

SUPERMICRO®

Layer 2/3 1/10 Gigabit Ethernet Switches



SSE-G24-TG4
1/10 Gigabit Ethernet Switch



SSE-G48-TG4
1/10 Gigabit Ethernet Switch

User's Manual

Revision 1.0c

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Preface

About this Manual

This manual is written for professional system integrators, Information Technology professionals, service personnel and technicians. It provides information for the installation and use of Supermicro's Layer 2/3 1/10 Gigabit Ethernet switches. Installation and maintenance should be performed by experienced professionals only.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with Layer 2/3 1/10 Gigabit Ethernet switches and describes their main features.

Chapter 2: System Safety

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing Layer 2/3 1/10 Gigabit Ethernet switches.

Chapter 3: Setup and Installation

Refer here for details on installing Layer 2/3 1/10 Gigabit Ethernet switches.

Chapter 4: Ports and Indicators

This chapter covers the various ports and LED indicators found on Layer 2/3 1/10 Gigabit Ethernet switches.

Chapter 5: Web-based Interface

This chapter covers the web-based interface control screens for Layer 2/3 1/10 Gigabit Ethernet switches and their use.

Notes

Chapter 1

Introduction

1-1 Overview

Both the SSE-G24-TG4 and the SSE-G48-TG4 1/10 Gigabit Ethernet Layer 2/3 switches include two bays for up to four 10-Gb/s uplink ports (one or two dual-port CX4 modules and/or one or two dual-port XFP modules and/or one or two dual port SFP+ modules), and either 24 (SSE-G24-TG4) or 48 (SSE-G48-TG4) duplex 1-Gb/s (RJ45) ports for LAN interfaces (of which four are combo ports that can alternately be connected to SFP cables with an appropriate transceiver). This Ethernet switch also has an external serial connector for connecting to an external console.

1-2 Product Checklist of Typical Components

The following components are included with SSE-G24-TG4 or SSE-G48-TG4 Layer 2/3 1/10 Gigabit Ethernet switches:

- Serial cable
- Power cable
- Mounting Ears for rack assembly
- Two 10-Gb/s port module bays for either CX-4 or XFP ports (modules sold separately)
- CD-ROM with manuals

1-3 Features

The Layer 2/3 1/10 Gigabit Ethernet switches offer the following features:

- 1U form factor
- Dimensions: 440 x 387 x 44 mm (17.32 x 15.24 x 1.73 inch) (W x D x H)
- Weight: 5.6 kg (12.4 lbs) SSE-G24-TG4, 6.2 kg (13.7 lbs) SSE-G48-TG4
- 1:1 Non-blocking Connectivity
- Jumbo Frames support
- Layer 2/3 switch
- Link Aggregation support
- Up to 9k bytes
- Comprehensive routing and switching protocol support (QoS, Priority, Flow Control, OSPF-v2, RIP v2, ACLs and IGMPv2/v3)
- Browser based management/CLI interface
- Telnet accessible – RFC854/855
- Supports STP, RSTP, MSTP, IGMP snooping and 802.1x

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Chapter 2

System Safety

This chapter provides system safety procedures for use with Layer 2/3 1/10 Gigabit Ethernet switches. Please read and understand this information before installing and using them.

2-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the switch from damage:

- Be aware of how to power on/off the switch as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the switch when removing or installing it in a rack.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

2-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the switch and rack components clean and free of clutter.
- Place the switch and any rack components that have been removed away from the rack or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

2-3 Electrostatic Discharge Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards.

The following measures are generally sufficient to neutralize this difference **before** contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the mainboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure the blade enclosure provides excellent conductivity between the power supplies, the blade modules and the mainboard.

Chapter 3

Installation and Setup

This chapter covers the setup of Layer 2/3 1/10 Gigabit Ethernet switches.

3-1 Installation

To install Layer 2/3 1/10 Gigabit Ethernet switches use the procedure below.

Installing the Switch

1. Carefully unpack the switch from its shipping container and verify that all parts are present.
2. Install the 10-Gb/s add-on module(s) in the rear.
3. Install the mounting ears onto the side of the switch using a screwdriver.
4. Mount the switch into your rack assembly.

3-2 Configuring the Switch Module

The Layer 2/3 1/10 Gigabit Ethernet switches module can be configured using two methods. You may configure it:

- Through the web-based management utility
- Directly through a command line (using a telnet interface or a serial console)

The management utility accesses the switch module through any web browser. To access the switch directly, use the command line.

Note that any port may be configured as *up* (active) or *down* (inactive). All ports are active by default.

Web-based Management Utility

You can use the web-based management utility on a web browser to configure the switch module. You can access the configuration menu by a network connection.

Command Line

Configuring the switch can be done using a command line via telnet or by using the serial console interface.

Accessing CLI through Telnet

To access the command line via telnet, follow the below steps.

1. Connect a PC to a network that is accessible to the switch.

For example, connect a PC to any of the front panel ports of the switch and make sure the PC has an IP address on the same subnet as the switch management IP.

2. In the PC, start a telnet client session with the switch management IP (default IP is **192.168.100.102**).

This brings up the switch's command line interface for user login.

3. Enter the default username (**ADMIN**) and password (**ADMIN**) to login to the switch.
4. To view the switch configurations use **show commands** and to configure the switch type **config term** to get access to the configuration commands. For help type **?** or **help**.

Accessing CLI through a Serial Console

To access the command line via a serial console, follow the steps below.

1. Connect a PC serial port to the switch console port.
2. In the PC, open any serial port access applications, such as Hyperterminal or Term Term.
3. Choose the serial port connected with the switch and configure with the following parameters:

Baudrate = 9600

Data bits = 8

Parity = None

Stop bit = 1

4. This brings up the switch's command line interface for user login.
5. Enter username and password to login to the switch.
6. To view the switch configurations use **show commands** and to configure the switch type **config term** to get access to the configuration commands. For help type **?** or **help**.

For further information on the use of the command line interface, see the separate *CLI User's Guide* manual on your enclosed CD-ROM.

Firmware

The firmware for Layer 2/3 1/10 Gigabit Ethernet switches resides on a chip on the PCB.

The switch has internal flash memory in two areas to hold two firmware images. The flash area used for the normal firmware image is referred to as the *normal* area. The other flash area, referred to as the *fallback* area, is used to store the firmware image for fallback purpose in case of a failure to boot from the normal area.

Firmware Upgrading Procedures

The procedures for firmware upgrading and using a fallback firmware image are listed below.

Upgrading Firmware on the Switch using TFTP or the Network

To upgrade the switch's firmware, use the procedure below.

1. Designate a server or the network as an FTP server.
2. Copy the latest firmware to the TFTP root directory on the TFTP server machine.
3. Make sure the upgraded TFTP server and switch both have network reachability.
4. Login to the Switch CLI, either through Telnet or a serial console port.
5. Type the command below to upgrade the firmware in the normal area:

```
firmware upgrade tftp://<ip-address>/<filename>  
flash:normal
```

Here *<ip-address>* is the IP address of the TFTP server and *<filename>* is the name of the firmware image file.

6. On successful download, the CLI displays the following string:

```
Firmware download completed successfully.
```
7. After a successful download, reboot the switch to use this latest firmware.
8. If the download fails, check the IP address, file name, network connections and configurations to reach the TFTP server.
9. If the switch does not come up after the firmware upgrade due to any incorrect firmware images, boot the switch using a fallback firmware image. Refer to the steps in the procedure "[Booting using a Fallback Firmware Image](#)" below to boot the switch using a fallback firmware image.
10. Once the switch is booted with a fallback firmware, repeat the above steps to upgrade with the correct firmware image.
11. On successful upgrade to the latest firmware, it is advised that you upgrade the fallback firmware image also. Follow the steps listed in the procedure "[Upgrading Fallback Firmware using TFTP](#)" below to upgrade the fallback firmware image.

Booting using a Fallback Firmware Image

Use the procedure below to boot using a fallback firmware image.

1. Reboot the switch by power cycling the switch power.
2. During reboot, press any key when it displays the below text (as shown in [Figure 3-1](#)).

Hit any key to stop autoboot: 5

Figure 3-1. Displayed Text for Rebooting

```
Decompressing...OK

Image Running Clock = 1
Image Running Clock = 21
system memory informations :
pool size : 25MB
free size : 21MB

PRODUCT TYPE : 24 GE Ports + 4 GE Combo Ports L2 Managed PoE Switch
Hit any key to stop autoboot: 5

ERROR: PCI configuration read(0x0=0xffffffff) -READ ERROR
ERROR: PCI configuration read(0x0=0xffffffff) -READ ERROR
PCI unit 0: Dev0xb313, Rev 0x01, Chip BCM56313_A0, Driver BCM56314_A0
SOC unit 0 attached to PCI device BCM56313_A0
Test chip 0.....OK

<<< USER MENU >>>

> SYSTEM INFO:
Hardware Version      : B1-01
-----
IP Address            : 192.168.2.32
Subnet Mask           : 255.255.255.0
Default Gateway       : 192.168.2.100
TFTP Server           : 192.168.2.100
Firmware File Name    : SBM-GEM-X2C-v5.2.10.bin

> MENU OPTIONS:
Press [H] to Set Hardware Info
Press [G] to Get Hardware Info
Press [F] to Download Firmware
Press [J] to Jump to Firmware

SMC>
```

3. Once the boot sequence is interrupted, it will display menu options as shown in [Figure 3-1](#).

Use the "H" option to set hardware information by typing the character **H**. This will display the hardware information that can be changed as shown in [Figure 3-2](#).

Figure 3-2. Setting Hardware Information

```
SMC>H

> HARDWARE INFO:
Local IP (ip) = 192.168.2.32
Subnet Mask (mask) = 255.255.255.0
Default Gateway (gateway) = 192.168.2.100
TFTP Server (tftpaddr) = 192.168.2.100
Firmware Name (randiskname) = SBM-GEM-32C-v5.2.10.bin
Randisk Flag (rflag) = 0

SMC.POSC> rflag=1

> HARDWARE INFO:
Local IP (ip) = 192.168.2.32
Subnet Mask (mask) = 255.255.255.0
Default Gateway (gateway) = 192.168.2.100
TFTP Server (tftpaddr) = 192.168.2.100
Firmware Name (randiskname) = SBM-GEM-32C-v5.2.10.bin
Randisk Flag (rflag) = 1

SMC.POSC> exit

Save before Exit ? [Y/N] y

Saving Hardware Info ... OK

> HARDWARE INFO:
Local IP (ip) = 192.168.2.32
Subnet Mask (mask) = 255.255.255.0
Default Gateway (gateway) = 192.168.2.100
TFTP Server (tftpaddr) = 192.168.2.100
Firmware Name (randiskname) = SBM-GEM-32C-v5.2.10.bin
Randisk Flag (rflag) = 1
```

4. To choose the boot from a fallback image, type the command: `rflag=1`
5. Type `Save` to save the hardware information.
6. Type `Exit` to exit the hardware information menu.
7. Type **J** to boot the image. In this case it will boot from a fall back image.
8. In case you wish to later move back to a normal image, repeat the above the steps with one difference for [step 4](#), where you should use the command `rflag=0` instead of `rflag=1` to boot with a normal firmware image.

Upgrading Fallback Firmware using TFTP

To upgrade the fallback firmware using TFTP, use the procedure below:

1. Copy the latest firmware to the TFTP root directory on the TFTP server machine.
2. Make sure the upgraded TFTP server and switch both have network reach ability.

3. Login to the Switch CLI either through Telnet or a serial console port.
4. Type the below command to upgrade the firmware in the normal area:

```
firmware upgrade tftp://<ip-address>/<filename> flash:fallback
```

Here *<ip-address>* is the IP address of the TFTP server and *<filename>* is the name of the firmware image file.
5. On a successful download, the CLI displays the following string:

```
Firmware download completed successfully.
```
6. After a successful download, reboot the switch using the fallback image to verify the fallback image. Refer to the steps listed above in the procedure "[Booting using a Fallback Firmware Image](#)" to boot the switch in the fallback image.
7. Once both the normal and fallback image both have latest firmware, continue to use the normal image as directed in [step 8](#) of the procedure "[Booting using a Fallback Firmware Image](#)".

Firmware Failure Recovery Steps

In case you have any issues in booting the switch with either a normal or fallback image, use the procedure below to recover the switch functionality with a correctly working firmware image.

Recovering Switch Functionality with a Firmware Image

1. Copy the latest firmware to the TFTP root directory on a TFTP server machine.
2. Make sure the upgraded TFTP server and switch both have network reachability.
3. Reboot the switch by power cycling the switch power.
4. During reboot, press any key when it displays the below text (as shown in [Figure 3-1](#)).

```
Hit any key to stop autoboot: 5
```
5. Once the boot sequence is interrupted, it will display menu options as shown in [Figure 3-1](#). Use the "H" option to set hardware information by typing the character **H**. This will display the hardware information that can be changed as shown in [Figure 3-2](#).
6. Configure the IP address for this switch (only for booting purposes) using the command: `ip=<IP address>`
For example **ip=192.168.2.3**
7. Configure the subnet mask for this switch IP address using the following command:
`mask=<subnet mask>`
For example **mask=255.255.255.0**
8. Configure the TFTP server IP address using the following command:
`tftpaddr=<TFTP server IP>`

For example **tftpaddr=192.168.2.100**

9. Configure the gateway address to reach the TFTP server using the following command if the TFTP server is in a different network:

```
gateway=<gateway IP>
```

For example **gateway=192.168.2.100**

10. Configure the firmware image file name using the following command:

```
ramdiskname=<filename>
```

For example **ramdiskname= SBM-GEM-X2C-v5.2.10.bin**

11. Type *Save* to save the hardware information.
12. Type *Exit* to exit the hardware information menu.
13. Type **F** to download the firmware image. In this case it will download to the normal image area.
14. On a successful download, the switch displays the below string.

```
Updating the ramdisk image ...  
This may take awhile  
OK
```

15. After a successful download, boot the switch to use this latest firmware by typing **J**.
16. If the download fails, check the IP address, file name, network connections and configurations to reach the TFTP server.

Notes

Chapter 4

Ports and Indicators

This chapter covers the ports and LED indicators found on Layer 2/3 1/10 Gigabit Ethernet switches.

4-1 SSE-G24-TG4 Ports and Indicators

Figure 4-1. SSE-G24-TG4 Ports and Indicators

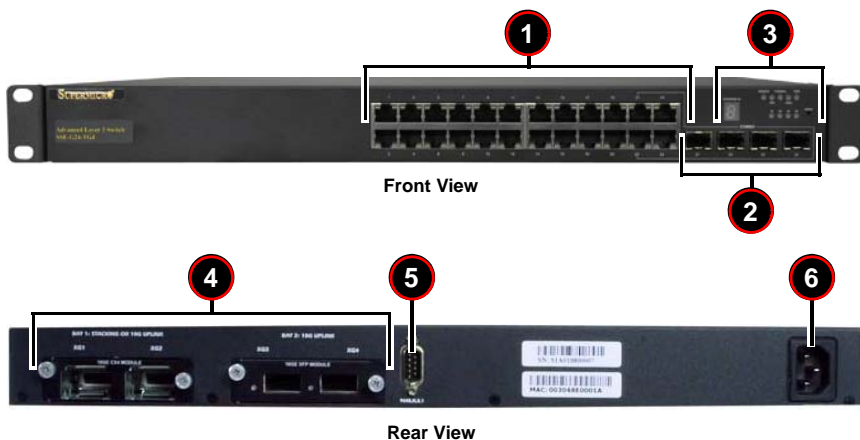


Table 4-1. SSE-G24-TG4 Switch Module Ports and Indicators

| Item | Description |
|------|---|
| 1 | RJ45 10/100/1000 Ethernet ports (24) |
| 2 | SFP Combo Ports (4) |
| 3 | LEDs and Stacking Indicator ID |
| 4 | 10-Gb/s Port Module Bays (2 bays for up to 4 ports for CX-4 or XFP) |
| 5 | Serial Port |
| 6 | Power Port |

4-2 SSE-G48-TG4 Ports and Indicators

Figure 4-2.

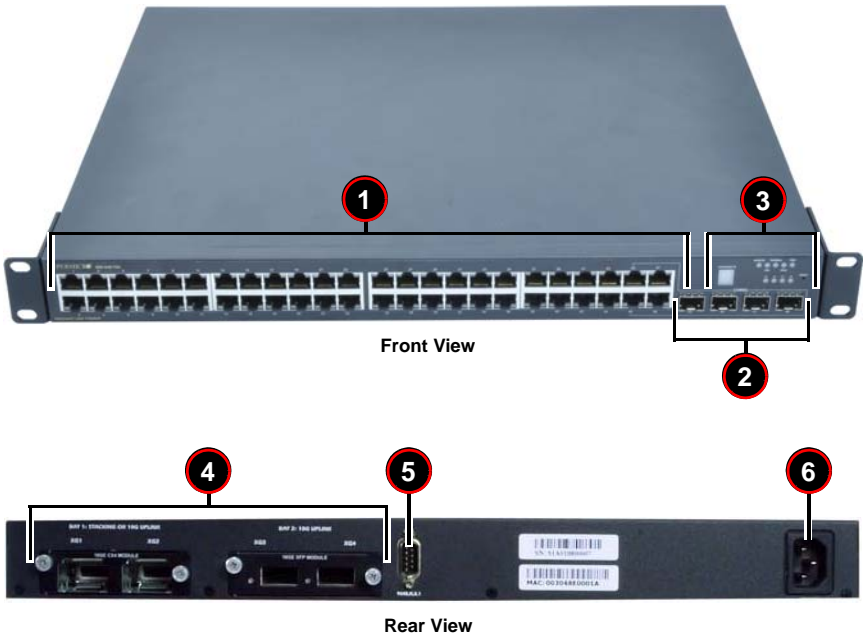


Table 4-2. SSE-G24-TG4 Switch Module Ports and Indicators

| Item | Description |
|------|---|
| 1 | RJ45 10/100/1000 Ethernet ports (48) |
| 2 | SFP Combo Ports (4) |
| 3 | LEDs and Stacking Indicator ID |
| 4 | 10-Gb/s Port Module Bays (2 bays for up to 4 ports for CX-4 or XFP) |
| 5 | Serial Port |
| 6 | Power Port |

4-3 Ports

Both Layer 2/3 1/10 Gigabit Ethernet switches contains several front mounted ports in common.

RJ45 Compatible Port

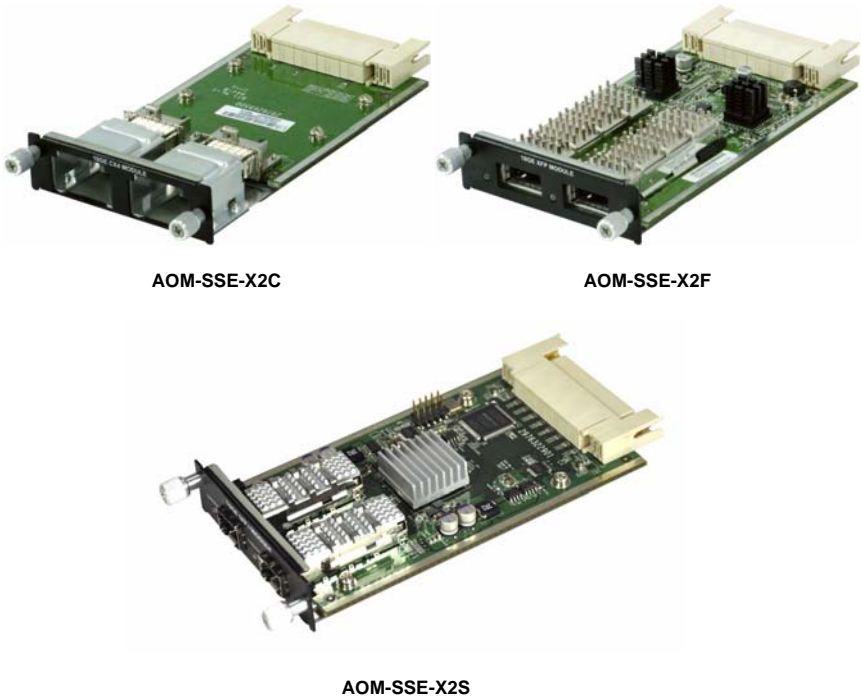
These 24 (SSE-G24-TG4) or 48 (SSE-G48-TG4) 1-Gb/s duplex ports each accept an RJ45 compatible cable.

Combo Ports

Each of the four SFP 1-Gb/s combo ports can hold a module for a downlinking fiber connector. This can be used instead of the RJ45 connector for only these four ports.

10-Gb/s Port Module Bays

Figure 4-3. 10-Gb/s Port Module Bays



The Layer 2/3 1/10 Gigabit Ethernet switches contains two bays in the rear that each house a 2-port 10-Gigabit interface module containing either CX-4, XFP or SFP+ ports, depending upon your chosen configuration (see [Figure 4-3](#)). Bay 1 can be used for Stacking or 10-Gb/s uplink. Bay 2 can also be used for stacking, but it normally is used to house a module for links to one or two external 10-Gb/s switches.

Current modules available are:

- **AOM-SSE-X2C** module with two CX4 copper interface ports for connections up to 12 meters in distance.
- **AOM-SSE-X2F** module with two XFP interface ports for accepting XFP transceivers allowing fiber connections up to 300 meters in distance.
- **AOM-SSE-X2S** module with two SFP+ interface ports for accepting SFP+ copper cables or SFP+ transceivers allowing fiber connections up to 300 meters in distance.

Serial Ports

One serial port is available for communications to an external control console.

Power Port

This port is for connecting the power cable for powering the Layer 2/3 1/10 Gigabit Ethernet switches.

4-4 Indicators

This section covers LED indicators for the Layer 2/3 1/10 Gigabit Ethernet switches. These LEDs are listed and described in [Table 4-3](#).

Table 4-3. SSE-G24-TG4 LED Indicators

| LED Name | Description |
|--------------------|---|
| Master | Indicates this is the master switch in a stacked configuration. |
| Fan | Indicates fan status. |
| Thermal | Indicates Thermal status. |
| Diagnostic | Indicates diagnostic activity. |
| Power | Indicates power for the system. |
| Combo LEDs (21-24) | Indicates activity for the Combo fiber port that corresponds to the number indicated. |

Chapter 5

Web Based Management Utility

This chapter is provided to help you quickly get started in using the web-based management utility for both Layer 2/3 1/10 Gigabit Ethernet switches.

The utility starts with a default IP address, which is also the management IP address. This IP address is essentially provided for remote management of this switch. For managing the switch through web browsers, type in the default IP address in your browser's web address in order to start accessing the switch.

For example, if the management IP address of the switch is **192.168.100.102**, the switch can be accessed through the Web browser by typing <http://192.168.1.1> in the address space of the web browser.

After entering in the IP address, the switch's LOGIN page ([Figure 5-1](#)) should appear.

Nomenclature

The following nomenclature applies to screens found in this chapter:

- **Port */*** – This indicates the stacking ID number, port number
- **Port Number GB */*** – This is for an internal port
- **Port Number Ext */*** – This is for an external port.

5-1 Overview

The Supermicro switch utility for Layer 2/3 1/10 Gigabit Ethernet switches provides a web-based interface for managing Layer 2 and Layer 3 switching at wire speed for constructing a switched/routed network. This interface provides both a bridging functionality and advanced features such as link aggregation, Dynamic VLAN/Dynamic Multicast, IGMP Snooping and Network Access Control. This web-based interface also comes with several Layer3 features as well (such as wire speed routing, Differentiated Services, multicast routing and so on).

The Supermicro Switch firmware is implemented using open sources from OpenSSL, OpenSSH and other open source communities and is configured using web browsers such as Internet Explorer.

The utility starts with a default IP address, which is also the management IP address. This IP address is essentially provided for remote management of this switch. For managing the switch through web browsers, type in the default IP address in your browser's web address in order to start accessing the switch.

For example, if the management IP address of the switch is **192.168.1.1**, the switch can be accessed through the Web browser by typing <http://192.168.1.1> in the address space of the web browser.

The default management IP address for Supermicro Switch products is **192.168.100.102**. This default IP address can be changed in the SYSTEM SETTINGS page in the System Management section.

For the SSE-G48-TG44 and SSE-G24-TG4 switches, you can connect to any of the front panel 1G ports or back panel 10G ports to manage the switch with the default management IP. These switches will create VLAN 1 by default with this IP address, including all 1G and 10G ports.

Nomenclature

The following nomenclature applies to screens found in this chapter:

- **Port */*** – This indicates the stacking ID number, port number
- **Port Number GB */*** – This is for an internal port
- **Port Number Ext */*** – This is for an external port.

5-2 Login

Figure 5-1. Login Page



The initial login page (Figure 5-1) is used to login to the Supermicro Switch web-based management utility for 10 Gb/s switches. To login, enter your **User Name** and **Password** in the fields provided and press the LOGIN button.

This User Name and Password are both used for accessing the switch through the web for switch configuration. The entered user name and password are validated at the switch end.

After logging in, you will be taken to the HOME page of the utility. See Section 5-3 for further details.

5-3 Home Page

The HOME page (Figure 5-2) contains links and menus for going to all other control pages in the Supermicro Switch web-based interface utility. A list of controls for this page is shown in Table 5-1. The basic page structure of the HOME page is duplicated for all subsequent sub-pages of the Supermicro Switch web-based interface utility.



NOTE: The SSE-G24-TG4 and SSE-G48-TG4 switches from Supermicro share a common management interface (including the associated feature set) with Supermicro's SBM-GEM-X2C Layer 2/3 1/10G Ethernet switch for the Supermicro Blade System.

In this manual you will see many screen shots of pages showing the name of the SBM-GEM-X2C in the upper left hand corner. With the exception of this name, these screens will all have the same structure and appearance in your SSE-G24-TG4 or SSE-G48-TG4 switch.

Figure 5-2. Home Page

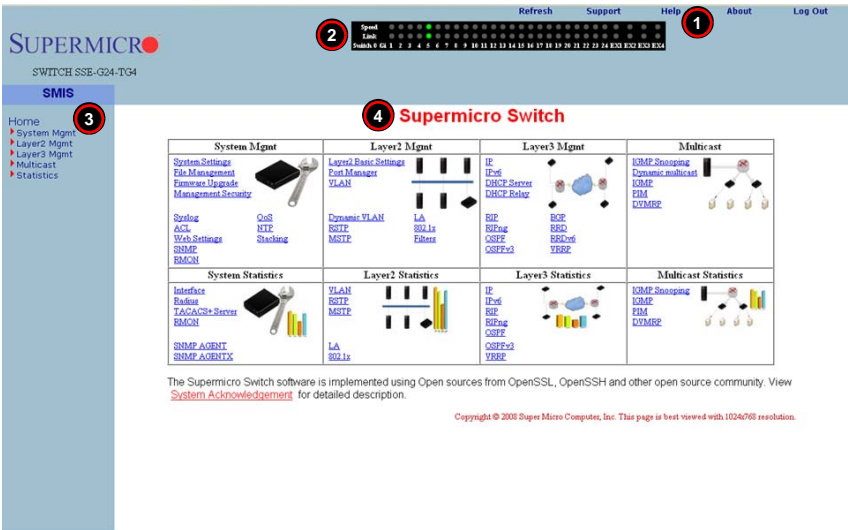


Table 5-1. Home Page Controls and Components

| Number | Name | Description |
|--------|-----------------|---|
| 1 | Top Page Links | The Top Page Links are present both on the Home page and all other pages accessed and contain links to support pages or additional controls for all pages viewed with the Web Management Utility. See "Top Page Links" below for further details. |
| 2 | Top LED Display | This section of the screen provides an overview port status for the switch. See "Top Page Links" for further details. |

Table 5-1. Home Page Controls and Components

| Number | Name | Description |
|--------|----------------------------------|--|
| 3 | Left Side Tree | The Left Side Tree contains an expandable list of links for you to use to get to other management pages. All configuration pages contain this navigation tree. |
| 4 | Middle Configuration Links Table | Each configuration page contains its own links and controls |

The HOME page is displayed on successful validation of the user name and password. The information in this page presents a brief overview of the switch web-based management utility. See Figure 5-3 and Figure 5-4 for different views of the Home page for each of Supermicro's 10-Gb/s switches.

Figure 5-3. SSE-G24-TG4 Home Page

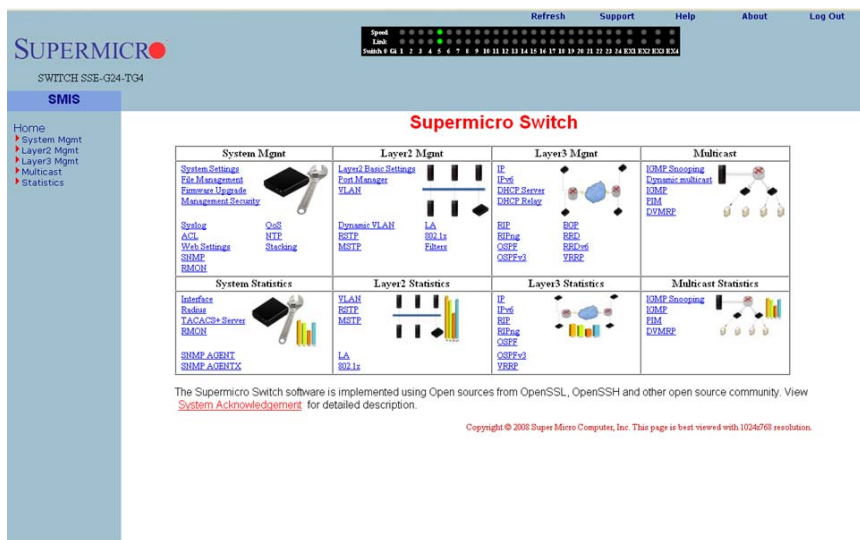
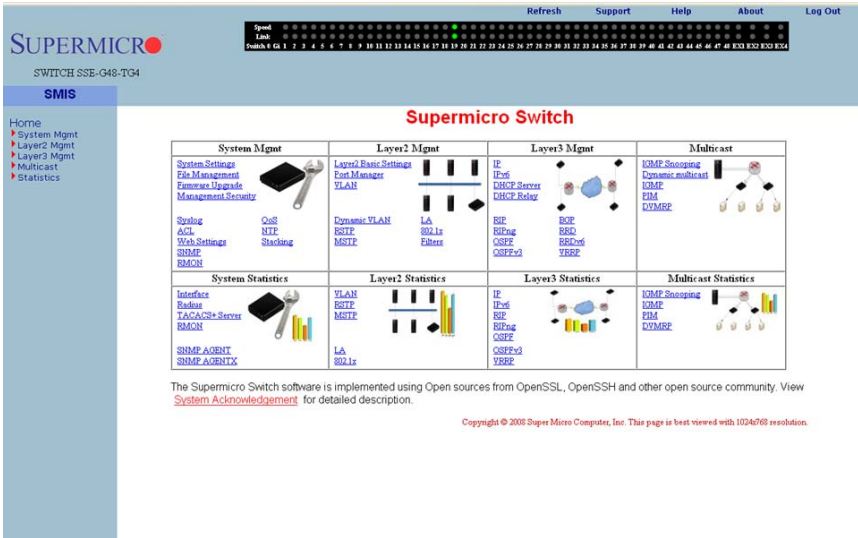


Figure 5-4. SSE-G48-TG4 Home Page



Top Page Links

On the top of all pages of the web-based management utility you can find the following PAGE HEADER links:

- **Refresh** – Click this link to refresh the contents of the page. Unlike the browser refresh button, this link refreshes only the contents of the middle of the page which has the active data.
- **Support** – Click this link to get technical support for Supermicro Products.
- **Help** – Click on this link to open a context specific help page that covers all the items on the page being viewed.
- **About** – Click this link to get additional information about the web-based management utility, the switch and also the versions supported.
- **Log Out** – Click this link to log out of the web session and go back to the Login page.

Top LED Display

This part of the screen displays the **Port Status**, **Speed** and **Link Status** for every port of the switch.

Since the number of ports is different in the SSE-G24-TG4 and SSE-G48-TG4 switches, this display displays a different number of ports for each when the Web Management Utility is run:

- For the SSE-G24-TG4 switch, it displays twenty four Gigabit Ethernet (Gi) ports and four 10-Gigabit Ethernet (EX-Extreme Ethernet) ports.
- For the SSE-G48-TG4 switch, it displays forty eight Gi ports and four Ex ports.

Note that Ex ports configured as stacking ports will not be displayed.

In stacking, the **Switch Identifier** will be displayed on top of this LED display. This allows you to select a stack member switch of interest, and to view the LED display for the corresponding switch.

For **Link**, a green light corresponding to a number indicates that that numbered port is up, whereas a red light corresponding to a number indicates that this port is down.

Left Side Tree

The tree display on the left side of the page provides quick access to the configuration pages. This tree is organized based on the features supported in the switch. The main features are categorized in the following groups.

- System Management - System based configurations
- Layer 2 Management - Layer 2 Protocols including VLAN, RSTP, MSTP, ...
- Layer 3 Management - Layer 3 Protocols including - IP, RIP, OSPF,
- Multicast Management - Multicast Protocols including IGMP, PIM, ...
- Statistics - Statistics and Counters for all the features.

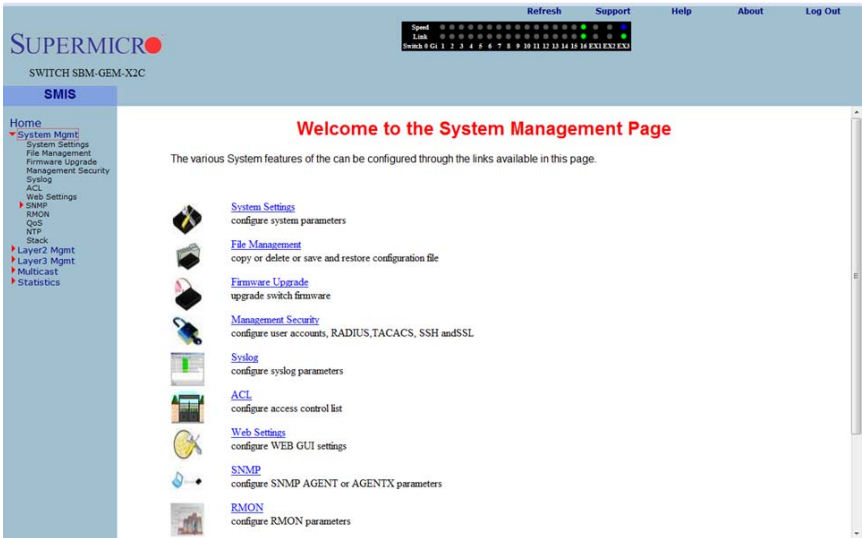
This tree is displayed on the left navigation pane on all configuration pages. This makes it easier for you to choose any configuration page directly without going back to the home page every time. To go to one of a MANAGEMENT page's sub-pages, click on the ► symbol to expand the list.

Middle Configuration Link Table

This section of the page displays a table of links to all major configurations. This table provides links similar to the Left Side Tree links. The configuration links are categorized based on features of the switch.

5-4 System Management Page

Figure 5-5. System Management Page



The SYSTEM MANAGEMENT page (Figure 5-5) contains the following links:

- [System Settings](#)
- [System Version](#)
- [File Management](#)
- [Firmware Upgrade](#)
- [Management Security](#)
- [Syslog](#)
- [ACL](#)
- [WEBGUI Settings](#)
- [SNMP](#)
- [RMON](#)
- [QoS](#)
- [NTP Settings](#)
- [Stack](#)
- [CX4 Cable Length](#)

System Settings

The following pages can be accessed through the System Settings link:

- [System Settings](#)
- [System Version](#)

System Settings

Figure 5-6. System Settings Page

The screenshot shows the 'System Settings' page for a SUPERMICRO SWITCH SBM-GEM-X2C. The page has a blue header with navigation links: Refresh, Support, Help, About, and Log Out. A status bar shows 'Speed 1000' and 'Switch: 8 Cx 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 800 832 833'. The main content area is titled 'System Settings' and contains a form with the following fields:

- Device Name: SMS1
- Switch Base MAC Address: 00:30:48:e0:04:86
- IP Address Mode: Manual
- Default IP Address: 192.168.2.5
- Subnet Mask: 255.255.255.0
- SNMP EngineID: 80.00.08.1c.04.48.53
- Device Contact: support@supermic
- Device Location: SUPERMICRO
- PIM Mode: Sparse
- Snoop Forward Mode: MAC Based
- Configuration Restore Status: Not Initiated
- Device Up Time: 0 hrs, 52 min, 24 secs
- Http Server Status: Enable
- Http Port Number: 80

Below the form are buttons for 'Reset To Factory Defaults' and 'Reboot Switch'. A note states: '* Restart of switch required, if these values are changed.'

Clicking the SYSTEM INFORMATION tab brings up the SYSTEM SETTINGS page (Figure 5-6). This page provides system related information and also helps you configure system specific parameters. Table 5-2 lists the parameters found on this page.

Table 5-2. System Information Page Parameters

| Parameter | Description |
|-----------------|--|
| Device Name | A configurable name can be entered into this field for the switch. |
| IP address mode | Either Manual or Automatic mode can be set for this parameter. |
| Subnet Mask | Use this parameter to configure the subnet mask. |
| SNMP Engine ID | This configures the SNMP Engine Identifier. |
| Device contact | Use this parameter to change the device contact. |
| Device Location | Use this parameter to change the device location. |
| PIM Mode | Use this to configure the PIM status of the switch. |

Table 5-2. System Information Page Parameters (Continued)

| Parameter | Description |
|------------------------------|--|
| Snoop forwarding Mode | You can use this parameter to change the Snoop Forwarding Mode between MAC based and IP based. |
| Switch Start MAC address | This is a display for the Switch Start MAC address. |
| Configuration Restore Status | This is a display for the Configuration Restore Status |
| Device Up Time | This is a display for the Device Up Time. |
| HTTP Server Status | This is a display for the HTTP Server Status. |
| HTTP Port Number | This is a display for the HTTP Port Number. |

This page also has a control to **Reset To Factory Defaults**. This clears all switch configuration and local user accounts information. This reset requires reboot of the switch.



WARNING: Make sure to have all necessary configurations backed up before doing "Reset To Factory Defaults."

This page also provides a control to **Reboot** the switch. In stacking, the Switch Identifier is displayed on top of this reboot button. You can select the interested stack member switch to reboot the corresponding switch. You can also select the **ALL** option to reboot all stack members.

System Version

Figure 5-7. System Version Page

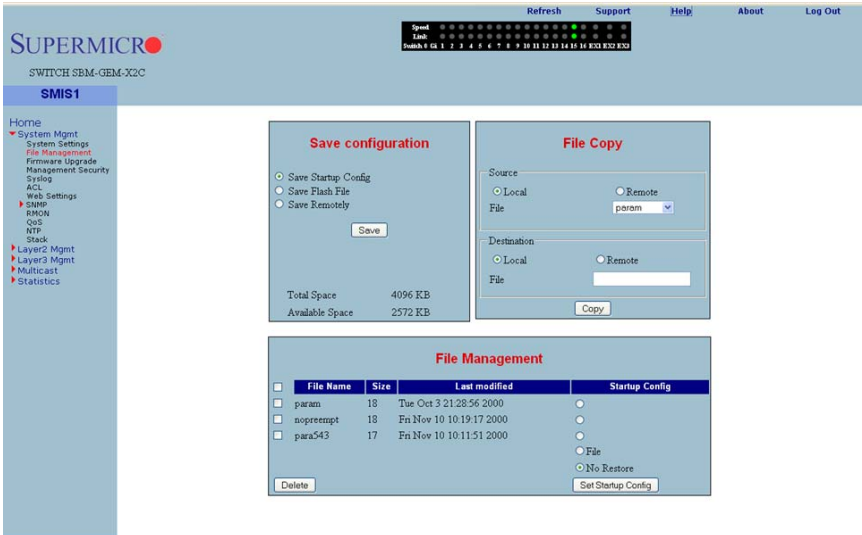
The screenshot displays the SUPERMICR web management utility interface. At the top, there is a navigation bar with links for Refresh, Support, Help, About, and Log Out. Below this, the SUPERMICR logo is visible, along with the text "SWITCH SBM-GEM-X2C". A status bar shows "Switch ID: 0" and a row of 24 indicator lights. The main content area features a navigation menu on the left with options: Home, System Mgmt, Layer2 Mgmt, Layer3 Mgmt, Multicast, and Statistics. The "System Version" tab is selected and highlighted in red. The main content area displays the "System Version" page, which contains a table with the following data:

| Switch ID | Hardware Version | Firmware Version |
|-----------|------------------|------------------|
| 0 | B1-01 | 1.0.4-4 |

Clicking the SYSTEM VERSION tab brings up the SYSTEM VERSION page (Figure 5-7). This page displays the hardware and firmware version of the switch.

File Management

Figure 5-8. File Management Page



Clicking the FILE MANAGEMENT link brings up the FILE MANAGEMENT page (Figure 5-8). The FILE MANAGEMENT page helps you to manage the configuration files in the switch. This page provides three main features.

- Save Configuration
- File Copy
- File Management

Save Configuration

You can save a currently running switch configuration in the following three ways:

- **Save Startup Config** - This option saves the currently running configuration in a local flash file with the file name configured as a "startup configuration" file.
- **Save Flash File** - This option saves the currently running configuration in local flash file with a user specified file name.
- **Save Remotely** - This option saves the currently running configuration into a remote TFTP server. You need to provide the IP address and file name of the TFTP server for this option.

The total configuration memory space and available free space are also displayed for your reference.

File Copy

You can copy a local file to or from a remote TFTP server. This feature is useful to create a backup of configuration files remotely, and also to download configuration files from remote computers to the switch. You need to provide a local file name and also the remote TFTP server's IP address and file name for this feature.

File Management

This section displays information about the configuration files stored in the switch and allows you to do any of the following actions:

- You can select one or more files and delete them.
- You can choose a Startup Configuration file from this file list.
- You can choose the FILE option and enter a name for a Startup Configuration file.
- You can also choose the NO RESTORE option for not loading any configuration files on the next reboot of the switch.

Firmware Upgrade

Figure 5-9. Firmware Upgrade Page

The screenshot shows the Supermicr web-based management utility interface. At the top, there is a navigation bar with links for Refresh, Support, Help, About, and Log Out. Below this, the main header displays 'SUPERMICR' and 'SWITCH SBM-GEM-X2C'. The left sidebar contains a navigation menu with options like Home, System Mgmt, System Settings, File Management, Firmware Upgrade (highlighted), Management Security, Syslog, ACL, Web Settings, SNMP, RMON, QoS, NTP, Stack, Layer2 Mgmt, Layer3 Mgmt, Multicast, and Statistics. The main content area is titled 'Firmware Upgrade' and contains a form with the following fields: 'Flash Area' (set to 'Normal'), 'File Name' (with a 'Browse...' button), and an 'Upload Firmware' button. Below the form, a note states: 'Note: Firmware Upload will take a few minutes. Please be patient.'

Clicking the FIRMWARE UPGRADE link brings up the FIRMWARE UPGRADE page (Figure 5-9). This page allows you to upgrade the firmware in normal or fallback memory. In stacking, the firmware is upgraded in all stack members automatically.

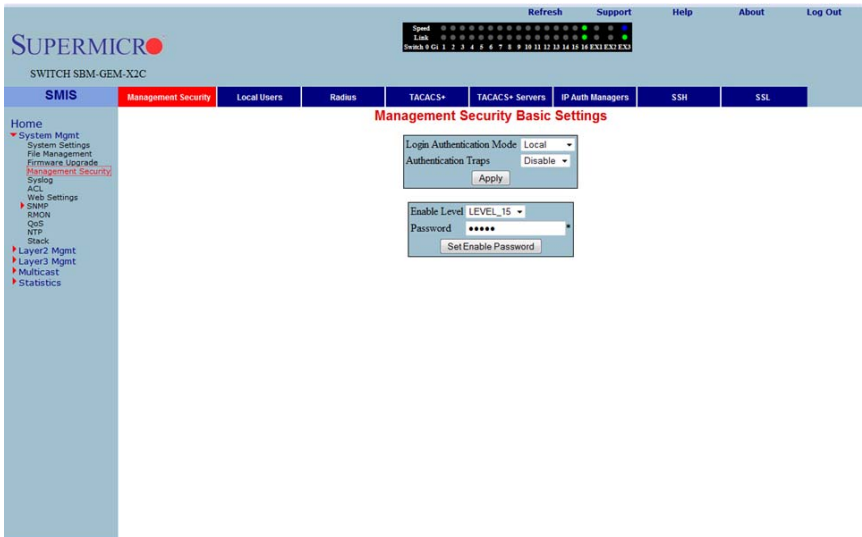
Management Security

The MANAGEMENT SECURITY link provides configuration for the following features:

- [Management Security Basic Settings](#)
- [Management User Account](#)
- [Radius](#)
- [TACACS+ Global Settings](#)
- [TACACS+ Server Configuration](#)
- [IP Authorized Manager](#)
- [SSH Configuration](#)
- [SSL Configuration](#)

Management Security Basic Settings

Figure 5-10. Management Security Basic Settings Page



Clicking the MANAGEMENT SECURITY tab brings up the MANAGEMENT SECURITY BASIC SETTINGS page (Figure 5-10). This page allows you to setup the below listed basic security parameters (Table 5-3).

Table 5-3. Management Security Basic Settings Page Parameters

| Parameter | Description |
|----------------------|---|
| Authentication mode | Use this parameter to choose the mode of authentication for management access. By default the management access is authenticated with LOCAL user accounts information. However you can choose to authenticate using <i>Radius</i> or <i>TACACS</i> instead. |
| Authentication traps | You can enable SNMP Traps for SNMP access authentication events using this parameter.. |

Administrative users can also create *Enable Passwords* in this page. Low privilege users can use these *Enable Passwords* in the WEB SETTINGS page to enable access to privilege configurations.

Administrative users can set an *Enable Password* for all privilege levels. By default, the Enable Password is set only for the highest level (Level_15). This default password is the same as the default password set for the ADMIN user login.

Management User Account

Figure 5-11. Management User Account Page

The screenshot shows the 'Management User Account Configuration' page. At the top, there's a status bar with 'Speed', 'Link', and 'CPU' indicators. Below that is a navigation bar with tabs: 'Management Security', 'Local Users', 'Radius', 'TACACS+', 'TACACS+ Servers', 'IP Auth Managers', 'SSH', and 'SSL'. The 'Local Users' tab is selected. The main content area has a form for adding a user with fields for 'User Name' (ADMIN), 'Password' (masked), and 'Privilege' (DEFAULT). Below the form is a table of existing users:

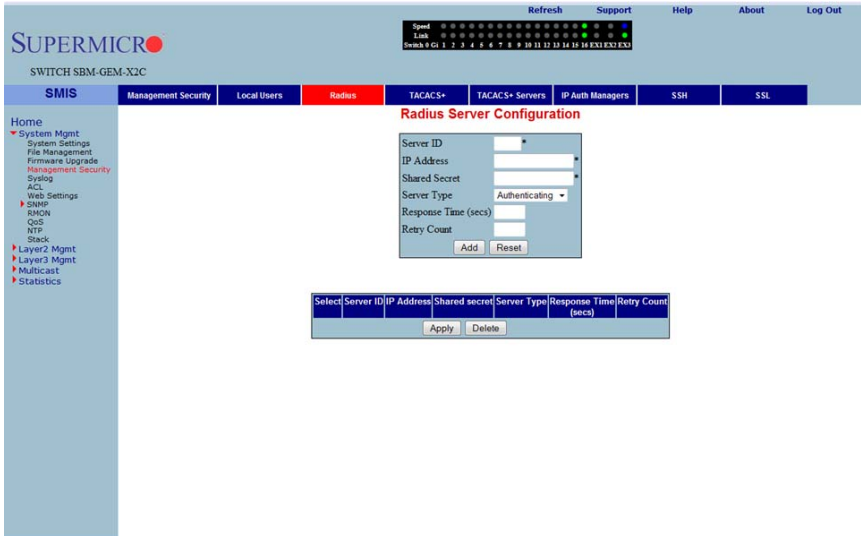
| Select | User Name | Privilege |
|----------------------------------|-----------|-----------|
| <input checked="" type="radio"/> | ADMIN | 15 |
| <input type="radio"/> | guest | 1 |
| <input type="radio"/> | stackuser | 1 |

There is a 'Delete' button below the table. The left sidebar shows a navigation menu with options like 'System Mgmt', 'System Settings', 'File Management', 'Firmware Upgrade', 'Management Security', 'Syslog', 'ACL', 'Web Settings', 'SNMP', 'SNMP', 'QoS', 'NTP', 'Stack', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', and 'Statistics'.

Clicking the LOCAL USERS tab brings up the MANAGEMENT USER ACCOUNT CONFIGURATION page (Figure 5-11). This page allows you to create or delete local user accounts. You need more than privilege Level_5 to view all pages and need more than privilege Level_10 for changing the configurations. The highest, Level_15, is for Administrator privilege.

Radius

Figure 5-12. Radius Server Configuration Page



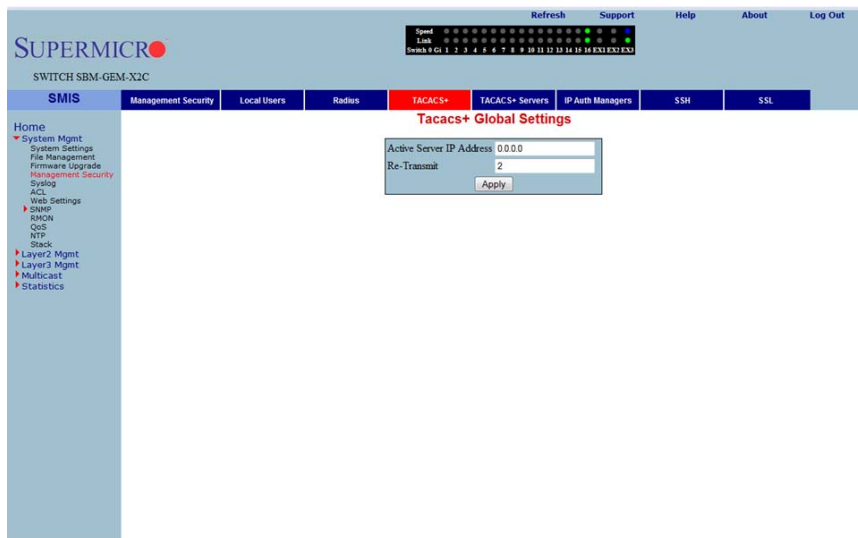
Clicking the RADIUS tab brings up the RADIUS SERVER CONFIGURATION page (Figure 5-12). This page allows you to configure the RADIUS server parameters as shown in Table 5-4.

Table 5-4. Radius Server Configuration Page Parameters

| Parameter | Description |
|----------------------|--|
| Server ID | This parameter specifies the unique identifier of the Radius Server Entry. |
| IP Address | This parameter specifies the IP Address of the Radius Server. |
| Shared Secret | Use this parameter to specify the secret string, which is to be shared between the Radius Server and the Radius Client. |
| Server Type | This parameter specifies the following RADIUS server type <ul style="list-style-type: none"> • <i>Authentication</i> • <i>Accounting</i> • <i>Both (Authentication and Accounting).</i> |
| Response Time (secs) | This parameter specifies the maximum time that the Radius Server has to respond for a request from the Radius Client. |
| Retry Count | This parameter specifies the maximum number of times a radius request is re-transmitted before getting a response from the Radius Server. |

TACACS+ Global Settings

Figure 5-13. TACACS+ Global Settings Page



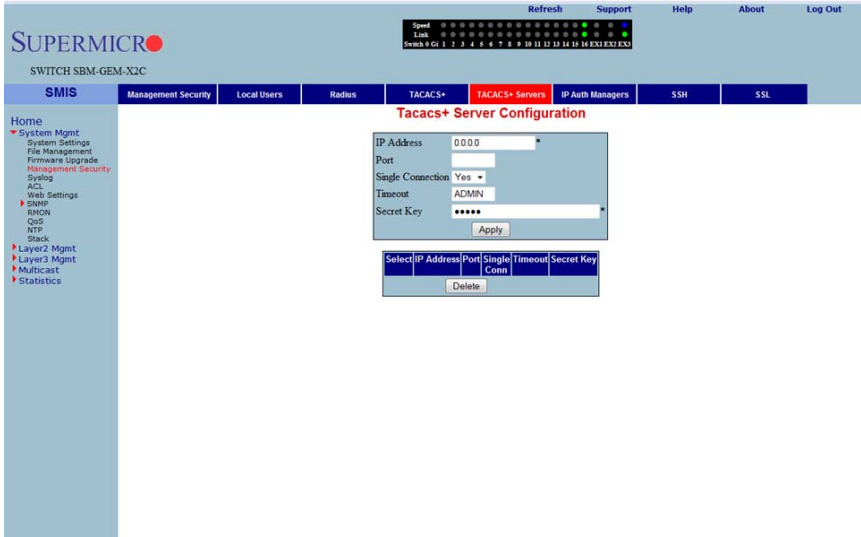
The TACACS+ GLOBAL SETTINGS page (Figure 5-13) allows you to configure TACACS retries and choose an active TACACS server. The parameters for this page are shown in Table 5-5.

Table 5-5. TACACS+ Global Settings Page Parameters

| Parameter | Description |
|--------------------------|--|
| Active Server IP Address | This parameter specifies the IP address of the active TACACS server. This server should have been already configured in the following TACACS+ SERVER CONFIGURATION page (Figure 5-14). |
| Retries | This parameter determines the number of times the switch searches the active TACACS server from the list of servers maintained. The allowed values are between 1 to 100. |

TACACS+ Server Configuration

Figure 5-14. TACACS+ Server Configuration Page



Clicking the TACACS+ SERVERS tab brings up the TACACS+ SERVER CONFIGURATION page (Figure 5-14), which allows you to configure TACACS servers. The parameters for this page are shown in Table 5-6.

Table 5-6. TACACS+ Server Configuration Page Parameters

| Parameter | Description |
|-------------------|---|
| IP Address | This parameter specifies the IP address of the TACACS server. |
| Port | Use this parameter to specify the TCP port for TACACS protocol. |
| Single Connection | Specify Yes or No for a single TCP connection. If Yes, it establishes only a single TCP connection with a given TACACS server. |
| Timeout | The time for which the switch will wait for a response from the TACACS server before closing the connection is specified with this parameter. It is configurable in seconds, with the default as 5-seconds . |
| Secret Key | This parameter specifies the encryption key for the given TACACS server. |

IP Authorized Manager

Figure 5-15. IP Authorized Manager Page

The screenshot displays the 'IP Authorized Manager' configuration page. At the top, there is a status bar with 'Speed' and 'Link' indicators. Below that, a navigation menu includes 'SMIS', 'Management Security', 'Local Users', 'RADIUS', 'TACACS+', 'TACACS+ Servers', 'IP Auth Managers' (highlighted), 'SSH', and 'SSL'. The left sidebar lists various system management options. The main form area is titled 'IP Authorized Manager' and contains the following fields and controls:

- IP Address:** A text input field.
- Subnet Mask:** A text input field.
- Port List (Incoming):** A text input field.
- VLANs Allowed:** A text input field.
- Services Allowed:** A set of checkboxes for ALL, SNMP, TELNET, HTTP, HTTPS, and SSH.
- Buttons:** 'Add' and 'Reset' buttons.

At the bottom of the form, there is a legend: `[IP Address]` `[Subnet Mask]` `[Port List (Incoming)]` `[VLANs Allowed]` `[Services Allowed]`.

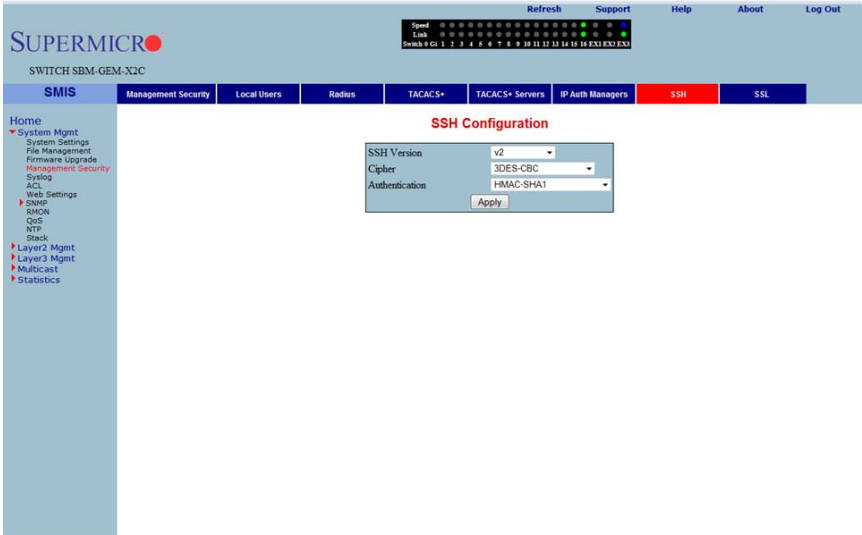
Clicking the IP AUTH MANAGER tab brings up the IP AUTHORIZED MANAGER page (Figure 5-15), which allows you to configure allowed management nodes for managing the switch. The parameters for this page are shown in Table 5-7.

Table 5-7. IP Authorized Manager Page Parameters

| Parameter | Description |
|----------------------|---|
| IP Address | This parameter specifies the IP address of the manager. An address 0.0.0.0 indicates "Any Manager". |
| Subnet Mask | This parameter specifies the sub-network mask for the specified IP address. |
| Port List (Incoming) | This lists the port through which the manager can access this switch. Ports can be comma separated or provided as a range (for example 1,2,3 or 1-3 or 1,2-3). |
| VLANs Allowed | This parameter specifies the VLANs through which the manager can access this switch. VLANs can be comma separated or provided as range (for example 1,2,3 or 1-3 or 1,2-3). |
| Services Allowed | These control buttons are used to indicate the service type, and can be one or more of the following: TELNET, SSH, HTTP, HTTPS, SNMP or ALL. |

SSH Configuration

Figure 5-16. SSH Configuration



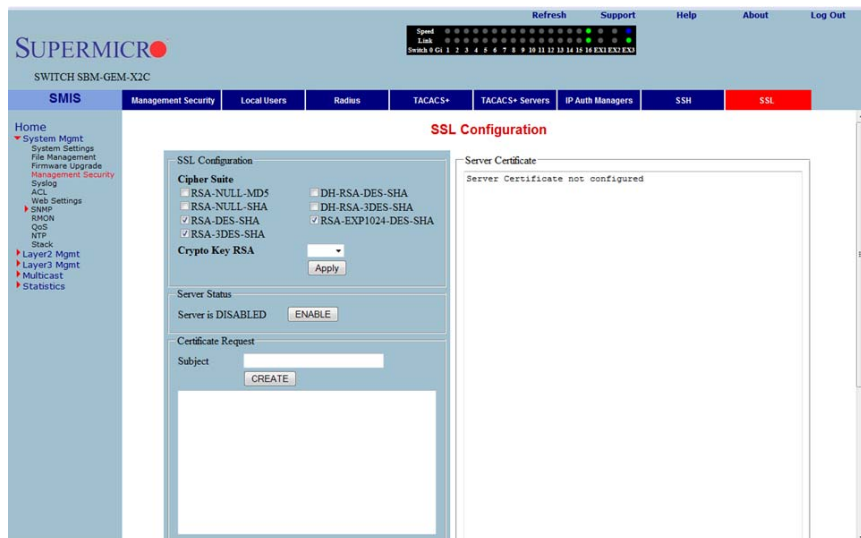
Clicking the SSH (Secure Shell) tab brings up the SSH CONFIGURATION page (Figure 5-16), which allows you to configure SSH version and keys. The parameters for this page are shown in Table 5-8.

Table 5-8. SSH Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| SSH Version | The default for this parameter is v2 . You can choose to configure this as compatible with <i>v1</i> instead. |
| Cipher | The default for this parameter is 3DES-CBC . You can instead choose to configure it as <i>3DES-CBC</i> or <i>DES-CBC</i> or both |
| Authentication | This parameter's default is HMAC-SHA1 . You can instead choose to configure it as <i>HMAC-SHA1</i> or <i>HMAC-MD5</i> or both. |

SSL Configuration

Figure 5-17. SSL Configuration Page



Clicking the SSL (Secure Socket Layers) tab brings up the SSL CONFIGURATION page (Figure 5-17), which allows you to configure SSL parameters and generate SSL certificates for HTTPS. To configure SSL and enable HTTPS, follow the procedure below using this page.

Configuring SSL and Enabling HTTPS

1. Configure CIPHER SUITE and CRYPTO KEY RSA with your chosen parameters.
2. Create a certificate request by entering the subject name and clicking on the CREATE button.
3. When the page reloads, the text box below the CREATE button will display a certificate request. Copy and paste these contents to a text file that says **a.csr**.
4. To generate an SSL certificate, the **openssl** application can be used. The sub-steps below can be executed in any Linux machine to generate SSL certificates. For other *openssl* implementations, refer to the *openssl* documentation to find the equivalent steps for them.
 - a. Execute the below command in the Linux shell.


```
openssl req -x509 -newkey rsa:1024 -keyout cakey.pem
-out cacert.pem
```
 - b. Execute the below command also in a Linux shell.

```
openssl x509 -req -in a.csr -out cert.pem -CA cacert.pem  
-CAkey cakey.pem -CAcreateserial
```

The above steps will generate the certificate file **cert.pem**.

5. Open the generated certificate file *cert.pem* and delete the first line (---BEGIN CERTIFICATE ---) and last line (---END CERTIFICATE--).
6. Join all the remaining lines as single lines to avoid line breaks being processed and copy/paste these joined texts in the ENTER CERTIFICATE text box back in the SSL CONFIGURATION page.
7. Click the CONFIGURE button.

This configures the certificate and saves it to flash memory.

Syslog

The Syslog link provides configuration controls for the following features:

- [Syslog Configuration](#)
- [Syslog Mail Configuration](#)

Syslog Configuration

Figure 5-18. Syslog Configuration Page

The screenshot shows the 'Syslog Configuration' page. The main configuration area includes the following fields:

- Syslog: Enable (dropdown)
- Server IP Address: 0.0.0.0 (text input)
- Buffer Size: (text input)
- Timestamp: Enable (dropdown)
- Console Log: Enable (dropdown)
- Facility: local0 (dropdown)
- Trap: Alerts (dropdown)

Below the form is a table summarizing the configuration:

| Syslog | Console Logging | Timestamp Logging | Trap Logging | Facility | Server IP | Buffer Size |
|---------|-----------------|-------------------|--------------|----------|-----------|-------------|
| Enabled | Enabled | Enabled | Debugging | local0 | 0.0.0.0 | 50 |

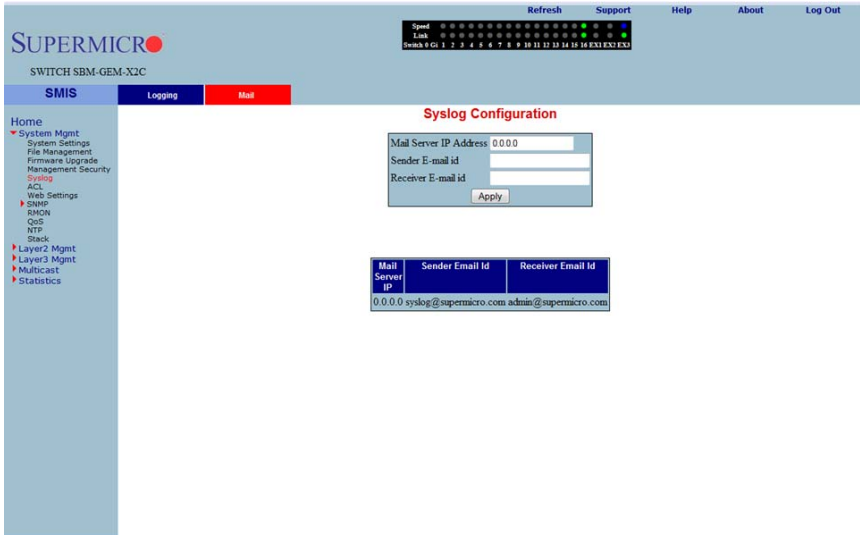
Clicking the LOGGING tab brings up the SYSLOG CONFIGURATION page (Figure 5-18), which allows you to configure logging parameters. The parameters for this page are shown in Table 5-9.

Table 5-9. Syslog Configuration Page Parameters

| Parameter | Description |
|-------------------|--|
| Syslog | This parameter enables or disables the Syslog feature. |
| Server IP Address | This parameter specifies the Syslog server IP address. Make sure the Server IP is reachable. |
| Buffer Size | The buffer size is specified in log entries. Max entries buffered is 200 . |
| Timestamp | This parameter allows you to enable or disable the adding of a timestamp to the log messages. |
| Console Log | This parameter allows you to enable or disable logging to the console. |
| Facility | This parameter allows you to select supported facilities. The switch supports syslog standard supported facilities LOCAL0, LOCAL1, LOCAL2, LOCAL3, LOCAL4, LOCAL5, LOCAL6, LOCAL7 and USER. |
| Traps | This parameter helps you to select a particular trap type. The following types of traps are supported ALERTS, CRITICAL, DEBUGGING, EMERGENCIES, ERROR, INFORMATIONAL, NOTIFICATION and WARNINGS. |

Syslog Mail Configuration

Figure 5-19. Syslog Mail Configuration Page



Clicking the MAIL tab brings up the SYSLOG MAIL CONFIGURATION page (Figure 5-19), which allows you to configure the mail server and mail addresses for the syslog feature. The parameters for this page are shown in Table 5-10.

Table 5-10. Syslog Mail Configuration Page Parameters

| Parameter | Description |
|------------------------|---|
| Mail Server IP Address | This parameter specifies the IP address of the mail server. Make sure the mail server is reachable. |
| Sender Email ID | This parameter specifies the Email ID to be shown as the From address on Syslog Emails. |
| Receiver Email ID | This parameter specifies the receipt Email address for Syslog Emails. |

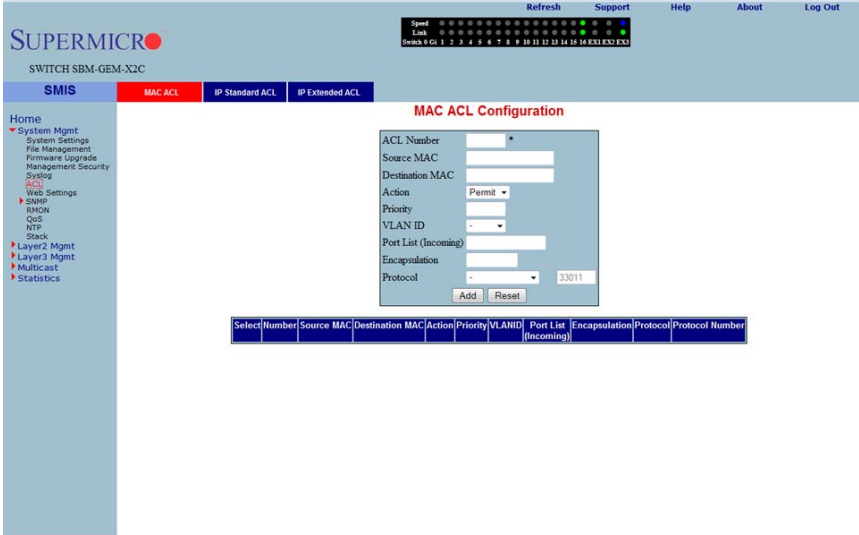
ACL

The ACL link allows you to configure the Access Control List for the switch. You can configure ACL on the following three pages:

- [MAC Based ACL](#)
- [IP Standard ACL](#)
- [IP Extended ACL](#)

MAC Based ACL

Figure 5-20. MAC ACL Configuration Page



Clicking the MAC ACL tab brings up the MAC ACL CONFIGURATION page (Figure 5-20), which displays the various parameters to configure the MAC Access List. The parameters for this page are shown in Table 5-11.

Table 5-11. MAC ACL Configuration Page Parameters

| Parameter | Description |
|----------------------------|---|
| ACL Number | This parameter specifies a unique ID for the access list. |
| Source and Destination MAC | These fields specify both the Source MAC Address and Destination MAC Address, for which the access list must be applied. Both the Source and Destination MAC Addresses must be configured for the status of the access list to be active. |
| Action | This parameter specifies the action to be taken for the access list. |
| Priority | This parameter specifies the priority for the access list. |
| VLAN ID | This parameter specifies the VLAN ID for which the access list has to be applied. |
| Port List (Incoming) | This parameter specifies the Port List for which the access list has to be applied. |
| Encapsulation | This parameter specifies the Encapsulation type of the packet for which the access list has to be applied. |
| Protocol | This parameter specifies the non-IP protocol type of the packet for which the access list has to be applied. |

IP Standard ACL

Figure 5-21. IP Standard ACL Configuration Page



Clicking the IP STANDARD ACL (Access Control List) tab brings up the IP STANDARD ACL CONFIGURATION page (Figure 5-21), which displays the various parameters to configure the Standard IP access lists. The parameters for this page are shown in Table 5-12.

Table 5-12. IP Standard ACL Configuration Page Parameters

| Parameter | Description |
|-----------------------------------|--|
| ACL Number | This parameter specifies the unique ID for the access list. This value must be in the range from 1 to 1000. |
| Action | This parameter specifies whether the packets must be allowed or dropped when a match has been found. |
| Source and Destination IP Address | This parameter specifies the IP Address of the Source and Destination for which the access list must be applied. |
| Subnet Mask | This parameter specifies the Source and Destination Address Mask corresponding to the IP Address. |
| Ports List (Incoming) | This parameter specifies the Incoming Port List for which the access list has to be applied. |
| Ports List (Outgoing) | This parameter specifies the Outgoing Port List for which the access list has to be applied. |

IP Extended ACL

Figure 5-22. IP Extended ACL Page

The screenshot displays the 'IP Extended ACL Configuration' page. At the top, there is a navigation bar with 'SMIS', 'MAC ACL', 'IP Standard ACL', and 'IP Extended ACL' (highlighted in red). Below this is a sidebar menu with options like 'Home', 'System Mgmt', 'System Settings', 'File Management', 'Firmware Upgrade', 'Management Security', 'Status', 'ACL', 'Web Settings', 'SNMP', 'RMON', 'QoS', 'NTP', 'Stack', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', and 'Statistics'. The main content area contains the configuration form for an ACL. The form includes fields for ACL Number, Action (Permit), Source IP Address, Subnet Mask, Destination IP Address, Subnet Mask, Port List (Incoming), Port List (Outgoing), Protocol (icmp), Message Code (255), Message Type (255), Priority, Discp, TOS (1), ACK Bit (Establish), RST Bit (Set), Source Port (Min), Source Port (Max), Destination Port (Min), and Destination Port (Max). There are 'Add' and 'Reset' buttons at the bottom of the form. A note below the form states: 'Note : Range for Both Source and Destination Ports cannot be given.' At the bottom of the page, there is a table with columns for various ACL parameters: Select, Filter, Action, Source IP, Subnet Mask, Destination IP, Subnet Mask, Port List (Incoming), Port List (Outgoing), Protocol, Other, Code, Type, Priority, Discp, TOS, ACK Bit, RST Bit, Source Port (Min), Source Port (Max), Destination Port (Min), and Destination Port (Max).

Clicking the IP EXTENDED ACL tab brings up the IP EXTENDED ACL CONFIGURATION page (Figure 5-22), which displays the various parameters required to configure the Extended IP access lists. The parameters for this page are shown in Table 5-13.

Table 5-13. IP Extended ACL Configuration Page Parameters

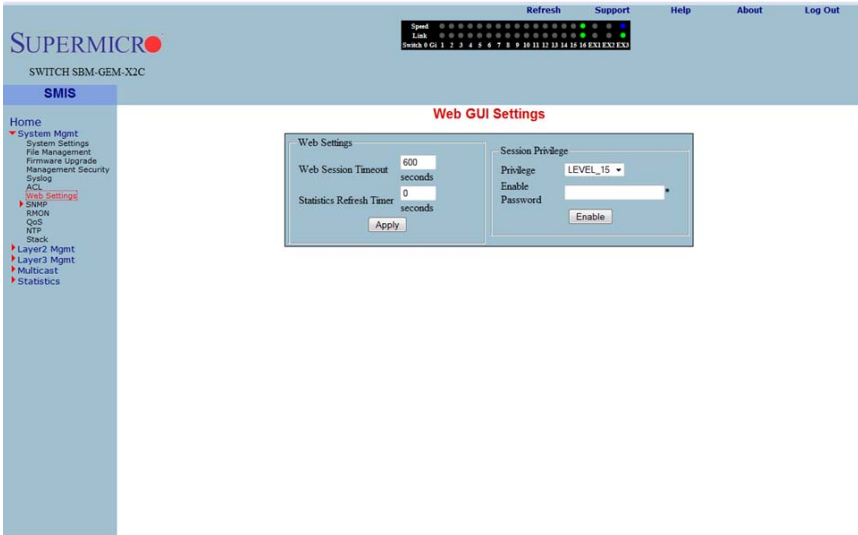
| Parameter | Description |
|-----------------------------------|---|
| ACL Number | This parameter specifies the unique ID for the access list. This value must be in the range from 1001 to 65535. |
| Action | This parameter specifies whether the packets must be allowed or dropped when a match has been found. |
| Source and Destination IP Address | This parameter specifies the IP Address for which the access list must be applied. |
| Subnet Mask | This parameter specifies the Address Mask corresponding to the IP Address. |
| Ports List (Incoming) | This parameter specifies the Incoming Port List for which the filter has to be applied. |
| Ports List (Outgoing) | This parameter specifies the Outgoing Port List for which the filter has to be applied. |
| Protocol | This parameter specifies the type of protocol. |
| Message Code | This parameter specifies the Message Code to be checked for ICMP Packets. |
| Message Type | This parameter specifies the Message Type to be checked for ICMP Packets. |

Table 5-13. IP Extended ACL Configuration Page Parameters (Continued)

| Parameter | Description |
|------------------------|---|
| Priority | This parameter specifies the Priority for the filter. |
| TOS | This parameter specifies the Type of Service for the access list. |
| ACK Bit | This parameter indicates the TCP Ack Bit to be checked against the incoming packet. |
| RST Bit | This parameter indicates the TCP Reset Bit to be checked against the incoming packet. |
| Source Port (Min) | This parameter specifies the TCP/UDP source port from which the access list has to be applied. |
| Source Port (Max) | This parameter specifies the TCP/UDP source port to which the access list has to be applied. |
| Destination Port (Min) | This parameter specifies the TCP/UDP destination port from which the access list has to be applied. |
| Destination Port (Max) | This parameter specifies the TCP/UDP destination port to which the access list has to be applied. |

WEBGUI Settings

Figure 5-23. Web GUI Settings Page



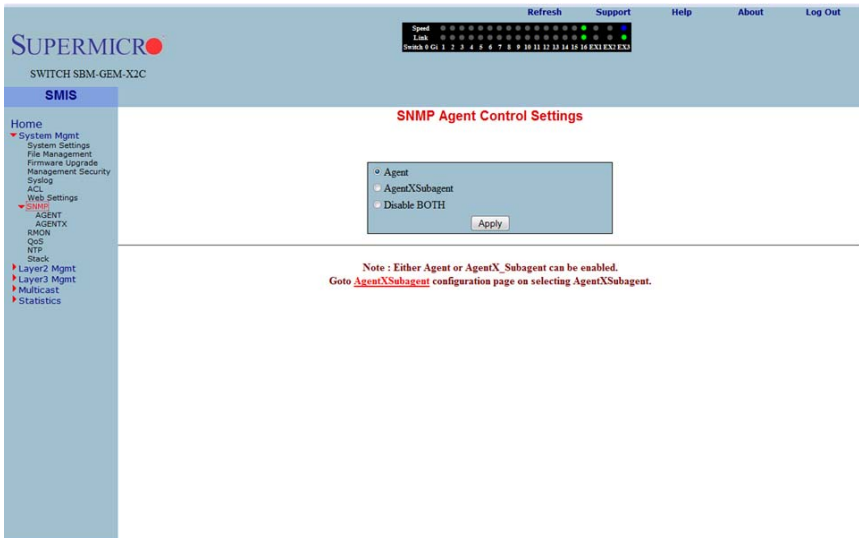
Clicking the WEB SETTINGS link brings up the WEB GUI SETTINGS page (Figure 5-23), which displays all basic Web GUI settings. The parameters for this page are shown in Table 5-14.

Table 5-14. Web GUI Settings Page Parameters

| Parameter | Description |
|--------------------------|--|
| Session timeout | This timeout value is used to automatically logout inactive user sessions. The default value is 5-minutes (600-seconds). |
| Statistics Refresh Timer | The statistics pages (grouped under "Statistics" node in left side tree) can be set to auto refresh based on this Statistics Refresh Timer. The default value zero means no auto refresh by default. |
| Session Privilege | This displays the current privilege level of the logged in user. You can choose to enter another privilege level using this configuration if you have the Enable password for the required privilege levels. The Enable Passwords for different levels are configurable in the Management Security web page. |

SNMP

Figure 5-24. SNMP Agent Control Settings Page



Clicking the SNMP link brings up the SNMP AGENT CONTROL SETTINGS page (Figure 5-24). SMIS supports the **SNMP Agent** or **SNMP AgentX Sub-agent**. The SNMP Agent or AgentX Sub-agent can be enabled or both can be disabled.

The SNMP Agent provides the following sub-page configurations shown in the table below.

Table 5-15. SNMP Agent Configuration Pages

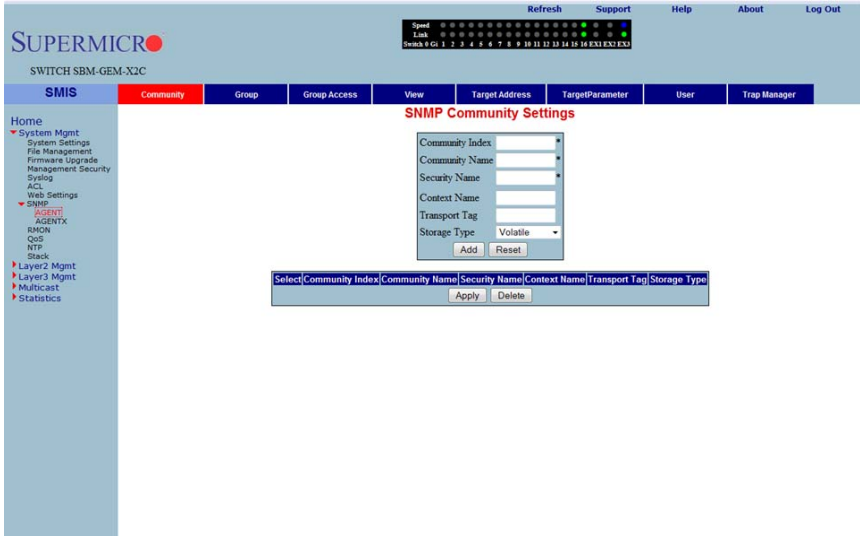
| Configuration Page | Description |
|--|---|
| SNMP Community Settings | This page allows you to configure the SNMP community including the COMMUNITY INDEX, NAME, SECURITY NAME, CONTEXT NAME, TRANSPORT TAG and STORAGE TYPE. |
| SNMP Group Settings | This page allows you to configure SNMP groups including GROUP NAME, SECURITY NAME, SECURITY MODEL and STORAGE TYPE. |
| SNMP Group Access Settings | This page allows you to configure SNMP group's access parameters including GROUP NAME, SECURITY MODEL, SECURITY LEVEL, STORAGE TYPE, AND READ, WRITE and NOTIFY VIEW. |
| SNMP View Tree Settings | This page allows you to configure an SNMP view tree including VIEW NAME, SUB TREE, MASK, TYPE OF THE VIEW and STORAGE TYPE. |
| SNMP Target Address Settings | This page allows you to configure the SNMP target including TARGET NAME, TARGET IP, TRANSPORT TAG, PARAM and STORAGE TYPE. |

Table 5-15. SNMP Agent Configuration Pages (Continued)

| Configuration Page | Description |
|--|--|
| SNMP Target Parameter Settings | This setting allows you to configure SNMP target parameters including PARAMETER NAME, MP MODEL, SECURITY MODEL, NAME, LEVEL and STORAGE TYPE. |
| SNMP User Settings | This setting allows you to configure SNMP security including user name, AUTHENTICATION PROTOCOL, AUTHENTICAITON KEY, PRIVACY PROTOCOL, PRIVACY KEY and STORAGE TYPE. |
| SNMP Trap Settings | This setting allows you to configure SNMP trap notifications including NOTIFY NAME, NOTIFY TAG, NOTIFY TYPE and STORAGE TYPE. |

SNMP Community Settings

Figure 5-25. SNMP Community Settings Page



Clicking the COMMUNITY tab brings up the SNMP COMMUNITY SETTINGS page (Figure 5-25), which allows you to add SNMP managers or remove existing managers.. The parameters for this page are shown in Table 5-16.

Table 5-16. SNMP Community Settings Page Parameters

| Parameter | Description |
|-----------------|---|
| Community index | This parameter sets the COMMUNITY INDEX identifier. |
| Community name | This parameter sets the COMMUNITY NAME string. |
| Security Name | This parameter sets the User Name String. |
| Context Name | This parameter sets the CONTEXT NAME that the management information is accessed from when using the community string, which is specified by the corresponding instance of the SNMP community name. |
| Transport Tag | This parameter sets the TRANSPORT TAG Identifier. |
| Storage Type | This parameter sets the <i>Volatile Storage</i> or <i>Non-volatile Storage</i> setting. |

SNMP Group Settings

Figure 5-26. SNMP Group Settings Page

The screenshot shows the 'SNMP GROUP Settings' page. At the top, there is a status bar with 'Speed' and 'Link' indicators, and a 'Switch 0 GI' status bar. The navigation menu includes 'SMIS', 'Community', 'Group' (selected), 'Group Access', 'View', 'Target Address', 'TargetParameter', 'User', and 'Trap Manager'. The left sidebar lists various system management options, with 'SNMP' expanded to show 'AGENTX', 'RMON', 'QoS', 'NTP', 'Stack', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', and 'Statistics'. The main content area is titled 'SNMP GROUP Settings' and contains a form with the following fields: 'Security Model' (v1), 'Security Name' (initial), 'Group Name' (initial), and 'Storage Type' (Volatile). Below the form is a table with the following data:

| Select | Security Model | Security Name | Group Name | Storage Type |
|--------------------------|----------------|---------------|------------|--------------|
| <input type="checkbox"/> | v3 | initial | initial | NonVolatile |
| <input type="checkbox"/> | v3 | templateMD5 | initial | NonVolatile |
| <input type="checkbox"/> | v3 | templateSHA | initial | NonVolatile |

Buttons for 'Add', 'Reset', 'Apply', and 'Delete' are also visible.

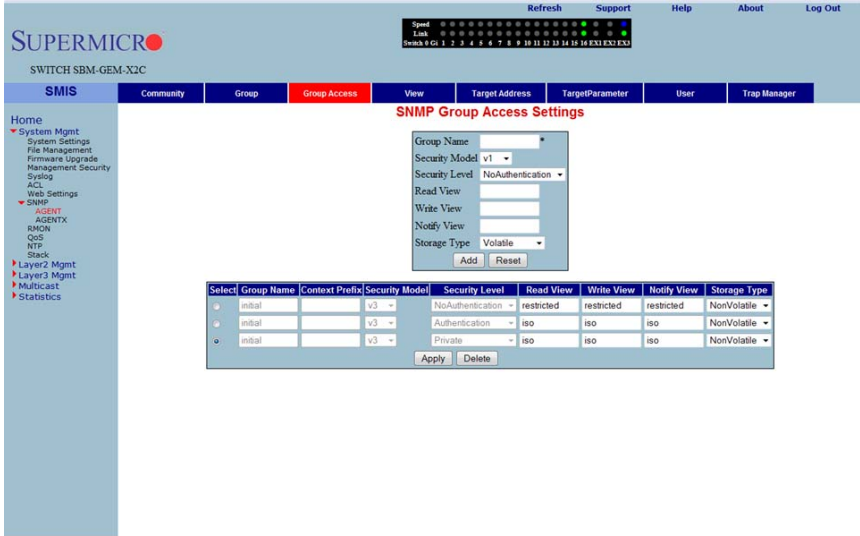
Clicking the GROUP tab brings up the SNMP GROUP SETTINGS page (Figure 5-26). This page helps you map a combination of the SECURITY MODEL and the SECURITY NAME into a GROUP NAME, which is used to define an access control policy. In addition, this page displays the STORAGE TYPE of the Group Table. The parameters for this page are shown in Table 5-17.

Table 5-17. SNMP Group Settings Page Parameters

| Parameter | Description |
|----------------|---|
| Security Model | This parameter allows you to select from <i>version 1</i> , <i>version 2</i> or <i>version 3</i> for the SECURITY MODEL used. |
| Security Name | Use this parameter to specify the SECURITY NAME string. |
| Group Name | Use this parameter to specify the GROUP NAME string. |
| Storage Type | Use this parameter to specify whether the STORAGE TYPE is <i>volatile</i> or <i>non-volatile</i> . |

SNMP Group Access Settings

Figure 5-27. SNMP Group Access Settings Page



Clicking the GROUP ACCESS tab brings up the SNMP GROUP ACCESS SETTINGS page (Figure 5-27), which displays the access rights of groups. Each entry is indexed by a GROUP NAME, a Context Prefix, a SECURITY MODEL and a SECURITY LEVEL. A proper view name (READ, WRITE and MODIFY) must be used for access control checking. It also displays the STORAGE TYPE of the Group Access table. An SNMP Group has to be created prior to the Group Access configuration. The parameters for this page are shown in Table 5-18.

Table 5-18. SNMP Group Access Settings Page Parameters

| Parameter | Description |
|----------------|---|
| Group Name | This parameter allows you to specify the GROUP NAME string. |
| Security Model | This parameter allows you to specify whether SNMP <i>version v1, v2 or v3</i> is used. <i>Version 3</i> is the most secure model as it allows packet encryption with the private key word. |
| Security Level | With this parameter the no-authentication option disables authentication. The AUTHENTICATION option enables <i>Message digest (MD5) or Secure Hash Algorithm (SHA)</i> packet authentication. The PRIVATE option selects both AUTHENTICATION and PRIVACY. |
| Read View | This parameter allows you to specify the READ VIEW identifier. |
| Write View | This parameter allows you to specify the WRITE VIEW identifier. |

Table 5-18. SNMP Group Access Settings Page Parameters (Continued)

| Parameter | Description |
|--------------|--|
| Notify View | This parameter allows you to specify the NOTIFY VIEW identifier. |
| Storage Type | Use this parameter to specify whether the STORAGE TYPE is <i>volatile</i> or <i>non-volatile</i> . |

SNMP View Tree Settings

Figure 5-28. SNMP View Tree Settings Page

The screenshot shows the 'SNMP ViewTree Settings' page. The navigation menu on the left includes 'Home', 'System Mgmt', 'System Settings', 'File Management', 'Firmware Upgrade', 'Management Security', 'Syslog', 'ACL', 'Web Settings', 'SNMP', 'AGENT', 'AGENTX', 'RMON', 'QoS', 'NTP', 'Stack', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', and 'Statistics'. The 'SNMP' menu item is expanded, showing 'ViewTree Settings'. The main content area has a title 'SNMP ViewTree Settings' and a form with the following fields: View Name (text input), SubTree (text input), Mask (text input), View Type (dropdown menu set to 'Excluded'), and Storage Type (dropdown menu set to 'Volatile'). Below the form are 'Add' and 'Reset' buttons. A table below the form has the following data:

| Select | View Name | SubTree | Mask | View Type | Storage Type |
|-------------------------------------|------------|---------|------|-----------|--------------|
| <input checked="" type="checkbox"/> | iso | 1 | 1 | Included | NonVolatile |
| <input type="checkbox"/> | restricted | 1 | 1 | Included | NonVolatile |

At the bottom of the table are 'Apply' and 'Delete' buttons.

Clicking the VIEW tab brings up the SNMP VIEW TREE SETTINGS page (Figure 5-28), which allows configuration of view trees. A SUBTREE when combined with the corresponding instance of a MASK defines a family of view subtrees. The VIEW NAME is the name for a family of view subtrees. This page also displays the STORAGE TYPE of the VIEWTREE table. SNMP Group and SNMP Access settings have to be created prior to the Group View configuration. The parameters for this page are shown in Table 5-19.

Table 5-19. SNMP View Tree Settings Page Parameters

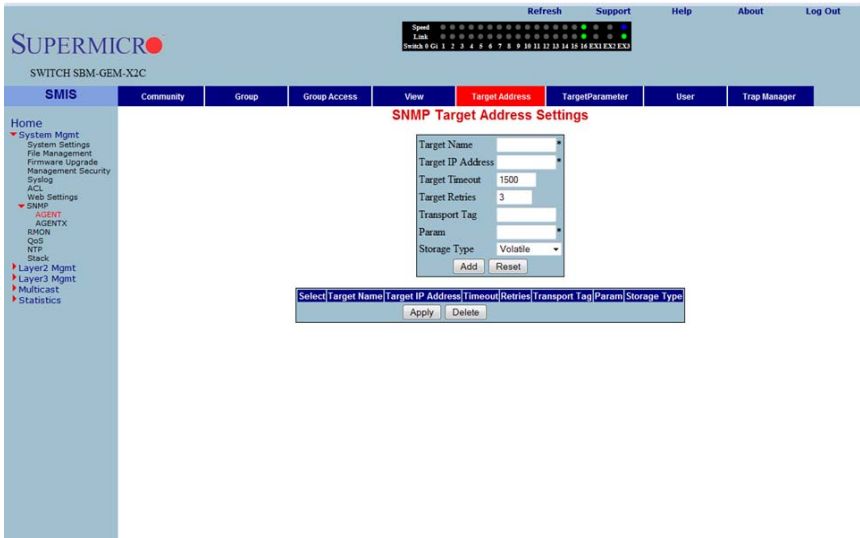
| Parameter | Description |
|-----------|--|
| View Name | This parameter specifies a VIEW NAME string. |
| SubTree | This parameter specifies a tree OID. |
| Mask | This parameter specifies an OID mask. |

Table 5-19. SNMP View Tree Settings Page Parameters (Continued)

| Parameter | Description |
|--------------|--|
| View Type | This parameter specifies whether a VIEW TYPE is <i>Included</i> or <i>Excluded</i> . |
| Storage Type | Use this parameter to specify whether the STORAGE TYPE is <i>volatile</i> or <i>non-volatile</i> . |

SNMP Target Address Settings

Figure 5-29. SNMP Target Address Settings Page



Clicking the TARGET ADDRESS tab brings up the SNMP TARGET ADDRESS SETTINGS page (Figure 5-29), which configures SNMP target address parameters. The parameters for this page are shown in Table 5-20.

Table 5-20. SNMP Target Address Settings Page Parameters

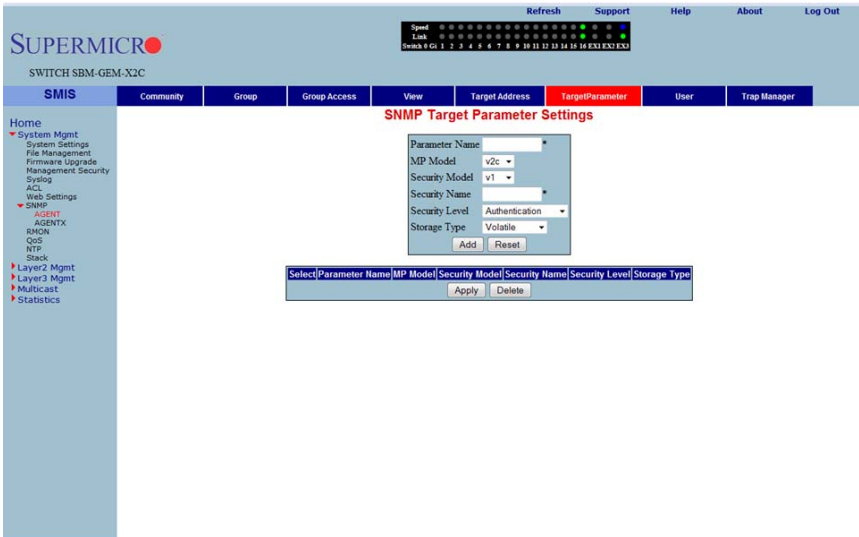
| Parameter | Description |
|-------------------|---|
| Target Name | This parameter specifies a TARGET NAME as a unique identifier. |
| Target IP Address | The TARGET IP ADDRESS specifies a target address to be used in the generation of SNMP operations. |
| Target Timeout | TARGET TIMEOUT specifies the maximum round trip for communicating with the TARGET IP ADDRESS. |
| Target Retries | TARGET RETRIES specifies the number of attempts to be made when no response is received |
| Transport Tag | The TRANSPORT TAG value is used to select a target address for a particular operation. |

Table 5-20. SNMP Target Address Settings Page Parameters (Continued)

| Parameter | Description |
|--------------|---|
| Param | PARAM contains SNMP parameters to be used when generating messages to be sent to a transport address. |
| Storage Type | Use this parameter to specify whether the STORAGE TYPE is <i>volatile</i> or <i>non-volatile</i> . |

SNMP Target Parameter Settings

Figure 5-30. SNMP Target Parameter Settings Page



Clicking the TARGET PARAMETER tab brings up the SNMP TARGET PARAMETER SETTINGS page (Figure 5-30), which configures SNMP Target Address parameters. The parameters for this page are shown in Table 5-21.

Table 5-21. SNMP Target Parameter Settings Page Parameters

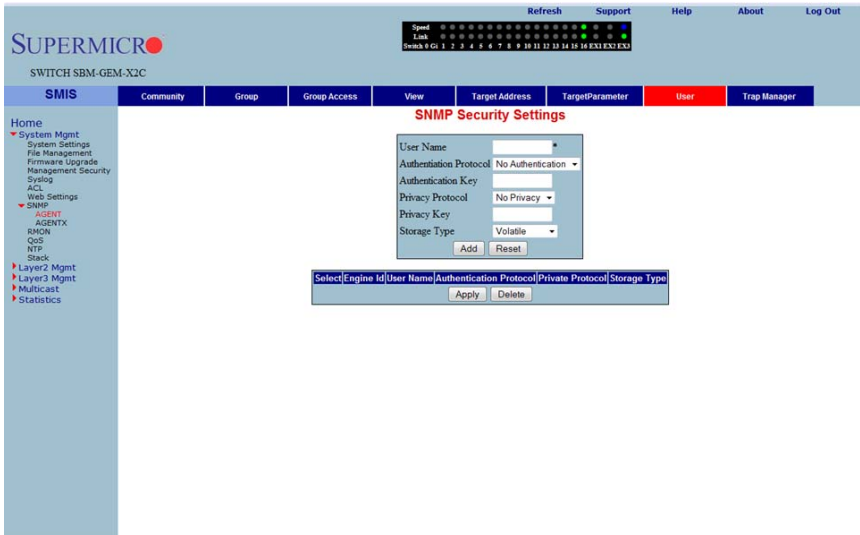
| Parameter | Description |
|----------------|---|
| Parameter Name | The target parameter is a unique name that specifies SNMP target information to be used in the generation of SNMP messages. |
| MP Model | The Message Processing (MP) Model is used when generating SNMP messages using this entry. |
| Security Model | The SECURITY MODEL is used when generating SNMP messages using this entry. |
| Security Name | The SECURITY NAME identifies the current PARAMETER NAME, on whose behalf SNMP messages will be generated. |

Table 5-21. SNMP Target Parameter Settings Page Parameters (Continued)

| Parameter | Description |
|----------------|--|
| Security Level | SECURITY LEVEL specifies the level of security used when generating SNMP messages. |
| Storage Type | STORAGE TYPE can be configured as <i>Volatile</i> or <i>Non-Volatile</i> . |

SNMP User Settings

Figure 5-31. SNMP Security Settings Page



Clicking the USER tab brings up the SNMP SECURITY SETTINGS page (Figure 5-31), which configures users configured in the SNMP for the User-based Security Model. The parameters for this page are shown in Table 5-22.

Table 5-22. SNMP Security Settings Page Parameters

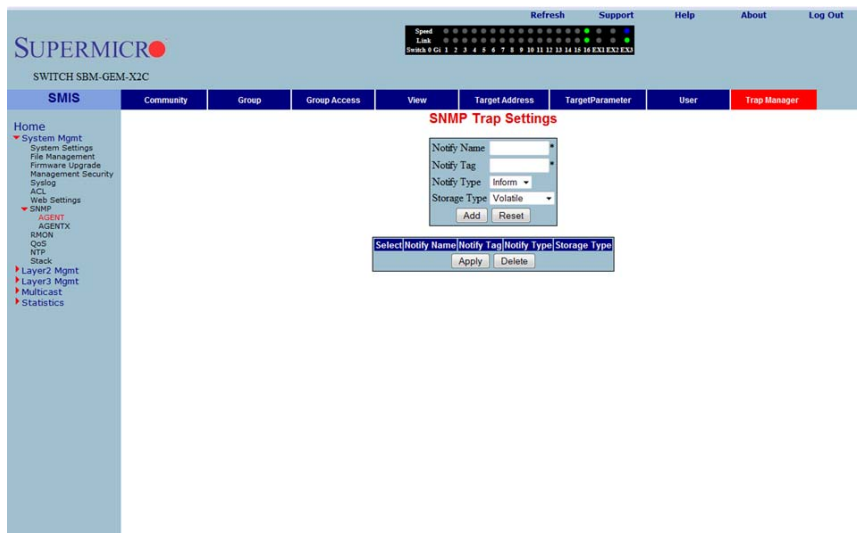
| Parameter | Description |
|-------------------------|--|
| User Name | USER NAME is the (User-based Security) model dependent security ID. |
| Authentication Protocol | The AUTHENTICATION PROTOCOL is used for authentication. |
| Authentication Key | The AUTHENTICATION KEY is the secret authentication key used for messages sent on behalf of this user to/from the SNMP. |
| Privacy Protocol | PRIVACY PROTOCOL is an indication of whether or not messages sent on behalf of this user to/from the SNMP are protected from disclosure, and if so, the type of privacy protocol that is used. |

Table 5-22. SNMP Security Settings Page Parameters (Continued)

| Parameter | Description |
|--------------|---|
| Privacy Key | PRIVACY KEY is an indication of whether or not messages sent on behalf of this user to/from the SNMP are protected from disclosure. |
| Storage Type | STORAGE TYPE can be configured as <i>Volatile</i> or <i>Non-Volatile</i> . |

SNMP Trap Settings

Figure 5-32. SNMP Trap Settings Page



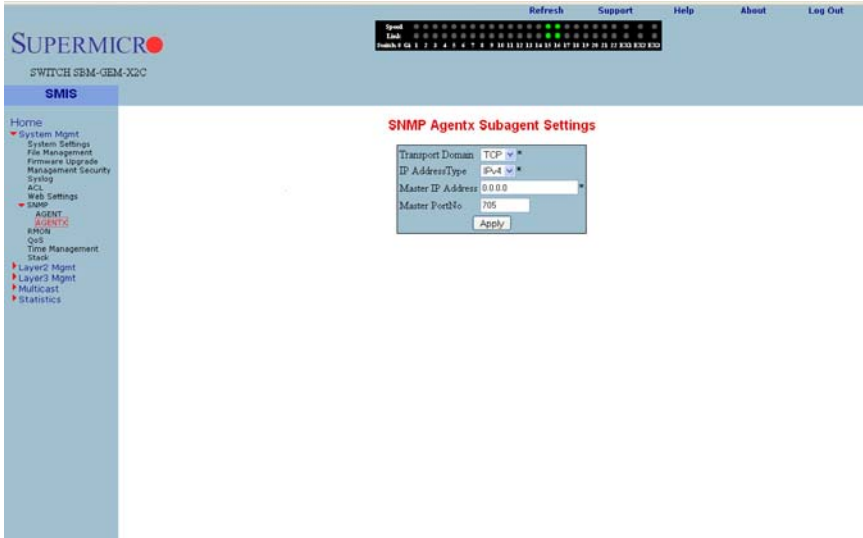
Clicking the TRAP MANAGER tab brings up the SNMP TRAP SETTINGS page (Figure 5-32), which configures the set of management targets that must receive notifications. The parameters for this page are shown in Table 5-23.

Table 5-23. SNMP Trap Settings Page Parameters

| Parameter | Description |
|--------------|---|
| Notify Name | NOTIFY NAME is a unique identifier associated with the entry. |
| Notify Tag | NOTIFY TAG contains a single tag value, which is used to select entries in the Target Address table. Any entry in the Target Address table that contains a tag value equal to the value of an instance of this Trap Manager, is selected. |
| Notify Type | The type of notification of the SNMP Trap Settings can be configured as <i>Trap</i> or <i>Inform</i> . |
| Storage Type | STORAGE TYPE can be configured as <i>Volatile</i> or <i>Non-Volatile</i> . |

SNMP AgentX

Figure 5-33. SNMP AgentX Subagent Settings Page



Clicking the AGENTX link brings up the SNMP AGENTX SUBAGENT SETTINGS page (Figure 5-33), which allows you to configure SNMP AgentX sub-agent parameters. The parameters for this page are shown in Table 5-24.

Table 5-24. SNMP AgentX Subagent Settings Page Parameters

| Parameter | Description |
|-------------------|--|
| Transport Domain | This parameter allows you to specify the TCP. |
| IP Address Type | This parameter specifies <i>IPv4</i> or <i>IPv6</i> for the IP ADDRESS TYPE. |
| Master IP Address | This parameter specifies the Master Agent IP address. |
| Master Port No | This parameter specifies the Master Port number. |

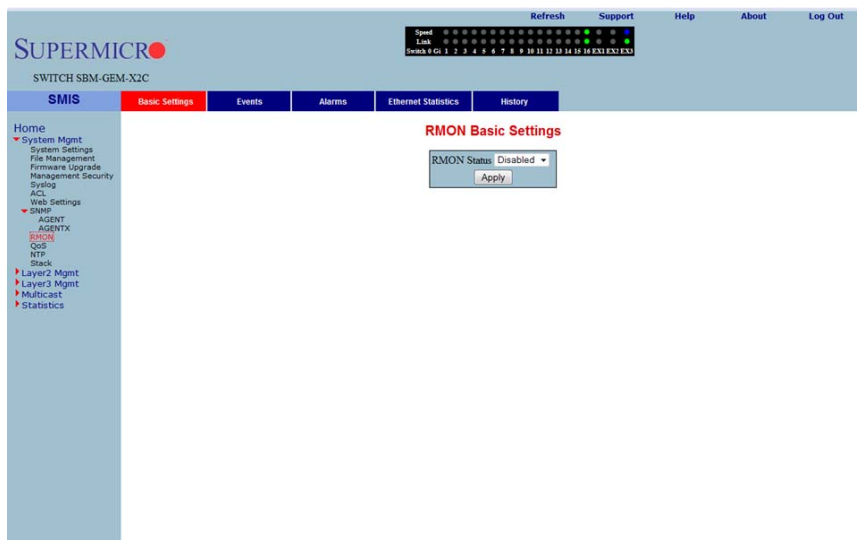
RMON

The following pages can be used to set RMON (Remote Monitoring) features and settings:

- [RMON Basic Settings](#)
- [Event Configuration](#)
- [RMON Alarm Configuration](#)
- [Ethernet Statistics Configuration](#)
- [History Control Configuration](#)

RMON Basic Settings

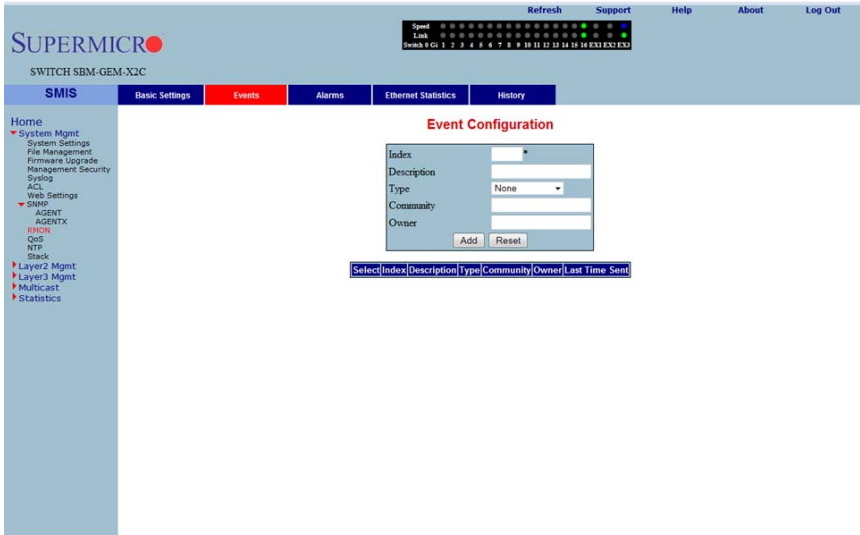
Figure 5-34. RMON Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the RMON BASIC SETTINGS page (Figure 5-34), which enables/disables the RMON feature using the RMON Status parameter.

Event Configuration

Figure 5-35. Event Configuration Settings Page



Clicking the EVENTS tab brings up the EVENT CONFIGURATIONS page (Figure 5-35), which configures RMON events. The parameters for this page are shown in Table 5-25.

Table 5-25. Event Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| Index | This parameter specifies the index to the Events table. |
| Description | This parameter specifies a brief description of the event. |
| Type | This parameter specifies the event configured. This can be a <i>Log</i> , an <i>SNMP Trap</i> , <i>Both</i> , or <i>None</i> . For the event type to display, <i>TRAP and Log</i> and <i>TRAP Community</i> must be configured. |
| Community | This parameter specifies the SNMP community string used for this trap. This is relevant when an SNMP trap is requested for an event. For event type to display, <i>TRAP and Log</i> and <i>TRAP Community</i> must be configured. Also make sure the configured community is active before adding an event on that community. |
| Owner | This parameter indicates the owner of this event. |
| Last Time Sent | This parameter denotes the time this event entry last generated an event. |

RMON Alarm Configuration

Figure 5-36. RMON Alarm Configuration Page

The screenshot displays the RMON Alarm Configuration page. The interface includes a top navigation bar with 'Refresh', 'Support', 'Help', 'About', and 'Log Out' links. Below this is a status bar showing 'Speed Link' and a row of indicator lights. The main navigation menu on the left lists various system management options, with 'Alarms' highlighted. The central content area is titled 'RMON Alarm Configuration' and contains a form with the following fields: Index, Interval, Variable, Sample type (set to 'Absolute value'), Rising Threshold, Falling Threshold, Rising Event Index, Falling Event Index, and Owner. 'Add' and 'Reset' buttons are located at the bottom of the form. A breadcrumb trail at the bottom of the form area reads: 'Select|Index|Interval|Variable|Sample Type|Rising Threshold|Falling Threshold|Rising Event Index|Falling Event Index|Owner|Value'.

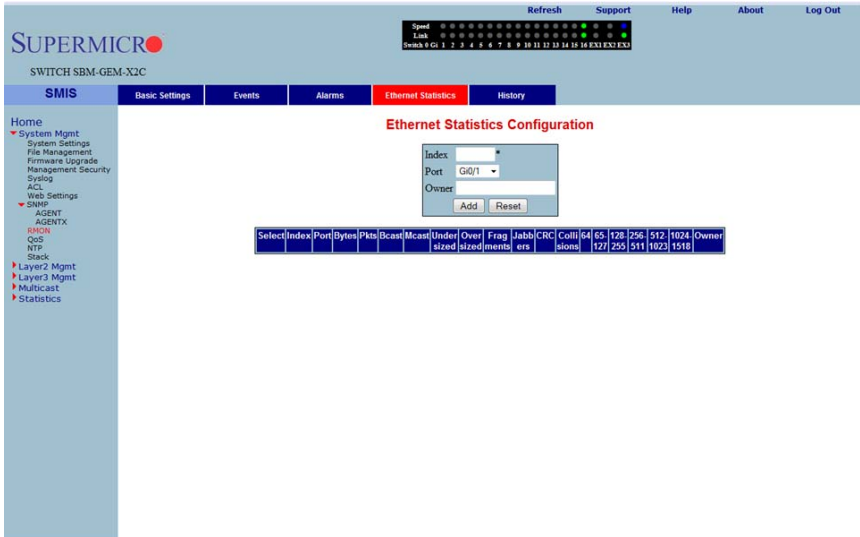
Clicking the ALARM tab brings up the RMON ALARM CONFIGURATION page (Figure 5-36), which configures RMON Alarm parameters. The parameters for this page are shown in Table 5-26.

Table 5-26. RMON Alarm Configuration Page Parameters

| Parameter | Description |
|---------------------|---|
| Index | This parameter specifies the table index. |
| Interval | This parameter specifies the time interval for which the alarm monitors the variable. |
| Variable | This parameter specifies the MIB object on which the alarm is set. |
| Sample Type | You can set this parameter to an <i>Absolute Value</i> or as just an <i>Incremental Value</i> of the timer. |
| Rising Threshold | If the startup alarm is set as <i>Rising Alarm</i> and this threshold is reached, an alarm is raised. |
| Falling Threshold | If the startup alarm is set as <i>Falling Alarm</i> and this threshold is reached, an alarm is raised. |
| Rising Event Index | Indicates the index of the event to be raised when the RISING THRESHOLD is reached. |
| Falling Event Index | Indicates the index of the event to be raised when the FALLING THRESHOLD is reached. |
| Owner | Specifies the owner of the alarm. |

Ethernet Statistics Configuration

Figure 5-37. Ethernet Statistics Configuration Page



Clicking the ETHERNET STATISTICS tab brings up the ETHERNET STATISTICS CONFIGURATION page (Figure 5-37), which configures RMON Ethernet statistics parameters. The parameters for this page are shown in Table 5-27.

Table 5-27. Ethernet Statistics Configuration Page Parameters

| Parameter | Description |
|-------------------|---|
| Index | This parameter specifies the index to the table. |
| Port | This parameter specifies the Ethernet Port. |
| Octets | This parameter specifies the total number of octets received from the network. |
| Packets | This parameter specifies the total number of packets received from the network. |
| Broadcast Packets | This parameter specifies the total number of broadcast packets received from the network. |
| Multicast Packets | This parameter specifies the total number of multicast packets received from the network. |
| Owner | This parameter specifies the owner string. |

History Control Configuration

Figure 5-38. History Control Configuration Page

The screenshot shows the 'History Control Configuration' page. At the top, there is a status bar with 'SUPERMICR' logo, 'SWITCH SBM-GEM-X2C', and navigation links like 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. Below this is a menu bar with 'SMIS', 'Basic Settings', 'Events', 'Alarms', 'Ethernet Statistics', and 'History' (highlighted). A left sidebar contains a tree view with categories like 'System Mgmt', 'System Settings', 'File Management', 'Firmware Upgrade', 'Management Security', 'Syslog', 'ACL', 'Web Settings', 'SNMP', 'AGENT', 'AGENTX', 'RMON', 'QoS', 'NTP', 'Stack', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', and 'Statistics'. The main content area is titled 'History Control Configuration' and contains a form with the following fields: 'Index' (text input), 'Port' (dropdown menu showing 'G0/1'), 'Buckets Requested' (text input), 'Interval' (text input), and 'Owner' (text input). Below the form are 'Add' and 'Reset' buttons. At the bottom, there is a table with the following columns: 'Select', 'Index', 'Port', 'Buckets Requested', 'Buckets Granted', 'Interval', and 'Owner'. The table is currently empty.

Clicking the HISTORY tab brings up the HISTORY CONTROL CONFIGURATION page (Figure 5-38), which configures RMON history configuration parameters. The parameters for this page are shown in Table 5-28.

Table 5-28. History Control Configuration Page Parameters

| Parameter | Description |
|-------------------|---|
| Index | This parameter specifies the index to the table. |
| Data Source | This parameter specifies the SNMP object ID of the variable for which the history is being collected. |
| Buckets Requested | Indicates the number of buckets to be configured for collecting the RMON statistics. |
| Interval | This parameter specifies the time interval between two successive polls to collect the statistics. |
| Owner | Denotes the owner of the RMON group of statistics. |
| Buckets Granted | Denotes the number of buckets granted for collecting the RMON statistics. |
| Status | This parameter specifies the status of the History Control entry as either <i>Valid</i> or <i>Invalid</i> . |

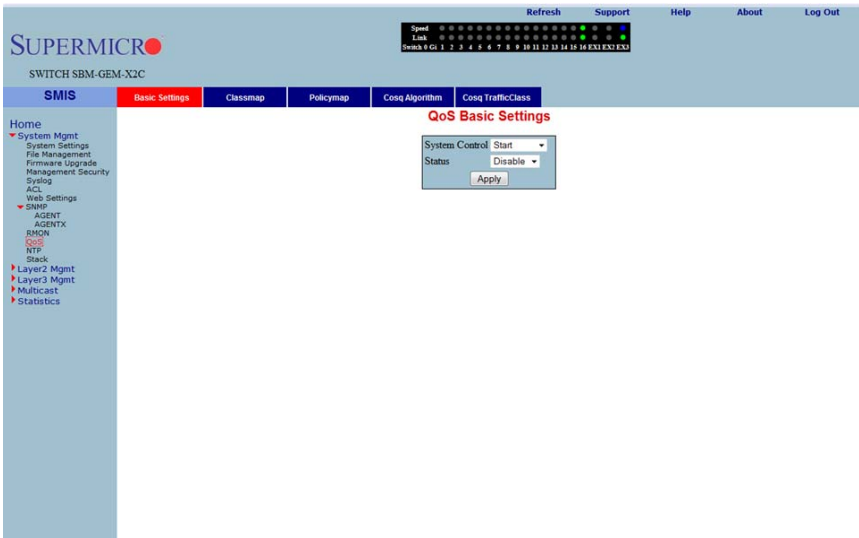
QoS

The QoS link of the System page opens the QoS Basic Settings page. This page allows you to configure QoS through following pages:

- [QOS Basic Settings](#)
- [QOS Classmap Settings](#)
- [QOS Polycymap Settings](#)
- [COSQ Scheduling Algorithm](#)
- [COSQ Weight and Bandwidth Configuration](#)

QOS Basic Settings

Figure 5-39. QOS Basic Settings Page



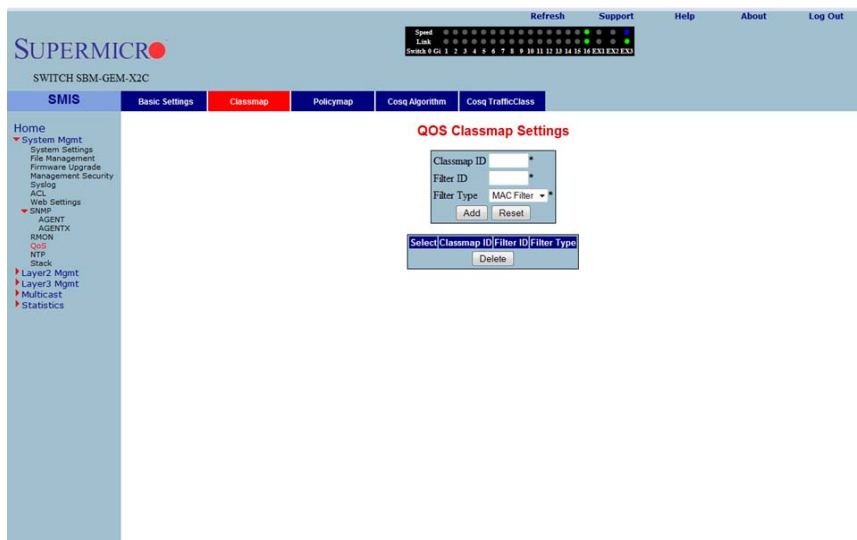
Clicking the BASIC SETTINGS tab brings up the QOS BASIC SETTINGS page (Figure 5-39), which allows you to configure QOS basic settings parameters. The parameters for this page are shown in Table 5-29.

Table 5-29. QOS Basic Settings Page Parameters

| Parameter | Description |
|----------------|---|
| System Control | With this parameter SYSTEM CONTROL can <i>Start</i> or <i>Shutdown</i> QoS. |
| Status | This parameter allows enabling/disabling of the QoS status. |

QOS Classmap Settings

Figure 5-40. QOS Classmap Settings Page



Clicking the CLASSMAP tab brings up the QOS CLASSMAP SETTINGS page (Figure 5-40), which is used to classify the stream of traffic. The parameters for this page are shown in Table 5-30.

Table 5-30. QOS Classmap Settings Page Parameters

| Parameter | Description |
|-------------|--|
| Classmap ID | This parameter specifies a unique ID for the Classmap. It must be in the range from 1 to 65535. |
| Filter ID | This parameter specifies the unique filter ID associated with this Classmap. |
| Filter Type | This parameter specifies the filter type associated with the Classmap. It can be set as either <i>MAC filter (1)</i> or <i>IP filter (2)</i> . |

QOS Policymap Settings

Figure 5-41. QOS Policymap Settings Page



Clicking the POLICYMAP tab brings up the QOS POLICYMAP SETTINGS page (Figure 5-41), which is used to specify action for a specified classmap. The parameters for this page are shown in Table 5-31.

Table 5-31. QOS Policymap Settings Page Parameters

| Parameter | Description |
|--------------------------|--|
| Policy Map ID | This parameter specifies the unique ID for Policymap. The value ranges between 1 and 65535. |
| Class Map ID | This parameter specifies the CLASS MAP ID to associate with Policymap. |
| Traffic Rate | This parameter specifies the TRAFFIC RATE of data that has to be applied. |
| In-Profile Action | This parameter specifies the action to be applied on matched data, and can be specified as either <i>Policy DSCP</i> or <i>Policy Precedence</i> . |
| Out-Profile Action | This parameter specifies the action to be applied on out-of-profile data, and can be specified as either <i>Policy DSCP</i> or <i>Drop</i> . |
| In-Profile Action Value | The IN-PROFILE ACTION VALUE can be specified from 0 to 7 for DSCP, or from 0 to 63 for IP Precedence. |
| Out-Profile Action Value | The OUT-PROFILE ACTION VALUE can be specified as <i>Drop</i> or from 0 to 63 for DSCP. |

COSQ Scheduling Algorithm

Figure 5-42. COSQ Scheduling Algorithm Settings Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are navigation links: Refresh, Support, Help, About, and Log Out. Below the navigation is a status bar with 'Speed Link' and a progress indicator. The main menu includes 'SMIS', 'Basic Settings', 'Classmap', 'Policymap', 'Cosq Algorithm' (highlighted), and 'Cosq TrafficClass'. The left sidebar contains a tree view with categories like System Mgmt, System Settings, File Management, Management Security, and Layer2 Mgmt. The main content area is titled 'COSQ Scheduling Algorithm Settings' with a sub-header 'G10.1-Ex0.3'. A table with 17 rows and 2 columns is displayed. The first column is 'Select' and the second is 'Scheduling Algorithm'. All entries in the 'Scheduling Algorithm' column are set to 'Strict Priority'. An 'Apply' button is located at the bottom of the table.

| Select | Port Number | Scheduling Algorithm |
|-----------------------|-------------|----------------------|
| <input type="radio"/> | G10.1 | Strict Priority |
| <input type="radio"/> | G10.2 | Strict Priority |
| <input type="radio"/> | G10.3 | Strict Priority |
| <input type="radio"/> | G10.4 | Strict Priority |
| <input type="radio"/> | G10.5 | Strict Priority |
| <input type="radio"/> | G10.6 | Strict Priority |
| <input type="radio"/> | G10.7 | Strict Priority |
| <input type="radio"/> | G10.8 | Strict Priority |
| <input type="radio"/> | G10.9 | Strict Priority |
| <input type="radio"/> | G10.10 | Strict Priority |
| <input type="radio"/> | G10.11 | Strict Priority |
| <input type="radio"/> | G10.12 | Strict Priority |
| <input type="radio"/> | G10.13 | Strict Priority |
| <input type="radio"/> | G10.14 | Strict Priority |
| <input type="radio"/> | G10.15 | Strict Priority |
| <input type="radio"/> | G10.16 | Strict Priority |
| <input type="radio"/> | Ex0.1 | Strict Priority |
| <input type="radio"/> | Ex0.2 | Strict Priority |
| <input type="radio"/> | Ex0.3 | Strict Priority |

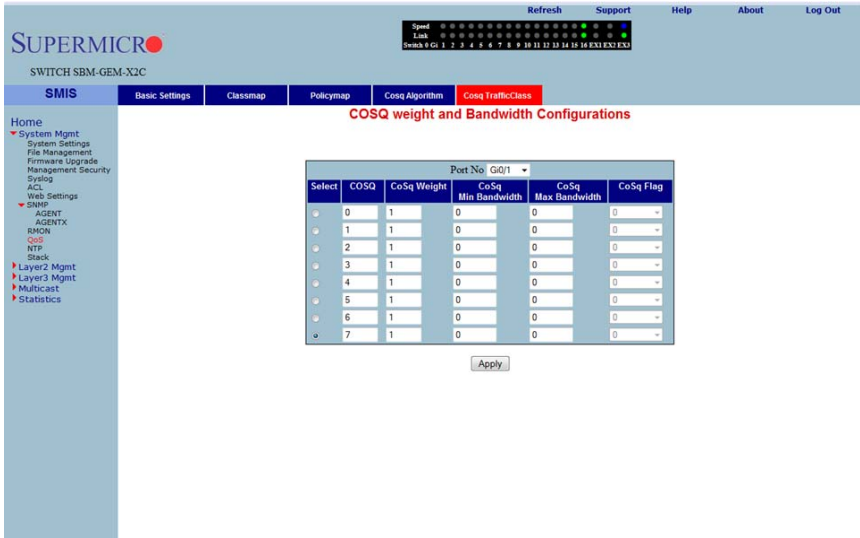
Clicking the COSQ ALGORITHM (Class of Service Queue Algorithm) tab brings up the COSQ SCHEDULING ALGORITHM SETTINGS page (Figure 5-42), which allows you to choose the algorithm for every port. The parameters for this page are shown in Table 5-32.

Table 5-32. COSQ Scheduling Algorithm Settings Page Parameters

| Parameter | Description |
|----------------------|--|
| Port Number | This list of ports allows you to select from the port index for your selected algorithm. |
| Scheduling Algorithm | The SCHEDULING ALGORITHM can be selected as one of the following: <ul style="list-style-type: none"> • <i>Strict Priority</i> • <i>Round Robin</i> • <i>Weighted Round Robin</i> • <i>Weighted Fair Queuein</i> • <i>Strict Round Robin</i> • <i>Strict Weighted Round Robin</i> • <i>Strict Weighted Fair Queueing</i> • <i>Deficit Round Robin</i> |

COSQ Weight and Bandwidth Configuration

Figure 5-43. COSQ Weight and Bandwidth Configurations Page



Clicking the COSQ TRAFFIC CLASS tab brings up the COSQ WEIGHT AND BANDWIDTH CONFIGURATIONS page (Figure 5-43), which allows you to configure the weight and bandwidth for CoS Queues. The parameters for this page are shown in Table 5-33.

Table 5-33. COSQ Weight and Bandwidth Configurations Page Parameters

| Parameter | Description |
|--------------------|---|
| COSQ Queue | This parameter allows you to select between 0 to 7 for your COSQ QUEUE value. |
| COSQ Weight | This parameter allows you to select between 0 to 15 for your COSQ WEIGHT value. |
| COSQ Min Bandwidth | This parameter configures minimum bandwidth between 1 to 262143. |
| COSQ Max Bandwidth | This parameter configures maximum bandwidth between 1 to 262143. |
| COSQ Flag | Use this parameter to set a flag for this queue. |

NTP Settings

Figure 5-44. NTP Settings Page

The screenshot shows the NTP Settings page with the following parameters:

- NTP Client:**
 - Ntp Status: DISABLED
 - Receive Server Update: BROADCAST
- Timezone Settings:**
 - Hour Offset: 0
 - Minutes Offset: 0
- NTP Servers:**
 - Server IP Address: (empty)
 - Key: (dropdown)
 - Interval: (dropdown)
 - Preferred: (dropdown)
- NTP Server Keys:**
 - Key Id: (input)
 - Key String: (input)

Clicking the NTP link brings up the NTP SETTINGS page (Figure 5-44), which configures the Network Time Protocol (NTP). The parameters for this page are shown in Table 5-34.

Table 5-34. NTP Settings Page Parameters

| Parameter | Description |
|----------------------------|--|
| NTP Client Settings | |
| NTP Status | This field enables or disables NTP in the switch. Configure the NTP SERVERS section to enable NTP. |
| Receive Server Update | The value for this parameter could be <i>Broadcast</i> or <i>Unicast</i> . To process the broadcast NTP updates from the server, choose the <i>Broadcast</i> option. |
| Timezone Settings | |
| Hour Offset | This parameter allows you to enter an hour offset from GMT for local time. |
| Minutes Offset | This parameter allows you to enter a minutes offset (after hour offset) from GMT for local time. |
| NTP Servers | |
| Server IP Address | Use this parameter to enter the NTP server IP address. |
| Key | Choose the key from the configured list. These keys are configurable in this page in the NTP SERVER KEYS section's fields. |
| Interval | This parameter allows you to choose the interval from the given list. |

Table 5-34. NTP Settings Page Parameters (Continued)

| Parameter | Description |
|-------------------------|--|
| Preferred | This parameter allows you to choose the preferred server. Choose Yes if this server needs to be preferred over other configured NTP servers. You can add multiple NTP servers. |
| NTP Servers Keys | |
| Key ID | Use this parameter to select a number to identify the configured key strings. |
| Key String | Use this parameter to specify any string to be used as a key to handshake with NTP servers. |

Stack

The Supermicro Intelligent switch supports stacking of Supermicro switch units. Switch stacking is created by connecting switches in a daisy chain. One of the stacked switches is selected as a Master based on its configurations. The Master switch provides management support for the whole stack. Other switches in the stack are referred to as slave switches.



NOTE: Make sure all stacked switches are running the same version of firmware.

The Master switch manages the control plane traffic for all stacked switches. When the current master switch fails, the backup master is then selected as the current master. The Master selection algorithm is based on a priority configuration. If two switches have the same priority, the switch with the lowest MAC address is selected as the Master switch.

Enabling Stacking

By default, Supermicro switches act as stand-alone switches. This stand-alone default facilitates using 10G Ethernet ports as Extreme Ethernet ports for uplinks.

When stacking is enabled the stacking ports are dedicated for stacking purposes. Stacking can be enabled using the command `stack` with the switch identifier and priority. The detailed command syntax is explained below.



NOTE: When stacking is enabled, the switch needs to be rebooted to make it effective.



NOTE: When a switch is acting as a stand-alone switch with stacking disabled, all physical interfaces are numbered as 0/1 to 0/n.

When the switch is in stacking mode, the interfaces are numbered as <switch id>/1 to <switch id> / n.

In non-stacking mode, the switch ID is considered to be 0.

The interface numbers change between stacking and non-stacking cases due to the switch ID. So configurations saved for stacking are not valid for non-stacking cases and vice versa.



NOTE: If you choose stacking using the `stack` command from a non-stacking case, and the configurations are already saved for restoring the switch, it will rename the configuration file by adding a suffix `_nonstack` and will not restore this file when the switch reboots with stacking enabled.

Similarly if you choose non-stacking using the `no stack` command from the stacking case, and the configurations are already saved for restoring the switch, it will rename the configuration file by adding a suffix `_stack` and will not restore this file when the switch reboots with stacking disabled.

Adding Stacking Members

Connect the stacked switches using stacking cables. For better redundancy, connect the switches daisy chained as shown in the diagram below (Figure 5-45). This chain connectivity helps to maintain stacking in case a single link or switch fails.

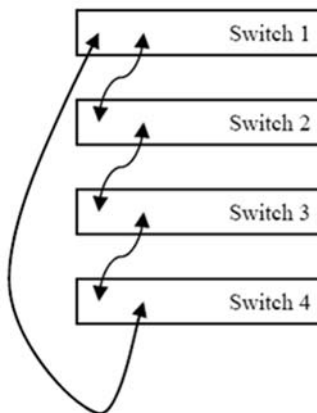
Before connecting switches in stacking, make sure stacking is enabled in all switches and that the switch identifier and priorities are all configured properly.

There is no other specific configuration required to add stacked switches. If two stacking-enabled switches connect through stacking cables, they form a stack.



NOTE: Do not use the same switch ID for multiple switches on the stack.

Figure 5-45. Switch Diagram





NOTE: In a stack only one switch can be configured as master. Otherwise the slave switches will not allow you to configure anything except *stacking disabled*. To login to slave switches, use a login name as "**stackuser**" and password as "**stack123**".

Removing a stacked switch

To remove a switch from stacking follow the below recommended procedure:

1. Disconnect stacking cables.
2. Reboot the removed switch as a standalone switch.
3. *Disable* stacking.
4. Reboot the switch again to operate as regular stand-alone switch.



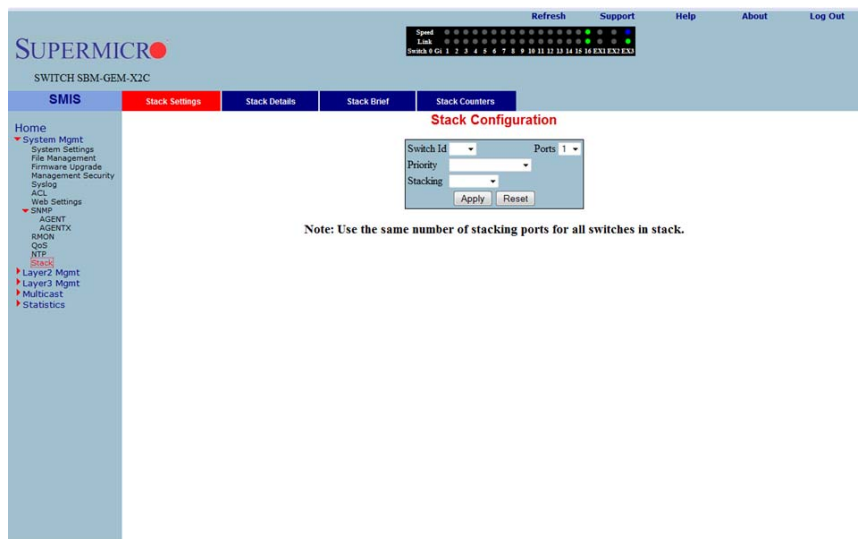
NOTE: When a switch is moved from stacking to stand-alone mode, the saved stacking configurations can not be loaded in stand-alone mode. When stacking is disabled, the switch software renames the existing configuration file to avoid automatic restoration of stacking configurations on a stand-alone switch.

The following pages are available for configuring Stack settings;

- [Stack Configuration](#)
- [Stack Details](#)
- [Stack Counters](#)

Stack Configuration

Figure 5-46. Stack Configuration Page



The screenshot shows the SUPERMICR web management utility interface. At the top, there are links for Refresh, Support, Help, About, and Log Out. Below the navigation bar, the 'Stack Settings' tab is active. The 'Stack Configuration' form includes the following fields:

- Switch ID: A dropdown menu.
- Ports: A dropdown menu set to '1'.
- Priority: A dropdown menu.
- Stacking: A dropdown menu.

Buttons for 'Apply' and 'Reset' are located at the bottom of the form. A note below the form reads: "Note: Use the same number of stacking ports for all switches in stack."

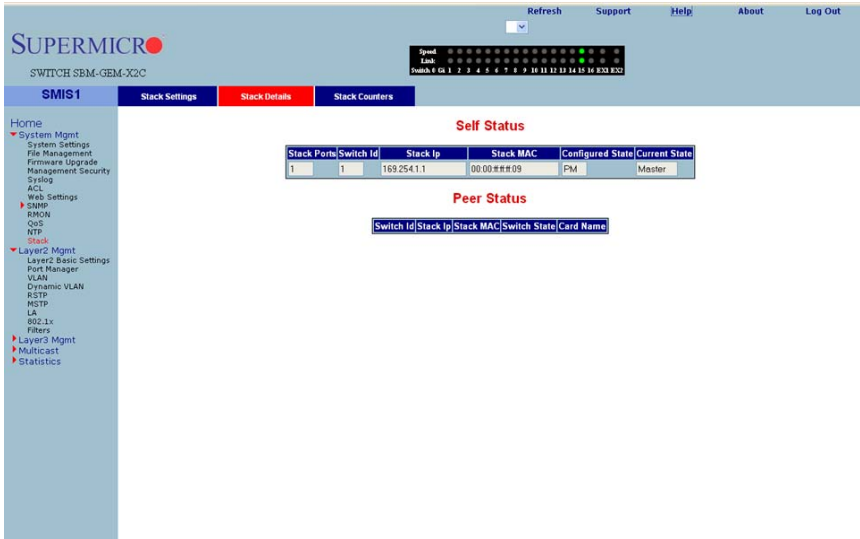
Clicking the STACK SETTINGS tab brings up the STACK CONFIGURATION page (Figure 5-46), which configures the stacking feature. The parameters for this page are shown in Table 5-35.

Table 5-35. Stack Configuration Page Parameters

| Parameter | Description |
|-----------|--|
| Switch ID | This parameter defines a switch identifier number for this switch. This identifier should be unique in the stack, since the number is used in referring all physical interfaces available in this switch. So for example, if this parameter is chosen as 2, the physical interfaces will be referred as <i>Gi2/1</i> , <i>Gi2/1</i> and so on. For non-stacking, stand-alone cases this switch ID is considered as zero. |
| Ports | This parameter represents the number of stacking ports. You can choose the number based upon your preferred stacking configuration and available CX4 ports. It is recommended that you use two CX4 ports as stacking ports to get redundancy. |
| Priority | This parameter chooses the priority for this switch in the Stacking Master selection. It could be configured as <i>Preferred Master</i> , <i>Backup Master</i> or <i>Preferred Slave</i> . |
| Stacking | This parameter enables or disables stacking. NOTE: Any change in stacking status requires a reboot of the switch. |

Stack Details

Figure 5-47. Stack Details Page



Clicking the STACK DETAILS tab brings up the STACK DETAILS page (Figure 5-47), which displays stacking details. The parameters for this page are shown in Table 5-36.

Table 5-36. Stack Details Page Parameters

| Parameter | Description |
|---|---|
| Self Status | |
| Stack Ports | This is the number of stacking ports configured in this switch. |
| Switch ID | This parameter is used to specify the switch identifier of this switch. |
| Stack IP | This parameter is used to specify the IP address of this switch. This IP address is used to communicate between stack member switches. |
| Stack MAC | This parameter is used to specify the MAC address of this switch. This MAC address is used to communicate between stack member switches. |
| Configured State | This parameter is used to specify the priority of this switch. |
| Current State | This parameter is used to specify the current status of this switch as <i>Master</i> or <i>Slave</i> . |
| Peer Status – The following parameters display information about all connected stack Slave switches. | |
| Switch ID | This parameter is used to specify the switch identifier of the Slave switch. |
| Stack IP | This parameter is used to specify the IP address of the Slave switch. This IP address is used to communicate between stack member switches. |

Table 5-36. Stack Details Page Parameters (Continued)

| Parameter | Description |
|--------------|---|
| Stack MAC | This parameter is used to specify the MAC address of the Slave switch. This MAC address is used to communicate between stack member switches. |
| Switch State | This parameter is used to specify the current status of the Slave switch. |
| Card Name | This parameter is used to specify the type of Slave switch. |

Stack Counters

Figure 5-48. Stack Counter Details Page

The screenshot shows the SUPERMICR web interface for a SWITCH SRM-GEM-X2C. The 'Stack Counter Details' page is active, displaying a table with the following data:

| Port | InOctet | InUcast | InDiscard | InErrors | InICOctet |
|------|----------|----------|------------|-----------|------------|
| 1 | 0 | 0 | 0 | 0 | 0 |
| Port | OutOctet | OutUcast | OutDiscard | OutErrors | OutICOctet |
| 1 | 0 | 0 | 0 | 0 | 0 |

Clicking the STACK COUNTERS tab brings up the STACK COUNTERS DETAILS page (Figure 5-48), which displays statistics for stacking ports. The parameters for this page are shown in Table 5-37.

Table 5-37. Stack Counter Details Page Parameters

| Parameter | Description |
|----------------------------|---|
| Port | This parameter displays the stacking port identifier. |
| Received Statistics | |
| InOctet | This parameter displays the number of bytes received. |
| InUcast | This parameter displays the number of unicast packets received. |
| InDiscard | This parameter displays the number of received packets that were discarded. |
| InErrors | This parameter displays the number of packets received with errors. |

Table 5-37. Stack Counter Details Page Parameters (Continued)

| Parameter | Description |
|-------------------------|--|
| InHCOctet ^a | This parameter displays the number of bytes received with HC. |
| Transmit Statistics | |
| OutOctet | This parameter displays the number of bytes transmitted. |
| OutUcast | This parameter displays the number of unicast packets transmitted. |
| OutDiscard | This parameter displays the number of packets discarded in transmission. |
| OutErrors | This parameter displays the number of packets transmitted got errors. |
| OutHCOctet ^a | This parameter displays the number of bytes transmitted with HC. |

-
- a. HC refers to the High Capacity of the counter used. The regular counter is 32-bit, whereas the HC counter is 64-bit.

CX4 Cable Length

Stacking is supported with CX-4 cables only. The CX-4 cable used for stacking should be no more than 3-meters in length, because stacking internally runs at 12-Gbps and therefore requires a more robust signal than longer cable lengths might provide reliably. The industry standard stacking cable length is 3-meters.



NOTE: For stacking ports, you do not need to configure CX4 cable length. It is fixed as "short" for stacking ports.

When used for 10G Ethernet uplinks, the CX-4 ports can be from 1-meter to 12-meters in length; the maximum CX-4 cable length supported on Supermicro switches is 12-meters.

It is acceptable to use a 1-meter stacking cable for port 1 and a 12-meter uplink cable for port 2. You will only need to configure the long cable preference for port 2. Do this by selecting the Port Number in the CX4 CABLE LENGTH screen (Figure 5-49) and then selecting the "long" option.

Figure 5-49. Configuring CX4 Cable Length

Refresh Support Help About Log Out

Speed
Label

SWITCH SSE-G48-TG4

SMIS

Home

- System Mgmt
 - System Settings
 - Management IP
 - File Management
 - Firmware Upgrade
 - Management Security
 - System
 - ACL
 - Web Settings
 - SNMP
 - RMON
 - QoS
 - Time Management
 - Stack
 - CX4 Cable Length
 - Layer2 Mgmt
 - Layer3 Mgmt
 - Multicast
 - Statistics

CX4 Cable Length Settings

| ALL | Port | CX4 Cable Length Option |
|--------------------------|-------|-------------------------|
| <input type="checkbox"/> | Exp01 | Short - Default |
| <input type="checkbox"/> | Exp02 | Short - Default |
| <input type="checkbox"/> | Exp03 | Short - Default |
| <input type="checkbox"/> | Exp04 | Short - Default |

Apply

Note: For cables of 1M to 7M length, use default short option.
For cables longer than 7M and up to 12M, use long option.

This configuration is done on an individual port basis. Thus, you can use "short" for one port and "long" for the other port. Alternatively you might use both "short" or, if neither are for stacking, both can be "long" cables.

5-5 Layer 2 Management

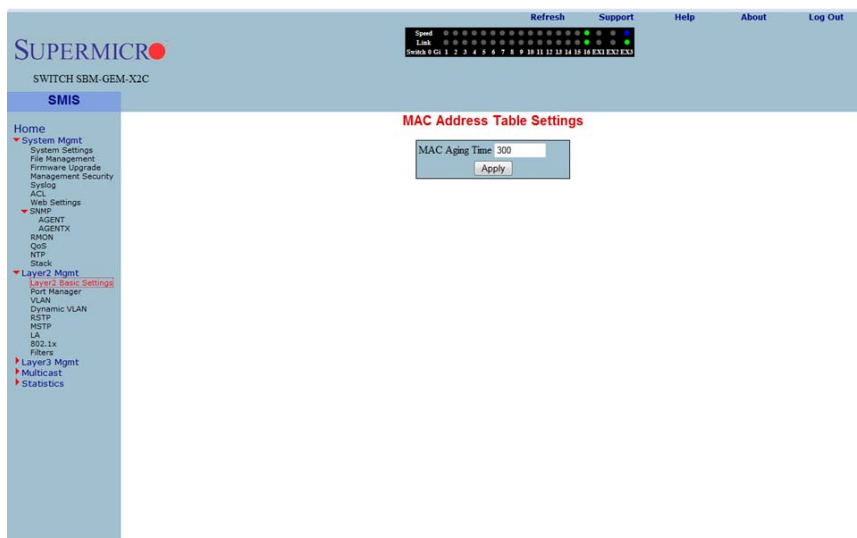
The LAYER2 MANAGEMENT page (Figure 5-50) has links to all pages with Layer2 controls.

Figure 5-50. Layer2 Management Page



Layer 2 Basic Settings

Figure 5-51. MAC Address Table Settings Page



Clicking the LAYER2 BASIC SETTINGS link brings up the MAC ADDRESS TABLE SETTINGS page (Figure 5-51), which gives you the option to change MAC aging time. MAC address confirmation can be done with this time interval.

Port Manager

The PORT MANAGER link has links to the following web pages:

- [Port Basic Settings](#)
- [Port Monitoring](#)
- [VLAN Traffic Class](#)
- [Port Control](#)
- [Rate Limiting](#)



NOTE: In all port based configuration pages, the port number group links are provided on the top.

In the normal standalone operation of the switch, there is only one link and the corresponding port configuration is displayed below it.

In case of stacking, multiple groups of port links are displayed. These links provide the configuration of ports from different stack member switches. To view the configuration of ports from a particular stack member switch, select the corresponding port links. For example, if three switches having switch identifier as 1, 2, and 3 are stacked together, the links will be as follows.

Gi1/1-Ex1/2 | Gi2/1-Ex2/2 | Gi3/1-Ex3/2

So to view the ports of switch 2, you need to select the Gi2/1-Ex2/2 link.

Port Basic Settings

Figure 5-52. Port Basic Settings Page

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. Below this is a status bar with 'Speed Link' and a row of 16 colored indicators. The main content area is titled 'Port Basic Settings' and shows a table for 'Gi0/1-Ex0/2'. The table has columns for 'Clear All', 'Port', 'Link Status', 'Admin State', 'Default User Priority', 'Switch Port', 'Switch Port Mode', 'MTU', and 'Link Up/Down Trap'. The table lists 17 ports (Gi0/1 to Ex0/2) with their respective configurations.

| Clear All | Port | Link Status | Admin State | Default User Priority | Switch Port | Switch Port Mode | MTU | Link Up/Down Trap |
|------------|--------|-------------|-------------|-----------------------|-------------|------------------|-------|-------------------|
| Select All | Gi0/1 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/2 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/3 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/4 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/5 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/6 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/7 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/8 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/9 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/10 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/11 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/12 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/13 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/14 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/15 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Gi0/16 | Up | Up | 0 | Yes | Hybrid | 1500 | Enabled |
| | Ex0/1 | Up | Up | 0 | Yes | Hybrid | 16338 | Enabled |
| | Ex0/2 | Up | Up | 0 | Yes | Hybrid | 16338 | Enabled |
| | Ex0/3 | Up | Up | 0 | Yes | Hybrid | 16338 | Enabled |

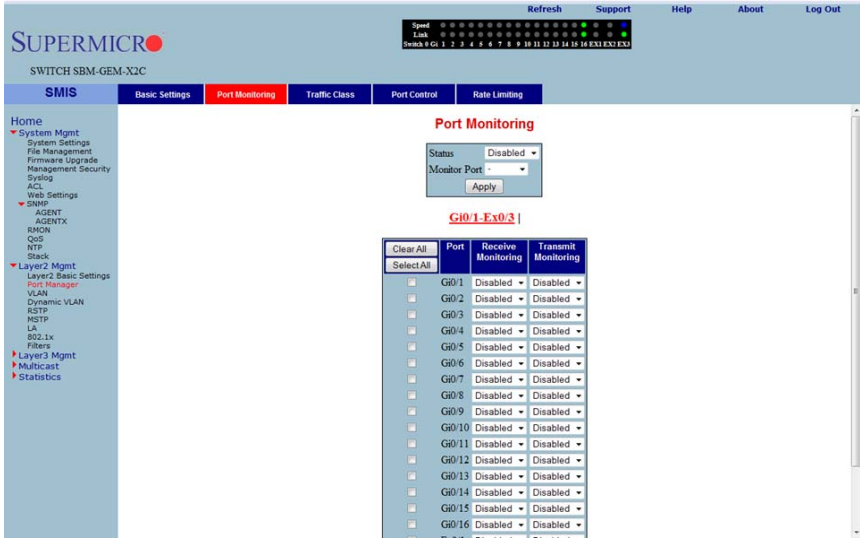
Clicking the BASIC SETTINGS tab brings up the PORT BASIC SETTINGS page (Figure 5-52), which allows you to configure port status and mode information. This page also helps configuring priority and MTU. The parameters for this page are shown in Table 5-38.

Table 5-38. Port Basic Settings Page Parameters

| Parameter | Description |
|-----------------------|---|
| Port | This displays the port number. |
| Link status | This column shows the physical link status as an UP or Down arrow. A green up arrow indicates that the status of the port is up, while the red down arrow indicates that the status of the port is down. |
| Admin State | This parameter allows you to administratively configure the admin state as <i>Up</i> or <i>Down</i> . |
| Default User Priority | This parameter allows you to set the priority from 0 to 7. |
| Switch Port | By default all ports are switch ports for layer 2 switching. To configure a port as a layer 3 routed port, choose <i>No</i> . |
| Switch Port Mode | Use this control allows to set the access mode as either <i>Trunk</i> or <i>Hybrid</i> . |
| MTU | This sets the MTU value. The Minimum is 90 and Maximum is 16338. A port must be administratively down in order to change the MTU. Jumbo frames of up to 9216 bytes are supported on 1G links. Jumbo frames of up to 16338 bytes are supported on 10G links. |
| Link Up/Down Trap | This parameter enables or disables SNMP trap generation for port up and down events. |

Port Monitoring

Figure 5-53. Port Monitoring Page



Clicking the PORT MONITORING tab brings up the PORT MONITORING page (Figure 5-53), which allows you to enable or disable monitoring on port interface. The parameters for this page are shown in Table 5-39.

Table 5-39. Port Monitoring Page Parameters

| Parameter | Description |
|---------------------|---|
| Status | This parameter enables or disables the port monitoring. |
| Port | This displays the port number. |
| Receive Monitoring | This parameter enables or disables the receive monitoring. |
| Transmit Monitoring | This parameter enables or disables the transmit monitoring. |

VLAN Traffic Class

Figure 5-54. VLAN Traffic Class Mapping Page

The screenshot shows the 'VLAN Traffic Class Mapping' page in the SUPERMICR web management utility. The page is for a 'SWITCH SBM-GEM.X2C'. The 'Traffic Class' tab is active. The main content area displays a table for 'G10-1-Ex0-3' with columns for Port, Priority 0, Priority 1, Priority 2, Priority 3, Priority 4, Priority 5, Priority 6, and Priority 7. Each row represents a port (G10/1 to G10/15 and Ex0/1 to Ex0/3) and all priority columns are set to 3. An 'Apply' button is located at the bottom of the table.

| Clear All Select All | Port | Priority 0 | Priority 1 | Priority 2 | Priority 3 | Priority 4 | Priority 5 | Priority 6 | Priority 7 |
|--------------------------|--------|------------|------------|------------|------------|------------|------------|------------|------------|
| <input type="checkbox"/> | G10/1 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/2 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/4 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/5 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/6 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/7 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/8 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/9 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/10 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/11 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/12 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/13 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/14 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/15 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | G10/16 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | Ex0/1 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | Ex0/2 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <input type="checkbox"/> | Ex0/3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

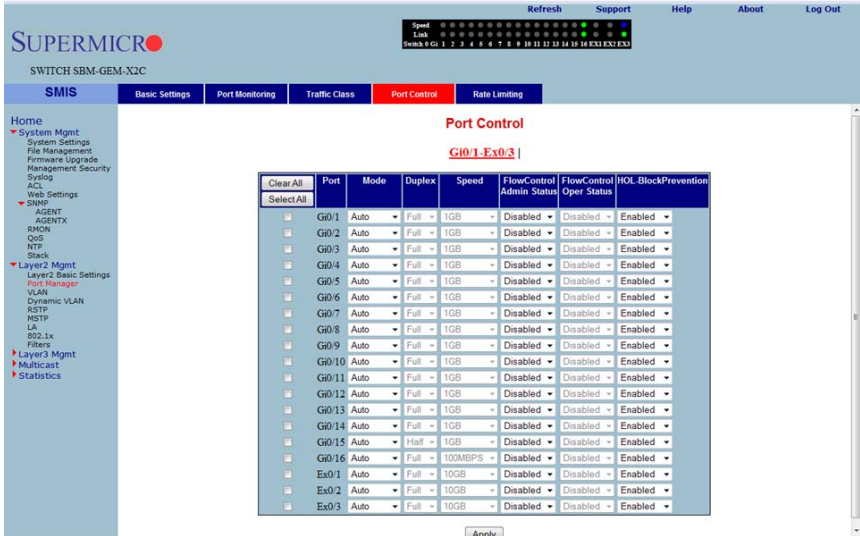
Clicking the TRAFFIC CLASS tab brings up the VLAN TRAFFIC CLASS MAPPING page (Figure 5-54), which allows you to map a priority to a traffic class. The parameters for this page are shown in Table 5-40.

Table 5-40. VLAN Traffic Class Mapping Page Parameters

| Parameter | Description |
|------------|---|
| Port | This displays the port number. |
| Priority 0 | This parameter chooses any traffic class 0 to 7 to map with priority 0. |
| Priority 1 | This parameter chooses any traffic class 0 to 7 to map with priority 1. |
| Priority 2 | This parameter chooses any traffic class 0 to 7 to map with priority 2. |
| Priority 3 | This parameter chooses any traffic class 0 to 7 to map with priority 3. |
| Priority 4 | This parameter chooses any traffic class 0 to 7 to map with priority 4. |
| Priority 5 | This parameter chooses any traffic class 0 to 7 to map with priority 5. |
| Priority 6 | This parameter chooses any traffic class 0 to 7 to map with priority 6. |
| Priority 7 | This parameter chooses any traffic class 0 to 7 to map with priority 7. |

Port Control

Figure 5-55. Port Control Page



Clicking the PORT CONTROL tab brings up the PORT CONTROL page (Figure 5-55), which allows you to configure specific parameters of the port. You can choose between *Auto-negotiation* and *No-negotiation* for a port. If *No-negotiation* is chosen, then the speed of the link, FlowControl and duplex modes can be configured. The parameters for this page are shown in Table 5-41.

Table 5-41. Port Control Page Parameters

| Parameter | Description |
|-------------------------------|--|
| Port | This displays the port number. |
| Mode | This parameter allows you to select either <i>Auto Negotiation</i> or <i>No-negotiation</i> . |
| Duplex | This parameter allows you to select either <i>Full Duplex</i> or <i>Half Duplex</i> . |
| Speed | This parameter allows you to select the speed as <i>10 Mbps</i> , <i>100 Mbps</i> or <i>1 Gb/s</i> . |
| Flow Control Admin Status | This parameter allows you to specify the Flow Control Admin Status as either <i>Disabled</i> , <i>Transmit Flow Control Enabled</i> , <i>Receive Flow Control Enabled</i> or both <i>Transmit and Receive Flow Control Enabled</i> . |
| Flow Control Operation Status | This parameter displays the status of the flow control. |
| HOL Block Prevention | This parameter allows you to enable or disable Head of Line block prevention. |

Rate Limiting

Figure 5-56. Rate Limiting Page

The screenshot shows the 'Rate Limiting' page for a SUPERMICR switch. The page title is 'Rate Limiting' and the selected port is 'G10-1-Ex0-2'. The table below shows the configuration for various ports.

| Clear All Select All | Port | Ingress Rate Limit | | | Egress Rate Limit | |
|--------------------------|--------|--------------------|-----------------|-----------------|------------------------|-----------------|
| | | DLF Level | Broadcast Level | Multicast Level | Egress Port Rate Limit | Port Burst Size |
| <input type="checkbox"/> | G10-1 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-2 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-3 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-4 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-5 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-6 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-7 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-8 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-9 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-10 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-11 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-12 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-13 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-14 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-15 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | G10-16 | 0 | 0 | 0 | 0 | 0 |
| <input type="checkbox"/> | Ex0-1 | 0 | 0 | 0 | 0 | 0 |

Clicking the RATE LIMITING tab brings up the RATE LIMITING page (Figure 5-56), which allows you to configure rate limiting for the port interface. The parameters for this page are shown in Table 5-42.

Table 5-42. Rate Limiting Page Parameters

| Parameter | Description |
|--|---|
| Port | This displays the port number. |
| The following parameters are configurable for Ingress Rate Limiting. | |
| DLF Level | This parameter allows you to specify the destination lookup failure packets per second. |
| Broadcast Level | This parameter allows you to specify the broadcast packets per second. |
| Multicast Level | This parameter allows you to specify the multicast packets per second. |
| The following parameters are configurable for Egress Rate Limiting. | |
| Egress Port Rate Limit | This parameter allows you to specify the egress limit of packets per second. |
| Egress Port Burst Size | This parameter allows you to specify the egress limit of packet burst size. |

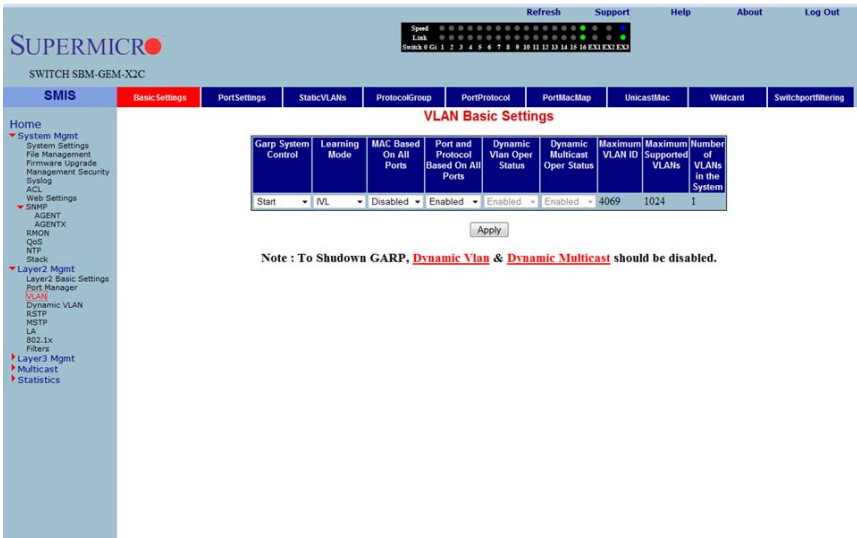
VLAN

The VLAN link allows to configure the VLAN information. VLAN configuration information has been provided in the following pages:

- [VLAN Basic Settings](#)
- [Port Settings](#)
- [Static VLAN](#)
- [Protocol Group](#)
- [Port Protocol](#)
- [Vlan Port MAC Map](#)
- [Unicast MAC](#)
- [Wildcard](#)
- [Switch Port VLAN](#)

VLAN Basic Settings

Figure 5-57. VLAN Basic Settings Page



The screenshot shows the SUPERMICR web interface for a SWITCH SBM-GEM-X2C. The 'Basic Settings' tab is selected. The main content area displays the 'VLAN Basic Settings' configuration table.

| Garp System Control | Learning Mode | MAC Based On All Ports | Port and Protocol Based On All Ports | Dynamic Vlan Oper Status | Dynamic Multicast Oper Status | Maximum VLAN ID | Maximum Supported VLANs | Number of VLANs in the System |
|---------------------|---------------|------------------------|--------------------------------------|--------------------------|-------------------------------|-----------------|-------------------------|-------------------------------|
| Start | IVL | Disabled | Enabled | Enabled | Enabled | 4069 | 1024 | 1 |

Below the table is an 'Apply' button and a note: "Note : To Shutdown GARP, Dynamic Vlan & Dynamic Multicast should be disabled."

Clicking the BASIC SETTINGS tab brings up the VLAN BASIC SETTINGS page (Figure 5-57), which displays VLAN global configuration information. The parameters for this page are shown in Table 5-43.

Table 5-43. VLAN Basic Settings Page Parameters

| Parameter | Description |
|--------------------------------------|---|
| Garp System Control | This parameter starts or shuts down GARP in the switch. |
| Learning Mode | This parameter specifies the Learning Mode (<i>Independent, Shared, Hybrid or VLAN Learning</i>). |
| VLAN Version | This parameter specifies the VLAN version supported. |
| Maximum VLAN ID | This parameter specifies the largest (4094) valid VLAN ID, which this switch can accept, above which all will be discarded. |
| Maximum Supported VLANs | This parameter specifies the maximum number of VLANs that this device can scale. |
| Number of VLANs in the System | This parameter specifies the active number of VLANs configured in the device. |
| MAC Based on All Ports | This parameter enables or disables the per Port MAC based classification. |
| Port and Protocol Based on all Ports | This parameter enables or disables the per Port Protocol based classification. |

In addition, the BASIC SETTINGS page provides the configuration of Bridge Mode (*Customer /Provider*) and the priority for tunneled STP BPDUs. When you configure BRIDGE MODE TO PROVIDER, the Port Protocol based classification and MAC-based classification on all ports must be disabled.

Port Settings

Figure 5-58. VLAN Port Settings Page

The screenshot shows the SUPERMICR SWITCH SBM-GEM-X2C web interface. The top navigation bar includes tabs for Basic Settings, Port Settings (selected), Static VLANs, Protocol Group, Port Protocol, Port Map, Unicast Mac, Wildcard, and Switchport Filtering. The main content area is titled "VLAN Port Settings" and shows the configuration for interface "G10.1-Ex0.3".

| Clear All | Port | MAC Based VLAN | Port and Protocol Based VLAN | PVID | Acceptable Frame Types | Ingress Filtering |
|--------------------------|-------|----------------|------------------------------|------|------------------------|-------------------|
| <input type="checkbox"/> | G0/1 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/2 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/3 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/4 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/5 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/6 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/7 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/8 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/9 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/10 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/11 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/12 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/13 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/14 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/15 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | G0/16 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | Ex0/1 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | Ex0/2 | Disabled | Enabled | 1 | All | Disabled |
| <input type="checkbox"/> | Ex0/3 | Disabled | Enabled | 1 | All | Disabled |

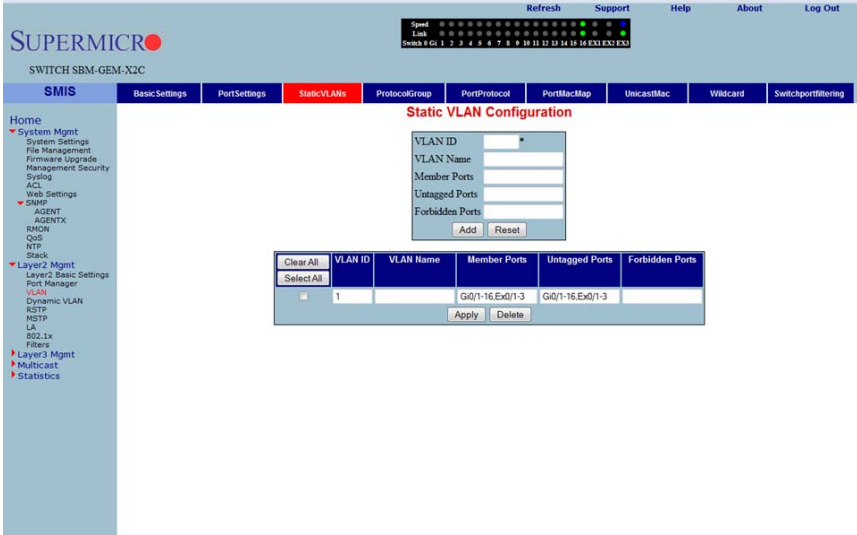
Clicking the PORT SETTINGS tab brings up the VLAN PORT SETTINGS page (Figure 5-58), which is used to associate the VLAN ID to the port for Port based VLAN classification.

While associating different ports to VLANs, you can also configure INGRESS FILTERING (at the port level) and ACCEPTABLE FRAME TYPES (accept *Tagged Frame Alone* or *All* frames).

The other configurations provided in this page are, enabling/disabling per Port MAC based classification and Port Protocol based classification, enabling/disabling of tunneling and enabling/disabling of STP BPDU Tunneling. To enable STP BPDU Tunneling on an interface, you must first enable tunneling on that interface.

Static VLAN

Figure 5-59. Static VLAN Configuration Page



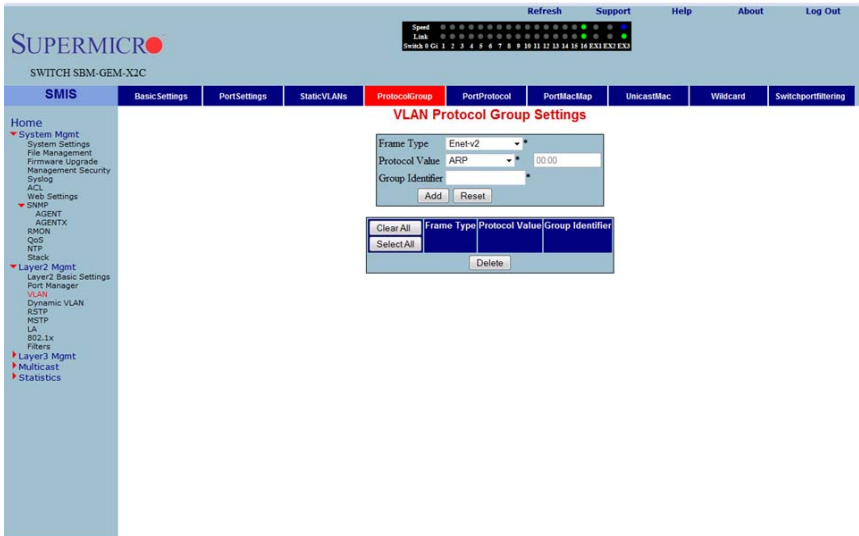
Clicking the STATIC VLANs tab brings up the STATIC VLAN CONFIGURATION page (Figure 5-59), which allows you to configure the VLAN related information statically.

Using the first table you can create new entries for uncreated VLANs. VLAN ID is the mandatory field in configuring a VLAN. You can also enter a VLAN NAME, MEMBER PORT LIST, UNTAGGED PORT and the FORBIDDEN PORTS for a VLAN.

The second table displays the VLAN configurations saved in the switch.

Protocol Group

Figure 5-60. VLAN Protocol Group Settings Page



Clicking the PROTOCOL GROUP tab brings up the VLAN PROTOCOL GROUP SETTINGS page (Figure 5-60), which is used to map Protocol Templates to Protocol Group Identifiers.

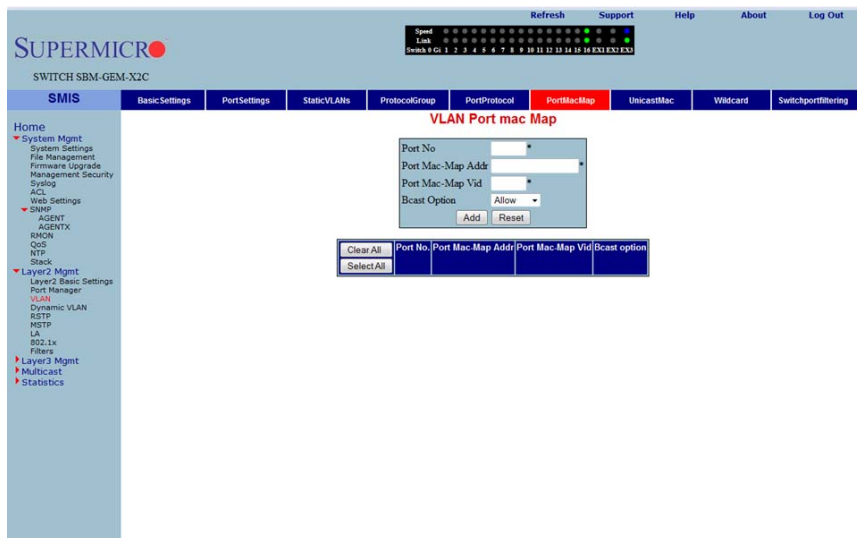
The FRAME TYPE gives you the data-link encapsulation format. The PROTOCOL VALUE is the value of the protocol in a protocol template. The GROUP ID represents a group of protocols that are associated together.

Port Protocol

Clicking the Port PROTOCOL tab brings up the PORT VLAN PROTOCOL SETTINGS page (not shown), which displays a table used for Port and Protocol based VLAN classification. The GROUP ID designates a group of protocols in the Protocol Group Database. The VLAN ID is the ID associated with a group of protocols for each port.

Vlan Port MAC Map

Figure 5-61. VLAN Port MAC Map Settings Page



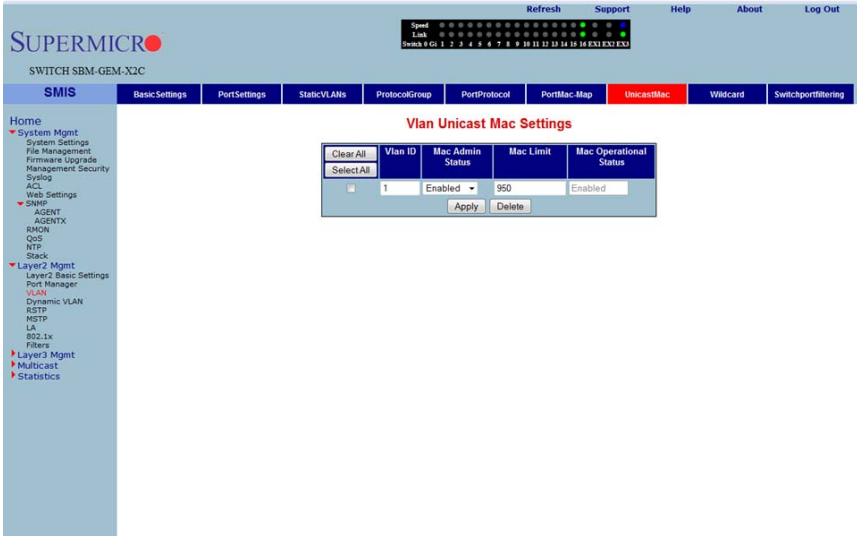
Clicking the PORT MAC MAP tab brings up the VLAN PORT MAC MAP page (Figure 5-61), which allows you to configure MAC based VLANs. The parameters for this page are shown in Table 5-44.

Table 5-44. VLAN Port MAC Map Page Parameters

| Parameter | Description |
|-------------------|---|
| Port No | This displays the port number. |
| Port Mac-Map Addr | This parameter specifies the Port MAC-Map address. |
| Port Mac-Map Vid | This parameter specifies the VLAN identifier for this MAC based VLAN |
| Bcast Option | This parameter specifies the Broadcast option, which can be allowed or discarded. |

Unicast MAC

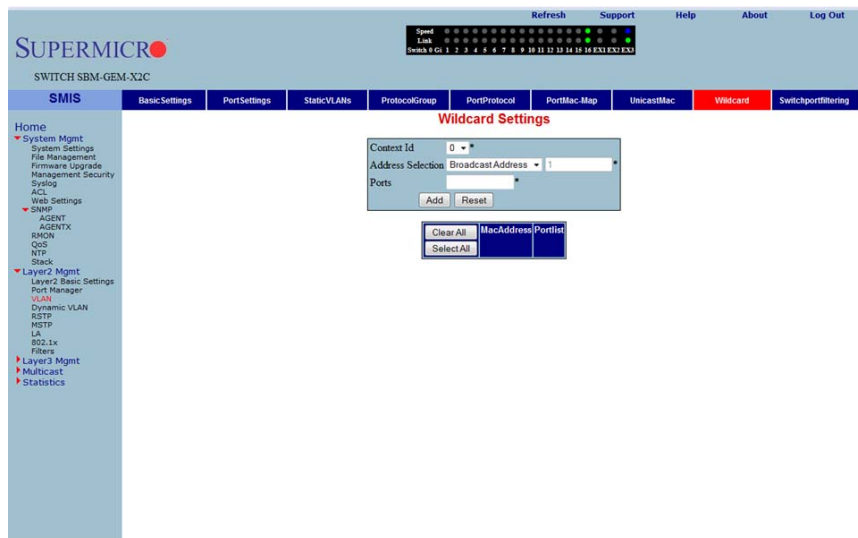
Figure 5-62. VLAN Unicast MAC Settings Page



Clicking the UNICAST MAC tab brings up the VLAN UNICAST MAC SETTINGS page (Figure 5-62), which allows you to configure the various parameters for VLAN Unicast MAC settings. The parameters for this page are shown in Table 5-45.

Table 5-45. VLAN Unicast Mac Settings Page Parameters

| Parameter | Description |
|------------------------|---|
| VLAN ID | This parameter specifies the VLAN Identifier. |
| MAC Admin Status | This parameter specifies the MAC administration status, which can be enabled or disabled. |
| MAC Limit | This parameter indicates the MAC limit. |
| MAC Operational Status | This parameter specifies the MAC operational Status, which can be enabled or disabled. |

Wildcard**Figure 5-63. Wildcard Settings Page**

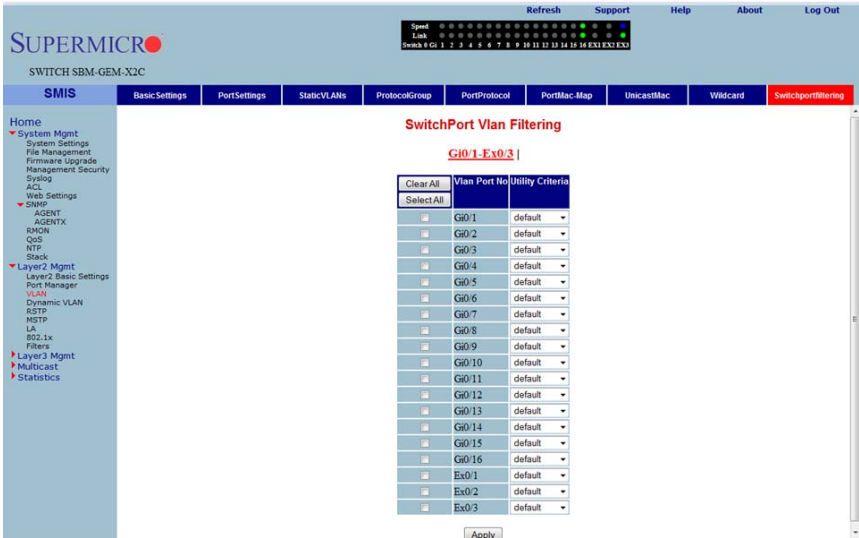
Clicking the WILDCARD tab brings up the WILDCARD SETTINGS page (Figure 5-63), which configures wildcard MAC addresses and ports for VLANs. The parameters for this page are shown in Table 5-46.

Table 5-46. Wildcard Settings Page Parameters

| Parameter | Description |
|-------------------|---|
| Content ID | This parameter allows you to select the CONTENT ID. |
| Address Selection | Use this parameter to select the address type. |
| Ports | This parameter allows you to enter a port. |

Switch Port VLAN

Figure 5-64. SwitchPort Vlan Filtering Page



Clicking the SWITCH PORT FILTERING tab brings up the SWITCHPORT VLAN FILTERING page (Figure 5-64), which configures utility criteria for SwitchPort Vlan filtering. The parameters for this page are shown in Table 5-47.

Table 5-47. SwitchPort Vlan Filtering Page Parameters

| Parameter | Description |
|------------------|---|
| VLAN Port No. | This parameter displays the VLAN Port Number, which can be selected by the check box to the left of the column. |
| Utility Criteria | Use this parameter to select the utility criteria for the VLAN port selected. |

Dynamic Vlan

The Dynamic VLAN link allows you to configure the Dynamic VLAN information. Dynamic VLAN configuration information has been provided in the following pages

- [Dynamic VLAN Global Configuration](#)
- [Port Configuration](#)
- [GARP Timers](#)

Dynamic VLAN Global Configuration

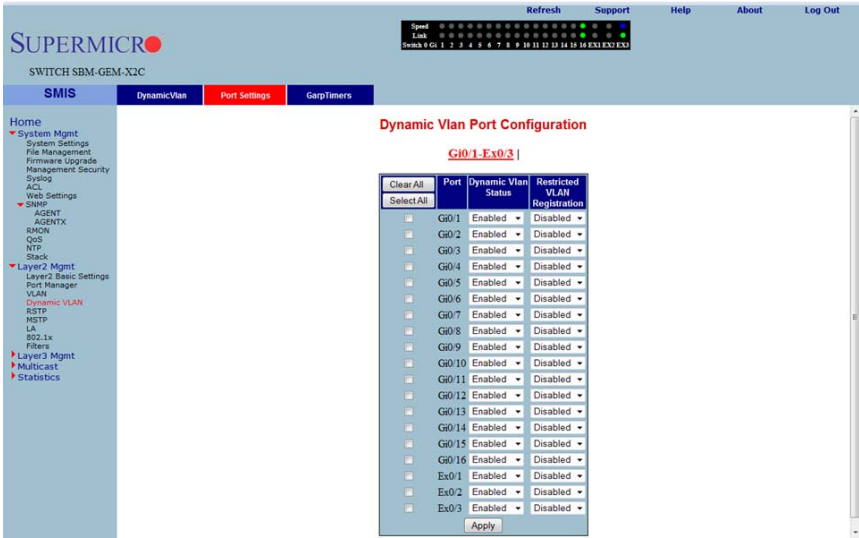
Figure 5-65. Dynamic VLAN Global Configuration Page

The screenshot displays the web management interface for a SUPERMICR SWITCH SBM-GEM-X2C. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. A status bar shows 'Speed Link' and a search bar. The main navigation menu on the left includes 'Home', 'System Mgmt', 'Web Settings', 'Layer2 Mgmt', and 'Layer3 Mgmt'. The 'Dynamic Vlan' tab is selected, leading to the 'Dynamic Vlan Global Configuration' page. The page content shows a 'Dynamic Vlan Status' dropdown menu set to 'Enabled' and an 'Apply' button.

Clicking the DYNAMIC VLAN tab brings up the DYNAMIC VLAN GLOBAL CONFIGURATION page (Figure 5-65), which allows you to enable or disable Dynamic VLAN.

Port Configuration

Figure 5-66. Dynamic VLAN Port Configuration Page



Clicking the PORT SETTINGS link brings up the DYNAMIC VLAN PORT CONFIGURATION page (Figure 5-66), which allows you to configure parameters for Dynamic VLAN ports. The parameters for this page are shown in Table 5-48.

Table 5-48. Dynamic VLAN Port Configuration Page Parameters

| Parameter | Description |
|------------------------------|--|
| Port | This parameter displays the Port Number, which can be selected by the check box to the left of the column. |
| Dynamic VLAN Status | Use this parameter to enable/disable the DYNAMIC VLAN STATUS. |
| Restricted VLAN Registration | This parameter allows you to enable/disable RESTRICTED VLAN REGISTRATION. |

GARP Timers

Figure 5-67. Garp Timers Configuration Page

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The main content area is titled 'Garp Timers Configuration' and shows a table of configuration parameters for the selected interface 'G10.1-Ex0.3'. The table has five columns: 'Clear All / Select All', 'Port No', 'GarpJoinTime (msecs)', 'GarpLeaveTime (msecs)', and 'GarpLeaveAllTime (msecs)'. The table lists 18 rows of data for ports G10.1 through Ex0.3, all with a GarpJoinTime of 200, GarpLeaveTime of 600, and GarpLeaveAllTime of 10000.

| Clear All / Select All | Port No | GarpJoinTime (msecs) | GarpLeaveTime (msecs) | GarpLeaveAllTime (msecs) |
|--------------------------|---------|----------------------|-----------------------|--------------------------|
| <input type="checkbox"/> | G10.1 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.2 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.3 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.4 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.5 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.6 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.7 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.8 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.9 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.10 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.11 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.12 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.13 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.14 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.15 | 200 | 600 | 10000 |
| <input type="checkbox"/> | G10.16 | 200 | 600 | 10000 |
| <input type="checkbox"/> | Ex0.1 | 200 | 600 | 10000 |
| <input type="checkbox"/> | Ex0.2 | 200 | 600 | 10000 |
| <input type="checkbox"/> | Ex0.3 | 200 | 600 | 10000 |

Clicking the GARP TIMERS tab brings up the GARP TIMERS CONFIGURATION page (Figure 5-67), which displays the various parameters for changing Garp times. The parameters for this page are shown in Table 5-49.

Table 5-49. Garp Timers Configuration Page Parameters

| Parameter | Description |
|-----------------------------|--|
| Port No | This parameter displays the Port Number. |
| Garp Join Time (msecs) | This parameter allows you to change the Garp Join Time. |
| Garp Leave Time (msecs) | This parameter allows you to change the Garp Leave Time. |
| Garp Leave All Time (msecs) | This parameter allows you to change the Garp Leave All Time. |

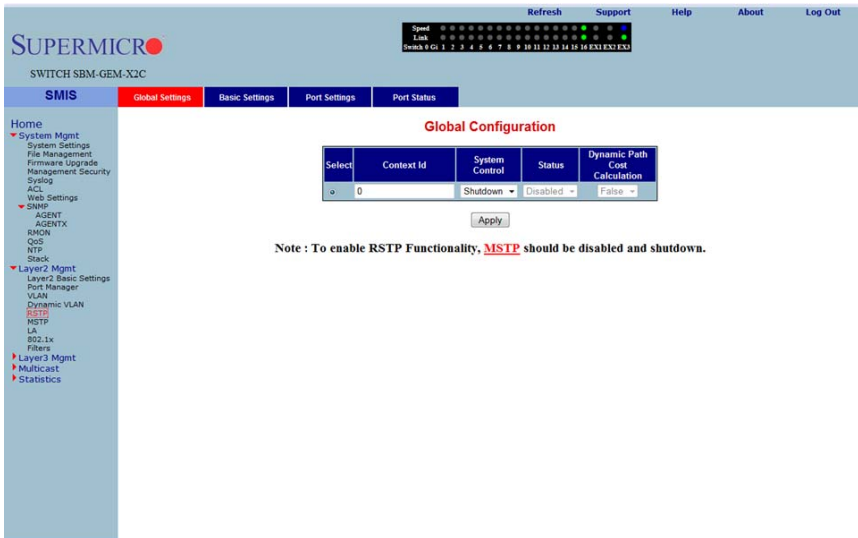
RSTP

The RSTP link provides links to the following configuration pages:

- [RSTP Global Settings](#)
- [RSTP Basic Settings](#)
- [Port Settings](#)
- [Port Status](#)

RSTP Global Settings

Figure 5-68. Global Configuration Page



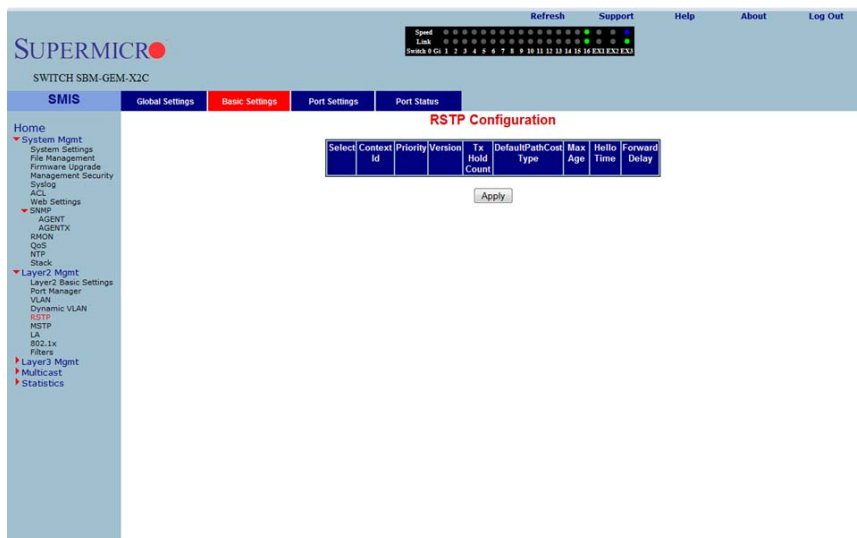
Clicking the GLOBAL SETTINGS tab brings up the GLOBAL CONFIGURATION page (Figure 5-68), which allows you to configure RSTP global parameters. The parameters for this page are shown in Table 5-50.

Table 5-50. Global Configuration Page Parameters

| Parameter | Description |
|-------------------------------|---|
| System Control | This parameter starts or Shutdowns RSTP in the switch. |
| Status | This parameter allows you to enable/disable the protocol at a global level on the switch. |
| Dynamic Path Cost Calculation | This parameter allows you to enable or disable the DYNAMIC PATH COST CALCULATION. |

RSTP Basic Settings

Figure 5-69. RSTP Configuration Page



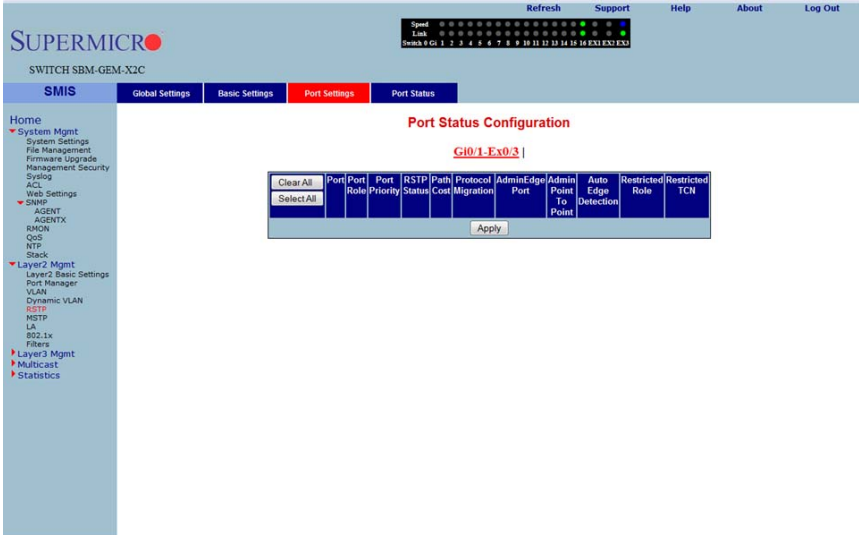
Clicking the BASIC SETTINGS tab brings up the RSTP CONFIGURATION page (Figure 5-69), which displays the various parameters for RSTP configuration. The parameters for this page are shown in Table 5-51.

Table 5-51. RSTP Configuration Page Parameters

| Parameter | Description |
|---------------------------|--|
| System Control | This parameter allows you to start or shutdown RSTP in the switch. |
| RSTP Status | This parameter allows you to enable/disable the protocol at a global level on the switch. |
| Compatibility | This parameter allows you to choose to run the protocol as an RSTP or STP compatible version. |
| Bridge Priority | This parameter specifies the BRIDGE PRIORITY, which can be used to select the root bridge. |
| Transmit Hold Count | This parameter specifies the maximum number of packets that can be sent in a given interval. This is configured to avoid flooding. |
| Default Path Cost Version | This parameter allows you to configure the path cost either as a 16-bit value or a 32-bit value. This is provided mainly for backward compatibility with STAP. |

Port Settings

Figure 5-70. Port Status Configuration Page



Clicking the PORT SETTINGS tab brings up the PORT STATUS CONFIGURATION page (Figure 5-70), which allows you to set the configuration per port related to RSTP. The parameters for this page are shown in Table 5-52.

Table 5-52. Port Status Configuration Page Parameters

| Parameter | Description |
|--------------------|--|
| Port | This parameter specifies the port identifier. |
| Status | This parameter enables or disables the RSTP protocol status on a particular port. |
| Priority | This parameter specifies the port priority used in role selection. |
| Path Cost | This parameter specifies the path cost associated with this port. |
| Protocol Migration | This parameter controls the migration from RSTP to STP, if the other side of the switch runs STP. The migration takes place only if this is <i>Enabled</i> . |
| PortFast | This parameter must be configured, if the corresponding port is an edge port. |
| Point-to-Point | This parameter allows you to configure ports explicitly as <i>Point-to-point</i> (Force true), <i>Non-point-to-point</i> or leave the decision to be made <i>Dynamically</i> (from the AL or MAC layer). |
| Auto Edge Status | If this parameter is set to <i>true</i> , the edge port status is dynamically calculated. |
| Restricted Role | This parameter specifies the RESTRICTED ROLE status of the port. |
| Restricted TCN | This parameter indicates the RESTRICTED TCN status of the port. |

Port Status

Figure 5-71. RSTP Port Status Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are navigation links for Refresh, Support, Help, About, and Log Out. Below the navigation is a status bar with 'Speed' and 'Link' indicators. The main menu includes 'SMIS' with sub-menus for Global Settings, Basic Settings, Port Settings, and Port Status (which is highlighted). The left sidebar contains a tree view of system management options, including System Mgmt, System Settings, File Management, Firmware Upgrade, Management Security, Syslog, ACL, Web Settings, SNMP, AGENT, AGENTX, RMON, QoS, NTP, Stack, Layer2 Mgmt, Layer2 Basic Settings, Port Manager, VLAN, Dynamic VLAN, RSTP, MSTP, LA, 802.1x, Filters, Layer3 Mgmt, Multicast, and Statistics. The main content area displays 'RSTP Port Status' for port 'G10-1-Ex0-3'. Below this, a table header is visible with columns: Port, Designated Root, Designated Cost, Designated Bridge, Designated Port, Type, Role, and Port State.

Clicking the PORT STATUS tab brings up the RSTP PORT STATUS page (Figure 5-71), which displays RSTP port specific information. The parameters for this page are shown in Table 5-53.

Table 5-53. RSTP Port Status Page Parameters

| Parameter | Description |
|-------------------|--|
| Designated Root | This parameter specifies the unique Bridge Identifier of the bridge that is recorded as the root for the segment to which the port is attached. |
| Designated Cost | This parameter specifies the path cost of the Designated Port of the segment connected to this port. |
| Designated Bridge | This parameter specifies the Bridge Identifier of the bridge, which this port considers to be the Designated Bridge for this port's segment. |
| Designated Port | This parameter specifies the Port Identifier of the port on the Designated Bridge for this port's segment. |
| Type | This parameter specifies the operational point-to-point status of the LAN segment attached to this port. It indicates whether a port is considered to have a <i>Point-to-point</i> connection or <i>Shared Media</i> . |
| Role | This parameter specifies the port's current role as defined by the Spanning Tree Protocol. |
| Port State | This parameter specifies the port's current state as defined by application of the Spanning Tree Protocol. |

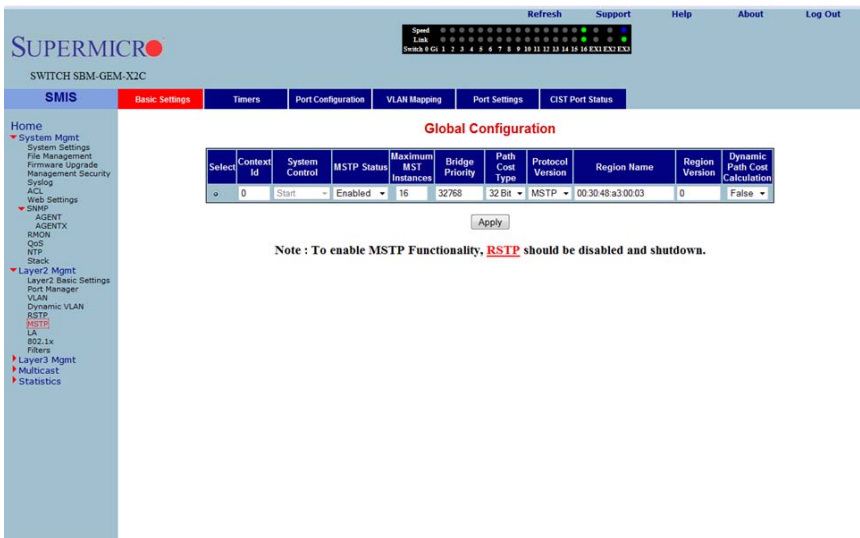
MSTP

The MSTP link leads you to the following configuration pages:

- [MSTP Basic Settings](#)
- [MSTP Timers](#)
- [Port Configuration](#)
- [VLAN Mapping](#)
- [Port Settings](#)
- [CIST Port Status](#)

MSTP Basic Settings

Figure 5-72. Global Configuration Page



Clicking the BASIC SETTINGS tab brings up the GLOBAL CONFIGURATION page (Figure 5-72), which can access the MSTP global configuration. The parameters for this page are shown in Table 5-54.

Table 5-54. Global Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| System Control | This parameter <i>Starts</i> or <i>Shutdowns</i> MSTP in the switch. |
| MSTP Status | This parameter specifies the protocol that can be enabled/disabled at a global level on the switch using this field. |
| Compatibility | This parameter allows you to choose to run the protocol in <i>MSTP</i> , <i>RSTP</i> or an <i>STP</i> compatible version. |

Table 5-54. Global Configuration Page Parameters (Continued)

| Parameter | Description |
|---------------------------|--|
| Bridge Priority | This parameter specifies the Priority value assigned to the bridge that is used to select the root bridge. |
| Transmit Hold Count | This parameter specifies the maximum number of packets that can be sent in a given interval. This is configured to avoid flooding. |
| Default Path Cost Version | This parameter allows you to configure the path cost either as a 16-bit value or a 32-bit value. This is provided mainly for backward compatibility with STAP. |
| Maximum Age (Seconds) | This parameter specifies the time period for which the information received in the RSTP BDPU is valid. |
| Forward Delay (Seconds) | This parameter specifies how fast a port changes its Spanning state when moving towards the Forwarding state. |
| Hop Counts (Seconds) | This parameter specifies the maximum number of bridges that a packet can cross before it will be dropped, to avoid infinite looping of the packets. |
| Region Name | This parameter specifies the name for the Region's configuration. By default, the region name will be equal to the Bridge MAC Address. |
| Region Version | This parameter specifies the version number of the configuration to be used. |

MSTP Timers

Figure 5-73. Timers Configuration Page

The screenshot shows the SUPERMICRO web management utility interface. At the top, there is a navigation bar with links for Refresh, Support, Help, About, and Log Out. Below this is a status bar showing 'SWITCH SBM_GEM_X2C' and a 'SMIS' menu with sub-items: Basic Settings, Timers (highlighted), Port Configuration, VLAN Mapping, Port Settings, and CIST Port Status. A left sidebar contains a navigation tree with categories like System Mgmt, Layer2 Mgmt, and Layer3 Mgmt. The main content area is titled 'Timers Configuration' and contains a table with the following data:

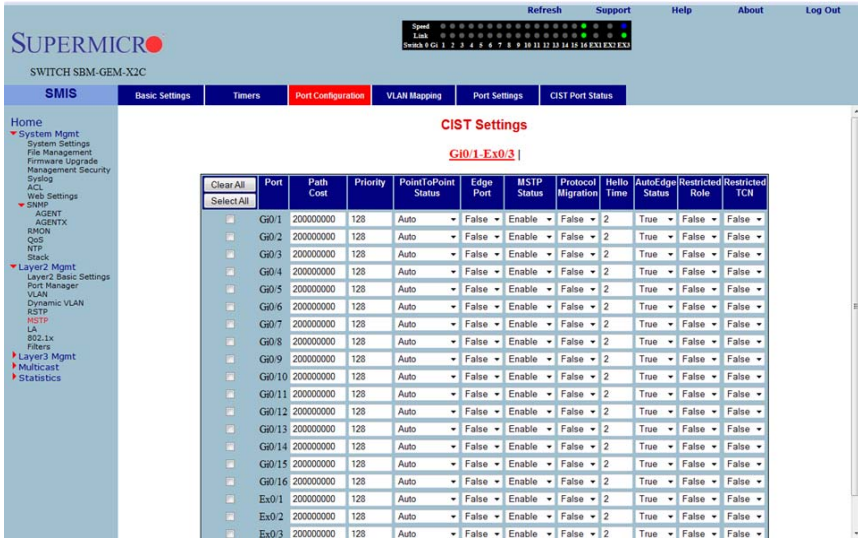
| Maximum Hop Count | Max Age | Forward Delay | Transmitt Hold Count | Hello Time |
|-------------------|---------|---------------|----------------------|------------|
| 20 | 20 | 15 | 3 | 2 |

Below the table is an 'Apply' button.

Clicking the TIMERS tab brings up the TIMERS CONFIGURATION page (Figure 5-73), which configures the time for MAXIMUM HOP COUNT, FORWARD DELAY, MAXIMUM AGE, TRANSMIT HOLD AGE and HELLO TIME.

Port Configuration

Figure 5-74. CIST Settings Page



Clicking the PORT CONFIGURATION tab brings up the CIST SETTINGS page (Figure 5-74), which sets the configuration per Port related to MSTP. The parameters for this page are shown in Table 5-55.

Table 5-55. CIST Settings Page Parameters

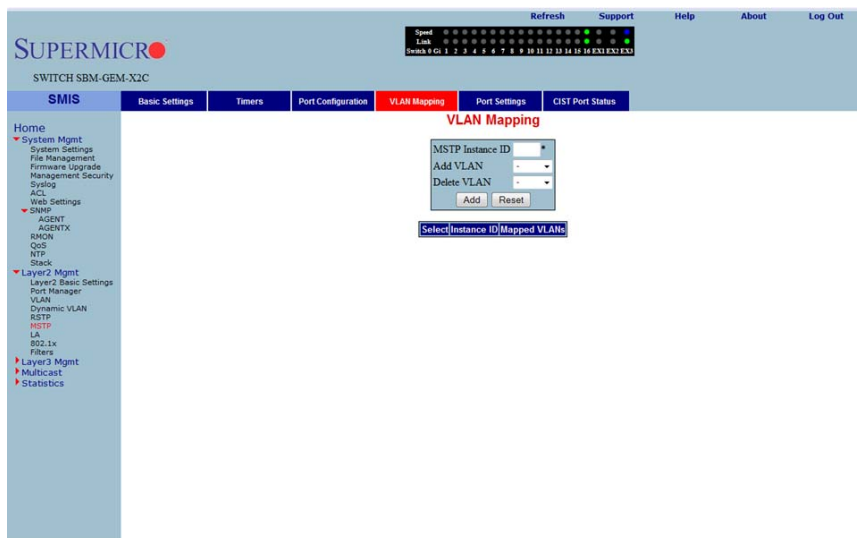
| Parameter | Description |
|-----------------------|---|
| Port | This parameter specifies the port identifier. |
| Admin Status | This parameter specifies the MSTP protocol status that can be enabled/disabled on the particular port. |
| Priority | This parameter specifies the port priority used in role selection. |
| Path Cost | This parameter specifies the path cost associated with this port. |
| Protocol Migration | This parameter controls the migration among MSTP, RSTP and STP protocols, if the other side of the switch runs a different mode. Migration takes place only if this is enabled. |
| Edge Status | This parameter must be configured if the corresponding port is an edge port. |
| Point-to-Point Status | This parameter allows you to configure the ports explicitly as point-to-point (<i>Force true</i>), as a non-point-to-point port, or leave the decision to be made dynamically (from the AL or MAC layer). |
| Hello Time (Seconds) | This parameter specifies the administrative value of Hello Time for the port. |
| Auto Edge Status | If set to <i>True</i> , the edge port status will be dynamically calculated. |

Table 5-55. CIST Settings Page Parameters (Continued)

| Parameter | Description |
|-----------------|--|
| Restricted Role | This parameter specifies the Restricted role status of the port. |
| Restricted TCN | This parameter indicates the Restricted TCN status of the port. |

VLAN Mapping

Figure 5-75. VLAN Mapping Page



Clicking the VLAN MAPPING tab brings up the VLAN MAPPING page (Figure 5-75), whose table contains one entry for each instance of MSTP. The parameters for this page are shown in Table 5-56.

Table 5-56. VLAN Mapping Page Parameters

| Parameter | Description |
|------------------|--|
| MSTP Instance ID | This parameter specifies the Instance ID, which is the index of the table. |
| Map VLAN | This parameter specifies the list of VLANs to be mapped to this instance of the spanning tree. |
| Unmap VLAN | This parameter specifies the list of VLANs to be unmapped from this instance of the spanning tree. |

Port Settings

Figure 5-76. Port Settings Page



Clicking the PORT SETTINGS tab brings up the PORT SETTINGS page (Figure 5-76), which displays the various parameters for port settings. The parameters for this page are shown in Table 5-57.

Table 5-57. Port Settings Page Parameters

| Parameter | Description |
|------------------|---|
| Port | This parameter specifies the interface index of the port on which MSTP is being run. |
| MSTP Instance ID | This parameter specifies the instance ID of the STP that is associated with this instance. |
| Port State | This parameter specifies the current state of the port. |
| Priority | This parameter specifies the priority related to this port. |
| Cost | This parameter specifies the cost associated with this port, which will be added to the cost of any path that includes this port. |

CIST Port Status

Figure 5-77. MSTP CIST Port Status Page

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The main menu on the left lists various system management options, with 'CIST Port Status' selected. The main content area displays the 'MSTP CIST Port Status' page for 'Gi0/1-Ex0/3'. A table lists the following parameters for each port:

| Port | Designated Root | Root Priority | Designated Bridge | Designated Port | Designated Cost | Regional Root | Regional Root Priority | Regional Path Cost | Type | Role | Port State |
|--------|-------------------------|---------------|-------------------------|-----------------|-----------------|-------------------------|------------------------|--------------------|--------------|-----------------------|------------|
| Gi0/1 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.01 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/2 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.02 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/3 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.03 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/4 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.04 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/5 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.05 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/6 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.06 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/7 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.07 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/8 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.08 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/9 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.09 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/10 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.0a | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/11 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.0b | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/12 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.0c | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/13 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.0d | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/14 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.0e | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/15 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.0f | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Gi0/16 | 80.00.00.30.48.90.00.2 | 32768 | 80.00.00.30.48.a3.00.03 | 80.10 | 200000000 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | PointToPoint | Designated Forwarding | |
| Ex0/1 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.19 | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Ex0/2 | 80.00.00.30.48.a3.00.03 | 32768 | 80.00.00.30.48.a3.00.03 | 80.1a | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | Shared_Lan | Disabled | Discarding |
| Ex0/3 | 80.00.00.30.48.90.00.2 | 32768 | 80.00.00.30.48.90.00.2 | 80.1b | 0 | 80.00.00.30.48.a3.00.03 | 32768 | 0 | PointToPoint | Root Forwarding | |

Clicking the CIST PORT STATUS tab brings up the MSTP CIST PORT STATUS page (Figure 5-77), which displays MSTP CIST port specific information. The parameters for this page are shown in Table 5-58.

Table 5-58. MSTP CIST Port Status Page Parameters

| Parameter | Description |
|--------------------|---|
| Designated Root | This parameter specifies the unique Bridge Identifier of the Bridge recorded as the Root for the segment to which the port is attached. |
| Designated Bridge | This parameter specifies the Bridge Identifier of the bridge, which this port considers to be the Designated Bridge for this port's segment. |
| Designated Port | This parameter specifies the Port Identifier of the port on the Designated Bridge for this port's segment. |
| Designated Cost | This parameter specifies the path cost of the Designated Port of the segment connected to this port. |
| Regional Root | This parameter specifies the unique Bridge Identifier of the bridge recorded as the CIST Regional Root Identifier in the configuration BPDUs transmitted. |
| Regional Path Cost | This parameter specifies the contribution of this port to the path cost of paths towards the CIST Regional Root, which includes this port. |
| Type | This parameter specifies the operational point-to-point status of the LAN segment attached to this port. It indicates whether a port is considered to have a point-to-point connection or shared media. |

Table 5-58. MSTP CIST Port Status Page Parameters (Continued)

| Parameter | Description |
|------------|--|
| Role | This parameter specifies the ports current role as defined by the Spanning Tree Protocol. |
| Port State | This parameter specifies the port's current state as defined by the application of the Spanning Tree Protocol. |

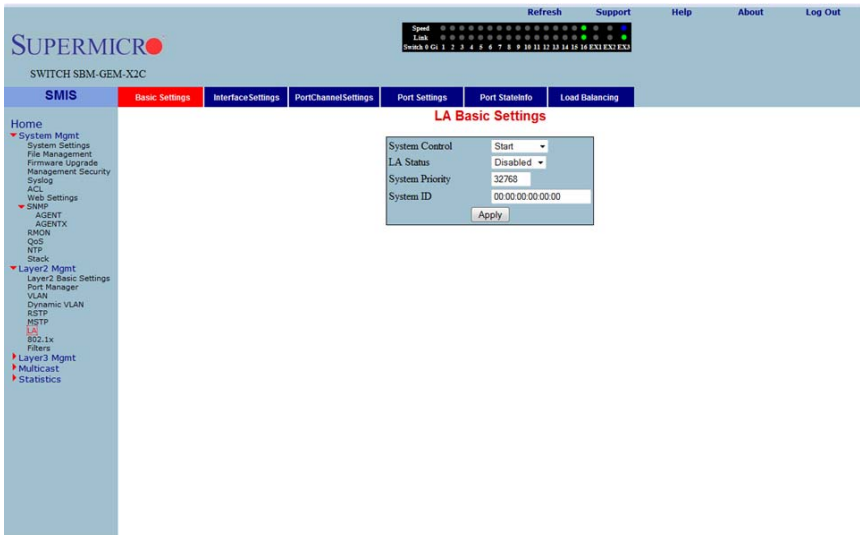
LA

The LA link provides links to the following configuration pages:

- [LA Basic Settings](#)
- [Interface Settings](#)
- [Port Channel](#)
- [Port Settings](#)
- [Port State Info](#)
- [Load Balancing](#)

LA Basic Settings

Figure 5-78. LA Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the LA BASIC SETTINGS page (Figure 5-78), which displays the various parameters for LA basic settings. The parameters for this page are shown in Table 5-59.

Table 5-59. LA Basic Settings Page Parameters

| Parameter | Description |
|-----------------|---|
| System Control | This parameter <i>Starts</i> or <i>Shutdowns</i> LA in the switch. |
| LA Status | This is used to enable or disable LA in the switch. |
| System Priority | This parameter specifies the priority value associated with the Actor's system ID. |
| System ID | This parameter specifies the Bridge MAC Address that is displayed. This is a read-only parameter. |

Interface Settings

Figure 5-79. Port Channel Interface Basic Settings Page

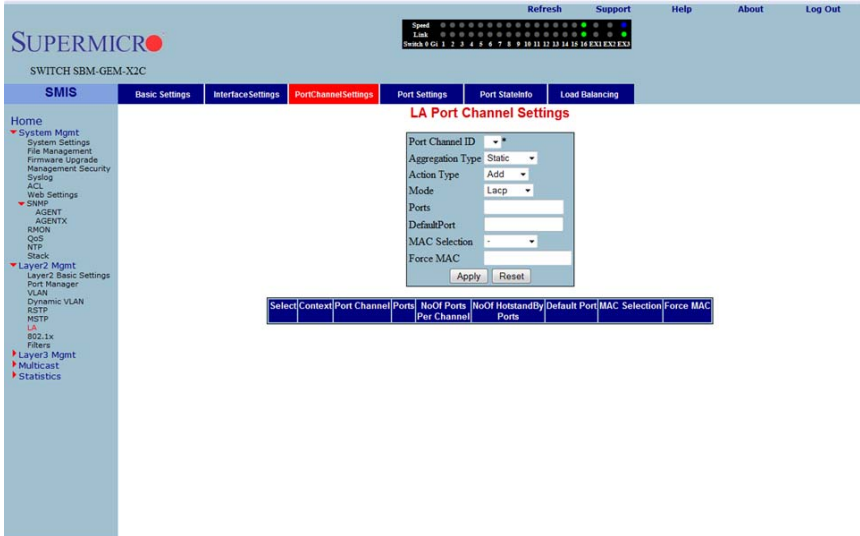
Clicking the INTERFACE SETTINGS tab brings up the PORT CHANNEL INTERFACE BASIC SETTINGS page (Figure 5-79), which allows you to configure port channels. The parameters for this page are shown in Table 5-60.

Table 5-60. Port Channel Interface Basic Settings Page Parameters

| Parameter | Description |
|-----------------|---|
| Port Channel ID | This parameter specifies the identifier of the port channel interface. The valid values are between 1 to 65535. |
| Admin Status | This parameter administratively makes the port channel <i>Up</i> or <i>Down</i> . |
| MTU | This parameter specifies the MTU value for this port channel. |

Port Channel

Figure 5-80. LA Port Channel Settings Page



Clicking the PORT CHANNEL SETTINGS tab brings up the LA PORT CHANNEL SETTINGS page (Figure 5-80), which is used to edit the Port Channel configuration. The first table is for creating Port Channel interfaces while the second table is for editing the Port Channel configuration. The third table is used to display the Port Channels and to delete the existing Port Channels. The parameters for this page are shown in Table 5-61.

Table 5-61. LA Port Channel Settings Page Parameters

| Parameter | Description |
|-----------------|--|
| Port Channel ID | This parameter specifies the identifier of the port channel interface. |
| Action Type | This parameter specifies whether the port channel must be created or deleted. |
| Ports | This parameter specifies the interface indices that must be configured to be members of the Port Channel. |
| MAC Selection | This parameter specifies the mode by which the MAC address for the port channel is assigned. It can be dynamic or the user can <i>Force</i> the selection of a specific MAC address. |
| Force MAC | This parameter specifies the MAC Address that is assigned to the port channel. For this, the MAC selection mode must be <i>Force</i> . |

Port Settings

Figure 5-81. LA Port Settings Page

The screenshot shows the 'LA Port Settings' page for a SUPERMICR switch. The page title is 'LA Port Settings' and the sub-header is 'G10_1-Ex0_3'. A table lists 27 ports (G10/1 to Ex0/3) with columns for Port, Port Priority, Port Identifier, Mode, Activity, Timeout, Wait Time (secs), Bundle State, and Aggregation Selection. All ports are currently in 'Disable' mode and 'Static' aggregation.

| Clear All | Port | Port Priority | Port Identifier | Mode | Activity | Timeout | Wait Time (secs) | Bundle State | Aggregation Selection |
|------------|--------|---------------|-----------------|---------|----------|---------|------------------|--------------|-----------------------|
| Select All | G10/1 | 128 | 1 | Disable | Active | Long | 2 | Down | Static |
| | G10/2 | 128 | 2 | Disable | Active | Long | 2 | Down | Static |
| | G10/3 | 128 | 3 | Disable | Active | Long | 2 | Down | Static |
| | G10/4 | 128 | 4 | Disable | Active | Long | 2 | Down | Static |
| | G10/5 | 128 | 5 | Disable | Active | Long | 2 | Down | Static |
| | G10/6 | 128 | 6 | Disable | Active | Long | 2 | Down | Static |
| | G10/7 | 128 | 7 | Disable | Active | Long | 2 | Down | Static |
| | G10/8 | 128 | 8 | Disable | Active | Long | 2 | Down | Static |
| | G10/9 | 128 | 9 | Disable | Active | Long | 2 | Down | Static |
| | G10/10 | 128 | 10 | Disable | Active | Long | 2 | Down | Static |
| | G10/11 | 128 | 11 | Disable | Active | Long | 2 | Down | Static |
| | G10/12 | 128 | 12 | Disable | Active | Long | 2 | Down | Static |
| | G10/13 | 128 | 13 | Disable | Active | Long | 2 | Down | Static |
| | G10/14 | 128 | 14 | Disable | Active | Long | 2 | Down | Static |
| | G10/15 | 128 | 15 | Disable | Active | Long | 2 | Down | Static |
| | G10/16 | 128 | 16 | Disable | Active | Long | 2 | Down | Static |
| | Ex0/1 | 128 | 25 | Disable | Active | Long | 2 | Down | Static |
| | Ex0/2 | 128 | 26 | Disable | Active | Long | 2 | Down | Static |
| | Ex0/3 | 128 | 27 | Disable | Active | Long | 2 | Down | Static |

Clicking the PORT SETTINGS tab brings up the LA PORT SETTINGS page (Figure 5-81), which configures LA properties at a per-port level. The parameters for this page are shown in Table 5-62.

Table 5-62. LA Port Settings Page Parameters

| Parameter | Description |
|---------------|--|
| Port | This parameter specifies the Interface Index. |
| Port Priority | This parameter specifies the priority value of the Port. |
| Mode | This parameter specifies the various port modes, such as <i>LACP</i> , <i>Manual</i> or <i>Disable</i> . |
| Activity | This parameter specifies whether the Port LACP activity is <i>Active</i> or <i>Passive</i> . |
| Timeout | This parameter sets the time within which LACP PDUs must be received on a port to avoid timing out of the Aggregated Link. If a <i>Long</i> timeout is chosen then the ports will time out of the Port Channel in 90-seconds. If a <i>Short</i> timeout is chosen then the ports will time out of the Port Channel in 3-seconds. |

Table 5-62. LA Port Settings Page Parameters (Continued)

| Parameter | Description |
|--------------|--|
| Wait Time | This parameter configures the waiting time for a port after receiving Partner information and before entering aggregation. |
| Bundle State | This parameter indicates the current state of the port with respect to Link Aggregation. The possible states are: <ul style="list-style-type: none"> • Up in Bundle - The port is an active member of the port channel. • Up Individual - The port is not a member of any port channel but its Oper-Status is Up. • Standby - The port is a member of the port channel but is currently in a standby state. • Down - The port's Oper-Status is Down. |

Port State Info

Figure 5-82. LA Port State Machine Information Page



Clicking the PORT STATE INFO tab brings up the LA PORT STATE MACHINE INFORMATION page (Figure 5-82), which displays Link Aggregation state machine information. It displays the aggregation state information for every port channel.

Load Balancing

Figure 5-83. LA Load Balancing Policy Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there is a status bar with 'Speed' and 'Link' indicators, and a 'Refresh' button. Below this is a navigation bar with tabs: 'SMIS', 'Basic Settings', 'Interface Settings', 'PortChannel Settings', 'Port Settings', 'Port StateInfo', and 'Load Balancing'. The 'Load Balancing' tab is selected. On the left, there is a vertical navigation menu with categories like 'System Mgmt', 'Layer2 Mgmt', and 'Layer3 Mgmt'. The main content area displays the 'LA Load Balancing Policy' page, which includes a dropdown menu labeled 'Select Port Channel Selection Policy' and an 'Apply' button.

Clicking the LOAD BALANCING tab brings up the LA LOAD BALANCING POLICY page (Figure 5-83), which allows you to choose the selection policy for load distribution on the aggregated links.

The selection policy can be one of the following - Source MAC based, Destination MAC based, both Source and Destination MAC, Source IP address, Destination IP address or both IP addresses.

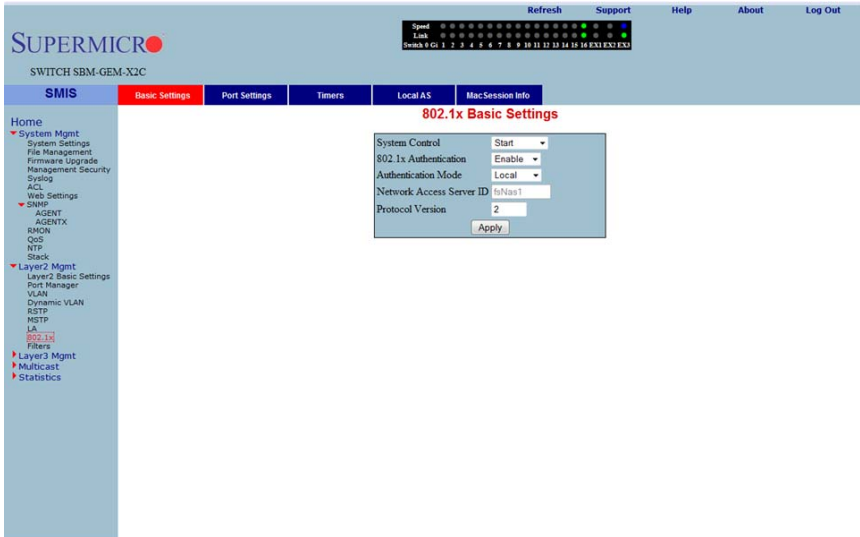
802.1x

The 802.1x link provides link to the following configuration pages:

- [Basic Settings](#)
- [Port Settings](#)
- [Timers](#)
- [Local AS](#)
- [MAC Session Info](#)

Basic Settings

Figure 5-84. 802.1x Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the 802.1x BASIC SETTINGS page (Figure 5-84), which displays the various 802.1x Basic Settings parameters. The parameters for this page are shown in Table 5-63.

Table 5-63. 802.1x Basic Settings Page Parameters

| Parameter | Description |
|--------------------------|--|
| System Control | This parameter starts or shutdowns 802.1x in the switch. |
| 802.1x Authentication | This parameter allows enabling or disabling of the 802.1x based port security feature in the switch. |
| Authentication Server | This parameter specifies the Authentication Server Location as <i>Remote</i> or <i>Local</i> . |
| Network Access Server ID | This parameter specifies the Authenticator ID, which originates the Access-Request Packets. |

Port Settings

Figure 5-85. 802.1x Port Settings Page

The screenshot shows the '802.1x Port Settings' page for a Supermicro switch. The page title is '802.1x Port Settings' and the interface is for 'SWITCH SBM_GEM_X2C'. The 'Port Settings' tab is active in the navigation menu. The main content area displays a table with the following columns: Clear All, Select All, Port, Port Control, Access Control, Auth Port Status, Supp Port Status, Authentication Mode, Configured Control Direction, Operational Control Direction, Auth SM State, Supp SM State, and Auth. The table lists 18 ports (Gigabit Ethernet ports G0/0-16 and Ethernet SFP ports Ex0/1-2). Each row shows the current configuration for that port, such as 'ForceAuthorized' for Port Control and 'INACTIVE' for Access Control.

Clicking the PORT SETTINGS tab brings up the 802.1X PORT SETTINGS page (Figure 5-85), which configures security information at the individual port levels. The parameters for this page are shown in Table 5-64.

Table 5-64. 802.1x Port Settings Page Parameters

| Parameter | Description |
|-------------------------------|---|
| Port | This parameter specifies the Index of the port for which its fields (such as PORT CONTROL, PORT AUTHORIZATION STATUS, and so on) are configured. |
| Port Control | This parameter specifies the control values of the Authenticator Port. The control values can be: <ul style="list-style-type: none"> Force Authorize - All the traffic through this port will be allowed always. Force Unauthorize - All the traffic through this port will be blocked always. Auto - The 802.1x authentication process will be imposed over this port. |
| Port Authorization Status | This parameter specifies current status of the port either as <i>Authorized</i> or <i>Un-Authorized</i> . |
| Authentication Mode | This parameter specifies the configuration for selecting the AUTHENTICATION MODE to be <i>Port Based</i> . |
| Admin Control Direction | This parameter specifies whether security is to be imposed for <ul style="list-style-type: none"> In - the incoming traffic Both - both incoming and outgoing traffic |
| Operational Control Direction | This parameter specifies the current security status. |

Table 5-64. 802.1x Port Settings Page Parameters (Continued)

| Parameter | Description |
|--------------------------------|---|
| Port Initialize | This parameter specifies the initialization control for the port. Setting this value to <i>True</i> causes the port to be initialized. The value reverts to <i>False</i> once initialization is complete. |
| Maximum Authentication Request | This parameter specifies the maximum number of authentication requests that can be sent from the authenticator before getting a response from the supplicant. |
| Reauthentication | This parameter provides configuration to enable or disable the reauthentication mechanism on the port. |

Timers

Figure 5-86. 802.1x Timer Configuration Page

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The main content area is titled '802.1x Timer Configuration' and 'G10.1-Ex0.3'. A table displays the timer configuration for 19 ports. The table has the following columns: Clear All, Select All, Port, Quiet Period (secs), Transmit Period (secs), Re-authentication Period (secs), Supplicant Timeout, Server Timeout, Held Period, Auth Period, Start Period, and Max Start.

| Clear All | Port | Quiet Period (secs) | Transmit Period (secs) | Re-authentication Period (secs) | Supplicant Timeout | Server Timeout | Held Period | Auth Period | Start Period | Max Start |
|--------------------------|-------|---------------------|------------------------|---------------------------------|--------------------|----------------|-------------|-------------|--------------|-----------|
| Select All | G0/0 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/2 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/3 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/4 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/5 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/6 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/7 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/8 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/9 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/10 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/11 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/12 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/13 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/14 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/15 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | G0/16 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | Ex0/1 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | Ex0/2 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |
| <input type="checkbox"/> | Ex0/3 | 60 | 30 | 3600 | 30 | 30 | 60 | 30 | 30 | 3 |

Clicking the TIMERS tab brings up the 802.1x TIMER CONFIGURATION page (Figure 5-86), which configures Timer parameters at the individual port level. The parameters for this page are shown in Table 5-13.

Table 5-65. 802.1x Timer Configuration Page Parameters

| Parameter | Description |
|------------------------------------|---|
| Port | This parameter is the index of the port for which fields such as QUIET PERIOD, TRANSMIT PERIOD, and such are configured. |
| Quiet Period (Seconds) | This parameter specifies the duration for which the authenticator will be silent and will not attempt to acquire a supplicant. It can be configured to any value in the range from 1 to 65535 seconds. |
| Transmit Period (Seconds) | This parameter specifies the time period used by the Authenticator State machine to define when the EAPOL PDU is to be transmitted. It can be configured to any value in the range from 1 to 65535 seconds. |
| Re-authentication Period (Seconds) | This parameter specifies the time between periodic re-authentication of the supplicant. |

Local AS

Figure 5-87. Local Authentication Server Configuration Page



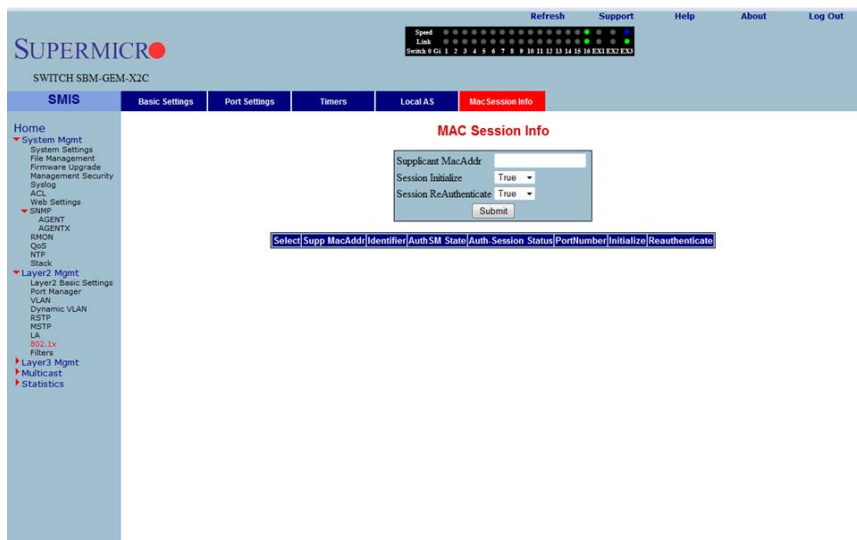
Clicking the LOCAL AS tab brings up the LOCAL AUTHENTICATION SERVER CONFIGURATION page (Figure 5-20), which configures Local Authentication Server information. The parameters for this page are shown in Table 5-13.

Table 5-66. Local Authentication Server Configuration Page Parameters

| Parameter | Description |
|------------|---|
| User Name | This parameter specifies the identity of the user who is seeking authentication, and is set by a string of not more than 20 printable characters. |
| Password | This parameter specifies the password specific to the user name, and is set by a string of not more than 20 printable characters. |
| Permission | This parameter represents the allowance and denial of access. The values that can be configured are: <ul style="list-style-type: none"> Allow - When set to <i>Allow</i>, the authentication request is allowed over the set of ports in the PORT LIST. Deny - When set to <i>Deny</i>, the authentication request is NOT allowed over the set of ports in the PORT LIST. |
| Port List | This parameter represents the complete set of ports of the authenticator to which the user is allowed or denied access. It is based on permission. |

MAC Session Info

Figure 5-88. MAC Session Info Page



Clicking the MAC SESSION INFO tab brings up the MAC SESSION INFO page (Figure 5-20), which configures the supplicant MAC address. The parameters for this page are shown in Table 5-13.

Table 5-67. MAC Session Info Page Parameters

| Parameter | Description |
|------------------------|--|
| Session Initialize | This parameter is the initialization control for this Supplicant MAC address. Setting this attribute to <i>True</i> causes the Supplicant session with this MAC address, to be initialized. The attribute value reverts to <i>False</i> once initialization has completed. |
| Session ReAuthenticate | This parameter is the reauthentication control for this Supplicant MAC address. Setting this attribute to <i>True</i> causes the Authenticator PAE state machine for this MAC address to reauthenticate the Supplicant. Setting this attribute to <i>False</i> has no effect. This attribute always returns to <i>False</i> when it is read. |

Filters

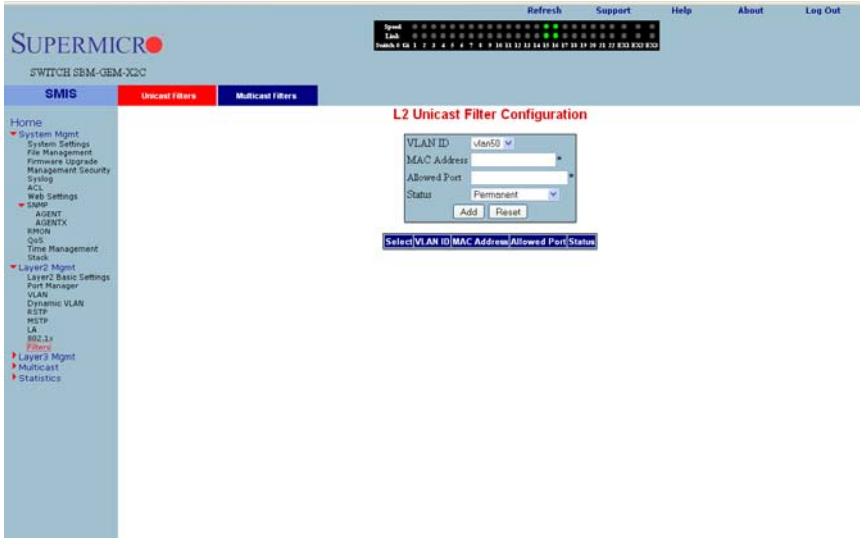
The Filters link allows you to configure Layer 2 packet filtering.

The Layer 2 packet filtering management has the following configuration pages:

- [Unicast Filters](#)
- [Multicast Filters](#)

Unicast Filters

Figure 5-89. L2 Unicast Filter Configuration Page



Clicking the UNICAST FILTERS tab brings up the L2 UNICAST FILTER CONFIGURATION page (Figure 5-20), which sets the filter configuration to control the unicast packets that the switch needs to process. The parameters for this page are shown in Table 5-13.

Table 5-68. L2 Unicast Filter Configuration Page Parameters

| Parameter | Description |
|---------------|--|
| FDB ID | This parameter specifies the forwarding database ID. |
| MAC Address | This parameter specifies the destination MAC address of the received packet. |
| Receive Port | This parameter specifies the port on which the packet was received. |
| Allowed Ports | This parameter specifies the list of ports on which the received packet, with the above set MAC address (if received from the configured port) can be forwarded. |
| Status | You can choose to set this configuration to any one of the following types: <ul style="list-style-type: none"> • Other – For entries currently in use, but whose conditions remain different from the following values. • Permanent – Entries that reside even after the restart of the switch. • DeleteOnReset – This deletes the entry on restart. • DeleteOnTimeout – This deletes the entry on expiration of the ageing timer. |

Multicast Filters

Figure 5-90. L2 Multicast Filter Configuration Page



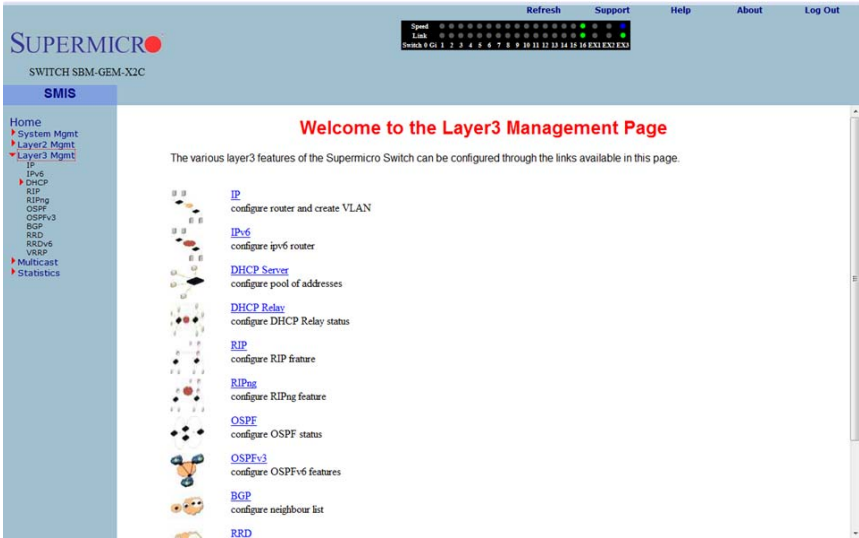
Clicking the MULTICAST FILTERS tab brings up the L2 MULTICAST FILTER CONFIGURATION page (Figure 5-20), which allows you to set the filter configuration to control the multicast packets that the switch needs to process. The parameters for this page are shown in Table 5-13.

Table 5-69. L2 Multicast Filter Configuration Page Parameters

| Parameter | Description |
|-----------------|--|
| VLAN ID | This parameter specifies the VLAN ID. |
| MAC Address | This parameter specifies the destination MAC address of the received packet. |
| Receive Port | This parameter specifies the port on which the packet was received. |
| Allowed Ports | This parameter specifies the list of ports on which the received packet, with the above set MAC address (if received from the configured port) can be forwarded. |
| Forbidden Ports | This parameter specifies the list of ports on which the received packet, with the above set MAC address (if received from the configured port) must NOT be forwarded. |
| Status | You can choose to set this configuration to any one of the following types: <ul style="list-style-type: none"> • Permanent – This configuration resides even after restart of the switch. • DeleteOnReset – This configuration deletes the entry on restart. • DeleteOnTimeout – This configuration deletes the entry on expiration of the ageing timer. |

5-6 Layer 3 Management

Figure 5-91. Layer3 Management Page



The LAYER 3 MANAGEMENT home page (Figure 5-91) has links to all Layer 3 features.

IP

The IP link enables you to perform IP related configuration. This can be done through the following pages.

- [Vlan Interface](#)
- [IP V4 Interface Settings](#)
- [IP Route](#)
- [LoopBack Basic Settings](#)

Vlan Interface

Figure 5-92. VLAN Interface Basic Settings Page

The screenshot shows the 'VLAN Interface Basic Settings' page. At the top, there is a navigation bar with 'SMIS' and several tabs: 'Vlan Interface' (selected), 'IPv4 Addr/Conf', 'IP Route', and 'LoopBack Settings'. A sidebar on the left contains a tree view of system management options, with 'Layer3 Mgmt' expanded to show 'Vlan Interface'. The main content area features a form for configuring a VLAN interface. The form includes a dropdown menu for 'VLAN Interface', a dropdown for 'Admin State' (set to 'Up'), and a text input for 'MTU' (set to '1500'). Below the form are 'Create' and 'Reset' buttons. Underneath the form is a table with the following data:

| Select | VLAN Interface | Admin State | Oper State | MTU |
|-----------------------|----------------|-------------|------------|------|
| <input type="radio"/> | 1 | Up | Up | 1500 |

Below the table are 'Apply' and 'Delete' buttons.

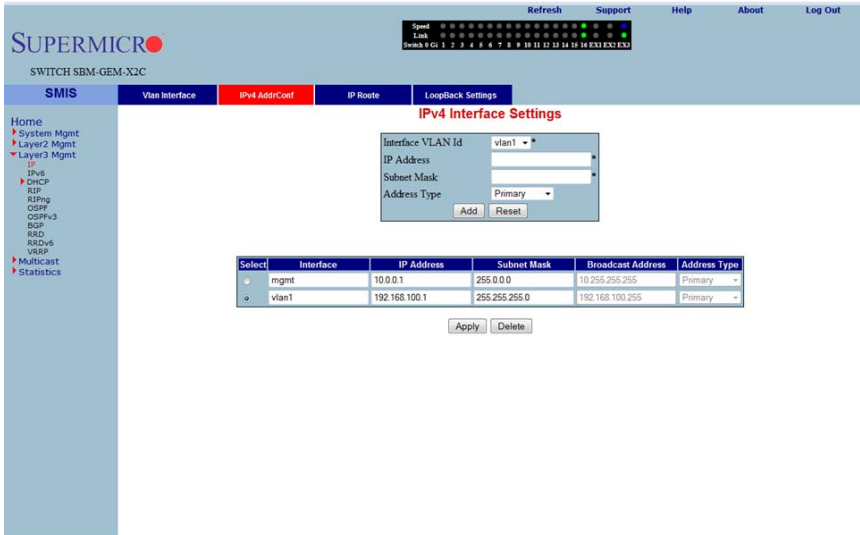
Clicking the VLAN INTERFACE tab brings up the VLAN INTERFACE BASIC SETTINGS page (Figure 5-92), which allows configuring of L3 VLAN interfaces. The parameters for this page are shown in Table 5-70.

Table 5-70. VLAN Interface Basic Settings Page Parameters

| Parameter | Description |
|----------------|---|
| VLAN Interface | This parameter specifies the VLAN identifier. |
| Admin State | This parameter specifies the admin state as either <i>Up</i> or <i>Down</i> . |
| MTU | This parameter specifies the maximum transfer unit size in bytes. |

IP V4 Interface Settings

Figure 5-93. IPv4 Interface Settings Page



Clicking the IPV4 ADDR CONF tab brings up the IPV4 INTERFACE SETTINGS page (Figure 5-93), which allows you to configure the IP address for L3 VLANs. The parameters for this page are shown in Table 5-71.

Table 5-71. IPv4 Interface Settings Page Parameters

| Parameter | Description |
|-------------------|---|
| Interface VLAN ID | This parameter specifies the VLAN interface. |
| IP Address | This parameter specifies the IP Address of the specified interface. |
| Subnet Mask | This parameter indicates the mask for the specified IP Address. |
| Address Type | This parameter specifies the type of address, which can be <i>Primary</i> or <i>Secondary</i> . |

IP Route

Figure 5-94. IP Route Configuration Page

The screenshot shows the IP Route Configuration page. The navigation menu on the left includes: Home, System Mgmt, Layer2 Mgmt, Layer3 Mgmt, IP, DHCP, RIP, RIPv2, OSPFv3, BGP, RRD, RRDv6, VRRP, Multicast, and Statistics. The main content area is titled "IP Route Configuration" and contains a form with the following fields: Destination Network, Subnet Mask, Gateway, Interface (set to vlan1), and Distance (Metric). Below the form is a table with the following data:

| Select | Destination Network | Subnet Mask | Gateway | Interface | Distance (Metric) | Routing Protocol |
|--------------------------|---------------------|---------------|---------|-----------|-------------------|------------------|
| <input type="checkbox"/> | 10.0.0.0 | 255.0.0.0 | 0.0.0.0 | mgmt | 0 | Connected |
| <input type="checkbox"/> | 192.168.100.0 | 255.255.255.0 | 0.0.0.0 | vlan1 | 0 | Connected |

Buttons for "Apply" and "Delete" are located below the table.

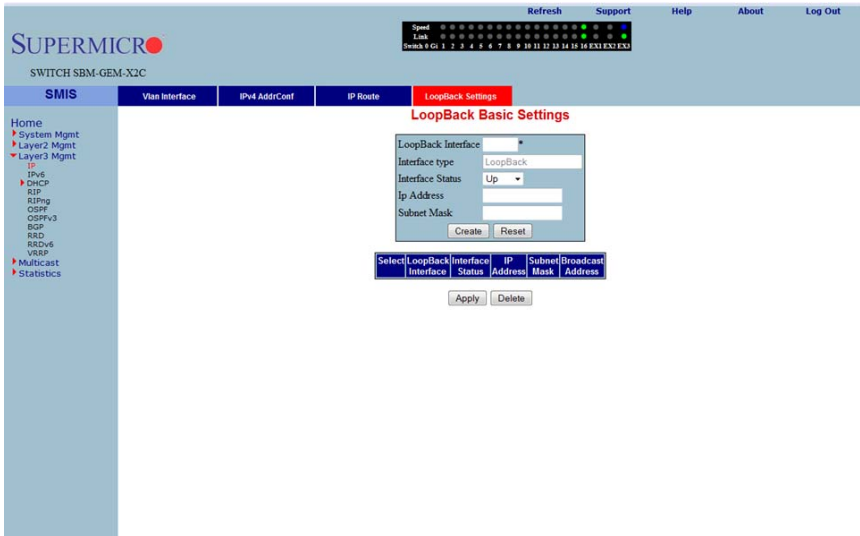
Clicking the IP ROUTE tab brings up the IP ROUTE CONFIGURATION page (Figure 5-94), which allows you to configure the static IP routes. The parameters for this page are shown in Table 5-72.

Table 5-72. IP Route Configuration Page Parameters

| Parameter | Description |
|---------------------|--|
| Destination Network | This parameter specifies the network address for which the route is being added. |
| Subnet Mask | This parameter indicates the subnet mask for the Destination Network address. |
| Gateway | This parameter denotes the Next Hop Gateway to reach the IP address. |
| Interface | This parameter specifies the outgoing interface. |
| Distance (Metric) | This parameter specifies the metric value of the destination. |

LoopBack Basic Settings

Figure 5-95. LoopBack Basic Settings Page



Clicking the LOOPBACK SETTINGS tab brings up the LOOPBACK BASIC SETTINGS page (Figure 5-95), which allows you to configure loopback IP interfaces. The parameters for this page are shown in Table 5-73.

Table 5-73. LoopBack Basic Settings Page Parameters

| Parameter | Description |
|--------------------|--|
| LoopBack Interface | This parameter is the name of the loopback interface getting created. |
| Interface Type | This parameter is always the loopback for this configuration. |
| Interface Status | This parameter for the INTERFACE STATUS can be set to <i>Up</i> or <i>Down</i> . |
| IP Address | This parameter specifies the IP address for this loopback interface. |
| Subnet Mask | This parameter specifies the subnet mask for this loopback interface. |

IP V6

The IPv6 link allows you to perform IPv6 related configurations. This can be accomplished through the following six pages.

- [IPv6 Route Configuration](#)
- [IPv6 Interface](#)
- [ND Cache](#)
- [Address Settings](#)

- Address Profile
- Prefix Settings

IPv6 Route Configuration

Figure 5-96. IPv6 Route Configuration Page

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. Below this is a status bar with 'Speed' and 'Link' indicators. The main navigation menu on the left includes 'Home', 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'IP...', 'DHCP', 'RIP', 'OSPF', 'OSPFv3', 'BGP', 'RSD', 'RSDv6', 'VRRP', 'Multicast', and 'Statistics'. The 'IPv6 Route' tab is selected in the top navigation bar. The main content area displays the 'IPv6 Route Configuration' form with the following fields: Destination Network (dropdown), Prefix Length (text input), Gateway (text input), Interface (dropdown menu showing 'vian1'), and Distance (Metric) (text input). There are 'Add' and 'Reset' buttons at the bottom of the form. A status bar at the bottom of the form shows 'select|Destination Network|Prefix Length|Routing Protocol|Gateway|Interface|Distance|Metric|'.

Clicking the IPv6 ROUTE tab brings up the IPv6 ROUTE CONFIGURATION page (Figure 5-96), which configures various IPv6 Route parameters. The parameters for this page are shown in Table 5-74.

Table 5-74. IPv6 Route Configuration Page Parameters

| Parameter | Description |
|---------------------|---|
| Destination Network | This parameter specifies the network address for which the IPv6 route is being added. |
| Prefix Length | This parameter specifies the subnet mask for the above said address. |
| Routing Protocol | This parameter indicates the routing protocol through which the route was learnt, if not manual. This cannot be configured. |
| Gateway | This parameter specifies the Next Hop Gateway to reach the IP address. |
| Interface | This parameter indicates the outgoing interface. |
| Distance (Metric) | This parameter denotes metric value of the destination. |

IPv6 Interface

Figure 5-97. IPv6 Interface Settings Page



Clicking the IPV6 INTERFACE tab brings up the IPV6 INTERFACE SETTINGS page (Figure 5-97), which displays the various parameters for the IPv6 Interface. The parameters for this page are shown in Table 5-75.

Table 5-75. IPv6 Interface Settings Page Parameters

| Parameter | Description |
|-------------------|---|
| Port | This parameter specifies the Index of the VLAN interface. |
| Admin | This parameter indicates the Administrative Status of IPv6 on the Interface. |
| Oper | This parameter specifies the Operational Status of IPv6 on the given Interface, which is a read-only field. |
| RA Status | This parameter indicates the Router Advertisement status on the Interface. |
| Hop Limit | This parameter denotes the Hop Limit value to be placed in the Router Advertisements sent on the Interface. |
| Def-Rtr Time | This parameter specifies the Default router lifetime to be placed in the Router Advertisements sent on the interface. |
| RA Rch Time | This parameter indicates the Reachable time to be placed in the Router Advertisements sent on the interface. |
| RA Retrans Time | This parameter specifies the RA Retransmit time to be placed in the Router Advertisement sent on the interface. |
| Prefix-Adv Status | This parameter specifies the Prefix Advertisement status on the Interface. |

Table 5-75. IPv6 Interface Settings Page Parameters (Continued)

| Parameter | Description |
|-------------|---|
| RA Min | This parameter specifies the minimum time in seconds allowed between sending unsolicited router advertisements. |
| RA Max | This parameter indicates the maximum time in seconds allowed between sending unsolicited router advertisements. |
| DAD Retries | This parameter specifies the maximum number of Duplicate Address Detection retries. |

ND Cache

Figure 5-98. ND Cache Configuration Page

The screenshot shows the 'ND Cache Configuration' page. At the top, there are links for 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The main navigation bar includes 'SMIS', 'IPv6 Route', 'IPv6 Interface', 'ND Cache' (highlighted), 'Address Settings', 'Address Profile', and 'Prefix Settings'. The left sidebar contains a tree view of configuration options. The main content area is titled 'ND Cache Configuration' and contains the following form elements:

- Interface VLAN Id:
- Destination:
- Mac Address:
- Buttons: Add, Reset
- Table:

| select | Interface VLAN Id | Destination | Mac Address | State | Age |
|--------------------------------------|---------------------------------------|-------------|-------------|-------|-----|
| <input type="button" value="Apply"/> | <input type="button" value="Delete"/> | | | | |

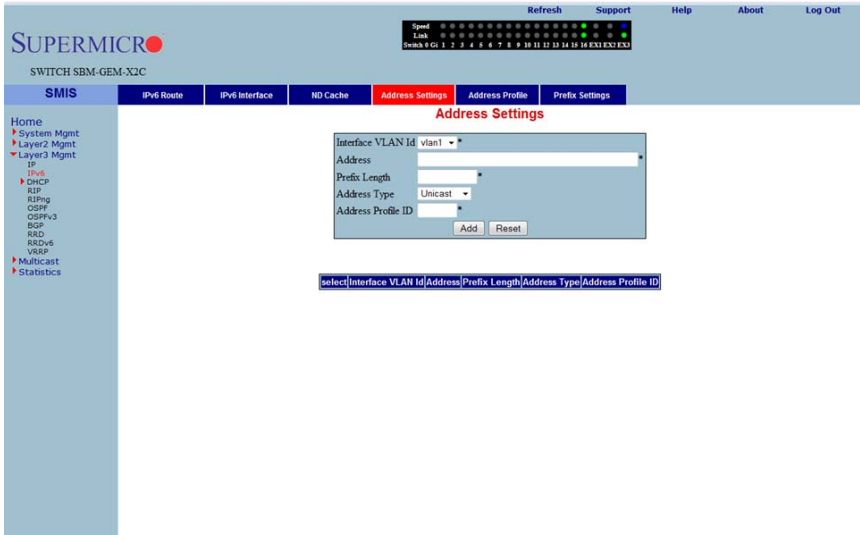
Clicking the ND CACHE tab brings up the ND CACHE CONFIGURATION page (Figure 5-98). The parameters for this page are shown in Table 5-76.

Table 5-76. ND Cache Configuration Page Parameters

| Parameter | Description |
|-------------------|---|
| Interface VLAN ID | This parameter indicates index of the VLAN interface. |
| Destination | This parameter specifies Destination IPv6 address. |
| MAC Address | This parameter denotes the physical address of the Destination address. |
| State | This parameter indicates the Reachability state of the entry, which is a read-only field. |
| Age | This parameter specifies the Age Time. |

Address Settings

Figure 5-99. Address Settings Page



Clicking the ADDRESS SETTINGS tab brings up the ADDRESS SETTINGS page (Figure 5-99), which allows you to configure address settings for IPv6. The parameters for this page are shown in Table 5-77.

Table 5-77. Address Settings Page Parameters

| Parameter | Description |
|--------------------|--|
| Interface VLAN ID | This parameter specifies the index of the VLAN Interface. |
| Address | This parameter specifies the IPv6 address. |
| Prefix Length | This parameter indicates the length of the prefix (in bits) associated with this entry's IPv6 address. |
| Address Type | This parameter specifies that the type of address can be <i>Link-Local</i> , <i>Global-Unicast</i> or <i>Anycast</i> . |
| Address Profile ID | This parameter indicates the index to the IPv6 address Profile table. |

Address Profile

Figure 5-100. Address Profile Settings Page

The screenshot shows the 'Address Profile Settings' page. The navigation menu on the left includes 'Home', 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'IP', 'IPv6', 'DHCP', 'RIP', 'RIPNG', 'OSPF', 'OSPFv3', 'BGP', 'RRD', 'RSDv6', 'VRRP', 'Multicast', and 'Statistics'. The top navigation bar has 'Refresh', 'Support', 'Help', 'About', and 'Log Out' buttons. The main content area has tabs for 'SMIS', 'IPv6 Route', 'IPv6 Interface', 'ND Cache', 'Address Settings', 'Address Profile', and 'Prefix Settings'. The 'Address Profile' tab is active, showing a form with the following fields: Profile Id (text input), Adv Status (On), On Link Adv Status (On), Auto Conf Adv Status (On), Preferred Time (text input), Valid Time (text input), Valid Flag (Fixed), and Preferred Flag (Fixed). Below the form are 'Add' and 'Reset' buttons. Below the form is a table with the following data:

| Select | ID | Adv Status | On Link Adv Status | Auto Conf Adv Status | Pre Time | Valid Time | Pref Flag | Valid Flag |
|--------|----|------------|--------------------|----------------------|----------|------------|-----------|------------|
| ▼ | 0 | On | On | On | 604800 | 2592000 | Fixed | Fixed |

Below the table are 'Apply' and 'Delete' buttons.

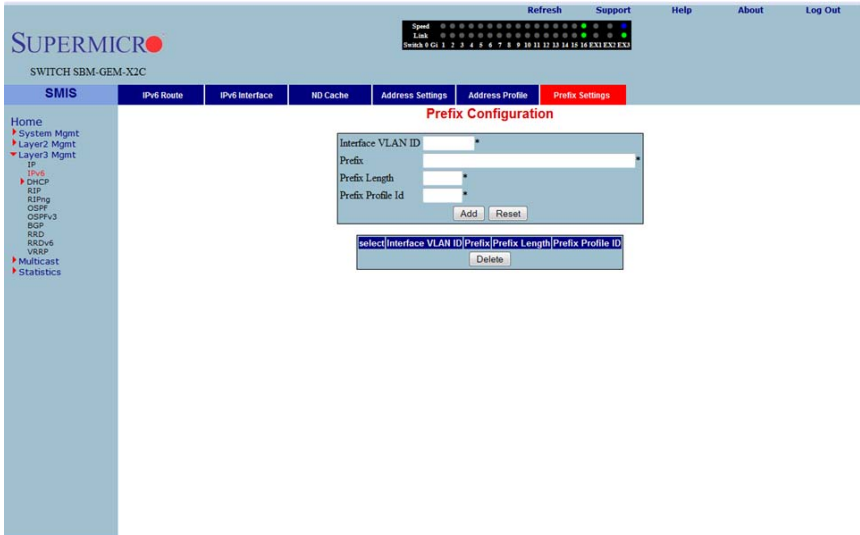
Clicking the ADDRESS PROFILE tab brings up the ADDRESS PROFILE SETTINGS page (Figure 5-100). The parameters for this page are shown in Table 5-78.

Table 5-78. Address Profile Settings Page Parameters

| Parameter | Description |
|----------------------|---|
| Profile ID | This parameter specifies the index of the Address Profile entry. |
| Adv Status | This parameter specifies the Prefix Advertise status. |
| On Link Adv Status | This parameter indicates the On-Link Advertise Flag status. |
| Auto Conf Adv Status | This parameter denotes the Autonomous Configuration Advertise Flag status. |
| Preferred Time | This parameter specifies the Preferred Lifetime of the prefix address that uses this profile. |
| Valid Time | This parameter indicates the Valid Lifetime of the prefix address that uses this profile. |
| Valid Flag | This parameter specifies if the Valid Lifetime Flag is <i>Variable</i> or <i>Fixed</i> . |
| Preferred Flag | This parameter specifies if the Preferred Lifetime Flag is <i>Variable</i> or <i>Fixed</i> . |

Prefix Settings

Figure 5-101. Prefix Configuration Page



Clicking the PREFIX SETTINGS tab brings up the PREFIX CONFIGURATION page (Figure 5-101). The parameters for this page are shown in Table 5-79.

Table 5-79. Prefix Configuration Page Parameters

| Parameter | Description |
|-------------------|--|
| Interface VLAN ID | This parameter specifies the index of the VLAN Interface. |
| Prefix | This parameter indicates the IPv6 address prefix to be advertised in RA. |
| Prefix Length | This parameter indicates the PREFIX LENGTH (in bits). |
| Prefix Profile ID | This parameter specifies index to the IPv6 address profile table. |

DHCP Server

The DHCP Server link helps you to manage the DHCP server in the switch through the following two pages:

- [DHCP Basic Settings](#)
- [Pool Settings](#)

DHCP Basic Settings

Figure 5-102. DHCP Basic Settings Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are links for Refresh, Support, Help, About, and Log Out. Below the navigation bar, the 'Basic Settings' tab is active. The left sidebar contains a tree view with categories like System Mgmt, Layer2 Mgmt, Layer3 Mgmt, IP, IPv6, DHCP, DHCP Server, DHCP Relay, RIP, RIPv2, RIPv3, OSPF, OSPFv3, BGP, RRD, RRDv6, VRRP, Multicast, and Statistics. The main content area is titled 'DHCP Basic Settings' and contains a form with the following fields:

- DHCP Server: Disabled
- Blocked IP Address Re-Use Timer (secs): 5
- ICMP Echo: Disabled

An 'Apply' button is located at the bottom of the form. Below the form, a note reads: 'Note : To enable DHCP Server, DHCP Relay Status should be disabled.'

Clicking the DHCP SETTINGS tab brings up the DHCP BASIC SETTINGS page (Figure 5-102). The parameters for this page are shown in Table 5-80.

Table 5-80. DHCP Basic Settings Page Parameters

| Parameter | Description |
|--------------------------------|---|
| DHCP-Server | With this parameter you can enable or disable the DHCP server using this configuration. |
| Offer-reuse Time out (seconds) | This parameter specifies the Reuse Timeout value that can be configured in this field, which is used by DHCP. |
| ICMP Echo | This parameter enables or disables the ICMP Echo feature. |

Pool Settings

Figure 5-103. DHCP Pool Settings Page



Clicking the POOL SETTINGS link brings up the DHCP POOL SETTINGS page (Figure 5-103), which allows you to configure the IP address pool that can be used by the DHCP server to allocate IP addresses. The parameters for this page are shown in Table 5-81.

Table 5-81. DHCP Pool Settings Page Parameters

| Parameter | Description |
|-----------------------|---|
| Pool ID | This parameter specifies the pool ID to index among the different subnet pools configured. |
| Network | This parameter specifies the subnet of the IP address in the pool. |
| Subnet Mask | This parameter specifies the subnet mask of the IP address in the pool. |
| Start IP | This parameter specifies the first IP address in the address pool that is used for dynamic allocation by the DHCP server. |
| End IP | This parameter specifies the last IP address in the address pool that is used for dynamic allocation by the DHCP server. |
| Lease Time | This parameter specifies the time interval for which the IP address is valid. |
| Utilization Threshold | This parameter specifies the DHCP Pool Utilization Threshold value. |
| Status | This parameter specifies the status of the entry. |

DHCP Relay

The DHCP Relay link helps you to manage the DHCP relay in the switch through the following two pages:

- [DHCP Relay Basic Settings](#)
- [Interface Settings](#)

DHCP Relay Basic Settings

Figure 5-104. DHCP Relay Configuration Page

The screenshot displays the 'DHCP Relay Configuration' page. At the top, there are navigation links: Refresh, Support, Help, About, and Log Out. The page title is 'DHCP Relay Configuration'. Below the title, there are two dropdown menus: 'Service DHCP-Relay' (set to 'Disabled') and 'IP DHCP Relay Information Option' (set to 'Disabled'), with an 'Apply' button below them. A note reads: 'Note : To enable DHCP Relay, DHCP Server Status should be disabled.' Below the note, there is a 'DHCP Server Address' input field with an 'Add' button. At the bottom, there is a 'Select Server Address' button with a 'Delete' button. The left sidebar shows a navigation menu with 'Basic Settings' highlighted.

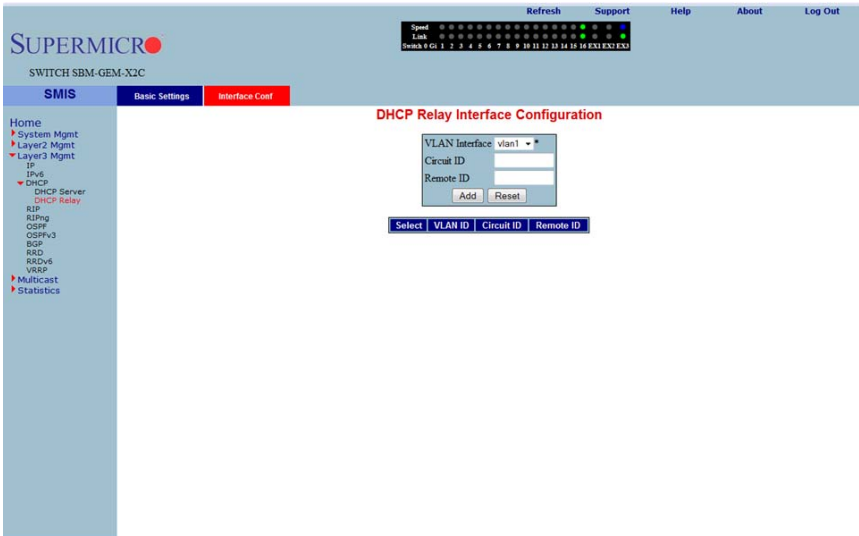
Clicking the BASIC SETTINGS tab brings up the DHCP RELAY CONFIGURATION page (Figure 5-104), which displays the various parameters for configuring the DHCP relay. The parameters for this page are shown in Table 5-82.

Table 5-82. DHCP Relay Configuration Page Parameters

| Parameter | Description |
|----------------------------------|---|
| Service DHCP-Relay | This parameter specifies the DHCP relay status that can be enabled or disabled in the switch using this field. |
| IP DHCP Relay Information Option | You can enable/disable this field to control the processing related to the Relay Agent Information options. |
| DHCP Server Address | This parameter indicates the IP address of the DHCP Server to which the Relay Agent needs to forward the packets from the client. |

Interface Settings

Figure 5-105. DHCP Relay Interface Configuration Page



Clicking the INTERFACE CONF tab brings up the DHCP RELAY INTERFACE CONFIGURATION page (Figure 5-105), which allows you to configure the DHCP relay for VLANs. The parameters for this page are shown in Table 5-83.

Table 5-83. DHCP Relay Interface Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| VLAN Interface | This parameter specifies the VLAN Interface name. |
| Circuit ID | This parameter specifies the DHCP Relay Circuit identifier. |
| Remote ID | This parameter specifies the Remote identifier. |

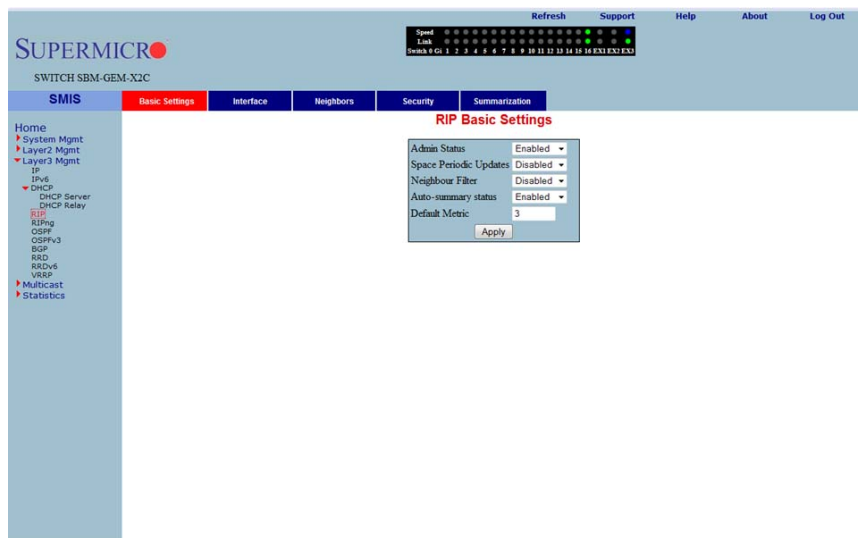
RIP

The RIP link opens the following links for configuration of RIP protocol:

- [RIP Basic Settings](#)
- [Interfaces](#)
- [Neighbors List](#)
- [Security Settings](#)
- [Address Summarization](#)

RIP Basic Settings

Figure 5-106. RIP Basic Settings Page



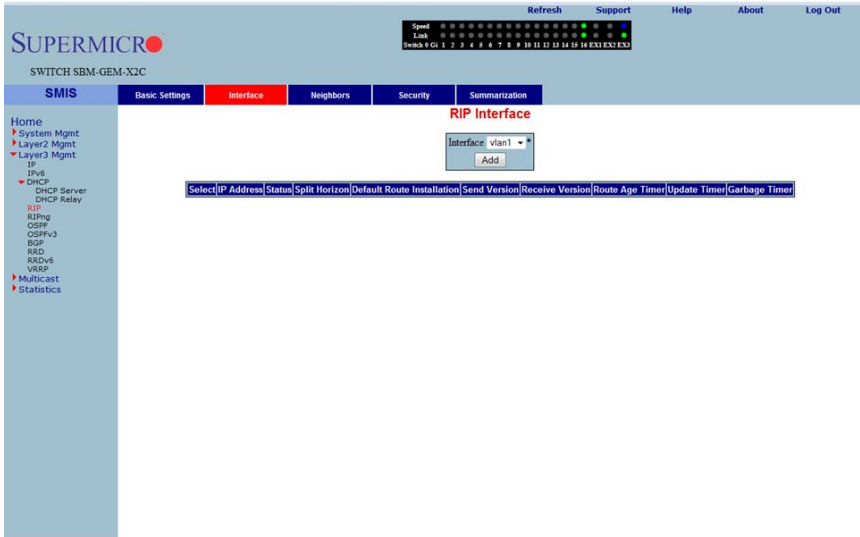
Clicking the BASIC SETTINGS tab brings up the RIP BASIC SETTINGS page (Figure 5-106). The parameters for this page are shown in Table 5-84.

Table 5-84. RIP Basic Settings Page Parameters

| Parameter | Description |
|---------------------|--|
| Output-delay | This parameter specifies the delay that needs to be enabled for RIP to split the periodic update packets before they are sent out. |
| Neighbor Filter | This parameter enables or disables neighbor filtering. Neighbor filtering helps you to filter routes from specific neighbors. |
| Auto-summary status | This parameter enables or disables the Auto-summary feature. |

Interfaces

Figure 5-107. RIP Interface Page



Clicking the INTERFACE tab brings up the RIP INTERFACE page (Figure 5-107). The parameters for this page are shown in Table 5-85.

Table 5-85. RIP Interface Page Parameters

| Parameter | Description |
|----------------------------|--|
| Interface | This parameter specifies the Interface ID for which RIP needs to be configured. |
| IP Address | This parameter specifies the IP address of the RIP interface. |
| Status | This parameter specifies the admin status of the interface. |
| Split Horizon | This parameter specifies the operational status of Split Horizon in the system. |
| Default Route Installation | This parameter specifies whether Default Route Installation can be done or not. |
| Send Version | This parameter allows selecting the RIP packets sent to be compatible to either <i>RIPV1</i> , <i>RIP1 Compatible</i> or <i>RIPV2</i> . |
| Receive Version | This parameter is similar to SEND VERSION, but it allows you to choose the RIP packets to be received as either <i>RIPV1</i> , <i>RIPV2</i> , both <i>RIPV1 and RIPV2</i> or <i>None</i> . |
| Route Age Timer | This parameter specifies the time interval after which the routes will be flushed. |
| Update Timer | This parameter specifies the time interval between successive RIP updates. |
| Garbage Timer | This parameter specifies the time interval after which the invalid routes will be removed from the routing table. |

Neighbors List

Figure 5-108. RIP Neighbor List Page

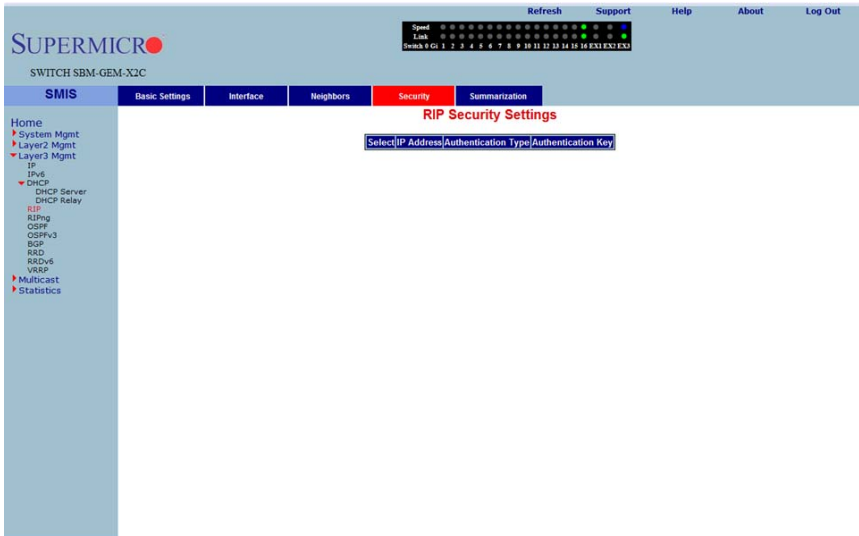
The screenshot shows the SUPERMICR web management utility interface. At the top right, there are links for Refresh, Support, Help, About, and Log Out. Below these is a status bar with 'Speed' and 'Link' indicators, and a table of switch ports (Switch 0 Gi 1-24 and EX1-EX3). The main navigation menu includes SMIS, Basic Settings, Interface, Neighbors (highlighted), Security, and Summarization. The left sidebar menu lists various configuration options, with 'RIP' expanded to show 'RIPng' and 'OSPFv3'. The main content area is titled 'RIP Neighbour List' and contains a form with an 'IP Address' input field, 'Add' and 'Reset' buttons, and a 'Select IP Address' button below.

Clicking the NEIGHBORS tab brings up the RIP NEIGHBOR LIST page (Figure 5-108), which is used to configure the RIP neighbors, by configuring their IP address.

The single parameter for this page is IP ADDRESS, which specifies the IP Address of the neighbor router to which the unicast update has to be sent.

Security Settings

Figure 5-109. RIP Security Settings Page



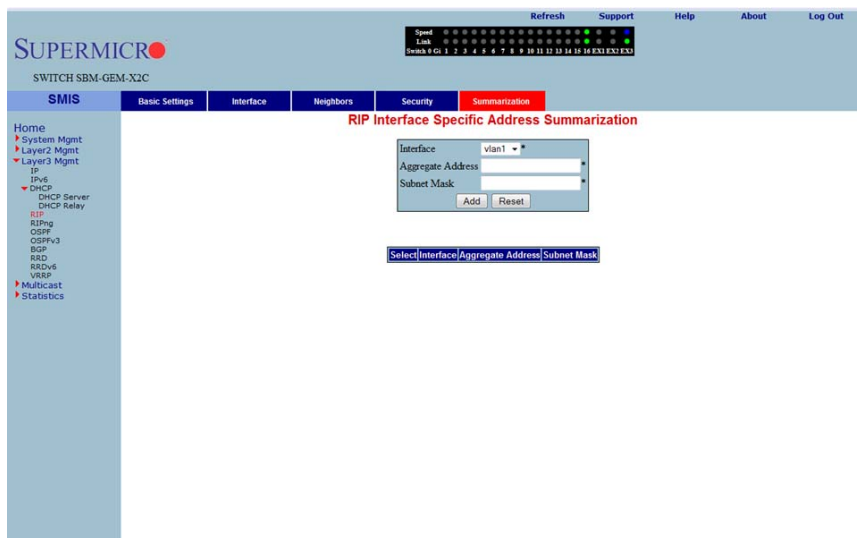
Clicking the SECURITY tab brings up the RIP SECURITY SETTING page (Figure 5-109). The parameters for this page are shown in Table 5-13.

Table 5-86. RIP Security Setting Page Parameters

| Parameter | Description |
|---------------------|--|
| IP Address | This parameter displays the active RIP interfaces. You can select the interface for which you want to configure authentication. |
| Authentication Type | This parameter specifies the authentication type. You can choose <i>No Authentication</i> , or <i>Simple Password</i> , or the <i>md5</i> authentication type. |
| Authentication Key | This parameter specifies the key used for authentication if the authentication type is other than <i>No Authentication</i> . |

Address Summarization

Figure 5-110. RIP Interface Specific Address Summarization Page



Clicking the SUMMARIZATION tab brings up the RIP INTERFACE SPECIFIC ADDRESS SUMMARIZATION page (Figure 5-110). The parameters for this page are shown in Table 5-87.

Table 5-87. RIP Interface Specific Address Summarization Page Parameters

| Parameter | Description |
|-------------------|---|
| Interface | This parameter specifies the Interface ID for which the RIP aggregate address needs to be configured. |
| Aggregate Address | This parameter specifies the aggregate address. |
| Subnet Mask | This parameter specifies the mask of the aggregate address. |

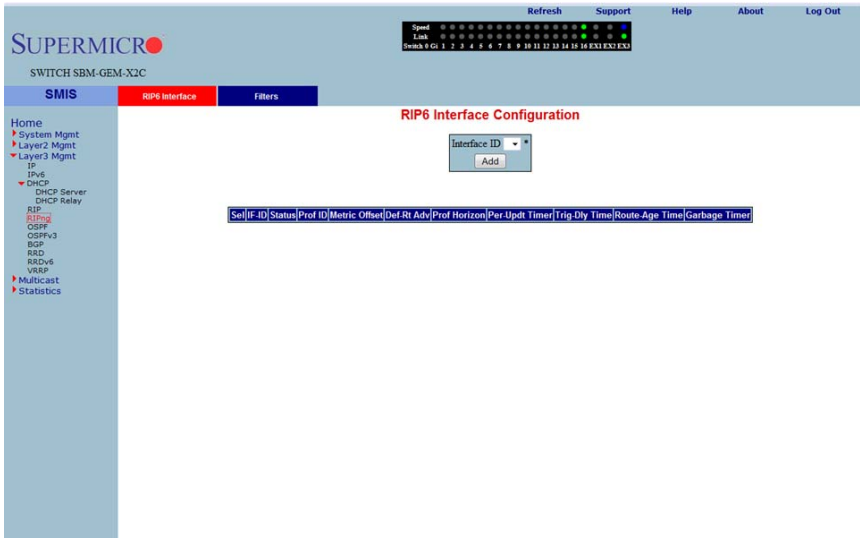
RIPng

The RIP6 link allows you perform IPv6 related configuration for the switch. This can be accomplished through the following two pages:

- [RIP6 Interface](#)
- [Filters](#)

RIP6 Interface

Figure 5-111. RIP6 Interface Configuration Page



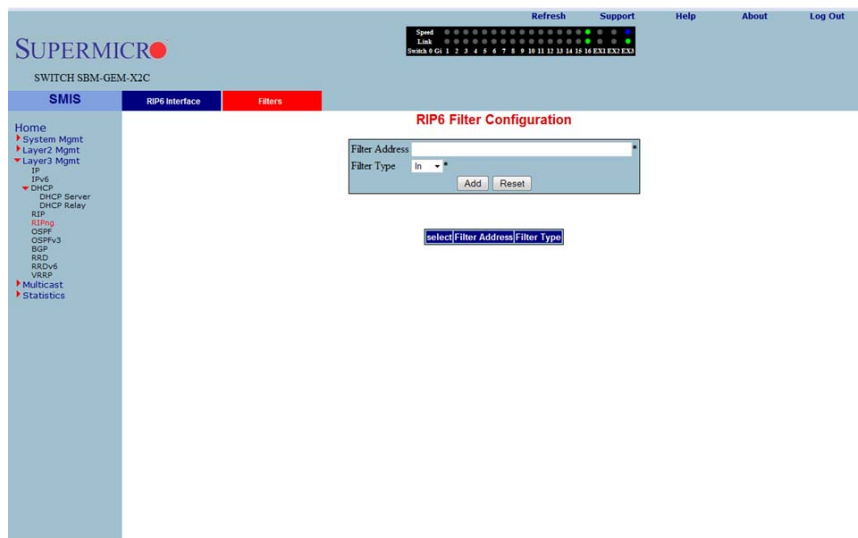
Clicking the RIP6 INTERFACE tab brings up the RIP6 INTERFACE CONFIGURATION page (Figure 5-111). The parameters for this page are shown in Table 5-88.

Table 5-88. RIP6 Interface Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| Interface ID | Specifies the Interface Id for which RIPv6 needs to be configured. |
| Status | This parameter specifies the administration status of the interface. |
| Prof ID | This parameter indicates the Index of the Address Profile entry. |
| Metric Offset | This parameter specifies the metric for the routes that are being re-distributed. |
| Def Rt Adv | This parameter indicates the default router lifetime to be placed in the Router Advertisements sent on the interface. |
| Prof Horizon | This parameter specifies the operational status of Profile Horizon in the system. |
| Per-Updt Timer | This parameter specifies the time interval between successive RIP6 updates. |
| Trig-Dly Time | This parameter indicates the time interval in seconds by which further triggered updates are delayed, after one triggered update is sent. |
| Route Age Time | This parameter specifies the time interval after which, the routes are flushed. |
| Garbage Timer | This parameter specifies the time interval after which, the invalid routes are removed from the routing table. |

Filters

Figure 5-112. RIP6 Filter Configuration Page



Clicking the FILTERS tab brings up the RIP6 FILTER CONFIGURATION page (Figure 5-112). The parameters for this page are shown in Table 5-89.

Table 5-89. RIP6 Filter Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| Filter Address | This parameter specifies the FILTER ADDRESS for the RIP6 interface. |
| Filter Type | This parameter specifies the FILTER TYPE for which RIP6 needs to be configured. |

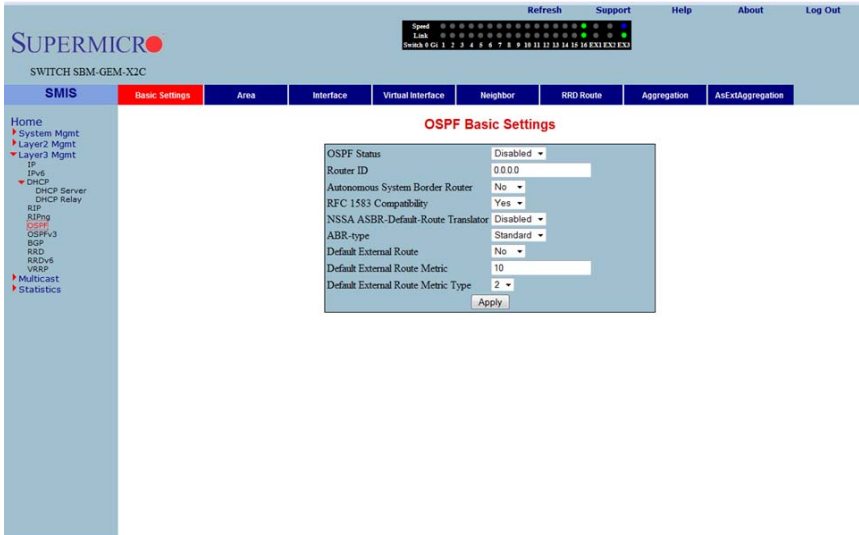
OSPF

The OSPF link allows you to configure the OSPF protocol through the following pages:

- [OSPF Basic Settings](#)
- [Area](#)
- [Interface](#)
- [Virtual Interface](#)
- [OSPF Neighbor](#)
- [OSPF RRD Route Configuration](#)
- [OSPF Area Aggregation](#)
- [External Aggregation](#)

OSPF Basic Settings

Figure 5-113. OSPF Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the OSPF BASIC SETTINGS page (Figure 5-113). The parameters for this page are shown in Table 5-90.

Table 5-90. OSPF Basic Settings Page Parameters

| Parameter | Description |
|------------------------------------|---|
| OSPF Status | This parameter specifies the global status of the protocol in the switch. |
| Router ID | This parameter specifies the router identifier. |
| Autonomous System Border Router | This parameter indicates the flag to denote whether or not the router is to be configured as an Autonomous System Border Router. |
| RFC 1583 Compatibility | This parameter specifies the compatibility to RFC 1583 for choosing the route among multiple AS for the same destination. |
| External Link State Database Limit | This parameter specifies the maximum number of non-default AS-external-LSA entries that can be stored in the link state database. |

Area

Figure 5-114. OSPF Area Configuration Page

The screenshot shows the OSPF Area Configuration page. The navigation menu on the left includes Home, System Mgmt, Layer2 Mgmt, Layer3 Mgmt, IP, IPv6, DHCP, DHCP Server, DHCP Relay, RIP, RIPng, OSPF, OSPFv3, BGP, RRD, RRDv6, VRRP, Multicast, and Statistics. The 'Area' tab is selected in the top navigation bar. The main content area displays the 'OSPF Area Configuration' form with the following fields:

- Area ID: [Text Input]
- Type: Normal (Dropdown)
- Send Summary Routes: No (Dropdown)
- Metric: 10 (Text Input)
- Metric Type: ospfMetric (Dropdown)
- Type Of Service: 0 (Text Input)
- Translator Role: candidate (Dropdown)
- NSSA Translator Stability Interval: 40 (Text Input)

Below the form is a table with the following columns: Select, Area ID, Type, Send Summary Routes, Sub Metric, Sub Metric Type, TOS, Translator Role, Stability Interval. The table contains one row with the following values: [Select], 0.0.0, Normal, Yes, 10, ospfMetric, 0, candidate, 40. Buttons for 'Apply' and 'Delete' are visible below the table.

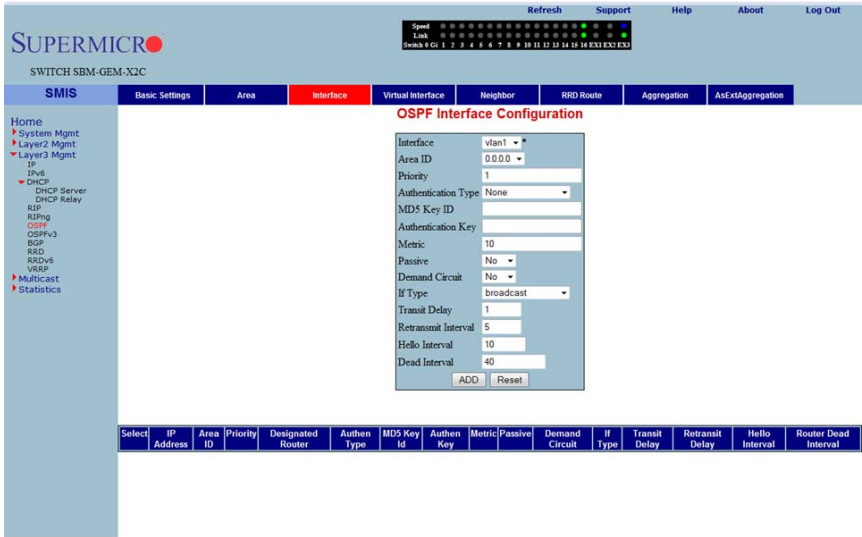
Clicking the AREA tab brings up the OSPF AREA CONFIGURATION page (Figure 5-114). The parameters for this page are shown in Table 5-91.

Table 5-91. OSPF Area Configuration Page Parameters

| Parameter | Description |
|---------------------|--|
| Area ID | This parameter specifies the identifier for the area. |
| Type | This parameter allows you to configure the area type, as a <i>Stub</i> area, a <i>Normal</i> area or <i>NSSA</i> . |
| Send Summary Router | This field is used to control the import of summary LSAs to stub areas. This does not have any impact for other areas. |
| Default Cost | This parameter specifies the metric/cost associated with the routes. |

Interface

Figure 5-115. OSPF Interface Configuration Page



Clicking the INTERFACE tab brings up the OSPF INTERFACE CONFIGURATION page (Figure 5-115). The parameters for this page are shown in Table 5-92.

Table 5-92. OSPF Interface Configuration Page Parameters

| Parameter | Description |
|---------------------|---|
| Interface | This parameter specifies the interface index of the port. |
| Area ID | This parameter indicates the 32-bit integer uniquely identifying the area to which the interface connects. |
| Priority | This parameter specifies the priority of this interface, which is used in the DR election algorithm. |
| Authentication Type | This parameter allows you to choose <i>MD5</i> , <i>Simple Password</i> or <i>None</i> as the authentication type. |
| MD5 Key ID | This parameter specifies the secret key used to create the message digest appended to the OSPF packet, if the authentication type is <i>MD5</i> . |
| Authentication Key | This parameter specifies the key required for authentication, if authentication is enabled on this interface. |
| IP Address | This parameter specifies the IP Address of the OSPF interface. |
| Designated Router | This read-only field specifies the IP Address of the Designated Router. |
| Status | When this parameter is enabled, the interface is advertised as an internal route to some area. When disabled it denotes that the interface is external to OSPF. |

Virtual Interface

Figure 5-116. OSPF Virtual Interface Configuration Page

The screenshot shows the 'OSPF Virtual Interface Configuration' page. The left sidebar contains a navigation tree with 'Virtual Interface' highlighted. The main configuration area includes the following fields:

- Transit Area ID: [Text Input]
- Neighbor Router ID: [Text Input]
- Authentication Type: [Dropdown Menu, set to None]
- MD5 Key ID: [Text Input]
- Authentication Key: [Text Input]
- Hello Interval: [Text Input, value 10]
- Router Dead Interval: [Text Input, value 60]
- Transit Delay: [Text Input, value 1]
- Retransmit Interval: [Text Input, value 5]

Buttons for 'ADD' and 'Reset' are located below the form fields. A status bar at the top right of the page displays system metrics and navigation links like 'Refresh', 'Support', 'Help', 'About', and 'Log Out'.

Clicking the VIRTUAL INTERFACE tab brings up the OSPF VIRTUAL INTERFACE CONFIGURATION page (Figure 5-116). The parameters for this page are shown in Table 5-93.

Table 5-93. OSPF Virtual Interface Configuration Page Parameters

| Parameter | Description |
|---------------------|--|
| Transit Area ID | This parameter specifies the transit area that the virtual link traverses. |
| Neighbor Router ID | This parameter specifies the router ID of the virtual neighbor. |
| Authentication Type | This parameter allows you to choose <i>MD5</i> , <i>Simple Password</i> or <i>None</i> as the authentication type. |
| MD5 Key ID | This parameter specifies the secret key used to create the message digest appended to the OSPF packet if the authentication type is <i>MD5</i> . |
| Authentication Key | This parameter specifies the key required for authentication, if authentication is enabled on this interface. |

OSPF Neighbor

Figure 5-117. OSPF Neighbor Configuration Page



Clicking the NEIGHBOR tab brings up the OSPF NEIGHBOR CONFIGURATION page (Figure 5-117), which allows you to configure OSPF neighbors. The parameters for this page are shown in Table 5-94.

Table 5-94. OSPF Neighbor Configuration Page Parameters

| Parameter | Description |
|---------------------|--|
| Neighbor IP Address | This parameter specifies the neighbor router ID. |
| Priority | This parameter specifies a number value for the router priority. |

OSPF RRD Route Configuration

Figure 5-118. OSPF RRD Route Configuration Page

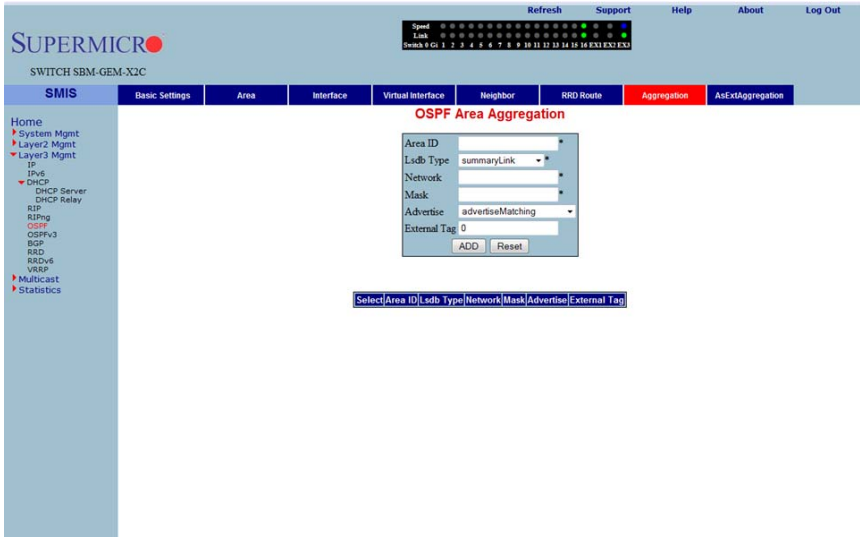
Clicking the RRD ROUTE tab brings up the OSPF RRD ROUTE CONFIGURATION page (Figure 5-118), which displays the various parameters for RRD Route configuration. The parameters for this page are shown in Table 5-95.

Table 5-95. OSPF RRD Route Configuration Page Parameters

| Parameter | Description |
|---------------------|---|
| Destination Network | This parameter specifies the DESTINATION NETWORK. |
| Network Mask | This parameter specifies the NETWORK MASK. |
| Route Metric | This parameter specifies the ROUTE METRIC. |
| Route Metric Type | This parameter specifies the ROUTE METRIC TYPE. |
| Route Tag | This parameter specifies the ROUTE TAG. |

OSPF Area Aggregation

Figure 5-119. OSPF Area Aggregation Page



Clicking the AGGREGATION tab brings up the OSPF AREA AGGREGATION page (Figure 5-119). The parameters for this page are shown in Table 5-96.

Table 5-96. OSPF Area Aggregation Page Parameters

| Parameter | Description |
|--------------|---|
| Area ID | This parameter specifies the area associated with the OSPF address range. It is specified as an IP address. |
| Lsdb Type | This parameter specifies the link state data base type as a <i>Summary Link</i> or as a <i>NSSA External Link</i> . |
| Network | This parameter specifies the network address. |
| Mask | This parameter specifies the network mask. |
| Advertise | This parameter specifies the advertise option as <i>Advertise Matching</i> or <i>Do Not Advertise Matching</i> . |
| External Tag | This parameter is not used by the OSPF protocol itself. It may be used to communicate information between AS boundary routers. The precise nature of this information is outside the scope of OSPF. |

External Aggregation

Figure 5-120. OSPF As External Aggregation Configuration Page

The screenshot displays the 'OSPF As External Aggregation Configuration' page. At the top, there is a navigation bar with 'SMIS' selected and other tabs like 'Basic Settings', 'Interface', 'Area', and 'Ext Aggregation'. A sidebar on the left lists various system management options, with 'OSPFv3' highlighted. The main content area contains a form with the following fields:

- Summary Prefix:
- Prefix Length:
- Area ID:
- Aggregation Effect:
- Translation:

Below the form are 'ADD' and 'Reset' buttons. At the bottom of the page, there is a breadcrumb trail: `Select|Prefix|Prefix Length|Area ID|Advertise|Translation`.

Clicking the EXT AGGREGATION tab brings up the OSPF AS EXTERNAL AGGREGATION CONFIGURATION page (Figure 5-120), which allows you to configure OSPF external aggregation parameters. The parameters for this page are shown in Table 5-97.

Table 5-97. OSPF As External Aggregation Configuration Page Parameters

| Parameter | Description |
|-----------|--|
| Network | This parameter specifies the external network address. |
| Mask | This parameter specifies the network mask. |
| Area ID | This parameter specifies the Area identifier. |

Table 5-97. OSPF As External Aggregation Configuration Page Parameters

| Parameter | Description |
|--------------------|--|
| Aggregation Effect | <p>This parameter specifies the Aggregation option as one of the following:</p> <ul style="list-style-type: none"> • Advertise – When set to <i>advertise</i> and associated Area ID is 0.0.0.0, then the aggregated Type-5 are generated. Otherwise if the associated Area ID is x.x.x.x (other than 0.0.0.0), then the aggregated Type-7 is generated in NSSA x.x.x.x for the specified range. • Do Not Advertise – When set to <i>doNotAdvertise</i> (2) and associated Area ID is 0.0.0.0, then the Type-5 is not generated for the specified range, while aggregated Type-7 are generated in all attached NSSA. While if the associated Area ID is x.x.x.x (other than 0.0.0.0), then the Type-7 are not generated in NSSA x.x.x.x for the specified range. • Allow All – When set to <i>allowAll</i> and associated Area ID is 0.0.0.0, then the aggregated Type-5 are generated for the specified range. In addition aggregated Type-7 are generated in all attached NSSA for the specified range. • Deny All – When set to <i>denyAll</i> neither Type-5 nor Type-7 will be generated for the specified range. |
| Translation | This parameter enables or disables the translation. |

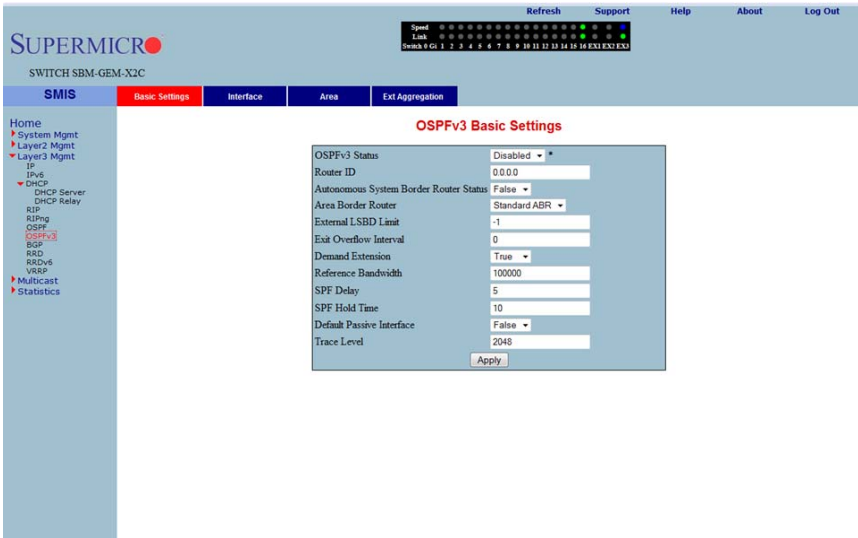
OSPF V3

The OSPFv3 link allows you to configure the OSPFv3 protocol through the following pages:

- [OSPFv3 Basic Settings](#)
- [Interface](#)
- [Area](#)
- [OSPF V3 External Aggregation](#)

OSPFv3 Basic Settings

Figure 5-121. OSPFv3 Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the OSPFv3 BASIC SETTINGS page (Figure 5-121). The parameters for this page are shown in Table 5-98.

Table 5-98. OSPFv3 Basic Settings Page Parameters

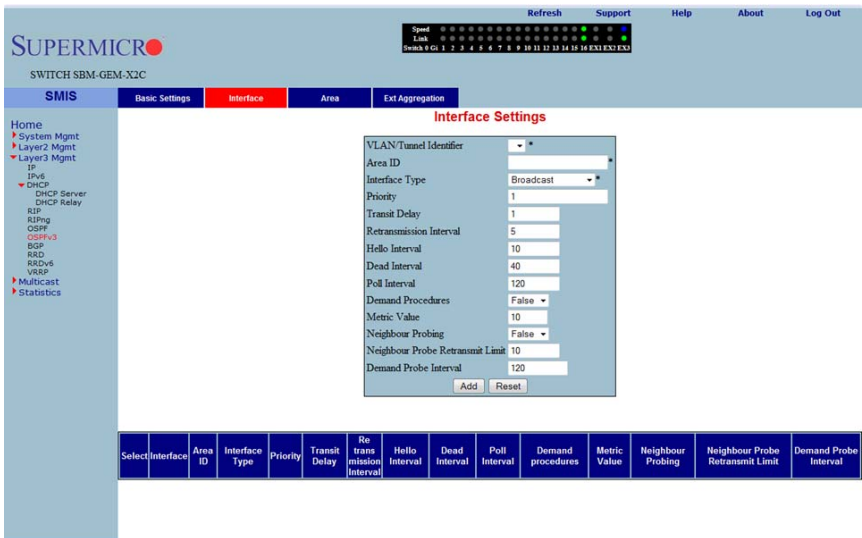
| Parameter | Description |
|--|---|
| OSPFv3 Status | This parameter enables or disables OSPFv3 administratively. |
| Router ID | This parameter uniquely identifies the router in the Autonomous System. |
| Autonomous System Border Router Status | This parameter specifies the router as Autonomous System border router. |
| Area Border Router | This parameter specifies the router as an area border router. |

Table 5-98. OSPFv3 Basic Settings Page Parameters (Continued)

| Parameter | Description |
|---------------------------|--|
| External LSDB Limit | This parameter specifies maximum number of non-default AS-external-LSAs entries that can be stored in the link-state database. |
| Exit Overflow Interval | This parameter specifies the time interval in seconds a router will attempt to leave OverflowState. |
| Demand Extension | This parameter indicates the router's support for demand routing. |
| Reference Bandwidth | This parameter specifies Reference bandwidth in kilobits/seconds, for calculating default interface metrics. |
| SPF Delay | This parameter indicates the delay in routing calculation after a topology change. |
| SPF Hold Time | This parameter specifies the minimum time between two consecutive SPF calculations. |
| Default Passive Interface | This parameter specifies whether all the OSPFv3 interfaces created after this setting are passive or not. |
| Trace Level | This parameter defines the level of trace required for OSPFv3. |

Interface

Figure 5-122. Interface Settings Page



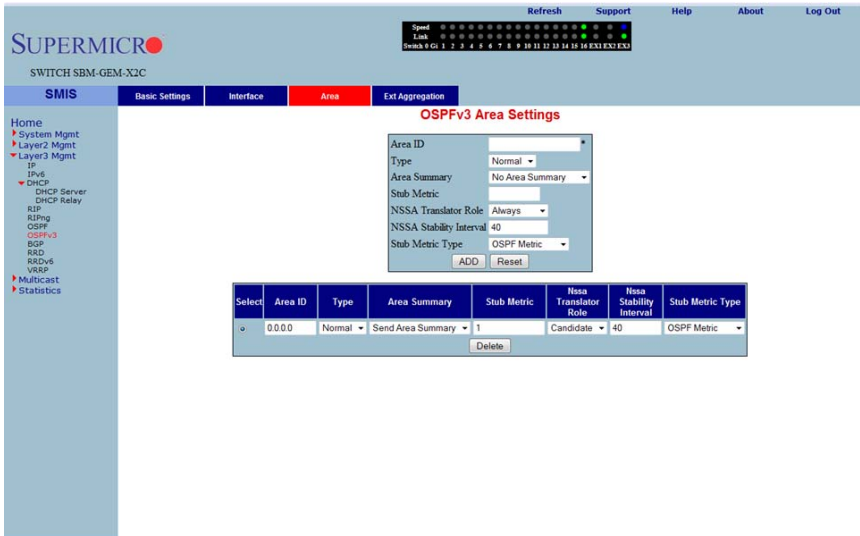
Clicking the INTERFACE tab brings up the INTERFACE SETTINGS page (Figure 5-122). The parameters for this page are shown in Table 5-99.

Table 5-99. Interface Settings Page Parameters

| Parameter | Description |
|----------------------------------|---|
| VLAN/Tunnel Identifier | This parameter specifies the IPv6 interface over which OSPFv3 is enabled. |
| Area ID | This parameter specifies the area ID associated with the IPv6 interface. |
| Interface Type | This parameter specifies the type of OSPFv3 interface (broadcast, nbma, pointToPoint and pointToMultipoint). |
| Priority | This parameter specifies the priority of the interface. |
| Transit Delay | This parameter indicates the estimated number of seconds to transmit a link state update packet over the interface. |
| Retransmission Interval | This parameter indicates the number of seconds between the link-state advertisement retransmissions, for adjacencies belonging to the interface. |
| Hello Interval | This parameter indicates the length of time, in seconds, between the Hello packets that the router sends on the interface. |
| Dead Interval | This parameter specifies the number of seconds for which the router waits for hello packet from the neighbor before declaring this neighbor down. |
| Poll Interval | This parameter denotes the larger time interval, in seconds, between the Hello packets sent to an inactive non-broadcast multi- access neighbor. |
| Demand Procedures | This parameter indicates whether Demand OSPFv3 procedures must be performed on this interface. |
| Metric Value | This parameter specifies the metric assigned to this interface. |
| Neighbour Probing | This parameter enables or disables neighbor probing to determine whether the neighbor is active or inactive. |
| Neighbour Probe Retransmit Limit | This parameter indicates the number of consecutive LSA retransmissions before the neighbor is deemed inactive and the neighbor adjacency is brought down. |
| Demand Probe Interval | This parameter defines how often the neighbor is probed. |

Area

Figure 5-123. OSPFv3 Area Settings Page



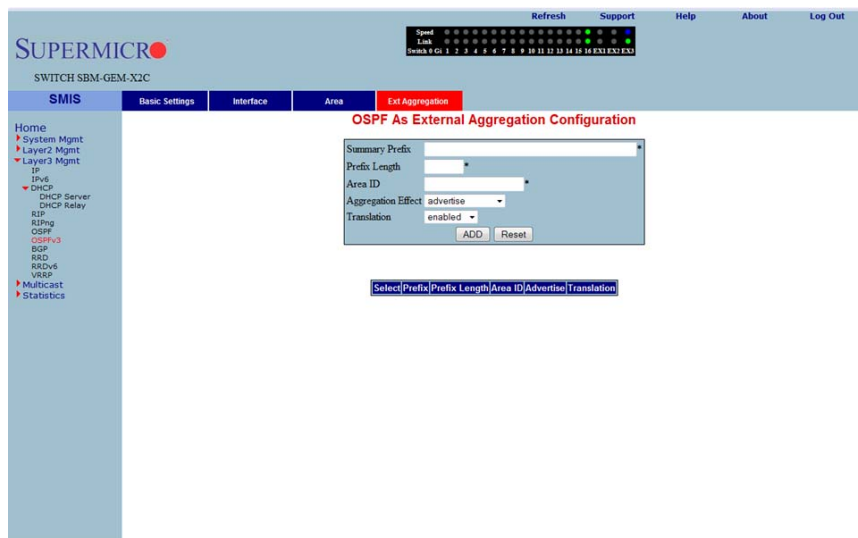
Clicking the AREA tab brings up the OSPFV3 AREA SETTINGS page (Figure 5-123). The parameters for this page are shown in Table 5-100.

Table 5-100. OSPFv3 Area Settings Page Parameters

| Parameter | Description |
|-------------------------|---|
| Area ID | This parameter uniquely identifies an area. |
| Type | This parameter indicates whether an area is a <i>Stub</i> area, <i>NSSA</i> , or <i>Standard</i> (normal) area. |
| Area Summary | This parameter controls the import of Inter-Area LSAs into stub areas. This can be <i>noAreaSummary</i> or <i>sendAreaSummary</i> . |
| Stub Metric | This parameter indicates the metric value advertised for the default route into <i>Stub</i> area and <i>NSSA</i> . |
| NSSA Translator Role | This parameter specifies the NSSA Border router's ability to perform NSSA translation of type-7 LSAs into type-5 LSAs. |
| NSSA Stability Interval | This parameter specifies the number of seconds after an elected translator determines its services are no longer required, in which it must continue to perform its translation duties. |
| Stub Metric Type | This parameter specifies the type of metric (<i>OSPFv3 Metric</i> , <i>External Type 1</i> , <i>External Type 2</i>) advertised as a default route. |

OSPF V3 External Aggregation

Figure 5-124. OSPF AS External Aggregation Configuration Page



Clicking the EXT AGGREGATION tab brings up the OSPF AS EXTERNAL AGGREGATION CONFIGURATION page (Figure 5-124), which allows you to configure OSPF external aggregation parameters. The parameters for this page are shown in Table 5-101.

Table 5-101. OSPF AS External Aggregation Configuration Page Parameters

| Parameter | Description |
|-----------|--|
| Network | This parameter specifies the external network address. |
| Mask | This parameter specifies the network mask. |
| Area ID | This parameter specifies the Area identifier. |

Table 5-101. OSPF AS External Aggregation Configuration Page Parameters

| Parameter | Description |
|--------------------|--|
| Aggregation Effect | <p>This parameter specifies the Aggregation option as one of the following:</p> <ul style="list-style-type: none"> • Advertise – When set to <i>advertise</i> and the associated Area ID is 0.0.0.0, then aggregated Type-5 are generated. Otherwise if associated Area ID is x.x.x.x (other than 0.0.0.0), then aggregated Type-7 is generated in NSSA x.x.x.x for the specified range. • Do Not Advertise – When set to <i>doNotAdvertise (2)</i> and the associated Area ID is 0.0.0.0, then Type-5 is not generated for the specified range, while aggregated Type-7 are generated in all attached NSSA. While associated Area ID is x.x.x.x (other than 0.0.0.0), then Type-7 are not generated in NSSA x.x.x.x for the specified range. • Allow All – When set to <i>allowAll</i> and associated Area ID is 0.0.0.0, then aggregated Type-5 are generated for the specified range. In addition aggregated Type-7 are generated in all attached NSSA, for the specified range. • Deny All – When set to <i>denyAll</i> neither Type-5 nor Type-7 will be generated for the specified range. |
| Translation | This parameter enables or disables the translation. |

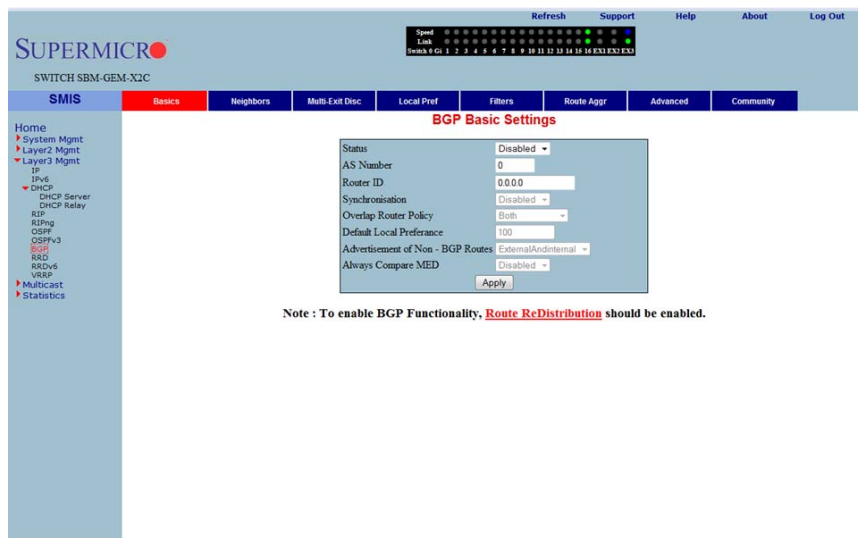
BGP

The BGP link allows you to configure the BGP protocol. Following are the configuration parameters available to manage BGP through this interface:

- [BGP Basic Settings](#)
- [BGP Peer Configuration](#)
- [BGP MED Configuration](#)
- [Local Preference](#)
- [BGP Filter](#)
- [Route Aggregations](#)
- [Advanced BGP Configuration](#)
- [BGP Community Management](#)

BGP Basic Settings

Figure 5-125. BGP Basic Settings Page



The screenshot shows the 'BGP Basic Settings' page in the SUPERMICR web management utility. The page has a navigation menu on the left with 'Basics' selected. The main content area displays the 'BGP Basic Settings' form with the following parameters:

- Status: Disabled
- AS Number: 0
- Router ID: 0.0.0.0
- Synchronization: Disabled
- Overlap Router Policy: Both
- Default Local Preference: 100
- Advertisement of Non-BGP Routes: ExternalAndInternal
- Always Compare MED: Disabled

Note : To enable BGP Functionality, **Route Redistribution** should be enabled.

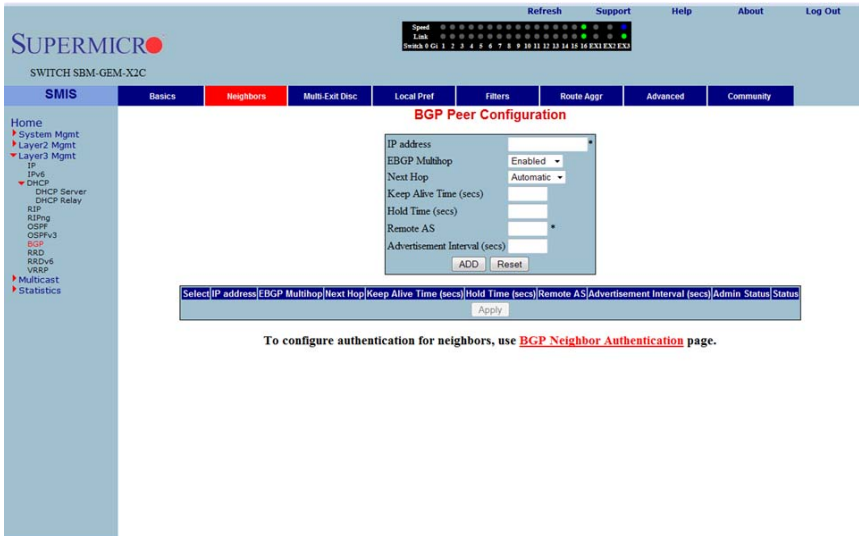
Clicking the BASICS tab brings up the BGP BASIC SETTINGS page (Figure 5-125). The parameters for this page are shown in Table 5-102.

Table 5-102. BGP Basic Settings Page Parameters

| Parameter | Description |
|---------------------------------|---|
| Status | This parameter specifies the BGP admin status. Using this, the protocol can be enabled/disabled in the switch. |
| AS Number | This parameter specifies the autonomous system to which the switch is connected, which is a read-only field. |
| Synchronization | The synchronization between IGP and BGP can be ensured by enabling this field. |
| Overlap Router Policy | This parameter represents the policy for handling overlapping routes. When an overlapping route is received, depending upon the configured policy, either the less-specific routes or most-specific routes or both are installed in the RIB tree. |
| Default Local Preference | This parameter sets a preference value for the autonomous system path. |
| Advertisement of Non-BGP Routes | You can choose to advertise even the external non-BGP routes by enabling this feature. |
| Always Compare MED | By enabling this feature, you can choose to always compare the MED values of paths from different neighbors for the same prefix, for choosing the best path. |

BGP Peer Configuration

Figure 5-126. BGP Peer Configuration Page



Clicking the NEIGHBORS tab brings up the BGP PEER CONFIGURATION page (Figure 5-126), which allows you to configure BGP Neighbors. The parameters for this page are shown in Table 5-103.

Table 5-103. BGP Peer Configuration Page Parameters

| Parameter | Description |
|----------------------------------|---|
| IP Address | This parameter specifies the IP address of the BGP neighbor. |
| EBGP MultiHop | By enabling this feature, BGP connections can be established between peers, which are not directly connected. |
| Next Hop | Using this parameter, next Hop can be set as <i>Self</i> or <i>Automatic</i> . By setting this field to <i>Self</i> , you can make the switch the next hop for all the routes that it distributes to its peers. |
| Keep Alive Time (Seconds) | This parameter specifies the maximum time interval between successive updates between any two BGP peers. |
| Hold Time (Seconds) | This parameter specifies the Hold time. This is the timer interval that a BGP will wait, before it decides that a connection to the peer is torn down. |
| Remote AS | This parameter represents the remote autonomous system number. |
| Advertisement Interval (seconds) | This parameter specifies the interval in seconds for the Minimum Route advertisement interval timer. |
| Status | This parameter specifies the status of the entry. |

BGP MED Configuration

Figure 5-127. BGP MED Configuration Page

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The main navigation tabs are 'SMIS', 'Basics', 'Neighbors', 'Multi-Exit Disc' (highlighted in red), 'Local Pref', 'Filters', 'Route Aggr', 'Advanced', and 'Community'. The left sidebar contains a tree view with categories like 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'IP', 'IPv6', 'DHCP', 'RIP', 'OSPF', 'BGP', 'RRD', 'VRPP', 'Multicast', and 'Statistics'. The main content area is titled 'BGP MED Configuration' and contains a form with the following fields: MED ID (text input), Remote AS (text input), IP Address Prefix (text input), IP Address Prefix Length (text input), Intermediate AS (text input), Direction (dropdown menu set to 'In'), Value (text input), and Preference (dropdown menu set to 'False'). There are 'ADD' and 'Reset' buttons below the form. Below the form is a table with the following columns: Select, MED ID, Remote AS, IP Address Prefix, Prefix Length, Intermediate AS, Direction, Value, Preference, and Status. An 'Apply' button is located below the table.

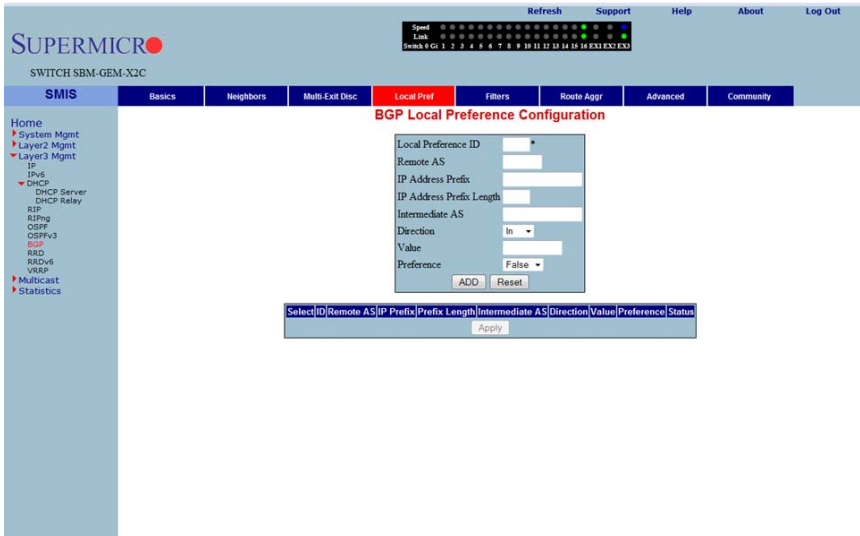
Clicking the MULTI-EXIT DISC tab brings up the BGP MED CONFIGURATION page (Figure 5-127), which allows you to configure the MED value for routes learnt from BGP peers. The parameters for this page are shown in Table 5-104.

Table 5-104. BGP MED Configuration Page Parameters

| Parameter | Description |
|--------------------------|---|
| MED ID | This parameter specifies the index for this table. |
| Remote AS | This parameter specifies the AS number from which the route update is received. |
| IP Address Prefix | This parameter specifies the IP address prefix for which the update is received. |
| IP Address Prefix Length | This parameter is used to calculate the subnet. |
| Intermediate AS | This parameter represents the intermediate AS between the BGP peers. |
| Direction | This parameter can be set for the incoming or the outgoing packets using <i>In</i> and <i>Out</i> values. |
| Value | This parameter specifies the MED value to be associated with this path learnt. |
| Preference | This parameter is used to enable/disable filtering. |
| Status | This parameter indicates the status of the entry. |

Local Preference

Figure 5-128. BGP Local Preference Configuration Page



Clicking the LOCAL PREF tab brings up the BGP LOCAL PREFERENCE CONFIGURATION page (Figure 5-128), which allows you to configure the Local Preference value for routes. The parameters for this page are shown in Table 5-105.

Table 5-105. BGP Local Preference Configuration Page Parameters

| Parameter | Description |
|--------------------------|---|
| Local Preference ID | This parameter specifies the Local Preference ID, which is the index for this table. |
| Remote AS | This parameter specifies the AS number from which the route update is received. |
| IP Address Prefix | This parameter specifies the IP Address prefix for which the update is received. |
| IP Address Prefix Length | This parameter is used to calculate the subnet. |
| Intermediate AS | This parameter represents the intermediate AS between the BGP peers. |
| Direction | This parameter can be set for the incoming or the outgoing packets using <i>In</i> and <i>Out</i> values. |
| Value | This parameter specifies the Local preference value to be associated with this learnt path. |
| Preference | This parameter is used to enable/disable filtering. |
| Status | This parameter specifies the status of the entry. |

BGP Filter**Figure 5-129. BGP Filter Configuration Page**

The screenshot shows the SUPERMICR web management utility interface. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The main navigation menu has tabs for 'SMIS', 'Basics', 'Neighbors', 'Multi-Exit Disc', 'Local Pref', 'Filters', 'Route Aggr', 'Advanced', and 'Community'. The 'Filters' tab is selected, displaying the 'BGP Filter Configuration' page. The configuration form contains the following fields:

- Filter ID:
- Remote AS:
- IP Address:
- IP Address Prefix Length:
- Intermediate AS:
- Direction:
- Action:

Below the form are 'ADD' and 'Reset' buttons. At the bottom, there is a table with the following columns: Select, Filter ID, Remote AS, IP Address, Prefix Length, Intermediate AS, Direction, Action, Status. An 'Apply' button is located below the table.

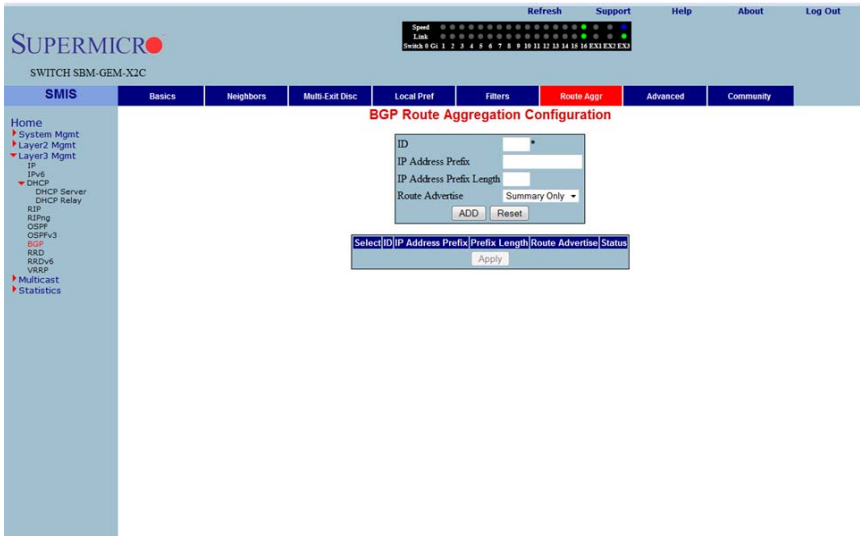
Clicking the FILTERS tab brings up the BGP FILTER CONFIGURATION page (Figure 5-129), which is used to set the filters on the routes being learnt. The parameters for this page are shown in Table 5-106.

Table 5-106. BGP Filter Configuration Page Parameters

| Parameter | Description |
|--------------------------|--|
| Filter ID | This parameter specifies the filter index. |
| Remote AS | This parameter specifies the remote AS associated with the BGP peer from which the router is being distributed. |
| IP Address | This parameter specifies the IP address for which the route is being learnt. |
| IP Address Prefix Length | This parameter specifies the prefix length to calculate the Subnet. |
| Intermediate AS | This parameter represents the intermediate AS between the BGP peers. |
| Direction | This parameter indicates the direction of the packet. |
| Action | With this parameter you can choose either to <i>Allow</i> (not to filter) or <i>Deny</i> (Filter) for the above configuration set. |
| Status | This parameter specifies the status of the entry. |

Route Aggregations

Figure 5-130. BGP Route Aggregation Configuration Page



Clicking the ROUTE AGGR tab brings up the BGP ROUTE AGGREGATION CONFIGURATION page (Figure 5-130), which is used to aggregate and configure the routes advertised by BGP. The parameters for this page are shown in Table 5-107.

Table 5-107. BGP Route Aggregation Configuration Page Parameters

| Parameter | Description |
|--------------------------|--|
| ID | This parameter specifies the index to this table. |
| IP Address Prefix | This parameter specifies the IP address prefix that needs to be aggregated. |
| IP Address Prefix Length | This parameter, in combination with the IP Prefix, decides the aggregated route to be distributed by this switch. |
| Route Advertise | With this parameter you can either choose to advertise only the aggregated routes by setting <i>Summary only</i> , or choose to advertise all routes by setting <i>All</i> . |
| Status | This parameter specifies the status of the entry. |

Advanced BGP Configuration

Figure 5-131. Advanced BGP Configuration Page

The screenshot shows the 'Advanced BGP Configuration' page. The navigation menu includes 'SMIS', 'Basics', 'Neighbors', 'Multi-Exit Disc', 'Local Pref', 'Filters', 'Route Aggr', 'Advanced' (selected), and 'Community'. The left sidebar lists various system management options like 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'IP', 'IPv6', 'DHCP Server', 'DHCP Relay', 'RIP', 'RIPng', 'OSPF', 'OSPFv3', 'RSD', 'RSDv6', 'VRSP', 'Multicast', and 'Statistics'. The main content area is titled 'Advanced BGP Configuration' and contains the following parameters:

- Client to Client Reflection: Enabled
- Dampening Half Life Time: 900
- Dampening Reuse Value: 500
- Dampening Suppress Value: 3500
- Dampening Max Suppress Time: 3600
- Dampening Decay Granularity: 1
- Dampening Reuse Granularity: 15
- Dampening Reuse Array Size: 1024
- Confederation Identifier: 0
- Best Path MED Confed: Disabled
- Confederation Peers: Add, Remove

An 'Apply' button is located at the bottom of the configuration form.

Clicking the **ADVANCED** tab brings up the **ADVANCED BGP CONFIGURATION** page (Figure 5-131), which configures dampening and confederation parameters. The parameters for this page are shown in Table 5-108.

Table 5-108. Advanced BGP Configuration Page Parameters

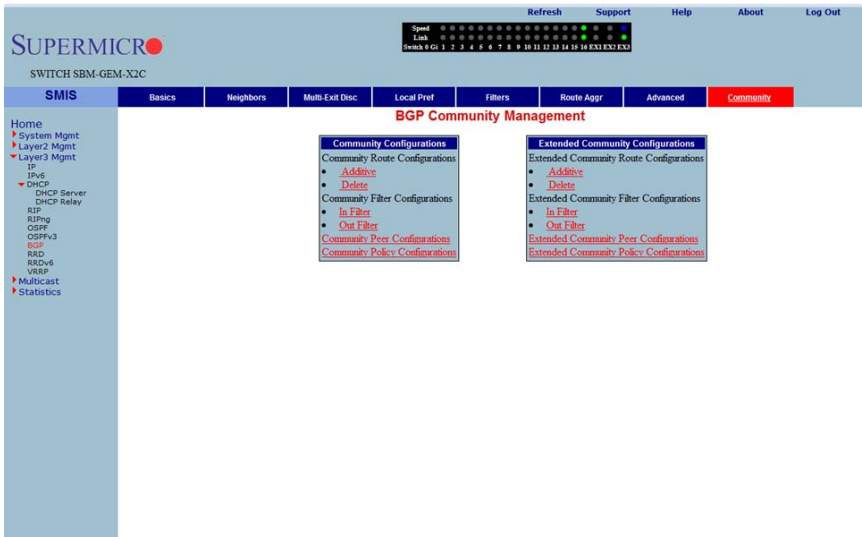
| Parameter | Description |
|-----------------------------|---|
| Client to Client Reflection | This parameter configures the Route Reflector to support route reflection to client peers. By default, the Route Reflector will reflect routes learnt from a client peer to all other client peers. If required, the administrator can disable this feature by disabling client-to-client reflection. If disabled, then the Route Reflector will not advertise routes learnt from a client peer to other client peers. This occurs when all peers within a cluster are fully-meshed and the client peer itself is able to advertise routes to other clients of the route-reflector. |
| Dampening Half Life Time | This parameter specifies the time (in seconds) after which a penalty is decreased by half. Once a route has been assigned a penalty, the penalty is decreased by half after the half-life time. |
| Dampening Reuse Value | If the penalty associated with a suppressed route falls below this value, the route is re-used. |
| Dampening Suppress Value | A route is suppressed when the penalty associated with the route exceeds this value. |

Table 5-108. Advanced BGP Configuration Page Parameters (Continued)

| Parameter | Description |
|-----------------------------|---|
| Dampening Max Suppress Time | This parameter specifies the maximum time (in seconds) a route can be suppressed. |
| Dampening Decay Granularity | This parameter specifies the time granularity in seconds used to perform all decay computations. |
| Dampening Reuse Granularity | This parameter specifies the time interval between evaluations of the reuse-lists. Each reuse lists corresponds to an additional time increment. |
| Dampening Reuse Array Size | This parameter specifies the size of the reuse index arrays. This size determines the accuracy with which suppressed routes can be placed within the set of reuse lists, when suppressed for a long time. |
| Confederation Identifier | This parameter specifies the BGP confederation identifier. The possible values are between 1 to 65535. Configuring 0 removes the existing configuration. |
| Best Path MED Confed | This parameter enables or disables MED comparison among paths learnt from confed peers. |
| Confederation Peers | This parameter configures the ASs that belongs to the confederation. |

BGP Community Management

Figure 5-132. BGP Community Management Page



Clicking the **COMMUNITY** tab brings up the **BGP COMMUNITY MANAGEMENT** page (Figure 5-132), which configures BGP community and extended community parameters. The parameters for this page are shown in Table 5-109.

Table 5-109. BGP Community Management Page Parameters

| Parameter | Description |
|--|--|
| Community Route Configurations | This parameter configures an entry in the Additive or Delete Community table. |
| Community Filter Configurations | This parameter configures the permit or deny function for the community attribute while receiving or advertising. |
| Community Peer Configurations | This parameter enables or disables advertisement of community attributes to the peer. |
| Community Policy Configurations | This parameter configures the community attribute advertisement policy for a specific destination. |
| Extended Community Route Configurations | This parameter configures an entry in the Additive or Delete Extended Community table. |
| Extended Community Filter Configurations | This parameter configures the permit or deny function for the Extended Community attribute while receiving or advertising. |
| Extended Community Peer Configurations | This parameter enables or disables advertisement of the Extended Community attributes to the peer. |
| Extended Community Policy Configurations | This parameter configures the Extended Community attribute advertisement policy for the specific destination. |

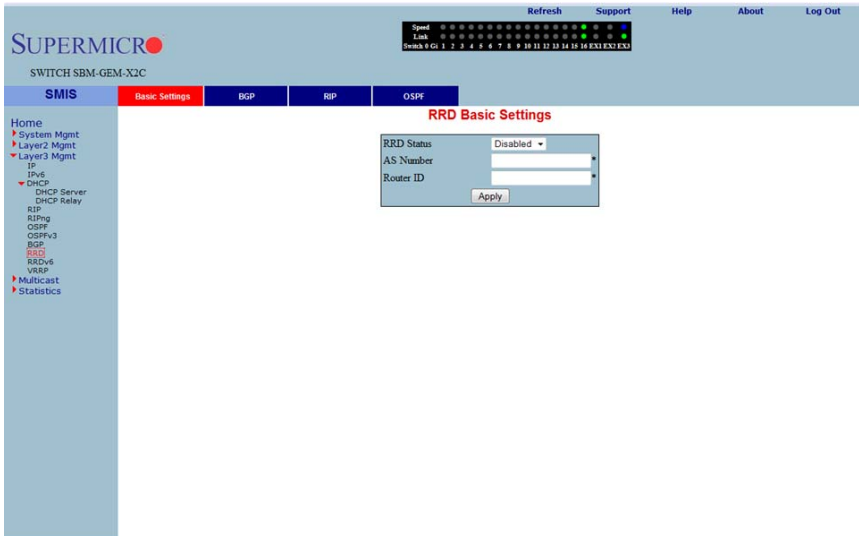
RRD

The RRD link allows you to manage the Route Redistribution with the help of the following pages:

- [RRD Basic Settings](#)
- [BGP](#)
- [RIP](#)
- [OSPF](#)

RRD Basic Settings

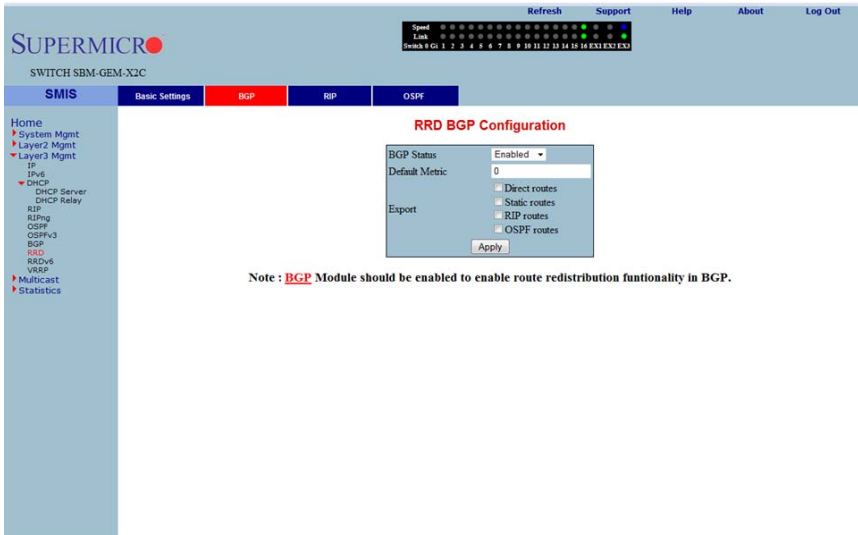
Figure 5-133. RRD Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the RRD BASIC SETTINGS page (Figure 5-133). The parameters for this page are shown in Table 5-110.

Table 5-110. RRD Basic Settings Page Parameters

| Parameter | Description |
|------------|--|
| RRD Status | By enabling this parameter, Route Re-distribution can be enabled in the switch. |
| AS Number | This parameter is used to configure the Router AS number to which this switch belongs. |
| Router ID | This parameter represents the Router ID of the switch. |

BGP**Figure 5-134. RRD BGP Configuration Page**


The screenshot displays the SUPERMICR web management interface for a SWITCH SBM-GEM-X2C. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. A status bar shows 'Speed' and 'Link' indicators. The main menu on the left lists various management options, with 'BGP' highlighted under 'Layer3 Mgmt'. The 'RRD BGP Configuration' form includes:

- BGP Status:** A dropdown menu set to 'Enabled'.
- Default Metric:** A text input field containing '0'.
- Export:** Four radio button options: 'Direct routes', 'Static routes', 'RIP routes', and 'OSPF routes'.
- Apply:** A button to save the configuration.

Note : **BGP** Module should be enabled to enable route redistribution functionality in BGP.

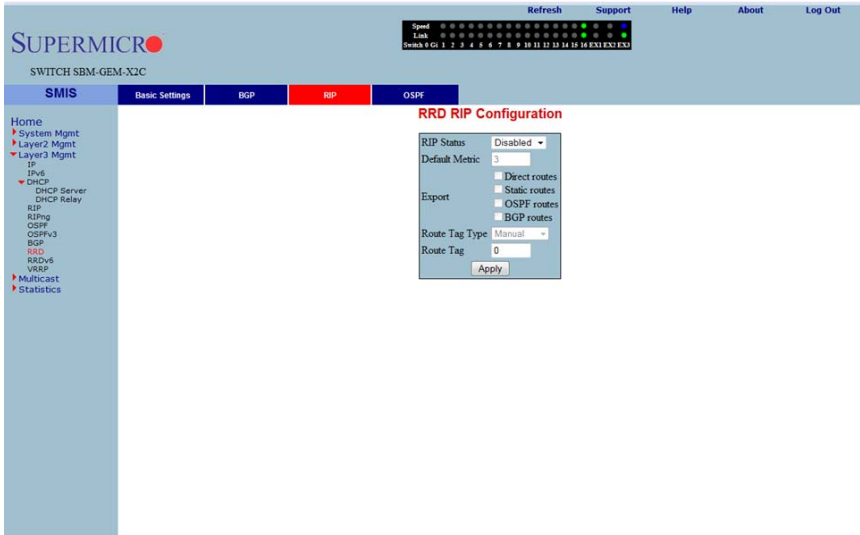
Clicking the BGP tab brings up the RRD BGP CONFIGURATION page (Figure 5-134), which allows you to re-distribute the routes that are learnt through other routing protocols to BGP. The parameters for this page are shown in Table 5-111.

Table 5-111. RRD BGP Configuration Page Parameters

| Parameter | Description |
|----------------|--|
| BGP Status | This parameter enables or disables redistribution for BGP. |
| Default Metric | This parameter specifies the metric for the routes that are being re-distributed. |
| Import | With this parameter you can choose to import <i>Direct routes</i> , <i>Static routes</i> , <i>RIP routes</i> and/or <i>OSPF routes</i> to BGP. |

RIP

Figure 5-135. RRD RIP Configuration Page



Clicking the RIP tab brings up the RRD RIP CONFIGURATION page (Figure 5-135), which allows you to re-distribute the routes that are learnt through other routing protocols to RIP. The parameters for this page are shown in Table 5-112.

Table 5-112. RRD RIP Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| RIP Status | This parameter enables or disables redistribution for RIP. |
| Default Metric | This parameter specifies the metric for the routes that are being re-distributed. |
| Import | You can use this parameter to choose to import <i>Direct routes</i> , <i>Static routes</i> , <i>OSPF routes</i> and <i>BGP routes</i> to RIP. |
| Route Tag Type | This parameter describes whether a tag is <i>manually</i> configured or <i>automatically</i> generated. |
| Route Tag | This parameter indicates the route tag in case you configure a manual option for the tag type. |

OSPF

Figure 5-136. RRD OSPF Configuration Page

The screenshot displays the RRD OSPF Configuration page. At the top, there is a navigation bar with 'SMIS' and tabs for 'Basic Settings', 'BGP', 'RIP', and 'OSPF'. The 'OSPF' tab is active. The main content area is titled 'RRD OSPF Configuration' and contains a form with the following elements:

- OSPF Status:** A dropdown menu currently set to 'Disabled'.
- Export:** Four checkboxes for 'Direct routes', 'Static routes', 'RIP routes', and 'BGP routes', all of which are currently unchecked.
- Apply:** A button to save the configuration.

Below the form, a note reads: "Note : **OSPF** Module should be enabled to enable route redistribution functionality in OSPF."

Clicking the OSPF tab brings up the RRD OSPF CONFIGURATION page (Figure 5-136), which allows you to e-distribute the routes that are learnt through other routing protocols to OSPF. The parameters for this page are shown in Table 5-113.

Table 5-113. RRD OSPF Configuration Page Parameters

| Parameter | Description |
|-------------|---|
| OSPF Status | This parameter enables or disables redistribution for OSPF. |
| Import | With this parameter you can choose to import <i>Direct routes</i> , <i>Static routes</i> , <i>RIP routes</i> and <i>BGP routes</i> to OSPF. |

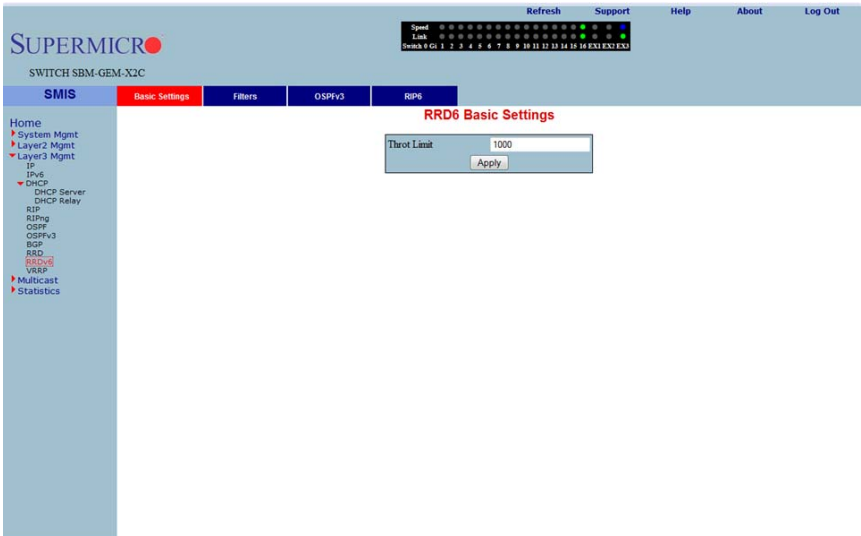
RRD6

The RRD6 link allows you to perform RRD6 related configuration through the following pages.

- [RRD6 Basic Settings](#)
- [Filters](#)
- [RRD V6 OSPF](#)
- [RRD RIP](#)

RRD6 Basic Settings

Figure 5-137. RRD6 Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the RRD6 BASIC SETTINGS page (Figure 5-137), which has the single parameter option of changing the throat limit for RRD6.

Filters

Figure 5-138. RRD6 Filter Configuration Page

The screenshot shows the 'RRD6 Filter Configuration' page. The navigation menu on the left includes 'Home', 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'IP', 'IPv6', 'DHCP', 'DHCP Server', 'DHCP Relay', 'RIP', 'RIPng', 'OSPF', 'OSPFv3', 'BGP', 'RRD', 'RRDv6', 'VRRP', 'Multicast', and 'Statistics'. The 'Filters' tab is active. The main configuration area has the following fields:

- IPv6 address: [Text input field]
- Prefix Length: [Text input field]
- Source: [Dropdown menu, value: Any]
- Destination: [Dropdown menu, value: Any]
- Action: [Dropdown menu, value: Permit]

Below the form is a table with the following data:

| select | IPv6 address | Prefix Length | Source | Destination | Action |
|-----------------------|---|---------------|--------|-------------|--------|
| <input type="radio"/> | 00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00 | 128 | Any | Any | Permit |

Buttons for '+ADD', 'Reset', and 'Delete' are also visible.

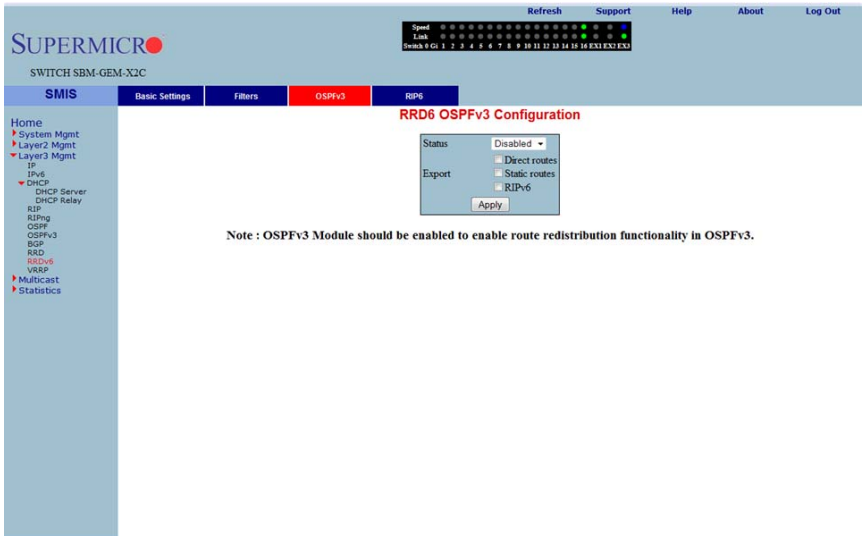
Clicking the FILTERS tab brings up the RRD6 FILTER CONFIGURATION page (Figure 5-138). The parameters for this page are shown in Table 5-114.

Table 5-114. RRD6 Filter Configuration Page Parameters

| Parameter | Description |
|---------------|---|
| IPv6 address | This parameter specifies the IPv6 Address. |
| Prefix Length | This parameter indicates the length of the prefix (in bits) associated with this entry's IPv6 address. |
| Source | This parameter denotes the address of the Source. |
| Destination | This parameter specifies the address of the Destination. |
| Action | With this parameter you can either choose to <i>Permit</i> (not to filter) or <i>Deny</i> (Filter) for the above configuration set. |

RRD V6 OSPF

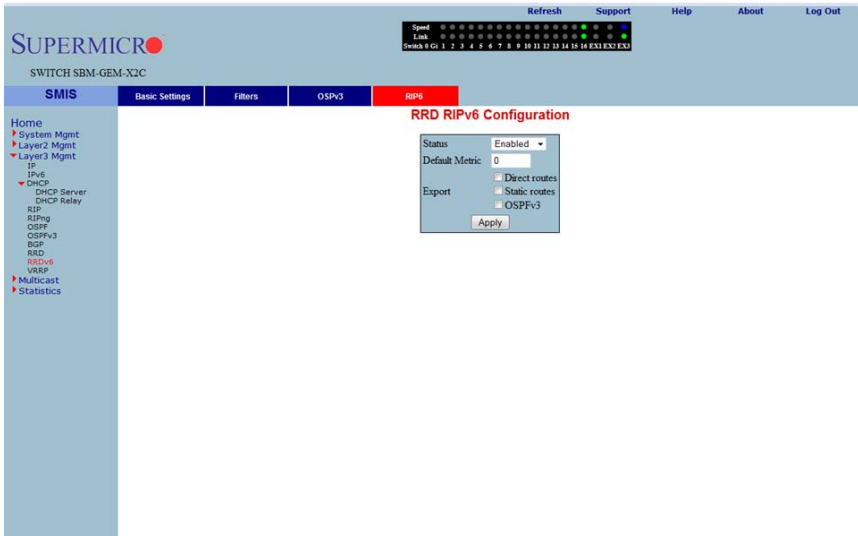
Figure 5-139. RRD6 OSPFv3 Configuration Page



Clicking the OSPFv3 tab brings up the RRD6 OSPFv3 CONFIGURATION page (Figure 5-139). The parameters for this page are shown in Table 5-115.

Table 5-115. RRD6 OSPFv3 Configuration Page Parameters

| Parameter | Description |
|-----------|---|
| Status | This parameter enables or disables redistribution for OSPFv3. |
| Import | With this parameter you can choose to import <i>Direct routes</i> , <i>Static routes</i> or <i>RIPv6 routes</i> . |

RRD RIP**Figure 5-140. RRD RIPv6 Configuration Page**

Clicking the RRP6 tab brings up the RRD RIPv6 CONFIGURATION page (Figure 5-140). The parameters for this page are shown in Table 5-116.

Table 5-116. RRD RIPv6 Configuration Page Parameters

| Parameter | Description |
|----------------|--|
| Status | This parameter enables or disables redistribution for RIP6. |
| Default Metric | This parameter specifies the metric for the routes that are being re-distributed. |
| Import | With this parameter you can choose to import <i>Direct routes</i> , <i>Static routes</i> or <i>OSPFv3 routes</i> . |

VRRP

The VRRP link allows you to configure VRRP through the following two pages:

- [VRRP Basic Settings](#)
- [VRRP Settings](#)

VRRP Basic Settings

Figure 5-141. VRRP Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the VRRP BASIC SETTINGS page (Figure 5-141), whose single parameter allows you to specify the status of VRRP in the switch.

VRRP Settings

Figure 5-142. VRRP Settings Page

The screenshot shows the VRRP Settings page in the SUPERMICR web management utility. The page has a navigation menu on the left with 'VRRP' selected. The main content area displays the 'VRRP Settings' form with the following fields and values:

- Virtual Router ID: *
- Interface: vlan1 <192.168.100.1>
- Primary IP Address: *
- Priority: *
- Authentication Type: no Authentication
- Authentication Key: *
- Advertisement Interval (secs): 1
- Pre-emption: Enable

Buttons: ADD, Reset

Breadcrumb trail: Virtual Router ID | Interface | Primary IP | Priority | Authentication Type | Authentication Key | Advertisement Interval (secs) | Pre-emption | State | Status

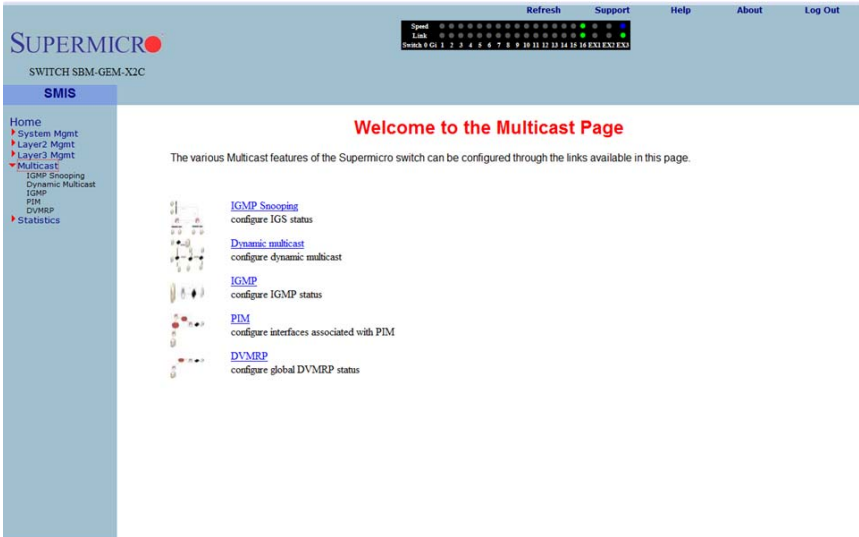
Clicking the VRRP SETTINGS link brings up the VRRP SETTINGS page (Figure 5-142). The parameters for this page are shown in Table 5-117.

Table 5-117. VRRP Settings Page Parameters

| Parameter | Description |
|----------------------------------|---|
| Virtual Router ID | This parameter indicates the Virtual ID associated with each Virtual Router. |
| Interface | This parameter represents the interface on which the Virtual Router must be configured. |
| Primary IP Address | This parameter specifies the PRIMARY IP ADDRESS for the Virtual Router. |
| Priority | This parameter indicates the PRIORITY for the Virtual Router. The configurable priority value ranges from 1 to 254. |
| Authentication Type | This parameter indicates the AUTHENTICATION TYPE for the Virtual Router. |
| Authentication Key | This parameter indicates the AUTHENTICATION KEY for the Virtual Router. |
| Advertisement Interval (Seconds) | This parameter specifies the time Interval in seconds for sending the advertisement packets. |
| Preempt Mode | This parameter enables or disables the PREEMPT MODE. |
| State | This parameter indicates the current state of the Virtual Router. |
| Status | This parameter specifies the Admin Status of the Virtual Router. |

5-7 Multicast

Figure 5-143. Multicast Home Page



MULTICAST HOME page (Figure 5-143) has links to multicast features in the switch.

GMP Snooping

The GMP Snooping link allows you to configure GMP Snooping through the following pages:

- [IGMP Snooping Configuration](#)
- [IGMP Snooping Timer](#)
- [IGMP Snooping Interface](#)
- [IGMP Snooping VLAN Router](#)
- [IGMP MAC Forwarding](#)

IGMP Snooping Configuration

Figure 5-144. IGMP Snooping Configuration Page

The screenshot displays the IGMP Snooping Configuration page. At the top, there is a navigation bar with tabs for SMIS, Basic Settings (selected), Timer, Interface Configuration, Router Ports, and Group Information. A sidebar on the left contains a menu with options like Home, System Mgmt, Layer 2 Mgmt, Layer 3 Mgmt, Multicast, IGMP Snooping, Dynamic Multicast, IGMP, DVMRP, PIM, and Statistics. The main content area is titled 'IGMP Snooping Configuration' and features a 'System Control' section with a 'Start' button. Below this is a configuration table with columns for Select, IGMP Snooping Status, Operational Status, Proxy Reporting, Snooping Mode, Report Forwarding, Retry Count, and Query Transm On TC. The values are: Disabled, Disabled, Enabled, Mac Based, Router Ports, 2, and Enabled. An 'Apply' button is located below the table. A note at the bottom states: 'Note : To enable IGS, **Dynamic Multicast** status should be disabled.'

Clicking the BASIC SETTINGS tab brings up the IGMP SNOOPING CONFIGURATION page (Figure 5-144), which allows you to configure IGMP snooping parameters. The parameters for this page are shown in Table 5-118.

Table 5-118. IGMP Snooping Configuration Page Parameters

| Parameter | Description |
|----------------------|--|
| System Control | This parameter <i>Starts</i> or <i>Shutdowns</i> IGS in the switch. |
| IGMP Snooping Status | This parameter enables or disables IGMP snooping globally in the switch. To enable IGS, GMRP status must be <i>Disabled</i> . |
| Operational Status | This parameter enables or disables IGMP snooping operationally in the switch. To enable IGS, GMRP status must be <i>Disabled</i> . |
| Proxy Reporting | This parameter indicates whether the proxy reporting in the IGMP snooping switch is to be enabled or disabled. |
| Snooping Mode | This parameter specifies the IGMP snooping multicast forwarding mode, which can be configured using the Destination IP Address or the Destination MAC Address. |
| Report Forwarding | This parameter specifies whether the IGMP reports are forwarded on all ports or only on router ports. |
| Retry Count | This parameter specifies the maximum number of group specific queries sent on a port on the reception of an IGMPv2 leave message. |
| Query Transmit On TC | This parameter allows you to enable or disable query transmit when topology changes. |

IGMP Snooping Timer

Figure 5-145. IGMP Snooping Timer Configuration Page



Clicking the **TIMER** tab brings up the **IGMP SNOOPING TIMER CONFIGURATION** page (Figure 5-145), which configures IGMP snooping timers. The parameters for this page are shown in Table 5-119.

Table 5-119. IGMP Snooping Timer Configuration Page Parameters

| Parameter | Description |
|---|--|
| Router Port PurgeInterval (Secs) | This parameter specifies the interval for which the learnt router port will be purged. The default value is 125-seconds . |
| Group-Member Port Purge Interval (Secs) | This parameter specifies the interval after which a port gets deleted, if IGMP reports are not received on a port. The default value is 260-seconds . |
| Report Forward Interval (Secs) | This parameter specifies the interval within which the next report messages for the same multicast group will not be forwarded. The default value is 5-seconds . |
| Group Query Interval (Secs) | This parameter specifies the interval within which the switch sends a group specific query on a port when an IGMPv2 leave message is received. The default value is 2-seconds . |

IGMP Snooping Interface

Figure 5-146. IGMP Snooping Interface Configuration Page

The screenshot shows the SUPERMICR web interface for a SWITCH SBM-GEM-X2C. The 'Interface Configuration' tab is active, displaying the 'IGMP Snooping Interface Configuration' page. The configuration form includes the following fields and controls:

- VLAN ID: dropdown menu showing 'vlan1'
- IGMP Snooping Status: dropdown menu showing '-'
- Operating Version: dropdown menu showing '-'
- Fast Leave: dropdown menu showing '-'
- Querier Status: dropdown menu showing '-'
- Querier Interval (secs): input field
- Router Port List: input field
- Buttons: 'Add' and 'Reset'

Below the form, a table lists the parameters for the configuration page:

| Select | VLAN ID | IGMP Snooping Status | Configured Version | Current Version | Fast Leave | Configured Querier Status | Current Querier Status | Querier Interval (secs) | Router Port List |
|--------|---------|----------------------|--------------------|-----------------|------------|---------------------------|------------------------|-------------------------|------------------|
|--------|---------|----------------------|--------------------|-----------------|------------|---------------------------|------------------------|-------------------------|------------------|

Clicking the INTERFACE CONFIGURATION tab brings up the IGMP SNOOPING INTERFACE CONFIGURATION page (Figure 5-146), which configures IGMP snooping interface specific parameters. The parameters for this page are shown in Table 5-120.

Table 5-120. IGMP Snooping Interface Configuration Page Parameters

| Parameter | Description |
|-------------------------|--|
| VLAN ID | This parameter specifies the VLAN ID for which the configuration is to be performed. |
| IGMP Snooping Status | This parameter specifies the status of IGMP snooping in the Switch, which can be enabled or disabled for a specific VLAN. |
| Operating Version | This parameter specifies the operating version of the IGMP snooping switch for a specific VLAN. |
| Fast Leave | This parameter indicates whether the fast leave processing for a specific VLAN, is to be enabled or disabled. |
| Querier Status | This parameter specifies whether the IGMP snooping switch is enabled or disabled as a querier for a specific VLAN. |
| Querier Interval (secs) | This parameter specifies the time period for which general queries are sent by the IGMP snooping switch, when configured as querier on a VLAN. |
| Router Port List | This parameter specifies the router port list for a specific VLAN. |

Table 5-120. IGMP Snooping Interface Configuration Page Parameters (Continued)

| Parameter | Description |
|------------------------|--|
| Current Version | This parameter specifies the working IGMP Version on the given VLAN. |
| Current Querier Status | This parameter specifies the current status of the Querier. |

IGMP Snooping VLAN Router

Figure 5-147. IGMP Snooping VLAN Router Ports Page



Clicking the ROUTE PORTS tab brings up the IGMP SNOOPING VLAN ROUTER PORTS page (Figure 5-147). The parameters for this page are shown in Table 5-121.

Table 5-121. IGMP Snooping VLAN Router Ports Page Parameters

| Parameter | Description |
|-----------|--|
| VLAN ID | This parameter specifies the VLAN ID. |
| Port List | This parameter specifies the ports on which routers are connected for a specific VLAN. |

IGMP MAC Forwarding

Figure 5-148. MAC Based Multicast Forwarding Table Page

The screenshot displays the SUPERMICR web management utility interface. At the top, there is a navigation bar with tabs for SMIS, Basic Settings, Timer, Interface Configuration, Router/Ports, and Group Information. The Group Information tab is selected. Below the navigation bar, the page title is "MAC Based Multicast Forwarding Table". A table is displayed with the following columns: VLAN ID, Group MAC Address, and Port List. The table is currently empty. The left sidebar contains a navigation menu with options like Home, System Mgmt, Layer2 Mgmt, Layer3 Mgmt, Multicast, IGMP Snooping, Dynamic Multicast, IGMP, PIM, DVMRP, and Statistics.

Clicking the GROUP INFORMATION tab brings up the MAC BASED MULTICAST FORWARDING TABLE page (Figure 5-148), which displays either the IP Based or the MAC Based Multicast Forwarding Table depending upon the configuration of the forwarding mode. The parameters for this page are shown in Table 5-122.

Table 5-122. MAC Based Multicast Forwarding Table Page Parameters

| Parameter | Description |
|-------------------|--|
| VLAN ID | This parameter specifies the VLAN ID pertaining to the MAC based multicast forwarding entry. |
| Group MAC Address | This parameter specifies the Group MAC Multicast address that is learnt. |
| Port List | This parameter specifies the learnt ports. |

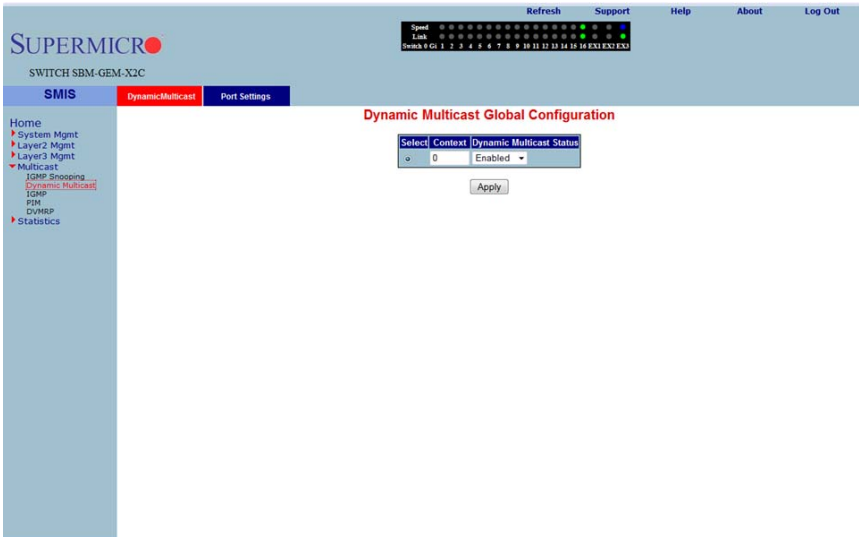
Dynamic Multicast

The Dynamic Multicast link allows you to configure Dynamic Multicast through the following pages:

- [Global Configuration](#)
- [Dynamic Multicast Port Configuration](#)

Global Configuration

Figure 5-149. Dynamic Multicast Global Configuration Page



Clicking the DYNAMIC MULTICAST tab brings up the DYNAMIC MULTICAST GLOBAL CONFIGURATION page (Figure 5-149), which allows you to enable or disable the dynamic multicast feature.

Dynamic Multicast Port Configuration

Figure 5-150. Dynamic Multicast Port Configuration Page

The screenshot shows the 'Dynamic Multicast Port Configuration' page. At the top, there is a navigation bar with 'SMIS', 'DynamicMulticast', and 'Port Settings' tabs. The 'Port Settings' tab is active. The page title is 'Dynamic Multicast Port Configuration' and the selected port is 'Gi0/1_Ex0/3'. Below the title is a table with the following data:

| Select | Port | Dynamic Multicast Status | Restricted Group Registration |
|-----------------------|--------|--------------------------|-------------------------------|
| <input type="radio"/> | Gi0/1 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/2 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/3 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/4 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/5 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/6 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/7 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/8 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/9 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/10 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/11 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/12 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/13 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/14 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/15 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Gi0/16 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Ex0/1 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Ex0/2 | Enabled ▾ | Disabled ▾ |
| <input type="radio"/> | Ex0/3 | Enabled ▾ | Disabled ▾ |

An 'Apply' button is located below the table.

Clicking the PORT SETTINGS tab brings up the DYNAMIC MULTICAST PORT CONFIGURATION page (Figure 5-150), which configures dynamic multicast at the port level. The parameters for this page are shown in Table 5-123.

Table 5-123. Dynamic Multicast Port Configuration Page Parameters

| Parameter | Description |
|-------------------------------|--|
| Port | This parameter specifies the Port index. |
| Dynamic Multicast Status | This parameter enables or disables dynamic multicast on this port. |
| Restricted Group Registration | This parameter enables or disables RESTRICTED GROUP REGISTRATION on this port. |

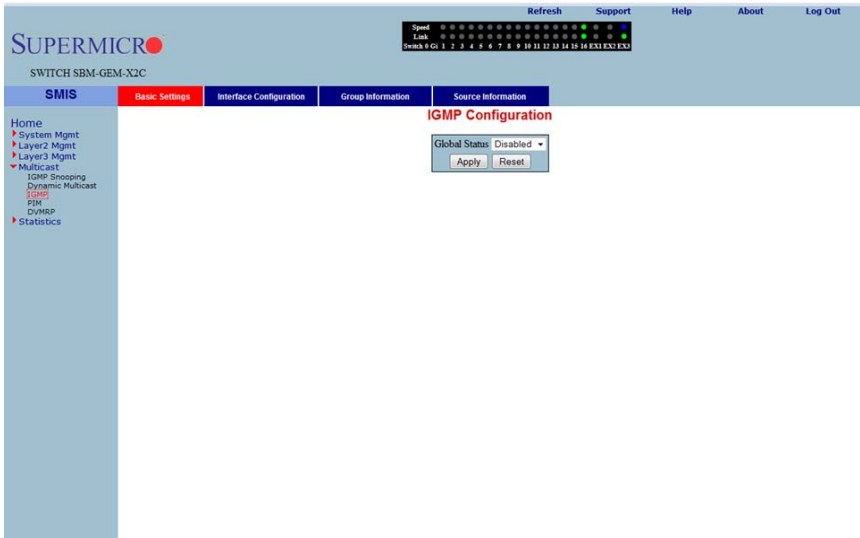
IGMP

The IGMP page allows you to configure the IGMP protocol. The IGMP protocol in the switch can be configured through the following pages:

- [Basic Settings](#)
- [Interface Configuration](#)
- [Group Information](#)
- [Source Information](#)

Basic Settings

Figure 5-151. IGMP Configuration Page



Clicking the IGMP CONFIGURATION tab brings up the IGMP CONFIGURATION page (Figure 5-151), whose single parameter allows you to enable or disable IGMP in the switch.

Interface Configuration

Figure 5-152. IGMP Interface Configuration Page

The screenshot displays the 'IGMP Interface Configuration' page. At the top, there is a status bar with 'Speed' and 'Link' indicators, and navigation links for 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. Below this is the 'SUPERMICR' logo and the device identifier 'SWITCH SBM-GEM-X2C'. The main navigation menu includes 'SMIS', 'Basic Settings', 'Interface Configuration' (highlighted), 'Group Information', and 'Source Information'. A left sidebar contains a tree view with options like 'Home', 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', 'IGMP Snooping', 'Dynamic Multicast', 'IGMP', 'PIM', 'DVMRP', and 'Statistics'. The central content area is titled 'IGMP Interface Configuration' and contains a form for interface 'vlan1'. The form fields are: IGMP Status (Disabled), Operating Version (Version 2), Fast Leave (Disabled), Query Interval (125), Query Response Time (100), Robustness Value (2), and Last Memb Query Int (10). There are 'Add' and 'Reset' buttons at the bottom of the form. Below the form is a table with columns: Select, Interface, IGMP Status, Operating Version, Fast Leave, Query Interval, Query Resp Time, Robust Value, and Last Memb Query Int.

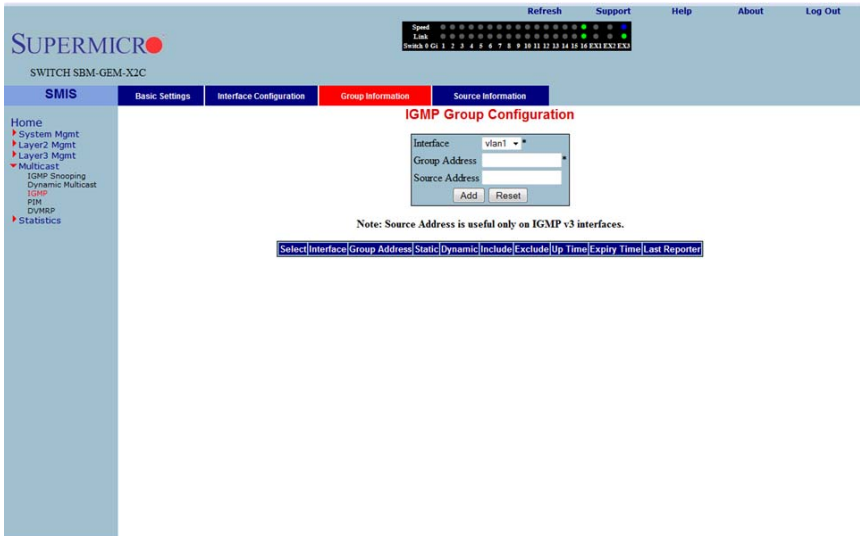
Clicking the INTERFACE CONFIGURATION tab brings up the IGMP INTERFACE CONFIGURATION page (Figure 5-152). The parameters for this page are shown in Table 5-124.

Table 5-124. IGMP Interface Configuration Page Parameters

| Parameter | Description |
|---------------------|--|
| Interface | This parameter specifies the interface index. |
| IGMP Status | This parameter specifies the IGMP Status. |
| Operating Version | With this parameter you can choose to run either in <i>IGMP Version 1</i> , <i>IGMP Version 2</i> or <i>IGMP Version 3</i> . This can be configured for every interface. |
| Fast Leave | This parameter indicates whether the fast leave processing for a specific interface, is to be enabled or disabled. |
| Query Interval | This parameter indicates the interval between two successive IGMP queries. |
| Query Response Time | This parameter specifies the response time for IGMP queries. |
| Robustness Value | This parameter specifies the ROBUSTNESS VALUE on this interface. |

Group Information

Figure 5-153. IGMP Group Configuration Page



Clicking the GROUP INFORMATION tab brings up the IGMP GROUP CONFIGURATION page (Figure 5-153). The parameters for this page are shown in Table 5-125.

Table 5-125. IGMP Group Configuration Page Parameters

| Parameter | Description |
|----------------|---|
| Interface | This parameter specifies the interface index. |
| Group Address | This parameter specifies the IP multicast group address. |
| Source Address | This parameter represents the IP Source address. NOTE: Source configuration is allowed only when the operating version is v3 on this interface. |
| Filter Mode | This parameter specifies the FILTER MODE. |

Source Information

Figure 5-154. IGMP Source Information Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are navigation links: Refresh, Support, Help, About, and Log Out. Below the navigation is a status bar with 'Speed' and 'Link' indicators. The main menu includes 'SMIS', 'Basic Settings', 'Interface Configuration', 'Group Information', and 'Source Information' (which is highlighted in red). The left sidebar contains a navigation tree with options like Home, System Mgmt, Layer2 Mgmt, Layer3 Mgmt, Multicast, IGMP Snooping, Dynamic Multicast, IGMP, PIM, DVMRP, and Statistics. The main content area displays the 'IGMP Source Information' page with a table structure as follows:

| Interface | Group Address | Source Address | Static | Dynamic | Include | Exclude | Forward | Non-Forward | Expiry Time | Last Reporter |
|-----------|---------------|----------------|--------|---------|---------|---------|---------|-------------|-------------|---------------|
|-----------|---------------|----------------|--------|---------|---------|---------|---------|-------------|-------------|---------------|

Clicking the SOURCE INFORMATION tab brings up the IGMP SOURCE INFORMATION page (Figure 5-154). The parameters for this page are shown in Table 5-126.

Table 5-126. IGMP Source Information Page Parameters

| Parameter | Description |
|----------------|--|
| Group Address | This parameter specifies the IP multicast group address. |
| Interface | This parameter specifies the interface index. |
| Source Address | This parameter represents the IP Source address. |

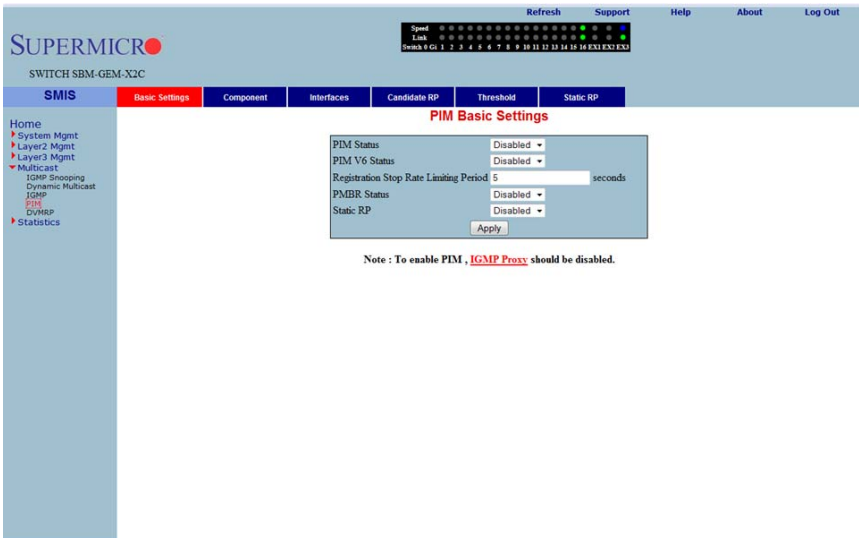
PIM

The PIM link allows you to perform PIM related configuration through the following pages:

- [Basic Settings](#)
- [Component](#)
- [Interfaces](#)
- [Candidate RPs](#)
- [Threshold](#)
- [Static RP](#)

Basic Settings

Figure 5-155. PIM Basic Settings Page



Clicking the BASIC SETTINGS tab brings up the PIM BASIC SETTINGS page (Figure 5-155), which specifies the PIM status in the switch. The parameters for this page are shown in Table 5-127.

Table 5-127. PIM Basic Settings Page Parameters

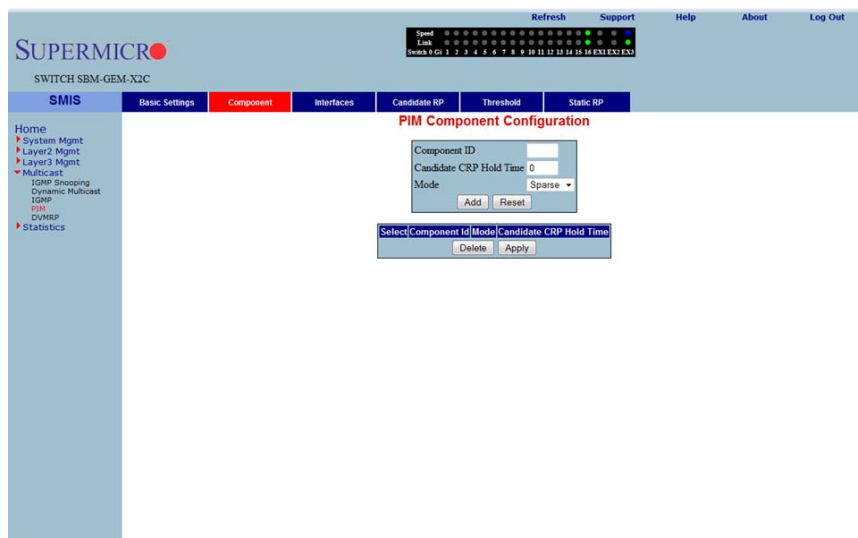
| Parameter | Description |
|---------------|---|
| PIM Status | This parameter allows you to enable or disable the PIM status in the switch. |
| PIM V6 Status | This parameter allows you to enable or disable the PIM V6 status in the switch. |

Table 5-127. PIM Basic Settings Page Parameters (Continued)

| Parameter | Description |
|--|---|
| Registration Stop Rate Limiting Period | This parameter specifies the registration stop rate limiting period in seconds. |
| PMBR Status | This parameter allows you to enable or disable the PMBR status in the switch. |
| Static RP | This parameter allows you to enable or disable the Static RP in the switch. |

Component

Figure 5-156. PIM Component Configuration Page



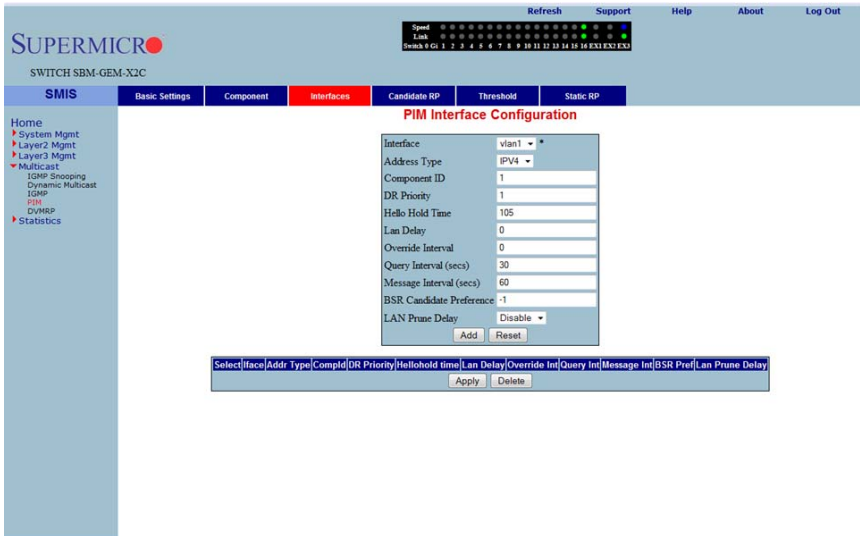
Clicking the COMPONENT tab brings up the PIM COMPONENT CONFIGURATION page (Figure 5-156). The parameters for this page are shown in Table 5-128.

Table 5-128. PIM Component Configuration Page Parameters

| Parameter | Description |
|-------------------------|---|
| Component ID | This parameter specifies a number uniquely identifying the component. |
| Candidate CRP Hold Time | This parameter specifies the hold time of the component when it is a candidate RP in the local domain. |
| Mode | This parameter specifies the mode of the component. It can be <i>Sparse</i> or <i>Dense</i> . |
| BSR Address | This parameter specifies the IP address of the bootstrap router for the local PIM region, which is a read-only field. |
| BSR Expiry Time | This parameter indicates the minimum time remaining before the bootstrap router in the local domain is declared down, which is a read-only field. |

Interfaces

Figure 5-157. PIM Interface Configuration Page



Clicking the INTERFACES tab brings up the PIM INTERFACE CONFIGURATION page (Figure 5-157). The parameters for this page are shown in Table 5-129.

Table 5-129. PIM Interface Configuration Page Parameters

| Parameter | Description |
|-------------------------------|--|
| Interface | This parameter specifies the interface index. |
| Component ID | This parameter specifies a number uniquely identifying the component. |
| Hello Interval (Seconds) | This parameter specifies the time interval between two successive Hello messages being sent by PIM on this interface. |
| Join Prune Interval (Seconds) | This parameter specifies the time interval between two successive Join/Prune messages being sent by PIM on this interface. |
| CBSR Preference | This parameter indicates the preference value for the local interface as a candidate bootstrap router. |
| Row Status | This parameter indicates the operational status of the entry. |

Candidate RPs

Figure 5-158. Candidate RP Configuration Page

The screenshot displays the 'Candidate RP Configuration' page. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The left sidebar shows a tree view with 'Candidate RP' selected. The main form contains the following fields:

- Component ID:
- Address Type:
- Group Address:
- Group Mask:
- RP Address:

Buttons for 'Add' and 'Reset' are located below the form fields. A status bar at the bottom of the form area contains the text: `Select[Component ID|Addr Type|Group Address|Group Mask|RP Address]`.

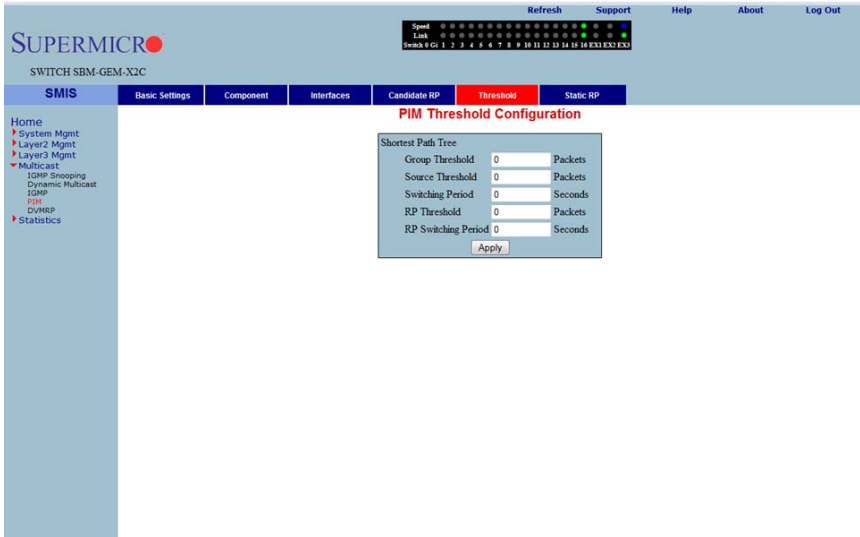
Clicking the CANDIDATE RPs tab brings up the CANDIDATE RP CONFIGURATION page (Figure 5-158). The parameters for this page are shown in Table 5-130.

Table 5-130. Candidate RP Configuration Page Parameters

| Parameter | Description |
|---------------|--|
| Component ID | This parameter specifies a number uniquely identifying the component. |
| Group Address | This parameter represents the multicast group, for which the switch advertises itself as the candidate RP. |
| Group Mask | This parameter specifies the subnet mask, which when combined with the group address gives the group prefix. |
| RP Address | This parameter represents the IP address of the Candidate-RP. |

Threshold

Figure 5-159. PIM Threshold Configuration Page



Clicking the THRESHOLD tab brings up the PIM THRESHOLD CONFIGURATION page (Figure 5-159). The parameters for this page are shown in Table 5-131.

Table 5-131. PIM Threshold Configuration Page Parameters

| Parameter | Description |
|---------------------|--|
| Group Threshold | This parameter is a bits-per-second (BPS) value that when it exceeds a certain value, initiates source specific counters for a particular group. |
| Source Threshold | This parameter is a bits-per-second (BPS) value that when exceeds a certain value, initiates switching to shortest path tree. |
| Switching Period | This parameter specifies the time interval that the data rate is monitored for, initiating the counters or for switching to SPT. |
| RP Threshold | When the number of registered packets received exceeds this threshold value, RP initiates switching to SPT. |
| RP Switching Period | This parameter specifies the time interval for which the registered packets are monitored to initiate switching to SPT. |

Static RP**Figure 5-160. Static RP Configuration Page**

The screenshot shows the SUPERMICR web management utility interface. At the top, there is a navigation bar with 'SMIS' and several tabs: 'Basic Settings', 'Component', 'Interfaces', 'Candidate RP', 'Threshold', and 'Static RP' (which is highlighted in red). Below the navigation bar, the 'Static RP Configuration' page is displayed. The page contains a form with the following fields: 'Component Id' (text input), 'Address Type' (dropdown menu set to 'IPv4'), 'Static Group Address' (text input), 'Static Group Mask' (text input), and 'Static RP Address' (text input). There are 'Add' and 'Reset' buttons at the bottom of the form. A breadcrumb trail at the bottom of the page reads: 'Select | Component Id | Address Type | Static Group Address | Static Group Mask | Static RP Address'.

Clicking the STATIC RP tab brings up the STATIC RP CONFIGURATION page (Figure 5-160), which configure static PIM RPs (Rendezvous Points). The parameters for this page are shown in Table 5-132.

Table 5-132. Static RP Configuration Page Parameters

| Parameter | Description |
|----------------------|--|
| Component ID | This parameter specifies a number uniquely identifying the component. |
| Address Type | This parameter chooses the IPv4 or IPv6 address type. |
| Static Group Address | This parameter represents the multicast group, for which the switch advertises itself as the candidate RP. |
| Static Group Mask | This parameter specifies the subnet mask, which when combined with the group address gives the group prefix. |
| Static RP Address | This parameter represents the IP address of the candidate RP. |

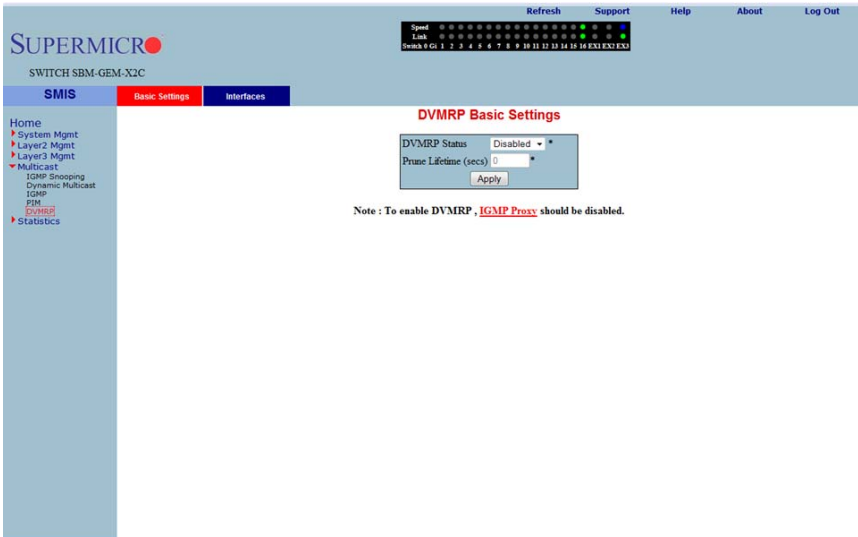
DVMRP

The DVMRP page allows you to configure the DVMRP protocol using the following pages:

- [DVMRP Basic Settings](#)
- [Interfaces](#)

DVMRP Basic Settings

Figure 5-161. DVMRP Basic Settings Page



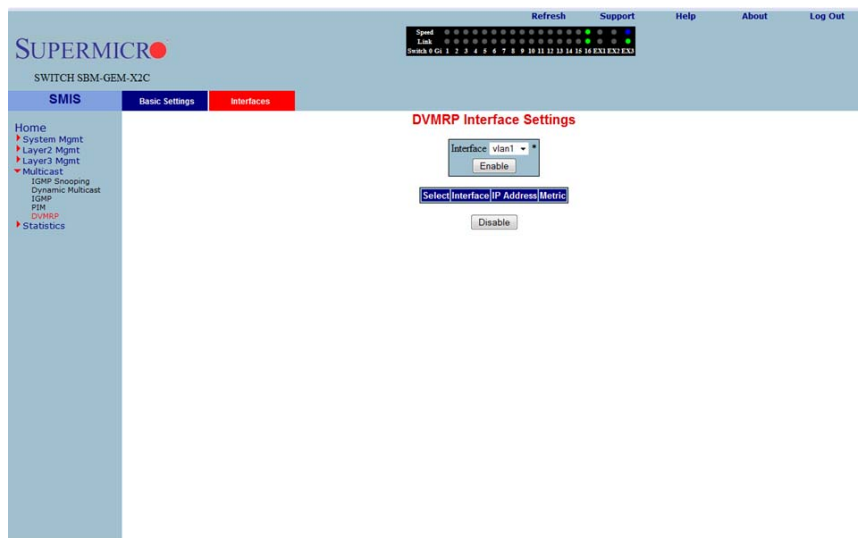
Clicking the BASIC SETTINGS tab brings up the DVMRP BASIC SETTINGS page (Figure 5-161). The parameters for this page are shown in Table 5-133.

Table 5-133. DVMRP Basic Settings Page Parameters

| Parameter | Description |
|--------------------------|--|
| DVMRP Status | DVMRP can be enabled or disabled in the switch using this field. |
| Prune Lifetime (Seconds) | This parameter represents the Prune Life Time Configuration value. |

Interfaces

Figure 5-162. DVMRP Interface Settings Page



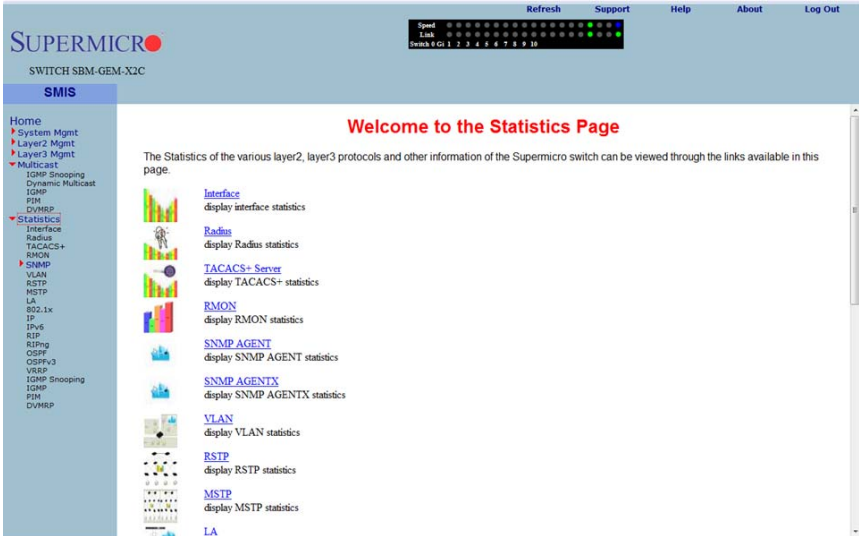
Clicking the INTERFACES tab brings up the DVMRP INTERFACE SETTINGS page (Figure 5-162), which displays the various parameters XXXXXX. The parameters for this page are shown in Table 5-134.

Table 5-134. DVMRP Interface Settings Page Parameters

| Parameter | Description |
|------------|---|
| Interface | This parameter specifies the Interface Index. |
| IP Address | This parameter specifies the IP Address of the interface, which is a read-only field. |
| Metric | This parameter specifies the distance metric for this interface, which is used to calculate distance vectors. |

5-8 Statistics

Figure 5-163. Statistics Home Page



The STATISTICS HOME page (Figure 5-163) contains links to all statistical information for all switch features.

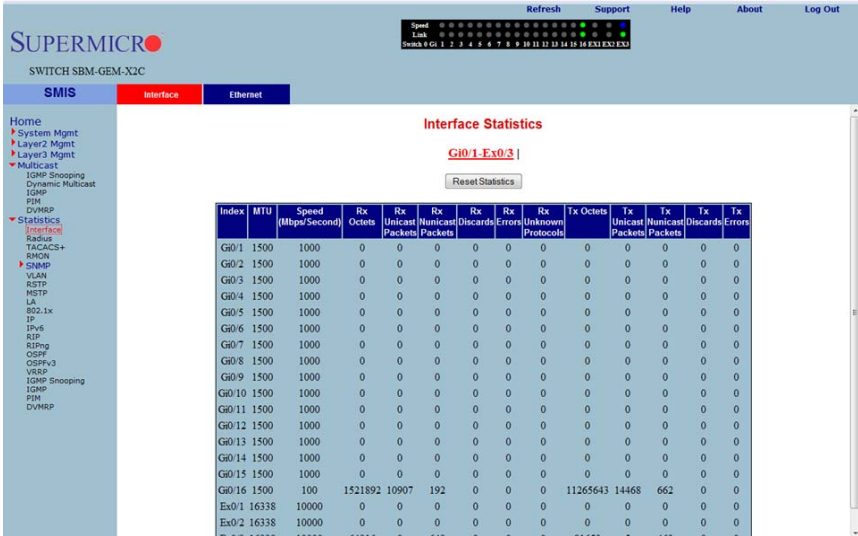
Interface

The Interface link allows you to configure the following pages:

- [Interface Statistics](#)
- [Ethernet Statistics](#)

Interface Statistics

Figure 5-164. Interface Statistics Page



Clicking the INTERFACE tab brings up the INTERFACE STATISTICS page (Figure 5-164). The parameters for this page are shown in Table 5-135.

Table 5-135. Interface Statistics Page Parameters

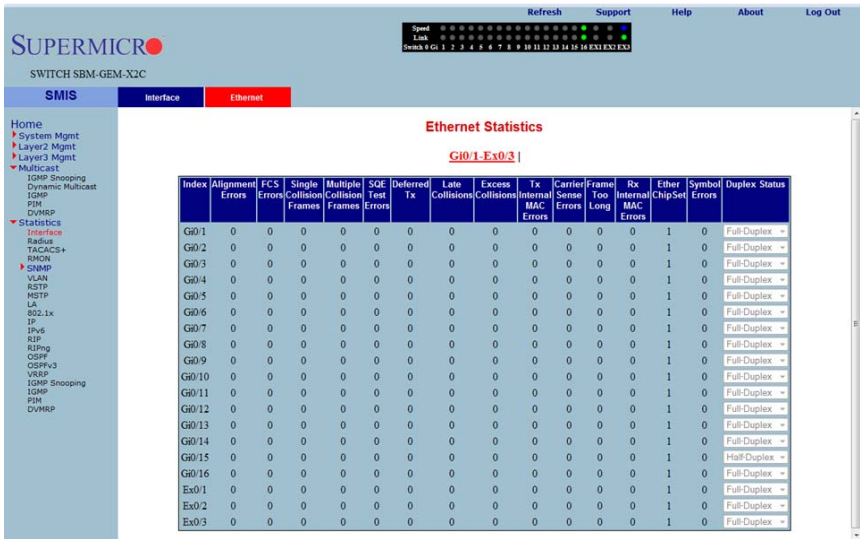
| Parameter | Description |
|----------------------------|---|
| Index | This parameter specifies the Port index. |
| MTU | This parameter specifies the Max Transfer Unit bytes. |
| Speed (Bits Per Second) | This parameter specifies the port speed in bits per second. |
| Received Octets | This parameter specifies the number of bytes received. |
| Received Unicast Packets | This parameter specifies the number of unicast packets received. |
| Received Nunicast Packets | This parameter specifies the number of non-unicast packets received. |
| Received Discards | This parameter specifies the number of packets discarded due to errors. |
| Received Errors | This parameter specifies the number of packets received with errors. |
| Received Unknown Protocols | This parameter specifies the number of packets received with an unknown protocol. |
| Transmitted Octets | This parameter specifies the number of bytes transmitted. |

Table 5-135. Interface Statistics Page Parameters (Continued)

| Parameter | Description |
|-------------------------------|--|
| Transmitted Unicast Packets | This parameter specifies the number of unicast packets transmitted. |
| Transmitted Multicast Packets | This parameter specifies the number of non-unicast packets transmitted. |
| Transmitted Discards | This parameter specifies the number of packets discarded due to transmit errors. |
| Transmitted Errors | This parameter specifies the number of transmit errors. |

Ethernet Statistics

Figure 5-165. Ethernet Statistics Page



Clicking the ETHERNET tab brings up the ETHERNET STATISTICS page (Figure 5-165). The parameters for this page are shown in Table 5-136.

Table 5-136. Ethernet Statistics Page Parameters

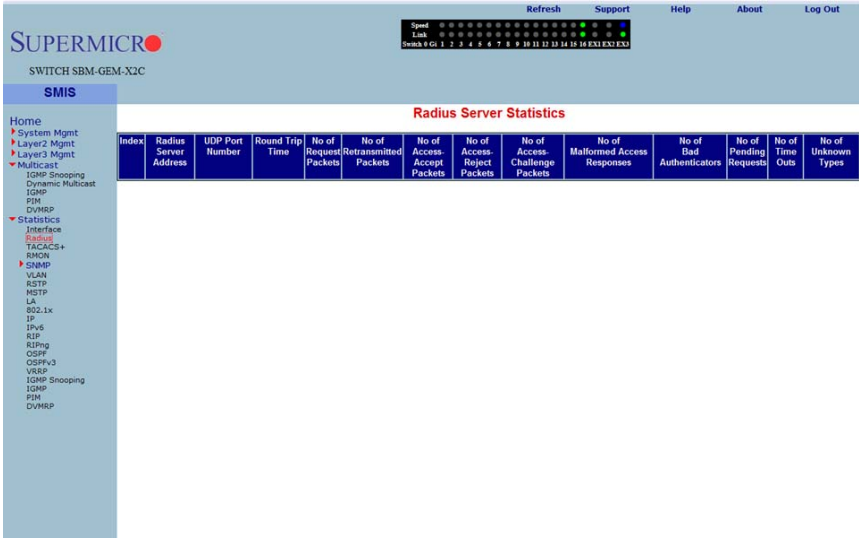
| Parameter | Description |
|-------------------------|--|
| Index | This parameter specifies the port index. |
| Alignment Errors | This parameter specifies the number of alignment errors. Alignment errors generally indicate improper byte-alignment for Ethernet packets. |
| FCS Errors | This parameter specifies the number of packets received with checksum errors. |
| Single Collision Frames | This parameter specifies the number of frames received with a collision. |

Table 5-136. Ethernet Statistics Page Parameters (Continued)

| Parameter | Description |
|---------------------------------|---|
| Multiple Collision Frames | This parameter specifies the number of frames received with multiple collisions. |
| SQE Test Errors | This parameter specifies the number of Signal Quality Errors that have occurred. |
| Deferred Transmissions | This parameter specifies the number of frames deferred for transmissions due to network sense. |
| Late Collisions | This parameter specifies the number of frames faced late collisions. A collision is considered late if the jam occurs after 512 bit-times, or 64 bytes. |
| Excess Collisions | This parameter specifies the number of excess collisions detected. Excessive Collisions describe the situation where a station has tried 16 times to transmit without success and discards the frame. This means that there is excessive traffic on the network and this must be reduced. |
| Transmitted Internal MAC Errors | This parameter specifies the number of MAC transmit errors. |
| Carrier Sense Errors | This parameter specifies the number of carrier sense errors. |
| Frame Too Long | This parameter specifies the number of too long frames received for transmission. |
| Received Internal MAC Errors | This parameter specifies the number of MAC received errors. |
| Symbol Errors | This parameter specifies the number of symbol errors. |
| Duplex Status | This parameter specifies the current status of duplex. |

Radius

Figure 5-166. Radius Server Statistics Page



Clicking the RADIUS link brings up the RADIUS SERVER STATISTICS page (Figure 5-166). The parameters for this page are shown in Table 5-137.

Table 5-137. Radius Server Statistics Page Parameters

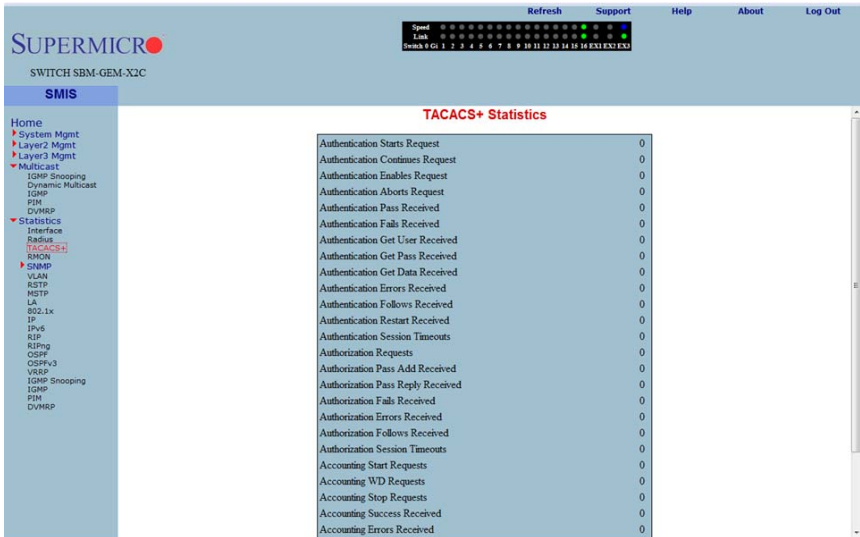
| Parameter | Description |
|--------------------------------|---|
| Index | This parameter specifies the port index. |
| Radius Server Address | This parameter specifies the RADIUS SERVER ADDRESS. |
| UDP Port Number | This parameter specifies the UDP PORT NUMBER. |
| Round Trip Time | This parameter displays the ROUND TRIP TIME in seconds. |
| No of Request Packets | This parameter specifies the number of request packets transmitted. |
| No of Retransmitted Packets | This parameter specifies the number of packets retransmitted. |
| No of Access-Accept Packets | This parameter specifies the number of accept packets. |
| No of Access-Reject Packets | This parameter specifies the number of reject packets. |
| No of Access-Challenge Packets | This parameter specifies the number of challenge packets. |

Table 5-137. Radius Server Statistics Page Parameters (Continued)

| Parameter | Description |
|----------------------------------|---|
| No of Malformed Access Responses | This parameter specifies the number of invalid access responses received. |
| No of Bad Authenticators | This parameter specifies the number of failed authentications. |
| No of Pending Requests | This parameter specifies the number of currently pending requests. |
| No of Time Outs | This parameter specifies the number of time outs that have happened. |
| No of Unknown Types | This parameter specifies the number of unknown types that have been received. |

TACACS+ Statistics

Figure 5-167. TACACS+ Statistics Page



Clicking the TACACS+ link brings up the TACACS+ STATISTICS page (Figure 5-167). The parameters for this page are shown in Table 5-138.

Table 5-138. TACACS+ Statistics Page Parameters

| Parameter | Description |
|----------------------------------|--|
| Authentication Starts Request | This parameter specifies the number of authentication starts requested. |
| Authentication Continues Request | This parameter specifies the number of authentication continues requested. |
| Authentication Enables Request | This parameter specifies the number of authentication enables requested. |
| Authentication Aborts Request | This parameter specifies the number of authentication aborts requested. |
| Authentication Pass Received | This parameter specifies the number of authentication passes received. |
| Authentication Fails Received | This parameter specifies the number of authentication fails received. |
| Authentication Get User Received | This parameter specifies the number of authentication get users received. |
| Authentication Get Pass Received | This parameter specifies the number of authentication get passes received. |

Table 5-138. TACACS+ Statistics Page Parameters (Continued)

| Parameter | Description |
|-----------------------------------|--|
| Authentication Get Data Received | This parameter specifies the number of authentication get datas received. |
| Authentication Errors Received | This parameter specifies the number of authentication errors received. |
| Authentication Follows Received | This parameter specifies the number of authentication follows received. |
| Authentication Restart Received | This parameter specifies the number of authentication restarts received. |
| Authentication Session Timeouts | This parameter specifies the number of authentication session timeouts received. |
| Authorization Requests | This parameter specifies the number of authentication requests received. |
| Authorization Pass Add Received | This parameter specifies the number of authentication pass adds received. |
| Authorization Pass Reply Received | This parameter specifies the number of authentication pass replies received. |
| Authorization Fails Received | This parameter specifies the number of authentication fails received. |
| Authorization Errors Received | This parameter specifies the number of authentication errors received. |
| Authorization Follows Received | This parameter specifies the number of authentication follows received. |
| Authorization Session Timeouts | This parameter specifies the number of authentication session timeouts. |
| Accounting Start Requests | This parameter specifies the number of accounting start requests. |
| Accounting WD Requests | This parameter specifies the number of accounting WD requests. |
| Accounting Stop Requests | This parameter specifies the number of accounting stop requests. |
| Accounting Success Received | This parameter specifies the number of accounting successes received. |
| Accounting Errors Received | This parameter specifies the number of accounting errors received. |
| Accounting Follows Received | This parameter specifies the number of accounting follows received. |
| Accounting Session Timeouts | This parameter specifies the number of accounting sessions received. |
| Malformed Packets Received | This parameter specifies the number of malformed packets received. |
| Socket Failures | This parameter specifies the number of socket failures. |
| Connection Failures | This parameter specifies the number of connection failures. |

RMON Ethernet Statistics

Figure 5-168. RMON Ethernet Statistics Page

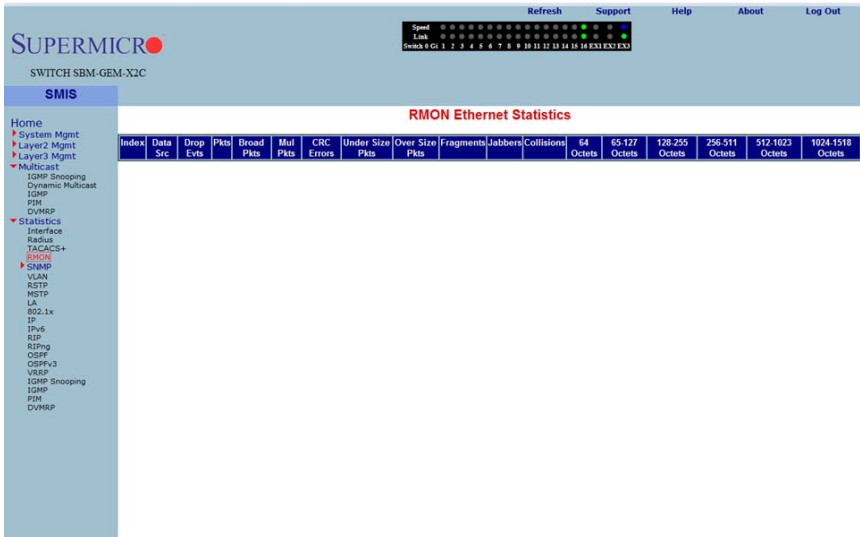


Table 5-139. RMON Ethernet Statistics Page Parameters (Continued)

| Parameter | Description |
|------------------|---|
| 64 Octets | This parameter specifies the number of Ethernet packets received with a size less than 64 bytes. |
| 65-127 Octets | This parameter specifies the number of Ethernet packets received with a size between 65 and 127 bytes. |
| 128-255 Octets | This parameter specifies the number of Ethernet packets received with a size between 128 and 255 bytes. |
| 256-511 Octets | This parameter specifies the number of Ethernet packets received with a size between 256 and 511 bytes. |
| 512-1023 Octets | This parameter specifies the number of Ethernet packets received with a size between 512 and 1023 bytes. |
| 1024-1518 Octets | This parameter specifies the number of Ethernet packets received with a size between 1024 and 1518 bytes. |

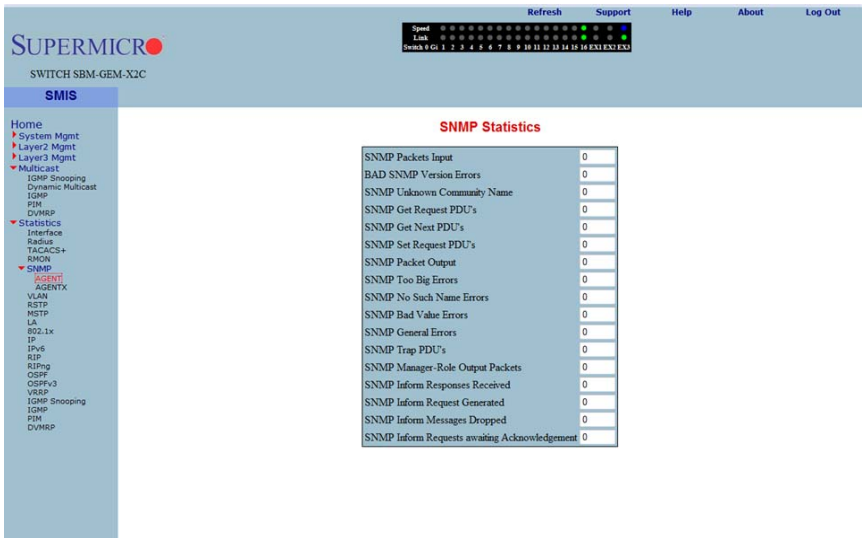
SNMP Statistics

The SNMP Statistics link allows you to configure SNMP Statistics through the following pages:

- [Agent](#)
- [SNMP AgentX](#)

Agent

Figure 5-169. SNMP Statistics Page



Clicking the SNMP AGENT link brings up the SNMP STATISTICS page (Figure 5-169), which displays SNMP statistics. The parameters for this page are shown in Table 5-140.

Table 5-140. SNMP Statistics Page Parameters

| Parameter | Description |
|-----------------------------|--|
| SNMP Packets Input | This parameter specifies the number of SNMP packets input. |
| BAD SNMP Version Errors | This parameter specifies the number of BAD SNMP version errors. |
| SNMP Unknown Community Name | This parameter specifies the number of SNMP unknown community names. |
| SNMP Get Request PDU's | This parameter specifies the number of SNMP Get Request PDU's. |
| SNMP Get Next PDU's | This parameter specifies the number of SNMP Get Next PDU's. |

Table 5-140. SNMP Statistics Page Parameters (Continued)

| Parameter | Description |
|---|---|
| SNMP Set Request PDU's | This parameter specifies the number of SNMP Set Request PDU's. |
| SNMP Packet Output | This parameter specifies the number of SNMP packets output. |
| SNMP Too Big Errors | This parameter specifies the number of SNMP Too Big errors, |
| SNMP No Such Name Errors | This parameter specifies the number of SNMP No Such Name errors, |
| SNMP Bad Value Errors | This parameter specifies the number of SNMP Bad Value errors. |
| SNMP General Errors | This parameter specifies the number of SNMP General errors. |
| SNMP Trap PDU's | This parameter specifies the number of SNMP Trap PDU's. |
| SNMP Manager-Role Output Packets | This parameter specifies the number of SNMP Manager-Role Output packets. |
| SNMP Inform Responses Received | This parameter specifies the number of SNMP Inform responses received. |
| SNMP Inform Request Generated | This parameter specifies the number of SNMP Inform requests generated. |
| SNMP Inform Messages Dropped | This parameter specifies the number of SNMP Inform messages dropped. |
| SNMP Inform Requests awaiting Acknowledgement | This parameter specifies the number of SNMP Inform requests awaiting acknowledgement. |

SNMP AgentX

Clicking the AGENTX link brings up the AGENTX SUBAGENT STATISTICS page (not shown), which displays Agentx Subagent information. The parameters for this page are shown in [Table 5-141](#).

Table 5-141. Agentx Subagent Statistics Page Parameters

| Parameter | Description |
|----------------------------|--|
| Transmit Statistics | |
| Transmitted Packets | This parameter specifies the number of packets transmitted. |
| Open PDU | This parameter specifies the number of open PDUs transmitted. |
| IndexAlloc PDU | This parameter specifies the number of IndexAlloc PDUs transmitted. |
| Register PDU | This parameter specifies the number of register PDUs transmitted. |
| Add Agent Caps PDU | This parameter specifies the number of add agent caps PDUs transmitted. |
| Notify PDU | This parameter specifies the number of notify PDUs transmitted. |
| Ping PDU | This parameter specifies the number of ping PDUs transmitted. |
| Remove Agent Caps PDU | This parameter specifies the number of remove agent caps PDUs transmitted. |

Table 5-141. Agentx Subagent Statistics Page Parameters (Continued)

| Parameter | Description |
|---------------------------|---|
| IndexDeAlloc PDU | This parameter specifies the number of IndexDeAlloc PDUs transmitted. |
| UnRegister PDU | This parameter specifies the number of unregister PDUs transmitted. |
| Close PDU | This parameter specifies the number of close PDUs transmitted. |
| Response PDU | This parameter specifies the number of response PDUs transmitted. |
| Receive Statistics | |
| Received Packets | This parameter specifies the number of packets received. |
| Get Request PDU | This parameter specifies the number of get request PDUs received. |
| Get Next PDU | This parameter specifies the number of get next PDUs received. |
| Get Bulk PDU | This parameter specifies the number of get bulk PDUs received. |
| TestSet PDU | This parameter specifies the number of test set PDUs received. |
| Commit PDU | This parameter specifies the number of commit PDUs received. |
| Cleanup PDU | This parameter specifies the number of cleanup PDUs received. |
| Undo PDU | This parameter specifies the number of undo PDUs received. |
| Dropped Packets | This parameter specifies the number of dropped packets. |
| Parse Drop Errors | This parameter specifies the number of received PDUs dropped due to parse errors. |
| Open Fail Errors | This parameter specifies the number of open fail PDUs received. |
| Close PDU | This parameter specifies the number of close PDUs received. |
| Response PDU | This parameter specifies the number of response PDUs received. |

VLAN

The VLAN link allows you to view VLAN statistics through the following pages:

- [Current DB](#)
- [VLAN Port Statistics](#)
- [VLAN Multicast Table](#)
- [VLAN Counter Statistics](#)
- [VLAN Capabilities](#)
- [VLAN FDB Entries](#)

Current DB**Figure 5-170. VLAN Current Database Page**

The screenshot shows the SUPERMICR web management utility interface. The main content area displays the 'VLAN Current Database' page. The page title is 'VLAN Current Database'. Below the title is a table with the following data:

| VLAN ID | VLAN FDB ID | Member Ports | Untagged Ports | Status |
|---------|-------------|------------------|------------------|-----------|
| 1 | 1 | G0/1-16, Ex0/1-3 | G0/1-16, Ex0/1-3 | Permanent |

The left sidebar shows a navigation menu with 'CurrentDB' selected. The top navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'.

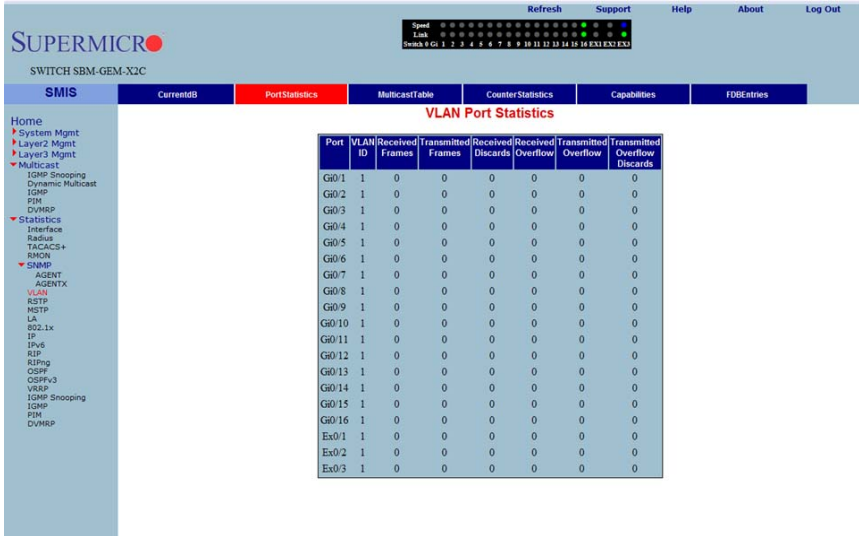
Clicking the CURRENT DB tab brings up the VLAN CURRENT DATABASE page (Figure 5-170), which displays VLAN database entries. The parameters for this page are shown in Table 5-142.

Table 5-142. VLAN Current Database Page Parameters

| Parameter | Description |
|----------------|---|
| VLAN ID | This parameter specifies the VLAN identifier. |
| VLAN FDB ID | This parameter specifies the VLAN filter database identifier. |
| Member Ports | This parameter specifies the index of member ports. |
| Untagged Ports | This parameter specifies the index of untagged member ports. |
| Status | This parameter specifies the VALN status. |

VLAN Port Statistics

Figure 5-171. VLAN Port Statistics Page



Clicking the PORT STATISTICS tab brings up the VLAN PORT STATISTICS page (Figure 5-171), which displays the various parameters XXXXXX. The parameters for this page are shown in Table 5-143.

Table 5-143. VLAN Port Statistics Page Parameters

| Parameter | Description |
|-------------------------------|--|
| Port | This parameter specifies the port index. |
| VLAN ID | This parameter specifies the VLAN identifier. |
| Received Frames | This parameter specifies the number of packets received in this VLAN. |
| Transmitted Frames | This parameter specifies the number of packets transmitted in this VLAN. |
| Received Discards | This parameter specifies the number of received packets discarded. |
| Received Overflow | This parameter specifies the number of received overflow packets. |
| Transmitted Overflow | This parameter specifies the number of transmit overflows. |
| Transmitted Overflow Discards | This parameter specifies the number of transmit overflow discards. |

VLAN Multicast Table

Figure 5-172. VLAN Multicast Table Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there is a navigation bar with 'SMIS' selected and other tabs like 'CurrentDB', 'PortStatistics', 'Multicast Table', 'Counter Statistics', 'Capabilities', and 'FDBEntries'. The 'Multicast Table' tab is active, displaying the 'VLAN Multicast Table' page. The page title is 'VLAN Multicast Table' and the search criteria are 'VLAN ID|Address|Egress Ports|Ports Learnt'. The left sidebar shows a tree view with 'Multicast' expanded to 'VLAN Multicast Table'. The top right corner has 'Refresh', 'Support', 'Help', 'About', and 'Log Out' buttons. A status bar at the top shows 'Speed Link' and a row of 24 status indicators.

Clicking the MULTICAST TABLE tab brings up the VLAN MULTICAST TABLE page (Figure 5-172), which displays multicast VLAN information. The parameters for this page are shown in Table 5-144.

Table 5-144. VLAN Multicast Table Page Parameters

| Parameter | Description |
|--------------|--|
| VLAN ID | This parameter specifies the VLAN identifier. |
| Address | This parameter specifies the VLAN address. |
| Egress Ports | This parameter specifies the indexes of egress ports. |
| Ports Learnt | This parameter specifies the indexes of ports on this VLAN that are learned. |

VLAN Counter Statistics

Figure 5-173. VLAN Counter Statistics Page



Clicking the COUNTER STATISTICS link brings up the VLAN COUNTER STATISTICS page (Figure 5-173), which displays VLAN counters. The parameters for this page are shown in Table 5-145.

Table 5-145. VLAN Counter Statistics Page Parameters

| Parameter | Description |
|-------------------------|--|
| VLAN ID | This parameter specifies the VLAN identifier. |
| Unicast Frames Rx | This parameter specifies the number of unicast packets received. |
| Mcast/Bcast Frames Rx | This parameter specifies the number of non-unicast packets received. |
| Unknown Unicast Flooded | This parameter specifies the number of packets flooded due to unknown unicast. |
| Unicast frames Tx | This parameter specifies the number of unicast packets transmitted. |
| Broadcast frames Tx | This parameter specifies the number of broadcast packets transmitted. |

VLAN Capabilities

Figure 5-174. VLAN Capabilities Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there is a navigation bar with 'Refresh', 'Support', 'Help', 'About', and 'Log Out' buttons. Below this is a status bar showing 'Speed Link' and a row of 24 status indicators. The main content area is titled 'VLAN Capabilities' and contains a list of parameters:

- Extended filtering services
- Traffic classes
- Static Entry Individual port
- IVL capable
- SVL capable
- Hybrid capable
- Configurable Pvid Tagging

The left sidebar contains a navigation menu with the following items:

- Home
- System Mgmt
- Layer2 Mgmt
- Layer3 Mgmt
- Multicast
 - IGMP Snooping
 - Dynamic Multicast
 - IGMP
 - PIM
 - DVHRP
- Statistics
- Interface
 - Radius
 - TACACS+
 - RMON
- SNMP
 - AGENT
 - AGENTX
- VLAN
- RSTP
- MSTP
- LA
- 802.1x
- IP
- IPv6
- RIP
- RIPng
- OSPF
- OSPFv3
- VRRP
- IGMP Snooping
- IGMP
- PIM
- DVHRP

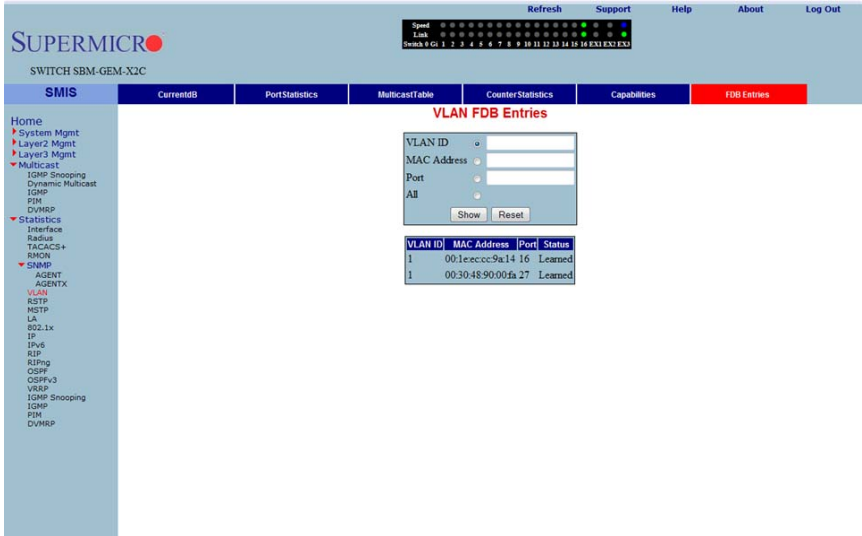
Clicking the CAPABILITIES tab brings up the VLAN CAPABILITIES page (Figure 5-174), which displays the VLAN capabilities of the switch. The parameters for this page are shown in Table 5-146.

Table 5-146. VLAN Capabilities Page Parameters

| Parameter | Description |
|------------------------------|---|
| Extended Filtering Services | This parameter specifies the number of extended filtering services. |
| Traffic Classes | This parameter specifies the number of traffic classes |
| Static Entry Individual port | This parameter specifies the number of Static Entry Individual ports. |
| IVL capable | This parameter specifies the number of IVL capables. |
| SVL capable | This parameter specifies the number of SVL capables. |
| Hybrid capable | This parameter specifies the number of Hybrid capables. |
| Configurable PVID Tagging | This parameter specifies the number of Configurable PVID taggings. |

VLAN FDB Entries

Figure 5-175. VLAN FDB Entries Page



Clicking the FDB ENTRIES tab brings up the VLAN FDB ENTRIES page (Figure 5-175), which displays VLAN filter database entries. The parameters for this page are shown in Table 5-147.

Table 5-147. VLAN FDB Entries Page Parameters

| Parameter | Description |
|-------------|---|
| VLAN ID | This parameter specifies the VLAN identifier. |
| MAC Address | This parameter specifies the MAC address learned. |
| Port | This parameter specifies the Index of port where this entry is learned. |
| Status | This parameter specifies the Status of this entry. |

RSTP Statistics

The RSTP STATISTICS link allows you to view RSTP statistics through the following pages:

- [RSTP Information](#)
- [RSTP Port Statistics](#)

RSTP Information

Figure 5-176. RSTP Information Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are links for 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. Below the navigation menu, the 'Information' tab is selected. The main content area displays 'RSTP Information' with a table of parameters.

| Context Id | Protocol Specification | Time Since Topology Change | Designated Root | Root Brg Priority | Root Cost | Root Port | Max Age | Hello Time | Hold Time | Forward Delay |
|------------|------------------------|----------------------------|-----------------|-------------------|-----------|-----------|---------|------------|-----------|---------------|
|------------|------------------------|----------------------------|-----------------|-------------------|-----------|-----------|---------|------------|-----------|---------------|

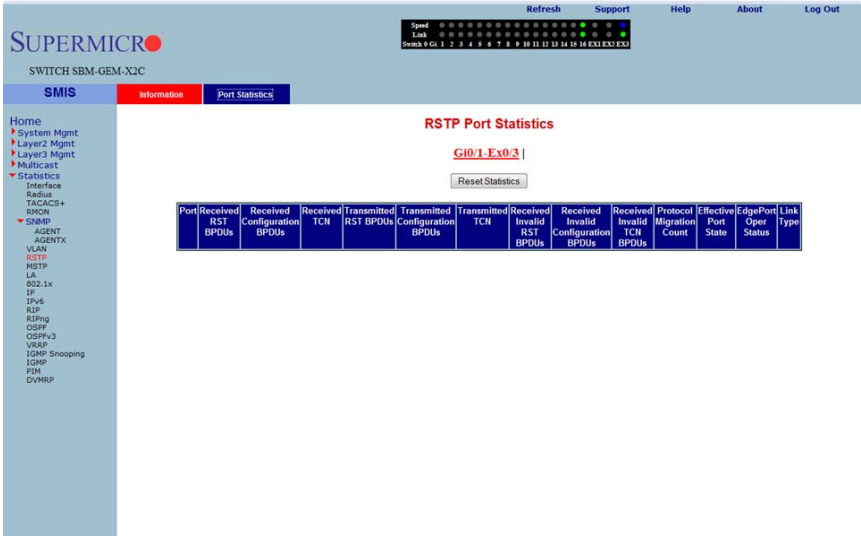
Clicking the INFORMATION tab brings up the RSTP INFORMATION page (Figure 5-176), which displays RSTP statistics. The parameters for this page are shown in Table 5-148.

Table 5-148. RSTP Information Page Parameters

| Parameter | Description |
|----------------------------|--|
| Protocol Specification | This parameter specifies the Protocol Specification. |
| Time Since Topology Change | This parameter specifies the number of seconds since topology changed. |
| Designated Root | This parameter specifies the designated root bridge address. |
| Root Brg Priority | This parameter specifies the priority of root bridge. |
| Root Cost | This parameter specifies the cost to root. |
| Root Port | This parameter specifies the index of the root port. |
| Max Age | This parameter specifies the max age in seconds. |
| Hello Time | This parameter specifies the Hello time in seconds. |
| Hold Time | This parameter specifies the hold time in seconds. |
| Forward Delay | This parameter specifies the forward delay in seconds. |

RSTP Port Statistics

Figure 5-177. RSTP Port Statistics Page



Clicking the PORT STATISTICS tab brings up the RSTP PORT STATISTICS page (Figure 5-177), which displays RSTP port level statistics. The parameters for this page are shown in Table 5-149.

Table 5-149. RSTP Port Statistics Page Parameters

| Parameter | Description |
|---------------------------------|---|
| Port | This parameter specifies the port index. |
| Received RST BPDUs | This parameter specifies the number of RSTP BPDUs received. |
| Received Configuration BPDUs | This parameter specifies the number of config BPDUs received. |
| Received TCN | This parameter specifies the number of topology changed notifications received. |
| Transmitted RST BPDUs | This parameter specifies the number of RSTP BPDUs transmitted. |
| Transmitted Configuration BPDUs | This parameter specifies the number of config BPDUs transmitted. |
| Transmitted TCN | This parameter specifies the number of topology change notifications transmitted. |
| Received Invalid RST BPDUs | This parameter specifies the number of invalid RSTP BPDUs received. |

Table 5-149. RSTP Port Statistics Page Parameters (Continued)

| Parameter | Description |
|--------------------------------------|--|
| Received Invalid Configuration BPDUs | This parameter specifies the number of invalid configuration BPDUs received. |
| Received Invalid TCN BPDUs | This parameter specifies the number of invalid topology change BPDUs received. |
| Protocol Migration Count | This parameter specifies the number of times protocol migration happened. |
| Effective Port State | This parameter specifies the effective port state. |
| EdgePort Oper Status | This parameter specifies the operational status of edge port. |
| Link Type | This parameter specifies the broadcast or point-to-point. |

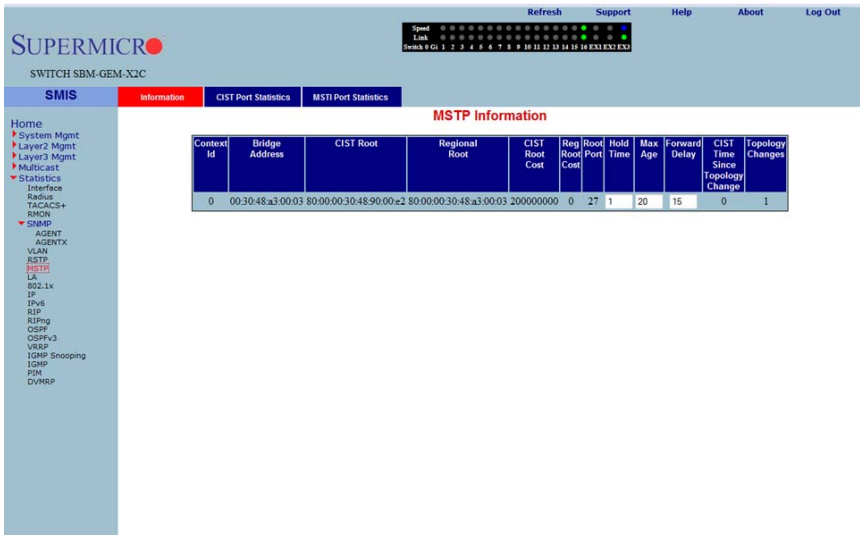
MSTP Statistics

The MSTP Statistics link allows you to view MSTP statistics through the following pages:

- [MSTP Information](#)
- [MSTP CIST Statistics](#)
- [MSTP MSTI Port Statistics](#)

MSTP Information

Figure 5-178. MSTP Information Page



Clicking the INFORMATION tab brings up the MSTP INFORMATION page (Figure 5-134), which displays MSTP statistics. The parameters for this page are shown in Table 5-13.

Table 5-150. MSTP Information Page Parameters

| Parameter | Description |
|---------------------------------|---|
| Bridge Address | This parameter specifies the Bridge Address. |
| CIST Root | This parameter specifies the CIST root. |
| Regional Root | This parameter specifies the Regional root. |
| CIST Root Cost | This parameter specifies the CIST root cost. |
| Regional Root Cost | This parameter specifies the Regional root cost. |
| Root Port | This parameter specifies the index of the root port. |
| Hold Time | This parameter specifies the hold time in seconds. |
| Max Age | This parameter specifies the maximum age in seconds. |
| Forward Delay | This parameter specifies the forward delay in seconds. |
| CIST Time Since Topology Change | This parameter specifies the number of seconds since topology last changed. |
| Topology Changes | This parameter specifies the number of topology changes. |

MSTP CIST Statistics

Figure 5-179. MSTP CIST Port Statistics Page

The screenshot shows the SUPERMICR web interface for a switch (SWM-GEM-X2C). The 'MSTP CIST Port Statistics' tab is selected, displaying a table of statistics for various ports. The table has 14 columns: Port, Received MST BPDUs, Received RST BPDUs, Received Config BPDUs, Received TCN BPDUs, Transmitted MST BPDUs, Transmitted RST BPDUs, Transmitted Config BPDUs, Transmitted TCN BPDUs, Received Invalid MST BPDUs, Received Invalid RST BPDUs, Received Invalid Config BPDUs, Received Invalid TCN BPDUs, and Protocol Migration Count. The data shows that for most ports, all values are 0. However, for port G0/16, the 'Transmitted MST BPDUs' value is 485. For port Eto/2, the 'Received MST BPDUs' value is 0.

| Port | Received MST BPDUs | Received RST BPDUs | Received Config BPDUs | Received TCN BPDUs | Transmitted MST BPDUs | Transmitted RST BPDUs | Transmitted Config BPDUs | Transmitted TCN BPDUs | Received Invalid MST BPDUs | Received Invalid RST BPDUs | Received Invalid Config BPDUs | Received Invalid TCN BPDUs | Protocol Migration Count |
|-------|--------------------|--------------------|-----------------------|--------------------|-----------------------|-----------------------|--------------------------|-----------------------|----------------------------|----------------------------|-------------------------------|----------------------------|--------------------------|
| G0/0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G0/16 | 0 | 0 | 0 | 0 | 485 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eto/1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eto/2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

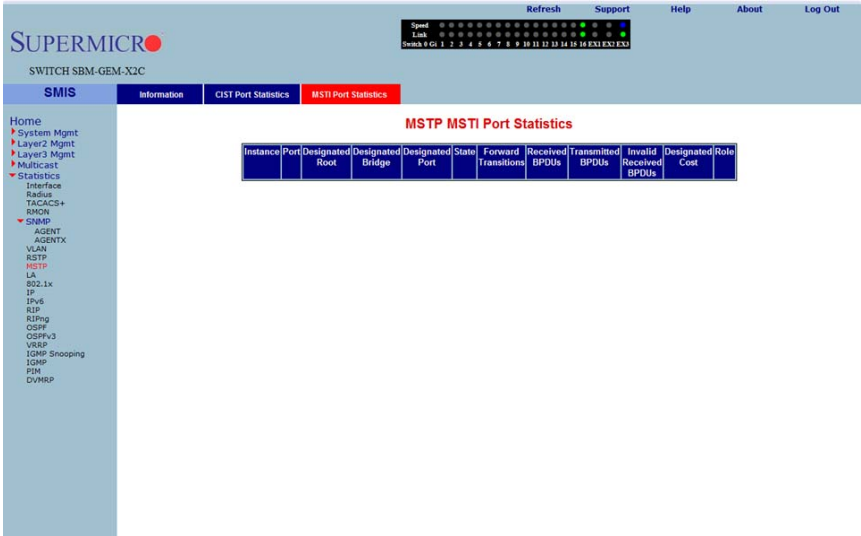
Clicking the CIST PORT STATISTICS tab brings up the MSTP CIST PORT STATISTICS page (Figure 5-179), which displays STP CIST port level statistics. The parameters for this page are shown in Table 5-151.

Table 5-151. MSTP CIST Port Statistics Page Parameters

| Parameter | Description |
|-------------------------------|--|
| Received MST BPDUs | This parameter specifies the number of MSTP BPDUs received. |
| Received RST BPDUs | This parameter specifies the number of RSTP BPDUs received. |
| Received Config BPDUs | This parameter specifies the number of config BPDUs received. |
| Received TCN BPDUs | This parameter specifies the number of topology change notification BPDUs received. |
| Transmitted MST BPDUs | This parameter specifies the number of MSTP BPDUs transmitted. |
| Transmitted RST BPDUs | This parameter specifies the number of RSTP BPDUs transmitted. |
| Transmitted Config BPDUs | This parameter specifies the number of config BPDUs transmitted. |
| Transmitted TCN BPDUs | This parameter specifies the number of topology change notification BPDUs transmitted. |
| Received Invalid MST BPDUs | This parameter specifies the number of invalid MSTP BPDUs received. |
| Received Invalid RST BPDUs | This parameter specifies the number of invalid RSTP BPDUs received. |
| Received Invalid Config BPDUs | This parameter specifies the number of invalid config BPDUs received. |
| Received Invalid TCN BPDUs | This parameter specifies the number of invalid TCN BPDUs received. |
| Protocol Migration Count | This parameter specifies the number of times protocol migration happened. |

MSTP MSTI Port Statistics

Figure 5-180. MSTP MSTI Port Statistics Page



Clicking the MSTI PORT STATISTICS tab brings up the MSTP MSTI PORT STATISTICS page (Figure 5-180), which displays MSTP MSTI port level statistics. The parameters for this page are shown in Table 5-152.

Table 5-152. MSTP MSTI Port Statistics Page Parameters

| Parameter | Description |
|------------------------|---|
| Instance | This parameter specifies the MSTP instance Identifier. |
| Port | This parameter specifies the port index. |
| Designated Root | This parameter specifies the designated root bridge address. |
| Designated Bridge | This parameter specifies the designated Bridge address. |
| Designated Port | This parameter specifies the index of designated port for this MSTP instance. |
| State | This parameter specifies the current state. |
| Forward Transitions | This parameter specifies the number of Forward Transitions. |
| Received BPDUs | This parameter specifies the number of BPDUs received. |
| Transmitted BPDUs | This parameter specifies the number of BPDUs transmitted. |
| Invalid Received BPDUs | This parameter specifies the number of invalid BPDUs received. |
| Designated Cost | This parameter specifies the designated cost. |
| Role | This parameter specifies the current role. |

Link Aggregation (LA)

The Link Aggregation link allows you to view Link Aggregation (LA) statistics through the following pages:

- [LA Port Statistics](#)
- [LA Neighbor Statistics](#)

LA Port Statistics

Figure 5-181. LA Port Statistics Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are navigation links: Refresh, Support, Help, About, and Log Out. Below the logo, the device is identified as 'SWITCH SBM-GEM-X2C'. The main navigation bar includes 'SMIS', 'PortLACP Stats' (selected), and 'Neighbor Stats'. The left sidebar contains a tree view of configuration categories: Home, System Mgmt, Layer2 Mgmt, Layer3 Mgmt, Multicast, and Statistics. Under Statistics, several sub-categories are listed, including Interface, Radius, RMON, SNMP, AGENT, AGENTX, VLAN, RSTP, MSTP, L2L, 802.1x, IP, IPv6, RIP, RIPv2, CSRP, OSPFv3, VRRP, IGMP Snooping, IGMP, PIM, and DVHRP. The main content area is titled 'LA Port Statistics' and shows a link for 'G10/1-Ex0/3'. Below this is a table with the following data:

| Port | Received PDUs | Received Marker PDUs | Received Marker Response | Received Unknown PDUs | Received Illegal PDUs | Transmitted PDUs | Transmitted Marker PDUs | Transmitted Marker Response |
|--------|---------------|----------------------|--------------------------|-----------------------|-----------------------|------------------|-------------------------|-----------------------------|
| G10/1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G10/16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ex0/1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ex0/2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ex0/3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Clicking the PORT LACP STATS tab brings up the LA PORT STATISTICS page (Figure 5-181), which displays LACP port level statistics. The parameters for this page are shown in Table 5-153.

Table 5-153. LA Port Statistics Page Parameters

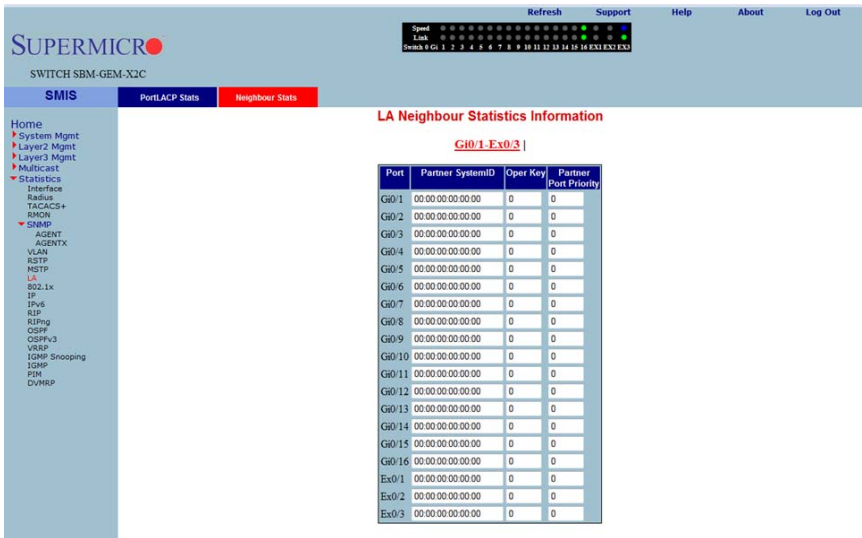
| Parameter | Description |
|--------------------------|---|
| Port | This parameter specifies the port index. |
| Received PDUs | This parameter specifies the number of LACP PDUs received. |
| Received Marker PDUs | This parameter specifies the number of Marker PDUs received. |
| Received Marker Response | This parameter specifies the number of Marker response PDUs received. |
| Received Unknown PDUs | This parameter specifies the number of unknown PDUs received. |

Table 5-153. LA Port Statistics Page Parameters (Continued)

| Parameter | Description |
|-----------------------------|--|
| Received Illegal PDUs | This parameter specifies the number of invalid PDUs received. |
| Transmitted PDUs | This parameter specifies the number of LACP PDUs transmitted. |
| Transmitted Marker PDUs | This parameter specifies the number of Marker PDUs transmitted. |
| Transmitted Marker Response | This parameter specifies the number of Marker response PDUs transmitted. |

LA Neighbor Statistics

Figure 5-182. LA Neighbor Statistics Information Page



Clicking the NEIGHBOR STATS tab brings up the LA NEIGHBOR STATISTICS INFORMATION page (Figure 5-182), which displays LACP neighbor statistics. The parameters for this page are shown in Table 5-154.

Table 5-154. LA Neighbor Statistics Information Page Parameters

| Parameter | Description |
|-----------------------|---|
| Port Index | This parameter specifies the port index. |
| Partner SystemID | This parameter specifies the Partner SystemID. |
| Oper Key | This parameter specifies the Oper Key. |
| Partner Port Priority | This parameter specifies the Partner Port Priority. |

802.1X

The 802.1x link allows you to view 802.1x statistics through the following pages:

- [802.1X Session Statistics](#)
- [802.1X Supplicant Statistics](#)
- [Mac Session Statistics](#)

802.1X Session Statistics

Figure 5-183. 802.1x Session Statistics Page

The screenshot shows the '802.1x Session Statistics' page. At the top, there is a navigation bar with 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. Below that is a status bar with 'Spent Link' and a progress indicator. The main content area has a sidebar on the left with a tree view of navigation options, including 'Home', 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', 'Statistics', and various protocols like RADIUS, TACACS+, RMON, SNMP, AGENT, AGENTX, VLAN, RSTP, MSTP, LLDP, 802.1X, IP, IPv6, RIP, RIPv2, OSPF, OSPFv3, VRRP, IGMP Snooping, IGMP, PIM, and DVRRP. The main content area is titled '802.1x Session Statistics' and shows a table for interface 'Gi0/1-Ex0/3'.

| Port | Session ID | Received Frames | Transmitted Frames | Session Time (secs) | Session Terminate Cause | User Name |
|--------|------------|-----------------|--------------------|---------------------|-------------------------|-----------|
| Gi0/1 | 1-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/2 | 2-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/3 | 3-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/4 | 4-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/5 | 5-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/6 | 6-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/7 | 7-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/8 | 8-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/9 | 9-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/10 | 10-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/11 | 11-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/12 | 12-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/13 | 13-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/14 | 14-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/15 | 15-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Gi0/16 | 16-0 | 0 | 0 | 101100 | Not Terminated Yet | No User |
| Ex0/1 | 25-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Ex0/2 | 26-0 | 0 | 0 | 105400 | Admin Disabled | No User |
| Ex0/3 | 27-0 | 0 | 0 | 101300 | Not Terminated Yet | No User |

Clicking the SESSION STATS tab brings up the 802.1X SESSION STATISTICS page (Figure 5-183), which displays 802.1x statistics information. The parameters for this page are shown in Table 5-155.

Table 5-155. 802.1x Session Statistics Page Parameters

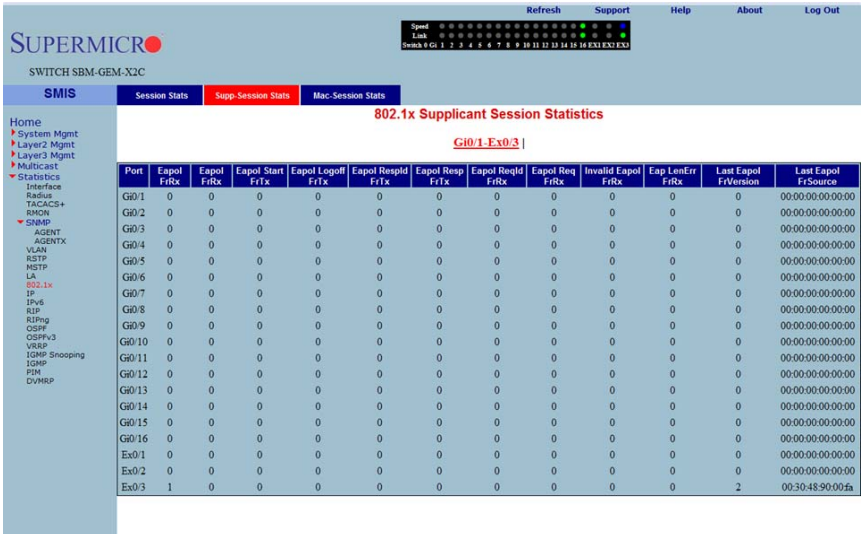
| Parameter | Description |
|---------------------|---|
| Port | This parameter specifies the port index. |
| Session ID | This parameter specifies the session identifier. |
| Received Frames | This parameter specifies the number of packets received. |
| Transmitted Frames | This parameter specifies the number of packets transmitted. |
| Session Time (secs) | This parameter specifies the session time in seconds. |

Table 5-155. 802.1x Session Statistics Page Parameters (Continued)

| Parameter | Description |
|-------------------------|--|
| Session Terminate Cause | This parameter specifies the reason for session termination. |
| User Name | This parameter specifies the name of the user authenticated. |

802.1X Supplicant Statistics

Figure 5-184. 802.1x Supplicant Session Statistics Page



Clicking the SUPP SESSION STATS tab brings up the 802.1X SUPPLICANT SESSION STATISTICS page (Figure 5-184), which displays information about the 802.1x supplicant session. The parameters for this page are shown in Table 5-156.

Table 5-156. 802.1x Supplicant Session Statistics Page Parameters

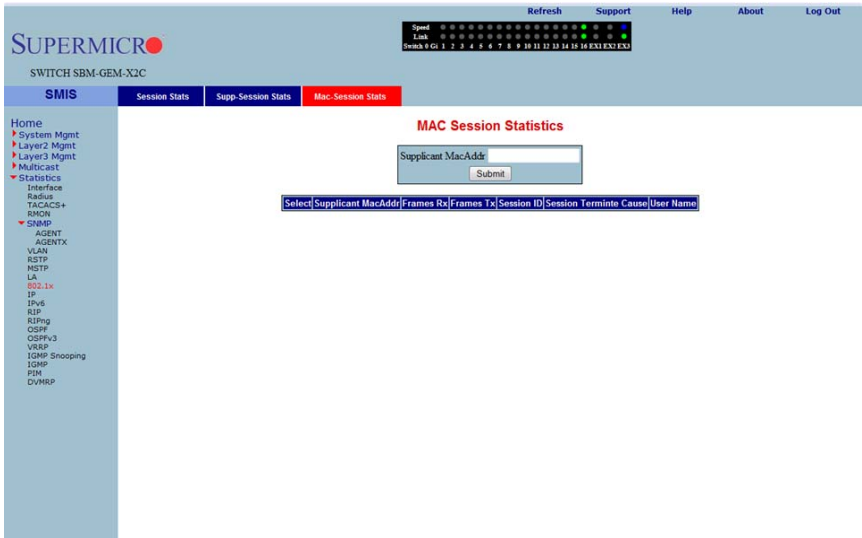
| Parameter | Description |
|-------------------|--|
| Port | This parameter specifies the port index. |
| Eapol FrRx | This parameter specifies the number of the EAPOL packets received. |
| Eapol FrTx | This parameter specifies the number of the EAPOL packets transmitted. |
| Eapol Start FrTx | This parameter specifies the number of the EAPOL start packet transmitted. |
| Eapol Logoff FrTx | This parameter specifies the number of the EAPOL logoff packet transmitted. |
| Eapol Respld FrTx | This parameter specifies the number of the EAPOL response identifier packet transmitted. |

Table 5-156. 802.1x Supplicant Session Statistics Page Parameters (Continued)

| Parameter | Description |
|----------------------|---|
| Eapol Resp FrTx | This parameter specifies the number of the EAPOL response packet frame transmitted. |
| Eapol ReqId FrRx | This parameter specifies the number of the EAPOL request identifier packet received. |
| Eapol Req FrRx | This parameter specifies the number of the EAPOL request frame received. |
| Invalid Eapol FrRx | This parameter specifies the number of the invalid EAPOL frame received. |
| Eap LenErr FrRx | This parameter specifies the number of EAPOL packets received with an invalid length. |
| Last Eapol FrVersion | This parameter specifies the version on the last EAPOL packet. |
| Last Eapol FrSource | This parameter specifies the source of the last EAPOL packet. |

Mac Session Statistics

Figure 5-185. MAC Session Statistics Page



Clicking the MAC SESSION STATS tab brings up the MAC SESSION STATISTICS page (Figure 5-185), which displays statistics information about 802.1x MAC sessions. The parameters for this page are shown in Table 5-157.

Table 5-157. MAC Session Statistics Page Parameters

| Parameter | Description |
|-------------------------|--|
| Supplicant MacAddr | This parameter specifies the supplicant MAC address. |
| Frames Rx | This parameter specifies the number of packets received. |
| Frames Tx | This parameter specifies the number of packets transmitted. |
| Session ID | This parameter specifies the session identifier. |
| Session Terminate Cause | This parameter specifies the reason for session termination. |
| User Name | This parameter specifies the name of user authenticated. |

IP

The IP link allows you to view IP statistics through the following pages:

- [ARP Cache](#)
- [ICMP Statistics](#)

ARP Cache

Figure 5-186. ARP Cache Page

The screenshot shows the Supermicro web management utility interface. At the top, there is a navigation bar with links for Refresh, Support, Help, About, and Log Out. Below this, the page title is "ARP Cache". A table displays the ARP cache entry:

| Interface | MAC Address | IP Address | Media Type |
|-----------|------------------|-----------------|------------|
| vlan1 | 00:1e:cccc:9a:14 | 192.168.100.125 | Dynamic |

The left sidebar contains a navigation menu with various system management options, including System Mgmt, Layer2 Mgmt, Layer3 Mgmt, Multicast, Statistics, Interface, Radius, TACACS+, RMON, SNMP, AGENT, AGENTX, VLAN, RSTP, MSTP, LLA, 802.1x, IP, IPv6, RIP, RIPv2, RIPv3, OSPF, OSPFv3, VRBP, ICMP Snooping, ICMP, PIM, and DVRRP.

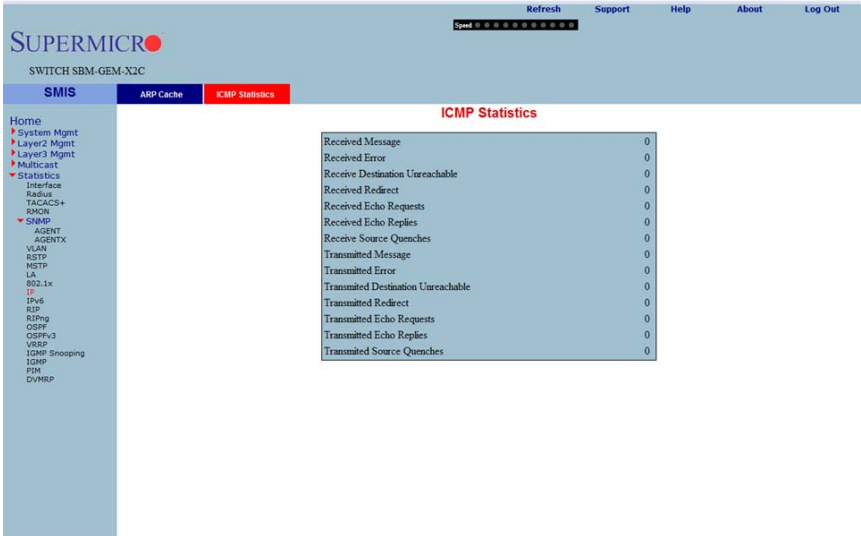
Clicking the ARP CACHE tab brings up the ARP CACHE page (Figure 5-186), which displays ARP entries. The parameters for this page are shown in Table 5-158.

Table 5-158. ARP Cache Page Parameters

| Parameter | Description |
|-------------|--|
| Interface | This parameter specifies the interface from which this ARP entry is learned. |
| MAC Address | This parameter specifies the MAC address. |
| IP Address | This parameter specifies the IP address. |
| Media Type | This parameter specifies the static ARP or dynamic ARP. |

ICMP Statistics

Figure 5-187. ICMP Statistics Page



Clicking the ICMP STATISTICS tab brings up the ICMP STATISTICS page (Figure 5-187), which displays ICMP statistics information. The parameters for this page are shown in Table 5-159.

Table 5-159. ICMP Statistics Page Parameters

| Parameter | Description |
|---------------------------------|---|
| Received Message | This parameter specifies the number of received messages. |
| Received Error | This parameter specifies the number of received errors. |
| Receive Destination Unreachable | This parameter specifies the number of received destination unreachables. |
| Received Redirect | This parameter specifies the number of received redirects. |
| Received Echo Requests | This parameter specifies the number of echo requests.. |
| Received Echo Replies | This parameter specifies the number of echo replies. |
| Receive Source Quenches | This parameter specifies the number of source quenches. |
| Transmitted Message | This parameter specifies the number of transmitted messages. |
| Transmitted Error | This parameter specifies the number of transmitted errors. |

Table 5-159. ICMP Statistics Page Parameters (Continued)

| Parameter | Description |
|-------------------------------------|---|
| Transmitted Destination Unreachable | This parameter specifies the number of transmitted destination unreachable. |
| Transmitted Redirect | This parameter specifies the number of transmitted redirects. |
| Transmitted Echo Requests | This parameter specifies the number of transmitted echo requests. |
| Transmitted Echo Replies | This parameter specifies the number of transmitted echo replies. |
| Transmitted Source Quenches | This parameter specifies the number of transmitted source quenches. |

IPv6

The IPv6 link allows you to view IPv6 statistics through the following pages:

- [IP V6 Interface Statistics](#)
- [ICMP V6 Statistics](#)

IP V6 Interface Statistics

Figure 5-188. IPV6 Interface Statistics Page

The screenshot shows the SUPERMICRO web management utility interface. At the top, there are navigation links: Refresh, Support, Help, About, and Log Out. Below the navigation is a status bar with a Speed Link indicator and a link to IPv6 statistics. The main content area is titled "IPv6 Interface Statistics" and displays a table of statistics for the IPv6 interface. The table has the following columns: Int, Rx, Hdr Err, Too Big Errs, Addr Errs, Fwd Dgrams, Unknown prot, Dis cards, Deliv, Out, Out Discards, Reasm Recqs, Reasm OKs, Reasm Fails, Frag OKs, Frag Fails, Frag Create, Rx Mcast Pkts, Tx Mcast Pkts, and Trunc Pkts. The table shows values for the 'vlan1' interface.

| Int | Rx | Hdr Err | Too Big Errs | Addr Errs | Fwd Dgrams | Unknown prot | Dis cards | Deliv | Out | Out Discards | Reasm Recqs | Reasm OKs | Reasm Fails | Frag OKs | Frag Fails | Frag Create | Rx Mcast Pkts | Tx Mcast Pkts | Trunc Pkts |
|-------|----|---------|--------------|-----------|------------|--------------|-----------|-------|-----|--------------|-------------|-----------|-------------|----------|------------|-------------|---------------|---------------|------------|
| vlan1 | 0 | 0 | 14340 | 0 | 0 | 0 | 1085 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15152163 | 0 |

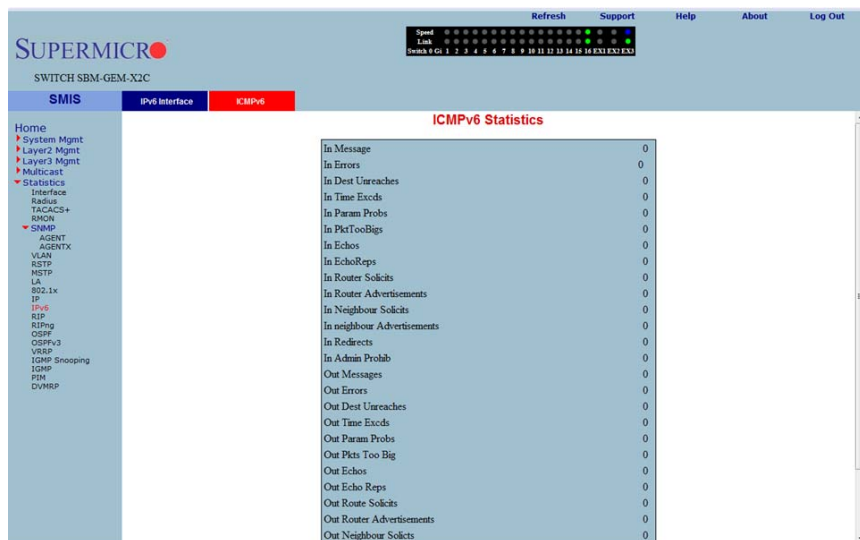
Clicking the IPV6 INTERFACE tab brings up the IPV6 INTERFACE STATISTICS page (Figure 5-188), which displays IPv6 port statistics. The parameters for this page are shown in Table 5-160.

Table 5-160. IPV6 Interface Statistics Page Parameters

| Parameter | Description |
|------------------|---|
| Interface | This parameter specifies the Port index. |
| Rcvd | This parameter specifies the number of IPv6 packets received. |
| Hdr Err | This parameter specifies the number of IPv6 packets received with header error. |
| Too Big Errs | This parameter specifies the number of too big IPv6 packets received. |
| Addr Errs | This parameter specifies the number of IPv6 packets received with address errors. |
| Fwd Dgrams | This parameter specifies the number of IPv6 datagrams forwarded in this port. |
| Unknown protos | This parameter specifies the number of packets received with unknown protocol. |
| Discdrs | This parameter specifies the number of received packets discarded due to errors. |
| Delivers | This parameter specifies the number of packets delivered. |
| Out Rqst | This parameter specifies the number of transmit requests. |
| Out Discards | This parameter specifies the number of transmit discards due to errors. |
| Out No Routes | This parameter specifies the number of packets to be transmitted but no routes. |
| Reasm Reqds | This parameter specifies the number of reassembly requests. |
| Reasm OKs | This parameter specifies the number or successful reassemblies. |
| Reasm Fails | This parameter specifies the number of reassemblies failed. |
| Frag OKs | This parameter specifies the number of good fragments received. |
| Frag Fails | This parameter specifies the number of fragments incompletely received. |
| Frag Creates | This parameter specifies the number of fragments created. |
| Rcvd Mcast Pkts | This parameter specifies the number of received IPv6 multicast packets. |
| Send Mcast Pkts | This parameter specifies the number of IPv6 multicast packets transmitted. |
| Trunctd Pkts | This parameter specifies the number of packets truncated. |

ICMP V6 Statistics

Figure 5-189. ICMPv6 Statistics Page



Clicking the ICMPv6 tab brings up the ICMPv6 STATISTICS page (Figure 5-189), which displays ICMPv6 statistics. The parameters for this page are shown in Table 5-161.

Table 5-161. ICMPv6 Statistics Page Parameters

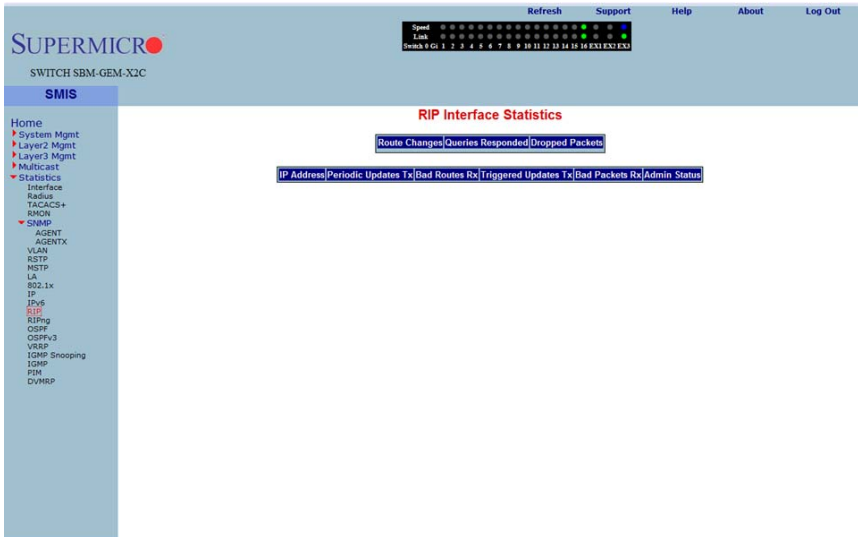
| Parameter | Description |
|----------------------------|---|
| In Message | This parameter specifies the number of messages received. |
| In Errors | This parameter specifies the number of messages received with errors. |
| In Dest Unreaches | This parameter specifies the number of destination unreachable messages received. |
| In Time Excds | This parameter specifies the number of receive timeouts. |
| In Param Probs | This parameter specifies the number of parameters probed. |
| In PktTooBigs | This parameter specifies the number of too big packets received. |
| In Echos | This parameter specifies the number of echo requests received. |
| In EchoReps | This parameter specifies the number of echo responses received. |
| In Router Solicits | This parameter specifies the number of received router solicit. |
| In Router Advertisements | This parameter specifies the number of routers advertisement received. |
| In Neighbor Solicits | This parameter specifies the number of received neighbor solicit. |
| In Neighbor Advertisements | This parameter specifies the number of received neighbor solicit. |

Table 5-161. ICMPv6 Statistics Page Parameters (Continued)

| Parameter | Description |
|------------------------------|--|
| In Redirects | This parameter specifies the number of redirect packets received. |
| In Admin Prohib | This parameter specifies the number of receive admin prohibited. |
| Out Messages | This parameter specifies the number of messages transmitted. |
| Out Errors | This parameter specifies the number of messages transmitted with errors. |
| Out Dest Unreaches | This parameter specifies the number of destination unreachable messages transmitted. |
| Out Time Excds | This parameter specifies the number of transmit timeouts. |
| Out Param Probs | This parameter specifies the number of parameters probed. |
| Out Pkts Too Big | This parameter specifies the number of too big packets transmitted. |
| Out Echos | This parameter specifies the number of echo requests transmitted. |
| Out Echo Reps | This parameter specifies the number of echo responses transmitted. |
| Out Route Solicits | This parameter specifies the number of transmitted router solicits. |
| Out Router Advertisements | This parameter specifies the number of transmitted neighbor solicits. |
| Out Neighbour Solicits | This parameter specifies the number of transmitted neighbor solicits. |
| Out Neighbour Advertisements | This parameter specifies the number of transmitted neighbor solicits. |
| Out Redirects | This parameter specifies the number of redirect packets transmitted. |
| Out Admin Prohib | This parameter specifies the number of transmit admin prohibited. |
| In Bad Code | This parameter specifies the number of bad code packets. |

RIP Statistics

Figure 5-190. RIP Interface Statistics Page



Clicking the RIP link brings up the RIP INTERFACE STATISTICS page (Figure 5-190), which displays RIP statistics. The parameters for this page are shown in Table 5-162.

Table 5-162. RIP Interface Statistics Page Parameters

| Parameter | Description |
|----------------------|---|
| IP Address | This parameter specifies the IP address. |
| Received Bad Packets | This parameter specifies the number of received bad packets. |
| Received Bad Routes | This parameter specifies the number of received bad routes. |
| Transmitted Updates | This parameter specifies the the number of transmitted updates. |

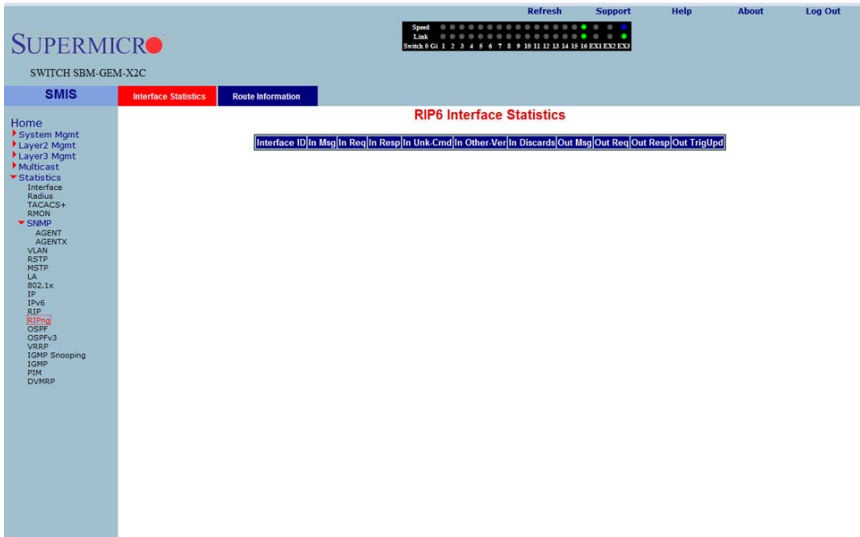
RIP6

The RIP6 link allows you to view RIP6 statistics through the following pages:

- [RIP6 Interface Statistics](#)
- [RIP6 Route Information](#)

RIP6 Interface Statistics

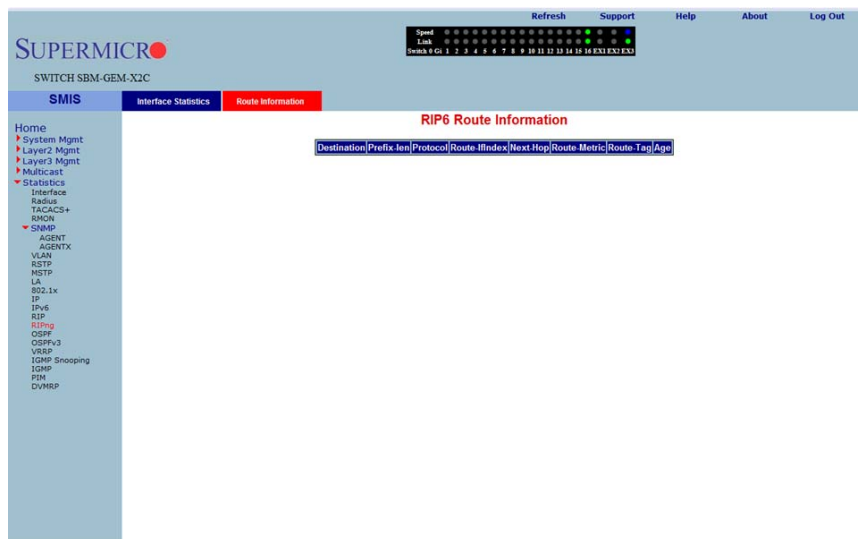
Figure 5-191. RIP6 Interface Statistics Page



Clicking the INTERFACE STATISTICS tab brings up the RIP6 INTERFACE STATISTICS page (Figure 5-191), which displays RIPng statistics. The parameters for this page are shown in Table 5-163.

Table 5-163. RIP6 Interface Statistics Page Parameters

| Parameter | Description |
|--------------|--|
| Interface ID | This parameter specifies the interface identifier. |
| In Msg | This parameter specifies the number of RIPng packets received. |
| In Req | This parameter specifies the number of RIPng request packets received. |
| In Resp | This parameter specifies the number of RIPng response packets received. |
| In Unk-Cmd | This parameter specifies the number of RIPng unknown command packets received. |
| In Other-Ver | This parameter specifies the number of RIPng other version packets received. |
| In Discards | This parameter specifies the number of received packets discarded. |
| Out Msg | This parameter specifies the number of RIPng packets transmitted. |
| Out Req | This parameter specifies the number of RIPng request packets transmitted. |
| Out Resp | This parameter specifies the number of RIPng response packets transmitted. |
| Out TrigUpd | This parameter specifies the number of RIPng triggered updates transmitted. |

RIP6 Route Information**Figure 5-192. RIP6 Route Information Page**

Clicking the ROUTE INFORMATION tab brings up the RIP6 ROUTE INFORMATION page (Figure 5-192), which displays information about RIPng routes. The parameters for this page are shown in Table 5-164.

Table 5-164. RIP6 Route Information Page Parameters

| Parameter | Description |
|---------------|--|
| Destination | This parameter specifies the route destination. |
| Prefix-len | This parameter specifies the length of the route prefix. |
| Protocol | This parameter specifies the routing protocol |
| Route-IfIndex | This parameter specifies the interface index. |
| Next-Hop | This parameter specifies the next hop for this route. |
| Route-Metric | This parameter specifies the metric of this route. |
| Route-Tag | This parameter specifies the route tag identifier. |
| Age | This parameter specifies the route age in seconds. |

OSPF

The OSPF link allows you to view OSPF statistics through the following pages:

- [OSPF Route Information](#)
- [OSPF Link State DB](#)

OSPF Route Information

Figure 5-193. OSPF Route Information Page



Clicking the ROUTE INFORMATION tab brings up the OSPF ROUTE INFORMATION page (Figure 5-193), which displays information about OSPF routes. The parameters for this page are shown in Table 5-165.

Table 5-165. OSPF Route Information Page Parameters

| Parameter | Description |
|-------------|---|
| IP Address | This parameter specifies the IP address. |
| Subnet Mask | This parameter specifies the Subnet Mask. |
| TOS | This parameter specifies the TOS. |
| Gateway | This parameter specifies the gateway. |
| Type | This parameter specifies the type. |
| Area ID | This parameter specifies the Area ID. |
| Cost | This parameter specifies the cost. |
| Type 2 Cost | This parameter specifies the Type 2 cost. |
| Interface | This parameter specifies the interface. |

OSPF Link State DB

Figure 5-194. OSPF Link State Database Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are navigation links: Refresh, Support, Help, About, and Log Out. Below the navigation is a status bar with 'Speed' and 'Link' indicators. The main content area is titled 'OSPF Link State Database' and displays a table with the following header: 'Area ID|Type|Link State ID|Router ID|Sequence|Checksum|Age'. The table content is mostly obscured by a black box.

Clicking the LINK STATE DATABASE tab brings up the OSPF LINK STATE DATABASE page (Figure 5-194), which displays information about OSPF link state database. The parameters for this page are shown in Table 5-166.

Table 5-166. OSPF Link State Database Page Parameters

| Parameter | Description |
|---------------|--|
| Area ID | This parameter specifies the area identifier. |
| Type | This parameter specifies the link state type. |
| Link State ID | This parameter specifies the link state identifier. |
| Router ID | This parameter specifies the router identifier. |
| Sequence | This parameter specifies the sequence number of this link state information. |
| Checksum | This parameter specifies the checksum. |
| Age | This parameter specifies the link state information age in seconds. |

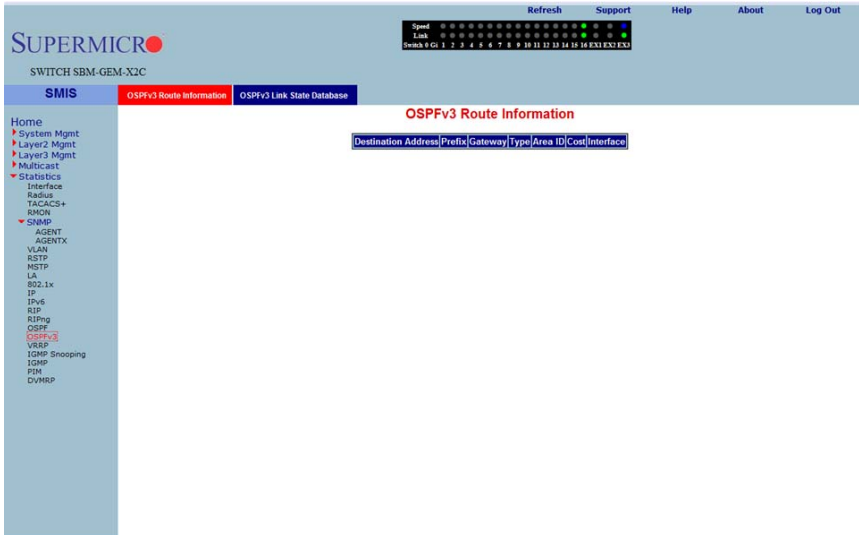
OSPFv3

The OSPFv3 link allows you to view OSPFv3 statistics through the following pages:

- [OSPFV3 Route Information](#)
- [OSPFV3 Link State DB](#)

OSPFV3 Route Information

Figure 5-195. OSPFV3 Route Information Page



Clicking the OSPFV3 ROUTE INFORMATION tab brings up the OSPFV3 ROUTE INFORMATION page (Figure 5-195), which displays information about OSPFV3 routes. The parameters for this page are shown in Table 5-167.

Table 5-167. OSPFV3 Route Information Page Parameters

| Parameter | Description |
|---------------------|---|
| Destination Address | This parameter specifies the destination address. |
| Prefix | This parameter specifies the prefix. |
| Gateway | This parameter specifies the gateway. |
| Type | This parameter specifies the type. |
| Area ID | This parameter specifies the Area ID. |
| Cost | This parameter specifies the cost. |
| Interface | This parameter specifies the interface. |

OSPFV3 Link State DB

Figure 5-196. OSPFV3 Link State Database Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there is a navigation bar with 'Refresh', 'Support', 'Help', 'About', and 'Log Out' links. Below this, the page title is 'OSPFV3 Link State Database'. The main content area displays a table with the following columns: Area ID, Type, Link State ID, Router ID, Sequence, Checksum, and Age. The table is currently empty. On the left side, there is a navigation menu with various system management options, including 'OSPFV3' which is highlighted in red. The top left corner shows the SUPERMICR logo and the text 'SWITCH SBM-GEM-X2C'.

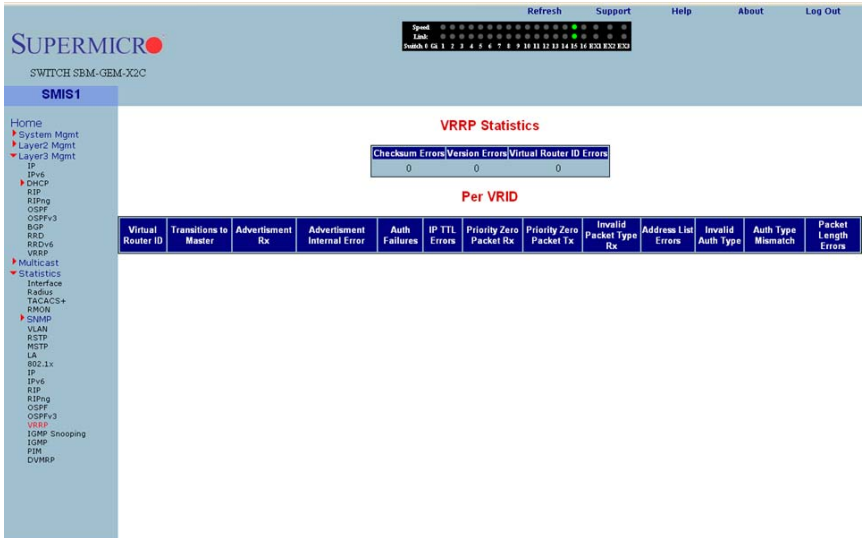
Clicking the OSPFV3 LINK STATE DATABASE tab brings up the OSPFV3 LINK STATE DATABASE page (Figure 5-196), which displays information about OSPF link state database. The parameters for this page are shown in Table 5-168.

Table 5-168. OSPFV3 Link State Database Page Parameters

| Parameter | Description |
|---------------|--|
| Area ID | This parameter specifies the area identifier. |
| Type | This parameter specifies the link state type. |
| Link State ID | This parameter specifies the link state identifier. |
| Router ID | This parameter specifies the router identifier. |
| Sequence | This parameter specifies the sequence number of this link state information. |
| Checksum | This parameter specifies the checksum. |
| Age | This parameter specifies the link state information age in seconds. |

VRRP Statistics

Figure 5-197. VRRP Statistics Page



Clicking the VRRP link brings up the VRRP STATISTICS page (Figure 5-197), which displays VRRP global statistics and VRRP router specific statistics. The parameters for this page are shown in Table 5-169.

Table 5-169. VRRP Statistics Page Parameters

| Parameter | Description |
|--|--|
| VRRP Global Statistics | |
| Checksum Errors | This parameter specifies the number of checksum errors. |
| Version Errors | This parameter specifies the number of version errors. |
| Virtual Router ID Errors | This parameter specifies the number of Virtual Router ID errors. |
| VRRP Router Specific Statistics | |
| Virtual Router ID | This parameter specifies the Virtual Router identifier. |
| Transitions to Master | This parameter specifies the number of transitions as Master. |
| Advertisement Receive | This parameter specifies the number of advertisement packets received. |
| Advertisement Internal Error | This parameter specifies the number of advertisement errors happened. |
| Authentication Failures | This parameter specifies the number of authentication failures. |
| IP TTL Errors | This parameter specifies the number of IP TTL errors happened. |

Table 5-169. VRRP Statistics Page Parameters (Continued)

| Parameter | Description |
|----------------------------------|---|
| Priority Zero Packet Received | This parameter specifies the number of priority zero packets received. |
| Priority Zero Packet Transmitted | This parameter specifies the number of priority zero packets transmitted. |
| Invalid Packet Type Received | This parameter specifies the number of invalid packets received. |
| Address List Errors | This parameter specifies the number of address list errors. |
| Invalid Authentication Type | This parameter specifies the number of invalid authentication types received. |
| Authentication Type Mismatch | This parameter specifies the number of authentication type mismatch received. |
| Packet Length Errors | This parameter specifies the number of VRRP packets received with invalid length. |

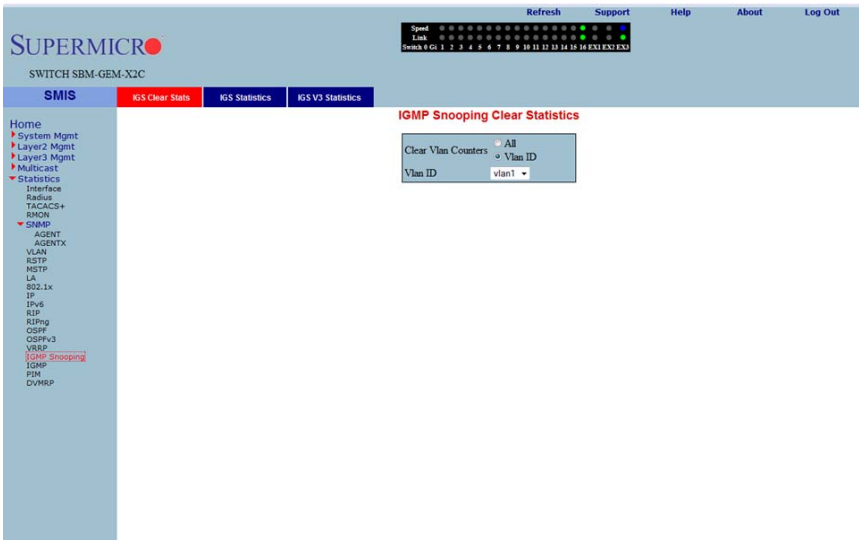
IGMP Snooping

The IGMP link allows you to view IGMP statistics through the following pages:

- [IGMP Snooping Clear Statistics](#)
- [IGMP Snooping V1/V2 Statistics](#)
- [IGMP Snooping V3 Statistics](#)

IGMP Snooping Clear Statistics

Figure 5-198. IGMP Snooping Clear Statistics Page



Clicking the IGS CLEAR STATS tab brings up the IGMP SNOOPING CLEAR STATISTICS page (Figure 5-198), which displays clearing IGMP snooping statistics. The parameters for this page are shown in Table 5-170.

Table 5-170. IGMP Snooping Clear Statistics Page Parameters

| Parameter | Description |
|-----------|--|
| All | This parameter gives you the option to clear all the IGMP statistics. |
| Vlan ID | This parameter give you the option to clear IGMP statistics for a particular VLAN. |

IGMP Snooping V1/V2 Statistics

Figure 5-199. IGMP Snooping V1/V2 Statistics Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there is a navigation bar with 'Refresh', 'Support', 'Help', 'About', and 'Log Out' links. Below this is a status bar with 'Speed' and 'Link' indicators. The main content area is titled 'IGMP Snooping V1/V2 Statistics' and contains a table with the following columns: VLAN ID, General Queries Received, Group Queries Received, Group and Source Queries Received, IGMP Reports Received, IGMP Leaves Received, IGMP Packets Dropped, General Queries Transmitted, Group Queries Transmitted, IGMP Reports Transmitted, and IGMP Leaves Transmitted. The table is currently empty. On the left side, there is a navigation menu with options like 'Home', 'System Mgmt', 'Layer2 Mgmt', 'Layer3 Mgmt', 'Multicast', 'Statistics', 'Interface', 'Radius', 'TACACS+', 'RMON', 'SNMP', 'AGENT', 'AGENTX', 'VLAN', 'RSTP', 'MSTP', 'LA', '802.1x', 'IP', 'IPv6', 'RIP', 'RIPng', 'OSPF', 'OSPFv3', 'VRRP', 'IGMP Snooping', 'IGMP', 'PIN', and 'DVRRP'. The 'IGMP Snooping' option is highlighted in red.

Clicking the IGS STATISTICS tab brings up the IGMP SNOOPING V1/V2 STATISTICS page (Figure 5-199), which displays IGMP snooping statistics. The parameters for this page are shown in Table 5-171.

Table 5-171. IGMP Snooping V1/V2 Statistics Page Parameters

| Parameter | Description |
|-----------------------------------|---|
| VLAN ID | This parameter specifies the VLAN identifier. |
| General Queries Received | This parameter specifies the number of general query packets received. |
| Group Queries Received | This parameter specifies the number of group query packets received. |
| Group and Source Queries Received | This parameter specifies the number of group and source query packets received. |
| IGMP Reports Received | This parameter specifies the number of IGMP report packets received. |
| IGMP Leaves Received | This parameter specifies the number of IGMP leave packets received. |
| IGMP Packets Dropped | This parameter specifies the number of IGMP dackets dropped. |
| General Queries Transmitted | This parameter specifies the number of general query packets transmitted. |

Table 5-171. IGMP Snooping V1/V2 Statistics Page Parameters (Continued)

| Parameter | Description |
|---------------------------|---|
| Group Queries Transmitted | This parameter specifies the number of group query packets transmitted. |
| IGMP Reports Transmitted | This parameter specifies the number of IGMP report packets transmitted. |
| IGMP Leaves Transmitted | This parameter specifies the number of IGMP leave packets transmitted. |

IGMP Snooping V3 Statistics

Figure 5-200. IGMP Snooping V3 Statistics Page



Clicking the IGS V3 STATISTICS tab brings up the IGMP SNOOPING V3 STATISTICS page (Figure 5-200), which displays IGMP snooping V3 statistics information. The parameters for this page are shown in Table 5-172.

Table 5-172. IGMP Snooping V3 Statistics Page Parameters

| Parameter | Description |
|---------------------------|---|
| VLAN ID | This parameter specifies the VLAN identifier. |
| V3 Reports Received | This parameter specifies the number of Reports messages received. |
| IS_INCL Messages Received | This parameter specifies the number of messages received with is include field. |
| IS_EXCL Messages Received | This parameter specifies the number of messages received with is exclude field. |

Table 5-172. IGMP Snooping V3 Statistics Page Parameters (Continued)

| Parameter | Description |
|---------------------------|---|
| TO_INCL Messages Received | This parameter specifies the number of messages received with to include field. |
| TO_EXCL Messages Received | This parameter specifies the number of messages received with to exclude field. |
| ALLOW Messages Received | This parameter specifies the number of allow messages received. |
| BLOCK Messages Received | This parameter specifies the number of block messages received. |
| V3 Reports Sent | This parameter specifies the number of V3 reports transmitted. |

IGMP Statistics

Figure 5-201. IGMP Route StatisticsPage

The screenshot shows the 'IGMP Statistics' page. At the top, there is a navigation bar with 'SUPERMICR' logo, 'SWITCH SBM-GEM-X2C', and utility links like 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. A status bar shows 'Speed' and 'Link' indicators. On the left, a navigation menu lists various system management options, with 'IGMP' highlighted. The main content area features a table titled 'IGMP Statistics' with the following structure:

| Interface | RX Statistics | | | | | TX Statistics | | | | | |
|-----------|-----------------|---------------|--------------------------|---------------|------------|---------------|-----------------|--------------------------|---------------|------------|-----------|
| | General queries | Group queries | Group and source queries | V1/V2 reports | V3 reports | V2 Leaves | General queries | Group and source queries | V1/V2 reports | V3 reports | V2 Leaves |
| | | | | | | | | | | | |

Clicking the IGMP link brings up the IGMP ROUTE STATISTICS page (Figure 5-201), which displays IGMP route information. The parameters for this page are shown in Table 5-173.

Table 5-173. IGMP Route Statistics Page Parameters

| Parameter | Description |
|--------------------------|--|
| Interface | This parameter specifies the interface identifier. |
| General Queries Received | This parameter specifies the number of general query packets received. |

Table 5-173. IGMP Route Statistics Page Parameters (Continued)

| Parameter | Description |
|--------------------------------------|--|
| Group Queries Received | This parameter specifies the number of group query packets received. |
| Group and Source Queries Received | This parameter specifies the number of group and source query packets received. |
| IGMP V1/V2 Reports Received | This parameter specifies the number of IGMP V1/V2 report packets received. |
| IGMP V3 Reports Received | This parameter specifies the number of IGMP V3 report packets received. |
| General Queries Transmitted | This parameter specifies the number of general query packets transmitted. |
| Group Queries Transmitted | This parameter specifies the number of group query packets transmitted. |
| Group and Source Queries Transmitted | This parameter specifies the number of group and source query packets transmitted. |

PIM

The PIM link allows you to view PIM statistics through the following pages:

- [PIM Interface Statistics](#)
- [PIM Neighbor Statistics](#)
- [PIM BSR Info](#)
- [PIM RP Set Information](#)
- [PIM Route Information](#)

PIM Interface Statistics

Figure 5-202. PIM Interface Statistics Page

The screenshot shows the SUPERMICR web management utility interface. The main navigation bar includes 'Refresh', 'Support', 'Help', 'About', and 'Log Out'. The left sidebar contains a menu with 'SMIS' selected, and 'Interface Stats' is highlighted in red. The main content area displays the title 'PIM Interface Statistics' and a search bar with the URL parameters: `Address|Interface|Version|Mode|Neighbor Count|Query Interval|DR Address|DR Priority`. The top right corner shows a 'Speed Link' status bar with a progress indicator and a list of numbers from 1 to 14, along with 'E31 E32 E33'.

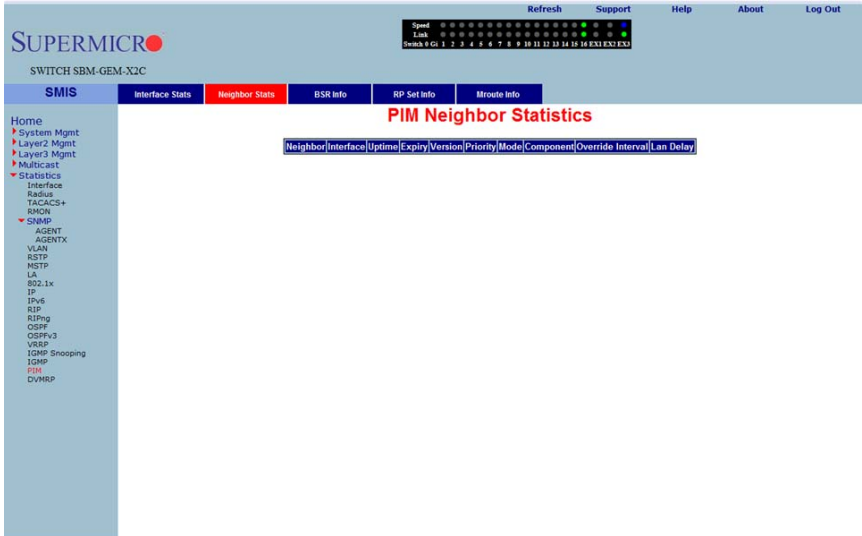
Clicking the INTERFACE STATS tab brings up the PIM INTERFACE STATISTICS page (Figure 5-202), which displays PIM interface statistics. The parameters for this page are shown in Table 5-174.

Table 5-174. PIM Interface Statistics Page Parameters

| Parameter | Description |
|----------------|--|
| Address | This parameter specifies the address. |
| Interface | This parameter specifies the interface. |
| Version | This parameter specifies the version. |
| Mode | This parameter specifies the mode. |
| Neighbor Count | This parameter specifies the neighbor count. |
| Query Interval | This parameter specifies the query interval. |
| DR address | This parameter specifies the DR address. |
| DR Priority | This parameter specifies the DR priority. |

PIM Neighbor Statistics

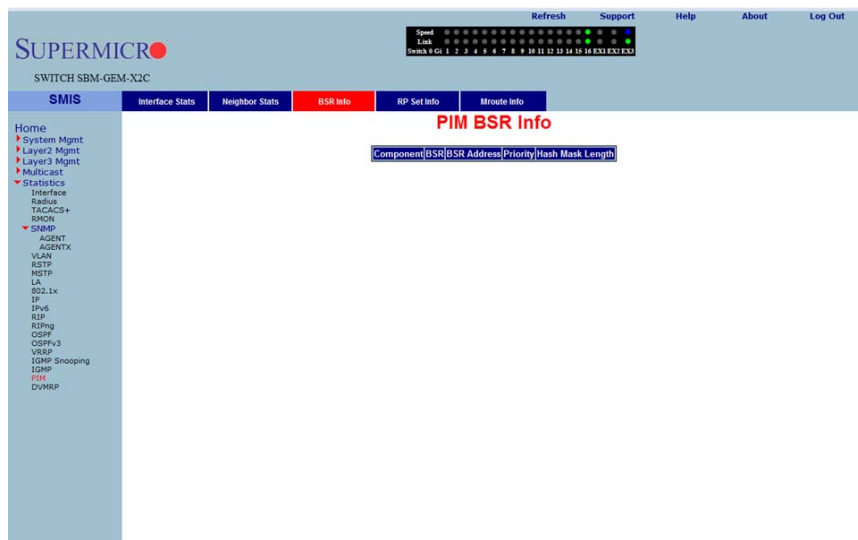
Figure 5-203. PIM Neighbor Statistics Page



Clicking the NEIGHBOR STATS tab brings up the PIM NEIGHBOR STATISTICS page (Figure 5-203), which displays PIM neighbor statistics. The parameters for this page are shown in Table 5-175.

Table 5-175. PIM Neighbor Statistics Page Parameters

| Parameter | Description |
|-------------------|---|
| Neighbor | This parameter specifies the neighbor. |
| Interface | This parameter specifies the interface. |
| Uptime | This parameter specifies the uptime. |
| Expiry | This parameter specifies the expiry. |
| Version | This parameter specifies the version. |
| Priority | This parameter specifies the priority. |
| Mode | This parameter specifies the mode. |
| Component | This parameter specifies the component. |
| Override Interval | This parameter specifies the override interval. |
| LAN Delay | This parameter specifies the LAN delay. |

PIM BSR Info**Figure 5-204. PIM BSR Info Page**

Clicking the BSR INFO tab brings up the PIM BSR INFO page (Figure 5-204). The parameters for this page are shown in Table 5-176.

Table 5-176. PIM BSR Info Page Parameters

| Parameter | Description |
|------------------|--|
| Component | This parameter specifies the component. |
| BSR | This parameter specifies the BSR. |
| BSR Address | This parameter specifies the BSR address. |
| Priority | This parameter specifies the priority. |
| Hash Mask Length | This parameter specifies the Hash Mask Length. |

PIM RP Set Information

Figure 5-205. PIM RP Information Page



Clicking the RP SET INFO tab brings up the PIM RP INFORMATION page (Figure 5-205), which displays PIM RP information. The parameters for this page are shown in Table 5-177.

Table 5-177. PIM RP Information Page Parameters

| Parameter | Description |
|--------------|--|
| Group | This parameter specifies the group address. |
| Mask | This parameter specifies the mask. |
| Candidate RP | This parameter specifies the candidate RP. |
| Hold Time | This parameter specifies the Hold time in seconds. |
| Expiry Time | This parameter specifies the expiry time in seconds. |
| Component | This parameter specifies the component identifier. |

PIM Route Information

Figure 5-206. PIM Route Information Page

The screenshot shows the SUPERMICR web management utility interface. At the top, there are links for Refresh, Support, Help, About, and Log Out. Below the navigation menu, the 'MRoute Info' tab is selected, displaying the 'PIM Route Information' page. The page features a table with the following columns: Group, Source, Mask, Upstream Neighbour, Interface, Up Time, Expiry Time, and Receive Packets. The table is currently empty.

Clicking the MROUTE INFO tab brings up the PIM ROUTE INFORMATION page (Figure 5-206), which displays PIM route information. The parameters for this page are shown in Table 5-178.

Table 5-178. PIM Route Information Page Parameters

| Parameter | Description |
|-------------------|--|
| Group | This parameter specifies the group address. |
| Source | This parameter specifies the source address. |
| Mask | This parameter specifies the PIM route mask. |
| Upstream Neighbor | This parameter specifies the upstream neighbor address. |
| Interface | This parameter specifies the |
| Up Time | This parameter specifies the up time in seconds. |
| Expiry Time | This parameter specifies the expiry time in seconds. |
| Receive Packets | This parameter specifies the number of packets received. |

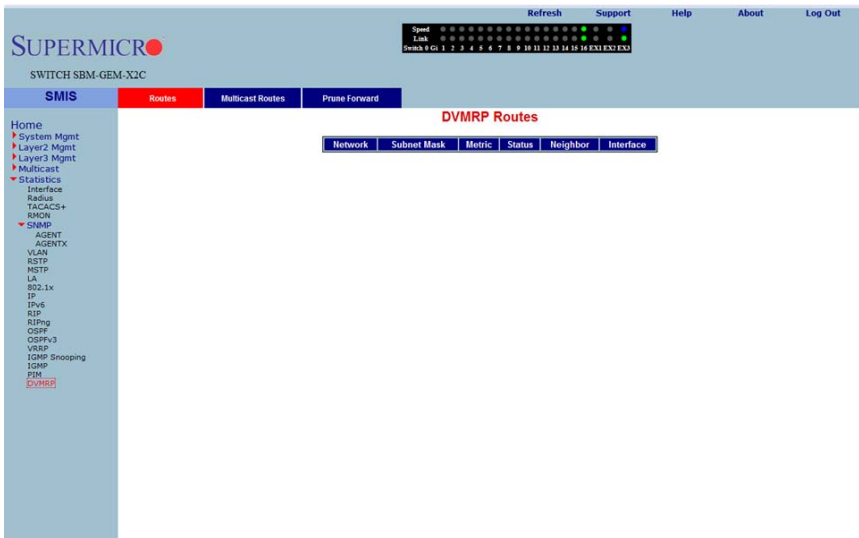
DVMRP

The DVMRP link allows you to view DVMRP statistics through the following pages:

- [DVMRP Routers](#)
- [DVMRP Multicast Routers](#)
- [DVMRP Prune Statistics](#)

DVMRP Routers

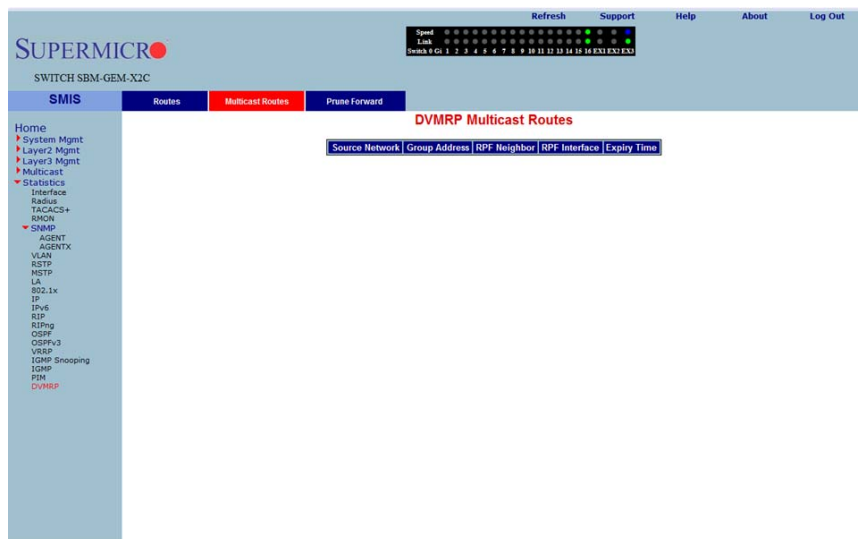
Figure 5-207. DVMRP Routes Page



Clicking the ROUTES tab brings up the DVMRP ROUTES page (Figure 5-207), which displays DVMRP routes information. The parameters for this page are shown in Table 5-179.

Table 5-179. DVMRP Routes Page Parameters

| Parameter | Description |
|-------------|---|
| Network | This parameter specifies the network address for this route. |
| Subnet Mask | This parameter specifies the network mask for this route. |
| Metric | This parameter specifies the metric value for this route. |
| Status | This parameter specifies the status of this route. |
| Neighbor | This parameter specifies the neighbor address for this route. |
| Interface | This parameter specifies the interface identifier. |

DVMRP Multicast Routers**Figure 5-208. DVMRP Multicast Routes Page**

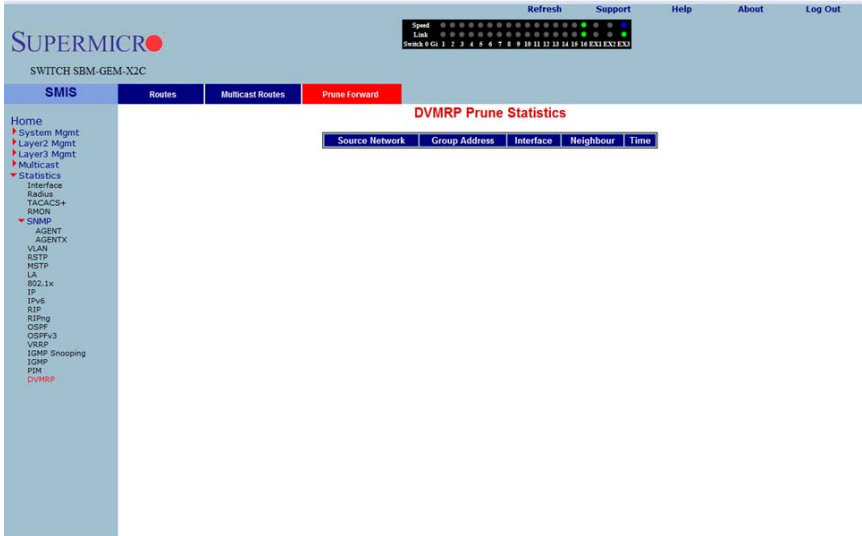
Clicking the MULTICAST ROUTES tab brings up the DVMRP MULTICAST ROUTES page (Figure 5-208), which displays DVMRP multicast routes information. The parameters for this page are shown in Table 5-180.

Table 5-180. DVMRP Multicast Routes Page Parameters

| Parameter | Description |
|----------------|--|
| Source Network | This parameter specifies the source network. |
| Group Address | This parameter specifies the group address. |
| RPF Neighbor | This parameter specifies the RPF neighbor. |
| RPF Interface | This parameter specifies the RPF interface. |
| Expiry Time | This parameter specifies the expiry time in seconds. |

DVMRP Prune Statistics

Figure 5-209. DVMRP Prune Statistics Page



Clicking the PRUNE FORWARD tab brings up the DVMRP PRUNE STATISTICS page (Figure 5-209), which DVMRP prune statistics information. The parameters for this page are shown in Table 5-181.

Table 5-181. DVMRP Prune Statistics Page Parameters

| Parameter | Description |
|------------------------|--|
| Source Network Address | This parameter specifies the source network address. |
| Group Address | This parameter specifies the group address. |
| Interface Identifier. | This parameter specifies the interface identifier. |
| Neighbor Address | This parameter specifies the neighbor address. |
| Time | This parameter specifies the time in seconds. |

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