TABLE OF CONTENTS

CHAPTER 1: SWITCH MANAGEMENT OVERVIEW

This section gives an overview of switch management, including the methods you can use to manage your NETGEAR Prosafe FS700TS family of 10/100 Stackable Smart Switches with Gigabit Ports.

Your NETGEAR Prosafe FS700TS family of 10/100 Stackable Smart Switches with Gigabit Ports contains software for viewing, changing, and monitoring the way it works. This management software is not required for the switch to work. You can use the 10/100 Mbps ports and the built-in Gigabit ports without using the management software. However, the management software allows you configure ports, VLAN and Trunking features and also improve the efficiency of the switch and, as a result, improve the overall performance of your network. The Switch gives you the flexibility to access and manage the switch using any of the following methods:

- Smart Wizard Discovery Utility program
- Web browser interface

After you power-up the switch for the first time, you can configure it using the Smart Wizard Discovery Utility or a Web browser. Please refer to the screenshots in following pages for the Smart Wizard Discovery Utility and Web Management GUI. Each of these management methods has advantages. Table 1-1 compares the three management methods.

Table 1 – 1: Comparing Switch Management Methods

Management Method	Advantages
Smart Wizard Discovery Utility program	No IP address or subnet needed Show all switches on the network User-friendly interface Firmware upgradeable
Web browser	Can be accessed from any location via the switch’s IP address Password protected Ideal for configuring the switch remotely Compatible with Internet Explorer and Netscape Navigator Web browsers Intuitive browser interface Most visually appealing Extensive switch configuration allowed Configuration backup for duplicating settings to other switches

For a more detailed discussion of the Smart Wizard Discovery Utility Program, see section 4. For a more detailed discussion of the Web Browser Interface, see section 5.

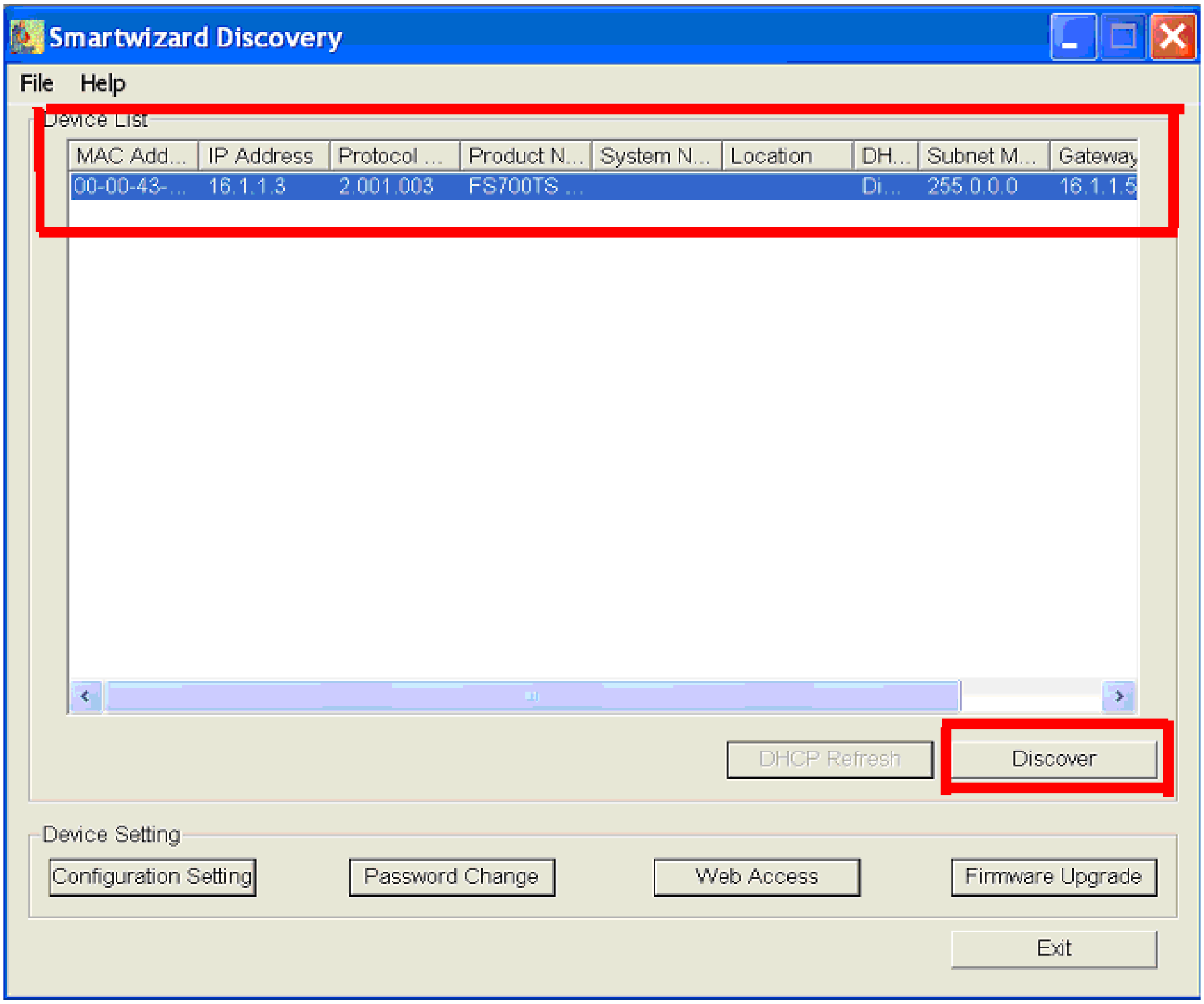
CHAPTER 2: GETTING STARTED

This section will walk you through the steps to start managing your FS700TS-series switch. This section will cover how to get started in a network with a DHCP server (most common) as well as if you do not have a DHCP server.

Network with DHCP server:

1. Connect the FS700TS-series switch to a DHCP network.
2. Power on FS700TS-series switch by plugging in power core.
3. Install the Smart Wizard Discovery Utility program on your computer.
4. Start the Smart Wizard Discovery utility. (Section 4 has detailed instructions on the Smart Wizard Discovery utility)
5. Click **Discover** for the Smart Wizard Discovery to find your FS700TS-series switch. You should see something similar to Figure 2-1.

Smart Wizard Discovery > Discover

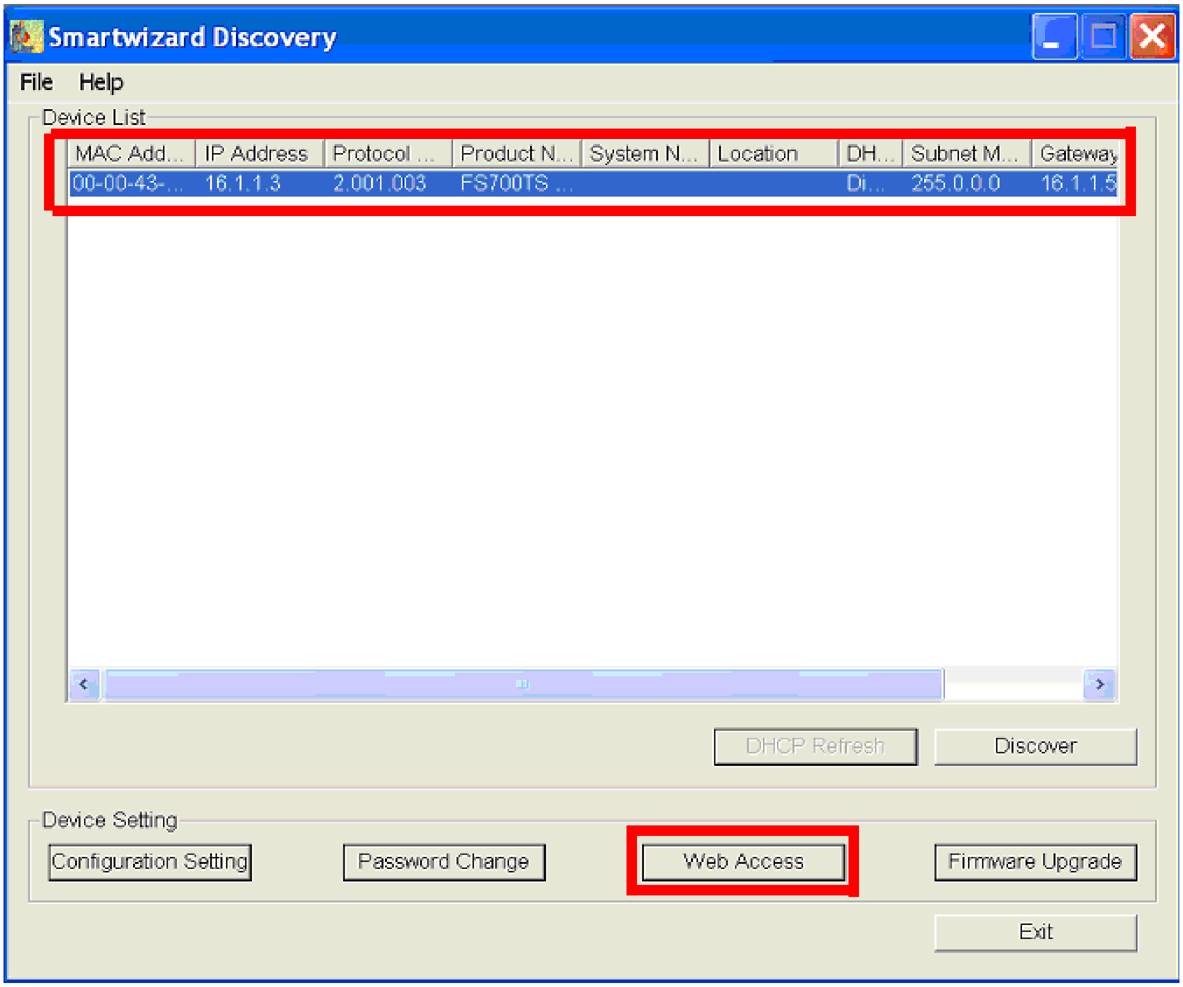


MAC Add...	IP Address	Protocol ...	Product N...	System N...	Location	DH...	Subnet M...	Gateway
00-00-43-...	16.1.1.3	2.001.003	FS700TS ...			Di...	255.0.0.0	16.1.1.5

Figure 2 - 1: Smart Wizard Discovery Utility Main Screen

6. Select your switch by clicking on it. Then click on Web Access, as highlighted in Figure 2-2.

Smart Wizard Discovery > Web Access

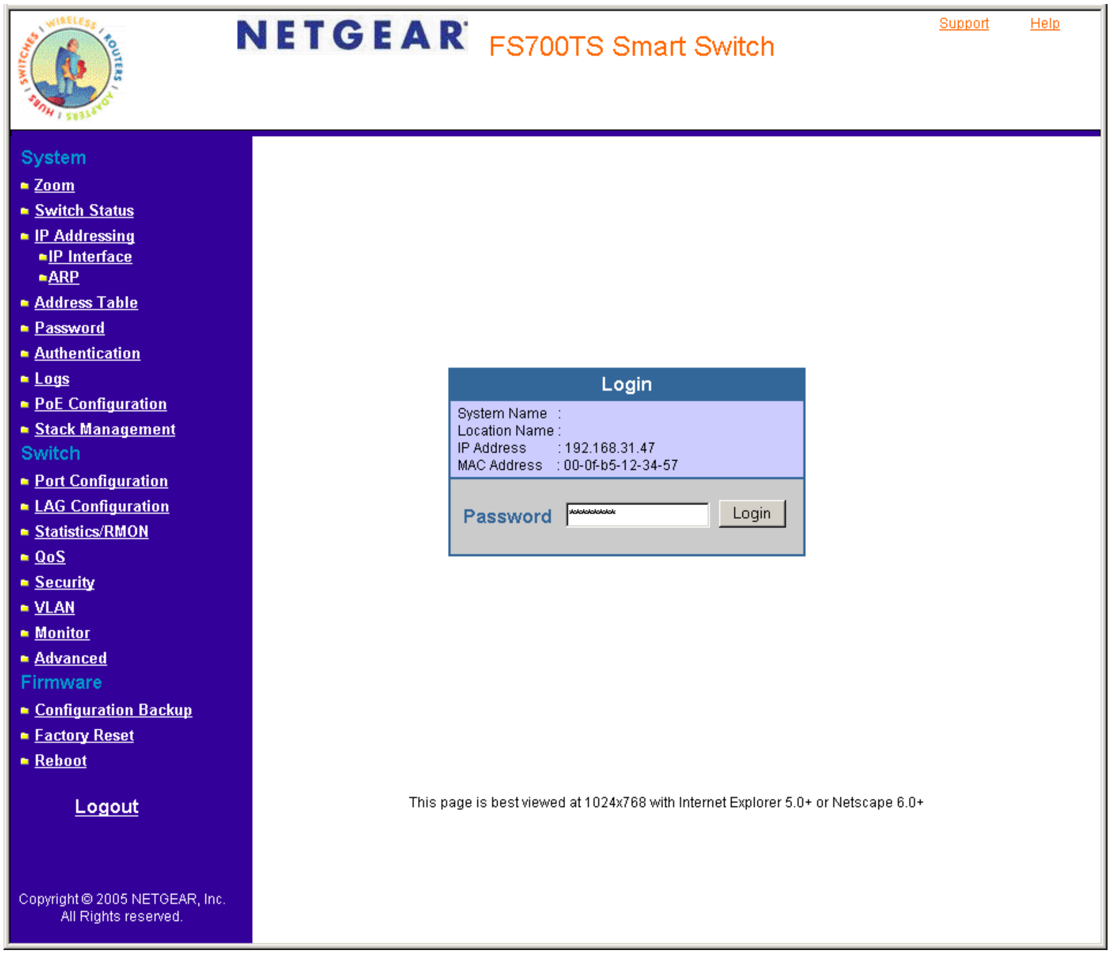


MAC Add...	IP Address	Protocol ...	Product N...	System N...	Location	DH...	Subnet M...	Gateway
00-00-43-...	16.1.1.3	2.001.003	FS700TS ...			Di...	255.0.0.0	16.1.1.5

Figure 2 - 2: Web Access

Start managing your switch via your web browser. The default password is ‘password’. For a detailed description on web management, please refer to Section 5.

Web Management



System Name :
Location Name :
IP Address : 192.168.31.47
MAC Address : 00-0f-b5-12-34-57

Password ********

This page is best viewed at 1024x768 with Internet Explorer 5.0+ or Netscape 6.0+

Copyright © 2005 NETGEAR, Inc.
All Rights reserved.

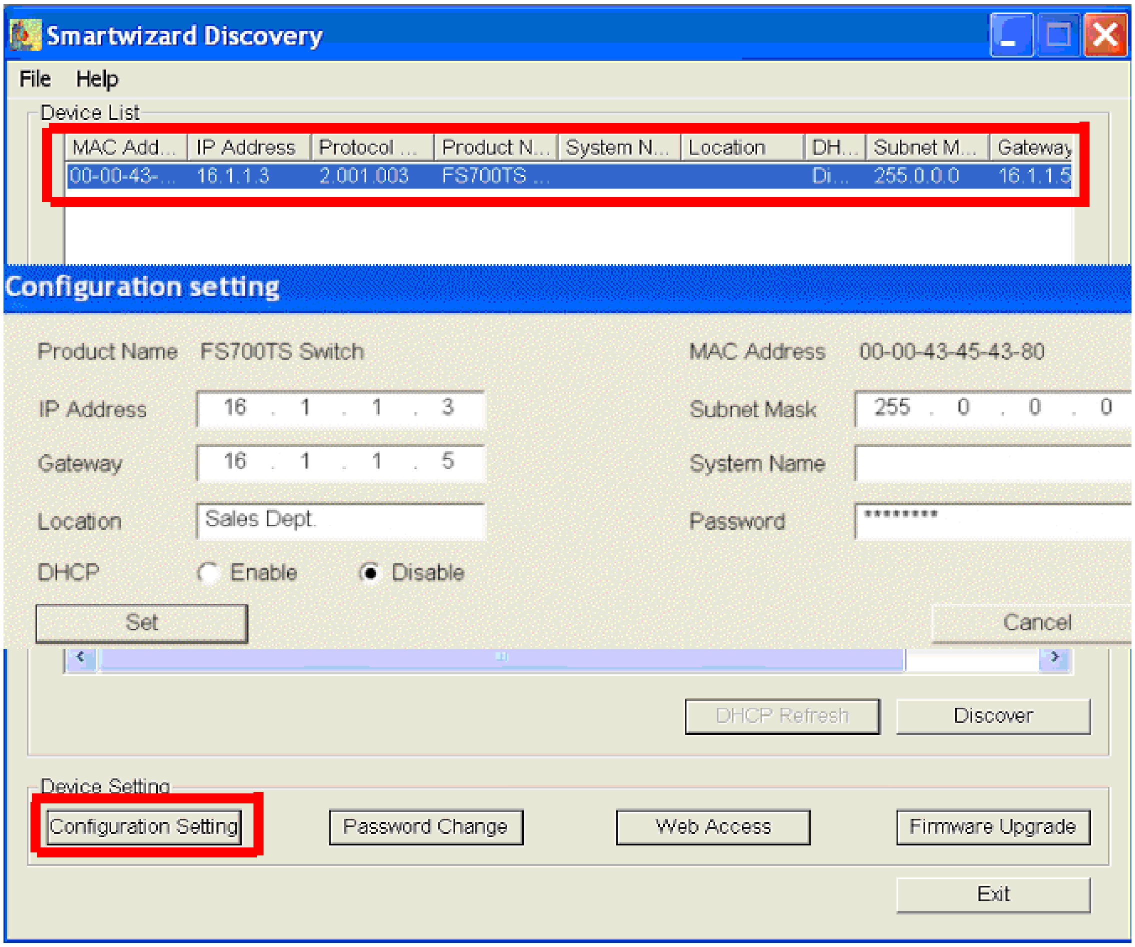
Figure 2 - 3: Web Management Front page after click "web access" on the Smart Wizard Discovery Utility

Network without DHCP server

1. Connect FS700TS-series switch to your existing network.
2. Power on FS700TS-series switch by plugging in power cord (Default IP is 192.168.0.239).
3. Install the Smart Wizard Discovery Utility program on your computer
4. Start the Smart Wizard Discovery utility. (Section 4 has detailed instructions on the Smart Wizard Discovery Utility)
5. Click **Discover** for the Smart Wizard Discovery Utility to find your FS700TS-series switch. You should see a something similar to Figure 2-1.
6. Click on **Configuration Setting** (See Figure 2-4).

Note: You can always assign a Static IP address to your FS700TS-series switch, even if your network does not have a DHCP server.

Smart Wizard Discovery > Configuration Setting > Default



MAC Add...	IP Address	Protocol ...	Product N...	System N...	Location	DH...	Subnet M...	Gateway
00-00-43-...	16.1.1.3	2.001.003	FS700TS ...			Di...	255.0.0.0	16.1.1.5

Configuration setting

Product Name FS700TS Switch

MAC Address 00-00-43-45-43-80

IP Address 16 . 1 . 1 . 3

Subnet Mask 255 . 0 . 0 . 0

Gateway 16 . 1 . 1 . 5

System Name

Location Sales Dept.

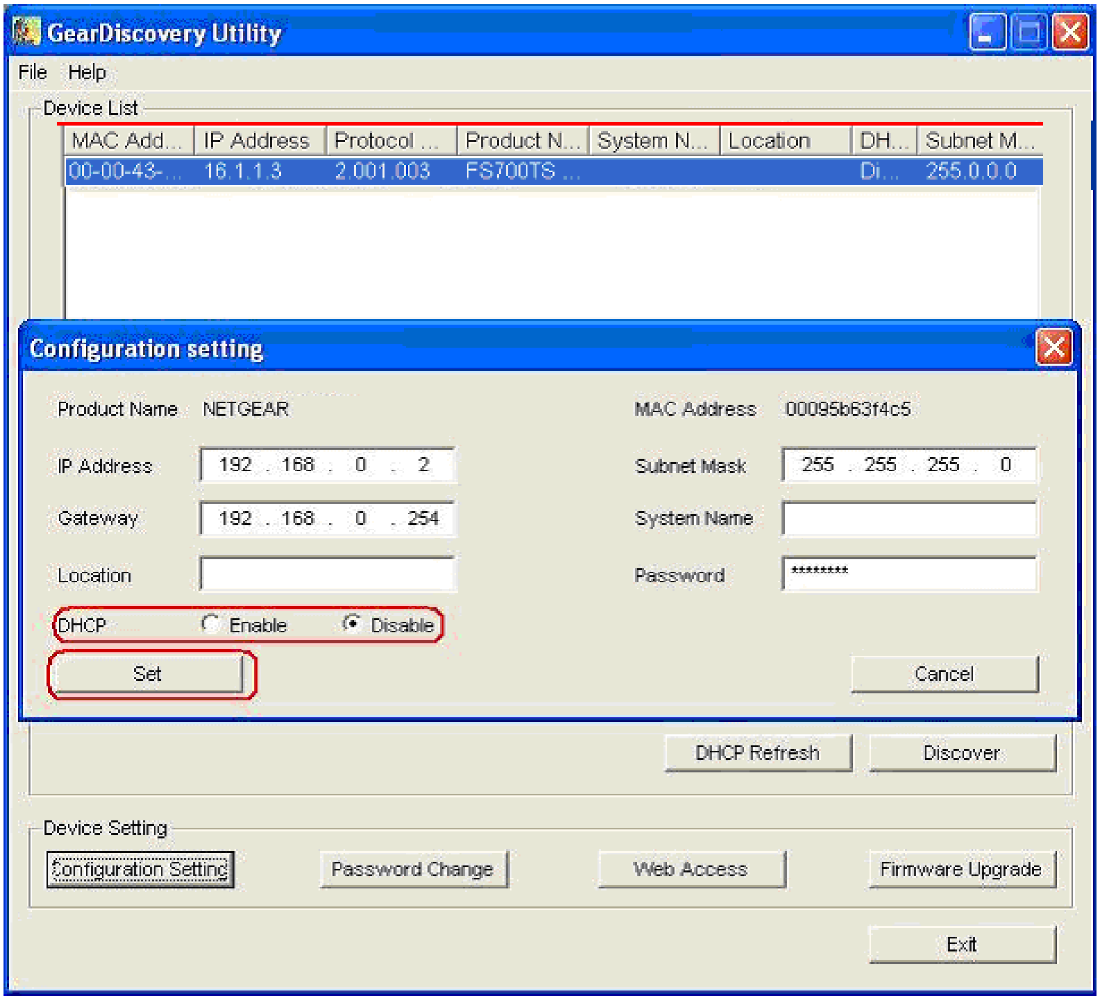
Password *********

DHCP ○ Enable ● Disable

Figure 2 - 4: Configuration Setting

7. Choose **Disable** on DHCP. See Figure 2-5.
8. Enter your IP address, Gateway and Subnet, and then type your password and click “**Set**”. Please make sure your PC and FS700TS-series switch are in the same subnet (See Figure 2-6.).

Smart Wizard Discovery > Configuration Setting > Assign Static IP



MAC Add...	IP Address	Protocol ...	Product N...	System N...	Location	DH...	Subnet M...
00-00-43-...	16.1.1.3	2.001.003	FS700TS ...			Di...	255.0.0.0

Product Name NETGEAR

MAC Address 00095b63f4c5

IP Address 192 . 168 . 0 . 2

Subnet Mask 255 . 255 . 255 . 0

Gateway 192 . 168 . 0 . 254

System Name

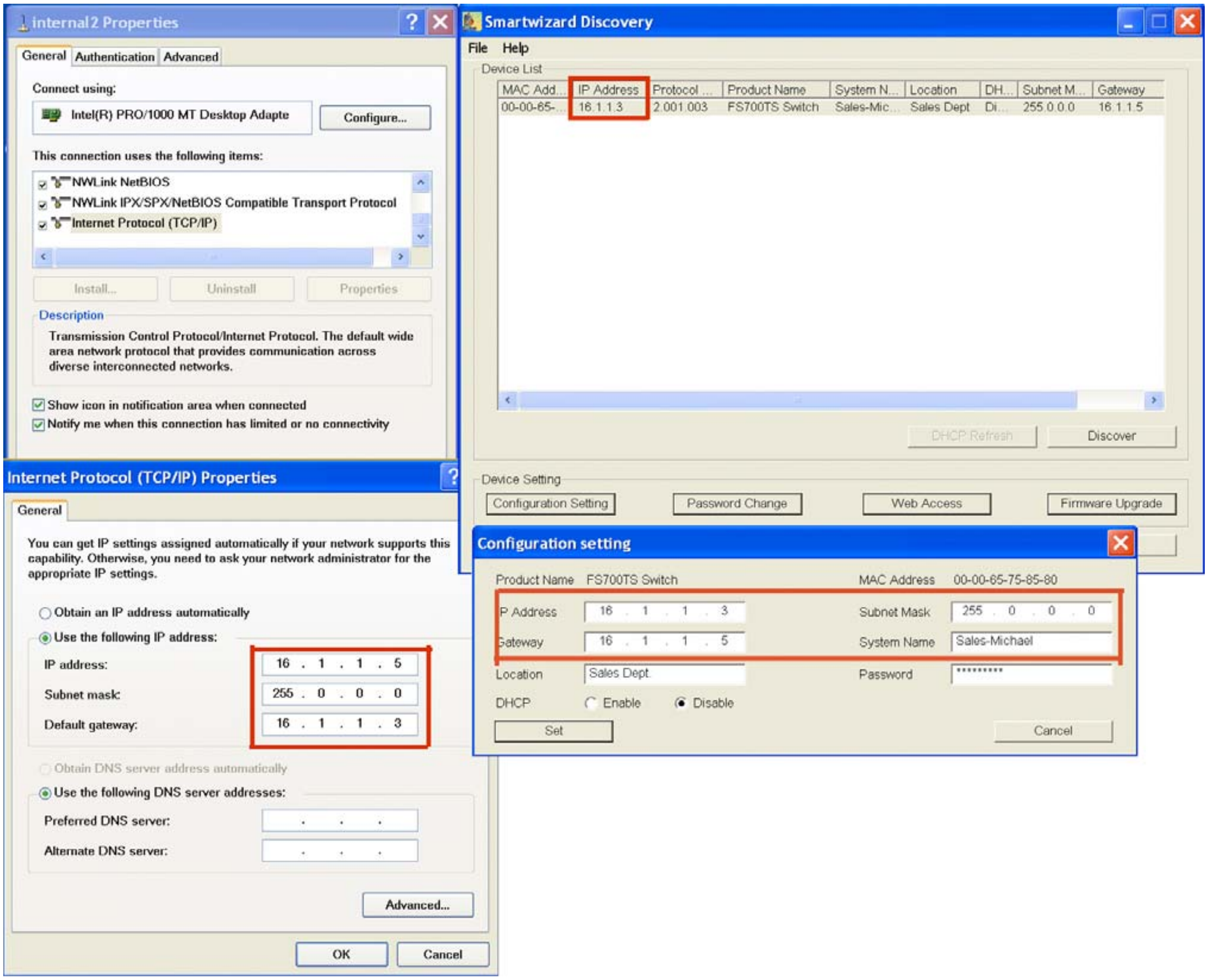
Location

Password ********

DHCP ○ Enable ● Disable

Figure 2 - 5: Manually Setting IP Address

NIC Setting on the PC that Accesses the FS700TS-Series Switch



internal2 Properties

General | Authentication | Advanced

Connect using:

Intel(R) PRO/1000 MT Desktop Adapte [Configure...]

This connection uses the following items:

☑ NWLink NetBIOS

☑ NWLink IPX/SPX/NetBIOS Compatible Transport Protocol

☑ Internet Protocol (TCP/IP)

[Install...] [Uninstall] [Properties]

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

☑ Show icon in notification area when connected

☑ Notify me when this connection has limited or no connectivity

Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 16 . 1 . 1 . 5

Subnet mask: 255 . 0 . 0 . 0

Default gateway: 16 . 1 . 1 . 3

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

[Advanced...]

[OK] [Cancel]

Smartwizard Discovery

File Help

Device List

MAC Add...	IP Address	Protocol ...	Product Name	System N...	Location	DH...	Subnet M...	Gateway
00-00-65-...	16.1.1.3	2.001.003	FS700TS Switch	Sales-Mic...	Sales Dept	Di...	255.0.0.0	16.1.1.5

[DHCP Refresh] [Discover]

Device Setting

[Configuration Setting] [Password Change] [Web Access] [Firmware Upgrade]

Configuration setting

Product Name FS700TS Switch

MAC Address 00-00-65-75-85-80

P Address 16 . 1 . 1 . 3

Subnet Mask 255 . 0 . 0 . 0

Gateway 16 . 1 . 1 . 5

System Name Sales-Michael

Location Sales Dept

Password *********

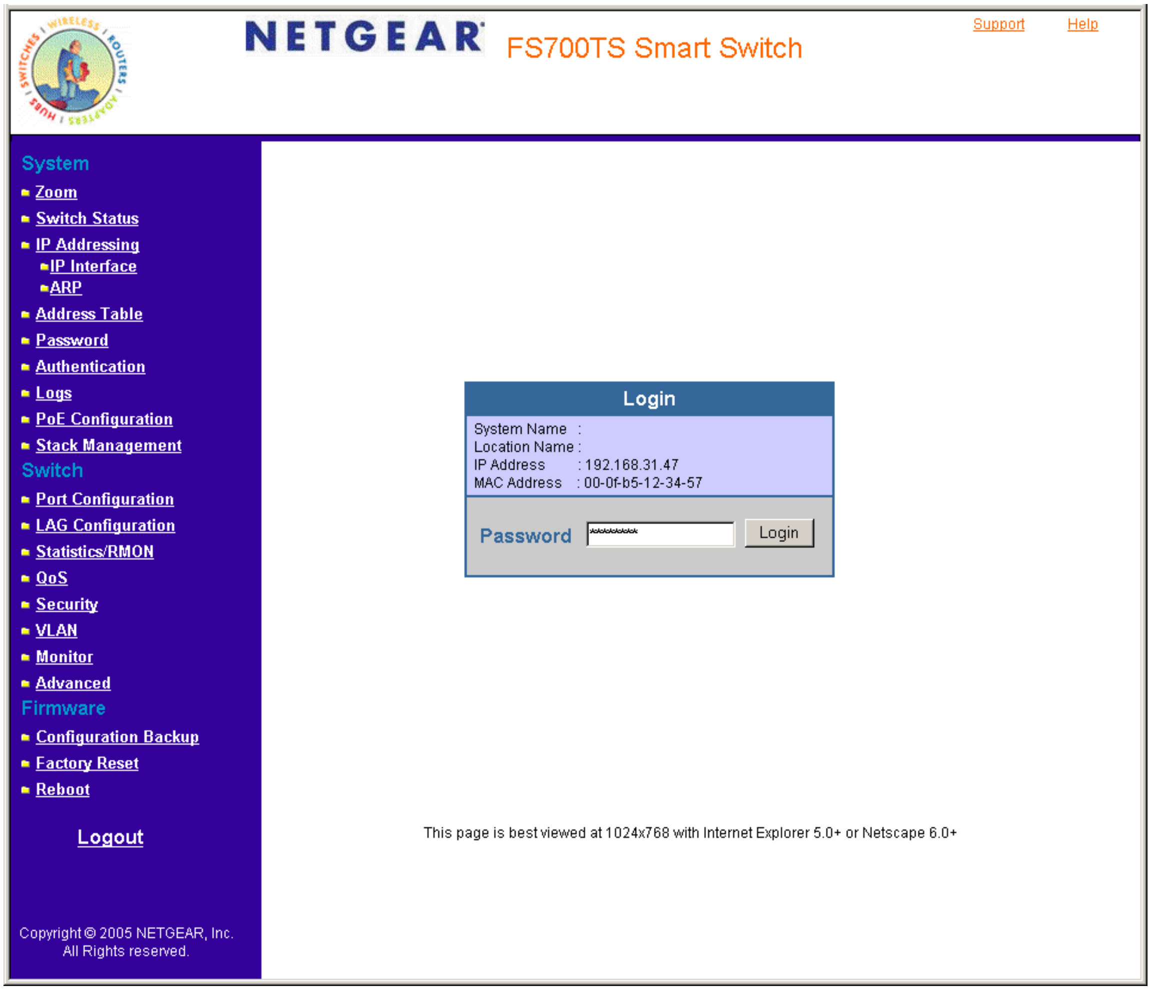
DHCP ○ Enable ● Disable

[Set] [Cancel]

Figure 2-6: Setting IP Address and Subnet Mask

1. Select your switch by clicking on it. Then click on **Web Access**, as highlighted in Figure 2-2.
2. Start managing your switch via your web browser. The default password is ‘password’. For a detailed description on web management access, please refer to Section 5.

Web Management



System Name :
Location Name :
IP Address : 192.168.31.47
MAC Address : 00-0f-b5-12-34-57

Password ******** Login

This page is best viewed at 1024x768 with Internet Explorer 5.0+ or Netscape 6.0+

Copyright © 2005 NETGEAR, Inc.
All Rights reserved.

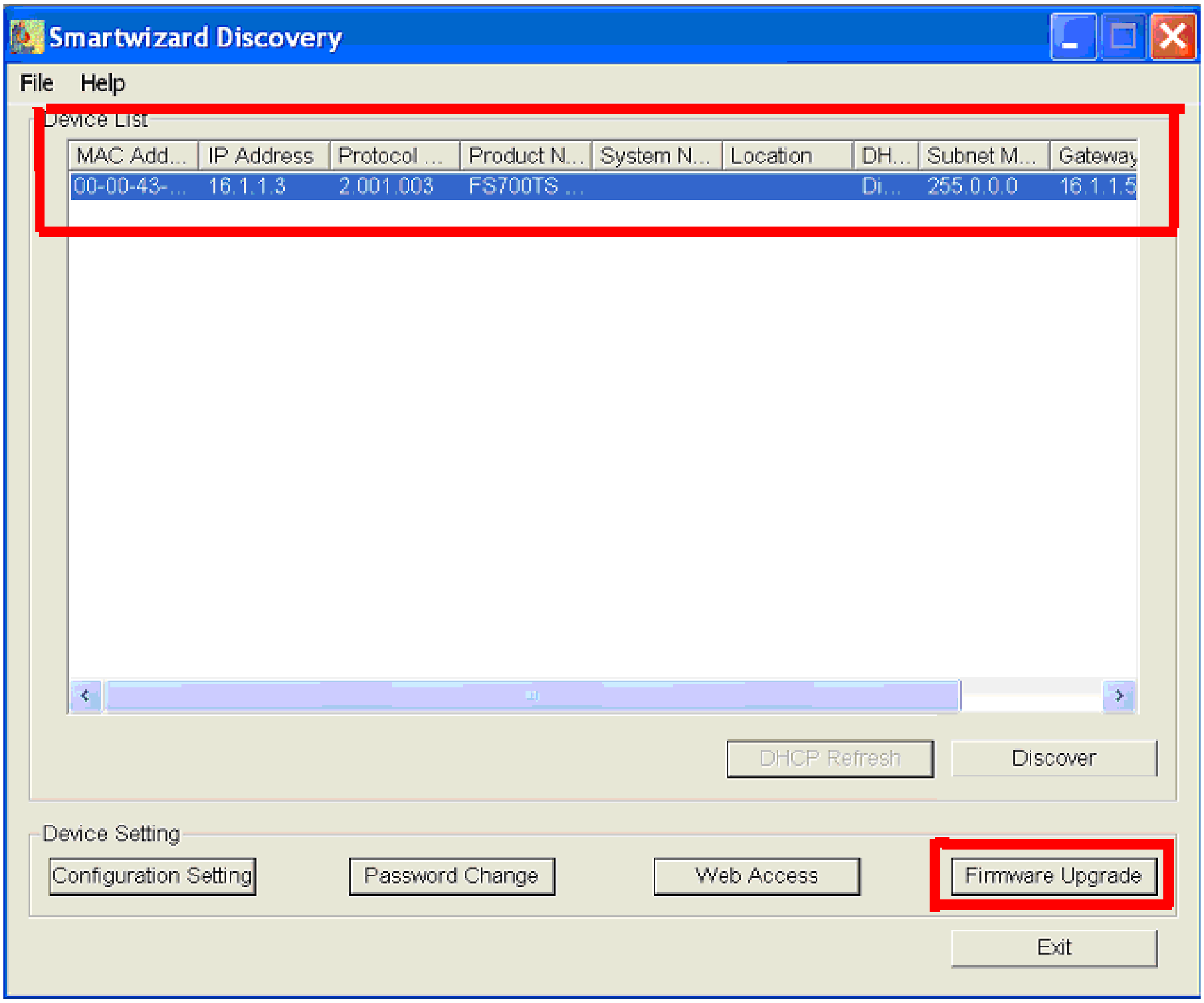
Figure 2 - 7: Web Management Front Page after Click “Web Access” on the Smart Wizard Discovery Utility

CHAPTER 3: SOFTWARE UPGRADE PROCEDURE

The application software for the FS700TS-series switch is upgradeable, enabling your switch to take advantage of improvements and additional features as they become available. The upgrade procedure and the required equipment are described in the following section.

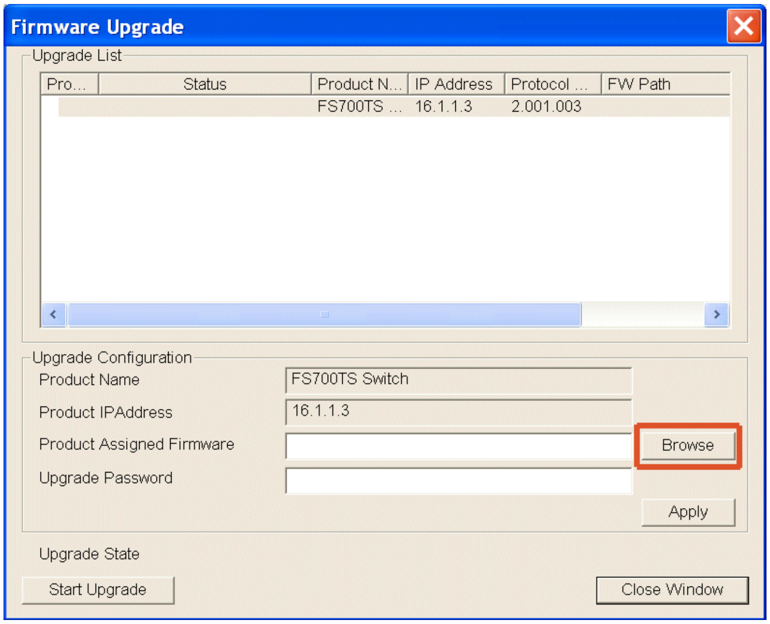
The upgrade procedure is as follows:

1. Save the new firmware to your computer.
2. Start the Smart Wizard Discovery Utility program.
3. Select your switch by clicking on it. Then click on **Firmware Upgrade**, as highlighted in Figure 3-1.



MAC Add...	IP Address	Protocol ...	Product N...	System N...	Location	DH...	Subnet M...	Gateway
00-00-43-...	16.1.1.3	2.001.003	FS700TS ...			Di...	255.0.0.0	16.1.1.5

Figure 3 - 1: Select the Switch you Want to Upgrade and Click Firmware Upgrade



Pro...	Status	Product N...	IP Address	Protocol ...	FW Path
		FS700TS ...	16.1.1.3	2.001.003	

Product Name: FS700TS Switch

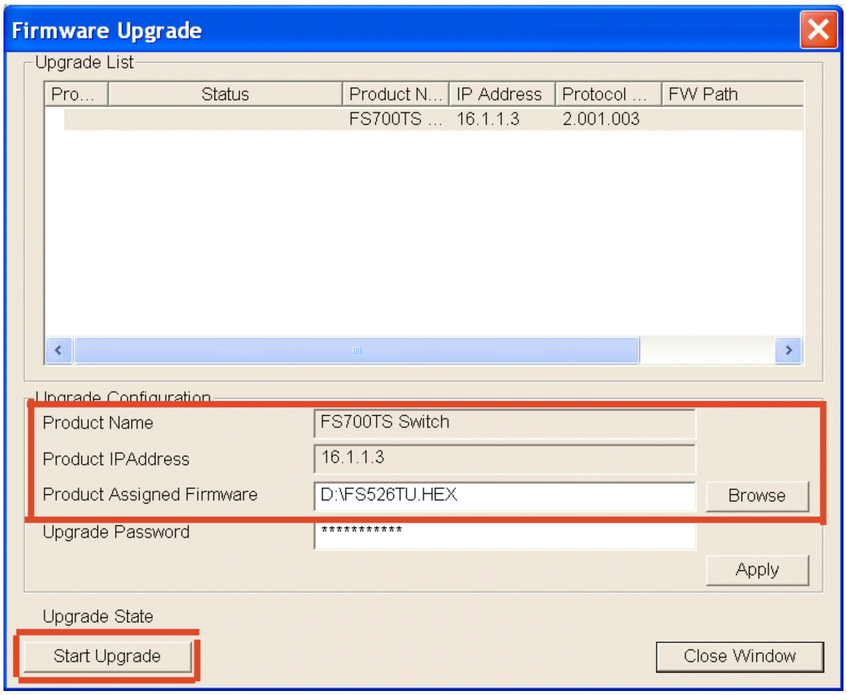
Product IPAddress: 16.1.1.3

Product Assigned Firmware:

Upgrade Password:

Figure 3 - 2: Locate New Firmware

4. Enter the location of the new firmware in the Firmware path below Firmware setting. Alternatively, you can click Browse to locate the file. Enter following path, `tftp://{tftp address}/{file name}`.
5. Click **Start** to download the new firmware file in non-volatile memory. The system software is automatically loaded to all stacking members.



Pro...	Status	Product N...	IP Address	Protocol ...	FW Path
		FS700TS ...	16.1.1.3	2.001.003	

Product Name: FS700TS Switch

Product IPAddress: 16.1.1.3

Product Assigned Firmware: D:\FS526TU.HEX

Upgrade Password: ***********

Figure 3 - 3: Enter Password and click Start

Note: Once the system finishes firmware upgrade process, the switch will automatically reboot. The Smart Wizard Discovery Utility determines the success of the upgrade process based on the success of the system reboot.

CHAPTER 4: SMART WIZARD DISCOVERY UTILITY PROGRAM

The Smart Wizard Discovery Utility program is a user-friendly, easy to install tool. Using this program, you can view and configure all the FS700TS-series Smart Switches in your network.

The installation of the Smart Wizard Discovery Utility is as follows:

1. Insert the disc into your CD-ROM drive.
2. Select the \Software folder or click '**install**' from Browser auto-executed after inserting the Resource CD.
3. Run the Setup program to install the Smart Wizard Discovery Utility.
4. The Installation Wizard will guide you through.
5. Run the '**Smart Wizard Discovery Utility**' from the window start bar.

Main Screen

The main screen displays the available functions. As shown in Figure 4-1, there are six function items to choose from:

- Discover
- Configuration Setting
- Password Change
- Web Access
- Firmware Upgrade
- Exit

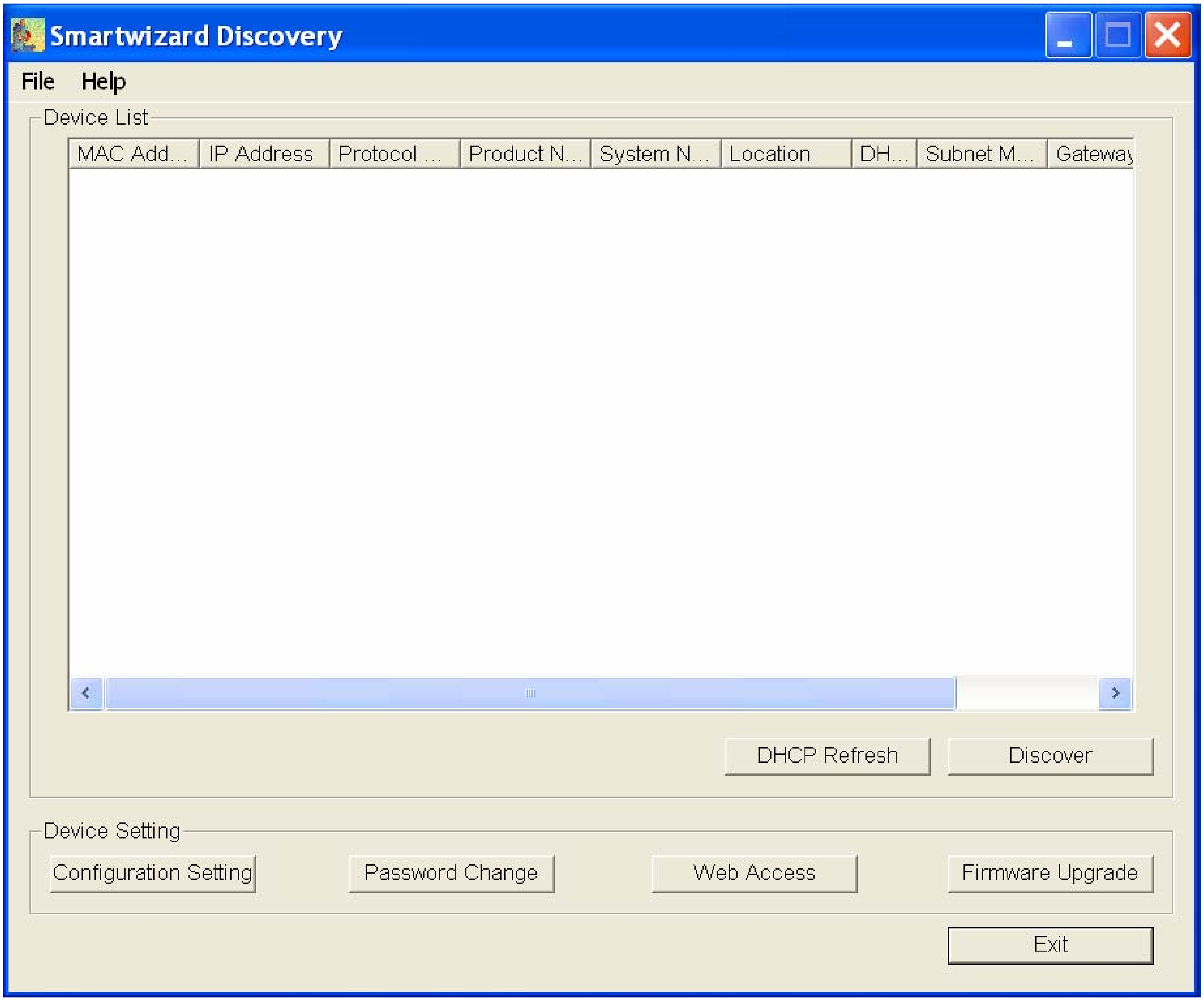
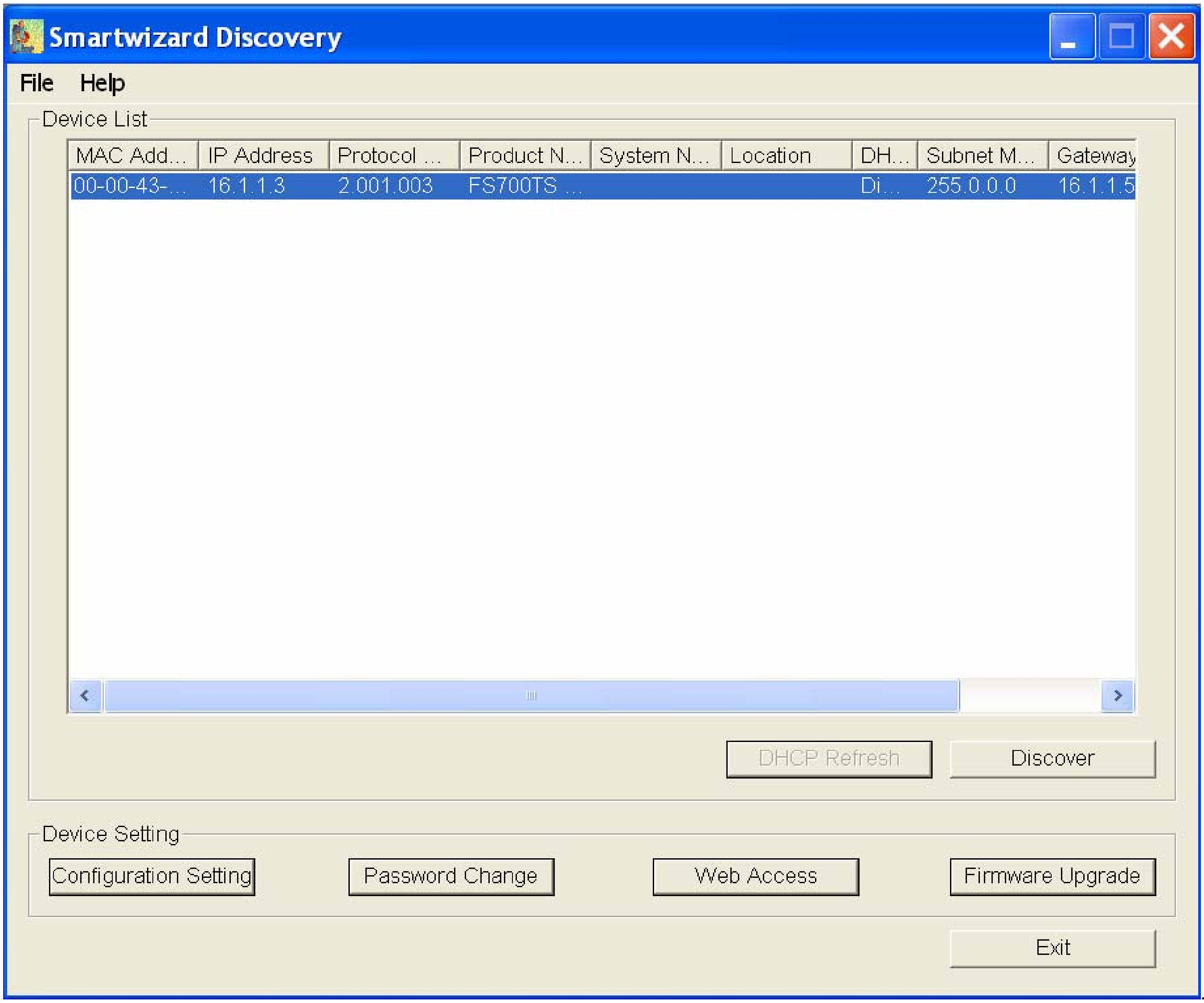


Figure 4 - 1: Smart Wizard Discovery Utility Main Screen

Main Screen > Device List > Discover

The Smart Wizard Discovery Utility can discover all switches currently connected on the network. Click '**Discover**' to view the following switch information of any listed switch:

- MAC Address
- IP Address
- Protocol Version
- Product Name
- System Name
- Location
- DHCP
- Subnet Mask
- Gateway



MAC Add...	IP Address	Protocol ...	Product N...	System N...	Location	DH...	Subnet M...	Gateway
00-00-43-...	16.1.1.3	2.001.003	FS700TS ...			Di...	255.0.0.0	16.1.1.5

Figure 4 - 2: Main Screen: Device List > Discover

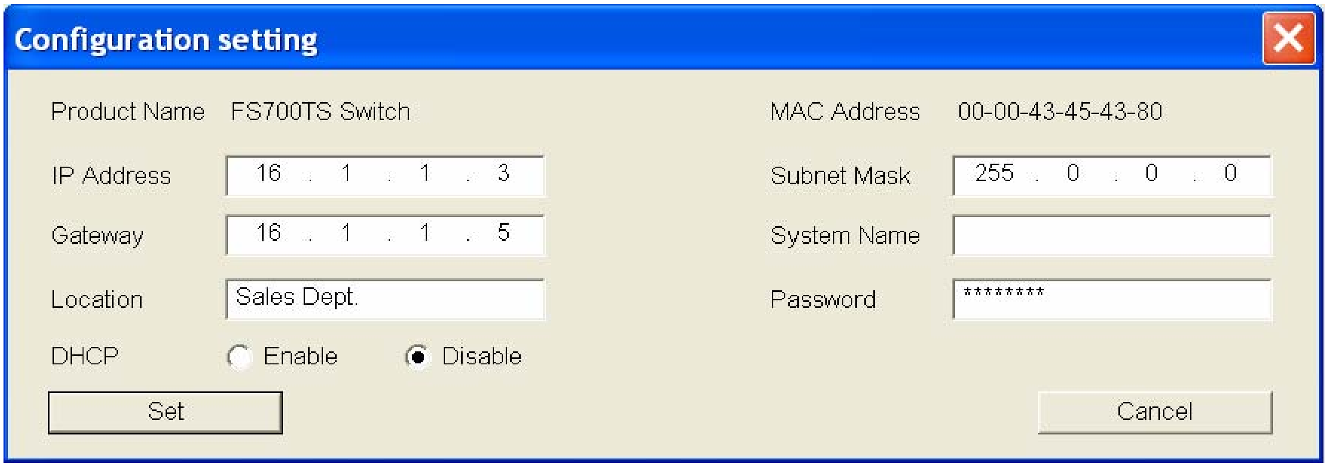
By double-clicking a listed switch, you can open the Web management for that switch. Alternatively, you can select a switch by clicking on it once, and then clicking Web Access. For more information on Web management, see Section 5.

Main Screen Switch Setting > Configuration Setting

Select a switch by clicking on it. Then click Configuration Setting.

The following screen pops up, enabling you modify:

- **System Name** — This field is to help you keep track of your switches. It can be any combination of letters and/or numbers.
- **Location** — This field is to help you keep track of where this switch is. It can be any combination of letters and/or numbers.
- **Password** — The default password is ‘password’. You must enter your password for and modifications to take affect.
- **DHCP** — DHCP automatically obtains the IP information for the switch.



Product Name FS700TS Switch

MAC Address 00-00-43-45-43-80

IP Address 16 . 1 . 1 . 3

Subnet Mask 255 . 0 . 0 . 0

Gateway 16 . 1 . 1 . 5

System Name

Location Sales Dept.

Password ********

DHCP ○ Enable ● Disable

Figure 4 - 3: Main Screen: Switch Setting > Configuration Setting

- **System Name** — Any desired description for System Name.
- **Location** — Any desired description for Location.
- **Password** — The default password is ‘password’.
- **DHCP** — This function is enabled by default. Click ‘Disable’ to abort the function.

Main Screen > Device Setting > Configuration Setting > Set

Click ‘Set’ to enable new settings. You must enter your password for these settings to be accepted.

Main Screen > Device Setting > Configuration Setting > Cancel

Click ‘Cancel’ to abort the above settings.

Main Screen > Switch Setting > Password Change

6. Click ‘**Password Change**’ from the Switch Setting section. The following screen pops up as shown in Figure 4-4.

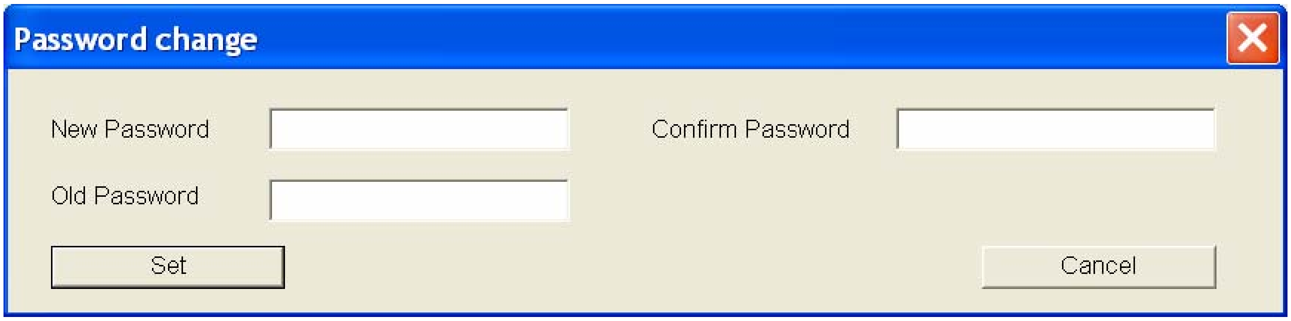


Figure 4 - 4: Main Screen: Switch Setting > Password Change

- **New Password** — Type any desired password. Passwords are case-sensitive and can have a maximum of 20 characters.

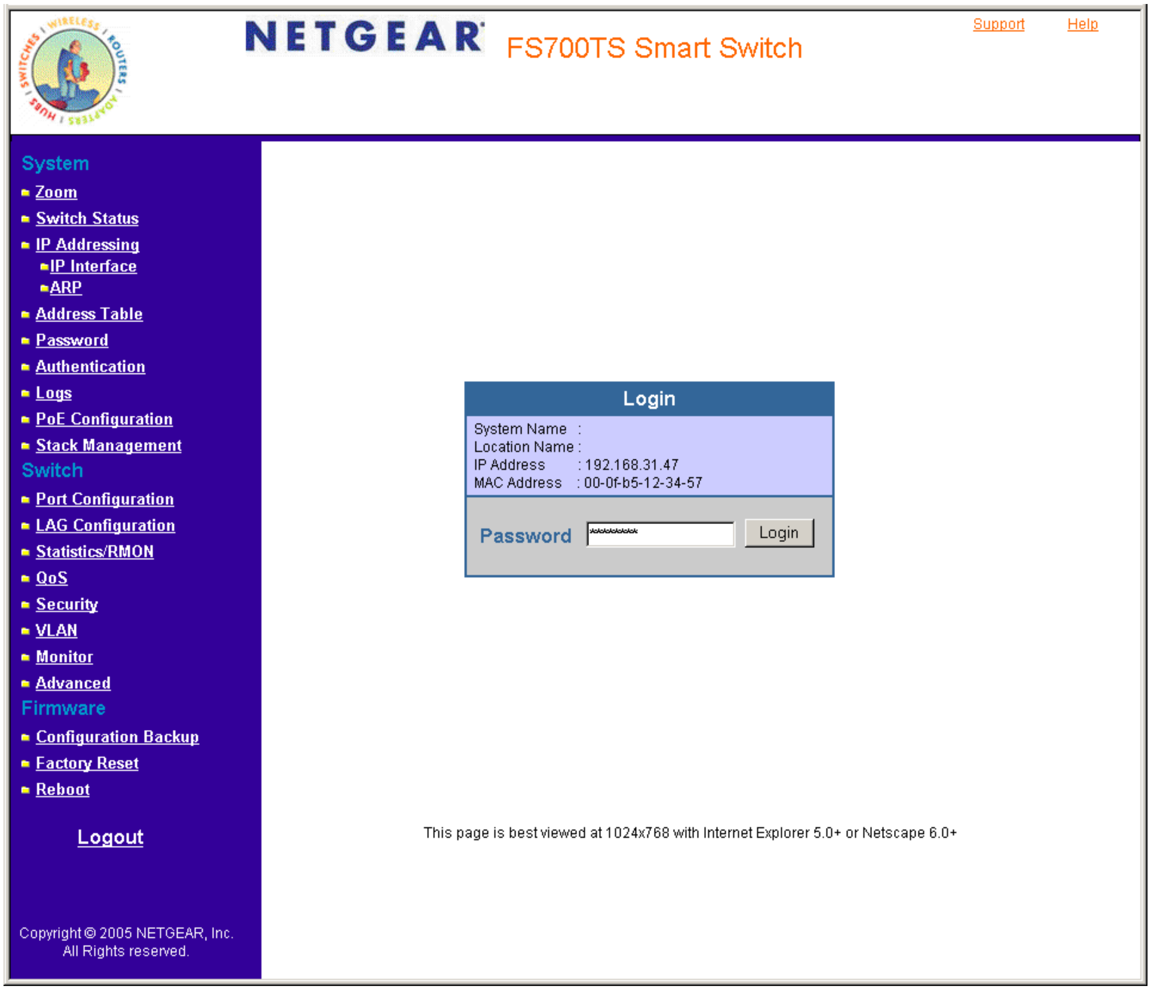
- **Confirm Password**— Re-type the new password to confirm it.
- **Old Password** — The default password is ‘password’.

7. Click ‘**Set**’ to enable new password.

Main Screen > Switch Setting > Web Access

8. Select a listed switch from the Device List section. Then click **Web Access** from the Switch Setting (see Figure 4-5).
9. Enter the default password ‘password’ and click **Log in**.

For more on Web management, see Section 5.



System Name :
Location Name :
IP Address : 192.168.31.47
MAC Address : 00-0f-b5-12-34-57

Password ******** Login

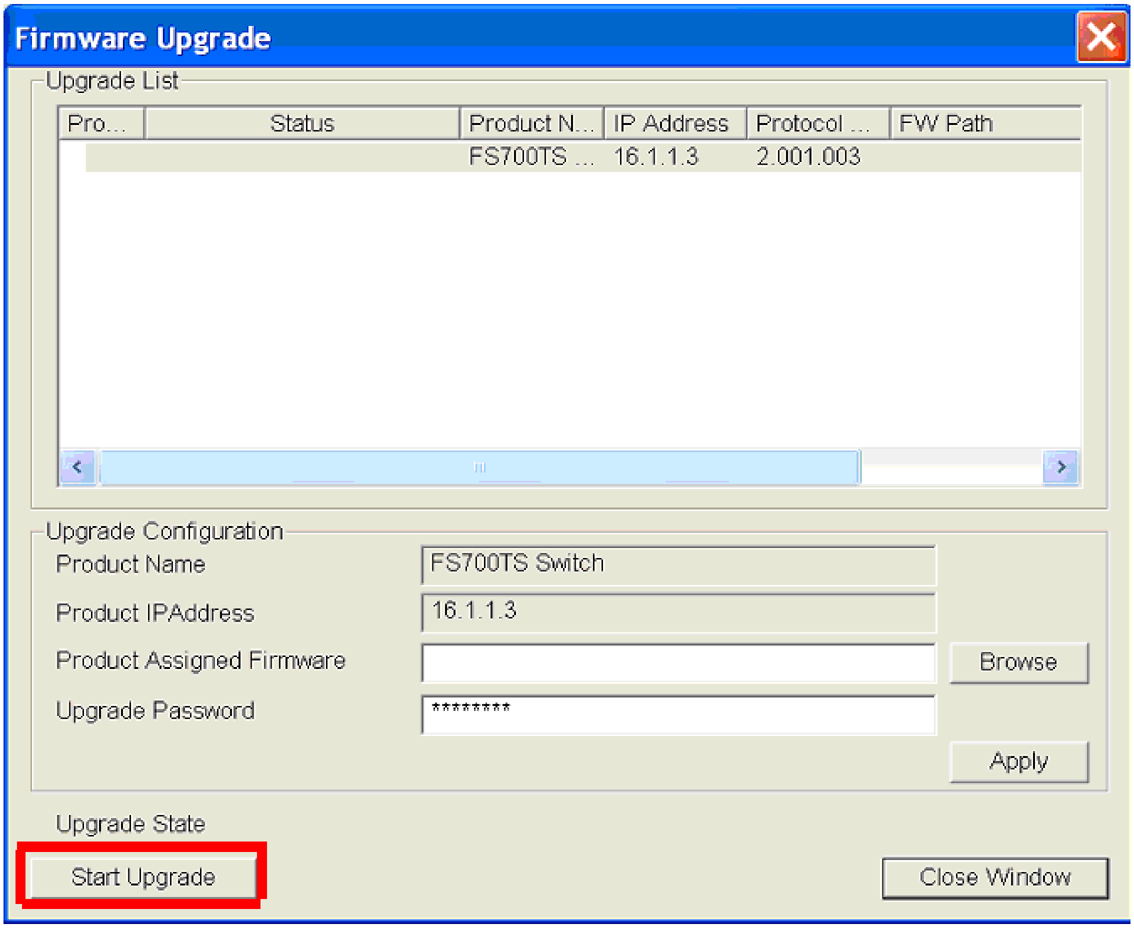
This page is best viewed at 1024x768 with Internet Explorer 5.0+ or Netscape 6.0+

Copyright © 2005 NETGEAR, Inc.
All Rights reserved.

Figure 4 - 5: Web Management Login Page

Main Screen > Switch Setting > Firmware Upgrade

10. Click **Firmware Upgrade** from the Switch Setting section. The following screen will pop up.



Pro...	Status	Product N...	IP Address	Protocol ...	FW Path
		FS700TS ...	16.1.1.3	2.001.003	

Product Name: FS700TS Switch

Product IPAddress: 16.1.1.3

Product Assigned Firmware:

Upgrade Password: *********

Figure 4 - 6: Main Screen: Switch Setting > Firmware Upgrade

- **Firmware Path** — The location of the new firmware. If you don't know, you can click Browse to locate file.
- **Password** — The default password is 'password'.
- **Upgrade State** — Shows upgrading in progress.

11. Click **Start** to start upgrading.

Main Screen > Switch Setting > Exit

- Click **Exit** from the Switch Setting section to close the Smart Wizard Discovery Utility program.

CHAPTER 5: CONFIGURING THE DEVICE USING YOUR BROWSER

This section contains information for configuring the device using your web browser and includes the following topics:

- Getting Started
- Resetting the System
- Defining Device Information
- Managing Stacking
- Configuring Device Security
- Viewing System Logs
- Configuring Power over Ethernet
- Configuring Interfaces
- Defining IP Addresses
- Defining the Forwarding Address Tables
- Configuring the Spanning Tree Protocol
- Configuring Quality of Service
- Configuring SNMP Security
- Monitoring the Device
- Managing RMON Statistics
- Resetting the Factory Default Values

Getting Started

This section describes setting browser interface options and using the home page for the FS700TS-series switch. It includes the following sections:

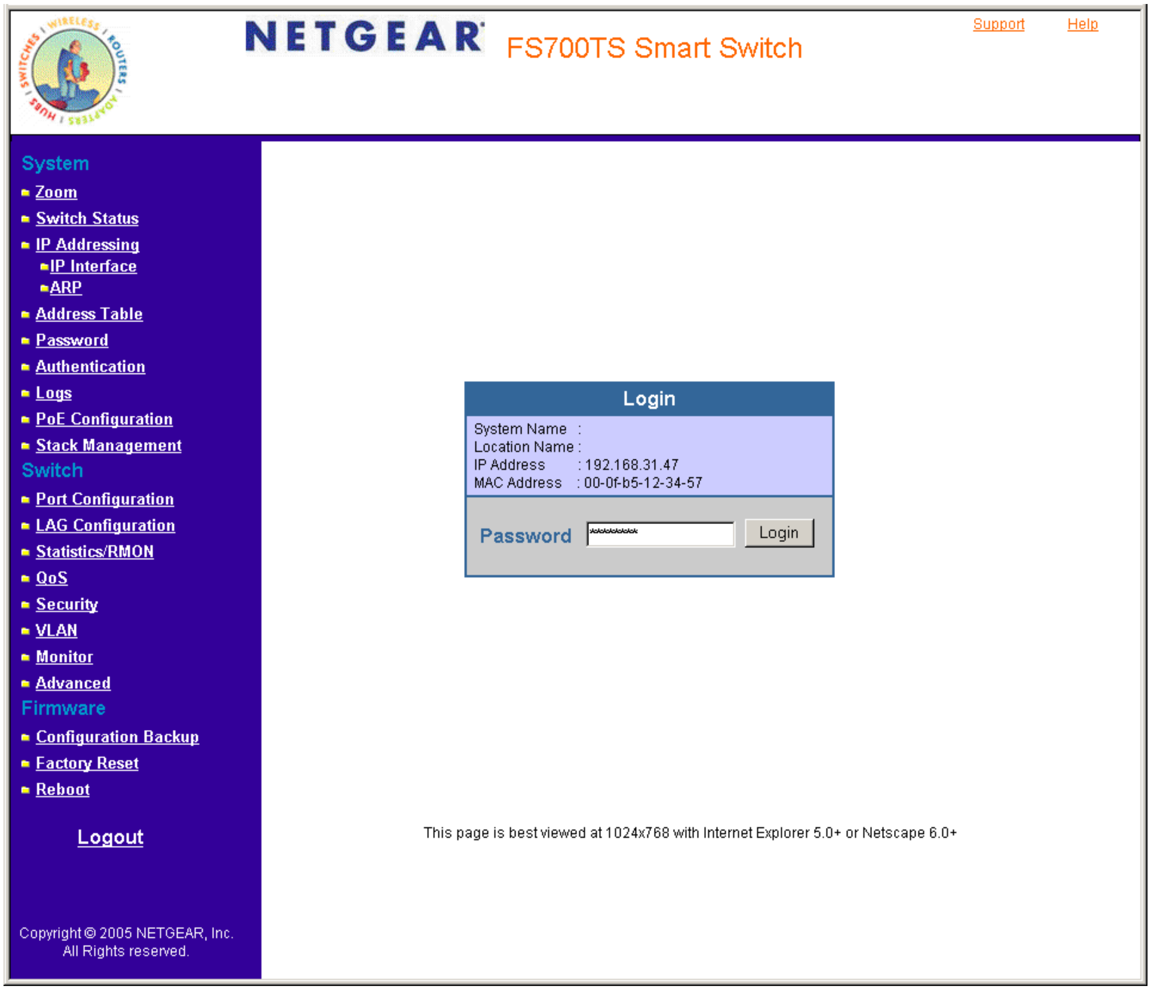
- Opening the NETGEAR Home Page for the FS700TS-series switch
- Understanding the Home Page for the FS700TS-series switch
- Using the Web Management System Buttons

Opening the NETGEAR Home Page for the FS700TS-Series Switch

The NETGEAR home page for the FS700TS-series switch can be accessed from any PC with a web browser.

To start the application:

1. Open a web browser.
2. Enter the device IP address in the address bar.
3. Press **Enter**. The *Login Page* appears.



System Name :
Location Name :
IP Address : 192.168.31.47
MAC Address : 00-0f-b5-12-34-57

Password: *******

This page is best viewed at 1024x768 with Internet Explorer 5.0+ or Netscape 6.0+

Figure 5 - 1: Login Page

4. Enter a password.
5. Click Login. The FS700TS home page displays.

Understanding the Home Page

The *NETGEAR* FS700TS home page contains the following views:

- **Navigation Pane** — Located on the left side of the FS700TS home page. The Navigation Pane provides an expandable Navigation Pane of the features and their component. The Navigation Pane is marked as 1 in *Figure 5 - 2*.
- **Device View** — Located on the right side of the FS700TS home page. The Device View provides a view of the device, information or table area, and of configuration instructions.
- **Information Buttons** — Located in the upper right corner of the home page, the information buttons provide connections to NETGEAR support and the online manual. See item 3 in Figure 5-2.

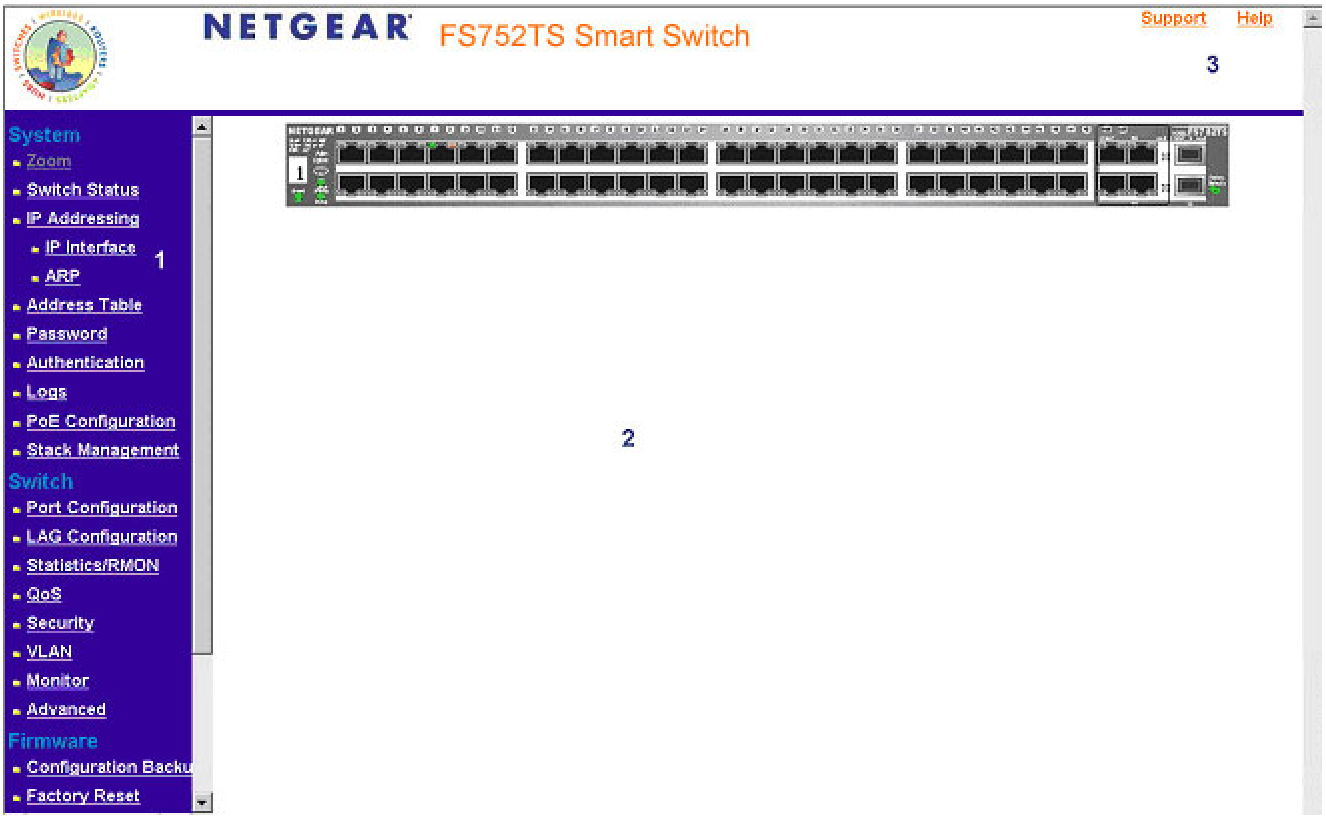


Figure 5 - 2: Home Page Components

Navigation Pane

The Navigation Pane contains a list of the different features that can be configured including switching features, ports, spanning tree, VLANs, class of service, link aggregation (aggregating ports), multicast support, and statistics. The Navigation Pane branches can be expanded to view all the components under a specific feature or retracted to hide the feature's components.

Device View

The following section describes the different aspects of the Device View. The device provides information about FS728TS/F752TPS/FS752TS, the different components, and the Work Desk. The Work Desk in the Device View provides a work area that contains device tables, general device information, and configurable device parameters.

Using The NETGEAR Web Management System Buttons

This section contains information about the different FS700TS browser interface buttons. The FS700TS web browser provides the following buttons:

- **Information Buttons** — Provide access to informational services including technical support, online help, device information, and closing the browser.
- **Device Management Buttons** — Provide an explanation of the management buttons in the NETGEAR FS700TS-series Switch, including the Add, Delete, Query, and Apply Changes buttons.

Information Buttons

The FS700TS Switch web browser contains the following information buttons:

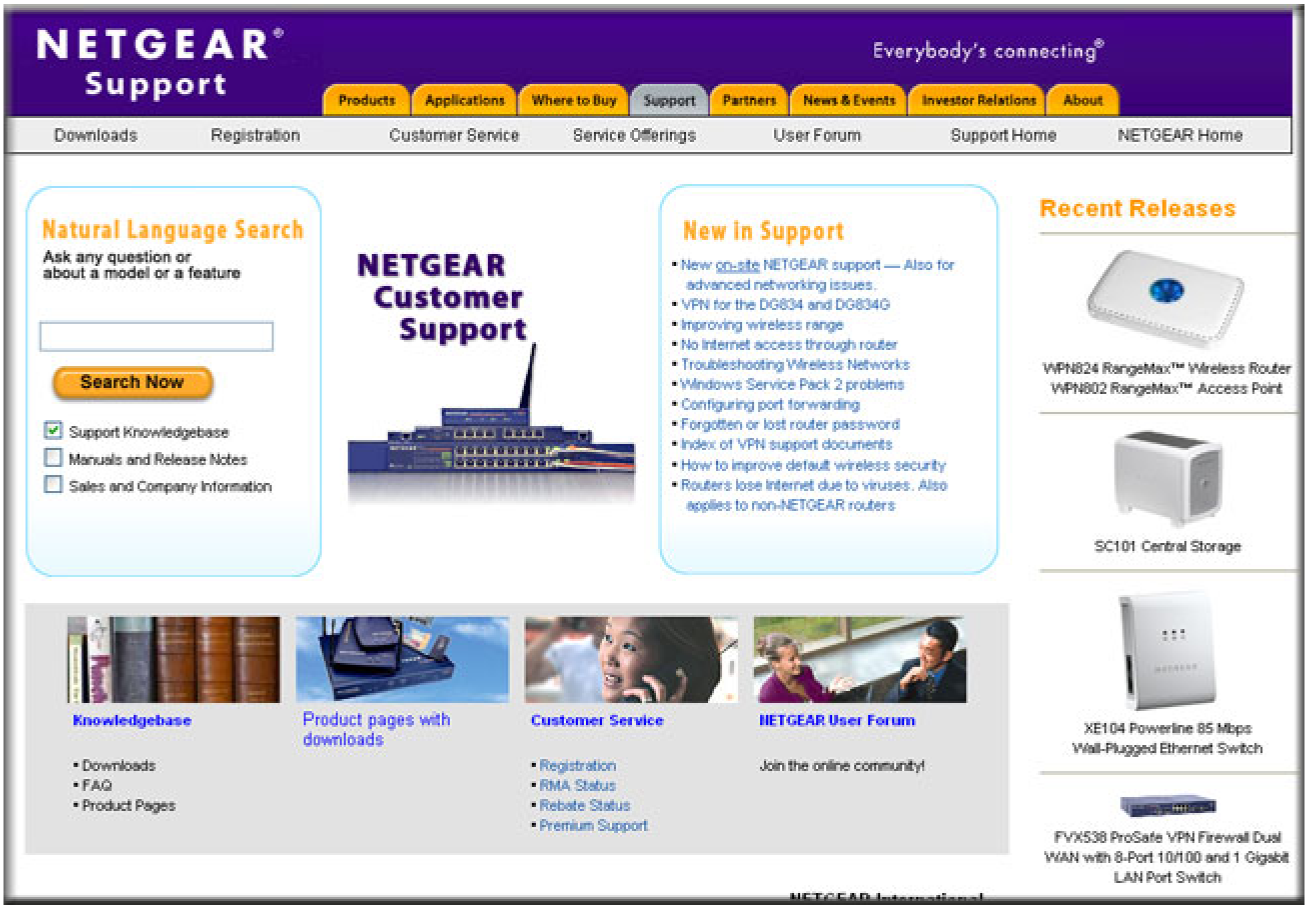
Table 1 - 1: Information Buttons

Button	Description
Support	Opens the NETGEAR support page. The NETGEAR technical support page URL is http://kbserver.netgear.com/
Help	Opens the Online Help.

Support Button

The *Support Page* contains information for accessing NETGEAR technical support. To access the technical support page:

- Click **Support** on the NETGEAR home page. The *NETGEAR Support Page* opens:



Ask any question or about a model or a feature

☑ Support Knowledgebase
□ Manuals and Release Notes
□ Sales and Company Information

New in Support

- New on-site NETGEAR support — Also for advanced networking issues.
- VPN for the DG834 and DG834G
- Improving wireless range
- No Internet access through router
- Troubleshooting Wireless Networks
- Windows Service Pack 2 problems
- Configuring port forwarding
- Forgotten or lost router password
- Index of VPN support documents
- How to improve default wireless security
- Routers lose Internet due to viruses. Also applies to non-NETGEAR routers

Recent Releases

WPN824 RangeMax™ Wireless Router
WPN802 RangeMax™ Access Point

SC101 Central Storage

XE104 Powerline 85 Mbps Wall-Plugged Ethernet Switch

FVX538 ProSafe VPN Firewall Dual WAN with 8-Port 10/100 and 1 Gigabit LAN Port Switch

Knowledgebase
- Downloads
- FAQ
- Product Pages

Customer Service
- Registration
- RMA Status
- Rebate Status
- Premium Support

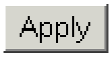
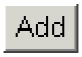
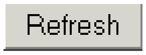
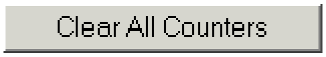
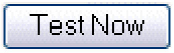
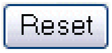
NETGEAR User Forum
Join the online community!

Figure 5 - 3: NETGEAR Support Page

Device Management Buttons

The NETGEAR FS700TS Switch web browser GUI management buttons allow network managers to easily configure the device from remote locations. The FS700TS Switch web browser GUI contains the following management buttons:

Table 1 - 2: Device Management Buttons

Button	Description
	Applies set changes to the device.
	Adds information to tables or information windows.
	Refreshes device information.
	Resets statistics counters.
	Performs copper cables.
	Restores the factory defaults.

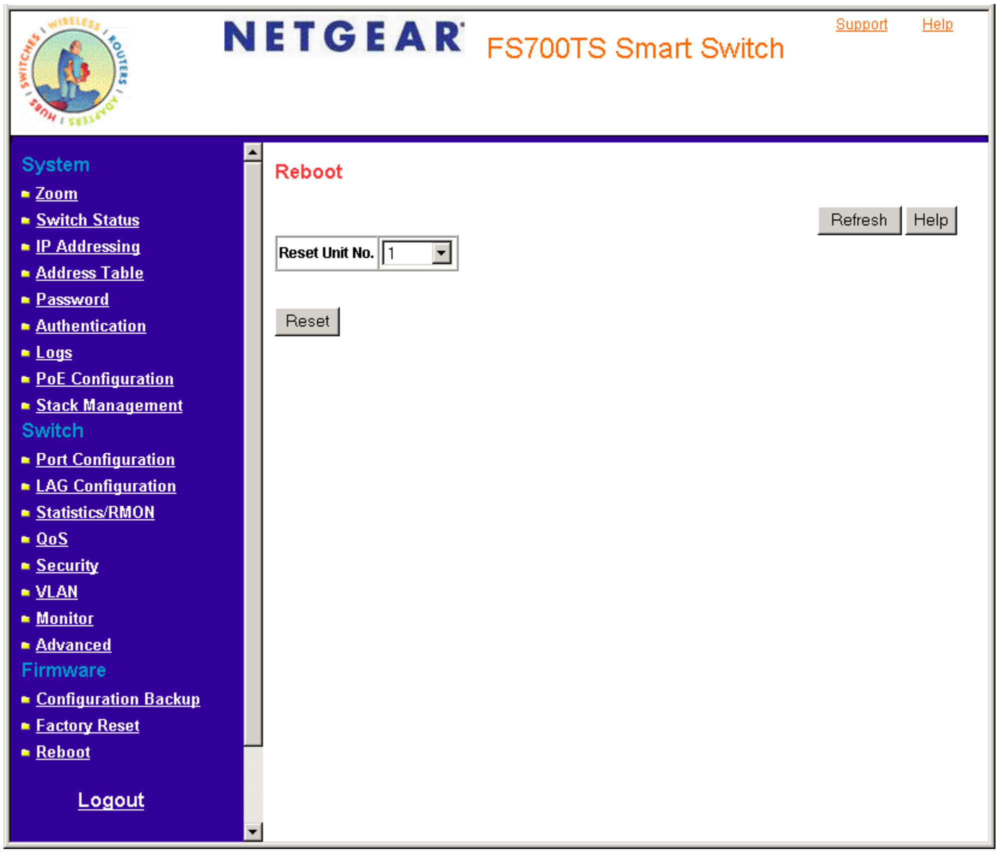
Resetting the System

The *Reboot Page* resets the device. Ensure that configuration changes are saved to the device before rebooting. Configuration changes that are not saved are lost. There are two options to reboot.

- Rebooting a particular unit.
- Rebooting the entire stack.

To open the *Reboot Page*:

1. Click **Reboot**. The *Reboot Page* opens.



Reboot

Reset Unit No. 1

Figure 5 - 4: Reboot Page

The *Reboot Page* contains the following field:

- **Reset Unit No.** — Choose the port to be reset or select the option Stack to reboot all stacking members.

2. Click Reset. The device is reset.

Defining Device Information

This section contains the following topics:

- Viewing the Device Zoom View
- Viewing the Device Status

Viewing the Device Zoom View

The *System Zoom Page* provides a graphic representation of the device, including the port and LED statuses.

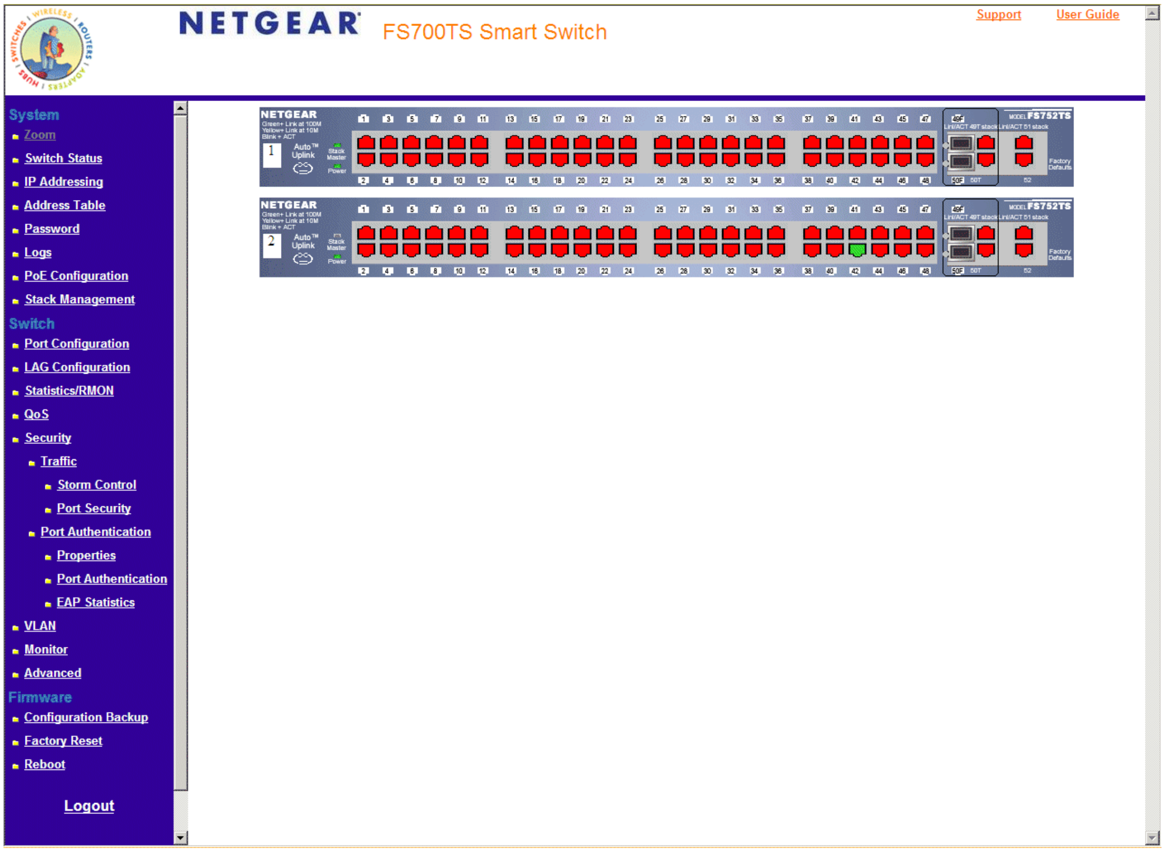
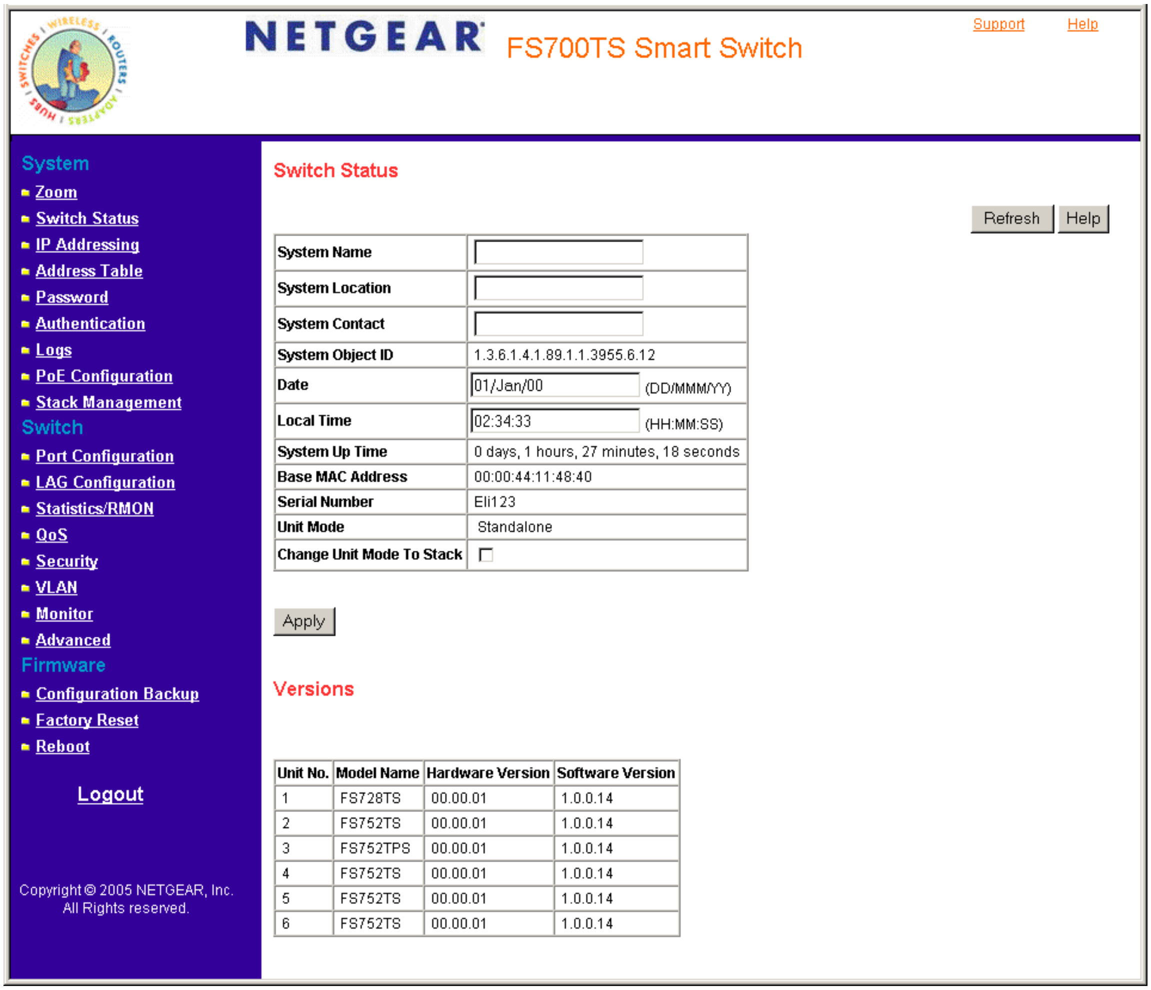


Figure 5 - 5: System Zoom Page

Viewing the Device Status

The *Switch Status Page* contains parameters for configuring general device information, including the system name, location, contact, the system MAC Address, System Object ID, System Up Time and MAC addresses, and both software and hardware versions.

1. Click **Switch Status**. The *Switch Status Page* opens.



Switch Status

System Name	
System Location	
System Contact	
System Object ID	1.3.6.1.4.1.89.1.1.3955.6.12
Date	01/Jan/00 (DD/MMM/YY)
Local Time	02:34:33 (HH:MM:SS)
System Up Time	0 days, 1 hours, 27 minutes, 18 seconds
Base MAC Address	00:00:44:11:48:40
Serial Number	Eli123
Unit Mode	Standalone
Change Unit Mode To Stack	□

Versions

Unit No.	Model Name	Hardware Version	Software Version
1	FS728TS	00.00.01	1.0.0.14
2	FS752TS	00.00.01	1.0.0.14
3	FS752TPS	00.00.01	1.0.0.14
4	FS752TS	00.00.01	1.0.0.14
5	FS752TS	00.00.01	1.0.0.14
6	FS752TS	00.00.01	1.0.0.14

Figure 5 - 6: Switch Status Page

The *Switch Status Page* contains the following fields:

- **Model Name** — Displays the device model number and name.
- **System Name** — Defines the user-defined device name. The field may contain is 0-160 characters.
- **System Location** — Defines the location where the system is currently running. The field may contain is 0-160 characters.
- **System Contact** — Defines the name of the contact person. The field may contain is 0-160 characters.
- **System Object ID** — Displays the vendor's authoritative identification of the network management subsystem contained in the entity.
- **Date** — Displays the current date.
- **Local Time** — Displays the Local time.
- **System Up Time** — Displays the amount of time since the most recent device reset. The system time is displayed in the following format: Days, Hours, Minutes, and Seconds. For example, 41 days, 2 hours, 22 minutes and 15 seconds.
- **Base MAC Address** — Displays the MAC address for each stacking unit.
- **Unit Mode** — Indicates if the device is currently in stand-alone or stacking mode.

- **Change Mode to Stack** — Switches the device from stand-alone to stacking mode.
- **Hardware Version** — Displays the installed device hardware version number.
- **Software Version** — Displays the installed software version number.
- **Boot Version** — Displays the current boot version running on the device.

2. Define the fields.
3. Click Apply.

Managing Stacking

All stack members are accessed through a single IP address through which the stack is managed. Stacks are managed using:

- Web-based Interface
- SNMP Management Station

The system supports up to six stacking members per stack to a maximum of 192 ports, or devices can operate as stand-alone systems.

During the Stacking setup, one device is selected as the Stacking Master. All other devices are named as stack members, and assigned a unique Unit ID. The Stack Master provides a Single point of control and management as well as a single interface in which to control and manage the stack. The device software is downloaded separately for each of the stack members. All units in the stack must be running the same software version. The Stacking Master maintains switch stacking and configuration. The Stacking Master detects and reconfigures the ports with minimal operational impact in the event of:

- Unit Failure
- Inter-unit Stacking Link Failure
- Unit Insertion
- Removal of a Stacking Unit

Operation Modes

A stack can operate in one of the following modes:

- **Stand-alone Mode** — Indicates the device is operating as a single unit and is not connected in a stack.
- **Stacking Master** — Manages the stacking configuration for all stack members.
- **Secondary Master** — Operates as a backup to the Stacking Master. If the Stacking Master is no longer operating, the Secondary Master takes over the stack management.
- **Stacking Member**—Indicates a device within the stacking topology. The stacking member receives its device configuration from the Stacking Master.

This section provides an introduction to the user interface and includes the following topics:

- Understanding Stack Topology
- Stacking Ring Topology
- Stacking Ports
- Stacking Members and Unit ID
- Removing and Replacing Stacking Members
- Inserting a Stacking Member
- Exchanging Stacking Members
- Switching the Stacking Master
- Configuring Stacking

Understanding Stack Topology

Stacked devices operate in a Ring or chain topology. The Ring topology connects all stacked devices in a circle. Each stacked device accepts data and sends it to the device to which it is physically connected. The packet continues through the stack until it reaches the destination port. The system automatically discovers the optimal path by which to send traffic. A chain topology connects stacking members from one to the next. This provides a single data path flow. The stacking members linked in the middle of the chain are connection to the stacking member on either side of them. The members on the ends of the chain only have one connection.

Stacking Ring Topology

One of the benefits of the Ring topology is that it offers redundancy in case the connections between two units fail, including the case where a unit in the stack fails. If a failure occurs in the stacking topology, the stack reverts to Chain Stacking Topology. In the Chain topology, devices operate in a chain formation. The system automatically switches to a Stacking Failover topology without any system downtime. An SNMP message is automatically generated, but no stack management action is required. However, the stacking link or stacking member must be repaired to return to the Ring topology.

After the stacking issues are resolved, the device can be reconnected to the stack without interruption and the Ring topology is restored.

Stacking Ports

The mode type determines the Gigabit Ethernet ports that are configurable by the user.

- In Stand-alone mode all Gigabit Ethernet ports are available.
- In Stack mode two dedicated Gigabit Ethernet ports are used for stack connection.

The factory default of the device is stacking mode. Use the Stack Management screen to configure a unit to operate in stand-alone mode.

The ports used for stacking can be either the combo ports or the copper ports. By default, the copper ports are reserved for stacking. The Stack Management screen allows network managers to configure the combo ports as the stacking ports. The factory default of the device is stacking mode.

Stacking Members and Unit ID

Stacking Unit IDs are essential to the stacking configuration. The stacking operation is determined during the boot process. The Unit ID selected during the initialization process determines the Operation Mode. For example, if the user selected stand-alone mode, the device boots as a stand-alone device.

Unit ID 1 and Unit ID 2 are reserved for Master enabled units. Unit IDs 3 to 6 can be defined for stack members. When the Master unit boots or when inserting or removing a stack member, the Master unit initiates a stacking discovering process.

If two members are discovered with the same Unit ID the stack continues to function, however only the unit with the older join time joins the stack. A message is sent to the user, notifying that a unit failed to join the stack.

Removing and Replacing Stacking Members

Stacking member 1 and stacking member 2 are Stacking Master enabled units. Unit IDs 1 and 2 are either designated as Master Unit or Secondary Master Unit. The Stacking Master assignment is performed during the configuration process. One Master enabled stack member is elected Master, and the other Master enabled stack member is elected Secondary Master, according to the following decision process:

- If only one Stacking Master enabled unit is present, this is the stacking Master.
- If two Stacking Master enabled stacking members are present, and one has been manually configured as the Stacking Master, this is the Stacking Master.
- If two Master enabled units are present and neither has been manually configured as the Stacking Master, the one with the longer up time is elected Stacking Master.
- If the two Master enabled stacking members are the same age, Unit 1 is elected Stacking Master.

Two stacking member are considered the same age if they joined the stack within the same ten minute interval. For example, Stack member 2 is inserted in the first minute of a ten-minute cycle, and Stack member 1 is inserted in fifth minute of the same cycle, the units are considered the same age. If there are two Master enabled units that are the same age, then Unit 1 is elected master.

The Stacking Master and the Secondary Master maintain a Warm Standby. The Warm Standby ensures that the Secondary Master takes over for the Stacking Master if a failure occurs. This guarantees that the stack continues to operate normally.

During the Warm Standby, the Master and the Secondary Master are synchronized with the static configuration only. When the Stacking Master is configured, the Stacking Master must synchronize the Stacking Secondary Master. The Dynamic configuration is not saved, for example, dynamically learned MAC addresses are not saved.

Each port in the stack has a specific Unit ID, port type, and port number, which is part of both the configuration commands and the configuration files. Configuration files are managed only from the device Stacking Master. This includes:

- Saving to the FLASH
- Uploading Configuration files to an external TFTP server
- Downloading Configuration files from an external TFTP server

Whenever a reboot occurs, topology discovery is performed, and the master learns all units in the stack. Unit IDs are saved in the unit and are learned through topology discovery. If a unit attempts to boot without a selected Master, and the unit is not operating in stand-alone mode, the unit does not boot. For example, if a stack member (unit IDs 3 - 6) is separated from the stack due to a topology failure, the stacking member is no longer connected to the stack. The device can be booted, but it cannot be managed through the Stacking Master. The network manager can either reset the device defaults, or correct the topology failure, and reconnect the unit to the stack.

Configuration files are changed only through explicit user configuration. Configuration files are not automatically modified when:

- Units are Added
- Units are Removed
- Units are reassigned Unit IDs

- Units toggle between Stacking Mode and Stand-alone Mode

Each time the system reboots, the Startup Configuration file in the Master unit is used to configure the stack. If a stack member is removed from the stack, and then replaced with a unit with the same Unit ID, the stack member is configured with the original device configuration. Only ports that are physically present are displayed in the FS700TS web pages, and can be configured through the web management system. By default, Unit IDs are assigned automatically. However, you can use the browser to assign a specific Unit ID; for example, the same unit ID as the unit which was recently removed."

Inserting a Stacking Member

When a stacking member is inserted into a running stack, it is automatically assigned a unit number. Note that a unit should not be powered up until it has been connected to the stack. If the user has already configured a Unit ID for the newly joined unit, a new Unit ID is not assigned.

Exchanging Stacking Members

If a stack member with the same Unit ID replaces an existing Unit ID with the same Unit ID, the previous device configuration is applied to the inserted stack member. If the new inserted device has either more than or less ports than the previous device, the relevant port configuration is applied to the new stack member.

- If a 24 port switch replaces a 24 port switch, all port configurations remain the same.
- IIf a 48 port switch replaces a 48 port switch, all port configurations remain the same.
- IIf a 48 port switch replaces a 24 port switch, the first 24 ports receive the 24 FE port configuration. The GE port configurations remain the same. The remaining ports receive the default port configuration.
- IIf a 24 port switch replaces a 48 port switch, the first 24 ports receive the first 24 port configuration. The GE port configurations remain the same.

The replaced stacking members receives the previous stacking member’s Unit ID.

Switching the Stacking Master

The Secondary Master replaces the Stacking Master if one of the following events occur:

- The Stacking Master fails or is removed from the stack.
- Links from the Stacking Master to the stacking members fails.
- A soft switchover is performed via the web interface.

Switching between the Stacking Master and the Secondary Master results in a limited service loss. Any dynamic tables are relearned if a failure occurs. The running configuration file is synchronized between Stacking Master and the Secondary Master and continues running on the Secondary Master.

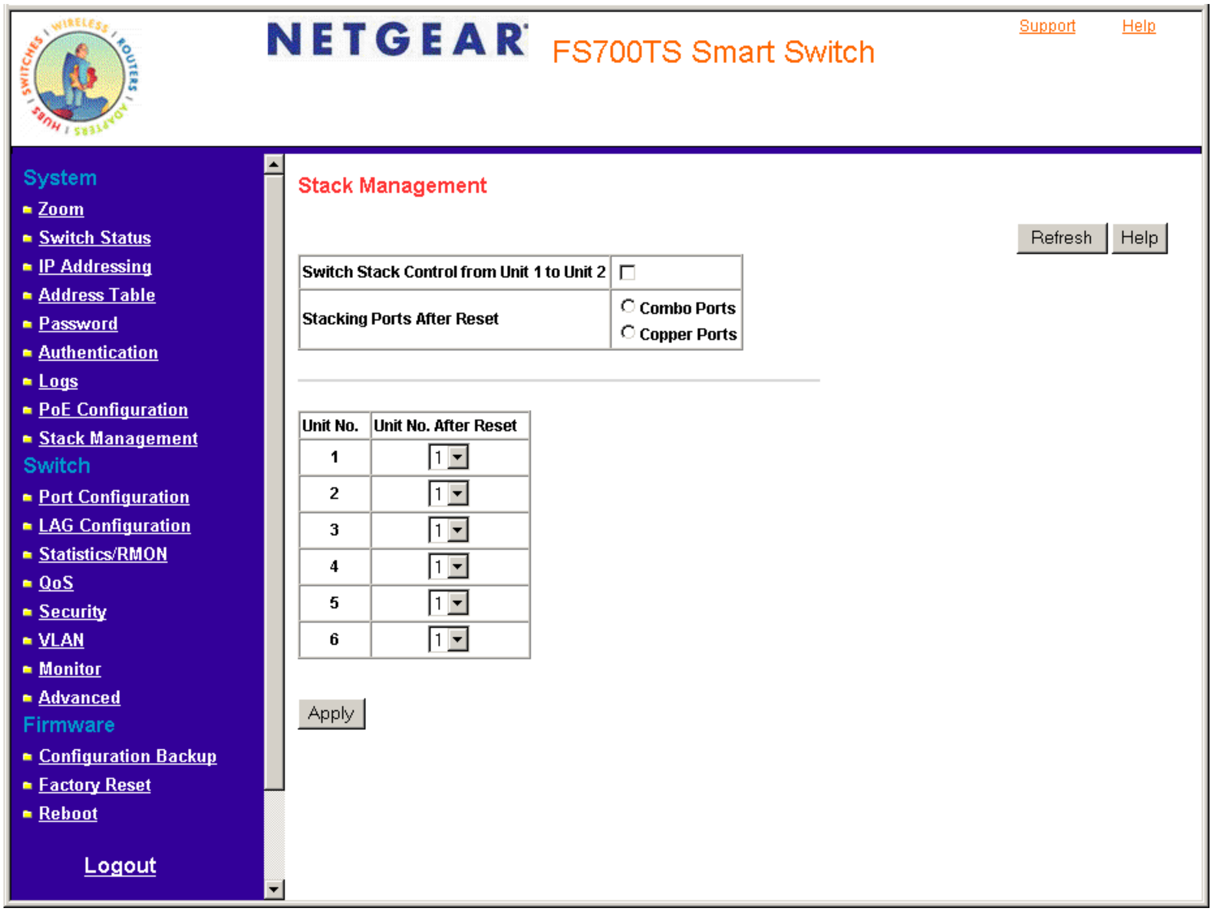
Configuring Stacking

The *Stack Management* page allows network managers to either reset the entire stack or a specific device. Device configuration changes that are not saved before the device is reset are not saved. A unique Unit ID (1-6) identifies a stack member. This unit number determines the interface-level configuration that the stack member uses. (The configuration is saved and managed by the master unit.). The stack management has the following defaults:

- The stacking mode is set to stackable.
- The stacking cable is copper.
- The stacking numbering method is set to auto-numbering.

To configure stacking:

1. Click **Stack Management.** The *Stack Management Page* opens.



Stack Management

Switch Stack Control from Unit 1 to Unit 2	□
Stacking Ports After Reset	○ Combo Ports ○ Copper Ports

Unit No.	Unit No. After Reset
1	1
2	1
3	1
4	1
5	1
6	1

Figure 5 - 7: Stack Management Page

The *Stack Management Page* contains the following fields:

- **Switch Stack Control from Unit 1 to Unit 2** — Switches the stack control from the Stack Master to the Backup Master. The possible field values are:
  - Checked —Switches the stack control to the Standby Stack Master.
  - Unchecked — Maintains the current stacking control.
- **Stacking Ports** — Allows the user to decide what cable type is in use.
  - Combo Ports Indicates that the combo port is used as the stacking port.
  - Copper Ports Indicates that the copper port is used as the stacking port.
- **Unit No**. — Indicates the stacking member’s current number. Possible values are 1-6.
- **Unit No. After Reset** — Indicates the stacking member’s future number after the stack is reset. Possible values are 1-6.

Switching Between Stack Masters:

1. Open the *Stack Management Page.*
2. Check the Switch Stack Control from Unit 1 to Unit 2 check box.
3. Click Apply. A confirmation message displays.

Configuring Device Security

This section contains information for managing both storm control and port security and includes the following topics:

- Enabling Storm Control
- Port Security

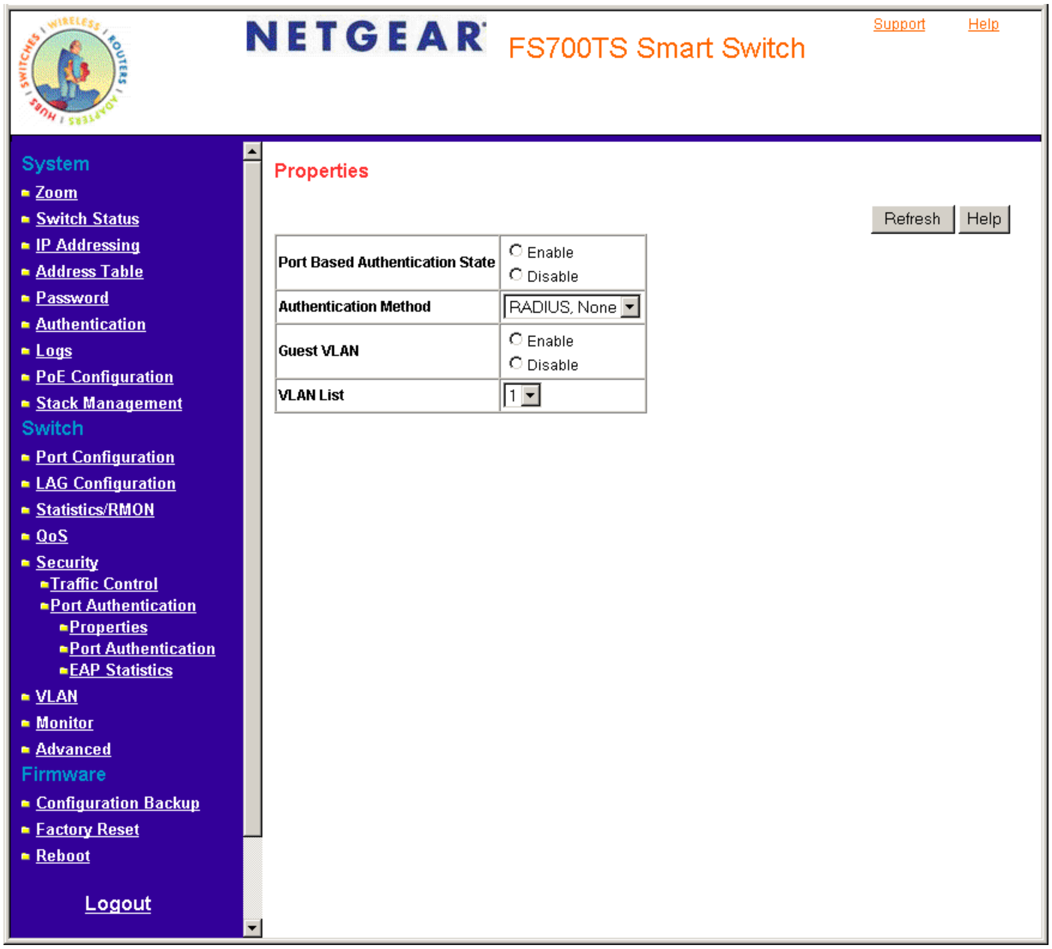
Defining Port Authentication Properties

The *Port Authentication Properties Page* allows network managers to configure network authentication parameters. In addition, Guest VLANs are enabled from the Properties Page. This section includes the following sections:

- Defining Port Authentication
- Viewing EAP Statistics (Extensible Authentication Protocol)

To define the port authentication properties:

1. Click **Security > Port Authentication > Properties**. The *Port Authentication Properties Page* opens.



Port Based Authentication State	○ Enable ○ Disable
Authentication Method	RADIUS, None
Guest VLAN	○ Enable ○ Disable
VLAN List	1

Figure 5 - 8: Port Authentication Properties Page

The *Port Authentication Properties Page* contains the following fields:

- **Port-based Authentication State** — Indicates if Port Authentication is enabled on the device. The possible field values are:
  - Enable — Enables port-based authentication on the device.
  - Disable — Disables port-based authentication on the device.
- **Authentication Method** — Specifies the authentication method used for port authentication. The possible field values are:
  - None — Indicates that no authentication method is used to authenticate the port.

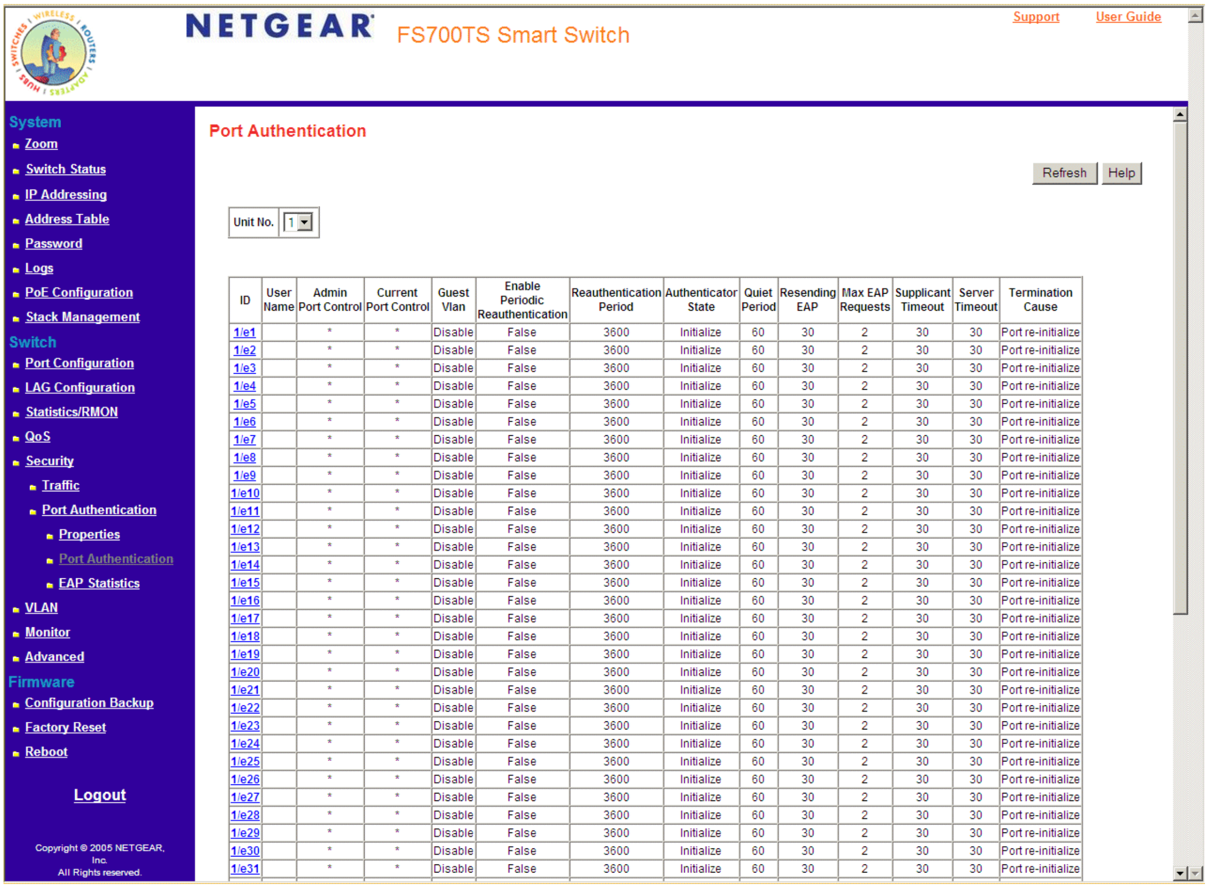
  - RADIUS — Provides port authentication using the RADIUS server.
  - RADIUS, None — Provides port authentication, first using the RADIUS server. If the port is not authenticated, then no authentication method is used, and the session is permitted.
- **Guest VLAN** — Specifies whether the Guest VLAN is enabled on the device. The possible field values are:
  - Enable — Enables using a Guest VLAN for unauthorized ports. If a Guest VLAN is enabled, the unauthorized port automatically joins the VLAN selected in the VLAN List field.
  - Disable — Disables port-based authentication on the device. This is the default.
- **VLAN List** — Contains a list of VLANs. The Guest VLAN is selected from the VLAN list.

2. Define the fields.
3. Click Apply The network authentication properties are set and the device is updated.

Defining Port Authentication

The *Port Authentication Page* allows network managers to configure port-based authentication global parameters. To define the port-based authentication global properties:

1. Click **Security > Port Authentication > Port Authentication**. The *Port Authentication Page* opens.



Port Authentication

Unit No. 1

ID	User Name	Admin Port Control	Current Port Control	Guest Vlan	Enable Periodic Reauthentication	Reauthentication Period	Authenticator State	Quiet Period	Resending EAP	Max EAP Requests	Supplicant Timeout	Server Timeout	Termination Cause
1/e1		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e2		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e3		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e4		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e5		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e6		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e7		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e8		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e9		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e10		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e11		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e12		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e13		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e14		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e15		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e16		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e17		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e18		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e19		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e20		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e21		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e22		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e23		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e24		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e25		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e26		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e27		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e28		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e29		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e30		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize
1/e31		*	*	Disable	False	3600	Initialize	60	30	2	30	30	Port re-initialize

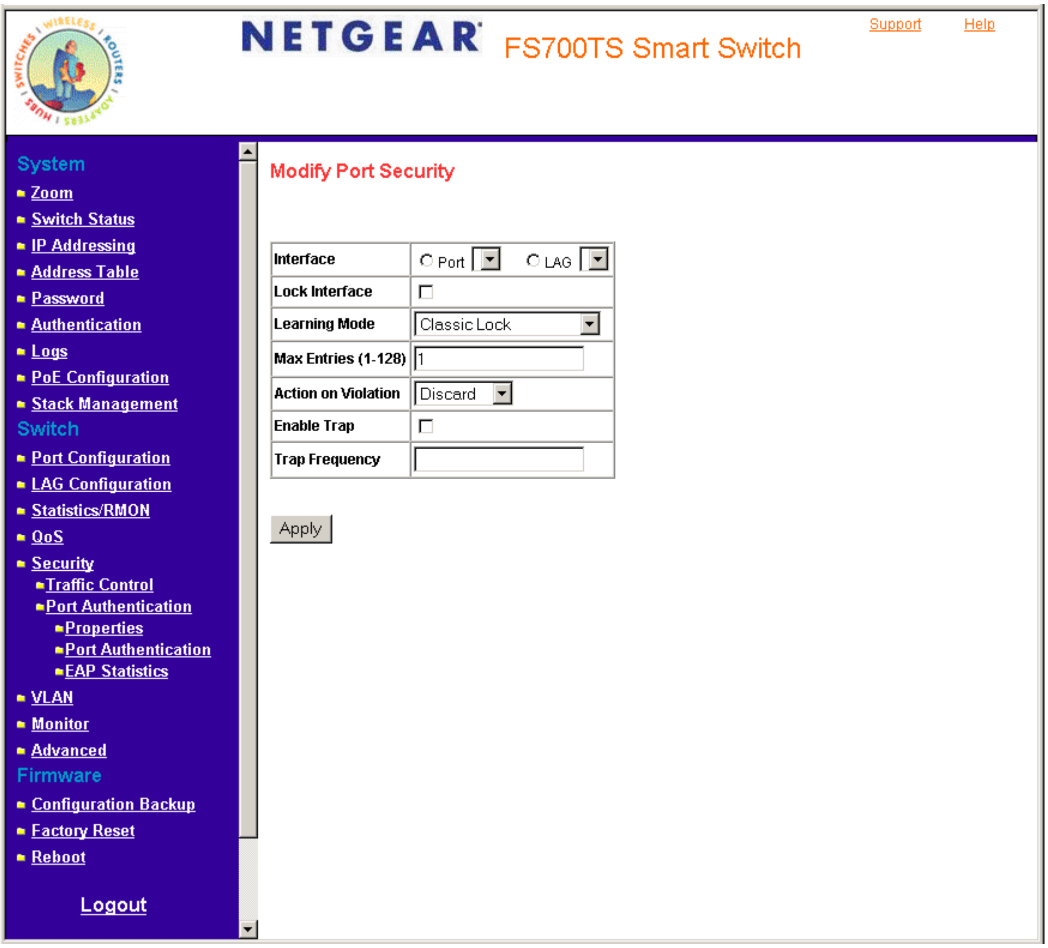
Figure 5 - 9: Port Authentication Page

The *Port Authentication Page* contains the following fields:

- **Unit No.** — Indicates the stacking number
- **ID** — Displays a list of interfaces on which port-based authentication is enabled.
- **User Name** — Displays the supplicant user name.
- **Current Port Control** — Displays the current port authorization state.
- **Enable Periodic Reauthentication** — Permits immediate port reauthentication. The possible field values are:
  - Enable — Enables immediate port reauthentication. This is the default value.
  - Disable — Disables port reauthentication.
- **Reauthentication Period** — Displays the time span (in seconds) in which the selected port is reauthenticated. The field default is 3600 seconds.
- **Authenticator State** — Displays the current authenticator state.
- **Quiet Period** — Displays the number of seconds that the device remains in the quiet state following a failed authentication exchanges. The possible field range is 0-65535. The field default is 60 seconds.
- **Resending EAP** — Defines the amount of time (in seconds) that lapses before EAP requests are resent. The field default is 30 seconds.
- **Max EAP Requests** — Displays the total amount of EAP requests sent. If a response is not received after the defined period, the authentication process is restarted. The field default is 2 retries.

- **Supplicant Timeout** — Displays the amount of time (in seconds) that lapses before EAP requests are resent to the supplicant. The field default is 30 seconds.
- **Server Timeout** — Displays the amount of time (in seconds) that lapses before the device re-sends a request to the authentication server. The field default is 30 seconds.
- **Termination Cause** — Indicates the reason for which the port authentication was terminated.

2. Click an ID. The *Modify Port Security Page* opens:



Modify Port Security

Interface	○ Port ○ LAG
Lock Interface	□
Learning Mode	Classic Lock
Max Entries (1-128)	1
Action on Violation	Discard
Enable Trap	□
Trap Frequency	

Apply

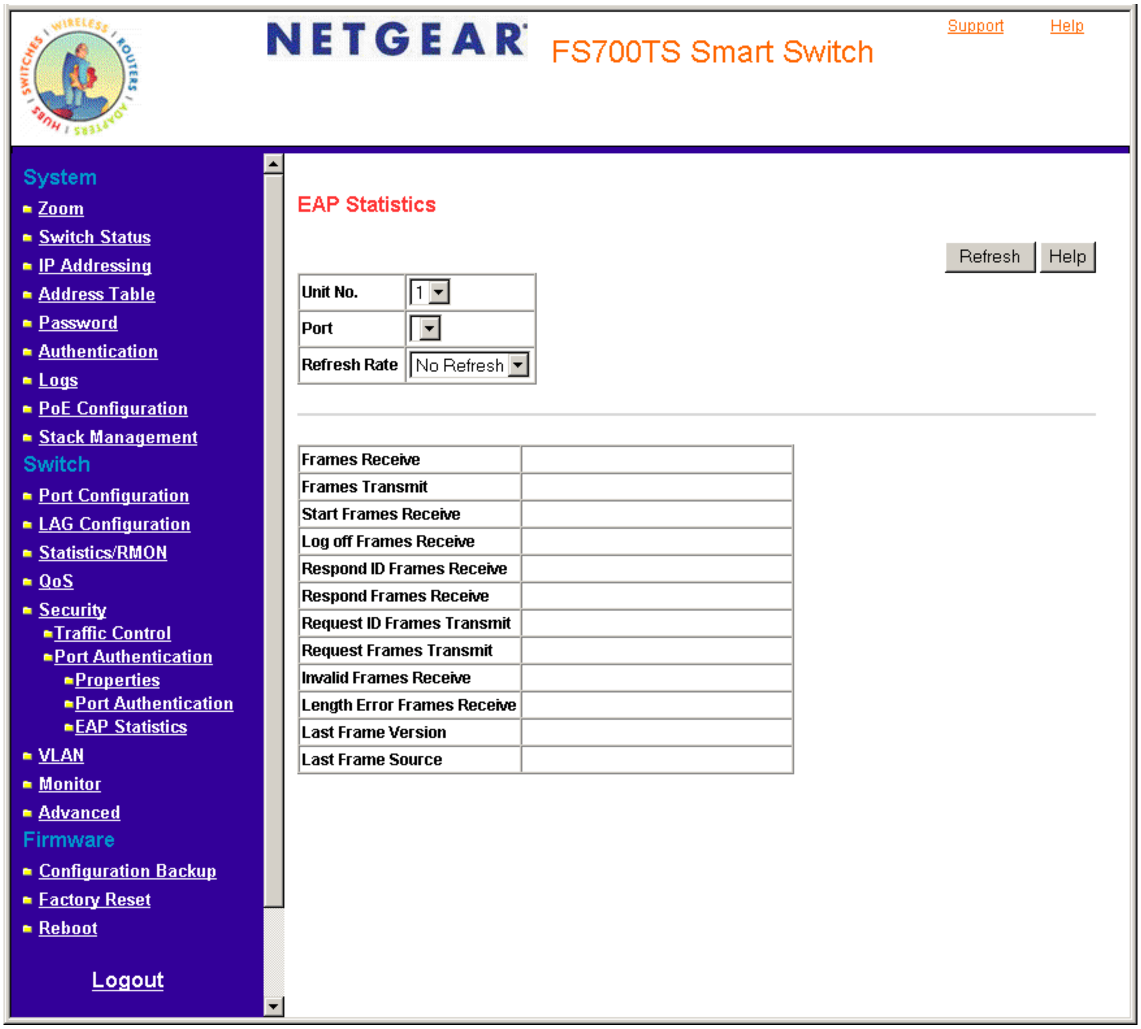
Figure 5 - 10: Modify Port Security Page

3. Modify the fields.
4. Click Apply. The port authentication settings are defined and the device is updated.

Viewing EAP Statistics

The *EAP Statistics Page* contains information about EAP packets received on a specific port. To view EAP Statistics:

- Click **Security > Port Authentication > EAP Statistics**. The *EAP Statistics Page* opens.



EAP Statistics

Unit No.	1
Port	
Refresh Rate	No Refresh

Frames Receive	
Frames Transmit	
Start Frames Receive	
Log off Frames Receive	
Respond ID Frames Receive	
Respond Frames Receive	
Request ID Frames Transmit	
Request Frames Transmit	
Invalid Frames Receive	
Length Error Frames Receive	
Last Frame Version	
Last Frame Source	

Figure 5 - 11: EAP Statistics Page

The *EAP Statistics Page* contains the following fields:

- **Unit No** — Indicates the stacking number
- **Port** — Indicates the port, which is polled for statistics.
- **Refresh Rate** — Indicates the amount of time that passes before the EAP statistics are refreshed. The possible field values are:
  - 15 Seconds.
  - 30 Seconds.
  - 60 Seconds.
  - No Refresh — Indicates that the EAP statistics are not refreshed.
- **Frames Receive** — Indicates the number of valid EAPOL frames received on the port.
- **Frames Transmit** — Indicates the number of EAPOL frames transmitted via the port.
- **Start Frames Receive** — Indicates the number of EAPOL Start frames received on the port.
- **Log off Frames Receive** — Indicates the number of EAPOL Logoff frames that have been received on the port.
- **Respond ID Frames Receive** — Indicates the number of EAP Resp/Id frames that have been received on the port.

- **Respond Frames Receive** — Indicates the number of valid EAP Response frames received on the port.
- **Request ID Frames Transmit** — Indicates the number of EAP Req/Id frames transmitted via the port.
- **Request Frames Transmit** — Indicates the number of EAP Request frames transmitted via the port.
- **Invalid Frames Receive** — Indicates the number of unrecognized EAPOL frames that have been received by on this port.
- **Length Error Frames Receive** — Indicates the number of EAPOL frames with an invalid Packet Body Length received on this port.
- **Last Frame Version** — Indicates the protocol version number attached to the most recently received EAPOL frame.
- **Last Frame Source** — Indicates the source MAC address attached to the most recently received EAPOL frame.

Enabling Storm Control

Storm control limits the amount of Multicast and Broadcast frames accepted and forwarded by the device. When Layer 2 frames are forwarded, Broadcast, and Multicast frames are flooded to all ports on the relevant VLAN. This occupies bandwidth and loads all nodes on all ports.

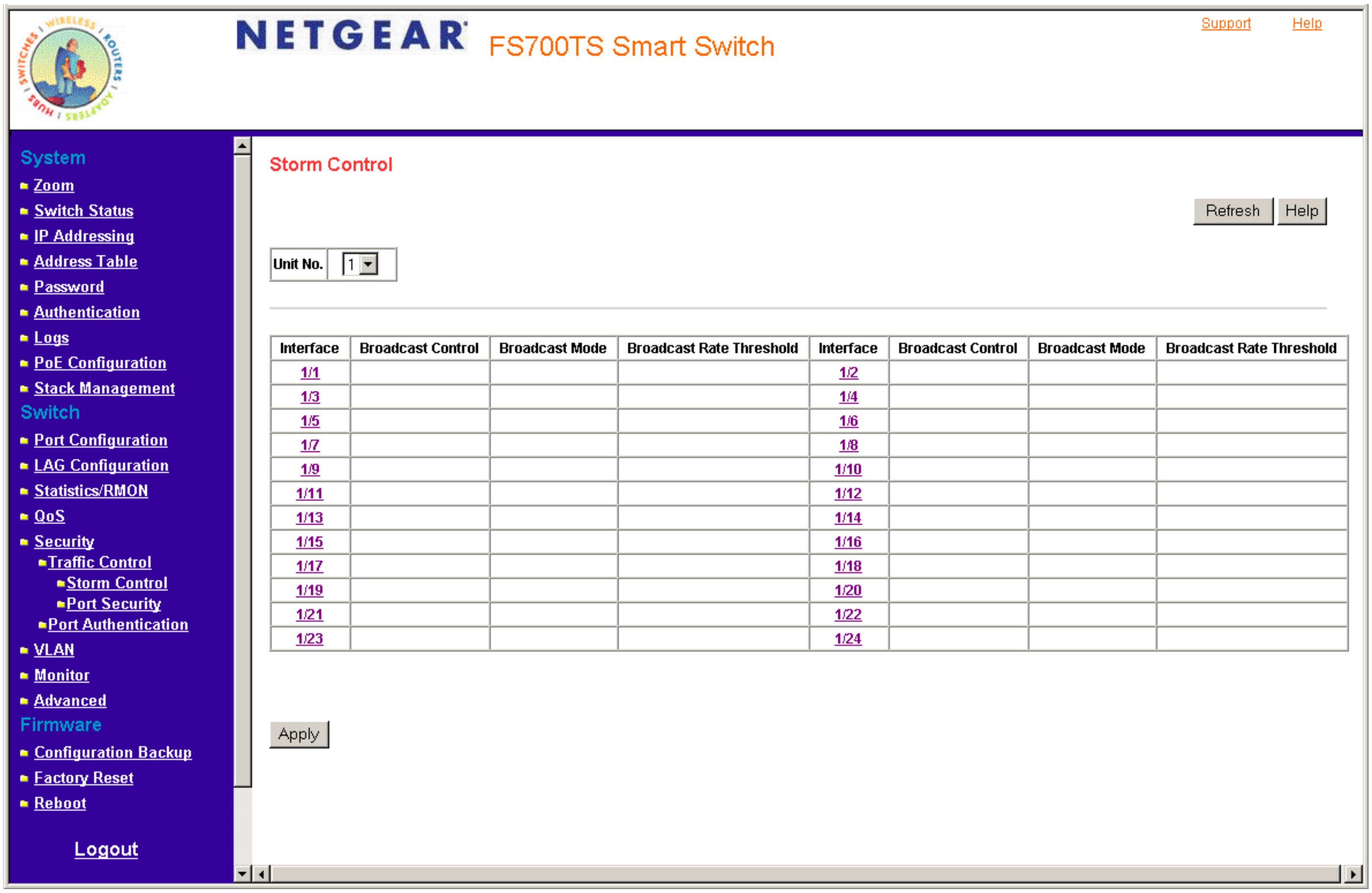
A Broadcast Storm is a result of an excessive amount of broadcast messages simultaneously transmitted across a network by a single port. Forwarded message responses are heaped onto the network, straining network resources or causing the network to time out.

Storm control is enabled for all ports by defining the packet type and the rate the packets are transmitted. The system measures the incoming Broadcast and Multicast frame rates separately on each port, and discards the frames when the rate exceeds a user-defined rate. By default, storm control is enabled on all ports - broadcast only - with threshold of 200 kbps. Storm Control is enabled by default.

The *Storm Control Page* provides fields for configuring broadcast storm control.

To enable storm control:

1. Click **Security > Traffic Control > Storm Control**. The *Storm Control Page* opens.



Storm Control

Unit No. 1

Interface	Broadcast Control	Broadcast Mode	Broadcast Rate Threshold	Interface	Broadcast Control	Broadcast Mode	Broadcast Rate Threshold
1/1				1/2			
1/3				1/4			
1/5				1/6			
1/7				1/8			
1/9				1/10			
1/11				1/12			
1/13				1/14			
1/15				1/16			
1/17				1/18			
1/19				1/20			
1/21				1/22			
1/23				1/24			

Figure 5 - 12: Storm Control Page

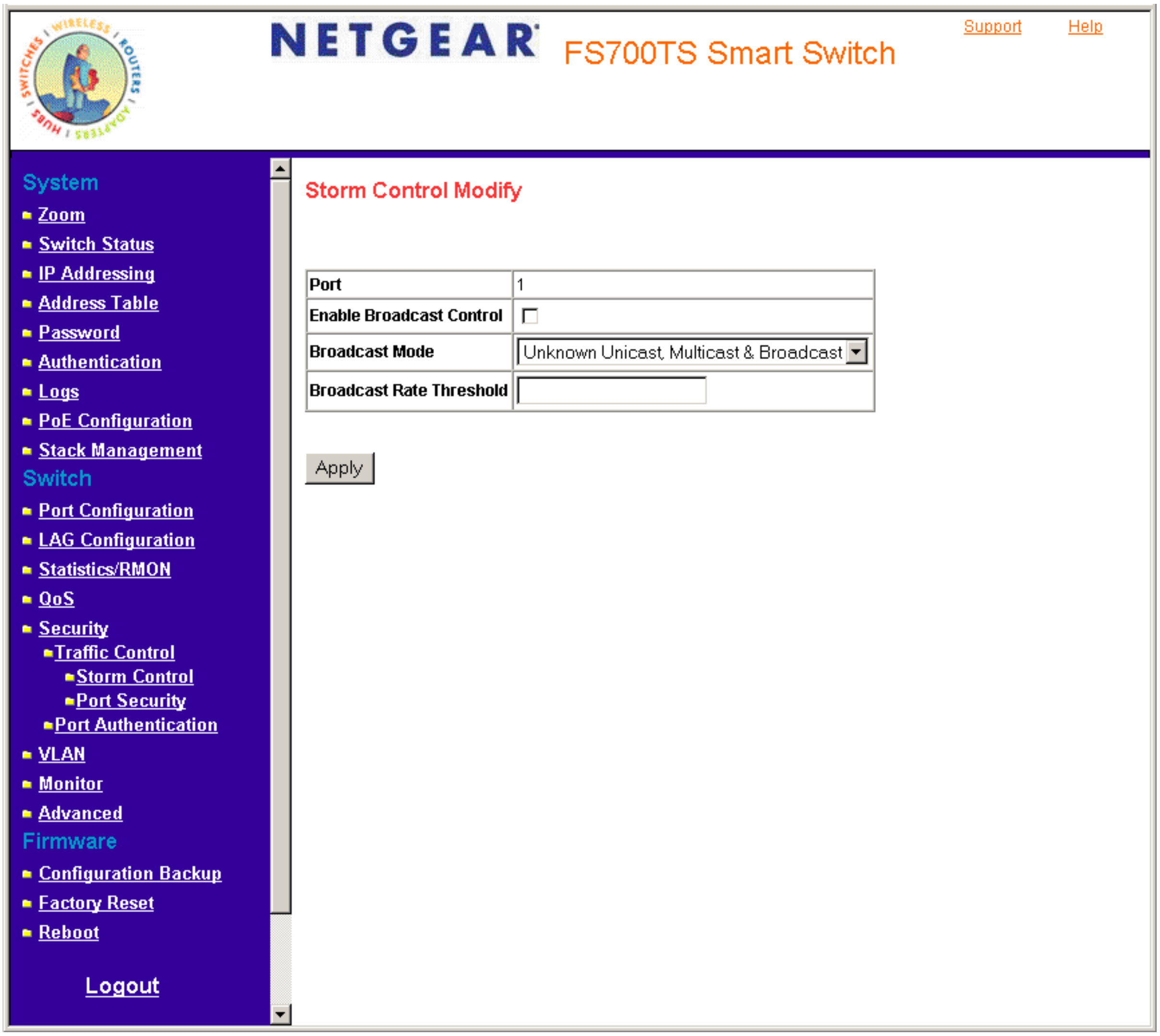
The *Storm Control Page* contains the following fields:

- **Unit** — Indicates the stacking number.
- **Interface** — Displays the port number for which the storm control information is displayed.
- **Enable Broadcast Control** — Indicates if forwarding Broadcast packet types is enabled on the interface for which the storm control information is displayed. The possible field values are:
  - Enable — Enables storm control on all broadcast only ports with threshold of 200 kbps. Enabled is the default.
  - Disable — Disables storm control on the interface.
- **Broadcast Mode** — Specifies the Broadcast mode currently enabled on the device. The possible field values are:
  - Unknown Unicast, Multicast & Broadcast — Counts Unicast, Multicast, and Broadcast traffic.

- Multicast & Broadcast — Counts Broadcast and Multicast traffic together.
- Broadcast Only — Counts only Broadcast traffic.

- **Broadcast Rate Threshold** — Indicates the maximum rate (kilobits per second) at which unknown packets are forwarded. The range is 70-250,000. The default value is 200.

2. Click an interface. The *Storm Control Modify Page* opens:



Storm Control Modify

Port	1
Enable Broadcast Control	□
Broadcast Mode	Unknown Unicast, Multicast & Broadcast
Broadcast Rate Threshold	

Figure 5 - 13: Storm Control Modify Page

3. Modify the fields.

4. Click Apply. Storm control is enabled on the device.

Port Security

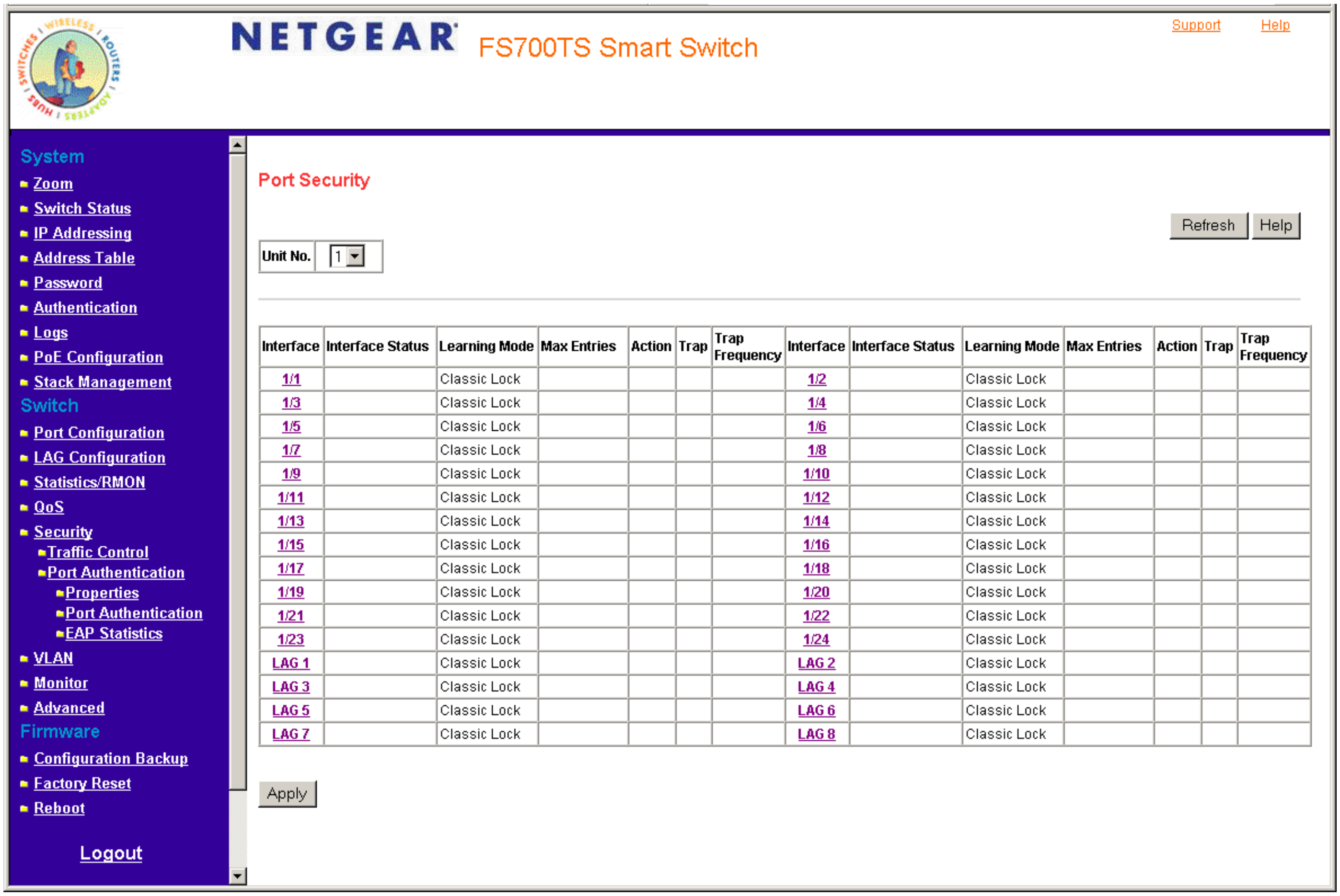
Network security can be increased by limiting access on a specific port only to users with specific MAC addresses. The MAC addresses can be dynamically learned or statically configured. Locked port security monitors both received and learned packets that are received on specific ports. Access to the locked port is limited to users with specific MAC addresses. These addresses are either manually defined on the port, or learned on that port up to the point when it is locked. When a packet is received on a locked port and the packet source MAC address is not tied to that port (either it was learned on a different port, or it is unknown to the system), the protection mechanism is invoked. It provides the following options for unauthorized packets arriving at a locked port:

- Forwarded
- Discarded with no trap
- Discarded with a trap
- Shuts down the port

Locked port security also enables storing a list of MAC addresses in the configuration file. The MAC address list can be restored after the device has been reset. Disabled ports are activated from the *Port Security Page.*

To define port security:

1. Click **Security > Traffic Control > Port Security**. The *Port Security Page* opens.



Port Security

Unit No. 1

Interface	Interface Status	Learning Mode	Max Entries	Action	Trap	Trap Frequency	Interface	Interface Status	Learning Mode	Max Entries	Action	Trap	Trap Frequency
1/1		Classic Lock					1/2		Classic Lock				
1/3		Classic Lock					1/4		Classic Lock				
1/5		Classic Lock					1/6		Classic Lock				
1/7		Classic Lock					1/8		Classic Lock				
1/9		Classic Lock					1/10		Classic Lock				
1/11		Classic Lock					1/12		Classic Lock				
1/13		Classic Lock					1/14		Classic Lock				
1/15		Classic Lock					1/16		Classic Lock				
1/17		Classic Lock					1/18		Classic Lock				
1/19		Classic Lock					1/20		Classic Lock				
1/21		Classic Lock					1/22		Classic Lock				
1/23		Classic Lock					1/24		Classic Lock				
LAG 1		Classic Lock					LAG 2		Classic Lock				
LAG 3		Classic Lock					LAG 4		Classic Lock				
LAG 5		Classic Lock					LAG 6		Classic Lock				
LAG 7		Classic Lock					LAG 8		Classic Lock				

Figure 5 - 14: Port Security Page

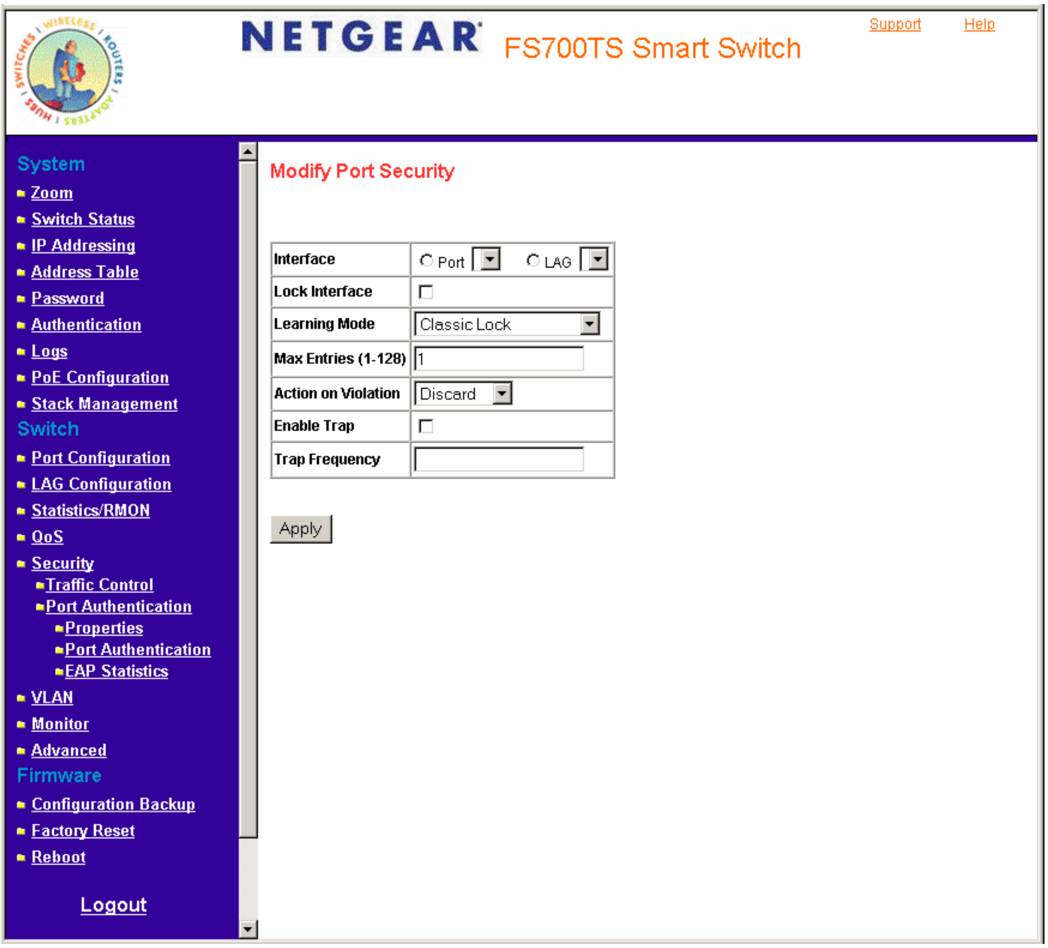
The *Port Security Page* contains the following fields:

- **Interface** — Displays the port or LAG name.
- **Interface Status** — Indicates the host status.
- **Learning Mode** — Defines the locked port type. The Learning Mode field is enabled only if Locked is selected in the Set Port field. The possible field values are:

- Classic Lock - Locks the port, and only forwards packets that have been learned statically or dynamically, prior to locking the port. The lock is effective immediately.
- Limited Dynamic Lock — Locks the port after a user-defined number of MAC addresses have been dynamically learned on the port. After the port is locked, packets are forwarded only from MAC addressees that have been learned prior to locking the port.

- **Max Entries** — Specifies the number of MAC address that can be learned on the port. The Max Entries field is enabled only if Locked is selected in the Set Port field. In addition, the Limited Dynamic Lock mode is selected. The default is 1.
- **Action** — Indicates the action to be applied to packets arriving on a locked port. The possible field values are:
  - Forward — Forwards packets from an unknown source without learning the MAC address.
  - Discard — Discards packets from any unlearned source. This is the default value.
  - Shutdown — Discards packets from any unlearned source and shuts down the port. The port remains shut down until reactivated or until the device is reset.
- **Trap** — Enables traps when a packet is received on a locked port. The possible field values are:
  - Checked — Enables traps.
  - Unchecked — Disables traps.
- **Trap Frequency (Sec)** — The amount of time (in seconds) between traps. The default value is 10 seconds.

2. Click an interface you want to modify. The *Modify Port Security Page* opens:



Modify Port Security

Interface	○ Port ○ LAG
Lock Interface	□
Learning Mode	Classic Lock
Max Entries (1-128)	1
Action on Violation	Discard
Enable Trap	□
Trap Frequency	

Apply

Figure 5 - 15: Modify Port Security Page

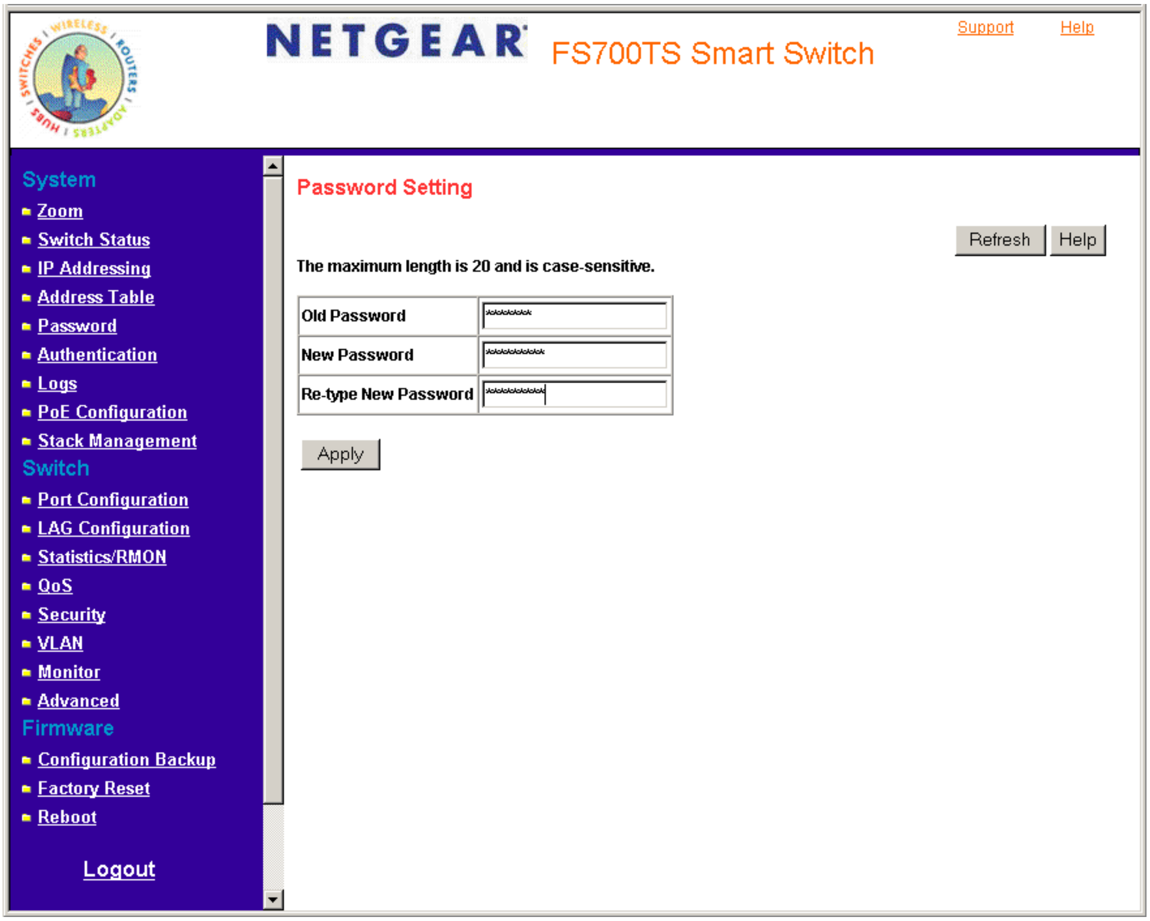
3. Modify the fields.
4. Click Apply. The port security settings are defined and the device is updated.

Configuring Passwords

The *Passwords Page* contains parameters for configuring device passwords.

To define device passwords:

1. Click **System > Password**. The *Password Page* opens:



Password Setting

The maximum length is 20 and is case-sensitive.

Old Password	*******
New Password	*********
Re-type New Password	*********

Figure 5 - 16: Password Page

The *Password Page* contains the following fields:

- **Old Password** — Indicates the current password used to access the system.
- **New Password** — Defines a new password for accessing the system.
- **Re-type New Word** — Verifies the new password used to access the system.

2. Define the fields.
3. Click Apply. The password is defined and the device is updated.

Viewing System Logs

Event messages have a unique format, as per the SYSLOG RFC recommended message format for all error reporting, for example, Syslog+ local device reporting. Messages are assigned a severity code, and include a message mnemonic, which identifies the source application generating the message. Messages are filtered based on their urgency or relevancy. The following table contains the Log Severity Levels:

Table 5-3: Severity Levels

Severity Type	Severity Level	Description
Emergency	0	Indicates that the system is not functioning.
Alert	1	Indicates that the system needs immediate attention.
Critical	2	Indicates that the system is in a critical state.
Error	3	Indicates that a system error has occurred.
Warning	4	Indicates that a system warning is logged.
Notice	5	Indicates that the system is functioning properly, but system notice is logged.
Informational	6	Provides device information.
Debug	7	Provides detailed log information.

This section provides information for managing logs. The logs enable viewing device events in real time, and recording the events for later usage. Logs record and manage events and report errors and informational messages.

This section includes the following topics:

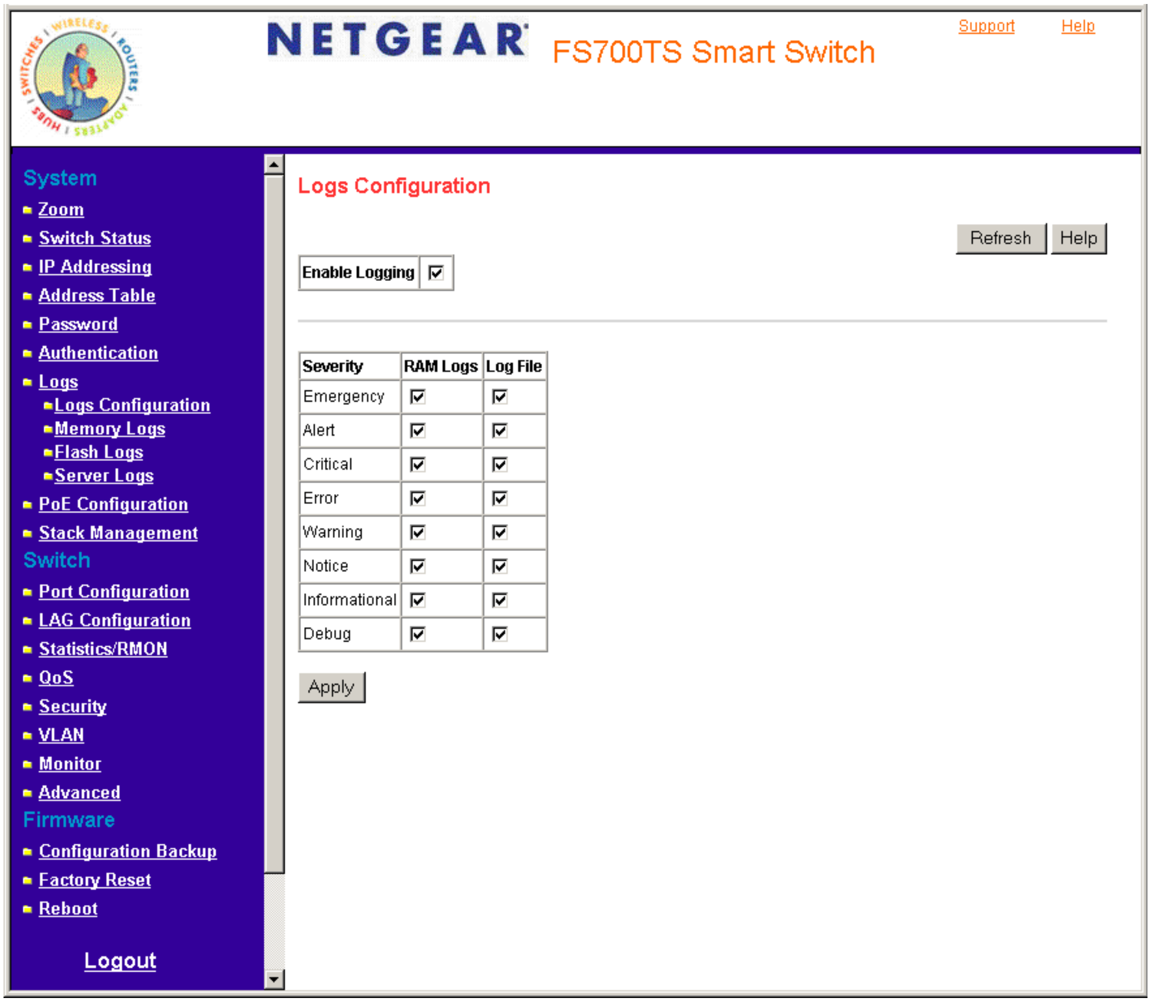
- Logs Configuration
- Memory Logs
- Flash Logs
- Server Logs

Logs Configuration

The *Logs Configuration Page* contains fields for defining which events are recorded to which logs. It contains fields for enabling logs globally, and parameters for defining logs. Log messages are listed from the highest severity to the lowest severity level. When a severity level is selected, all severity level choices above the selection are selected automatically.

To enable event logging:

1. Click **Logs > Logs Configuration**. The *Logs Configuration Page* opens.



Logs Configuration

Enable Logging ☑

Severity	RAM Logs	Log File
Emergency	☑	☑
Alert	☑	☑
Critical	☑	☑
Error	☑	☑
Warning	☑	☑
Notice	☑	☑
Informational	☑	☑
Debug	☑	☑

Figure 5 - 17: Logs Configuration Page

The *Logs Configuration Page* contains the following fields:

- **Enable Logging** — Indicates if device global logs for Cache, File, and Server Logs are enabled. Console logs are enabled by default. The possible field values are:
  - Checked — Enables device logs.
  - Unchecked — Disables device logs.
- **Severity** — The following are the available log severity levels:
  - Emergency — The highest warning level. If the device is down or not functioning properly, an emergency log message is saved to the specified logging location.
  - Alert — The second highest warning level. An alert log is saved, if there is a serious device malfunction; for example, all device features are down.
  - Critical — The third highest warning level. A critical log is saved if a critical device malfunction occurs; for example, two device ports are not functioning, while the rest of the device ports remain functional.

  - Error — A device error has occurred; for example, if a single port is offline.
  - Warning — The lowest level of a device warning. The device is functioning, but an operational problem has occurred.
  - Notice — Provides device information.
  - Informational — Provides device information.
  - Debug — Provides debugging messages.
- **RAM Logs** — Defines the minimum severity level from which logs are sent to the RAM Log kept in RAM (Cache).
- **Log File** — Defines the minimum severity level from which logs are sent to the log file kept in FLASH memory.

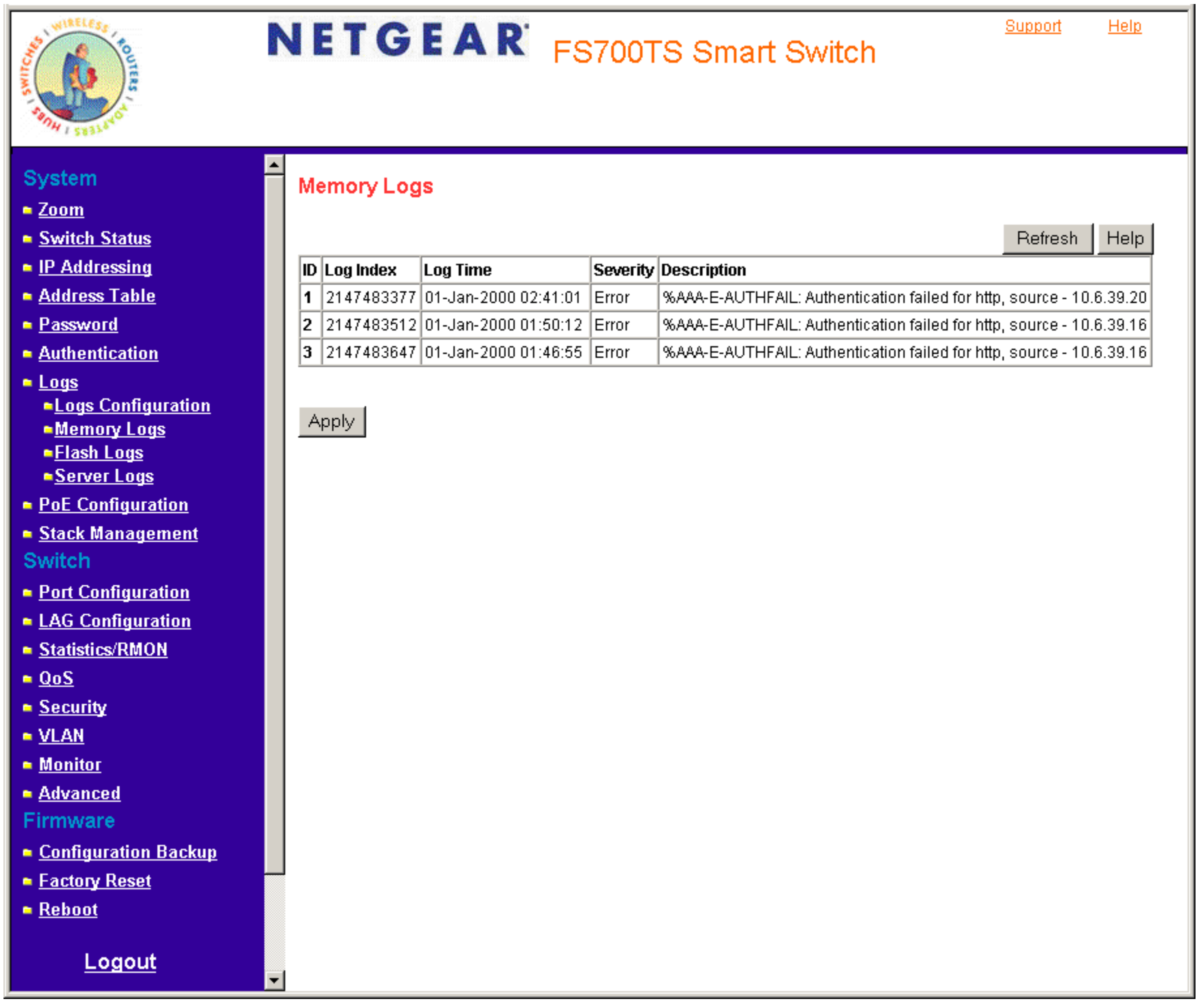
2. Define the *Enable Logging* and *Severity* fields.
3. Click Apply. The log parameters are set and the device is updated.

Viewing the Memory Logs

The *Memory Logs Page* contains all system logs in a chronological order that are saved in RAM (Cache).

To view the Memory Logs:

- Click **Logs > Memory Logs**. *The Memory Logs Page* opens.



ID	Log Index	Log Time	Severity	Description
1	2147483377	01-Jan-2000 02:41:01	Error	%AAA-E-AUTHFAIL: Authentication failed for http, source - 10.6.39.20
2	2147483512	01-Jan-2000 01:50:12	Error	%AAA-E-AUTHFAIL: Authentication failed for http, source - 10.6.39.16
3	2147483647	01-Jan-2000 01:46:55	Error	%AAA-E-AUTHFAIL: Authentication failed for http, source - 10.6.39.16

Figure 5 - 18: Memory Logs Page

The *Memory Logs Page* contains the following fields:

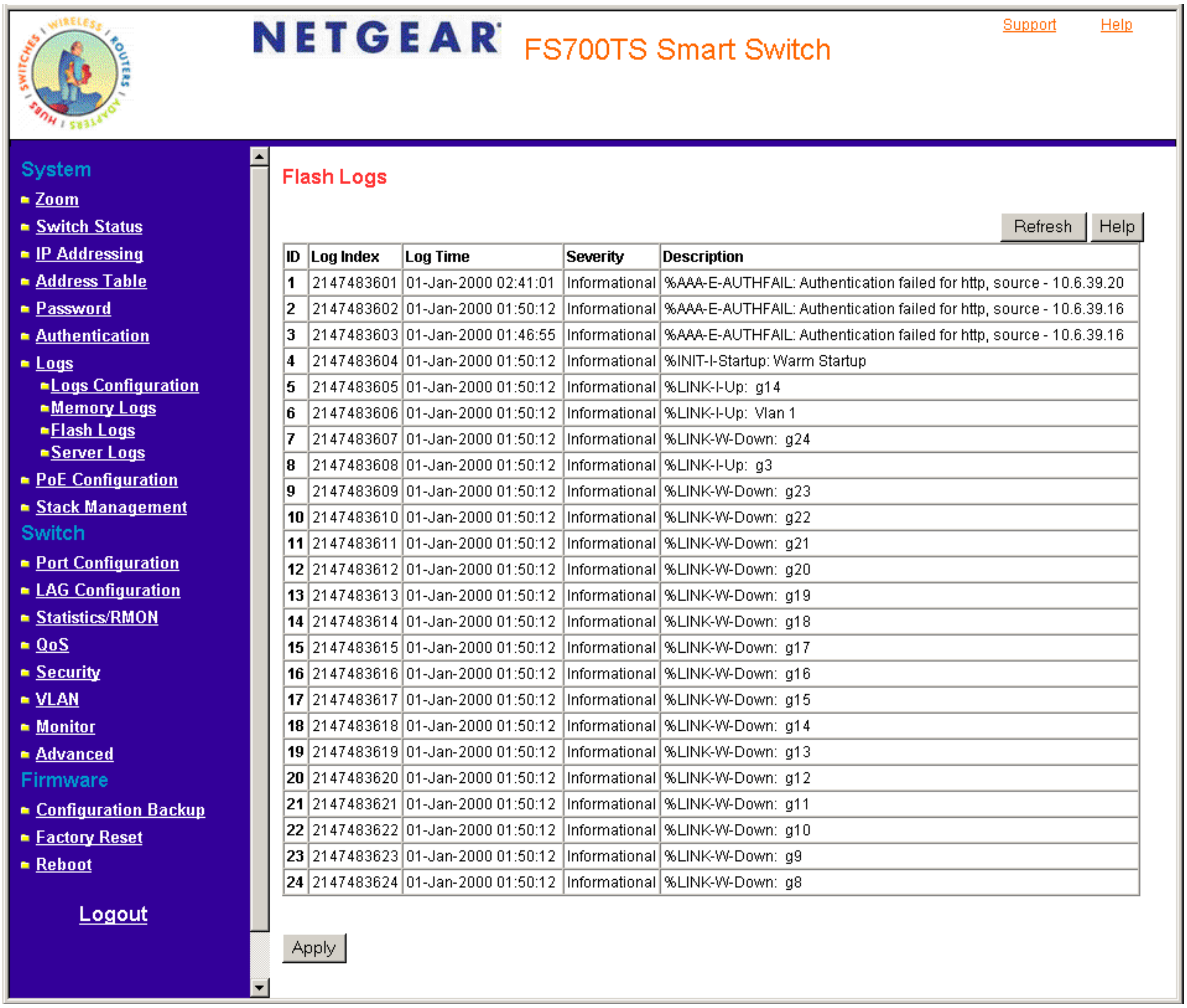
- **ID** – Displays the table entry number.
- **Log Index** — Displays the log number.
- **Log Time** — Displays the time at which the log was generated.
- **Severity** — Displays the log severity.
- **Description** — Displays the log message text.

Viewing Flash Logs

The *Flash Logs Page* contains information about log entries saved to the log file in Flash, including the time the log was generated, the log severity, and a description of the log message. The message log is available after reboot.

To view the message logs:

- Click **Logs** > **Flash Logs**. The *Flash Logs Page* opens:



Flash Logs

ID	Log Index	Log Time	Severity	Description
1	2147483601	01-Jan-2000 02:41:01	Informational	%AAA-E-AUTHFAIL: Authentication failed for http, source - 10.6.39.20
2	2147483602	01-Jan-2000 01:50:12	Informational	%AAA-E-AUTHFAIL: Authentication failed for http, source - 10.6.39.16
3	2147483603	01-Jan-2000 01:46:55	Informational	%AAA-E-AUTHFAIL: Authentication failed for http, source - 10.6.39.16
4	2147483604	01-Jan-2000 01:50:12	Informational	%INIT-I-Startup: Warm Startup
5	2147483605	01-Jan-2000 01:50:12	Informational	%LINK-I-Up: g14
6	2147483606	01-Jan-2000 01:50:12	Informational	%LINK-I-Up: Vlan 1
7	2147483607	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g24
8	2147483608	01-Jan-2000 01:50:12	Informational	%LINK-I-Up: g3
9	2147483609	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g23
10	2147483610	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g22
11	2147483611	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g21
12	2147483612	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g20
13	2147483613	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g19
14	2147483614	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g18
15	2147483615	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g17
16	2147483616	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g16
17	2147483617	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g15
18	2147483618	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g14
19	2147483619	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g13
20	2147483620	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g12
21	2147483621	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g11
22	2147483622	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g10
23	2147483623	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g9
24	2147483624	01-Jan-2000 01:50:12	Informational	%LINK-W-Down: g8

Figure 5 - 19: Flash Logs Page

The *Flash Logs Page* contains the following fields:

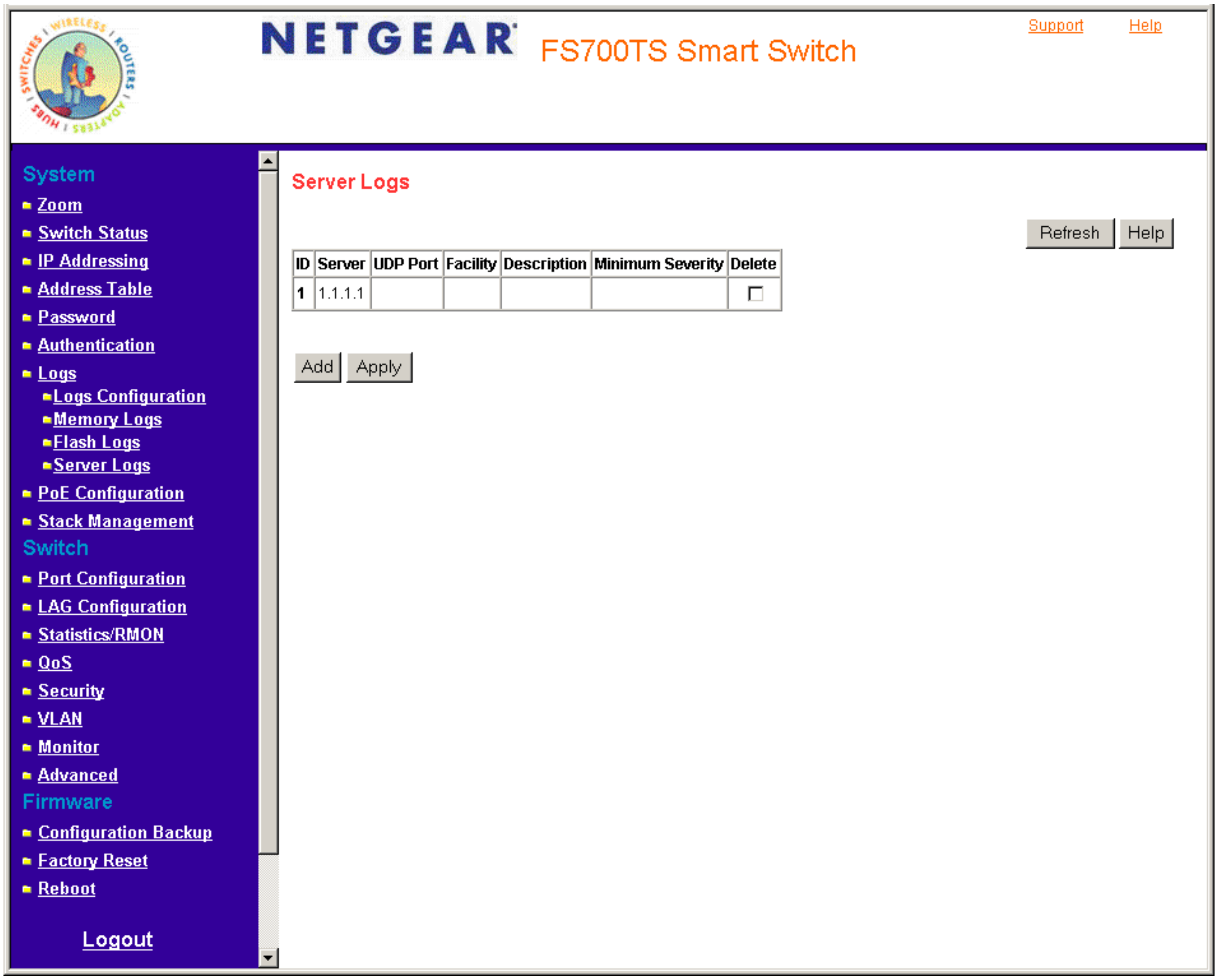
- **ID**— Displays the table entry number.
- **Log Index** — Displays the log number.
- **Log Time** — Displays the time at which the log was generated.
- **Severity** — Displays the log severity.
- **Description** — Displays the log message text.

Defining Server Logs

The *Server Logs Page* contains information for viewing and configuring the remote log servers. New log servers can be defined and the log severity sent to each server.

To configure server logs:

1. Click **Logs > Server Logs**. The *Server Logs Page* opens.



ID	Server	UDP Port	Facility	Description	Minimum Severity	Delete
1	1.1.1.1					□

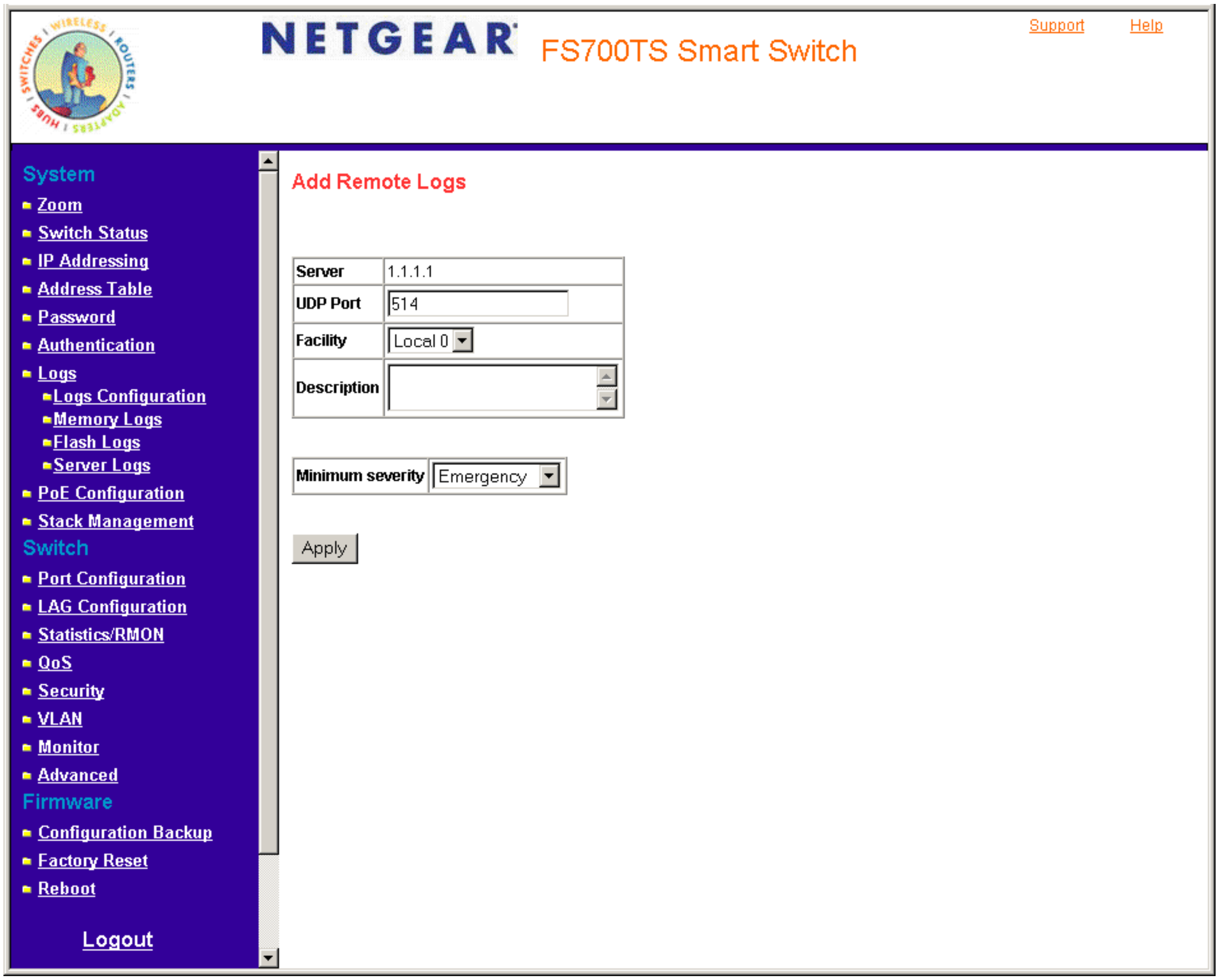
Figure 5 - 20: Server Logs Page

The *Server Logs Page* contains the following fields:

- **ID** — Displays the table entry number.
- **Server** — Specifies the server's IP address to which logs can be sent.
- **UDP Port** — Defines the UDP port to which the server logs are sent. The possible range is 1 - 65535. The default value is 514.
- **Facility** — Defines an application from which system logs are sent to the remote server. Only one facility can be assigned to a single server. If a second facility level is assigned, the first facility is overridden. All applications defined for a device utilize the same facility on a server. The field default is Local 7. The possible field values are *Local 0 - Local 7***.**
- **Description** — A user-defined server description.
- **Minimum Severity** — Indicates the minimum severity from which logs are sent to the server. For example, if *Notice* is selected, all logs with a severity level of *Notice* and higher are sent to the remote server.
- **Delete** — Deletes the currently selected servers from the Servers list. The possible field values are:
  - Checked — Removes the selected server from the Servers Log Parameters Page. Once removed, logs are no longer sent to the removed server.

– Unchecked — Maintains the remote servers.

2. Click Add. The *Add Remote Logs Page* opens:



Add Remote Logs

Server	1.1.1.1
UDP Port	514
Facility	Local 0
Description	

Minimum severity	Emergency

Figure 5 - 21: Add Remote Logs Page

3. Define the fields.

4. Click Apply. The log is defined and the device is updated.

Configuring Power over Ethernet

Power over Ethernet (PoE) provides power to devices over existing LAN cabling without updating or modifying the network infrastructure. This removes the limitation of placing network devices close to power sources. Power over Ethernet can be used in the following applications:

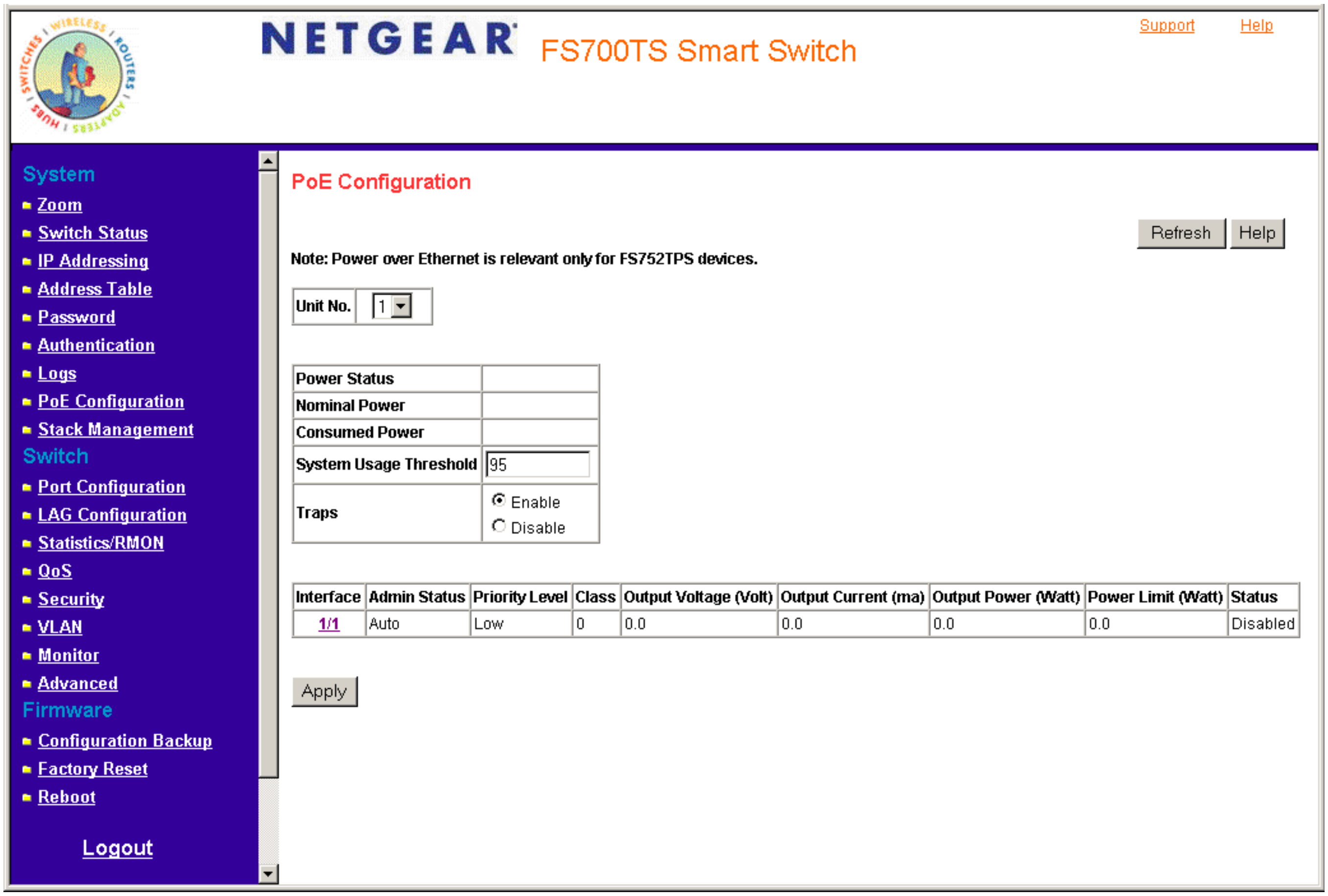
- IP Phones
- Wireless Access Points
- IP Gateways
- Audio and video remote monitoring

Powered Devices are devices that receive power from the device power supplies, for example IP phones. Powered Devices are connected to the device via Ethernet ports. PoE is available on for the FS752TPS.

The *PoE Configuration Page* contains system PoE information for enabling PoE on the device, monitoring the current power usage, and enabling PoE traps.

To enable PoE on the device:

1. Click **PoE Configuration**. *PoE Configuration Page* opens:



PoE Configuration

Note: Power over Ethernet is relevant only for FS752TPS devices.

Unit No. 1

Power Status	
Nominal Power	
Consumed Power	
System Usage Threshold	95
Traps	● Enable ○ Disable

Interface	Admin Status	Priority Level	Class	Output Voltage (Volt)	Output Current (ma)	Output Power (Watt)	Power Limit (Watt)	Status
1/1	Auto	Low	0	0.0	0.0	0.0	0.0	Disabled

Figure 5 - 22: PoE Configuration Page

The *PoE Configuration Page* contains the following fields:

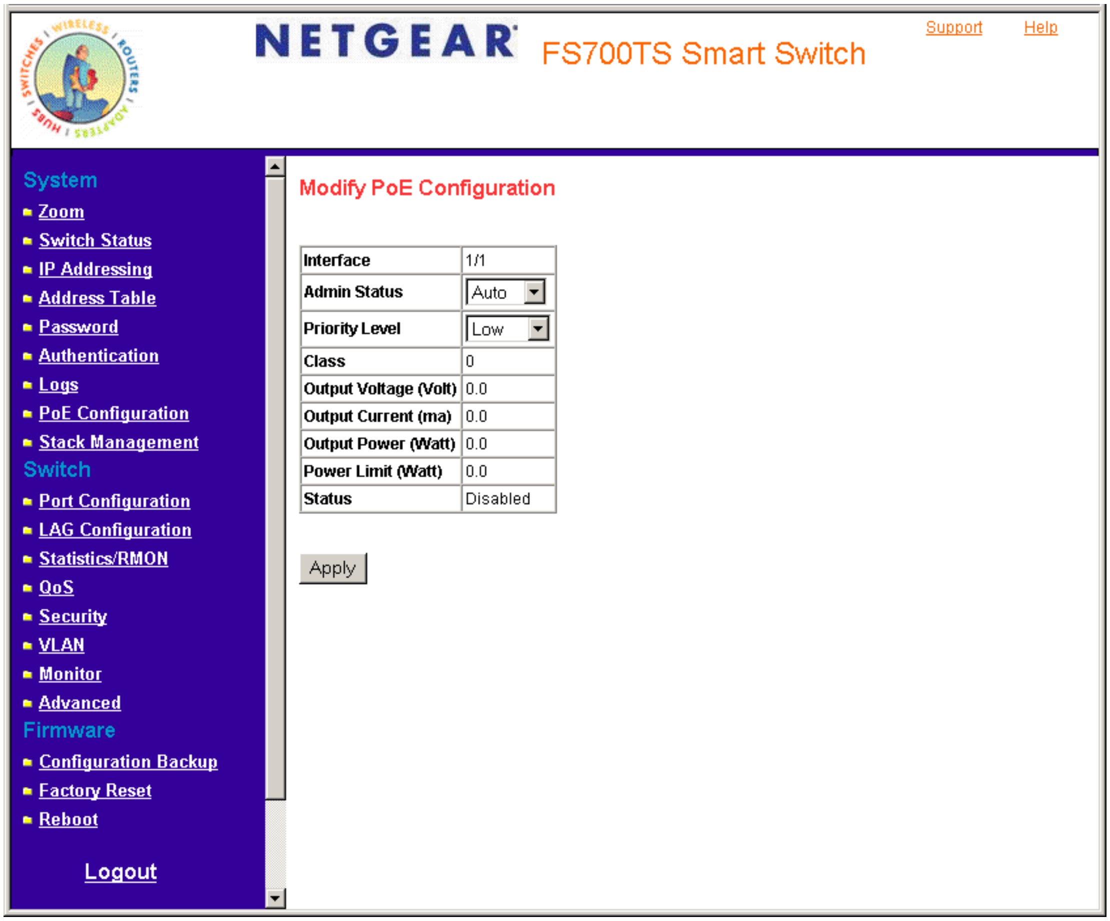
- **Unit No.** — Displays the stacking member for which the PoE information is displayed.
- **Power Status** — Indicates the inline power source status. The possible field values are:
  - On — Indicates that the power supply unit is functioning.
  - Off — Indicates that the power supply unit is not functioning.
  - Faulty — Indicates that the power supply unit is functioning, but an error has occurred. For example, a power overload or a short circuit.

- **Nominal Power** — Indicates the actual amount of power the device can supply. The field value is displayed in Watts.
- **Consumed Power** — Indicates the amount of the power used by the device. The field value is displayed in Watts.
- **System Usage Threshold** — Indicates the percentage of power consumed before an alarm is generated. The field value is 1-99 percent. The default is 95 percent.
- **Traps** — Indicate if PoE device traps are enabled. The possible field values are:
  - Checked — Enables PoE traps on the device.
  - Unchecked — Disables PoE traps on the device. This is the default value.
- **Interface** — Indicates the specific interface for which PoE parameters are defined. PoE parameters are assigned to the powered device that is connected to the selected interface.
- **Admin Status** — Indicates the device PoE mode. The possible field values are:
  - Auto — Enables the Device Discovery protocol and provides power to the device using the PoE module. The Device Discovery Protocol enables the device to discover Powered Devices attached to the device interfaces and to learn their classification. This is the default setting.
  - Never — Disables the Device Discovery protocol and stops the power supply to the device using the PoE module.
- **Priority Level** — Determines the port priority if the power supply is low. The field default is low. For example, if the power supply is running at 99% usage, and port 1 is prioritized as high, but port 3 is prioritized as low, port 1 is prioritized to receive power and port 3 may be denied power. The possible field values are:
  - Low — Defines the PoE priority level as low. This is the default level.
  - High — Defines the PoE priority level as high.
  - Critical — Defines the PoE priority level as Critical. This is the highest PoE priority level.
- **Class** — Indicates the amount of power assigned to the powered device connected to the selected interface. The powered device classifies devices, and the devices use the classification information. The field values are represented in Watts. The possible field values are:
  - *0.44 – 12.95* — Indicates that the port is assigned a power consumption level of 44 to 12.95 Watts.
  - *0.44 – 3.8* — Indicates that the port is assigned a power consumption level of 44 and 3.8 Watts.
  - 3.84 – 6.49 — Indicates that the port is assigned a power consumption level of 3.84 and 6.49 Watts.
  - 6.49 – 12.95 — Indicates that the port is assigned a power consumption level of 6.49 and 12.95 Watts
- **Output Voltage** — Displays the Output Voltage in watts.
- **Output Current (ma)** — Displays the Output current in milli amps.
- **Power Limit (Watt)** —Indicates the power limits in watts.
- **PoE Operation Status** — Indicates if the port is enabled to work on PoE. The possible field values are:
  - On — Indicates the device is delivering power to the interface.
  - Off — Indicates the device is not delivering power to the interface.
  - Test Fail — Indicates the powered device test has failed. For example, a port could not be enabled and cannot be used to deliver power to the powered device.
  - Testing — Indicates the powered device is being tested. For example, a powered device is tested to confirm it is receiving power from the power supply.
  - Searching — Indicates that the device is currently searching for a powered device. Searching is the default PoE operational status.
  - Fault — Indicates that the device has detected a fault on the powered device. For example, the powered device memory could not be read.

2. Define the fields.
3. Click Apply. The PoE interface is defined and the device is updated.

To view PoE statistics:

1. Click **PoE Configuration**. The *PoE Configuration Page* opens.
2. Click the interface. The *Modify PoE Configuration Page* opens:



Modify PoE Configuration

Interface	1/1
Admin Status	Auto
Priority Level	Low
Class	0
Output Voltage (Volt)	0.0
Output Current (ma)	0.0
Output Power (Watt)	0.0
Power Limit (Watt)	0.0
Status	Disabled

Figure 5 - 23: Modify PoE Configuration Page

In addition to the fields in the *PoE Configuration Page*, the *Modify PoE Configuration Page* contains the following fields:

- **Overload Counter** — Indicates the total power overload occurrences.
- **Short Counter** — Indicates the total power shortage occurrences.
- **Denied Counter** — Indicates times the powered device was denied power.
- **Absent Counter** — Indicates the times the powered device did not receive power from the power supply because the powered device was no longer detected.
- **Invalid Signature Counter** — Indicates the times an invalid signature was received. Signatures are the means by which the powered device identifies itself to the PSE. Signatures are generated during powered device detection, classification, or maintenance.

Configuring Interfaces

This section contains information for configuring ports, LAGs, and VLANs and contains the following topics:

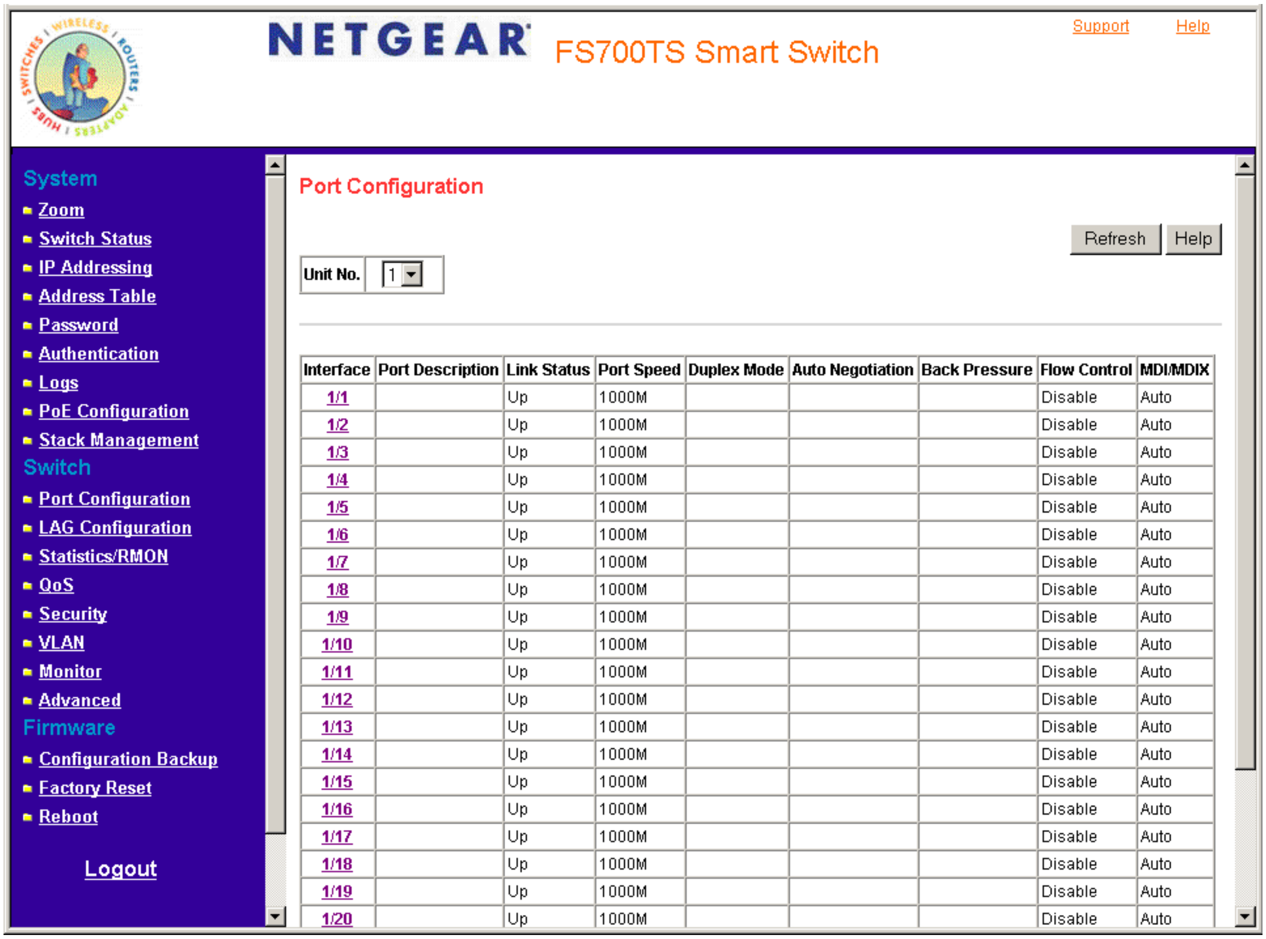
- Defining Port Parameters
- Defining LAG Members
- Defining VLAN Properties

Defining Port Parameters

The *Port Configuration Page* contains fields for defining port parameters.

To define port parameters:

1. Click **Port Configuration**. The *Port Configuration Page* opens.



Port Configuration

Unit No. 1

Interface	Port Description	Link Status	Port Speed	Duplex Mode	Auto Negotiation	Back Pressure	Flow Control	MDI/MDIX
1/1		Up	1000M				Disable	Auto
1/2		Up	1000M				Disable	Auto
1/3		Up	1000M				Disable	Auto
1/4		Up	1000M				Disable	Auto
1/5		Up	1000M				Disable	Auto
1/6		Up	1000M				Disable	Auto
1/7		Up	1000M				Disable	Auto
1/8		Up	1000M				Disable	Auto
1/9		Up	1000M				Disable	Auto
1/10		Up	1000M				Disable	Auto
1/11		Up	1000M				Disable	Auto
1/12		Up	1000M				Disable	Auto
1/13		Up	1000M				Disable	Auto
1/14		Up	1000M				Disable	Auto
1/15		Up	1000M				Disable	Auto
1/16		Up	1000M				Disable	Auto
1/17		Up	1000M				Disable	Auto
1/18		Up	1000M				Disable	Auto
1/19		Up	1000M				Disable	Auto
1/20		Up	1000M				Disable	Auto

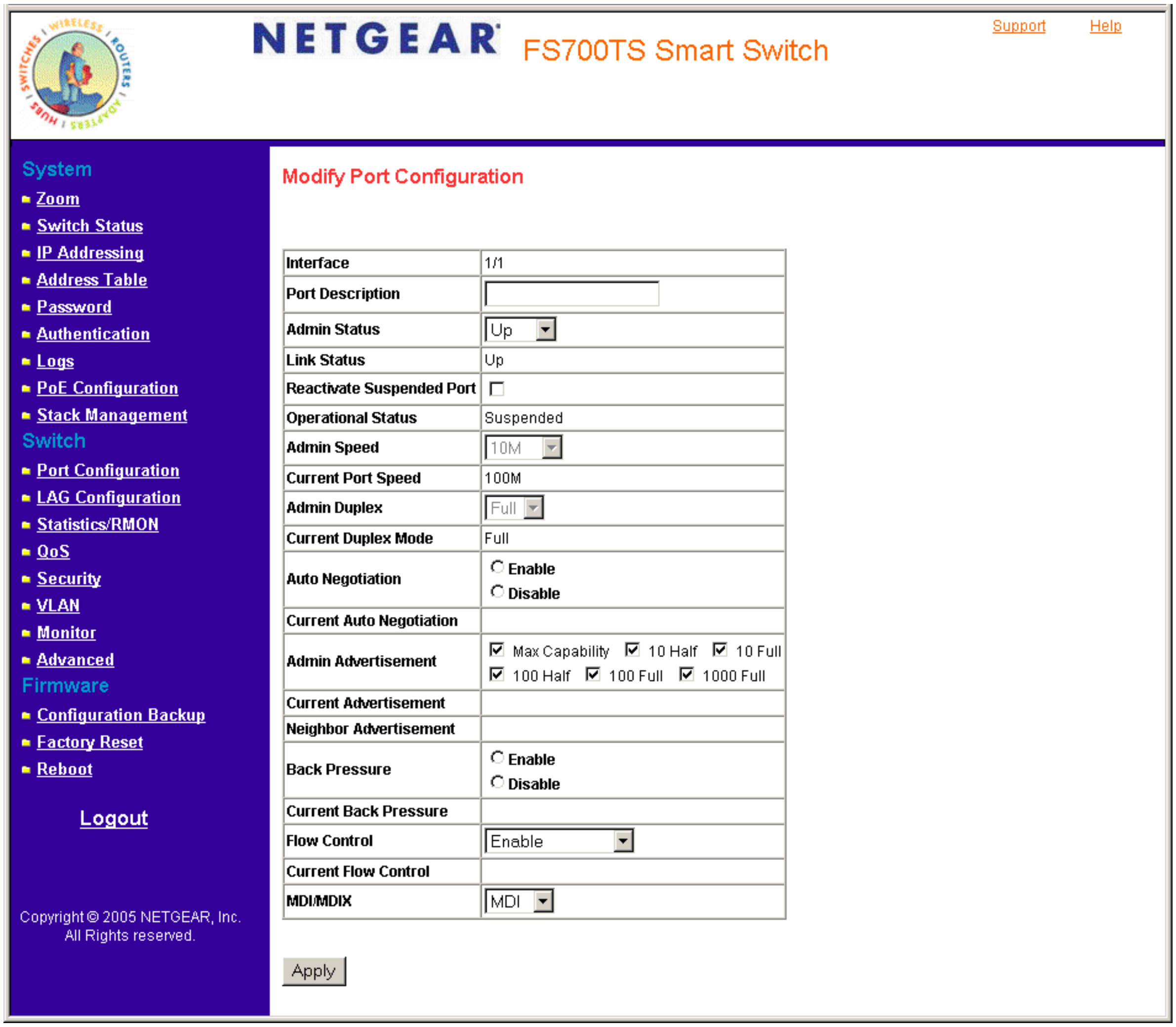
Figure 5 - 24: Port Configuration Page

The *Port Configuration Page* contains the following fields:

- **Unit No**. — Indicates the stacking number or LAG number.
- **Interface** — Displays the port number.
- **Port Description** — Provides a user-defined device description.
- **Link Status** — Indicates whether the port is currently operational or non-operational. The possible field values are:
  - Up — Indicates the port is currently operating.
  - Down — Indicates the port is currently not operating.
- **Port Speed** — Displays the configured rate for the port. The port type determines which speed setting options are available. Port speeds can only be configured when auto negotiation is disabled. The possible field values are:

  - 10 — Indicates the port is currently operating at 10 Mbps.
  - 100 — Indicates the port is currently operating at 100 Mbps.
  - 1000 — Indicates the port is currently operating at 1000 Mbps.
- **Duplex Mode** — Displays the port duplex mode. This field is configurable only when auto negotiation is disabled and the port speed is set to 10M or 100M. This field cannot be configured on LAGs. The possible field values are:
  - Full — The interface supports transmission between the device and its link partner in both directions simultaneously.
  - Half — The interface supports transmission between the device and the client in only one direction at a time.
- **Auto Negotiation** — Displays the auto negotiation status on the port. Auto negotiation is a protocol between two link partners that enables a port to advertise its transmission rate, duplex mode, and flow control abilities to its partner.
- **Back Pressure** — Displays the Back Pressure mode on the Port. Back Pressure mode is used with half duplex mode to disable ports from receiving messages. Back Pressure mode is enabled by default.
- **Flow Control** — Displays the flow control status on the port. Operates when the port is in full duplex mode. FC is enabled by default.
- **MDI/MDIX** — Displays the MDI/MDIX status of the port. Hubs and switches are deliberately wired opposite in the way from end stations. This is to ensure that when a hub or switch is connected to an end station, a straight through Ethernet cable can be used and the pairs will match up properly. When two hubs or switches are connected to each other or two end stations are connected to each other, a crossover cable is used to ensure that the correct pairs are connected. The possible field values are:
  - Auto Uplink — Use to automatically detect the cable type.
  - MDI (Media Dependent Interface) — Use for end stations.
  - MDIX (Media Dependent Interface with Crossover) — Use for hubs and switches.
  - LAG — Indicates whether the port is part of a Link Aggregation Group (LAG).

2. Click an interface. The *Modify Port Configuration Page* opens:



Modify Port Configuration

Interface	1/1
Port Description	
Admin Status	Up
Link Status	Up
Reactivate Suspended Port	□
Operational Status	Suspended
Admin Speed	10M
Current Port Speed	100M
Admin Duplex	Full
Current Duplex Mode	Full
Auto Negotiation	○ Enable ○ Disable
Current Auto Negotiation	
Admin Advertisement	☑ Max Capability ☑ 10 Half ☑ 10 Full ☑ 100 Half ☑ 100 Full ☑ 1000 Full
Current Advertisement	
Neighbor Advertisement	
Back Pressure	○ Enable ○ Disable
Current Back Pressure	
Flow Control	Enable
Current Flow Control	
MDI/MDIX	MDI

Figure 5 - 25: Modify Port Configuration Page

In addition to the fields in the *Interface Configuration Page*, the *Modify Port Configuration Page* includes the *Reactivate Suspended Port* field.

3. Define the fields.

4. Click Apply. The parameters are saved and the device is updated.

Defining LAG Members

Link Aggregation optimizes port usage by linking a group of ports together to form a single LAG. Aggregating ports multiplies the bandwidth between the devices, increases port flexibility, and provides link redundancy. Ports added to a LAG lose their individual port configuration. When ports are removed from the LAG, the original port configuration is applied to the ports. Ensure the following when configuring LAGs:

- All ports within a LAG must be the same media type.
- A VLAN is not configured on the port.
- The port is not assigned to a different LAG.
- Auto-negotiation mode is not configured on the port.
- The port is in full-duplex mode.
- All ports in the LAG have the same ingress filtering and tagged modes.
- All ports in the LAG have the same back pressure and flow control modes.
- All ports in the LAG have the same priority.
- All ports in the LAG have the same transceiver type.

- The device supports up to eight LAGs with eight ports in each LAG.

This section includes the following sections:

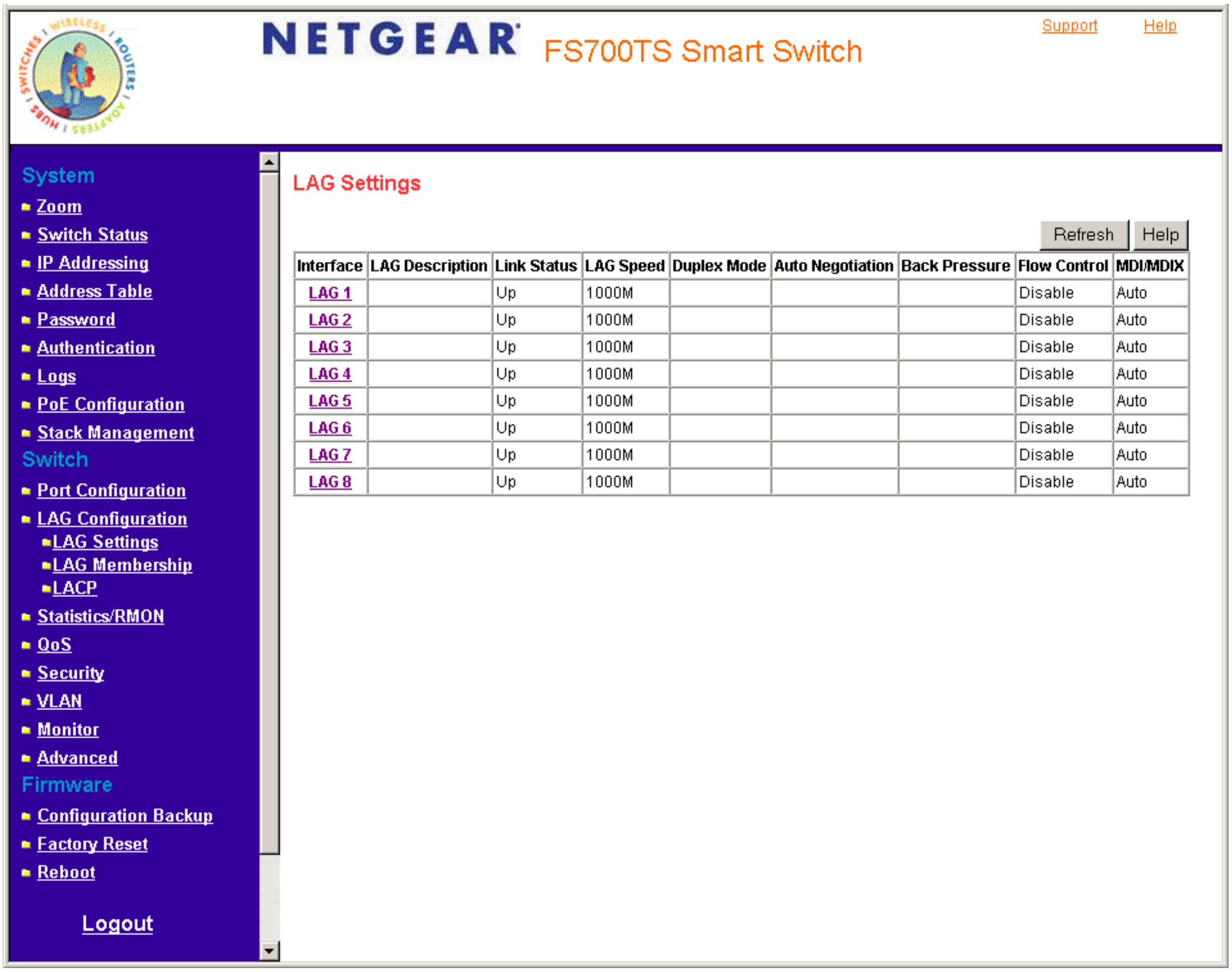
- Aggregating Ports
- Defining LAG Membership

Aggregating Ports

The *LAG Settings Page* contains fields for configuring parameters for configured LAGs. The system supports 8 LAGs, and each LAG can contain up to 8 ports.

To define LAG parameters:

1. Click **LAG Configuration- > LAG Settings**. The *LAG Settings Page* opens.



LAG Settings

Interface	LAG Description	Link Status	LAG Speed	Duplex Mode	Auto Negotiation	Back Pressure	Flow Control	MDI/MDIX
LAG 1		Up	1000M				Disable	Auto
LAG 2		Up	1000M				Disable	Auto
LAG 3		Up	1000M				Disable	Auto
LAG 4		Up	1000M				Disable	Auto
LAG 5		Up	1000M				Disable	Auto
LAG 6		Up	1000M				Disable	Auto
LAG 7		Up	1000M				Disable	Auto
LAG 8		Up	1000M				Disable	Auto

Figure 5 - 26: LAG Settings Page

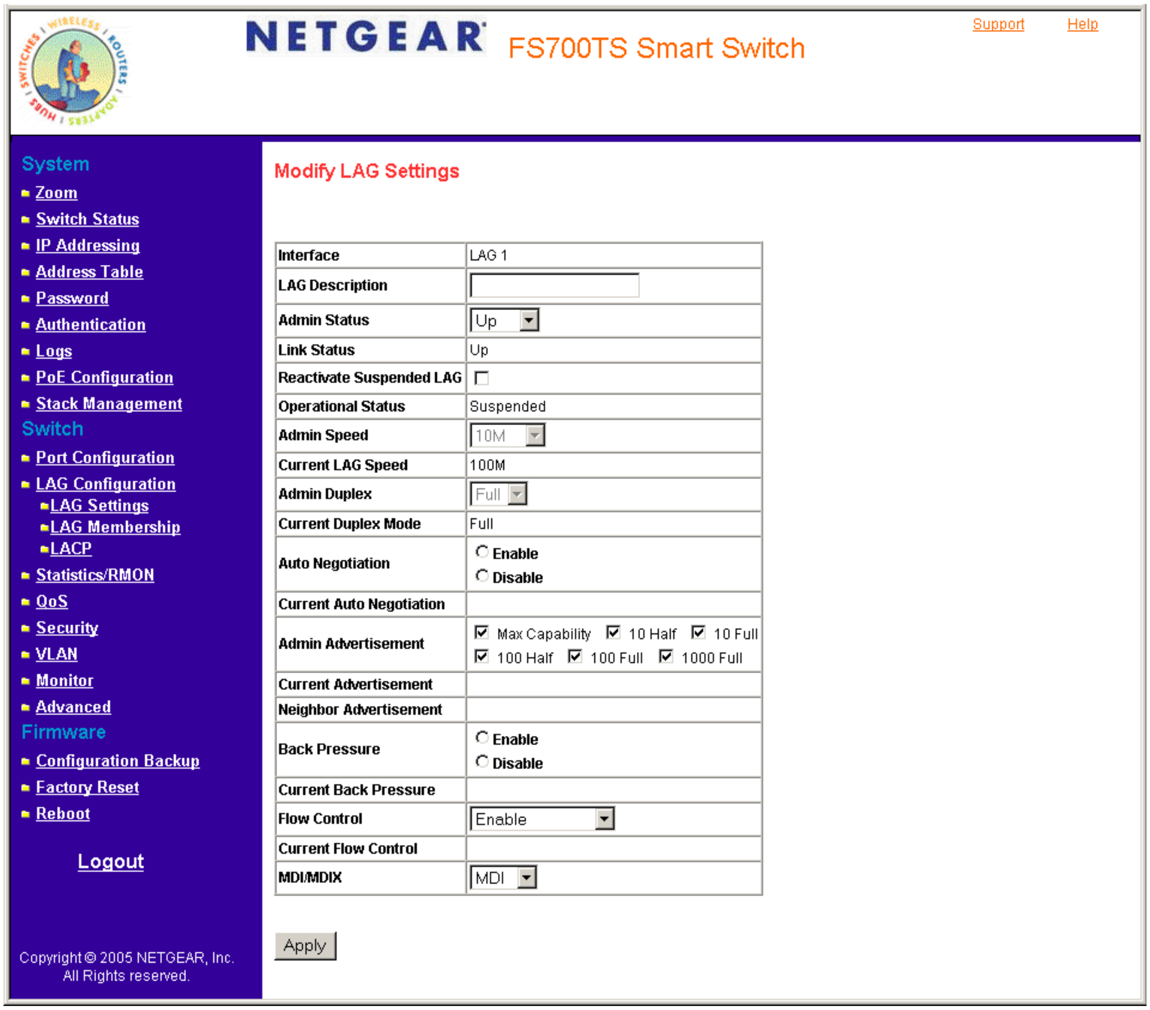
The *LAG Settings Page* contains the following fields:

- **Interface** — Displays the LAG number.
- **LAG Description** — Displays the user-defined port name.
- **Link Status** — Displays the link operational status. The possible field values are:
  - UP — Indicates the LAG is currently linked and forwarding traffic.
  - Down — Indicates the LAG is currently not linked.
- **LAG Speed** — Displays the configured rate for the LAG. The port type determines what speed setting options are available. LAG speeds can only be configured when auto negotiation is disabled. The possible field values are:
  - 10 — Indicates the LAG is currently operating at 10 Mbps.

- 100 — Indicates the LAG is currently operating at 100 Mbps.
- 1000 — Indicates the LAG is currently operating at 1000 Mbps.

- **Auto Negotiation** — Displays the auto negotiation status on the LAG. Auto negotiation is a protocol between two link partners that enables a port to advertise its transmission rate, duplex mode, and flow control abilities to its partner.
- **Flow Control** — Displays the flow control status on the LAG. Operates when the port is in full duplex mode. Enabled by default.

2. Click a LAG. The *Modify LAG Settings* Page opens:



Modify LAG Settings

Interface	LAG 1
LAG Description	
Admin Status	Up
Link Status	Up
Reactivate Suspended LAG	☐
Operational Status	Suspended
Admin Speed	10M
Current LAG Speed	100M
Admin Duplex	Full
Current Duplex Mode	Full
Auto Negotiation	○ Enable ○ Disable
Current Auto Negotiation	
Admin Advertisement	☑ Max Capability ☑ 10 Half ☑ 10 Full ☑ 100 Half ☑ 100 Full ☑ 1000 Full
Current Advertisement	
Neighbor Advertisement	
Back Pressure	○ Enable ○ Disable
Current Back Pressure	
Flow Control	Enable
Current Flow Control	
MDI/MDIX	MDI

Figure 5 - 27: Modify LAG Settings Page

In addition to the fields in the *LAG Settings Page*, the *Modify LAG Settings Page* contains the following additional fields:

- **Current Auto Negotiation** — The current Auto Negotiation setting. Auto negation of Flow Control (FC) is enabled by default.
- **Admin Advertisement** — Defines the auto-negotiation setting the port advertises. The possible field values are:
  - Max Capability — Indicates that all port speeds and Duplex mode settings are accepted.
  - 10 Half — Indicates that the port advertises for a 10 mbps speed port and half duplex mode setting.
  - 10 Full — Indicates that the port advertises for a 10 mbps speed port and full duplex mode setting.
  - 100 Half — Indicates that the port advertises for a 100 mbps speed port and half duplex mode setting.
  - 100 Full — Indicates that the port advertises for a 100 mbps speed port and full duplex mode setting.
  - 1000 Full — Indicates that the port advertises for a 1000 mbps speed port and full duplex mode setting.
- **Current Advertisement** — The port advertises its speed to its neighbor port to start the negotiation process. The possible field values are those specified in the Admin Advertisement field.

- **Neighbor Advertisement** — Indicates the neighboring port's advertisement settings. The field values are identical to the Admin Advertisement field values.

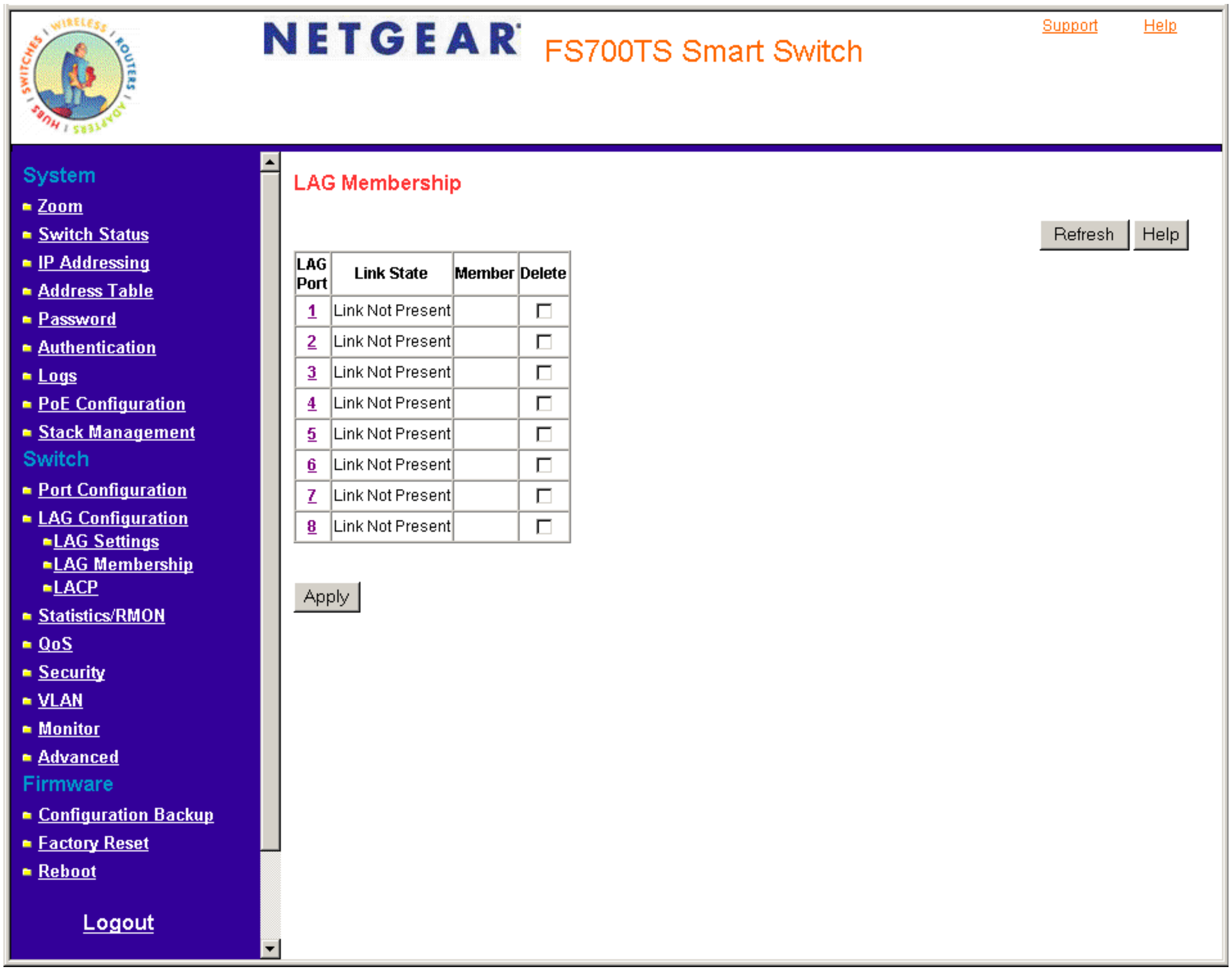
3. Define the *Port* and *LACP* fields.
4. Click Apply. The LAG membership settings are saved and the device is updated.

Defining LAG Membership

The *LAG Membership Page* allows network managers to assign ports LAGs.

To assign ports to LAGs:

1. Click **LAG Configuration > LAG Membership**. The *LAG Membership Page* opens.



LAG Membership

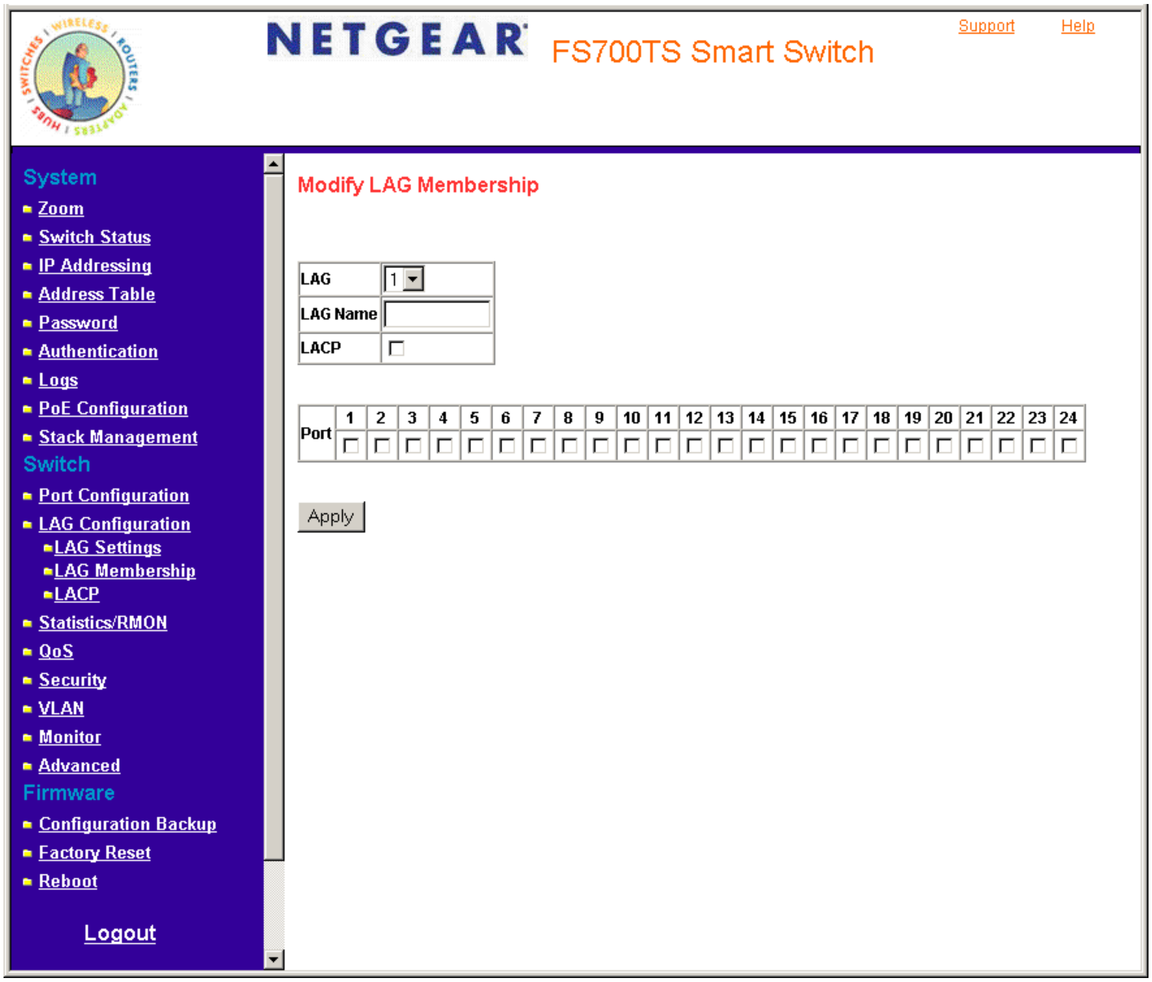
LAG Port	Link State	Member	Delete
1	Link Not Present		☐
2	Link Not Present		☐
3	Link Not Present		☐
4	Link Not Present		☐
5	Link Not Present		☐
6	Link Not Present		☐
7	Link Not Present		☐
8	Link Not Present		☐

Figure 5 - 28: LAG Membership Page

The *LAG Membership Page* contains the following fields:

- **LAG Port** — Displays the LAG number.
- **Link State** — Displays the LAG operational status. The possible field values are:
  - Link Present — Indicates the LAG is currently linked and forwarding traffic.
  - Link Not Present — Indicates the LAG is currently not linked.
- **Member** — Displays the ports that are attached to the LAG.
- **Delete** — Removes the selected LAG.
  - Checked — Removes the selected LAG.
  - Unchecked — Maintains the LAGs.

2. Click a LAG. The *Modify LAG Membership Page* opens:



Modify LAG Membership

LAG	1
LAG Name	
LACP	□

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
	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□

Figure 5 - 29: Modify LAG Membership Page

3. Select a port to attach to the selected LAG.

4. Click Apply. The LAG is defined and the device is updated.

Configuring VLANs

VLANs are logical subgroups within a Local Area Network (LAN), which combine user stations, and network devices into a single unit, regardless of the physical LAN segment to which they are attached. VLANs allow network traffic to flow more efficiently within subgroups. VLANs use software to reduce the amount of time it takes for network changes, additions, and moves to be implemented.

VLANs have no minimum number of ports, and can be created per unit, per device, or through any other logical connection combination since they are software-based and not defined by physical attributes.

VLANs function at Layer 2. Since VLANs isolate traffic within the VLAN, a Layer 3 router working at a protocol level is required to allow traffic flow between VLANs. Layer 3 routers identify segments and coordinate with VLANs. VLANs are Broadcast and Multicast domains. Broadcast and Multicast traffic is transmitted only in the VLAN in which the traffic is generated.

VLAN tagging provides a method of transferring VLAN information between VLAN groups. VLAN tagging attaches a 4-byte tag to packet headers. The VLAN tag indicates to which VLAN the packets belong. VLAN tags are attached to the VLAN by either the end station or the network device. VLAN tags also contain VLAN network priority information.

The NETGEAR FS700TS-series Switch supports up to 128 active VLANs.

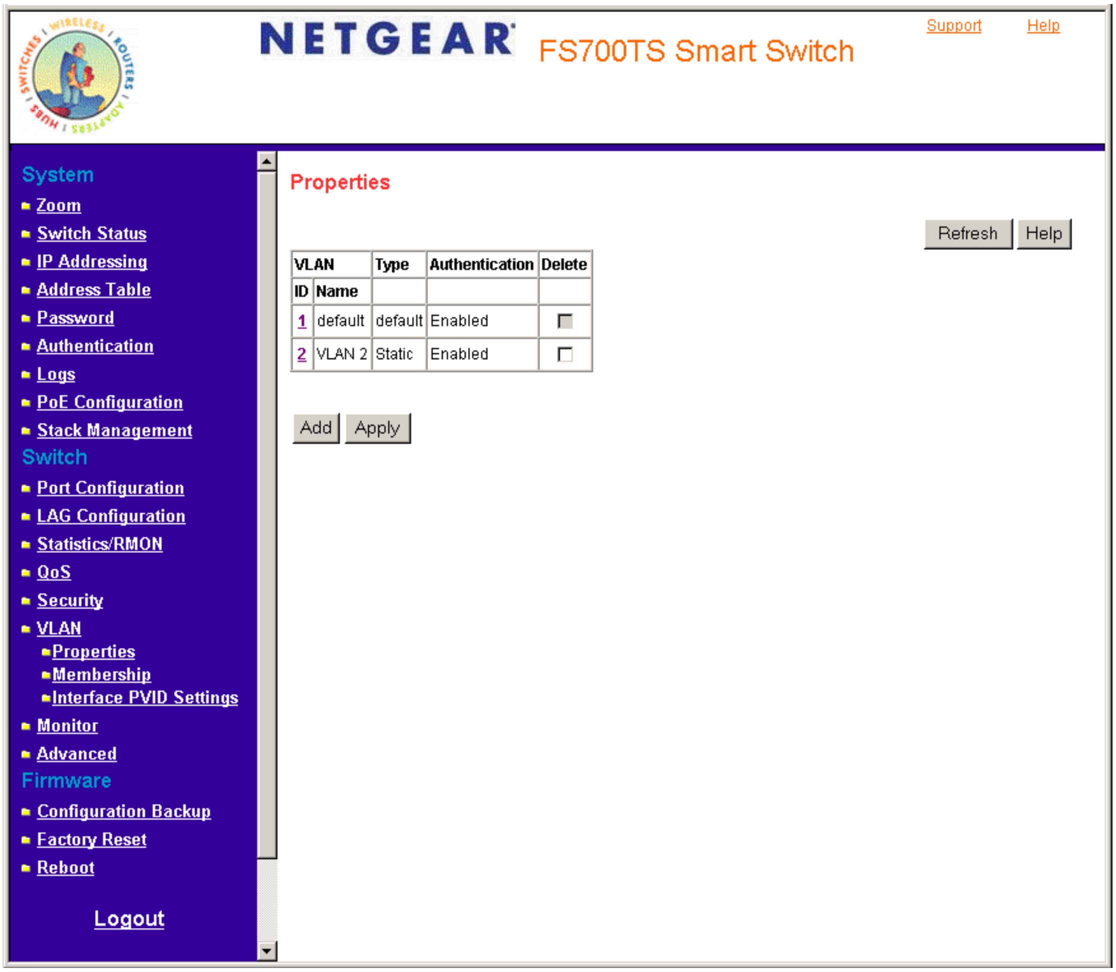
This section contains the following topics:

- Defining VLAN Properties
- Defining VLAN PVID Settings

Defining VLAN Properties

The *VLAN Properties Page* provides information and global parameters for configuring and working with VLANs.
To define VLAN properties:

1. Click **Switch > VLAN**. The *VLAN Properties Page* opens.



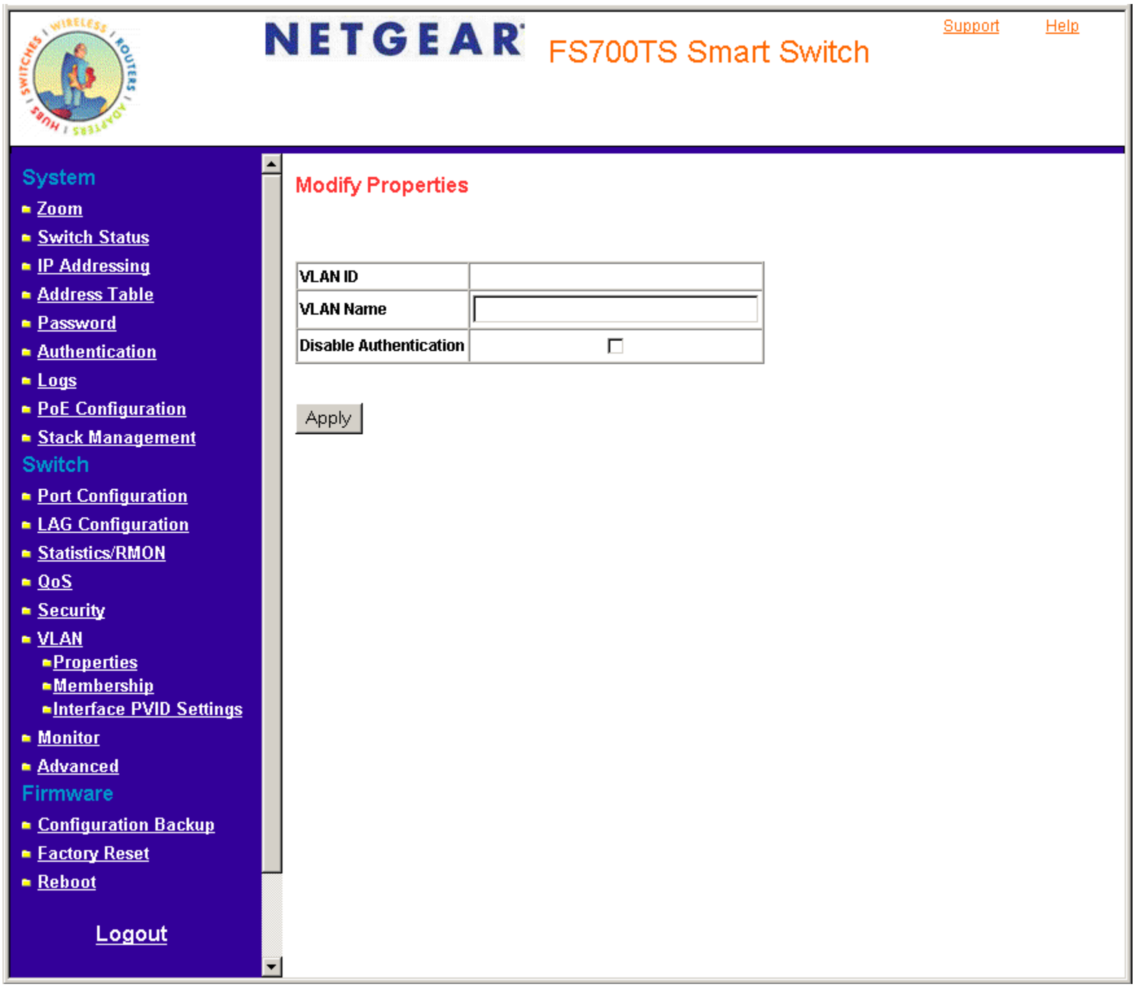
VLAN		Type	Authentication	Delete
ID	Name			
1	default	default	Enabled	□
2	VLAN 2	Static	Enabled	□

Figure 5 - 30: VLAN Properties Page

The *VLAN Properties Page* contains the following fields:

- **ID** — Displays the VLAN ID.
- **Name** — Displays the user-defined VLAN name.
- **Type**— Displays the VLAN type. The possible field values are:
  - Static — Indicates the VLAN is user-defined.
  - Default — Indicates the VLAN is the default VLAN. The default VLAN is enabled by default.
- **Authentication** — Indicates whether unauthorized users can access a Guest VLAN. The possible field values are:
  - Enable — Enables unauthorized users to use the Guest VLAN.
  - Disable — Disables unauthorized users from using the Guest VLAN.
- **Delete**— Removes VLANs. The possible field values are:
  - Checked — Removes the selected VLAN.
  - Unchecked — Maintains VLANs.

2. Select and click a VLAN in the ID field. The *Add 802.1q VLAN Page* opens:



Modify Properties

VLAN ID	
VLAN Name	
Disable Authentication	☐

Apply

Figure 5 - 31: Add 802.1q VLAN Page

3. Define the *VLAN ID* and *VLAN Name* fields.

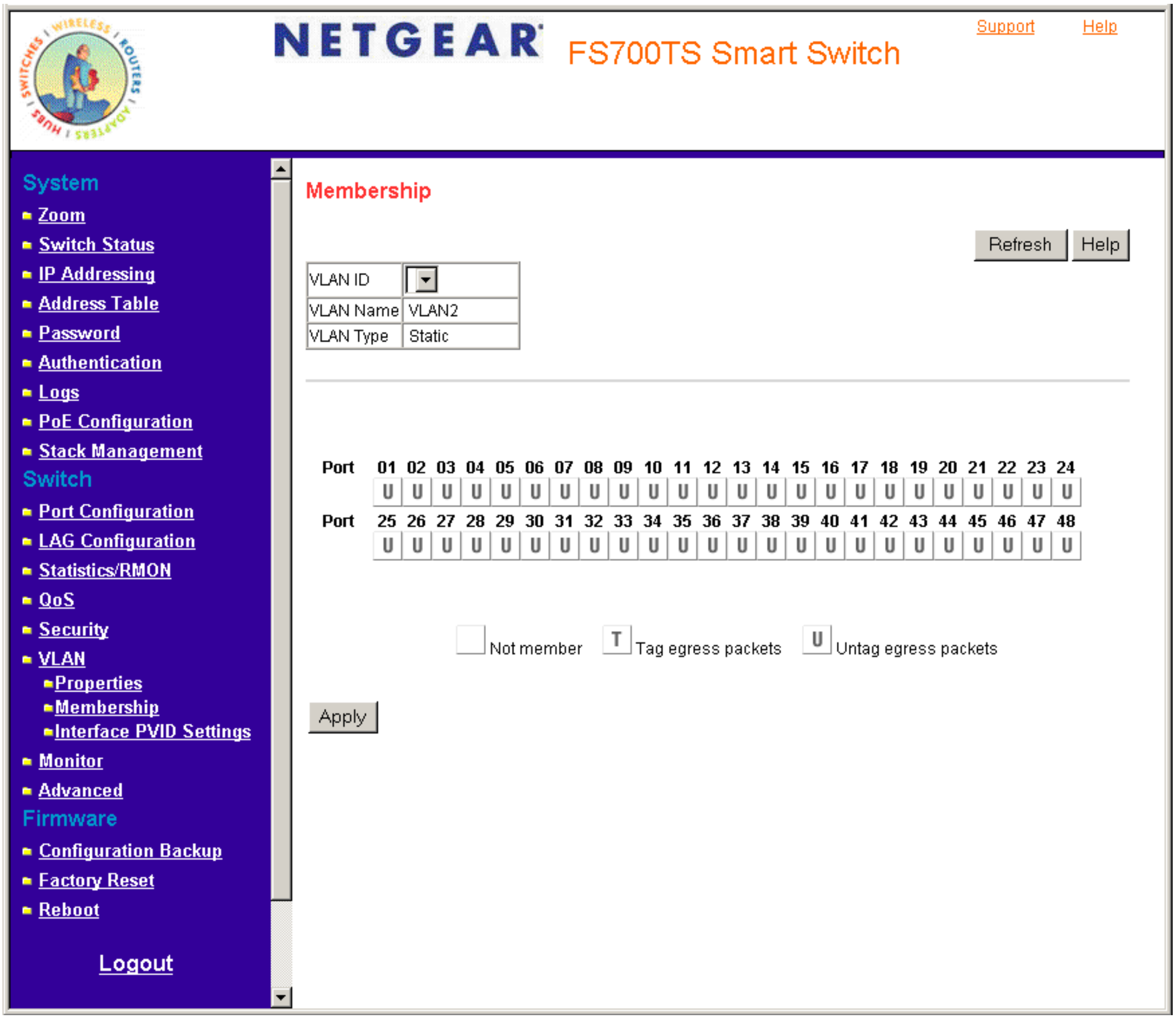
4. Click Apply. The VLAN ID is defined and the device is updated.

Defining VLAN Membership

The *VLAN Membership Page* contains a table that maps VLAN parameters to ports. Ports are assigned VLAN membership by toggling through the Port Control settings.

To define VLAN membership:

1. Click **Basic Setup > VLAN > Membership > Membership**. The *VLAN Membership Page* opens.



VLAN ID	
VLAN Name	VLAN2
VLAN Type	Static

Port	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Port	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**
	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

□ Not member T Tag egress packets U Untag egress packets

Figure 5 - 32: VLAN Membership Page

The *VLAN Membership Page* contains the following fields:

- **VLAN ID** — Displays the user-defined VLAN ID.
- **VLAN Name** — Displays the name of the VLAN.
- **VLAN Type**— Indicates the VLAN type. The possible field values are:
  - *Static* — Indicates the VLAN is user-defined.
  - *Default* — Indicates the VLAN is the default VLAN. The default VLAN is enabled.
- **Port** — Indicates the port membership.
- **LAG** — Indicates the LAG membership.
- **Untagged** — Indicates the interface is an untagged VLAN member. Packets forwarded by the interface are untagged.
- **Tagged** — Indicates the interface is a tagged member of a VLAN. All packets forwarded by the interface are tagged. The packets contain VLAN information.

- **Include** — Includes the port in the VLAN.
- **Exclude** — Excludes the interface from the VLAN.
- **Forbidden** — Denies the interface VLAN membership.

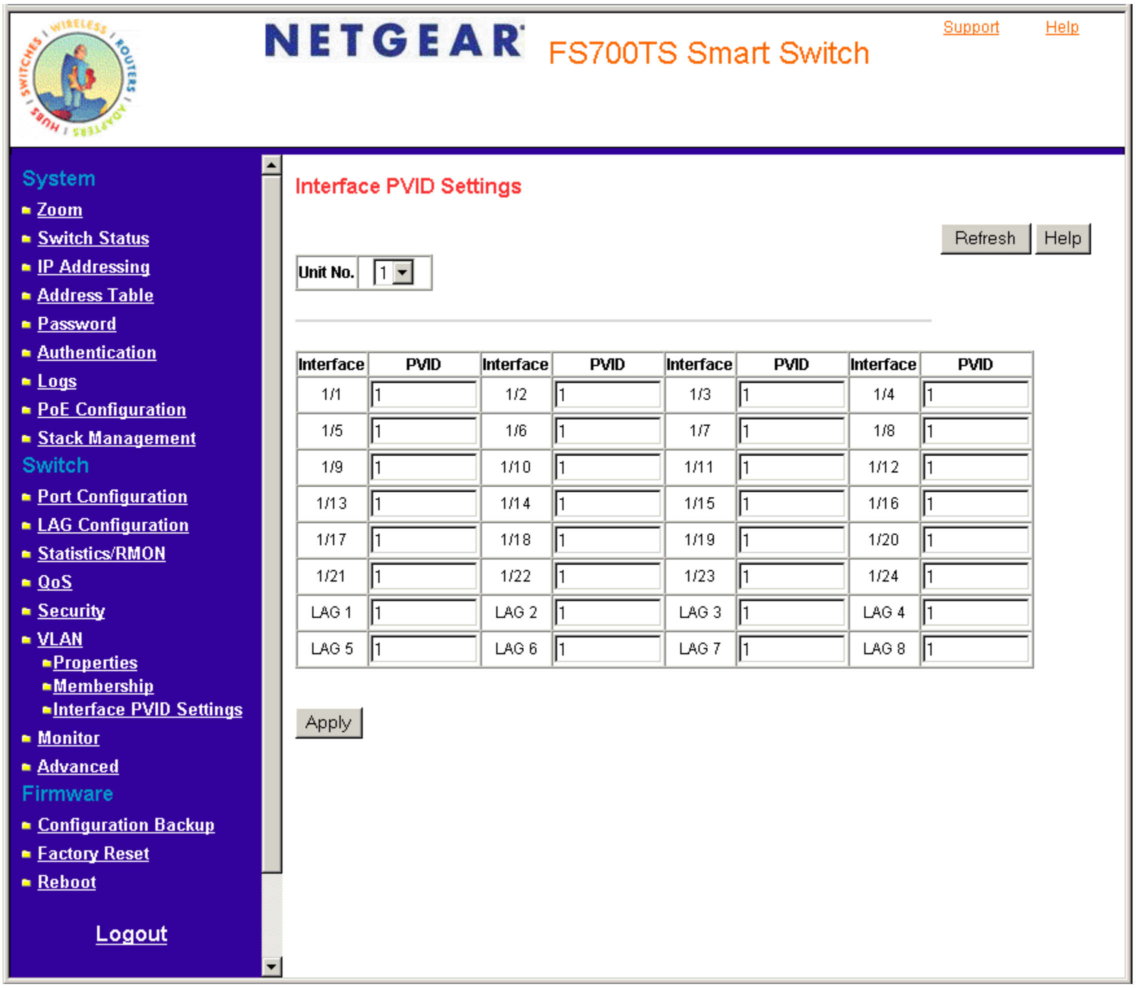
2. Define the fields.
3. Click Apply. The VLAN Membership is defined and the device is updated.

Defining VLAN PVID Settings

The *Interface PVID Settings Page* contains parameters for assigning *Port VLAN ID* (PVID) values to interfaces. All ports must have a defined PVID. If no other value is configured the default VLAN PVID is used. VLAN number 1 is the default VLAN and cannot be deleted from the system.

To open the *Interface PVID Settings* Page:

1. Click **Switch > VLAN > Interface PVID Settings**. The *Interface PVID Settings Page* opens:



Interface PVID Settings

Unit No. 1

Interface	PVID	Interface	PVID	Interface	PVID	Interface	PVID
1/1	1	1/2	1	1/3	1	1/4	1
1/5	1	1/6	1	1/7	1	1/8	1
1/9	1	1/10	1	1/11	1	1/12	1
1/13	1	1/14	1	1/15	1	1/16	1
1/17	1	1/18	1	1/19	1	1/20	1
1/21	1	1/22	1	1/23	1	1/24	1
LAG 1	1	LAG 2	1	LAG 3	1	LAG 4	1
LAG 5	1	LAG 6	1	LAG 7	1	LAG 8	1

Figure 5 - 33: Interface PVID Settings Page

The *Interface PVID Settings Page* contains the following fields:

- **Unit No**. — Displays the stacking member for which the PVID information is displayed.
- **Interface** — Displays the interface to which the PVID tag is assigned. The possible field values are:
  - Port —Displays the port to which the PVID tag is attached.
  - LAG— Displays the LAG to which the PVID tag is attached.
- **PVID** — Displays the PVID value. The possible field range is 1-4094.

2. Define the fields.

3. Click Apply. The PVID settings are saved and the device is updated.

Defining IP Addresses

This section contains the following topics:

- Configuring IP Interfaces
- Configuring ARP

Configuring IP Interfaces

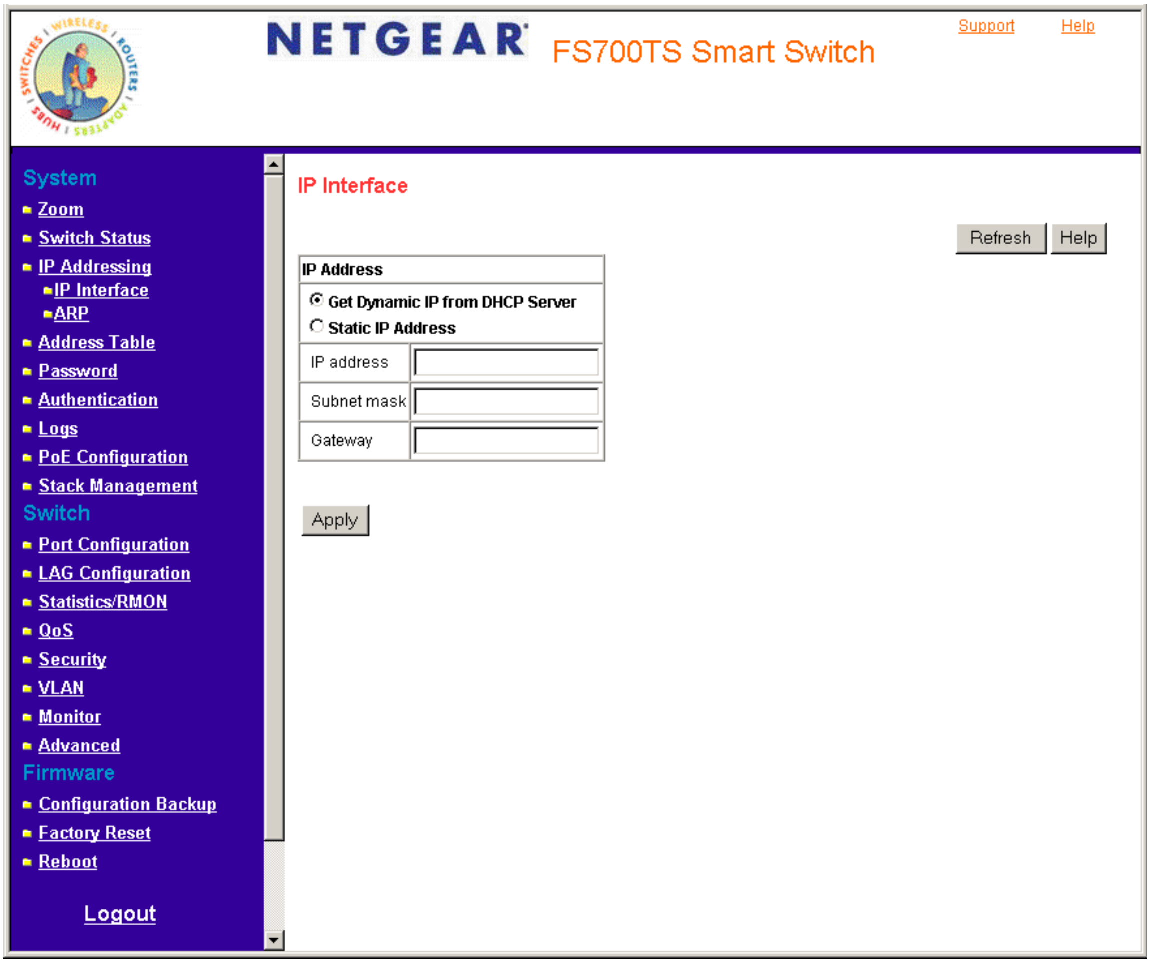
The *IP Interface Page* contains fields for assigning IP addresses. IP addresses are either defined as static or are retrieved using the *Dynamic Host Configuration Protocol* (DHCP). The *IP Interface Page* also contains information for defining default gateways DHCP is also configured from the *IP Interface Page*. The assigns dynamic IP addresses to devices on a network. DHCP ensures that network devices can have a different IP address every time the device connects to the network.

Note the following when configuring IP Addresses:

- If the device was accessed using the Smart Wizard Discovery Utility, the IP address retrieved through DHCP is displayed.
- If the device fails to retrieve an IP address through DHCP, the default IP address is 192.168.0.239.

To define an IP interface:

1. Click **IP Addressing > IP Interface**. The *IP Interface Page* opens:



IP Interface

IP Address	
◉ Get Dynamic IP from DHCP Server	
○ Static IP Address	
IP address	
Subnet mask	
Gateway	

Figure 5 - 34: IP Interface Page

The *IP Interface Page* contains the following fields:

- **Get Dynamic IP from DHCP Server** — Retrieves the IP addresses using DHCP.
- **Static IP Address**— Displays the currently configured IP address. IP addresses are either configured on the Default VLAN or are user-defined.

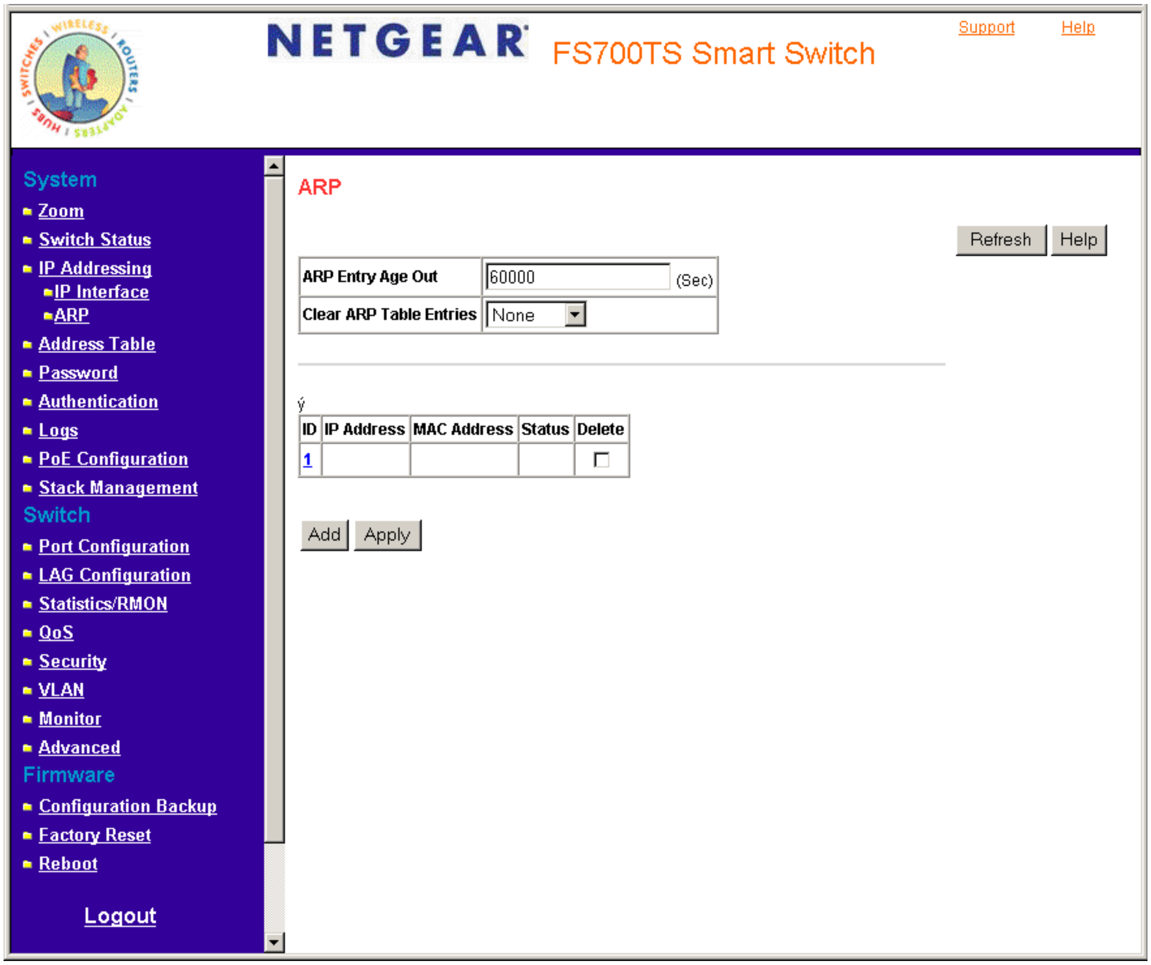
- **IP Address** —Defines the interface used to manage the device.
- **Subnet mask** — Displays the currently configured IP address mask.
- **Gateway** — Defines the default gateway IP address.

2. Define the fields.
3. Click Apply. The IP configuration fields are saved and the device is updated.

Configuring ARP

The *Address Resolution Protocol* (ARP) converts IP addresses into physical addresses, and maps the IP address to a MAC address. ARP allows a host to communicate with other hosts only when the IP address of its neighbors is known. To define ARP information:

1. Click **IP Addressing > ARP**. The *ARP Page* opens:



ARP

ARP Entry Age Out	60000 (Sec)
Clear ARP Table Entries	None

ý

ID	IP Address	MAC Address	Status	Delete
1				□

Figure 5 - 35: ARP Page

The *ARP Page* contains the following fields:

- **ARP Entry Age Out** — Specifies the amount of time (in seconds) that passes between *ARP Table* entry requests. Following the *ARP Entry Age* period, the entry is deleted from the table. The range is 1 - 40000000. The default value is 60000 seconds.
- **Clear ARP Table Entries** — Specifies the types of ARP entries that are cleared. The possible values are:
  - None — Maintains the ARP entries.
  - All — Clears all ARP entries.
  - Dynamic — Clears only dynamic ARP entries.
  - Static — Clears only static ARP entries.
- **ID** — Displays the *ARP Table* entry number.

- **IP Address** — Indicates the station IP address, which is associated with the MAC address filled in below.
- **MAC Address** — Displays the station MAC address that is associated in the ARP table with the IP address.
- **Status** — Displays the ARP table entry type. Possible field values are:
  - Dynamic — Indicates the ARP entry is learned dynamically.
  - Static — Indicates the ARP entry is a static entry.
- **Delete** — Removes a specific ARP entry. The possible field values are:
  - Checked — Removes the selected ARP entries.
  - Unchecked — Maintains the current ARP entries.

2. Define the fields.
3. Click Apply. The ARP parameters are defined and the device is updated.

To create a new ARP entry:

1. Click **IP Addressing > ARP**. The *ARP Page* opens.
2. Click Add. The *Add ARP Page* opens:

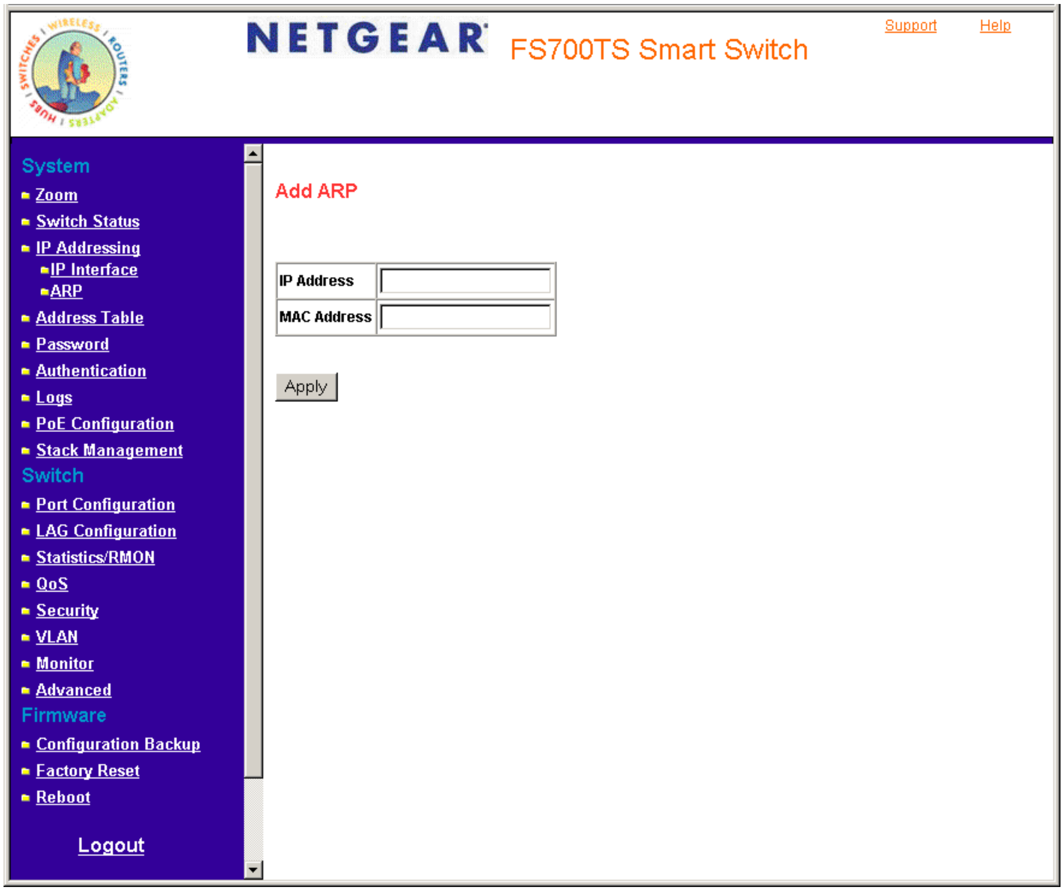


Figure 5 - 36: Add ARP Page

3. Define the fields.
4. Click Apply. The ARP interface is added and the device is updated.

Defining the Forwarding Address Tables

Packets addressed to destinations stored in either the Static or Dynamic databases are immediately forwarded to the port. The Dynamic MAC Address Table can be sorted by interface, VLAN, or MAC Address, whereas MAC addresses are dynamically learned as packets from sources that arrive at the device. Static addresses are configured manually.

An address becomes associated with a port by learning the port from the frame's source address but if a frame that is addressed to a destination MAC address is not associated with a port, that frame is flooded to all relevant VLAN ports. To prevent the bridging table from overflowing, a dynamic MAC address, from which no traffic arrives for a set period, is erased.

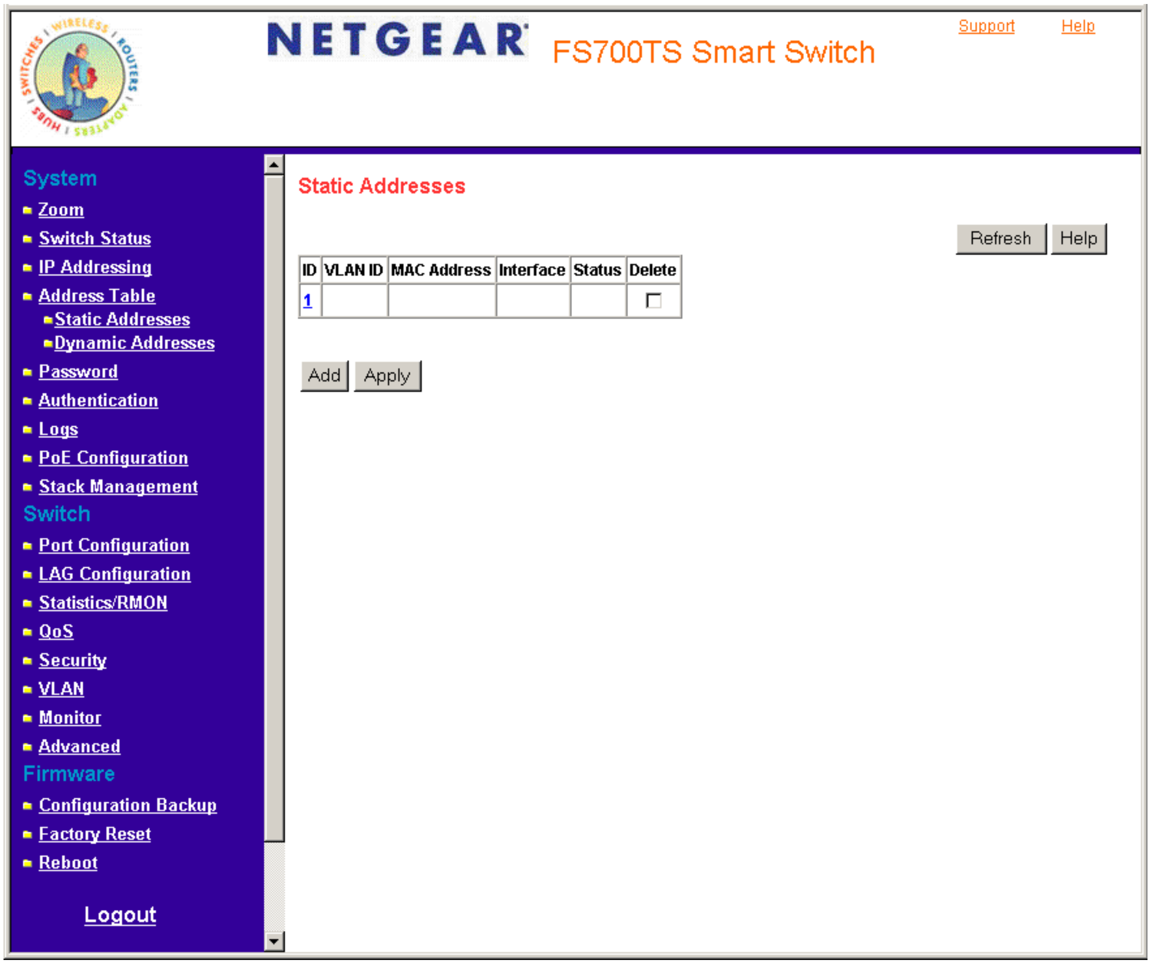
The *Defining the* Forwarding Address Tables *Page* contains parameters for defining the age interval on the device. To prevent static MAC addresses from being deleted when the device is reset, ensure that the port attached to the MAC address is locked. This section includes the following topics:

- Configuring Static Addresses
- Defining Dynamic Addresses

Configuring Static Addresses

To configure the static addresses:

1. Click **Address Table > Static Addresses**. The *Static Addresses Page* opens.



Static Addresses

ID	VLAN ID	MAC Address	Interface	Status	Delete
1					□

Figure 5 - 37: Static Addresses Page

The *Static Addresses Page* contains the following fields:

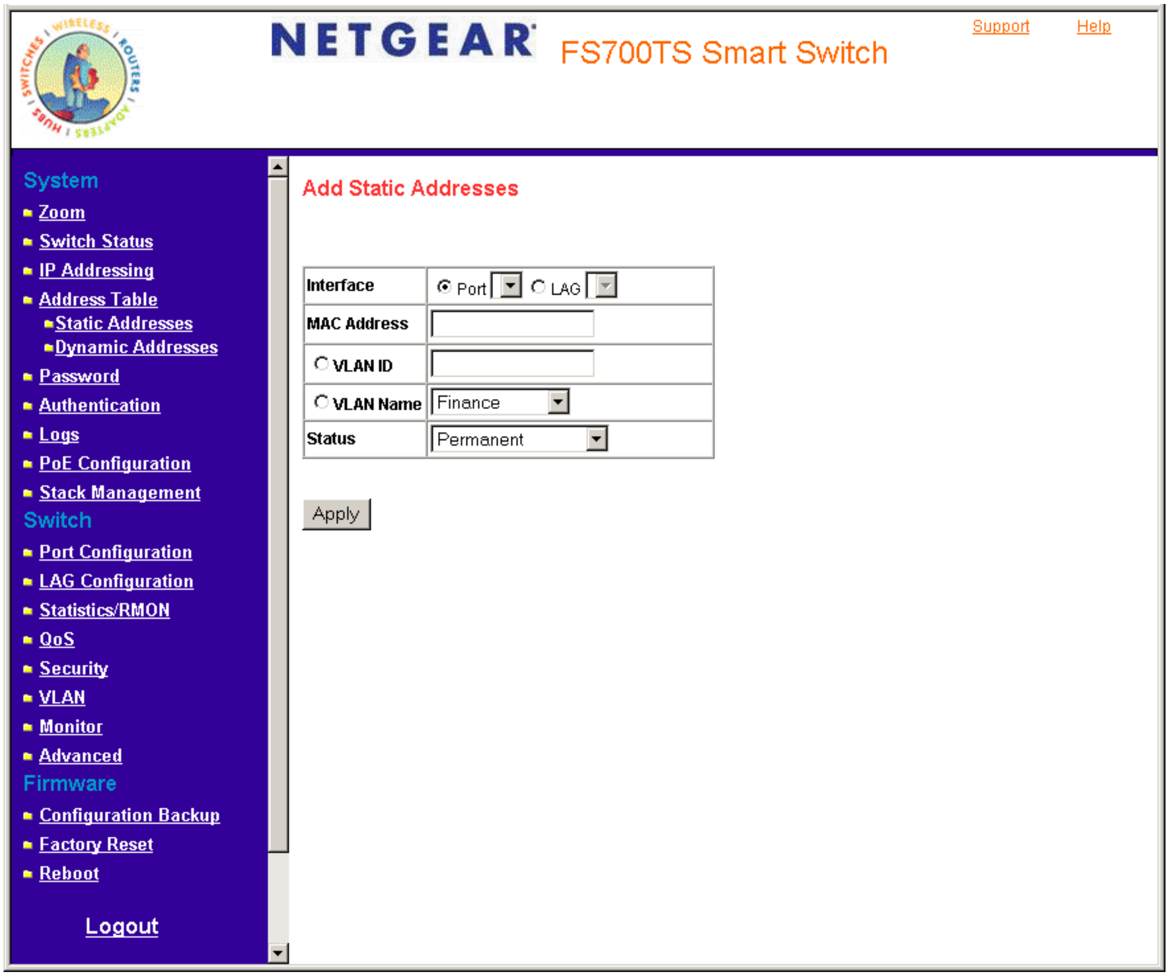
- **ID** — Indicates the stacking number.
- **VLAN ID** — Displays the VLAN ID number to which the entry refers.
- **MAC Address** — Displays the MAC address to which the entry refers.

- **Interface** — Displays the interface to which the entry refers:
- **Status** — Displays how the entry was created. The possible field values are:
  - Secure — The MAC Address is defined for locked ports.
  - Permanent — The MAC address is permanent.
  - Delete on Reset — The MAC address is deleted when the device is reset.
  - Delete on Timeout — The MAC address is deleted when a timeout occurs.
- **Delete** — Removes the entry. The possible field values are:
  - *Checked* — Removes the selected entry.
  - *Unchecked* — Maintains the current static forwarding database.

To prevent static MAC addresses from being deleted when the device is reset, ensure the port attached to the MAC address is locked.

To add a new static address entry:

1. Click **Address Table > Static Addresses**. The *Static Addresses Page* opens.
2. Click Add. The *Add Static Addresses Page* opens:



Add Static Addresses

Interface	● Port ○ LAG
MAC Address	
○ VLAN ID	
○ VLAN Name	Finance
Status	Permanent

Apply

Figure 5 - 38: Add Static Addresses Page

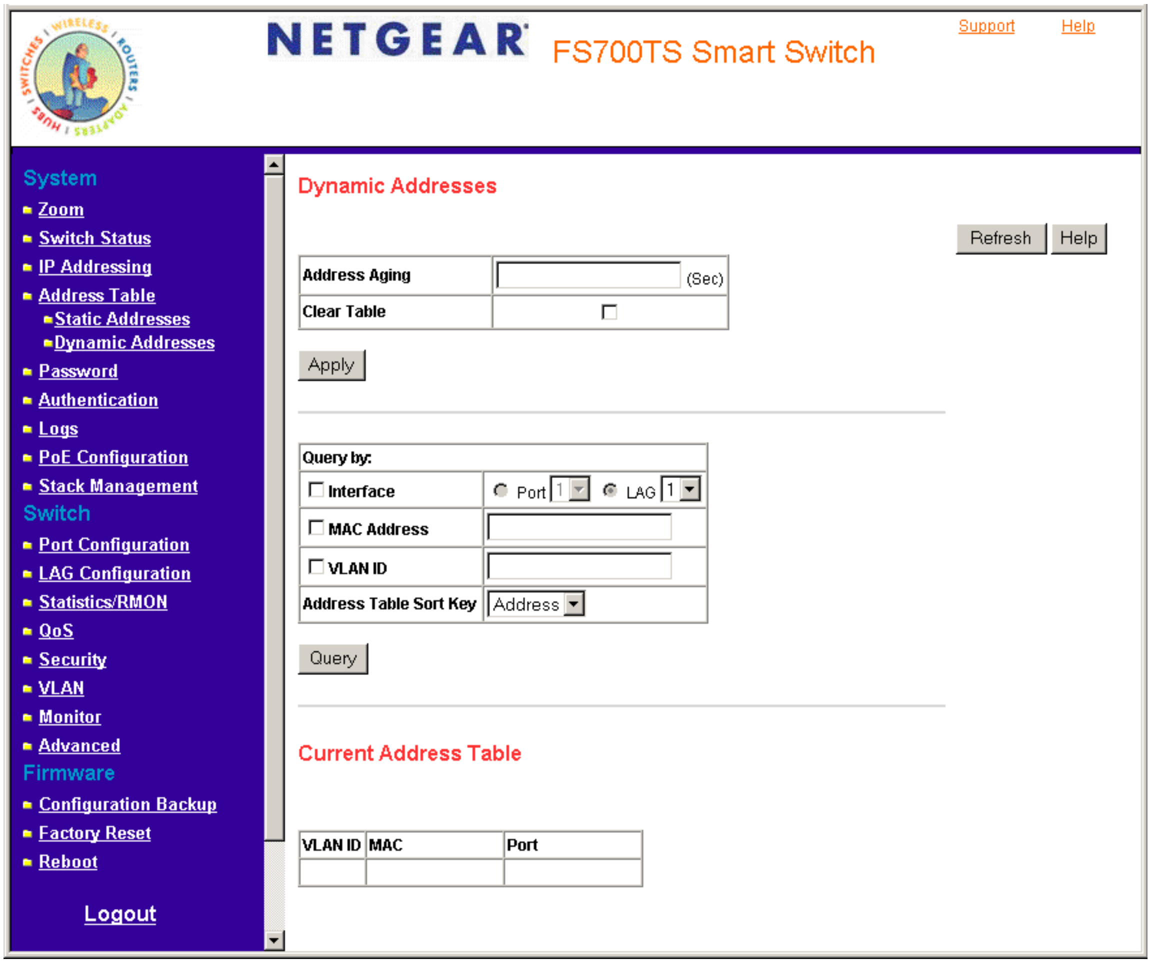
3. Define the fields.
4. Click Apply. The forwarding database information is modified and the device is updated.

Defining Dynamic Addresses

The *Dynamic Addresses Page* contains parameters for querying information in the Dynamic MAC Address Table, including the interface type, MAC addresses, VLAN, and table storing. The Dynamic MAC Address table contains information about the aging time before a dynamic MAC address is erased and includes parameters for querying and viewing the Dynamic MAC Address table. The Dynamic MAC Address table contains address parameters by which packets are directly forwarded to the ports. Interface, VLAN, and MAC Address can sort the Dynamic Address Table.

To configure the Dynamic MAC Address Table:

1. Click **Address Table > Dynamic Addresses**. The *Dynamic Addresses Page* opens.



Dynamic Addresses

Address Aging	(Sec)
Clear Table	□

Query by:	
□ Interface	○ Port 1 ● LAG 1
□ MAC Address	
□ VLAN ID	
Address Table Sort Key	Address

Current Address Table

VLAN ID	MAC	Port

Figure 5 - 39: Dynamic Addresses Page

The *Dynamic Addresses Page* contains the following fields:

- **Address Aging** — Specifies the amount of time the MAC address remains in the Dynamic MAC Address table before it is timed out if no traffic from the source is detected. The default value is 300 seconds.
- **Clear Table** — To empty the current values from the table.
- **Port** — Specifies the interface for which the table is queried. There are two interface types from which to select.
- **MAC Address** — Specifies the MAC address for which the table is queried.
- **VLAN ID** — Specifies the VLAN ID for which the table is queried.
- **Address Table Sort Key** —Specifies the means by which the Dynamic MAC Address Table is sorted. The address table can be sorted by address, VLAN, or interface.
- **VLAN ID** — Shows the ID of the current VLAN
- **MAC** — Displays the current MAC address.
- **Port** — Indicates the interface for which the table is currently queried

2. Define the fields.

3. Click Apply. The Dynamic Address Aging field is defined and the device is updated.

To query the Dynamic MAC Address Table:

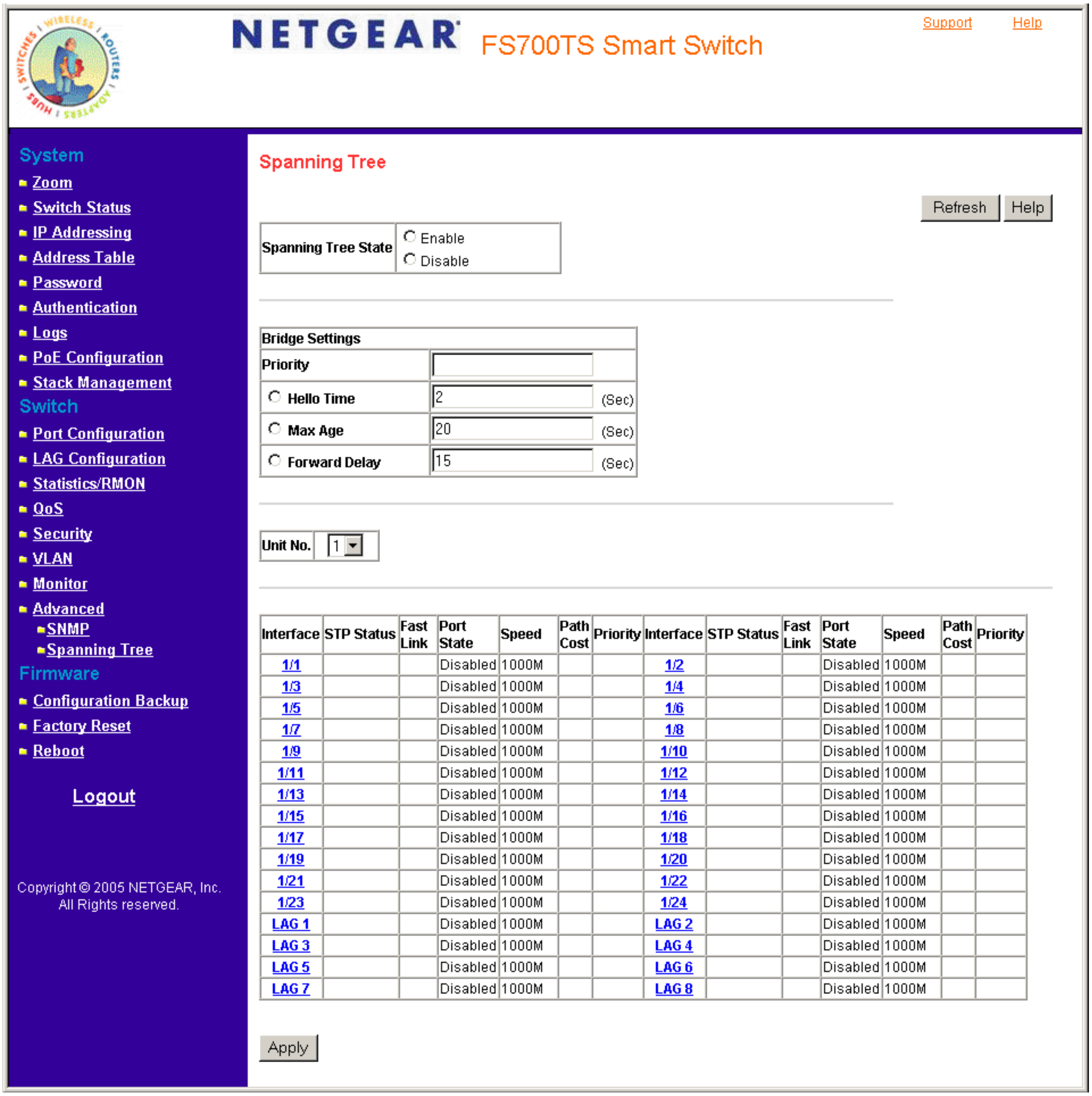
1. Click **Address Table > Dynamic Addresses**. The *Dynamic Addresses Page* opens.
2. Select a port, MAC Address, and VLAN ID.
3. Select an Address Table Sort Key.
4. Click Query. The Dynamic MAC Address Table is queried and the results are displayed.

Configuring the Spanning Tree Protocol

Spanning Tree Protocol (STP) provides tree topography for any arrangement of bridges. STP also provides a single path between end stations on a network, eliminating loops. Loops occur when alternate routes exist between hosts. Loops in an extended network can cause bridges to forward traffic indefinitely, resulting in increased traffic and reducing network efficiency.

To configure STP on the device:

1. Click **Advanced Setup > Spanning Tree**. The *Spanning Tree Page* opens:



Spanning Tree

Spanning Tree State	○ Enable ○ Disable

Bridge Settings		
Priority		
○ Hello Time	2	(Sec)
○ Max Age	20	(Sec)
○ Forward Delay	15	(Sec)

Unit No. 1

Interface	STP Status	Fast Link	Port State	Speed	Path Cost	Priority	Interface	STP Status	Fast Link	Port State	Speed	Path Cost	Priority
1/1			Disabled	1000M			1/2			Disabled	1000M		
1/3			Disabled	1000M			1/4			Disabled	1000M		
1/5			Disabled	1000M			1/6			Disabled	1000M		
1/7			Disabled	1000M			1/8			Disabled	1000M		
1/9			Disabled	1000M			1/10			Disabled	1000M		
1/11			Disabled	1000M			1/12			Disabled	1000M		
1/13			Disabled	1000M			1/14			Disabled	1000M		
1/15			Disabled	1000M			1/16			Disabled	1000M		
1/17			Disabled	1000M			1/18			Disabled	1000M		
1/19			Disabled	1000M			1/20			Disabled	1000M		
1/21			Disabled	1000M			1/22			Disabled	1000M		
1/23			Disabled	1000M			1/24			Disabled	1000M		
LAG 1			Disabled	1000M			LAG 2			Disabled	1000M		
LAG 3			Disabled	1000M			LAG 4			Disabled	1000M		
LAG 5			Disabled	1000M			LAG 6			Disabled	1000M		
LAG 7			Disabled	1000M			LAG 8			Disabled	1000M		

Figure 5 - 40: Spanning Tree Page

The *Spanning Tree Page* contains the following fields:

- **Spanning Tree State** — Indicates whether STP is enabled on the device. The possible field values are:
  - *Enable* — Enables STP on the device.
  - *Disable* — Disables STP on the device.

- **Hello Time (1-10)** — Specifies the device Hello Time. The Hello Time indicates the amount of time in seconds a Root The device waits between configuration messages. The default is 2 seconds.
- **Max Age (6-40)** — Specifies the device Maximum Age Time. The Maximum Age Time is the amount of time in seconds a bridge waits before sending configuration messages. The default Maximum Age Time is 20 seconds.
- **Forward Delay (4-30)** — Specifies the device Forward Delay Time. The Forward Delay Time is the amount of time in seconds a bridge remains in a listening and learning state before forwarding packets. The default is 15 seconds.
- **Unit Number** — Indicates the stacking member for which the STP information is displayed.
- **Interface** — Indicates the port or LAG for which the STP information is displayed.
- **Fast Link** — Indicates if Fast Link is enabled on the port. If Fast Link mode is enabled for a port, the Port State is automatically placed in the Forwarding state when the port link is up. Fast Link optimizes the STP protocol convergence. STP convergence can take 30-60 seconds in large networks. The possible field values are:
  - Enable — Indicates that Fast Link is enabled on the port.
  - Disable — Indicates that Fast Link is disabled on the port.
- **Port State** — Displays the current STP state of a port. If enabled, the port state determines what forwarding action is taken on traffic. Possible port states are:
  - Forwarding — Indicates that STP is enabled on the port, and the port is forwarding packets based on the STP topology.
  - Disabled — Indicates that STP is currently disabled on the port. The port forwards traffic while learning MAC addresses.
  - Blocking — Indicates that the port is currently blocked and cannot forward traffic or learn MAC addresses. Blocking is displayed when STP is enabled.
- **Speed** — Indicates the speed at which the port is operating.
- **Path Cost** — Specifies the method used to assign default path cost to STP ports. The possible field values are:
  - *Short* — Specifies 1 through 65,535 range for port path cost. This is the default value.
  - *Long* — Specifies 1 through 200,000,000 range for port path cost. The default path cost assigned to an interface varies according to the selected method (*Hello Time*, *Max Age*, or *Forward Delay*).
- **Priority** — Specifies the bridge priority value. When switches or bridges are running STP, each is assigned a priority. After exchanging BPDUs, the device with the lowest priority value becomes the Root Bridge. The default value is 32768. The port priority value is provided in increments of 4096.
- **BPDU Handling** — Determines how BPDU packets are managed when STP is disabled on the port or device. BPDUs are used to transmit spanning tree information. The possible field values are:
  - *Filtering* — Filters BPDU packets when spanning tree is disabled on an interface. This is the default value.
  - *Flooding* — Floods BPDU packets when spanning tree is disabled on an interface.
- **Priority (0-65535)** — Reflects the value entered in the Priority field above.

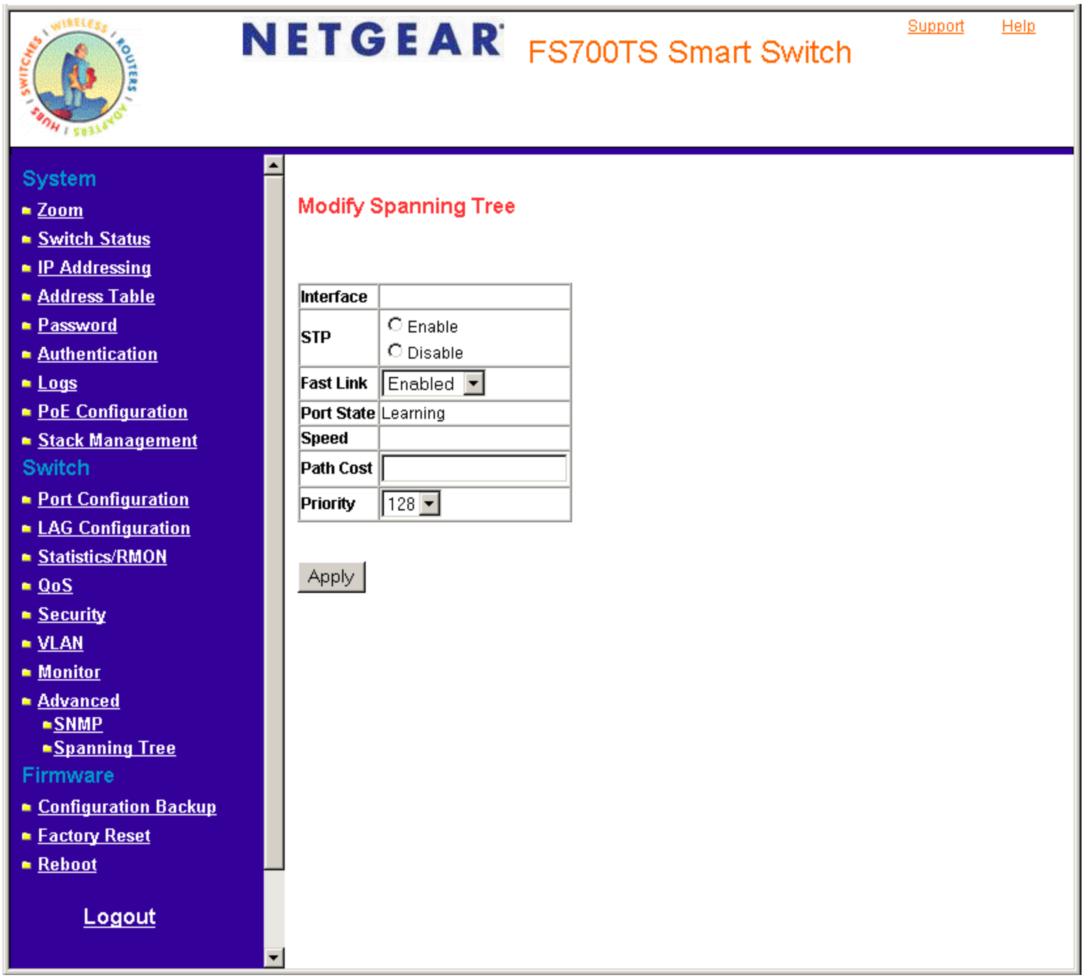
2. Select *Enable* in the *Spanning Tree State* field.
3. Select an STP type in the *STP Operation Mode* field.
4. Define the *BPDU Handling* and *Path Cost Default Values* fields.
5. Select either the *Hello Time*, *Max Age*, or *Forward Delay* field.
6. Click Apply. STP is enabled and the device is updated.

Defining STP on Interfaces

Network administrators can assign STP settings to specific interfaces using the *Modify Spanning Tree Page*. The Global LAGs section displays the STP information for Link Aggregated Groups.

To assign STP settings to an interface:

1. Click **Advanced > Spanning Tree** and click an interface. The *Modify Spanning Tree Page* opens:



Modify Spanning Tree

Interface	
STP	○ Enable ○ Disable
Fast Link	Enabled
Port State	Learning
Speed	
Path Cost	
Priority	128

Figure 5 - 41: Modify Spanning Tree Page

The *Modify Spanning Tree Page* contains the following fields:

- **Interface** — The interface for which the information is displayed.
- **STP**— Indicates if STP is enabled on the port. The possible field values are:
  - *Enable* — Enables STP on the port.
  - *Disable* — Disables STP on the port. This is the default value.
- **Fast Link** — Indicates if Fast Link is enabled on the port. If Fast Link mode is enabled for a port, the *Port State* is automatically placed in the *Forwarding* state when the port link is up. Fast Link optimizes the STP protocol convergence. STP convergence can take 30-60 seconds in large networks.
- **Port State** — Displays the current STP state of a port. If enabled, the port state determines what forwarding action is taken on traffic. Possible port states are:
  - *Disabled* — Indicates that STP is currently disabled on the port. The port forwards traffic while learning MAC addresses.
  - *Blocking* — Indicates that the port is currently blocked and cannot forward traffic or learn MAC addresses. Blocking is displayed when STP is enabled.

- **Role** — Displays the port role assigned by the STP algorithm to provide to STP paths. The possible field values are:
  - *Designated* — The port or LAG through which the designated switch is attached to the LAN.
  - *Alternate* — Provides an alternate path to the root switch from the root interface.
  - *Backup* — Provides a backup path to the designated port path toward the Spanning Tree leaves. Backup ports occur only when two ports are connected in a loop by a point-to-point link or when a LAN has two or more connections connected to a shared segment.
  - *Disabled* — The port is not participating in the Spanning Tree.
- **Speed** — Indicates the speed at which the port is operating.
- **Path Cost** — Indicates the port contribution to the root path cost. The path cost is adjusted to a higher or lower value and is used to forward traffic when a path is re-routed.
- **Priority** — Priority value of the port. The priority value influences the port choice when a bridge has two ports connected in a loop. The priority value is between 0 -240. The priority value is determined in increments of 16.

2. Select *Enable* in the *STP* field.
3. Define the fields.
4. Click Apply. STP is enabled on the interface and the device is updated.

Configuring Quality of Service

Quality of Service (QoS) provides the ability to implement QoS and priority queuing within a network. For example, certain types of traffic that require minimal delay, such as Voice, Video, and real-time traffic can be assigned a high priority queue, while other traffic can be assigned a lower priority queue. The result is an improved traffic flow for traffic with high demand. QoS is defined by:

- **Classification** — Specifies which packet fields are matched to specific values. All packets matching the user-defined specifications are classified together.
- **Action** — Defines traffic management where packet forwarding is based on packet information and packet field values such as *VLAN Priority Tag* (VPT) and *DiffServ Code Point* (DSCP).

After packets are assigned to a specific egress queue, CoS services can be assigned to the queue. Egress queues are configured with a scheduling scheme by one of the following methods:

- **Strict Priority** — Ensures that time-sensitive applications are always forwarded. Strict Priority (SP) allows the prioritization of mission-critical, time-sensitive traffic over less time-sensitive applications.
  For example, under SP, voice over IP (VoIP) traffic can be prioritized so that it is forwarded before FTP or email (SMTP) traffic.
- **Weighted Round Robin** — Ensures that a single application does not dominate the device forwarding capacity. Weighted Round Robin (WRR) forwards entire queues in a round robin order. All queues can participate in WRR, except SP queues. If the traffic flow is minimal, and SP queues do not occupy the whole bandwidth allocated to a port, the WRR queues can share the bandwidth with the SP queues. This ensures that the remaining bandwidth is distributed according to the weight ratio. If WRR is selected, the following weights are assigned to the queues: 1, 2, 4, 8.

This section contains information for defining general QoS settings, and includes the following topics:

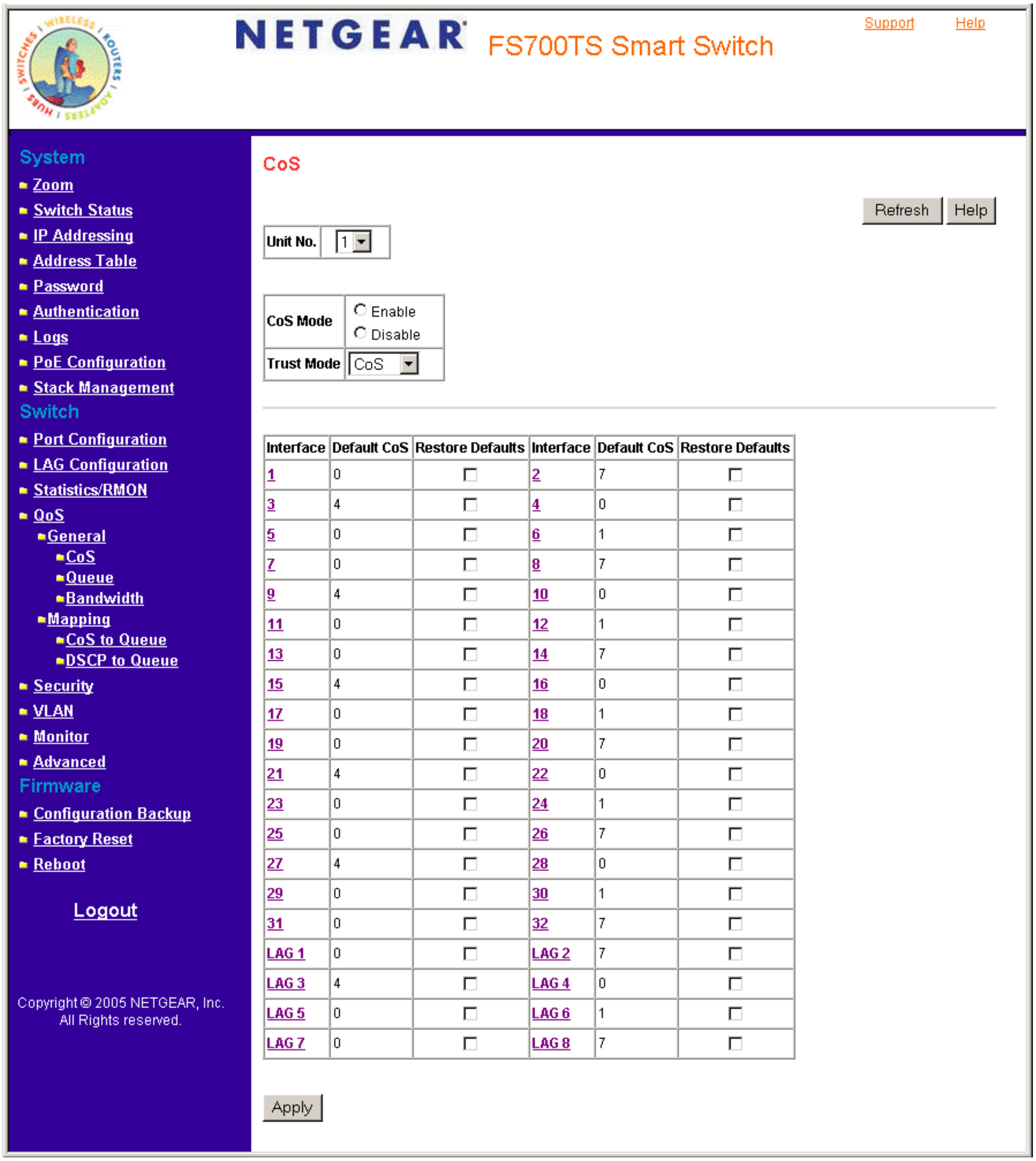
- Defining General QoS Setting
- Defining QoS Queues
- Configuring Bandwidth Settings

Defining General QoS Settings

The *CoS Page* contains information for enabling QoS globally and on specific interfaces. After QoS has been configured, the original device QoS default settings can be reassigned to the interface in the *CoS Page*.

To enable QoS:

1. Click **QoS > General > CoS**. The *CoS Page* opens:



CoS

Unit No. 1

CoS Mode ○ Enable ○ Disable

Trust Mode CoS

Interface	Default CoS	Restore Defaults	Interface	Default CoS	Restore Defaults
1	0	□	2	7	□
3	4	□	4	0	□
5	0	□	6	1	□
7	0	□	8	7	□
9	4	□	10	0	□
11	0	□	12	1	□
13	0	□	14	7	□
15	4	□	16	0	□
17	0	□	18	1	□
19	0	□	20	7	□
21	4	□	22	0	□
23	0	□	24	1	□
25	0	□	26	7	□
27	4	□	28	0	□
29	0	□	30	1	□
31	0	□	32	7	□
LAG 1	0	□	LAG 2	7	□
LAG 3	4	□	LAG 4	0	□
LAG 5	0	□	LAG 6	1	□
LAG 7	0	□	LAG 8	7	□

Figure 5 - 42: CoS Page

The *CoS Page* contains the following:

- **Unit No.** — Displays the stacking member for which the QoS information is displayed.
- **CoS Mode** — Determines whether QoS is enabled on the device. The possible values are:
  - Enable — Enables QoS on the interface.

  - Disable — Disables QoS on the interface.

- **Trust Mode** — Defines which packet fields to use for classifying packets entering the device. When no rules are defined, the traffic containing the predefined packet CoS field is mapped according to the relevant trust modes table. Traffic not containing a predefined packet field is mapped to best effort. The possible Trust Mode field values are:
  - CoS — Classifies traffic based on the CoS (VPT) tag value.
  - DSCP — Classifies traffic based on the DSCP tag value.
  - None — Indicates that Trust is not enabled on the device.
- **Interface** — Displays the interface for which the global QoS parameters are defined.
  - Port — Selects the port for which the global QoS parameters are defined.
  - LAG — Selects the LAG for which the global QoS parameters are defined.
- **Default CoS for Incoming Traffic** — Determines the default CoS value for incoming packets for which a VLAN tag is not defined. The possible field values are 0-7. The default CoS value is 0.

2. Select *Enable* in the Quality of Service field.
3. Define the *Trust Mode* field.
4. Click Apply. Quality of Service is enabled on the device.

Defining QoS Queues

The Defining QoS Queues *Page* contains fields for defining the QoS queue forwarding types.

To set the queue settings:

1. Click **QoS > General > Queue**. The *Queue Page* opens.

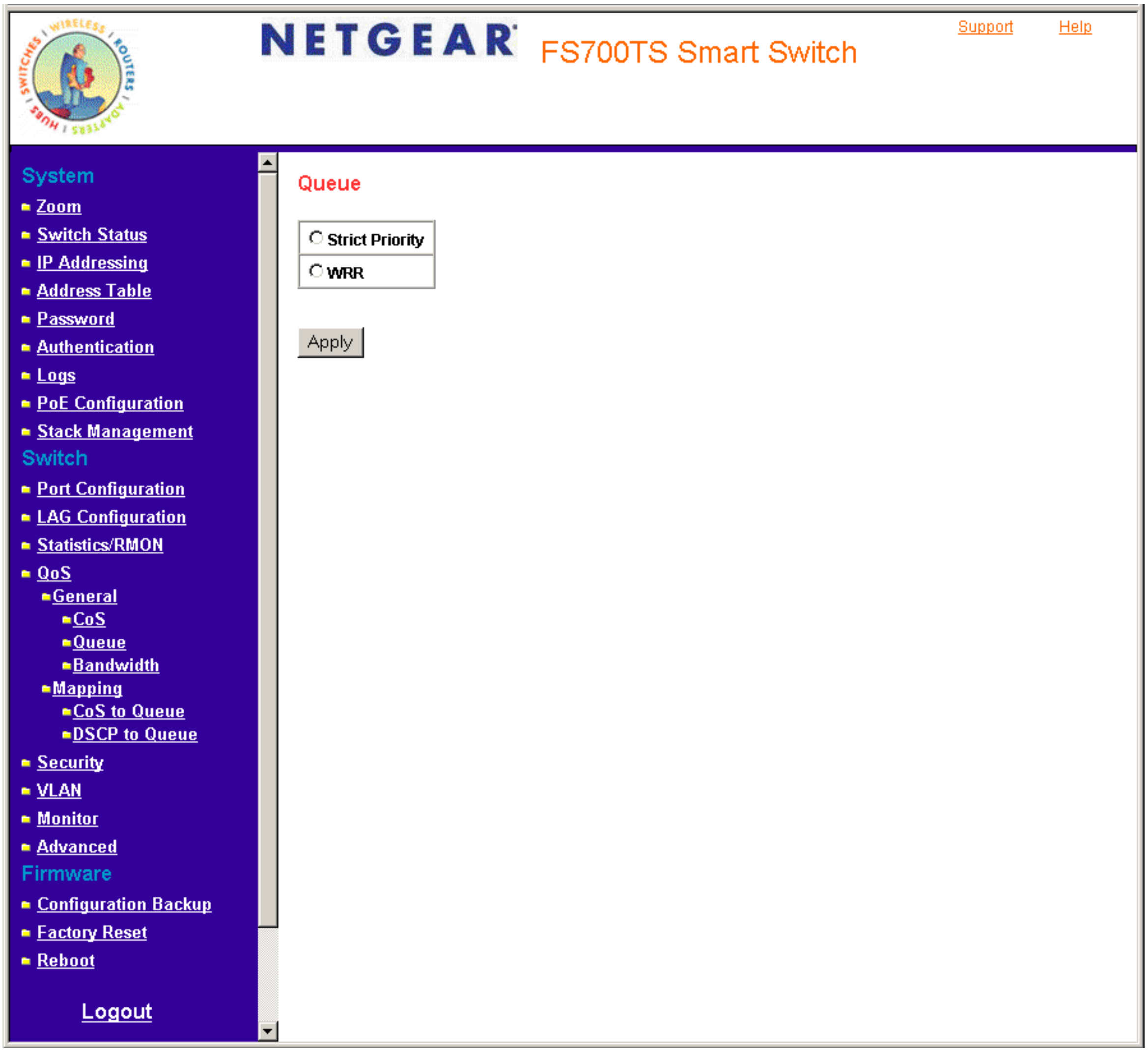


Figure 5 - 43: Queue Page

The *Queue Page* contains the following fields:

- **Strict Priority** — Specifies whether traffic scheduling is based strictly on the queue priority.
- **WRR** — Assigns WRR weights to queues. This field is enabled only for queues in WRR queue mode.

2. Select *Strict Priority* or *WRR* Fields.

3. Click Apply. The queue settings are set and the device is updated.

Configuring Bandwidth Settings

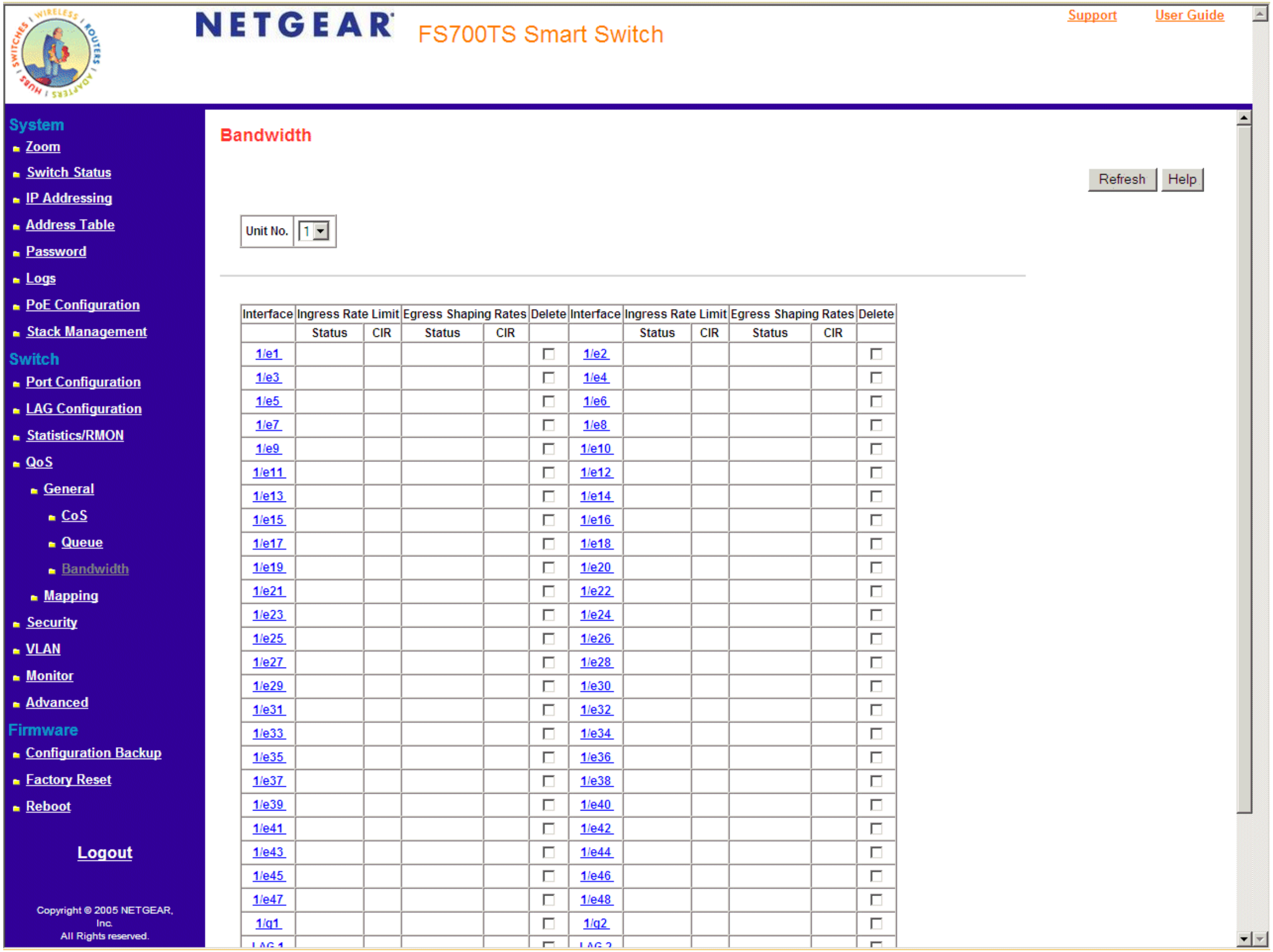
After packets are assigned to a queue, a scheduling scheme can be assigned to an interface, using either:

- **Committed Burst Size** — Indicates the maximum number of data bits transmitted within a specific time interval.
- **Committed Information Rate** — Indicates the rate that data is transmitted. The rate is averaged over a minimum time increment**.**

The *Bandwidth Page* allows network managers to define the bandwidth settings for a specified egress interface. Modifying queue scheduling affects the queue settings globally. Queue shaping can be based per queue and/or per interface. Shaping is determined by the lower specified value. The queue shaping type is selected in the *Bandwidth Page.*

To define bandwidth settings:

1. Click **QoS > General > Bandwidth**. The *Bandwidth Page* opens:



Bandwidth

Unit No. 1

Interface	Ingress Rate Limit		Egress Shaping Rates		Delete	Interface	Ingress Rate Limit		Egress Shaping Rates		Delete
	Status	CIR	Status	CIR			Status	CIR	Status	CIR	
1/e1					□	1/e2					□
1/e3					□	1/e4					□
1/e5					□	1/e6					□
1/e7					□	1/e8					□
1/e9					□	1/e10					□
1/e11					□	1/e12					□
1/e13					□	1/e14					□
1/e15					□	1/e16					□
1/e17					□	1/e18					□
1/e19					□	1/e20					□
1/e21					□	1/e22					□
1/e23					□	1/e24					□
1/e25					□	1/e26					□
1/e27					□	1/e28					□
1/e29					□	1/e30					□
1/e31					□	1/e32					□
1/e33					□	1/e34					□
1/e35					□	1/e36					□
1/e37					□	1/e38					□
1/e39					□	1/e40					□
1/e41					□	1/e42					□
1/e43					□	1/e44					□
1/e45					□	1/e46					□
1/e47					□	1/e48					□
1/g1					□	1/g2					□
LAG 1					□	LAG 2					□

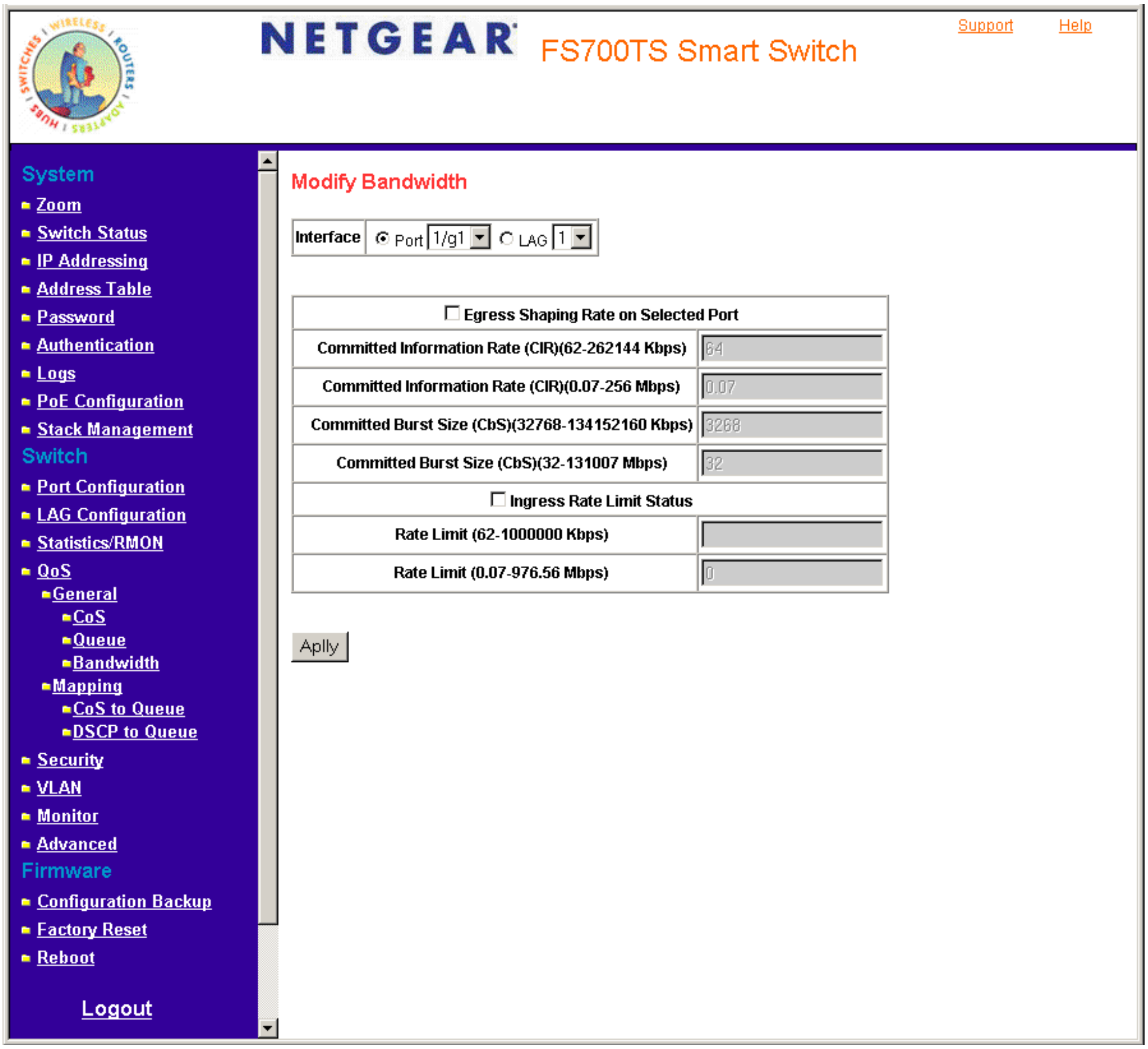
Figure 5 - 44: Bandwidth Page

The *Bandwidth Page* contains the following fields:

- **Interface** — Indicates the stacking members for which the bandwidth settings are displayed.
- **Status** — Indicates if rate limiting is enabled on the interface. The possible field values are:
  - Enable — Enables rate limiting on the interface.
  - Disable — Disables rate limiting on the interface. This is the default value.
- **Rate Limit** — Displays the amount of bandwidth assigned to the interface.
- **Delete** — Deletes the bandwidth settings from the interface. The possible field values are:

- Checked — Deletes the bandwidth settings from the selected interface.
- Unchecked — Maintains the bandwidth settings from the selected interface. This is the default value.

2. Click an interface. The *Modify Bandwidth Page* opens.



Modify Bandwidth

Interface ● Port 1/g1 ○ LAG 1

□ Egress Shaping Rate on Selected Port	
Committed Information Rate (CIR)(62-262144 Kbps)	64
Committed Information Rate (CIR)(0.07-256 Mbps)	0.07
Committed Burst Size (CbS)(32768-134152160 Kbps)	3268
Committed Burst Size (CbS)(32-131007 Mbps)	32
□ Ingress Rate Limit Status	
Rate Limit (62-1000000 Kbps)	
Rate Limit (0.07-976.56 Mbps)	0

Aplly

Figure 5 - 45: Modify Bandwidth Page

In addition to the fields in the *Bandwidth Page* the *Modify Bandwidth Page* contains the following additional fields:

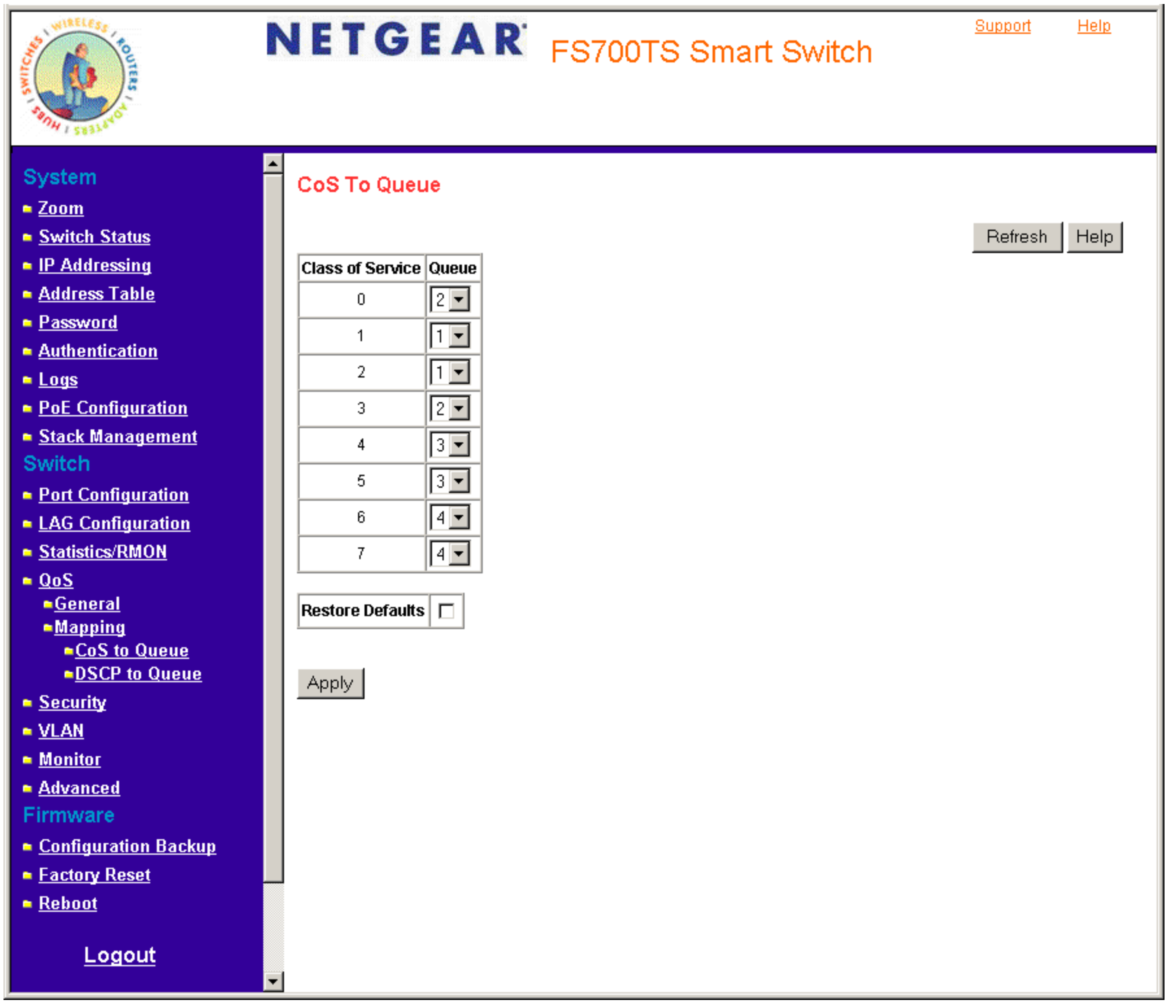
- **Egress Shaping Rate on Selected Port** — Determines the egress port bandwidth settings for the selected interface. The possible field values are:
  - Committed Information Rate (CIR)(62-262144 Kbps) — Defines the CIR in kilobytes per seconds. The possible field range is 62 -262144 Kbps.
  - Committed Information Rate (CIR) (0.07-256 Mbps) — Defines the CIR in megabytes per seconds. The possible field range is 0.07 -256 Mbps.
- **Ingress Rate Limit Status** — Determines the ingress port bandwidth settings for the selected interface.
  - Rate Limit (62-1000000 Kbps) — Defines the interface rate limiting to kilobytes per second. The field range is 62-1000000 Kbps.
  - Rate Limit (0.07-976.56 Mbps) — Defines the interface rate limiting to Megabytes per second. The field range is 0.07-976.56 Mbps.

3. Define the fields.
4. Click Apply. The bandwidth settings are saved to interface and the device is updated.

Mapping CoS Values to Queues

The *CoS to Queue Page* contains fields for mapping CoS values to traffic queues. To map CoS values to queues:

1. Click **QoS > Mapping > CoS to Queue**. The *CoS to Queue Page* opens.



CoS To Queue

Class of Service	Queue
0	2
1	1
2	1
3	2
4	3
5	3
6	4
7	4

Restore Defaults □

Figure 5 - 46: CoS to Queue Page

The *CoS to Queue Page* contains the following fields:

- **Class of Service** — Specifies the CoS priority tag values, where zero is the lowest and 7 is the highest.
- **Queue** — Defines the traffic forwarding queue to which the CoS priority is mapped. Eight traffic priority queues are supported.
- **Restore Defaults** — Restores the device factory defaults for mapping CoS values to a forwarding queue.

2. Define the queue number in the *Queue* field next to the required CoS value.

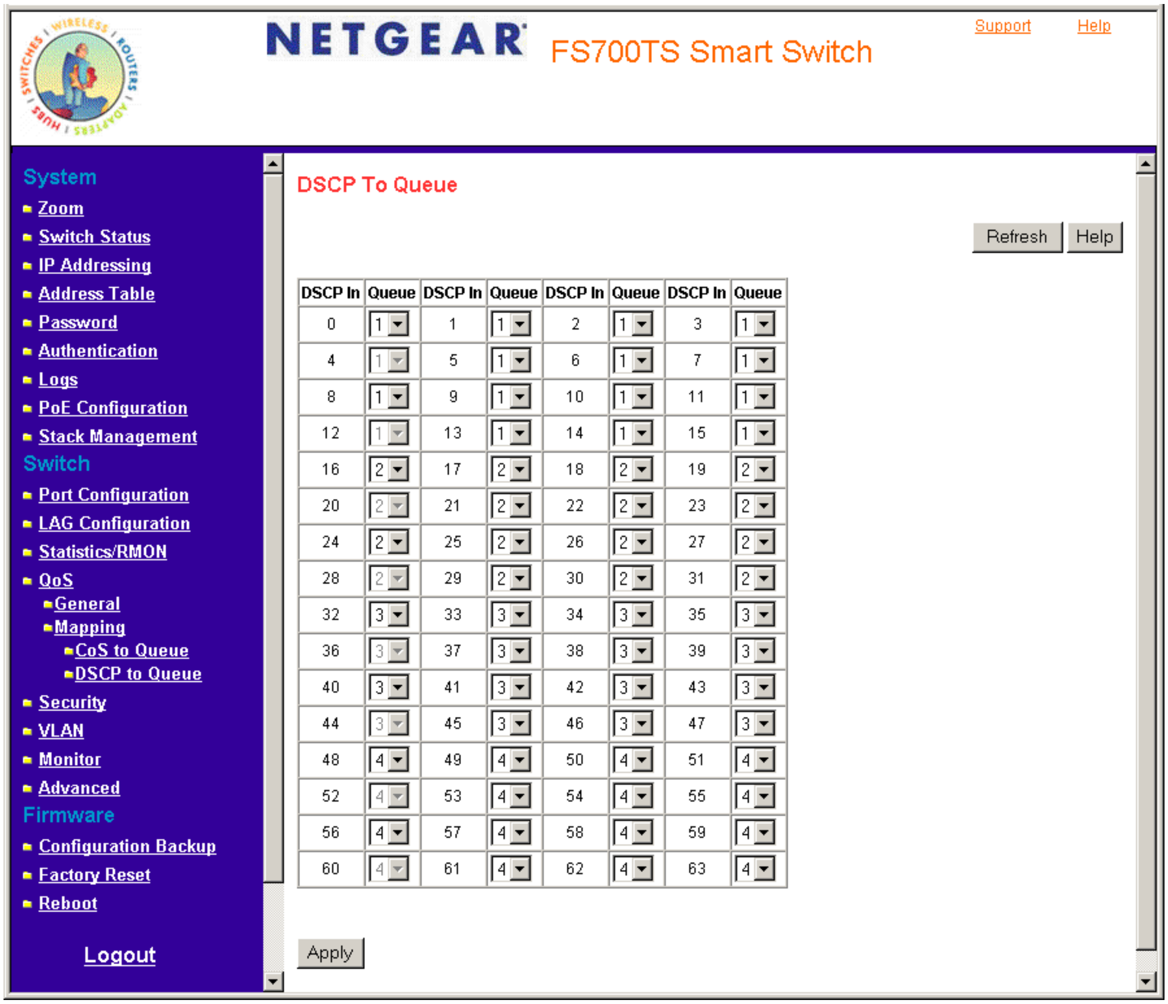
3. Click Apply. The CoS value is mapped to a queue and the device is updated.

Mapping DSCP Values to Queues

The *DSCP to Queue Page* contains fields for mapping DSCP settings to traffic queues. For example, a packet with a DSCP tag value of 3 can be assigned to queue 2.

To map CoS values to queues:

1. Click **QoS > General > Mapping > DSCP to Queue**. The *DSCP to Queue Page* opens.



DSCP In	Queue	DSCP In	Queue	DSCP In	Queue	DSCP In	Queue
0	1	1	1	2	1	3	1
4	1	5	1	6	1	7	1
8	1	9	1	10	1	11	1
12	1	13	1	14	1	15	1
16	2	17	2	18	2	19	2
20	2	21	2	22	2	23	2
24	2	25	2	26	2	27	2
28	2	29	2	30	2	31	2
32	3	33	3	34	3	35	3
36	3	37	3	38	3	39	3
40	3	41	3	42	3	43	3
44	3	45	3	46	3	47	3
48	4	49	4	50	4	51	4
52	4	53	4	54	4	55	4
56	4	57	4	58	4	59	4
60	4	61	4	62	4	63	4

Figure 5 - 47: DSCP to Queue Page

The *DSCP to Queue Page* contains the following fields:

- **DSCP In** — Displays the incoming packet's DSCP value.
- **Queue** — Specifies the traffic-forwarding queue to which the DSCP priority is mapped. Four traffic priority queues are supported.

2. Define the queue number in the *Queue* field next to the required DSCP value.

3. Click Apply. The DSCP value is mapped to a queue and the device is updated.

Configuring SNMP Security

Simple Network Management Protocol (SNMP) provides a method for managing network devices. The device supports the following SNMP versions:

- SNMP v1 and v2c
- SNMP version 3

The SNMP agents maintain a list of variables that are used to manage the device. The variables are defined in the *Management Information Base* (MIB). The SNMP agent defines the MIB specification format, as well as the format used to access the information over the network. Access strings control access rights to the SNMP agents.

SNMP v3 applies access control and a new traps mechanism. In addition, User Security Model (USM) parameters are defined for SNMPv3, including:

- **Authentication** — Provides data integrity and data origin authentication.
- **Privacy** — Protects against the disclosure of message content. Cipher Block-Chaining (CBC) is used for encryption. Either authentication is enabled on an SNMP message, or both authentication and privacy are enabled on an SNMP message. However, privacy cannot be enabled without authentication.
- **Timeliness** — Protects against message delay or message redundancy. The SNMP agent compares the incoming message to the message time information.
- **Key Management** — Defines key generation, key updates, and key use.

The device supports SNMP notification filters based on *Object IDs* (OIDs). OIDs are used by the system to manage device features.

SNMP v3 supports the following features:

- Security
- Feature Access Control
- Traps

The device generates copy traps.

This section contains the following topics:

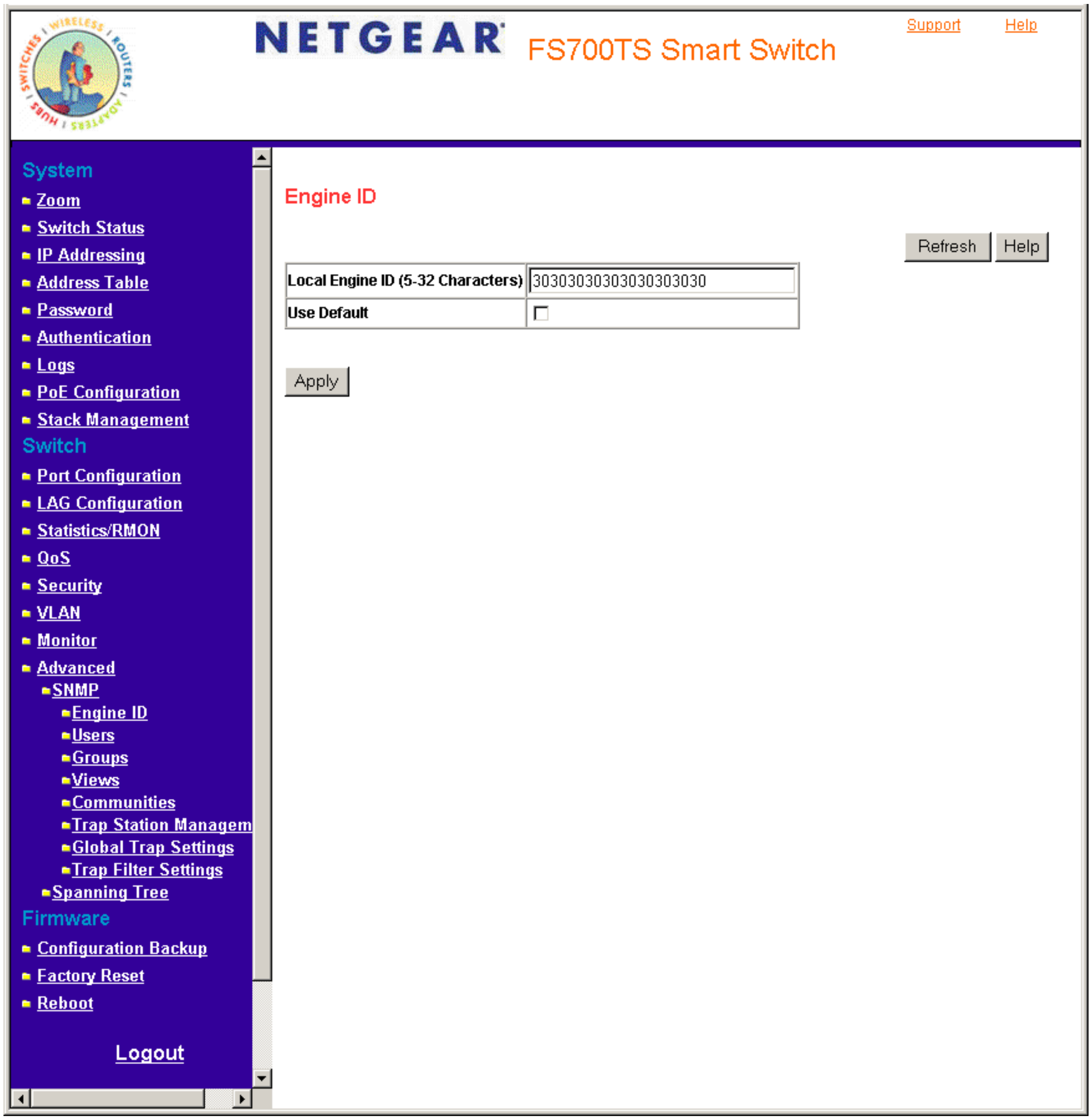
- Defining SNMP Engine ID
- Defining SNMP Users
- Defining SNMP Views
- Defining SNMP Communities
- Trap Station Management
- Global Trap Settings
- Trap Filter Settings

Defining SNMP Engine ID

The *Engine ID Page* allows network managers to define the SNMP Engine ID and allows network managers to assign the default parameters to SNMP.

To define the Local Engine ID:

1. Click **Advanced > SNMP > Engine ID**. The *Engine ID Page* opens:



Engine ID

Local Engine ID (5-32 Characters)	30303030303030303030
Use Default	□

Figure 5 - 48: Engine ID Page

The *Engine ID Page* contains the following fields:

- **Local Engine ID (0-32 Characters)** — Displays the local device Engine ID. The field value is a hexadecimal string. Each byte in hexadecimal character strings is two hexadecimal digits. Each digit can be separated by a period or a colon. The Engine ID must be defined before SNMPv3 is enabled.
- **Use Default** — Uses the device-generated Engine ID. The default Engine ID is based on the device MAC address and is defined per standard as:
  - First 4 octets — first bit = 1, the rest is IANA Enterprise number.
  - Fifth octet — Set to 3 to indicate the MAC address that follows.
  - Last 6 octets — MAC address of the device.

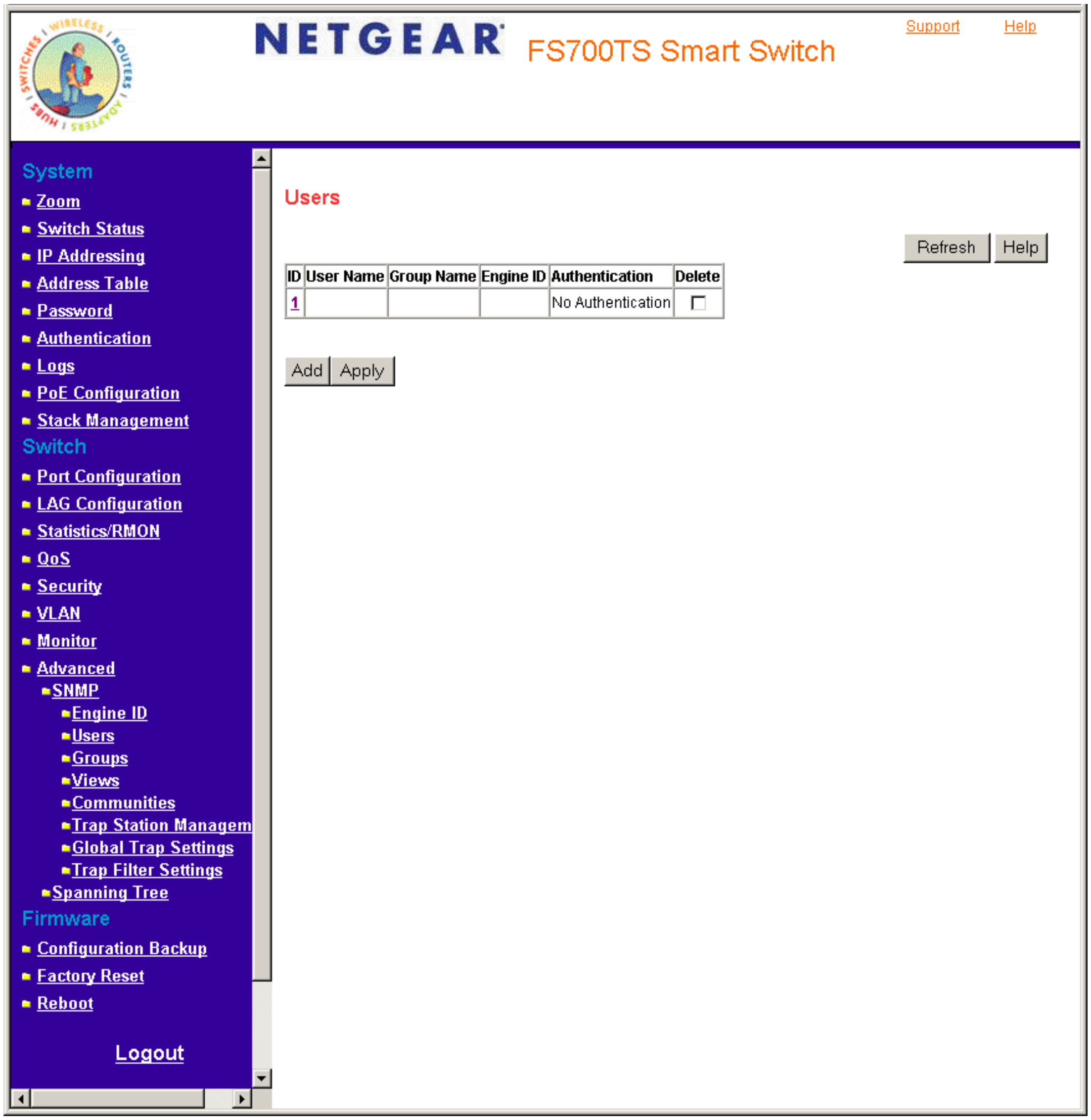
2. Define the Local Engine ID and Use Default fields.

3. Click Apply. The SNMP global security parameters are set and the device is updated.

Defining SNMP Users

The *SNMP Users Page* provides information for creating SNMP groups and assigning SNMP access control privileges to SNMP groups. Groups allow network managers to assign access rights to specific device features or feature aspects. To define an SNMP group:

1. Click **Advanced > SNMP > Users**. The *SNMP Users Page* opens:



Users

ID	User Name	Group Name	Engine ID	Authentication	Delete
1				No Authentication	□

Figure 5 - 49: SNMP Users Page

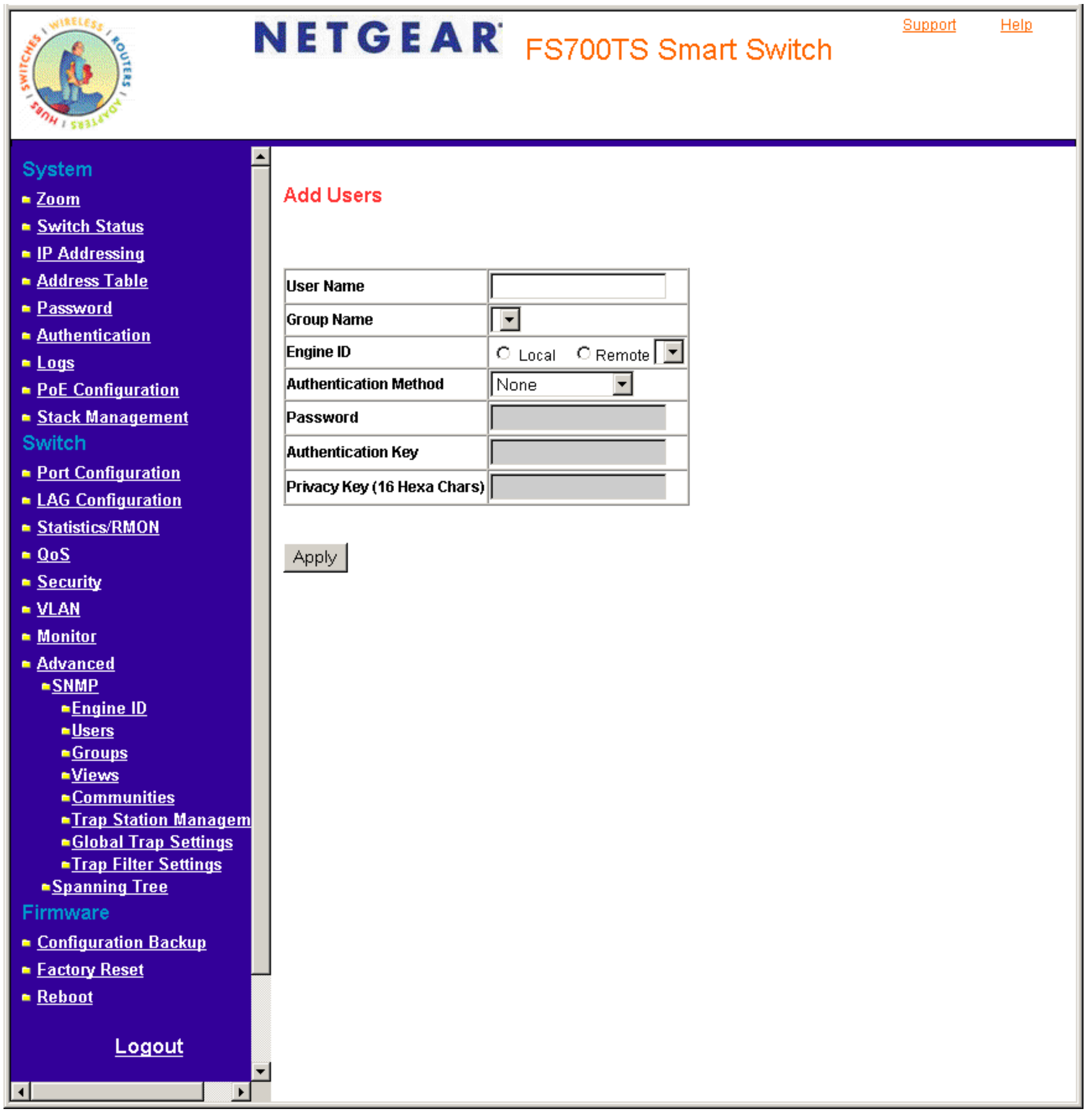
The *SNMP Users Page* contains the following fields:

- **ID** – Displays the table entry number.
- **User Name** — Contains a list of user-defined user names. The field range is up to 30 alphanumeric characters.
- **Group Name** — Contains a list of user-defined SNMP groups. SNMP groups are defined in the *SNMP Group Profile Page*.
- **Engine ID** — Displays either the local or remote SNMP entity to which the user is connected. Changing or removing the local SNMP Engine ID deletes the SNMPv3 user database.
  - Local — Indicates that the user is connected to a local SNMP entity.

- Remote — Indicates that the user is connected to a remote SNMP entity. If the Engine ID is defined, remote devices receive inform messages.

- **Authentication** — Displays the method used to authenticate users. The possible field values are:
  - MD5 Key — Users are authenticated using the HMAC-MD5 algorithm.
  - SHA Key — Users are authenticated using the HMAC-SHA-96 authentication level.
  - MD5 Password — The HMAC-MD5-96 password is used for authentication. The user should enter a password.
  - SHA Password — Users are authenticated using the HMAC-SHA-96 authentication level. The user should enter a password.
  - No Authentication — No user authentication is used.
- **Delete** — Removes users from a specified group. The possible field values are:
  - Checked — Removes the selected user.
  - Unchecked — Maintains the list of users.

2. Click Add. The *Add SNMP Users Page* opens:



Add Users

User Name	
Group Name	
Engine ID	○ Local ○ Remote
Authentication Method	None
Password	
Authentication Key	
Privacy Key (16 Hexa Chars)	

Apply

Figure 5 - 50: Add SNMP Users Page

3. Define the fields.

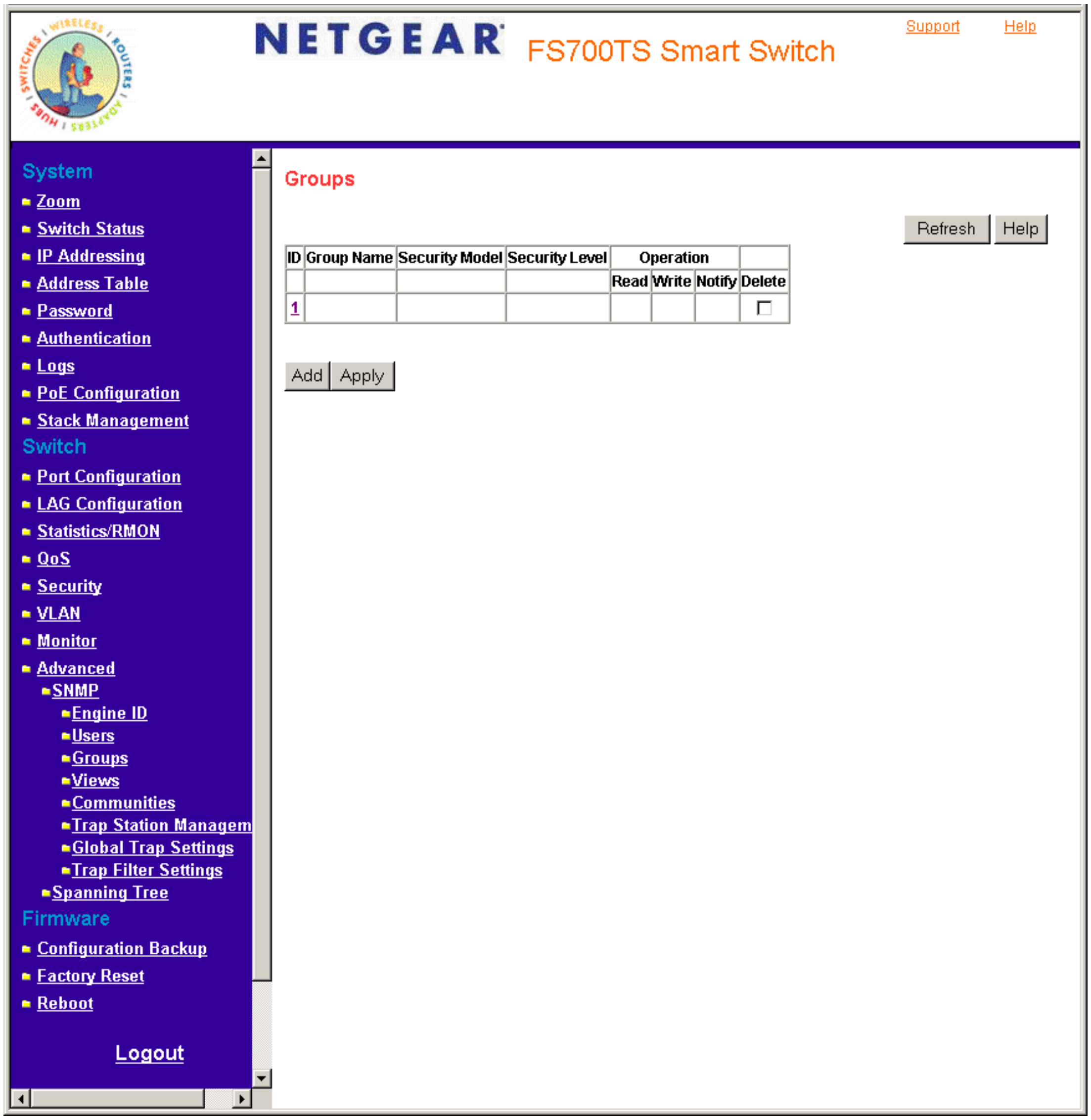
4. Click Apply. The SNMP user is defined and the device is updated.

Defining SNMP Groups

The *Groups Page* provides information for creating SNMP groups and assigning SNMP access control privileges to SNMP groups. Groups allow network managers to assign access rights to specific device features or feature aspects.

To define an SNMP group:

1. Click **Advanced SNMP > Groups.** The *Groups Page* opens:



Groups

ID	Group Name	Security Model	Security Level	Operation			
				Read	Write	Notify	Delete
1							□

Figure 5 - 51: Groups Page

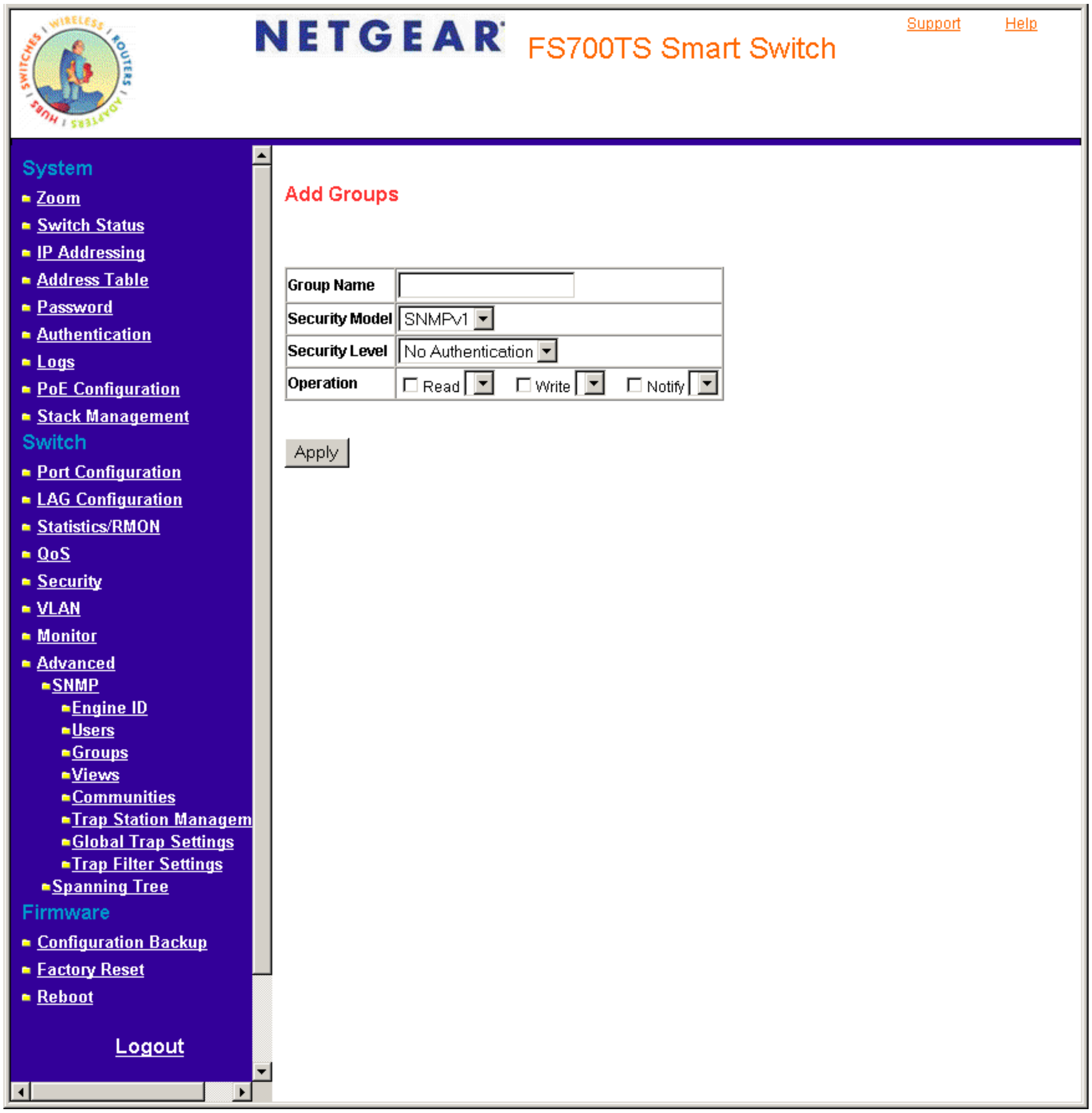
The *Groups Page* contains the following fields:

- **ID** – Indicates the stacking number
- **Group Name** — Displays the user-defined group to which access control rules are applied. The field range is up to 30 characters.
- **Security Model** — Defines the SNMP version attached to the group. The possible field values are:
  - SNMPv1 — SNMPv1 is defined for the group.
  - SNMPv2c — SNMPv2c is defined for the group.
  - SNMPv3 — SNMPv3 is defined for the group.
- **Security Level** — Defines the security level attached to the group. Security levels apply to SNMPv3 only. The possible field values are:

- No Authentication — Indicates that neither the Authentication nor the Privacy security levels are assigned to the group.
- Authentication — Authenticates SNMP messages and ensures that the SNMP message's origin is authenticated.
- Privacy — Encrypts SNMP messages.

- **Operation** — Defines the group access rights. The possible field values are:
  - Read — Management access is restricted to read-only. Changes cannot be made to the assigned SNMP view.
  - Write — Management access is read-write. Changes can be made to the assigned SNMP view.
  - Notify — Sends traps for the assigned SNMP view.
- **Delete** — Removes SNMP groups. The possible field values are:
  - Checked — Removes the selected SNMP group.
  - Unchecked — Maintains the SNMP groups.

2. Click Add. The *Add Groups Page* opens:



Add Groups

Group Name	
Security Model	SNMPv1
Security Level	No Authentication
Operation	□ Read □ Write □ Notify

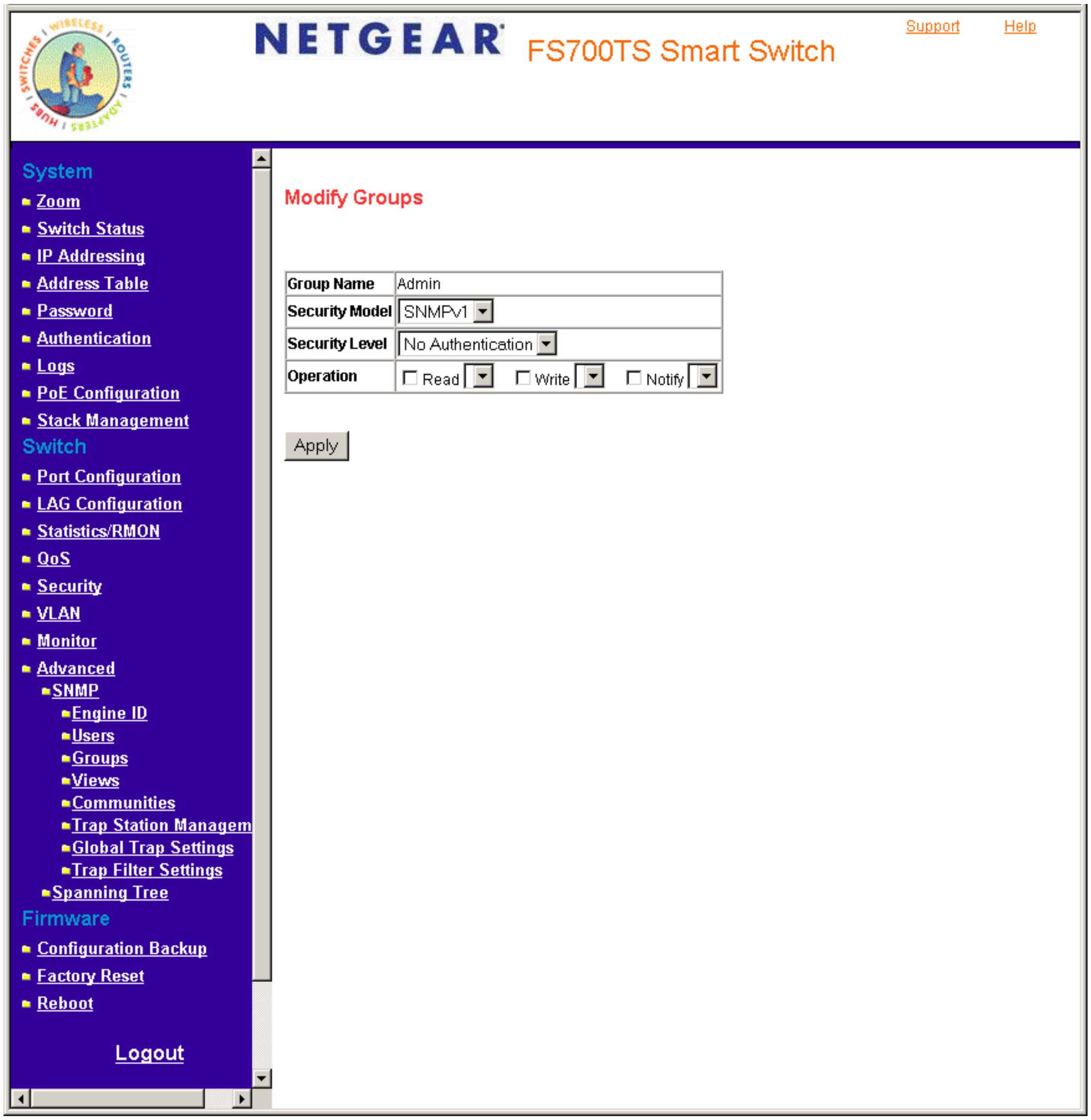
Apply

Figure 5 - 52: Add Groups Page

3. Define the fields.
4. Click Apply. The SNMP group profile is added and the device is updated.

To modify SNMP Group settings:

1. Click **Advanced > SNMP > Groups**. The *Groups Page* opens.
2. Click the ID of the group you want to modify. The *Modify Groups Page* opens:



Modify Groups

Group Name	Admin
Security Model	SNMPv1
Security Level	No Authentication
Operation	□ Read □ Write □ Notify

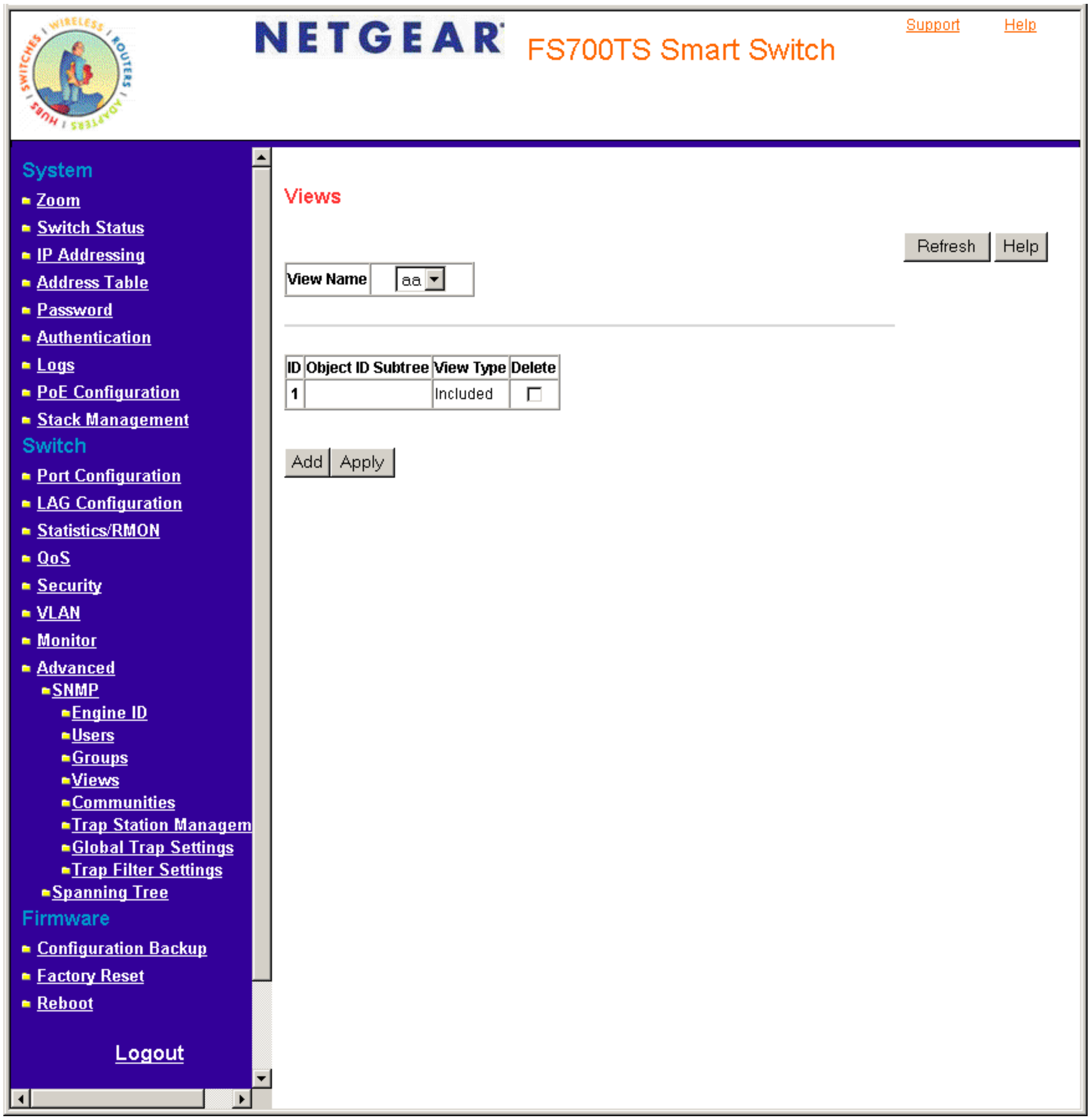
Figure 5 - 53: Modify Groups Page

3. Modify the fields.
4. Click Apply. The SNMP group profile is modified and the device is updated.

Defining SNMP Views

SNMP Insert space views provide or block access to device features or portions of features. For example, a view can be defined which provides that SNMP group A has *Read Only* (R/O) access to Multicast groups, while SNMP group B has *Read-Write* (R/W) access to Multicast groups. Feature access is granted via the MIB name or MIB Object ID. To define SNMP views:

1. **Advanced > SNMP > Views**. The *Views Page* opens:



Views

View Name: aa

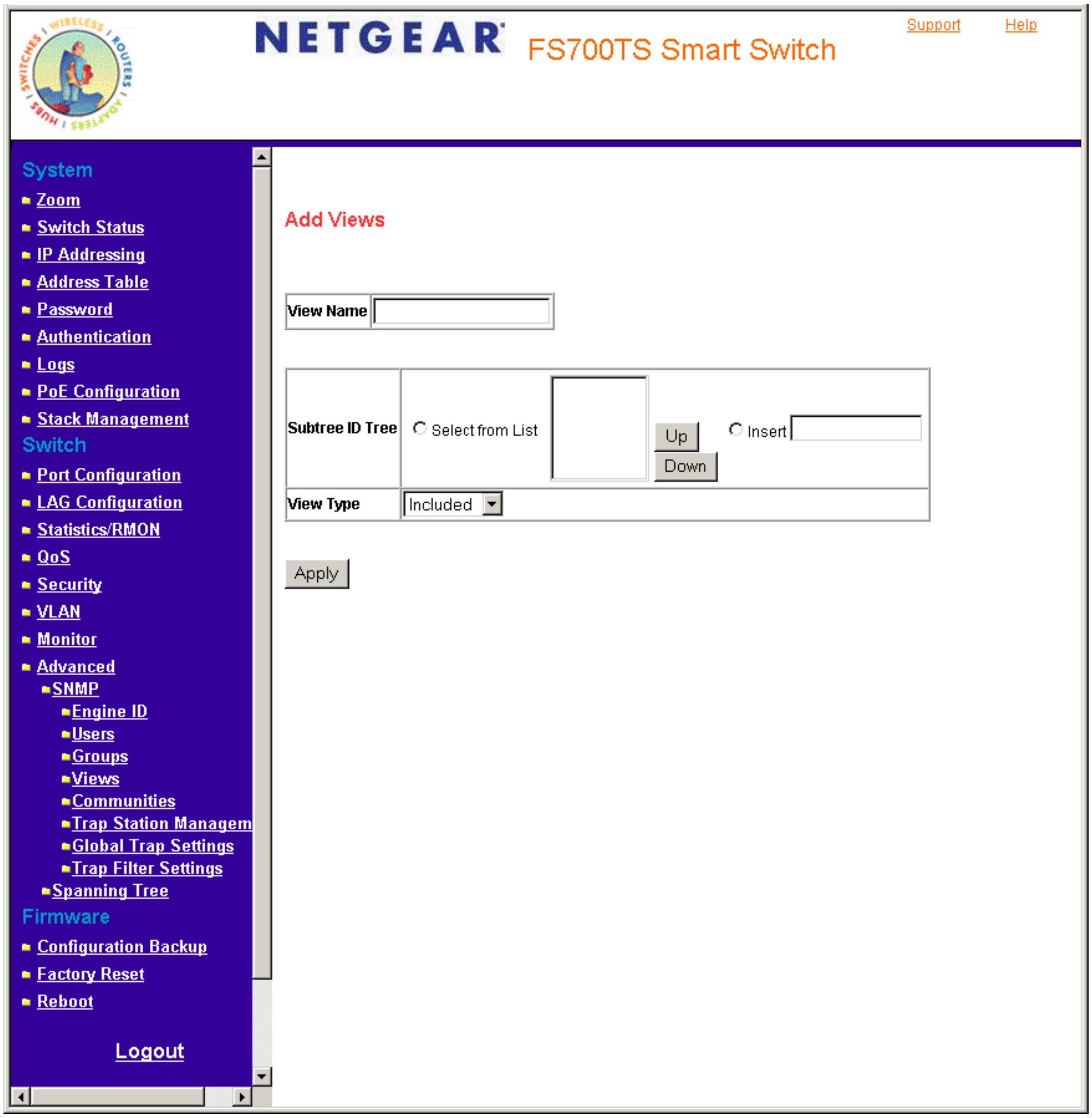
ID	Object ID Subtree	View Type	Delete
1		Included	□

Figure 5 - 54: Views Page

The *Views Page* contains the following fields:

- **View Name** — Displays the user-defined views. The view name can contain a maximum of 30 alphanumeric characters.
- **ID** – Indicates the stacking number.
- **Object ID Subtree** — Displays the device feature OID included in or excluded from the selected SNMP view.
- **View Type** — Indicates whether the defined OID branch will be included in or excluded from the selected SNMP view.
- **Delete** — Deletes the currently selected view. The possible field values are:
  - Checked — Removes the selected view.
  - Unchecked — Maintains the list of views.

2. Click Add. The *Add Views Page* opens:



Add Views

View Name			
Subtree ID Tree	○ Select from List	Up Down	○ Insert
View Type	Included		

Apply

Figure 5 - 55: Add Views Page

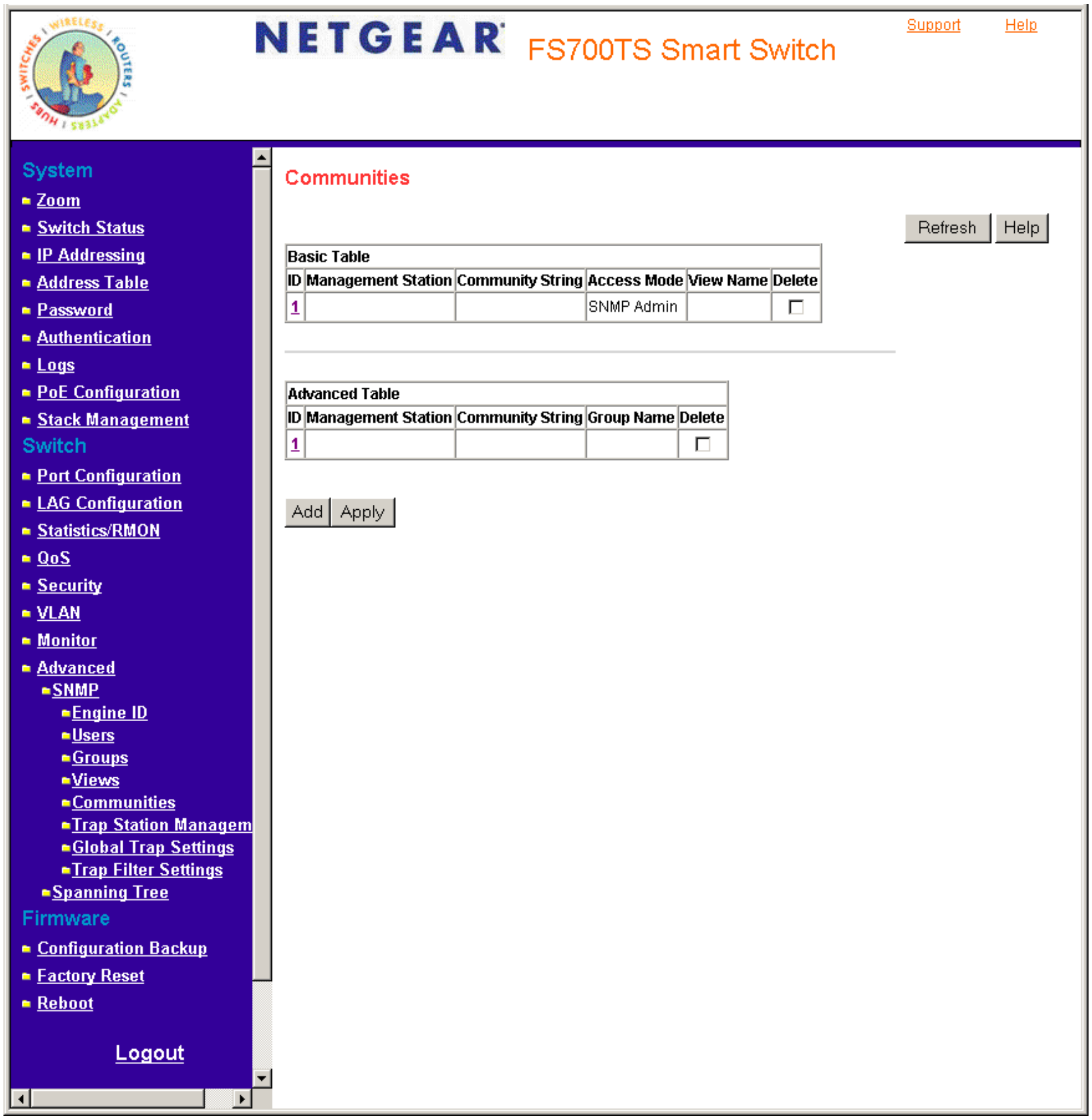
3. Define the fields.

4. Click Apply. The view is defined and the device is updated.

Defining SNMP Communities

Access rights are managed by defining communities in the *SNMP Communities Page*. When the community names are changed, access rights are also changed. SNMP communities are defined only for SNMP v1 and SNMP v2c. To define SNMP communities:

1. Click **Advanced > SNMP > Communities**. The *Communities Page* opens:



Basic Table

ID	Management Station	Community String	Access Mode	View Name	Delete
1			SNMP Admin		□

Advanced Table

ID	Management Station	Community String	Group Name	Delete
1				□

Figure 5 - 56: Communities Page

The *Communities Page* is divided into the following tables:

- Basic Table
- Advanced Table

SNMP Communities Basic Table

The SNMP Communities Basic Table contains the following fields when using SNMPv1 and SNMPv3:

- **ID** — Indicates the table entry number.
- **Management Station** — Displays the management station IP address for which the basic SNMP community is defined.
- **Community String** — Defines the password used to authenticate the management station to the device.
- **Access Mode** — Defines the access rights of the community. The possible field values are:

- Read Only — Management access is restricted to read-only. Changes cannot be made to the community.
- Read Write — Management access is read-write. Changes can be made to the device configuration but not to the community.
- SNMP Admin — User has access to all device configuration options, as well as permissions to modify the community.

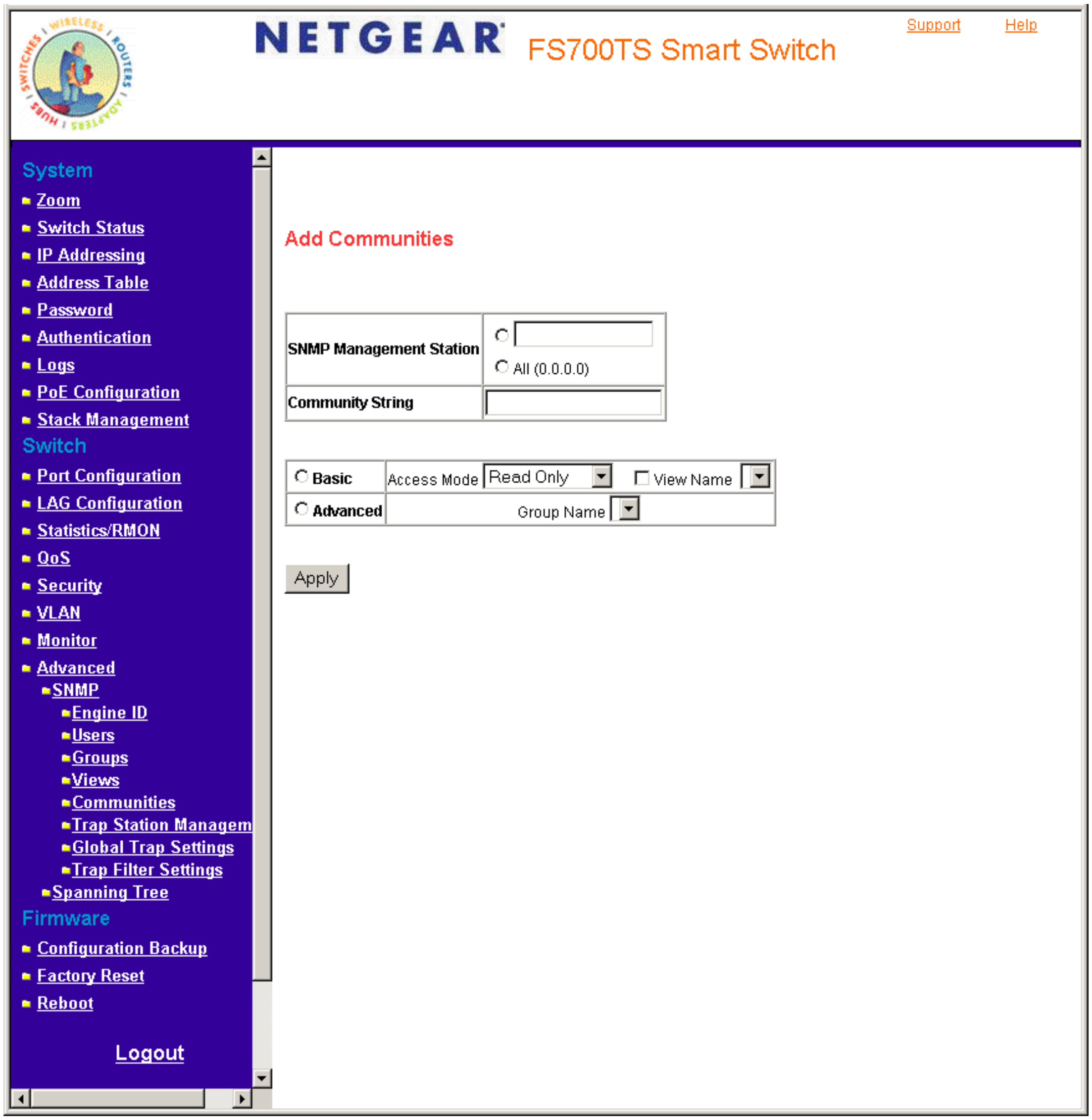
- **View Name** — Contains a list of user-defined SNMP views.
- **Delete** — Removes a community. The possible field values are:
  - Checked — Removes the selected SNMP community.
  - Unchecked — Maintains the SNMP communities.

SNMP Communities Advanced Table

The SNMP Communities Advanced Table contains the following fields:

- **ID** — Indicates the table entry number.
- **Management Station** — Displays the management station IP address for which the advanced SNMP community is defined.
- **Community String** — Defines the password used to authenticate the management station to the device.
- **Group Name** — Defines advanced SNMP community group names.
- **Delete** — Removes a community. The possible field values are:
  - Checked — Removes the selected SNMP communities.
  - Unchecked — Maintains the SNMP communities.

2. Click Add. The *Add Communities Page* opens:



Add Communities

SNMP Management Station	○ ○ All (0.0.0.0)
Community String	

○ Basic	Access Mode Read Only	□ View Name
○ Advanced	Group Name	

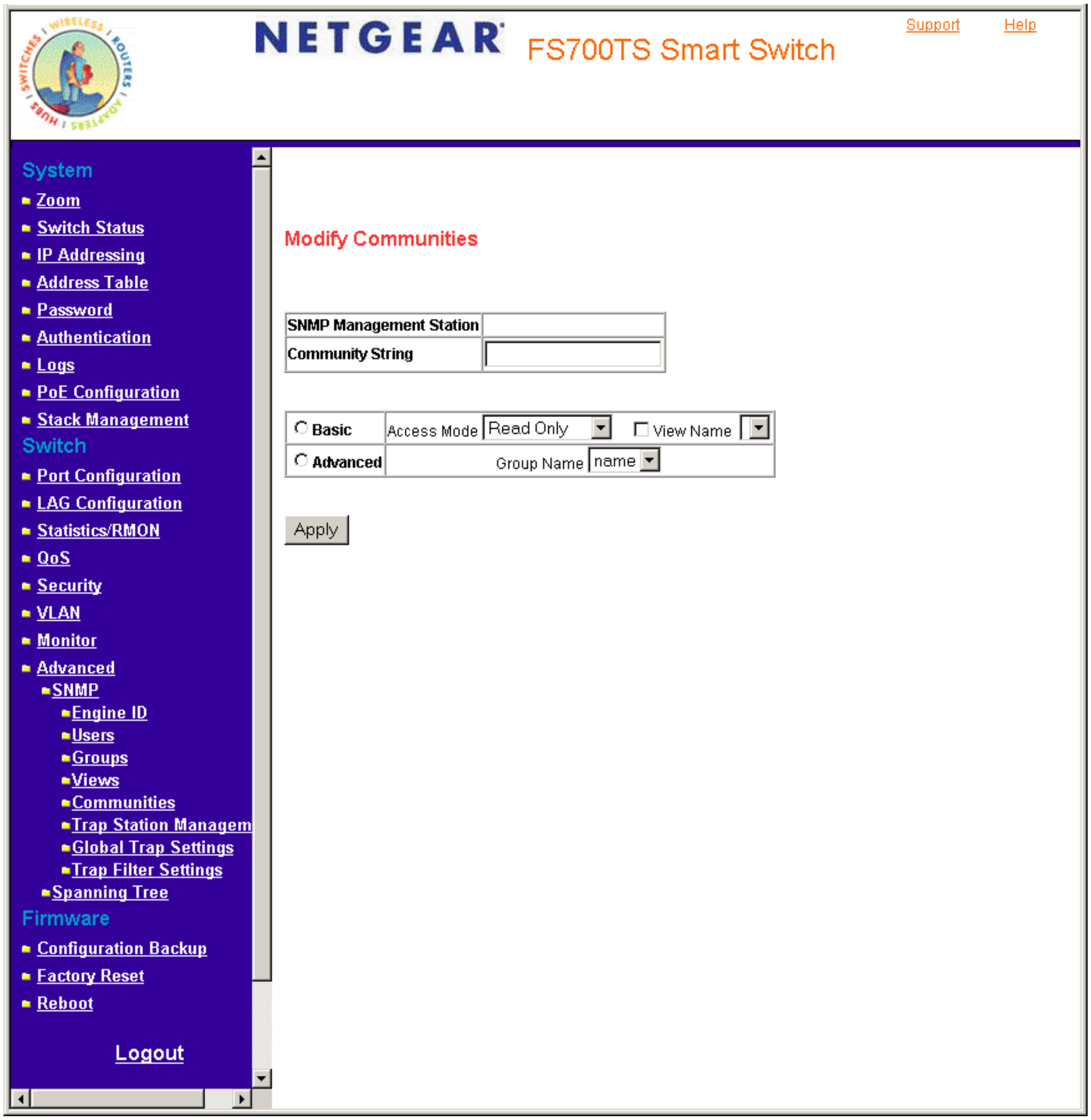
Figure 5 - 57: Add Communities Page

3. Define the OOB Management Stations, SNMP Management Station, Community String, and Basic or Advanced tables.

4. Click Apply. The SNMP community is added and the device is updated.

To modify SNMP community settings:

1. Click **Advanced > SNMP > Communities**. The *Communities Page* opens.
2. Click an ID. The *Modify Communities Page* opens:



Modify Communities

SNMP Management Station	
Community String	

○ Basic	Access Mode Read Only	□ View Name
○ Advanced	Group Name name	

Figure 5 - 58: Modify Communities Page

3. Modify the SNMP Management Station, Community String, and Basic or Advanced tables.

4. Click Apply. The SNMP community is modified and the device is updated.

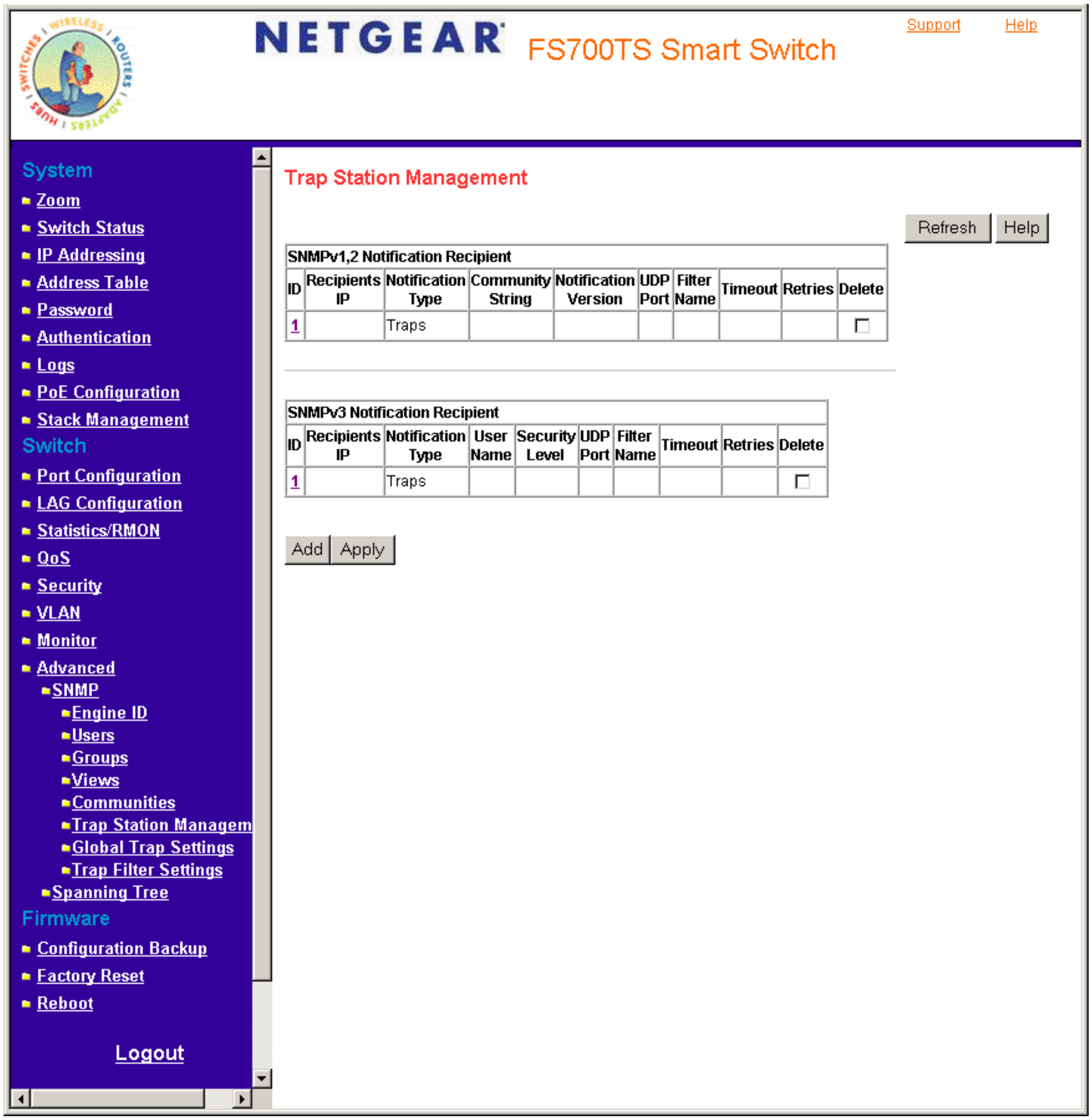
Trap Station Management

The *Trap Station Management Page* contains information for defining filters that determine whether traps are sent to specific users, and the trap type sent. SNMP notification filters provide the following services:

- Identifying Management Trap Targets
- Trap Filtering
- Selecting Trap Generation Parameters
- Providing Access Control Checks

To define trap station management:

1. Click **Advanced > SNMP > Trap Station Management**. The *Trap Station Management Page* opens:



Trap Station Management

SNMPv1,2 Notification Recipient

ID	Recipients IP	Notification Type	Community String	Notification Version	UDP Port	Filter Name	Timeout	Retries	Delete
1		Traps							□

SNMPv3 Notification Recipient

ID	Recipients IP	Notification Type	User Name	Security Level	UDP Port	Filter Name	Timeout	Retries	Delete
1		Traps							□

Figure 5 - 59: Trap Station Management Page

The *Trap Station Management Page* is divided into the following tables:

- SNMPv1, 2 Notification Recipient
- SNMPv3 Notification Recipient

SNMPv1, 2c Notification Recipient

The *SNMP v1, v2c Recipient* table contains the following fields:

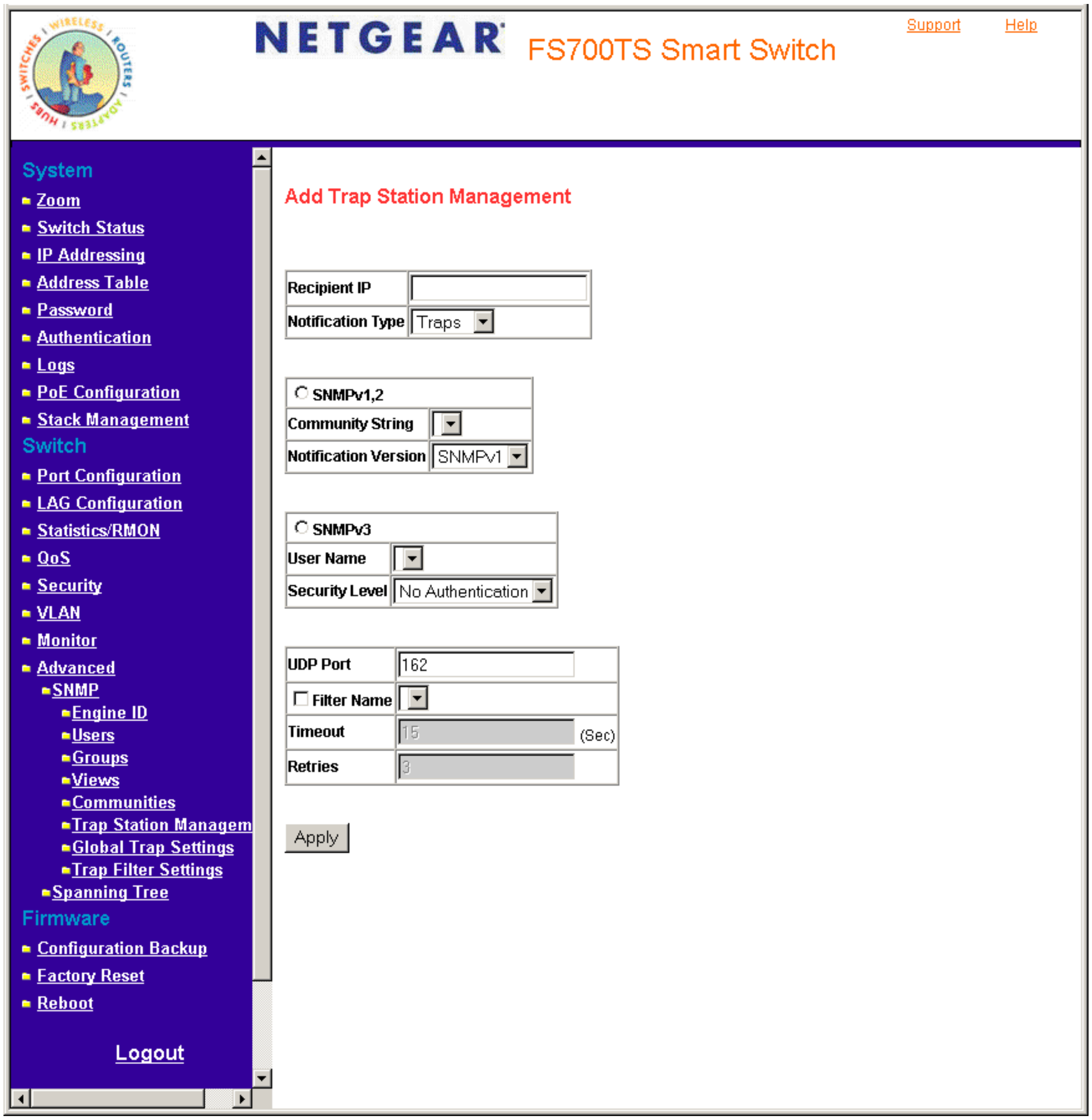
- **ID** — Indicates the stacking number.
- **Recipients IP** — Displays the IP address to which the traps are sent.
- **Notification Type** — Displays the notification sent. The possible field values are:
  - Trap — Indicates traps are sent.
  - Inform — Indicates informs are sent.
- **Community String** — Displays the community string of the trap manager.
- **Notification Version** — Displays the trap type. The possible field values are:
  - SNMP V1 — Indicates that SNMP Version 1 traps are sent.
  - SNMP V2c — Indicates that SNMP Version 2 traps are sent.
- **UDP Port** — Displays the UDP port used to send notifications. The default is 162.
- **Filter Name** — Indicates if the SNMP filter for which the SNMP Notification filter is defined.
- **Timeout** — Indicates the amount of time (in seconds) the device waits before re-sending informs. The default is 15 seconds.
- **Retries** — Indicates the amount of times the device re-sends an inform request. The default is 3 seconds.
- **Delete** — Removes the currently selected recipient. The possible field values are:
  - Checked — Removes the selected recipient from the list of recipients.
  - Unchecked — Maintains the list of recipients.

SNMPv3 Notification Recipient

The *SNMPv3 Notification Recipient* table contains the following fields:

- **ID** — Indicates the stacking number.
- **Recipient IP** — Displays the IP address to which the traps are sent.
- **Notification Type** — Displays the type of notification sent. The possible field values are:
  - Trap — Indicates that traps are sent.
  - Inform — Indicates that informs are sent.
- **User Name** — Displays the user to which SNMP notifications are sent.
- **Security Level** — Displays the means by which the packet is authenticated. The possible field values are:
  - No Authentication — Indicates that the packet is neither authenticated nor encrypted.
  - Authentication — Indicates that the packet is authenticated.
- **UDP Port** — The UDP port used to send notifications. The field range is 1-65535. The default is 162.
- **Filter Name** — Includes or excludes SNMP filters.
- **Timeout** — The amount of time (seconds) the device waits before resending informs. The field range is 1-300. The default is 10 seconds.
- **Retries** — The amount of times the device resends an inform request. The field range is 1-255. The default is 3.
- **Delete** — Removes the currently selected recipient. The possible field values are:
  - Checked — Removes the selected recipient from the list of recipients.
  - Unchecked — Maintains the list of recipients.

2. Click Add. The *Add Trap Station Management Page* opens.



Add Trap Station Management

Recipient IP	
Notification Type	Traps

○ SNMPv1,2	
Community String	
Notification Version	SNMPv1

○ SNMPv3	
User Name	
Security Level	No Authentication

UDP Port	162
□ Filter Name	
Timeout	15 (Sec)
Retries	3

Figure 5 - 60: Add Trap Station Management Page

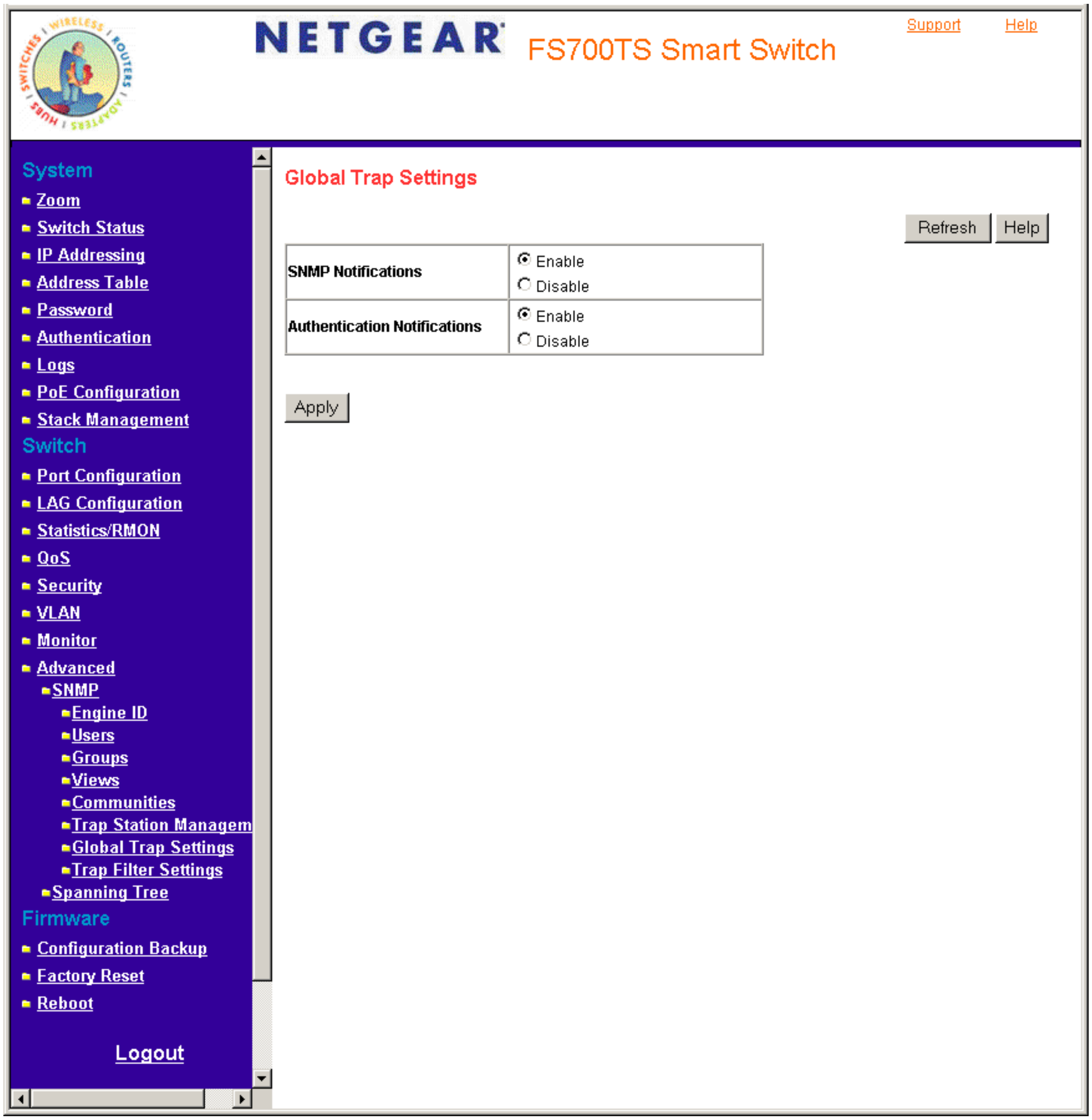
3. Define the Recipient IP, Notification Type, Community String, Notification Version, User Name, UPD Port, Filter Name, Timeout, and Retries fields.

4. Click Apply. The SNMP Notification recipients are defined and the device is updated.

Global Trap Settings

The *Global Trap Settings Page* contains parameters for defining SNMP notification parameters. To define SNMP notification global parameters:

1. Click **Advanced > SNMP > Global Trap Settings**. The *Global Trap Settings Page* opens:



Global Trap Settings

SNMP Notifications	● Enable ○ Disable
Authentication Notifications	● Enable ○ Disable

Figure 5 - 61: Global Trap Settings Page

The *Global Trap Settings Page* contains the following fields:

- **SNMP Notifications** — Specifies whether the device can send SNMP notifications. The possible field values are:
  - Enable — Enables SNMP notifications.
  - Disable — Disables SNMP notifications.
- **Authentication Notifications** — Specifies whether SNMP authentication failure notification is enabled on the device. The possible field values are:
  - Enable — Enables the device to send authentication failure notifications.
  - Disable — Disables the device from sending authentication failure notifications.

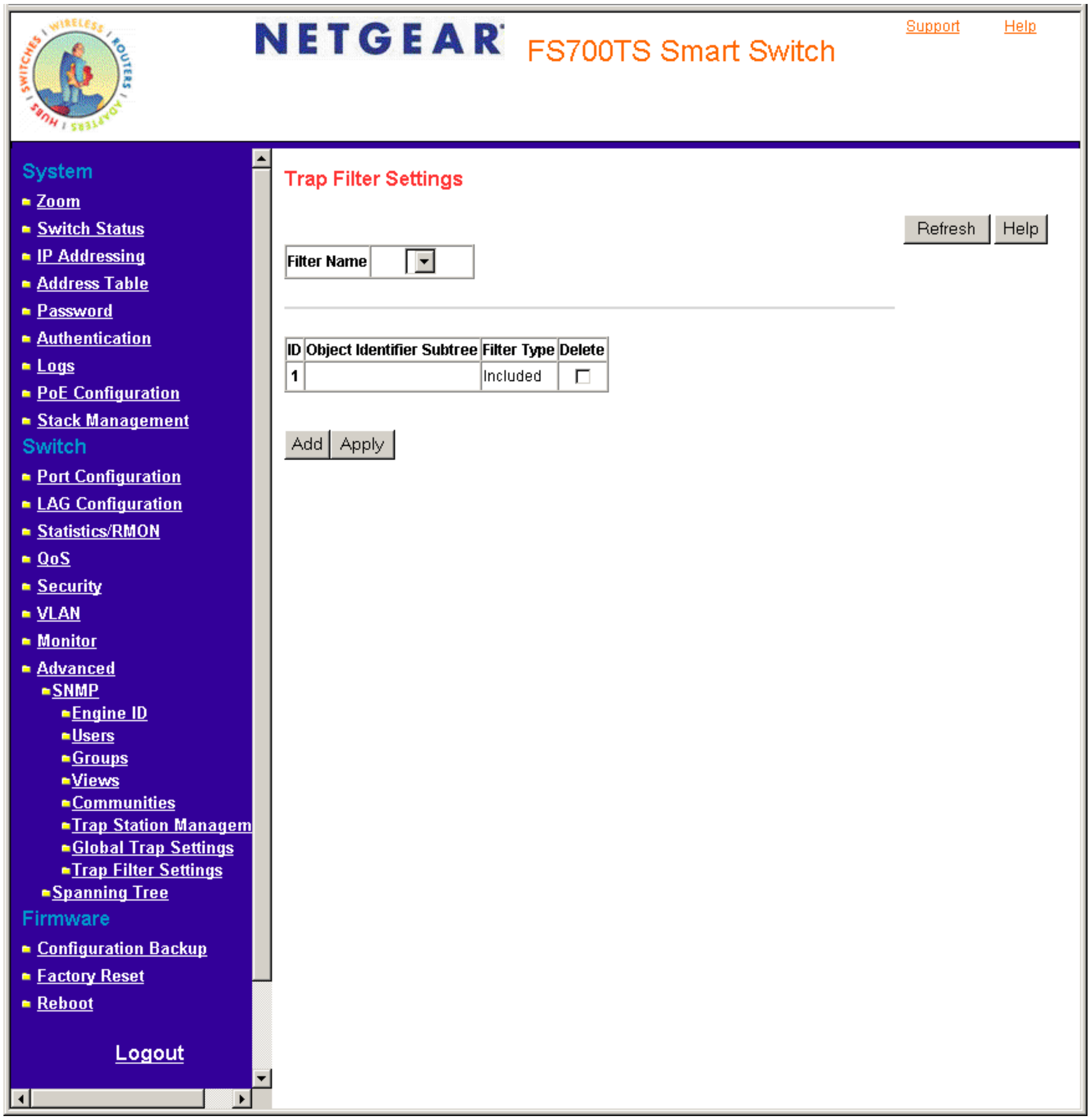
2. Define the SNMP Notification and Authentication Notifications fields.
3. Click Apply. The SNMP notification properties are defined and the device is updated.

Trap Filter Settings

The *Trap Filter Settings Page* permits filtering traps based on OIDs. Each OID is linked to a device feature or a portion of a feature. The *Trap Filter Settings Page* also allows network managers to filter notifications.

To define SNMP Trap Filter settings:

1. Click **Advanced > SNMP > Trap Filter Settings**. The *Trap Filter Settings Page* opens:



Trap Filter Settings

Filter Name ▾

ID	Object Identifier Subtree	Filter Type	Delete
1		Included	☐

Figure 5 - 62: Trap Filter Settings Page

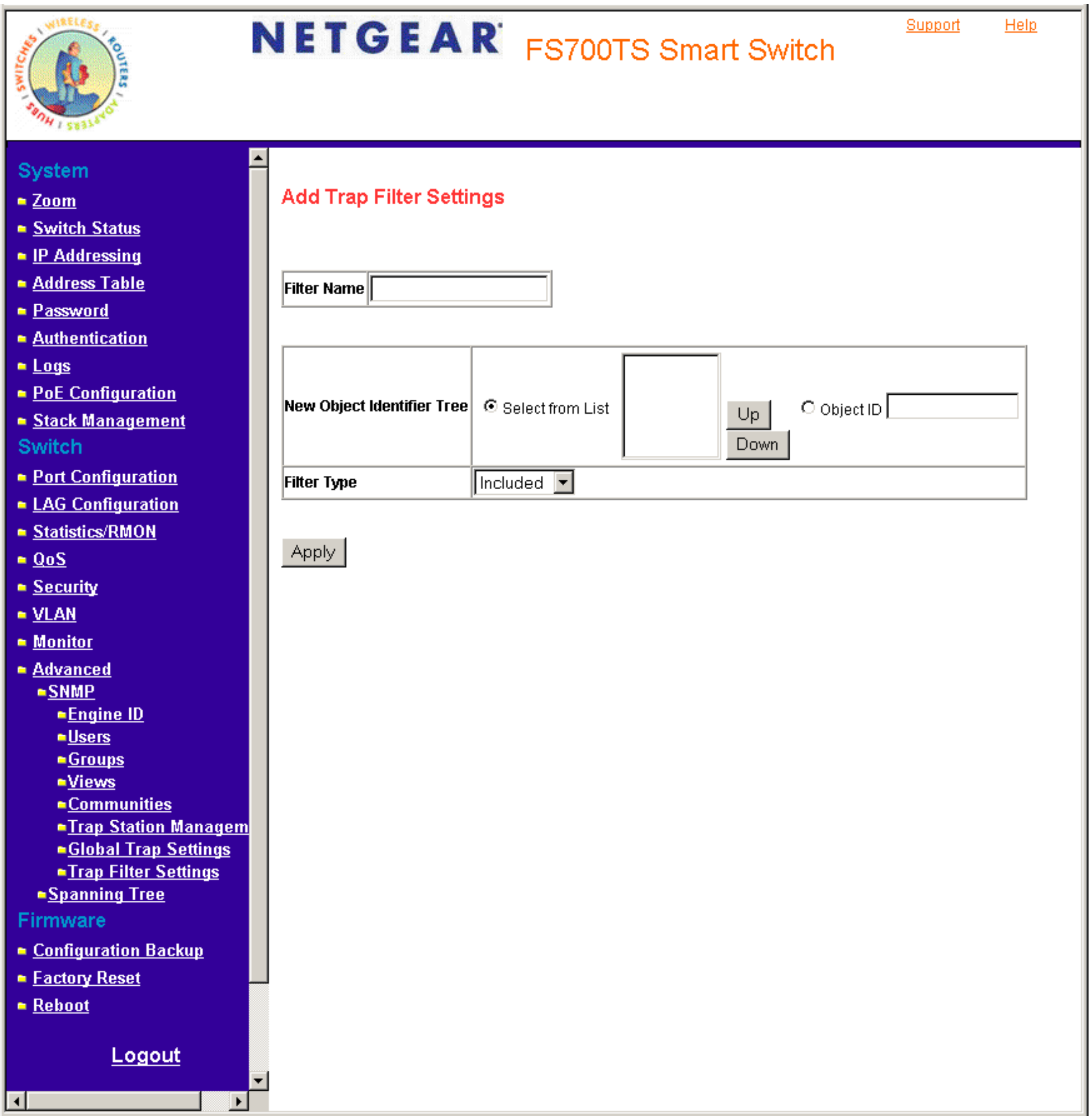
The *Trap Filter Settings Page* contains the following fields:

- **Filter Name** — Contains a list of user-defined notification filters.
- **ID** — Indicates the Trap Filter Settings Table entry number.
- **Object Identifier Subtree** — Displays the OID for which notifications are sent or blocked. If a filter is attached to an OID, traps or informs are generated and sent to the trap recipients. OIDs are selected from either the *Select from* field or the *Object ID* field.
- **Filter Type** — Indicates whether to send traps or informs relating to the selected OID.
  - Excluded — Does not send traps or informs.
  - Included — Sends traps or informs.
- **Delete** — The possible field values are:

– Checked — Deletes the selected filter.

– Unchecked — Maintains the list of filters.

2. Click Add. The *Add Trap Filter Settings Page* opens:



Add Trap Filter Settings

Filter Name	

New Object Identifier Tree	● Select from List Up Down ○ Object ID
Filter Type	Included

Apply

Figure 5 - 63: Add Trap Filter Settings Page

3. Define the Filter Name, New Object Identifier Tree, and Filter Type fields.

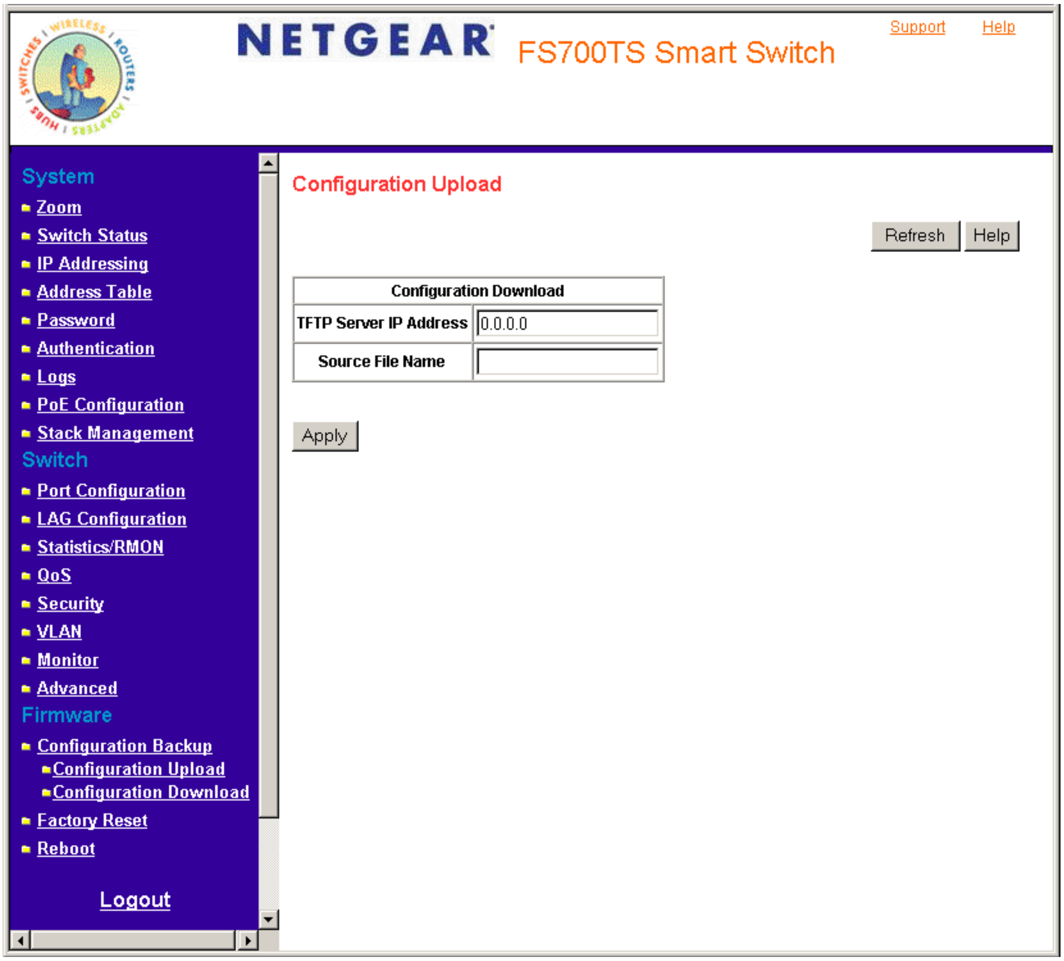
4. Click Apply. The SNMP Trap filter is defined and the device is updated.

Managing System Files

System Files can be backed up and restored using configuration backup.

To back up files:

1. Click **Configuration Backup > Configuration Upload.** The *Configuration Upload Page* opens:



Configuration Download	
TFTP Server IP Address	0.0.0.0
Source File Name	

Figure 5 - 64: Configuration Upload Page

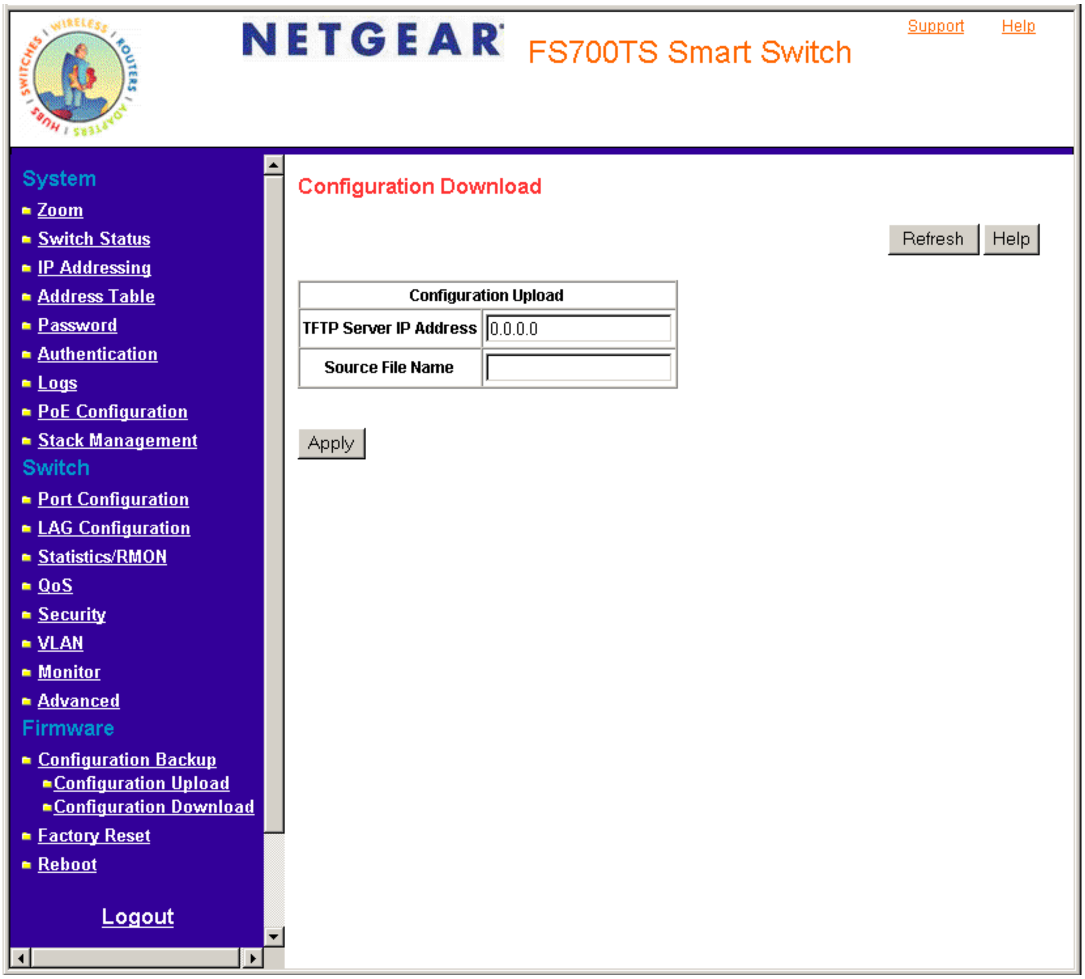
The *Configuration Upload Page* contains the following fields:

- **Backup Current setting to file** — Backs up the current System settings to file.
- **Restore Saved Setting From File** — Changes the current system file to a previously saved file.

2. Click **Backup** to save the settings to file.
3. Click **Browse** to search for the system file.
4. Click **Restore** to activate the saved system file.

To restore saved settings:

- Click **Configuration Backup > Configuration Download.** The *Configuration Upload Page* opens:



Configuration Download

Configuration Upload	
TFTP Server IP Address	0.0.0.0
Source File Name	

Figure 5 - 65: Configuration Download Page

Monitoring the Device

This section contains the following topics:

- Configuring Port Mirroring
- Performing Optical Transceiver Tests
- Viewing System Health Information

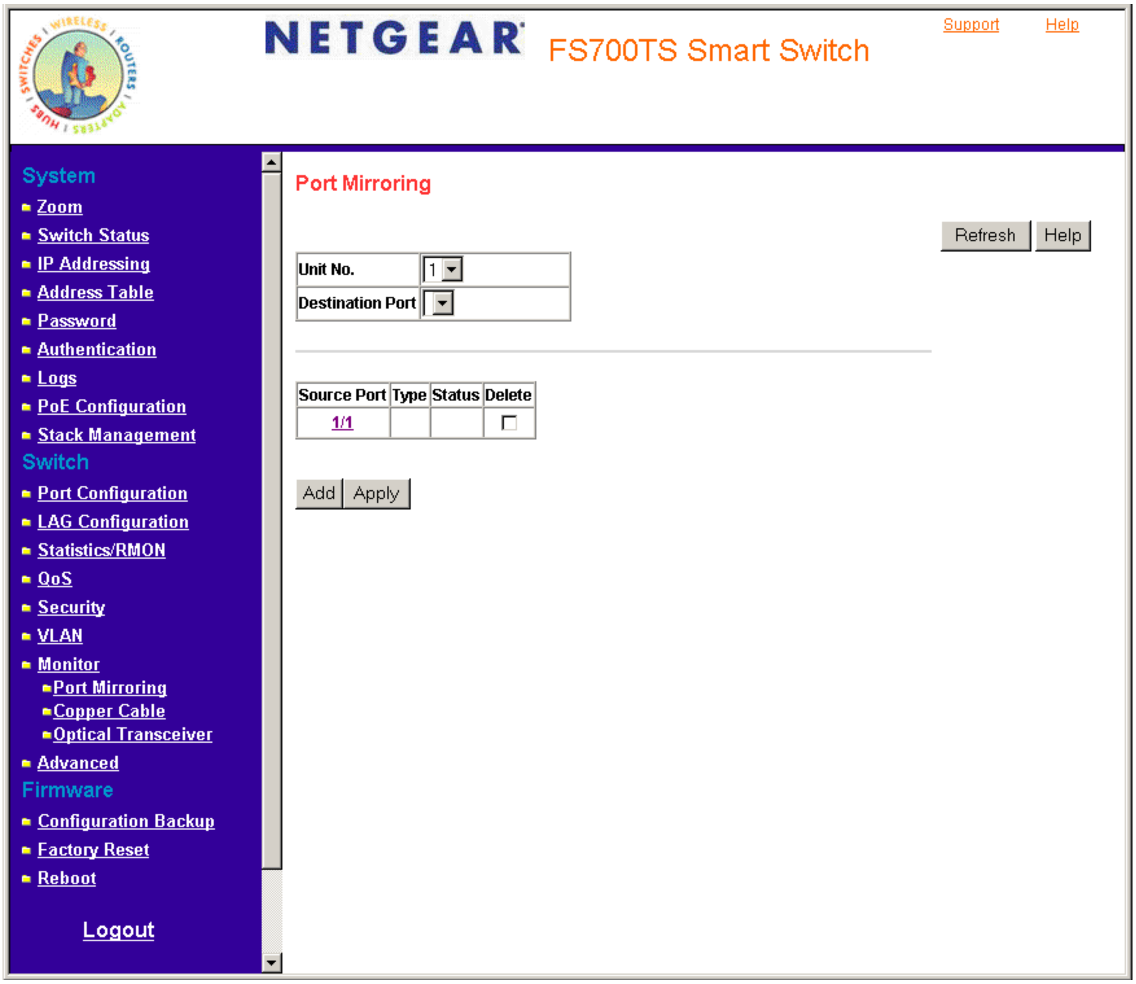
Configuring Port Mirroring

Port mirroring monitors and mirrors network traffic by forwarding copies of incoming and outgoing packets from one port to a monitoring port. Port mirroring can be used as a diagnostic tool as well as a debugging feature. Port mirroring also enables switch performance monitoring.

Network administrators can configure port mirroring by selecting a specific port from which to copy all packets, and other ports to which the packets are copied.

To enable port mirroring:

1. Click **Monitor > Port Mirroring**. The *Port Mirroring Page* opens:



Port Mirroring

Unit No.	1
Destination Port	

Source Port	Type	Status	Delete
1/1			☐

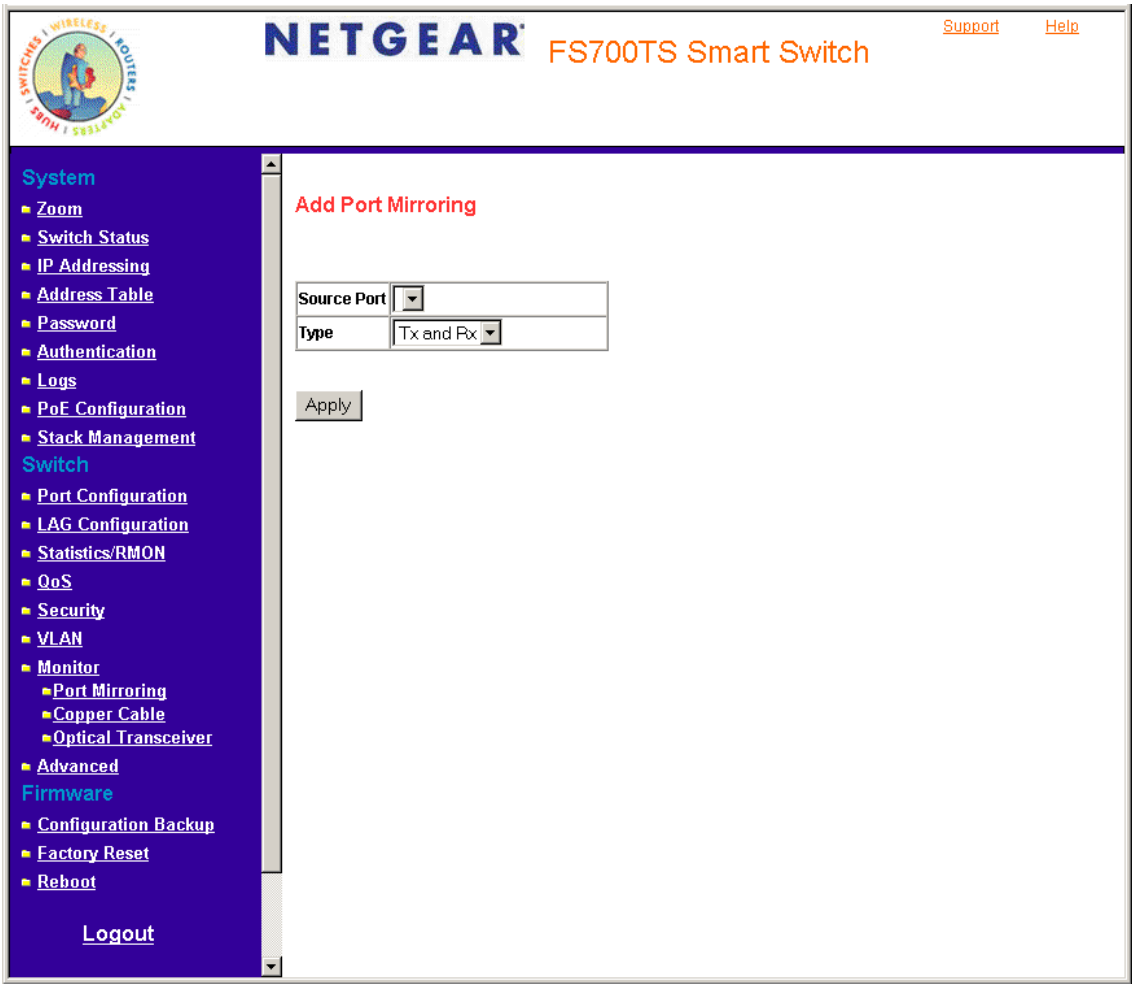
Figure 5 - 66: Port Mirroring Page

The *Port Mirroring Page* contains the following fields:

- **Unit No.** — Indicates the stacking number.
- **Destination Port** — Defines the port number to which port traffic is copied.
- **Source Port** — Indicates the port from which the packets are mirrored.

- **Type** — Indicates the port mode configuration for port mirroring. The possible field values are:
  - RX — Defines the port mirroring on receiving ports.
  - TX — Defines the port mirroring on transmitting ports.
  - Both — Defines the port mirroring on both receiving and transmitting ports. This is the default value.
- **Status** — Indicates if the port is currently monitored. The possible field values are:
  - Active — Indicates the port is currently monitored.
  - Ready — Indicates the port is not currently monitored.
- **Delete** — Removes the port mirroring session. The possible field values are:
  - Checked — Removes the selected port mirroring sessions.
  - Unchecked — Maintains the port mirroring session.

2. Click Add. The *Add Port Mirroring Page* opens:



Add Port Mirroring

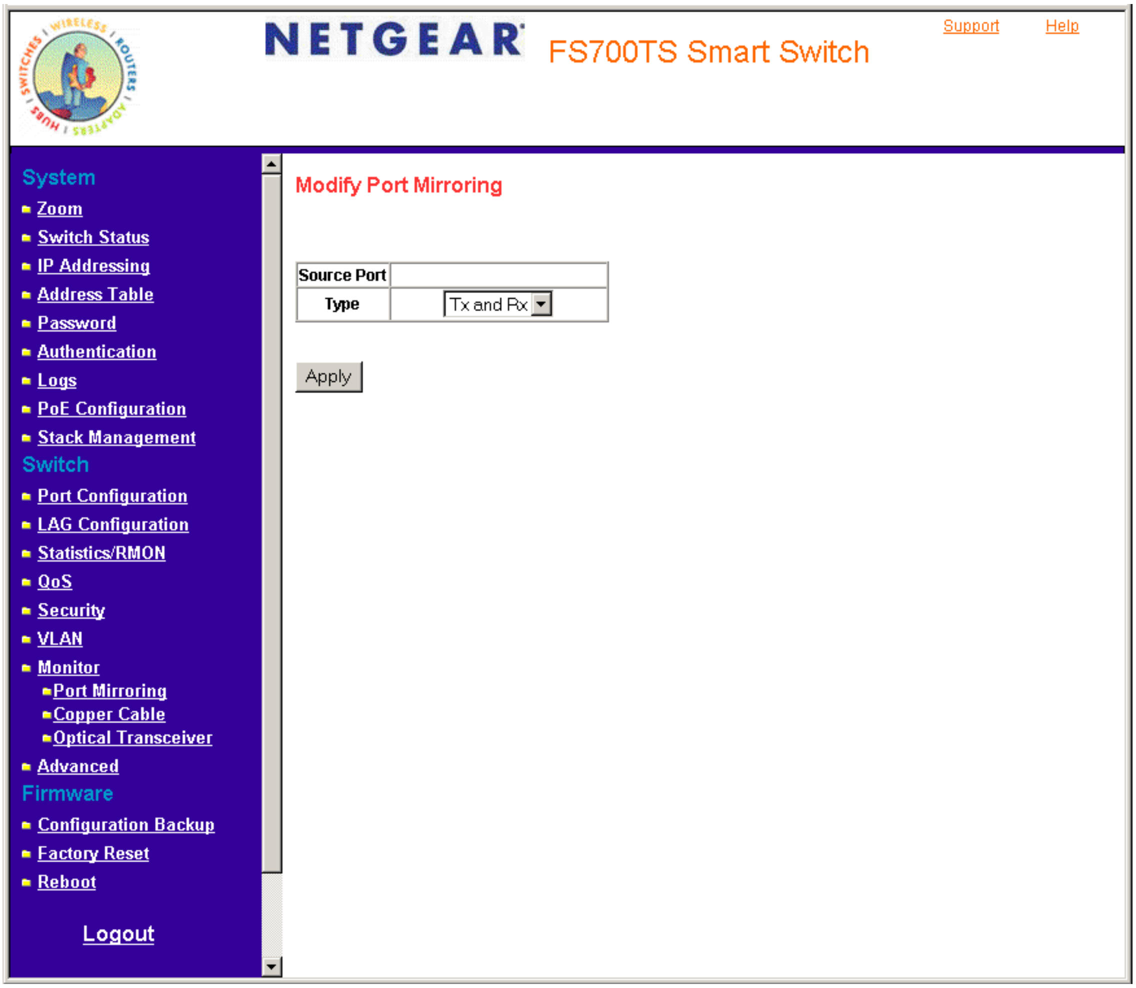
Source Port	
Type	Tx and Rx

Figure 5 - 67: Add Port Mirroring Page

3. Select a port in the *Source Port* field.
4. Select a port type in the *Type* field.
5. Click Apply. The port mirroring session is defined and the device is updated.

To edit the port mirroring settings:

1. Click **Monitor > Port Mirroring**. The *Add Port Mirroring Page* opens:
2. Click an interface. The *Modify Port Mirroring Page* opens:



Modify Port Mirroring

Source Port	
Type	Tx and Rx

Figure 5 - 68: Modify Port Mirroring Page

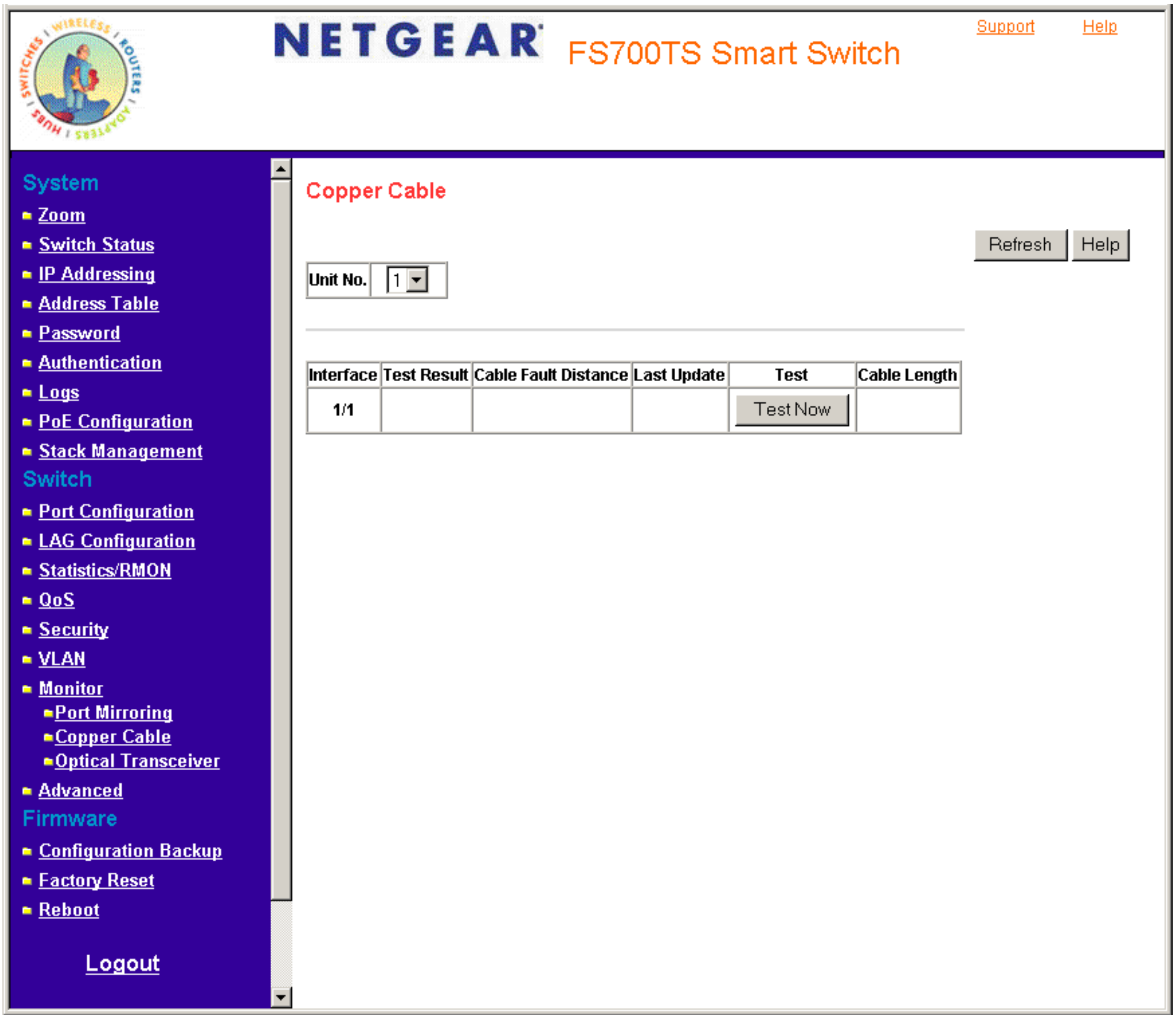
3. Modify the *Type* field.
4. Click Apply. The port mirroring settings are modified and the device is updated.

Performing Copper Cable Tests

The *Performing Copper Cable Tests* contains fields for performing tests on copper cables. Cable testing provides information about where errors occurred in the cable, the last time a cable test was performed, and the type of cable error that occurred. The tests use *Time Domain Reflectometry* (TDR) technology to test the quality and characteristics of a copper cable attached to a port. Cables up to 120 meters long can be tested. Cables are tested when the ports are in the down state, with the exception of the Approximated Cable Length test.

To test cables:

1. Click **Monitor > Copper Cable**. The *Copper Cable Page* opens:



Copper Cable

Unit No. 1

Interface	Test Result	Cable Fault Distance	Last Update	Test	Cable Length
1/1				Test Now	

Figure 5 - 69: Copper Cable Page

The *Copper Cable Page* contains the following fields:

- **Unit No**. — Indicates the stacking member for which the copper cable test results are displayed.
- **Interface** — Specifies the port to which the cable is connected.
- **Test Result** — Displays the cable test results. Possible values are:
  - No Cable — Indicates that a cable is not connected to the port.
  - Open Cable — Indicates that a cable is connected on only one side.
  - Short Cable — Indicates that a short has occurred in the cable.
  - OK — Indicates that the cable passed the test.
- **Cable Fault Distance** — Indicates the distance from the port where the cable error occurred.

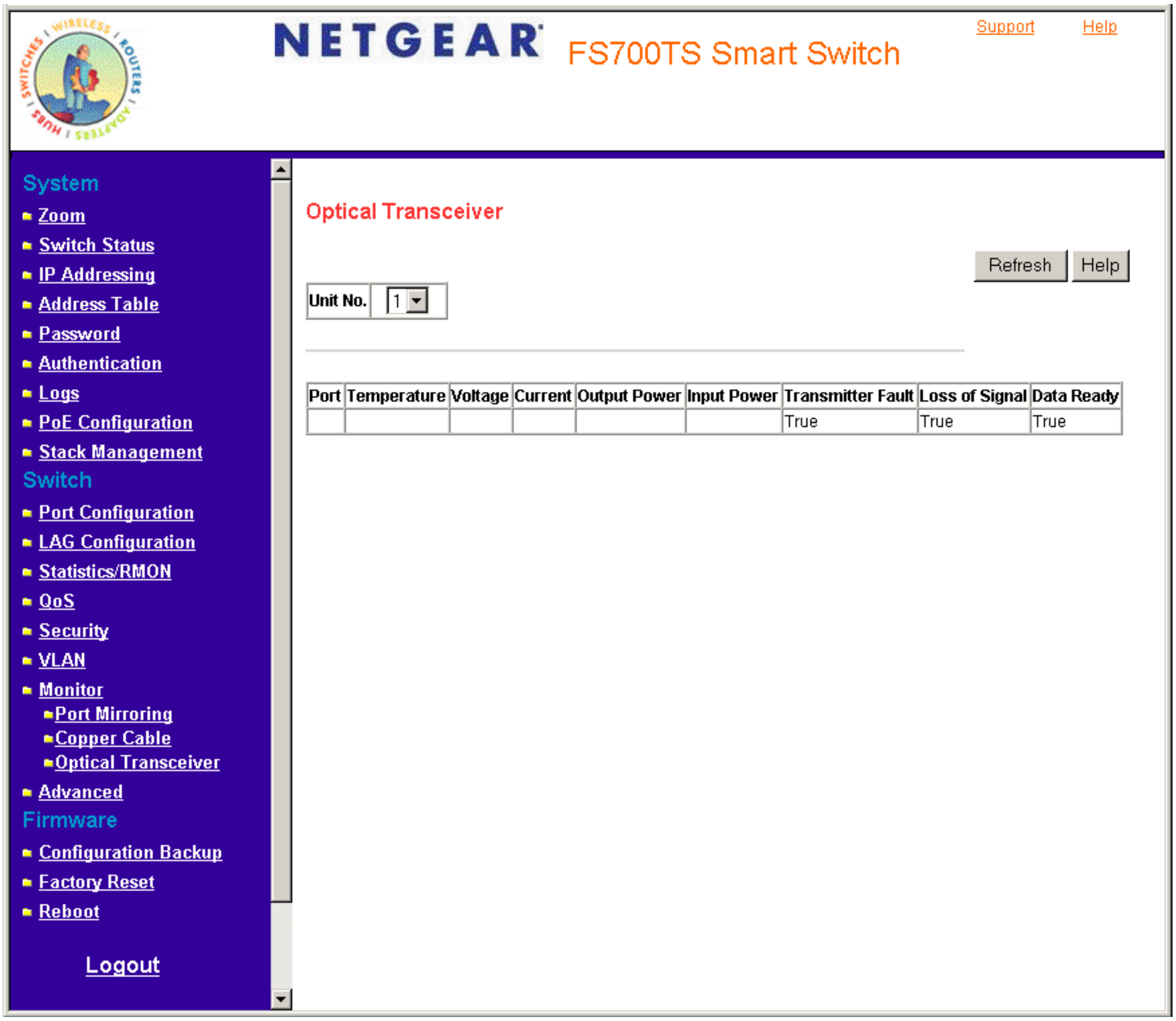
- **Last Update** — Indicates the last time the port was tested.
- **Cable Length** — Indicates the approximate cable length. This test can only be performed when the port is up and operating at 1 Gbps.

2. Click Test Now**.** The test results are displayed.

Performing Optical Transceiver Tests

The *Optical Transceivers Page allows* network managers to perform tests on Fiber Optic cables. Optical transceiver diagnostics can be performed only when the link is present. To test cables:

1. Click **Monitor > Optical Transceivers**. The *Optical Transceivers Page* opens:



Optical Transceiver

Unit No. 1

Port	Temperature	Voltage	Current	Output Power	Input Power	Transmitter Fault	Loss of Signal	Data Ready
						True	True	True

Figure 5 - 70: Optical Transceivers Page

The *Optical Transceivers Page* contains the fields:

- **Unit No**. — Indicates the stacking member for which the fiber optic cable tests are displayed.
- **Port** — Displays the port IP address on which the cable is tested.
- **Temperature** — Displays the temperature (C) at which the cable is operating.
- **Voltage** — Displays the voltage at which the cable is operating.
- **Current** — Displays the current at which the cable is operating.
- **Output Power** — Indicates the rate at which the output power is transmitted.
- **Input Power** — Indicates the rate at which the input power is transmitted.
- **Transmitter Fault** — Indicates if a fault occurred during transmission.
- **Loss of Signal** — Indicates if a signal loss occurred in the cable.
- **Data Ready** — Indicates the transceiver has achieved power up and data is ready.

Managing RMON Statistics

This section contains information for viewing the Remote Monitoring Statistics. RMON Statistics allow network managers to view network traffic information from a single workstation.

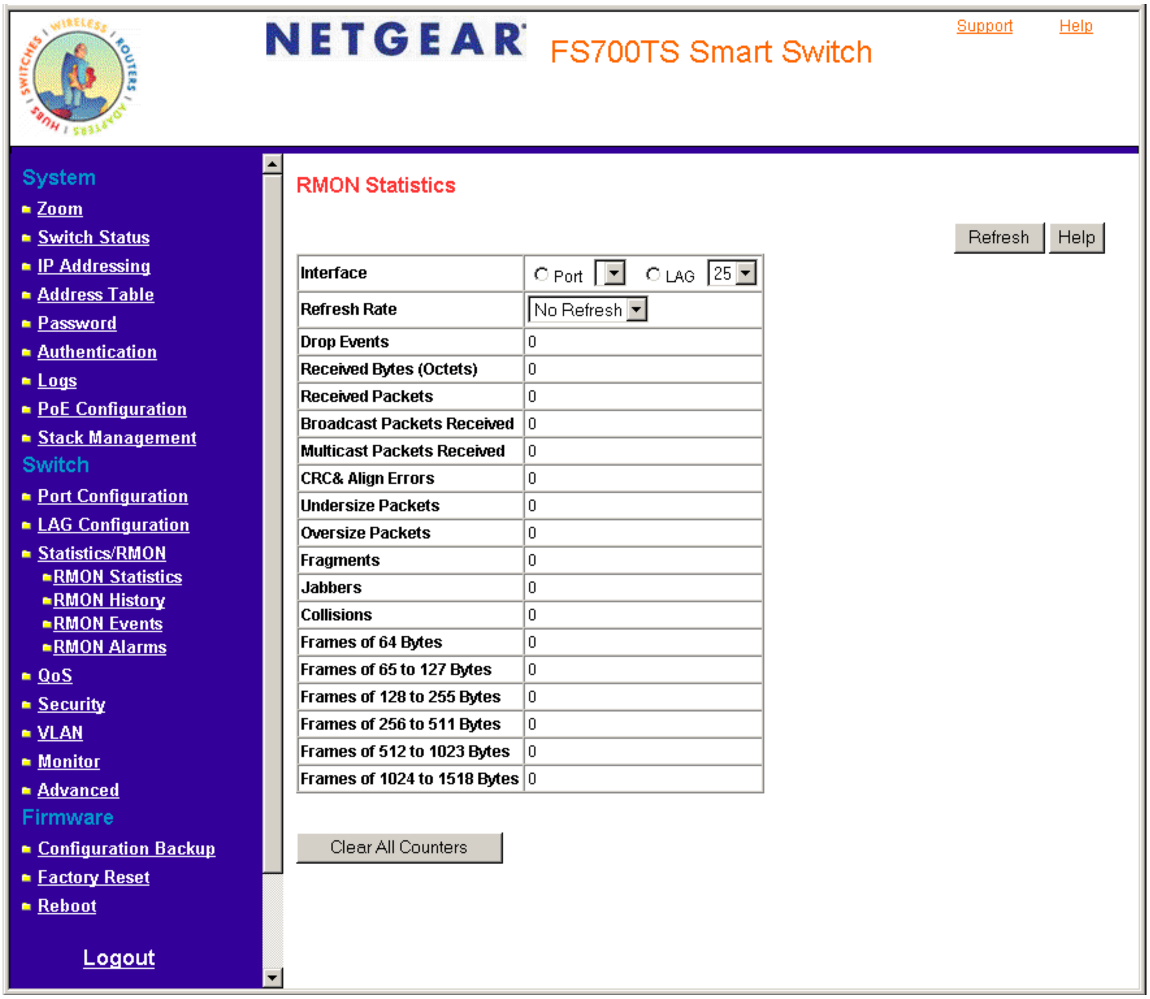
- Viewing RMON Statistics
- Configuring RMON History
- Defining RMON Events

Viewing RMON Statistics

The *RMON Statistics Page* contains fields for viewing information about device utilization and errors that occurred on the device.

To view RMON statistics:

1. Click **Statistics/RMON > RMON Statistics**. The *RMON Statistics Page* opens.



RMON Statistics

Interface	○ Port ○ LAG 25
Refresh Rate	No Refresh
Drop Events	0
Received Bytes (Octets)	0
Received Packets	0
Broadcast Packets Received	0
Multicast Packets Received	0
CRC& Align Errors	0
Undersize Packets	0
Oversize Packets	0
Fragments	0
Jabbers	0
Collisions	0
Frames of 64 Bytes	0
Frames of 65 to 127 Bytes	0
Frames of 128 to 255 Bytes	0
Frames of 256 to 511 Bytes	0
Frames of 512 to 1023 Bytes	0
Frames of 1024 to 1518 Bytes	0

Figure 5 - 71: RMON Statistics Page

The *RMON Statistics Page* contains the following fields:

- **Interface** — Indicates the device for which statistics are displayed. The possible field values are:
  - *Port* — Defines the specific port for which RMON statistics are displayed.
  - *LAG* — Defines the specific LAG for which RMON statistics are displayed.
- **Refresh Rate** — Defines the amount of time that passes before the interface statistics are refreshed. The possible field values are:

  - *15 Sec* — Indicates that the RMON statistics are refreshed every 15 seconds.
  - *30 Sec* — Indicates that the RMON statistics are refreshed every 30 seconds.
  - *60 Sec* — Indicates that the RMON statistics are refreshed every 60 seconds.
- **Drop Events** — Displays the number of dropped events that have occurred on the interface since the device was last refreshed.
- **Received Bytes (Octets)** — Displays the number of octets received on the interface since the device was last refreshed. This number includes bad packets and FCS octets, but excludes framing bits.
- **Received Packets** — Displays the number of packets received on the interface, including bad packets, Multicast, and Broadcast packets, since the device was last refreshed.
- **Broadcast Packets Received** — Displays the number of good broadcast packets received on the interface since the device was last refreshed. This number does not include Multicast packets.
- **Multicast Packets Received** — Displays the number of good Multicast packets received on the interface since the device was last refreshed.
- **CRC & Align Errors** — Displays the number of CRC and Align errors that have occurred on the interface since the device was last refreshed.
- **Undersize Packets** — Displays the number of undersized packets (less than 64 octets) received on the interface since the device was last refreshed.
- **Oversize Packets** — Displays the number of oversized packets (over 1518 octets) received on the interface since the device was last refreshed.
- **Fragments** — Displays the number of fragments (packets with less than 64 octets, excluding framing bits, but including FCS octets) received on the interface since the device was last refreshed.
- **Jabbers** — Displays the total number of received packets that were longer than 1518 octets. This number excludes frame bits, but includes FCS octets that had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral octet (Alignment Error) number. The field range to detect jabbers is between 20 ms and 150 ms.
- **Collisions** — Displays the number of collisions received on the interface since the device was last refreshed.
- **Frames of *xx* Bytes** — Number of *xx*-byte frames received on the interface since the device was last refreshed.

2. Select an interface in the *Interface* field. The RMON statistics are displayed.

Resetting RMON Statistics Counters

1. Open the RMON Statistics Page.
2. Click . The RMON statistics counters are cleared.

Configuring RMON History

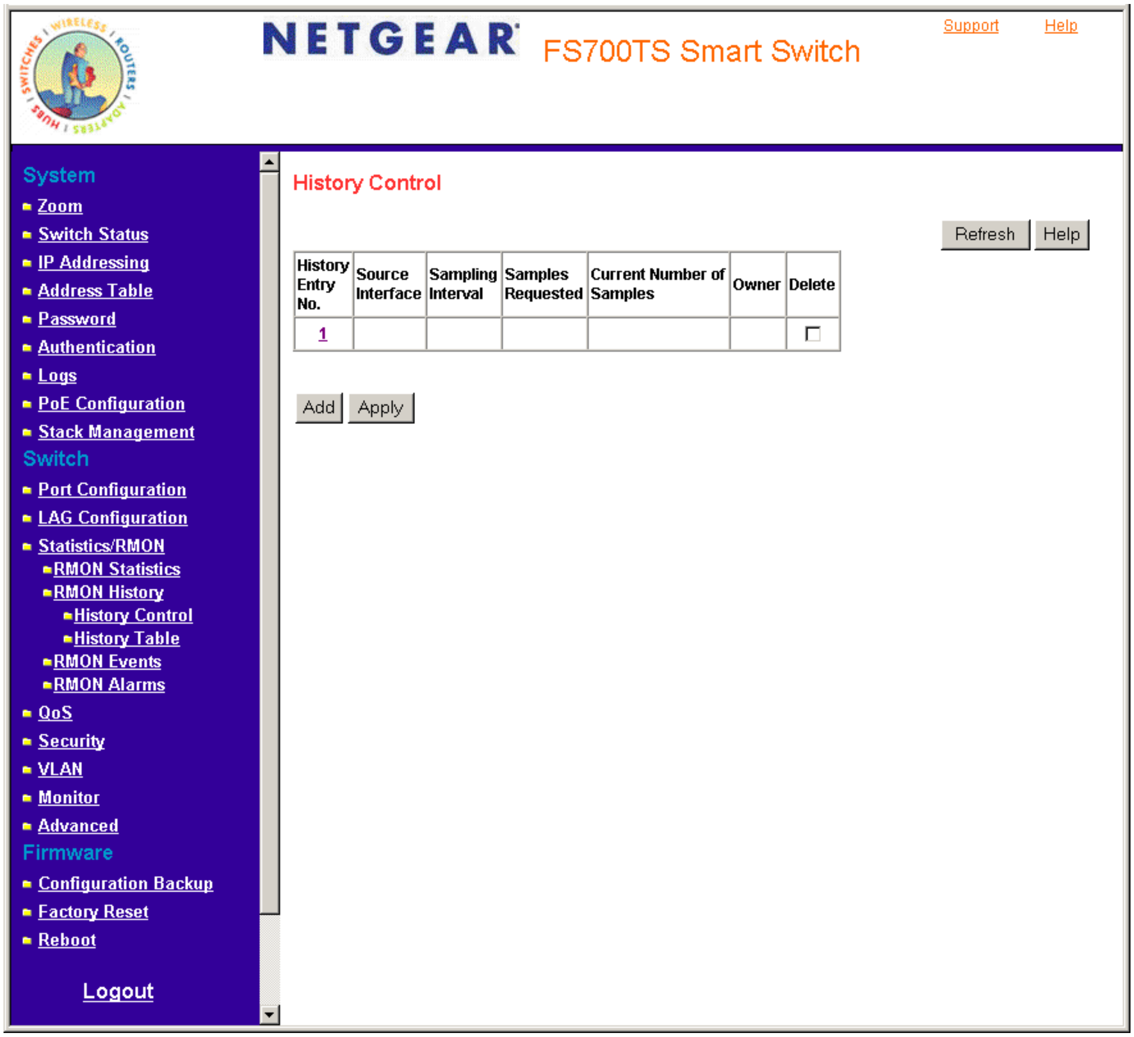
This section contains the following topics:

- Defining RMON History Control
- Viewing the RMON History Table

Defining RMON History Control

The *History Control Page* contains information about samples of data taken from ports. For example, the samples may include interface definitions or polling periods. To view RMON history information:

1. Click **Statistics/RMON > RMON History > History Control**. The *History Control Page* opens.



History Control

History Entry No.	Source Interface	Sampling Interval	Samples Requested	Current Number of Samples	Owner	Delete
1						□

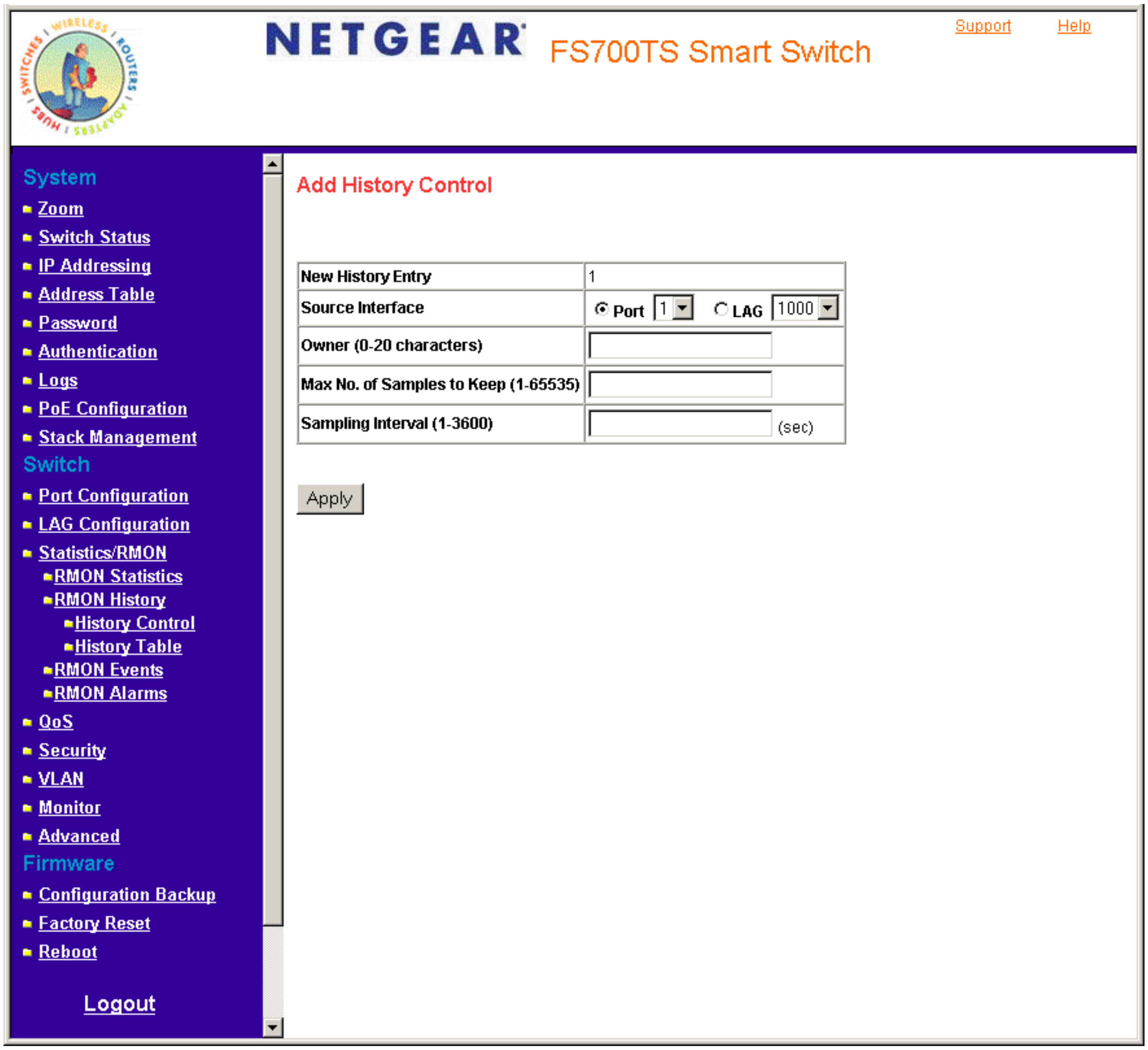
Figure 5 - 72: History Control Page

The *History Control Page* contains the following fields:

- **History Entry No.** — Displays the entry number for the History Control Table page.
- **Source Interface** — Displays the interface from which the history samples were taken. The possible field values are:
  - Port — Specifies the port from which the RMON information was taken.
  - LAG — Specifies the port from which the RMON information was taken.
- **Sampling Interval** — Indicates in seconds the time that samples are taken from the ports. The field range is 1-3600. The default is 1800 seconds (equal to 30 minutes).
- **Samples Requested** — Displays the number of samples to be saved. The field range is 1-65535. The default value is 50.

- **Current Number of Samples in List**— Displays the current number of samples taken.
- **Owner** — Displays the RMON station or user that requested the RMON information. The field range is 0-20 characters.
- **Delete** — Removes History Control entries. The possible field values are:
  - Checked — Removes the selected History Control entry.
  - Unchecked — Maintains the current History Control entries.

2. Click a history entry number. The *Add History Control* opens:



Add History Control

New History Entry	1
Source Interface	● Port 1 ○ LAG 1000
Owner (0-20 characters)	
Max No. of Samples to Keep (1-65535)	
Sampling Interval (1-3600)	(sec)

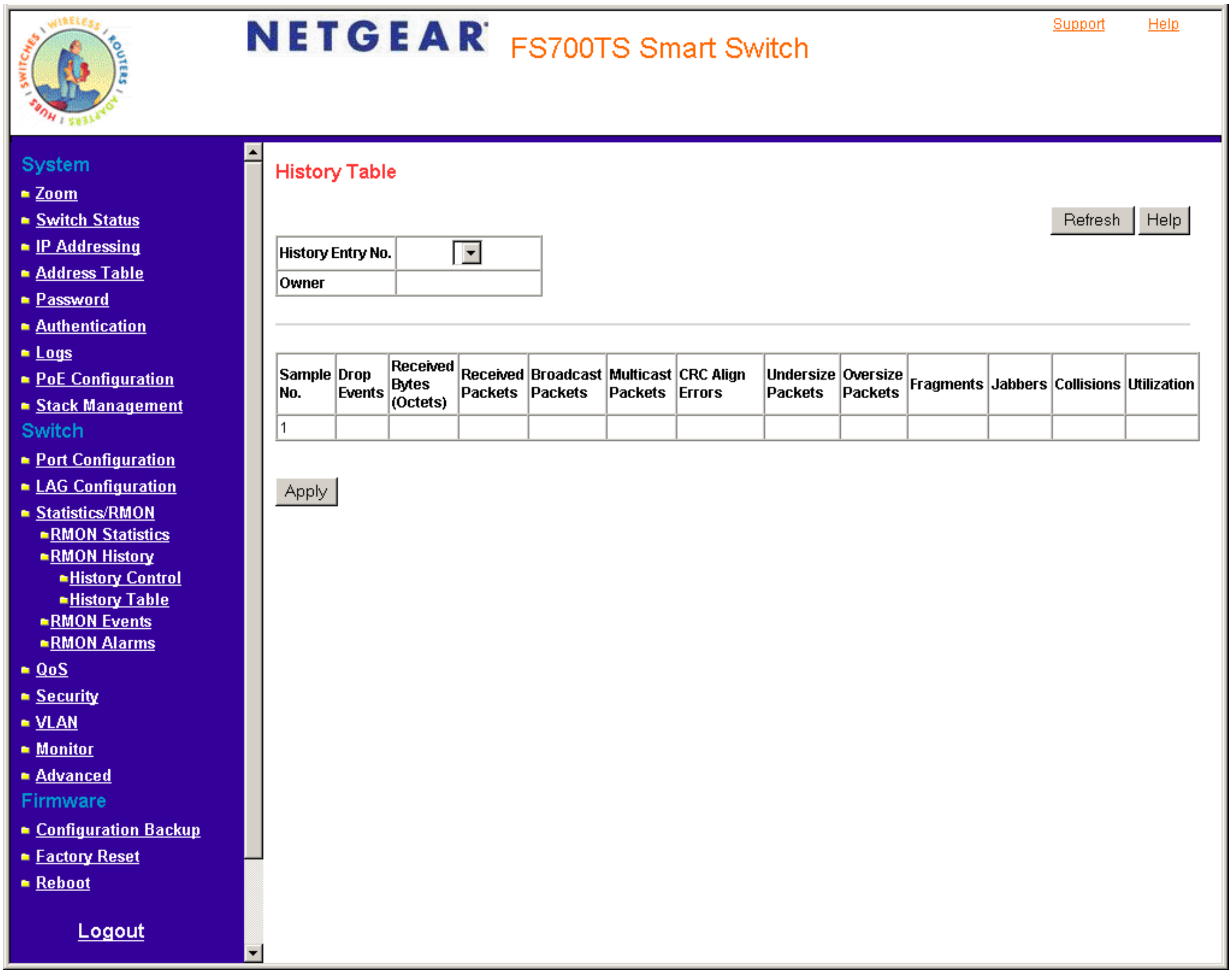
Figure 5 - 73: Add History Control Page

3. Define *the Source Interface*, *Owner*, *Sampling Interval*, *Max. No. of Samples to Keep*, and *Samples intervals* fields.
4. Click Apply. The entry is added to the *History Control Page* and the device is updated.

Viewing the RMON History Table

The *History Table Page* contains interface specific statistical network samples. Each table entry represents all counter values compiled during a single sample. To view the: *Viewing the RMON* History Table

1. Click **Statistics/RMON > History Table**. The *History Table Page* opens.



History Table

History Entry No.	
Owner	

Sample No.	Drop Events	Received Bytes (Octets)	Received Packets	Broadcast Packets	Multicast Packets	CRC Align Errors	Undersize Packets	Oversize Packets	Fragments	Jabbers	Collisions	Utilization
1												

Figure 5 - 74: History Table Page

The *History Table Page* contains the following fields:

- **History Entry No.** — Displays the entry number for the History Control Table page.
- **Owner** — Displays the RMON station or user that requested the RMON information. The field range is 0-20 characters.
- **Sample No**. — Indicates the sample number from which the statistics were taken.
- **Drop Events** — Displays the number of dropped events that have occurred on the interface since the device was last refreshed.
- **Received Bytes (Octets)** — Displays the number of octets received on the interface since the device was last refreshed. This number includes bad packets and FCS octets, but excludes framing bits.
- **Received Packets** — Displays the number of packets received on the interface since the device was last refreshed, including bad packets, Multicast, and Broadcast packets.
- **Broadcast Packets** — Displays the number of good Broadcast packets received on the interface since the device was last refreshed. This number does not include Multicast packets.
- **Multicast Packets** — Displays the number of good Multicast packets received on the interface since the device was last refreshed.
- **CRC Align Errors** — Displays the number of CRC and Align errors that have occurred on the interface since the device was last refreshed.
- **Undersize Packets** — Displays the number of undersized packets (less than 64 octets) received on the interface since the device was last refreshed.
- **Oversize Packets** — Displays the number of oversized packets (over 1518 octets) received on the interface since the device was last refreshed.

- **Fragments** — Displays the number of fragments (packets with less than 64 octets, excluding framing bits, but including FCS octets) received on the interface since the device was last refreshed.
- **Jabbers** — Displays the total number of received packets that were longer than 1518 octets. This number excludes frame bits, but includes FCS octets that had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral octet (Alignment Error) number. The field range to detect jabbers is between 20 ms and 150 ms.
- **Collisions** — Displays the number of collisions received on the interface since the device was last refreshed.
- **Utilization** — Displays the percentage of the interface utilized.

2. Select an entry in the *History Entry No.* field. The statistics are displayed.

Defining RMON Events

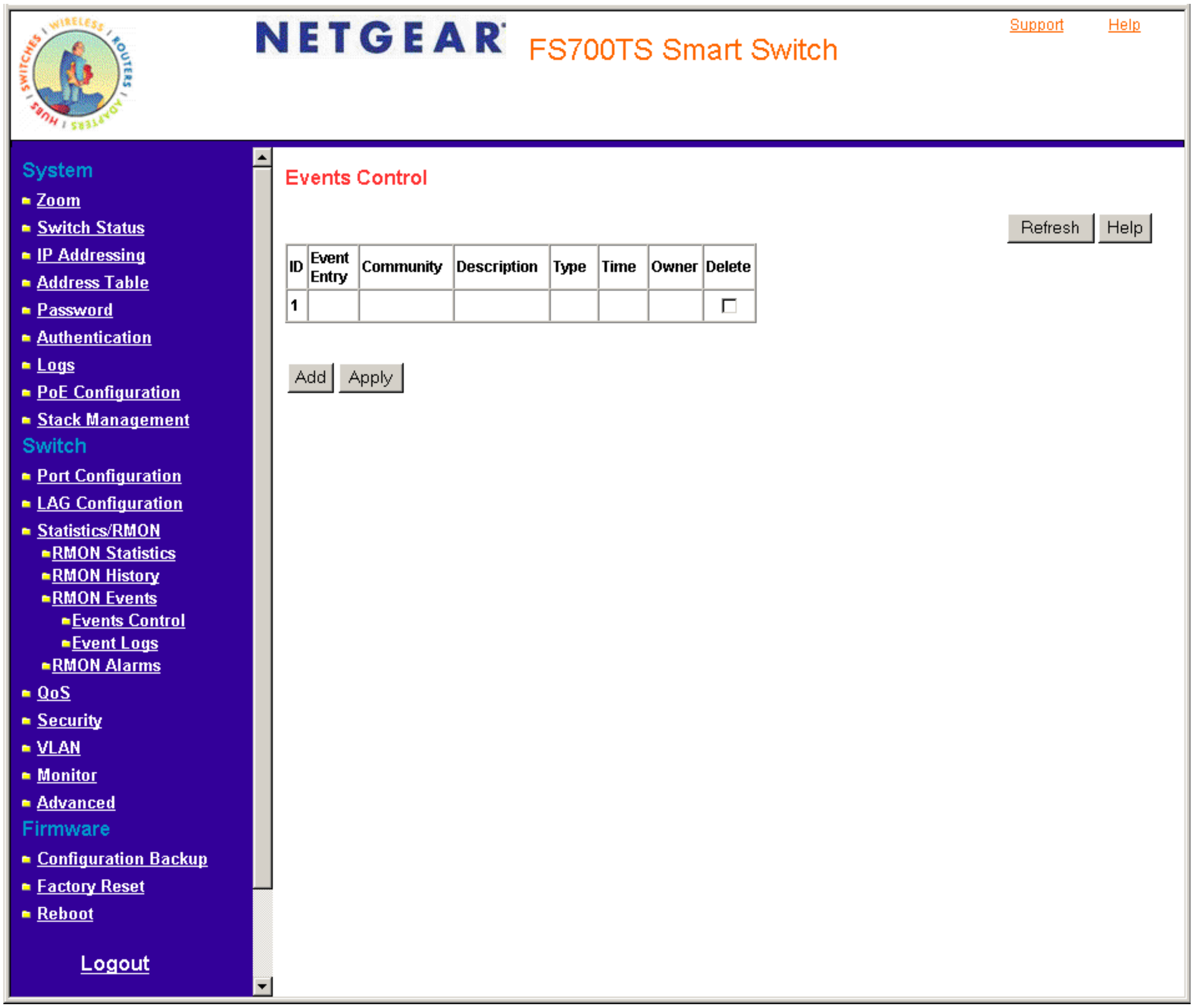
This section includes the following topics:

- Events Control
- Event Logs

Defining RMON Events Control

The *Events Control Page* contains fields for defining RMON events. To view RMON events:

- Click **Statistics/RMON > RMON Events > Events Control**. The *Events Control Page* opens.



Events Control

ID	Event Entry	Community	Description	Type	Time	Owner	Delete
1							□

Figure 5 - 75: Events Control Page

The *Events Control Page* contains the following fields:

- **ID** — Indicates the stacking number.
- **Event Entry** — Displays the event.
- **Community** — Displays the community to which the event belongs.
- **Description** — Displays the user-defined event description.
- **Type** — Describes the event type. Possible values are:
  - Log — Indicates that the event is a log entry.
  - Trap — Indicates that the event is a trap.

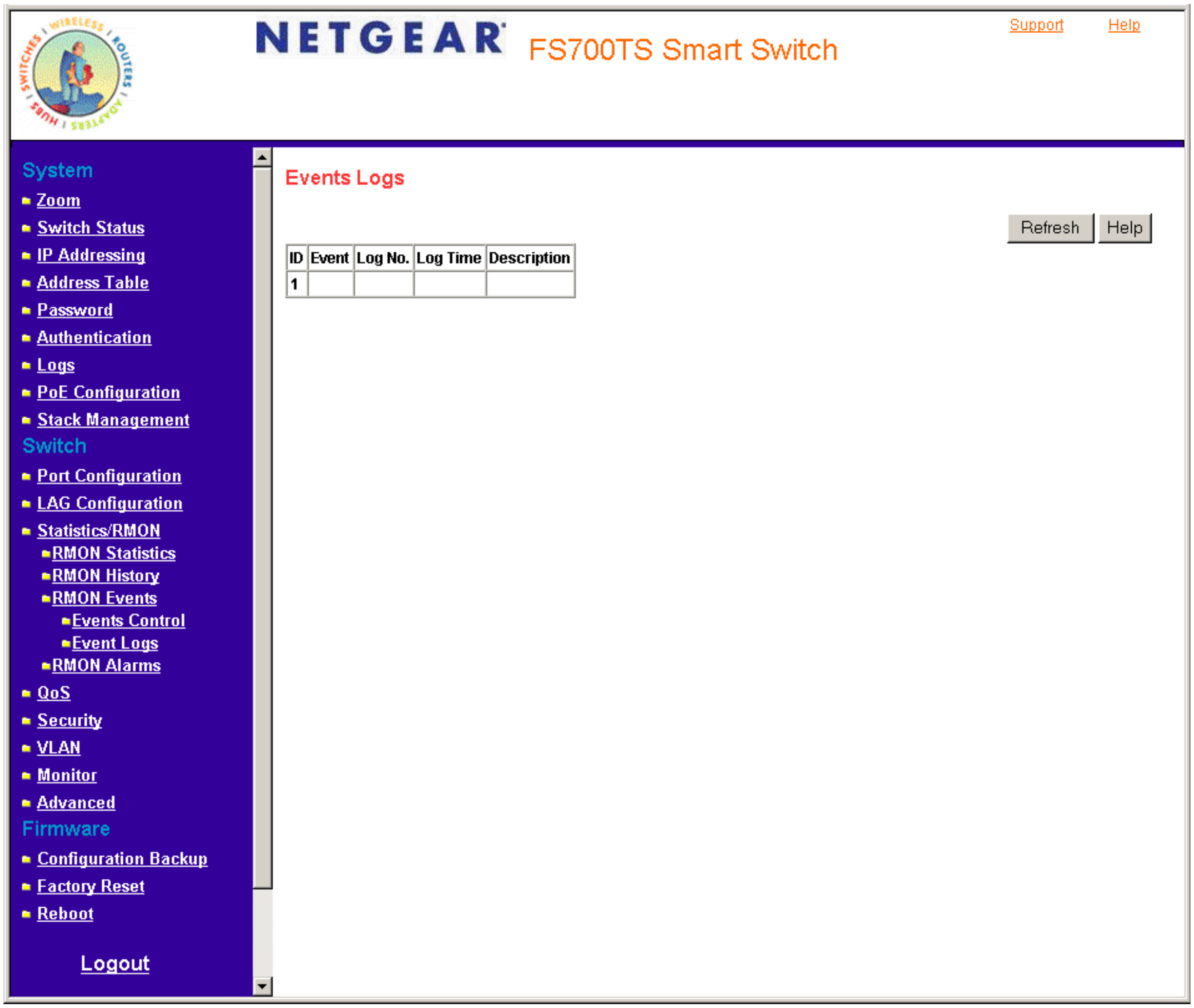
  - Log and Trap — Indicates that the event is both a log entry and a trap.
  - None — Indicates that no event occurred.
- **Time** — Displays the time that the event occurred.
- **Owner** — Displays the device or user that defined the event.
- **Delete** — Removes a RMON event. The possible field values are:
  - Checked — Removes a selected RMON event.
  - Unchecked — Maintains RMON events.

Viewing the RMON Events Logs

The *Events Logs Page* contains a list of RMON events.

To view RMON event logs:

- Click **Statistics/RMON > RMON Events > Event Logs**. The *Events Logs Page* opens.



ID	Event	Log No.	Log Time	Description
1				

Figure 5 - 76: Events Logs Page

The *Events Logs Page* contains the following fields:

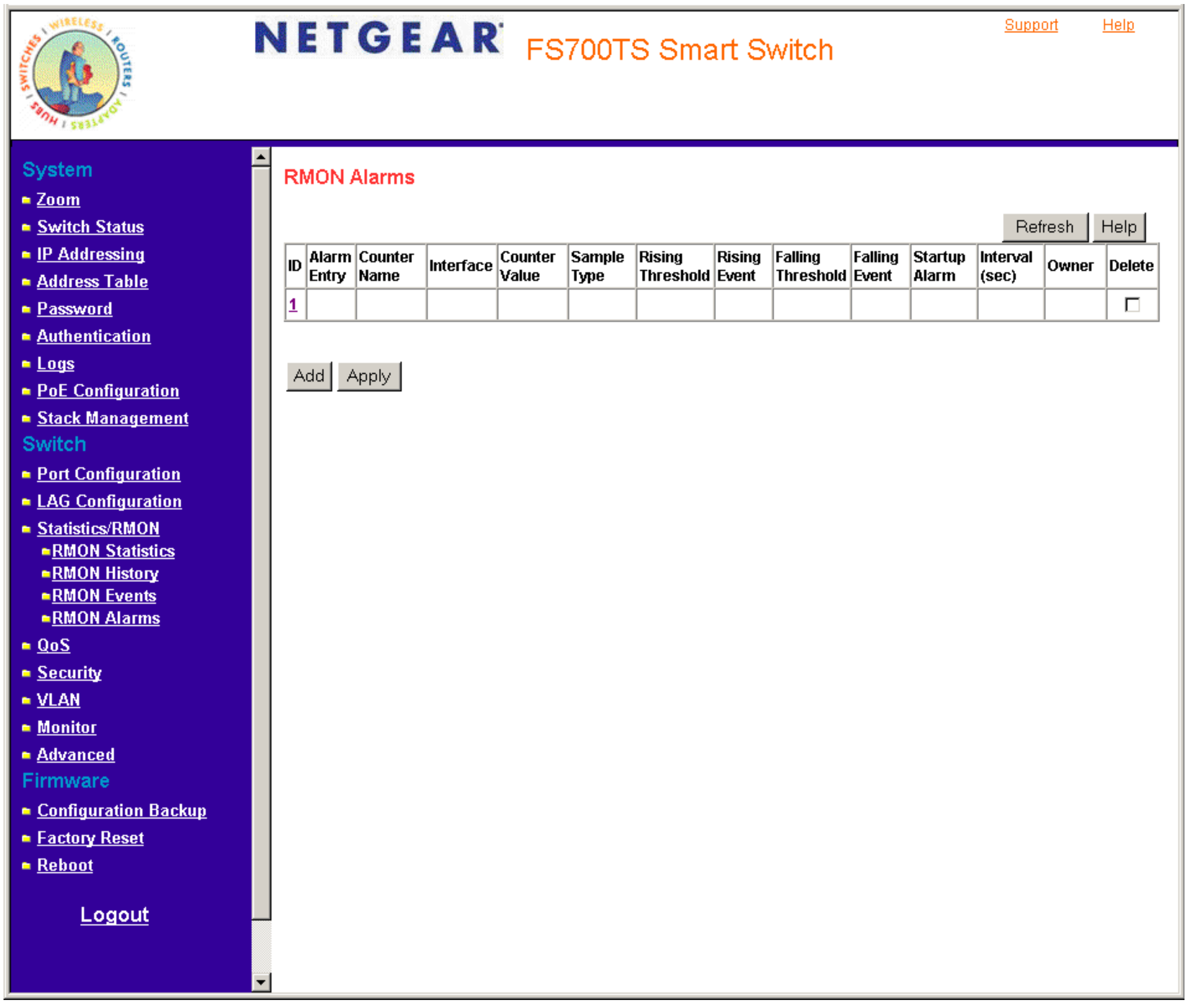
- **ID** — Indicates the Events Logs Page table entry.
- **Event** — Displays the RMON Events.
- **Log No**.— Displays the log number.
- **Log Time** — Displays the time when the log entry was entered.
- **Description** — Displays the log entry description.

Defining RMON Alarms

The *RMON Alarms Page* contains fields for setting network alarms. Network alarms occur when a network problem or event, is detected. Rising and falling thresholds generate events.

To set RMON alarms:

1. Click **Statistics/RMON > RMON Alarms**. The *RMON Alarms Page* opens.



RMON Alarms

ID	Alarm Entry	Counter Name	Interface	Counter Value	Sample Type	Rising Threshold	Rising Event	Falling Threshold	Falling Event	Startup Alarm	Interval (sec)	Owner	Delete
1													☐

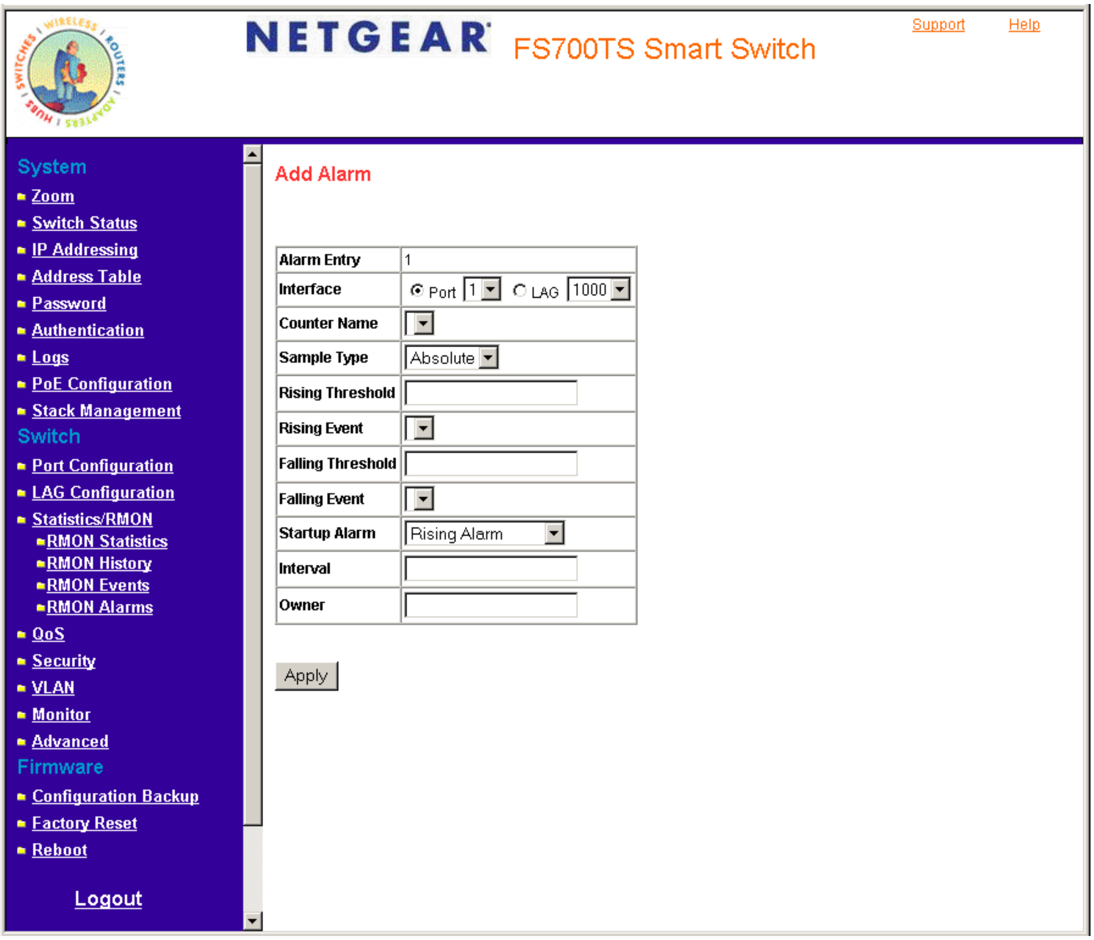
Figure 5 - 77: RMON Alarms Page

The *RMON Alarms Page* contains the following fields:

- **Alarm Entry** — Indicates a specific alarm.
- **Counter Name** — Displays the selected MIB variable.
- **Interface** — Displays interface for which RMON statistics are displayed. The possible field values are:
  - Port — Displays the RMON statistics for the selected port.
  - LAG — Displays the RMON statistics for the selected LAG.
- **Counter Value** — Displays the selected MIB variable value.
- **Sample Type** — Defines the sampling method for the selected variable and comparing the value against the thresholds. The possible field values are:
  - Delta — Subtracts the last sampled value from the current value. The difference in the values is compared to the threshold.
  - Absolute — Compares the values directly with the thresholds at the end of the sampling interval.

- **Rising Threshold** — Displays the rising counter value that triggers the rising threshold alarm. The rising threshold is presented on top of the graph bars. Each monitored variable is designated a color.
- **Rising Event** — Displays the mechanism in which the alarms are reported. The possible field values are:
  - LOG — Indicates there is not a saving mechanism for either the device or in the management system. If the device is not reset, the entry remains in the Log Table.
  - TRAP — Indicates that an SNMP trap is generated and sent via the Trap mechanism. The Trap can also be saved using the Trap mechanism.
  - Both — Indicates that both the Log and Trap mechanism are used to report alarms.
- **Falling Threshold** — Displays the falling counter value that triggers the falling threshold alarm. The falling threshold is graphically presented on top of the graph bars. Each monitored variable is designated a color.
- **Falling Event** — Displays the mechanism in which the alarms are reported.
- **Startup Alarm** — Displays the trigger that activates the alarm generation. Rising is defined by crossing the threshold from a low-value threshold to a higher-value threshold.
- **Interval** — Defines the alarm interval time in seconds.
- **Owner** — Displays the device or user that defined the alarm.
- **Delete** — Removes the RMON Alarms Table entry.

2. Click Add. The *Add Alarm Page* opens:



Add Alarm

Alarm Entry	1
Interface	● Port 1 ○ LAG 1000
Counter Name	
Sample Type	Absolute
Rising Threshold	
Rising Event	
Falling Threshold	
Falling Event	
Startup Alarm	Rising Alarm
Interval	
Owner	

Apply

Figure 5 - 78: Add Alarm Page

3. Define the fields.
4. Click Apply. The RMON alarm is added and the device is updated.

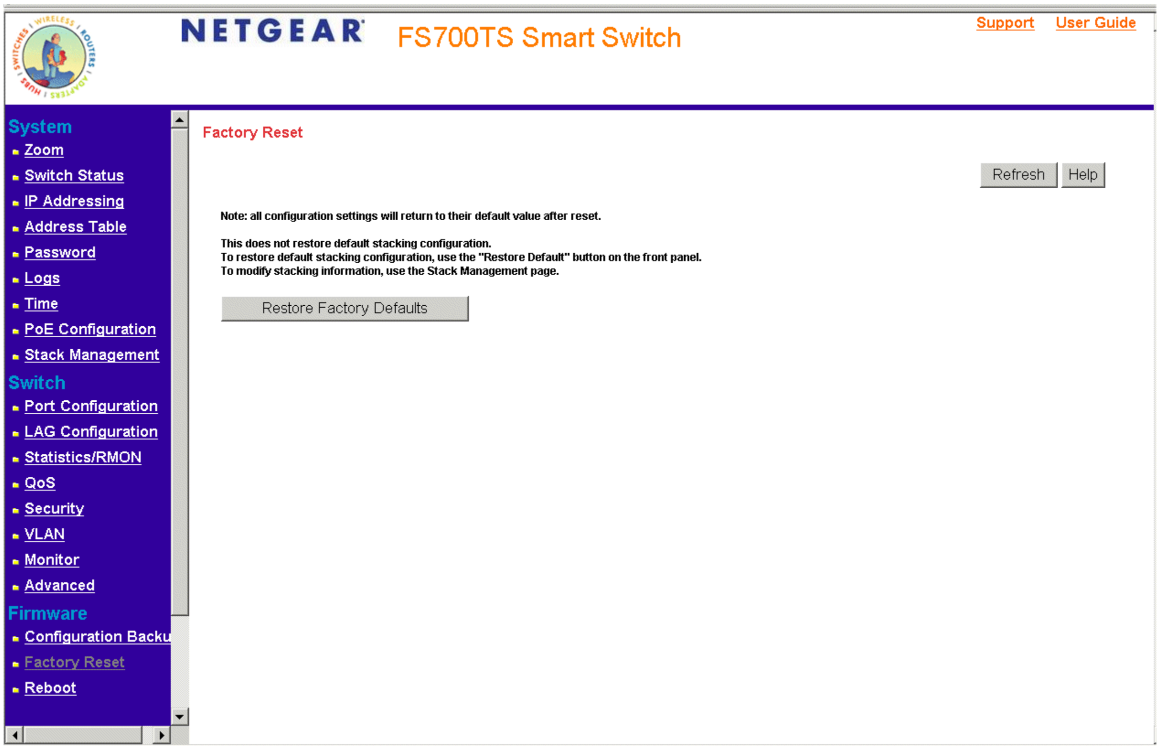
Resetting the Factory Default Values

The *Factory Reset Page* allows network managers to reset the device to the factory defaults shipped with the switch. Restoring factory defaults results in erasing the configuration file. The stacking defaults are not restored from this page, including:

- The stacking mode
- The stacking cables
- The Unit ID numbering

To restore stacking defaults, press the button on the front panel of your device. To reset the factory defaults:

1. Click **Factory Reset.** The *Factory Reset Page* opens.



Note: all configuration settings will return to their default value after reset.

This does not restore default stacking configuration.
To restore default stacking configuration, use the "Restore Default" button on the front panel.
To modify stacking information, use the Stack Management page.

Figure 5 - 79: Factory Reset Page

2. Click Restore Factory Defaults. The device reboots and the original default values are set.

APPENDIX A: DEFAULT SETTINGS

This appendix provides default settings for the NETGEAR Model FS700TS-series 24/48 Port 10/100 Stackable Smart Switch with 4 Gigabit Ports. You can always configure the switch to default settings by using the Factory Reset function from a Web browser.

Table A-1. Default Settings

Feature	FS700TS Default Setting
Port Speed	Auto-negotiation
Port Duplex	Auto-negotiation
Flow Control (half duplex)	Enabled
Flow Control (full duplex)	Enabled
IP Configuration	DHCP enabled
Password	password
VLAN	Port-Based VLAN
Link Aggregation (Trunk)	Disabled
Traffic Prioritization (QoS)	Optimized for flow control, all ports set normal priority