

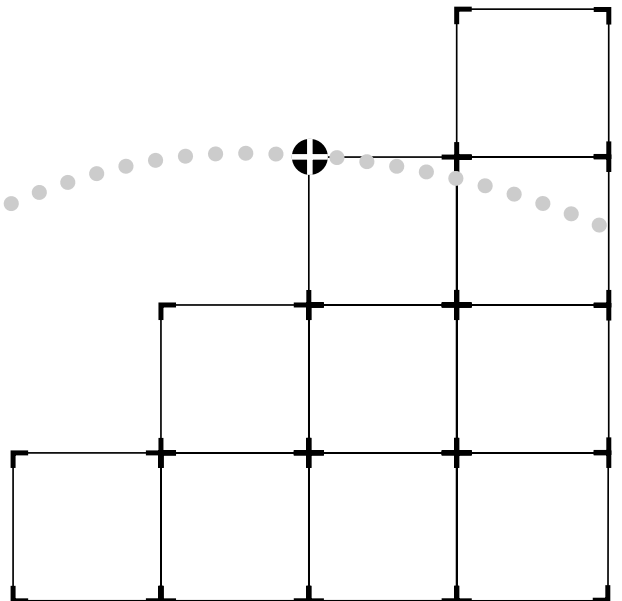


SUPERSTACK™ II ENTERPRISE MONITOR USER GUIDE



**SUPER
STACK™**

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ABOUT THIS GUIDE

Introduction

This guide gives you the information you need to install and configure the SuperStack II Enterprise Monitor on your network for maximum benefit.

The first part of the guide is divided into five chapters:

- Chapter 1 gives an overview of the Enterprise Monitor. This includes a description of the unit and its components such as LEDs, an explanation of RMON, typical network configurations and factory defaults.
- Chapter 2 shows how to locate and install the probe and the media modules.
- Chapter 3 guides you through basic and additional configuration.
- Chapter 4 focuses on troubleshooting.
- Chapter 5 guides you through upgrading and allocating memory.

In the second part, seven appendices explain in detail safety issues, pinouts, the use of modems, technical support, technical specifications and error sequence codes.



If the information in the release notes shipped with the Enterprise Monitor differs from the information in this guide, follow the release notes.

Conventions

The following tables list icon and text conventions and terminology used throughout this guide.

Table 1 Notice Icons




Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, system damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

Table 2 Text Conventions

Convention	Description
<i>Italics</i>	Italics are used for emphasis or to denote new terms.
ENTER	The word “enter” means to type something and then press the Return or Enter key.
Text represented as screen display	This typeface is used to represent displays that appear on your terminal screen; for example: Select a menu option
Text represented as commands	This typeface is used to represent commands or text that you enter.
Keys	When specific keys are referred to in the text, they are referred to by their labels, such as “RETURN” or “DELETE.”

Table 3 Terminology

Term	Description
Probe or Device	Refers to the Enterprise Monitor.
Management Application	A simple network management protocol (SNMP) application that may be used for remote management of probes.
Network Manager	The person who installs and manages the computer network and its equipment in an organization.
Firmware	The term used to describe the management software running in a device. This can also be referred to as <i>Agent Software</i> .

Related Publications

Within the SuperStack II Enterprise Monitor document set:

- *SuperStack II Enterprise Monitor Ethernet Media Module Quick Reference Guide*
- *SuperStack II Enterprise Monitor 10/100BASE-TX Ethernet Media Module Quick Reference Guide*
- *SuperStack II Enterprise Monitor FDDI DAS Media Module Quick Reference Guide*
- *SuperStack II Enterprise Monitor FDDI SAS Media Module Quick Reference Guide*
- *SuperStack II Enterprise Monitor Token Ring Media Module Quick Reference Guide*

Other publications you may find useful:

- *Transcend™ LANsentry® for Unix User Guide*
- *Transcend LANsentry® for Windows User Guide*
- *Transcend Traffic Generator User Guide*
- *Transcend Traffix™ Manager User Guide*

1

GETTING STARTED

Introduction

This section gives an overview of the capabilities of the Enterprise Monitor.

To enable successful installation and configuration, the probe and its media modules are described, together with diagrams showing network configuration examples.

Overview

The Enterprise Monitor is a high-speed, multi-port RMON and RMON2 ready (ECAM) probe, capable of monitoring multiple network segments of different media types at the same time. It gives you the flexibility to meet ever-changing requirements, monitoring increasing amounts of data across different media types. It also allows you to consolidate the functions of multiple individual probes into a single chassis, reducing physical space requirements and cost per port.

Whenever the configured Enterprise Monitor is running and connected to your network it is collecting information about activity on that network. This information includes current statistics, historical statistics and selected packets themselves.

Summary of Features

- Three media module slots, allowing you to insert new media modules as your networks change and grow.
- Simultaneously monitors multiple networks of different media types.
- High speed, i960 RISC processor.
- 3Com's SuperStack II architecture:
 - Integrated network management.
 - 19 inch rack or stand-alone mounting.
- Software support:
 - RMON.
 - Capability to download additional agents such as RMON2 (ECAM).
 - BOOTP.
- Easy software upgrades.
- Remote or local management.

Remote Monitoring (RMON)

RMON is an SNMP MIB (Management Information Base) that enables the collection of data about the network itself, rather than devices on the network. It collects information in MIBs as defined by the IETF in documents *RFC 1513* and *RFC 1757*.

A typical RMON system consists of two components:

- **The Probe** - Connects to a LAN segment, examines all the LAN traffic on that segment and keeps a summary of statistics (including historical data) in the probe's local memory.
- **The Management Workstation** - Communicates with the probe and collects the summarized data from it. The workstation does not have to be on the same network as the probe and can manage the probe by either in-band or out-of-band connections.

The IETF defines that RMON probes can supply several groups of information. These groups are described in [Table 1-1](#).

Table 1-1 MIB groups in RMON

RMON Group	Description
Statistics	Total LAN statistics.
History	Time-based statistics for trend analysis.
Alarms	Triggered when statistics reach pre-defined thresholds.
Events	Reporting mechanism for alarms.
Hosts	Statistics stored for each station MAC address.
HostTopN	Stations ranked by traffic or errors.
Matrix	Traffic matrix (who is talking to whom).
Filter	Packet selection mechanism.
Packet Capture	Allows traces of packets against pre-defined filters.
Ring Station	<ul style="list-style-type: none"> ■ Ring Station Group: Statistics and status information associated with each Token Ring station on the local ring. Also includes status information for each ring being monitored. ■ Ring Station Order Group: order of stations on monitored rings. ■ Ring Station Config Group: allows management of other Token Ring stations through active menus.
Source Routing Statistics	Utilization statistics derived from source routing information optionally present in Token Ring packets.

RMON2

The RMON2 MIB, also defined by the IETF, extends the capability of the original RMON MIB to include protocols above the MAC level. The inclusion of network-layer protocols, such as IP, enables a probe to monitor traffic through routers attached to the local subnetwork.

The RMON2 (ECAM) SmartAgent® enables the probe to monitor the sources of off-network traffic arriving by a router, and the destination of off-network traffic that leaves by a router. With the inclusion of higher-layer protocols, such as those at the application level, the probe can provide a detailed breakdown of traffic by application. RMON and RMON2 work together.

Table 1-2 shows the additional MIB groups available with RMON2.

Table 1-2 MIB Groups in RMON2

RMON Group	Description
Protocol Directory	Lists the inventory of protocols the probe has the capability of monitoring.
Protocol Distribution	Collects the number of octets and packets for the different protocols detected on a network segment.
Address Map	Lists MAC address to network address bindings discovered by the probe, and the interface they were last seen on.
Network Layer Hosts	Counts the amount of traffic sent from and to each network address discovered by the probe.
Network Layer Matrix	Counts the amount of traffic sent between each pair of network addresses discovered by the probe.
Application Layer Host	Counts the amount of traffic, by protocol, sent from and to each network address discovered by the probe.
Application Layer Matrix	Counts the amount of traffic, by protocol, sent between each pair of network addresses discovered by the probe.
User History	Periodically samples user-specified variables and logs that data based on user-defined parameters.
Probe Configuration	Defines standard configuration parameters for RMON probes.

Other Media Types

The Enterprise Monitor gathers other media-specific statistics for other media types such as FDDI.

Overview

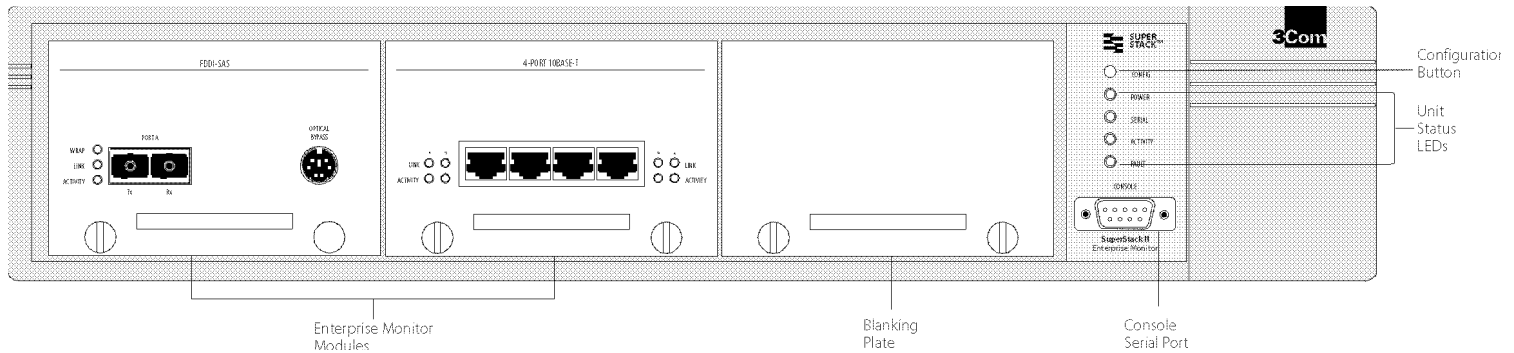


Figure 1-1 Enterprise Monitor Unit Overview

Enterprise Monitor Modules

The Enterprise Monitor has slots for three media modules. Each module can allow you to monitor a different media type. The slots are numbered consecutively 1, 2 and 3 from left to right.

Blanking Plate

Use when fewer than three media modules are required.

Console Serial Port

Use the Console Serial Port for connecting a terminal and carrying out remote or local configuration and management. Configuration for the serial port is set to 9600 baud, 8 bit character size, no parity, 1 stop bit when the Configuration System is in use. For out-of-band SLIP management any baud rate can be set.

CONFIG Button

Use the CONFIG button to configure the probe. Pressing the CONFIG button takes you into the Configuration System or cold starts the probe if pressed again within a short time.

Unit Status LEDs

The following table shows the status of the LEDs under normal operation.

Table 1-3 Unit Status LEDs

LED	Under Normal Operation
Power	ON.
Serial	ON and flickering if data is being transmitted or received on the console port, otherwise OFF.
Activity	ON and flickering if there is network activity, otherwise OFF.
Fault	OFF.

Unit Defaults

The following table shows the factory defaults for the Enterprise Monitor.

Table 1-4 Unit Defaults

Parameter	Default Setting
General Settings	
BOOTP Network Interface	1
Autodiscovery Echo Interval	1800
Ring Number	1 (Token Ring only)
Serial Settings	
Port IP address	187.187.187.193
Port Subnet Mask	255.255.255.192
Port Speed	9600
Port Mode	Direct, Hardware Flow Control OFF
Modem Init String	^s^MATE0Q0V1X4 S0=1 S2=43^M^d2
Modem hangup string	^d2^s+++^d2^sATH0^M^d2
Modem connect responses	/CONNECT/300/CONNECT 1200/ 1200/CONNECT 2400/2400/ CONNECT 4800/4800/CONNECT 9600/9600/CONNECT 14400/ 14400/ CONNECT 19200/ CONNECT 38400/38400/
Modem no connect responses	/NO CARRIER/BUSY/NO DIALTONE/NO ANSWER/ERROR

Deployment Scenarios

Multiple Segments from a Single Enterprise Monitor

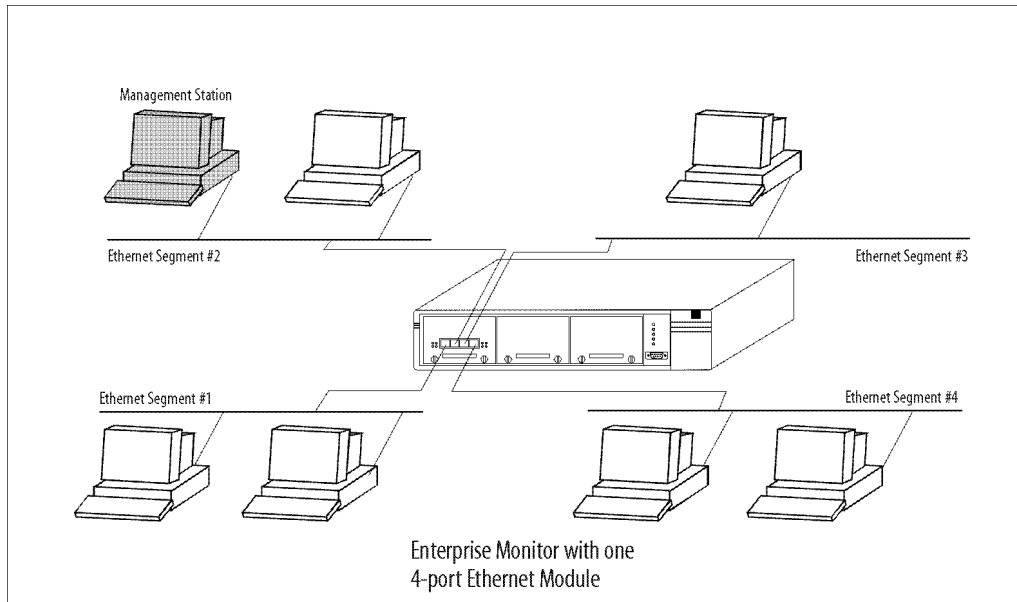


Figure 1-2 Monitor and troubleshoot multiple segments from a single Enterprise Monitor

The network manager can monitor enterprise traffic and troubleshoot multiple network segments of the same or different media types from a single Enterprise Monitor.

By monitoring more than one segment at a time, you not only extend your reach but also gain an understanding of the interactions between segments. Today's networks are designed for smaller segments and you can increase effectiveness by monitoring at the point where segments come together in the wiring closet.

Local and Remote FDDI Traffic

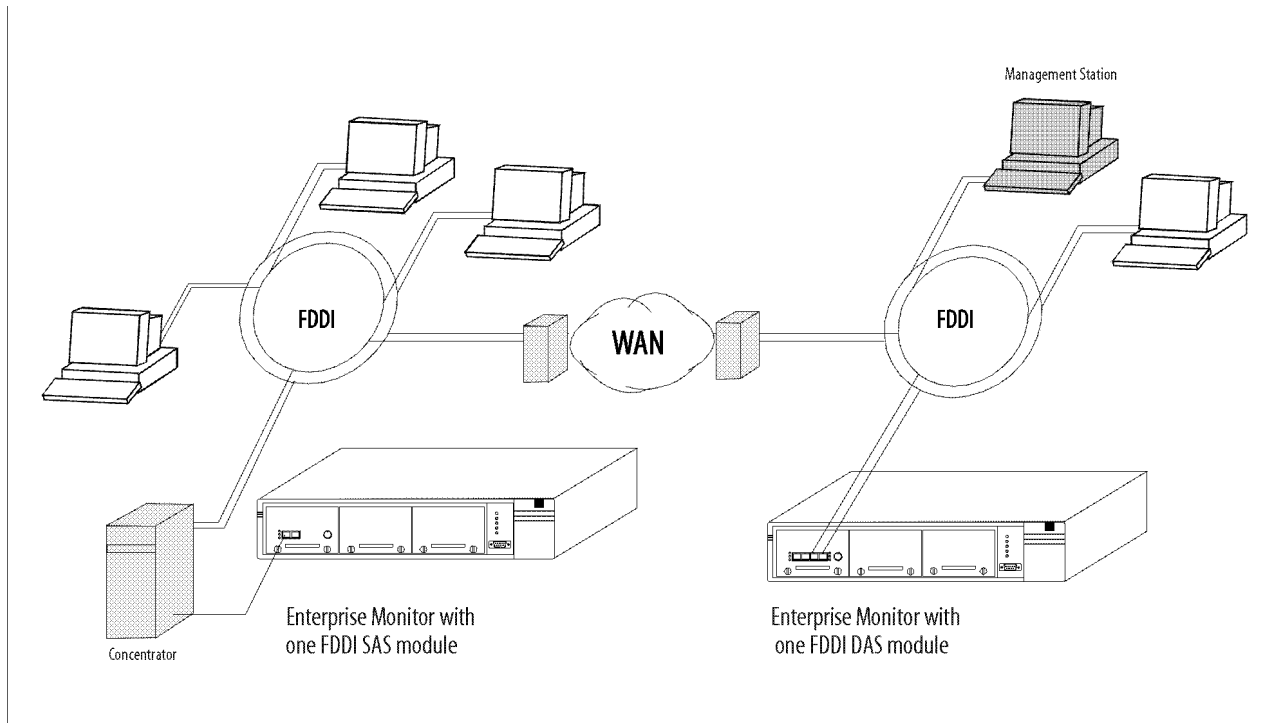


Figure 1-3 Monitor and troubleshoot FDDI traffic

FDDI backbones often continue to be the 'black hole' in the corporate network. With devices permanently installed on the network you can see utilization, rate of traffic growth, errors on the ring and other key ring health parameters on an on-going basis. These RMON-like statistics show important parameters, support alarms, histories and protocol analysis. With an RMON2 (ECAM) SmartAgent on the probe, you gain the knowledge of who is sending traffic onto the ring and which applications are being used. The FDDI Media Module can be addressed over the ring.

FDDI and Ethernet Together

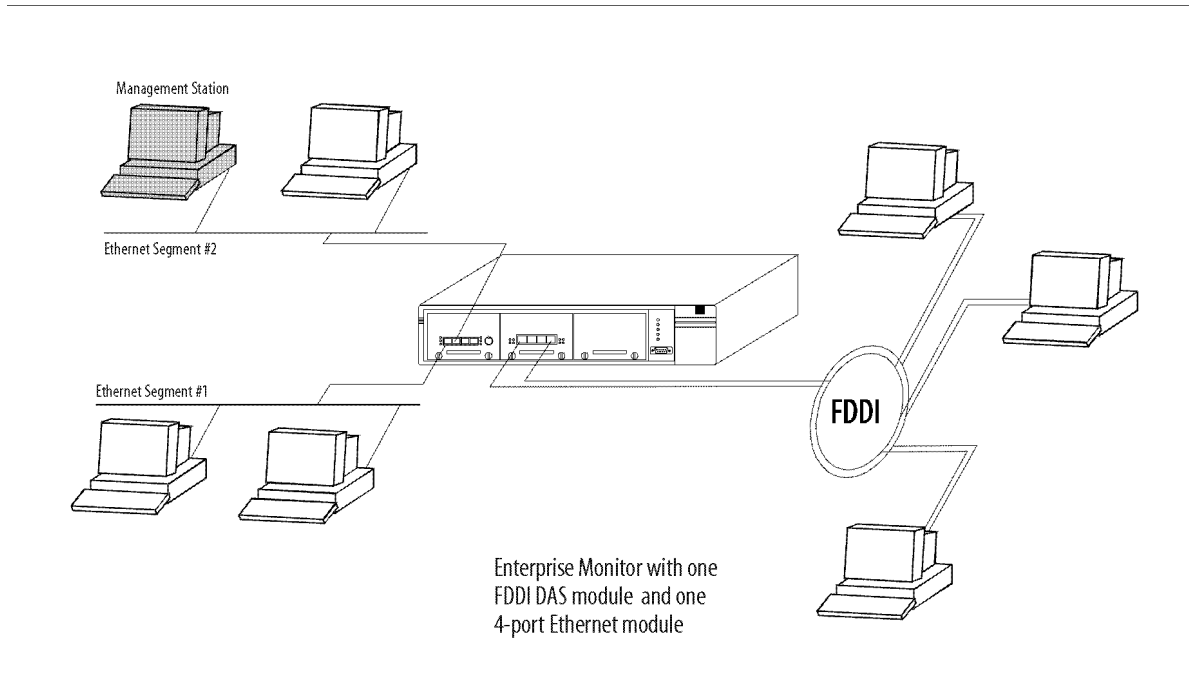


Figure 1-4 Monitor and troubleshoot FDDI and Ethernet together

Connecting an Enterprise Monitor to an FDDI ring and the Ethernet segments that send traffic to it, allows you to understand how that 'branch' on the enterprise network is behaving as a group. RMON and RMON-like statistics support rapid troubleshooting across the group of stations. An RMON2 (ECAM) SmartAgent in the probe provides end-to-end communication information to support network redesign, perhaps eliminating through-ring traffic by reassigning key stations to other segments.

FDDI and Token Ring Together

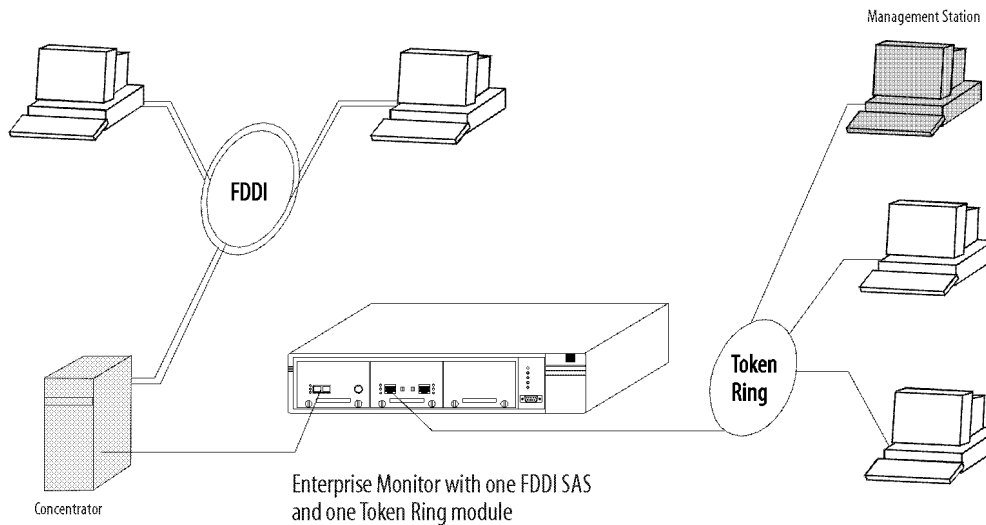


Figure 1-5 Monitor and troubleshoot FDDI and Token Ring

Token Ring and FDDI environments can also be monitored together. With RMON, full troubleshooting is available on Token Ring – FDDI has RMON-like statistics – while an RMON2 (ECAM) SmartAgent in the probe provides the information needed for fine-tuning the network.

Multiple Switch Segments

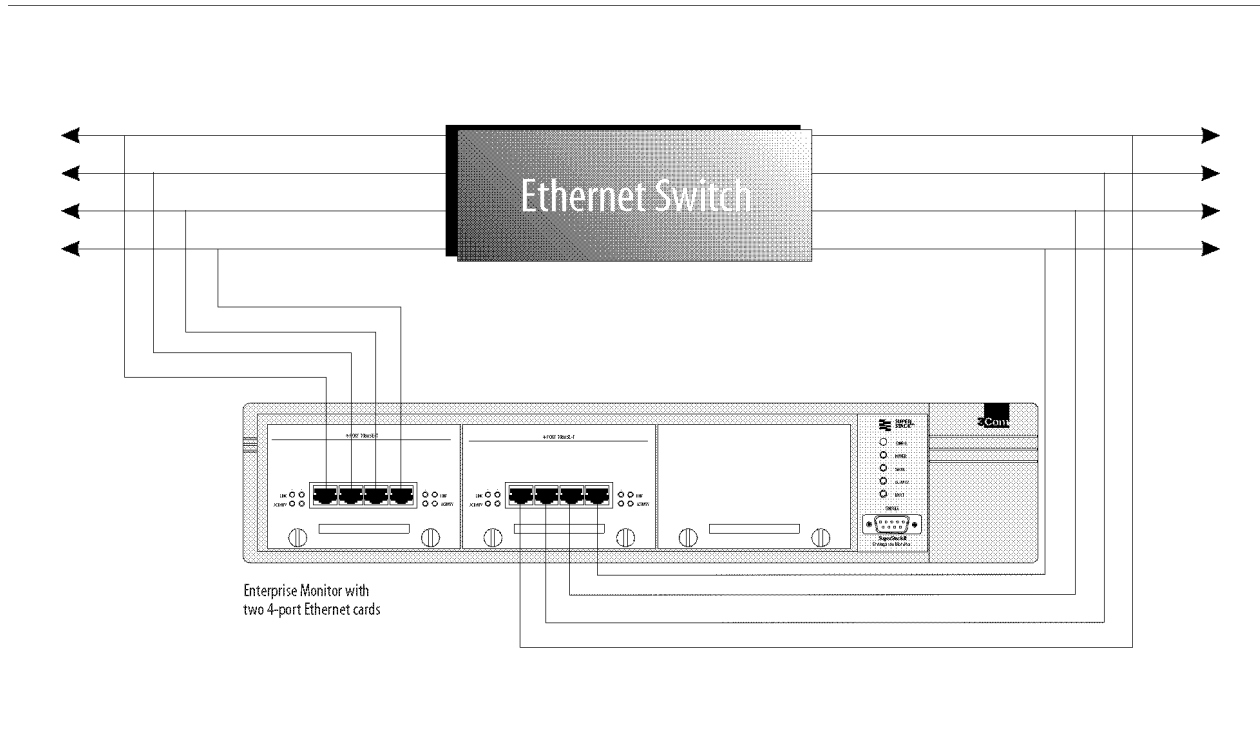


Figure 1-6 Monitor and troubleshoot multiple switch segments

Ethernet (and Token Ring) switches provide a significant monitoring challenge. The Enterprise Monitor is designed to support the large number of interfaces presented by switched environments. This micro-segmentation is supported by the probe's high port density. Its interfaces can also be used to monitor 'mirror' or 'copy' ports on the switch.

Supported Media Module Combinations

[Table 1-5](#) below, shows possible combinations of media modules currently supported by the Enterprise Monitor.

Table 1-5 Media Module Combinations

	Ethernet or Token Ring	Fast Ethernet (100BASE-TX)	FDDI
Ethernet or Token Ring	Up to 3 modules, any combination of Ethernet and/or Token Ring	1 Fast Ethernet module with any combination of up to 2 Ethernet and/or Token Ring modules	1 FDDI Module with any combination of up to 2 Ethernet and/or Token Ring modules
Fast Ethernet (100BASE-TX)	1 Fast Ethernet module with any combination of up to 2 Ethernet and/or Token Ring modules	1 Fast Ethernet module	Fast Ethernet is not supported in combination with FDDI
FDDI	1 FDDI module with any combination of up to 2 Ethernet and/or Token Ring modules	FDDI is not supported in combination with Fast Ethernet	1 FDDI module



2

INSTALLING THE ENTERPRISE MONITOR

Following Safety Information

Before installing or removing any components from the SuperStack II Enterprise Monitor you must read the safety information provided in Appendix A of this guide.

Siting the Enterprise Monitor

The Enterprise Monitor can be mounted in a standard 19 inch rack. It can also be stacked.

Two standard 3Com rack mounting kits (supplied) are required for rack mounting.

When deciding where to site the unit, ensure that:

- You will be able to meet the requirements detailed in the following section.
- It is accessible and cables can be connected easily.
- Cabling is away from:
 - Sources of electrical noise such as radios, transmitters and broadband amplifiers.
 - Power lines and fluorescent lighting fixtures.
- Water or moisture cannot enter the case of the unit.
- Air-flow around the unit and through the vents in the side of the case is not restricted. We recommend that you provide a minimum of 25 mm (1 inch) clearance.

- No objects are placed on top of the unit or stack.
- Units are not stacked more than four high, if free-standing.

Positioning the Enterprise Monitor

When connecting an Enterprise Monitor interface to the network, take into consideration the effects of devices such as bridges, routers and hubs on the traffic being monitored on that part of the network.

Bridges are transparent devices - traffic crossing the bridge appears to have traveled directly to the destination - except that they do not forward collisions. As a result, an interface connected downstream from a bridge will monitor inter-segment traffic when it crosses the device and traffic between stations on the local segment. It will not monitor traffic between stations or collisions on the other side of the device.

Routers are not transparent. Devices on a LAN must specifically address packets or frames to a router for handling. An interface connected downstream from a router will see inter-segment traffic as if it came from that router.

Hub devices on most networks are transparent, except on Ethernet. In this case, the repeater port on a hub will filter out receive-mode collisions between other stations. The monitoring interface will see its own collisions, but no others.

Preparing the Site

Make sure the site you choose has the following features:

- Access to all of the required network connections.
- A flat surface area large enough to support the unit, if not installed in a rack.
- A grounded power outlet offering either 100-120 VAC or 220-240 VAC. The building circuit protection must comply with nationally recognized safety standards.

Rack-mounting the Enterprise Monitor

To mount the probe in a rack:

- 1 Lift the probe from its packing container and place it on a flat surface.
- 2 Determine where you will attach the probe to the rack.
- 3 Attach two mounting brackets to each side of the probe using appropriate screws (supplied) as shown in [Figure 2-1](#).
- 4 Carefully lift the probe into position in the rack. While holding the probe in place, insert the mounting screws into the mounting holes in each bracket (two screws per bracket).

- 5 Fasten the brackets to the rails with rack mount screws. Tighten each screw.

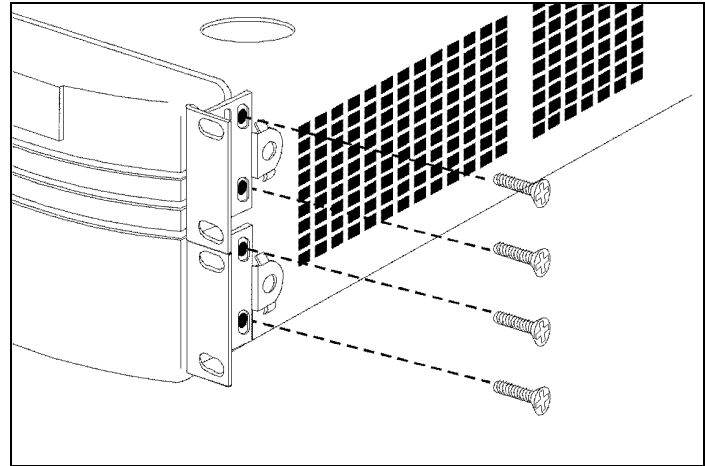


Figure 2-1 Attaching mounting brackets to the Enterprise Monitor

Stacking the Enterprise Monitor

To stack the probe:

- 1 Lift the probe from its packing container and place it on a flat surface.
- 2 Turn over and mount adhesive feet (supplied) with U-shaped lip to the front of the probe (both front and rear positions).
- 3 Determine where you will stack the probe.

- 4 If required, attach mounting brackets to each side of the probe using appropriate screws (supplied). In this case use the top and bottom screw holes only and attach the brackets to the other probe(s) in the rack.

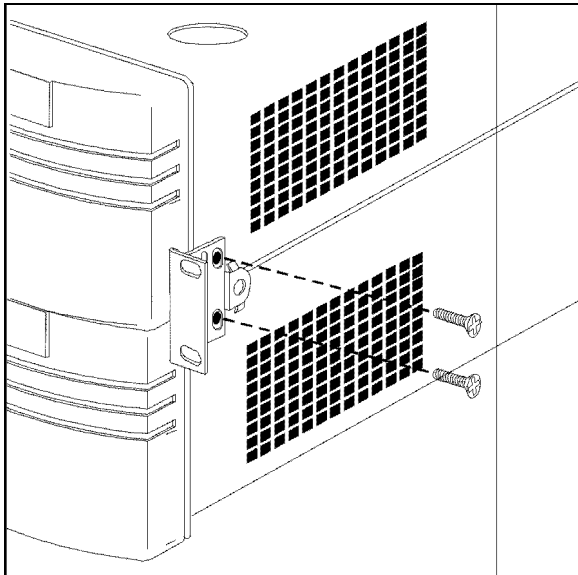


Figure 2-2 Stacking two Enterprise Modules

- 5 Carefully lift the probe into position.

Positioning Media Modules

Media modules can be installed in any order in the three module slots in the front panel of the Enterprise Monitor. However, the order of the media modules does have implications for the assignment of IP addresses to the interfaces on the probe when using the Configuration System.

IP addresses are used to enable management stations to communicate with the probe. IP addresses can be assigned via the Configuration System to the first four interfaces on the probe, as they appear from left to right in the front panel.



If a Management Application is used, IP addresses can be assigned to all interfaces.

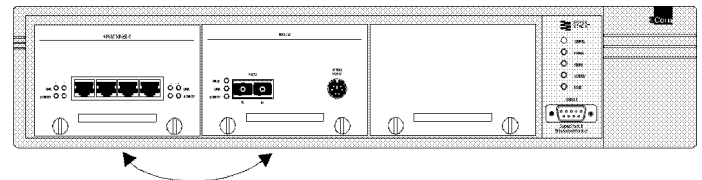


Figure 2-3 Installing 4-port Ethernet and FDDI SAS media modules

If you install a 4-port Ethernet module in the first slot and an FDDI module in the second, as in [Figure 2-3](#), IP addresses could be assigned to the four interfaces on the Ethernet module but none to the interface on the FDDI module. Changing the position of the two modules as indicated would let you assign an IP address to the FDDI interface and to the first three interfaces on the Ethernet module.



For more information on assigning IP addresses and other network parameters, please refer to [“IP Addresses and Subnet Mask”](#) in Chapter 3.

Supported media module combinations are shown on page 1-11 of Chapter 1.

Installing a Media Module



WARNING: Ensure that all power cords are disconnected from electrical outlets before completing the following steps.



CAUTION - Media modules are made of extremely sensitive electronic components that may be damaged by static electricity. This damage can result from even small amounts of static charge, for example from your clothes. Handle the media modules only by the front panel and by their non-conducting edges and wear a wrist strap attached to an unpainted part of the probe's chassis.

- 1 Power down the Enterprise Monitor.
- 2 Position the probe so that you have clear access to the probe's front panel.
- 3 Remove the blanking plate:
 - a Unscrew the two captive screws of the blanking plate, turning them a quarter turn anti-clockwise. Do not attempt to force the screws further.
 - b Holding the handle of the blanking plate, pull the plate towards you.
- 4 Insert the media module:
 - a Align the rear edges of the module with the rails on either side of the module slot.
 - b Slide the module into the slot until the face of the media module is flush with the front panel of the probe. You may need to press firmly to ensure a connection to the bus connectors.
 - c Secure the two captive screws of the media module, turning them a quarter turn clockwise.
- 5 When the Enterprise Monitor is powered up, it will automatically detect the new media module.

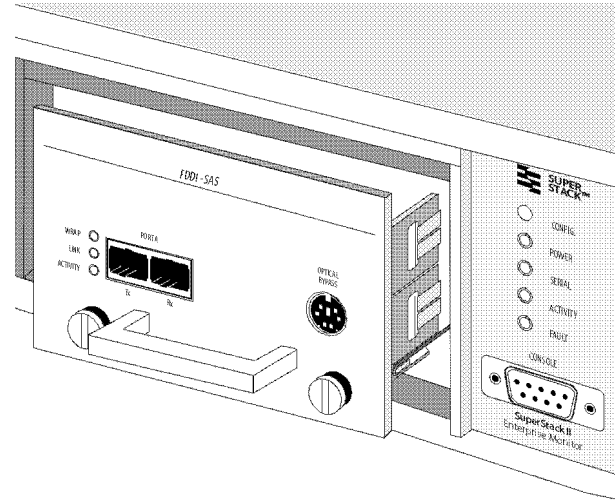


Figure 2-4 Inserting a Media Module into the Enterprise Monitor



Use the configuration procedure described in [“IP Addresses and Subnet Mask”](#) in [Chapter 3](#) to configure the network interfaces present on the media module.

Consult the documentation accompanying the media module for instructions on connecting the media module to the network.

Removing a Media Module



WARNING: Ensure that all power cords are disconnected from electrical outlets before completing the following steps.



CAUTION: Media modules are made of extremely sensitive electronic components that may be damaged by static electricity. This damage can result from even small amounts of static charge, for example from your clothes. Handle the media modules only by the front panel and by their non-conducting edges and wear a wrist strap attached to an unpainted part of the probe's chassis.

- 1 Power down the Enterprise Monitor.
- 2 Position the probe so that you have clear access to the probe's front panel.
- 3 Remove the media module:
 - a Unscrew the two captive screws of the media module, turning them a quarter turn anti-clockwise. Do not attempt to force the screws further.
 - b Holding the handle of the media module, pull the module firmly towards you.



When not in use, media modules should be stored in the anti-static bag provided with the module to prevent damage from electrostatic charge.

- 4 If another media module is not to be installed, insert a blanking plate to ensure that compliance with national radio frequency emission, safety standards and requirements is maintained.
 - a Align the edges of the blanking plate with the edges of the module slot, so that the face of the blanking plate is flush with the front panel of the probe.
 - b Secure the two captive screws of the blanking plate, turning them a quarter turn clockwise.
- 5 When the Enterprise Monitor is powered up, it will automatically detect the change in media modules.

Media Module Specific Status Indicators

In addition to the status LEDs on the front panel of the Enterprise Monitor, each media module has its own specific status indicators.

These are described in the documentation supplied with the module.

Starting the Enterprise Monitor

When the power cord is plugged into the power inlet on the Enterprise Monitor, the unit automatically powers up. There is no power switch.

On power up, all front panel LEDs on the Enterprise Monitor will initially light up briefly before being turned off under software control. The Power LED is then illuminated.

The probe then runs a Self Test procedure which, under normal operation, will take up to twenty seconds.

To make the probe operational after the initial power up, you must assign it network parameters, including an IP address. This procedure is described in [Chapter 3](#).

3

SETTING UP AND CONFIGURING

Introduction

To make the Enterprise Monitor operational, basic configuration information has to be set:

- An IP address and subnet mask.
- A default gateway.

This can be done in two ways:

a With a BOOTP server

This is the simplest method. With the BOOTP server configured and accessible by the probe, the Enterprise Monitor can be configured in one operation.

- b** By connecting a terminal or terminal emulator to the enterprise monitor, then carrying out basic configuration via the Configuration System.

Once basic configuration has been carried out by either method, the Enterprise Monitor is operational. Additional configuration can be carried out at any time.

This chapter is in five parts:

- Connecting to a BOOTP server to configure the Enterprise Monitor.
- Connecting a terminal or terminal emulator to the Enterprise Monitor
- Basic Configuration – the minimum configuration information required to make the Enterprise Monitor operational.

- Additional Configuration – altering settings to suit your particular requirements. This can be carried out via a terminal or a management application.
- LEDs – a description of the LEDs once the Enterprise Monitor has been configured.

A screen map of the Configuration System is included for the Basic and Additional Configuration sections.

Connecting to a BOOTP Server

BOOTP is a broadcast protocol which allows an Enterprise Monitor to discover its own IP address and related information from a BOOTP server without the use of a terminal.

Once the device is connected to the network, basic configuration will be completed automatically and then the Enterprise Monitor is ready to start monitoring. Additional configuration can be carried out via the probe's Configuration System or a Management Application.

The Enterprise Monitor supports BOOTP over any of its network interfaces. The network interface to be used is configurable via the Enterprise Monitor's Configuration System or by the MIB object `netConfigBootpInterface.0`. By default, the Enterprise Monitor BOOTPs over network interface 1.

The BOOTP server must be able to do the following:

- Map MAC addresses to IP addresses.
- Respond to BOOTP requests from clients.
- Support the vendor-specific subnet mask and default gateway fields.

You must set the following four items of information in the BOOTP server configuration file for the BOOTP operation to complete successfully:

1 Hardware type.



When setting the BOOTP hardware type, Ethernet, Fast Ethernet and FDDI interfaces should be set to `ethernet`, while Token Ring should be set to `token-ring`.

2 MAC address.



The MAC address of the first interface is shown on a sticker on the rear of the Enterprise Monitor. MAC addresses for additional interfaces are allocated sequentially to each interface as they appear from left to right in the front panel. Use the canonical address.

For example, if the MAC address of the first interface is 00 C0 D4 02 02 80, the MAC address of the second interface will be 00 C0 D4 02 02 81, and so on.

3 IP address and subnet mask.

4 Default gateway.

Configuration via a BOOTP Server



By default, the BOOTP network interface is set to 1. Refer to "[BOOTP Interface Value](#)" on page 3-7 of this chapter if you need to change it.

To use the BOOTP server, you must first connect the Enterprise Monitor to the network. Connection procedures will vary according to the media module to be used, so you should consult the documentation accompanying each media module for these instructions.

If the IP address or subnet mask is set to 0 . 0 . 0 . 0 when the Enterprise Monitor is powered on, the probe automatically sends out BOOTP requests until it gets a valid BOOTP response. This response supplies the Enterprise Monitor with an IP address and a subnet mask. These parameters are stored in EEPROM and the probe is then operational.

If the default gateway is set to 0 . 0 . 0 . 0, the BOOTP server also supplies the Enterprise Monitor with gateway information which is stored in EEPROM.

No Warm or Cold Start is required (see page 3-8 in this chapter for further information).

The Enterprise Monitor is now ready to start monitoring your network. For Additional Configuration please refer to page 3-10 of this chapter.

Connecting a Terminal or Terminal Emulator

The Enterprise Monitor has to be configured to work on a particular network before it becomes operational. Basic configuration is carried out using a local terminal or terminal emulator connected to the Enterprise Monitor.



Basic configuration can also be carried out using BOOTP - refer to ["Connecting to a BOOTP Server"](#) on page 3-1 for more information.

The Enterprise Monitor Console Serial Port settings are set to:

- *Character Size - 8.*
- *Parity - None.*
- *Stop Bit - 1.*
- *Baud Rate - 9600.*

The terminal connected to the Console Serial Port must be configured with the same settings. This procedure will be described in the documentation supplied with the terminal.

The pin outs of the serial cable required are detailed in [Appendix B](#) so that you may order a cable from your local supplier or make your own.

Connecting a Terminal

To connect a terminal directly to the Console Serial Port on the Enterprise Monitor, you need a standard null modem cable.

- 1 Connect one end of the cable to the serial port on the Enterprise Monitor, marked Console, and the other end to the serial port of the terminal.
- 2 Ensure that your terminal is set to character size 8, no parity, 1 stop bit, 9600 baud.

Connecting a Terminal Emulator

Ensure that the workstation is running a suitable terminal emulation package. There are many available - contact your local supplier for further details.

- 1 Connect one end of a null modem cable to the workstation, and the other end to the serial port on the Enterprise Monitor, marked Console.
- 2 Ensure that your terminal emulation software is set to character size 8, no parity, 1 stop bit, 9600 baud.

With a terminal or terminal emulator connected to the Enterprise Monitor, you are now ready to carry out basic configuration of the Enterprise Monitor.

Basic Configuration

This section takes you through the basic steps needed to configure the Enterprise Monitor. A screen map of the menu system is included with items covered in this section shaded in grey.

For any configuration changes to take effect, the Enterprise Monitor should be Warm or Cold Started. This is described in [“Warm and Cold Starting”](#) at the end of this section.

The following should be set:

- IP address and subnet mask for network interfaces that will be used.
- Default gateway.

If using BOOTP:

- BOOTP interface (if an interface other than the default interface 1 is to be used).

Menu Conventions

Menu items are chosen by typing an option number followed by RETURN or ENTER.

To change a value:

- a Type the number of that option and press ENTER.
- b Delete the current value by using DELETE, the backspace key or press CTRL+U to delete the entire entry.
- c Type the new value and press ENTER.
- d Type s to save and exit or 0 to exit without saving.

The s and 0 options are available on most screens. Selecting either option will return you to the previous screen. To return to the Main Menu, select s or 0 as many times as required.

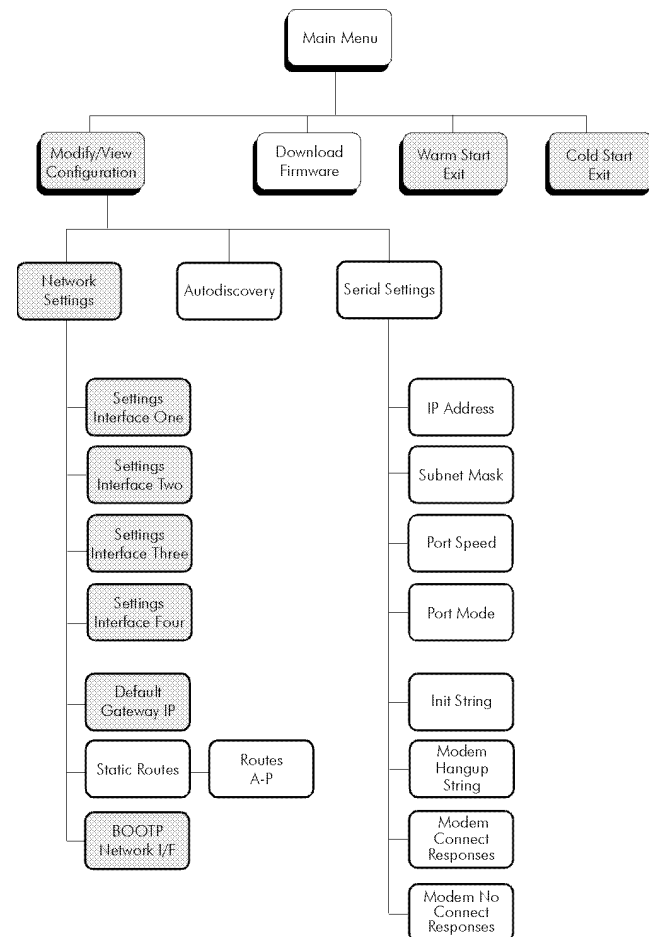


Figure 3-1 Basic Configuration Screen Map

Entering the Configuration System

To enter the Configuration System:

- 1 Bring up the Main Menu by doing one of the following:
 - a Within 15 seconds of powering up the Enterprise Monitor, hold down the X key on the terminal keyboard until the menu appears.
 - b Using a pointed, non-metallic object, lightly press the CONFIG button on the front panel. The fault LED will light and then extinguish after a few seconds.

The Main Menu will appear:

```

Main Menu - RevN.NN (RevN.NN)
1 Modify/View configuration values ->
2 Download new firmware ->
3 Warm start and Exit
4 Cold start and Exit

Enter one of: 1 2 3 4 ? 1

```

Figure 3-2 Configuration System Main Menu screen

- 2 From the Main Menu type 1 and press ENTER. The Modify/View Configuration Values Menu will appear, listing the current memory configuration and installed media module(s).
- 3 Type 1 and press ENTER, to open the Modify/View Network Settings Menu.

All basic configuration is carried out from this menu.

```

Modify/View Configuration Values Menu Rev N.NN
Memory configuration 16M bytes
Network media modules:
Slot 1: 4 port Ethernet module
Slot 2: is empty
Slot 3: is empty

1 Modify/View network settings
2 Autodiscovery echo interval (secs)      1800
3 Modify/View serial port settings

S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 3 S 0 ? 1

```

Figure 3-3 Modify/View Configuration Values Menu screen



During the configuration process, if no action is taken within 2 - 3 minutes the following message will be displayed.

Keyboard input timeout.

Probe warm started and config system exited.

The Configuration System will be exited and the RMON Application System entered.

If this occurs, any changes you have made but have not applied will be lost. Saved changes will not be lost. Further configuration can be carried out if required. To re-enter the Configuration System, follow the procedures given in Step 1 above for bringing up the Main Menu.

IP Addresses and Subnet Mask

Assigning multiple IP addresses gives you greater flexibility for communicating with the Enterprise Monitor – so if one interface is inaccessible, another interface could still be accessible.

Within the Configuration System, IP addresses can be allocated for any of the first four interfaces, as they appear from left to right in the front panel of the Enterprise Monitor, to allow communication via the network. At least one IP address *must* be configured.

These interfaces will therefore be dictated by the order in which the media modules have been installed in the Enterprise Monitor. Refer to [“Installing a Media Module”](#) in [Chapter 2](#) for instructions on installing and removing media modules.

In addition, IP addresses can be configured for all of the interfaces (although you are unlikely to require more than 2 or 3 IP addresses) on the Enterprise Monitor via a Management Application. All of the installed interfaces on the Enterprise Monitor will be visible in the Management Application, irrespective of the number of IP addresses configured.



IP (Internet Protocol) addresses have the format n.n.n.n where n is a decimal number between 0 and 255. An example IP address is: 192.128.40.120.

If you are unsure of the IP addresses allocated to you, consult your Network Administrator. If you do not have an IP address, refer to [Appendix F](#).

- 1 In the Modify/View Network Settings Menu, type the number of the network interface you want to configure and press the ENTER key. Interfaces 1 to 4 are configured in the same way.

```

Modify/View Network Settings Menu Rev N.NN
1 Modify/View settings for network interface 1
2 Modify/View settings for network interface 2
3 Modify/View settings for network interface 3
4 Modify/View settings for network interface 4

6 Default gateway IP address           89.0.0.30
7 Modify/View static routes
8 BOOTP network interface              1

S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 3 4 6 7 8 S 0 ? 1

```

Figure 3-4 Modify/View Network Settings Menu screen

The Modify/View Network Interface Settings Menu for the selected interface will open.

- 2 Select 1 to change the IP address or 2 to change the subnet mask.
 - a Delete the current value by pressing DELETE or press CTRL+U to delete the entire value.
 - b Type the new value and press ENTER.

Type s to save and exit or 0 to exit without saving.



The information and options displayed in this menu will differ according to the media type of the selected interface. The examples below show the settings for Ethernet and Token Ring interfaces.


```

Modify/View Network Interface 1 Settings Menu Rev N.NN
Ethernet Interface: ie0, slot 1, port 1
MAC address: canonical 00 c0 d4 66 61 30,
              non-canonical 00 03 2b 66 86 0c
1 IP address                89.0.14.19
2 Subnet mask              255.0.0.0
S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 S 0 ? 1
IP addr: 89.0.14.19

```

Figure 3-5 Interface Settings Menu screen for Ethernet

```

Modify/View Network Interface 1 Settings Menu Rev N.NN
Token Ring Interface: tr0, slot 2, port 1
MAC address: canonical 00 c0 d4 02 02 80,
              non-canonical 00 03 2b 40 40 41
1 IP address                89.0.14.190
2 Subnet mask              255.0.0.0
S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 S 0 ? 0
IP addr: 89.0.14.19

```

Figure 3-6 Interface Settings Menu screen for Token Ring

Default Gateway IP Address

To change the default gateway IP address:

- 1 From the Modify/View Network Settings Menu, type 6 for Default gateway IP address.

The current setting is displayed at the bottom of the menu screen.

```

Modify/View Network Settings Menu Rev N.NN
1 Modify/View settings for network interface 1
2 Modify/View settings for network interface 2
3 Modify/View settings for network interface 3
4 Modify/View settings for network interface 4

6 Default gateway IP address          89.0.0.30
7 Modify/View static routes
8 BOOTP network interface            1
S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 3 4 6 7 8 S 0 ? 6
Default gateway IP addr: 89.0.0.89

```

Figure 3-7 Changing the Default gateway IP address

- a Delete the current value by pressing DELETE or press CTRL+U to delete the entire value.
- b Type the new value and press ENTER.
- c Type S to save and exit or 0 to exit without saving.

BOOTP Interface Value



By default, the BOOTP network interface is set to 1. Refer to [“Connecting to a BOOTP Server”](#) for information on using BOOTP.

The interface configured for BOOTP must have an IP address entered. If it does not, then the Enterprise Monitor makes continuous BOOTP requests for an IP address and will not function until a response is received.

- 1 From the Modify/View Network Settings Menu ([Figure 3-4](#)), type 8 for BOOTP interface.

The current setting is displayed at the bottom of the menu screen.

- a Delete the current value by pressing DELETE or press CTRL+U to delete the entire value.
- b Type the new value and press ENTER.
- c Type s to save and exit or 0 to exit without saving.

Warm and Cold Starting

After configuration, the Enterprise Monitor should be restarted for changes to take effect.

You can restart the Enterprise Monitor using either a warm start or a cold start. Both cause it to re-initialize, but there are differences in the effect each has on the Enterprise Monitor. After basic configuration, the settings will not be affected whether warm or cold start is selected.

If additional configuration has been carried out, refer to [“Comparison of Data Preserved and Lost”](#) on page 3-8, to determine whether warm or cold starting is more appropriate.

Warm and cold starting can also be carried out from a management application.

Warm Starting

When you warm start the Enterprise Monitor, all configuration information is preserved but collected statistics stored in the Enterprise Monitor’s RAM are lost.

- 1 From the Enterprise Monitor’s Configuration System Main Menu ([Figure 3-2](#)), select option 3, Warm start and Exit.

Cold Starting

When you cold start the Enterprise Monitor, all network management information - except basic configuration information, such as IP address, subnet mask and default gateway, stored in EEPROM - is lost.



Use cold start to remove configuration information quickly.

You can cold start the Enterprise Monitor in two ways:

- 1 Using the Configuration System Main menu, select option 4, Cold start and Exit.
- 2 Lightly press the CONFIG button on the Enterprise Monitor’s front panel, using a pointed, non-metallic object to bring up the Configuration System. The fault LED will light for a few seconds and then extinguish when the Configuration System is running. Press the CONFIG button again to cold start the Enterprise Monitor.

Comparison of Data Preserved and Lost

The following table gives a comparison of data preserved and lost when warm or cold starting the Enterprise Monitor.

- | | |
|----------------|-------------------------------|
| P | <i>Denotes data preserved</i> |
| L | <i>Denotes data lost</i> |
| L ^a | <i>Reverts to default</i> |
| b | <i>Token Ring only</i> |

Table 3-1 Comparison of Data Preserved and Lost

Data Type	Warm Start	Cold Start
probe configuration information (IP address, etc.)	P	P
tftp server address	P	P
download filename	P	P
date and time	P	P
serial port configuration information	P	P
filter table	P	L
channel table	P	L
buffer control table	P	L
history control table	P	L ^a
host control table	P	L ^a
matrix control table	P	L ^a
host topN table	L	L
alarm table	P	L
event table	P	L ^a
community access table entries	P	L ^a
client table entries	P	L ^a
serial connection table	P	L
trap destination table	P	L
captured packets	L	L
historical statistics	L	L
current statistics	L	L
host statistics tables	L	L
matrix statistics tables	L	L
host topN statistics tables	L	L
log tables	L	L
ring station tables ^b	L	L
source routing statistics ^b	L	L
ring station control table ^b	P	L

You have completed the minimum configuration requirements for the Enterprise Monitor and warm or cold started the device. Your Enterprise Monitor is now ready to monitor your network.

If required, you can now enter additional configuration information (see the following section).

Additional Configuration

Additional configuration is carried out via the Configuration System menu or using a management application. A screen map of the menu system is included with items covered in this section shaded in grey.

In this section the configuration of static routes, console serial port, autodiscovery and downloading firmware are explained.

With the exception of downloading firmware, the Enterprise Monitor should be warm or cold started after additional configuration (see [“Warm and Cold Starting”](#), page 3-8).



Menu conventions are explained in Basic Configuration (see page 3-4).

Using a Management Application

Any Management Application using the Simple Network Management Protocol (SNMP) can manage the Enterprise Monitor, provided the MIB (Management Information Base) is installed correctly on the management station. Concise MIB files for all 3Com products are available free on the 3Com Bulletin Board (see [Appendix E](#)).

The Transcend LANsentry and Transcend Traffix Manager applications specifically include facilities for managing the Enterprise Monitor.

The IP address for the Enterprise Monitor must be configured before the Management Application can communicate with the device. Follow the steps in [“IP Addresses and Subnet Mask”](#), at the start of this chapter.

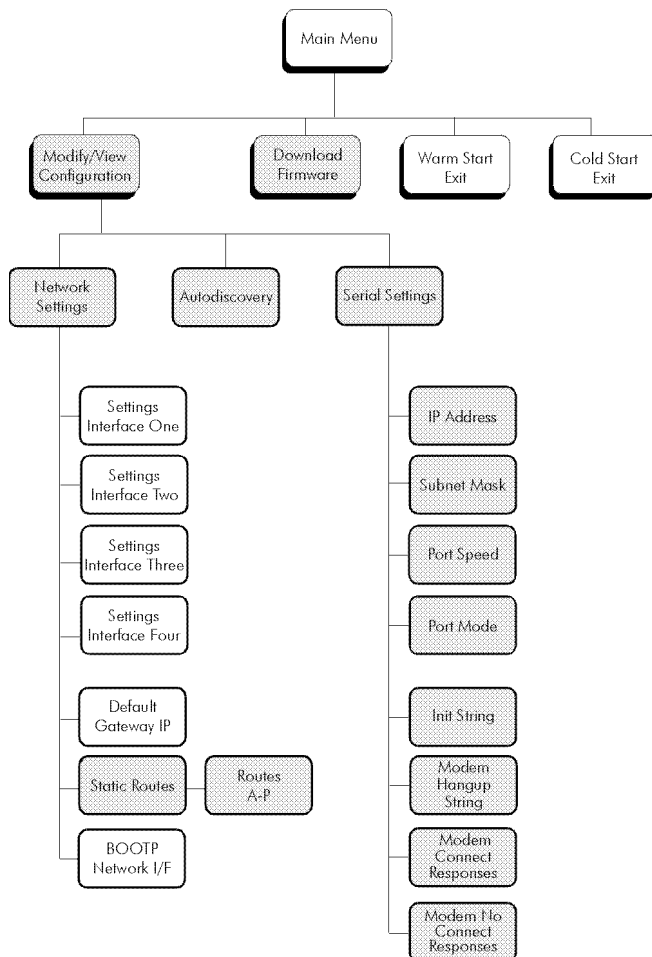


Figure 3-8 Additional Configuration Screen Map

Static Routes

These are used to set up a specific route that the Enterprise Monitor should use to reach another network, overriding the default gateway. Up to sixteen static routes can be set up.

To configure the static routes:

- 1 From the Main Menu, type 1 and press ENTER to open the Modify/View Network Settings Menu.
- 2 Type 7 and press ENTER to open the Modify/View Static Routes Menu.

```

Modify/View Static Routes Menu Rev N.NN
A Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
B Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
C Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
D Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
E Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
F Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
G Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
H Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
I Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
J Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
K Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
L Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
M Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
N Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
O Modify route Network: 0.0.0.0 Gateway: 0.0.0.0
P Modify route Network: 0.0.0.0 Gateway: 0.0.0.0

0 Return to previous menu

Enter one of: A B C D E F G H I J K L M N O P 0 ? a
  
```

Figure 3-9 Modify/View Static Routes Menu screen

- 3 Type the option letter of the static route you want to modify and press ENTER to open the Modify/View Static Route Menu.

The network address is the address of the destination network, for example 100.0.0.0.

The gateway address is the address of the router to which traffic should be directed, for example 92.2.0.2. This router must be on the same subnet as a configured interface on the Enterprise Monitor.

- 4 To change a value:
 - a Type the option number and press ENTER.
 - b Delete the current value by pressing DELETE or press CTRL+U to delete the entire value.
 - c Type the new value and press ENTER.
 - d Type s to save and exit or 0 to exit without saving.

```

Modify/View Static Route A Menu Rev.N.NN
1 Network address          100.0.0.0
2 Gateway address         92.2.0.2

3 Clear route

S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 3 S 0 ? 2

```

Figure 3-10 Modifying a Static Route

Autodiscovery Echo Interval

The Enterprise Monitor is set up to send a ping message to the default gateway periodically. If your router requires a shorter or longer interval between ping messages, to keep the Enterprise Monitor in its routing tables, you may need to change the autodiscovery echo interval.

From the Main Menu:

- 1 Type 1 and press ENTER to display the Modify/View Configuration Values Menu.
- 2 Type 2 and Press ENTER.

The current setting is displayed at the bottom of the screen.

```

Modify/View Configuration Values Menu Rev.N.NN
Memory configuration 16M bytes
Network media modules:
Slot 1: 4 port Ethernet module
Slot 2: is empty
Slot 3: is empty

1 Modify/View network settings
2 Autodiscovery echo interval (secs)      1800
3 Modify/View serial port settings

S Save changes and exit
0 Cancel changes and exit

Enter one of: 1 2 3 S 0 ? 2
Autodiscovery Echo Interval (seconds): 1800

```

Figure 3-11 Modifying the Autodiscovery Echo Interval

- 3 To change the value
 - a Delete the current value by pressing DELETE or press CTRL+U to delete the entire value.
 - b Type the new value and press ENTER.
 - c Type s to save and exit, or 0 to exit without saving. You will be returned to the Main Menu.

Configuring the Console Serial Port

The console serial port can be configured to run SLIP over a direct link or a modem. This enables the Enterprise Monitor and a Management Application to communicate even when a network link is not available.

To modify or view the serial port settings:

- 1 From the Main Menu ([Figure 3-2](#)), type 1 and press ENTER to open the Modify/View Serial Configuration Values Menu.
- 2 Type 3 and press ENTER to open the Modify/View Console Serial Port Settings Menu.

```

Modify/View Serial Port Settings Menu RevN.NH
1  Serial port IP address          187.187.187.193
2  Serial port subnet mask        255.255.255.192
3  Serial port speed              9600
4  Serial port mode                Direct, Hardware Flow Control OFF
5  Modem Init String              ^s^MATE0Q0U1X4 S0=1 S2=43^H^d2
6  Modem Hangup String            ^d2^s+++^d2^sATH0^H^d2
7  Modem Connect Responses
   /CONNECT/300/CONNECT 1200/1200/CONNECT
   2400/2400/CONNECT 4800/4800/CONNECT 960
   0/9600/CONNECT 14400/14400/CONNECT
   19200/19200/CONNECT 38400/38400/

8  Modem No-Connect Responses
   /NO CARRIER/BUSY/NO DIALTONE/NO ANSWER/ERROR/
S  Save changes and exit
0  Cancel changes and exit

Enter one of: 1 2 3 4 5 6 7 8 S 0 ? 1
Serial IP addr: 187.187.187.193

```

Figure 3-12 Modify/View Console Serial Port Settings Menu screen

- 3 To change a value:

- a Type the number of the option you want to change and press ENTER.
The current setting is displayed at the bottom of the menu screen.
- b Delete the current value using the DELETE key or press CTRL+U to delete the entire entry.
- c Type the new value and press ENTER.
- d Enter s to save and exit or 0 to exit without saving.



The SLIP address must be different from the network IP address(es).

Item 3, *Port speed* has 8 options: 1 = 300, 2 = 1200, 3 = 2400, 4 = 4800, 5 = 9600, 6 = 14400, 7 = 19200, 8 = 38400.

Item 4, *Port mode* has 4 options: 1 = Direct, 2 = Modem, 3 = Direct/HWFC, 4 = Modem/HWFC.

Items 5-8 relating to modems are discussed in [Appendix C](#).

- 4 Once configuration has been carried out, the Enterprise Monitor should be restarted for changes to take effect.

To restart the Enterprise Monitor, select option 3 or 4 from the Main Menu for a warm or cold start. The differences between warm and cold starts are described in detail in [“Warm and Cold Starting”](#) on page 3-8.

Downloading New Firmware

This section describes how to upgrade the version of the firmware running on the Enterprise Monitor.

To simplify probe administration, firmware files are generally stored on a tftp server which can be accessed by a probe on the network. New versions of firmware can be quickly and simply downloaded to probes from this central site. Firmware can be downloaded temporarily or permanently.

From the Main Menu:

- 1 Type 2 to open the Download Menu.

```

Download Menu RevN.NN

1  Filename to download      /usr/jjb/ax/lsv
2  tftp server to download   99.0.0.1
3  Permanent download
4  Temporary download

0  Return to previous menu

IP address 1:                99.1.1.14
Subnet mask 1:                255.0.0.0
IP address 2:                99.1.1.14
Subnet mask 2:                255.0.0.0
IP address 3:                99.1.1.14
Subnet mask 3:                255.0.0.0
IP address 4:                99.1.1.14
Subnet mask 4:                255.0.0.0


Default gateway IP address:   99.0.0.1

Select one of: 1 2 3 4 S 0 ? 1

```

Figure 3-13 Download Menu screen

- 2 To change the filename of the firmware release or the IP address of the host server:
 - a Type the number of the option you want to change and press ENTER.
 - b Delete the current value by using the DELETE key or press CTRL+U to delete the entire entry.
 - c Type the new value and press ENTER.
 - d Type s to save and exit or 0 to exit without saving.
- 3 To download the new firmware permanently and save it to the non-volatile storage area, select option 3. The Enterprise Monitor will take approximately one minute to copy the new firmware to the non-volatile memory area.

 *If you do not save the new firmware permanently, this firmware will be lost next time you restart the Enterprise Monitor.*
- 4 To download the new firmware temporarily into memory and to run it without saving it to the non-volatile memory area, select option 4, Temporary Download.
- 5 There is no need to reboot the Enterprise Monitor. As soon as it has downloaded the firmware, the Enterprise Monitor automatically warm starts itself and starts running the new firmware.

LEDs in Normal Operation

Once it has been installed and configured, and has successfully run through its Self Test, the Enterprise Monitor has been designed to run unattended.

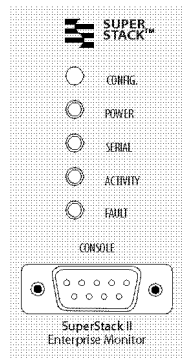


Figure 3-14 LEDs on the front panel of the Enterprise Monitor.

If the Enterprise Monitor is operating correctly the LEDs will display as follows:

Table 3-2 Status LEDs on the Enterprise Monitor Front Panel.

LED	Under Normal Operation
power	ON
fault	OFF
serial	ON and flickering if data is being transmitted or received on the serial port, otherwise OFF
activity	ON and flickering if there is network activity, otherwise OFF



With an FDDI module connected, the activity light will flicker on from time to time, even when the module is not attached to an external network. This is because the Enterprise Monitor is monitoring the internal FDDI network that has been set up within the FDDI module itself.

If your installation fails due to hardware problems, the Enterprise Monitor will display the appropriate error code through the activity and fault LEDs. Please refer to [Chapter 4](#) for more troubleshooting information.



4

TROUBLESHOOTING

This chapter helps you to identify problems with your Enterprise Monitor. Please consult this section before contacting the Technical Support Team.

The first section contains examples of common problems and their solutions.

The second section introduces the error flash sequence produced by the Activity LED in conjunction with the fault LED.

Troubleshooting

The following is a list of problems you may see with operating the Enterprise Monitor with suggested courses of corrective action to take. If you have a problem which is not listed here and you cannot solve it, please contact your local technical support representative.

LEDs

A link is connected and yet the Power LED does not light.

Check that:

- All connections are secure.
- Cables are free from damage.
- The devices at both ends of the link are powered up.

All LEDs remain on.

Power cycle the Enterprise Monitor a few times, if all LEDs remain on for each power cycle, there is a serious hardware fault with the Enterprise Monitor. Contact the Technical Support Team.

All LEDs flash for two minutes.

There is a fault with the Enterprise Monitor firmware. Make note of all the operations carried out with the Enterprise Monitor, together with the basic configuration information for your network. Contact your local Technical Support office.

Using the Terminal or Terminal Emulator Interface

The initial Main Menu screen will not display or screens are displayed incorrectly.

Check that:

- Your terminal or terminal emulator is correctly configured to operate as a dumb terminal.
- The settings on your terminal or emulator are character size 8, no parity, 1 stop bit, 9600 baud.

Using the Enterprise Monitor

The Management Application cannot access the device.

Check that:

- The Enterprise Monitor's IP address(es), subnet mask and default gateway are correctly configured and the device has been warm or cold started.
- The Enterprise Monitor's IP address is correctly recorded by the Management Application. (Refer to the user manual for the Management Application).
- Only one port is configured to be on any one subnet.

The Management Application can no longer access the device.

There is possibly a network problem preventing you from accessing the device over the network. Try accessing the device through the Console Serial Port.

I have entered IP addresses but get no response from the Enterprise Monitor.

The interface configured for BOOTP must have an IP address entered (the default is interface 1). If it does not, then the Enterprise Monitor makes continuous BOOTP requests for an IP address and will not function until a response is received.

I was able to set up trap information via the Management Application but I now find that traps are not being received.

Check that the trap destination IP address set in the Management Application is correct and try again.

I have 8 ports in my Enterprise Monitor but I can only enter 4 IP addresses in the Configuration System.

From the Configuration Menu System the Enterprise Monitor can have a maximum of 4 IP addresses allocated. It only needs one IP address to operate. This address can be used to bring back statistics from *all* of the ports in the Enterprise Monitor. The ability to have up to 4 IP addresses allows information to be sent to management stations on 4 *completely separate* networks.

IP addresses can be set for all interfaces from the Management Application.

My Enterprise Monitor is not collecting information that I know exists on my network.

The Enterprise Monitor should be configured with enough memory to collect all of the data required. However, the default settings may not be suitable for your network. Refer to [Chapter 3](#) for instructions on amending configuration parameters and [Chapter 5](#) for instructions on installing and altering RMON defaults.

My Enterprise Monitor is dropping lots of packets.

The Enterprise Monitor has fixed processing power. If more network connections are made to the Enterprise Monitor further processing power will be required to monitor those networks. Check that the configuration of your unit is acceptable for your particular application. Refer to [Chapter 5](#) for instructions on amending RMON defaults.

I have connected my FDDI media module to the network but get no response from the Enterprise Monitor, even though the link lights are on.

Check that all cabling is correctly positioned.

My Enterprise Monitor with FDDI DAS module appears to have caused a problem on my FDDI ring.

If any configuration settings (e.g. IP address) are changed, the Enterprise Monitor has to be reset for the change to take effect. Resetting the Enterprise Monitor causes the ring to be interrupted for about a second. Fitting an external optical bypass switch will eliminate this problem.

Loss of power on the Enterprise Monitor will also cause the ring to be interrupted. (Refer to the FDDI DAS Module Quick Reference Guide).

LED Error Flash Sequence

When the Enterprise Monitor detects a problem during execution of the Power On Self Test, it illuminates the fault LED and communicates the problem to you through flashing of the activity LED.

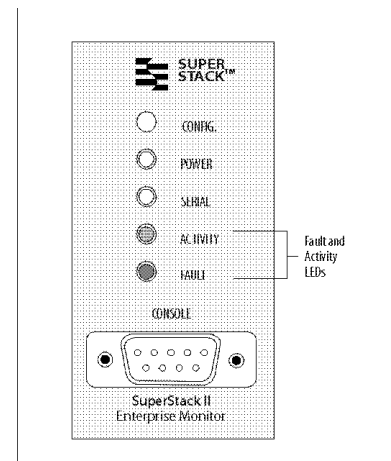


Figure 4-1 The Enterprise Monitor LED panel.

To communicate the error, the Enterprise Monitor uses a sequence of flashes of the activity LED. If a terminal is attached, a string representation of the error test and failure identity numbers is displayed. This gives a description of the failure.

To use the error flash system effectively:

- 1 Note the flash sequence displayed by the Enterprise Monitor.

The sequence repeats continuously. There are two groups of failure code LED flashes, Test ID and Failure ID. There is a 0.2 second delay between flashes within each code group.



If you have difficulty reading the LED error flash sequence, power cycle the Enterprise Monitor with a terminal attached. If the serial hardware is not faulty, you should see a string representation of the test and failure IDs.

For a description of the error flash sequences refer to [Appendix G “Test Identifiers and Failure Codes”](#).

- 2 Note the sequence and contact Technical Support.

Identifying the Error Flash Sequence

There are several classes of test, numbered from 11. Within each class there are between 1 and 9 possible failure codes, numbered 1 through 9.

For example, as part of its power-on sequence, the Enterprise Monitor runs through a number of extensive DRAM tests. This set of tests is identified by the number 15. If the Enterprise Monitor detects a bit change failure, this is identified by failure code 7. So, in this case, we have a Test ID of 15 and a Failure ID of 7. The Enterprise Monitor communicates this error to you through a sequence of flashes.

The example below shows how the Enterprise Monitor represents Test ID 15 and Failure ID 7.

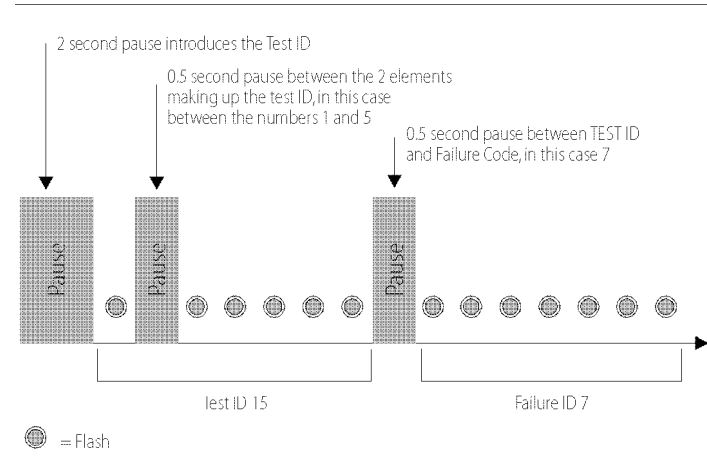


Figure 4-2 Example of an error sequence.

5

UPGRADING AND ALLOCATING MEMORY

This chapter is in three sections. The first section lists the possible memory configurations for the Enterprise Monitor.

The second section describes how to upgrade memory SIMMs in the Enterprise Monitor.

The third section covers the allocation of memory in the Enterprise Monitor for the different combinations of media modules. Those RMON defaults that can be modified are also described.



CAUTION: *It is essential that you follow all of the safety precautions given in the following pages. Failure to do so may result in serious injury or damage to the equipment.*

Possible SIMM Combinations

The Enterprise Monitor holds up to 128MB of RAM in four sockets as 32MB SIMMs; up to 64MB as 16MB SIMMs. After installing new SIMMs, there is no need to adjust jumpers or switches, the system recognizes any changes to the SIMMs during its Self Test.



Each SIMM socket must contain the same size of SIMM. You must not install a mixture of different sizes of SIMMs.

Memory Configurations

You must install SIMMs without leaving gaps, in the order that the sockets appear from front to back. For example, install socket 1, then 2, 3 and lastly 4.

Table 5-1 Possible combinations of 16MB and 32MB SIMMs

Memory Size	Socket Number			
	1	2	3	4
16MB	16MB			
32MB	16MB	16MB		
32MB	32MB			
48MB	16MB	16MB	16MB	
64MB	16MB	16MB	16MB	16MB
64MB	32MB	32MB		
96MB	32MB	32MB	32MB	
128MB	32MB	32MB	32MB	32MB

Installing SIMMs

This section describes how to open the Enterprise Monitor and add or remove memory. Upgrading memory should be the only time when you will need to open the Enterprise Monitor.



WARNING: Ensure that all power cords are disconnected from electrical outlets before completing the following steps. Failure to disconnect power may result in serious injury.



CAUTION: Electrostatic discharge can damage electronic components. Before beginning the following procedures, be sure that you have the same potential as the Enterprise Monitor by wearing a wrist strap connected by a ground cord to an unpainted part of the chassis, such as the Console Serial Port.

Opening the Enterprise Monitor

- 1 Power down the Enterprise Monitor.
- 2 If the Enterprise Monitor is rack-mounted, remove the probe from the rack and place it on a flat surface. Remove the rack mount attachments on each side of the probe.



CAUTION: If possible, you should attach the casing of the probe to ground. This provides an extra level of protection for the components.

- 3 Remove the casing screws as shown in [Figure 5-1](#) and lift the lid from the unit.

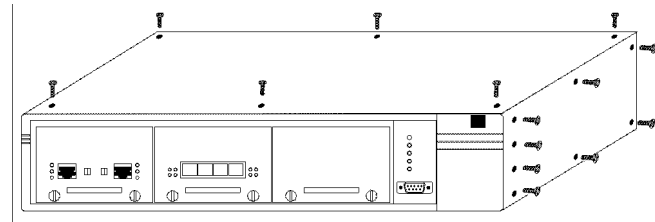


Figure 5-1 Removing casing screws

Location of the SIMMs Inside the Enterprise Monitor

The SIMM sockets are located at the back of the Enterprise Monitor, at the middle of the rear of the motherboard.

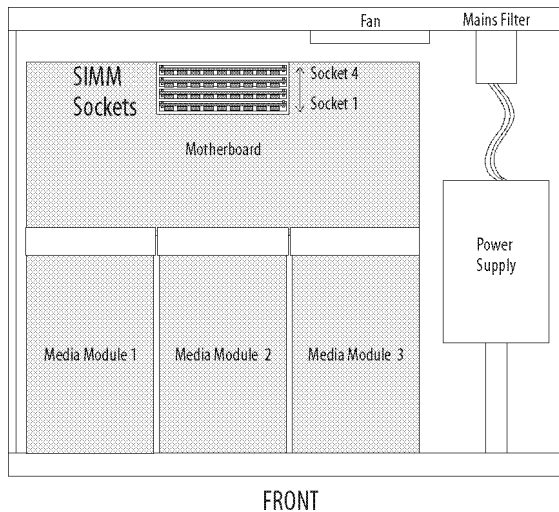


Figure 5-2 Inside the Enterprise Monitor chassis



Warning: Do not touch any part of the power supply located to the right of the motherboard and module 3.

Removing Installed Memory Modules

If required, remove installed memory modules in the following way.



CAUTION: SIMMs are made of extremely sensitive electronic components that may be damaged by static electricity. This damage can result from even small amounts of static charge, for example from your clothes. Handle the SIMMs only by their non-conducting edges and wear a wrist strap attached to an unpainted part of the Enterprise Monitor chassis.

- 1 Gently pull the socket clamps outwards and then towards you to release the SIMM from the socket.

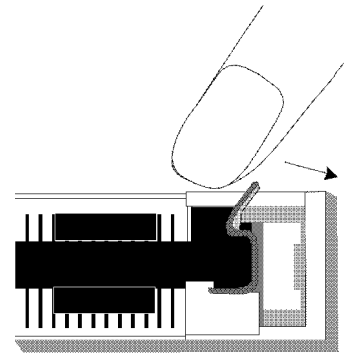


Figure 5-3 Removing a SIMM from a socket

- 2 Tilt the SIMM away from you and lift out of the socket.

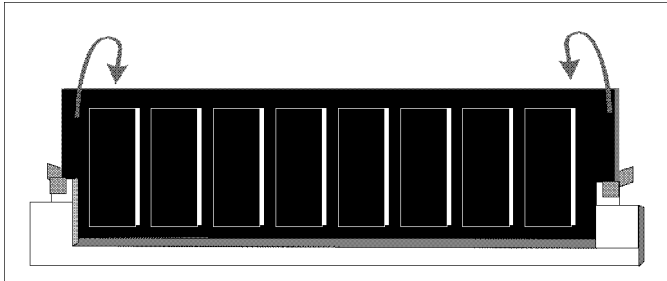


Figure 5-4 Tilting a SIMM out of its socket



Never force the SIMM out of the socket without first releasing the clamps.

- 3 Store unused SIMMs in anti-static envelopes.

Installing Memory Modules

The memory in the Enterprise Monitor must be installed in matching SIMMs, e.g. all 16 MB or 32 MB. Mixed SIMMs are not supported (see [Table 5-1](#)).

Insert into the first available socket in the order that they appear from front to back without leaving gaps (see [Figure 5-2](#)).

Install SIMMs in the following way:

- 1 Remove the SIMMs from the envelope by touching only their non-conducting edges.

- 2 Place the SIMM on the socket at an angle - just enough to avoid the socket clamps.



The SIMMs are keyed so that they only fit into the slot in one way - the semi-circle at the bottom of the SIMM lines up with the small plastic strip between the two connector sections.

- 3 Pull the clamps outwards.

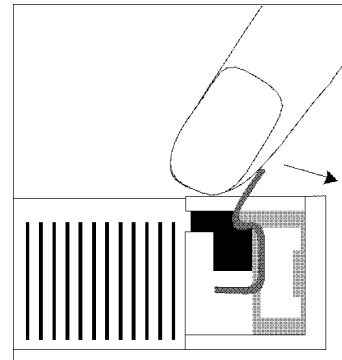


Figure 5-5 Releasing the socket clamps

- 4 Pull the SIMM forward releasing the socket clamps and the SIMM will snap into place.

Ensuring the SIMMS are Correctly Installed



WARNING: Do not power up the probe until the cover is replaced and secured. Failure to do so could result in personal injury.

To test, replace the lid and re-boot.

- 1 Switch the probe on by re-connecting the power cable. The probe should boot normally if the SIMM is correctly in place.

If the probe does not boot:

- a Power off the probe and remove the lid.
- b Check the SIMM is securely in place.
- c Replace the lid of the probe and re-connect the power cable.

If the probe still does not boot normally, contact Technical Support.

- 2 After checking the SIMM is correctly placed, power the probe off again before mounting the probe in a rack or returning it to its original location.

If the probe is rack-mounted, re-attach the rack mount attachments to each side of the probe.

- 3 Network and power connections can be re-established.

Memory Allocation

This section lists the default table sizes and how to amend them where applicable.

The sizes given in the following tables relate to various items in the RMON MIB (refer to RFC 1757 and RFC 1513, the Token Ring RMON extensions) and the Enterprise Monitor-specific MIB. The number of entries are aggregate rather than per interface.

The entries are allocated on an interface basis. If these are not suitable for your particular application, refer to [“Altering RMON Defaults”](#) later in this chapter.

Some memory is left free for loading of firmware.

Table Sizes

The items listed in the table below remain the same for all configurations of the Enterprise Monitor.

Table 5-2 Size of Entries

Table	Maximum Number of Entries
Alarm	60
Event	150
Event log	2800
Filter	60
Channel	40
Buffer control	16
Community access	20
Client	20
Trap destination	300
Serial connect	20

Table 5-3 Maximum number of entries for single module

Table	Single Media Module		
	Token Ring*	FDDI	4E†
16 MB			
Host	2000	1000	4000
Host TopN control	8	4	16
Host TopN (per control)	2000	1000	4000
Matrix	8000	4000	16000
History control	8	4	16
Total history buckets	500	250	1000
Capture buffer packets (per control)	8000	8000	8000
Total capture buffer octets	2516584	2516584	2516584
32MB			
Host	2000	1000	4000
Host TopN control	8	4	16
Host TopN (per control)	2000	1000	4000
Matrix	8000	4000	16000
History control	8	4	16
Total history buckets	500	250	1000
Capture buffer packets (per control)	16000	16000	16000
Total capture buffer octets	5033168	5033168	5033169

* There are 2 ports on the Token Ring Module.

† 4E = 4 Port Ethernet

For combinations of modules, the number of entries can be found by adding the appropriate value from the table above, except in the case of the capture buffer packets and buffer octets which remain constant.

For example:

One Token Ring (each Token Ring Module has 2 ports), one FDDI and one 4 Port Ethernet would have 28,000 matrix entries and 8000 capture buffer packets in a 16 MB system.

Altering RMON Defaults

The Enterprise Monitor's RMON defaults will be suitable for most networks. However, if required, these defaults can be amended to settings more appropriate to a particular network. For instance, if the memory allocated to Capture Packets was reduced, additional memory could then be allocated for Host Entries.

- 1 From the main Configuration System Main Menu, type `t` at the prompt. You will be asked for a password. Type in `tMax` (case sensitive) and press ENTER.
- 2 The Modify/View RMON Table Sizes Menu will be displayed:

```

Modify/View RMON Table Sizes Menu RevN.NN
16Mb probe: 5762kb allocated from 14848Kb
available; (* = modifiable)

 1 History Entries *           1000
 2 History Controls           16
 3 Host Entries *             4000
 4 Host TopN Controls         16
 5 Matrix Entries *          16000
 6 Capture Packets *          8000
 7 Capture Buffer *           2516584
 8 Capture Control            12
 9 Log Entries                 2800
 A Alarm Entries              60
 B Event Entries              100
 C Filter Entries             50
 D Channel Entries            50

 R Reset to factory default settings

 S Save changes and exit (forces a cold start)
 0 Cancel changes and exit

Enter one of: 1 2 3 4 5 6 7 8 9 A B C D R S 0 ?

```

Figure 5-6 Modify/View RMON Table Sizes Menu screen

Only items marked with an * are modifiable.

The amount of memory that is available for allocation is listed at the top of the menu. All of this memory, except 100 Kb, can be allocated.

- 3 Select the menu item you wish to change and press ENTER.



If a non-modifiable menu item is selected, the selection is ignored and the menu is re-displayed.

- a Delete the current value by pressing DELETE or press CTRL+U to delete the entire value.
 - b Type the new value and press ENTER.
 - c Type S to save and exit or 0 to exit without saving.
- 4 The defaults can be reset to the factory defaults at any time by selecting R.



Changing the RMON table sizes will cause the probe to cold start even if you exit the Configuration System with a warm start.



SAFETY INFORMATION

You must read the following safety information before carrying out any installation or removal of components, or any maintenance procedures on the Enterprise Monitor.

Important Safety Information



WARNING: *Warnings contain directions that you must follow for your personal safety. Follow all instructions carefully.*

Please read the following safety information thoroughly before installing the Enterprise Monitor.

- Installation and removal of the unit must be carried out by qualified personnel only.
- If installing the Enterprise Monitor unit in a stack with SuperStack II Hub units, the Enterprise Monitor unit must be installed below the narrower Hub units.
- This unit must be grounded (earthed).
- Connect the unit to a grounded (earthed) power supply to ensure compliance with European safety standards.
- The power cord set must be approved for the country where it will be used.
- The appliance coupler, that is the connector to the device itself and not the wall plug, must have a configuration for mating with an EN60320/IEC320 appliance inlet.

- For USA and Canada:
 - The cord set must be UL-approved and CSA certified.
 - The minimum specification for the flexible cord is:
 - No. 18 AWG
 - Type SV or SJ
 - 3-conductor
 - The cord set must have a rated current capacity of at least 10A.
 - The attachment plug must be an earth-grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A, 250V) configuration.
- For Denmark:
 - The supply plug must comply with section 107-2-D1, standard sheet DK2-1a or DK2-5a.
- For Switzerland:
 - The supply plug must comply with SEV/ASE 1011.
- It is essential that the mains socket outlet is installed near to the unit and is accessible. You can only disconnect the unit by removing the appliance coupler (power lead) from the unit.
- If the power supply plug is unsuitable and you have to replace it, you may find other codings for the respective connections. Connect the power supply wires from the unit according to the following scheme:

- Brown wire to the Live (Line) plug terminal which may be marked with the letter L or colored red.
- Blue wire to the Neutral plug terminal which may be marked with the letter N or colored black.
- Yellow/green wire to the Earth (Ground) plug terminal which may be marked with the letter E, or the earth symbol, or colored green/yellow.
- This unit operates under SELV conditions (Safety Extra Low Voltage) according to IEC 950, the conditions of which are maintained only if the equipment to which it is connected is also operational under SELV.
- The unit should never be connected to an A.C. outlet (power supply) without a Ground (Earth) connection.
- France and Peru only:
 - This unit cannot be powered from IT (impedance à la terre) supplies. If your supplies are of the IT type, this unit should be powered by 230V (2P+T) via an isolation transformer ratio 1:1, with the secondary connection point labelled Neutral, connected directly to Ground (Earth).



WARNING: RJ45 ports. *These are shielded RJ45 data sockets. They cannot be used as telephone sockets. Only connect RJ45 data connectors to these sockets.*

Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.

L'information de Sécurité Importante



AVERTISSEMENT: *Les avertissements contiennent les directions que vous devez suivre pour votre sécurité personnelle. Suivez toutes les directives avec soin.*

Veillez lire à fond l'information de la sécurité suivante avant d'installer le Enterprise Monitor.

- L'installation et l'enlèvement de l'unité doivent être faits seulement par le personnel qualifié.
- Si vous entassez l'unité FlexiProbe avec les unités SuperStack II Hub, l'unité Enterprise Monitor doit être installée en dessous des unités Hub plus étroites.
- Cette unité doit être mise à la terre.
- Brancher l'unité à une source de courant mise à la terre pour assurer la conformité aux normes de sécurité européennes.
- Le cordon d'alimentation surmoulé doit être approuvé pour le pays auquel il sera utilisé.
- Le socle de connecteur, c'est-à-dire, le connecteur à l'appareil lui-même et non pas la prise murale, doit avoir une configuration pour le branchement avec une admission d'appareil EN60320/IEC320.
- Pour USA et le Canada:
 - Le cordon surmoulé doit être UL Certifié et CSA Certifié.
 - Les spécifications minimales pour le cordon souple sont:
 - No. 18 AWG
 - Type 5V ou SJ
 - 3-conducteur

- Le cordon surmoulé doit avoir une capacité de courant calculée au moins de 10A.
- La fiche de fixation doit être un type mis à la terre avec une configuration NEMA 5-15P (15A, 125V) ou NEMA 6-15P (15A, 250V).
- C'est essentiel que le socle soit installé près de l'unité et soit accessible. Vous pouvez seulement débrancher l'unité en enlevant la fiche d'alimentation de la prise de courant.
- Cette unité marche sous les conditions SELV (Safety Extra Low Voltage) conformément à IEC950, ces conditions sont maintenues seulement si le matériel auquel elle est branchée, est aussi en exploitation sous SELV.
- L'unité ne devrait pas être branchée à une prise de courant C.A. (source de courant) sous aucun prétexte sans un branchement mis à la terre (mis à la masse).
- Seulement Pour La France et Le Pérou:
 - Cette unité ne peut pas être mise en marche des sources de courant IT (Impédance à la terre). Si vos sources de courant sont de type IT, cette unité doit être alimentée par 230V (2P+T) via un rapport de transformation d'isolation de 1:1, avec un point de connexion secondaire étiqueté Neutre, branché directement à la Terre (à la Masse).



AVERTISSEMENT: *Les ports RJ45. Ceux-ci sont les prises de courant de données RJ45 protégées. Ils ne peuvent pas être utilisés comme prises de courant téléphoniques. Brancher seulement les connecteurs RJ45 de données à ces prises de courant.*

Les câbles de données blindés ou non blindés, avec les jacks blindés ou non blindés, l'un ou l'autre, peuvent être branchés à ces prises de courant de données.

Wichtige Sicherheitsinformationen



WARNUNG: *Warnungen enthalten Anweisungen, die zur eigenen Sicherheit unbedingt zu beachten sind. Bitte befolgen Sie alle Anweisungen sorgfältig und genau.*

Bitte unbedingt vor dem Einbauen des Enterprise Monitor Einheit die folgenden Sicherheitsanweisungen durchlesen.

- Ein- und Ausbau des Gerätes ist **nur von Fachpersonal** vorzunehmen.
- Wenn die Enterprise Monitor Einheit in einer Stapel mit anderen SuperStack II Hub Einheiten eingebaut werden soll, muß die Enterprise Monitor Einheit unter die schmalere Hub Einheiten eingebaut werden.
- Dieses Gerät muß geerdet sein.
- Das Gerät an geerdete Stromversorgung anschließen, um eine Übereinstimmung mit den europäischen Sicherheitsbestimmungen zu gewährleisten.
- Der Anschlußkabelsatz muß mit den Bestimmungen des Landes übereinstimmen, in dem er verwendet werden soll.
- Die Anordnung der Gerätesteckvorrichtung, d.h. die Steckverbindung am Gerät selbst im Gegensatz zum Wandstecker, muß in den EN60320/IEC320 Zuführungsstecker am Gerät passen.
- Es ist wichtig, daß der Netzstecker sich in unmittelbarer Nähe zum Gerät befindet und leicht erreichbar ist. Das Gerät kann nur durch Herausziehen des Verbindungssteckers aus der Steckdose vom Stromnetz getrennt werden.
- Das Gerät wird mit Sicherheits-Kleinspannung nach IEC 950 (SELV = Safety Extra Low Voltage) betrieben. Angeschlossen werden können nur Geräte, die ebenfalls nach SELV betrieben werden.

- Das Gerät ist unter keinen Umständen an einen Wechselstrom (A.C.) Netzstecker anzuschließen ohne Erdungsleitung.
- Vorm Öffnen der Abdeckungsklappe der IEC Steckverbindingssicherung oder vorm Abnehmen der Gesamtabdeckung der Gerät sicherstellen, daß das Stromverbindungskabel vom Netzstrom getrennt ist.

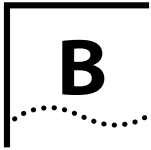
Stromversorgung und Sicherung

Das Gerät stellt sich automatisch auf die Versorgungsspannung ein. Die Sicherung ist sowohl für 110V A.C. wie für 220-240V A.C. geeignet.



WARNUNG: RJ45 Ports. *Hierbei handelt es sich um abgeschirmte RJ45 Datenbuchsen, die nicht als Telefonbuchsen verwendbar sind. Nur RJ45 Datensteckverbinder an diese Buchsen anschließen.*

Diese Datenstecker können entweder mit abgeschirmten oder ungeschirmten Datenkabeln mit abgeschirmten oder ungeschirmten Klinkensteckern verbunden werden.



PIN OUTS

This appendix describes the cable types and connectors required to attach a local terminal, PC or modem to the Enterprise Monitor. RJ45 pin assignments are also included.

A = Always required

H = Required for handshake

O = Only required if screen

Null Modem Cables

9 pin to RS-232 25 pin

Enterprise Monitor

Cable Connector:
9 pin female

Screen	Shell	●
TxD	3	●
RxD	2	●
Ground	5	●

PC/Terminal Cable

Connector:
25 pin male/female

●	1	Screen	O
●	3	RxD	A
●	2	TxD	A
●	7	Ground	A

PC-AT Serial Cable

9 pin to 9 pin

Enterprise Monitor

Cable Connector:
9 pin female

Screen	Shell	●
TxD	3	●
RxD	2	●
Ground	5	●

PC-AT Serial Port

Cable connector:
9 pin female

●	Shell	Screen	O
●	2	RxD	A
●	3	TxD	A
●	5	Ground	A

Modem Cables

9 pin to RS-232 25 pin

Enterprise Monitor

Cable Connector:
9 pin female

Screen	Shell	●
TxD	3	●
RxD	2	●
Ground	5	●
RTS	7	●
CTS	8	●
DSR	6	●
DCD	1	●
DTR	4	●

RS-232 Modem Port

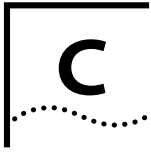
Cable connector:
25 pin male

●	1	Screen	O
●	2	TxD	A
●	3	RxD	A
●	7	Ground	A
●	4	RTS	H
●	5	CTS	H
●	6	DSR	H
●	8	DCD	H
●	20	DTR	H

RJ45 Pin Assignments

Ports configured as MDI

Pin Number	Signal	Function
1	TxDData +	Transmit data
2	TxDData -	Transmit data
3	RxDData +	Receive data
4	Not assigned	
5	Not assigned	
6	RxDData -	Receive data
7	Not assigned	
8	Not assigned	



MODEMS

This appendix describes: connecting, configuring and initializing modems.



CAUTION: *Cables used in this section must be to an approved standard. Refer to [Appendix A](#) for further information.*

Refer to [Appendix B](#) for Modem cable pin-outs

Connecting Modems

You can connect a modem to the probe to allow out-of-band access by a remote client if the main network link goes down. The access can be made using Serial Line IP (SLIP). The physical connection could be made using a modem, data switch or serial line from a management station.

Modem Configuration

Over a SLIP connection, the probe supports the following configuration:

- Character Size - 8 bit.
- Parity - none.
- Stop bit - 1.
- Baud rates - various.

To communicate with the probe, the client should use the Enterprise Monitor's local SLIP address as its destination IP address. For information on configuring a SLIP route to a device, please check your workstation documentation.

Modem Initialization

This section describes the format of the modem Initialization, Hangup and Response strings.

Initialization and Hangup Strings

The Initialization and Hangup strings are used to communicate with a modem or a serial data switch. These strings contain embedded commands to control the Enterprise Monitor's interaction with the remote device through the serial interface. Commands are represented as two character sequences beginning with the '^' character.

The following table shows the commands that are recognized by the probe. Command characters are case sensitive.

Table C-1 Commands recognised by the Enterprise Monitor

Command	Description
^s	Send string that follows, which is terminated by the next command or the end of string.
^c	Delay for the number of seconds that follows. Discard any data received rather than storing it in a buffer for parsing.
^t	Set timeout to the value represented by the decimal digits that follow. The default timeout is 20 seconds. Notes that this timeout may be overridden by a smaller serial Timeout configured for the associated serial interface.
^w	Wait for the reply string that follows, which is terminated by the next command or the end of string. Partial and case insensitive matching is applied, i.e. if the reply string (any case combination) is found anywhere in the received string, then the match is found. If the current timeout elapses without a match, then the remaining control string is ignored.
^!	The '^' character.
^d	Delay the number of seconds specified by the decimal digits that follow.
^b	Send break for the number of milliseconds specified by the decimal digits that follow. If no digits follow, break will be enforced for 250 milliseconds by default.

The following ASCII control characters may be inserted into the '^s' send string or the '^w' reply string:

Table C-2 ASCII control characters

ASCII Characters	Value
^@	0x00
^A	0x01
^M	0x0D
^Z	0x1A
^[0x1B
^\	0x1C
^]	0x1D
^^	0x1E
^-	0x1F

Binary data may also be inserted in the data stream. The control sequence for each byte of binary data is '^0x##', where ## is the hexadecimal representation of the data byte. Two ASCII characters (0-9, a-f, A-F) must follow the '^0x' control prefix.

For example:

```
^0x0D^0x0A
```

is interpreted as a carriage return followed by a line feed.

Modem Response Strings

This section describes the format of the modem Connect Response and No Connect Response strings.

Connect Response

This is an ASCII string that contains substrings describing the expected modem connection response code and associated line speed. The substrings are delimited by the first character in the string.

The table below gives the Connect Response string for:

```
CONNECT/300/CONNECT 1200/1200/CONNECT
2400/2400/CONNECT 4800/4800/CONNECT
9600/9600
```

Table C-3 Example of a connect response string:

Response code	Line speed (bps)
CONNECT	300
CONNECT 1200	1200
CONNECT 2400	2400
CONNECT 4800	4800
CONNECT 9600	9600

The Enterprise Monitor will use the information in this string to adjust the line speed of the serial interface once a modem connection is established.

No Connect Response

This is an ASCII string that contains response codes generated by a modem to report why a connection attempt has failed. The response codes are delimited by the first character in the string.

For example:

```
/NO CARRIER/BUSY/NO DIALTONE/NO
ANSWER/ERROR/
```

If one of these response codes is received via the serial interface while attempting to make a modem connection, the Enterprise Monitor will issue the hang up command as specified by the modem Hangup string.





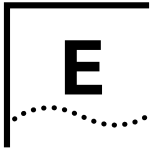
SUPERSTACK II ENTERPRISE MONITOR SPECIFICATIONS

The following table gives the Enterprise Monitor specifications.

Table D-1 Enterprise Monitor specifications

Hardware	RISC processor, Intel i960-based design
Serial Interface	RS-232
Environmental	Operating Temperature 0° to 40°C Storage Temperature -20° to 55°C Humidity 0% to 95% non-condensing air-cooled
Dimensions	17½ x 14¾ x 3½ inches 44.6 x 37.5 x 8.8 cm
Weight	8.0 lbs; 3.6 kg
Power Requirements	100 V AC to 240 V AC autosensing 50/60 Hz
Power Consumption	65 W max
Indicators	Power, Activity, Serial Line and Fault
Standards Compliance	FCC Class A, EN 55022-A, VCCI Class 1, UL 1950, CSA 220, EN 60950, EN 50082, VDE-B(Fiber A/B), IETF RFC 1757 and 1513, ANSI X3T9.5 FDDI SMT
Memory	16 MB minimum, expandible to 64 MB in 4 SIMMs; 32 MB expandible to 128 MB in 4 SIMMs.





TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Online Technical Services

3Com offers worldwide product support seven days a week, 24 hours a day, through the following online systems:

- 3Com Bulletin Board Service (3ComBBS).
- World Wide Web site.
- 3ComForum on CompuServe®.
- 3ComFactsSM automated fax service.

3Com Bulletin Board Service

3ComBBS contains patches, software and drivers for all 3Com products, as well as technical articles. This service is available via modem or ISDN seven days a week, 24 hours a day.

Access by Modem

To reach the service by modem, set your modem to 8 data bits, no parity and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	(61) (2) 9955 2073
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 9600 bps	(49) (89) 627 32 188 or (49) (89) 627 32 189
Hong Kong	up to 14400 bps	(852) 2537 5608
Italy (fee required)	up to 14400 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5840
U.K.	up to 28800 bps	(44) (1442) 278278
U.S.	up to 28800 bps	(1) (408) 980 8204

Access by ISDN (US only)

ISDN users can dial-in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, dial the following number:

(408) 654 2703

World Wide Web Site

Access the latest networking information on 3Com's World Wide Web site by entering our URL into your Internet browser:

http://www.3Com.com/

This service features news and information about 3Com products, customer service and support, 3Com's latest news releases, selected articles from 3TECH™ (3Com's award-winning technical journal) and more.

3ComForum on CompuServe

3ComForum is a CompuServe-based service containing patches, software, drivers and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

- 1 Log on to CompuServe.
- 2 Enter **go threecom**.
- 3 Press [Return] to see the 3ComForum main menu.

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams and troubleshooting instructions on 3Com products 24 hours a day, seven days a week.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Telephone Number
Hong Kong	(852) 2537 5610
U.K.	(44) (1442) 278279
U.S.	(1) (408) 727 7021

Local access numbers are available within the following countries:

Country	Telephone Number	Country	Telephone Number
Australia	800 123853	Netherlands	06 0228049
Belgium	0800 71279	Norway	800 11062
Denmark	800 17319	Portugal	0505 442607
Finland	98 001 4444	Russia (Moscow only)	956 0815
France	05 90 81 58	Spain	900 964445
Germany	0130 8180 63	Sweden	020 792954
Italy	1678 99085	U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages.
- A list of system hardware and software, including revision levels.
- Details about recent configuration changes, if applicable.

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

In the U.S. and Canada, call **(800) 876-3266** for customer service.

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number
Australia (Sydney)	(61) (2) 9937 5000
(Melbourne)	(61) (3) 9653 9515
Belgium*	0800 71429
Brazil	(55) (11) 546 0869
Canada	(416) 498 3266
Denmark*	800 17309
Finland*	0800 113153
France*	05 917959
Germany*	0130 821502
Hong Kong	(852) 2501 1111
Ireland*	1 800 553117
Italy*	1678 79489
Japan	(81) (3) 3345 7251
Mexico	(525) 531 0591
Netherlands*	06 0227788
Norway*	800 13376
Singapore	(65) 538 9368
South Africa	(27) (11) 803 7404
Spain*	900 983125
Sweden*	020 795482
Taiwan	(886) (2) 577 4352
United Arab Emirates	(971) (4) 349049
U.K.*	0800 966197
U.S.	(1) (408) 492 1790

* These numbers are toll-free.

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	(31) 30 60 29900, option 5	(44) (1442) 275822
Outside Europe, U.S., and Canada	(1) (408) 492 1790	(1) (408) 764 7290



NETWORK NUMBERS

Obtaining a Network Number

There are three organizations responsible for allocating network numbers. These are:

Table F-1 Organisations providing network numbers

USA - InterNIC, Network Solutions

InterNic Registration Services
505 Huntmar Park Drive
Herndon

Attention: VA 22070

1-800-444-4345 (Toll Free)
1-619-455-4600

Telephone 1-703-742-4777

hostmaster@rs.internic.net
(host, domain, network changes and updates)

actions@rs.internic.net
(computer operations)

mailserv@rs.internic.net
(automatic mail service)

info@internic.net
(automatic mail service for general enquiries)

refdesk@is.internic.net
(enquiries not handled by the services above)

Asia Pacific Network Information Centre (APNIC-DOM)

Asia Pacific Network Information Centre (APNIC-DOM)
c/o Computer Centre, University of Tokyo
2-11-16 Yayoi
Bunkyo-ku, Tokyo 113
Japan

Attention:

Admin. Contact Nakayama, Masaya (MN89)

Telephone +81 3 3812 2111 ext. 2720

Email nakayama@nic.ad.jp

Technical Contact: Conrad, David (DC936)

Telephone: +81 3 3580 3781 or +81 3 3580 3784

Fax +81 3 3580 3782

Email: davidc@apnic.net

Europe - RIPE

RIPE NCC
Kruislaan 409
NL-1098 SJ
Amsterdam

Attention: The Netherlands

Telephone +31 20 592 5065

Fax: +31 20 592 5090

Email: ncc@ripe.net



TEST IDENTIFIERS AND FAILURE CODES

This appendix lists the Enterprise Monitor Power On Self Test identifiers and failure codes signalled by the Enterprise Monitor fault LED. Refer to [“Identifying the Error Flash Sequence”](#) in [Chapter 4](#) for further explanation.

Table G-1 Test Identifiers and Failure Codes

Test ID and Name	Failure Code and Description
11 Internal serial line test	1 Internal loopback failure
	2 Serial line interrupt failure
12 External serial line test	1 DTR or RTS handshaking lines not driven as expected failure
	2 External loopback failure
13 Counter timer test	1 Counter channel 0 counting failure
	2 Counter channel 1 counting failure
	3 Counter channel 1 interrupt failure
14 Simple DRAM test	1 Climbing integer fill verification failure

Test ID and Name	Failure Code and Description
15 Extensive DRAM test	1 Refresh failure
	2 Shorts, read access failure
	3 Ints, read access failure
	4 Shorts, write access failure
	5 Odd addressed ints, write access failure
	6 Int zero failure
	7 Bit change failure
16 Latch test	1 Zeroing of all latch bits failure
	2 Setting of individual latch bit failure
	3 Setting of all latch bits failure
17 LEDs test	Failure only detectable by observation
18 FLASH program voltage generator test	1 Vpp on and valid FLASH identification code not read
	2 Vpp off and valid FLASH identification code read failure
19 FLASH burn test	1 Write of test data to FLASH failure
	2 Write of original FLASH contents back to FLASH failure
21 Simple time of day clock test	1 Clock climbing failure
	2 CMOS checksum (MAC address and DRAM size storage) failure

Test ID and Name	Failure Code and Description
25 Watch dog timer test	1 NMI from watch dog timer failure
31 Simple cache RAM test	1 Climbing integer fill verification failure
32 Extensive cache RAM test	1 Refresh failure 2 Shorts, read access failure 3 Ints, read access failure 4 Shorts, write access failure 5 Odd addressed ints, write access failure 6 Int zero failure 7 Bit change failure
33 Simple EEPROM test	1 Climbing integer fill verification failure
34 Millisecond tick test	1 No tick interrupt failure
41 Simple daughter card DRAM test	1 Climbing integer fill verification failure
42 Extensive daughter card DRAM test	1 Refresh failure 2 Shorts, read access failure 3 Ints, read access failure 4 Shorts, write access failure 5 Odd addressed ints, write access failure 6 Int zero failure 7 Bit change failure

Test ID and Name	Failure Code and Description
51 Internal ethernet controller test	1 82596 remaining busy failure 2 82596 interrupt after channel attention failure 3 82596 command word read failure 4 82596 interrupt acknowledge failure 5 Transmission status failure 7 Received frame not as transmitted failure
52 External ethernet controller test	1 82596 remaining busy failure 2 82596 interrupt after channel attention failure 3 82596 command word read failure 4 82596 interrupt acknowledge failure 5 Transmission status failure 7 Received frame as transmitted failure
53 Internal token ring controller test	1 TMS380 RAM: Cannot zero memory over DIO interface 2 TMS380 RAM: Cannot set an individual bit of memory over DIO interface 3 Code download to TMS380 failed 4 TMS380 BUD tests failed 5 TMS380 initialization failed
54 FDDI card reset test	1 FDDI card hard reset failed 2 FDDI controller, NS83266, PLAYER, soft reset failed

Test ID and Name	Failure Code and Description
55 FDDI fiber loop first path test	1 FDDI controller, NS83266, PLAYER, soft reset failed
	2 FDDI controller, NS83266, BMAC, soft reset failed
	3 FDDI controller, NS83266, BSI, soft reset failed
	4 FDDI controller, NS83266, BSI pointer RAM dump failed
	6 FDDI controller, NS83266, BSI pointer RAM read and writes failed
	7 FDDI loopback test failed
	56 FDDI internal loop first path test
2 FDDI controller, NS83266, BMAC, soft reset failed	
3 FDDI controller, NS83266, BSI, soft reset failed	
4 FDDI controller, NS83266, BSI pointer RAM dump failed	
6 FDDI controller, NS83266, BSI pointer RAM read and writes failed	
7 FDDI loopback test failed	

Test ID and Name	Failure Code and Description
57 FDDI fiber loop second path test	1 FDDI controller, NS83266, PLAYER, soft reset failed
	2 FDDI controller, NS83266, BMAC, soft reset failed
	3 FDDI controller, NS83266, BSI, soft reset failed
	4 FDDI controller, NS83266, BSI pointer RAM dump failed
	6 FDDI controller, NS83266, BSI pointer RAM read and writes failed
	7 FDDI loopback test failed
	58 FDDI internal loop second path test
2 FDDI controller, NS83266, BMAC, soft reset failed	
3 FDDI controller, NS83266, BSI, soft reset failed	
4 FDDI controller, NS83266, BSI pointer RAM dump failed	
6 FDDI controller, NS83266, BSI pointer RAM read and writes failed	
7 FDDI loopback test failed	

Test ID and Name	Failure Code and Description
59 FDDI internal loop all paths test	1 FDDI controller, NS83266, PLAYER, soft reset failed
	2 FDDI controller, NS83266, BMAC, soft reset failed
	3 FDDI controller, NS83266, BSI, soft reset failed
	4 FDDI controller, NS83266, BSI pointer RAM dump failed
	6 FDDI controller, NS83266, BSI pointer RAM read and writes failed
7 FDDI loopback test failed	
61 FDDI MAC loop test	1 FDDI controller, NS83266, PLAYER, soft reset failed
	2 FDDI controller, NS83266, BMAC, soft reset failed
	3 FDDI controller, NS83266, BSI, soft reset failed
	4 FDDI controller, NS83266, BSI pointer RAM dump failed
	6 FDDI controller, NS83266, BSI pointer RAM read and writes failed
7 FDDI loopback test failed	

GLOSSARY

10BASE-T

The IEEE 802.3 specification for Ethernet over Unshielded Twisted Pair (UTP) cabling.

100BASE-FX

100Mbps Ethernet implementation over fiber.

100BASE-TX

100Mbps Ethernet implementation over category 5 and Type 1 Twisted Pair cabling.

ANSI

American National Standards Institute

Backbone

The part of a network used as the primary path for transporting traffic between network segments.

Bandwidth

Information capacity, measured in bits per second, that a channel can transmit. The bandwidth of Ethernet is 10 Mbps, the bandwidth of Fast Ethernet is 100 Mbps. FDDI bandwidth is 100 Mbps. Token Ring bandwidth is 4/16 Mbps.

Baud rate

The switching speed of a line. Also known as *line speed*.

BOOTP

The BOOTP protocol allows you to automatically map an IP address to a given MAC address each time a device is started. In addition, the protocol can assign the subnet mask and default gateway to a device.

Bridge

A device that interconnects local or remote networks no matter what higher level protocols are involved. Bridges form a single logical network, centralizing network administration.

Collision

The phenomenon in Ethernet whereby two or more systems transmit at the same time on the same LAN segment, causing the two transmissions to overlap and become garbled.

Concentrator

An FDDI station that provides attachment points for connecting stations to the FDDI ring.

DAS

Dual Attachment Station. Offers two connections to the FDDI dual counter-rotating ring.

ECAM

Enterprise Communications Analysis Module.

EIA

Electronic Industries Association.

Ethernet

A LAN specification developed jointly by Xerox, Intel and Digital Equipment Corporation. Ethernet networks operate at 10 Mbps using CSMA/CD to run over cabling.

FDDI

Fiber Distributed Data Interface. A set of ANSI/ISO standards that define high-bandwidth (100 Mbps) general purpose LAN.

Fast Ethernet

100 Mbps technology based on the Ethernet/CD network access method.

Forwarding

The process of sending a frame towards its destination by an intranetworking device.

IETF

Internet Engineering Task Force, whose responsibilities include specification of protocols and recommendation of Internet standards via the Request for Comment (RFC) process.

IP address

Internet protocol address. A unique identifier for a device attached to a network using TCP/IP. The address is written as four octets separated with full-stops (periods), and is made up of a network section, an optional subnet section and a host section.

ISO

International Standards Organisation

LAN

Local Area Network. A network of connected computing resources (such as PCs, printers, servers) covering a relatively small geographic area (usually not larger than a floor or building). Characterized by high data rates and low error rates.

Line speed

See *Baud rate*.

MAC

Media Access Control. The Data Link sublayer responsible for scheduling, transmitting, and receiving data on a shared medium LAN (for example FDDI)

MIB

Management Information Base. Stores a device's management characteristics and parameters. MIBs are used by Simple Network Management Protocol (SNMP) to contain attributes of their managed systems.

Modem

MOdulator-DEModulator. A device that converts between the digital data format used by computers and the analog signals transmitted over a telephone circuit.

Multicast

Single packets copied to a specific subset of network addresses. These addresses are specified in the destination-address field of the packet.

Packet

A unit of information that contains data, origin information; and destination information, which is switched as a whole through a network.

Protocol

A set of rules for communication between devices on a network. The rules dictate format, timing, sequencing and error control.

RJ-45

Standard 8-wire connectors for IEEE 802.3 10BASE-T networks.

RS232

An EIA standard for computer/terminal interfaces that defines the electrical and mechanical characteristics for the interconnecting of data terminal equipment to data communications equipment.

RMON

Remote MONitoring. Subset of SNMP MIB II which allows monitoring and management capabilities by addressing up to ten different groups of information. Defined in IETF document *RFC 1757*.

RMON2

Extends the capability of RMON to include protocols above the MAC layer.

SAS

Single Attachment Station. Offers one S port attachment to the FDDI network, and M ports for the attachment of stations or other concentrators.

Serial Port

The port on the Enterprise Monitor accepting a terminal or modem connector. It changes the parallel arrangement of data within computers to the serial form used on data transmission links. This port is most often used for dedicated local management.

SLIP

Serial Line Internet Protocol. A protocol which allows IP to run over a serial line connection.

SNMP

Simple Network Management Protocol. A protocol originally designed to be used in managing TCP/IP networks. SNMP is presently implemented on a wide range of computers and networking equipment and may be used to manage many aspects of network and end-station operation.

SmartAgent

Intelligent management agents in devices and logical connectivity systems that reduce the computational load on the network management station and reduce management-oriented traffic on the network.

Switch

A device which filters, forwards and floods frames based on the frame's destination address. The switch learns the addresses associated with each switch port and builds tables based on this information to be used for the switching decision.

fttp

Trivial File Transfer Protocol. Allows you to transfer files (such as software upgrades) from a remote device.

Token Ring

IEEE Standard 802.5. A standard that defines the MAC layer for a token-passing ring network.

Transcend™ Enterprise Management

3Com's umbrella management application used to manage all of 3Com's networking solutions.

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