10/100 Managed
24-Port GigaSwitch

Use this guide to install:
Linksys EtherFast® II 10/100
Managed 24-Port GigaSwitch
(EG24M)

User Guide

LINKSYS®

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The 10/100 Managed 24-Port GigaSwitch has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the equipment or device
• Connect the equipment to an outlet other than the receiver's
• Consult a dealer or an experienced radio/TV technician for assistance

008

Table of Contents

Introduction

The Linksys EtherFast II
10/100 Managed 24-Port GigaSwitch

Maximize your network potential with the ultimate high-speed manageable switch. The EtherFast II 10/100 Managed 24-Port GigaSwitch from Linksys delivers a combination of Ethernet, Fast Ethernet, and Gigabit Ethernet solutions, all in one surprisingly affordable package.

Perfect for demanding enterprise environments, the GigaSwitch's "intelligent" design provides maximum network control, regulating traffic and eliminating server bottlenecks. The included software, with its web management interface and upgrade capability, makes the GigaSwitch ideal for interactive web-based applications.

And if it's expansion you're looking for, the 10/100 Managed 24-Port GigaSwitch's rack-mountable design and optional fiber expansion modules ensure that your network will be primed to grow right along with your business.

So when you're ready to bring your network up to speed, bring it up to Gigabit speed--with the EtherFast II 10/100 Managed 24-Port GigaSwitch.

1

Package Contents for the EtherFast II 10/100 Managed 24-Port GigaSwitch

• One EtherFast II 10/100 Managed 24-Port GigaSwitch
• One Power Cord
• Mounting Brackets
• One Serial/Console Cable
• User Guide and Registration Card

Getting to Know the GigaSwitch

LEDs

MAIN

Power	The LED will illuminate when the switch is powered on.
Management	The LED will illuminate when management functions are being performed.

PER PORT

Link 10/100 (Row A)	The LED will illuminate orange when the port is operating at 10Mbps, and illuminate green when operating at 100Mbps.
Tx/Rx (Row B)	The LED will flicker green when the port is transmitting data, and flicker orange when receiving data.
FD/Col (Row C)	The LED will illuminate green when the port is operating in full-duplex mode, and flicker orange when collisions are being encountered.

GIGABIT

Link	The LED will illuminate when the Gigabit Switch Module is successfully connected to a network.
Tx/Rx	The LED will flicker when the Gigabit Switch Module is transmitting or receiving data.
FD	The LED will illuminate when the Gigabit Switch Module is operating in full-duplex mode.

The RJ-45 Ports

The 10/100 Managed 24-Port GigaSwitch is equipped with twenty-four auto-sensing RJ-45 ports. These RJ-45 ports support network speeds of either 10Mbps or 100Mbps, and can operate in half- and full-duplex modes. Auto-sensing technology enables each port to automatically detect the speed of the device connected to it (10Mbps or 100Mbps), and adjust its speed and duplex accordingly.

To connect a device to a port, you will need to use a network cable. UTP Category 3 cable is acceptable for 10BaseT networks, however, if you are using 100BaseTX devices you will need to use UTP Category 5 (or better) cable. For more information on twisted-pair cabling, refer to the *Twisted-Pair Cabling* section on page 80.

The Gigabit Expansion Ports

The 10/100 Managed 24-Port GigaSwitch is equipped with two gigabit expansion ports, providing for the installation of one or two expansion modules. These ports provide links to high-speed network segments or individual workstations at speeds of up to 1000Mbps (Gigabit Ethernet).

To establish a Gigabit Ethernet connection, you will need to install a SX or TX Gigabit expansion module and use fiber optic cabling. for more information on fiber optic cabling, refer to the *Fiber Optic Cabling* section on page 79.

The Console Port

The 10/100 Managed 24-Port GigaSwitch is equipped with a serial port labeled *CONSOLE* (located on the rear of the switch) that allows you to connect to a computer (for configuration purposes) using the provided serial cable.

Installing the GigaSwitch

Pre-Installation Considerations

Fast Ethernet Considerations

If you will be using the GigaSwitch for Fast Ethernet (100Mbps) applications, you must observe the following guidelines:

• The maximum UTP cabling length using Category 3 cable is 328 feet (100 meters).

Full-Duplex Considerations

As previously mentioned, the GigaSwitch provides full-duplex support for its RJ-45 ports. Full-duplex operation allows data to be sent and received simultaneously, doubling a port's potential data throughput.

If you will be using the GigaSwitch in full-duplex mode, the maximum UTP cable length using Category 5 cable is 328 feet (100meters).

Positioning the GigaSwitch

Before you choose a location for the GigaSwitch, observe the following guidelines:

• Keep cabling away from sources of electrical noise, power lines, and fluorescent lighting fixtures.

• Position the GigaSwitch away from water and moisture sources.

• To ensure adequate air flow around the GigaSwitch, be sure to provide a minimum of one inch (25mm) clearance.

• Do not stack free-standing GigaSwitches more than four units high.

Rack-Mounting the GigaSwitch

The 10/100 Managed 24-Port GigaSwitch can be used as a free-standing unit, or installed in any standard 19-inch rack.

Use the following instructions to rack-mount the GigaSwitch:

Before you begin, disconnect all cables from the GigaSwitch.

1. Place the GigaSwitch right side up, with the front panel facing you.

2. Position a mounting bracket over the screw holes on one side of the GigaSwitch.

3. Secure the mounting bracket by inserting three screws into the screw holes. Use a screwdriver to tighten the screws, ensuring that they are fastened firmly in place.

4. Repeat steps 2 and 3 to install the other mounting bracket on the opposite side of the GigaSwitch.

5. Insert the GigaSwitch into the 19-inch rack and secure it with suitable screws (not provided). Ensure that the ventilation holes are not obstructed.

The rack-mount installation is complete.
You can now re-connect the cables to the back of the GigaSwitch.

Powering On and Resetting the GigaSwitch

To power on the GigaSwitch, simply connect the AC power cord to the back of the GigaSwitch, then plug the power cord into an electrical outlet. The GigaSwitch will boot up within approximately 30 seconds.

If you need to reset the GigaSwitch, depress the *RESET* button (located on the rear of the switch) for approximately one or two seconds.

Uplinking the GigaSwitch

Port 24 on the EtherFast II 10/100 Managed 24-Port GigaSwitch can act as an uplink port, allowing you to uplink to other switches or hubs using a standard Ethernet connection.

To uplink the switch, connect one end of a Category 5 (or better) network cable into Port 24, then connect the other end of the cable into the desired network device's uplink port. To enable uplinking capability, depress the *MDI/MDIX* button on the front of the switch.

Installing the Gigabit Expansion Modules

Use the following instructions to install the Gigabit Expansion Modules:

Before you begin power off the GigaSwitch by disconnecting all cables from the GigaSwitch.

1. Place the GigaSwitch right side up, with the rear panel facing you.

2. Use a screwdriver to remove the desired Expansion Module cover plate (labeled "Slot 1" and "Slot 2"). Set the screws aside for step 4.

3. Insert the Gigabit Expansion Module (must be purchased seperately) into the selected Gigabit Expansion Port, ensuring that it is seated firmly in place.

4. Secure the module in place using the screws and a screwdriver.

The Gigabit Expansion Module installation is complete.
You can now re-connect the cables to the back of the GigaSwitch.

Switch Management

Overview

The Linksys EtherFast II 10/100 24-Port Managed GigaSwitch offers an easy-to-use, menu-driven console interface. Using this interface, you can perform various switch configuration and management activities, including:

• Configuring system and port parameters
• Assigning an IP address
• Configuring routing properties
• Configuring ARP
• Configuring DHCP
• Setting VLAN policy
• Setting packet filtration
• Configuring STP and SNMP parameters
• Upgrading software

There are four methods of managing the GigaSwitch:

• Local Console Management using the serial port
• Remote Console Management using a network or dial-up connection
• Using an SNMP Management Station
• Web-Browser

Local Console Management

You can manage the GigaSwitch locally by connecting the switch to a PC or workstation with terminal emulation software using the serial port.

Before you log on to the GigaSwitch, make sure that the switch's serial port settings are as follows:

```
BAUD RATE:          115200
FLOW:               None
PARITY:             None
STOP BITS:          1
DATA BITS:          8

EMULATION:          ANSI
CURSOR EMULATION:   VT100
```

Remote Console Management

You can manage the GigaSwitch remotely by having a remote host establish a Telnet connection to the switch via an Ethernet or modem link.

To use this management method:

• The host must run a SLIP protocol if a modem is used
• The GigaSwitch must have an IP address

The Remote Console Management interface is identical in appearance and functionality to the Local Console Management interface. If you are using Microsoft's Telnet, the terminal setting should be set to VT100/ANSI.

SNMP Management

You can manage the GigaSwitch across a LAN using an SNMP Network Management Station with a graphical user interface. This management method allows you to monitor statistical counters and set switch parameters from the remote Network Management Station.

To use this management method:

• The network must use the IP protocol
• The GigaSwitch must be configured on the network with a proper IP address

Assigning an IP Address to the GigaSwitch

To manage the GigaSwitch remotely through the console port or with an SNMP Management Station, you must assign an IP address to the GigaSwitch. To assign an IP address to the GigaSwitch, refer to page 44 in the **Configuring the GigaSwitch** section.

Logging On to the GigaSwitch

When you log on to the GigaSwitch for the first time, a sign-in string appears and you are prompted for a *console login name* and *password*. The factory default login name is set as "**admin**" and the password is "**123456**". If you desire, you can change this password after you log on.

Configuring the GigaSwitch

Overview

The Linksys EtherFast II 10/100 24-Port Managed GigaSwitch features a menu-driven console interface for switch configuration. The GigaSwitch can be configured locally through the serial port or remotely via a Telnet connection.

Web-Based Configuration and Management

This **User Guide** provides instructions on how to configure and manage the GigaSwitch using the console interface. If you wish to manage the switch through a web connection, you can do so by connecting to the GigaSwitch's IP Address using your web browser.

Although the web-based management menu will differ in appearance from the console-based management menu, you will still have access to all the same configuration and management features.

Logging On to the GigaSwitch

When logging on to the GigaSwitch, you will receive the following screen prompt:

```
Linksys Gigabit Switch
Screen Name:

System Name
Login:
```

Enter the default *login* and *password* (see page 9), pressing **Enter** after each entry (as shown in the image below).

Basic Management Activities

After you log on to the GigaSwitch, the *Switch Management* screen will appear.

The *Switch Management screen* consists of a series of menu boxes. Each menu box has several options, which are listed vertically. A highlight in each box lets you select the option you wish to choose; pressing the **Enter** key activates the highlighted option.

To navigate through the Console Interface use the *Up Arrow* or *Down Arrow* keys to move up or down, use the *Enter* key to select, and the *Esc* key to return to the previous selection; menu options and any values entered or present will get highlighted. Note that the bottom of the window always has a listing of the appropriate key strokes.

Basic management activities consist of General, LAN port, and console port tasks. To perform basic management activities:

1. From the Switch Management screen, highlight *Basic Management* and press **Enter**. The *Basic Management* screen will appear.

2. From the *Basic Management* screen, highlight the desired option and press the **Enter** key:

• **General** allows you change the system name, location, administration and guest passwords, statistics collection, reboot-on-error, and remote Telnet login.

• **LAN Port** allows you configure speed and flow control, link type, and physical address.

• **Console Port** allows you change the console baud rate, flow control method, modem control, and setup string; enable or disable SLIP; and configure the SLIP address and SLIP subnet mask.

General Management Configuration

Select *General* from the *Basic Management* screen. The *General* screen will appear, with the cursor on *System Name*, with any value highlighted.

Use the following procedure to configure the general management options:

**Changing the System Name**

1. From the *General* screen, highlight *System Name* and press the **Enter** key. The *Enter System Name* screen appears.
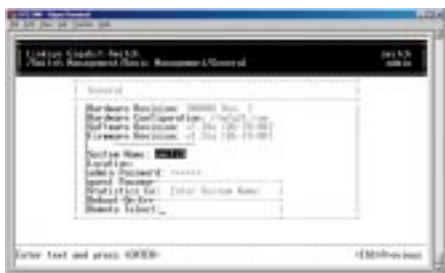
2. Enter a system name (16 characters max.). If you make a mistake, use the **Backspace** key to delete the error.

3. Press **Enter** to return to the *General* screen.

Changing the Location

1. From the *General* screen, move the cursor to *Location* and press the **Enter** key. The *Enter Location* screen will appear.
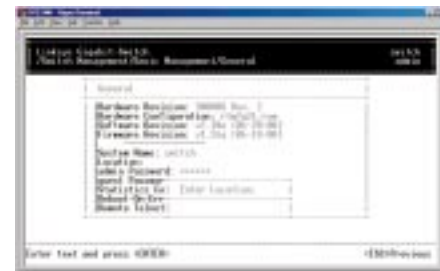
2. Enter a location name. If you make a mistake, use the **Backspace** key to delete the error.

3. Press **Enter** to return to the *General* screen.

Changing the Administration Password

1. Use the *Down Arrow* key to highlight *admin Password* and press the **Enter** key. The *Enter Old Password* screen will appear.
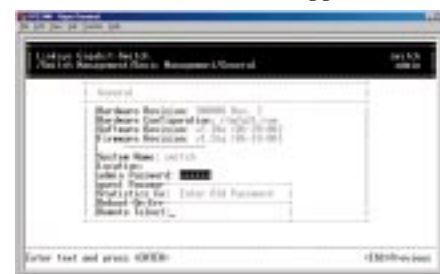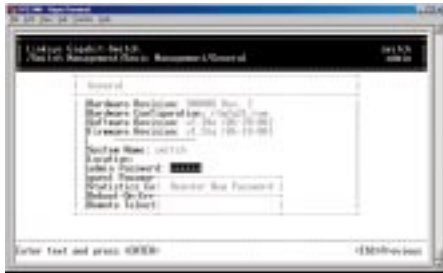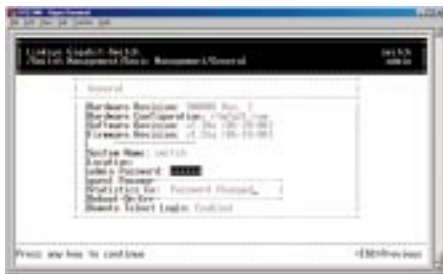

2. Enter the current password. Each character you type appears as an asterisk (*). If you make a mistake, use the **Backspace** key to delete the error.

3. Press **Enter**. The *Enter New Password* screen (see next page) will appear.

12

13

Changing the Guest Password

1. Use the *Down Arrow* key to highlight *guest Password* and press the **Enter** key. The *Enter New Password* screen will appear.
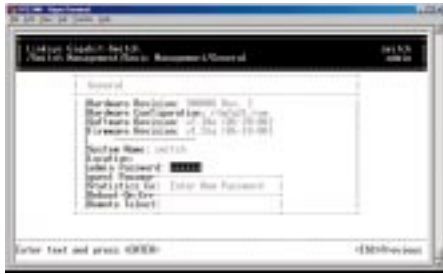
4. Enter the new password. For security, each password character you type appears as an asterisk (*). The password is case-sensitive, can be no more than 16 characters (only alphanumeric characters and the underscore "_" character can be used).

5. Press **Enter**. A screen will prompt you to re-enter the new password.

2. Enter a new guest password. If you make a mistake, use the **Backspace** key to delete the error. The password is case-sensitive, can be no more than 16 characters (only alphanumeric characters and the underscore "_" character can be used).

3. Press **Enter** to return to the *General* screen.

Statistic Collection

1. From the *General* screen, highlight *Statistic Collection* and press the **Enter** key. The following screen will appear.
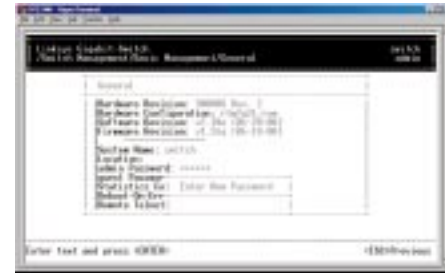
6. Re-enter the new password you typed in step 4 and press **Enter**. The *Password Changed* message will appear, confirming that the new password is in effect.

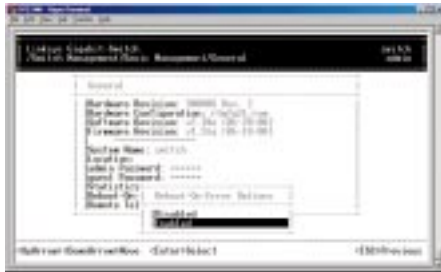2. Highlight one of the following choices:

   Disabled (prevents statistic collection to the GigaSwitch)

   Enabled (allows statistic collection to the GigaSwitch)

3. Press **Enter** to return to the *General* screen.

7. Press **Enter** to remove the message and return to the *General* screen. The admin password will appear as asterisks in the *admin Password* field.

Reboot-on-Error

1. From the *General* screen, highlight *Reboot-On-Error* and press the **Enter** key. The following screen will appear.
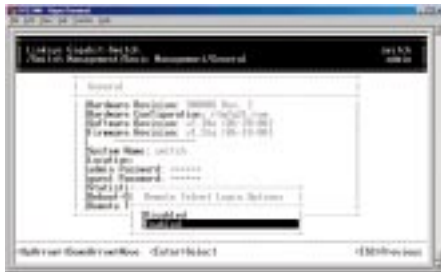

2. Highlight one of the following choices:

> *Disabled* (prevents the GigaSwitch from automatically resetting when a fatal error is detected. This setting is useful when a persistent problem needs to be reported)

> *Enabled* (allows the GigaSwitch to automatically reset when a fatal error is detected)

3. Press **Enter** to return to the *General* screen.

Remote Telnet Login

1. From the *General* screen, highlight *Remote Telnet Login* and press the **Enter** key. The following screen will appear.

2. Highlight one of the following choices:

> *Disabled* (prevents remote Telnet logins to the GigaSwitch)

> *Enabled* (allows remote Telnet logins to the GigaSwitch. This is the default setting)

3. Press **Enter** to return to the *General* screen.

Returning to the Basic Management Screen

After completing the general management activities, press the **Esc** key to exit the *General* screen and return to the *Basic Management* screen. You can then select another option from the *Basic Management* screen or press **Esc** to return to the *Switch Management* screen.

LAN Port Configuration

Select *LAN Port* from the *Basic Management* screen. The *LAN Port Configurations* screen will appear, with *Speed & Flow Control* highlighted.


Use the procedures in this section to configure the *LAN Port Configuration* options for one or more ports, including:
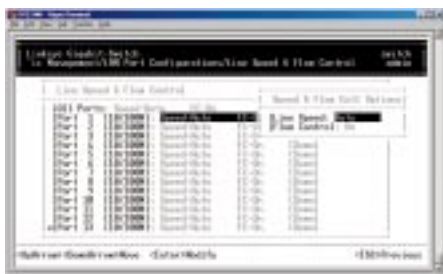
• *Speed & Flow Control*

• *Physical Address* (this option only appears when *System MAC Address* in the *General* screen is set to *Multiple*)

Changing the Speed and Flow Control

1. From the *LAN Port Configurations* screen, highlight *Speed & Flow Control* and press the **Enter** key. A screen similar to the following will show the current line speed settings for all ports. If an expansion module is installed in the switch, it will also be listed.
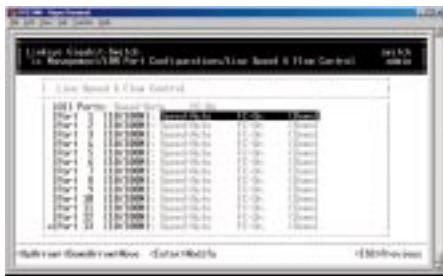
2. You can configure each port individually or all ports at one time. To configure an individual port, highlight it and press **Enter**. To configure all ports, highlight *All Ports* (the top option in the previous screen) and press **Enter**. If an expansion module is present, choose either *All 10/100M Ports* or *All 1000M Ports*. The *Speed & Flow Cntl Options* screen will appear
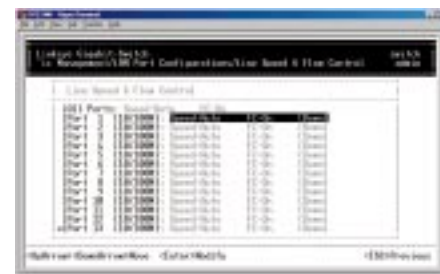
3. Proceed to the appropriate section:

> To set the line speed, proceed to *the* **Setting the Line Speed** section

> To set the flow control, go to **Changing the Flow Control** on page 20.

Setting the Line Speed

1. Press **Enter** with the *Line Speed* value highlighted . The *Speed Options* menu will appear (see screen next page).

2. Highlight the line *Speed Option* you want to select for the port. *Auto* allows the GigaSwitch to automatically determine the line speed and duplex mode. All the other selections force the GigaSwitch to use a specific line speed and duplex mode.

3. Press **Enter**. You will return to the *Speed & Flow Cntl Options* screen and the line speed setting you selected appears next to *Line Speed*.

4. To configure the flow control for this port, proceed to **Changing the Flow Control** on page 20 .

5. To configure the line speed for additional ports, press **Esc** to remove the *Speed & Flow Cntl Options* screen. Then highlight the port you want to configure and repeat steps 1 through 4.

> If you want to disable a port, highlight the desired port, then click **Enter**. In the *Port Settings Options* box select *Admin Control*. Click **Enter.**
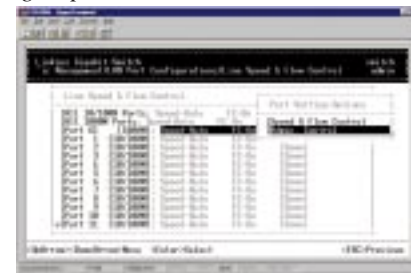
In the *Admin Status Options* box, select *Down*. Click **Enter**.

18   19
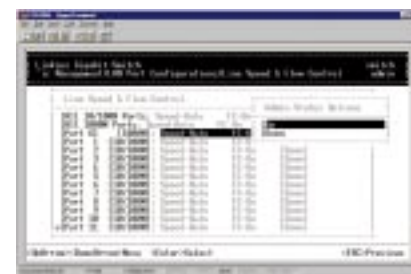
6. When you finish, press the **Esc** key from the *Line Speed & Flow Control* screen to return to the *LAN Port Configurations* screen.

Changing the Flow Control

1. With the *Speed & Flow Cntl Options* screen displayed, press the *Down Arrow* key to highlight *Flow Control* and press **Enter**. The *Flow Cntl Options* screen will appear.

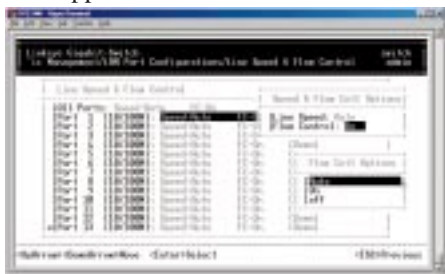2. Highlight the desired flow control option for the port. *Auto* allows the GigaSwitch to automatically determine whether or not to use flow control. *On* enables flow control at all times. *Off* disables flow control at all times.

3. Press **Enter**. You will return to the *Speed & Flow Cntl Options* screen, and the selected flow control setting will appear next to *Flow Control*.

4. To configure the flow control for additional ports, press **Esc** to remove the *Speed & Flow Cntl Options* screen. Highlight the desired port then press **Enter**. Highlight *Speed* and *Flow Control*, then press **Enter.** Repeat steps 1 through 3 for each additional port.

5. When you are finished, press the **Esc** key from the *Line Speed & Flow Control* screen to return to the *LAN Port Configurations* screen.

Displaying Physical Port Address

The following procedure describes how to display the physical port address. This option only appears on the *LAN Port Configurations* screen when *System MAC Address* in the *General* screen is set to *Multiple*. The addresses of each individual port will be displayed.

1. From the *LAN Port Configurations* screen, highlight *Physical Address* and press the **Enter** key. A screen similar to the following (see next page) will appear.
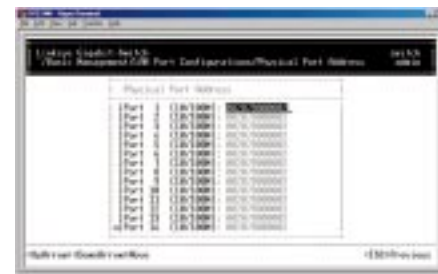
Returning to the Basic Management Screen

After completing the general management activities, press the **Esc** key to exit the *General* screen and return to the *Basic Management* screen. You can then select another option from the *Basic Management* screen or press **Esc** to return to the *Switch Management* screen.

Console Port Configuration

Select *Console Port* from the *Basic Management* screen, the *Console Port Configurations* screen will appear, with the *Baud Rate* value highlighted.
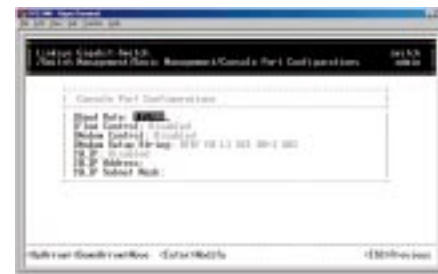
Use the procedures in this section to configure the *Console Port Configurations* options for one or more settings, including:

• Specifying *Baud Rate*

• Specifying *Flow Control*

• Enable or Disable *Modem Control*

• Enter *Modem Setup String*

• Enable or Disable *SLIP*

• Specify a *Slip Address*

• Specify a *SLIP Subnet Mask*

Changing the Console Baud Rate

1. From the *Console Port Configurations* screen, highlight *Baud Rate* and press the **Enter** key. A screen similar to the following will show the cur- rent console baud rate.

2. Highlight the baud rate you want to select for the console. *Auto* allows the GigaSwitch to autobaud between 9600 bps and 115,200 bps. If you choose *Auto*, it willchoose the rest of your configuration selections. Then, when you exit the configuration program, press the **Enter** key one or more times until the prompt *Linksys GigaSwitch Login Password* appears on your computer screen. All other selections force a specific console baud rate.

3. Press **Enter**. You will return to the *Console Port Configurations* screen and the selected console port baud rate will appear in the *Baud Rate* field.

Selecting a Flow Control Method

1. From the *Console Port Configurations* screen, highlight *Flow Control* and press the **Enter** key. A screen similar to the following will show the current console flow control method.

2. Highlight the desired flow control method for the console and press **Enter**. You will return to the *Console Port Configurations* screen and the selected flow control method will appear in the *Flow Control* field.

Enabling or Disabling Modem Control Options

1. From the *Console Port Configurations* screen, highlight *Modem Control* and press the **Enter** key. A screen similar to the following will show whether a console modem connection is enabled or disabled.

2. Highlight *Enabled* or *Disabled* in the *Modem Control Options* field to either enable or disable a modem connection to the console port.

3. Press **Enter**. You will return to the *Console Port Configurations* screen and the modem control option you selected will appear in the *Modem Control* field.

Specifying a Modem Setup String

If you enabled a modem connection to the console port, use the following procedure to specify a modem setup string.

1. From the *Console Port Configurations* screen, highlight *Modem Setup String* and press the **Enter** key. A screen similar to the following will show the current modem setup string option.

2. Highlight the desired modem setup string option.

Note: Switch setup, when accessed through a modem or SLIP account, is the sole responsibility of the user. Technical support is not provided for setup of modem or SLIP.

22

23

3. Press the **Enter** key. If you highlight *Default Setup String*, you will return to the *Console Port Configurations* screen and the default modem string will appear in the *Modem Setup String* field. If you highlight *Custom Setup String*, enter the custom string in the *Enter Modem Setup String* screen and press **Enter** again. You will return to the *Console Port Configurations* screen and the custom setup string will appear in the *Modem Setup String* field.

Enabling or Disabling SLIP

1. From the *Console Port Configurations* screen, highlight *SLIP* and press the **Enter** key. A screen similar to the following will show the current SLIP setting.

2. Highlight *Enabled* or *Disabled* to either enable or disable SLIP, then press **Enter**. You will return to the *Console Port Configurations* screen and the selected SLIP option will appear in the *SLIP* field.

Note: if you enable SLIP, a warning window will appear telling you to disable SLIP if you encounter problems. By enabling SLIP, the switch cannot be directly accessed through the console port with the provided serial cable.

Specifying a SLIP Address

If you enabled SLIP, use the following procedure to enter an address that has a network part different than the network address of the GigaSwitch (for more information, contact your network administrator).

1. From the *Console Port Configurations* screen, highlight *SLIP Address* and press **Enter**. The following screen (see next page) will appear.
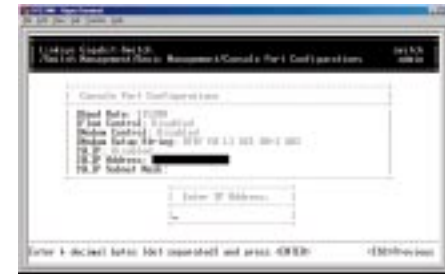
2. Enter the SLIP address. The address consists of numbers separated by periods (e.g., 192.168.1.105).

3. After you enter the SLIP address, press the *Enter* key. You will return to the *Console Port Configurations* screen and your entry will appear in the *SLIP Address* field.

Specifying a SLIP Subnet Mask

If you are using SLIP, enter a suitable SLIP subnet mask.

1. From the *Console Port Configurations* screen, highlight *SLIP Subnet Mask* and press **Enter**. The *Enter IP Subnet Mask* screen will appear.

2. Enter the SLIP subnet mask. The subnet mask consists of numbers separated by periods (e.g., 255.255.255.0).

3. After you enter the SLIP subnet mask, press the **Enter** key. You will return to the *Console Port Configurations* screen and your entry will appear in the *SLIP Subnet Mask* field.

**Returning to the Basic Management Screen**

After completing the general management activities, press the **Esc** key to exit the *Console Port* screen and return to the *Basic Management* screen. You can then select another option from the *Basic Management* screen or press **Esc** to return to the *Switch Management* screen.

Advanced Management Activities

Advanced management activities consist of the Level 2 switching database, Level 3 IP networking, bridging, static filtering, spanning tree, SNMP, other protocols (GVRP and IGMP), port trunking, port mirroring, and file transfer.

To perform advanced management activities:

1. From the *Switch Management* screen, highlight *Advanced Management* and press **Enter**. The *Advanced Management* screen will appear.
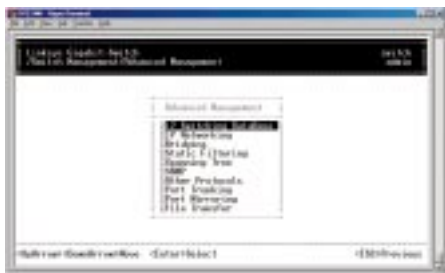
2. In the *Advanced Management* screen, highlight the desired option and press the **Enter** key.

The following options are available:

• *L2 Switching DataBase* lets you view and change VLAN, IP multicast group, MAC address, and port perspectives.

• *IP Networking* allows you to view or change IP settings, ARP and routing table parameters, RIP parameters, DHCP gateway settings, and ping settings.

• *Bridging* lets you view and change the aging period for a MAC address.

• *Static Filtering* allows you to view, add, delete, or search all source or destination addresses to be filtered.

• *Spanning Tree* lets you view and change parameters relating to the spanning tree protocol.

• *SNMP* allows you to view and change all SNMP-related information.

• *Other Protocols* lets you view and change GVRP and IGMP settings.

• *Port Trunking* allows you to assign a range of ports to trunking groups.

• *Port Mirroring* lets you mirror one port to another.

• *File Transfer* allows you to upgrade your GigaSwitch software.

Switching Database Configuration

Select *L2 Switching DataBase* from the *Advanced Management* screen and press **Enter**. The *L2 Switching DataBase* screen will appear, with *VLAN Perspective* highlighted.

The GigaSwitch can be viewed from the four perspectives in the *L2 Switching DataBase* screen.

• *VLAN Perspective*

• *IP Multicast Group Perspective*

• *MAC Address Perspective*

• *Port Perspective*

These four views allow a network administrator to manage and monitor VLANs and their associated MAC addresses and ports effectively from different views.

VLAN PERSPECTIVE

This section describes the default VLAN and how to obtain a VLAN perspective.

Default VLAN

The IEEE 802.1Q standard defines VLAN ID #1 as the default VLAN. The default VLAN includes all the ports as the factory default. The default VLAN's egress rule restricts the ports to be all untagged, so it can, by default, be easily used as a simple 802.1D bridging domain. The default VLAN's domain shrinks as untagged ports are defined in other VLANs.

Obtaining a VLAN Perspective

The following procedure describes how to obtain a VLAN perspective. For convenience, the VLAN ID appears as both decimal and hexadecimal values side by side in the *VLAN Perspective* screen.

1. From the *L2 Switching DataBase* screen, highlight *VLAN Perspective* and press the **Enter** key. The *VLAN perspective* screen will appear.

From this screen you will be able to:

• Create a new VLAN

• Delete a VLAN ID

• View VLAN activities

• View or change a VLAN Configuration

To return to the *L2 Switching Database* screen, press the **Esc** key.

Creating a New VLAN

1. From the *VLAN Perspective* screen in, hold down the **Shift** key and press the "+" key. The *New VLAN Settings* screen will appear

2. With the *VLAN ID* field highlighted, press the **Enter** key. The *Enter New VLAN ID* screen will appear.

3. Enter a new VLAN ID as either a decimal or hexadecimal ID value from 1 to 4094 (0xFFE).

4. Press **Enter**. The VLAN ID appears next to *VLAN ID* in the *New VLAN Settings* screen.

5. To enter an optional VLAN name, perform the following steps (the VLAN name is used to identify the VLAN at the local switch).

    a) Press the **Down Arrow** key to move to *VLAN Name*.

    b) Press **Enter**. The *Enter New VLAN Name* screen will appear.

28

29

c) Enter a name for the new VLAN (up to 31 alphanumeric characters).

d) Press **Enter**. The VLAN name appears next to *VLAN Name* in the *New VLAN Settings* screen.

6. Press the **Esc** key. A screen similar to the following will appear.

This screen will allow you to add or delete switch port to a VLAN.

Adding New Switch Ports

To add new switch ports to the newly created VLAN:

1. Hold down the **Shift** key and press "+" to display the *Port Options* screen.

2. In the *Port Options* screen, highlight either *Untagged Ports* or *Tagged Ports* and press the **Enter** key.If you highlight *Untagged Ports*, the screen window reads *Select Untagged Ports*, as in the following screen. Ports not allowed to be used in specific VLANs are labeled *Forbidden Ports*.

If you highlight *Tagged Ports*, the screen window reads *Select Tagged Ports*, as in the following screen.

3. In the *Select Untagged Ports* or *Select Tagged Ports* screen, use the **Up Arrow** and **Down Arrow** keys to highlight an individual port.

4. Press **Enter**. An asterisk appears to the right of the selected port. Repeat this step for each new port you want to add.

5. After selecting the new ports you want to add, press **Esc**. A screen will show the selected ports and whether they are tagged or untagged.

6. If you added untagged ports and want to now add tagged ports, or vice versa, repeat steps 1 through 4 and in step 2 select the appropriate port option. To remove a port, highlight the desired port and press "**-**".

7. Press Esc to return to the *VLAN Perspective* screen. You may then select another option from the *VLAN Perspective* screen or press **Esc** to return to the *L2 Switching DataBase* screen.

The VLAN IDs and names you added will appear in the *VLAN Perspective* screen. In the following screen, the Zuma and lana VLAN IDs have been added.

Deleting a VLAN ID

Use the following procedure to delete a VLAN ID from the *VLAN Perspective* field.

1. Use the **Up Arrow** and **Down Arrow** keys to highlight the VLAN ID you want to delete.

2. Press the "**-**" (hyphen) key. A message will ask whether you are sure you want to delete the VLAN ID.
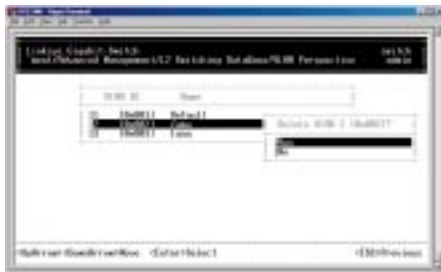
3. With *Yes* highlighted, press the **Enter** key to delete the VLAN ID, or to retain it, press the **Esc** key or highlight *No* and press **Enter**.

Viewing VLAN Activities

The following procedure describes how to use the *VLAN Perspective* screen to view activities for a particular VLAN. Using this procedure, you can view:

• Active ports.
• Active MAC addresses associated with a VLAN.
• A transient address, if any.
• Filtering and port information.

To view VLAN activities:

1. From the *VLAN Perspective* screen , highlight an existing VLAN and press the **Enter** key. The *VLAN Info* screen appears, with the highlight on *VLAN Activities*.

2. Press the **Enter** key. A screen similar to the following will appear.

This screen shows all active MAC addresses and VLAN domains for the VLAN you selected.

• MAC addresses are those that have been sending frames from this VLAN to the switch within the last aging period.

• VLAN domain shows the domains in this VLAN from which active MAC addresses have been learned within the last aging period.

You can use the **Tab** key to move between the *MAC Addresses* and *VLAN Domain* screens.

Searching for MAC Addresses

To search for MAC addresses:

1. In the *VLAN MAC Address* screen, press **S**. The *Enter MAC Addr To Search* screen will appear.
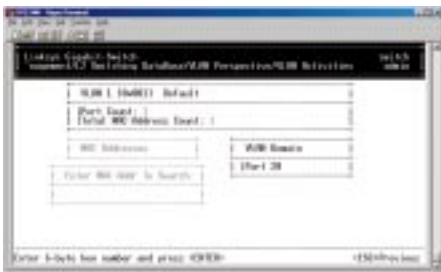

2. Enter a MAC address in the *Enter MAC Addr To Search* screen and press the **Enter** key. If the address is found, it is highlighted in the *MAC Addresses* screen.

Obtaining Additional Information

To obtain additional information about an active MAC address:

1. In the *MAC Addresses* screen, scroll to the desired address.

2. Press the **Enter** key. A *VLAN/IP Multicast Group Membership* screen similar to the following will appear.
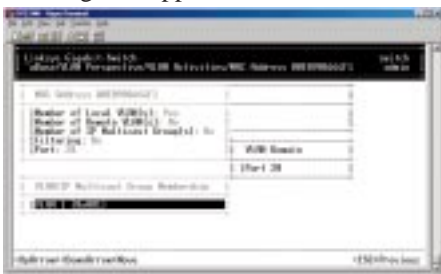
3. Press **Esc** to remove the *VLAN/IP Multicast Group Membership* screen.

Scrolling Through Domains

When the *VLAN Domain* screen is active, you can use the **Up Arrow** and **Down Arrow** keys to scroll through the list of domains associated with the selected VLAN.

Exiting the VLAN Screens

When you finish performing VLAN activities, press the **Esc** key until you return to the desired screen.

Viewing VLAN Settings

Using the *VLAN Configuration* screen, you can view VLAN settings.

1. From the *VLAN Perspective* screen, highlight an existing VLAN and press the **Enter** key. A screen similar to the following will appear, with the highlight on *VLAN Activities*.

2. Press the **Up Arrow** or **Down Arrow** key to highlight *VLAN Settings*.

3. Press **Enter**. A screen similar to the following will appear.
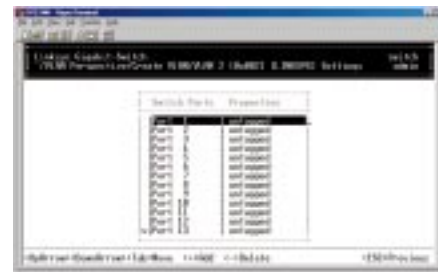
4. From this screen, you can add or delete switch ports from any VLAN except the default VLAN. The controls for adding and deleting ports are not displayed for the default VLAN.

**Adding Ports**

To add ports to a VLAN:

1. After following steps 1-4 on page 35, hold down the **Shift** key and press "+". The *Port Options* screen will appear.
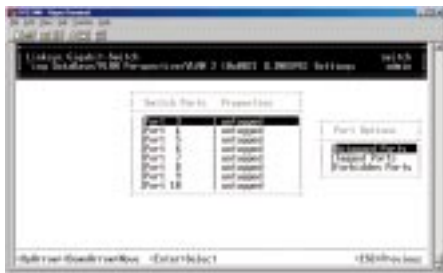
2. Select either *Untagged Ports* or *Tagged Ports*. Ports not allowed to be used in specific VLANs are labeled as *Forbidden Ports.*

To select *Untagged Ports*:

• Highlight *Untagged Ports* and press **Enter**. The *Select Untagged Ports* screen will appear, along with a list of the untagged ports that are not in use. Initially, there are 24 untagged ports you can select; this number decreases as you use untagged ports in your VLANs. In the following example, only untagged port 9 is available.
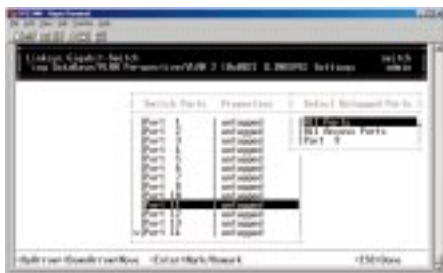
• To select an individual port, highlight it and press **Enter**. An asterisk will appear next to each port you select (to deselect it, press **Enter** again to remove the asterisk).

To select all ports, highlight *All Ports* and press **Enter**.

• Press **Esc**. The port(s) you selected appear in the previous screen.

To select tagged ports:

• Highlight *Tagged Ports* and press **Enter**. The *Select Tagged Ports* screen will appear, along with a list of the tagged ports.

• To select an individual port, highlight it and press **Enter**. An asterisk will appear next to each port you select (to deselect it, press **Enter** again to remove the asterisk).

To select all ports, highlight *All Ports* and press **Enter**.

• Press **Esc**. The port(s) you selected will appear in the previous screen.

3. When you finish, press **Esc** until you return to the desired screen.

Deleting Ports

The following procedure describes how to delete ports from a VLAN. Since there is no precautionary message that appears before you delete a VLAN port, be sure you want to delete the port before you begin.

1. From the screen at the bottom of page 35, use the **Up Arrow** and **Down Arrow** keys to highlight the port you want to delete.

2. Press the "**-**" (hyphen) key. The port is deleted.

IP MULTICAST GROUP PERSPECTIVE

The IP multicast group perspective provides information associated with an IP multicast group. Use the following procedure to obtain an IP multicast group perspective (IGMP must be set prior to this process--see page 68):
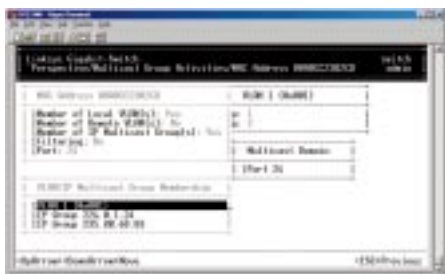
1. From the *L2 Switching DataBase* screen, highlight *IP Multicast Group Perspective* and press the **Enter** key. A screen similar to the following will appear.

2. To obtain a IP multicast group perspective for one of the addresses in the screen above, use the **Up Arrow** and **Down Arrow** keys to highlight an address and press the **Enter** key. A screen similar to the following will appear.
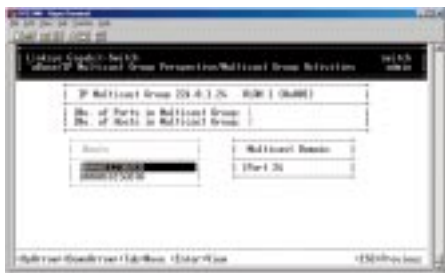
3. To view the VLAN and IP multicast group addresses associated with the MAC address, highlight a host in the *Hosts* screen and press **Enter**. A *VLAN/IP Multicast Group Membership* screen similar to the following will appear.

4. Use the **Up Arrow** and **Down Arrow** keys to scroll through the *VLAN/IP Multicast Group Membership* screen.

5. When you finish, press **Esc** until you return to the desired screen.

MAC ADDRESS PERSPECTIVE

The MAC address perspective lets you view all characteristics associated with a MAC address, corresponding VLANs, and corresponding ports in the switching database.

To obtain a MAC address perspective:

1. From the *L2 Switching DataBase* screen, highlight *MAC Address Perspective* and press the **Enter** key. You are prompted for a MAC address.

2. Enter the desired MAC address' characteristics, corresponding VLANs, and corresponding ports you want to view.

3. Press **Enter**. A screen similar to the following will appear.
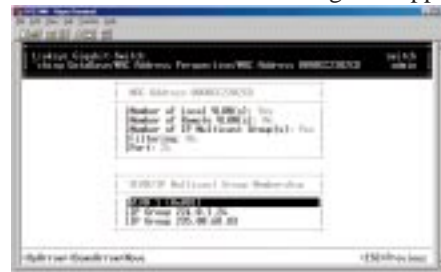
4. Use the **Up Arrow** and **Down Arrow** keys to scroll through the *VLAN/IP Multicast Group Membership* screen.

5. When you finish, press the **Esc** key to return to the desired screen.

PORT PERSPECTIVE

The port perspective lets you view VLAN activities and RMON statistics.

To obtain a port perspective:

1. From the *L2 Switching DataBase* screen, highlight *Port Perspective* and press the **Enter** key. The *Port Perspective* screen will appear.


2. To view per-port VLAN activities, highlight *Per Port VLAN Activities*, then press the **Enter** key.

3. To view per-port statistics, highlight *Per Port Statistics*, then press the **Enter** key.

Per Port VLAN Activities

If you select *Per Port VLAN Activities* from the *Port Perspective* screen, a screen similar to the following *Per Port VLAN Activities* screen appears.
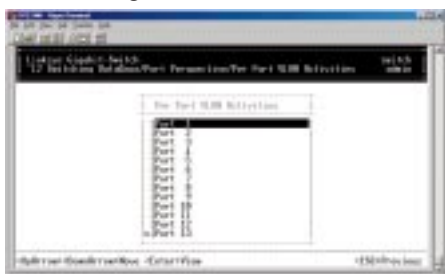
1. Use the **Up Arrow** and **Down Arrow** keys to highlight the desired port number and view the corresponding VLAN activities.

2. Press the **Enter** key. A screen similar to the one on the next page will appear, along with a list of the MAC addresses for the selected VLAN and the corresponding VLAN memberships.
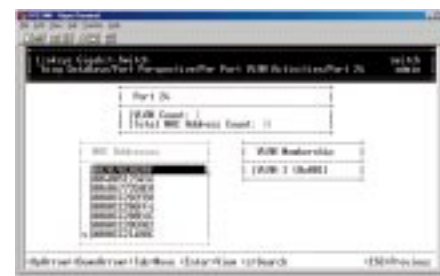
Scrolling Through MAC Addresses

Use the following procedure to scroll through the list of active MAC addresses corresponding to the selected port:

1. If the *MAC Addresses* screen is not the current screen, press the **Tab** key until it appears.

2. Use the **Up Arrow** and **Down Arrow** keys to scroll through the list of active MAC addresses for the selected port.

3. To search for a MAC address, press the "**S**" key. When the search prompt appears, enter a MAC address in the *Enter MAC Addr to Search* screen and press the **Enter** key. If the address is found, it will be highlighted in the *Port MAC Addresses* screen.

4. To obtain additional information about a particular MAC address, scroll to the address in the *Port MAC Address* screen and press the **Enter** key. A screen similar to the following will appear, showing detailed information about the selected MAC address.


40

41
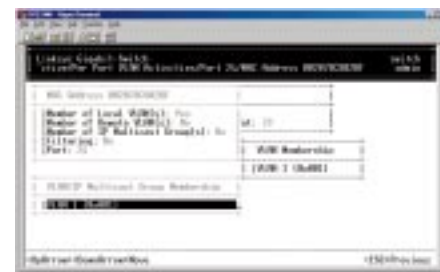
Per Port Statistics

If you select *Per Port Statistics* from the *Port Perspective* screen, a screen similar to the following *Per Port VLAN Activities* will appear.
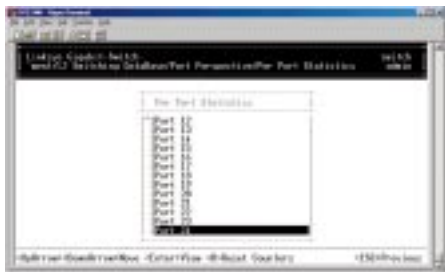

1. To reset counters for all ports, press the "**R**" key. When the following screen appears, highlight *Yes*. Press **Enter** to reset the counters or highlight *No* and press **Enter** to not reset them.

2. To view statistics for a port, use the **Up Arrow** and **Down Arrow** keys to highlight the desired port.

3. Press the **Enter** key. A screen similar to the following will appear, showing the statistics for the port you selected.
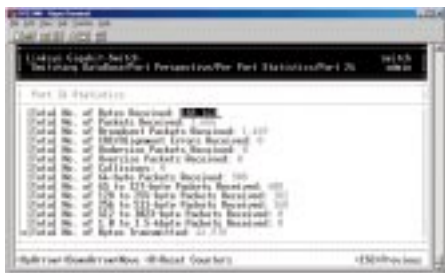
4. To reset counters for the port in the screen above, press the "**R**" key. The following screen will appear (see next page).
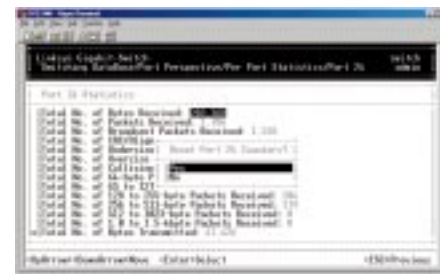
5. After reviewing this information, press the **Esc** key until you return to the desired screen.

IP Networking

If you select *IP Networking* from the *Advanced Management* screen, the *IP Networking* screen will appear.

From the *IP Networking* screen, you can:

• View or change *IP and RIP Settings*.

• View or change *ARP Table* Parameters.

• View or change *Routing Table* Parameters.

• View or change *DHCP Gateway Settings*.

• View or change *Ping* Settings.

IP & RIP SETTINGS

If you select *IP & RIP Settings* from the *IP Networking* screen, an *IP Settings* screen similar to the following will appear, along with a list of the VLAN IDs, IP addresses, subnet masks, and frame types currently defined.
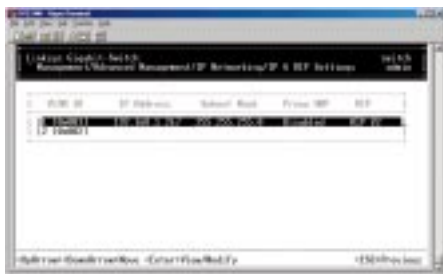
Use the following procedure to modify the settings shown:

1. Use the **Down Arrow** key to highlight the row that contains the parameters you want to change, then press **Enter**. A screen similar to the following will appear, with the the *IP Address* field highlighted.
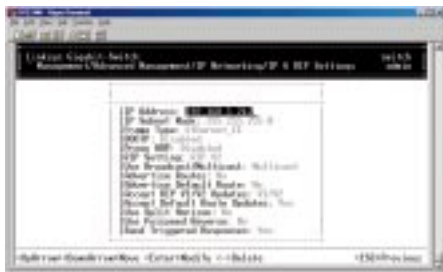
2. Review the settings. To change a setting, highlight it, press the **Enter** key, select the desired setting, and press **Esc**.

3. To delete a setting, highlight the setting and press the "**-**" (hyphen) key. When a message asks you to confirm the deletion, highlight *Yes* and press **Enter** to delete it. Press **Esc** or highlight *No* and press **Enter** to retain it. Note that by deleting the IP Address, any Telnet or Web connection will be disconnected.

4. When you finish, press the **Esc** key until you return to the desired screen.

ARP TABLE SETTINGS

If you select *ARP Table* from the *L3 IP Networking* screen, an *ARP Table* screen similar to the following will appear with the ARP table entries that have already been defined or learned.


From this screen, you are able to:

• Add static entries to the ARP table.

• Delete static entries to the ARP table.

• Search for entries in the ARP table.

Adding Static ARP Table Entries

Use the following procedure to add static entries to the ARP table:

1. From the *ARP Table* screen, hold down the **Shift** key and press the "+" key. The *Static ARP Specifications* screen will appear, with the *Internet Address* field highlighted.
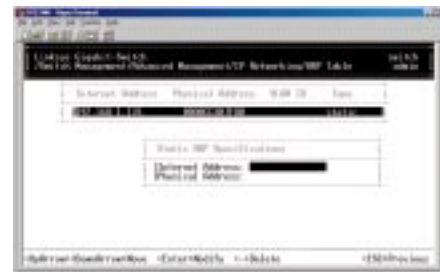
2. Press the **Enter** key. The *Enter Internet Address* screen (see next page) will appear.
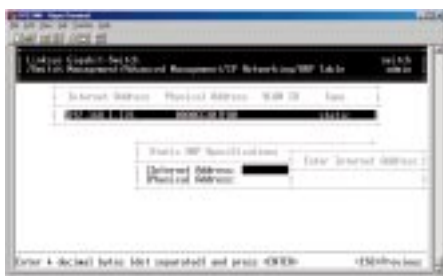
3. Type an Internet address. The address consists of numbers separated by periods (e.g., 129.32.0.11). When you finish, press **Enter**. The Internet address you typed will appear next to *Internet Address* in the *Static ARP Specifications* screen.

4. Press the **Down Arrow** key to highlight *Physical Address* and press **Enter**. The *Enter Physical Address* screen will appear.
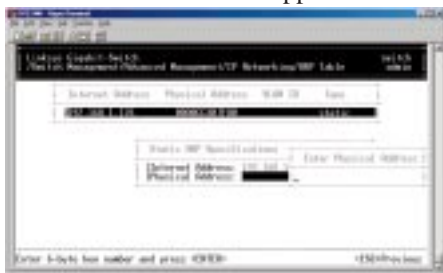
5. Type the corresponding physical address and press **Enter**. The physical address you typed will appear next to *Physical Address* in the *Static ARP Specifications* screen.

6. Press **Esc**. The Internet and physical addresses you typed will appear in the *ARP Table* screen. The following screen shows an example of Internet and physical addresses that have been added.

7. To add more static ARP table entries, repeat steps 1 through 6. When you are finished, press **Esc** to return to the *ARP Table* screen.

Deleting Static ARP Table Entries

If you no longer need a static entry in the ARP table, use the following procedure to delete it. Since there is no precautionary message that appears before you delete a static ARP table entry, be sure you want to delete the entry before you begin.

1. From the *ARP Table* screen, use the **Up Arrow** or **Down Arrow** key to highlight the ARP table entry you want to delete.

2. Press the "**-**" (hyphen) key to delete the entry.

3. To delete additional static ARP table entries, repeat steps 1 and 2.

4. When you finish, press **Esc** to return to the *ARP Table* screen.

Searching for ARP Table Entries

Use the following procedure to search for ARP table entries:

1. From the *ARP Table* screen, press the "**S**" key. The *Search Options* screen will prompt you to select an *Internet Address* or a *Physical Address*.

2. Highlight either *Internet Address* or *Physical Address* and press the **Enter** key. You are prompted for an IP or physical address.

3. Enter the IP or physical address you are searching and press **Enter**. The selected address will be highlighted.

4. When you finish viewing the information, press the **Esc** key until you return to the desired screen.

ROUTING TABLE

If you select *Routing Table* from the *IP Networking* screen, a *Routing Table* screen similar to the following will appear.
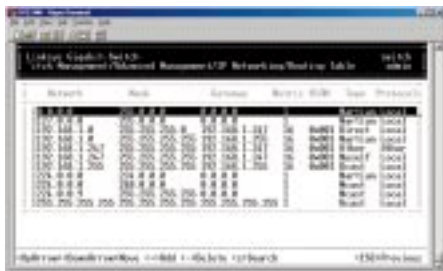
The Routing Table allows you to view, add, delete, or search a particular routing path. Information is displayed in the following columns:

Network   The IP Subnetwork address to which the switch can route packets.

Mask: The related IP Subnetwork Mask to which the switch can route packets.

Gateway   The IP address of the router at the next hop.

Metric   The number of hops needed between the switch and the destination network.

VLAN   The VLAN within which the gateway or destination resides.

Type   The IP route type for the IP subnetwork. There are six IP route types:

     Direct   A directly connected subnetwork.

     Remote   A remote IP subnetwork or host address.

     Myself   A switch IP address on a specific IP subnetwork.

     Bcast   A subnetwork broadcast address.

     Mcast   An IP multicast address.

     Martian   An illegal IP address to be filtered.

Protocol   Indicates one of the following:

     Local   A manually configured routing entry.

     NetMgmt   A routing entry set via SNMP.

     ICMP   A routing entry obtained via ICMP redirect.

     RIP   A routing entry learned via the RIP protocol.

     Other   A protocol other than one of the other four listed above.
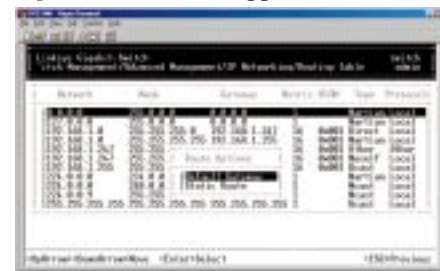
From the *Routing Table* screen, you are able to:

• Add entries to the Routing table.

• Delete entries from the Routing table.

• Search for entries in the Routing table.

Adding Routing Table Entries

Use the following procedure to add entries to the Routing table:

1. From the *Routing Table* screen, hold down the **Shift** key and press the "+" key. The *Route Options* screen will appear.
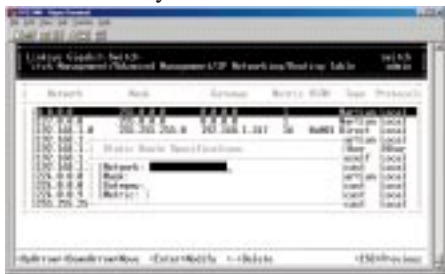

2. Select *Default Gateway* or *Static Route*, then press **Enter**.

If you select *Default Gateway*, the following screen (see next page) will appear. Press **Enter** and type an IP address for the default gateway. The address consists of numbers separated by periods (e.g., 129.32.0.11). When you finish, press **Enter**. Proceed to step 3.

If you select *Static Route*, the following screen will appear. At each field, press **Enter**, type the appropriate parameter, and press **Enter** again. Use the **Up Arrow** and **Down Arrow** keys to move between fields. Proceed to step 3.

3. After entering default gateway or static route parameters, press **Esc**. The parameters you entered will appear in the *Routing Table* screen.

**Deleting Routing Table Entries**

If you no longer need an entry in the Routing Table, use the following procedure to delete it. Since there is no precautionary message that appears before you delete a Routing Table entry, be sure you want to delete the entry before you begin.

1. From the *Routing Table* screen, use the **Up Arrow** or **Down Arrow** key to highlight the Routing table entry you want to delete.

2. Press the "**-**" (hyphen) key to delete the entry.

3. To delete additional Routing Table entries, repeat steps 1 and 2. When you finish, press **Esc** to return to the *Routing Table* screen.

Searching for Routing Table Entries

Use the following procedure to search for entries in the Routing Table:

1. From the *Routing Table* screen, press the "**S**" key. The *Enter Network Address* screen will appear.
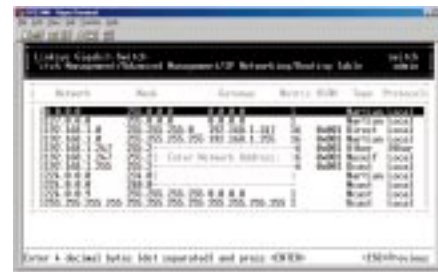
2. Type the network address you want to search for, then press **Enter**.

DHCP GATEWAY SETTINGS

If you highlight *DHCP Gateway Settings* from the *IP Networking* screen and press the **Enter** key, a *DHCP Gateway Settings* screen similar to the following will appear.
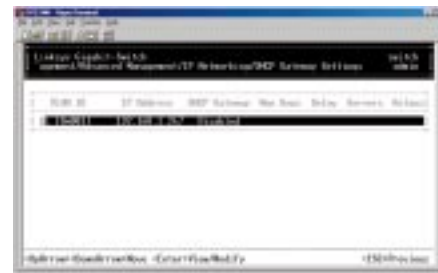

In this screen, the following details are displayed:

VLAN ID   shows the IDs of the VLANs that have been defined.

IP Address   shows the corresponding IP addresses of the VLANs.

DHCP Relay   shows whether the DHCP relay is enabled or disabled.

Max. Hops   shows the maximum number of hops that a DHCP request broadcast can be relayed along the DHCP relay path from the DHCP client to the DHCP server.

Delay   shows the number of seconds that must elapse before a DHCP request broadcast is relayed to the next IP subnetwork.

Servers   shows any preferred servers that have been defined.

Relays   shows the outbound IP subnetwork for relaying a DHCP request broadcast.

The following procedure describes how to change the DHCP gateway set-tings. As part of this procedure, you can specify up to three preferred servers and/or an outbound relay interface.
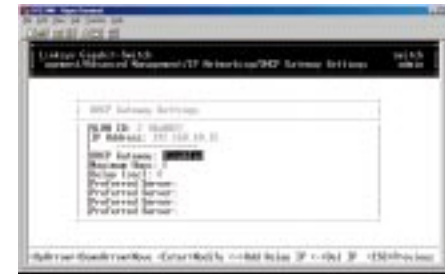
1. Highlight the appropriate *VLAN ID* and press **Enter**. A screen similar to the following will appear.
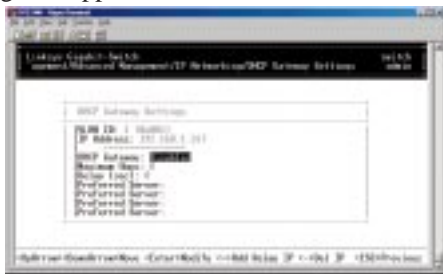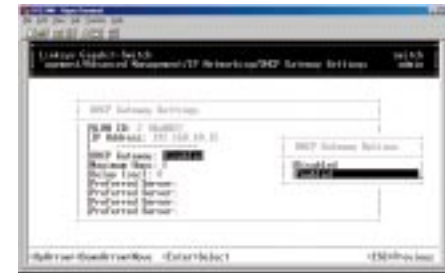

2. To add a relay IP, hold down the **Shift** key and press the "+" key. A screen similar to the following will appear.
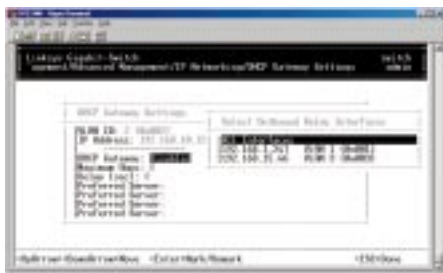
3. Highlight the appropriate interface, or highlight *All Interfaces*, then press **Esc**. A screen similar to the following (see next page) will appear.
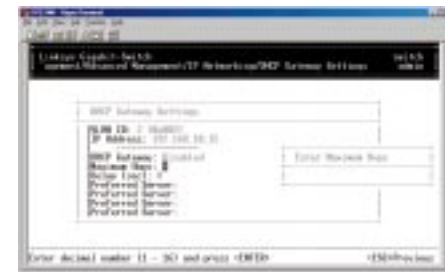

4. With the highlight on *DHCP Gateway*, press **Enter**. The following screen will appear.


5. Highlight *Enabled* and press **Enter** to enable the DHCP gateway.

6. Press the **Down Arrow** key and press **Enter** to configure the maximum number of hops. When the following screen appears, type the desired num-ber and press **Enter**.

7. Press the **Down Arrow** key and press **Enter** to configure the delay. When the following screen (see next page) appears, type the delay, in seconds, and press **Enter**.
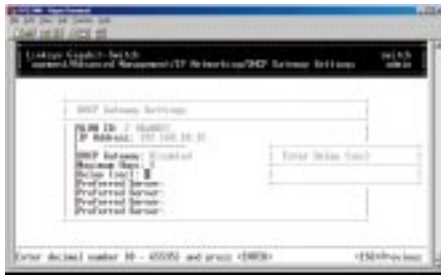
8. Press the **Down Arrow** key and press **Enter** to specify the preferred server. When the following screen appears, type the delay, in seconds, and press **Enter**.
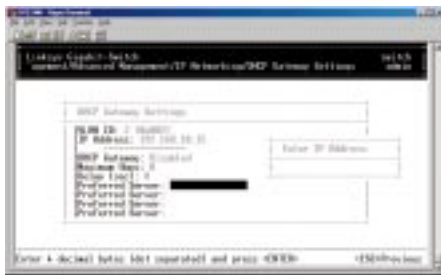
9. To specify up to three more preferred servers, do so in the remaining *Preferred Field* options.

10. When you finish, press **Esc**. The *DHCP Gateway Settings* screen will appear, along with the parameters you specified.

11. To define additional DHCP gateways, repeat steps 1 through 10.

12. When you finish defining DHCP gateways, press **Esc** until you return to the desired screen.

PING SETTINGS

If you select *Ping* from the *IP Networking* screen, a *Ping* screen similar to the following will appear, with the *Host* field highlighted.

Use the following procedure to change the ping settings:

1. Press **Enter**. The *Enter IP Address* screen will appear.

2. Type the IP address of the server you want to ping. The address consists of numbers separated by periods (e.g., 129.32.0.11).

3. Press **Enter**.

4. Use the **Down Arrow** key to move to *Count* and press **Enter**. The *Enter Packet Count* screen will appear.

54   55

5. Type a packet count number from 1 to 999, or type 0 for an infinite packet count. Press **Enter**.

6. Move to *Size <mbytes>* and press **Enter**. The *Enter Packet Size* screen will appear.

7. Type the packet size, from 0 to 1500, then press **Enter**.

8. Move to *Timeout <sec>* and press **Enter**. The *Enter Timeout* screen will appear.

9. Type a timeout value, from 0 to 999, and press **Enter**.

10. When you finish specifying the ping parameters, press **Esc** to start pinging a remote IP address.

11. Press **Esc** again to return to the *L3 IP Networking* screen.

BRIDGING

If you select *Bridging* from the *Advanced Management* screen, the following *Bridging Parameters* screen will appear.

1. To change the aging time, highlight *Aging Time <seconds>* and press **Enter**. The following prompt will ask you to enter a bridge aging period, in seconds. Enter a new aging period and press the **Enter** key. Enter 0 for no aging.

2. To change the flood limit for all ports, highlight *Flood Limit for All ports <pkt/s>*, the following prompt will ask you to enter the flood limit, in packets per second. Enter a a new flood limit and press the **Enter** key. Enter 0 for no limit.

3. Press the **Esc** key until you return to the desired screen.

STATIC FILTERING

If you select *Static Filtering* from the *Advanced Management* screen, the following *Static Filtering* screen will appear, with *Source MAC Address* highlighted.


From the *Static Filtering* screen, you can select *Source MAC Addresses* or *Destination MAC Addresses* for static filtering by highlighting one of these options and pressing the **Enter** key.

If you select *Source MAC Address* and press **Enter**, the *SRC MAC Out-Filter* screen will appear.

If you select *Destination MAC Address* and press **Enter**, the *DST MAC Out-Filter* screen will appear.
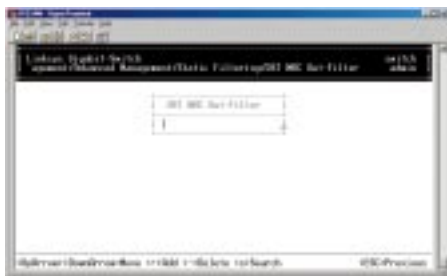
From either of these screens, you are able to:

• Hold down the **Shift** key and press the "+" key to add a specific MAC address to be filtered.

• Press the "**-**" (hyphen) key to delete a specific MAC address from being filtered. Since there is no precautionary message that appears before you delete a specific MAC address, be sure you want to delete the address before you begin.

• Press "**S**" to search through the list of MAC addresses in the static filtering database. The static filtering database maximum capacity is 64.

When you finish, press the **Esc** key until you return to the desired screen.

SPANNING TREE FUNCTIONS

If you select *Spanning Tree* from the *Advanced Management* screen, the *Spanning Tree Protocol* screen will appear.


Spanning Tree Protocol Configurations

Highlight *Spanning Tree Configurations* in the *Spanning Tree Protocol* screen and press the **Enter** key. A *Spanning Tree Protocol Configuration* screen similar to the following will appear. The top half of this screen displays read-only values. The bottom half, starting with *Spanning Tree Protocol*, is user configurable. Use the **Up Arrow** and **Down Arrow** keys to highlight a field, then press **Enter** to change the value. When you finish, press the **Esc** key until you return to the desired screen.
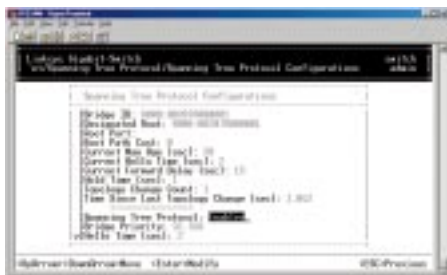

Use the following procedure to modify the selections shown:

1. With the *Spanning Tree Protocol* field highlighted, press **Enter**. The following choices will appear (see next page).
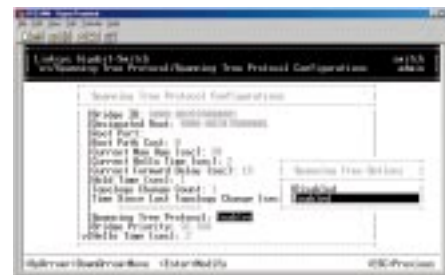

2. Select either *Disabled* or *Enabled* and press **Enter**. Your selection will appears next to *Spanning Tree Protocol*.

3. Use the **Down Arrow** key to move to *Bridge Priority* and press **Enter**. The *Enter Bridge Priority* screen will appear.
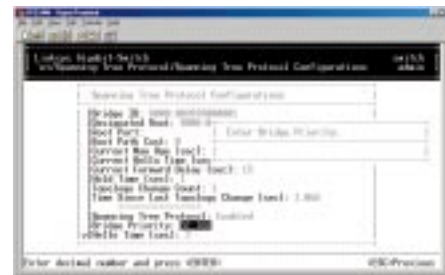
4. Type a decimal number for the bridge priority and press **Enter**. The decimal value you typed will appear next to *Bridge Priority*.

5. Use the **Down Arrow** key to move to *Hello Time <sec>* and press **Enter**. The *Enter Hello Time* screen will appear.
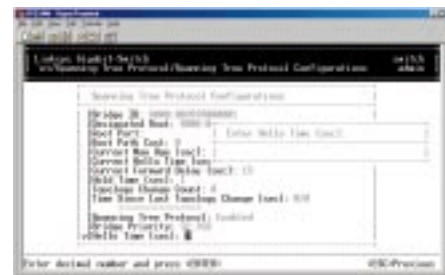

6. Type a decimal number for the hello time and press **Enter**. The decimal value you typed will appear next to *Hello Time*.

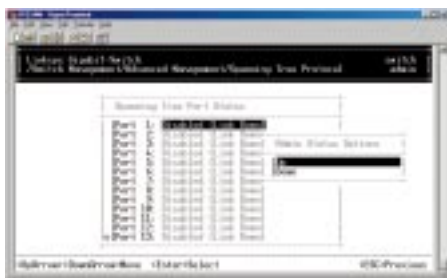7. Press the **Esc** key to return to the *Spanning Tree Protocol* screen.

Spanning Tree Port States

Highlight *Spanning Tree Port States* in the *Spanning Tree Protocol* screen and press the Enter key. A *Spanning Tree Port States* screen similar to the following will appear. This screen displays read-only values. When you finish, press the **Esc** key until you return to the desired screen.
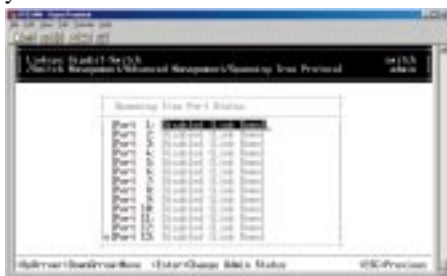
Use the following procedure to change the administration status:

1. Use the **Up Arrow** and **Down Arrow** keys to highlight the desired port.

2. Press the **Enter** key. The *Admin Status Options* screen will appear.

• To manually enable the selected port, highlight *Up* and press **Esc**.

• To manually disable the selected port, highlight *Down* and press **Esc** (to re-enable the port, repeat steps 1 through 3 and select *Up* in step 3).

3. Enable or disable the selected port (your selection will appear next to the selected port).

4. To change the administration status options for other ports, repeat steps 1 through 3.
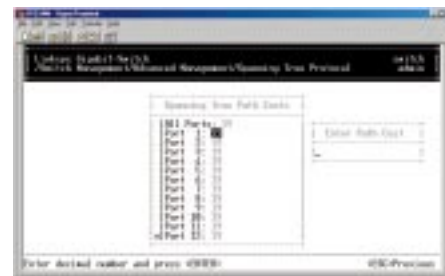
5. When you finish, press **Esc**.

Spanning Tree Path Costs

Highlight *Spanning Tree Path Costs* in the *Spanning Tree Protocol* screen and press the **Enter** key. A *Spanning Tree Path Costs* screen similar to the following will appear.

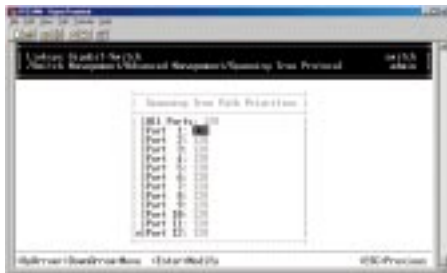Use the following procedure to change the costs in the *Spanning Tree Path Costs* screen:

1. Use the **Up Arrow** and **Down Arrow** keys to highlight a specific port or highlight *All Ports*.

2. Press the **Enter** key. The *Enter Path Cost* screen will appear.

3. Enter a new path cost, then press **Enter**. The new Spanning Tree path cost appears next to the selected port.

4. Repeat steps 1 through 3 to change the Spanning Tree path costs for other ports.

5. When you finish, press the **Esc** key until you return to the desired screen.

Spanning Tree Port Priorities

Highlight *Spanning Tree Port Priorities* in the *Spanning Tree Protocol* screen and press the **Enter** key, a *Spanning Tree Port Priorities* screen similar to the following will appear.

Use the following procedure to modify the settings in the *Spanning Tree Port Priorities* screen:

1. Use the **Up Arrow** and **Down Arrow** keys to highlight the a specific port or highlight *All Ports*.

2. Press **Enter**. The *Enter Port Priority* screen will appear.
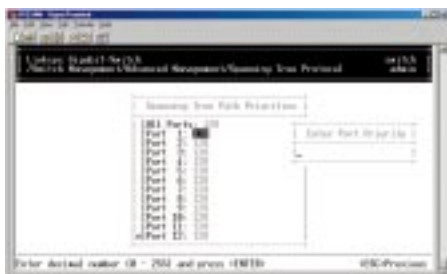
3. Type a port priority, from 0 to 255, and press **Enter**. A low value gives the port a greater likelihood of becoming a Root port.

4. To change the priorities of other ports, repeat steps 1 through 3.

5. When you finish, press the **Esc** key until you return to the desired screen.

SNMP FUNCTIONS

If you select *SNMP* from the *Advanced Management* screen, the following *SNMP Configurations* screen will appear, with the SNMP value highlighted.
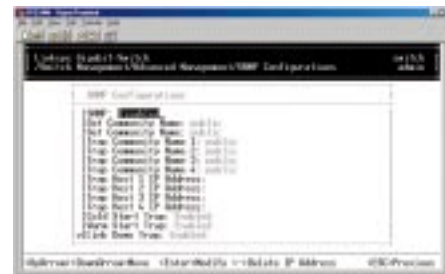
The *SNMP Configurations* screen lets you view all SNMP-related information. As this screen shows, the factory default SNMP value is *Enabled* and the factory default *Community Name* value is *public*.

Use the following procedure to change a value:

1. With the *SNMP* field highlighted, press the **Enter** key. The following SNMP options will appear.
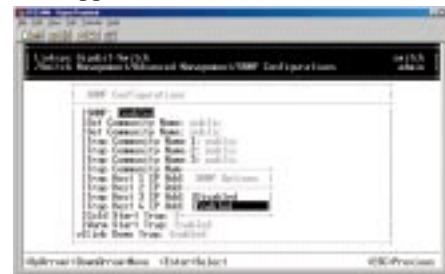

2. Select *Disabled* or *Enabled* and press **Enter**. Your selection will appear next to *SNMP*.

3. Use the **Down Arrow** key to move to *Get Community Name* and press **Enter**. The *Enter Get Community Name* screen will appear.

4. Type a get community name and press **Enter**. The get community name you typed will appear next to *Get Community Name*.

5. Use the **Down Arrow** key to move to *Set Community Name* and press **Enter**. The *Enter Set Community Name* screen will appear.
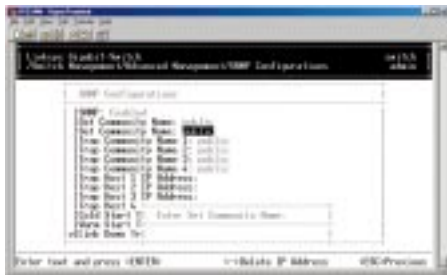

6. Type a set community name and press **Enter**. The set community name you typed will appear next to *Set Community Name*.

7. Use the **Down Arrow** key to move to *Trap Community Name* and press **Enter**. The *Enter Trap Community Name* screen will appear.
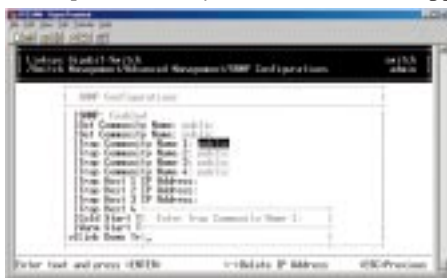
8. Type a trap community name and press **Enter**. The set community name you typed will appear next to *Trap Community Name*.

9. To specify up to three additional trap community names, repeat steps 7 and 8.

10. To specify a trap host IP address, use the **Down Arrow** key to move to *Trap Host 1 IP Address* and press **Enter**. The *Enter Trap Host 1 IP Address* screen will appear (see next page).
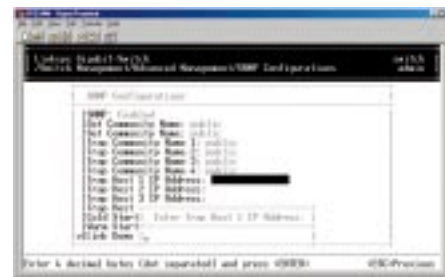
11. Type an IP address for trap host 1. The address consists of numbers separated by periods (e.g., 129.32.0.11).

12. Press **Enter**. The IP address you typed will appear next to *Trap Host 1 IP Address*.

13. To specify up to two additional trap community names, repeat steps 10 through 12.

14. To change the cold start trap setting, press the **Down Arrow** key to move to *Cold Start Trap* and press **Enter**. The Trap Options screen will appear.
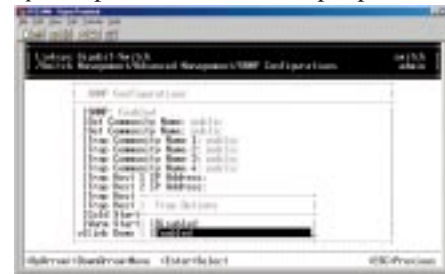
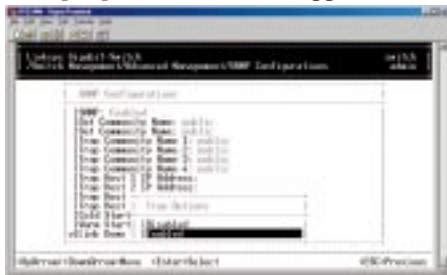
15. Select *Disabled* or *Enabled* and press **Enter**. Your selection will appear next to *Cold Start Trap*.

16. Press the **Down Arrow** key to move to *Warm Start Trap* and press the **Enter** key. *The Trap Options* screen will appear.

17. Select *Disabled* or *Enabled* and press **Enter**. Your selection will appear
    next to *Warm Start Trap*.

18. Press the **Down Arrow** key to move to *Link Down Trap* and press the
   **Enter** key. The *Trap Options* screen will appear.

19. Select *Disabled* or *Enabled* and press **Enter**. Your selection will appear
    next to *Link Down Trap*.

20. When you finish, press the **Esc** key until you return to the desired screen.

OTHER PROTOCOLS

Highlight *Other Protocols* from the *Advanced Management* screen and press
the **Enter** key. The *Other Protocol Settings* screen will appear, with the
GVRP value highlighted.
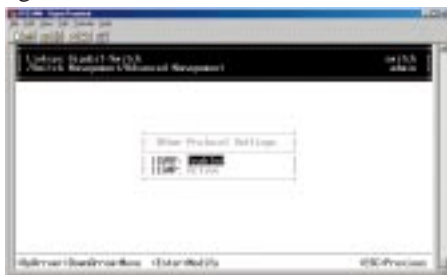
1. To change the GVRP setting, press **Enter** with *GVRP* highlighted. When
   the following screen (see next page) appears, highlight the desired setting
   and press **Enter**.

2. To change the IGMP setting, highlight *IGMP* and press **Enter**. When the
   following screen appears, highlight the desired setting and press **Enter**.

3. When you finish, press the **Esc** key until you return to the desired screen.

PORT TRUNKING

Using *Port Trunking* from the *Advanced Management* screen, you can associ-
ate ports with trunk groups.

1. From the *Advanced Management* screen, highlight *Port Trunking* and press
   the **Enter** key. The following screen will appear.

2. Highlight the trunk group to which you want the ports assigned, then press
   Enter. A screen similar to the following (see next page) will appear.

68   69
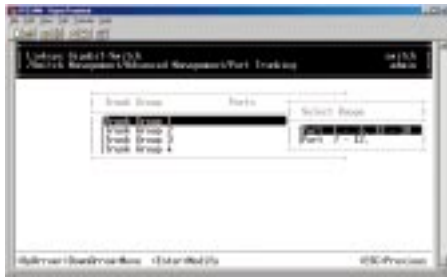
3. Highlight the range of ports you want to associate with the trunk group, then press **Enter**. The port range appears next to the selected trunk group, as in the following screen.

4. For each trunk port you want to select, highlight it and press **Enter**. An asterisk will appear next to the selected port as in the following screen (if you change your mind, highlight the port and press **Enter** again to deselect it and remove the asterisk.)

5. When you finish selecting ports, press **Esc**. A screen similar to the following (see next page) will appear, showing the ports associated with the trunk group.

6. To associate additional ports with trunk groups, repeat steps 2 through 5.

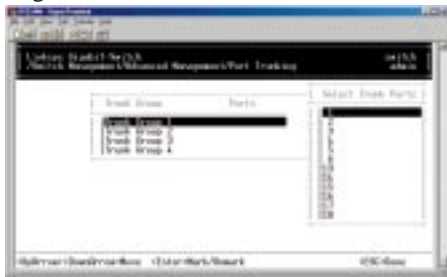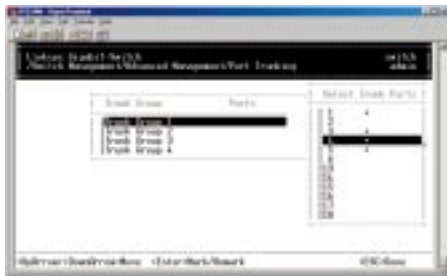7. When you finish, press the **Esc** key until you return to the desired screen.

PORT MIRRORING

Using Port Mirroring from the Advanced Management screen, you can mirror any one port to Port 13.

1. From the *Advanced Management* screen, highlight *Port Mirroring* and press the **Enter** key. The following screen will appear.

2. Highlight Port 13, then press **Enter**. The *Port Mirroring Options* screen will appear.

3. With the *Mirror From* field highlighted, press the **Enter** key. A *Mirror From Options* screen will appear, listing the ports that can be mirrored from.

70   71
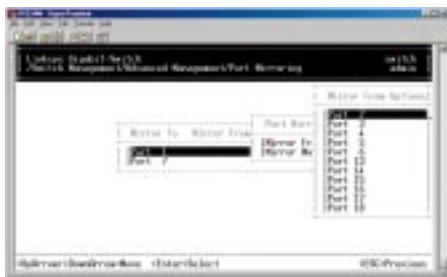
4. Highlight the port you want to mirror from and press **Enter**. You will return to the *Port Mirroring Options Screen* and your selection will appear next to *Mirror From*.

5. Press the **Down Arrow** key to highlight *Mirror Mode* and press **Enter**. The *Mode Options* screen will appear.

6. Highlight *Receive* or *Transmit* depending on whether the port to be mirrored from will be receiving or transmitting, then press **Enter**. Your selection will appear next to *Mirror Mode* in the *Port Mirroring Options* screen.

7. Press **Esc**. Your selections will appear in the following screen.
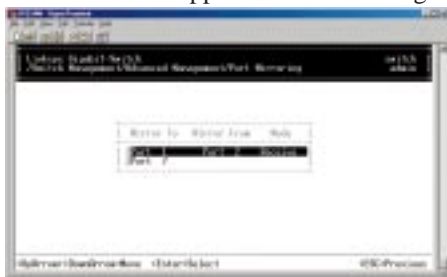
8. To mirror additional ports, repeat steps 2 through 7.

9. When you finish, press the **Esc** key until you return to the desired screen.

UPGRADING FIRMWARE

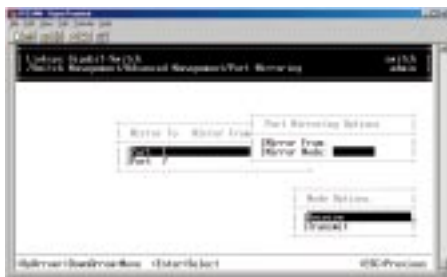Select *File Transfer* from the *Advanced Management* screen. The following *File Transfer* screen will appear, with the *File Name* value highlighted.
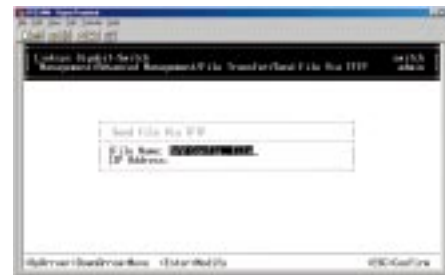
Use the following procedure to change a value:

1. Press the **Enter** key. The *Enter File Name* screen will appear.
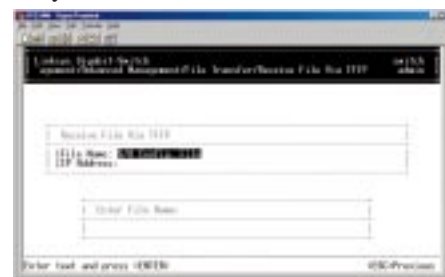
2. Type a name for the *Software Upgrade* file and press **Enter**. The name you typed will appear next to *File Name*.

3. Use the **Down Arrow** key to move to *IP Address*, then press **Enter**. The *Enter IP Address* screen will appear.
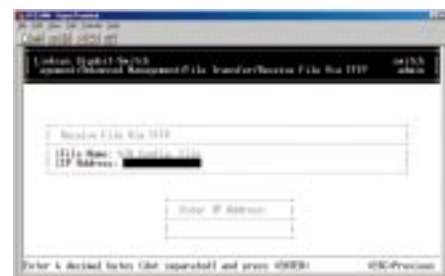
4. Type the IP address from where the software upgrade will be obtained. The address consists of numbers separated by periods (e.g., 129.32.0.11).

5. Press **Enter**. The IP address will appear next to *IP Address*.

6. When you finish, press the **Esc** key. A prompt will ask whether you want to upgrade your software now.

7. Highlight *Yes* and press **Enter** to upgrade the software now. Press the **Esc** key or highlight *No* and press **Enter** to not upgrade at this time.

SNMP and RMON Management

Overview

This section describes the GigaSwitch's Simple Network Management Protocol (SNMP) and Remote Monitoring (RMON) capabilities.

RMON is an abbreviation for the Remote Monitoring MIB (Management Information Base). RMON is a system defined by the Internet Engineering Task Force (IETF) document RFC 1757, which defines how networks can be monitored remotely. RMONs typically consist of two components: an RMON probe and a management workstation:

• The RMON probe is an intelligent device or software agent that continually collects statistics about a LAN segment or VLAN. The RMON probe transfers the collected data to a management workstation on request or when a pre-defined threshold is reached.

• The management workstation collects the statistics that the RMON probe gathers The workstation can reside on the same network as the probe, or it can have an in-band or out-of-band connection to the probe.

The GigaSwitch provides RMON capabilities that allow network administrators to set parameters and view statistical counters defined in MIB-II, Bridge MIB, and RMON MIB. RMON activities are performed at a Network Management Station running an SNMP network management application with graphical user interface.

SNMP Agent and MIB-2 (RFC1213)

The SNMP Agent running on the switch manager CPU is responsible for:

• Retrieving MIB counters from various layers of software modules according to the SNMP GET/GET NEXT frame messages.

• Setting MIB variables according to the SNMP SET frame message.

• Generating an SNMP TRAP frame message to the Network Management Station if the threshold of a certain MIB counter is reached or if other trap conditions (see next page) are met:

• Warm start

• Cold start

• Link up

• Link down

• Authentication failure

• Rising alarm

• Falling alarm

• Topology change

MIB-2 defines a set of manageable objects in various layers of the TCP/IP protocol suites. MIB-2 covers all manageable objects from layer 1 to layer 4 and, as a result, is the major SNMP MIB supported by all vendors in the net-working industry. The GigaSwitch supports a complete implementation of SNMP Agent and MIB-2.

RMON MIB (RFC 1757) and Bridge MIB (RFC 1493)

The GigaSwitch provides hardware-based RMON counters in the switch chipset. The switch manager CPU polls these counters periodically to collect the statistics in a format that complies with the RMON MIB definition.

RMON GROUPS SUPPORTED

The GigaSwitch supports the following RMON MIB groups defined in RFC1757:

• RMON Statistics Group maintains utilization and error statistics for the switch port being monitored.

• RMON History Group gathers and stores periodic statistical samples from the previous Statistics Group.

• RMON Alarm Group allows a network administrator to define alarm thresholds for any MIB variable. An alarm can be associated with Low Threshold, High Threshold, or both. A trigger can trigger an alarm when the value of a specific MIB variable exceeds a threshold, falls below a thresh-old, or exceeds or falls below a threshold.

• RMON Event Group allows a network administrator to define actions based on alarms. SNMP Traps are generated when RMON Alarms are trig-gered. The action taken in the Network Management Station depends on the specific network management application.

BRIDGE GROUPS SUPPORTED

The GigaSwitch supports the following four groups of Bridge MIB (RFC1493):

• **The dot1dBase Group** a mandatory group that contains the objects appli-cable to all types of bridges.

• **The dot1dStp Group** contains the objects that denote the bridge's state, with respect to the Spanning Tree Protocol. If a node does not implement the Spanning Tree Protocol, this group will not be implemented. This group is applicable to any transparent only, source route, or SRT bridge that imple-ments the Spanning Tree Protocol.

• **The dot1dTp Group** contains objects that describe the entity's transparent bridging status. This group is applicable to transparent operation only and SRT bridges.

• **The dot1dStatic Group** contains objects that describe the entity's destina-tion-address filtering status. This group is applicable to any type of bridge which performs destination-address filtering.

Appendix

About Fast Ethernet

As the demand for desktop video, multimedia development, imaging, and other speed-intensive applications continues to rise, the need for high performance, fault tolerant LAN technology will become more critical.

Standard Ethernet, which has been the most popular networking technology to date with a maximum data throughput of 10Mbps (Megabits per second), is becoming insufficient to handle the latest video, multimedia, and other speed-intensive client/server LAN applications.

Among the solutions to the problem of network speed, Fast Ethernet has emerged as the most viable and economical. Capable of sending and receiving data at 100Mbps, it is more than fast enough to handle even the most demanding video and other real-time applications.

Although there are a number of different competing Fast Ethernet implementations, 100BaseTX is by far the most popular. Operating on two pairs of Category 5 unshielded twisted-pair (UTP) cabling, 100BaseTX supports high speed signaling and is relatively inexpensive. Because it uses four wires for data transmission and the same packet format, packet length, error control, and management information as 10BaseT, 100BaseTX can be made to communicate with slower 10BaseT equipment when routed through a switch.

This backwards compatibility is one of 100BaseTX's major advantages over other forms of Fast Ethernet; it allows critical, speed-dependent network segments to be upgraded to 100BaseTX speeds as needed without re-wiring, refitting, and retraining an entire site. Networks can now mix both slow and fast network segments for different users or departments. Publishing, R&D, video, multimedia, or accounting departments can enjoy a 100Mbps pace, while other corporate segments can operate at slower and more affordable 10Mbps speeds.

About Gigabit Ethernet

Gigabit Ethernet runs at speeds of 1Gbps (Gigabit per second), ten times faster than 100Mbps Fast Ethernet, but it still integrates seamlessly with 100Mbps Fast Ethernet hardware. Users can connect Gigabit Ethernet hardware with either fiber optic cabling or copper Category 5 cabling, with fiber optics more suited for network backbones. As the new Gigabit standard gradually integrates into existing networks, current computer applications will enjoy faster access time for network data, hardware, and Internet connections.

Fiber Optic Cabling

Fiber optic cabling is made from flexible, optically efficient strands of glass and coated with a layer of rubber tubing, fiber optics use photons of light instead of electrons to send and receive data. Although fiber is physically capable of carrying tetrabits of data per second, the signaling hardware currently on the market can handle no more than a few gigabits of data per second.

Fiber cables come in different with two main connector types. The most commonly used fiber optic cable is multi-mode fiber cable (MMF), with a 62.5 micron fiber optic core. Single-mode fiber cabling is somewhat more efficient than multi-mode but far more expensive, due to its smaller optic core that helps retain the intensity of traveling light signals. A fiber connection always require two fiber cables: one transmits data, and the other receives it.

Each fiber optic cable is tipped with a connector that fits into a fiber port on a network adapter, hub, or switch. In the U. S., most cables use a square SC connector that slides and locks into place when plugged into a port or connected to another cable. In Europe, the round ST connector is more prevalent.

Twisted-Pair Cabling

There are different grades, or categories, of twisted-pair cabling. Category 5 is the most reliable and is highly recommended. Category 3 is a good second choice. Straight-through cables are used for connecting computers to a hub. Crossover cables are used for connecting a hub to another hub (there is an exception: some hubs have a built-in uplink port that is crossed internally, which allows you to link or connect hubs together with a straight-through cable instead).


RJ-45 Color Chart

| Wire 1 | White with an Orange Stripe |
Wire 2	Orange
Wire 3	White with a Green Stripe
Wire 4	Blue
Wire 5	White with a Blue Stripe
Wire 6	Green
Wire 7	White with a Brown Stripe
Wire 8	Brown

You can buy pre-made Category 5 cabling, or cut and crimp your own. Category 5 cables can be purchased or crimped as either straight-through or crossover cables. A Category 5 cable has 8 thin, color-coded wires inside that run from one end of the cable to the other. All 8 wires are used. In a straight-through cable, wires 1, 2, 3, and 6 at one end of the cable are also wires 1, 2, 3, and 6 at the other end. In a crossover cable, the order of the wires change from one end to the other: wire 1 becomes 3, and 2 becomes 6. See the diagrams on the next page for more detailed information on straight-through and crossover cabling.

To determine which wire is wire number 1, hold the cable so that the end of the plastic RJ-45 tip (the part that goes into a wall jack first) is facing away from you. Face the clip down so that the copper side faces up (the springy clip will now be parallel to the floor).When looking down on the copper side, wire 1 will be on the far left.
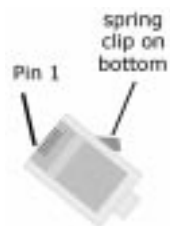
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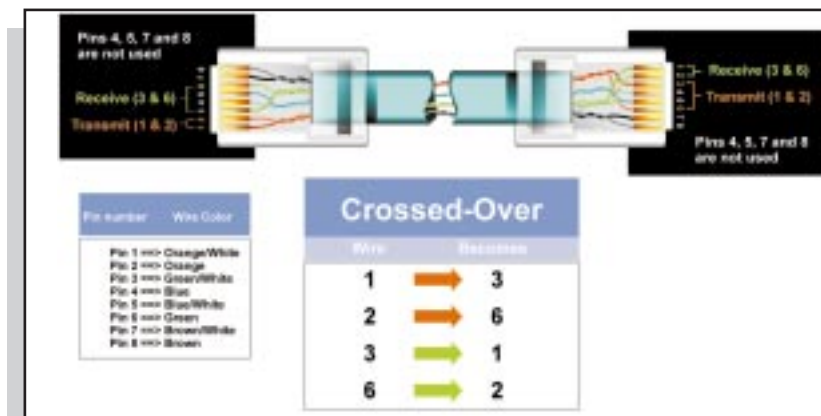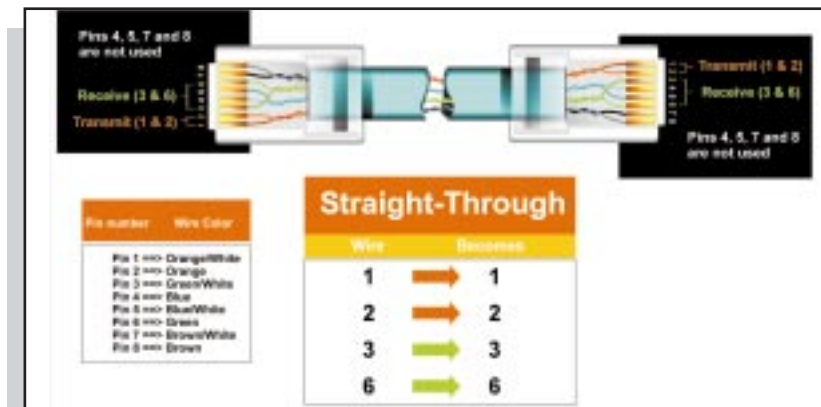
Specifications

Model No.	EG24M
Standards	IEEE: 802.1d, 802.1p, 802.1q, 802.3, 802.3ab, 802.3ad, 802.3u, 802.3x, 802.3z
Protocol	CSMA/CD
Ports	Twenty-Four 10BaseT/100BaseTX RJ-45 Ports, Two Gigabit Expansion Ports, One Console Port
Cabling Type	UTP Category 5 (or better), Fiber Optic*
Topology	Star
Speed	
Ethernet:	10Mbps/20Mbps (half/full-duplex)
Fast Ethernet:	100Mbps/200Mbps (half/full-duplex)
Gigabit Ethernet*:	1Gbps/2Gbps (half/full-duplex)
Cabling Type	UTP Category 5 (or better), Fiber Optic*
Topology	Star
LEDs	*Main*: Power, Management; *Per Port*: Link, 10/100, Tx/Rx, FD/Collision; *Gigabit**: Link, Tx/Rx, FD

*optional Gigabit expansion module required

Environmental

Dimensions	9.1" x 17.3" x 2.6" (232mm x 440mm x 66mm)
Unit Weight	8.8 lbs. (4Kg)
Power	90-240V, 50/60Hz, 60W
Certifications	FCC Class A, CE Mark Commercial
Operating Temp	0ºC to 40ºC (32ºF to 104ºF)
Storage Temp	-20ºC to 70ºC (-4ºF to 158ºF)
Operating Humidity	10% to 85% Non-Condensing
Storage Humidity	5% to 90% Non-Condensing

Customer Support

For help with the installation or operation of your EtherFast 10/100 Managed 25-Port GigaSwitch, contact Linksys Customer Support at one of the phone numbers or Internet addresses below.

Customer Support	(800) 326-7114
	(949) 261-1288
Information	(800) 546-5797
Fax	(949) 261-8868
E-mail	support@linksys.com
Web	http://www.linksys.com
FTP Site	ftp.linksys.com

Linksys Warranty Information

Note: You must have your proof of purchase and a barcode from the product's packaging on hand when calling. Return requests can not be processed without proof of purchase.

Linksys guarantees that every EtherFast 10/100 Managed 25-Port GigaSwitch is free from physical defects in material and workmanship under normal use for FIVE yeas from the date of purchase. If the product proves defective during this warranty period, contact Linksys Customer Support to obtain a Return Authorization Number. When returning a product, mark the Return Authorization Number clearly on the outside of the package and include your original proof of purchase. All customers outside of the United States of America and Canada shall be held responsible for shipping and handling charges.

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