



***ForeRunner*[™] ES-3810** **Configuration Manual**

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Software Version 4.2.x

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Preface

This manual provides users of the *ForeRunner*[™] ES-3810 Ethernet Workgroup Switch with the necessary information to successfully configure and manage the ES-3810. This document provides information about the software administration capabilities of the ES-3810, and it was created for users with various levels of experience. If you have questions or problems with the installation, please contact FORE Systems' Technical Support.

Chapter Summaries

Chapter 1 - Introduction - Provides information about the Network Management Module, the ES-3810's console interface, and logon procedures.

Chapter 2 - System Management - Provides information about viewing and configuring ES-3810 system parameters, viewing installed modules, and managing system software.

Chapter 3 - Interface Management - Provides information about the management and configuration of the ES-3810's Ethernet and ATM interfaces, describes LANE and RFC 1483 (PVC) configuration, and describes the ES-3810's various interface counters.

Chapter 4 - VLAN Management - Describes how to create, modify, and delete VLANs, including naming, port and MAC address inclusion, IGMP filtering, and protocol (LANE or RFC1483) usage.

Chapter 5 - UDP/IP Management - Describes management of the ARP cache, IP parameters, and the IP routing table, as well as how to view ICMP, IP, and UDP counters.

Chapter 6 - SNMP Management - Describes how to modify and manage the Access Control List and the Trap Destination List, and how to view SNMP counters.

Chapter 7 - Spanning Tree Management - Describes how to create, modify, and delete Spanning Tree instances on the ES-3810, how to display the Spanning Tree configuration, and how to configure Spanning Tree on individual ports.

Chapter 8 - Telnet Management - Describes how to view the current Telnet parameters, how to enable or disable Telnet on the ES-3810, and how to modify the timeout value on the switch.

Appendix A - ESM-16 Console Management Subsystem - Provides information about local management of the ES-3810 via the ESM-16.

Technical Support

In the U.S.A., you can contact FORE Systems' Technical Support by any one of four methods:

1. If you have access to Internet, you may contact FORE Systems' Technical Support via e-mail at:

support@fore.com

2. You may FAX your questions to "support" at:

412-742-7900

3. You may send questions, via U.S. Mail, to:

**FORE Systems, Inc.
1000 FORE Drive
Warrendale, PA 15086-7502**

4. You may telephone your questions to "support" at:

800-671-FORE (3673) or 412-635-3700

Technical support for non-U.S.A. customers should be handled through your local distributor.

No matter which method is used for technical support, please be prepared to provide the serial number(s) of the product(s) and as much information as possible describing your problem/question.

Typographical Styles

Throughout this manual, specific commands to be entered by the user appear on a separate line in bold typeface. In addition, use of the Enter or Return key is represented as <ENTER>. The following example demonstrates this convention:

```
cd \usr <ENTER>
```

Commands, menu options, or file names that appear within the text of this manual are represented in the following style: "...the fore_install program will install this distribution"

Important Information Indicators

To call your attention to safety and otherwise important information that must be reviewed to insure correct and complete installation, as well as to avoid damage your system, FORE Systems utilizes the following *WARNING/CAUTION/NOTE* indicators.

WARNING statements contain information that is critical to the safety of the operator and/or the system. Do not proceed beyond a **WARNING** statement until the indicated conditions are fully understood or met. This information could prevent serious damage to the operator, the system, or currently loaded software. For example:

WARNING!



Hazardous voltages are present. To lessen the risk of electrical shock and danger to personal health, follow the instructions carefully.

CAUTION statements contain information that is important for proper installation/operation. **CAUTION** statements can prevent possible equipment damage or loss of data. For example:

CAUTION



You risk damaging your equipment and/or software if you do not follow these instructions.

NOTE statements contain information that has been found important enough to be called to the special attention of the operator. For example:



Steps 1, 3, and 5 are similar to the installation for the computer type above. Review the previous installation procedure before installation in your particular model.

Laser Notice

**Class 1 Laser Product:
This product conforms to
applicable requirements of
21 CFR 1040 at the date of
manufacture.**

Class 1 lasers are defined as products which do not permit human access to laser radiation in excess of the accessible limits of Class 1 for applicable wavelengths and durations. These lasers are safe under reasonably foreseeable conditions of operation.

Every ES-3810 module having a fiber optic interface contains a Class 1 laser.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all warnings and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source matches the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. FORE Systems, Inc., is not responsible for regulatory compliance of a modified FORE product.

Placement of a FORE Systems Product

CAUTION



To ensure reliable operation of your FORE Systems product and to protect it from overheating, openings in the equipment must not be blocked or covered. A FORE Systems product should never be placed near a radiator or heat register.

Power Cord Connection

WARNING!



FORE Systems products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug FORE Systems products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

WARNING!



Your FORE Systems product is shipped with a grounding type (3-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

Preface

CHAPTER 1

Introduction

The system and network management capabilities of the ES-3810 are provided by the Network Management Module (NMM). The primary functions of the NMM are as follows:

- Provide SNMP-based management for the ES-3810 Ethernet Workgroup switch
- Provide a management console that permits the configuration of both system-wide (e.g., IP Address, Subnet Mask) and port-specific (e.g., Sniffing Mode, Backbone Mode) parameters

The NMM is the management vehicle for the ES-3810, whether installed with or without the ESM-16 management module. In cases where both modules are installed in a switch, the NMM disables the management processor of the ESM-16 while allowing the 16 ports of the ESM-16 to remain active.

Some of the main functions the local management console allows the Network Administrator to perform are as follows:

- View network activity on a per port basis
- View the configuration of a particular port
- Configure each port with unique characteristics, if necessary
- Update the ES-3810's firmware
- View/modify a port's address database entries
- Save the ES-3810's unique port settings in non-volatile storage
- Reset the ES-3810

The management console utilizes a VT-100 terminal or VT-100 terminal emulator as an interface to the end-user. The system does not allow an escape from the menus—all options must be performed from a menu selection.

**NOTE**

The menu system operates as an autonomous subsystem of the ES-3810. If a management station is not connected to the console port, the ES-3810 still operates using either the factory default settings detailed in the *ForeRunner ES-3810 Installation and User's Manual* or the last saved settings which are restored during the power up sequence.

1.1 The User Interface

The user interface to the ES-3810 is displayed on the management station (if attached) as soon as the NMM has completed its internal power-up diagnostics. It is recommended that a console always be connected when the NMM is turned on so that any power-up errors may be detected (see the *ForeRunner ES-3810 Installation and User's Manual*).



The management console uses the VT-100 line drawing set. If your terminal (or terminal emulation package) does not support this feature, some console text may appear twice.

1.1.1 Counter Updates

Certain screens in the ES-3810 console interface provide the ability to adjust how often the displayed data is updated. On counters and displays where automatic updates are supported, the following commands are available:

- + Increases the frequency with which the screen is updated to a maximum of every two seconds.
- Decreases the frequency with which the screen is updated. There is no minimum update value.
- f Freezes the screen as it appears (i.e., the screen will not be updated).
- u Unfreezes the screen (i.e., the screen will be updated at the next regular interval).
- q Exits the screen.

1.1.2 Logging on to the ES-3810

Upon the first successful power-up of the ES-3810, you will be prompted for a username. Enter one of the following usernames according to the access privileges you want:

- public** Grants read only privileges to objects that are accessible through the ES-3810's local management console (e.g., port counters can be viewed, but port parameters can not be changed).
- private** Grants read/write privileges to all managed objects that are accessible through the ES-3810's local management console.



Logging on as `private` requires the use of a password. The default password is `fore`.

Usernames and passwords can be changed from the ES-3810 console. See Chapter 6 for more information.



Only users with read-write access can change usernames and passwords.



Figure 1.1 - ES-3810 Logon Screen

Once you have gained access to the ES-3810, you can modify, add, or delete usernames and the read/write privileges associated with them.

The following ES-3810 Main Menu appears once you have entered a valid username:



Figure 1.2 - ES-3810 Main Menu

The items in the previous menu have the following meanings:

Manage System	Displays the Manage System Menu (Chapter 2).
Manage Interface	Displays the Interface Selection screen (Chapter 3).



Once the user provides an interface selection, the management console displays the Manage Interface Menu, which is specific to the type of interface selected. For information on specific modules, see Chapter 3.

Manage VLAN	Displays the Manage VLAN Menu (Chapter 4).
Manage UDP/IP	Displays the Manage UDP/IP Menu (Chapter 5).
Manage SNMP	Displays the Manage SNMP Menu (Chapter 6).
Manage Spanning Tree	Displays the Manage Spanning Tree Menu (Chapter 7).
Manage Telnet	Displays the Manage Telnet Menu (Chapter 8).
Reset Counters	Resets all counters in the entire system to 0. The SNMP sysUpTime value is also reset to 0.
Logoff	Returns to the logon screen.

1.1.3 Resetting Counters

To reset the counters (e.g., IP Counters, ICMP Counters, SNMP Counters, etc.) on the ES-3810, type 8 and press <ENTER> at the Main Menu. You will be prompted to confirm your choice. To reset the counters, type **y** and press <ENTER>, to abort the command, type **n** and press <ENTER> or simply press <ENTER> (see Figure 1.3).



Figure 1.3 - Reset Counters Screen

1.1.4 Logging off of the ES-3810

To end a console session on the ES-3810, type 9 and press <ENTER> at the Main Menu. Logging off returns the console to the logon screen (see Figure 1.1).

2.1 Manage System Menu

The Manage System Menu contains options that provide access to managed objects having system-wide implications. This menu is reached from option 1 on the Main Menu. The figure below illustrates the Manage System Menu.

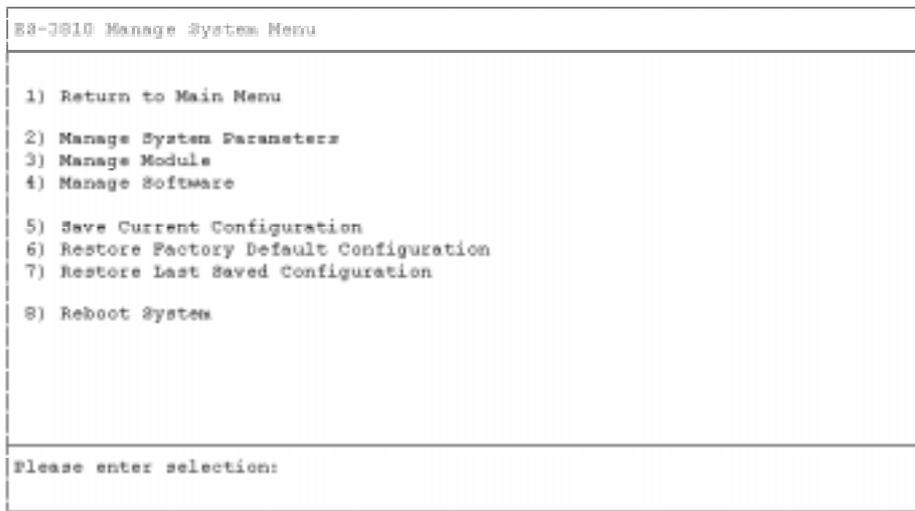


Figure 2.1 - Manage System Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Manage System Parameters	Displays the Manage System Parameters Menu.
Manage Module	Displays the Module Selection screen.
Manage Software	Displays the Software Selection screen.
Save Current Configuration	Saves the value of each managed object in the current configuration to persistent storage. However, some dynamic values (i.e., address database entries) will not be saved.

Restore Factory Default Configuration	Restores the value of each managed object in the current configuration to its factory default setting.
Restore Last Saved Configuration	Restores the value of each managed object in the current configuration to the value last saved to persistent storage.
Reboot System	Performs a cold restart of the system.

2.1.1 Manage System Parameters Menu

This menu displays commands that provide access to various system-wide interface parameters, it is accessed by selecting option 1 at the Manage System Menu. The figure below illustrates the Manage System Parameters Menu.

```
ES-3810 Manage System Parameters Menu

1) Return to Main Menu
2) Return to Previous Menu

3) View System Parameters
4) Modify System Name
5) Modify System Contact
6) Modify System Location

7) Modify Maximum Address Database Age
8) Modify Initial Filtering Mode

Please enter selection:
```

Figure 2.2 - Manage System Parameters Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage System Menu.
View System Parameters	Displays the System Parameters View screen.
Modify System Name	Queries the user for a new system name. The new system name defaults to the current system name if the user provides no input.

Modify System Contact	Queries the user for a new system contact. The new system name defaults to the current system contact if the user provides no input.
Modify System Location	Queries the user for a new system location. The new system location defaults to the current system location if the user provides no input.
Modify Maximum Address Database Age	Queries the user for a new maximum address database age value. The new maximum address database age defaults to the current maximum address database age if the user provides no input. To disable aging, enter “0” at the prompt.
Modify Initial Filtering Mode	Queries the user for a new initial filtering mode. The choices are “positive” and “negative.”

2.1.1.1 View System Parameters

This view is reached from the Main Menu through the Manage System Menu, then through the Manage System Parameters Menu. The figure below illustrates the System Parameters View screen.

```

ES-3810 View System Parameters
-----
System Name:      ForeRunner ES-3810
System Contact:   Contact Name
System Location:  Warrendale, PA
MAC Address:      00-A0-36-00-05-61
System Up Time:   26:22.15
Kernel Up Time:  26:47.44

Maximum Address Database Age: Aging Disabled
Initial Filtering Mode:      positive

Hit <Enter> to continue._

```

Figure 2.3 - System Parameters View

2.1.2 Manage Module Menu

This menu displays commands that monitor and control the previously selected module. This menu is reached from the Main Menu through the Manage System Menu, then through the Module Selection screen. The figure below illustrates the Manage Module Menu.

```
ES-3810 Manage Module Menu                               Module 2 (FEM-8/TE)

1) Return to Main Menu
2) Return to Previous Menu
3) Select Another Module

4) View Module

5) Reset and Reinitialize Module
6) Test and Reinitialize Module

7) View Module Inventory

Please enter selection:
```

Figure 2.4 - Manage Module Menu

The items in the previous menu have the following meanings:

- | | |
|--------------------------------|--|
| Return to Main Menu | Returns to the Main Menu. |
| Return to Previous Menu | Returns to the Manage System Menu. |
| Select Another Module | Returns to the Module Selection screen. |
| View Module | Displays the Module View screen for the selected module. |
| Reset Module | Resets the selected module. |
| Test Module | Performs an on-line diagnostic on the selected module. When the diagnostic has completed, the selected module is reset to the last saved configuration, and the management console displays the Module Test View screen. |
| View Module Inventory | Displays the Module Inventory View screen. |



The Module View and Module Test View screens depend on the selected module. For information on specific modules, see Chapter 3.

2.1.2.1 Module Selection Menu

This menu asks the user to select a module from those installed on the system. This screen is reached from the Main Menu through the Manage System Menu. The figure below illustrates the Module Selection screen. The management console does not allow the user to select an empty slot.

ES-3810 Module Selection		Module 2 (FEM-S/TE)	
Slot	Type	State	Description
1		Empty	
2	FEM-S/TE	Enabled	8-port 100BaseTX Ethernet Switch Module
3	SMM-16	Enabled	16-port 10BaseT Ethernet Switch Module
4	SMM-24	Enabled	24-port 10BaseT Ethernet Switch Module
5	SMM	Enabled	Network Management Module
6		Empty	

Please enter selection (by slot):

Figure 2.5 - Module Selection Menu

After a valid module is entered, the Manage Module Menu is displayed.

2.1.2.2 Module Inventory View

This view is reached from the Main Menu through the Manage System Menu, then through the Module Selection screen, and finally through the Manage Module Menu. The figure below illustrates the Module Inventory View screen.

ES-3810 View Software Inventory		NMM System Software		
Id	Software Module	Revision	Build Date	Build Number
1	NMM Bootstrap Software	4.0.2	Jun 7 1996 14:49:01	
2	NMM System Software	4.2.0	Apr 7 1997 14:28:24	(1.33)

Hit <Enter> to continue.

Figure 2.6 - Module Inventory View

2.1.3 Manage Software Menu

This menu displays commands that monitor and control the software installed in the system. This menu is reached from the Main Menu through the Manage System Menu, then through the Software Selection screen. The figure below illustrates the Manage Software Menu.

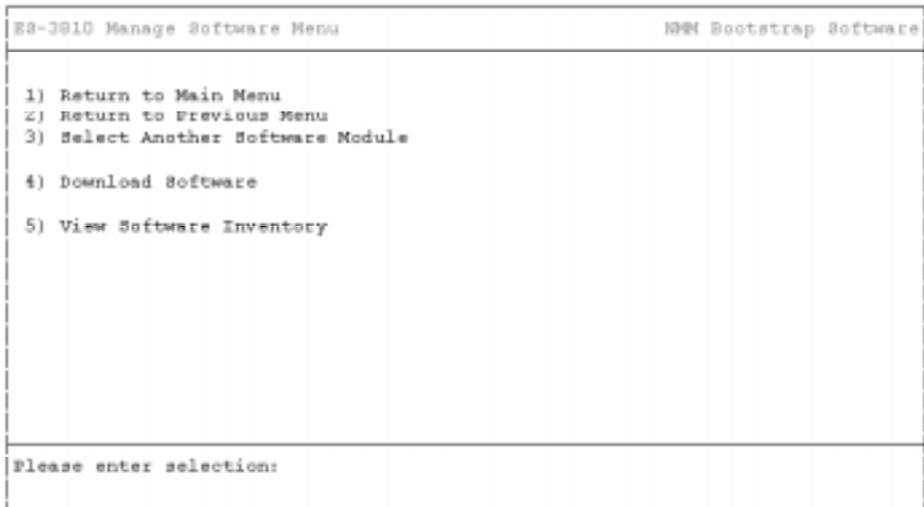


Figure 2.7 - Manage Software Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage System Menu.
Select Another Software Module	Returns to the Software Selection screen.
Download Software	Invokes the TFTP read utility to download an image containing the selected software module.
View Software Inventory	Displays the Software Inventory View screen.

2.1.3.1 Software Selection Menu

This menu asks the user to select a software module from a list of the software installed in the system. This screen is reached from the Main Menu through the Manage System Menu. The figure below illustrates the Software Selection screen. The management console does not allow the user to select an empty slot.

ES-3810 Software Selection		NMM System Software		
Id	Software Module	Revision	Build Date	Build Number
1	NMM Bootstrap Software	4.0.2	Jun 7 1996 14:49:01	
2	NMM System Software	4.2.0	Apr 7 1997 14:28:24	(1.33)

Please enter selection (by Id):

Figure 2.8 - Software Selection Menu

After a valid software module ID is entered, the Manage Software Menu is displayed.

2.1.3.2 Downloading a New Software Image

For information about downloading a new software image to the ES-3810, see Chapter 4 of the *ForeRunner ES-3810 Installation and User's Manual*.

2.1.3.3 Software Inventory View

This view is reached from the Main Menu through the Manage System Menu, then through the Software Selection screen, then through the Manage Software Menu. The figure below illustrates the Software Inventory View screen.

ES-3810 View Software Inventory		NMM System Software		
Id	Software Module	Revision	Build Date	Build Number
1	NMM Bootstrap Software	4.0.2	Jun 7 1996 14:49:01	
2	NMM System Software	4.2.0	Apr 7 1997 14:28:24	(1.33)

Hit <Enter> to continue.

Figure 2.9 - Software Inventory View

System Management

CHAPTER 3

Interface Management

This chapter details the menus used to manage the ES-3810's various interfaces. These menus are available by selecting option 2, "Manage Interface," from the ES-3810 Main Menu.

3.1 Selecting an Interface

To choose a specific interface, or group of interfaces, select option 2 from the Manage Interface Menu, then follow the guideline in the Interface Selection screen that appears (see Figure 3.1).

ES-3810 Interface Selection		Interface D1 (10BaseT Ethernet)
Interface	Description	
A1	OC-3c MM ATM	
B1	OC-3c MM ATM	
D1 - D24	10BaseT Ethernet	
F1 - F2	100BaseFX Ethernet	
D*	All Interfaces in 24-port 10BaseT Ethernet Switch Module	
F*	All Interfaces in 2-port 100BaseFX Ethernet Switch Module	
+	All Ethernet Interfaces of ES3810	

Please enter selection (by Interface):

Figure 3.1 - Interface Selection Screen

After selecting an interface (or group of interfaces), you will be returned to the Manage Interface Menu.

3.2 Managing 10 Mbps Ethernet Interfaces

This section explains how to view and manage the configuration of the 10BaseT Ethernet interfaces on the ESM-16 and the ESM-24. The figure below illustrates the Manage Interface Menu for the ESM-16 and ESM-24.

```
ES-3810 Manage Interface Menu                Interface C1 (10BaseT Ethernet)

1) Return to Main Menu
2) Select Another Interface
3) Reset Interface
4) Manage Interface Configuration
5) Manage Address Database
6) View Interface Counters
7) Reset Counters

Please enter selection:
```

Figure 3.2 - ESM Manage Interface Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Select Another Interface	Returns to the Interface Selection menu.
Reset Interface	Resets the selected interface.
Manage Interface Configuration	Displays the Manage Interface Configuration Menu for the selected interface.
Manage Address Database	Displays the Manage Address Database Menu for the selected interface.
View Interface Counters	Displays the Interface Counters screen.
Reset Counters	Resets all counters for the selected interface.

3.2.1 Resetting the Interface

To reset the selected interface, select option 3 from the Manage Interface Menu.

3.2.2 Manage Interface Configuration Menu



10 Mbps segment interfaces are managed the same way as those on the ESM-16 and ESM-24, except that the address database can hold 8,192 addresses.

This menu displays commands that provide access to managed objects that monitor and control the configuration for the selected 10Base interface. This menu is reached by selecting option 4 from the Manage Interface Menu. The figure below illustrates this menu.

```

ESM-3810 Manage Configuration Menu                Interface CL (10BaseT Ethernet)
-----
1) Return to Main Menu                          10) Half/Full Duplex Connection
2) Return to Previous Menu                      11) Internal Loopback
3) View Configuration                          12) Work-Group/Backbone Connection
4) Receiver                                    13) Transmitter
5) Polarity Correction                         14) Forced Transmit
6) Sniffing                                    15) Forward Sniffed Packets
7) Sniffing Of Error Packets                  16) Forward Flagged Packets
8) Multicast Promiscuous Reception            17) Multicast Mesh Upload
9) Individual Promiscuous Reception

Please enter selection:

```

Figure 3.3 - ESM Manage Interface Configuration Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Interface Menu.
View Configuration	Displays the Interface Configuration View screen for the selected interface.

Receiver	Queries the user to determine whether or not the interface's receiver is to be disabled or enabled.
Polarity Correction	Queries the user to determine whether or not the interface automatically corrects the polarity of the transmit and receive pairs comprising the physical medium.
Sniffing	Queries the user to determine whether or not the interface sniffs packets. Sniffing enables the forwarding of all transmitted and received packets onto the packet bus. In addition, the interface tags sniffed packets in order that other interfaces can forward them out of the system.
Sniffing of Error Packets	Queries the user to determine if the interface sniffs packets that have errors. If the interface is not sniffing, then this managed object has no relevance.
Multicast Promiscuous Reception	Queries the user to determine whether or not the interface promiscuously receives all multicast address packets.
Individual Promiscuous Reception	Queries the user to determine whether or not the interface promiscuously receives all individually addressed packets.
Half/Full Duplex Connection	Queries the user to determine if the interface is to provide half or full duplex connectivity.
Internal Loopback	Queries the user to determine whether or not the interface's internal loopback is to be enabled.
Work-Group/Backbone Connection	Queries the user to determine if the interface is to provide work-group or backbone connectivity.
Transmitter	Queries the user to determine whether or not the interface's transmitter is to be disabled or enabled.
Forced Transmits	Queries the user to determine whether or not the interface forces transmits when the link is not active.
Forward Sniffed Packets	Queries the user to determine whether or not the interface forwards sniffed packets out of the system.
Forward Flagged Packets	Queries the user to determine whether or not the interface forwards flagged packets out of the system.
Multicast Hash Upload	Queries the user to determine whether or not the interface accepts multicast hash upload packets.

3.2.2.1 Interface Configuration View

This view is reached from the Main Menu through the Interface Selection menu then through the Manage Interface Menu. The figure below illustrates the Interface Configuration View for 10Base interfaces.

ES-3810 Interface Configuration		Interface C1 (10BaseT Ethernet)	
Type:	SEC-10B	Full Duplex:	Disabled
MAU:	10-Base-T	Loopback:	Disabled
Number:	8	Mode:	Workgroup
Link Detected:	No	Forced Transmits:	Disabled
Link Polarity:	Correct	Polarity Correction:	Disabled
Receiver:	Enabled	Transmitter:	Enabled
Receive Buffer:	Enabled	Transmit Buffer:	Enabled
Sniff Segment:	Disabled	Transmit Sniffed Packets:	Disabled
Blocking:	Disabled	Transmit Blocked Packets:	Disabled
Receive Errors:	Disabled	Transmit Flagged Packets:	Disabled
Multicast Promiscuous:	Disabled	Multicast Hash Upload:	Disabled
Individual Promiscuous:	Disabled		

Hit <Enter> to continue._

Figure 3.4 - ESM Interface Configuration View

3.2.3 Manage Address Database Menu

This menu is reached from the Main Menu through the Interface Selection menu then through the Manage Interface Menu. This menu displays commands that provide access to managed objects that monitor and control the address database associated with the selected 10Base interface. The figure below illustrates the Manage Address Database Menu.

```
ES-3810 Manage Address Database Menu          Interface C1 (10BaseT Ethernet)

1) Return to Main Menu
2) Return to Previous Menu

3) View Address Database
4) Modify Address Database

Please enter selection:
```

Figure 3.5 - ESM Manage Address Database Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Interface Menu.
View Address Database	Displays the Address Database View screen for the selected interface.
Modify Address Database Entry	Displays the list of entries in the address database and asks the user to select one to be modified. Next, the user is asked to modify the MAC address, age, multicast mask, and flag values for the entry.

3.2.3.1 Address Database View

This menu is reached from the Main Menu through the Interface Selection menu then through the Manage Interface Menu then through the Manage Address Database Menu. The figure below illustrates the Address Database View screen for the selected interface.

ES-3810 Address Database		Interface C1 (10BaseT Ethernet)		
Entry	Address	Age	Multicast Mask	Flagged
1	-----	invalid	1111 1111 1111 1111	---
2	-----	invalid	1111 1111 1111 1111	---
3	-----	invalid	1111 1111 1111 1111	---
4	-----	invalid	1111 1111 1111 1111	---

=> _
 Commands: +, -, Freeze, Unfreeze, Quit

Figure 3.6 - ESM Address Database View

3.2.3.2 Modify Address Database Menu

This screen is reached from Main Menu through the Interface Selection menu then through the Manage Interface Menu then through the Manage Address Database Menu. The figure below illustrates the Address Database Entry Selection screen.

ES-3810 Modify Address Database		Interface C1 (10BaseT Ethernet)		
Entry	Address	Age	Multicast Mask	Flagged
1	-----	invalid	1111 1111 1111 1111	---
2	-----	invalid	1111 1111 1111 1111	---
3	-----	invalid	1111 1111 1111 1111	---
4	-----	invalid	1111 1111 1111 1111	---

Which entry do you want to modify (1-4): 1

Address [-----]: 00-00-00-00-00-01
 Age [invalid]: valid
 Multicast Mask [1111 1111 1111 1111]:
 Flag [No]: No

Figure 3.7 - ESM Modify Address Database Menu

3.2.4 Viewing Interface Counters

The figure below illustrates the Interface Counters screen for the interfaces supported by an ESM-16 and ESM-24.

Transmit Counters		Receive Counters	
Octets:	0	Octets:	0
Packets:	0	Packets:	0
Lost Packets:	0	Lost Packets:	0
Broadcasts:	0	Broadcasts:	0
Multicasts:	0	Multicasts:	0
Initially Deferred:	0	Short Packets:	0
Single Collisions:	0	Long Packets:	0
Multiple Collisions:	0	Framing Errors:	0
Excessive Collisions:	0	FCS Errors:	0
Late Collisions:	0		
Carrier Lost:	0		

Packet Size Histogram					
64	65-127	128-255	256-511	512-1024	>1024
0	0	0	0	0	0

=>
 Commands: +, -, Freeze, Unfreeze, Quit

Figure 3.8 - ESM Interface Counters View

3.2.5 Resetting Interface Counters

To reset the counters of the selected interface, select option 7 from the Manage Interface Menu.

3.3 Managing 10/100Base Ethernet Interfaces

This section details the menus used to manage the interfaces on the ES-3810's Fast Ethernet Modules (FEMs). The figure below illustrates the Manage Interface Menu for the FEMs.

```

ES-3810 Manage Interface Menu                               Interface C1 (100BaseTX Ethernet)
-----
1) Return to Main Menu
2) select another interface
3) Reset Interface
4) Manage Interface Configuration
5) Manage Address Database
6) View Interface Counters
7) Reset Counters

Please enter selection:
  
```

Figure 3.9 - FEM Manage Interface Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Select Another Interface	Returns to the Interface Selection menu.
Reset Interface	Resets the selected interface.
Manage Interface Configuration	Displays the Manage Interface Configuration Menu for the selected interface.
Manage Address Database	Displays the Manage Address Database Menu for the selected interface.
View Interface Counters	Displays the Interface Counters screen.
Reset Counters	Resets all counters for the selected interface.

3.3.1 Resetting the Interface

To reset the selected interface, select option 3 from the Manage Interface Menu.

3.3.2 Manage Configuration Menu



100 Mbps segment interfaces are managed the same way as those on other FEMs, except that the address database can hold 8,192 addresses.

This menu displays commands that provide access to managed objects that monitor and control the configuration for the selected 10/100 Mbps-based interface. This menu is reached by selecting option 4 from the Manage Interface Menu. The figure below illustrates this menu.

```
ES-3810 Manage Configuration Menu                Interface E1 (100BaseTX Ethernet)

1) Return to Main Menu                          9) Media Configuration
2) Return to Previous Menu                      10) Internal Loopback
3) View Configuration                           11) Work-Group/Backbone Connection
4) Receiver                                     12) IA Domain Matching
5) Sniffing                                     13) Transmitter
6) Sniffing Of Error Packets                   14) Forward Sniffed Packets
7) Multicast Promiscuous Reception             15) Forward Flagged Packets
8) Individual Promiscuous Reception            16) Multicast Hash Upload

Please enter selection:
```

Figure 3.10 - FEM Manage Configuration Menu

The items in the previous menu have the following meanings:

- | | |
|--------------------------------|--|
| Return to Main Menu | Returns to the Main Menu. |
| Return to Previous Menu | Returns to the Manage Interface Menu. |
| View Configuration | Displays the Interface Configuration View screen for the selected interface. |

Receiver	Queries the user to determine whether or not the interface's receiver is to be disabled or enabled.
Sniffing	Queries the user to determine whether or not the interface sniffs packets. Sniffing enables the forwarding of all transmitted and received packets onto the packet bus. In addition, the interface tags sniffed packets in order that other interfaces can forward them out of the system.
Sniffing of Error Packets	Queries the user to determine whether or not the interface sniffs packets that have errors. If the interface is not sniffing, then this managed object has no relevance.
Multicast Promiscuous Reception	Queries the user to determine whether or not the interface promiscuously receives all multicast address packets.
Individual Promiscuous Reception	Queries the user to determine whether or not the interface promiscuously receives all individually addressed packets.
Media Configuration	Displays the current state of the auto-negotiated connection.
Internal Loopback	Queries the user to determine if the interface's internal loopback is to be disabled or enabled.
Work-Group/Backbone Connection	Queries the user to determine if the interface is to provide work-group or backbone connectivity.
IA Domain Matching	Queries the user to determine if individual address domain matching will be enabled.
Transmitter	Queries the user to determine whether or not the interface's transmitter is to be disabled or enabled.
Forward Sniffed Packets	Queries the user to determine whether or not the interface forwards sniffed packets out of the system.
Forward Flagged Packets	Queries the user to determine whether or not the interface forwards flagged packets out of the system.
Multicast Hash Upload	Queries the user to determine whether or not the interface accepts multicast hash upload packets.
Dump ICS1890 Registers	Displays the values of the registers associated with the selected port.

3.3.2.1 Interface Configuration View

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu and then through the Manage Configuration Menu. The figure below illustrates the Interface Configuration View for Switched 100 Mbps-based interfaces.

ES-3810 Interface Configuration		Interface B1 (100BaseTX Ethernet)	
Type:	Disabled	Loopback:	Disabled
MAU:		Mode:	Workgroup
Number:	0		
Media Configurations: 100Base-TX, Half-Duplex			
Link Detected:	No	VLAN Extension:	n/a
IA Domain Matching:	Disabled	Multicast Filterings:	n/a
Receiver:	Enabled	Transmitter:	Enabled
Receive Buffer:	Enabled	Transmit Buffer:	Enabled
Sniff Segment:	Disabled	Transmit Sniffed Packets:	Disabled
Blocking:	Disabled	Transmit Blocked Packets:	Disabled
Receive Errors:	Disabled	Transmit Flagged Packets:	Disabled
Multicast Promiscuous:	Disabled	Multicast Hash Upload:	Disabled
Individual Promiscuous:	Disabled		

Hit <Enter> to continue._

Figure 3.11 - FEM Interface Configuration View

3.3.3 Manage Address Database Menu

This menu is reached from the Main Menu through the Interface Selection menu then through the Manage Interface Menu. This menu displays commands that provide access to managed objects that monitor and control the address database associated with the selected 10Base interface. The figure below illustrates the Manage Address Database Menu.

```

ES-3810 Manage Address Database Menu      Interface E1 (100BaseTX Ethernet)

1) Return to Main Menu
2) Return to Previous Menu
3) View Address Database
4) Modify Address Database

Please enter selection:

```

Figure 3.12 - FEM Manage Address Database Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Interface Menu.
View Address Database	Displays the Address Database View screen for the selected interface.
Modify Address Database Entry	Displays the list of entries in the address database and asks the user to select one to be modified. Next, the user is asked to modify the MAC address, age, multicast mask, and flag values for the entry.

3.3.3.1 Address Database View

This menu is reached from the Main Menu through the Interface Selection menu then through the Manage Interface Menu then through the Manage Address Database Menu. The figure below illustrates the Address Database View screen for the selected interface.

```

ES-3810 Address Database                               Interface E1 (100BaseTX Ethernet)
+-----+-----+-----+-----+-----+
| Entry | Address          | Age      | Multicast Mask | Flagged |
+-----+-----+-----+-----+-----+
| 1     | -----         | invalid  | 1111 1111 1111 1111 | ---     |
| 2     | -----         | invalid  | 1111 1111 1111 1111 | ---     |
| 3     | -----         | invalid  | 1111 1111 1111 1111 | ---     |
| 4     | FF-FF-FF-FF-FF-FF | 0       | 0000 0000 0000 0001 | No      |
+-----+-----+-----+-----+-----+

=> _
Commands: +, -, Freaze, Unfreeze, Quit
    
```

Figure 3.13 - FEM Address Database View

3.3.3.2 Modify Address Database Menu

This screen is reached from Main Menu through the Interface Selection menu then through the Manage Interface Menu then through the Manage Address Database Menu. The figure below illustrates the Address Database Entry Selection screen.

```

ES-3810 Modify Address Database                       Interface E1 (100BaseTX Ethernet)
+-----+-----+-----+-----+-----+
| Entry | Address          | Age      | Multicast Mask | Flagged |
+-----+-----+-----+-----+-----+
| 1     | -----         | invalid  | 1111 1111 1111 1111 | ---     |
| 2     | -----         | invalid  | 1111 1111 1111 1111 | ---     |
| 3     | -----         | invalid  | 1111 1111 1111 1111 | ---     |
| 4     | FF-FF-FF-FF-FF-FF | 0       | 0000 0000 0000 0001 | No      |
+-----+-----+-----+-----+-----+

Which entry do you want to modify (1-4): 1

Address [-----]: 00-00-00-00-00-01
Age [invalid]: valid
Multicast Mask [1111 1111 1111 1111]:
Flag [No ]: No
    
```

Figure 3.14 - FEM Modify Address Database Menu

3.3.4 Viewing Interface Counters

The figure below illustrates the Interface Counters screen for the FEM interfaces.

Transmit Counters		Receive Counters	
Octets:	0	Octets:	0
Packets:	0	Packets:	0
Lost Packets:	0	Lost Packets:	0
Broadcasts:	0	Broadcasts:	0
Multicasts:	0	Multicasts:	0
Initially Deferred:	0	Short Packets:	0
Single Collisions:	0	Long Packets:	0
Multiple Collisions:	0	Framing Errors:	0
Excessive Collisions:	0	PCB Errors:	0
Late Collisions:	0		
Carrier Lost:	0		

Packet Size Histogram					
64	65-127	128-255	256-511	512-1024	>1024
0	0	0	0	0	0

Commands: +, -, Freeze, Unfreeze, Quit

Figure 3.15 - FEM Interface Counters View

3.3.5 Resetting Interface Counters

To reset the counters of the selected interface, select option 7 from the Manage Interface Menu.

3.4 Managing ATM Interfaces

This section details the menus used to manage the interfaces on the ES-3810's ATM Modules.

3.4.1 Dual ATM Uplinks

The ES-3810 supports redundant ATM Uplinks. When two ATM Uplinks are installed in an ES-3810, they share the LECs created by the user. Odd-numbered LECs reside on the ATM uplink in the lower-numbered slot of the ES-3810 chassis. Even-numbered LECs reside on the ATM uplink in the higher-numbered slot in the ES-3810 chassis. For example, with ATM uplinks in slots B and C, the odd-numbered LECs reside on the uplink in slot B, and the even numbered LECs reside on the uplink in slot C. If one of the ATM uplinks fails, the ES-3810 will reconfigure the “failed” LECs on the other uplink.



An uplink “failure” is defined as uplink module failure or cut fiber.

3.4.2 Manage ATM Interface Menu

This menu displays commands that provide access to managed objects that monitor and control the selected interface. The figure below illustrates the Manage Interface Menu for ATM Uplink Modules.

```
ES-3810 Manage Interface Menu                               Interface A1 (00-3c 00 ATM)
-----
1) Return to Main Menu
2) Select Another Interface

3) Manage SONET/SDH Configuration
4) Manage LANE Configuration
5) Manage RPL483 Connection
6) Manage Signaling Configuration
7) Manage ILMI Configuration

8) View SONET Counters
9) View ATM Counters
10) View AAL5 Counters
11) View LANE Counters
12) View LSC Counters
13) View Signaling Counters

Please enter selection: _
```

Figure 3.16 - Manage Interface Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Select Another Interface	Returns to the Interface Selection screen.
Manage SONET/SDH Configuration	Displays the Manage SONET/SDH Configuration Menu for the selected interface.
Manage LANE Configuration	Displays the Manage LANE Configuration Menu for the selected interface.
Manage RFC1483 Connection	Displays the Manage RFC1483 Connection Menu.
Manage Signaling Configuration	Displays the Manage Signaling Configuration Menu for the selected interface.
Manage ILMI Configuration	Displays the Manage ILMI Configuration Menu.
View SONET Counters	Displays the SONET Counters screen.
View ATM Counters	Displays the ATM Counters screen.
View AAL5 Counters	Displays the AAL5 Counters screen.
View LANE Counters	Displays the LANE Counters screen.
View LEC Counters	Displays the LEC Counters screen.
View Signaling Counters	Displays the Signaling Counters screen.

3.4.2.1 Manage SONET/SDH Configuration Menu

This menu displays commands that provide access to managed objects that monitor and control the SONET/SDH (Synchronous Optical NETwork / Synchronous Digital Hierarchy) configuration for the selected ATM based interface. This menu is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the Manage SONET/SDH Configuration Menu.

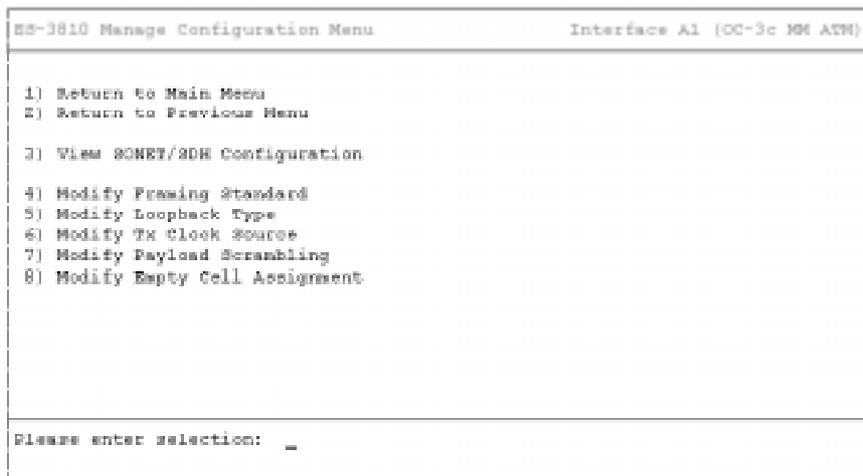


Figure 3.17 - Manage SONET/SDH Configuration Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Interface Menu.
View SONET/SDH Configuration	Displays the SONET/SDH Configuration View screen for the selected interface.
Modify Framing Standard	Queries the user to determine the SONET/SDH framing standard to use. The current product supports two standards: <ul style="list-style-type: none">• SONET: North American defined Synchronous Optical Network (default)• SDH: ITU defined Synchronous Digital Hierarchy
Modify Loopback Type	Queries the user to determine the loopback mode to use. The choices are: <ul style="list-style-type: none">• Line loopback• Diagnostics loopback• None (default)

Modify Tx Clock Source	Queries the user to determine what source for the Tx clock to use. The choices are: <ul style="list-style-type: none"> • Internal (local) clock (default) • Network (loop timing)
Modify Payload Scrambling	Queries the user to determine whether or not to enable payload scrambling. The default is Enabled.
Modify Empty Cell Assignment	Queries the user to determine the cell type to assign to empty cells. The choices are: <ul style="list-style-type: none"> • ATM Forum UNI Unassigned Cell (default) • ITU I.432 Idle Cell

3.4.2.1.1 SONET/SDH Configuration View

This menu is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the SONET/SDH Configuration View for ATM based interfaces.

```

ES>3810 SONET Configuration
-----
Pressing Standard:      SONET
Loopback Type:         None
Tx Clock Source:       Internal
Payload Scrambling:    Enabled
Empty Cell Assignment: Unassigned
Carrier:               No
Status:                0x62c

Hit <Enter> to continue.

```

Figure 3.18 - SONET/SDH Configuration View

3.4.2.2 Manage LANE Configuration Menu

This menu displays commands that provide access to managed objects that monitor and control the LANE (local area network emulation) configuration for the selected ATM interface. This menu is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the Manage LANE Configuration Menu.

```
ES-3810 Manage Configuration Menu                               Interface A1 (OC-3c MM ATM)

1) Return to Main Menu
2) Return to Previous Menu

3) View LEC Configuration
4) View LEC VCC List
5) View LEC ARP Cache

6) Create LEC
7) Delete LEC

8) Flush LEC ARP Cache

Please enter selection: _
```

Figure 3.19 - Manage LANE Configuration Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Interface Menu.
View LEC Configuration	Displays the ELAN Selection screen and the LEC Configuration View screen for the selected ELAN.
View LEC VCC List	Displays the ELAN Selection screen and then the LEC VCC List screen for the selected ELAN.
View LEC ARP Cache	Displays the ELAN Selection screen and then the LEC ARP Cache screen for the selected ELAN.
Create LEC	Queries the user for the configuration of a new LEC.
Delete LEC	Displays the ELAN Selection screen and then asks the user if the selected LEC should be deleted.
Flush LEC ARP Cache	Displays the list of existing ELANs and asks the user for the ELAN whose LEC ARP cache is to be deleted.

3.4.2.2.1 LEC Configuration View

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu then through the Manage LANE Configuration Menu. The user is then asked to select an ELAN to view. The figure below illustrates the LEC Configuration View.

```

ES-3810 LEC Configuration ELAN Id: 2

ELAN Name:          marketing
ELAN Id:            2
LEC Id:             0
Admin Status:      Up
Operational Status: Waiting for Local Address
Selector:           0x0F
Mode:               Automatic
LEC Address:        0x00.0000.00.000000.0000.0000.0000.000000000000.00
LEC9 Address:       0x47.007F.00.000000.0000.0000.0000.00A03E000001.00
LES Address:        0x00.0000.00.000000.0000.0000.0000.000000000000.00
BUS Address:        0x00.0000.00.000000.0000.0000.0000.000000000000.00
Config. Direct VCI: None
Control Direct VCI: None
Control Distribute VCI: None
Multicast Send VCI: None
Multicast Forward VCI: None

Hit <Enter> to continue.

```

Figure 3.20 - LEC Configuration View

3.4.2.2.2 LEC VCC List

This screen lists all of the Virtual Channel Connections (VCCs) in use by a given LAN Emulation Client (LEC). This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu then through the Manage LANE Configuration Menu and finally through the ELAN Selection screen. The figure below illustrates the LEC VCC List screen for the selected ELAN.

```
ES-3810 VC List ELAN Id: 1
ELAN Id: 1, Elan Name: default
Index   VCI      VCI Type
  1     226     Config. Direct VCI
  2     227     Control Direct VCI
  3     228     Control Distribute VCI
  4     229     Multicast Send VCI
  5     230     Multicast Forward VCI
  6     231     Data Direct VCI

Hit <Enter> to continue.
```

Figure 3.21 - LEC VCC List View

3.4.2.2.3 LEC ARP Cache View

This screen lists all of the current ARP (Address Resolution Protocol) cache entries for the selected LAN Emulation Client (LEC). This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu then through the Manage LANE Configuration Menu and finally through the ELAN Selection screen. The figure below illustrates the LEC ARP Cache View screen for the selected ELAN.

```

ES-3810 LEC ARP Cache ELAN Id: 1
ELAN Id: 1, Elan Name: default
Index  MAC Address          ATM Address
1      08-00-20-0B-0A-F4    0x47.0005.80.FFE100.0000.F21C.11FD.00A03600041A.00
      vpi=0, vci=231, flags=Valid

Hit <Enter> to continue.

```

Figure 3.22 - LEC ARP Cache View

3.4.2.3 Manage RFC1483 Connection

This menu displays options that let the user view, create, and delete RFC 1483 Permanent Virtual Circuits (PVCs). PVCs act like ELANs on the ES-3810, in that you can associate VLANs to PVCs. The Manage RFC1483 Connection Menu is shown in Figure Figure 3.23.

```

ES-3810 Manage RFC1483 Connection ES-3810 Manage RFIInterface A1 (OC-3c MM ATM)

1) Return to Main Menu
2) Return to Previous Menu

3) View RFC1483 Connection
4) Create RFC1483 Connection
5) Delete RFC1483 Connection

Please enter selection:

```

Figure 3.23 - Manage RFC1483 Connection Menu

3.4.2.3.1 View RFC1483 Connection

The View RFC1483 Connection Menu lets the user select a PVC and view its current configuration. To select a PVC, type 2 and press <ENTER> in the Manage RFC1483 Connection Menu. When the View RFC1483 Connection Menu appears, type the number that corresponds to the desired PVC and press <ENTER> (see Figure Figure 3.24). After selecting a PVC, it's connection parameters are displayed (see Figure 3.25).

```
ES-3810 View RFC1483 Connection
2. test
4. PVC Connection
5. PVC One
6. PVC Two
7. PVC Three

Which Connection: _
```

Figure 3.24 - View RFC1483 Connection Menu

```
ES-3810 View RFC1483 Connection
RFC1483 Connection Name: marketing
Connection Id : 2
vci is 100.

Hit <Enter> to continue. _
```

Figure 3.25 - View RFC1483 Connection

3.4.2.3.2 Create RFC1483 Connection

This menu lets the user create PVCs by choosing a name for the connection (ELAN) and a VCI value. To create a PVC, type 4 and press <ENTER> in the Manage RFC1483 Connection Menu. When prompted, type the name of the connection and press <ENTER>, type the VCI for the connection and press <ENTER>.

After entering the VCI for the connection, you are prompted to confirm the settings you just entered. If you are satisfied with the settings, type **y** and press <ENTER>. If you are not satisfied with the settings, type **n** and press <ENTER>. After accepting or declining your choices, press <ENTER> again (see Figure 3.26).

```
ES-3810 Create RFC1483 Connection
-----
Configuring a new RFC1483 Connection...
Enter Connection Name : marketing
Enter VCI: 150

RFC1483 Connection Name: marketing
vci is 150.
Are you satisfied with these settings [No]? y

RFC 1483 Connection Configured. (ELAN ID : 8)
Connection Name: marketing
PVC Number: 150

Hit <Enter> to continue._
-----
```

Figure 3.26 - Creating a PVC

3.4.2.3.3 Delete RFC1483 Connection

This menu lets the user delete PVCs. To delete PVCs, type 5 and press <ENTER> in the Manage RFC1483 Connection Menu. When the Delete RFC1483 Connection Menu appears, type the number that corresponds to the PVC to be deleted and press <ENTER> (see Figure 3.27).

```
ES-3810 Delete RFC1483 Connection
-----
2. marketing
7. testing
8. pubs
9. graphics

Which Connection: 2
-----
```

Figure 3.27 - Selecting a PVC to Delete

You are asked to confirm your choice. If you still wish to delete the PVC, type **y** and press <ENTER>. If you do not wish to delete the PVC, type **n** and press <ENTER>. After confirming your choice, press <ENTER> (see Figure 3.28).

```
ES-3810 Delete RFC1483 Connection
-----
You are deleting RFC1483 Connection marketing(Id: 2). Are you sure [No]? y
RFC1483 Connection 2 has been deleted.Hit <Enter> to continue.
-----
```

Figure 3.28 - Confirming the Deletion of a PVC

3.4.2.4 Manage Signaling Configuration Menu

This menu displays commands that provide access to managed objects that monitor and control the signaling configuration for the selected ATM interface. This menu is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the Manage Signaling Configuration Menu.

```

ES-3810 Manage Signaling Configuration Menu      Interface A1 (OC-3c MM ATM)
-----
1) Return to Main Menu
2) Return to Previous Menu
3) View Signaling Configuration
4) Disable Signaling
5) Enable Signaling

Please enter selection:  _

```

Figure 3.29 - Manage Signaling Configuration Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Interface Menu.
View Signaling Configuration	Displays the Signaling Configuration View screen for the selected interface.
Disable Signaling	Attempts to disable signaling, but asks for user confirmation before doing so.
Enable Signaling	Attempts to enable signaling, but asks for user confirmation before doing so.

3.4.2.4.1 Signaling Configuration View

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu and then through the Manage Signaling Configuration Menu. The figure below illustrates the Signaling Configuration View.

```
ES-3810 Signaling Configuration
-----
ILMI Mode:           Up
ATM Network Prefix:  0x00.0000.00.000000.0000.0000.0000
End System ID (ESI): 00-A0-36-00-05-61

Hit <Enter> to continue. _
```

Figure 3.30 - Signaling Configuration View

3.4.2.5 Manage ILMI Configuration

This menu lets the user manage ILMI on the ATM interface of the ES-3810. To manage ILMI, type 7 and press <ENTER> in the Manage Interface Menu. The Manage ILMI Configuration Menu appears (see Figure 3.31).

```
ES-3810 Manage ILMI Configuration Menu          Interface A1 (00-3c 00 00 ATM)
-----
1) Return to Main Menu
2) Return to Previous Menu

3) Disable ILMI
4) Enable ILMI

Please enter selection: _
```

Figure 3.31 - Manage ILMI Configuration Menu

3.4.2.5.1 Disabling ILMI

To disable ILMI on the selected ATM interface, type 3 and press <ENTER> in the Manage ILMI Configuration Menu.



You can not disable ILMI until you have delete all the ELANs on the ES-3810. Delete LANE ELANs from the Manage LANE Configuration Menu. Delete PVC ELANs from the Manage RFC1483 Connection Menu.

Once you have deleted all ELANs on the ES-3810, you can disable ILMI. After entering 3 in the Manage ILMI Configuration Menu, you are prompted to confirm you choice to disable ILMI. If you still wish to disable ILMI, type **y** and press <ENTER>. If you do not wish to disable ILMI, type **n** and press <ENTER>. After confirming whether or not to disable ILMI, press <ENTER> again (see Figure 3.32).

```

ES-3810 Disable ILMI
-----
Are you sure to disable ilmi [No]? y
ILMI has been disabled.Hit <Enter> to continue.

```

Figure 3.32 - Disabling ILMI

3.4.2.5.2 Enabling ILMI

To enable ILMI on the selected ATM interface, type 4 and press <ENTER> in the Manage ILMI Configuration Menu. When prompted to confirm your choice type **y** and press <ENTER> if you still wish to enable ILMI. If you do not wish to enable ILMI, type **n** and press <ENTER>. After confirming whether or not to enable ILMI, press <ENTER> again (see Figure 3.33).

```
ES-3810 Enable ILMI
-----
Are you sure to enable ILMI [No]? y
ILMI has been enabled.Hit <Enter> to continue.
```

Figure 3.33 - Enabling ILMI

3.4.2.6 View SONET Counters

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the SONET Counters screen for interfaces supported by an ATM module.

```
ES-3810 SONET Counters 3:50.22
-----
Section BIPs          12274032
Section LOPs          255
Section LOPs          255
Line BIPs             24
Line PERPs            23
Line AIPs             255
Line PERPs            0
Path BIPs             14
Path PERPs            3
Path LOPs             0
Path AIPs             255
Path Yellow          255
Correctable HCSs      0
Uncorrectable HCSs   0

=>
Commands: +, -, Freeze, Unfreeze, Quit
```

Figure 3.34 - SONET Counters View

3.4.2.7 View ATM Counters

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the ATM Counters screen for interfaces supported by an ATM module.

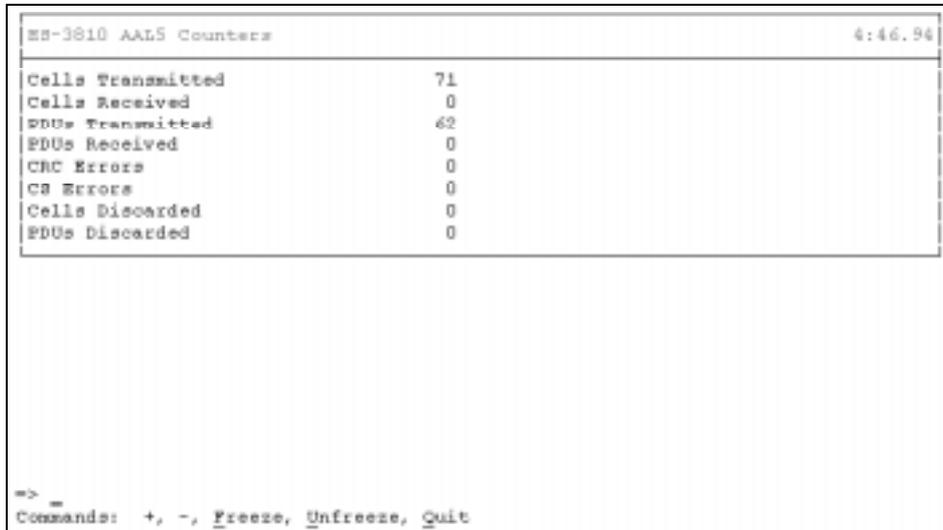
```
ES-3810 ATM Counters                                     4:13.59
-----
VPIs Out Of Range                                     0
VPIs Not Connected                                    0
VCI's Out Of Range                                    0
VCI's Not Connected                                    0
-----

=>
Commands: +, -, Freeze, Unfreeze, Quit
```

Figure 3.35 - ATM Counters View

3.4.2.8 View AAL5 Counters

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the AAL5 Counters screen for interfaces supported by an ATM module.



```
ES-3810 AAL5 Counters 4:46.96
-----
Cells Transmitted      71
Cells Received         0
PDUs Transmitted       62
PDUs Received          0
CRC Errors              0
CS Errors               0
Cells Discarded         0
PDUs Discarded         0
-----
=> _
Commands: +, -, F_reeze, U_nfreeze, Q_uit
```

Counter	Value
Cells Transmitted	71
Cells Received	0
PDUs Transmitted	62
PDUs Received	0
CRC Errors	0
CS Errors	0
Cells Discarded	0
PDUs Discarded	0

Figure 3.36 - AAL5 Counters View

3.4.2.9 View LANE Counters

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the LANE Counters screen for interfaces supported by an ATM module.

```

ES-3810 LANE Counters                                     5:16.15
-----
Total Bytes to ATM:                                     0
Total Bytes to Ethernet:                               0
Cells to Ethernet Dropped:                             0
Packets to ATM Dropped:                                0
Packets From ATM Dropped:                              0
Wrong Size ATM PDUs:                                   0
Wrong Size Ethernet Frames:                            0
EchoSuppressions:                                     0
Invalid VCC Accessed:                                  0
Limits to BUS Exceeded:                                0
Unrecognized Ethernet Frames:                          0

=> _
Commands: +, -, Freeze, Unfreeze, Quit

```

Figure 3.37 - LANE Counters View

3.4.2.10 View LEC Counters

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the LEC Counters screen for interfaces supported by an ATM module.

```

ES-3810 ELAN 3 (Engineering) LEC Counters              1 18:51:39.15
-----
SVC Failures:                                         0
Control Packets Received:                             0
Control Packets Sent:                                 0
ARP Replies Received:                                 0
ARP Replies Sent:                                     0
ARP Requests Received:                                0
ARP Requests Sent:                                   0
Join Calls:                                           0
Topology Change Indications:                          0

Hit <Enter> to continue.

```

Figure 3.38 - LEC Counters View

3.4.2.11 View Signaling Counters

This view is reached from the Main Menu through the Interface Selection screen then through the Manage Interface Menu. The figure below illustrates the Signaling Counters screen for interfaces supported by an ATM module.

```
ES-3810 Signaling Counters 8:01.62
-----
VCCs                0
Restarts            0
Calls Completed     0
Calls Failed        0
Calls Rejected      0
Messages Transmitted 0
Messages Received   0
-----
=> _
Commands: +, -, _freeze, _unfreeze, _quit
```

Figure 3.39 - Signaling Counters View

CHAPTER 4

VLAN Management

This chapter provides information about managing virtual LANs (VLANs) on the ES-3810. For more information about using VLANs, see Appendix A in the *ForeRunner ES-3810 Installation and User's Manual*.

4.1 Manage VLAN Menu

This menu displays commands that provide access to managed objects that monitor and control the VLANs. This menu is reached from the Main Menu through the VLAN Selection screen. The figure below illustrates the Manage VLAN Menu.

```
ES-3810 Manage VLAN Menu                                VLAN 1 (default)
-----
1) Return to Main Menu
2) Select Another VLAN

3) View VLAN
4) Create VLAN
5) Modify VLAN
6) Delete VLAN
7) Rename VLAN

8) view vlan inventory

Please enter selection:
```

Figure 4.1 - Manage VLAN Menu

The items in the previous menu have the following meanings:

- Return to Main Menu** Returns to the Main Menu.
- Select Another VLAN** Returns to the VLAN Selection Menu.
- View VLAN** Displays the VLAN View screen for the selected VLAN.

Create VLAN	Queries the user for the name of the new VLAN, the ports that are to belong to that VLAN, whether or not IP multicast filtering is to be enabled, a MAC address to add to the VLAN, whether or not to join the new VLAN, the configuration (“auto” or “manual”), and whether or not to use the default LECS address.
Modify VLAN	Displays the VLAN Selection screen and then queries the user for a new name for the selected VLAN and new ports that are to belong to that VLAN.
Delete VLAN	Displays the Delete VLAN Menu and queries the user for the number of the VLAN to be deleted.
Rename VLAN	Displays the Rename VLAN Menu and queries the user for the number of the VLAN to be renamed.
View VLAN Inventory	Displays the VLAN Inventory View screen.

4.1.1 Modify VLAN Menu

When the user selects Modify VLAN from the Manage VLAN Menu, the following menu is displayed:

```
ES-3810 Modify VLAN Menu                                VLAN 3 (example)

1) Return to Main Menu
2) Return to Previous Menu

3) Add Port To VLAN
4) Delete Port From VLAN
5) Add MAC Address to VLAN
6) Delete MAC Address From VLAN

7) Enable/Disable IP Multicast Filtering for VLAN

Please enter selection:
```

Figure 4.2 - Modify VLAN Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage VLAN Menu.
Add Port to VLAN	Queries the user for the port(s) to add to the selected VLAN and whether or not IP multicast filtering is to be enabled.
Delete Port from VLAN	Queries the user for the port(s) to be deleted from the selected VLAN.
Add MAC Address to VLAN	Queries the user for the MAC address(es) to be added to the selected VLAN.
Delete MAC Address from VLAN	Queries the user for the MAC address(es) to be deleted from the selected VLAN.
Enable/Disable IP Multicast Filtering for VLAN	Asks the user whether to enable or disable IP multicast filtering.

4.1.2 VLAN Selection Menu

This menu asks the user to select a VLAN from a list of the VLANs defined in the system. This screen is reached directly from the Main Menu. The figure below illustrates the VLAN Selection screen.

ES-3810 VLAN Selection		VLAN 1 (default)
Number	Name	
1	default	
2	pubs	
Please enter selection (by Number): 2		

Figure 4.3 - VLAN Selection Menu

4.1.2.1 VLAN View

This view is reached from the Main Menu through the Manage VLAN Menu, then through the VLAN Selection menu. The figure below illustrates the VLAN View.

```
ES-3810 VLAN View                               VLAN 2 (pubs)
-----
VLAN Number:                2
VLAN Name:                  pubs
IP Multicast Filtering:     Enabled
Member Ports:               C1-C6
Member MAC Addresses:       1. 08:00:00:00:00:01

Hit <Enter> to continue.
```

Figure 4.4 - VLAN View

4.1.3 VLAN Inventory View

This view is reached from the Main Menu through the Manage VLAN Menu. The figure below illustrates the VLAN Inventory View.

```
ES-3810 View VLAN Inventory                       VLAN 2 (public)
-----
1. default
2. public
3. test1
4. sales2
5. marketing
6. training
7. <Not Configured>
8. <Not Configured>
9. <Not Configured>
10. <Not Configured>
11. <Not Configured>
12. <Not Configured>
13. <Not Configured>
14. <Not Configured>
15. <Not Configured>
16. <Not Configured>

Hit <Enter> to continue. _
```

Figure 4.5 - VLAN Inventory View

CHAPTER 5

UDP/IP Management

This chapter describes the menus used to access and configure managed objects that monitor and control the UDP/IP stack.

5.1 Manage UDP/IP Menu

This menu is reached directly from the Main Menu. The figure below illustrates the Manage UDP/IP Menu.

```
ES-3810 Manage UDP/IP Menu

1) Return to Main Menu
2) Manage ARP Cache
3) Manage IP Parameters
4) Manage IP Routing Table

5) View ICMP Counters
6) View IP Counters
7) View UDP Counters

Please enter selection:
```

Figure 5.1 - Manage UDP/IP Menu

The items in the previous menu have the following meanings:

- | | |
|--------------------------------|--|
| Return to Main Menu | Returns to the Main Menu. |
| Manage ARP Cache | Displays the Manage ARP Cache Menu. |
| Manage IP Parameters | Displays the Manage IP Parameters Menu. |
| Manage IP Routing Table | Displays the Manage IP Routing Table Menu. |

View ICMP Counters	Displays the ICMP Counters screen.
View IP Counters	Displays the IP Counters screen.
View UDP Counters	Displays the UDP Counters screen.

5.1.1 Manage ARP Cache Menu

This menu displays commands that provide access to managed objects that monitor and control the ARP cache. This menu is reached from the Main Menu through the Manage UDP/IP Menu. The figure below illustrates the Manage ARP Cache Menu.

```
ES-3810 Manage ARP Cache Menu

1) Return to Main Menu
2) RETURN TO PREVIOUS MENU

3) View ARP Cache

4) Create ARP Entry
5) Modify ARP Entry
6) Delete ARP Entry

7) Flush ARP Cache

Please enter selection:
```

Figure 5.2 - Manage ARP Cache Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage UDP/IP Menu.
View ARP Cache	Displays the ARP Cache View screen.

- Create ARP Entry** Queries the user for an IP address and an associated physical address. If the information provided by the user is valid, an entry does not already exist with the specified IP address, and the ARP cache is not full, then the management console adds an entry to the ARP cache. If the ARP entry could not be added to the ARP cache, then the management console displays an appropriate error message in the error message component of the Manage ARP Cache Menu. Entries added to the ARP cache through the management console always have a fixed state. The management console considers ARP cache entries with the fixed state part of the system's configuration, thereby making them persistent.
- Modify ARP Entry** Queries the user for an IP address. If the information provided by the user is valid, and the specified entry exists in the ARP cache, then the management console asks the user for a new physical address. If the specified entry does not exist in the ARP cache, then the management console displays an appropriate error message in the error message component of the Manage ARP Cache Menu.
- Delete ARP Entry** Queries the user for an IP address. If the information provided by the user is valid, and the specified entry exists in the ARP cache, then the management console deletes the specific entry from the ARP cache. The management console confirms the action. If the specified entry does not exist in the ARP cache, then the management console displays an appropriate error message in the error message component of the Manage ARP Cache Menu.
- Flush ARP Cache** Deletes all entries that do not have a fixed state from the ARP cache. The management console explains and confirms this action with the user.

5.1.1.1 ARP Cache View

This view is reached from the Main Menu through the Manage UDP/IP Menu, then through the Manage ARP Cache Menu. The figure below illustrates the ARP Cache View screen.

View ARP Cache		0 00:28:18.71
IP Address	PhysicalAddress	State
1.2.3.4	00-00-00-00-00-01	Fixed
1.2.3.5	00-00-00-00-00-00	Fixed
123.22.43.12	00-01-02-A1-E1-00	Fixed
255.198.98.14	00-A1-03-E1-00-00	Fixed

Hit <Enter> to continue._

Figure 5.3 - ARP Cache View

5.1.2 Manage IP Parameters Menu

This menu displays commands that provide access to managed objects that monitor and control the IP parameters. This menu is reached from the Main Menu through the Manage UDP/IP Menu. The figure below illustrates the Manage IP Parameters Menu.

ES-3810 Manage IP Parameters Menu
1) Return to Main Menu 2) Return to previous menu 3) View IP Parameters 4) Modify IP Address 5) Modify Subnet Mask 6) Modify Primary Gateway
Please enter selection:

Figure 5.4 - Manage IP Parameters Menu

The items in the previous menu have the following meanings:

- Return to Main Menu** Returns to the Main Menu.
- Return to Previous Menu** Returns to the Manage UDP/IP Menu.

View IP Parameters	Displays the IP Parameters View screen.
Modify IP Address	Queries the user for a new IP address. The new IP address defaults to the current IP address if the user provides no input.
Modify Subnet Mask	Queries the user for a new subnet mask. The new subnet mask defaults to the class of the current IP address if the user provides no input.
Modify Primary Gateway	Queries the user for a new primary gateway. The new primary gateway defaults to 0.0.0.0 if the user provides no input.

5.1.3 Manage IP Routing Table Menu

This menu displays commands that provide access to managed objects that monitor and control the IP routing table. This menu is reached from the Main Menu through the Manage UDP/IP Menu. The figure below illustrates the Manage IP Routing Table Menu.

```

ES-3810 Manage IP Routing Table Menu

1) Return to Main Menu
2) Return to Previous Menu

3) View IP Routing Table

4) Create IP Routing Entry
5) Modify IP Routing Entry
6) Delete IP Routing Entry

Please enter selection:

```

Figure 5.5 - Manage IP Routing Table Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage UDP/IP Menu.
View IP Routing Table	Displays the IP Routing View screen.

- Create IP Routing Entry** Queries the user for an IP address, a subnet mask, the next-hop address, and a simple routing metric. If the information provided by the user is valid, an entry does not already exist with the specified IP address, and the IP routing table is not full, then the management console adds an entry to the IP routing table.
- Modify IP Routing Entry** Displays the IP routing entries and asks the user to select one. Next, the management console presents the user with the Modify IP Routing Entry Menu. If the specified entry does not exist in the IP routing table, then the management console displays an appropriate error message in the error message component of the Manage IP Routing Table Menu.
- Delete IP Routing Entry** Queries the user for an IP address. If the information provided by the user is valid, and the specified entry exists in the IP routing table, then the management console deletes the specific entry from the IP routing table. The management console confirms the action. If the specified entry does not exist in the IP routing table, then the management console displays an appropriate error message in the error message component of the Manage IP Routing Table Menu.

5.1.3.1 IP Routing Table View

This menu is reached from the Main Menu through the Manage UDP/IP Menu, then through the Manage IP Routing Table Menu. The figure below illustrates the IP Routing Table View screen.

IP Routing Table View						0 00:14:50.99
IP Address	Network Mask	Gateway	Metric	Fixed	Creator	
123.234.12.34	255.255.255.255	Direct	0	Yes	Operational SW	
123.234.12.0	255.255.255.0	Direct	0	Yes	Operational SW	
Default	255.0.0.0	100.200.210.220	0	Yes	Operational SW	

Figure 5.6 - IP Routing Table View

5.1.3.2 Modify IP Routing Entry Menu

This menu displays commands that provide write access to managed objects that define the specified IP routing entry. This menu is reached from the Main Menu through the Manage UDP/IP Menu, then through the Manage IP Routing Table Menu. The figure below illustrates the Modify IP Routing Entry Menu.

```

ES-3810 Modify IP Routing Entry Menu                               123.234.12.0
-----
1) Return to Main Menu
2) Return to previous menu

3) Modify Subnet Mask
4) Modify Next Hop
5) Modify Metric

Please enter selection: _
  
```

Figure 5.7 - Manage IP Routing Entry Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage IP Routing Table Menu.
Modify Subnet Mask	Queries the user for a new subnet mask for the specified IP routing entry. The new subnet mask defaults to the current subnet mask if the user provides no input.
Modify Next Hop	Queries the user for a new next hop address for the specified IP routing entry. The new next hop address defaults to the current next hop address if the user provides no input.
Modify Metric	Queries the user for a new metric for the specified IP routing entry. The new metric defaults to the current metric if the user provides no input.

5.1.4 ICMP Counters

This view is reached from the Main Menu through the Manage UDP/IP Menu. The figure below illustrates the ICMP Counters screen.

Inbound		Outbound	
Total Messages	0	Total Messages	0
Total Errors	0	Total Errors	0
Destination Unreachable Msgs	0	Destination Unreachable Msgs	0
Time Exceeded Messages	0	Time Exceeded Messages	0
Parameter Problem Msgs	0	Parameter Problem Msgs	0
Source Quench Messages	0	Source Quench Messages	0
Redirect Messages	0	Redirect Messages	0
Echo Requests	0	Echo Requests	0
Echo Replies	0	Echo Replies	0
Timestamp Requests	0	Timestamp Requests	0
Timestamp Replies	0	Timestamp Replies	0
Address Mask Requests	0	Address Mask Requests	0
Address Mask Replies	0	Address Mask Replies	0

ES-3810 View ICMP Counters 27:13.69

=> _
 Commands: +, -, Freeze, Unfreeze, Quit

Figure 5.8 - View ICMP Counters

5.1.5 IP Counters

This view is reached from the Main Menu through the Manage UDP/IP Menu. The figure below illustrates the IP Counters screen.

The screenshot shows a terminal window titled "ES-3810 View IP Counters" with a timestamp of "28:01.02". It displays a table of IP counter statistics for Inbound and Outbound traffic. All values are currently zero. At the bottom, there is a command prompt "=>" and a list of available commands: "+, -, Freeze, Unfreeze, Quit".

Inbound		Outbound	
Total Messages	0	Total Messages	0
Header Errors	0	Discards	0
Address Errors	0	No Routes	0
Unknown Protocols	0	Fragment OKs	0
Discards	0	Fragment Failures	0
Delivered Datagrams	0	Fragment Creates	0
Reassembly Requireds	0		
Reassembly OKs	0		
Reassembly Failures	0		

=>
Commands: +, -, Freeze, Unfreeze, Quit

Figure 5.9 - View IP Counters

UDP/IP Management

5.1.6 UDP Counters

This view is reached from the Main Menu through the Manage UDP/IP Menu. The figure below illustrates the UDP Counters screen.

Inbound		Outbound	
Total Datagrams	0	Total Datagrams	0
No Port Errors	0		
Other Errors	0		

ES-3810 View UDP Counters 28:33.21

Commands: +, -, F~~rees~~, U~~nfrees~~, Quit

Figure 5.10 - UDP Counters View

CHAPTER 6

SNMP Management

This chapter describes the menus used to access and configure managed objects that monitor and control the SNMP-based management agent.

6.1 Manage SNMP Menu

This menu is reached directly from the Main Menu. The figure below illustrates the Manage SNMP Menu.



Figure 6.1 - Manage SNMP Menu

The items in the previous menu have the following meanings:

- | | |
|-------------------------------------|---|
| Return to Main Menu | Returns to the Main Menu. |
| Manage Access Control List | Displays the Manage Access Control List Menu. |
| Manage Trap Destination List | Displays the Manage Trap Destination List Menu. |
| View SNMP Counters | Displays the SNMP Counters screen. |

6.1.1 Manage Access Control List Menu

This menu displays commands that provide access to managed objects that monitor and control the access control list used by the SNMP-based agent for the purpose of authentication. The logon process also uses the access control list.

You can modify, add, or delete entries in the Access Control List. You can add communities to this list to give certain privileges to certain users. For example, you can add the community “Marketing,” and provide read-only privileges. The username for a community is the community name.

This menu is reached from the Main Menu through the Manage SNMP Menu. The figure below illustrates the Manage Access Control List Menu.

```
ES-3810 Manage Access Control List Menu

1) Return to Main Menu
2) Return to Previous Menu
3) View Access Control List
4) Modify Access Control List

Please enter selection: _
```

Figure 6.2 - Manage Access Control List Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage SNMP Menu.
View Access Control List	Displays the Access Control List View screen.
Modify Access Control List	Displays the Community Selection screen and then Displays the Modify Access Control Entry Menu for the selected community.

6.1.1.1 Access Control List View and Community Selection

This view is reached from the Main Menu through the Manage SNMP Menu and then through the Manage Access Control List Menu. The figure below illustrates the Access Control List View screen.

E8-3810 Access Control List				0 00:31:04.37	
Id	Community	Rights	Client List		
1	public	R	No		
2	private	RW	No		

Hit <enter> to return to the previous menu or
type a community id to view its client list: 1

Figure 6.3 - Access Control List View

6.1.1.2 Client List View

This view is reached from the Main Menu through the Manage SNMP Menu, and then through the Manage Access Control List Menu. The figure below illustrates the Access Control List View screen.

E8-3810 Client List for Community "public"				0 00:32:49.37	
Id	Client Address	Client Mask	Rights		
1	1.2.3.4	1.0.0.0			
2	1.2.3.5	1.1.0.0	R		

Figure 6.4 - Client List View

6.1.1.3 Modify Access Control Entry Menu

This menu displays commands that provide write access to managed objects that define the specified IP routing entry. This menu is reached from the Main Menu through the Manage SNMP Menu, then through the Manage Access Control List Menu and finally through the Community Selection screen. The figure below illustrates the Modify Access Control Entry Menu.

```
ES-3810 Modify Access Control List Menu

1) Return to Main Menu
2) Return to Previous Menu

3) Add Entry
4) Delete Entry
5) Modify Entry

6) Add Client
7) Delete Client
8) Modify Client

Please enter selection: _
```

Figure 6.5 - Modify Access Control Entry Menu

The items in the previous menu have the following meanings:

Return to Main Menu	Returns to the Main Menu.
Return to Previous Menu	Returns to the Manage Access Control List Menu.
Add Entry	Queries the user for a new community name and whether or not that community has write privileges.
Delete Entry	Displays a list of existing entries (communities) in the access control list and asks the user to select the entry to be deleted.
Modify Entry	Displays a list of existing entries (communities) in the access control list and asks the user to select the entry to be modified, the new name for the entry, and the read-write privileges of the entry.

Add Client Displays a list of existing entries (communities) in the access control list and asks the user to select the entry to which a client is to be added. Next, the user is asked for the IP address, IP address mask, whether the client is to have write access (if the community to which it belongs has write access), and whether the client is to have read access.

**NOTE**

A client cannot have more privileges than the community to which it belongs (i.e., a client in a “read-only” community cannot have write access).

Delete Client Displays a list of existing entries (communities) in the access control list and asks the user to select the entry from which a client is to be deleted. Next, a list of clients in the selected community is displayed, and the user is asked which client from the list is to be deleted.

Modify Client Displays a list of existing entries (communities) in the access control list and asks the user to select the entry containing the client to be modified. Next, a list of clients in the selected community is displayed, and the user is asked which client from the list is to be modified. The user must supply the client’s new IP address, IP address mask, whether the client is to have write access (if the community to which it belongs has write access), and whether the client is to have read access.

6.1.2 Manage Trap Destination List Menu

This menu displays commands that provide access to managed objects that monitor and control the trap destination list used by the SNMP-based agent to determine where to send traps. This menu is reached from the Main Menu through the Manage SNMP Menu. The figure below illustrates the Manage Trap Destination List Menu.

```
ES-3810 Manage Trap Destination List Menu

1) Return to Main Menu
z) Return to Previous Menu

3) View Trap Destination List

4) Create Trap Destination Entry
5) Modify Trap Destination Entry
6) Delete Trap Destination Entry

Please enter selection:
```

Figure 6.6 - Manage Trap Destination List Menu

The items in the previous menu have the following meanings:

- | | |
|-----------------------------------|--|
| Return to Main Menu | Returns to the Main Menu. |
| Return to Previous Menu | Returns to the Manage SNMP Menu. |
| View Trap Destination List | Displays the Trap Destination List View. |

- Create Trap Destination Entry** Queries the user for an IP address and a community name. If the information provided by the user is valid, and an entry matching the specified IP address does not already exist in the trap destination list, and the trap destination list is not full, then the management console adds the entry to the trap destination list. If the management console could not add the entry to the trap destination list, then the management console displays an appropriate error message in the error message component of the Manage Trap Destination List Menu. Note that trap destination entries are persistent.
- Modify Trap Destination Entry** Displays the Trap Destination Selection screen and then queries the user for a new community. The new community defaults to the current community if the user provides no input.
- Delete Trap Destination Entry** Displays the Trap Destination List View screen and then asks the user to confirm the selection before deleting the entry.

6.1.2.1 View Trap Destination List

This view is reached from the Main Menu through the Manage SNMP Menu, and then through the Manage Trap Destination List Menu. The figure below illustrates the Trap Destination List View screen.

ES-3810 Trap Destination List			0 00:40:03.15
Id	Client	Community	
1	12.34.23.45	Group Three	
2	255.0.0.0	private	
3	123.234.12.34	public	
4	34.56.123.12	Group Three	

Figure 6.7 - View Trap Destination List

6.1.2.2 Trap Destination Selection

This screen is reached from the Main Menu through the Manage SNMP Menu, and then through the Manage Trap Destination List Menu. The figure below illustrates the Trap Destination List View screen.

ES-3810 Trap Destination List		
0 00:04:00.20		
Id	Client	Community
1	192.34.12.11	public
2	198.98.23.34	public

Which entry do you want to modify?

Figure 6.8 - Trap Destination Selection Menu

6.1.3 SNMP Counters

This view is reached from the Main Menu through the Manage SNMP Menu. The figure below illustrates the SNMP Counters screen.

ES-3810 View SNMP Counters			
52:48.41			
Inbound		Outbound	
Total Packets	0	Total Packets	0
Get Requests	0	Get Requests	0
Get-Next Requests	0	Get-Next Requests	0
Set Requests	0	Set Requests	0
Get Responses	0	Get Responses	0
Traps	0	Traps	0
Total Set Variables	0		
Total Request Variables	0		
General Errors	0	General Errors	0
Read Onlys	0		
Bad Values	0	Bad Values	0
No Such Names	0	No Such Names	0
Too Bigs	0	Too Bigs	0
ASN.1 Parse Errors	0		
Bad Community Uses	0		
Bad Community Names	0		
Bad Versions	0		

=>
 Commands: +, -, Freeze, Unfreeze, Quit

Figure 6.9 - View SNMP Counters

CHAPTER 7

Spanning Tree Management

This section provides an overview of Spanning Tree bridging and details the menus used to manage and configure it on the ES-3810.

7.1 Overview

A bridge accepts packets of data passing through a network and decides whether to forward each packet based on the information it contains. Bridges operate at the physical and data link layers of the Open Systems Interconnection (OSI) model. The physical layer provides the physical connection to the transmission medium, and the data link layer provides reliable transmission. Specifically, the data link layer is made up of two distinct tasks, Logical Link Control (LLC) and Medium Access Control (MAC) (see Figure 7.1).

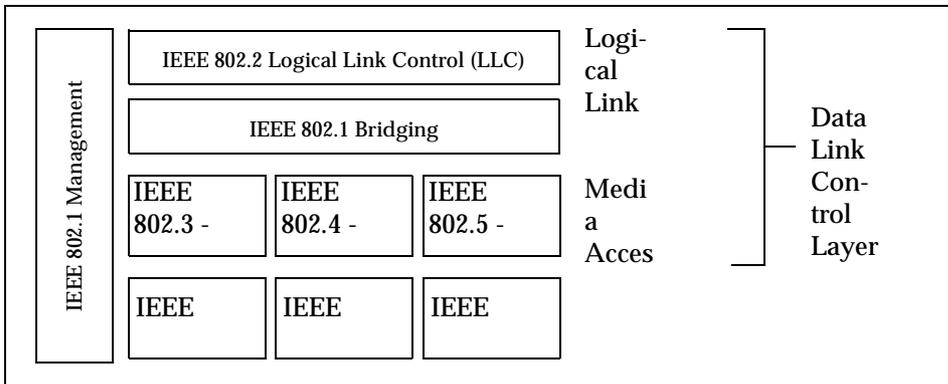


Figure 7.1 - Overview of IEEE Protocols

The LLC controls the logical link (i.e., it serves to open, maintain, and terminate links). The LLC depends upon the physical layers to perform its tasks.

The MAC controls access to the physical media, acting independently of the physical layer and providing an interface to the upper layers of the network model. IEEE 802.3 and Ethernet use the same MAC layer, allowing both types of packets to coexist on the same cable. In this way, the same bridge can forward both Ethernet and IEEE 802.3 packets.

Bridging allows any IEEE 802-compliant station to communicate with remote, bridged stations as if they were local. Although bridged networks remain physically separate, they appear as one network to other devices.

Bridges forward packets between networks and can pass data using any protocol compatible with the media. Bridges receive all packets from a LAN and examine each one to determine its destination. If the packet is destined for a station on the physical cable from which it was received, the bridge does not forward the packet. If the destination is unknown, the packet is forwarded to all ports except the one on which it was received.

Because bridges examine each packet, and because each packet contains a source address, bridges can easily learn the locations of stations on the network. However, if an address is unknown, flooding can result in endless loops on the network, since all bridges that do not know the address will flood the packet looking for the address. To circumvent this, a tree-type algorithm is implemented that prevents loops and forces the packets into logical routes. This algorithm, called the Spanning Tree Algorithm (STA), allows only one route between any two physical cables or networks.

Spanning tree bridges are based upon a root bridge which exchanges topology information with designated bridges to maintain the configuration. The root and designated bridges notify all other bridges in the network when topology changes are required, thereby preventing loops and reducing the risk of link failure.

7.1.1 Spanning Tree on the ES-3810

The ES-3810 supports up to 16 Spanning Tree instances, or bridges. Each bridge must be configured on a per-port, per-VLAN basis. All ports of a VLAN must be associated with the same Spanning Tree, including the ports of the associated ELAN (denoted as L1, L2, etc.).



More than one VLAN can be associated with a bridge.

Each bridge, internally numbered from 0 to 15, can be named to allow easier identification. At startup, a default bridge (STP 0) is configured. This default instance is named DefaultSpanningTree.

All VLANs and all ports belong to STP 0 by default, and all ports will be initialized with Spanning Tree switched off. Spanning Tree must be manually activated on desired ports (see the remainder of this chapter for more information on configuring Spanning Tree on the ES-3810).

7.2 Manage Spanning Tree Menu

The Manage Spanning Tree menu is available from the Main Menu of the ES-3810 console interface (see Figure 7.2).

```

ES-3810 Manage Spanning Tree Menu                                DefaultSpanningTree

1) Return to Previous Menu
2) Select Spanning Tree Instance
3) Display Spanning Tree Bridge Information
4) Create Spanning Tree Instance
5) Modify Spanning Tree Bridge Config
6) Delete Spanning Tree Instance

7) Display Spanning Tree Port Status

8) Switch STP ON on Ports
9) Switch STP OFF on Ports
10) Manage Spanning Tree Port Configuration

Please enter selection:

```

Figure 7.2 - Manage Spanning Tree Menu

7.2.1 Select Spanning Tree Instance

To select a Spanning Tree instance, type 2 and press <ENTER> in the Manage Spanning Tree Menu (see Figure 7.2). When the Select Spanning Tree Menu appears, type the number corresponding to the desired Spanning Tree instance and press <ENTER> (see Figure 7.3).

```

ES-3810 Select Spanning Tree                                    DefaultSpanningTree

```

Number	Name
1	DefaultSpanningTree
2	Spanning Tree 1
3	Spanning Tree 2
4	Spanning Tree 3

```

Please enter selection (by Number):

```

Figure 7.3 - Select Spanning Tree Menu

7.2.2 Display Spanning Tree Bridge Information

After selecting a Spanning Tree instance, you will be returned to the Manage Spanning Tree Menu. To display the bridge information of the selected Spanning Tree instance, type 3 and press <ENTER>. The screens shown in Figure 7.4 and Figure 7.5 are displayed.

Spanning Tree Management		Bridge Information		0 00:09:34.23
STP Name : Spanning Tree 1		STP Number		1
Root Port Number	0 ()	Desig Root Pr	32768	
Root Cost	0	Desig Root Ad	00-A0-36-00-05-61	
Topology Changes 0		Bridge Priority	32768	
Hold Time	1 secs	Bridge Address	00-A0-36-00-05-61	
Max Age	20 secs	Bridge Max Age	20 secs	
Hello Time	2 secs	Bridge Hello Time	2 secs	
Forward Delay	15 secs	Bridge Forward Delay	15 secs	
Enter any key to continue				

Figure 7.4 - Bridge Information Display (part 1)

Spanning Tree Management		Bridge Information		0 00:10:10.64
STP Name : Spanning Tree 1		STP Number		1
Ports configured on STP Spanning Tree 1:				
None				
Number of Ports = 0				
Enter any key to continue_				

Figure 7.5 - Bridge Information Display (part 2)

The parameters in the previous display have the following meanings:

STP Name	Indicates the name of the selected bridge. A bridge's name can be assigned or changed by the user. The default bridge name is DefaultSpanningTree.
STP Number	Indicates the number, from 0 to 15, of the selected bridge. STP Number is the internal system identifier of each bridge.
Root Port Number	Indicates the port on the selected bridge that is closest to the Root Bridge, determined by path cost.
Desig Root Pr	Indicates the priority of the root bridge, between 0 and 65,535.
Root Cost	Indicates the sum of the path costs from the selected bridge to the root.
Desig Root Ad	Indicates the MAC address of the root bridge.
Topology Changes	Indicates the number of times the topology of the selected bridge has changed.
Bridge Priority	Indicates the priority of the selected bridge.
Hold Time	Indicates the hold time, which is a constant value of one second.
Bridge Address	Indicates the MAC address of the selected bridge.
Max Age	Indicates the maximum amount of time that the selected bridge will wait to hear Hello Bridge Protocol Data Units (BPDUs) from the root bridge. If the selected bridge does not receive BPDUs from the root bridge within this interval, it assumes that the network has changed and recalculates the spanning tree topology.
Bridge Max Age	Indicates the Max Age of the selected bridge.
Hello Time	Indicates the interval between BPDUs.
Bridge Hello Time	Indicates the Hello Time for the selected bridge.
Forward Delay	Indicates the amount of time that will be spent listening for topology changes after a bridging interface is configured and before forwarding begins.
Bridge Forward Delay	Indicates the Forward Delay for the selected bridge.

7.2.3 Creating a Spanning Tree Instance

To create a new Spanning Tree Instance, type 4 and press <ENTER> in the Manage Spanning Tree Menu, the Create Spanning Tree Menu is displayed (see Figure 7.6).

```
ES-3810 Create Spanning Tree
-----
Spanning Tree Name: Spanning Tree 4

```

Figure 7.6 - Create Spanning Tree Menu (part 1)

Type the name of the new Spanning Tree and press <ENTER>. Next, select a VLAN to include in the new spanning tree (see Figure 7.7). If you wish to include ports from another VLAN, enter y at the “Add More Ports from Vlans [No]?” prompt (see Figure 7.7).

```
ES-3810 Create Spanning Tree                               STP 7 (Spanning Tree 4)
-----
Ports configured on STP Spanning Tree 4:
  Root
Select Vlan to include in this Spanning Tree :

1. default

Enter Vlan Number :1

Add More Ports from Vlans [No]? n

```

Figure 7.7 - Create Spanning Tree Menu (part 2)

7.2.4 Modify Spanning Tree Bridge Information

To modify the bridge information of the selected Spanning Tree instance, type 5 and press <ENTER> in the Manage Spanning Tree Menu. The Modify Spanning Tree Bridge Configuration Menu is displayed (see Figure 7.8).

```
ES-3810 Modify Spanning Tree Bridge Config Menu          Spanning Tree 1

1) Return to Previous Menu
2) Associate VLAN to STP Instance
3) Modify STP Bridge Priority
4) Modify STP Bridge MaxAge
5) Modify STP Bridge Hello Time
6) Modify STP Bridge Forward Delay

Please enter selection:
```

Figure 7.8 - Modify Spanning Tree Bridge Configuration Menu

7.2.4.1 Associate VLAN to Spanning Tree Instance

To associate a VLAN to the selected Spanning Tree instance, type 2 and press <ENTER> in the Modify Spanning Tree Bridge Configuration Menu. The Associate VLANs to Spanning Tree Menu is displayed (see Figure 7.9). Type the number corresponding to the desired VLAN and press <ENTER>.

```
Associate Vlans to Spanning Tree      Spanning Tree 1      0 00:12:19.52
-----
Ports configured on STP Spanning Tree 1:
None
Select Vlan to include in this Spanning Tree :

1. default

Enter Vlan Number :
```

Figure 7.9 - Associate VLANS to Spanning Tree Menu

7.2.4.2 Modify Spanning Tree Bridge Priority

To modify the Spanning Tree bridge priority of the selected Spanning Tree instance, type 3 and press <ENTER> in the Modify Spanning Tree Bridge Configuration Menu. The Modify STP Bridge Priority Menu is displayed (see Figure 7.10). Type the value of the new bridge priority and press <ENTER>.

```
Modify STP Bridge Priority             Spanning Tree 1      0 00:13:14.32
-----
Enter STP Bridge Priority [Current 32768] [Range 0 - 65535] :
```

Figure 7.10 - Modify STP Bridge Priority Menu

7.2.4.3 Modify Spanning Tree Bridge Maximum Age

To modify the Spanning Tree bridge maximum age of the selected Spanning Tree instance, type 4 and press <ENTER> in the Modify Spanning Tree Bridge Configuration Menu. The Modify STP Bridge MaxAge Menu is displayed (see Figure 7.11). Type the value of the new maximum age and press <ENTER>.

```
Modify STP Bridge MaxAge          Spanning Tree 1          0 00:15:01.19
-----
Enter STP Bridge Max Age
Allowed Range is [0 - 30] as per relation :
( 2 * [Forward Delay -1] >= Max Age )
Enter STP Bridge MaxAge [Current 20]:
```

Figure 7.11 - Modify STP Bridge MaxAge Menu

7.2.4.4 Modify Spanning Tree Bridge Hello Time

To modify the Spanning Tree bridge hello time of the selected Spanning Tree instance, type 5 and press <ENTER> in the Modify Spanning Tree Bridge Configuration Menu. The Modify STP Bridge Hello Time Menu is displayed (see Figure 7.12). Type the value of the new hello time and press <ENTER>.

```
Modify STP Bridge Hello Time           Spanning Tree 1           0 00:15:31.60
-----
Enter STP Bridge Hello Time [Current 2] [Range 1 - 10] : 4
```

Figure 7.12 - Modify STP Bridge Hello Time Menu

7.2.4.5 Modify Spanning Tree Bridge Forward Delay

To modify the Spanning Tree bridge forward delay of the selected Spanning Tree instance, type 5 and press <ENTER> in the Modify Spanning Tree Bridge Configuration Menu. The Modify STP Bridge Forward Delay Menu is displayed (see Figure 7.13). Type the value of the new forward delay and press <ENTER>.

```
Modify STP Bridge Forward Delay          Spanning Tree 1          0 00:16:05.37
-----
Enter STP Bridge Forward Delay
Allowed Range is [4 - 30] as per relation :
( 2 * [Forward Delay -1] >= Max Age )
Enter STP Bridge Forward Delay [Current 15]:
```

Figure 7.13 - Modify STP Bridge Forward Delay Menu

7.2.5 Delete Spanning Tree Instance

To delete a Spanning Tree instance, type 6 and press <ENTER> in the Manage Spanning Tree Menu. When the Delete Spanning Tree Menu appears, type the number corresponding to the Spanning Tree instance to be deleted and press <ENTER> (see Figure 7.14).

ES-3810 Delete Spanning Tree		Spanning Tree 1
Number	Name	
1	DefaultSpanningTree	
2	Spanning Tree 1	
3	Spanning Tree 2	
4	Spanning Tree 3	
5	Spanning Tree 4	
Please enter selection (by Number):		

Figure 7.14 - Delete Spanning Tree Menu

7.2.6 Display Spanning Tree Port Status

To display all the ports of the ES-3810, the Spanning Tree instance to which they belong, and the status of each port, type 7 and press <ENTER> in the Manage Spanning Tree Menu. When the View STP Port Status Display is shown, press <ENTER> to scroll through the listed ports (see Figure 7.15).

ES-3810 View STP Port Status		Spanning Tree 1
1.	DefaultSpanningTree	E1 STP Off
2.	DefaultSpanningTree	E2 STP Off
3.	DefaultSpanningTree	E3 STP Off
4.	DefaultSpanningTree	E4 STP Off
5.	DefaultSpanningTree	E5 STP Off
6.	DefaultSpanningTree	E6 STP Off
7.	DefaultSpanningTree	E7 STP Off
8.	DefaultSpanningTree	E8 STP Off
9.	DefaultSpanningTree	E1 STP Off
10.	DefaultSpanningTree	E2 STP Off
11.	DefaultSpanningTree	E3 STP Off
12.	DefaultSpanningTree	E4 STP Off
13.	DefaultSpanningTree	E5 STP Off
14.	DefaultSpanningTree	E6 STP Off
15.	DefaultSpanningTree	E7 STP Off
16.	DefaultSpanningTree	E8 STP Off
17.	DefaultSpanningTree	E9 STP Off
Hit <ENTER> to View Remaining Ports		

Figure 7.15 - View STP Port Status Display

7.2.7 Switch on STP on Ports

To switch on Spanning Tree on an individual port or groups of ports, type 8 and press <ENTER> in the Manage Spanning Tree Menu. When the Switch STP ON Menu appears, type the port(s) on which you wish to switch on Spanning Tree and press <ENTER> (see Figure 7.16).

```
Switch STP ON                                0 00:18:02.97
-----
Enter Ports to Switch ON Spanning Tree
Enter (eg. a1,a2,c1,c3-c8,d8,11) :b1-b6
```

Figure 7.16 - Switch STP ON Menu

7.2.8 Switch off STP on Ports

To switch off Spanning Tree on a port or groups of ports, type 9 and press <ENTER> in the Manage Spanning Tree Menu. When the Switch STP OFF Menu appears, type the port(s) on which you wish to switch off Spanning Tree and press <ENTER> (see Figure 7.17).

```
Switch STP ON 0 00:18:02.97

Enter Ports to Switch ON Spanning Tree
Enter (sq. a1,a2,c1,c2-c8,d8,11) :b1-b6
```

Figure 7.17 - Switch STP OFF Menu

7.2.9 Manage Spanning Tree Port Configuration

To manage Spanning Tree on a port, type 10 and press <ENTER> in the Manage Spanning Tree Menu. The Modify Spanning Tree Port Configuration Menu appears (see Figure 7.18).

```
ES-3810 Modify Spanning Tree Port Config Menu Port No. B1

1) Return to Previous Menu
2) Select Spanning Tree Port
3) Display Spanning Tree Port Information
4) Switch STP ON/OFF on a Port
5) Enable/Disable STP on a Port
6) Modify STP Port Priority
7) Modify STP Port Path Cost

Please enter selection:
```

Figure 7.18 - Modify Spanning Tree Port Configuration Menu

7.2.9.1 Select Spanning Tree Port

To manage Spanning Tree on an individual port, type 2 and press <ENTER> in the Modify Spanning Tree Port Configuration Menu. When the Select Spanning Tree Port Menu appears, enter the desired port number (see Figure 7.19).

```
Select Spanning Tree Port          Port : B1          0 00:04:11.98
-----
Spanning Tree Ports :
          B1 - B8
          C1 - C16
          D1 - D24
Enter Port Identifier (B1-D24): b1
```

Figure 7.19 - Select Spanning Tree Port Menu

7.2.9.2 Display Spanning Tree Port Information

To display information for the selected port, type 3 and press <ENTER> in the Modify Spanning Tree Port Configuration Menu. The Spanning Tree Management Display is shown (see Figure 7.20).

Spanning Tree Management		Port Information		© 00:04:43.10	
STP Information for Port E1				Desig Root Pr	0
Port Priority	128	Desig Root Ad	00-00-00-00-00-00		
Port Id	1	Desig Cost	0		
Port State	STP Off	Desig Bridge Pr	0		
Port Path Cost	10	Desig Bridge Ad	00-00-00-00-00-00		
Designated Port Priority 0		Designated Port Id		0	
Spanning Tree Instance = 0		STP Name : DefaultSpanningTree			
Enter any key to continue					

Figure 7.20 - Spanning Tree Port Information Menu

7.2.9.3 Toggle STP on a Port

To switch STP on or off on the selected port, type 4 and press <ENTER> in the Modify Spanning Tree Port Configuration Menu. If Spanning Tree is currently set to “On” on the port, you will be prompted to turn it “Off.” If Spanning Tree is currently set to “Off,” you will be prompted to turn it “On.” Type y and press <ENTER> at the prompt to accept, or type n and press <ENTER> to leave the port unchanged (see Figure 7.21).

```

Switch STP ON/OFF on a Port          Port No. E1          0 00:05:14.05
-----
STP Switched Off on this Port (Port E1)
Switch ON STP on this port : [No]? y

```

Figure 7.21 - Toggle STP on a Port Menu

7.2.9.4 Enable/Disable Traffic Forwarding on a Port

To enable or disable traffic forwarding on the selected port, type 5 and press <ENTER> in the Modify Spanning Tree Port Configuration Menu. If traffic forwarding is currently enabled on the port, you will be prompted to disable it. If traffic forwarding is currently disabled on the port, you will be prompted to enable it. Type y and press <ENTER> at the prompt to accept, or type n and press <ENTER> to leave the port unchanged (see Figure 7.22).

```

Enable/Disable STP on a Port          Port No. E1          0 00:06:00.61
-----
All Traffic Enabled on this Port (Port E1)
Disable Traffic on this port : [No]? y

```

Figure 7.22 - Enable/Disable STP Menu

7.2.9.5 Modify STP Port Priority

To modify a port's priority, type 6 and press <ENTER> in the Modify Spanning Tree Port Configuration Menu. When the Modify STP Port Priority Menu appears, type a new port priority and press <ENTER> (see Figure 7.23).

```
Modify STP Port Priority          Port No. 81          0 00:06:36.63
-----
Enter STP Port Priority [Current 128 ] [Range 0-255] :224
```

Figure 7.23 - Modify STP Port Priority Menu

7.2.9.6 Modify STP Port Path Cost

To modify the path cost on a selected port, type 7 and press <ENTER> in the Modify Spanning Tree Port Configuration Menu. When the Modify STP Port Path Cost Menu appears, type a new path cost and press <ENTER> (see Figure 7.24).

```
Modify STP Port Path Cost          Port No. E1          0 00:07:14.52
-----
Enter STP Port Path Cost ( 10 ) :4_
-----
_____
```

Figure 7.24 - Modify STP Port Path Cost Menu

Spanning Tree Management

8.1 Overview

The ES-3810 includes single-session Telnet support for providing remote access to the switch. Telnet is single session **only** and causes the console to be redirected (i.e., only a telnet session or a local console session can be active at any one time, not both).

To configure Telnet on the ES-3810, log on via the management console and select option 7, “Manage Telnet,” from the ES-3810 Main Menu. The Manage Telnet Menu is displayed, as shown in Figure 8.1.

```
ES-3810 Manage Telnet Menu

1) Return to Main Menu
2) View Telnet Parameters
3) Enable/Disable Telnet
4) Modify Telnet Timeout

Please enter selection: _
```

Figure 8.1 - The Manage Telnet Menu

8.1.1 Viewing Telnet Parameters

To view the ES-3810's current Telnet configuration, select option 2, "View Telnet Parameters," from the Manage Telnet Menu. The Telnet parameters are displayed as shown in Figure 8.2.

```
ES-3810 View Telnet Parameters
-----
Telnet Logon:      Enabled
Telnet Timeout:   000 00:05:00
Hit <Enter> to continue.
```

Figure 8.2 - View Telnet Parameters Display

The parameters displayed in this screen have the following meanings:

Telnet Logon Indicates whether or not Telnet access to the ES-3810 is enabled. *Enabled* indicates that the ES-3810 can be reached via telnet (using the correct IP address). *Disabled* indicates that the ES-3810 can not be reached via Telnet.

Telnet Timeout Indicates the current timeout setting for the ES-3810. The timeout parameter (entered in days hours:minutes:seconds) indicates the amount of "idle" time allowed before which the ES-3810 will terminate a Telnet session.

For example, if the timeout value is set to 000 00:05:00 (five minutes), a Telnet session to the ES-3810 will be terminated after five minutes of inactivity.

8.1.2 Enabling/Disabling Telnet

To enable or disable Telnet on the ES-3810, select option 3, “Enable/Disable Telnet,” from the Manage Telnet Menu. The selection must be confirmed (whether enabling or disabling Telnet), as shown in Figure 8.3.

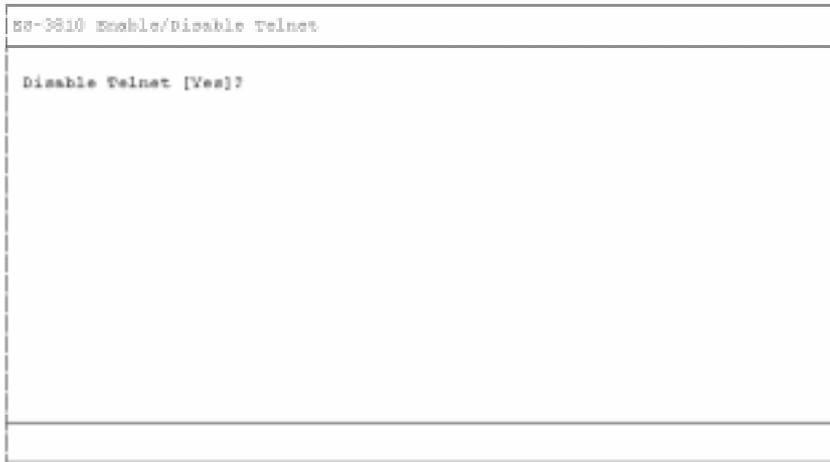


Figure 8.3 - Enable/Disable Telnet Confirmation Screen

- - If Telnet is disabled, the following message is displayed: Enable Telnet [Yes]?
 - To enable Telnet, type *y* and press <ENTER>, or simply press <ENTER>.
 - To leave Telnet disabled, type *n* and press <ENTER>.
 - Next, press <ENTER> again to return to the Manage Telnet Menu.
- - If Telnet is enabled, the following message is displayed: Disable Telnet [Yes]?
 - To disable Telnet, type *y* and press <ENTER>, or simply press <ENTER>.
 - To leave Telnet enabled, type *n* and press <ENTER>.
 - Next, press <ENTER> again to return to the Manage Telnet Menu.

8.1.3 Modifying the Timeout Value

To change or disable the Telnet timeout value on the ES-3810, select option 4, “Modify Telnet Timeout,” from the Manage Telnet Menu. The following screen is displayed:

```
ES-3810 Modify Telnet Timeout
-----
Telnet Timeout [8:00]: 000 00:10:00_

Please enter a delta time value using the following formats:

      [ddd hh:mm:ss
      where ddd = days (<12)
            hh  = hours  (<24)
            mm  = minutes (<60)
            ss  = seconds (<60)
      Delta time should be >= 10secs AND <= 1000000secs

      Enter a zero (0) value to disable the function.
```

Figure 8.4 - Timeout Modification Screen

To change the Telnet timeout value, enter the new value according to the key in the lower portion of the screen. For example, to change the value to 10 minutes, enter 000 00:10:00. 10 minutes can also be entered as 10:00, or as 600 (seconds).



To return to the Manage Telnet Menu without modifying the timeout value, press <ENTER> before entering anything else.

To disable the timeout feature altogether, enter 0 as the timeout value.

APPENDIX A

ESM-16 Console Management Subsystem

The following details the menu selections available through the ESM-16 Console Management Subsystem. The ESM-16 Console Management Subsystem is not used in systems with an NMM. If your system is configured with an NMM, please ignore this chapter and refer to Chapters 1 through 8.

The following sections detail the menu selections available through the ESM-16 Console Management Subsystem.

A.1 The Main Menu

The following is the main menu that will be displayed. This is the first menu displayed upon power up, as well as the menu that remains displayed after any menu selection is completed.

ForeRunner ES-3810
Copyright 1995 FORE Systems, Inc.
Main Menu

1. **View Port Configuration**
2. **View Port Counters**
3. **Set Port Configuration**
4. **Address Database Functions**
5. **Save Current Settings**
6. **Reset to Factory Default Settings**
7. **Download New Image**
8. **Initialize Port Counters**
9. **Reboot**

Enter Selection:

A.1.1 View Port Configuration

The following menu is displayed for option 1 from the Main Menu.



The user will first be prompted for a port number to view.

**ForeRunner ES-3810
Port Configuration**

Please enter port number (1-16): 1
Firmware Version: V1.1.00
Hardware Version: 10B

Port implementation:	SEC-10	Transmitter:	ENABLED
Chip number:	0	Receive Buffer:	ENABLED
Twisted Pair:	ENABLED	Transmit Buffer:	ENABLED
Loopback:	DISABLED	Secure Learn:	DISABLED
Sniff Segment:	DISABLED	Receive Err Pkts:	DISABLED
Full Duplex:	DISABLED	Hash Uploading:	DISABLED
Force Transmit:	DISABLED	Flagged Packets:	DISABLED
Polarity Correction:	DISABLED	Sniffed Packets:	DISABLED
Link Detected:	NO	IA Promiscuous:	DISABLED
Link Polarity:	OK	MC Promiscuous:	ENABLED
Receiver:	ENABLED	Backbone Mode:	DISABLED

Press ENTER to Return to Main Menu

A.1.2 View Port Counters

The following menu is displayed for Option 2 from the Main Menu.



The user will first be prompted for a port number to view.

```

ForeRunner ES-3810
View Port Statistics

Please enter port number (1-16): 1

----- TRANSMITTER -----
Total Bytes:      1202010372
Packets:         2832049
Lost Packets:    0
Broadcasts:     30862
Multicasts:     175576
Single Collisions: 2299
Multiple Collisions: 2439
Excessive Collisions: 0
NCL Packets:    0
Init Deferred Pkts: 113645

----- RECEIVER -----
Total Bytes:      335294917
Packets:         2293755
Lost Packets:    0
Broadcasts:     69083
Multicasts:     69083
Short Packets    0
Long Packets:    0
Framing Errors: 0
FCS Error Packets: 0
Late Collisions: 0

Press ENTER to Return to Main Menu
    
```

A.1.3 Set Port Configuration

The following menu is displayed for Option 3 from the Main Menu.



The user will first be prompted for a port number for which the parameters will be set. It is recommended that before any parameter is set to anything other than the Factory Default Setting, a thorough understanding of Section 8.2.1, Port Parameters, is required.

ForeRunner ES-3810
Set Port Attributes

The following attributes are settable:

1. Enable/Disable Loopback Mode	2. Enable/Disable Segment Sniffing
3. Enable/Disable Full Duplex Mode	4. Enable/Disable Receiver
5. Enable/Disable Transmitter	6. Enable/Disable Secure Learning
7. Enable/Disable Hash Upload	8. Enable/Disable Flagged Packets
9. Enable/Disable Packet Sniffing	10. Enable/Disable IA Promiscuous Mode
11. Enable/Disable MC Promiscuous Mode	12. Enable/Disable Backbone Mode
13. Enable/Disable Receive Errors Mode	14. Enable/Disable Twisted Pair Mode
15. Enable/Disable Correct Polarity	16. Enable/Disable Force Tmit Mode
17. Enable/Disable Rx Ring Buffer	18. Enable/Disable Tx Ring Buffer

Please Enter Selection [range 1-18]:

For each of the parameters that may be set, the current state of the parameter is presented and the user is asked a final time if they are sure they want to change the parameter.

CAUTION



Any changes made are immediately implemented. Make sure you read Section 8.2.1 and have a thorough understanding of the port parameters.

A.1.4 Address Database Functions

Each port of the ES-3810 maintains an address database for the four addresses maintained for that port. These parameters can be either viewed or modified. Once the Address Database Functions option has been selected, a submenu is presented with three options - Option 1 allows the address aging time to be set, Option 2 allows address database viewing and Option 3 allows address database modifications.

ForeRunner ES-3810
Address Database Functions

1. Set Address Aging Time
2. View Address Database
3. Modify Address Database

Enter Selection:

A.1.4.1 Set Address Aging Time

By default, the ES-3810 will not automatically age idle addresses, that is, once learned, an address will stay within the respective ports address database until either a switch reboot or new addresses are learned by the port. The Set Address Aging Time option allows the network administrator to set a time limit on how long an idle address will reside within a ports address database before the firmware will age the address.

ForeRunner ES-3810
Set Address Aging Time

Please enter the Address Aging Time <0 - 59>: 20
Press ENTER to Return to Main Menu



The time entered is a global parameter. In the preceding example all addresses within all ports of the ES-3810 will age in 20 minutes if they are idle for that length of time.

A.1.4.2 View Address Database

The View Address Database option lets the contents of a port's address database to be displayed.

ForeRunner ES-3810 Address Database Functions				
Address	Flagged	Age Flag	Multicast Mask	Hash
00-A0-36-00-01-02	No	0	FFFF	No
00-A0-36-00-03-04	Yes	3	FFFF	No
00-A0-36-00-05-06	Yes	1	4	No
00-A0-36-00-07-08	No	2	B	No

Press ENTER to Return to Main Menu

A.1.4.3 Modify Address Database

The Modify Address Database Options allows for the modification of all the address database parameters.

ForeRunner ES-3810 Modify Address Database			
Address 1:	00-A0-36-00-01-02	Age:	3
Address 2:	00-A0-36-00-03-04	Age:	0
Address 3:	00-A0-36-00-05-06	Age:	1
Address 4:	00-A0-36-00-07-08	Age:	2

The following parameters may be set within the address database:

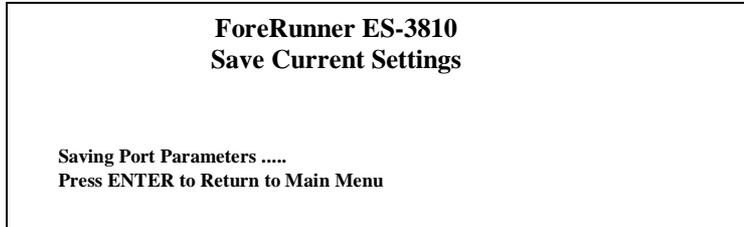
1. Age Information (0, 4, 5, or 7)
2. An Individual Address (form aabbccddeeff)
3. Multicast Domain (0h - Fh)
4. Enable/Disable Flag Bit

Please Enter Selection: 1
Please Enter Address From Above (1-4): 1
Enter New Age Information: 5

Press ENTER to Return to Main Menu

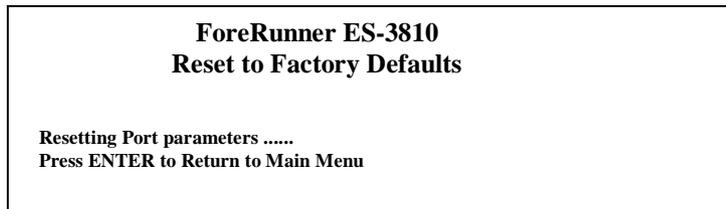
A.1.5 Save Current Settings

The Save Current Settings option allows for any port parameter customization that has been performed to be saved in non-volatile storage. In this way, these parameter customizations are automatically restored upon an ES-3810 reboot or power cycle.



A.1.6 Reset to Factory Default Settings

The Reset to Factory Default option causes a full reset for each port of the ES-3810, resetting each ports entire parameter configuration to the default settings detailed in Section 3.4.1. When this option is selected, any customized settings that have been saved in non-volatile storage are cleared.



A.1.7 Download New Image

The Download New Image option allows for firmware upgrades to be made to the *ForeRunner* ES-3810. The download option is built upon the XMODEM protocol; therefore, the management station must support the XMODEM protocol and must have the ability to load a software image onto a media device (e.g., hard disk, diskette).

The Download New Image option is a two-stage process - first, the option must be selected and second, the XMODEM protocol must be initiated. Once the option is selected, choose the binary transfer option from the XMODEM based application on the management station (e.g., Microsoft Windows 3.x Terminal). When prompted, enter the path where the file ES3810cm.BIN has been placed. The download takes approximately one minute to complete. Once the download finishes, the ES-3810 performs an automatic reboot.

```
ForeRunner ES-3810
Download New Image

Do you want to download a new image (Y/N)

Downloading ...
Downloading Complete. Rebooting .....
```

A.1.8 Initialize Port Counters

The Initialize Port Counters option resets, on a port-by-port basis, the counters displayed (see Section 8.1.2) to all zeros.

```
ForeRunner ES-3810
Initialize Port Counters

Port Counter Initialization Complete.
Press ENTER to Return to Main Menu
```

A.1.9 Reboot

The Reboot option performs a full initialization of the ES-3810. The power-up sequence detailed in Section 1.3 takes place.

```
ForeRunner ES-3810
Reboot

Are you sure you wish to reboot the ForeRunner ES-3810? <Y|N>

Rebooting .....
```

A.2 Port Characteristics

A.2.1 Port Parameters

The following section provides a brief description of each of the port's characteristics.

TwistedPairMode When enabled, the port configures its transceivers as a standard twisted pair device. When disabled, the port configures the transceiver as an asynchronous NRZ interface designed to interface directly to a serial interface adapter.

LoopbackMode When enabled, data sent by the transmitter is looped back to the receiver and all data from the receiver and collision input pins is ignored. When disabled, the port acts as a standard Ethernet CSMA/CD port.



The Loopback Mode is intended for diagnostic purposes only and should remain disabled.

SniffSegmentMode When disabled, the port acts as a normal CSMA/CD port. When enabled, all packets sent by the transmitter are looped back to the receiver, but the receive and collision logic is not disabled. SniffSegmentMode forces all packets on a half-duplex port (sent and received) through the receiver to the Packet Bus allowing the segment to be “sniffed” elsewhere in the ES-3810.

FullDuplexMode When disabled, each port acts as a 10 Mbit/sec CSMA/CD port. When enabled, the port acts as a 20 Mbit/sec port. Full Duplex mode indicates that send and receive can happen simultaneously.

ForceTransmissionMode When disabled, the port acts as a standard 10 Mbit/sec CSMA/CD port. When enabled, packets are transmitted regardless of the state of the transceiver.



This parameter is for diagnostic purposes only and should remain disabled at all times.

CorrectPolarity Mode	When enabled, data polarity can be corrected when the receiver is in an incorrect polarity mode. When disabled, data polarity correction logic is disabled.
LinkFailMode	This informational parameter indicates the status of the link integrity state. When OK, the port is operating properly; when Wrong, the link detection circuitry detected an error.
WrongPolarity Mode	This informational parameter indicates the status of the polarity logic. When disabled, the received polarity of the packet is good. When enabled, the polarity is incorrect.
ReceiverMode	When enabled, the receiver portion of the Media Access Controller (“MAC”) is active. When disabled, the receiver portion of the MAC is inactive.
ReceiveRingBufferMode	When enabled, the memory ring buffer used for packet reception is active. When disabled, the receive ring buffer becomes inactive.



ReceiverMode and ReceiveRing BufferMode must be enabled to receive packets on the port.

TransmitterMode	When enabled, the transmitter portion of the Media Access Controller (“MAC”) is active. When disabled, the transmitter portion of the MAC is inactive.
TransmitterRing BufferMode	When enabled, the memory ring buffer used for packet transmission is active. When disabled, the transmit ring buffer becomes inactive.



TransmitterMode and TransmitterRingBufferMode must be enabled to transmit packets on the port.

SecureLearnMode	When disabled, newly learned addresses are automatically used for forwarding from the Packet Bus to the Ethernet. When enabled, new addresses are stored in the address database but are only used for forwarding after the management processor confirms the validity of the newly learned address.
------------------------	--


NOTE

This feature is only available for in-band management configurations.

ReceiveErrorsMode When enabled, all packets, including those with errors, are forwarded onto the Packet Bus. When disabled, received packets with errors are automatically deleted from the receive ring buffer memory and, therefore, are not forwarded on to the Packet Bus.

UploadMode This parameter is reserved for future use.

FlaggedPacket Mode When enabled, and none of the individual address flag bits are set, all packets with the flag bit set will be received from the Packet Bus and transmitted by the port. When enabled, and any of the individual address bits are set, packets with the flag bit set are received from the Packet Bus if the destination address matches one of the flagged addresses in the port's address database. When disabled, flagged packets are treated like any other packet on the Packet Bus.

SniffedPacket Mode When enabled, all sniffed packets (transmitted or received) are taken from the Packet Bus and transmitted on the port. When disabled, sniffed transmit packets are ignored by this port and sniffed receive packets are handled like any other packet on the Packet Bus.

IndividualAddressPromiscuous Mode When enabled, all individually addressed packets from the Packet Bus are transmitted by the port. When disabled, normal filtering is performed on individually addressed packets from the Packet Bus, such as matching the destination address with the addresses in the ports address database.

MulticastAddress PromiscuousMode When enabled, all multicast messages from the Packet Bus are transmitted by the port. When disabled, normal filtering is performed on multicast messages from the Packet Bus.

BackboneMode When enabled, the port transmits all individually addressed packets whose destination address does not reside in any of the ports' address databases.

When disabled, or in Workgroup Mode, normal operation is selected and only those individual addresses that match an entry in the ports' address database are received from the Packet Bus.



If all ports are in Workgroup Mode and a packet match does not occur within any port, the packet is simply dropped.

A.2.2 Address Databases

Each Workgroup port of an ES-3810 maintains a four-entry address database that is maintained in a dynamic fashion (i.e., addresses are learned, aged, and migrated in a dynamic, interactive nature). Additionally, each address database entry maintains certain characteristics about the address as follows:

- | | |
|---------------------------|---|
| Age Information | Each of the four addresses are numbered zero (0) through three (3) with zero being the most recently learned address and three being the oldest address in the database. Further, if an address was learned in SecureLearnMode, the age field is four (4) and the address is used for forwarding only after the management processor locks the address (which turns the age field to five (5) or acknowledges it (age=zero (0)). If an address has an age value of five (5), it will not be aged or migrated. |
| Hash Information | A one (1) in this field indicates a multicast hash table has been uploaded to the port from an end station. |
| Domain Information | This 16-bit field represents the virtual LAN, or multicast domain, information for the address. Each of the 16 bits represents a separate and unique virtual LAN/multicast domain to which this address can belong. |

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