Address:** Displays the MAC Address of the switch. (Read Only)
- Serial Number:** Displays the serial number of the switch. (Read Only)
- Active IP Add:** Displays the current IP address of the switch. (Read Only)
- Active Sub Mask:** Displays the current subnet mask of the switch. (Read Only)
- Active Gateway:** Displays the current Default Gateway. (Read Only)
- DHCP Server:** Displays the IP address of the DHCP Server. (Read Only)
- Lease Time:** Displays the amount of time left in the DHCP lease period. (Read Only)
- Device Name:** Enter the device name in the space provided.
- DHCP Enabled:** Used to enable the DHCP client on the switch. If you have a DHCP Server running on your network and you want the switch to have a dynamic IP Address, enable this feature.
- IP Address:** If you are not using the DHCP client and want to configure a static IP Address into the switch, enter it here.
- Subnet Mask:** Enter a valid subnet mask into the space provided.
- Gateway:** Enter a valid gateway address into the space provided.

Management

- VLAN:** Enter the VLAN group used to gain access to the web management. Default value is 1. If you change this value only ports belonging to the VLAN group chosen can manage the switch.
- Password:** If you want to change the default password of the switch please enter it here. Default password is admin.
- Inactivity Timeout:** Used to automatically log you out of the management interface after a specified inactivity time. Time is measured in Seconds, Default value is 0.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.
- Refresh Button:** Used to refresh the current settings displayed on the screen.

3.2.2 Ports

The ports configuration page is used to display the current status of each port on the switch. In this section the user can also change the speed settings and flow control of each port and Jumbo Frame support can also be enabled from this location.

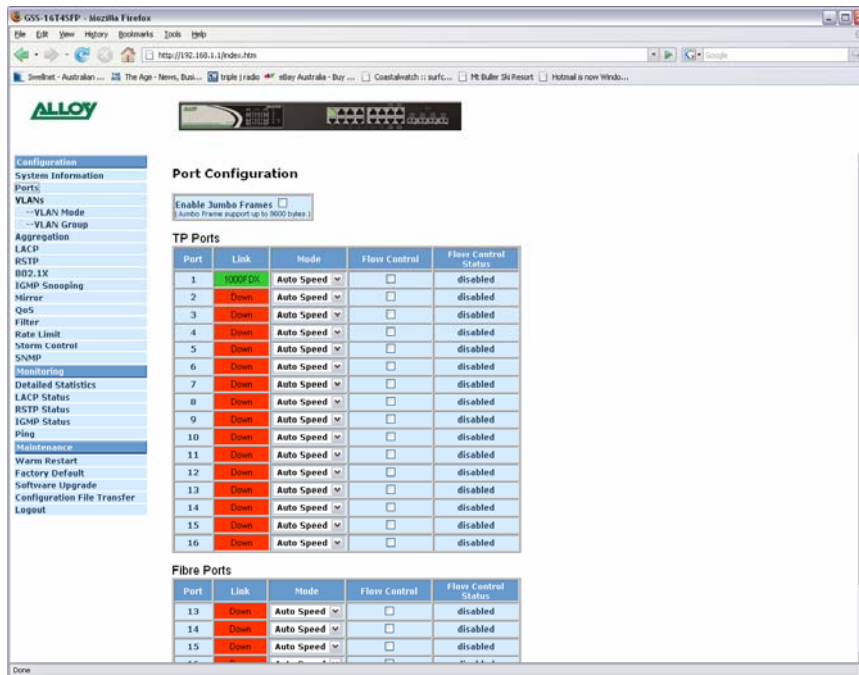


Fig. 3.3

Enable Jumbo

Frames: Tick the check box to enable Jumbo Frame support on each port.

Port: Is the physical port number of the switch.

Link Status: Displays the current link status of each port. Table below displays the values shown depending on connecting device:

Link Status	Description
1000FDX	Port is running at 1000M/Full Duplex
100FDX	Port is running at 100M/Full Duplex
100HDX	Port is running at 100M/Half Duplex
10FDX	Port is running at 10M/Full Duplex
10HDX	Port is running at 10M/Half Duplex
Down	No link is present

Link Mode: Used to disable Auto-Negotiation and force the speed and duplex settings of the port. Values are Auto Speed, 10 Half, 10 Full, 100 Half, 100 Full, 1000 Full and Disable. If disable is selected the port will be fully disabled and will not function. Fibre ports only have three options Auto Speed, 1000 Full and Disabled.

Flow Control: Used to enable Flow Control on the port.

Flow Control

Status: Displays the current flow control status.

Drop Frames after

Excessive Collisions: Used when running half duplex equipment, tick the check box to enable this feature.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Refresh Button: Used to refresh the current settings displayed on the screen.

3.2.3 VLAN Mode

The GSS Series of switches support port based VLAN's, 802.1q tagged VLAN's and Metro mode VLAN's. Up to 16 active Port Based VLAN groups can be configured with a PVID from 1 ~ 4094 for the GSS-16T4SFP and 24 active Port Based VLAN groups can be configured for the GSS-24T4SFP. 24 802.1q Tagged based VLAN's can be created on both models with a PVID ranging from 1 ~ 4094.

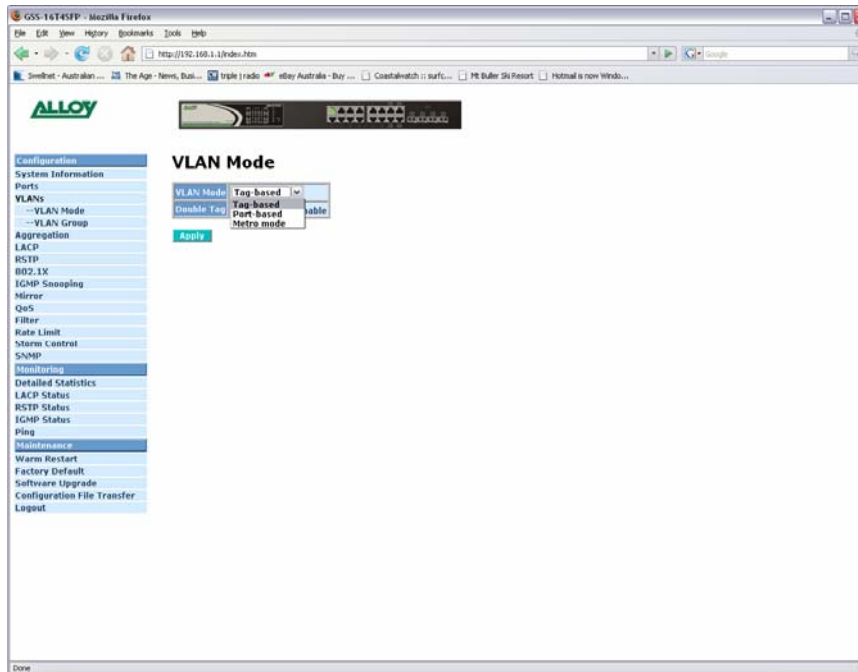


Fig. 3.4

VLAN Mode: Select which VLAN mode you would like to use.

Port Based: Port Based VLAN's are used to logically separate your switch into multiple Virtual Local Area Networks. Port Based VLAN's work by grouping particular ports into groups based on a Group ID. If ports 1, 2, 3 and 4 are configured to belong to VLAN group ID 2 and ports 5, 6, 7 and 8 are configured to belong to VLAN group ID 1, these ports will not be able to communicate with each other. Only ports that belong to the same VLAN Group ID will be able to communicate. A typical example of port based vlan's could be used in an internet café where all computers are not allowed to communicate with each other but must communicate to a single port for internet access. The switch would then be configured with 7 vlan groups. Each VLAN group will consist of 2 ports one for the computer and one for the internet router. This will then block each computer from communicating with each other, but still enable communication with the port connected to the internet router. Port based VLAN's can only be used on single switches if you wish to span your VLAN's across multiple switches 802.1q Tag VLAN's must be used.

Tag-Based: Tag-based VLAN's identify members by its VID. A VID can be applied to a packet from a host machine that supports 802.1q or from the switch itself when a packet is sent from the switch. Ingress and Egress rules can also be applied to each port to identify how a packet is handled. The switch will accept both tagged and un-tagged packets depending on the ingress rules that have been defined. Rules can be created to allow only incoming packets to be tagged; however when this Rule is applied any untagged packets will be dropped.

- Metro-Mode:** Metro Mode VLAN's is a quick method of creating 13, 14, 15 or 16 port based VLAN groups. Each port is separated into its own VLAN group with 1, 2, 3, or 4 ports belonging to each group. Each group contains its own port and the uplink port.
- Double Tag:** Double Tag also known as Q in Q is used to encapsulate a second VLAN tag inside an Ethernet packet. This type of scenario is mainly used for service provider networks. The inner VLAN tag is used by the customer's network where the outer VLAN tag is used by the service provider for their network.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.4 VLAN Group

Tag Based VLAN's

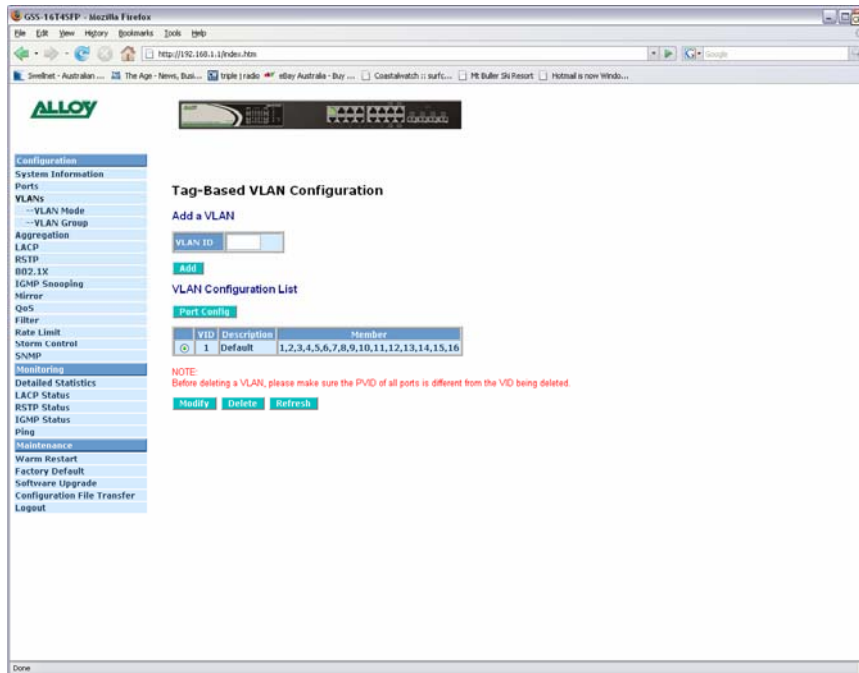


Fig. 3.5

VLAN ID: To create a new VLAN group, Enter a valid VLAN ID into the space provided. A new screen will appear as shown below:

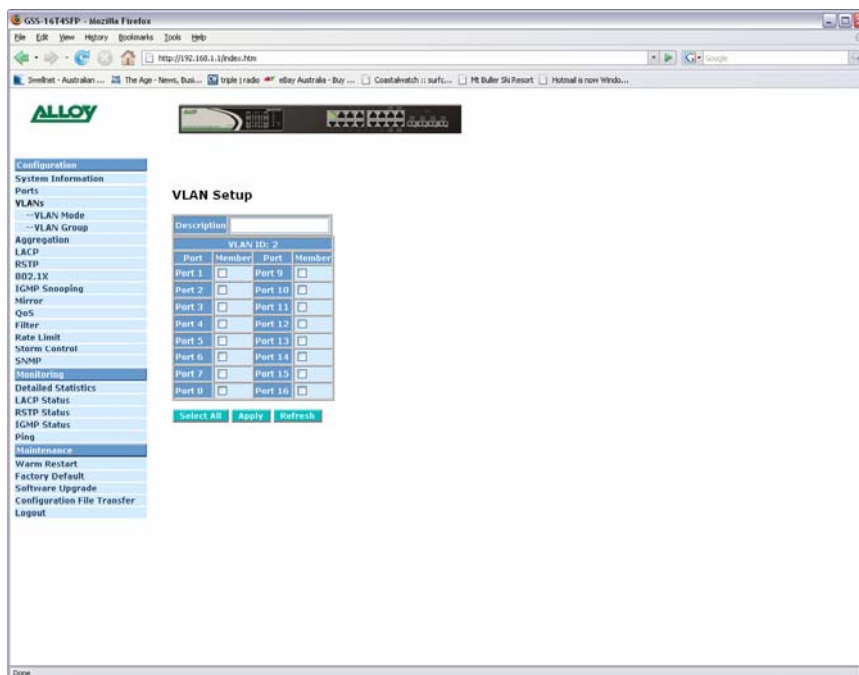


Fig. 3.6

- Description:** Enter a Descriptive name for the VLAN.
- Ports:** Select what ports you want to be members of this VLAN and tick there corresponding check boxes.
- Select All:** Used to automatically select all ports.
- Refresh Button:** Used to refresh the current settings displayed on the screen.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Port Config: Used to configure per port parameters.

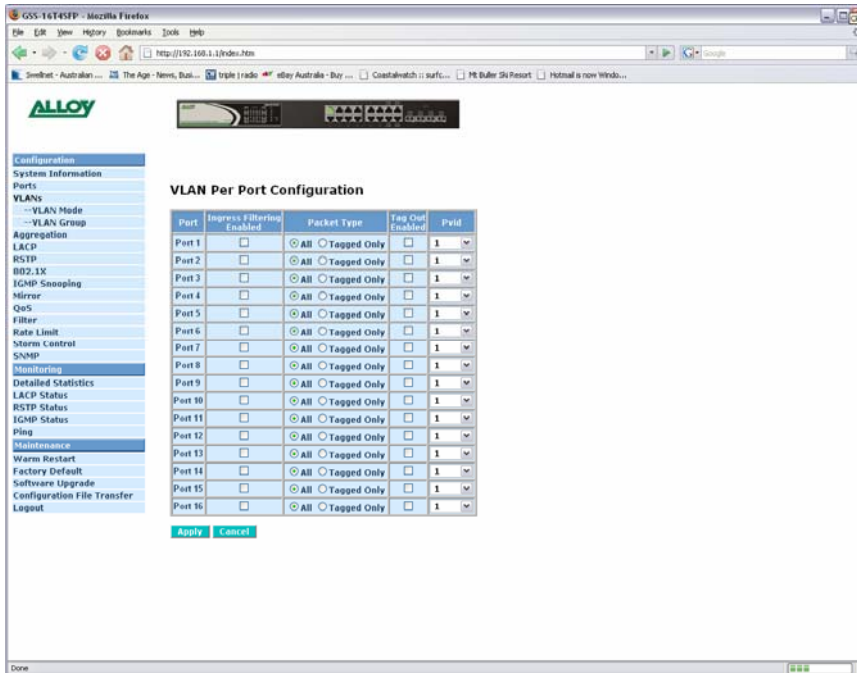


Fig. 3.7

Port: Is the physical port number of the switch.

Ingress Filtering

Enabled: Tick the check box to enable Ingress Filtering.

Packet Type: Select each port to accept All types of packets including tagged and untagged packets, or only allow each port to accept Tagged packets.

Tag Out Enabled: Tick this check box to enable all packets being sent from this port to be tagged. If you are enabling this feature please ensure that the connecting device can accept tagged packets.

PVID: Select the desired PVID from the drop down box provided.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Cancel Button: By pressing the cancel button, you will discard any changes that you have made.

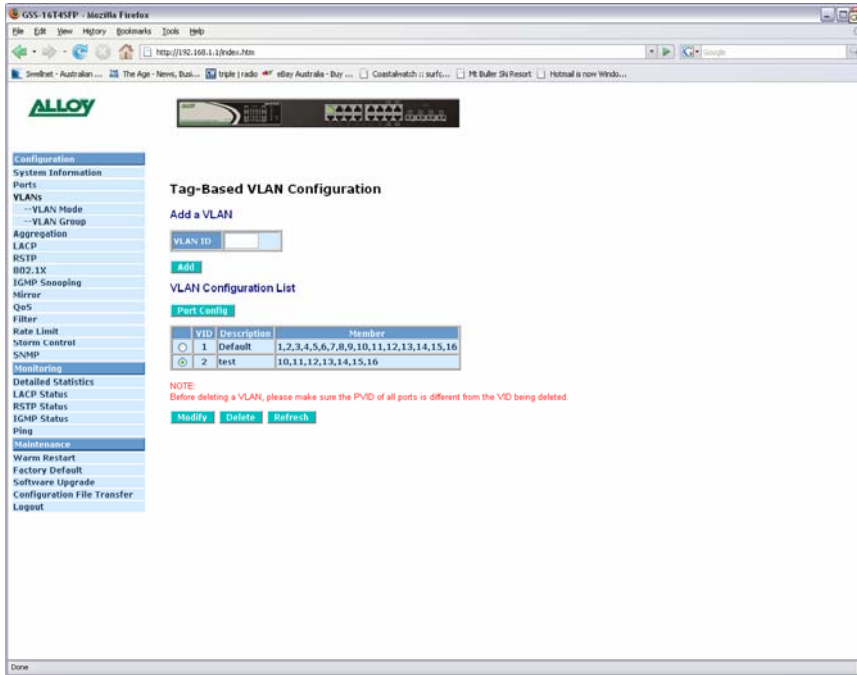


Fig. 3.8

- Modify:** Select the radio button next to the VLAN you wish to modify and click modify.
- Delete:** Select the radio button next to the VLAN you wish to delete and click delete.
- Refresh Button:** Used to refresh the current settings displayed on the screen.

Port Based VLAN's

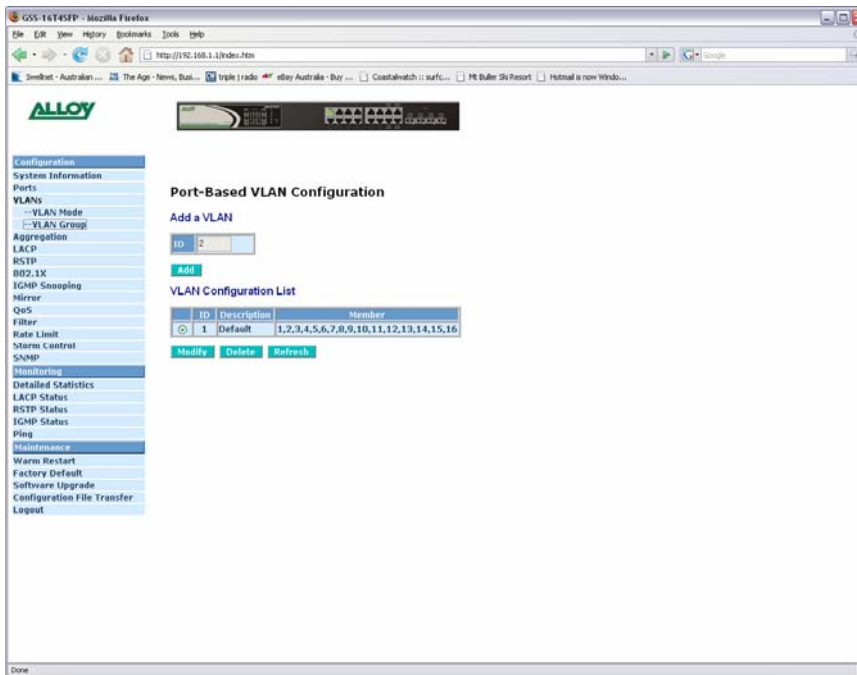


Fig. 3.9

VLAN ID: To create a new VLAN group, Enter a valid VLAN ID into the space provided. A new screen will appear as shown below:

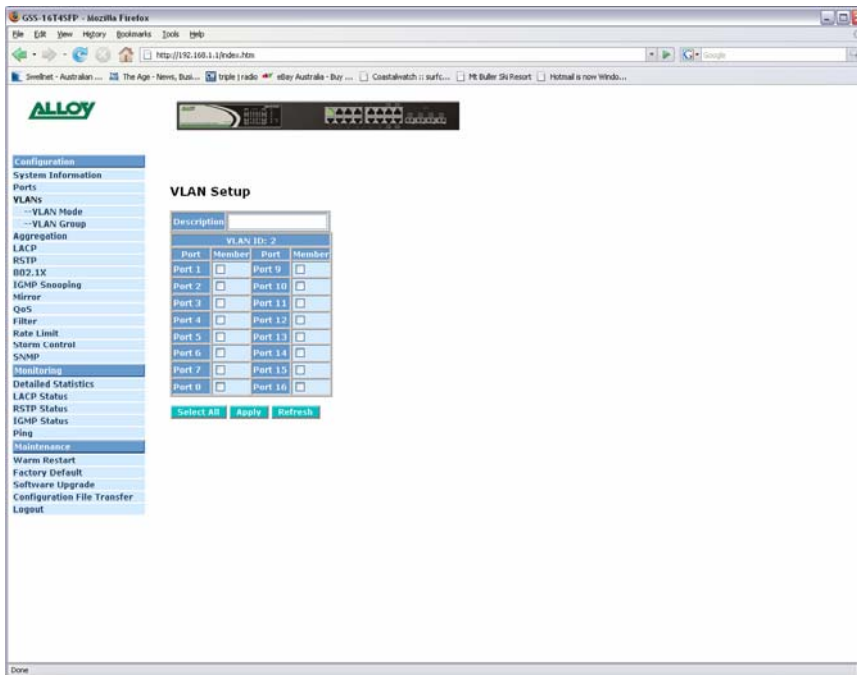


Fig. 3.10

- Description:** Enter a Descriptive name for the VLAN.
- Ports:** Select what ports you want to be members of this VLAN and tick there corresponding check boxes.
- Select All:** Used to automatically select all ports.
- Refresh Button:** Used to refresh the current settings displayed on the screen.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

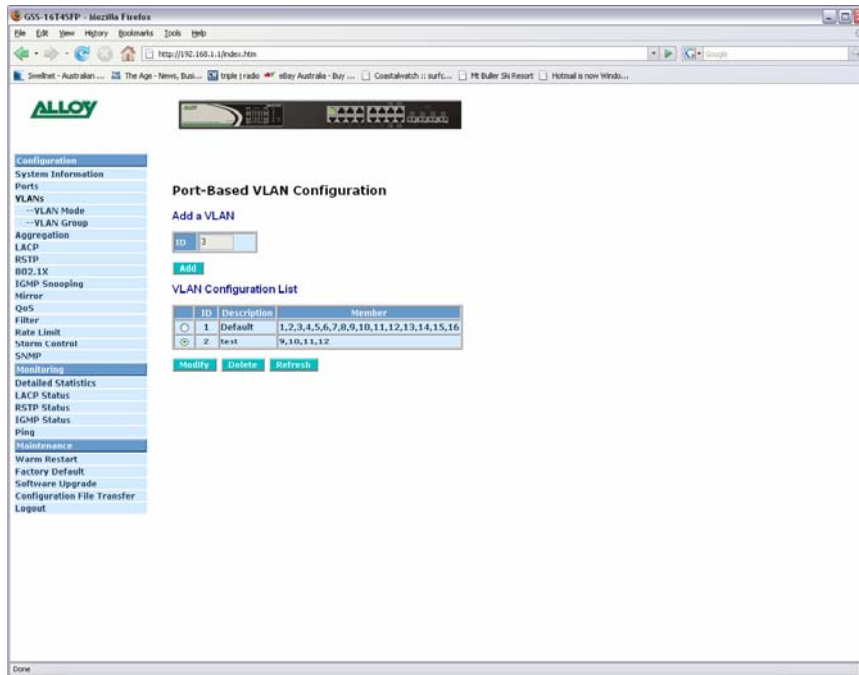


Fig. 3.11

Modify: Select the radio button next to the VLAN you wish to modify and click modify.

Delete: Select the radio button next to the VLAN you wish to delete and click delete.

Refresh Button: Used to refresh the current settings displayed on the screen.

Metro Mode VLAN's

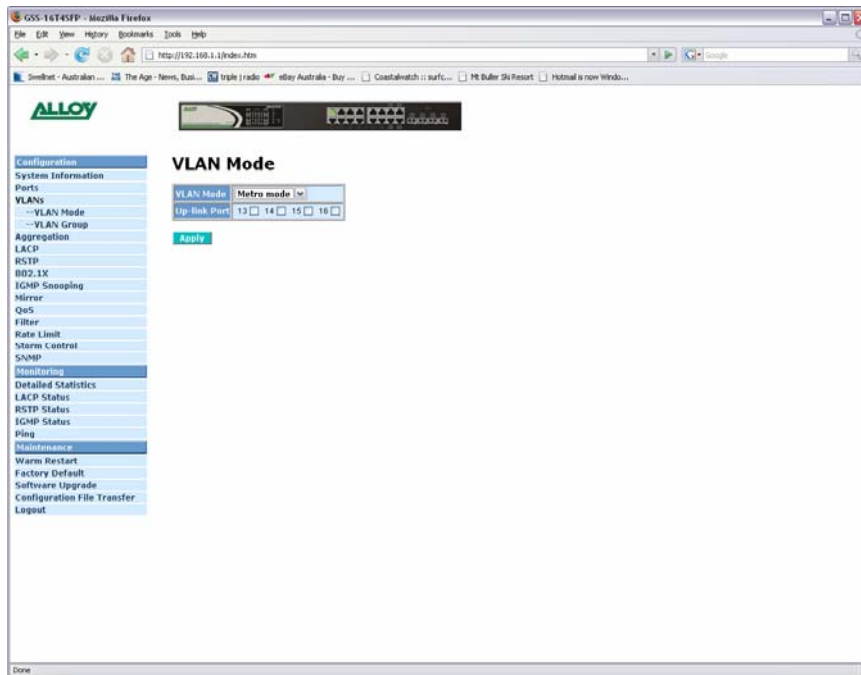


Fig. 3.12

Uplink Port: Select the port(s) that you wish to use as your uplink port(s). This is the port(s) that belongs to each individual VLAN.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

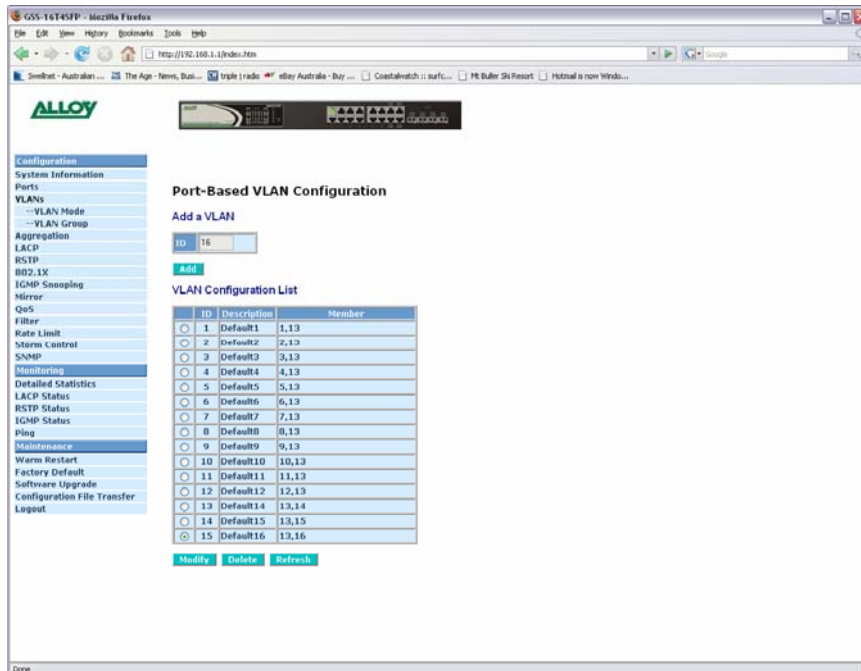


Fig. 3.12

Modify: Select the radio button next to the VLAN you wish to modify and click modify.

Delete: Select the radio button next to the VLAN you wish to delete and click delete.

Refresh Button: Used to refresh the current settings displayed on the screen.

3.2.5 Aggregation

Port Aggregation is used to Aggregate Ports into a logical trunk usually called Link Aggregation. Link Aggregation can bundle more than one port with the same speed, full duplex and the same MAC address to be a single logical port, thus the logical port aggregates the bandwidth of these ports. This allows the switch to aggregate multiple ports together to form a high bandwidth backbone link.

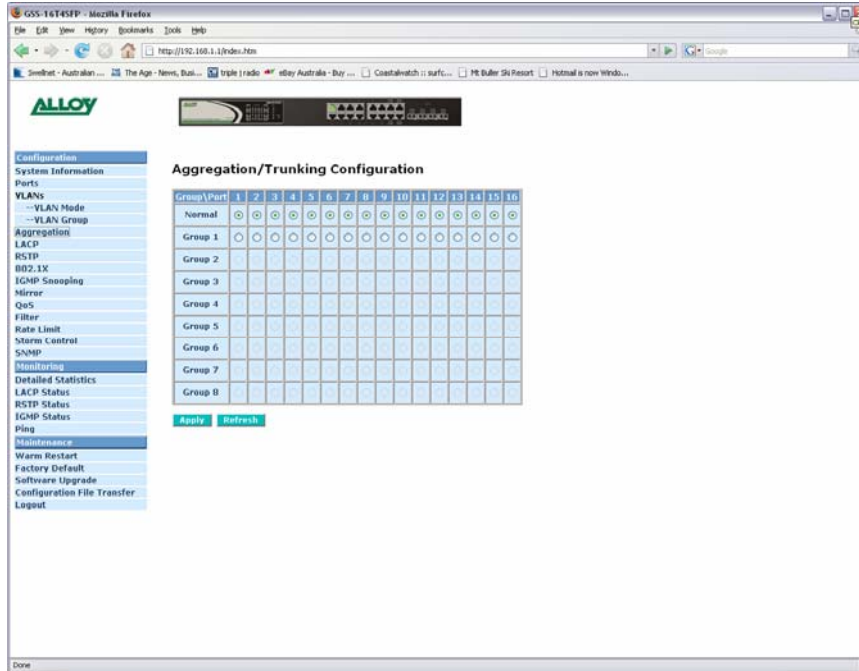


Fig 3.13

- Group/Port:** Is the built in trunking groups allowed to be configured. The switch supports a maximum of 8 Trunk groups.
- 1 ~ 16 or 24:** The physical ports of the switch.
Select the radio button of the port you wish to join to a particular Trunking Group.
- Refresh Button:** Used to refresh the current settings displayed on the screen.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.6 LACP

Link Aggregation Control Protocol is a protocol used to dynamically trunk ports into groups that have the same LACP key value.

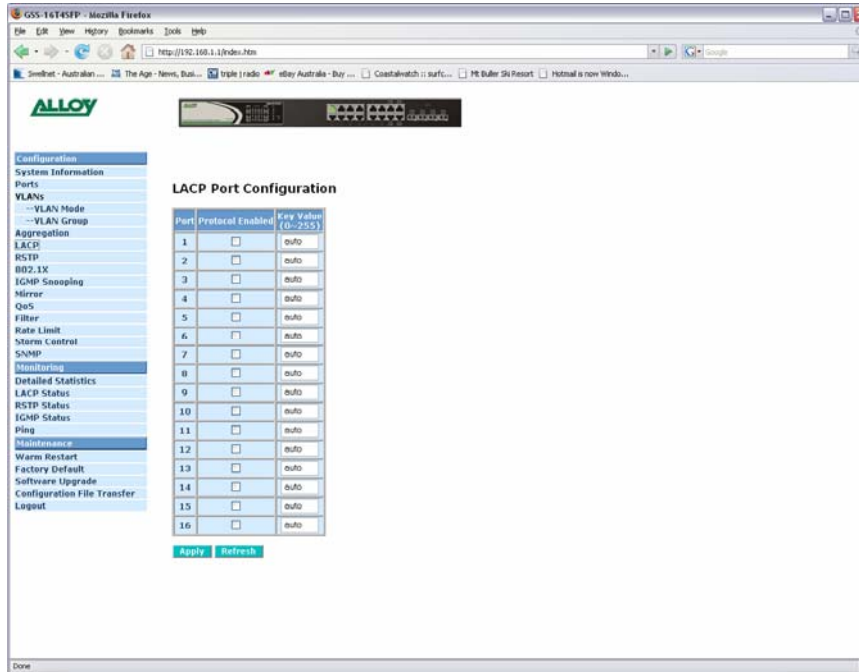


Fig 3.14

Port: The physical ports of the switch.

Protocol Enabled: Tick the checkbox to enable LACP on the particular port.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Refresh Button: Used to refresh the current settings displayed on the screen.

3.2.7 RSTP

The Spanning Tree Protocol is an IEEE 802.1d standard designed for avoiding unwanted loops in switched networks. When STP/RSTP is enabled only a single path will be active between any two nodes on a network. Spanning Tree is also used as a redundancy method to eliminate down time if a device or cable goes down on your network. By creating multiple paths between nodes on a network, spanning tree will allow only one active link between these nodes, if a link or device fails the spanning tree protocol will automatically switch to an alternative path.

The Rapid Spanning Tree Protocol is a more advanced protocol than STP according to the IEEE 802.1w standard. RSTP shortens the convergence time if a particular path fails between nodes on a network.

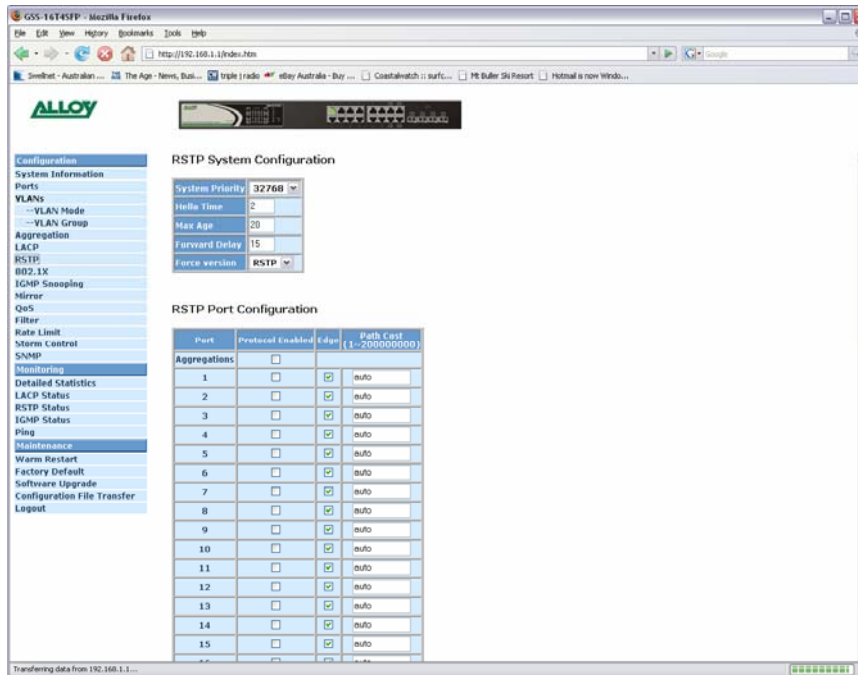


Fig. 3.14

System Configuration:

System Priority: Is a value used to identify the root bridge of the spanning tree network. The bridge with the lowest values has the highest priority and becomes the root. 16 Values are allowed by the switch ranging from 0 to 61140 in increments of 4096.

Hello Time: The number of seconds between the transmission of the Spanning Tree Protocol configuration messages. Enter a value from 1 to 10.

Max Age: The number of seconds a bridge waits without receiving STP configuration messages before attempting a re-configuration. Enter a value from 6 to 40.

Forward Delay: The number of seconds a port waits before changing from it's learning and listening states to a forwarding state. Enter a value from 4 to 30.

Force Version: When set to normal the switch will use RSTP. When set to compatible the switch will be compatible with the older STP.

Port Configuration:

Port: Is the physical port number of the switch.

Aggregations: Used if you would like to enable RSTP on any port aggregation groups.

- Protocol Enabled:** Used to enable the Rapid Spanning Tree Protocol on individual ports.
- Edge:** Edge will be enabled if the port is connecting to an end device such as a workstation. Edge will be disabled if connecting to another STP aware device.
- Path Cost:** A value set to each port to allow the switch to determine which port will be a forwarding port. The lowest path cost value will be used as the forwarding port. Enter a value between 1 and 20000000 or it can be set to Auto to be automatically generated.
- Refresh Button:** Used to refresh the current settings displayed on the screen.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.8 802.1x

The 802.1x port-based network access control provides a method to restrict users to access network resources via authenticating user's information. This restricts users from gaining access to the network resources through an 802.1x-enabled port without authentication. Any user wishing to access the network through a port under 802.1x control, must first input their account name for authentication and then wait for the authorisation to complete before sending or receiving any data from an 802.1x-enabled port.

Before the devices or end stations can access the network resources through the ports under 802.1x control, the devices or end stations connected to a controlled port send the authentication request to the authenticator, the authenticator passes the request to the authentication server to authenticate and verify the username and password, and the server then tells the authenticator if the request has been granted access for that port.

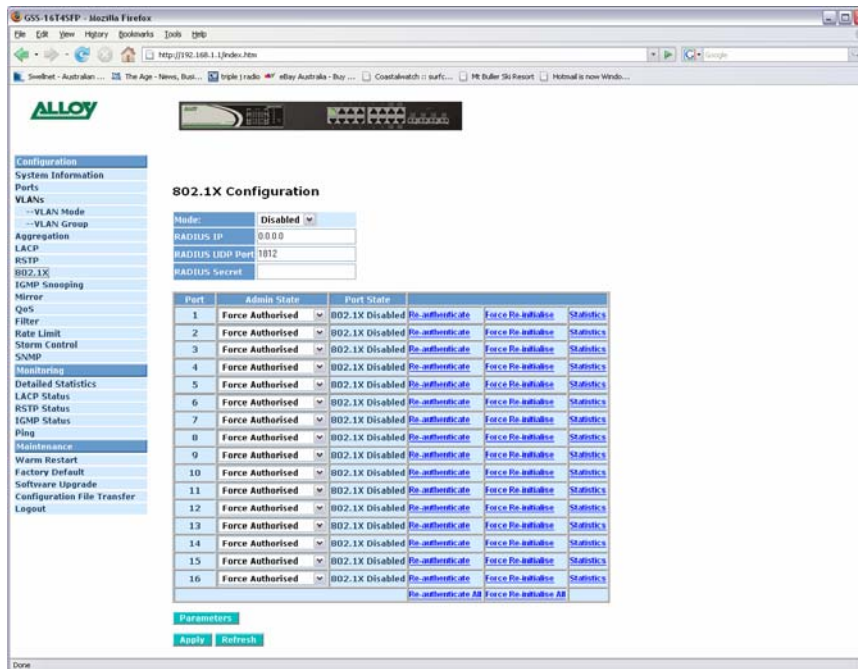


Fig. 3.15

- Mode:** Used to enable or disable the 802.1x feature.
- RADIUS IP:** The 802.1x feature of the switch works in conjunction with a RADIUS server. Enter the IP address of the RADIUS server.
- RADIUS UDP Port:** Specify the port used for RADIUS communication. Default 1812.
- RADIUS Secret:** Enter a secret word used to authenticate the switch to the RADIUS Server. Shared secret should be the same on the switch and the RADIUS server.
- Port:** Is the physical port number of the switch.
- Admin Mode:** Determines the mode the port will run in.
Force Authorised forces the port to be authenticated with the RADIUS server.
Force Unauthorised allows the port to be used without authentication.
Auto allows the port to be authenticated or unauthenticated.
- Port State:** Displays the current mode the port is running in.

Action: **Re-authenticate** forces the port to re-authenticate with the RADIUS server.
Force Re-initialise forces the port to re-initialise with the RADIUS server.
Statistics displays the 802.1x statistics of each individual port.

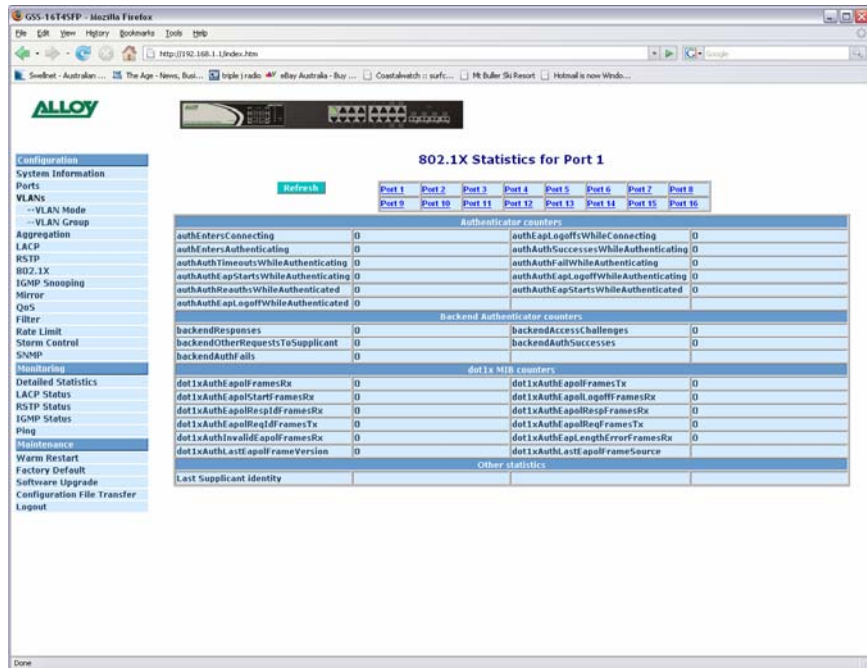


Fig. 3.16

Refresh Button: Used to refresh the current settings displayed on the screen.

802.1x Parameters

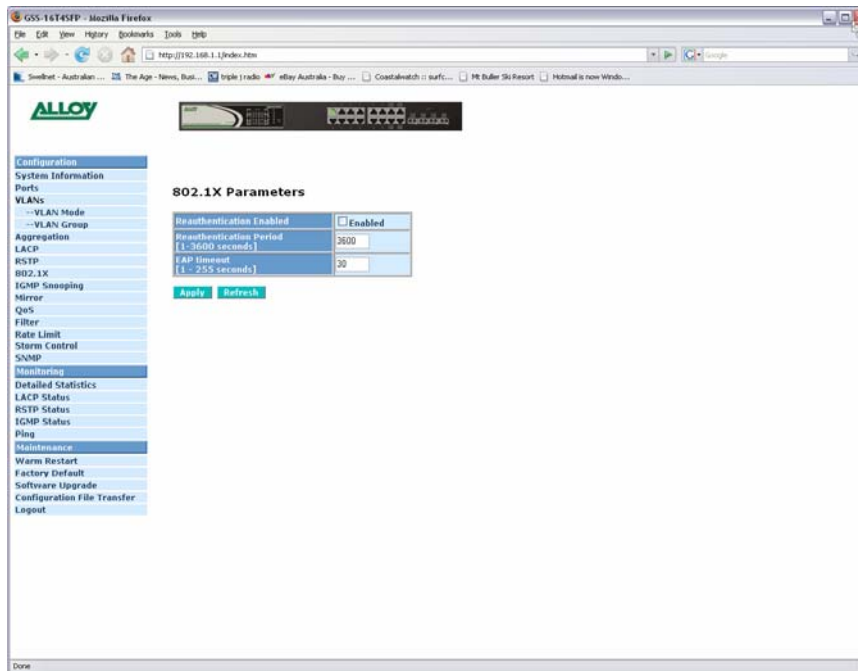


Fig. 3.18

Re-authentication

Enabled: Tick the checkbox to force re-authentication between the port and the RADIUS after a pre-determined time interval.

Re-authentication

Period: Used to set the time before re-authentication occurs. Time interval can be set between 1 and 3600 seconds.

EAP Timeout: Used to set the timeout value of the EAP authentication. Time interval can be set between 1 and 255 seconds.

Refresh Button: Used to refresh the current settings displayed on the screen.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.9 IGMP

IGMP Snooping is used to establish multicast groups to forward multicast packets to each of the multicast member ports, and, in nature, avoids wasting bandwidth with IP multicast packets. If a switch does not support IGMP or IGMP Snooping it can not tell a multicast packet from a broadcast packet, so it will treat them all as broadcast packets. Without IGMP Snooping, multicast packets are treated as broadcast packets, therefore increasing the overall traffic on your network.

The GSS Series supports all functions of IGMP Snooping including query, report and leave. IGMP Snooping is used by the switch to learn who belongs to a multicast group and also update the multicast table within the switch with new multicast members. Once the switch has learned who belongs to the multicast group all packets forwarded to a multicast address will be forwarded to all members belonging to the multicast group.

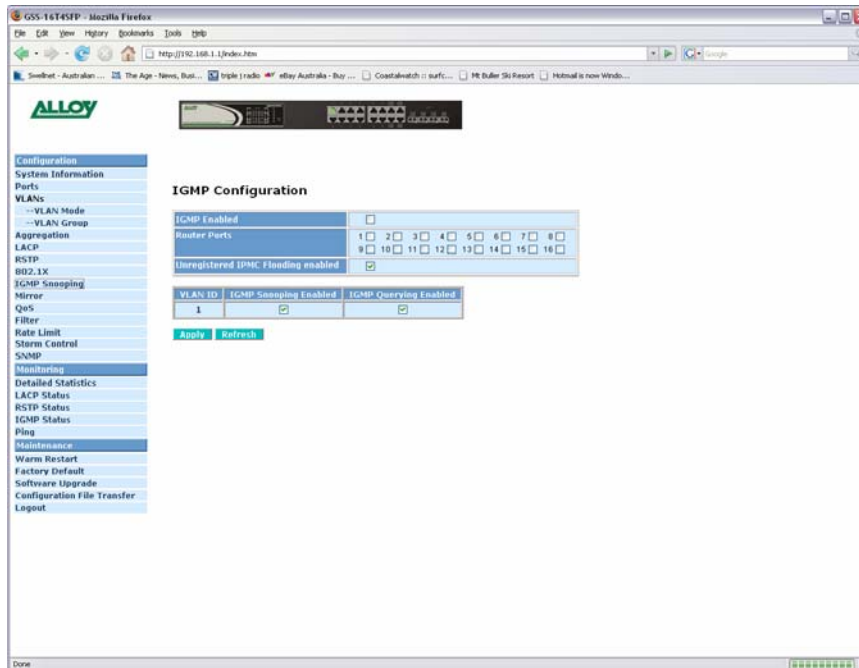


Fig. 3.19

IGMP Enabled: Used to enable or disable the IGMP function.

Router Ports: Used to specify administrative router ports for IGMP frames.

Unregistered IPMC Flooding

Enabled: Used to set forwarding options for unregistered IP multicast traffic. When enabled unregistered multicast packets will be forwarded to all ports, if disabled all unregistered multicast traffic will be forwarded to the router ports.

The next table will list all VLAN groups that have been configured in the switch. IGMP Features can be enabled or disabled per VLAN group.

IGMP Snooping

Enabled: Used to enable IGMP snooping on the VLAN group.

IGMP Querying

Enabled: Used to enable IGMP querying on the VLAN group.

Refresh Button: Used to refresh the current settings displayed on the screen.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.10 Port Mirroring

The Mirror function of the GSS Series is used to capture data from a particular port on the switch. Any port on the switch can be selected as the monitoring port; this port will be used to capture data from another port on the switch using third party data capturing software. Data can be captured from more than one port on the switch simultaneously therefore you can have one monitoring port and several other ports being monitored by the one port.

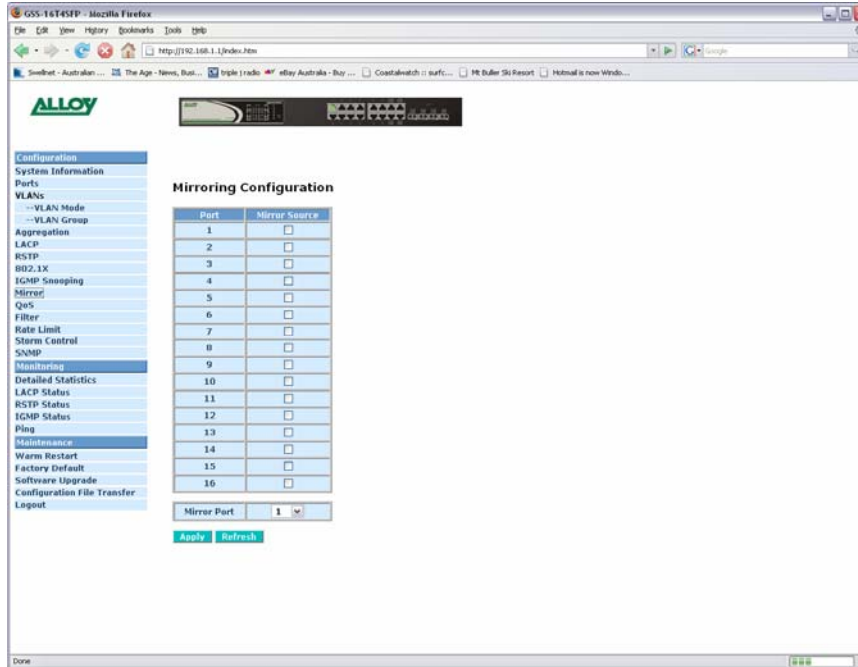


Fig. 3.20

- Mirror Port:** Select the port you would like to use as the capturing port. This port will be plugged directly to a PC running Packet Capturing software.
- Mirror Source:** This is the port or ports that the Mirror Port will be capturing packets from. Any data that is sent or received by these ports will be duplicated to the Mirror port.
- Refresh Button:** Used to refresh the current settings displayed on the screen.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.11 Quality of Service

Two methods of Quality of Service is available in the GSS Series, they are 802.1p QoS – Is a tag based QoS method normally used with 802.1q VLAN's. Inside each Ethernet packet 3 bits are reserved for QoS purposes, priority levels are then set based on the value of the 3 bit field inside the packet. The GSS Series can then set High, Medium, Normal and Low priorities based on the 3 bit value. The last QoS method is DSCP – This method utilises the TOS filed inside the header of an Ethernet packet. Again priorities can be set based on the value of the TOS filed bits.

3.2.11.1 Quality of Service – 802.1p

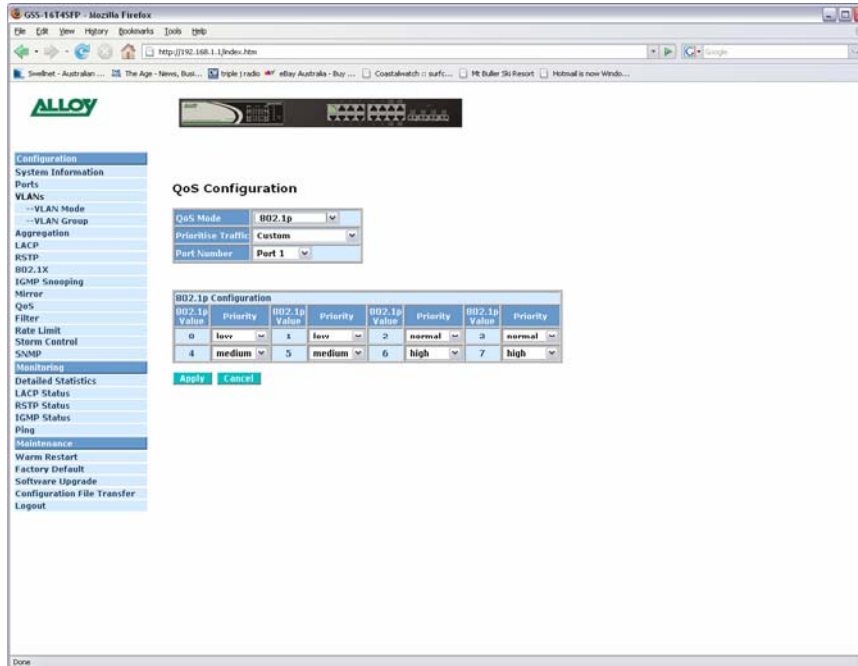


Fig. 3.21

QoS Mode: Used to set the required QoS method. Options are 802.1p and DSCP.

Prioritise Traffic: Used to set the priority of each 3 bit value. Priority values range from 0 through to 7. A high, Medium, Normal or Low class can be applied to each 3 bit priority value.

802.1p Config: Used to set a particular class to each priority level. A High, Medium, Normal or Low class can be assigned to each priority.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Cancel Button: By pressing the cancel button, you will discard any changes that you have made.

3.2.11.2 Quality of Service – DSCP

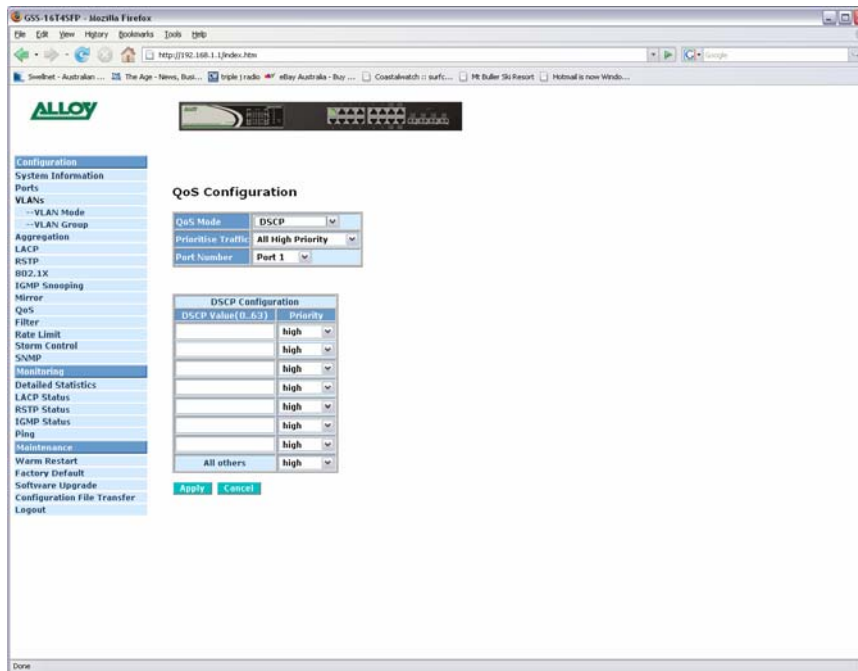


Fig. 3.22

QoS Mode: Used to set the required QoS method. Options are 802.1p and DSCP.

Prioritise Traffic: Used to set the priority of each 3 bit value. Priority values range from 0 through to 7. A high, Medium, Normal or Low class can be applied to each 3 bit priority value.

Port Number: Select the desired port to configure.

DSCP Value

(0 – 63): Used to apply a particular priority class to a certain DSCP value. Only 7 DSCP Values can have a priority class assigned to it. All other DSCP values will be assigned the same priority class.

Priority: Set a High, Medium, Normal or Low priority class to 7 DSCP values. You can then set a priority class to all other DSCP values.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Cancel Button: By pressing the cancel button, you will discard any changes that you have made.

3.2.12 Filter

The filtering function of the GSS Series is used to block unwanted devices from accessing the switch. The filtering rules are based on an IP Address, both static and dynamic IP addressing can be used.

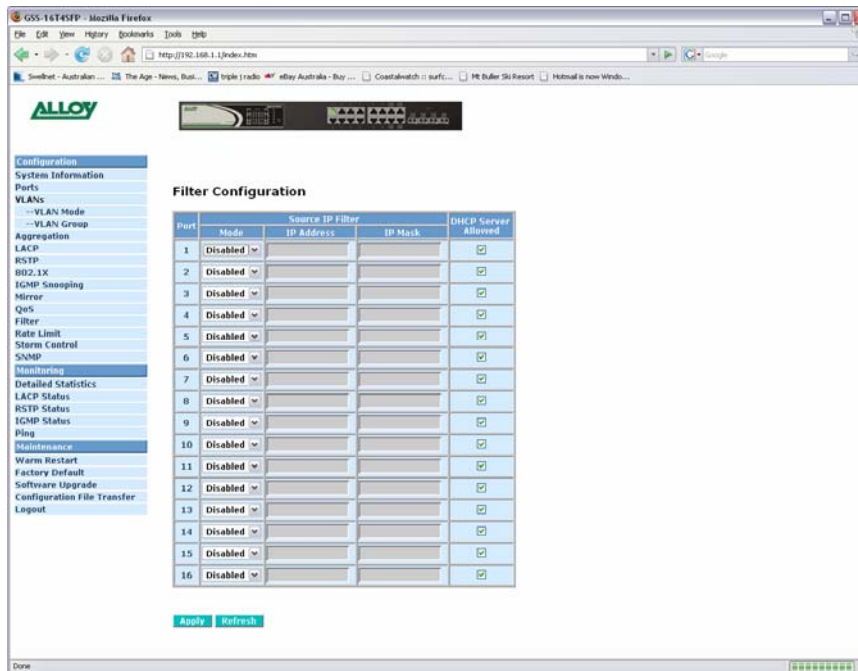


Fig. 3.23

- Port:** Is the physical port number of the switch.
- Mode:** Used to disable or enable the filtering function. Either static or dynamic IP addressing can be selected here.
- IP Address:** If using a static IP address, enter the IP address here. If using dynamic an IP address will appear once an IP address has been assigned to the device connected to this port.
- IP Mask:** If using a static IP address, enter the subnet mask here.
- DHCP Server:** Tick the check box to allow DHCP Servers to use this port.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.
- Refresh Button:** Used to refresh the current settings displayed on the screen.

3.2.13 Rate Limit

The Rate Limit function of the GSS Series is used to limit the speed of each port on the switch.

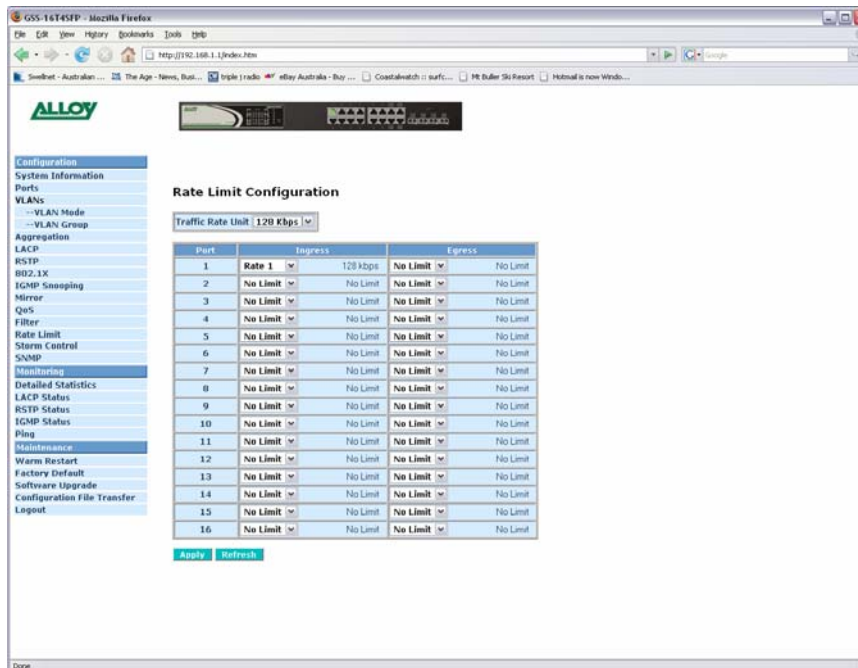


Fig. 3.24

Traffic Rate Unit: Is used to select the incremental value of the rate limit. You can set a rate limit based on 128K, 512K, 1M, 10M or 32M. If you select 128K you can then select a rate value for each port. If the rate value is set to 1, the port will be limited to 128K. If the rate limit is set to 2 then the port will be limited to 256K.

Ingress: Select the ingress rate value from the drop down box provided. As stated above the rate limit value is multiplied by the Traffic rate unit to give you the total ingress speed.

Egress: Select the egress rate value from the drop down box provided. As stated above the rate limit value is multiplied by the Traffic rate unit to give you the total ingress speed.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

Refresh Button: Used to refresh the current settings displayed on the screen.

3.2.14 Storm Control

Storm Control is used to limit the amount of Broadcast, Multicast and Unicast frames allowed to enter the switch. These limits are based on the amount of frames allowed to be received per second.

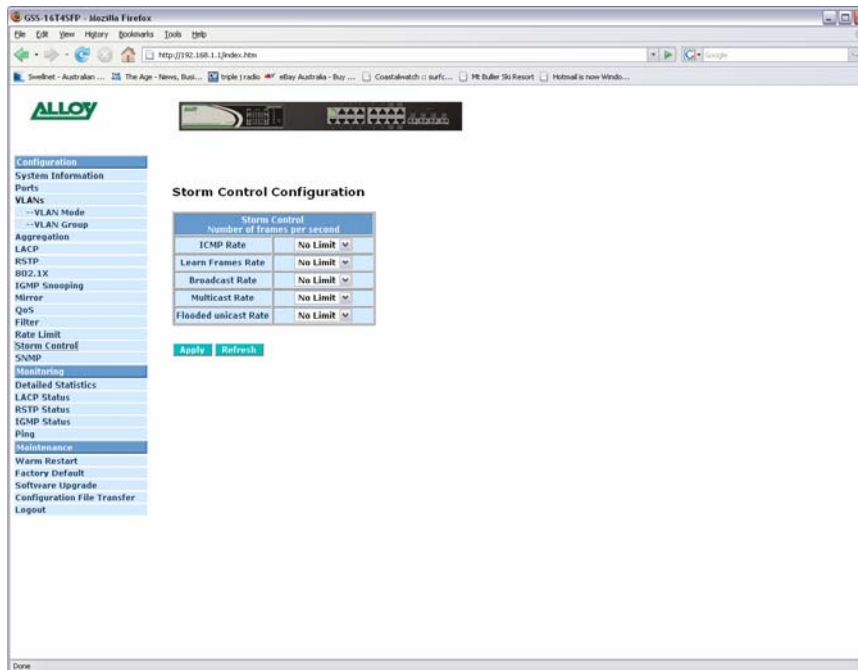


Fig. 3.25

ICMP Rate: Used to set the number of frames allowed to be received by the switch per second. The preset values are: 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K or No Limit.

Learn Frames

Rate: Used to set the number of frames allowed to be received by the switch per second. The preset values are: 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K or No Limit.

Broadcast Rate: Used to set the number of frames allowed to be received by the switch per second. The preset values are: 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K or No Limit.

Multicast Rate: Used to set the number of frames allowed to be received by the switch per second. The preset values are: 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K or No Limit.

Flooded Unicast

Rate: Used to set the number of frames allowed to be received by the switch per second. The preset values are: 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K or No Limit.

Refresh Button: Used to refresh the current settings displayed on the screen.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

3.2.15 SNMP

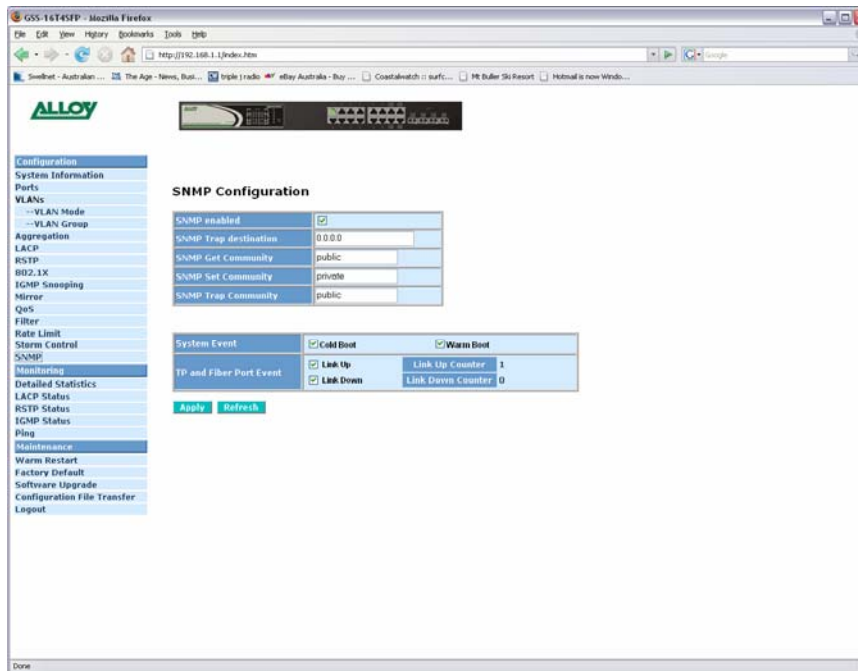


Fig. 3.26

SNMP Enabled: Used to enable or disable SNMP.

SNMP Trap

Destination: Enter the IP address of a device used to receive SNMP Traps.

SNMP Get

Community: Enter the SNMP Get community name in the space provided.

SNMP Set

Community: Enter the SNMP Set community name in the space provided.

SNMP Trap

Community: Enter the SNMP Trap community name in the space provided.

Cold Boot: Tick this check box for an SNMP trap to be sent when the event occurs.

Warm Boot: Tick this check box for an SNMP trap to be sent when the event occurs.

Link Up: Tick this check box for an SNMP trap to be sent when the event occurs.

Link Down: Tick this check box for an SNMP trap to be sent when the event occurs.

Refresh Button: Used to refresh the current settings displayed on the screen.

Apply Button: The Apply button must be pressed after making any changes to any of the values on this screen.

3.3 Monitoring

3.3.1 Detailed Statistics

The detailed port statistics screen shows you in detail statistics of each individual port.

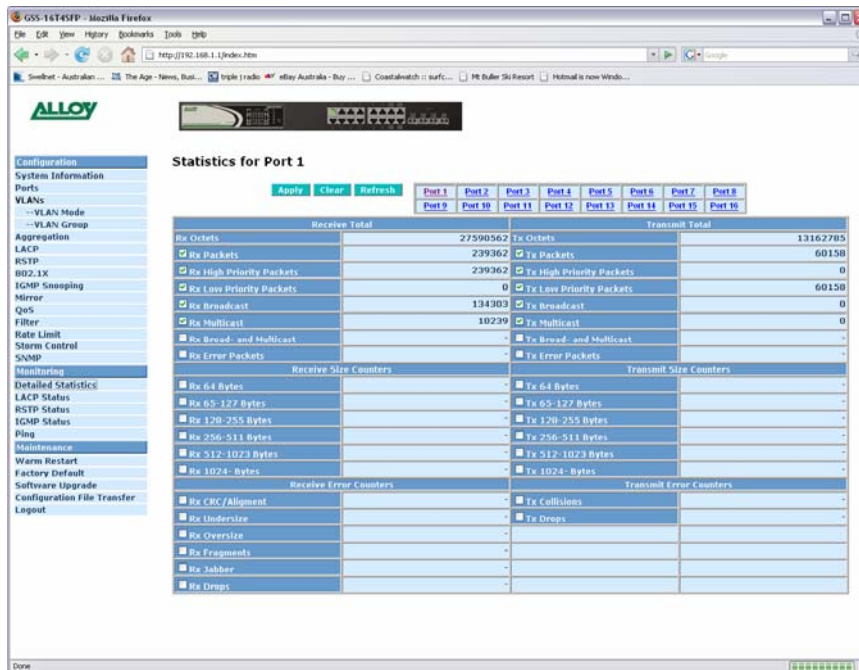


Fig. 3.27

- Check Boxes:** Tick the check boxes next to each of the statistics that you wish to monitor.
- Apply Button:** The Apply button must be pressed after making any changes to any of the values on this screen.
- Refresh Button:** Used to refresh the current settings displayed on the screen.
- Clear Button:** Used to clear the current statistics from the table.

3.3.2 LACP Status

Displays the status of all LACP based port aggregation groups.

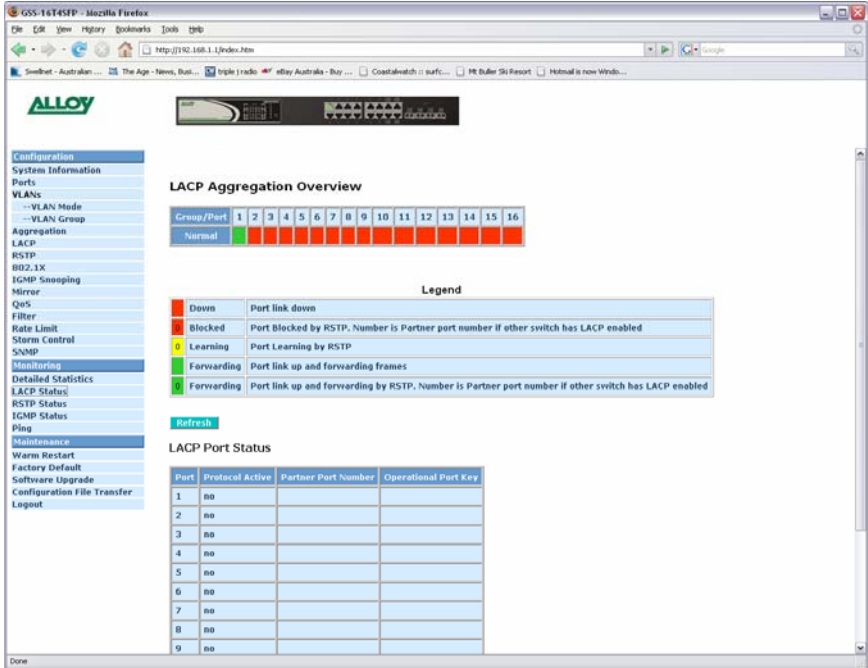


Fig. 3.28

Refresh Button: Used to refresh the current settings displayed on the screen.

3.3.3 RSTP Status

Displays the current status of RSTP.

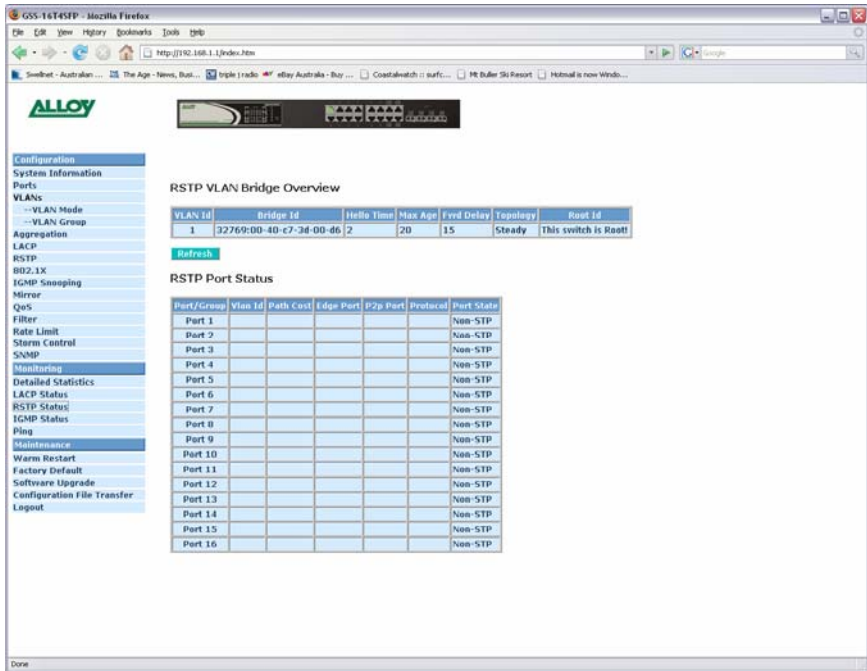


Fig. 3.29

Refresh Button: Used to refresh the current settings displayed on the screen.

3.3.4 IGMP Status

Displays the current status of multicast groups learnt by the switch.

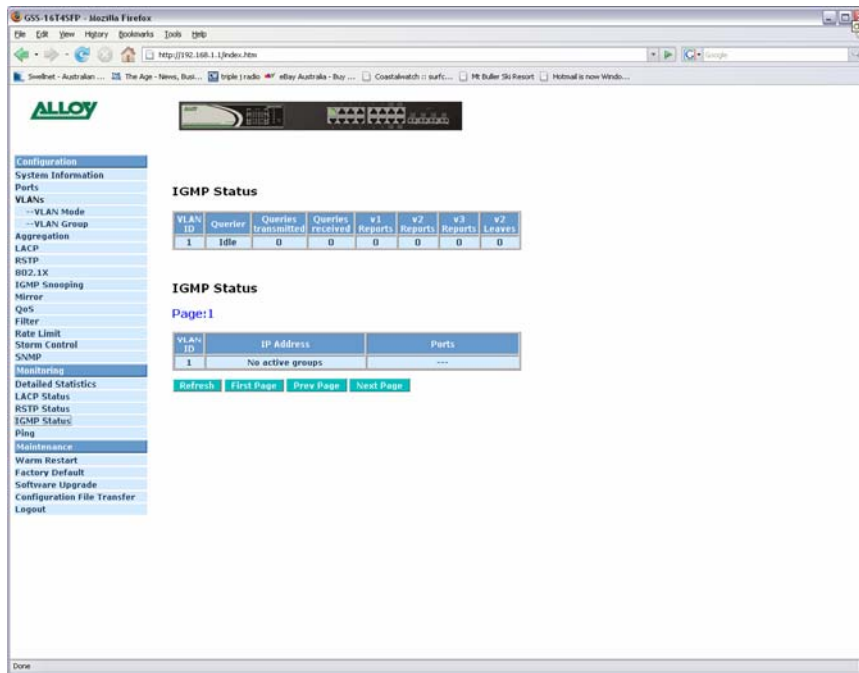


Fig. 3.30

Refresh Button: Used to refresh the current settings displayed on the screen.

3.3.5 Ping

The ping function of the switch is used to test communication between other IP enabled devices on your network.

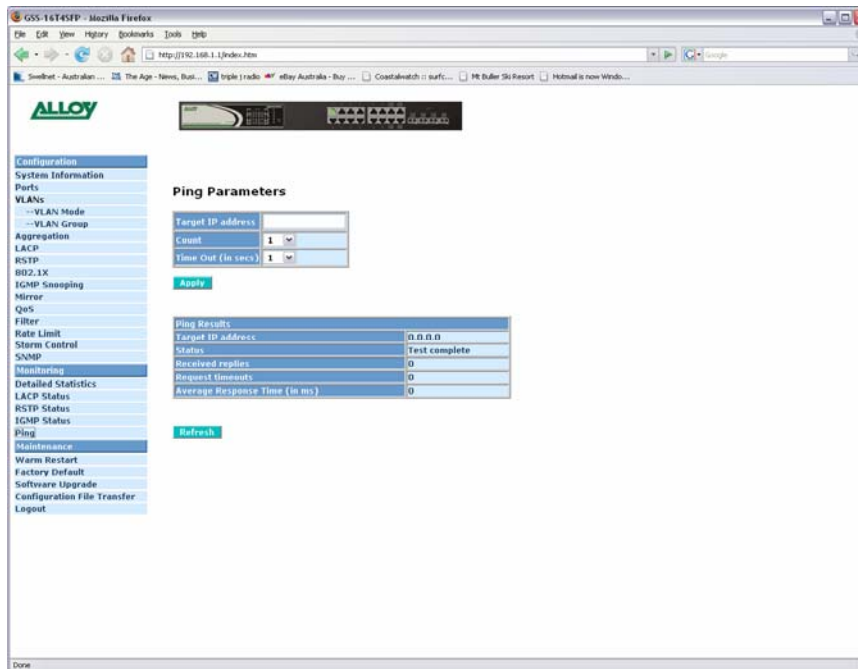


Fig. 3.31

Target IP Address: Enter the IP address of an IP device on your network in which you want to test communication with.

Count: Select the number of times you would like to ping the device. Available options are 1, 5, 10 and 20.

Time Out: Enter the time out value from the drop down box provided. Available options are 1, 5, 10 and 30.

Ping Results: Displays the results of the ping operation performed.

Apply Button: Click the apply button to perform the ping test.

Refresh Button: Used to refresh the current settings displayed on the screen.

3.4 Maintenance

3.4.1 Warm Restart

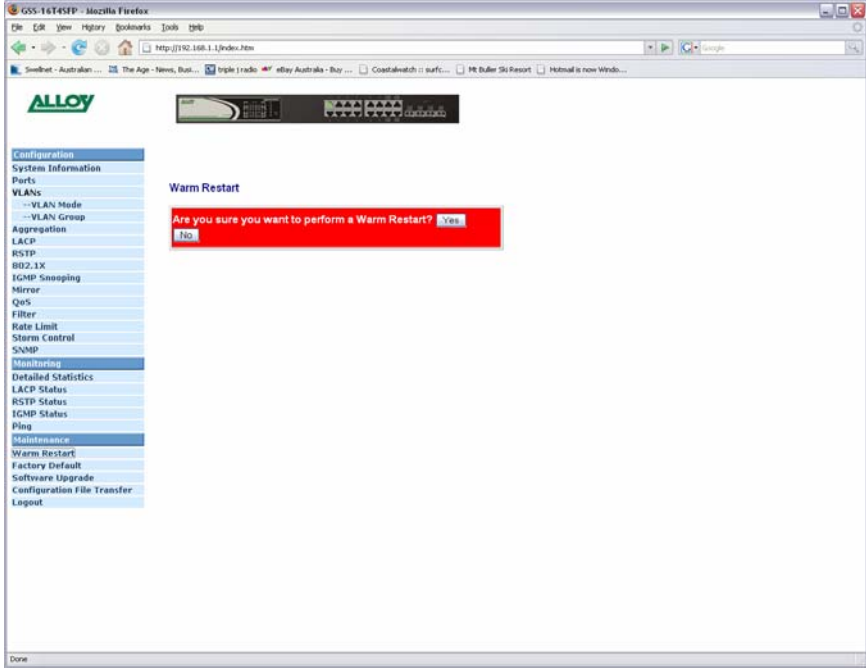


Fig. 3.32

Click Yes to reboot the device or No to cancel the operation.

3.4.2 Factory Default

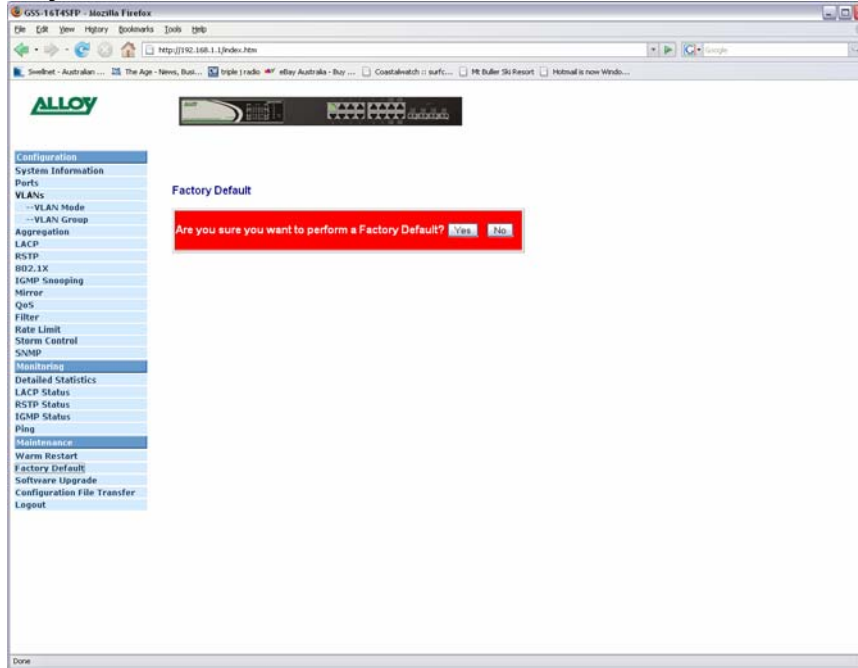


Fig. 3.33

Click Yes to restore the factory default settings on the switch, or No to cancel the operation.

3.4.3 Software Upgrade

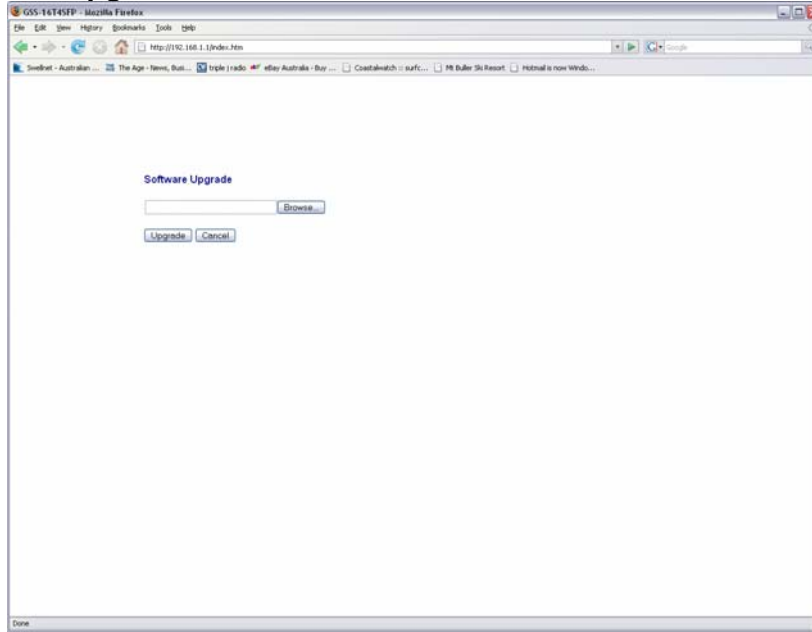


Fig. 3.34

- Browse:** Used to select the firmware file to load into the switch.
- Upload:** Once the file has been located, press the upload button to upgrade the switches firmware.
- Cancel:** Press cancel to cancel the operation.

3.4.4 Configuration File Transfer

The GSS Series allows the user to backup and restore the configuration settings of the switch.

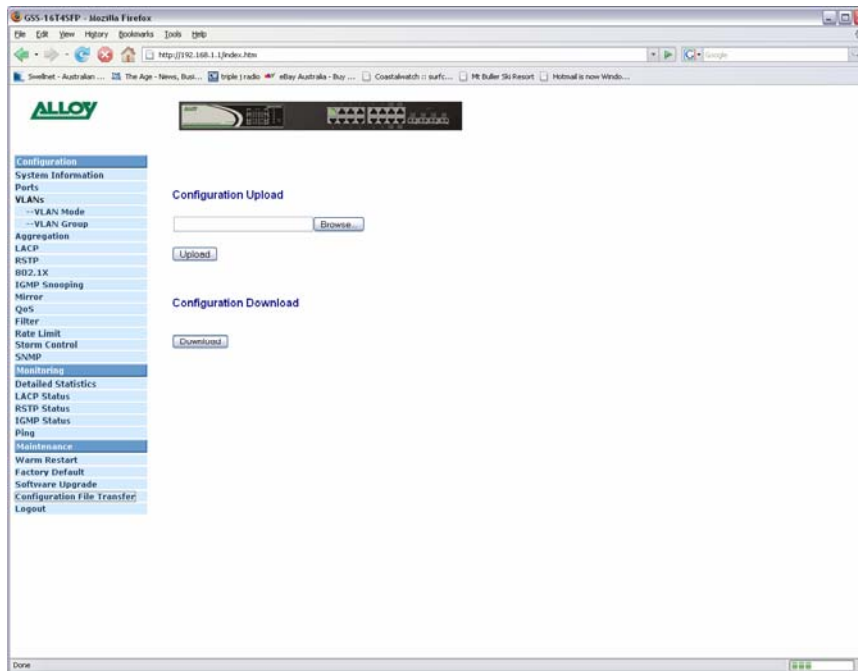


Fig. 3.35

Configuration Download

Download: Used to download the current configuration of the switch. Once pressed a dialog box will appear asking you where you would like the file saved.

Configuration Upload

Browse: Click the browse button to search for the backed up configuration file of the switch.

Upload: Once the configuration file has been located click on the restore button to load the backed up configuration.

3.4.5 Logout

Press the logout button to logout of the web management.

Appendix A – Technical Specifications

Hardware Specifications

- **Standard Compliance:** IEEE802.3/802.3ab / 802.3z / 802.3u / 802.3x
- **Network Interface:**

Configuration	Mode	Connector	Port
10/100/1000Mbps Gigabit TP	NWay	TP (RJ-45)	1 – 16 or 24
1000Base-SX Gigabit Fibre	1000 FDX	*SFP	13~16(OPTION) 21~24(OPTION)
1000Base-LX Gigabit Fibre	1000 FDX	*SFP	13~16(OPTION) 21~24(OPTION)
1000Base-LX Single Fibre WDM (BiDi)	1000 FDX	*SFP	13~16(OPTION) 21~24(OPTION)

*Port 13~16 or 21~24 are TP/SFP fibre dual media ports with auto detected function

*Optional SFP module supports LC or BiDi SC transceiver

- **Transmission Mode:** 10/100Mbps support full or half duplex
1000Mbps support full duplex only
- **Transmission Speed:** 10/100/1000Mbps for TP
1000Mbps for Fibre
- **Full Forwarding/Filtering Packet Rate:** PPS (packets per second)

Forwarding Rate	Speed
1,488,000PPS	1000Mbps
148,800PPS	100Mbps
14,880PPS	10Mbps

- **MAC Address and Self-learning:** 8K MAC address
- **Buffer Memory:** Embedded 400 KB frame buffer
- **Flow Control:** IEEE802.3x compliant for full duplex
Backpressure flow control for half duplex
- **Cable and Maximum Length:**

TP	Cat. 5 UTP cable, up to 100m
1000Base-SX	Up to 220/275/500/550m, which depends on Multi-Mode Fibre type
1000Base-LX	Single-Mode Fibre, up to 10/30/50Km
1000Base-LX WDM (BiDi)	Single-Mode Single Fibre, up to 20Km

- **Diagnostic LED:**

System LED :	Power
Per Port LED:	
10/100/1000M TP Port 1 to 12	: LINK/ACT, 10/100/1000Mbps
10/100/1000M TP Port 1 to 20	: LINK/ACT, 10/100/1000Mbps
1000M SFP Fibre Port 13~16	: SFP(LINK/ACT)
1000M SFP Fibre Port 21~24	: SFP(LINK/ACT)

- **Power Requirement** : AC Line
 - Voltage : 100~240 V
 - Frequency : 50~60 Hz
 - Consumption : 30W
- **Ambient Temperature** : 0° to 50°C
- **Humidity** : 5% to 90%
- **Dimensions** : 44(H) × 442(W) × 209(D) mm
- **Comply with FCC Part 15 Class A, C-Tick & CE Mark Approval**