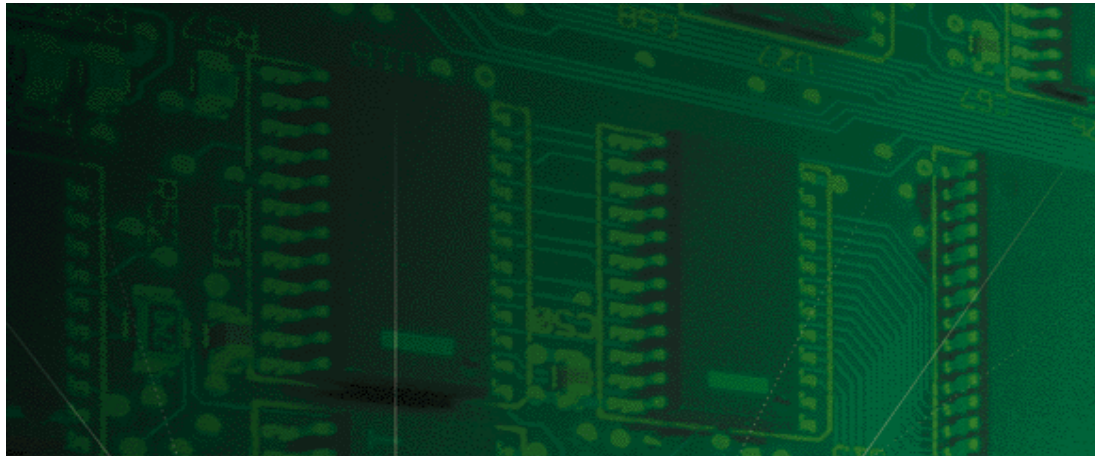# HiPer Network Management Card

3Com®

Network Application Card
Getting Started Guide

3Com ®

HiPer Network Management Card

Network Application Card
Getting Started Guide

CONTENTS

A   T<small>ROUBLE</small> C<small>LEARING AND</small> T<small>ECHNICAL</small> S<small>PECIFICATIONS</small>

1 **OVERVIEW**

This chapter provides an overview of:

- Contacting 3Com
- Document conventions
- Product description
- Product compatibility

Contacting 3Com

Call the appropriate toll free number listed below for technical support.

For European countries that do not have a toll free number listed, call +31 30 602 9900.

Country	Toll Free Number	Country	Toll Free Number
Austria	06 607468	**Netherlands**	0800 0227788
Belgium	0800 71429	**Norway**	800 11376
Canada	1800 2318770	**Poland**	00800 3111206
Denmark	800 17309	**Portugal**	0800 831416
Finland	0800 113153	**South Africa**	0800 995014
France	0800 917959	**Spain**	900 983125
Germany	0800 1821502	**Sweden**	020 795482
Hungary	00800 12813	**Switzerland**	0800 553072
Ireland	1800 553117	**UK**	0800 966197
Israel	0800 9453794	**United States**	1800 2318770
Italy	1678 79489	***All Other Locations (Outside Europe)***	1847 7976600

Refer to the Total Control Hub Documentation CD-ROM for more information regarding product warranty.

For information about Customer Service, including support, training, contracts, and documentation, visit our website at
http://totalservice.3com.com

Document Conventions

These tables list conventions used throughout this guide.

Icon	Notice Type	Description
	Information note	Information that contains important features or instructions.
	Caution	Information to alert you to potential damage to a program, system, or device.
	Warning	Information to alert you to potential personal injury or fatality. May also alert you to potential electrical hazard.
	ESD	Information to alert you to take proper grounding precautions before handling a product.

Convention	Description
Text represented as a `screen display`	This typeface represents displays that appear on your terminal screen, for example: `Netlogin:`
Text represented as **commands**	**This typeface** represents commands that you enter for example: **setenv TCMHOME directory** *This guide always gives the full form of a command in uppercase and lowercase letters. However, you can abbreviate commands by entering only the uppercase letters and the appropriate value. Commands are not case-sensitive.*
Text represented as **menu** or **sub-menu names**.	**This typeface** represents all menu and sub-menu names within procedures, for example: On the **File** menu, click **New**.

Product Description	The HiPer Network Management Card (NMC) Network Application Card (NAC) manages all of the devices installed in the Total Control chassis. The NMC operates under the direction of management software running on a workstation known as the Management Station (MS).

Two protocols are used to implement management functions:

- A protocol between the NMC and the MS are known as Simple Network Management Protocol (SNMP)
- A protocol between the NMC and the managed devices are known as Management Bus Protocol (MBP).

Simple Network Management Protocol

The NMC communicates with the MS by way of the SNMP. The NMC acts as a proxy agent for other NACs in the chassis that are not running an SNMP agent directly.

The NMC receives requests from the MS. These requests are articulated by Management Information Bases (MIBs) and are defined for each device in the chassis. In this capacity, the NMC acts as a proxy agent for the other NACs in the chassis. The NMC then carries out the requests and obtains results using the proprietary 3Com MBP, and uses SNMP to return the results to the MS.

Management Bus Protocol

The NMC uses the 3Com proprietary MBP to communicate with the installed chassis devices. The NMC provides these functionalities within the chassis via MBP:

- NAC configuration management
- Automatic NAC configuration upon installation
- NAC configuration queries
- NAC software download upgrades
- Security and accounting management (RADIUS)
- Performance management
- Fault management

Product Compatibility

- The HiPer NMC NAC is compatible with the 10/100 Ethernet AUX I/O Network Interface Card (NIC).

2 INSTALLATION

This chapter contains HiPer Network Management Card (NMC) Network Application Card (NAC) installation information.

Installation Tools   To install this NAC in the Total Control chassis, you need a #2 Phillips and flat-head screwdriver.

Installation Procedure

To install this NAC:

ESD: *To reduce the risk of electrostatic discharge (ESD), take proper grounding precautions before handling the NAC.*

1 Install the Network Interface Card (NIC) corresponding to this NAC. Refer to the NIC's Getting Started Guide for more information.

2 Configure the NAC via the DIP switches.
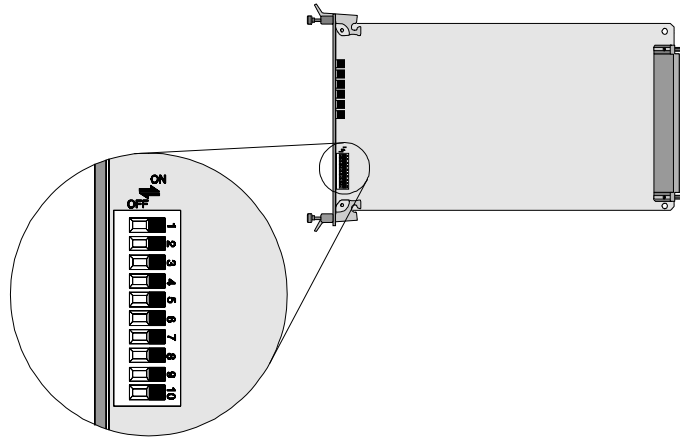
DIP Switch Number	Function		
1, 2	NMC NIC user interface (UI) port rate		
	DIP1	**DIP2**	**Selects**
	OFF	OFF	9600 bps
	OFF	ON	19200 bps
	ON	OFF	38400 bps
	ON	ON	57600 bps
3, 4	NMC NIC out-of-band management (WAN) port rate		
	DIP3	**DIP4**	**Selects**
	OFF	OFF	9600 bps
	OFF	ON	19200 bps
	ON	OFF	38400 bps
	ON	ON	57600 bps
5	**OFF -** On power-up, NMC reads the chassis configuration from NVRAM		
	ON - NMC boots from factory defaults		
6	SLIP over console port (UI) configuration/password enable.		
	OFF - Console port can be configured for SLIP operation.		
	ON - Console port (UI) configured for normal operation. Password can be enabled through the UI.		
7-10	Reserved for factory use only. Do not change setting.		

Install the NAC with or without power applied to the chassis.

3 Select a slot at the front of the Total Control chassis for installing the NAC.

Install this NAC in slot(s): 1–17

For managed chassis, slot 17 is reserved for the Network Management Card (NMC) NAC.
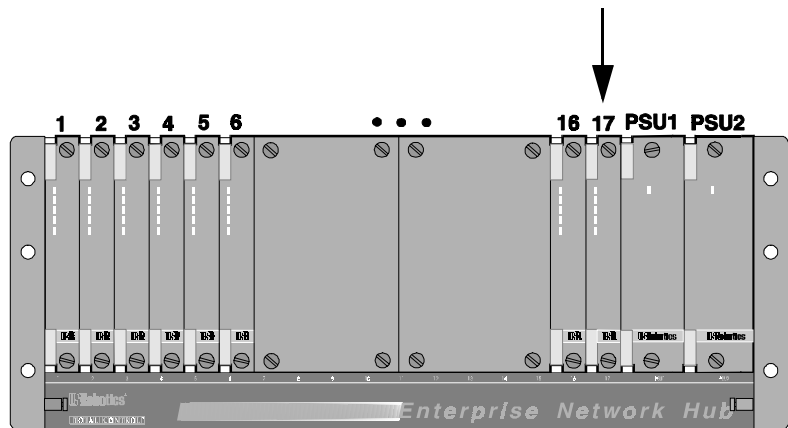
4 Use a #2 Phillips screwdriver to remove the safety panel covering this slot.
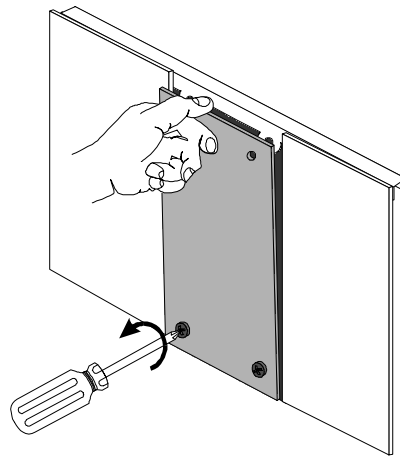
5 Insert the NAC between the slot's upper and lower card guides.
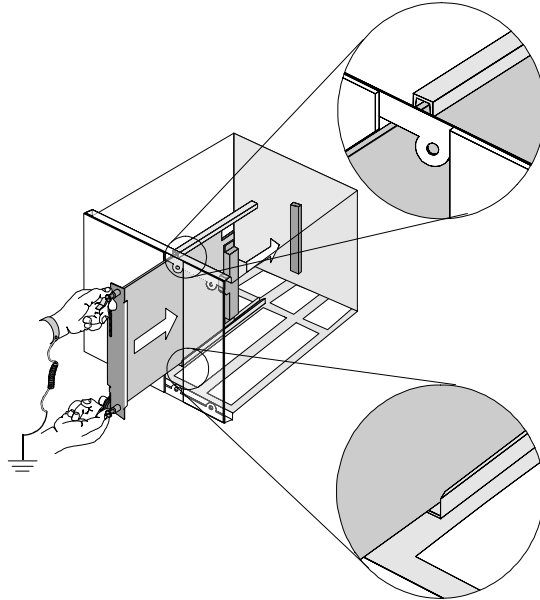
6 Holding the tabs perpendicular to the NAC's front panel, slide the NAC into the chassis, until the front of the NAC is flush with the chassis. Push the tabs toward each other to secure the NAC.
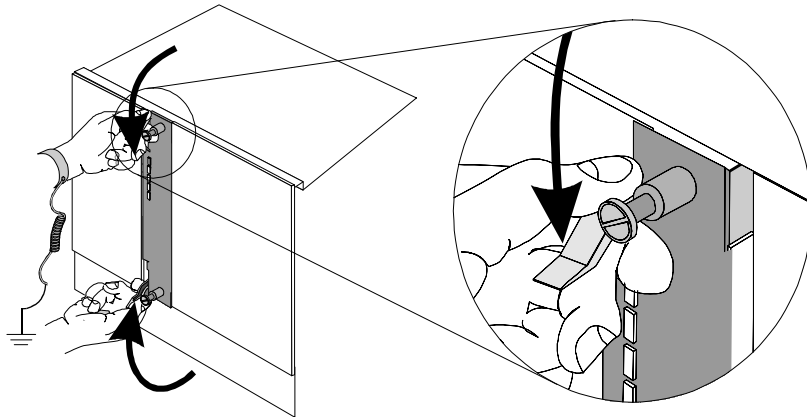
7 Use a flat-head screwdriver to tighten the screws on the front panel.
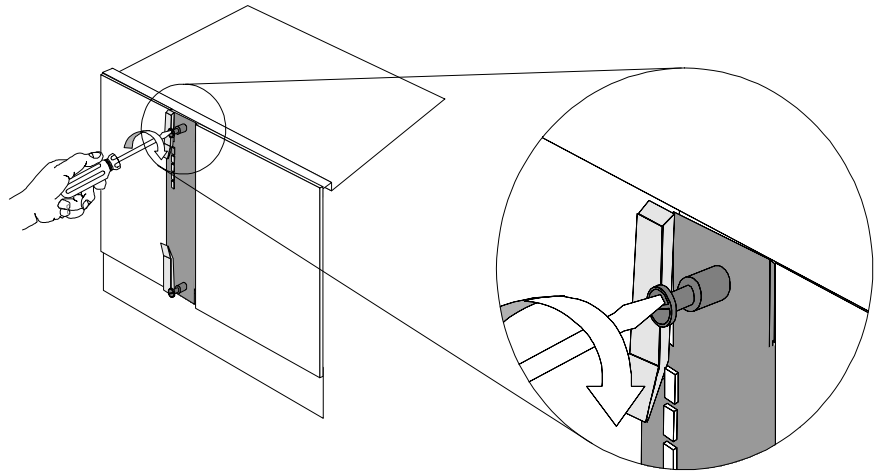
8 Cover any unused chassis slots with safety panels.

9 Apply power to the chassis, if power is not already applied.

10 After the NAC boots, verify that the RN/FL (run/fail) LED is green.
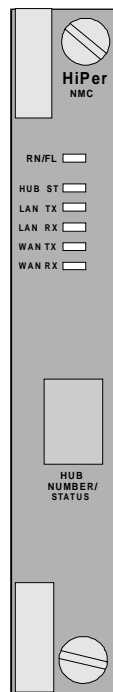
■ If the RN/FL LED does not light, or is solid red or flashing red, there is an error. Refer to the *Trouble Clearing* section for more information.

RN/FL LED

■ If the RN/FL LED is green, continue configuring the HiPer NMC NAC. Refer to the *Product Reference* for configuration information.

3 NETWORK MANAGEMENT CARD CONFIGURATION

This chapter provides the procedure for configuring the Network Management Card (NMC) Network Application Card (NAC) through the NMC Network Interface Card (NIC) RS–232 User Interface (UI) port.

i *Even if you plan to use the Total Control Manager SNMP software to manage the chassis, you must use the User Interface (UI) to complete initial NMC configuration.*

i *Changes made through the UI will not take effect until the NMC reboots.*

Values needed for initial configuration

To speed NMC configuration, obtain the values listed in this UI parameters table before starting configuration.

Parameter	Required Value	Default
LAN IP address		192.77.203.193
LAN subnet mask		255.255.255.192
WAN IP address		192.77.203.65
WAN subnet mask		255.255.255.192
Secondary WAN IP address		0.0.0.0
Secondary WAN subnet mask		255.255.255.192
Default gateway IP address		192.77.203.126

Before you configure the NMC through the UI

Make sure you have completed the following steps before you configure the NMC through the UI:

1 Configure and install the NMC NIC. Refer to the appropriate NIC *Getting Started Guide*.

2 Install the NMC NAC. Refer to the installation section of this guide.

3 Power up the chassis by turning the power switch to the on position.

4 If you are connecting locally, connect the cabling between the management station (MS) and the NMC NIC. Use the RS–232 cable and null modem adapter provided with the NMC NIC. Refer to the appropriate NIC *Getting Started Guide* for more information.
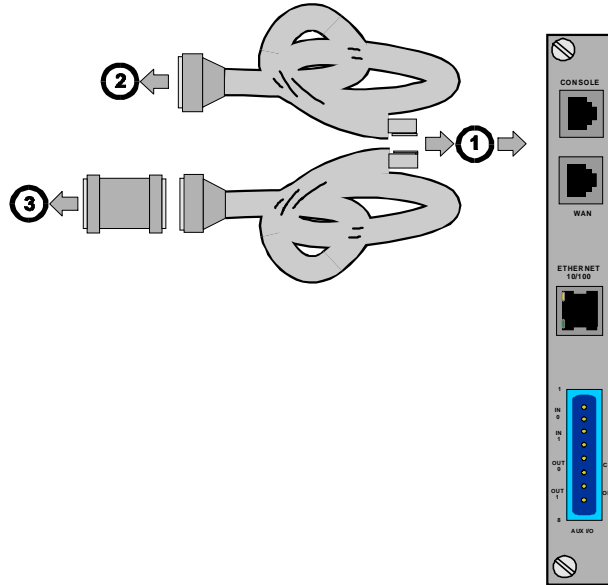
Callout Number	Description
1	RJ-45 connector to NIC's console port
2	DB-25 male connector to modem for remote operations
3	DB-25 female-to-female null modem adapter to PC or terminal COM port

Make sure the NMC NAC is configured to the same baud rate as the MS COM port. Refer to Chapter 2 in this manual for the correct settings. Setting the speed greater than 19.2 kbps is not recommended.

About saving configuration changes

No configuration changes will take effect until you save them to nonvolatile random access memory (NVRAM), and reset or reboot the NMC.

Dip switch 5 on the NMC NAC must be set to OFF to save changes to NVRAM. If you ever want to restore factory default settings, set DIP switch 5 to ON.

Configuring the initial NMC parameters	Initial NMC parameters are those values that are mandatory for communicating with the NMC. They include IP addresses and subnet masks.

Accessing the UI

1 Access the UI through a terminal emulation program.

2 Press **ENTER**. If prompted for a password, type your SNMP read-write community string password, then press **ENTER**.

```
U.S. Robotics

Network Management Card Revision 5.1.4
Boot Code Linked Date: Jun 14 1995 at 15:24:25
Operation Code Linked Date: Aug 12 1997 at 18:51:45

PASSWORD:
```

3 The **Main Menu** appears.

```
U.S. Robotics

Network Management Card Revision 5.1.4
Boot Code Linked Date: Jun 14 1995 at 15:24:25
Operation Code Linked Date: Aug 12 1997 at 18:51:45

Serial Number:BBU52TM0

Main Menu

1 Configuration
2 Command
3 Feature Enable

Enter menu selection and press Return.

Menu Selection (1-3): _
```

4 Type **1**, then press **ENTER** to access the Configuration menu.

```
Configuration

1 Local LAN IP Address
2 Local WAN IP Address
3 Local Gateway IP Address
4 Local Token Ring IEEE Address
5 Local SNMP Community Strings
6 Local LAN Enable/Disable on Power-up
7 RADIUS Secret Key
8 Reinitialize Authorized Access List
9 Save Configuration To Non-Volatile Memory
10 Enable/Disable Routing between LAN & WAN
11 UI/SLIP Port Selection
12 Local WAN2 IP Address
13 Local INACTIVITY TIME
14 PASSWORD Screen Enable/Disable

Enter menu selection and press Return or press Esc to exit.

Menu Selection (1-14): _
```

Assign the local IP address and subnet mask

1 Type **1**, then press **ENTER** to access the **Local LAN IP Address** menu.

2 Type **1**, then press **ENTER** to access the **LAN IP Address** menu.

3 Accept the **Current LAN IP Address** by pressing **ESC**.
or
Type the **New LAN IP Address**, then press **ENTER**.

4 Type **2**, then press **ENTER** to access the **LAN IP Subnet Mask** menu.

5 Accept the **Current LAN IP Subnet Mask** by pressing **ESC**.
or
Type the **New LAN IP Subnet Mask**, then press **ENTER**.

Configure the local gateway IP address

The NMC NIC uses the gateway Internet Protocol (IP) address to route data packets that are not destined for either the LAN or the WAN.

1 From the **Configuration** menu, type **3**, then press **ENTER** to access the **Local Gateway IP Address** menu.

2 Accept the **Current Local Gateway IP Address** by pressing **ESC**.
   or
   Type the **New Gateway IP Address**, then press **ENTER**.

Configuring the NMC NIC for Token Ring

Configure the local Token Ring IEEE address

Both Token Ring and Ethernet NICs have a unique IEEE address burned in at the factory. The Ethernet NIC IEEE address cannot be changed. You may change the IEEE address on Token Ring NICs to permit compatibility with some older Token Ring equipment. Typically, the IEEE address should not require a change.

1 From the **Configuration** menu, type **4**, then press **ENTER** to access the **Local Token Ring IEEE Address** menu.

2 Accept the **Physical Address** (default NIC address) by pressing **ESC**.
   or
   Type the **New Local Address**, then press **ENTER**.

If you change the local Token Ring IEEE address now and think that later you may want to change it back to the burned-in address, set the value to all zeros.

Configuring the LAN

Set the LAN enable/disable option to "disable" to allow the NMC card to be removed from the chassis without bringing down the network.

1 From the **Configuration** menu, type **6**, then press **ENTER** to access the **Local LAN Enable/Disable on Power-up** menu.

2 Accept the current setting by pressing **ESC**.
   or
   Type the **1** to enable or **2** to disable the LAN, then press **ESC** twice.

| **Saving the configuration to NVRAM** | Type **9** to access the to access the **Save Configuration to Non-Volatile Memory** menu, then press **ENTER** to save the LAN IP configuration to NVRAM |

i *You cannot save to NVRAM unless the local gateway IP address points to either the LAN or WAN port subnet. You will receive an error message if the IP address is not correct.*

Exiting the UI

1 After saving all changes to NVRAM, press **ESC** to exit the UI.

2 Reboot the NMC only if you changed the IP address or subnet mask. Reboot by partially removing the NAC and then reseating it.

3 Diconnect the RS–232 cable, or leave the port connected if you need to maintain a connection to the NMC.

Testing the IP connection

After completing basic configuration, perform a PING test to ensure you are communicating properly. Refer to Testing the IP Connection of the *Testing Installation* section for additional information.

4

TESTING YOUR INSTALLATION

This chapter includes information about testing the Network Management Card (NMC) installation. Refer to the *Trouble Clearing* section of the appendix and the *NMC Product Reference* for additional diagnostic and trouble clearing information.

Testing the IP connection

After completing basic configuration, perform a PING test to ensure you are communicating properly.

Perform a PING test

Type **PING [IP ADDRESS]** at the appropriate command prompt for your operating system. If you want to perform multiple PINGs, add the command line switch "-nX", where X indicates the number of times to repeat the PING. For example, this command will PING the NMC five times:

```
PING -n5 192.77.203.193
```

A successful PING response to this example will look like this:

```
Reply from 192.77.203.193: bytes=32 time<10ms TTL=32
Reply from 192.77.203.193: bytes=32 time<10ms TTL=32
Reply from 192.77.203.193: bytes=32 time<10ms TTL=32
Reply from 192.77.203.193: bytes=32 time<10ms TTL=32
Reply from 192.77.203.193: bytes=32 time<10ms TTL=32
```

If the PING does not respond

A response of "Request Timed Out" indicates a problem with the connection. Refer to *Trouble Clearing* section for more information.

A

TROUBLE CLEARING AND TECHNICAL SPECIFICATIONS

Trouble Clearing

This table provides HiPer Network Management Card (NMC) Network Application Card (NAC) trouble clearing information for problems occurring at power-up.

ℹ️ *At power-up, the LEDs will be solid red for a short time. This is a normal condition.*
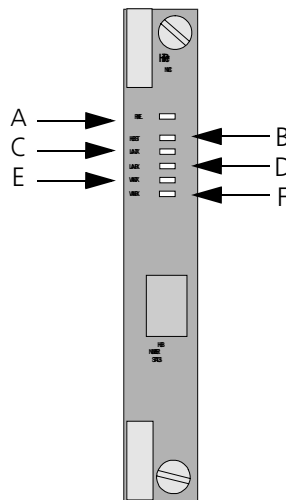
LED	Description	Status	Meaning
A	Run/Fail (RN/FL)	Solid green	Normal/diagnostics mode/boot-up self-test
		Solid red	Critical Failure
		Flashing red/green	Non-critical failure on initial power-up
		Flashing green	Testing or software download (required or in process). Also during boot-up sequence

LED	Description	Status	Meaning
B	Hub Status	Solid green	Chassis normal/diagnostics mode
		Solid red	Chassis critical failure
		Flashing red	Management bus failure with card in chassis
C	LAN TX	Green	NMC transmitting data on LAN port
		OFF	No data being transmitted on LAN port
D	LAN RX	Green	NMC receiving data on LAN port
		OFF	No data being received on LAN port
E	WAN TX	Green	NMC transmitting data on WAN port
		OFF	No data being transmitted on WAN port
F	WAN RX	Green	NMC receiving data on WAN port
		OFF	No data being received on WAN port

After power-up problems with the RN/FL LEDs

This table provides information on trouble clearing power-up problems with the HiPer NMC RN/FL LEDs.

At power-up, the LEDs will be solid red for a short time. This is a normal condition.

After power-up is complete, if the RN/FL LED is...	Then...	Take this action...
solid green	The condition is normal	No action required.
solid red	There is a critical failure	Remove and reinstall the NMC.
flashing red and green	There is no NIC installed behind the HiPer NMC NAC	Install the NIC. Refer to the appropriate *Getting Started Guide.*
		Note: If the NIC is installed after the NMC, reboot the NMC by removing and reseating the NMC card.
not lit	There is no power to the NAC	■ Make sure the NMC is installed properly.
		■ Make sure the chassis is powered on.
		■ Make sure power supply status LED is green.

When a PING does not respond

If a PING procedure does not respond, observe the LEDs on the NMC. If you are using a LAN connection, use the LAN RX and LAN TX LEDs. If you are using a SLIP connection, use the WAN RX and WAN TX LEDs.

Tx LED colors	Rx LED colors	Indicates
Flashing green	Flashing green	Normal - no failures
No LEDs lit	No LEDs lit	■ Bad physical connection. reinstall the NMC NAC. Refer to the *Installation section* of this guide. ■ **SLIP —** PC COM port may be addressed incorrectly ■ **LAN —** If you are using a NAC, the PC COM port may be addressed incorrectly
No LEDs lit	Flashing green	■ The PING may be reaching the NMC, but the IP address is incorrect. Be sure the IP address for the PING matches the address set within the NMC UI. ■ The baud rate may be incompatible ■ **SLIP —** You may be trying you use a baud rate greater than 19.2 kbps with a PC COM port that uses an 8250 UART. Use a 16550 UART for higher speed connections.

Critical failure debug procedure

Follow this procedure if you suspect a critical failure at start-up.

1 Pull the HiPer NMC NAC forward to unplug it from the midplane.

2 Reseat the card.

3 Check to see if the RN/FL LED becomes green. If reseating the NAC does not solve the problem, call 3Com Technical Support.

Technical Specifications

Certification

EMI/RFI	- FCC 15A - EN 55022A - AUSTEL, VCCI - EN 50082-1
SAFETY	- UL1950, C/UL - EN 60950

Regulatory Compliance Statements

United States

FCC Part 15 Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Processor

Pentium processor (P5) at 133 Mhz

Operational Memory

Dynamic Random Access Memory (DRAM):	16 Mbytes
Flash Read-Only Memory (Flash ROM):	8 Mbytes

Data Retention Method

Clock and CMOS retained by 3V microlithium cell.

Current Draw

+5.2 VDC @ 2.3mA typical maximum

i *Typical maximum refers to the maximum current draw under most typical configurations.*

Environment   **Shipping and Storage**

Temperature:	-25 to 75° C, -13 to 167° F
Humidity:	0 to 100%, Non-condensing

Operating

Temperature:	0 to 40° C, 32 to 104° F
Humidity:	0 to 95%, Non-condensing

Physical Dimensions

	Inches	Centimeters
Length:	12.95	32.89
Width:	0.79	2.00
Height:	6.90	17.53

3Com®

3Com Corporation
5400 Bayfront Plaza
P.O. Box 58145
Santa Clara, CA
95052-8145

Part No. 1.024.1324-01