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Electronic Private Automatic Branch Exchange and Business Communication Systems  
**Network Administration Center (NAC)**

Installation Guide

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## About this document

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This document details the steps and procedures required to successfully install the hardware and software for your Network Administration Center (NAC) Release 2 system.

### Terminology

The term “Meridian 1” is used throughout this document, and refers to Meridian 1 and Meridian 1-ready systems, such as Meridian 1 SL-1 style cabinets that have been upgraded.

### Conventions

The following conventions are used throughout the NAC document set:

#### **CALLS ANSWD**

Words in this type represent things that you see on your screen or on printed reports.

#### **{ENTER}**

Words or characters within brackets and capitalized represent a specific key on your keyboard. When two or more such keys appear side by side, you must press all of the keys simultaneously to achieve the desired effect.

Press {ENTER} or {CONTROL}{R} to begin the procedure.

#### **[Commands]**

Words within square brackets represent the generic name attached to a specific function key. For more information on the function key capabilities, please refer to the “The NAC workstation” chapter, “Function keys” section.

[Commands]

## Activity Code Report

Bold text represents specific text that must be typed on the keyboard. The {ENTER} key must always be pressed after typing and confirming text so the system can recognize that the user is ready to continue.

For example: Enter **10** to achieve the desired effect.

## Graph Title

Italicized text represents the name of a specific field on a screen or report.

For example: Move the cursor to the *Display Name* field.

## “Configuration Control”

Text in quotation marks represents references to other areas of a document.

For example: Refer to the “Profile Maintenance” chapter.

## NAC Supervisor’s User Guide

Italicized text represents references to other documents.

For example: Refer to *NAC Supervisor’s User Guide*.

## Other NAC documents

Additional information about NAC is contained in the following Northern Telecom documents:

- 553-4011-510 *NAC 2 System Administration and Maintenance Guide*
- P0724352 *NAC 2 Supervisor’s User Guide*

## Reference to other ACD documents

Other Northern Telecom ACD documents associated with NAC are listed below:

- P0802089 *Meridian MAX 6 Supervisor’s User Guide*
- P0802091 *Meridian MAX 6 Supervisor’s Reference Guide*
- 553-4001-111 *Meridian MAX 6 Installation Guide*
- 553-4001-811 *Meridian MAX 6 Maintenance and Diagnostics Guide*

- 553-4001-911 *Meridian MAX 6 Overview*
- 553-4001-210 *Meridian MAX 6 Installation Upgrade Guide for Meridian MAX 3, 4, 4.6 and 5 Systems*
- 553-4001-212 *Meridian MAX 6 Platform Upgrade Guide for ACD-MAX 3, 4 and ACD-D Systems*
- 553-4011-500 *NAC 1.0 Operation*
- 553-4011-800 *NAC 1.0 System Messages*
- P0734020 *NAC 1.0 Supervisor's User Guide*
- P0743664 *Meridian MAX 5 Supervisor's User Guide*
- P0743656 *Meridian MAX 5 Supervisor's Reference Guide*
- 553-4001-111 *Meridian MAX 5 Installation Guide*
- 553-4001-811 *Meridian MAX 5 Maintenance and Diagnostics Guide*
- 553-4001-911 *Meridian MAX 5 Overview*
- 553-4001-210 *Meridian MAX 5 Installation Upgrade Guide for Meridian MAX 3, 4 and 4.6 Systems*
- 553-4001-212 *Meridian MAX 5 Platform Upgrade Guide for ACD-MAX 3, 4 and ACD-D Systems*
- P0741145 *Meridian MAX - IPE 4.6 Supervisor's User Guide*
- 553-4001-024 *Meridian MAX - IPE 4.6 Master Index*
- 553-4001-121 *Meridian MAX - IPE 4.6 Installation*
- 553-4001-821 *Meridian MAX - IPE 4.6 Maintenance and Diagnostics*
- 553-4001-921 *Meridian MAX - IPE 4.6 Overview*
- 553-4001-004 *Meridian MAX 4 Master Index*
- 553-4001-111 *Meridian MAX 4 Installation*

- 553-4001-811 *Meridian MAX 4 Maintenance and Diagnostics*
- 553-4001-911 *Meridian MAX 4 Overview*
- P0737511 *Meridian MAX 4 Supervisor's User Guide*
- 553-4001-101 *Meridian MAX 3.4x Installation (NAC Appendix 1 Connectivity)*
- 553-4001-002 *Meridian MAX 3.3 Master Index*
- 553-4001-101 *Meridian MAX 3.3 Installation*
- 553-4001-501 *Meridian MAX 3.3 Operations*
- 553-4001-801 *Meridian MAX 3.3. System Messages*
- 553-4001-901 *Meridian MAX 3.3 Overview*
- P0730129 *Meridian MAX 3.3 Supervisor's User Guide*
- 553-2671-100 *ACD Basic Features Description (Package A)*
- 553-2671-101 *ACD Advanced Features Description (Package B)*
- 553-2671-103 *Load Management*
- 553-2671-104 *ACD-D General Description (Section 3 only)*

## Sample screens

All screen depictions assume that you are using the DEC VT420 video display terminal for supervisor displays, and an HP console for a maintenance display. If you are using a different VDT, you may notice a difference between the function key menu as it appears on your screens and the function key menu as it appears in this document. This is due to the different keyboards that can be used with the display terminal. Please refer to the "The NAC workstation" chapter for more information.

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# Introduction

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This document describes the procedures that must be carried out to correctly install the NAC 2 hardware and software. These procedures should only be carried out by trained personnel.

## Network Administration Center (NAC) overview

Network Administration Center (NAC) is a computerized system which allows organizations with multiple Meridian MAX sites, referred to as nodes, to monitor and supervise all sites from one central location.

NAC 2 runs on the application module (AM) platform. Refer to the “NAC hardware overview” section of this chapter for a list of the NAC hardware components. The AM resides in an Application Equipment Module (AEM). Refer to the “Application Equipment Module (AEM) hardware overview” section of this chapter for more information.

Meridian MAX is an automatic call distribution management system that runs with a Meridian 1 switch. Each Meridian MAX site must be equipped with Release 4.3x or Release 6.x or higher of Meridian MAX software. This software must include the Network ACD (NACD) and NAC Connectivity options.

The NAC 2 system allows a maximum of 38 supervisor workstations to monitor a maximum of ten Meridian MAX 4.3x and Meridian MAX 6.x or higher nodal systems. Supervisor workstations and the nodal systems can be located anywhere, provided the appropriate connections to the NAC are made.

## Installation responsibilities

The NAC 2 installation responsibilities fall upon two main groups: Northern Telecom, and Northern Telecom representatives or Meridian 1 distributors.

### Northern Telecom

The following installation procedures are performed by Northern Telecom.

- Procure the hardware and software required for this installation.
- Install the operating system and NAC application software (factory-installed software only).
- Ship the equipment and material to the NAC site.

### Northern Telecom representative or Meridian 1 distributor

The following installation procedures are performed by the Northern Telecom representative or the Meridian 1 distributor.

- Install the NAC, the printers, and the workstations.
- Install the modems and associated connections.
- Install the operating system and NAC application software, customer-installed only.
- Reinstall the operating system and the NAC application software (customer-installed only).
- Upgrade the NAC application software.
- Configure the NAC.
- Start the NAC.
- Install the database.
- Change the NAC system time.

## Application Equipment Module (AEM) hardware overview

For an Application Equipment Module (AEM) installation, please read and follow any instructions given in the following chapters of the document *Application Equipment Module Installation Guide* (NTP 553-3201-200).

- “Overview”
- “Installing a stand-alone AEM”
- “Adding an AEM to a column”

## Installation process overview

The NAC 2 installation process can be divided into hardware and software procedures.

### Hardware procedures

The following list provides an overview to the hardware procedures available in this document.

- Site layout
- Upgrading from a Vectra
- Installing the application module
- Installing the power supply
- Installing the mass storage unit (MSU)
- Assigning input/output ports
- Adding an MVME332XT card
- Replacing the MVME 167–34 single board computer card
- Configuring the MVME 167–34 card
- Cabling arrangements
- Configuring workstations
- Configuring printers
- Configuring modems

### Software procedures

The following list provides an overview to the software procedures available in this document.

- New installation: customer-installed software
- New installation: factory-installed software
- Reinstallation
- Installation upgrade
- Application upgrade
- Loading a new software release
- Switching from Training mode to Precutover mode
- Switching from Precutover mode to Product mode

- Changing the NAC system time

## **NAC installation checklist**

The “NAC installation checklist” chapter lists all of the steps to be followed while installing a new NAC 2 system. Each step should be performed only if all of the following conditions are met. Refer to the “NAC installation checklist” chapter for more detailed information.

- This document was read and understood fully by the personnel who are performing the step.
- All applicable preceding steps were completed and performed correctly.

## **NAC hardware overview**

NAC 2 runs on the application module (AM) platform and consists of the following components.

- MVME167–34 33MHz CPU card with 32 Mbyte of memory
- 1.2 Gbyte Seagate ST11200N hard drive
- 600 Mbyte Teac tape drive
- MVME332-XT boards (maximum of five)
- application module generic I/O panel

## **Software overview**

Please read and follow the instructions as given in the “Software installation overview” chapter of this document for your software installation requirements.

### **New installation**

The following is a list of the steps required to install software on a new NAC 2 system.

- 1 Ensure the NAC hardware is installed properly.
- 2 Install the operating system and the NAC application software (customer-installed software sites).
- 3 Start up the NAC system in Training Mode.
- 4 Train all users with the Training Mode.
- 5 Switch from Training Mode to Precutover Mode.
- 6 Set up the database while in Precutover Mode.

- 7 Switch from Precutover Mode to Product Mode.

## Installation upgrade

The following is a list of the steps required to perform a NAC 2 installation upgrade.

- 1 Back up the system database from your existing system.
- 2 Install the operating system and the NAC application software (customer-installed software).
- 3 Transfer the existing customer database to the NAC hard disk.
- 4 Start up the NAC system in Precutover Mode.
- 5 Adjust the database while in Precutover Mode.
- 6 Switch from Precutover Mode to Product Mode.

## System reliability

### Automatic backup

To minimize the loss of recent changes to the system's database in the event of a disk failure, database files are backed up to tape every midnight. If the cassette tape is not rotated daily, each time the midnight routine runs, the new backup overwrites the previous one. For this reason, several backup tapes should be used.

Data used by the NAC's displays and reports is stored in the Meridian MAX nodes that generated the original data. Historical data is backed up at the node, through the Meridian MAX automatic backup facility.

For more information on the Meridian MAX's capacity to store data, refer to either the *Meridian MAX 4 Installation Guide* (NTP 553-4001-111) or the *Meridian MAX 6 Installation Guide* (NTP 553-4001-111), depending upon the release of Meridian MAX software.

### Power failure

If a power failure occurs, NAC automatically reboots and initializes the application software as soon as power is reapplied.

### AC/DC supply

If you have the DC version of NAC you may have also acquired the battery backup option. This option allows you to connect your NAC to a battery. In the event of a power failure, such a system can be brought down safely

before the battery has discharged beyond its operable limit. The AC version of the NAC does not have this option.

### **Uninterrupted Power Supply (UPS)**

If an Uninterrupted Power Supply (UPS) is being used, in the event of a power failure, such a system should be backed up manually, then brought down safely before the battery has discharged beyond its operable limit. If the system is not backed up before the battery has discharged beyond its operable limit, your data for that day is lost.

## **Mean Time Between Failures (MTBF)**

The MTBF value calculated for a NAC application module is 10,500 hours at 40°C (104°F). Table 1-1 list the major components of the NAC application module and their MTBF values.

<b>Table 1-1 Mean Time Between Failures (MTBF) for NAC (at 40°C)</b>	
<b>Hardware</b>	<b>MTBF (hours)</b>
Motorola MVME167 single board computer	83,500
Motorola MVME712M transition board	300,000
Motorola MVME332XT intelligent serial interface card	83,500
Farnell NF350 (AC) power supply	72,000
Farnell ND300 (DC) power supply	72,000
Seagate ST11200N 1.2 Gbyte disk drive	200,000
TEAC MT-2ST/F50B-000 600 Mbyte cassette drive (at 15 minutes per-8 hour period)	34,400

## **Supported printers**

The following printers or 100% compatible models are supported for NAC 2.

- DEC LA195 (does not support international languages)
- HP PaintJet 3630
- HP LaserJet series II
- HP LaserJet series III
- HP LaserJet series 4

- HP LaserJet series 4 Plus
- HP DeskJet
- HP DeskJet 500
- HP DeskJet 560C
- HP RuggedWriter

Refer to the “Peripheral devices” chapter, “Printers” section for more information on configuring NAC printers.

## Supported workstations

The following workstations are supported for NAC 2.

- DEC VT220 or 100% compatible
- DEC VT420 or 100% compatible (North American model)
- DEC VT420 or 100% compatible (Worldwide model)
- HP 700/32 or 100% compatible
- IBM PC or 100% compatible with the following components:
  - AT-style or enhanced-style keyboard
  - 512 Kbytes of RAM
  - Paradise EGA or VGA card with 256 Kbytes of memory
  - one 5.25 inch floppy disk drive
  - two floppy disk drives or one floppy disk drive and hard disk (3.5 in. or 5.25 in. disk drives can be used)
  - serial communications port
  - PC-DOS/MS-DOS Version 5.0 or higher
  - Reflection 4+ software

Refer to the “Peripheral devices” chapter, “Workstations” section for more information on configuring NAC workstations.

## Supported modems

The following modems are supported for NAC 2.

- Gandalf 120E LDS
- Develcon DS 511A LDS

- NetComm SmartModem M7F
- Ven-Tel 2400 Plus II
- Ven-Tel 9600 Plus
- Racal VI2422PA
- UDS 2440

**Note:** Not all modems can be used for all functions. Refer to the “Peripheral devices” chapter, “Modems overview” section for more information.

## Site preparation

This chapter outlines the equipment requirements for your NAC 2 site.

### Power requirements

Table 2-1 lists the power requirements for all of the hardware components used in the NAC 2. Ensure that your site can provide the needed power to run all of the equipment you require.

<b>Table 2-1 NAC 2 power requirements</b>			
<b>Hardware</b>	<b>Voltage</b>	<b>Frequency</b>	<b>Power</b>
NAC 2 Application Module (AC)	220–240 VAC	50–60 Hz	142W
NAC 2 Application Module (DC)	–48 V	n/a	142W
DEC VT420 or 100% compatible terminal (North American or Worldwide models)	100–240 VAC	50–60 Hz	35W
DEC VT220 or 100% compatible terminal	100–240 VAC	50–60 Hz	35W
Gandalf LDS 120E	110–120 VAC	60 Hz	5 W
—continued—			

<b>Table 2-1 (continued)</b>			
<b>NAC 2 power requirements</b>			
<b>Hardware</b>	<b>Voltage</b>	<b>Frequency</b>	<b>Power</b>
Develcon DS511A	115 VAC	60 Hz	2 W
NetComm SmartModem M7F	15 VAC	50-60 Hz	5 W
UDS 2440 modem	115 VAC	60 Hz	14 W
Ven-Tel 2400 Plus II and 9600 Plus II modems	90–130 VAC	50/60 Hz	10 W
Racal VI2422PA modem	240, 220 or 115 VAC	47–63 Hz	7 W
RuggedWriter printer	100, 120, 220, 240 VAC (+/-10%) (user-selectable)	47.5–63 Hz	20 W Idle max. 80W Printing max.
LaserJet II, LaserJet III and LaserJet 4 printers	100, 115, 220, 240 VAC(+/-10%) (user-selectable)	48–62 Hz	170 W (115V) Idle max. 870 W (115V) Printing max.
LaserJet 4 Plus	100-127 VAC or 220-240 VAC	48–62 Hz	300 W
PaintJet 3630 printer	100, 120, 220, 240 VAC (+/-1096) (user-selectable)	48–66 Hz	20 W
DeskJet printer	100, 120, 220, 240 VAC (+/-1096) (user-selectable)	47.5–63 Hz	8 W (120V) Idle max. 25 W (120V) Printing max.
DeskJet 500 printer	120 VAC	50-60 Hz	25 W
DeskJet 560C printer	100, 120, 220, 240 VAC (+/-1096) (user-selectable)	50-60 Hz	25 W
DEC LA195 (Epson-mode only)	95-132 VAC	47-63 Hz	33 W
—end—			

## Environmental requirements

Ensure that your site can maintain the required environmental conditions for the NAC 2 hardware before beginning the installation procedures. The following list details the environmental requirements for NAC 2 hardware.

- Operating temperature between 10°C–40°C (50°F–104°F)
- Non-operating temperature between –10°C–60°C (14°F–140°F)
- Changes in temperature less than 20°C/hour (68°F/hour)
- Operating humidity between 20%–80% (non-condensing)
- Non-operating humidity between 20%–80% (non-condensing)
- Operating altitude between 0–3.24 km (0–10,000 ft)

**Note:** The front and back panels of the Application Equipment Module (AEM) must be closed and latched at all times. This action ensures that the temperature within the Meridian column remains reasonably constant and within the operating temperatures of the equipment.

## Site layout

Each site has different restrictions and requirements for the layout of the hardware. This section identifies some of the factors to take into account when laying out the NAC site.

Consider the following factors when planning your site. The exact details for your site's layout depend entirely on your specific requirements and restrictions. You may choose to discuss these and other factors with your distributor or Northern Telecom representative before installing the hardware.



### **NOTICE**

**RS-232 cables that directly connect peripherals to the NAC 2 must not exceed 15 meters (50 feet).**

This length is based on an EIA RS-232C standard. Peripherals can be farther away if limited-distance self-powered (own power supply), or dial-up modems are used.

## Supervisor location

Network supervisors who must use common resources (such as catalogues or inventory listings) should be placed close to the resources they require.

## Printer location

Locate the printers in conveniently accessible areas so that the network supervisors can obtain their reports. You may consider placing one printer near the network administrator and another printer near the NAC 2. Remember that the maximum range for the printer cable is 15 meters (50 feet). Use self-powering, limited distance modems to extend this range, if necessary. Refer to the "Peripheral devices" chapter, "Limited distance modems" section for more information.

## Static electricity precautions

Ensure that the appropriate precautions are taken against the discharge of static electricity. Static electricity can seriously affect any computerized system.

## System capacities

Below are the maximum limits within which the NAC 2 system works. If you exceed these limitations, unpredictable consequences may result.

- 10 Meridian MAX 4.3 and/or Meridian MAX 6.x or higher nodes defined and connected to the NAC 2
- 160 network ACD-DN or CDN queues defined and monitored by the NAC 2 (average 16 per node)
- 80 Network Supervisors/Network Administrators IDs defined within the NAC 2. Only 38 can be logged into the system simultaneously.
- 10 remote supervisor login positions defined within NAC 2

Table 2-2 lists the maximum number of network links, remote logins, workstations and printers that can be defined on a NAC 2 system. Their combined total cannot exceed the number of ports available.

For example, you have a 24-port NAC 2 system with four Meridian MAX nodes and you want to define 15 supervisors workstations on the system. Four ports are required for the network links and one port is required for each of the 15 supervisor workstations. The total number of ports used at this point is 19. This leaves five ports available to define printers. This configuration would use all 24 of your available ports. If you decide to define a remote login for two of your Meridian MAX nodes, the number of ports available for supervisors and printers would decrease.

**Note:** One network link, one supervisor workstation, and one printer must be defined on your NAC 2 system at all times regardless of the system configuration. A remote login can be defined if needed but there is no minimum requirement.

<b>Table 2-2 NAC 2 system maximums</b>					
<b>Hardware device</b>	<b>Maximum</b>				
	<b>8 I/O ports</b>	<b>16 I/O ports</b>	<b>24 I/O ports</b>	<b>32 I/O ports</b>	<b>40 I/O ports</b>
Network Links	6	10	10	10	10
Remote Logins	5	10	10	10	10
Workstations	6	14	22	30	38
Printers	6	14	22	30	38

## Printer capacities

Table 2-3 lists the print speed and the recommended maximum monthly usage values for each of the printers supported by NAC 2.

<b>Table 2-3 Printer capacities</b>		
<b>Printer</b>	<b># of pages (per minute)</b>	<b># of pages (per month)</b>
RuggedWriter	3	5000
PaintJet 3630	2	1500
LaserJet II	8	5000
LaserJet III	8	16,000
LaserJet 4	8	20,000
LaserJet 4 Plus	8	20,000
DeskJet	3	1000
DeskJet 500	3	1000
DeskJet 560C	3	1000
DEC LA195 (Epson-mode only)	2	1000

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## Hardware installation

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This chapter provides information and instructions on installing your NAC 2 system hardware.

### A word about warranties

Read and understand the warranties issued for your NAC hardware and software. Each warranty details what you can and cannot do with the item warranted.

While care has been taken to ensure that the procedures described in this NTP do not void any of the warranties, it is still possible for an instruction to be in conflict with a warranty, such as a warranty change after the publication of this NTP. If you find such a condition, contact your dealer or Northern Telecom service representative.

**CAUTION****Understand your warranty**

Under no circumstances should you void your warranty for the sake of following any instruction given in this (or any other) document.

Be sure to register your warranties with the appropriate companies (usually the manufacturers) where required.

## Hardware overview



### **DANGER**

**Power down the application module before attempting any installations or upgrades.**

If installing or upgrading an application module (AM) in an existing Application Equipment Module (AEM), ensure the AM is powered down before beginning an installation or upgrade. Failure to power down the AM may cause unpredictable results.

If your upgrade is performed on an existing system, follow the instructions contained in the “NAC power-down procedure” chapter.

## Required equipment and materials

Table 3-1 lists the equipment and materials required for a NAC installation.

<b>Table 3-1 NAC installation equipment and material list</b>	
<b>Equipment</b>	<b>Contents</b>
NAC with console	Motorola MVME712M transition card Motorola NT6D51AA transition card (maximum of 5) Motorola P2 adapter board 1.2 Gbyte Seagate ST11200N hard disk drive 600 Mbyte Teac MT-2ST/F5OB-413 cassette drive Motorola MVME167-34 single board computer with: 33 MHz M68040 CPU 32 Mbyte DRAM M68882 math coprocessor 4 RS-232C communication ports SCSI bus interface with DMA Motorola MVME332XT eight-channel asynchronous I/O board (maximum of 5) Mass storage unit (MSU) containing disk and tape drives AC or DC power supply
Cables	3 Multiport assemblies (NT8D96AE) for each MVME332XT Asynchronous Communication controller External input/output cables (refer to the "Cables" section for more details)
—continued—	

<b>Table 3-1 (continued)</b> <b>NAC installation's equipment and material list</b>	
<b>Equipment</b>	<b>Contents</b>
Workstations (any combination)	VDT-type (DEC VT420, DEC VT220 or HP700/32 or terminals which are 100% compatible) IBM PC AT, PS/2, or 100% compatible
Reports Printer (any combination)	HP RuggedWriter printer HP LaserJet series II printer HP LaserJet series III printer HP LaserJet series 4 printer HP LaserJet series 4 Plus printer HP PaintJet 3630 printer HP DeskJet printer HP DeskJet 500 printer HP DeskJet 560C printer (with serial-parallel converter) DEC LA195 (Epson-mode only) printer
Modems	NetComm SmartModem M7F Gandalf LDS 120E Develcon DS511A Ven-Tel 2400 Plus II Ven-Tel 9600 Plus Racal VI2422PA UDS 2440
Software	NAC 2 Application Software (1 cassette) Motorola UNIX Operating System SYSV68 (1 cassette) Reflection 4+ version 3.0 (or higher) for DOS if using personal computers as workstations (customer provided)
—continued—	

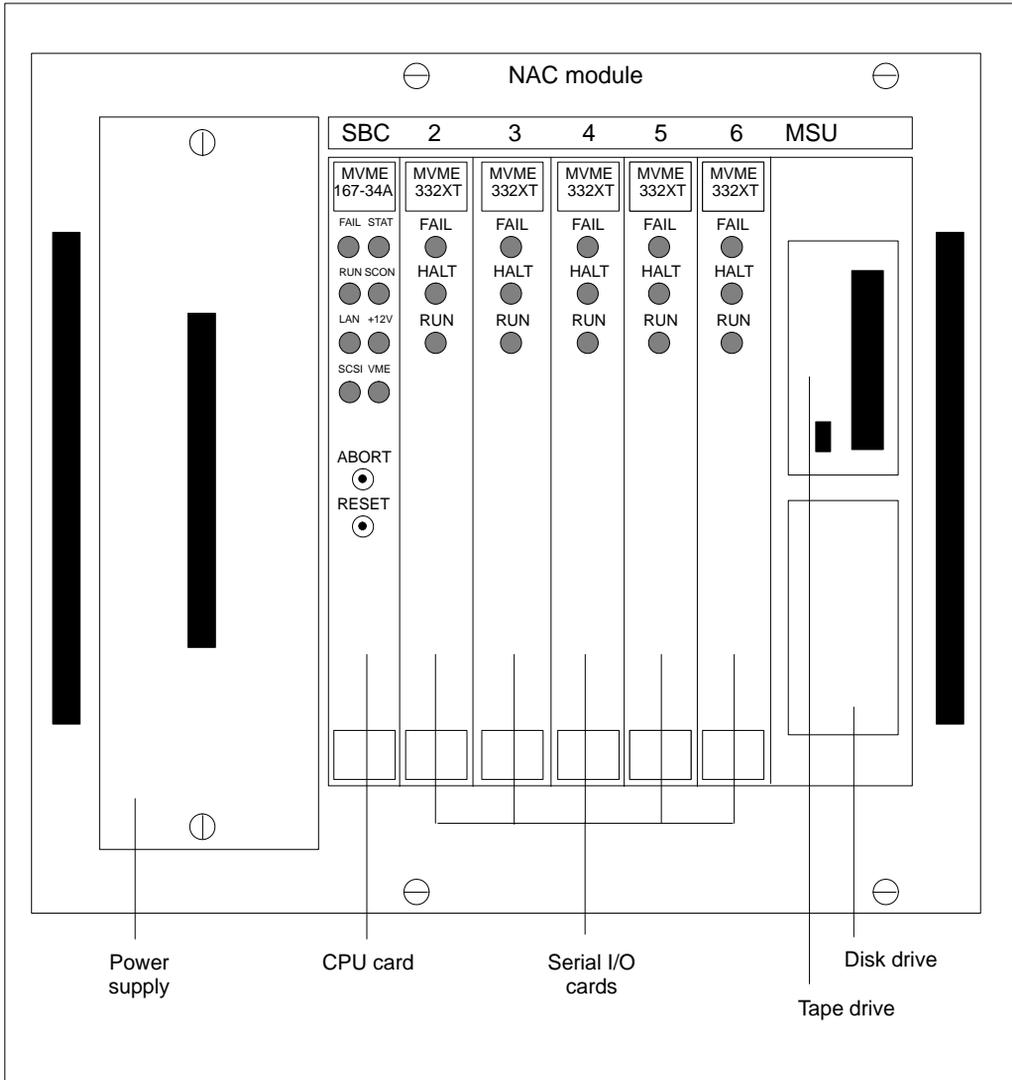
**Table 3-1 (continued)**  
**NAC installation's equipment and material list**

Equipment	Contents
Documentation	P0724352 <i>NAC 2 Supervisor's User Guide</i> P0802089 <i>Meridian MAX 6 Supervisor's User Guide</i> P0802091 <i>Meridian MAX 6 Supervisor's Reference Guide</i> P0737511 <i>Meridian MAX 4.0 Supervisor's User Guide</i> Set of Northern Telecom publications: 553-4011-110 <i>NAC 2 Installation Guide</i> 553-4011-510 <i>NAC 2 System Administration and Maintenance Guide</i>  553-4001-111 <i>Meridian MAX 6 Installation Guide</i> 553-4001-811 <i>Meridian MAX 6 Maintenance and Diagnostics Guide</i> 553-4001-911 <i>Meridian MAX 6 Overview Guide</i>  553-4001-004 <i>Meridian MAX 4.0 Master Index</i> 553-4001-111 <i>Meridian MAX 4.0 Installation</i> 553-4001-511 <i>Meridian MAX 4.0 Operations</i> 553-4001-811 <i>Meridian MAX 4.0 System Messages</i> 553-4001-911 <i>Meridian MAX 4.0 Overview</i>
Miscellaneous equipment	Serial-parallel converter for printers (A0621070) HP C2809A 9- to 25-pin converter
Supplies	Minimum of 3 blank 600 Mbyte cassette tape (A0605411)
—end—	

## Application module (AM)

Figure 3-1 shows the front view of NAC application module (AM). NAC can have one to five MVME332XT eight-channel asynchronous boards.

**Figure 3-1**  
**NAC 2 application module (AM)**



## Upgrading from NAC 1 on the HP Vectra

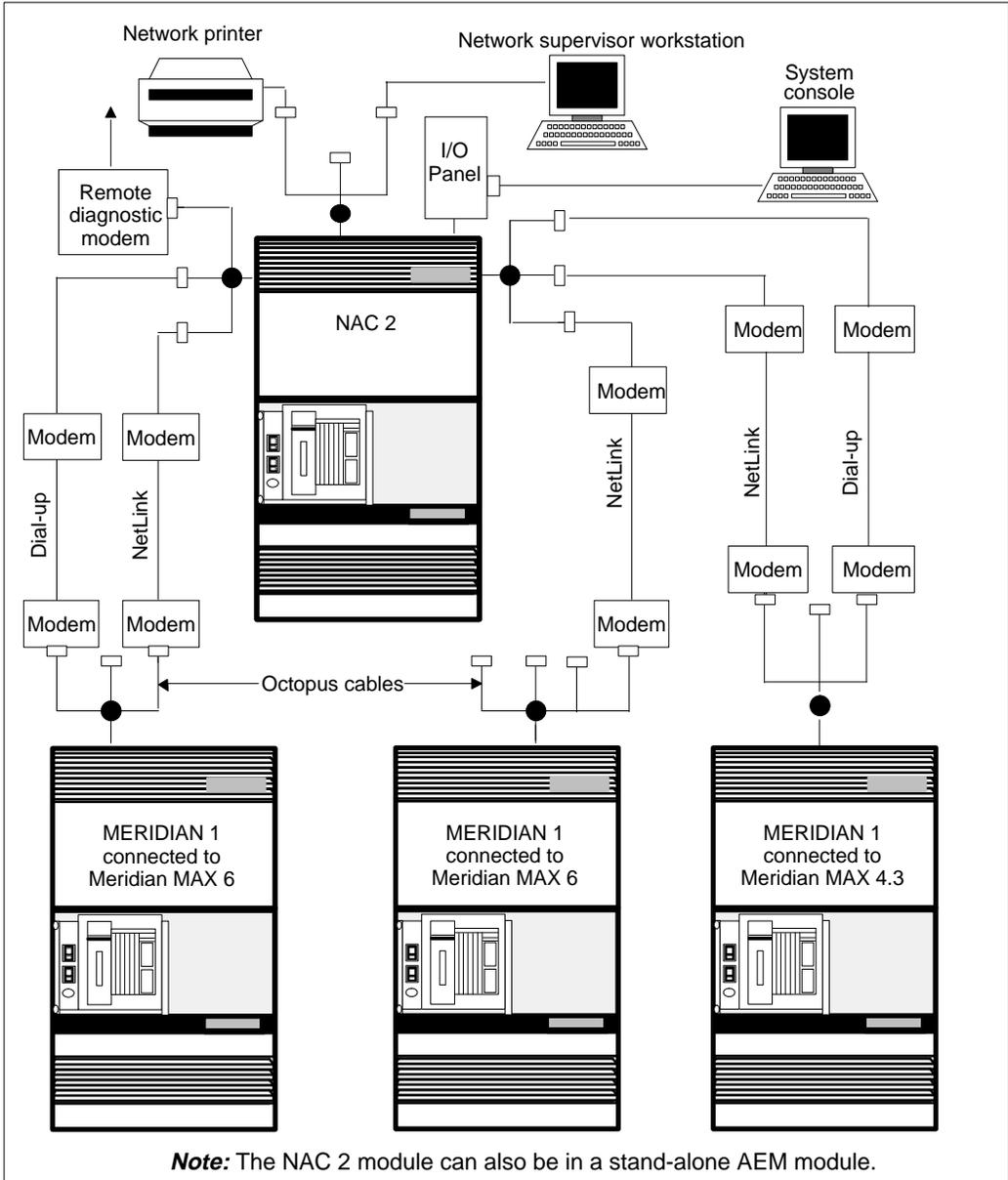
For system upgrades from NAC 1 on the HP Vectra platform to NAC 2 on the AM, an external SCSI port is provided. This port is used to connect an Archive 150 Mbyte tape drive for data downloading via a standard cartridge. The external SCSI terminator at the rear of the AM is removed to connect the external tape drive.

The AM must be shut down prior to connecting the external tape drive. After the downloading is complete, and the external tape drive is removed, the external SCSI device must be terminated using the external SCSI terminator.

## NAC connectivity overview

Figure 3-2 shows a simplified overview of the network connectivity between a NAC and its various Meridian MAX nodes. Your site's layout may be different.

**Figure 3-2**  
**NAC connectivity overview**



## MVME167-34 single board computer card

The 32 Mbyte and 33 MHz MVME167-34 single board computer (SBC) card is the central processing unit of the NAC system. It is based on the MC68040 microprocessor.

Eight light-emitting diodes (LEDs) and two buttons are located on the front of the MVME167-34 card. The types of LEDs and their locations for both cards are shown in Figure 3-3.

The LEDs show the following conditions:

- **FAIL:** This red LED lights when a hardware failure has occurred on the CPU card. The LED also lights for a 7 to 10 minute duration when the MVME167 card's on-board diagnostics is enabled during bootup.
- **STAT/STATUS:** This yellow LED lights continuously, indicating a halt condition from the card processor.
- **RUN:** This green LED lights almost continuously but flickers when the system processor has stopped.
- **SCON:** This green LED lights continuously when the MVME167 card is the VMEbus system controller.
- **LAN:** This green LED lights continuously when the MVME167 card's LAN microchip is the local bus master.

*Note:* As of the printing of this document, NAC 2 does not support LAN.

- **+12V:** This green LED lights continuously when the MVME167 card is supplying +12V LAN power to the transceiver interface.
- **SCSI (Small Computer System Interface):** Heavy communication between devices is indicated by a solid light, while a flickering light indicates less data movement.
- **VME:** This green LED lights when the MVME167 card is accessing or being accessed by the VMEbus.



**WARNING**

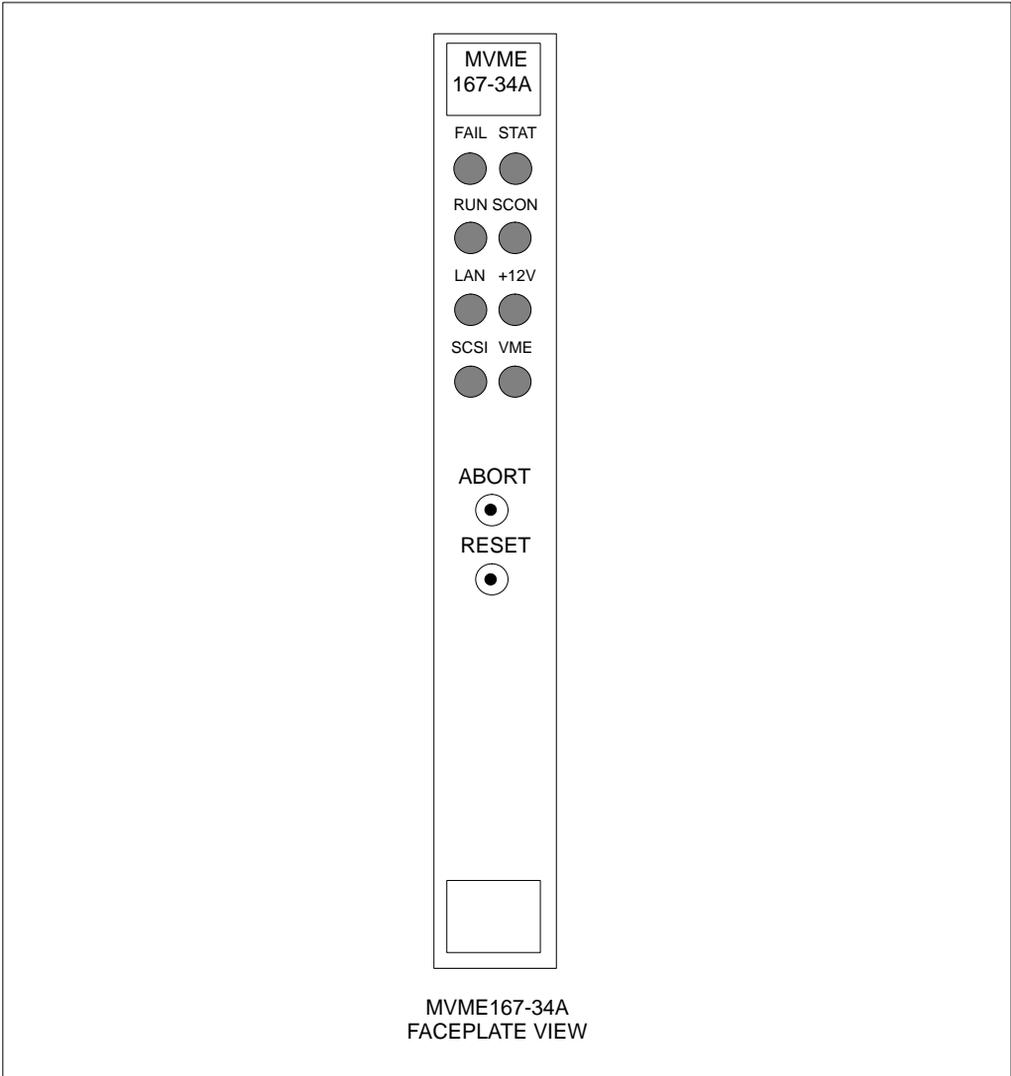
**Abort and reset buttons**

DO NOT PRESS the abort or reset button while applications are running. Shut down the system software before pressing the abort or reset buttons. This information is provided in the “NAC power-down procedure” chapter.

The buttons produce the following conditions and should not be pressed unless under the direction of Northern Telecom support personnel:

- **ABORT:** This button halts the NAC system.
- **RESET:** This button reinitializes the NAC system. The system performs a self test and then reboots.

**Figure 3-3**  
**LED locations for MVME167-34 card**



## Transition cards

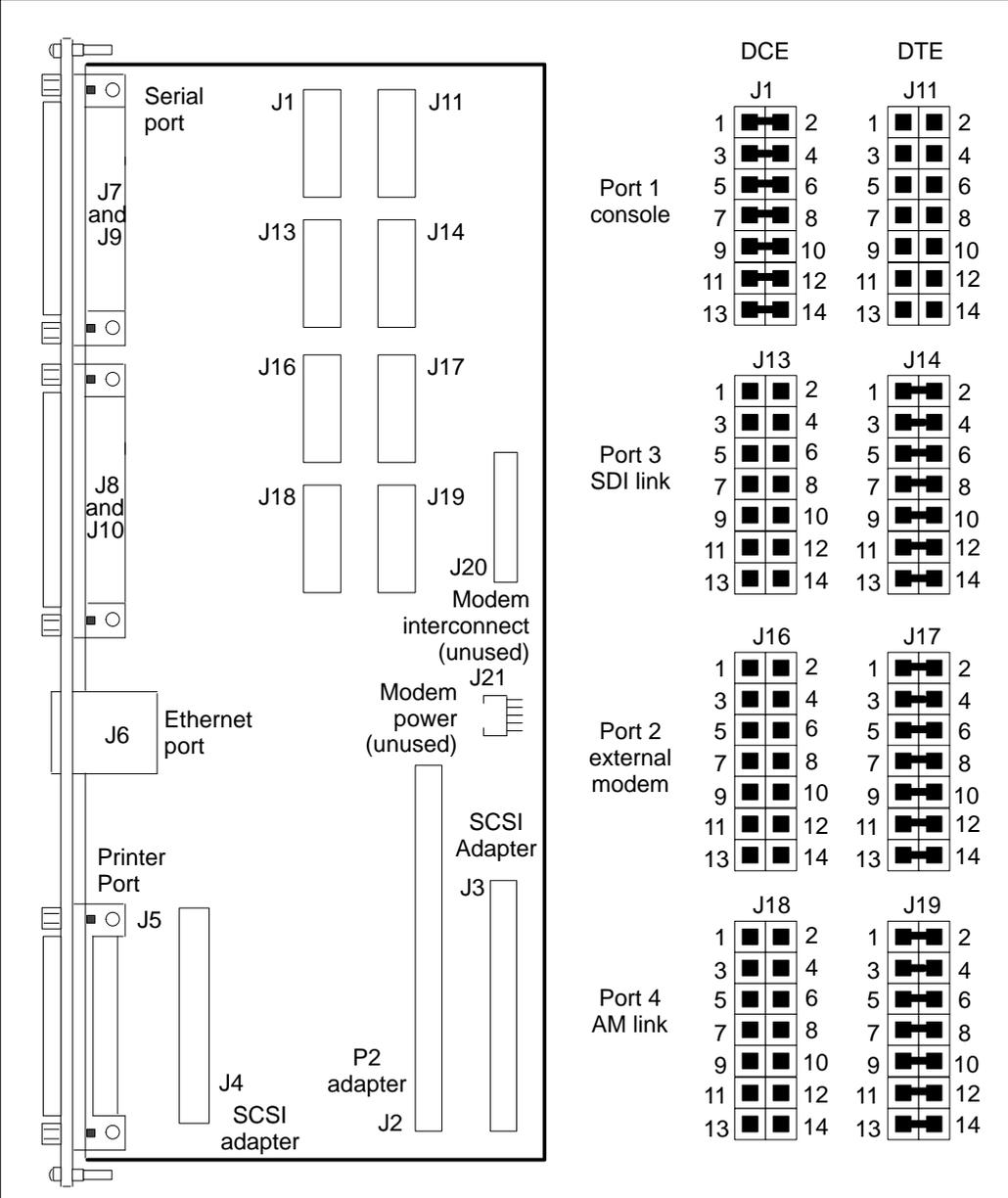
### **MVME712M**

The MVME712M transition card is used as the interface between MVME167 family modules and the interconnect cables that attach to the I/O panel of the NAC. The features of the MVME712M card are one independent printer port and four 25-pin multiprotocol RS-232 serial ports. These four serial ports can be configured as asynchronous but two of the ports can also be configured as synchronous ports as well. Figure 3-4 shows the default switch settings for this card.

### **NT6D51AA**

The NT6D51AA transition card is used as the interface between the MVME332XT serial I/O cards and the interconnect cables that attach to the I/O panel of the NAC. The features of the NT6D51AA card are three 25-pin connectors that provide eight ports for connection to peripheral devices.

**Figure 3-4**  
**MVME712M transition card showing jumper switch settings**



## MVME332XT eight-channel asynchronous board

The MVME332XT eight-channel asynchronous board connects the NAC module with all external devices via the NT6D51AA transition card, interconnect and external cables. Each MVME332XT eight-channel asynchronous board can communicate with a maximum of eight devices.

Five different NAC 2 configurations exist for the MVME332XT board:

- NAC module with one MVME332XT board (8 ports)
- NAC module with two MVME332XT boards (16 ports)
- NAC module with three MVME332XT boards (24 ports)
- NAC module with four MVME332XT boards (32 ports)
- NAC module with five MVME332XT boards (40 ports)

Each board in a NAC module has two banks of switches: a bank of eight and a bank of four. The set of eight switches has a unique setting for each card.. Table 3-2 shows the settings for this bank of switches.

For the bank of four switches, the settings on all cards are the same: 1 and 2 are off, and 3 and 4 are on.

Refer to Figure 3-5 for the switch set locations on the MVME332XT board.

<b>Table 3-2 MVME332XT eight-channel asynchronous board's eight-switch bank settings</b>								
<b>Card</b>	<b>Switch Setting</b>							
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>1</b>	ON	OFF	OFF	OFF	OFF	ON	ON	ON
<b>2</b>	ON	OFF	OFF	OFF	OFF	ON	ON	OFF
<b>3</b>	ON	OFF	OFF	OFF	OFF	ON	OFF	ON
<b>4</b>	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
<b>5</b>	ON	OFF	OFF	OFF	OFF	OFF	ON	ON

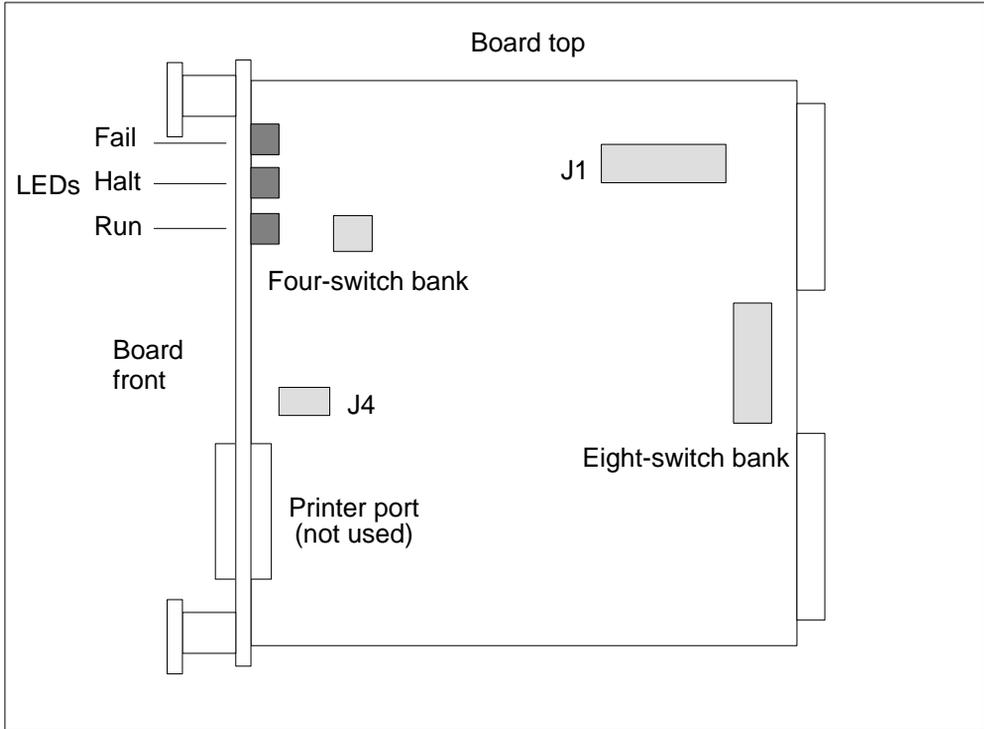
Use jumpers to connect the following pins.

- On J1: 1 to 2, 5 to 6, 7 to 9, 8 to 10, 11 to 12, and 15 to 17
- On J4, jumper 1 to 2

Three light-emitting diodes (LEDs) are located on the faceplate of the MVME332XT eight-channel asynchronous board. The LEDs show the following conditions.

- FAIL indicator: This red LED lights when a hardware failure has occurred on the card.
- HALT indicator: This yellow LED lights steadily when the processor has stopped.
- RUN indicator: This green LED lights almost continuously but flickers every few seconds when applications are running normally.

**Figure 3-5**  
**MVME332XT eight-channel asynchronous board**



## NAC application module installation

Once you have obtained your NAC system you must install the application module into your Application Equipment Module (AEM). The MVME167-34 card and MVME332XT eight-channel asynchronous boards are already installed in the application module. The power supply and mass storage unit (MSU) must then be installed in the application module.

If your NAC system was shipped already installed in the Application Equipment Module (AEM) most of the application module is already assembled. The MVME167-34 card and MVME332XT boards, power supply and mass storage unit (MSU) need to be installed.

Make sure the internal, interconnect, and external input/output cables are connected as described in the “Cables” section of this chapter.

### Installing the application module

This procedure details instructions on installing the NAC 2 application module as well as the MVME167-34 card and MVME332XT boards.

- 1 Ensure the circuit breaker (CB) of the module in which you are installing the power supply is in the off position.
- 2 Remove the front panel covering the AM cage.  
*Loosen the four screws at the front panel of the AM cage and pull the panel and attached cage away from the AEM.*
- 3 Install the new NAC application module into the AEM.  
*Align the AM with the guides at the top and bottom of the AM cage of the AEM and slowly slide the AM into the AEM. Be careful to make sure the cables and I/O panel are drawn through to the rear of the AEM as the AM is being inserted. Tighten the four screws at the front of the AM.*
- 4 Connect the I/O panel to the I/O panel section at the rear of the AEM.  
*Line up the eight screw holes of the I/O panel with the eight screw holes on the frame of the AEM. Connect the I/O panel to the AEM using the eight screws.*
- 5 Connect the NT7D55AD power cable at the rear of the AEM.  
*At the back of the column, locate the power cable running from socket J8. Connect this cable to the P3 or P4 socket, which can be found behind a metal plate behind the shelf's main power circuit breakers. The first module's power cable connects to the P3 socket and the second module's power cable connects to the P4 socket.*

- 6** Connect the NT7D52AA power sensor cable at the rear of the AEM.

*Locate the power sensor cable (two thin wires, yellow and grey, with a small plug at the end). Connect the plug to the power monitor located at the base of the AEM, between the two application modules.*

*It may be necessary to temporarily disconnect the cable NT8D46AC and the PDU cable to make it easier to locate the correct socket for connecting the power sensor cable. Make sure that you restore these cables to their original sockets after you have plugged in the power sensor cable.*
- 7** Connect the ground wire to the terminal block.

*The orange ground wire connects to the terminal block, located at the base of the AEM between the two application modules, using a lug connector.*
- 8** Install the application module power supply.

*Refer to the "Installing the power supply" subsection for instructions.*
- 9** Install the NAC system mass storage unit (MSU).

*Refer to the "Installing the mass storage unit (MSU)" subsection for instructions.*
- 10** Your MVME332XT boards may come already installed in the system. You should verify the switch settings of each MVME332XT board.

*Refer to the "Hardware upgrades and replacements" section, "Adding MVME332XT eight-channel asynchronous boards" subsection for more information on the removal and installation of MVME332XT boards.*

*Refer to the "MVME332XT eight-channel asynchronous board" section of this chapter for switch setting information.*
- 11** You may install additional MVME332XT boards into your NAC system.

*Refer to the "Hardware upgrades and replacements" section, "Adding MVME332XT eight-channel asynchronous boards" subsection for more information on the installation of MVME332XT boards.*
- 12** Connect your system console to the NAC using an NT7D61Ax cable.

*The DB-25 end connects to the workstation and the DB-9 end connects to the SYS CONS port on the I/O panel located at the rear of the Application Equipment module (AEM).*
- 13** Configure the system console.

*Refer to the "Peripheral devices" chapter, "Workstations" section, "Workstation configuration" subsection for more information on configuring the system console.*

- 14 Configure the MVME167 card.  
*Refer to the "Configuring the MVME167-34 card" section for instructions to configure the MVME167 card.*
- 15 Install the NAC system software.  
*Refer to the "New software installations" chapter for information on software installation.*
- 16 Connect all external cables to the new I/O panel.  
*Refer to the "Cables" section for information on external cable connections.*

## Installing the power supply

The power for your NAC 2 application module is supplied by either an AC or DC power supply unit.

- 1 Ensure the circuit breaker (CB) of the module in which you are installing the power supply is in the off position.
- 2 Install the application module power supply. (If you have replaced a previous system, use the power supply from that system).
- 3 Gripping the handle at the front of the power supply faceplate, line up the power supply with the guides at the top and bottom of the power supply slot of the AM.
- 4 Slowly slide the power supply into the AM until the faceplate is flush with the front of the AM.
- 5 Tighten the two screws located at the top and bottom of the power supply faceplate.

## Installing the mass storage unit (MSU)

Your NAC 2 mass storage unit (MSU) contains the system disk and tape drives.

- 1 Ensure the circuit breaker (CB) of the module in which you are installing the power supply is in the off position.
- 2 Install the NAC system mass storage unit (MSU).
- 3 Carefully align the unit with the guides at the top and bottom of the AM.
- 4 Slide the unit into the card cage until the faceplate is flush with the front of the AM.  
*If you are uncertain as to whether the MSU is in as far as it will go, simultaneously press up on the top latch and down on the bottom latch. If the card pops forward slightly, then the card was in as far as it could go.*
- 5 Tighten the two screws at the top and bottom of the MSU faceplate.

## **NAC application module label**

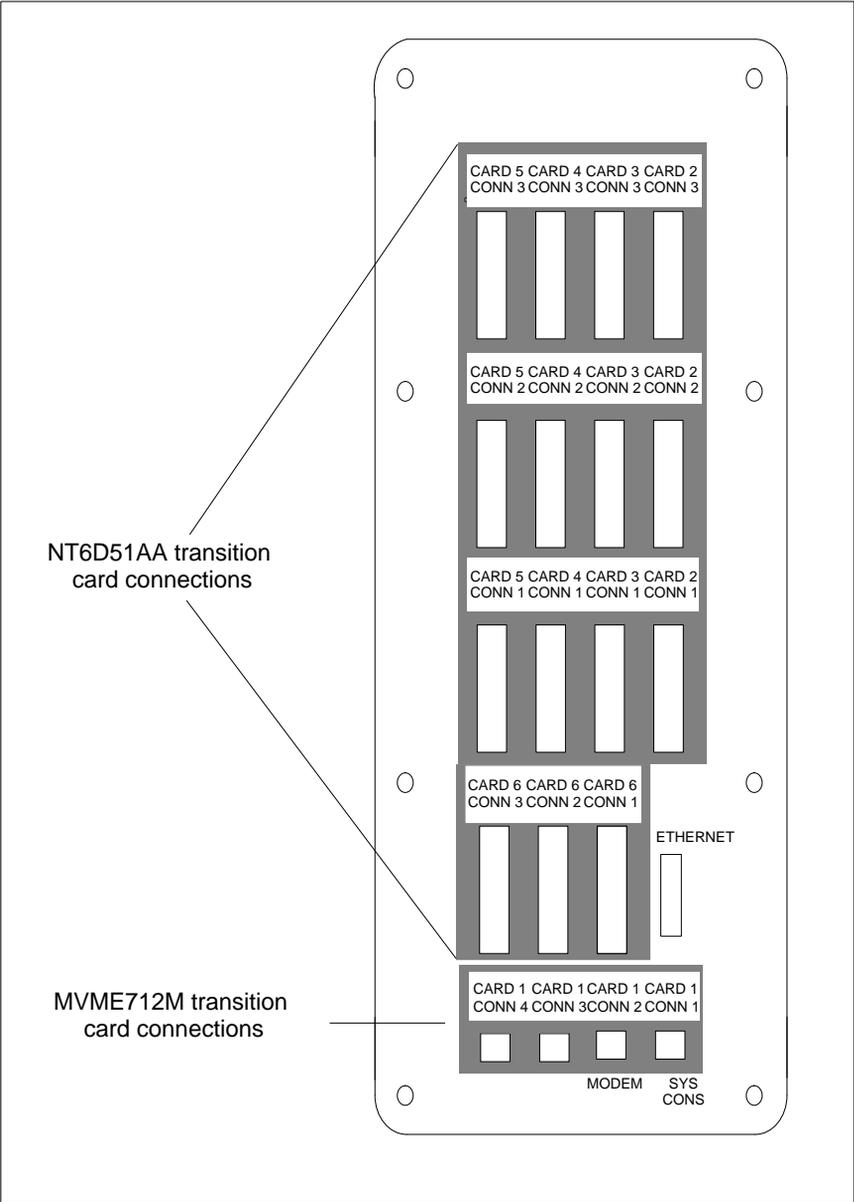
Your NAC system is supplied with an application module label (P0800734) that contains a Meridian NAC and a Meridian MAX sticker.

The Meridian NAC sticker should be adhered to the application module front panel, above the NT7D19SA label.

## **Input/output panels**

The Generic I/O panel has 20 connectors, as shown in Figure 3-6. The serial I/O ports (labelled from Card 2–Conn 1 to Card 6–Conn 3) are 25-pin (DB-25) connectors, and the Ethernet port provides a 15-pin connector. The central processing unit (CPU) ports labelled Card 1–Conn 1 to Card 1–Conn 3 are 9-pin (DB-9) connectors. The port labelled Card 1–Conn 4 is a 15-pin high density connection.

**Figure 3-6**  
**Generic input/output connector panel**



## Input/output port assignments

Five configurations of NAC 2 exist, based on the number of MVME332XT boards configured on the system. A NAC 2 system can be configured with one to five MVME332XT boards.

Each MVME332XT, or I/O card, has a maximum of three ports that can be connected to multiport cables as seen in the “VME multiport cable” subsection. Each multiport cable has three RS-232 serial port connectors labelled A, B and C. The ports in the multiport cable can be connected to peripherals or a limited choice of other devices, except where noted below.

- Cable C of the multiport cable connected to CONN 3C cannot be used, and should not be connected to any type of device.
- At least one supervisor workstation, one network link, and one printer must be connected to any I/O card through the multiport cable.

Aside from these restrictions, you can attach the remainder of the cables to Meridian MAX nodes, supervisor workstations, printers, or modems.

Table 3-3 provides you with a chart which lists all of the assignable ports, as they appear on the NAC 2 Communication Port Assignment screen, and shows the type of device which can be connected to each port. As you decide upon the device to connect to each port, enter the device name in the space provided. If you are assigning a supervisor workstation, remote login, or network link, you must specify the type of connection: direct, dial-up at 2400 baud, or dial-up at 9600 baud. This information is requested during the software installation.

Figure 3-6 shows the Generic input/output connector panel. It identifies the ports which are connected to the multiport cables. The other end of the cables are connected to the peripherals identified by you in Table 3-3.

Please note the following abbreviations:

- SW Supervisor workstation
- PRT Printer
- NL Network link (NetLink)
- RSL Remote supervisor login link

Please note the following abbreviations for connection type:

- DC Direct connection
- 24 Dial-up connection at 2400 baud
- 96 Dial-up connection at 9600 baud

**Note:** The “Connection type” column in the following table lists all of the possible connections. Some connection types cannot be applied to some devices available. For example, the only connection type possible for a printer is direct connection. Ensure that you do not select an inappropriate connection type.

<b>Table 3-3 NAC 2 communication port assignment sheet</b>					
<b>Card slot</b>	<b>Port</b>	<b>Cable</b>	<b>Devices available</b>	<b>Device selected</b>	<b>Connection type</b>
2	CARD 2, CONN 1	A	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 1	B	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 1	C	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 2	A	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 2	B	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 2	C	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 3	A	SW / PRT / NL / RSL		DC / 24 / 96
2	CARD 2, CONN 3	B	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 1	A	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 1	B	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 1	C	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 2	A	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 2	B	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 2	C	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 3	A	SW / PRT / NL / RSL		DC / 24 / 96
3	CARD 3, CONN 3	B	SW / PRT / NL / RSL		DC / 24 / 96
—continued—					

<b>Table 3-3 (continued)</b> <b>NAC 2 communication port assignment sheet</b>					
<b>Card slot</b>	<b>Port</b>	<b>Cable</b>	<b>Devices available</b>	<b>Device selected</b>	<b>Connection type</b>
4	CARD 4, CONN 1	A	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 1	B	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 1	C	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 2	A	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 2	B	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 2	C	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 3	A	SW / PRT / NL / RSL		DC / 24 / 96
4	CARD 4, CONN 3	B	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 1	A	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 1	B	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 1	C	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 2	A	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 2	B	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 2	C	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 3	A	SW / PRT / NL / RSL		DC / 24 / 96
5	CARD 5, CONN 3	B	SW / PRT / NL / RSL		DC / 24 / 96
6	CARD 6, CONN 1	A	SW / PRT / NL / RSL		DC / 24 / 96
6	CARD 6, CONN 1	B	SW / PRT / NL / RSL		DC / 24 / 96
6	CARD 6, CONN 1	C	SW / PRT / NL / RSL		DC / 24 / 96
6	CARD 6, CONN 2	A	SW / PRT / NL / RSL		DC / 24 / 96
6	CARD 6, CONN 2	B	SW / PRT / NL / RSL		DC / 24 / 96
6	CARD 6, CONN 2	C	SW / PRT / NL / RSL		DC / 24 / 96
—continued—					

<b>Table 3-3 (continued)</b> <b>NAC 2 communication port assignment sheet</b>					
<b>Card slot</b>	<b>Port</b>	<b>Cable</b>	<b>Devices available</b>	<b>Device selected</b>	<b>Connection type</b>
<b>6</b>	CARD 6, CONN 3	A	SW / PRT / NL / RSL		DC / 24 / 96
<b>6</b>	CARD 6, CONN 3	B	SW / PRT / NL / RSL		DC / 24 / 96
—end—					

## Cables

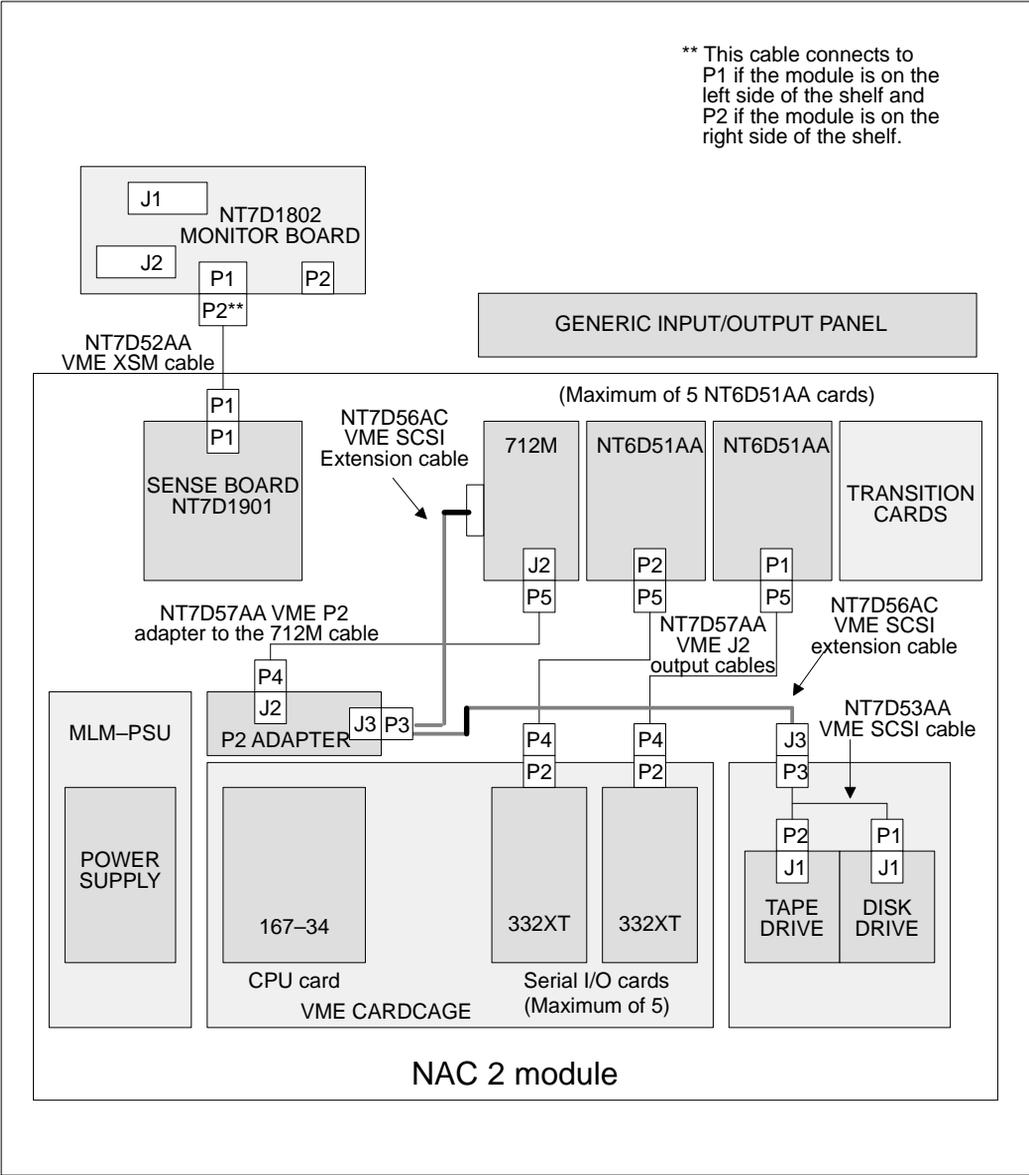
### Internal input/output cables

NAC 2 internal cables are used to interconnect all devices which are not connected through the VME bus backplane, but still require input/output capability. Table 3-4 lists all of the internal I/O cables available. Figure 3-7 shows a cabling schematic. This figure identifies the cables and devices which must be connected for the NAC application module system.

<b>Table 3-4 Internal input/output cables</b>				
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>From</b>	<b>To</b>
NT7D52AA	VME XSM cable. Carries the PSTAT signals from the power sensor PCB to the power monitor PCB.	3 pin connectors (twisted wire)	Power sensor board (P1)	Power monitor board (P1 if module on left, P2 if module is on right)
NT7D53AA	VME SCSI cable. Extends the SCSI from the floating connectors to the MSU.	50 Telco at floating panel, 2 x 25 connectors at the drives.	Floating plate (J3)	Tape drive (J1) and disk drive (J1)
—continued—				

<b>Table 3-4 (continued)</b> <b>Internal input/output cables</b>				
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>From</b>	<b>To</b>
NT7D56AC	VME SCSI extension cable. Extends SCSI from P2 adapter to the external SCSI port via 712M and to connector at MSU	2 x 25 connector at P2 and MVME712AM/M, 50 Telco at MSU.	P2 adapter (J3)	External SCSI port MSU (P3)
NT7D57AA	Carries I/O from ISI and ICC circuit cards to their transition modules. (For MVME712M)	64 pin DIN connectors (flat ribbon)	MVME332XT (P2)	NT6D51AA (P2)
NT8D46AA	XSM cable. carries signals to the XSM from the power monitor PCB	40 pin	Power monitor board (J1, J2)	Backplane of module below or XSM or AEM below
—end—				

**Figure 3-7**  
**Internal input/output cabling**



## Interconnect input/output cables

NAC 2 interconnect cables exit from the rear of the transition modules/cards and terminate on the Application Equipment Module's die-cast input/output panel via a custom input/output panel and radio-filtered connectors.

Table 3-5 lists all of the interconnect I/O cables. Figure 3-7 shows cabling schematics, which identify the cables and devices which must be connected for a system.

The term "input/output connector panel" refers to the Generic I/O panel.

<b>Table 3-5 Interconnect input/output cables</b>			
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>Length</b>
NT7D47DA	Carries input/output between the MVME712M transition card and the Input/Output connector panel (Ethernet).	15-pin (male) Ethernet to 15-pin (female) Ethernet	35.5 cm (14 inches)
NT7D58CA	Carries input/output between the input/output connector panel (Card 1, Conn 4) and the MVME712M transition board (Serial Port 4)	15-pin (female) high density D-sub to 25-pin (male) round subminiature D-style	35.5 cm (14 inches)
NT7D79BA	Carries input/output between the input/output connector panel (Card 1, Conn 1-3, modem and SDI Link) and the MVME712M transition board (Serial Ports 1,2 and 3).	9-pin (male) to 25-pin (male) flat subminiature D-style	35.5 cm (14 inches)
—continued—			

<b>Table 3-5 (continued)</b> <b>Interconnect input/output cables</b>			
<b>ENG Code</b>	<b>Application</b>	<b>Cable and Connector style</b>	<b>Length</b>
NT7D95AA	Carries input/output between the input/output connector panel (Card 2-6, Conn 1-3) and the NT6D51AA transition board.	25-pin (male) flat subminiature D-style to 25-pin (male) flat subminiature D-style	35.5 cm (14 inches)
—end—			

## External input/output cables

NAC 2 external cables exit from the rear of the application module and terminate on the Application Equipment Module's die-cast input/output panel via a custom input/output panel and radio-filtered connectors.

Table 3-6 lists all of the external I/O cables. Figure 3-12 shows cabling schematics, which identify the cables and devices which must be connected for a system.

The term "input/output connector panel" refers to the "Generic I/O panel".

<b>Table 3-6 External input/output cables</b>			
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>Length</b>
NT1R03DB NT1R03DC NT1R03DF NT1R03DP NT1R03DV	Connects as input/output between modems and peripheral devices.	DB-25 (male) connector to DB-25 (male) connector	61 cm (2 ft) 1.2 m (4 ft) 3 m (10 ft) 7.6 (25 ft) 13.7 m (45 ft)
NT1R03EB NT1R03EC NT1R03EF NT1R03EP NT1R03EV	Connects as input/output between modems and peripheral devices.	DB-25 (male) connector to DB-25 (female) connector	61 cm (2 ft) 1.2 m (4 ft) 3 m (10 ft) 7.6 (25 ft) 13.7 m (45 ft)
NT7D47EA	Carries input/output between the input/output connector panel (Ethernet) and the customer supplied transceiver.	15-pin (male) connector with thumb screws to 15-pin (female) connector with sliding latch	3 m (10 ft)
NT7D58AB NT7D58AD NT7D58AF NT7D58AL NT7D58AT NT7D58AV	Connects as input/output between terminals and printers (with A0351509 gender changer).	25-pin (male) subminiature D-style connector to 25-pin (male) subminiature D-style connector	61 cm (2 ft) 1.8 m (6 ft) 3 m (10 ft) 6.1 m (20 ft) 10.7 m (35 ft) 13.7 m (45 ft)
—continued—			

<b>Table 3-6 (continued)</b> <b>External input/output cables</b>			
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>Length</b>
NT7D61AB NT7D61AD NT7D61AF NT7D61AL NT7D61AT NT7D61AV	Carries input/output between the input/output connector panel and the NAC 2 system console (with A0351509 gender changer)	25-pin (male) subminiature D-style connector to 9-pin (female) round subminiature D-style connector	61 cm (2 ft) 1.8 m (6 ft) 3 m (10 ft) 6.1 m (20 ft) 10.7 m (35 ft) 13.7 m (45 ft)
NT8D96AE	Carries input/output between the input/output connector panel and the peripheral devices connected to the NAC 2	Single DB-25 (male) at the I/O panel's end to three DB-25 (female) connectors	2.4 m (8 ft)
NT7D99AA	Connects as input/output between NAC 2 and dial-up modem, as well as, NAC 2 and LDS modem	25-pin (male) subminiature D-style DB-25 connector to 25-pin (male) subminiature D-style DB-25 connector	3 m (10 ft)
—end—			

Figure 3-8 shows the cable arrangement for NT1R03Dx when supplying a connection between a modem and a peripheral device.

**Figure 3-8**  
**Cabling arrangement—modem connection cable NT1R03Dx**

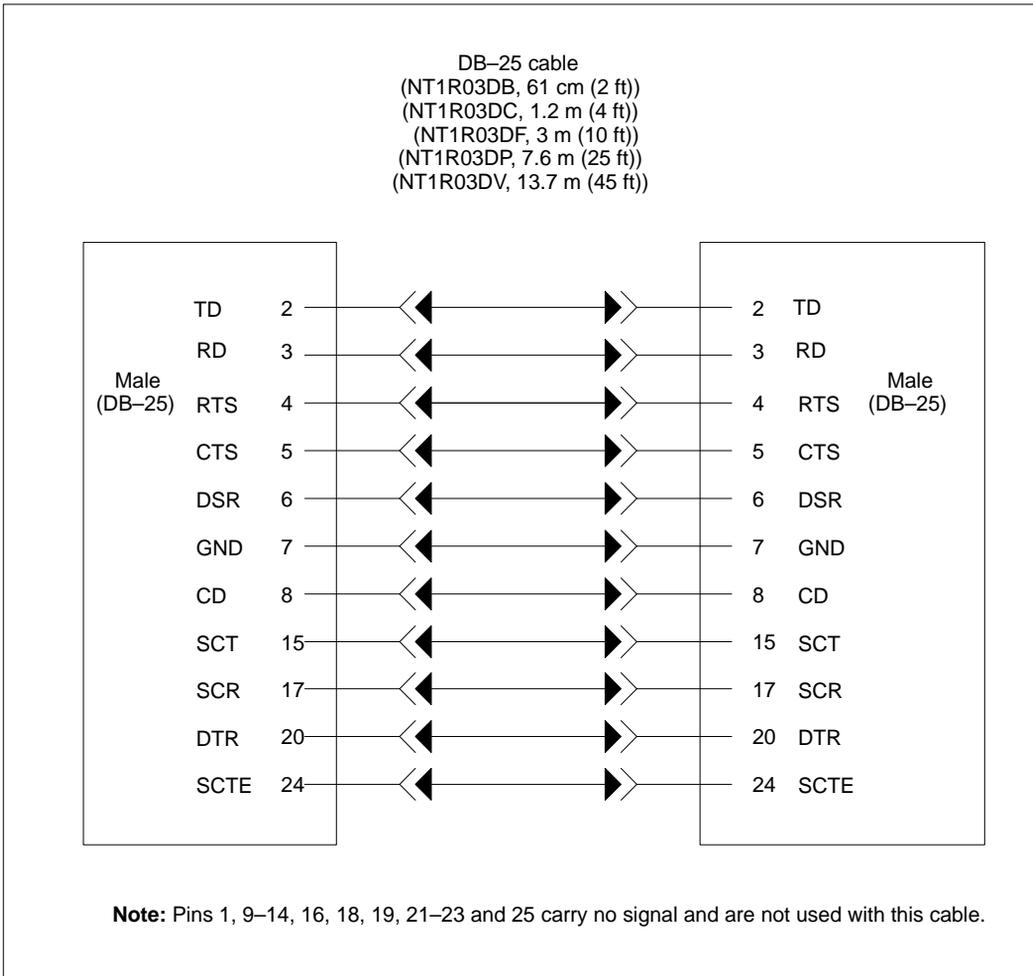


Figure 3-9 shows the cable arrangement for NT1R03Ex when supplying a connection between a modem and a peripheral device.

**Figure 3-9**  
**Cabling arrangement—modem connection cable NT1R03Ex**

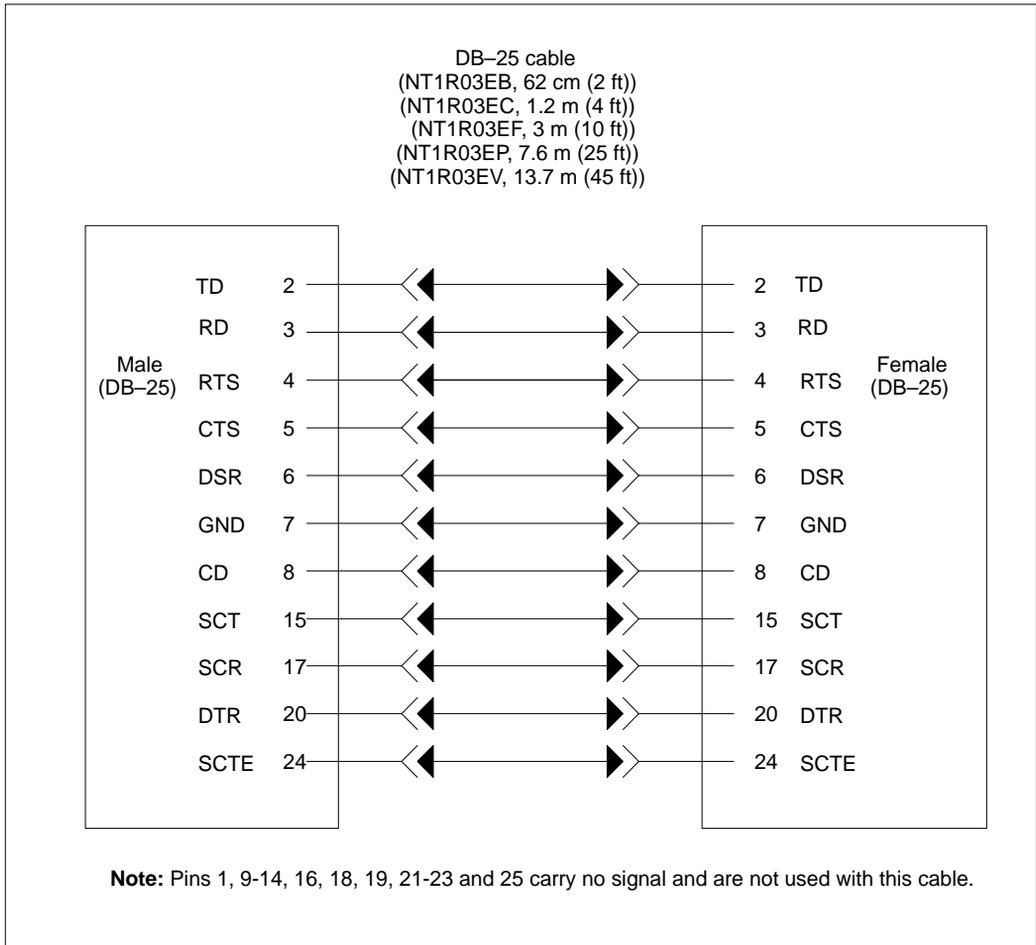


Figure 3-10 shows the cable arrangement for NT7D61Ax when it is used for the system console or system external modem.

**Figure 3-10**

**Cabling arrangement—NAC 2 cable NT7D61Ax used for the system console, or a system external modem**

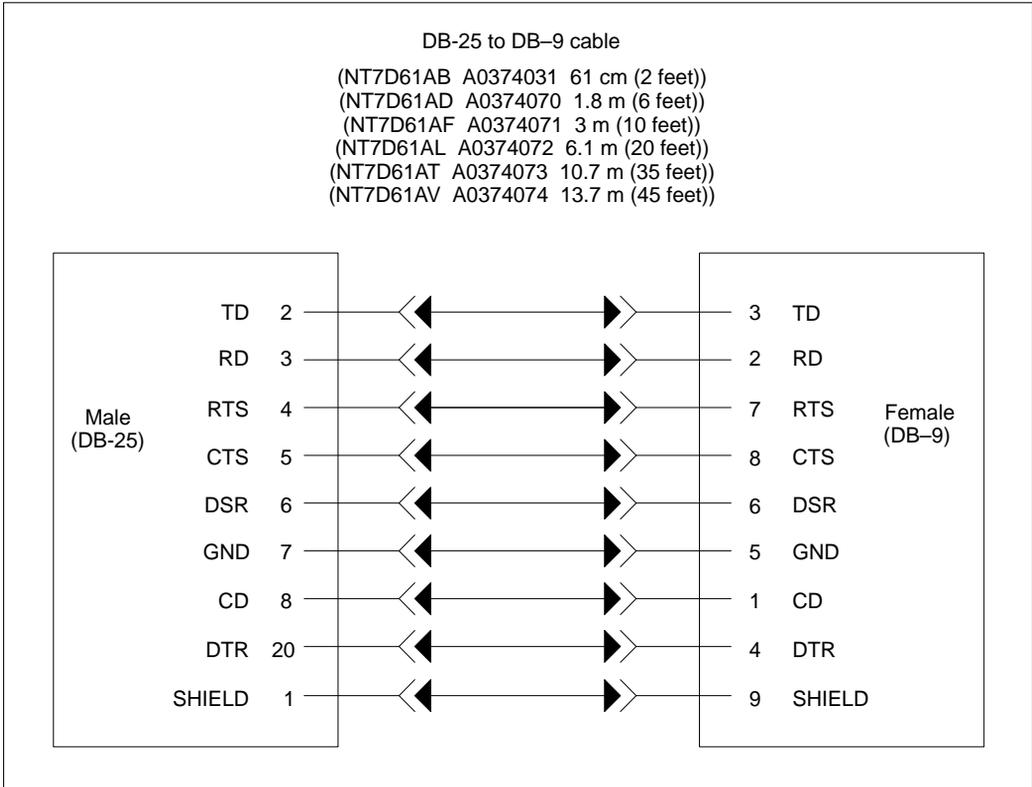
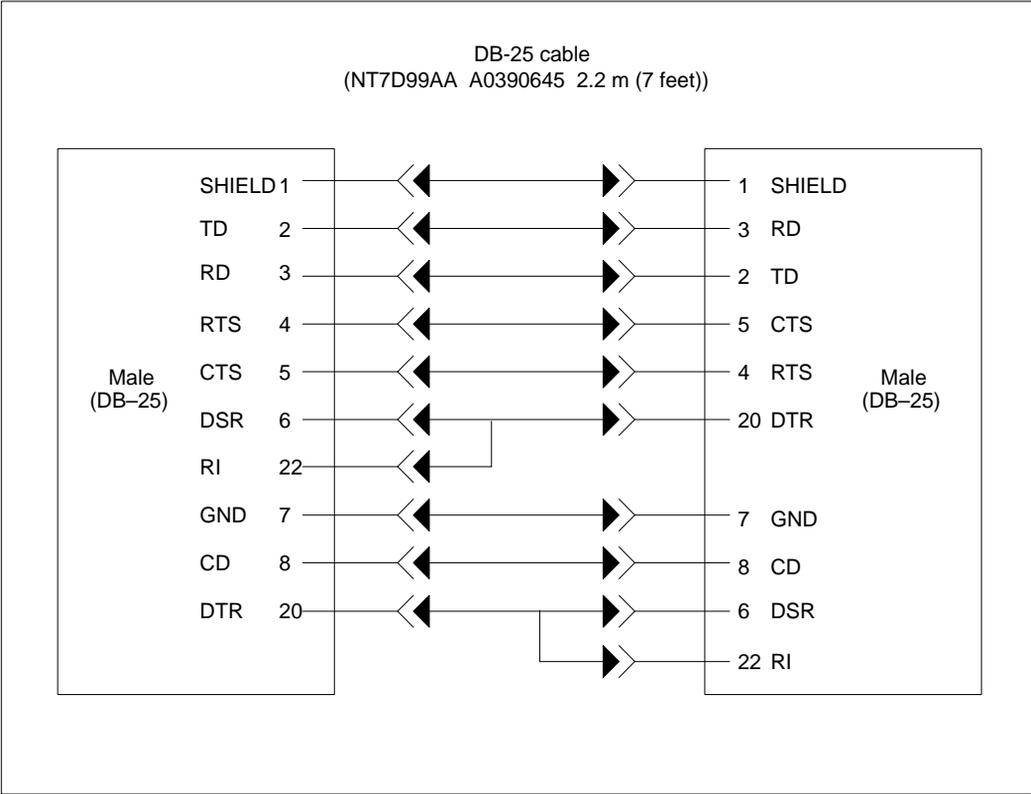
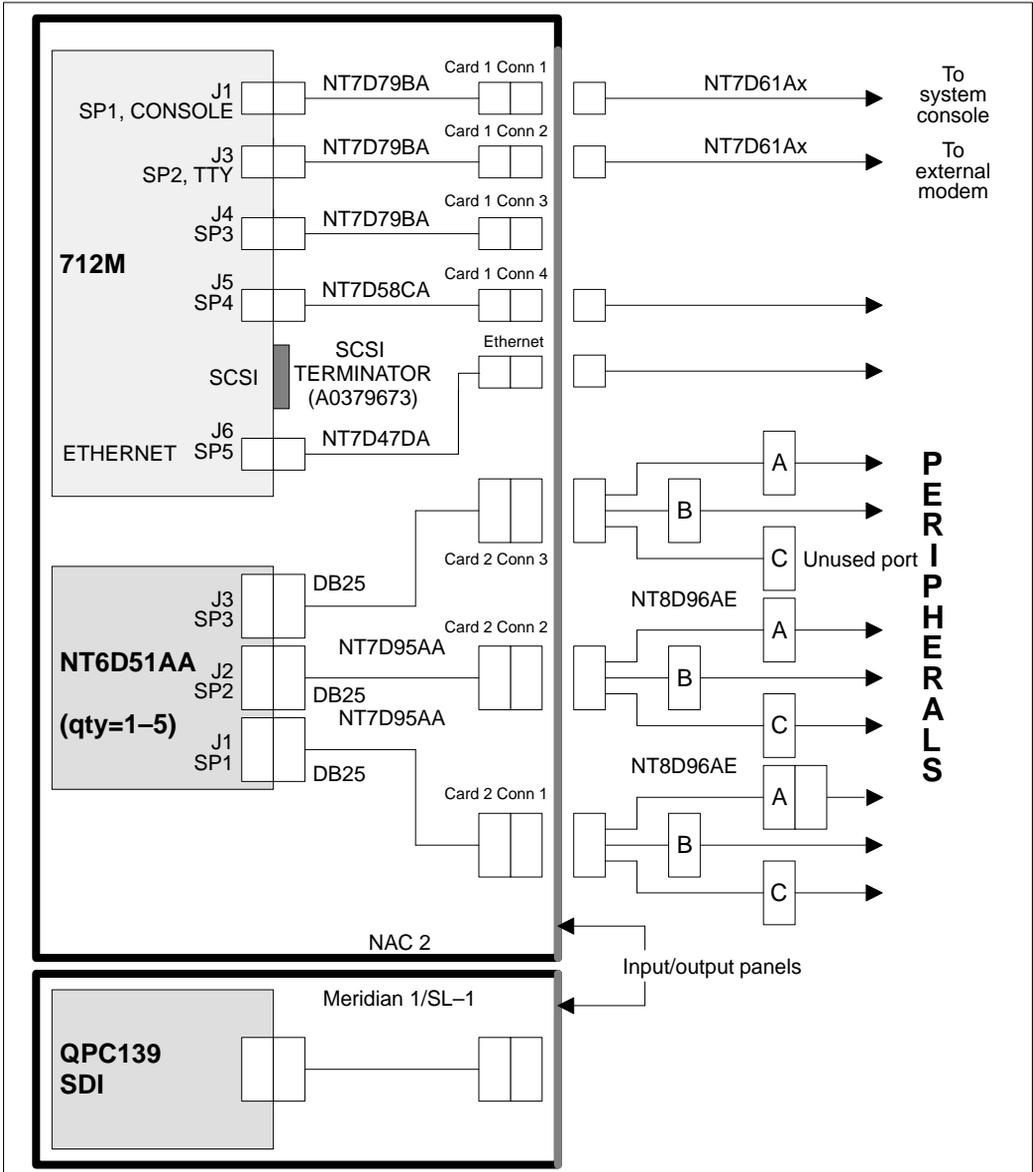


Figure 3-11 shows the cable NT7D99AA when it is used for a dial-up modem or a limited distance modem.

**Figure 3-11**  
**Cabling arrangement—modem connection cable NT7D99AA**



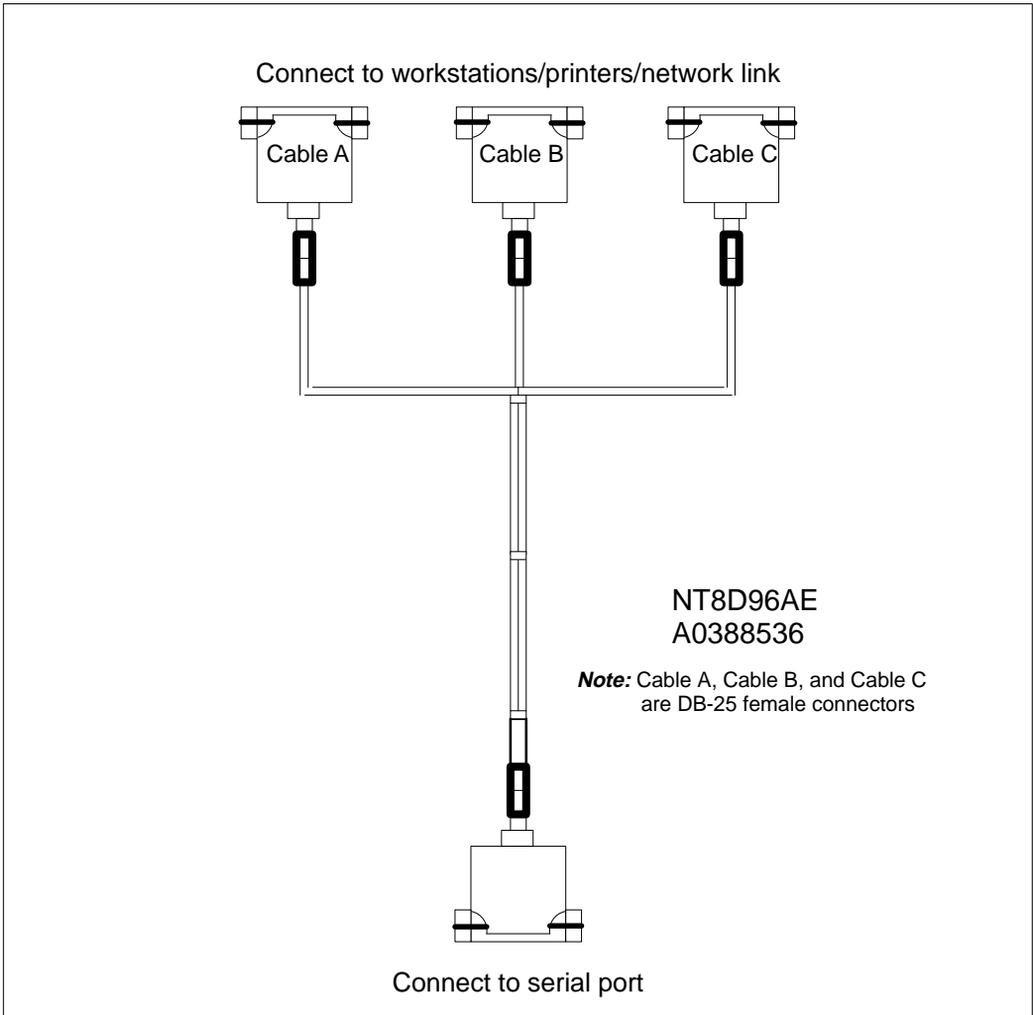
**Figure 3-12**  
**External input/output cabling**



## VME multiport cable

The VME multiport cable, shown in Figure 3-13, connects the NAC module with each peripheral in the system.

**Figure 3-13**  
**VME multiport cable**



Each cable has a single male DB-25 plug at one end, and three female DB-25 plugs at the other end. The single DB-25 plug connects to a DB-25 socket in the I/O connector panel (see Figure 3-11). Each of the three DB-25 plugs at the other end are connected to a peripheral device. Refer to the correct port assignment chart when connecting peripherals to cables.

An RS-232 straight-through cable with male DB-25 connectors can extend the range between a NAC and a peripheral device. The RS-232 must be less than 42 feet long, and must use all 25 pins. For greater distances, refer to the “Peripheral devices” chapter, “Modems overview” section.

Table 3-7 is the wiring table for the multiport cable. The pins listed in the “From” column represent pins in the plug which connect to the I/O connector panel. Pins listed in the “To” column are pins in the DB-25 sockets for the cables listed in the “Cable” column.

<b>From</b>	<b>To</b>	<b>Cable</b>	<b>Signal name</b>
2	2	A	TD
3	3	A	RD
4	4	A	RTS
5	5	A	CTS
6	6	A	DSR
7	7	A	GND
8	8	A	CD
20	20	A	DTR
9	2	B	TD
10	3	B	RD
11	4	B	RTS
12	5	B	CTS
13	6	B	DSR
25	7	B	GND
24	8	B	CD
23	20	B	DTR
14	2	C	TD
15	3	C	RD
16	4	C	RTS
17	5	C	CTS
18	6	C	DSR
19	7	C	GND
21	8	C	CD
22	20	C	DTR
1	1	A, B, C	SHIELD

## Hardware upgrades and replacements

As your operation and needs grow, so may your need to expand the system.

You can add MVME332XT eight-channel asynchronous boards to the NAC system, providing the maximum capacity for the system is not exceeded. With each additional MVME332XT board, the number of available ports increases by increments of eight.

The NAC 2 hardware platform can support between 8 and 40 ports, or one to five boards.

It is less likely that you may need to replace a component of the system. If this is required, the upgrade instructions given in this section permit you to make the replacement.

*Note:* All upgrades and replacements must be performed by qualified technicians.



**WARNING**  
**Static sensitive devices**

Use an anti-static wrist strap before you remove components from an antistatic bag. Failure to do so can result in damage to components.



**CAUTION**  
**Shut down the system from the maintenance menu, then secure the system before powering down the module**

If you are adding a module to your system power, down the column. Once the appropriate equipment is powered down, remove the column's faceplate and back plate for the appropriate shelf. See the "NAC 2 power-down procedure" chapter for more information.

## Adding MVME332XT eight-channel asynchronous boards

Before inserting any additional cards into the NAC 2 system, ensure that each card's switch settings match those given in Table 3-2.

- 1 Shut down the NAC 2 software. Ensure that the I/O Port Reconfiguration on System Restart is enabled.

*Refer to NAC 2 System Administration and Maintenance Guide (NTP 553-4011-510), "Maintenance and administration programs: system running" chapter, "Shut down the system" section for instructions on shutting down your Meridian MAX system.*

*Refer to NAC 2 System Administration and Maintenance Guide (NTP 553-4011-510), "Maintenance and administration programs: system shut down" chapter, "Restart and Power Down System Utilities" section for instructions to enable the I/O Reconfiguration on System Restart feature.*

- 2 Secure the NAC system for power down.

*Refer to NAC 2 System Administration and Maintenance Guide (NTP 553-4011-510), "Maintenance and Administration programs: system shut down" chapter, "Restart and Power Down Utilities" section, "Secure the System for Power Down" subsection for more information.*

- 3 Remove the front and rear panels of the Application Equipment Module (AEM).
- 4 Power down the application module (AM). The circuit breaker (CB) is located at the left of the AEM.
- 5 To remove an existing MVME332XT board, locate the existing card that needs switch settings verified or needs to be replaced. Use a Phillips screwdriver to remove the top and bottom retaining screws which keep the card in place. Press up on the card's top release lever while pressing down on the bottom card release lever. When enough pressure is applied, the card pushes itself out about a quarter of an inch. Carefully pull the card out of the slot and set it aside.
- 6 To add additional MVME332XT eight-channel asynchronous boards to the NAC, remove the face plates covering the empty card slots specified in Table 3-8.

<b>Number of cards</b>	<b>Number of ports</b>	<b>Slot placement</b>
1	8	2
2	16	2, 3
3	24	2, 3, 4
4	32	2, 3, 4, 5
5	40	2, 3, 4, 5, 6

- 7 Take each new MVME332XT board from its packaging and check the switch settings. Refer to the “MVME332XT eight-channel asynchronous board” section of this chapter for this information. Carefully align the card with the black plastic guides found along the top and bottom of the VME card cage. Keeping the new card level, slide the card into the card cage until the new card is flush with the faceplate of the AM.

*If you are uncertain as to whether the card is in as far as it will go, simultaneously press up on the top latch and down on the bottom latch. If the card pops forward slightly, then the card was in as far as it could go.*

- 8 Once the card is inserted into the card cage, use a screwdriver to tighten the top and bottom retaining screws to keep the card in place.  
*Tightening the screws while the card is not in as far as it can go could result in stripping the screws.*
- 9 At the back of the AEM, connect the three multiport cables to the I/O connector panel. Use the appropriate port assignment table to determine which peripherals to connect to the new cables.
- 10 If there are no further hardware upgrades to be performed, replace the AEM back and front panels. Power up the AEM. The hardware upgrade is complete.

## Power monitor upgrades

Before beginning this subprocedure using the Power Monitor Mounting Bracket Kit, NT7D18KA (A0405826), ensure that the NAC 2 software and the application modules (AM) contained in the Application Equipment Module (AEM) have been properly shut down.



### **WARNING** **Static sensitive devices**

While handling components during your upgrade ensure that you are grounded to the system using an approved ground strap. Failure to do so results in damage to components.

- 1 Remove the front and rear covers of the pedestal column located at the base of the column.  
*Remove the two screws located at the upper left and right hand corners of the pedestal cover.*
- 2 Power off the main breaker at the rear of the pedestal.  
*Flip the breaker down to the off position.*
- 3 Loosen the four raised spring-loaded screws located at the front of the AM .
- 4 Slide the AM(s) forward two inches.  
*Grip the AM by the handles located on either side and pull forward slowly. Pulling the module forward too far could result in disrupted connections at the I/O panel by stretching the interconnect cables.*
- 5 At the bottom center of the AEM, remove the four hex head screws securing the terminal block to the current mounting bracket.
- 6 Move the terminal to one side. Be careful not to disrupt the logic return connections.
- 7 Remove the current mounting bracket.  
*Remove the two hex head screws and one hex head bolt.*
- 8 Secure the new mounting bracket to the back center of the AEM.  
*The new mounting bracket is secured in the same position as your previous bracket using two hex head screws and one hex head bolt.*
- 9 Remount the existing terminal block to the new bracket.

*Secure the existing terminal block to the new bracket using two hex head screws.*

- 10** Connect the power monitor capacitor to the new bracket.

*Secure one end of the capacitor to the terminal block and the other to the mounting bracket. The connection on the mounting bracket is marked logic return.*

- 11** Remove the power monitor board from the I/O panel.

*The power monitor board is located on the inside upper portion of the I/O panel located at the right side of the AEM. Remove the screws located at each corner of the board, being careful not to drop the screws into the AEM. Pull the board away from the I/O panel, being careful not to disrupt any of the connections.*

- 12** Mount the power monitor board onto the new mounting bracket.

*Holding the power monitor board by the edges, mount the board onto the four nylon standoffs located on the mounting bracket. Ensure the board is mounted securely.*

- 13** Connect the power cord and the power sensor cable to the power monitor board.

*The power cord is a grey ribbon cable to be connected at J1 on the power monitor board. The power sensor cable is a yellow and grey cable to be connected at J2.*

*Connection J1 on the power monitor board should be facing towards the front of the AEM.*

- 14** Reroute or replace the power monitor cables if necessary.

- 15** Reinstall the AM(s).

*Grip the AM by the handles located on either side and push the module into the AEM until secure. Tighten the four raised spring-loaded screws.*

- 16** Power on the main breaker at the rear of the pedestal.

*Flip the breaker up to the on position.*

- 17** Check the circuit breaker at the front of the pedestal.

*Ensure it is in the on position.*

- 18** Replace the front and rear covers of the pedestal column located at the base of the column.

*Replace the two screws located at the upper left and right hand corners of the pedestal cover.*

## Replacing the MVME167-34 single board computer card

Use this procedure to replace the MVME167-34 card. Figure 3-14 shows the side view of this card.

- 1 Shut down the NAC 2 software.

*Refer to NAC 2 System Administration and Maintenance Guide (NTP 553-4011-510), "Maintenance and Administration programs: system running" chapter, "Shut down the system" section for instructions on shutting down your NAC 2 system.*

*Refer to NAC 2 System Administration and Maintenance Guide (NTP 553-4011-510), "Maintenance and Administration programs: system shut down" chapter, "Restart and Power Down System Utilities" section for instructions to enable the System Restart feature.*

- 2 Power down the application module (AM). The circuit breaker (CB) is located at the left of the AEM.
- 3 Remove the front and rear covers of the pedestal column located at the base of the column.  
*Remove the two screws located at the upper left and right hand corners of the pedestal cover.*
- 4 Locate the existing MVME167-34 single board computer card that needs to be replaced. Use a Phillips screwdriver to remove the top and bottom retaining screws which keep the card in place. Press up on the card's top release lever while pressing down on the bottom card release lever. When enough pressure is applied, the card pushes itself out about a quarter of an inch. Carefully pull the card out of the slot and set it aside.
- 5 Take the MVME167-34 replacement card from its packaging. Since jumpers are set and tested in the factory, it is not necessary to change the jumper settings on the cards.

- 6 Carefully align the card with the black plastic guides found along the top and bottom of the VME card cage. Keeping the card level, slide it into the card cage until the card is flush with the faceplate of the AM.

*If you are uncertain as to whether the card is in as far as it will go, simultaneously press up on the top latch and down on the bottom latch. If the card pops forward slightly, then the card was in as far as it could go.*

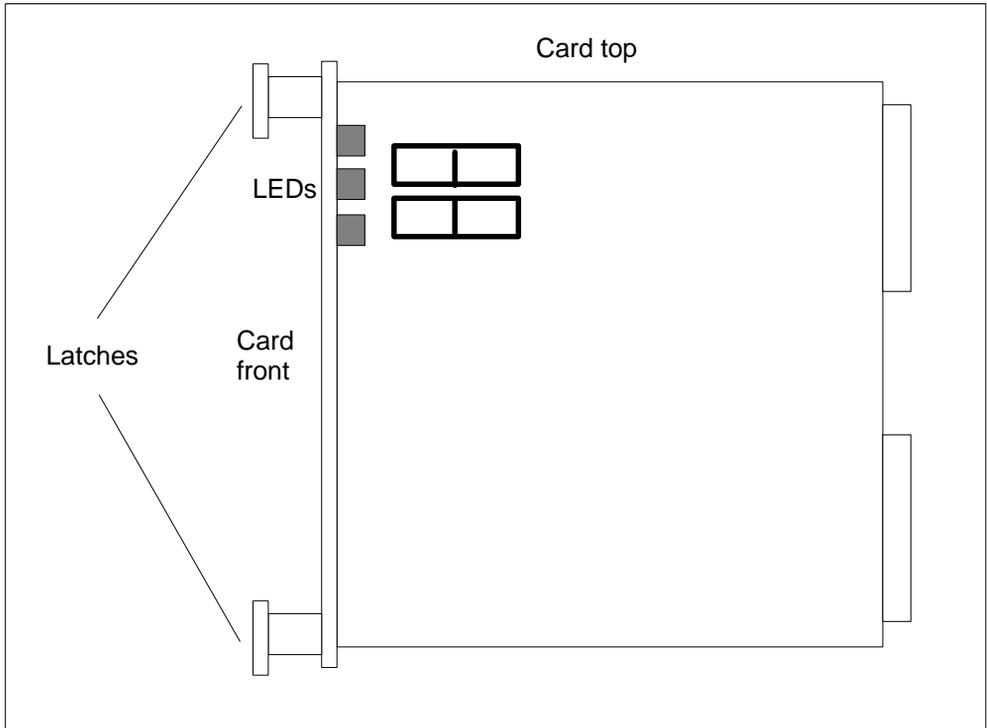
- 7 Once the card is inserted into the card cage, use a screwdriver to tighten the top and bottom retaining screws to keep the card in place.

*Tightening the screws while the card is not fully inserted could result in stripping the screws.*

- 8 Replace the front and rear covers of the pedestal column located at the base of the column.

*Replace the two screws located at the upper left and right hand corners of the pedestal cover.*

**Figure 3-14**  
**MVME167-34 single board computer card**



## Configuring the MVME167-34 card

Once the upgrade or replacement is completed, follow Procedure 3-1 to configure the MVME167-34 card.

Procedure 3-1 Configuring the MVME167-34 card	
Step	Installer's action and system's response
1	<p>Shut down the NAC 2 software.</p> <p>Refer to <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and administration programs: system running" chapter, "Shut down the system" section for instructions on shutting down your NAC system.</p>
2	<p>Secure the NAC system for power down.</p> <p>Refer to <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and Administration programs: system shut down" chapter, "Restart and Power Down Utilities" section, "Secure the System for Power Down" subsection for more information.</p>
3	<p>Power down your system by flipping the power switch located to the left of the AEM to the OFF position. Wait approximately 20 seconds, then flip the power switch to the ON position.</p> <p>The system displays the following at the maintenance console:</p> <pre>Copyright Motorola Inc. 1988 - 1994, All Rights Reserved  MVME167 Debugger/Diagnostics Release Version 2.2 - 01/14/94  COLD Start  Local Memory Found =02000000 (&amp;33554432)</pre>
—continued—	

<b>Procedure 3-1 (continued)</b> <b>Configuring the MVME167-34 card</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>4</b>	<p>If your card was preset in the factory, the following message appears.</p> <p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Press the <b>{BREAK}</b> key if your MVME167-34 card was preset in the factory.</p> <p>—Break Detected—</p> <p>The following menu appears if your card was not preset in the factory.</p> <ol style="list-style-type: none"> <li>1) Continue System Start Up</li> <li>2) Select Alternate Boot Device</li> <li>3) Go to System Debugger</li> <li>4) Initiate Service Call</li> <li>5) Display System Test Errors</li> <li>6) Dump Memory to Tape</li> </ol> <p>Enter Menu #:</p>
<b>5</b>	<p>If your card was not preset in the factory, enter <b>3</b> to select the "Go to System Debugger" option.</p> <p>The system displays the following prompt:</p> <p>167-Diag&gt;</p> <p>If your card was preset in the factory, the system displays the following prompt instead:</p> <p>167-Bug&gt;</p>
<p>—continued—</p>	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
6	<p>Enter <b>env</b> to configure the system environment.</p> <p>The default values that appear when the system is powered on are in effect at this moment. They may differ if the card was configured at the factory or at the site. Regardless, only the following recommended values should be entered.</p> <p>Bug or System environment [B/S] = ?</p>
7	<p>Enter <b>b</b> for bug.</p> <p>The system displays the following prompt:</p> <p>Field Service Menu Enable [Y/N] = ?</p>
8	<p>Enter <b>n</b> to reject the Field Service Menu.</p> <p>The system displays the following prompt:</p> <p>Remote Start Method Switch [G/M/B/N] = ?</p>
9	<p>Enter <b>b</b>.</p> <p>The system displays the following prompt:</p> <p>Probe System for Supported I/O controllers [Y/N] = ?</p>
10	<p>Enter <b>y</b> to probe system for supported I/O controllers.</p> <p>The system displays the following prompt:</p> <p>Negate VMEbus SYSFAIL* Always [Y/N] ?</p>
11	<p>Enter <b>n</b> to reject the Negate VMEbus SYSFAIL* Always prompt.</p> <p>The system displays the following prompt:</p> <p>Local SCSI Bus Reset on Debugger Startup [Y/N] = ?</p>
<p>—continued—</p>	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
12	Enter <b>y</b> to start up the local SCSI bus reset on the debugger. The system displays the following prompt: Local SCSI Bus Negotiations Type [A/S/N] = ?
13	Enter <b>a</b> to set the local SCSI bus negotiations type. The system displays the following prompt: Ignore CFGA Block on a Hard Disk Boot [Y/N] = ?
14	Enter <b>y</b> to ignore the CFGA block on a hard disk boot. The system displays the following prompt: Auto Boot Enable [Y/N] = ?
15	Enter <b>y</b> to enable the auto boot. The system displays the following prompt: Auto Boot at power-up only [Y/N] = ?
16	Enter <b>n</b> to disable auto boot at power-up only. The system displays the following prompt: Auto Boot Controller LUN = ?
17	To skip the following default prompts, enter a period (.) and go to Step 89. To continue, using the following default prompts, enter <b>00</b> . The system displays the following prompt: Auto Boot Device LUN = ?
18	Enter <b>00</b> . The system displays the following prompt: Auto Boot Abort Delay = ?

—continued—

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
19	Enter <b>15</b> . The system displays the following prompt: Auto Boot Default String [NULL for an empty string] = ?
20	Press <b>{RETURN}</b> . The system displays the following prompt: ROM Boot Enable [Y/N] = ?
21	Enter <b>n</b> to disable the boot. The system displays the following prompt: ROM Boot at power-up only [Y/N] = ?
22	Enter <b>y</b> to boot at power-up only. The system displays the following prompt: ROM Boot Enable search of VMEbus [Y/N] = ?
23	Enter <b>n</b> to disable search of VMEbus. The system displays the following prompt: ROM Boot Abort Delay = ?
24	Enter <b>0</b> . The system displays the following prompt: ROM Boot Direct Starting Address = ?
25	Enter <b>FF800000</b> . The system displays the following prompt: ROM Boot Direct Ending Address = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
26	Enter <b>FFBFFFFC</b> . The system displays the following prompt: Network Auto Boot Enable [Y/N] = ?
27	Enter <b>n</b> to disable the network auto boot. The system displays the following prompt: Network Auto Boot at power-up only [Y/N] = ?
28	Enter <b>y</b> to enable the network auto boot at power-up only. The system displays the following prompt: Network Auto Boot Controller LUN = ?
29	Enter <b>00</b> . The system displays the following prompt: Network Auto Boot Device LUN = ?
30	Enter <b>00</b> . The system displays the following prompt: Network Auto Boot Abort Delay = ?
31	Enter <b>5</b> . The system displays the following prompt: Network Auto Boot Configuration Parameters Pointer (NVRAM) = ?
32	Enter <b>00000000</b> . The system displays the following prompt: Memory Search Starting Address = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
33	Enter <b>00000000</b> . The system displays the following prompt: Memory Search Ending Address = ?
34	Enter <b>02000000</b> . The system displays the following prompt: Memory Search Increment Size = ?
35	Enter <b>00010000</b> . The system displays the following prompt: Memory Search Delay Enable [Y/N] = ?
36	Enter <b>n</b> to disable the memory search delay. The system displays the following prompt: Memory Search Delay Address = ?
37	Enter <b>FFFFCE0F</b> . The system displays the following prompt: Memory Size Enable [Y/N] = ?
38	Enter <b>y</b> to enable memory sizing for self-test diagnostics. The system displays the following prompt: Memory Size Starting Address = ?
39	Enter <b>00000000</b> . The system displays the following prompt: Memory Size Ending Address = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
40	Enter <b>02000000</b> . The system displays the following prompt: Base Address of Local Memory = ?
41	Enter <b>00000000</b> . The system displays the following prompt: Size of Local Memory Board #0 = ?
42	Enter <b>02000000</b> . The system displays the following prompt: Size of Local Memory Board #1 = ?
43	Enter <b>00000000</b> . The system displays the following prompt: Slave Enable #1 [Y/N] = ?
44	Enter <b>y</b> to enable the slave address decoder #1. The system displays the following prompt: Slave Starting Address #1 = ?
45	Enter <b>00000000</b> . The system displays the following prompt: Slave Ending Address #1 = ?
46	Enter <b>01FFFFFF</b> . The system displays the following prompt: Slave Address Translation Address #1 = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
47	Enter <b>00000000</b> . The system displays the following prompt: Slave Address Translation Select #1 = ?
48	Enter <b>00000000</b> . The system displays the following prompt: Slave Control #1 = ?
49	Enter <b>03FF</b> . The system displays the following prompt: Slave Enable #2 [Y/N] = ?
50	Enter <b>y</b> to enable the slave address decoder #2. The system displays the following prompt: Slave Starting Address #2 = ?
51	Enter <b>FFE00000</b> . The system displays the following prompt: Slave Ending Address #2 = ?
52	Enter <b>FFE1FFFF</b> . The system displays the following prompt: Slave Address Translation Address #2 = ?
53	Enter <b>00000000</b> . The system displays the following prompt: Slave Address Translation Select #2 = ?
—continued—	

<b>Procedure 3-1 (continued)</b> <b>Configuring the MVME167-34 card</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>54</b>	Enter <b>00000000</b> .  The system displays the following prompt:  Slave Control #2 = ?
<b>55</b>	Enter <b>01EF</b> .  The system displays the following prompt:  Master Enable #1 [Y/N] = ?
<b>56</b>	Enter <b>y</b> to enable the master address decoder #1.  The system displays the following prompt:  Master Starting Address #1 = ?
<b>57</b>	Enter <b>02000000</b> .  The system displays the following prompt:  Master Ending Address #1 = ?
<b>58</b>	Enter <b>FFFFFFF</b> .  The system displays the following prompt:  Master Control #1 = ?
<b>59</b>	Enter <b>0D</b> .  The system displays the following prompt:  Master Enable #2 [Y/N] = ?
<b>60</b>	Enter <b>n</b> to not enable the master address decoder #2.  The system displays the following prompt:  Master Starting Address #2 = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
61	Enter <b>00000000</b> . The system displays the following prompt: Master Ending Address #2 = ?
62	Enter <b>00000000</b> . The system displays the following prompt: Master Control #2 = ?
63	Enter <b>00</b> . The system displays the following prompt: Master Enable #3 [Y/N] = ?
64	Enter <b>n</b> to not enable the master address decoder #3. The system displays the following prompt: Master Starting Address #3 = ?
65	Enter <b>00000000</b> . The system displays the following prompt: Master Ending Address #3 = ?
66	Enter <b>00000000</b> . The system displays the following prompt: Master Control #3 = ?
67	Enter <b>00</b> . The system displays the following prompt: Master Enable #4 [Y/N] = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
68	Enter <b>n</b> to not enable the master address decoder #3. The system displays the following prompt: Master Starting Address #4 = ?
69	Enter <b>00000000</b> . The system displays the following prompt: Master Ending Address #4 = ?
70	Enter <b>00000000</b> . The system displays the following prompt: Master Address Translation Address #4 = ?
71	Enter <b>00000000</b> . The system displays the following prompt: Master Address Translation Select #4 = ?
72	Enter <b>00000000</b> . The system displays the following prompt: Master Control #4 = ?
73	Enter <b>00</b> . The system displays the following prompt: Short I/O (VMEbus A16) Enable [Y/N] = ?
74	Enter <b>y</b> to enable the short I/O address decoder. The system displays the following prompt: Short I/O (VMEbus A16) Control = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

Step	Installer's action and system's response
75	Enter <b>01</b> . The system displays the following prompt: F-Page (VMEbus A24) Enable [Y/N] = ?
76	Enter <b>y</b> to enable the F-page address decoder. The system displays the following prompt: F-Page (VMEbus A24) Control = ?
77	Enter <b>02</b> . The system displays the following prompt: ROM Speed Bank A Code = ?
78	Enter <b>04</b> . The system displays the following prompt: ROM Speed Bank B Code = ?
79	Enter <b>04</b> . The system displays the following prompt: Static RAM Speed Code = ?
80	Enter <b>00</b> . The system displays the following prompt: PCC2 Vector Base = ?
81	Enter <b>05</b> . The system displays the following prompt: VMEC2 Vector Base #1 = ?
—continued—	

**Procedure 3-1 (continued)**  
**Configuring the MVME167-34 card**

<b>Step</b>	<b>Installer's action and system's response</b>
<b>82</b>	Enter <b>06</b> .  The system displays the following prompt:  VMEC2 Vector Base #2 = ?
<b>83</b>	Enter <b>07</b> .  The system displays the following prompt:  VMEC2 GCSR Group Base Address = ?
<b>84</b>	Enter <b>CC</b> .  The system displays the following prompt:  VMEC2 GCSR Board Base Address = ?
<b>85</b>	Enter <b>00</b> .  The system displays the following prompt:  VMEbus Global Time Out Code = ?
<b>86</b>	Enter <b>01</b> .  The system displays the following prompt:  Local Bus Time Out Code = ?
<b>87</b>	Enter <b>00</b> .  The system displays the following prompt:  VMEbus Access Time Out Code = ?
<b>88</b>	Enter <b>02</b> .  The system displays the following prompt:
<b>89</b>	Update Non-Volatile RAM (Y/N) = ?

—continued—

<b>Procedure 3-1 (continued)</b> <b>Configuring the MVME167-34 card</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>90</b>	Enter <b>y</b> .  The system displays the following prompt:  Reset local System (CPU) (Y/N) = ?
<b>91</b>	Power down your system by flipping the power switch located to the left of the AEM to the OFF position. At this point, you may replace the MVME167 card or power on the system and install your NAC 2 software.
—end—	

## NAC 2 to Meridian MAX

Figure 3-2 shows a simplified overview of the network connectivity between a NAC 2 and its various Meridian MAX nodes using modems.

These modems support the remote supervisor login and network link. The remote supervisor login and network link require a separate modem connection. Refer to the “Peripheral devices” chapter, “Remote supervisor login modems” and “Network link modems” sections for more information. Your site’s layout may be different.

A NAC 2 system can connect to a Meridian MAX 4.3x or 6.x or higher system in four ways.

- direct connection
- limited distance modem
- T1 connection
- dial-up modem

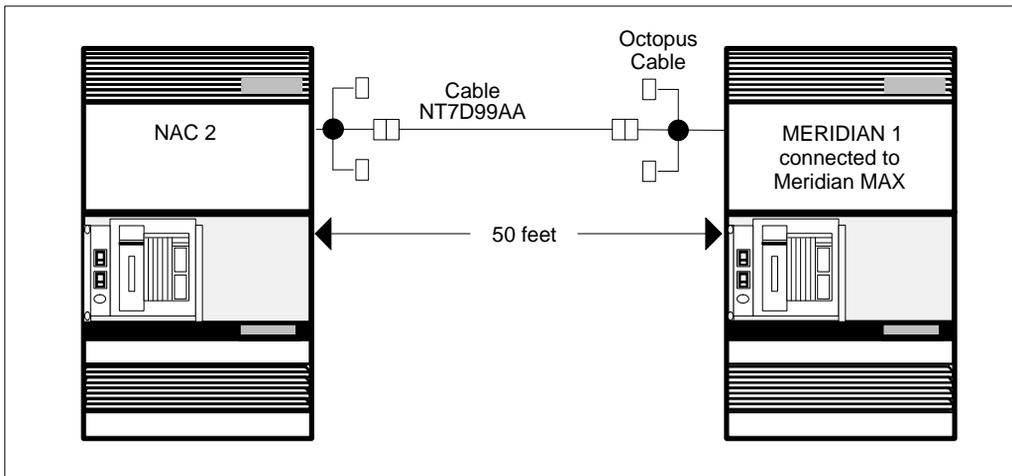
A Meridian MAX nodal system cannot be connected to the NAC 2 unless one of these four methods is used.

## Direct connection

If the NAC 2 system is within 50 feet of a Meridian MAX nodal system, then a direct connection can be used.

Connect one DB-25 end of the NT7D99AA cable to the NAC octopus cable. Connect the other DB-25 end to the octopus cable at the Meridian MAX end. Figure 3-15 illustrates this connection.

**Figure 3-15**  
**Connecting the NAC to a Meridian MAX node—direct connection**



## Cabling arrangement

Figure 3-11 shows the cabling arrangement for the NT7D99AA cable.

## Limited distance connection

The limited distance connection method must be used if the octopus cable of a nodal Meridian MAX is more than 50 feet but less than five miles from the NAC 2. The limited-distance modem must be self-powered. The added range depends on the modem you obtain. Limited-distance modems are recommended for use inside buildings only.

The following settings are used for a limited-distance modem:

- 9600 baud rate
- 8 bits, no-parity, 1 stop bit

Limited distance connections are used for remote supervisor logins and network links. Refer to the “Peripheral equipment” chapter, “Remote supervisor login modems” and “Network link modems” section for more information.

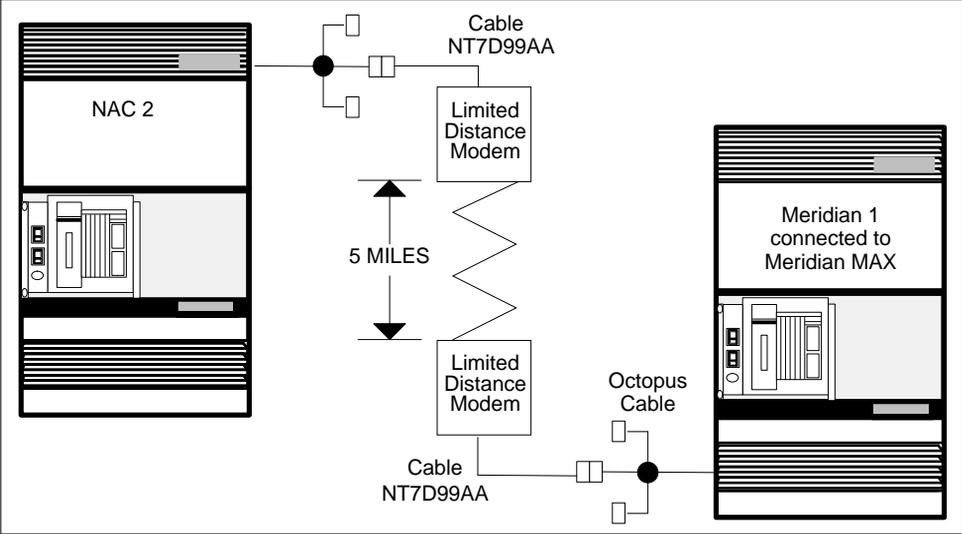
The cable between the Meridian MAX, running on an application module, and the limited distance modem is a modem cable NT7D99AA. Figure 3-16 illustrates this connection and how to connect the two modems together.

Two NT7D99AA cables are required. Connect the DB-25 end of the first NT7D99AA cable to the octopus cable at the NAC end. The other end of the cable is a DB-25 male connector, which is attached to the first limited distance modem.

Connect the DB-25 end of the second NT7D99AA cable to the octopus cable at the Meridian MAX end. The other end of the cable is a DB-25 male connector, which is attached to the second limited distance modem.

The Meridian MAX modem and the NAC modem are connected to each other via a telephone network. Figure 3-16 illustrates this connection.

**Figure 3-16**  
**Connecting the NAC with a Meridian MAX node—limited distance connection**



**Cabling arrangement**

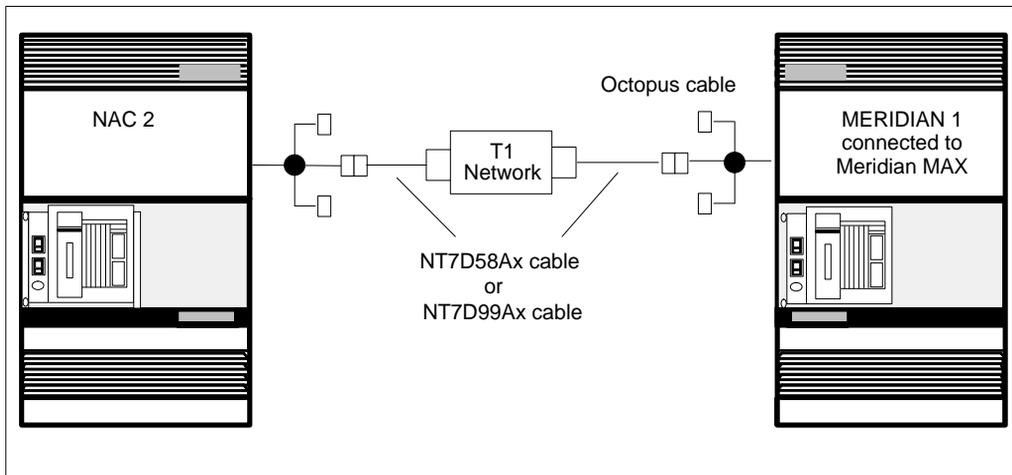
Figure 3-11 shows the cabling arrangement for the NT7D99AA cable.

## T1 Connection

The NAC 2 system can be connected to a Meridian MAX node through digital lines such as T1. During the system's installation, the network link port on the NAC and the Meridian MAX must be configured as direct connection ports. In the NAC system, the network link baud rate should be set to 9600 through the Network Definition screen. The T1 network delay must be less than 0.5 second.

Figure 3-17 shows a NAC 2 connected to a Meridian MAX via a T1 connection. Use either an NT7D58Ax or an NT7D99Ax cable to connect the T1 network to the Meridian MAX and NAC octopus cables.

**Figure 3-17**  
**Connecting the NAC to a Meridian MAX node—T1 Connection**



The T1 ports (data module or DSU) for the network link should be set up as follows:

- asynchronous
- full duplex
- 9600 baud
- 8 data bits, no parity, 1 stop bit
- RS-232/C
- DCE or DTE (DCE is recommended)

If the T1 port for the network link provides a DB25 interface then the network link is connected as follows:

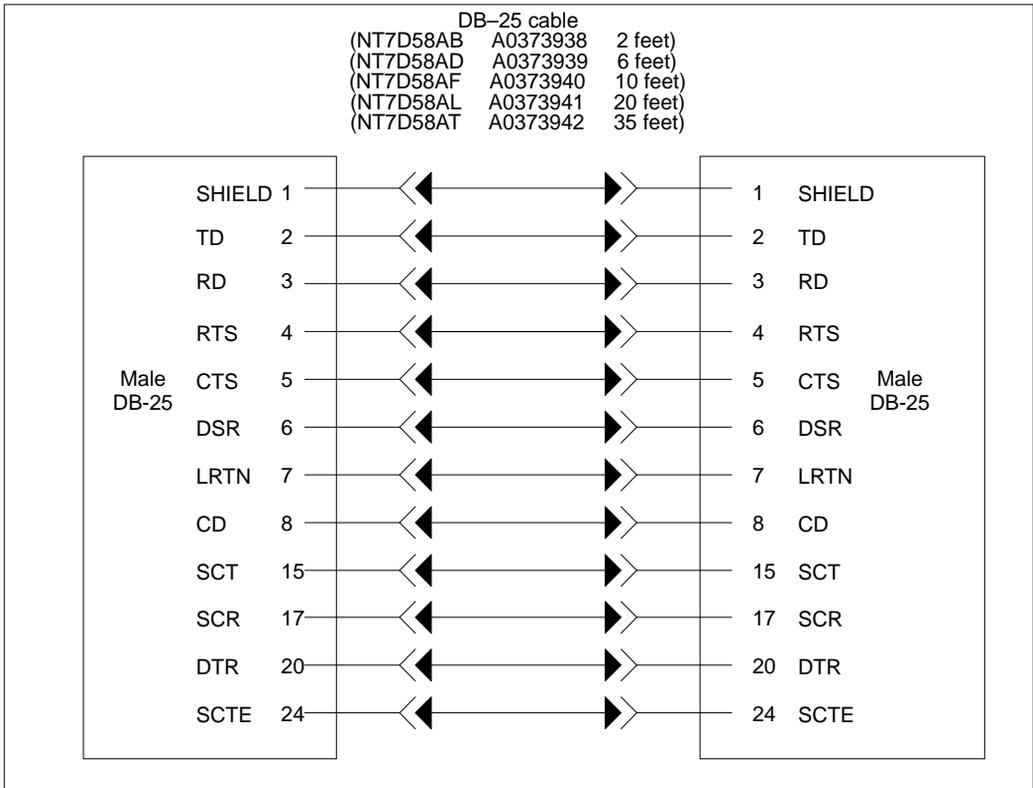
- If the T1 port is configured as DCE and you are trying to connect the T1 port to the octopus cable's network link port on the NAC 2 or Meridian MAX, use the modem cable NT7D99AA (Figure 3-11).
- If the T1 port is configured as DTE and you are trying to connect the T1 port to the octopus cable's network link port on the NAC 2 or Meridian MAX then use the modem cable NT7D58Ax (Figure 3-18).

**Note:** It is desirable to have both ports of the T1 link configured as DCE. Setting up both ports as DTE is not recommended.

If the T1 data bank does not provide a DB25 interface then a patch panel or similar equipment should be installed to provide the required RS-232/C interface.

Due to the wide variety of T1 equipment available, the T1 administrator should be consulted before installing the network link.

**Figure 3-18**  
**Cabling arrangement—modem connection cable NT7D58Ax**



## Dial-up connection

This method of connection can be used if the NAC system is more than five miles from the octopus cable of the Meridian MAX nodal system.

### NAC 2 to Meridian MAX

Two NT7D99AA modem cables and two dial-up modems are required to create a dial-up connection between the NAC to a Meridian MAX node.

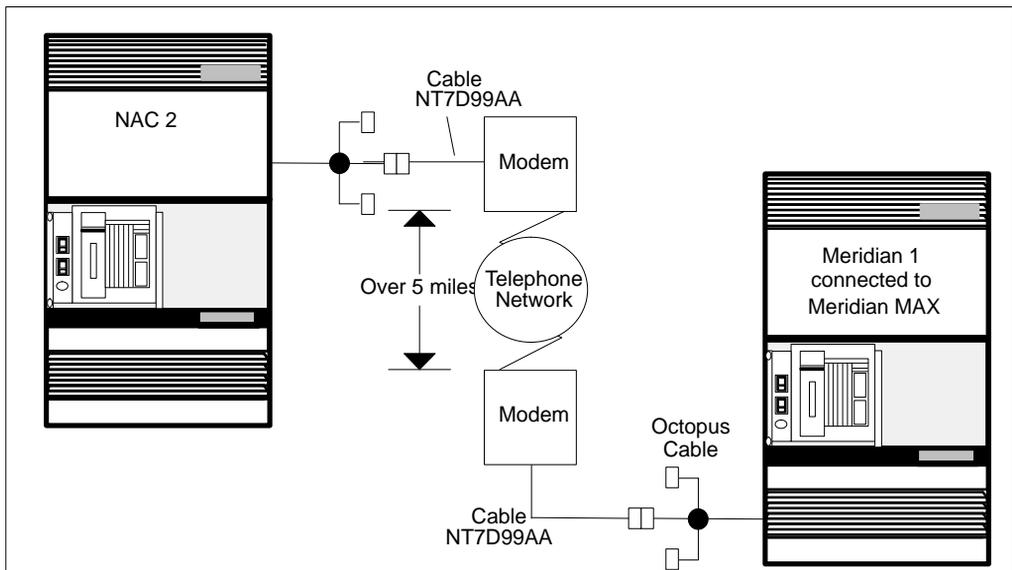
Connect the DB-25 end of the first NT7D99AA modem cable to the octopus cable at the NAC end. Connect the other end of the cable, a DB-25 male connector, to the first dial-up modem.

Connect the DB-25 end of the second NT7D99AA cable to the octopus cable at the Meridian MAX end. Connect the other end of the cable, a DB-25 male connector, to the second dial-up modem.

The Meridian MAX modem and the NAC 2 modem are connected to the telephone network. Figure 3-19 illustrates this connection.

Figure 3-11 shows the cabling arrangement for the NT7D99AA cable.

**Figure 3-19**  
Connecting the NAC with a Meridian MAX node—dial-up connection



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## Peripheral devices

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This chapter provides information and instructions on installing the supported peripheral devices for NAC 2.

### Workstations

Workstations are used by the network supervisors to control the operation of the NAC system.

Workstations available for the NAC system can be separated into two categories: personal computers (PCs) and video display terminals (VDTs). Table 4-1 lists each type of workstation and the gender of its serial port.

**Note:** The maintenance console controls the installation and upgrade procedures, as well as the maintenance and administration programs. This console supports DEC VT420, VT220, HP 700/32 or 100% compatible display terminals. If your workstation is being used as a system console, a female to female gender changer, A0351509, is required.

<b>Table 4-1 Workstations—serial port genders</b>	
<b>Workstation type</b>	<b>Gender</b>
PC (running Reflection 4+)	Male DB-25 or DB-9
DEC VT420, VT220, HP700/32 (or 100% compatible models)	Male DB-25

- serial communications port
- PC-DOS/MS-DOS Version 5.0 or higher

PCs supported by the NAC 2 system are the IBM PS/2 30 and the Compaq Deskpro with:

- AT-style or enhanced-style keyboard
- 512 Kbytes of RAM
- Paradise EGA or VGA card with 256 Kbytes of memory
- either one 5.25 inch floppy disk drive, two floppy disk drives, or one floppy disk drive and hard disk (3.5 in. or 5.25 in. disk drives can be used)
- Reflection 4+ software

The VDTs supported by the NAC are the DEC VT220, DEC VT420 (North American and Worldwide models) and 100% compatibles.

### **Personal computer workstations**

Unpack and assemble the PC workstation by following the installation instructions given in the manufacturer's user manual. Perform all setup and/or diagnostic routines to ensure the viability of the equipment. This includes formatting the hard disk (if present) as the DOS start-up drive.

Install the Reflection 4+ software to the hard disk (if present).

Connect the workstation to the NT8D96AE cable on the application module. Refer to the "Cables" section of the "Hardware installation" chapter for more information on these cables.

To configure your PC workstation for use with Reflection 4+, refer to the "Workstation configuration" section.

Before you start or restart the NAC, and each time you power up the PC, you must follow the appropriate instructions on the next page.

**3PC with hard disk running Reflection 4+**

If you are using a PC with a hard disk, power up the PC. When the PC boots up, switch to the directory which contains the Reflection 4+ program and enter **R4** or **R4 meridian.cfg** (if previously run) to start the program.

**PC without hard disk running Reflection 4+**

If you are using a PC without a hard disk, power up the PC and insert the DOS operating system disk in Drive A. When the PC boots up, insert the Reflection 4+ operating disk in Drive B, and select Drive B. Enter **R4** to start the Reflection 4+ program.

## Video display terminal (VDT) workstation

Four types of video display terminal workstations are supported for NAC.

- DEC VT220
- DEC VT420 (North American model)
- DEC VT420 (Worldwide model)
- HP 700/32

*Note:* To differentiate between the North American and Worldwide models of the VT420, view your workstation's set-up directory. If there is a keyboard option, you are using the worldwide model. If there is no keyboard option, you are using the North American model.

Other models may be used but they must be 100% compatible with one of the models listed. Setups may differ slightly depending on the version of the workstation.

### DEC VT220 or 100% compatible

- 1 Refer to the vendor's manual for installation instructions.
- 2 The video display terminal (VDT) is connected to the AM's VME multiport cable using an NT8D96AE (AM) cable. Refer to the appropriate port assignment table for valid port assignments.
- 3 Power on the terminal and push the setup key. Some VDTs have on-screen cues for changing settings and moving between menus. The VDT manual contains the definitive instructions on setting up the workstation's options.

*Figure 4-1 provides the details to set up a DEC VT220 or 100% compatible VDT. Each directory shown in Figure 4-1 has its own screen and displays the correct setting for each field. If any of the fields shown differ from those on your screen, cursor to the field and press {ENTER} until the correct information is displayed. Complete these procedures before powering on NAC.*

**Figure 4-1**  
**DEC VT220 workstation set-up**

<b>Set-Up Directory</b>						
Display	General	Comm	Printer	Keyboard	Tab	
On Line	Clear Display	Clear Comm	Reset Terminal	Recall	Save	
Set-Up English	North American Keyboard	Default	Exit			
<b>Display Set-Up</b>						
To Next Set-Up	To Directory	80 Columns	Interpret Controls			
No Auto Wrap	Jump Scroll	Light Text, Dark Screen				
No Cursor	Block Cursor Style					
<b>General Set-Up</b>						
To Next Set-Up	To Directory	VT200 Mode, 8 Bit Controls				
User Defined Keys Unlocked	User Features Unlocked	Multinational				
Numeric Keypad	Normal Cursor Keys	No New Line				
<b>Communications Set-Up</b>						
To Next Set-Up	To Directory	Transmit=9600	Receive=Transmit			
XOFF at 128	8 Bits, No Parity	1 Stop Bit	Local Echo			
EIA Port, Data Leads Only	Disconnect, 2 s Delay	Limited Transmit				
<b>Keyboard Set-Up</b>						
To Next Set-Up	To Directory	Typewriter Keys	Caps Lock			
No Auto Repeat	No Keyclick	No Margin Bell	Warning Bell	Break		
No Auto Answerback	Answerback=	Not Concealed				

### **DEC VT420 or 100% compatible (North American model)**

- 1 Refer to the vendor's manual for installation instructions.
- 2 The video display terminal (VDT) is connected to the AM's VME multiport cable using an NT8D96AE (AM) cable. Refer to the appropriate port assignment table for valid port assignments.
- 3 Power on the terminal and push the set-up key. Some VDTs have on-screen cues for changing settings and moving between menus. The VDT manual contains the definitive instructions on setting up the workstation's options.

*Figure 4-2 provides the details to set up a DEC VT420 (North American model) or 100% compatible VDT. Each directory shown in Figure 4-2 has its own screen and displays the correct setting for each field. If any of the fields shown differ from those on your screen, cursor to the field and press **{ENTER}** until the correct information is displayed. Complete these procedures before powering on NAC.*

**Figure 4-2**  
**DEC VT420 workstation (North American model) Version 1.3 or greater setup**

**Set-Up Directory**

Global Display General Comm Printer Keyboard Tab  
 Clear Display Clear Comm Reset Session Recall Save  
 Default Screen Align  
 Enable Sessions Disable Sessions Exit

**Global Directory**

To Next Set-Up To Directory  
 On Line S1 = Comm1 CRT Saver Printer Shared  
 70 Hz

**Display Set-Up**

To Next Set-Up To Directory 80 Columns Interpret Controls  
 No Auto Wrap Jump Scroll Dark Screen  
 No Cursor Block Cursor Style No Status Display  
 Cursor Blink 6X24 pages 24 Lines/Screen  
 Vertical Coupling Page Coupling No Auto Resize Screen

**General Set-Up**

To Next Set-Up To Directory VT400 Mode, 8 Bit Controls VT420 ID  
 User Defined Keys Unlocked User Features Unlocked  
 Numeric Keypad Normal Cursor Keys No New Line  
 UPSS ISO Latin-1 When Available Update

**Communications Set-Up**

To Next Set-Up To Directory Transmit = 9600 Receive = Transmit  
 XOFF at 128 8 Bits, No Parity 1 Stop Bit No Local Echo  
 Data Leads Only Limited Transmit  
 No Auto Answerback Answerback= Not Concealed

**Keyboard Set-Up**

To Next Set-Up To Directory Caps Lock  
 No Auto Repeat Keyclick High Margin Bell Off Warning Bell High  
 Character Mode <X> Delete Local Compose Ignore Alt  
 F1 = Hold F2 = Print F3 = Set-Up F4 = Session F5 = Break  
 < and .> Keys <> Key '~ Key

**DEC VT420 or 100% compatible (Worldwide model)**

- 1 Refer to the vendor's manual for installation instructions.
- 2 The video display terminal (VDT) is connected to the AM's VME multiport cable using an NT8D96AE (AM) cable. Refer to the appropriate port assignment table for valid port assignments.
- 3 Power on the terminal and push the setup key. Some VDTs have on-screen cues for changing settings and moving between menus. The VDT manual contains the definitive instructions on setting up the workstation's options.

*Figure 4-3 provides the details to set up a DEC VT420 (Worldwide model) or 100% compatible VDT. Each directory shown in Figure 4-3 has its own screen and displays the correct setting for each field. If any of the fields shown differ from those on your screen, cursor to the field and press **{ENTER}** until the correct information is displayed. Complete these procedures before powering on NAC.*

**Figure 4-3**  
**DEC VT420 workstation (Worldwide model) setup**

<b>Set-Up Directory</b>									
Global	Display	General	Comm	Printer	Keyboard	Tab			
Clear Display	Clear Comm	Reset Session	Recall	Save					
Set-Up = English*	North American Keyboard**	Default							
Enable Sessions	Disable Sessions	Exit	Screen Align						
<b>Global Set-Up</b>									
To Next Set-Up	To Directory								
On Line	S1 = Comm1	CRT Saver							
Comm1 = DEC-423***	70 Hz	Printer Shared							
<b>Display Set-Up</b>									
To Next Set-Up	To Directory	80 Columns	Interpret Controls						
No Auto Wrap	Jump Scroll	Dark Screen							
No Cursor	Block Cursor Style	No Status Display							
Cursor Blink	6X24 pages	24 Lines/Screen							
Vertical Coupling	Page Coupling	No Auto Resize Screen							
<b>General Set-Up</b>									
To Next Set-Up	To Directory	VT400 Mode, 8 Bit Controls							
User Defined Keys Unlocked	User Features Unlocked	8-bit Characters							
Numeric Keypad	Normal Cursor Keys	No New Line							
UPSS ISO Latin-1	VT420 ID								
When Available Update									
<b>Communications Set-Up</b>									
To Next Set-Up	To Directory	Transmit = 9600	Receive = Transmit						
XOFF at 128	8 Bits, No Parity	1 Stop Bit	No Local Echo						
Data Leads Only	Disconnect, 2 s Delay	Limited Transmit							
No Auto Answerback	Answerback=	Not Concealed							
Modem High Speed = Ignore	Modem Low Speed = ignore								
<b>Keyboard Set-Up</b>									
To Next Set-Up	To Directory	Typewriter Keys	Caps Lock						
No Auto Repeat	Keyclick Off	Margin Bell Off	Warning Bell High						
Character Mode	<X> Delete	Local Compose	Ignore Alt						
F1 = Hold	F2 = Print	F3 = Set-Up	F4 = Session	F5 = Break					
,, and .> Keys	<> Key	'~ Key							

**Note:** \* This setting specifies the DEC setup language and does not affect the NAC screens.  
 \*\* Change this setting to match the keyboard language you are using.  
 \*\*\* This setting depends on the port you are using on the back of the terminal. Refer to your terminal guide for more information.





**Procedure 4-1 (continued)**  
**HP 700/32 workstation setup**

Step	Action																														
7	<p>Ensure that the options match the following Emulation settings:</p> <p><b>EMULATION</b></p> <table> <tr> <td>Emulation</td> <td>VT320</td> </tr> <tr> <td>Terminal Id</td> <td>VT220</td> </tr> <tr> <td>Control Codes</td> <td>8-Bit</td> </tr> <tr> <td>Characters Mode</td> <td>8-Bit</td> </tr> <tr> <td>Preferred Char Set</td> <td>ISO 8859-1 Latin</td> </tr> <tr> <td>Keypad Mode</td> <td>Numeric</td> </tr> <tr> <td>Cursor Keys</td> <td>Normal</td> </tr> <tr> <td>Print Scroll Region</td> <td>Off</td> </tr> <tr> <td>User Features Locked</td> <td>No</td> </tr> <tr> <td>User Keys Locked</td> <td>No</td> </tr> <tr> <td>Data Processing Keys</td> <td>No</td> </tr> </table>	Emulation	VT320	Terminal Id	VT220	Control Codes	8-Bit	Characters Mode	8-Bit	Preferred Char Set	ISO 8859-1 Latin	Keypad Mode	Numeric	Cursor Keys	Normal	Print Scroll Region	Off	User Features Locked	No	User Keys Locked	No	Data Processing Keys	No								
Emulation	VT320																														
Terminal Id	VT220																														
Control Codes	8-Bit																														
Characters Mode	8-Bit																														
Preferred Char Set	ISO 8859-1 Latin																														
Keypad Mode	Numeric																														
Cursor Keys	Normal																														
Print Scroll Region	Off																														
User Features Locked	No																														
User Keys Locked	No																														
Data Processing Keys	No																														
8	To save the Emulation settings, press the <b>[SAVE MENU]</b> key.																														
9	<p>Ensure that the options match the following Port 1 settings:</p> <p><b>PORT 1</b></p> <table> <tr> <td>Communication</td> <td>Full Duplex</td> </tr> <tr> <td>Data Length</td> <td>8 bits</td> </tr> <tr> <td>Parity</td> <td>None</td> </tr> <tr> <td>Stop Bits</td> <td>1</td> </tr> <tr> <td>Xmit Baud</td> <td>9600</td> </tr> <tr> <td>Recv Baud</td> <td>=Xmit</td> </tr> <tr> <td>Xmit Pace</td> <td>Xon/Xoff</td> </tr> <tr> <td>Recv Pace</td> <td>Xoff at 128</td> </tr> <tr> <td>Limited Transmit</td> <td>On</td> </tr> <tr> <td>DSRI</td> <td>No</td> </tr> <tr> <td>CTS</td> <td>Ignore</td> </tr> <tr> <td>CD</td> <td>Ignore</td> </tr> <tr> <td>Break Duration</td> <td>170 ms</td> </tr> <tr> <td>Disconnect Delay</td> <td>2 sec</td> </tr> <tr> <td>Aux Printer Type</td> <td>National</td> </tr> </table>	Communication	Full Duplex	Data Length	8 bits	Parity	None	Stop Bits	1	Xmit Baud	9600	Recv Baud	=Xmit	Xmit Pace	Xon/Xoff	Recv Pace	Xoff at 128	Limited Transmit	On	DSRI	No	CTS	Ignore	CD	Ignore	Break Duration	170 ms	Disconnect Delay	2 sec	Aux Printer Type	National
Communication	Full Duplex																														
Data Length	8 bits																														
Parity	None																														
Stop Bits	1																														
Xmit Baud	9600																														
Recv Baud	=Xmit																														
Xmit Pace	Xon/Xoff																														
Recv Pace	Xoff at 128																														
Limited Transmit	On																														
DSRI	No																														
CTS	Ignore																														
CD	Ignore																														
Break Duration	170 ms																														
Disconnect Delay	2 sec																														
Aux Printer Type	National																														
10	To save the Port 1 settings, press the <b>[SAVE MENU]</b> key.																														
— continued —																															

Procedure 4-1 (continued) HP 700/32 workstation setup																									
Step	Action																								
11	<p>Ensure that the options match the following KeyBrd Menu settings:</p> <p><b>KEYBRD Menu</b></p> <table> <tr> <td>Lock Key</td> <td>Caps Lock</td> </tr> <tr> <td>Kbd Lock Enable</td> <td>Yes</td> </tr> <tr> <td>Save Tabs</td> <td>Yes</td> </tr> <tr> <td>Auto Repeat</td> <td>No</td> </tr> <tr> <td>Margin Bell</td> <td>No</td> </tr> <tr> <td>Warning Bell</td> <td>Yes</td> </tr> <tr> <td>Auto Answerback</td> <td>No</td> </tr> <tr> <td>Answerback=</td> <td>[blank]</td> </tr> <tr> <td>Conceal Answerback</td> <td>No</td> </tr> <tr> <td>Clear All Tabs</td> <td>(not applicable)</td> </tr> <tr> <td>Set 8 Column Tabs</td> <td>(not applicable)</td> </tr> <tr> <td>Tab Setting</td> <td>(not applicable)</td> </tr> </table>	Lock Key	Caps Lock	Kbd Lock Enable	Yes	Save Tabs	Yes	Auto Repeat	No	Margin Bell	No	Warning Bell	Yes	Auto Answerback	No	Answerback=	[blank]	Conceal Answerback	No	Clear All Tabs	(not applicable)	Set 8 Column Tabs	(not applicable)	Tab Setting	(not applicable)
Lock Key	Caps Lock																								
Kbd Lock Enable	Yes																								
Save Tabs	Yes																								
Auto Repeat	No																								
Margin Bell	No																								
Warning Bell	Yes																								
Auto Answerback	No																								
Answerback=	[blank]																								
Conceal Answerback	No																								
Clear All Tabs	(not applicable)																								
Set 8 Column Tabs	(not applicable)																								
Tab Setting	(not applicable)																								
12	To save the Keybrd Menu settings, press the <b>[SAVE MENU]</b> key.																								
13	To exit the set-up screen, press the <b>{Set-Up}</b> key.																								
—end—																									

## Workstation configuration

As mentioned previously, two types of workstations are supported for NAC: VDTs and PCs. If you are using a workstation that was not previously configured as a NAC workstation, perform Procedure 4-2.

<b>Procedure 4-2 Workstation configuration</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>1</b>	Press <b>{CONTROL}{T}</b> to begin this procedure.
<b>2</b>	<p>If you have set up your PC workstation as in the "Personal computers workstations" section, and Reflection 4+ is loaded on your PC, or if your workstation is a VT220 or VT420, go to Step 4.</p> <p>If you are configuring your system via a supervisor dial-up, the following prompt appears.</p> <p>REMINDER: If you have invoked this feature to change your terminal configuration during an active supervisor dial-up session, your new selection will NOT take effect. To change the terminal configuration during an active dial-up session, you must log off and dial-up again to select the new configuration.</p> <p>If you are dialing in for the first time, however, you may freely select your terminal configuration now and it will be properly activated for this dial-up session.</p> <p>Please press &lt;ENTER&gt; to continue...</p>
<b>3</b>	Press <b>{ENTER}</b> .
—continued—	

**Procedure 4-2 (continued)**  
**Workstation configuration**

Step	Installer's action and system's response
<p><b>4</b></p>	<p>The system continues.</p> <p>The terminal type for this port is unknown.</p> <p>Please choose a terminal type from the following list:</p> <ol style="list-style-type: none"> <li>1. DEC vt220 monochrome and compatibles</li> <li>2. DEC vt420 monochrome and compatibles</li> <li>3. PC running Reflection 4-PLUS terminal emulation</li> </ol> <p>Selection —&gt;</p> <p>If you are using a VT220 workstation, enter <b>1</b>, followed by <b>{RETURN}</b>.</p> <p>If you are using a VT420, enter <b>2</b>, followed by <b>{RETURN}</b>.</p> <p>If you are using a PC workstation running Reflection 4+, enter <b>3</b>, followed by <b>{RETURN}</b>. Go to Step 7.</p>
<p><b>5</b></p>	<p>If you selected a VT220 or a VT420 as your terminal type, a menu listing the keyboard types appears.</p> <p>Select your keyboard type from the following list:</p> <pre>&gt;&gt;&gt;1. North American Keyboard 2. United Kingdom Keyboard 3. Flemish Keyboard 4. Canadian French Keyboard 5. Danish Keyboard 6. Finnish Keyboard 7. German Keyboard 8. Dutch Keyboard 9. Italian Keyboard 10. Swiss French Keyboard 11. Swiss German Keyboard 12. Swedish Keyboard 13. Norwegian Keyboard 14. French/Belgian Keyboard 15. Spanish Keyboard 16. Portuguese Keyboard</pre> <p>Selection —&gt;</p>

—continued—

<b>Procedure 4-2 (continued)</b> <b>Workstation configuration</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>6</b>	<p>Enter the number that corresponds to your keyboard type, followed by <b>{RETURN}</b>.</p> <p><b>Note:</b> The &gt;&gt;&gt; sign that appears before a selection indicates it is the default selection. To choose this selection, you can either enter the number associated with it, followed by <b>{RETURN}</b>, or just press <b>{RETURN}</b>.</p> <p>Go to Step 16.</p>
<b>7</b>	<p>If your workstation is a PC running Reflection 4+, the system continues with the following prompt.</p> <p>Select your keyboard type from the following list:</p> <p>1. AT style keyboard (10 function keys on left) &gt;&gt;&gt; 2. Enhanced keyboard (12 function keys along top)</p> <p>Selection —&gt;</p> <p>If your keyboard is an AT-style keyboard, enter <b>1</b>, followed by <b>{RETURN}</b>.</p> <p>If your keyboard is an enhanced keyboard, enter <b>2</b>, followed by <b>{RETURN}</b>.</p>
<b>8</b>	<p>The system then asks you to choose a color scheme.</p> <p>Select the desired color scheme from the following list:</p> <p>&gt;&gt;&gt; 1. Color — black background 2. Color — blue background</p> <p>Selection —&gt;</p>
<b>9</b>	<p>Enter <b>1</b>, followed by <b>{RETURN}</b>, if you want a black background screen.</p> <p>Enter <b>2</b>, followed by <b>{RETURN}</b>, if you want a blue background screen.</p> <p>The following prompt then appears.</p> <p>About to start transfer of an appropriate Reflection 4-PLUS configuration file from NAC to your PC...</p> <p>The transfer should take approximately 15 – 30 seconds.</p> <p>Please press &lt;ENTER&gt; to begin...</p>
<b>10</b>	<p>Press <b>{ENTER}</b> to begin transferring the appropriate Reflection 4+ terminal configuration file from NAC to your workstation.</p>
—continued—	

<b>Procedure 4-2 (continued)</b> <b>Workstation configuration</b>	
Step	Installer's action and system's response
11	<p>If the transfer of the configuration is successful, the system displays the following prompts. If the transfer of the configuration is unsuccessful, go to Step 14.</p> <p>Transfer of configuration file was successful.                      From now on, use the following command when starting Reflection:</p> <p style="padding-left: 40px;">R4 MERIDIAN.CFG</p> <p>If there are any key labels currently displayed at the bottom of the screen, please press &lt;Ctrl&gt;+&lt;Alt&gt;+N to clear them.</p>
12	<p>If there are no function key descriptions on the screen then ignore this message. If the bottom screen portion shows the function key descriptions, then press <b>{CONTROL}{ALT}{N}</b> simultaneously. This action clears the descriptions from the screen.</p> <p>Please press &lt;ENTER&gt; to continue...</p>
13	<p>Press <b>{ENTER}</b> to complete the workstation's configuration. At the end of the process the system displays the Supervisor Logon screen.</p> <p>Go to Step 16.</p>
14	<p>The system displays the following prompt for an unsuccessful file transfer:</p> <p>!!! Transfer of configuration file failed. !!!</p> <p>Select an action from the following list:</p> <p>&gt;&gt;&gt; 1. Retry the transfer operation                      2. Ignore the failure (a configuration file is available)                      3. Select a different terminal type</p> <p>Selection —&gt;</p>
<p>—continued—</p>	

<b>Procedure 4-2 (continued)</b> <b>Workstation configuration</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>15</b>	<p>If you enter <b>1</b>, followed by <b>{RETURN}</b>, the system takes you to prompts shown for Step 9, after which the successive steps follow.</p> <p>Enter <b>2</b>, followed by <b>{RETURN}</b>, if the meridian.cfg file is already on the PC workstation. Go to Step 16.</p> <p>Enter <b>3</b>, followed by <b>{RETURN}</b>, to return to prompts shown in Step 4, after which the successive steps follow.</p>
<b>16</b>	The Supervisor Login screen appears after a few seconds.
<b>17</b>	To exit Reflection 4+, log out from NAC. Wait until the login screen is completely redrawn. Enter <b>{CONTROL}{ALT}{X}</b> . The DOS prompt appears.
—end—	

If you wish to reconfigure your terminal while NAC is running, press **{CONTROL}{T}** simultaneously at anytime to display the configuration prompt. If your terminal selection remains unchanged, you are returned to the NAC feature you were using prior to reconfiguring the workstation. If your terminal selection is changed during Procedure 4-2, you are logged out, and the Supervisor Login screen appears.

If you are running your display session from a supervisor dial-up connection, pressing **{CONTROL}{T}** does not change your terminal configuration. If you want to reconfigure the terminal for your dial-up session, you must log off, hang up the connection and dial back in again. When you reconnect, the configuration prompt is displayed and the new terminal configuration you choose takes effect.

## Printers

There are ten types of printers that can be used by the NAC.

- DEC LA195 (does not support international languages)
- HP RuggedWriter
- HP LaserJet series II
- HP LaserJet series III
- HP LaserJet series 4
- HP LaserJet series 4 Plus
- HP PaintJet 3630
- HP DeskJet
- HP DeskJet 500
- HP DeskJet 560C (with serial-parallel converter)

The serial port gender of each printer is a female DB-25, with the exception of the LaserJet 4 Plus. The LaserJet 4 Plus serial port gender is a female DB-9, requiring a HP C2809A 9- to 25-pin serial cable adapter. This adapter can be obtained through HP or one of its distributors.

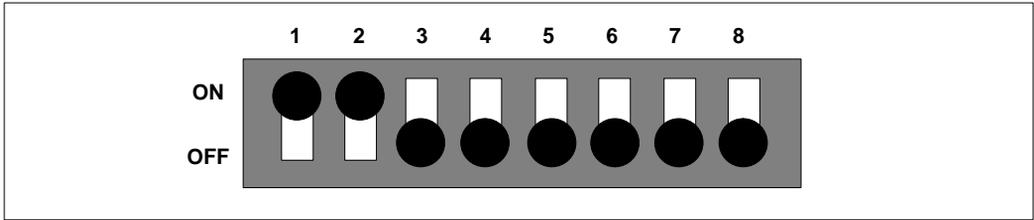
Obtain the installation instructions from the user's manual for your printer. Ensure that the settings for your printer(s) are correct as described here.

*Note:* Before a printer can be fully disconnected, it must be taken off-line, powered off, and the serial interface connector must be removed. Before a printer is connected and powered up, the interface must be connected and secured, and the power cord installed. When these steps are completed, the printer can be powered up and put on-line.

### Serial-parallel converter

A serial-parallel converter (A0621070) is required for printers that use parallel connections instead of serial connections. The converter uses a 36-pin parallel connector at one end to connect to the printer, and a 25-pin female connector at the other end to connect to the serial cable. The converter requires no external power supply because it is powered by the RS-232 interface. Figure 4-5 shows the correct DIP switch settings for use with the NAC system.

**Figure 4-4**  
**Serial-parallel converter DIP switch settings**



**CAUTION**

**To avoid service interruptions**

Never use pencils or other graphite tools when changing the position of the DIP switches. Flakes of graphite can enter the switch and damage the printer.

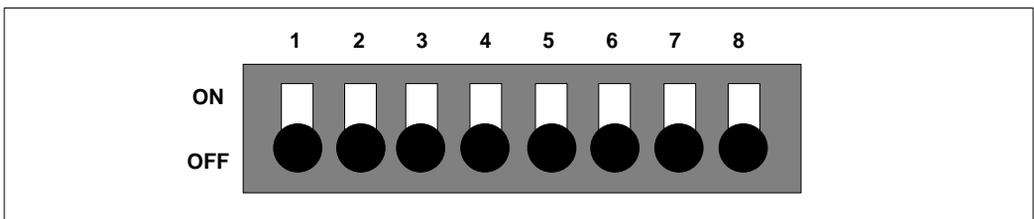
## DEC LA195

The DEC LA195 is a dot-matrix printer. This printer can be configured in Epson-mode as configured in the VuePrint Menu System. Epson-mode does not support the international character set but provides faster printing of reports. Table 4-2 lists the correct system set-up for use with the NAC system. Figure 4-5 shows the correct DIP switch settings for use with the NAC system.

<b>Table 4-2 DEC LA195 system set-up</b>	
<b>Function</b>	<b>Setting</b>
<b>Install 1:</b>	
Ribbon	Normal
A.S.F.	Off
Emulation	Epson
<b>Print style:</b>	
Font	Draft
Emphasized	Off
Pitch	10 CPI
Font Lock	Off
<b>Page layout:</b>	
Quarter	Off
Line spacing	6 LPI
Form Length	Letter
Page skip	Off
<b>Print mode:</b>	
Text dir	Bi-dir
Graphic dir	Uni-dir
AGM mode	Off
—continued—	

<b>Table 4-2 (continued) DEC LA195 system set-up</b>	
<b>Function</b>	<b>Setting</b>
<b>Character:</b>	
Slash zero	Off
Character set	Italics
Intl char set	USA
Character set	Set 1
Code page	USA
<b>Install 2:</b>	
Tear off	On
Paper out	Enable
Auto CR	On
Auto LF	Off
Copy mode	Off
Envelope	Off
Language	English
—end—	

**Figure 4-5**  
**DEC LA195 DIP switch settings**

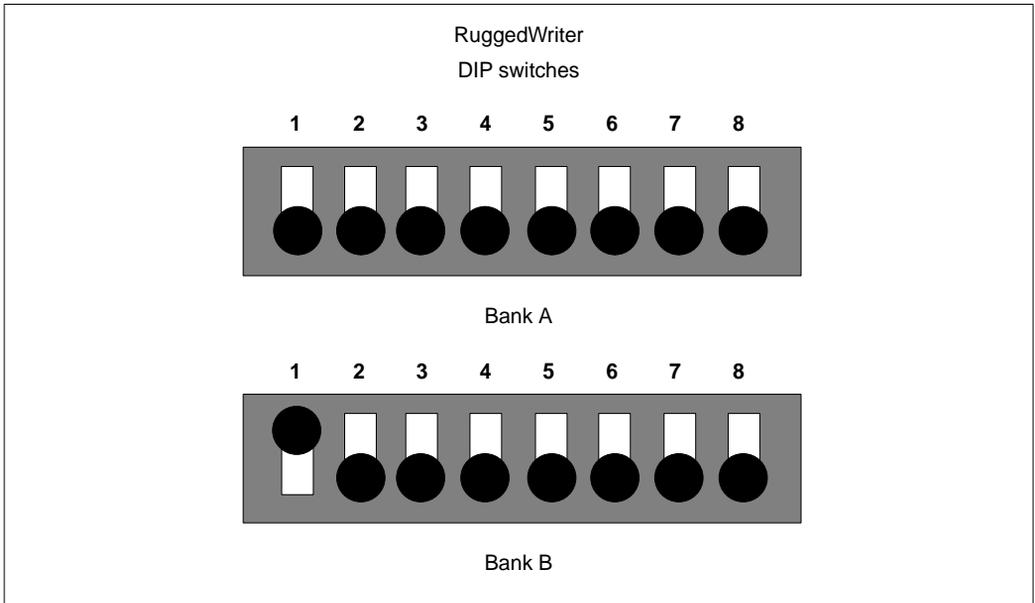


## HP RuggedWriter

The RuggedWriter is a dot-matrix printer. This printer can be configured in HP PCL mode or in Epson mode as configured in the Bank B switches. HP PCL mode provides ISO Latin-1 international support as well as higher quality graphics. Epson mode does not support the international character set but provides faster printing of reports. Table 4-3 lists the correct DIP switch settings for use with the NAC system.

<b>Table 4-3 RuggedWriter option switch settings</b>			
<b>Function</b>	<b>Setting</b>	<b>Switch</b>	<b>Switch position</b>
<b>Bank A switches:</b>			
Pitch	10 cpi	1	Down
Default MAX	-8	2	Down
Character set		3	Down
		4	Down
		5	Down
Paper path	z-fold	6	Down
Page length	11 inches	7	Down
Print quality	Draft	8	Down
<b>Bank B switches:</b>			
Command set	EPSON	1	Up
	HP PCL	1	Down
RAM allocation	Buffer	2	Down
Perforation skip	Disabled	3	Down
Handshaking	XON / XOFF	4	Down
Parity	None	5	Down
		6	Down
Baud	9600	7	Down
		8	Down

**Figure 4-6**  
**RuggedWriter DIP switch settings**



## HP LaserJet series II, III, 4 and 4 Plus

The LaserJet series II, III, 4 and 4 Plus are laser printers. Table 4-4 shows the correct option settings for the LaserJet series II. Table 4-5 shows the correct option settings for the LaserJet series III. Table 4-6 shows the correct option settings for the LaserJet series 4. Table 4-7 shows the correct option settings for the LaserJet series 4 Plus.

**Note:** For a LaserJet series 4 Plus printer using a serial connection, the HP C2809A 9- to 25-pin converter is required to connect the printer to the printer cable.

Use the {Menu} key on the front panel to check/set the options. Press the {Menu} key to access the first group of settings. Hold the {Menu} key down for about five seconds (when the printer is off-line) to access the second group of settings. Press the {+} or {-} key until the correct setting appears to change an option. Press the {Enter/Reset Menu} key to save a selection. Press the {Menu} key to continue. Press the {On-line} key to exit the menu.

<b>Table 4-4 LaserJet series II printer option settings</b>
<b>Press {Menu} key to view Printing menu</b>
COPIES = 01
MANUAL FEED = OFF
FONT SOURCE = 1
FONT NUMBER = 00
FORM = 066 LINES
<b>Hold {Menu} key five seconds to view Configuration menu</b>
SYM SET = IBM – US
AUTO CONT = OFF
I/O = SERIAL
BAUD RATE = 9600
ROBUST XON = ON
DTR POLARITY = HI

<b>Table 4-5 LaserJet series III printer option settings</b>
<b>Press {Menu} key to view Printing menu</b>
COPIES = 1
FONT SOURCE = 1
FONT NUMBER = 00
PAPER = LETTER
ORIENTATION = P
FORM = 066 LINES
MANUAL FEED = OFF
SYM SET = ROMAN8
<b>Hold {Menu} key five seconds to view Configuration menu</b>
AUTO CONT = OFF
I/O = SERIAL
SERIAL = RS-232
BAUD RATE = 9600
ROBUST XON = ON
DTR POLARITY = HI
RET = DARK
PAGEPROTECT = OFF

<b>Table 4-6 LaserJet series 4 printer option settings</b>
<b>Press {Menu} key to view Printing menu</b>
COPIES = 1
PAPER = LETTER
ORIENTATION = P
FORM = 66
MANUAL FEED = OFF
RET = DARK
<b>Press {Menu} key once to view PCL menu</b>
FONT SOURCE = I
FONT NUMBER = 45
SYM SET = ISO L1
PAGEPROTECT = OFF
RESOLUTION = 300
*TIMEOUT = 15
<b>Press {Menu} key twice to view Configuration menu</b>
MP TRAY = CLASS
LOCK = NONE
CLR WARN = ON
AUTO CONT = ON
DENSITY = 3
LOW TONER = ON
<b>Press {Menu} key three times to view Printing menu</b>
SERIAL = RS-232
PACING = XON/XOFF
BAUD RATE = 9600
ROBUST XON = ON
DTR POLARITY = HI

<b>Table 4-7 LaserJet series 4 Plus printer option settings</b>
<b>Press {Menu} key to view Printing menu</b>
COPIES = 1
PAPER = LETTER
ORIENTATION = P
FORM = 60
MANUAL FEED = OFF
RET = MEDIUM
ECONOMODE = OFF
<b>Press {Menu} key once to view PCL menu</b>
FONT SOURCE = I
FONT NUMBER = 0
PITCH = 10.00
SYM SET = ROMAN -8
<b>Press {Menu} key twice to view Job menu</b>
RESOLUTION = 600
IO TIMEOUT = 15
PWRSAVE MODE = 30 MIN
<b>Press {Menu} key three times to view Configuration menu</b>
MP TRAY = CLASS
LOCK = NONE
CLR WARN = ON
AUTO CONT = OFF
DENSITY = 3
LOW TONER = CONT
—continued—

<b>Table 4-7</b> <b>LaserJet series 4 Plus printer option settings (continued)</b>
<b>Press {Menu} key four times to view Memory configuration menu</b>
IO BUFFER = AUTO
<b>Press {Menu} key five times to view Parallel menu</b>
HIGH SPEED = YES
ADV FNCTNS = OFF
<b>Press {Menu} key six times to view Serial menu</b>
PACING = XON/XOFF
BAUD RATE = 9600
ROBUST XON = ON
DTR POLARITY = HI
—end—

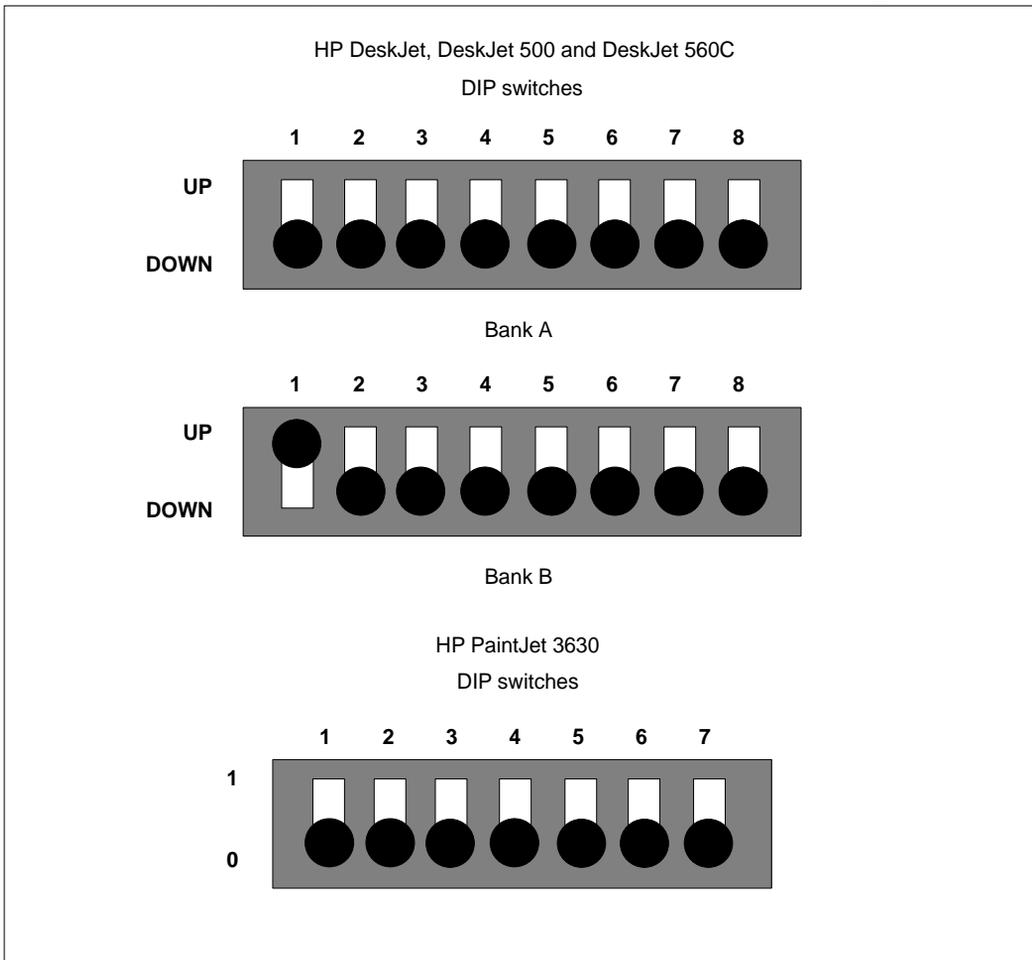
## HP PaintJet 3630, DeskJet, DeskJet 500 and DeskJet 560C

The PaintJet 3630, DeskJet, DeskJet 500 and DeskJet 560C are inkjet printers. Figure 4-7 shows each printer's correct DIP switch settings for use with the NAC system.

*Note:* The DeskJet 560C must be used with a serial-parallel converter. See the "Serial-parallel converter" section for more details.

**Figure 4-7**

### HP PaintJet 3630, DeskJet, DeskJet 500 and DeskJet 560C DIP switch settings



## Modems overview

When a peripheral device or a Network Administration Center (NAC) system is located at distance greater than 15 meters (50 feet) from the Meridian MAX system, a modem may be used.

### Supported modems

There are a number of modems that can be used to connect a Meridian MAX system or peripheral device to the NAC. Table 4-8 lists each type of modem and the gender of its DB-25 serial port.

<b>Table 4-8 Modems—DB-25 serial port genders</b>	
<b>Modem type</b>	<b>Gender</b>
Develcon DS511A	Female
Gandalf LDS 120E	Female
NetComm SmartModem M7F	Female
Racal VI2422PA	Female
UDS 2440	Female
Ven-Tel 2400 Plus II	Female
Ven-Tel 9600 Plus	Female

Table 4-9 lists the modems and the functions for which they can be used. Refer to appropriate section listed in the “Modem functions” columns.

<b>Table 4-9 Modems and functions</b>					
<b>Modem</b>	<b>Modem function</b>				
	<b>Limited distance</b>	<b>Remote diagnostics</b>	<b>Dial-up supervisor</b>	<b>Remote supervisor login</b>	<b>Network link</b>
Develcon DS511A	Yes			Yes	Yes
Gandalf LDS 120E	Yes			Yes	Yes
NetComm Smart-Modem M7F		Yes	Yes	Yes	Yes
Racal VI2422PA		Yes	Yes	Yes	Yes
UDS 2440		Yes	Yes	Yes	Yes
Ven-Tel 2400 Plus II			Yes	Yes	Yes
Ven-Tel 9600 Plus			Yes	Yes	Yes

A limited distance modem is used when peripheral devices are connected to the NAC through a direct connection. If a direct connection cannot be supported, a dial-up modem is used to connect the peripheral device or Meridian MAX to the NAC through the public service telephone network (PSTN).

### **Other modems**

It may be possible to use other modems for dial-up supervisor displays, remote supervisor logins, or network links, provided they support the correct subset of standard Hayes modem commands. A set of modem responses must also be supported. Table 4-10 shows the list of commands and Table 4-11 shows the list of responses that must be supported.

<b>Table 4-10 Supported Hayes modem commands</b>	
<b>Command</b>	<b>Usage</b>
+++	Escape sequence
AT&C1	
AT&D0	
AT&D2	
AT&F	Recall factory settings
AT&W	Write parameters
ATDS1	Dial stored number
ATDS=1*	Dial stored number
ATDT...	Dial
ATE0	Echo off
ATH0	On hook
ATL0	
ATQ0	Result codes on
ATS0=0	Auto answer ring number
ATS2=128	Escape code character
ATS64=1	Dial/answer sequence abort
ATX4	Extended feature set
* This command is only used with the NetComm Smart-Modem M7F	

<b>Table 4-11 Supported modem responses</b>	
<b>Command</b>	<b>Response</b>
0	OK
1	RING
2	CONNECT 1200
3	CONNECT 2400
4	CONNECT 4800
5	CONNECT 9600
6	CONNECT
7	NO CARRIER
8	MODEM ERROR
9	NO DIAL TONE
10	BUSY
11	NO ANSWER

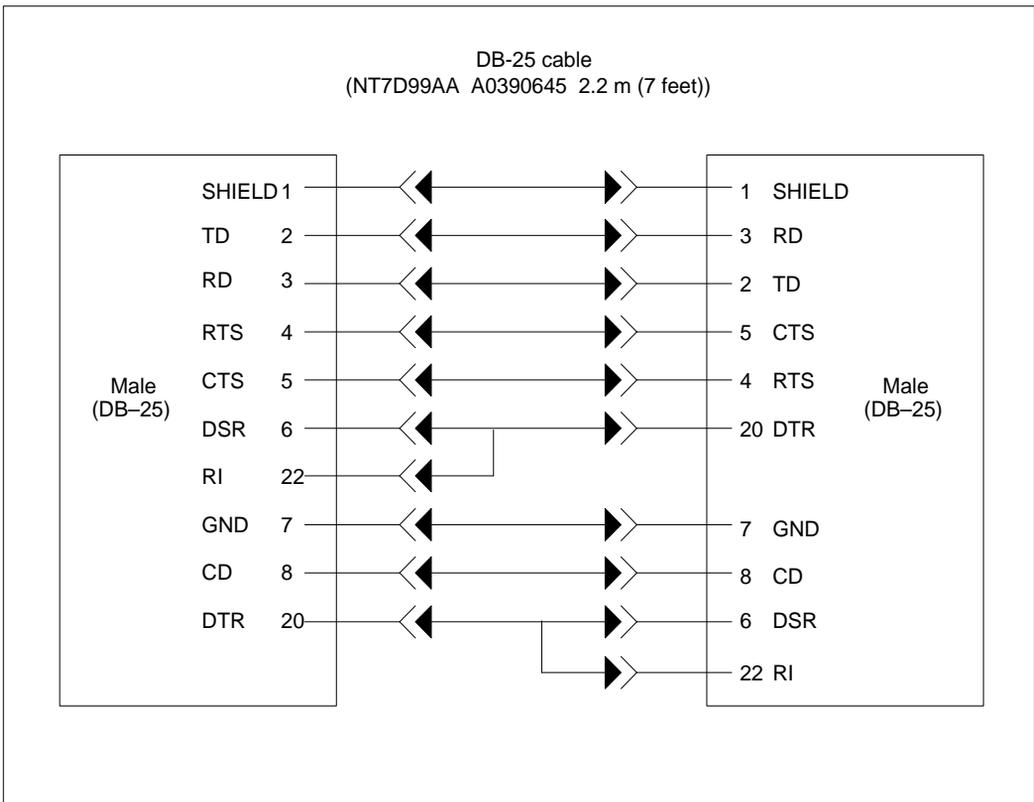
### Modem cables

Modems can be connected to the NAC using two modem cables: the NT7D99AA null modem cable and the NT7D61Ax cable.

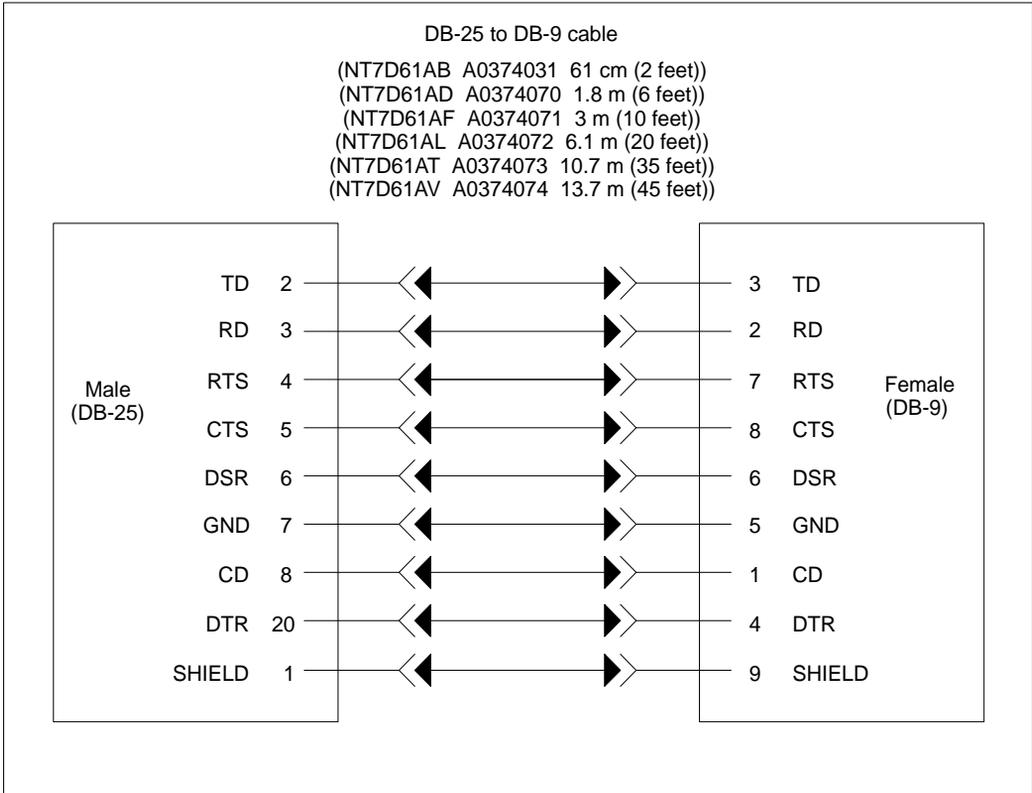
Figure 4-8 shows the cabling arrangement for the NT7D99AA cable for use with dial-up supervisor, remote supervisor login and network link.

Figure 4-9 shows the cabling arrangement for the NT7D61Ax cable for use with remote diagnostics.

**Figure 4-8**  
**Cabling arrangement—modem connection cable NT7D99AA for dial-up supervisor, remote supervisor login and network link**



**Figure 4-9**  
**Cabling arrangement—modem connection cable NT7D61Ax for remote diagnostics**



## Limited distance modem

If you need more than 15 meters (50 feet) between the NAC and any peripheral, you need to use a limited-distance modem. The limited-distance modem must be self-powered. The added range depends on the modem you obtain. Limited-distance modems are recommended for use inside buildings only.

The following settings are used for a limited-distance modem.

- 9600 baud rate
- 8 bits, no parity, 1 stop bit

### **Gandalf LDS 120E and Develcon DS 511A limited distance**

The Gandalf LDS 120E and Develcon DS 511A limited distance modems allow you to extend the distance between the NAC and any connected peripheral by up to a maximum distance of five miles. Other limited distance modems may not provide the five mile distance. It is your responsibility to check with the particular manufacturer.

The Gandalf LDS 120E and Develcon DS 511A limited distance modems can also be used for both the remote supervisor login and the network link. Refer to the “Remote supervisor login modems” and “Network link modems” sections for more information.

For each peripheral requiring a limited distance modem, you require the null modem cable NT7D99AA connected between the modem and the multiport cable connected at the NAC.

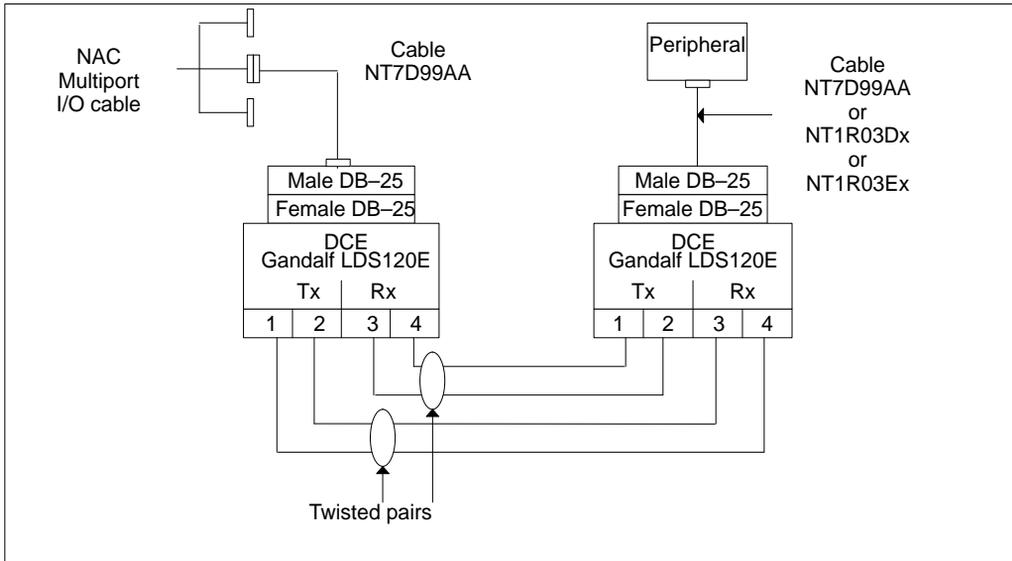
If the peripheral device connected to the second modem is DCE, the NT7D99AA cable is used to connect the peripheral device to this modem.

If the peripheral device connected to the second modem is a female DTE connection, the NT1R03Dx cable must be used to connect this modem to the peripheral device. If the peripheral device connected to the second modem is a male DTE connection, the NT1R03Ex cable must be used to connect this modem to the peripheral device.

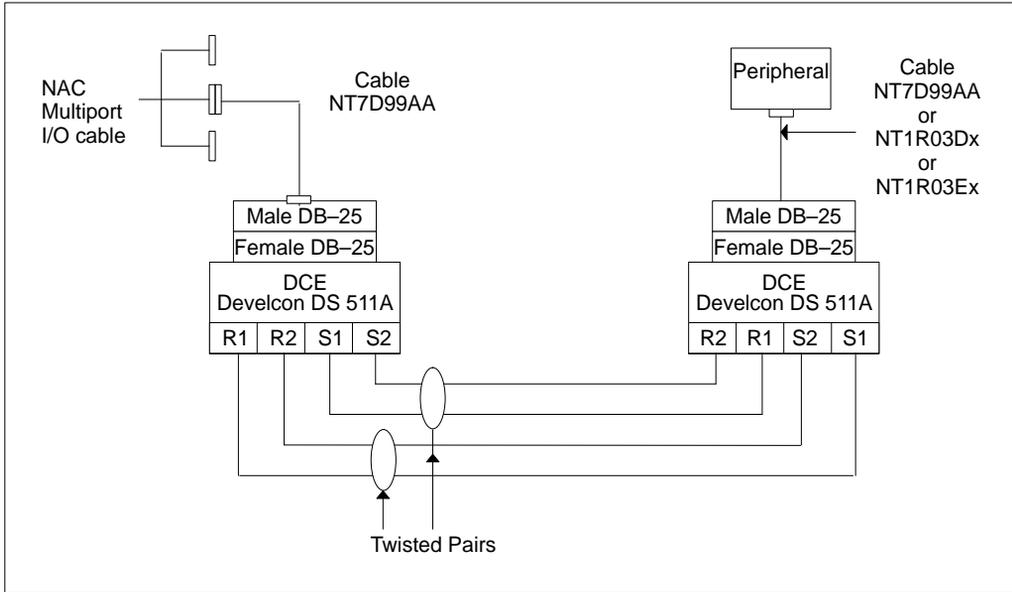
Figure 4-10 illustrates the hardware configuration required to use the Gandalf LDS 120E modem with an application module system. Figure 4-11 illustrates the hardware configuration required to use the Develcon DS 511A modem with an application module system.

The switch on the back of the modem should be set to the “normal” position.

**Figure 4-10**  
**Gandalf LDS 120E limited distance modem hardware configuration**



**Figure 4-11**  
**Develcon DS 511A limited distance modem hardware configuration**



**Gandalf LDS 120E modem settings**

The following settings are necessary for the Gandalf LDS 120E modem to be used:

- Termination: T (330 OHM)
- Internal Jumper Plugs: 4-wire mode, J13-J14 connected and J15-J16 connected
- Front Panel Push-button Switches: ALL OUT - TP - RL - DL - AL

Table 4-12 lists the external DIP switch settings for point-to-point, full-duplex for the Gandalf LDS 120E. Table 4-13 lists the internal DIP switch settings for point-to-point, full-duplex.

**Table 4-12**  
**Gandalf LDS 120E external DIP switch settings for point-to-point, full-duplex**

Switch number	Switch setting
1	OPEN (OFF)
2	CLOSED (ON)
3	CLOSED (ON)
4	CLOSED (ON)
5	CLOSED (ON)
6	NOT USED

**Table 4-13**  
**Gandalf LDS 120E internal DIP switch settings for point-to-point, full-duplex**

Switch number	Switch setting
1	CLOSED (ON)
2	CLOSED (ON)
3	CLOSED (ON)
4	CLOSED (ON)
5	CLOSED (ON)
6	CLOSED (ON)

Once the modems are connected, turn on the power and ensure the DCD lamp on each modem comes on. This lamp indicates that both Gandalf LDS 120E modems are active.

Please note that these instructions may vary depending on the equipment used at your site. Some peripherals connect to male DB-25 connectors and others connect to female DB-25 connectors. The creation of the straight-through DB-25 cable and the 2-pair twisted cable is the

responsibility of the user and it is the user's responsibility to ensure that the correct connectors are attached.

Connect one end of the modem cable NT7D99AA to the VME multiport cable. Connect the other end to the female DB-25 socket on the first Gandalf LDS 120E or Develcon DS 511A modem.

The first Gandalf LDS 120E or Develcon DS 511A modem is connected to the second Gandalf LDS 120E or Develcon DS 511A modem with a 2-pair-twisted cable of 24 AWG. This cable cannot exceed 5 miles. For the Develcon DS 511A modem, the cover casing must be removed before connecting the 2-pair-twisted cable.

Figures 4-10 and 4-11 illustrate the 2-pair-twisted cable connections for the two modems.

If the peripheral device is a female DTE connection, the second Gandalf LDS 120E or Develcon DS 511A modem is connected to the peripheral by using a straight-through NT1R03Dx cable. If the peripheral device is a male DTE connection, the second Gandalf LDS 120E or Develcon DS 511A modem is connected to the peripheral by using a straight-through NT1R03Ex cable.

If the peripheral device is DCE, the modem is connected to the peripheral device by the null modem cable NT7D99AA.

If the peripheral device is DTE, the second Gandalf LDS 120E or Develcon DS 511A modem is connected to the peripheral by using a straight-through NT1R03Dx cable.

The male DB-25 connector is attached to the second Gandalf LDS 120E modem or Develcon DS 511A modem's female DB-25 socket, and the appropriate DB-25 connector attached to the peripheral.

## Dial-up modems overview

Dial-up modems are used for the following functions.

- Remote diagnostics
- Dial-up supervisor
- Network link
- Remote Supervisor Login feature specific to the NAC option (see *NAC 2 Supervisor's User Guide (P0724352)* for more information on this feature)

The same brand of dial-up modem must be used for either purpose. Ensure that each modem connected to the network is properly set up for its purpose.

This chapter recommends modems that have been tested with NAC when configured for remote diagnostics, supervisor dial-up, network link, and for the remote supervisor login feature.

**Note:** Dial-up printers are not supported through the dial-up connection.

## Remote diagnostic modems

The Remote Diagnostic allows Northern Telecom to diagnose your NAC system whenever you experience difficulties. Often the solutions can be sent back through this link directly to your system. Consult your service contract for more details about the remote diagnostic service.

The Remote Diagnostic Link is the cable which connects the AM to the modem. Using an RJ-45 cable, attach the DB-9 connector to the NAC octopus cable. Connect the DB-25 connector (which is at the other end of the cable) to the modem. The modem is connected to the telephone network. Figure 4-9 shows the cable arrangements for the Remote Diagnostic Link.

For the Remote Diagnostic modems, the following standards must be met.

- 1200 or 2400 baud rate
- auto-answer capability
- accessible from the public switch telephone network

In order to obtain the Remote Diagnostic support for your NAC system, you must connect a modem to the Remote Diagnostic Link. The cabling arrangement for the remote diagnostics port is shown in Figure 4-9.

The following modems are supported for remote diagnostics.

- NetComm SmartModem M7F
- Racal VI2422PA
- UDS 2440

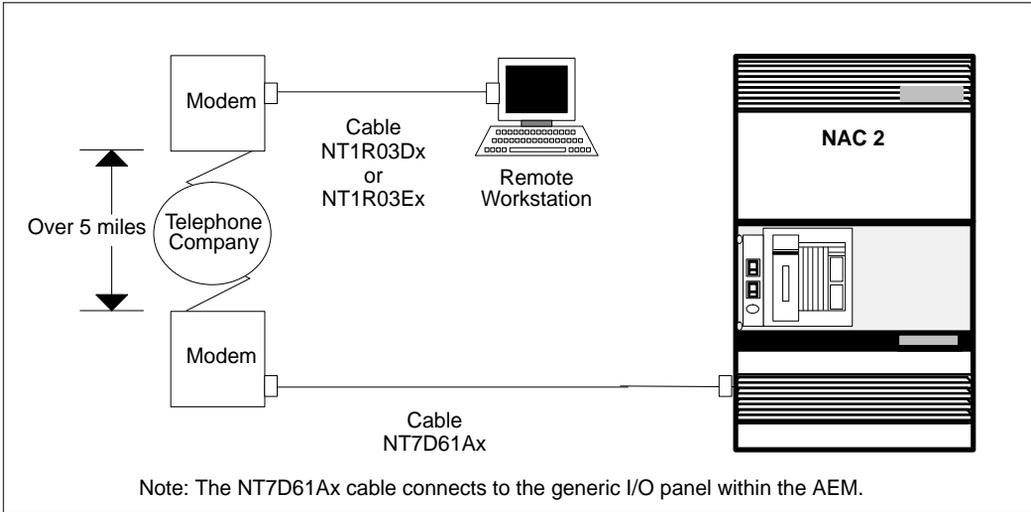
The cable between NAC I/O panel and the remote diagnostic modem is a DB-25 (male) to DB-9 (female) modem cable, NT7D61Ax. This cable is connected to the I/O panel at Card 1, Conn 2.

The cable between the remote terminal and the diagnostic modem is a straight-through DB-25 serial cable NT1R03Dx (male to male) or NT1R03Ex (male to female). The cable type depends on the configuration defined by the user. Figure 4-12 illustrates this connection for a NAC system.

The modem settings at the NAC end must be done before connecting the modem to the NAC. This is accomplished by first connecting the modem to

one of the workstations. Refer to your specific modem setups. Once this is done, disconnect the modem and reconnect it to the NAC.

**Figure 4-12**  
**Connecting the remote diagnostics workstation with a NAC remote diagnostic modem**



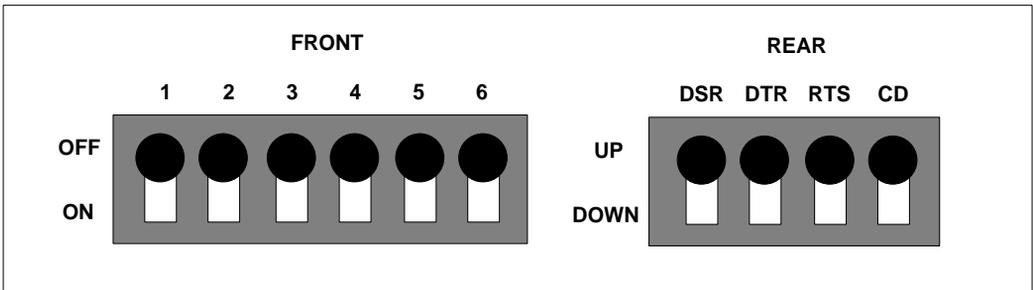
### NetComm SmartModem M7F

Figure 4-12 illustrates the connection between the NAC remote diagnostics port and a remote workstation using the NetComm SmartModem M7F.

To properly set up the NetComm modem for remote diagnostics, ensure the modem's switch settings match those shown in Figure 4-13. The same switch settings should be used at both the remote end and the NAC end.

*Note:* There are two buttons located on the front panel of the modem: Mode and Talk/Data. For use with the NetComm modem, the Talk/Data button should be pressed.

**Figure 4-13**  
**NetComm SmartModem M7F modem switch settings**



Complete the steps in Procedure 4-3 to configure the NetComm modem for remote diagnostics.

Procedure 4-3 Configuring the NetComm SmartModem M7F for remote diagnostics		
Step	Action	Response
1	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
—continued—		

<b>Procedure 4-3 (continued)</b> <b>Configuring the NetComm SmartModem M7F for remote diagnostics</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>2</b>	Connect the workstation and the modem to their power sources.	
<b>3</b>	Power up the workstation and the modem.	
<b>4</b>	Enter the following commands on the workstation keyboard, pressing {ENTER} after each command.	
	<b>atz</b>	OK
	<b>at&amp;f</b>	OK
	<b>ats0=1</b>	OK
	<b>at&amp;d0</b>	OK
	<b>at&amp;c1</b>	OK
	<b>at\n3</b>	OK
	<b>at\q3</b>	OK
	<b>at&amp;w</b>	OK
<b>5</b>	Power down the workstation and the modem.	
<b>6</b>	Disconnect the workstation from the modem.	
<b>7</b>	Connect the modem directly to the NAC generic I/O panel using an NT7D61Ax modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
—continued—		

**Procedure 4-3 (continued)**

**Configuring the NetComm SmartModem M7F for remote diagnostics**

Step	Action	Response
8	Power up the modem.	If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.
—end—		

## Racal VI2422PA

If you use a Racal VI2422PA modem at one end of the line you must use the Racal VI2422PA modem at the other end as well. Both modems must be set to the same speed.

Figure 4-12 illustrates the connection between the NAC remote diagnostics port and a remote workstation using a Racal VI2422PA modem.

Complete the steps in Procedure 4-4 to configure the Racal modem for remote diagnostics.

For more information on the Racal modem and its operation, refer to the *Racal VI2422PA Modem User's Guide* that accompanies the modem.

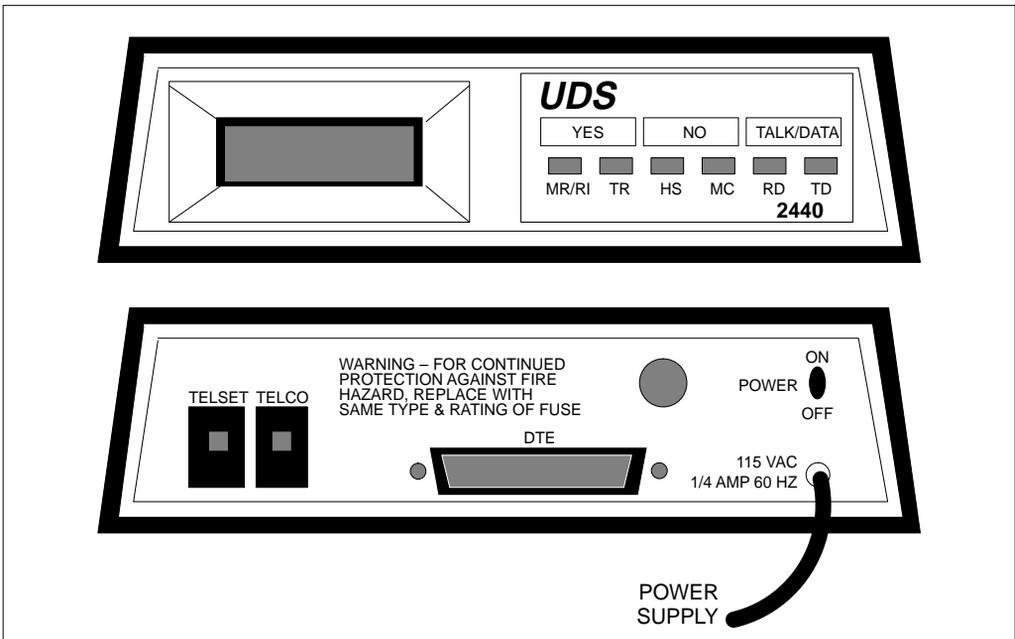
<b>Procedure 4-4</b> <b>Configuring the Racal VI422PA modem for remote diagnostics</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Connect a workstation with data format 8N1 and speed 2400 to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
<b>2</b>	Connect the workstation and the modem to their power sources.	
<b>3</b>	Power up the workstation and the modem.	
<b>4</b>	Enter the following commands, pressing <b>{ENTER}</b> after each command:	
	<b>at&amp;f</b>	OK
	<b>atQ0</b>	OK
	<b>atV1</b>	OK
—continued—		

<b>Procedure 4-4 (continued)</b> <b>Configuring the Racal VI422PA modem for remote diagnostics</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
	<b>atX1</b>	OK
	<b>ats0=1</b>	OK
	<b>at&amp;C1</b>	OK
	<b>at&amp;D2</b>	OK
	<b>atS2=128</b>	OK
	<b>atE0</b>	OK
	The following command does not appear on the screen when you enter it:	
	<b>at&amp;w</b>	OK
<b>5</b>	Power down the workstation and the modem.	
<b>6</b>	Disconnect the workstation from the modem.	
<b>7</b>	Connect the modem directly to the NAC I/O panel using an NT7D61Ax (AM) modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
<b>8</b>	Power up the modem.	
<b>9</b>	Through the use of the Racal modem's front panel, choose option 1 and set the value to <b>1</b> . Choose option 13 and set the value to <b>2</b> .	
—end—		

## UDS 2440

Figure 4-14 shows the front and rear view of the UDS 2440 Remote Diagnostic modem. This modem connects to the AM's I/O panel using an NT7D61Ax cable.

**Figure 4-14**  
Remote diagnostic modem—UDS 2440—front and rear view



The UDS 2440 modem does not contain any internal switch settings. The configuration is done via the front panel buttons on the modem.

If you want to configure the UDS 2440 modem for remote diagnostic support using the modem's front panel buttons, perform Procedure 4-5.

<b>Procedure 4-5</b> <b>Configuring the UDS 2440 modem via the front panel for remote diagnostics</b>	
Step	Configuration action and system response
1	Connect the modem to a power source next to the NAC system. Ensure that the modem is not connected to the NAC system at this point.
2	Position the power switch on the rear panel of the modem to ON.  Press either the {YES} or {NO} buttons on the front of the modem panel for each response appearing in the LCD window.  If the wrong button is pressed, press the {TALK/DATA} button followed by the {NO} button. This action returns you to Step 2.  The LCD on the front panel displays the following:  ####-## (e.g. 3050-5C, appears for two seconds)  OFFLINE
3	Press {NO}.  DIAL?
4	Press {NO}.  TEST?
5	Press {NO}.  AUTO ANS?
6	Press {NO}.  DATA OPTS?
7	Press {NO}.  OPTIONS?
—continued—	

<b>Procedure 4-5 (continued)</b> <b>Configuring the UDS 2440 modem via the front panel for remote diagnostics</b>	
<b>Step</b>	<b>Configuration action and system response</b>
<b>8</b>	Press <b>{YES}</b> .  RESET?
<b>9</b>	Press <b>{YES}</b> .  LOADING (appears for one second)  RESET?
<b>10</b>	Press <b>{NO}</b> .  FACTORY?
<b>11</b>	Press <b>{YES}</b> .  FACTORY 0?
<b>12</b>	Press <b>{YES}</b> .  LOADING (appears for one second)  FACTORY?
<b>13</b>	Press <b>{NO}</b> .  SPKR OPTS?
<b>14</b>	Press <b>{NO}</b> .  TELE OPTS?
<b>15</b>	Press <b>{NO}</b> .  PIN OPTS?
<b>16</b>	Press <b>{NO}</b> .  MSG OPTS
—continued—	

<b>Procedure 4-5 (continued)</b> <b>Configuring the UDS 2440 modem via the front panel for remote diagnostics</b>	
Step	Configuration action and system response
17	Press <b>{NO}</b> .  SECURITY?
18	Press <b>{NO}</b> .  DISC OPTS?
19	Press <b>{NO}</b> .  SREGS?
20	Press <b>{NO}</b> .  OPTIONS?
21	Press <b>{NO}</b> .  PROTOCOL?
22	Press <b>{NO}</b> .  If SAVE? appears go to Step 23, if not go to Step 24.
23	Press <b>{YES}</b> .  SAVING (appears for two seconds)
24	OFFLINE
25	Press <b>{NO}</b> .  DIAL?
26	Press <b>{NO}</b> .  TEST?
27	Press <b>{NO}</b> .  AUTO ANS?
—continued—	

**Procedure 4-5 (continued)**  
**Configuring the UDS 2440 modem via the front panel for remote diagnostics**

Step	Configuration action and system response
28	Press {YES}.  AUTO ANS E
29	Press {YES}.  RINGS?
30	Press {YES}.  RING = 001
31	Press {YES}.  AUTO ANS?
32	Press {NO}.  DATA OPTS?
33	Press {NO}.  OPTIONS?
34	Press {YES}.  RESET?
35	Press {NO}.  FACTORY?
36	Press {NO}.  SPKR OPTS?
37	Press {NO}.  TELE OPTS?
—continued—	

<b>Procedure 4-5 (continued)</b> <b>Configuring the UDS 2440 modem via the front panel for remote diagnostics</b>	
<b>Step</b>	<b>Configuration action and system response</b>
<b>38</b>	Press <b>{NO}</b> .  PIN OPTS?
<b>39</b>	Press <b>{YES}</b> .  DTR OPTS?
<b>40</b>	Press <b>{YES}</b> .  DTR OPTS 0
<b>41</b>	Press <b>{NO}</b> .  dtr opt 1
<b>42</b>	Press <b>{NO}</b> .  dtr opt 2
<b>43</b>	Press <b>{NO}</b> .  dtr opt 3
<b>44</b>	Press <b>{YES}</b> .  DTR OPTS?
<b>45</b>	Press <b>{NO}</b> .  DSR OPTS?
<b>46</b>	Press <b>{YES}</b> .  DSR FORCED
<b>47</b>	Press <b>{NO}</b> .  DSR normal
—continued—	

**Procedure 4-5 (continued)**  
**Configuring the UDS 2440 modem via the front panel for remote diagnostics**

Step	Configuration action and system response
48	Press <b>{YES}</b> .  DSR OPTS?
49	Press <b>{NO}</b> .  CD OPTS?
50	Press <b>{YES}</b> .  CD FORCED
51	Press <b>{NO}</b> .  lo at disc
52	Press <b>{NO}</b> .  cd normal
53	Press <b>{YES}</b> .  CD OPTS?
54	Press <b>{NO}</b> .  CTS OPTS?
55	Press <b>{NO}</b> .  P 21 OPTS?
56	Press <b>{NO}</b> .  P 23 OPTS?
57	Press <b>{NO}</b> .  P 25 OPTS?
—continued—	

<b>Procedure 4-5 (continued)</b> <b>Configuring the UDS 2440 modem via the front panel for remote diagnostics</b>	
Step	Configuration action and system response
58	Press <b>{NO}</b> .  PIN OPTS?
59	Press <b>{NO}</b> .  MSG OPTS
60	Press <b>{NO}</b> .  SECURITY?
61	Press <b>{NO}</b> .  DISC OPTS?
62	Press <b>{NO}</b> .  SREGS?
63	Press <b>{NO}</b> .  OPTIONS?
64	Press <b>{NO}</b> .  PROTOCOL?
65	Press <b>{NO}</b> .  SAVE?
66	Press <b>{YES}</b> .  SAVING (appears for two seconds)  OFFLINE
—continued—	

<b>Procedure 4-5 (continued)</b> <b>Configuring the UDS 2440 modem via the front panel for remote diagnostics</b>	
<b>Step</b>	<b>Configuration action and system response</b>
<b>67</b>	<p>Connect the modem directly to the NAC generic I/O panel using an NT7D61Ax modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.</p> <p>If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.</p>
—end—	

If you have a workstation, you can use an alternative method to set up the UDS 2440 modem for remote diagnostic support. To properly configure the modem, perform Procedure 4-6.

<b>Procedure 4-6</b> <b>Alternative procedure for configuring the UDS 2440 modem via workstation for remote diagnostics</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
<b>2</b>	Connect the workstation and the modem to their power sources.	
<b>3</b>	Power up the workstation and the modem.	
—continued—		

**Procedure 4-6 (continued)**  
**Alternative procedure for configuring the UDS 2440 modem via workstation for re-remote diagnostics**

Step	Action	Response
4	Set the workstation baud rate to 2400. Refer to the "Workstation" section, "Video display terminal (VDT) workstation" subsection for more information.	
5	Enter the following commands on the workstation keyboard, pressing {ENTER} after each command.  <b>atz</b>  <b>at&amp;f</b>  <b>ats0=1</b>  <b>at&amp;d3</b>  <b>at&amp;s1</b>  <b>at&amp;c1</b>  <b>at&amp;w</b>	OK  OK  OK  OK  OK  OK
6	Power down the workstation and the modem.	
7	Disconnect the workstation from the modem.	
8	Connect the modem directly to the NAC I/O panel using an NT7D61Ax modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
—continued—		

<b>Procedure 4-6 (continued)</b> <b>Alternative procedure for configuring the UDS 2440 modem via workstation for re- mote diagnostics</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>9</b>	Power up the modem.	If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.
—end—		

## Dial-up supervisor modems

The following modems are supported modems for dial-up supervisor:

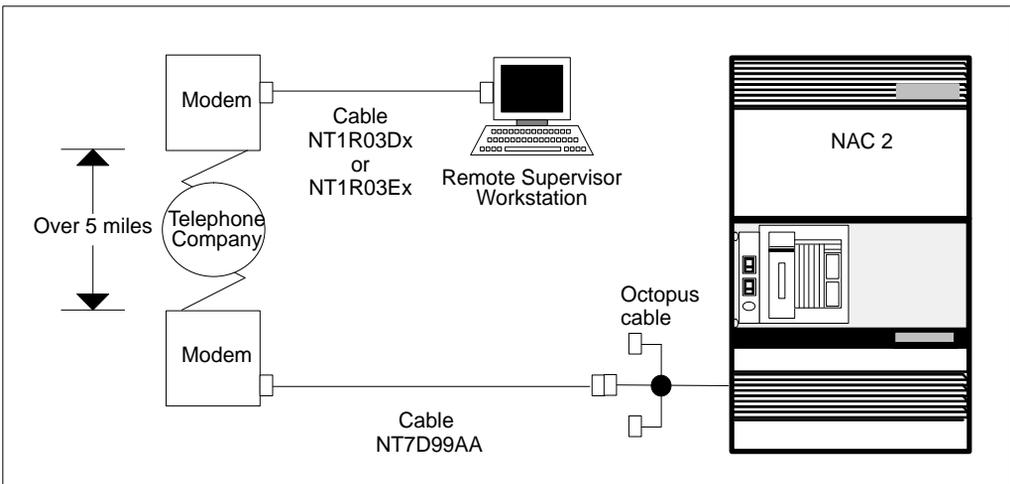
- NetComm SmartModem M7F
- Racal VI2422PA
- UDS 2440
- Ven-Tel 9600 Plus
- Ven-Tel 2400 Plus II

The cable between the supervisor workstation and the modem is a straight-through DB-25 serial cable NT1R03Dx (male to male) or NT1R03Ex (male to female) cable. But this depends on the configuration defined by the user. The cable between a PC running Reflection software and the modem is a DB-25 to DB-9 serial cable (male to female) A0268901.

The cable between the NAC and the dial-up supervisor modem is a modem cable NT7D99AA. Figure 4-15 illustrates this connection.

NAC automatically configures remote supervisor modems connected at the NAC end. Before dialing, the modem must be configured at the remote location.

**Figure 4-15**  
**Connecting the remote dial-up workstation with a NAC dial-up supervisor modem**



## NetComm SmartModem M7F

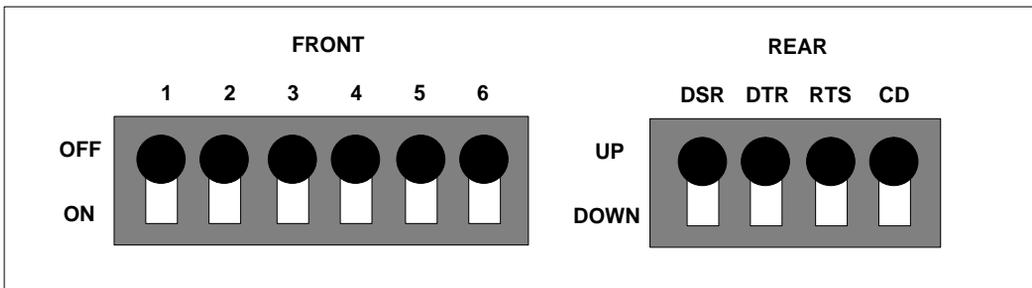
Figure 4-15 illustrates the connection between the NAC dial-up supervisor port and a remote workstation using the NetComm SmartModem M7F.

To properly set up the NetComm modem for dial-up supervisor, ensure the modem's switch settings match those shown in Figure 4-16. The same switch settings should be used at both the remote end and the NAC end.

NAC automatically configures remote supervisor modems connected at the NAC end. The cable connecting the NAC AM's VME multiport cable and the NetComm SmartModem M7F is the modem cable NT7D99AA.

**Note:** There are two buttons located on the front panel of the modem: Mode and Talk/Data. For use with the NetComm modem, the Talk/Data button should be pressed.

**Figure 4-16**  
**NetComm SmartModem M7F modem switch settings**



Complete the steps in Procedure 4-7 to configure the NetComm modem for dial-up supervisor.

<b>Procedure 4-7</b> <b>Configuring the NetComm SmartModem M7F for dial-up supervisor—remote end</b>		
Step	Action	Response
1	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
2	Connect the workstation and the modem to their power sources. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
3	Power up the workstation and the modem.	
4	Enter the following commands on the workstation keyboard, pressing {ENTER} after each command.	
	<b>atz</b>	OK
	<b>at&amp;f</b>	OK
	<b>ats0=1</b>	OK
	<b>at&amp;d0</b>	OK
	<b>at&amp;c1</b>	OK
	<b>at\n3</b>	OK
	<b>at\q3</b>	OK
	<b>at&amp;w</b>	OK
5	Use the Hayes AT command "atdt####" for touch-tone dialing and "atdp####" for pulse dialing to dial the required number. (where #### is the telephone number of the NAC modem)	

## Racal VI2422PA

Figure 4-15 illustrates the connection between the NAC port configured for dial-up supervisor and a remote dial-up workstation using a Racal VI2422PA modem.

NAC automatically configures remote supervisor modems connected at the NAC end. The cable connecting the NAC AM's VME multiport cable and the Racal VI2422PA modem is the modem cable NT7D99AA.

The Racal modem can be used for the dial-up supervisor, the remote supervisor login, and as the modem for the network link.

- Connect the Racal modem to its power source.
- Connect the Racal modem to the NAC through the use of the NT7D99AA cable.
- Connect the Racal modem's RJ-45 TELCO socket to the telephone socket using the cable provided by Racal.
- Record the port that is assigned to the Racal mode.
- Power up the Racal modem.
- Set Option 1 to "1".
- Set Option 13 to "2".

If you use a Racal modem at one end of the line you must use the Racal modem at the other end as well. For example, a single network link could have a Racal modem at the NAC site and a Racal modem at the nodal Meridian MAX site. Both modems must be set to the same speed.

Complete the steps in Procedure 4-8 to configure the Racal VI2422PA modem at the remote location for dial-up supervisor.

For more information on the Racal modem and its operation, refer to the Racal VI2422PA Modem User's Guide that accompanies the modem.

<b>Procedure 4-8</b> <b>Configuring the Racal VI2422PA dial-up supervisor modem—remote end</b>		
Step	Action	Response
1	Connect a workstation with data format 8N1 and 2400 baud to the modem with a straight-through NT1R03Dx or NT1R03Ex cable.	
2	Connect the workstation and the modem to their power sources. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
3	Power up the workstation and the modem.	
4	Enter the following commands, pressing <b>{ENTER}</b> after each command.	
	<b>at&amp;f</b>	OK
	<b>at*f0</b>	OK
	<b>ats0=1</b>	OK
	<b>atq1</b>	OK
	<b>ate0</b>	OK
	The following command will not appear on the screen when you enter it.	
	<b>at&amp;w</b>	OK
5	Through the use of the Racal modem's front panel, choose option 1 and set the value to <b>1</b> . Choose option 13 and set the value to <b>2</b> .	
6	Use the Hayes AT command "atdt####" for touch-tone dialing and "atdp####" for pulse dialing to dial the required number. (where #### is the telephone number of the NAC modem)	

## UDS 2440

Figure 4-14 shows the front and rear view of the UDS 2440 dial-up supervisor modem. This modem connects to the AM's multiport cable using an NT7D99AA cable.

The UDS 2440 modem does not contain any internal switch settings. Complete Procedure 4-9 to configure the UDS 2440 modem for dial-up supervisor.

NAC automatically configures remote supervisor modems connected at the NAC end. The cable connecting the NAC AM's VME multiport cable and the UDS 2440 modem is the modem cable NT7D99AA.

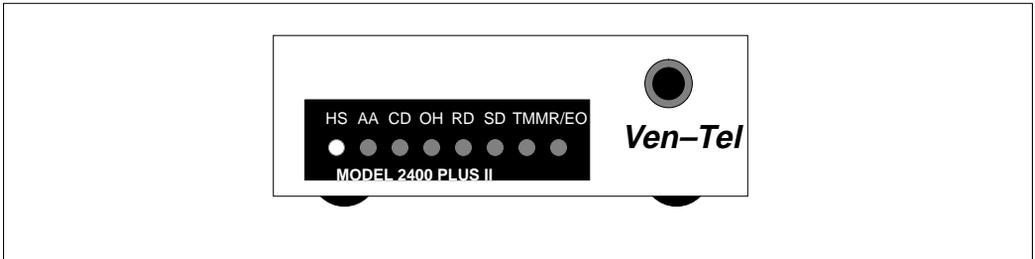
<b>Procedure 4-9</b>		
<b>Configuring the UDS 2440 modem for dial-up supervisor—remote end</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
<b>2</b>	Connect the workstation and the modem to their power sources. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
<b>3</b>	Power up the workstation and the modem.	
<b>4</b>	Enter the following commands on the workstation keyboard, pressing <b>{ENTER}</b> after each command.	
	<b>atz</b>	OK
	<b>at&amp;f</b>	OK
	<b>ats0=1</b>	OK
—continued—		

<b>Procedure 4-9 (continued)</b> <b>Configuring the UDS 2440 modem for dial-up supervisor—remote end</b>		
Step	Action	Response
5	<b>at&amp;d3</b>	OK
	<b>at&amp;s1</b>	OK
	<b>at&amp;c1</b>	OK
	<b>at&amp;w</b>	OK
	Use the Hayes AT command “atdt####” for touch-tone dialing and “atdp####” for pulse dialing to dial the required number. (where #### is the telephone number of the NAC modem)	
—end—		

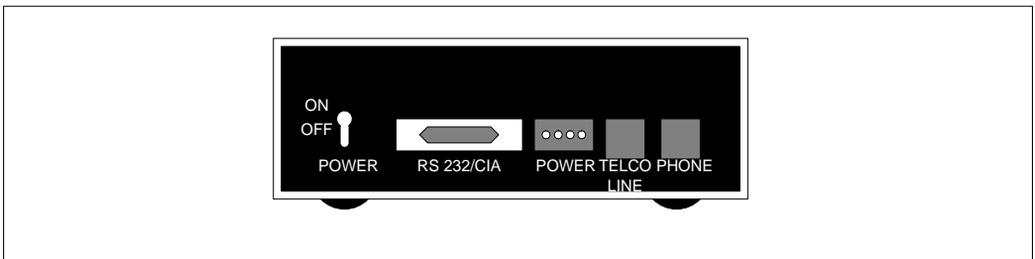
## Ven-Tel 2400 Plus II

Figure 4-17 and Figure 4-18 show the front and rear view of the Ven-Tel 2400 Plus II modem. Figure 4-19 shows how to open the modem. Figure 4-20 shows the switch locations.

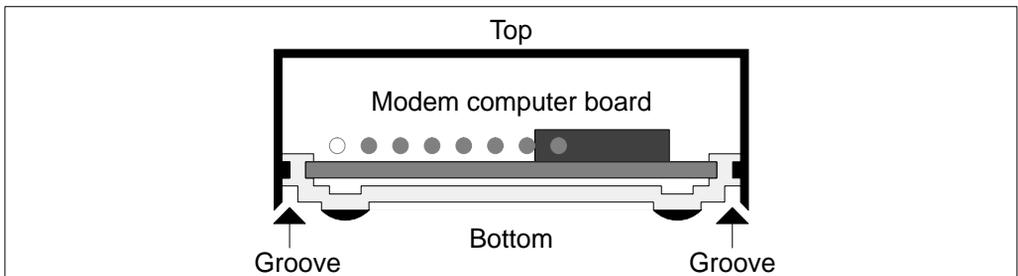
**Figure 4-17**  
Ven-Tel 2400 Plus II modem—front view



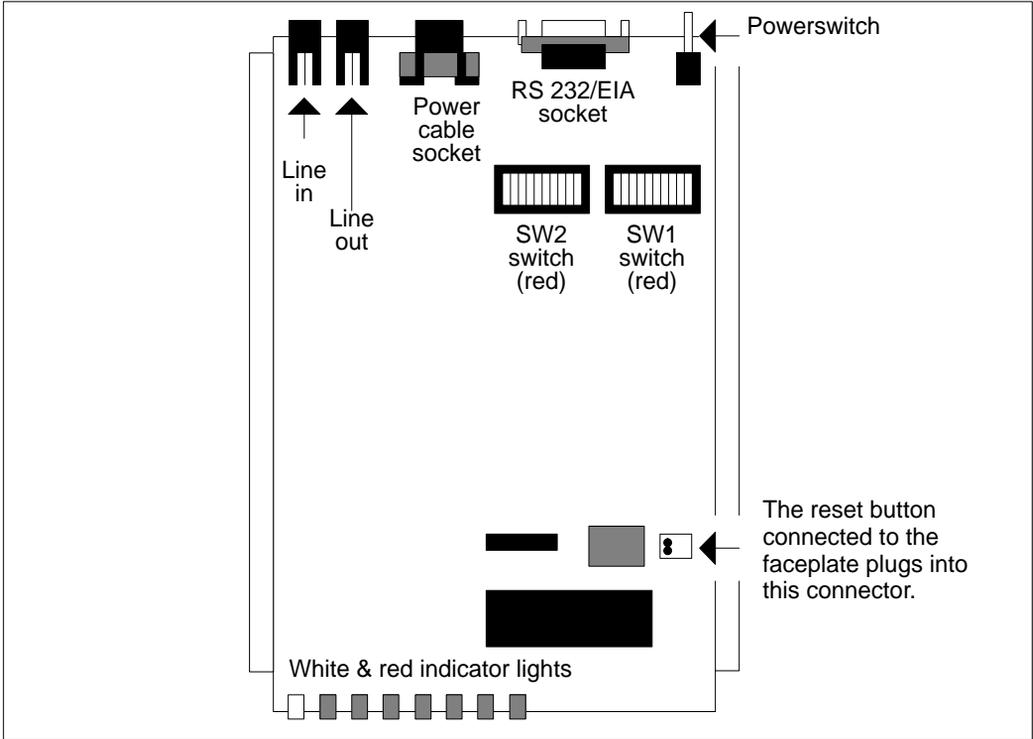
**Figure 4-18**  
Ven-Tel 2400 Plus II modem—rear view



**Figure 4-19**  
Ven-Tel 2400 Plus II modem—opening the modem



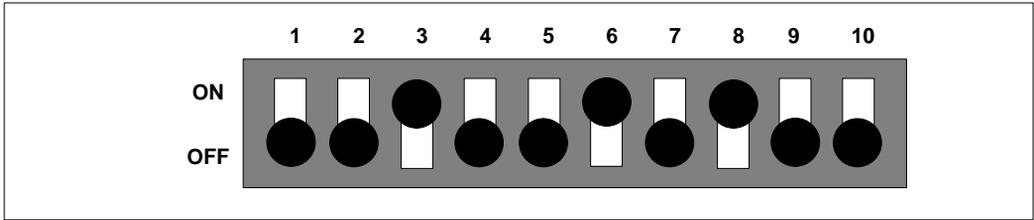
**Figure 4-20**  
**Ven-Tel 2400 Plus II modem—switch locations**



NAC automatically configures remote supervisor modems connected at the NAC end. The cable connecting the NAC AM's VME multiport cable and the Ven-Tel 2400 Plus II modem is the modem cable NT7D99AA.

To properly set up the Ven-Tel 2400 Plus II modem for use as a dial-up supervisor login modem, ensure the modem's switch settings match those shown in Figure 4-21. The same switch settings should be used at both the remote end and the NAC end.

**Figure 4-21**  
**Ven-Tel 2400 Plus II remote dial-up supervisor modem switch settings**



Complete the steps in Procedure 4-10 to configure the Ven-Tel 2400 Plus II modem for dial-up supervisor.

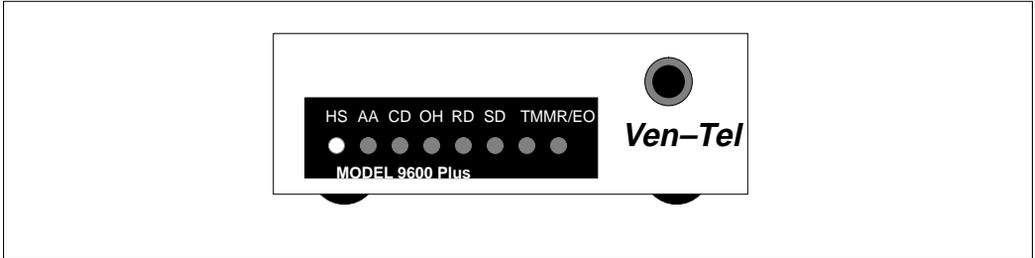
<b>Procedure 4-10</b>		
<b>Configuring the Ven-Tel 2400 Plus II dial-up supervisor modem—remote end</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
1	Open the modem as in Figure 4-19 and ensure that the switch settings are correct. Figure 4-21 shows the switch locations on the modem.	
2	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
3	Connect the workstation and the modem to their power sources. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
4	Power up the workstation and the modem.	
—continued—		

<b>Procedure 4-10 (continued)</b> <b>Configuring the Ven-Tel 2400 Plus II dial-up supervisor modem—remote end</b>		
Step	Action	Response
5	Enter the following commands, pressing <b>{ENTER}</b> after each command:  <b>at&amp;f</b>  <b>ats2=128</b>  <b>at&amp;c1</b>  <b>at&amp;d2</b>  <b>atv1</b>  <b>atx1</b>  <b>ats0=1</b>  <b>atq0</b>  <b>ate0</b>  The following command will not appear on the screen when you enter it:  <b>at&amp;w</b>	OK  OK  OK  OK  OK  OK  OK  OK  OK  OK
6	Use the Hayes AT command "atdt####" for touch-tone dialing and "atdp####" for pulse dialing to dial the required number. (where #### is the telephone number of the NAC modem)	OK
—end—		

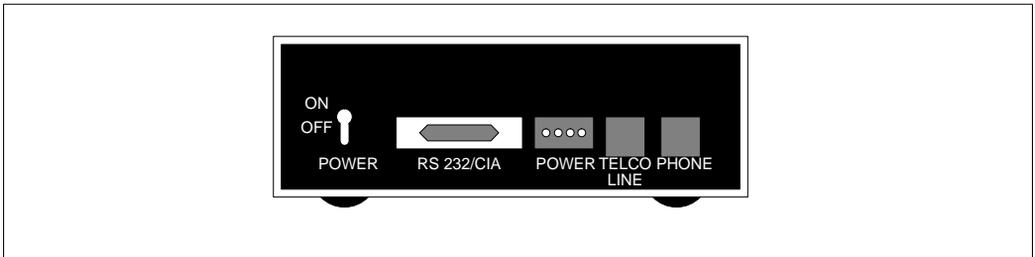
**Ven-Tel 9600 Plus (with power pack model # L5730-01)**

Figure 4-22 shows the front view of the Ven-Tel 9600 Plus modem and Figure 4-23 shows the rear view. Figure 4-24 shows how to open the modem. Figure 4-25 shows the switch locations.

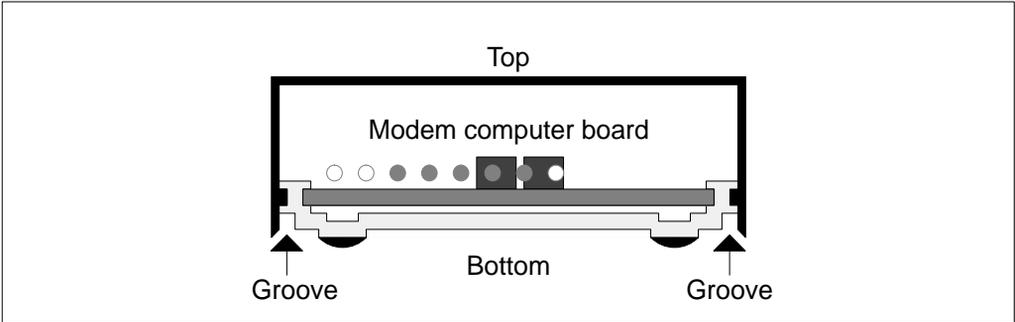
**Figure 4-22**  
**Ven-Tel 9600 Plus modem—front view**



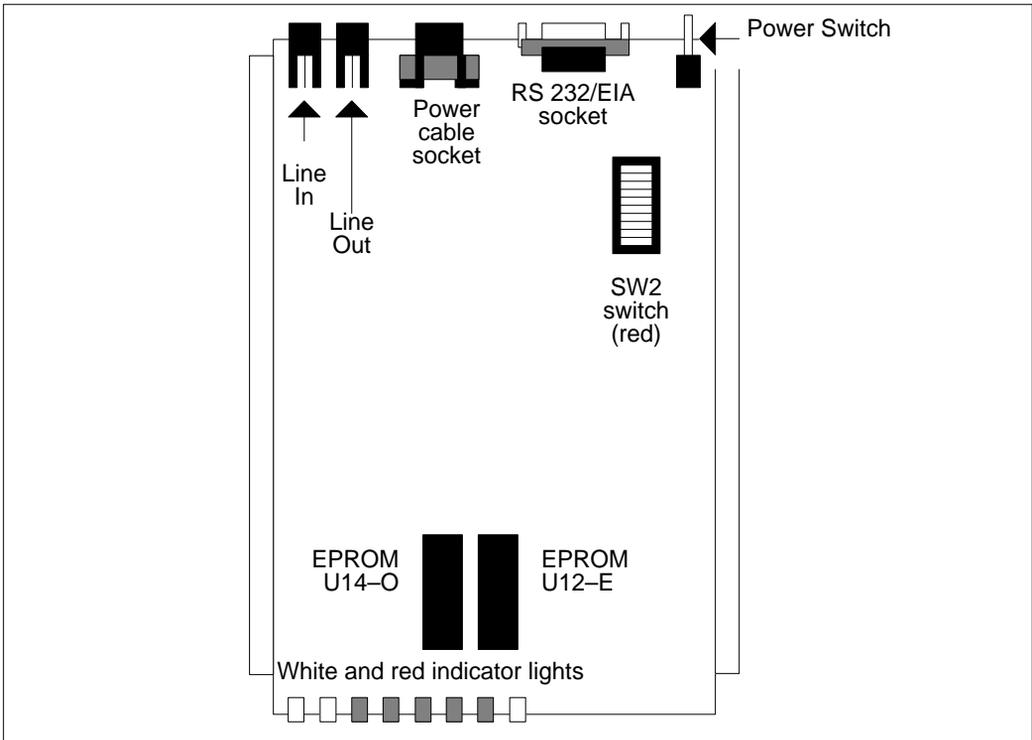
**Figure 4-23**  
**Ven-Tel 9600 Plus modem—rear view**

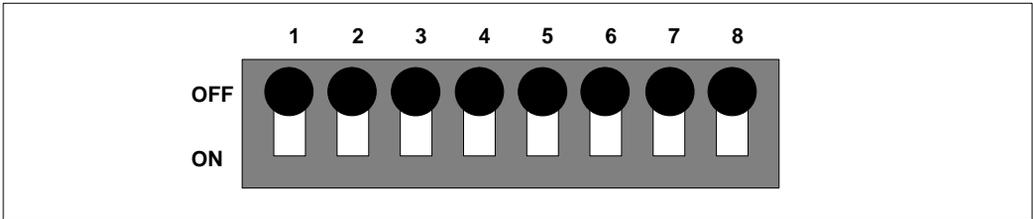


**Figure 4-24**  
**Ven-Tel 9600 Plus modem—opening the modem**



**Figure 4-25**  
**Ven-Tel 9600 Plus modem—switch locations**



**Figure 4-26****Ven-Tel 9600 Plus dial-up supervisor, remote supervisor login, and network link modem switch settings**

NAC automatically configures remote supervisor modems connected at the NAC end. The cable connecting the NAC AM's VME multiport cable and the Ven-Tel 9600 Plus modem is the modem cable NT7D99AA.

To properly set up the Ven-Tel 9600 Plus modem for use as a dial-up supervisor modem, ensure the modem's switch settings match those shown in Figure 4-26. The same switch settings should be used at both the remote end and the NAC end. Figure 4-25 shows the switch locations.

Complete the procedures in Procedure 4-11 to configure the Ven-Tel 9600 Plus modem for dial-up supervisor.

Make sure power pack model number L5730-01 is used.

<b>Procedure 4-11</b> <b>Configuring the Ven-Tel 9600 Plus dial-up supervisor modem—remote end</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Open the modem and ensure that the switch settings are correct. Compare them with the correct settings in Figure 4-26.	
<b>2</b>	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
<b>3</b>	Connect the workstation and the modem to their power sources. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
<b>4</b>	Power up the workstation and the modem.	
<b>5</b>	Enter the following commands, pressing <b>{ENTER}</b> after each command.	
	<b>at&amp;f</b>	OK
	<b>ats2=128</b>	OK
	<b>at&amp;c1</b>	OK
	<b>at&amp;d2</b>	OK
	<b>atv1</b>	OK
	<b>atx1</b>	OK
	<b>ats0=1</b>	OK
	<b>atq0</b>	OK
	<b>ate0</b>	OK
—continued—		

<b>Procedure 4-11 (continued)</b> <b>Configuring the Ven-Tel 9600 Plus dial-up supervisor modem—remote end</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>6</b>	<p>The following command does not appear on the screen when you enter it:</p> <p><b>at&amp;w</b></p> <p>Use the Hayes AT command "atdt#####" for touch-tone dialing and "atdp#####" for pulse dialing to dial the required number. (where #### is the telephone number of the NAC modem)</p>	OK
—end—		

## Remote supervisor login modems

The following modems can be used for remote supervisor logins.

- NetComm SmartModem M7F
- UDS 2440
- Ven-Tel 2400 Plus II
- Ven-Tel 9600 Plus
- Racal VI2422PA
- Gandalf LDS 120E
- Develcon DS 511A

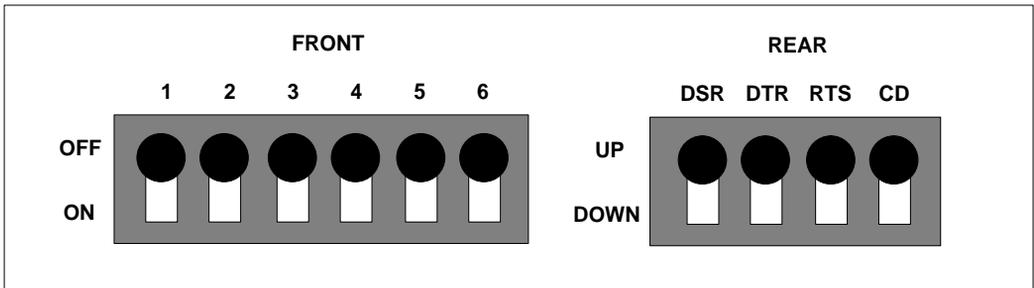
Both the NAC and Meridian MAX ends of the remote supervisor login connection send Hayes AT modem initialization strings.

### NetComm SmartModem M7F

To properly set up the NetComm modem for remote supervisor login, ensure the modem's switch settings match those shown in Figure 4-27. The same switch settings should be used at both the remote end and the NAC end.

*Note:* There are two buttons located on the front panel of the modem: Mode and Talk/Data. For use with the NetComm modem, the Talk/Data button should be pressed.

**Figure 4-27**  
NetComm SmartModem M7F modem switch settings



## UDS 2440

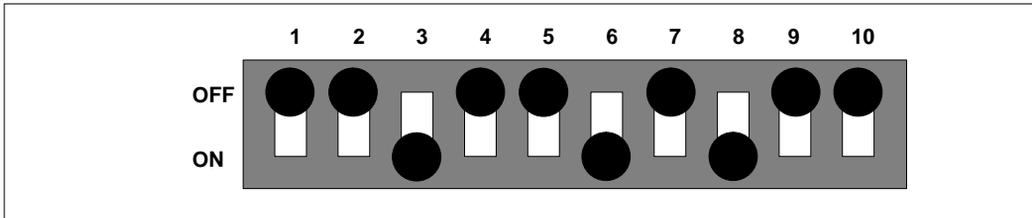
Figure 4-14 shows the front and rear view of the UDS 2440 dial-up supervisor modem. This modem connects to the AM's multiport cable using an NT7D99AA cable.

No internal switch settings are required to configure the UDS 2440 modem for remote supervisor login. Refer to the "Dial-up supervisor modem" section, "UDS 2440" subsection for more information.

## Ven-Tel 2400 Plus II

To properly set up the Ven-Tel 2400 Plus II modem for use as a remote supervisor login modem, ensure the modem's switch settings match those shown in Figure 4-28. The same switch settings should be used at both the remote end and the MAX end. Figure 4-20 shows the switch locations.

**Figure 4-28**  
Remote supervisor login modem—Ven-Tel 2400 Plus II modem's switch settings



## Ven-Tel 9600 Plus

To properly set up the Ven-Tel 9600 Plus modem for use as remote supervisor login, ensure that the switch settings match those shown in Figure 4-26.

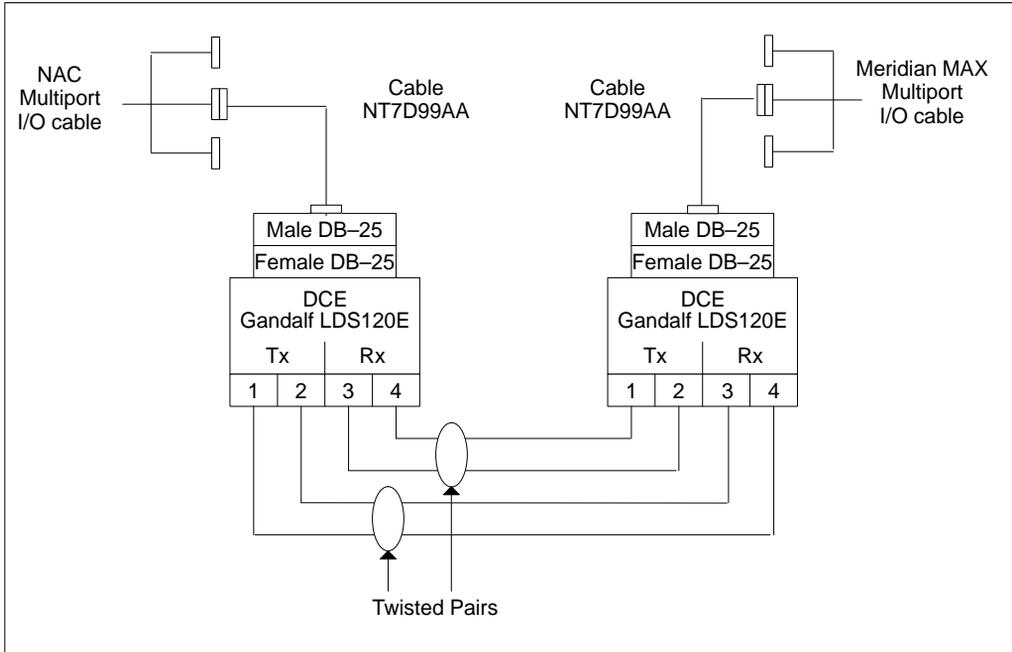
## Racal VI2422PA

No internal switch settings are required to configure the Racal VI2422PA modem for remote supervisor login. Refer to the "Dial-up supervisor modem" section, "Racal VI2422PA" subsection for more information.

## Gandalf LDS 120E

The Gandalf LDS 120E can be used as a remote supervisor login or network link modem. Figure 4-29 illustrates the modems configuration as either a remote supervisor login or a network link.

**Figure 4-29**  
**Gandalf LDS 120E limited distance modem hardware configuration for remote supervisor login or network link**



### Modem settings

The following settings are necessary for the Gandalf LDS 120E modem to be used:

- Termination: T (330 OHM)
- Internal jumper plugs: 4-wire mode, J13–J14 connected and J15–J16 connected
- Front panel push-button switches: ALL OUT – TP – RL – DL – AL

Table 4-14 lists the external DIP switch settings for point-to-point, full-duplex for the Gandalf LDS 120E. Table 4-15 lists the internal DIP switch settings for point-to-point, full-duplex.

<b>Table 4-14 LDS 120E external DIP switch settings for point-to-point, full-duplex</b>	
<b>Switch number</b>	<b>Switch setting</b>
1	OPEN (OFF)
2	CLOSED (ON)
3	CLOSED (ON)
4	CLOSED (ON)
5	CLOSED (ON)
6	NOT USED

<b>Table 4-15 LDS 120E internal DIP switch settings for point-to-point, full-duplex</b>	
<b>Switch number</b>	<b>Switch setting</b>
1	CLOSED (ON)
2	CLOSED (ON)
3	CLOSED (ON)
4	CLOSED (ON)
5	CLOSED (ON)
6	CLOSED (ON)

Once the modems are connected, turn on the power and ensure the DCD lamp on each modem comes on. This lamp indicates that both Gandalf LDS 120E or Develcon DS 511A modems are active.

Please note that these instructions may vary depending on the equipment used at your site.

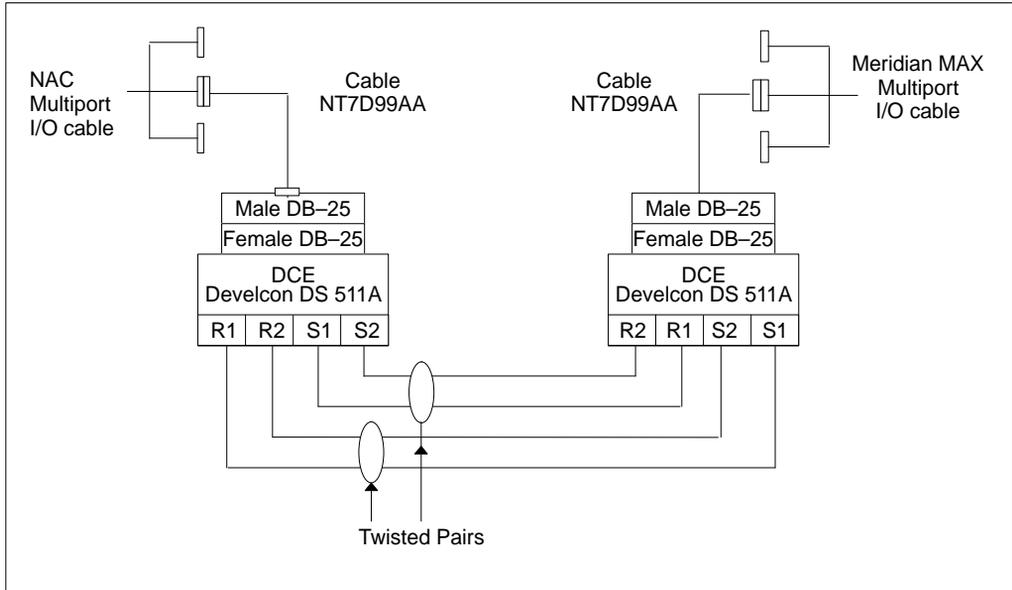
Some peripherals connect to male DB-25 connectors and others will connect to female DB-25 connectors. The creation of the straight-through DB-25 cable and the 2-pair-twisted cable is the responsibility of the user and it is the user's responsibility to ensure that the correct connectors are attached.

## Develcon DS 511A

The Develcon DS 511A can be used as a remote supervisor login or network link modem. Figure 4-29 illustrates the modems configuration as either a remote supervisor login or a network link.

**Figure 4-30**

**Develcon DS 511A limited distance modem hardware configuration for remote supervisor login or network link**



## Network link modems

The following modems can be used for network links.

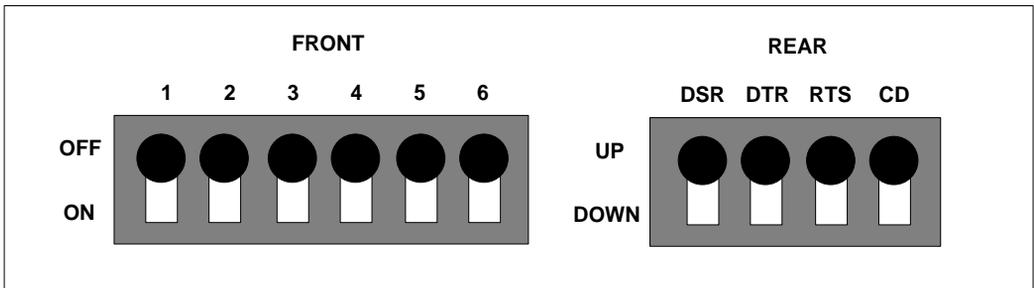
- NetComm SmartModem M7F
- UDS 2440
- Ven-Tel 2400 Plus II
- Ven-Tel 9600 Plus
- Racal VI2422PA
- Gandalf LDS 120E
- Develcon DS 511A

### NetComm SmartModem M7F

To properly set up the NetComm modem for network link, ensure the modem's switch settings match those shown in Figure 4-31. The same switch settings should be used at both the remote end and the NAC end.

*Note:* There are two buttons located on the front panel of the modem: Mode and Talk/Data. For use with the NetComm modem, the Talk/Data button should be pressed.

**Figure 4-31**  
**NetComm SmartModem M7F modem switch settings**



Complete the steps in Procedure 4-12 to configure the NetComm modem for network link.

<b>Procedure 4-12</b>		
<b>Configuring the NetComm SmartModem M7F for network link</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
<b>2</b>	Connect the workstation and the modem to their power sources.	
<b>3</b>	Power up the workstation and the modem.	
<b>4</b>	Enter the following commands on the workstation keyboard, pressing <b>{ENTER}</b> after each command.	
	<b>atz</b>	OK
	<b>at&amp;f</b>	OK
	<b>at&amp;d0</b>	OK
	<b>at&amp;c1</b>	OK
	<b>at\n3</b>	OK
	<b>at\q3</b>	OK
	<b>at&amp;z1=t#####</b>	OK
	##### must be replaced with the correct telephone number for the Meridian MAX node.	
	<b>at&amp;w</b>	OK
<b>5</b>	Power down the workstation and the modem.	
<b>6</b>	Disconnect the workstation from the modem.	
—continued—		

<b>Procedure 4-12 (continued)</b> <b>Configuring the NetComm SmartModem M7F for network link</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>7</b>	Make sure the modem at the Meridian MAX site is properly connected and powered up. The NAC initiates the signal that connects the modems.	The NAC modem dials the Meridian MAX telephone number as recorded during Step 4.  The connection between the NAC site and the Meridian MAX site is confirmed when the Carrier Detect (CD) LED remains constantly on.
<b>8</b>	Connect the modem directly to the NAC multiport cable using an NT7D99AA modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
<b>9</b>	Power up the modem.	If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.
—end—		

## UDS 2440

Figure 4-14 shows the front and rear view of the UDS 2440 network link modem. This modem connects to the AM's multiport cable using an NT7D99AA cable.

The UDS 2440 modem does not contain any internal switch settings. Complete Procedure 4-13 to configure the UDS 2440 modem for network link.

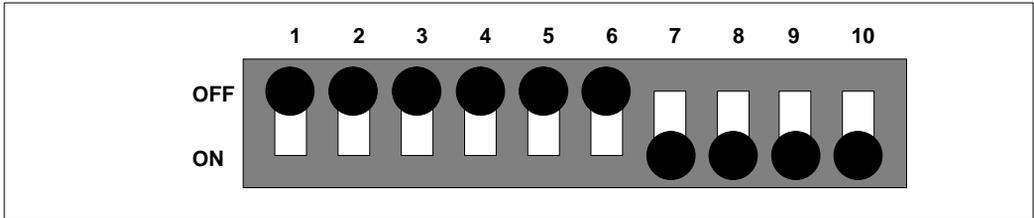
<b>Procedure 4-13</b>		
<b>Configuring the UDS 2440 modem for network link</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Connect a workstation to the modem with a straight through NT1R03Dx or NT1R03Ex cable.	
<b>2</b>	Connect the workstation and the modem to their power sources.	
<b>3</b>	Power up the workstation and the modem.	
<b>4</b>	Enter the following commands on the workstation keyboard, pressing <b>{ENTER}</b> after each command.	
	<b>atz</b>	OK
	<b>at&amp;f</b>	OK
	<b>at&amp;d3</b>	OK
	<b>at&amp;s1</b>	OK
	<b>at&amp;c1</b>	OK
—continued—		

<b>Procedure 4-13 (continued)</b> <b>Configuring the UDS 2440 modem for network link</b>		
Step	Action	Response
	<b>at&amp;z0=t#####</b> ##### must be replaced with the correct telephone number for the Meridian MAX node.	OK
	<b>at&amp;w</b>	OK
5	Power down the workstation and the modem.	
6	Disconnect the workstation from the modem.	
7	Connect the modem directly to the NAC multiport cable using an NT7D99AA modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
8	Power up the modem.	If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.
—end—		

### Ven-Tel 2400 Plus II

To properly set up the Ven-Tel 2400 Plus II modem for use as a network link, ensure that the switch settings match those shown in Figure 4-32.

**Figure 4-32**  
**Ven-Tel 2400 Plus II network link modem switch settings**



To properly set up the Ven-Tel 2400 Plus II modem for use as a network link, follow the instructions given in Procedure 4-14.

<b>Procedure 4-14</b>		
<b>Configuring the Ven-Tel 2400 Plus II modem for network link</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>1</b>	Open the modem and ensure that the switch settings are correct, as shown in Figure 4-32.	
<b>2</b>	Connect a workstation to the modem with a straight-through NT1R03Ex cable.	
<b>3</b>	Connect the workstation and the modem to their power sources.	
<b>4</b>	Power up the workstation and the modem.	
<b>5</b>	Enter the following commands, pressing <b>{RETURN}</b> after each command.	
	<b>at&amp;f</b>	OK
	<b>at&amp;d0</b>	OK
—continued—		

<b>Procedure 4-14 (continued)</b> <b>Configuring the Ven-Tel 2400 Plus II modem for network link</b>		
Step	Action	Response
	<b>at&amp;c1</b>	OK
	<b>at\n1</b>	OK
	<b>atlg1</b>	OK
	<b>at\q1</b>	OK
	<b>at\x1</b>	OK
	<b>at\j1</b>	OK
	<b>at\c1</b>	OK
	<b>ats64=1</b>	OK
	<b>ats0=1</b>	OK
	<b>at&amp;z1=t#####</b> ##### must be replaced with the correct telephone number for the Meridian MAX node.	OK
	<b>atq1</b>	NONE
	<b>ate0</b> The following command will not appear on the screen when you enter it.	NONE
	<b>at&amp;w</b>	NONE
<b>6</b>	Power down the workstation and the modem.	
<b>7</b>	Disconnect the workstation from the modem.	
—continued—		

<b>Procedure 4-14 (continued)</b> <b>Configuring the Ven-Tel 2400 Plus II modem for network link</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>8</b>	Make sure the modem at the Meridian MAX site is properly connected and powered up. The NAC initiates the signal that connects the modems.	The NAC modem will dial the Meridian MAX telephone number as recorded during Step 5.  The connection between the NAC site and the Meridian MAX site is confirmed when the Carrier Detect (CD) LED remains constantly on.
<b>9</b>	Connect the modem directly to the NAC using an NT7D99AA (AM) modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
<b>10</b>	Power up the modem.	If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.
—end—		

### Ven-Tel 9600 Plus

To properly set up the Ven-Tel 9600 Plus modem for use as a network link, ensure that the modem's switch settings match those shown in Figure 4-26, and follow the instructions given in Procedure 4-15.

Make sure power pack model # L5730-01 is used.

<b>Procedure 4-15</b> <b>Configuring the Ven-Tel 9600 Plus modem for network link</b>		
Step	Action	Response
1	Open the modem and ensure that the switch settings are correct, as shown in Figure 4-26.	
2	Connect a workstation to the modem with a straight-through NT1R03Ex cable.	
3	Connect the workstation and the modem to their power sources.	
4	Power up the workstation and the modem.	
5	Enter the following commands, pressing <b>{RETURN}</b> after each command.	
	<b>at&amp;f</b>	OK
	<b>at&amp;f2</b>	
	<b>at&amp;d0</b>	OK
	<b>at&amp;c1</b>	OK
	<b>at\n3</b>	OK
—continued—		

<b>Procedure 4-15 (continued)</b> <b>Configuring the Ven-Tel 9600 Plus modem for network link</b>		
<b>Step</b>	<b>Action</b>	<b>Response</b>
	<b>at\q3</b>	OK
	<b>ats64=1</b>	OK
	<b>ats0=1</b>	OK
	<b>at&amp;z1=t#####</b> ##### must be replaced with the correct telephone number for the Meridian MAX node.	OK
	<b>atq1</b>	NONE
	<b>ate0</b>	NONE
	The following command does not appear on the screen when you enter it.	
	<b>at&amp;w1&amp;y1</b>	NONE
<b>6</b>	Power down the workstation and the modem.	
<b>7</b>	Disconnect the workstation from the modem.	
<b>8</b>	Make sure the modem at the Meridian MAX site is properly connected and powered up. The NAC initiates the signal that connects the modems.	The NAC modem will dial the Meridian MAX telephone number as recorded during Step 5.
		The connection between the NAC site and the Meridian MAX site is confirmed when the Carrier Detect (CD) LED remains constantly on.
<b>9</b>	Connect the modem directly to the NAC using an NT7D99AA modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
—continued—		

**Procedure 4-15 (continued)**  
**Configuring the Ven-Tel 9600 Plus modem for network link**

<b>Step</b>	<b>Action</b>	<b>Response</b>
<b>10</b>	Power up the modem.	If your NAC system is powered up and fully functional, you should see the LED labelled "TR" light up on the front panel of the modem. If the "TR" LED does not light up, retry this procedure. If the light still does not appear, contact your Northern Telecom representative.
—end—		

## Racal VI2422PA

No internal switch settings are required to configure the Racal VI2422PA modem for use as a network link. Refer to the “Dial-up supervisor modems” section, “Racal VI2422PA” subsection for more information.

To properly set up the Racal VI2422PA modem for use as a network link, follow the instructions given in Procedure 4-16.

For more information on the Racal modem and its operation, refer to the *Racal VI2422PA Modem User's Guide* that accompanies the modem.

Procedure 4-16 Configuring the Racal VI2422PA modem for network link		
Step	Action	Response
1	Connect a workstation with data format 8N1 and speed 2400 baud to the modem with a straight-through NT1R03Ex cable.	
2	Connect the workstation and the modem to their power sources.	
3	Power up the workstation and the modem.	
4	Enter the following commands, pressing <b>{ENTER}</b> after each command:	
	<b>at&amp;f</b>	OK
	<b>at*f0</b>	OK
	<b>at&amp;zt#####</b>	OK
	##### must be replaced with the correct telephone number for the Meridian MAX node.	
—continued—		

<b>Procedure 4-16 (continued)</b> <b>Configuring the Racal VI2422PA modem for network link</b>		
Step	Action	Response
	<b>atq1</b>	NONE
	<b>ate0</b>	NONE
	The following command will not appear on the screen when you enter it.	
	<b>at&amp;w</b>	NONE
5	Power down the workstation and the modem.	
6	Disconnect the workstation from the modem.	
7	Connect the modem directly to the NAC using an NT7D99AA modem cable. Make sure the modem is connected to the telephone system with an RJ-11 cable/connector.	
8	Power up the modem.	
9	Through the use of the Racal modem's front panel, choose option 1 and set the value to 1. Choose option 13 and set the value to 2.	
10	Make sure the modem at the Meridian MAX site is properly connected and powered up. The NAC initiates the signal that connects the modems.	<p>The NAC modem dials the Meridian MAX telephone number as recorded during Step 4.</p> <p>The connection between the NAC site and the Meridian MAX site is confirmed when the carrier detect (CD) LED remains constantly on.</p>
—end—		

**Gandalf LDS 120E**

The Gandalf LDS 120E modem can be used as as network link modem. Refer to the “Remote supervisor login modems” section, “Gandalf LDS 120E” subsection for more information.

**Develcon DS 511A**

The Develcon DS 511A modem can be used as as network link modem. Refer to the “Remote supervisor login modems” section, “Develcon DS 511A” subsection for more information.

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## Software installation overview

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### A word about warranties

It is extremely important that you read and understand the warranties issued for your peripheral equipment. Each warranty details what you can and cannot do with the warranted item.

While the utmost care has been taken to ensure that the procedures described in this NTP do not void any of the warranties, it is still possible for an instruction to be in conflict with a warranty, such as warranty changes after the publication of this NTP. If you find such a condition, contact your dealer or Northern Telecom service representative.



**CAUTION**  
**Understand your warranty**

Under no circumstances should you void your warranty for the sake of following any instruction given in this (or any other) document. Be sure to register your warranties with the appropriate companies (usually the manufacturers) where required.

## NAC 2 hardware platform

NAC 2 runs on the SNN hardware platform. The SNN hardware platform includes the following hardware components:

- MVME167-34 CPU card
- 1.2 Gbyte hard disk
- 600 Mbyte cassette tape drive
- 1 to 5 MVME332XT serial I/O cards

## Software installation procedures

Five software installation procedures can be used to install a NAC 2 system. The procedure you use depends on the release of NAC you currently use or the type of upgrade you want to perform.

### New software installations

If your operation has never used a NAC system, you can only complete a NAC 2 new software installation.

There are two types of new software installations—customer-installed or factory-installed. You perform the applicable procedure the first time you install the system. Refer to the “New software installations” chapter for more information.

### Load new software release

As new releases of NAC 2 software are developed, you can purchase an updated version of the software and install it onto your NAC 2 system. To install the software, you would perform a load new software release procedure. Refer to the “Loading a new software release” chapter for more information.

### Software reinstallations and upgrades

If you need to perform a installation or application upgrade, refer to the “Software reinstallations and upgrades” chapter.

#### Installation upgrades

An installation upgrade is performed when you want to install new NAC 2 software that changes system functionality, or when you need to reinstall existing NAC 2 system software.

As your operation grows you may require greater NAC functionality and capacity. This growth can be accommodated through hardware and software upgrades within NAC 2. System functionality can be increased through an installation upgrade, once the necessary hardware changes are complete.

If a problem arises with an installation, you may have to reinstall the software. If a problem does occur, the system asks you to re-attempt the installation. Determine whether hardware is causing the problem (for example, missing or improperly connected equipment), and correct these problems before restarting the installation. If there is a problem with installing a factory-installed software site, the customer-installed software procedure should be used. If no hardware problem exists, then restart the installation. If the problem persists, contact your distributor or Northern Telecom support group for assistance.

### **Application upgrades**

Application upgrades are performed when you want to modify the secondary language of your existing NAC 2 system. No hardware changes are required.

### **Platform upgrades**

If you are currently using a NAC 1 system and are upgrading to a NAC 2 system, a platform upgrade must be completed, providing you have made the necessary hardware changes.

If you need to perform a platform upgrade, refer to the “Platform upgrade” chapter.

## Retained port assignments

No port assignments are retained if you are performing a platform upgrade (NAC 1 to NAC 2).

If the number of available ports on the new system is less than the number of available ports on the old system, only the existing port assignments are retained. For example, if a 32-port NAC 2 system was upgraded to a 24-port NAC 2 system, the port assignments for the first 24 ports would be retained from the previous NAC 2 system.

If your upgrade has no hardware platform change and the new number of ports is equal to or greater than the number of ports on the previous system, all port assignments are retained.

If you want to change your port assignments after the installation is complete, you must alter the port assignments through maintenance. Refer to the *NAC 2 System Administration and Maintenance Guide* (NTP 553-4011-510), “Maintenance and administration programs: system shut down” chapter, “Using the maintenance and administration program” section, “Configure NAC system” subsection for more information.

## Backups

Backups are a vital link in the data integrity of any system. While you may never have a need for backups, nothing can replace them in the event of a major system failure.

You should always perform a backup on your current system before starting any of these procedures.

To perform a backup, refer to the *NAC 2 System Administration and Maintenance Guide* (NTP 553-4011-510), “Maintenance and administration programs” chapter, “Maintenance and administration programs — system shut down” section, “Backup and Restore Utilities” section.

Data is backed up automatically at midnight. In the event of a failure where data is lost, the backup can return all data up to the point when the backup was taken. Any data lost between when the backup was taken and when the failure occurs can sometimes be recovered (depending on the nature of the failure). Ensure that a backup tape is in the NAC tape drive for the midnight backup.

Additional backups, once per week and once per month, are recommended.

Each backup copies the most current information from the NAC database to a cassette tape. Any information on the tape prior to the backup procedure is erased before the current information is copied. You may choose to recycle your backup tapes to reduce the number of tapes required. A minimum of three backup tapes is recommended. You should not use the same tape for two consecutive backups as a failure during the procedure would cause you to lose the tape’s original information as well as the current information.

## Reentry points

NAC 2 software has four installation reentry points that can be used if a problem occurs during the software installation. If a software installation must be aborted at some point, the installation can be restarted from the last successfully completed section of the installation. For example, if an installation had to be aborted after the OS files had been copied to the hard disk, but before the application files were copied, the installer can skip over the successfully copied OS files and go to the point just before the application files were copied.

**Note:** The system only displays the reentry points available for your installation. You cannot skip steps that were not successfully completed.

Check your error log and system messages when the software installation procedure is complete to ensure no errors were reported. If you want to use a reentry point, check that no errors were reported within the steps you want to skip. If you are unsure, restart the installation from the beginning. If the errors persist, contact your Northern Telecom distributor.

If an error message appears on the screen, perform a graceful shutdown of the system. The system provides prompts and messages for the shutdown.



### **WARNING**

#### **Graceful system shutdown**

If the system is shut down improperly, unpredictable results may occur.

The reentry points for a NAC 2 system are

- 1 From the beginning
- 2 Prior to copying the OS files to the hard disk
- 3 Prior to copying the NAC application files to the hard disk
- 4 Prior to booting from the hard disk

For more information on software reinstallations, software upgrades, and application upgrades, refer to the “Software reinstallations and upgrades” chapter.

Before starting any upgrade, verify that the system is performing properly. Check the NAC error log and the UNIX system log (when appropriate) to verify that midnight backups are successfully completed. Schedule an upgrade to be completed before 11:30 p.m. or started after 1:00 a.m.

**WARNING****Changing the NAC system time**

When you change the NAC system time, ensure the following conditions are met:

- the time is not changed between midnight and 01:00
- the new time does not fall between midnight and 01:00

Changes in the number or type of workstations or printers do not require an upgrade, but do require a port assignment reconfiguration for the NAC system. This reassignment can only be done while the system is shut down, using the Configure NAC System feature. For more information, refer to the *NAC 2 System Administration and Maintenance Guide* (NTP 553-4011-510), “Maintenance and administration programs: system shutdown” chapter, “Configure NAC System” section, “Port assignment” subsection. Use the “Workstation configuration” procedure, in the “Peripheral devices” chapter, to configure a VDT or PC workstation that you have not previously configured.

## Installation tapes

All procedures use one or two cassette tapes. Care must be taken to avoid damaging the tape, as its fragility can cause damage that can result in tape errors during the installation procedure. Also ensure that installation tapes are set to write-protected before using them. Keep tapes away from excessive heat or electromagnetic radiation. Figure 5-1 shows the correct method for inserting a tape cassette into the tape drive of a NAC 2 system. Make sure the arrow on the label points towards the drive, and that the notch in the cassette tape is pointing down.

Verify that all features on the application tape label are correct before starting the upgrade procedure. Log on as **maint**, enter **v** to view all existing options, then enter **t** in the submenu to view the tape identification. Make sure your tape label list matches your specific tape identification. The

application tape identification can also be viewed at the beginning of a software installation.

When following instructions within the procedures regarding cassette tapes, this document refers to the tapes by functional application names, rather than by the labels you see on the different tapes. Table 5-1 cross-references the tape application name used within a procedure and the label on the tape.

<b>Table 5-1 Tape names</b>	
<b>Tape name used in procedure</b>	<b>Tape label</b>
Generic Operating System tape	System V68 OS_NAC_R2.x
NAC Application tape	NAC R02.xx Required OS: OS_NAC_R2.x



**WARNING**

**Do not power off a module without first performing the system shutdown procedure**

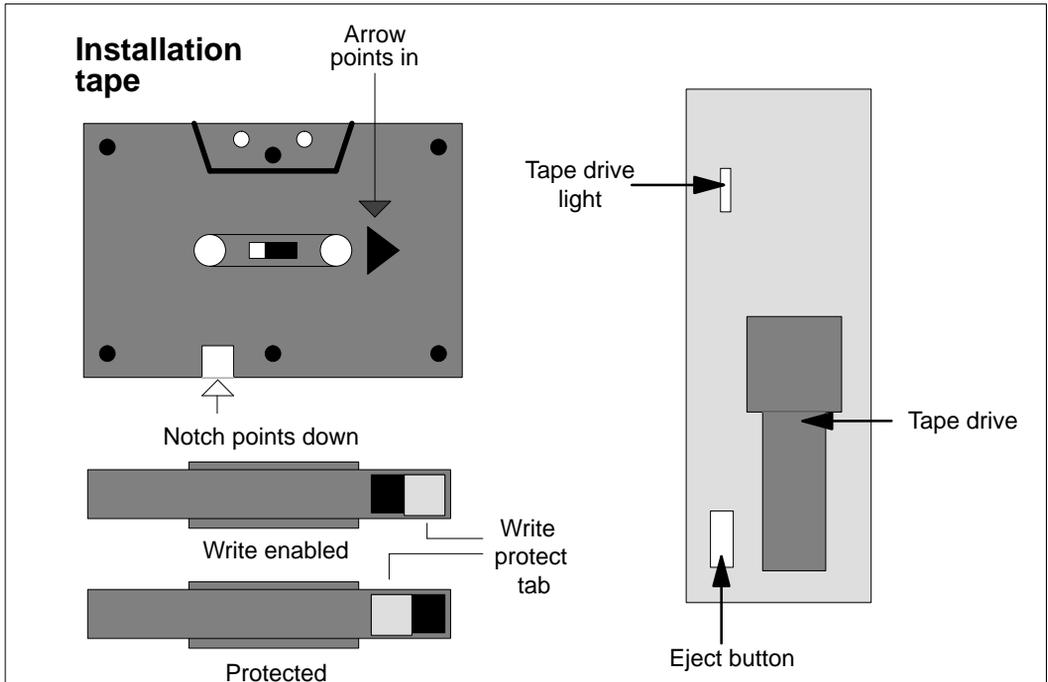
The NAC module must not be powered off without first shutting down the system. The shutdown process synchronizes the information currently in system memory with the information on the hard drive. Only in extenuating circumstances should the module be powered off without first shutting down.

If an error occurs during installation, a graceful shutdown must be done to ensure that the system is stable. Unpredictable results may occur if the system is not shut down properly.

To insert or remove a cassette tape from the NAC 2 module's tape drive, the front panel may be removed for short periods of time. If you do not need to access the module shortly afterwards, make certain that the front panel is properly replaced. This ensures that the temperature within the

Application Equipment Module (AEM) remains reasonably constant, and within the operating temperature ranges of the equipment.

**Figure 5-1**  
Inserting a cassette into the tape drive of a NAC 2 system



**Note:** If the cassette tape is incorrectly inserted into the tape drive, the tape automatically ejects. Reinsert the tape correctly with the tape arrow pointing toward the drive as seen in Figure 5-1. Once the tape drive is running (the tape drive light is lit), you cannot eject the tape.



**WARNING**  
**Entering numbers**

When entering a number in response to a prompt, use the upper row of keys (numbers) rather than the numeric keypad. If you want to use the numeric keypad, ensure that the keyboard indicator “NUM LOCK” is on. Otherwise, unpredictable results may occur.

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## New software installations

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Two types of new software installation procedures exist for NAC 2 systems: customer-installed and factory-installed.

To distinguish factory-installed software from customer-installed software, power up the NAC 2 module. If the console login prompt appears, then the system has factory-installed software. If the system does not boot up, it has customer-installed software.

Table 6-1 lists the software installation procedures for new software installations for NAC 2.

<b>Table 6-1 NAC 2 new software installation procedures</b>	
<b>Description of software installation procedures</b>	<b>Procedure #</b>
New installation of the NAC 2 system: customer-installed software	6-1
New installation of the NAC 2 system: factory-installed software	6-2

## **NAC 2 new installation**

Perform a NAC 2 new installation if your company has never used a NAC product.

Follow Procedure 6-1 if your system has customer-installed software. Use Procedure 6-2 if your system has factory-installed software.

## **Customer-installed software**

To perform the following procedure, you need the NAC 2 application tape and the generic operating system tape.

**Procedure 6-1****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>	<p>Before beginning the software installation, ensure that the MVME167-34 card has been configured correctly. Refer to the "Hardware installation" chapter.</p> <p>Make sure the power is turned off.</p> <p>Insert the NAC 2 operating system tape.</p> <p>Power up the module. The power switch is located on the left-hand side of the AEM module. The upper switch controls the power for the module in the left side of the Meridian 1, while the lower switch controls the power for the module in the right side.</p> <p>The system displays the copyright and hardware configuration information. The messages below may differ from your system messages.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved.  MVME167 Debugger/Diagnostics Release Version 1.5 – 02/14/93  COLD Start</p> <p>Local Memory Found =02000000 (&amp;33554432)</p> <p>MPU Clock Speed =33Mhz</p> <p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Press <b>{BREAK}</b> to stop the hard disk load and begin the tape load.</p> <p><b>Note:</b> {F5} on the VT420 is the {BREAK} key.</p> <p>—Break Detected—  167-Bug&gt;</p>
—continued—	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
<p><b>6</b></p>	<p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>At the previous prompt, enter <b>bo 0,40</b> followed by <b>{RETURN}</b>.</p> <p>Booting from VME167, Controller 0, Drive 40</p> <p>Loading: Operating System</p> <p>Volume: V/68</p> <p>IPL Loaded at: \$001F0000</p> <p>MVMETAPE IPL Version 1.0</p> <p>There is a one to two minute delay before the system continues with the following:</p> <pre> *****                         System V/68 Release R3V7 M68040 Version 930402                         Real mem      = 31457280                         Avail mem= 29900800                         Buffers       = 60 ***** </pre> <p>Copyright (c) 1984–1992 Motorola Inc. All rights reserved.</p> <p>INIT: SINGLE USER MODE</p> <p>***</p> <p>erase = # kill = @ Intr = DEL quit = ^ </p> <p>***</p> <p><b>Note:</b> The previous message indicates that pressing the backspace key causes a system interruption which terminates the current process. The <b>{#}</b> key backspaces and deletes one character. If you press the <b>{DELETE/BACKSPACE}</b> key accidentally, press <b>{CONTROL}{D}</b> to reset the system.</p>
<p>—continued—</p>	

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response																											
7	<p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE</td> <td>ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC</td> <td>MT-2ST/F50B</td> </tr> </tbody> </table> <p>This configuration is an example. Your system messages may differ.</p> <p>Enter the correct date and time EST [mmdhmmyy]:</p> <p>Enter the correct date and time, where the first pair of numbers represent the month, the second pair of numbers represent the day, the third pair represent the hour in the 24-hour time cycle, the fourth pair of numbers represent the minutes, and the last pair of numbers represent the last two digits of the year. For example, if 0211152594 was entered, the system would ask you the following question.</p> <p>Is the date Fri Feb 11 15:25:00 1994 EST correct (y/n) ?</p> <p>8</p> <p>If the date and/or time you entered is incorrect, enter <b>n</b>, followed by <b>{RETURN}</b>. The system then returns you to Step 7. If the date and time you entered are correct, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; From this point on, many system messages will be timestamped. (TIME)</p> <p>The word TIME in parentheses indicates a time message displayed by your system.</p> <p>***</p> <p>New character settings: erase = DEL kill = ^u intr = ~ quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message indicates that pressing the <b>{~}</b> key causes a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and backspaces one character.</p> <p>—&gt; <b>Do you</b> wish to verify the identity of the NAC Application Tape (y/n) ?</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor	Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE	ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC	MT-2ST/F50B
Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor	Description																				
Disk	00	0002	8988...	.....	2054325	0512	SEAGATE	ST11200N																				
Tape	40	0001	RV J...	.....	0000000	0000	TEAC	MT-2ST/F50B																				
—continued—																												

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
Step	Installer's action and system's response
9	<p>If you do not wish to verify the options, enter <b>n</b>, followed by <b>{RETURN}</b>, and go to Step 14. If you want to verify the customer purchasable options on the application tape, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Please remove the OS tape from the tape drive and insert the NAC Application tape.</p>
10	<p>Remove the OS tape and insert the application tape.</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>—&gt; Is the NAC Application tape in the tape drive (y/n/q) ?</p>
11	<p>If the application tape is in the tape drive and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Checking to see that tape is ready for reading...</p> <p>Extracting files...</p> <p>The system displays the Tape ID Display.</p> <p>NAC Tape ID</p> <p>_____</p> <p>Product Release : 02.xx</p> <p>Hardware Platform : SNN</p> <p><b>If this information does not match the options listed on the tape label, please type "n" to the following question. The installation will abort. Please call your service representative for further assistance.</b></p> <p>—&gt; <b>Do you wish to install the tape options specified above (y/n) ?</b></p>
12	<p>If you want to abort the installation, enter <b>n</b>, followed by <b>{RETURN}</b>. If you want to install the tape, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>Please remove the NAC Application tape from the tape drive and insert the OS tape.</p> <p>Is the OS tape in the tape drive (y/n/q)?</p>
<p>—continued—</p>	

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

<b>Step</b>	<b>Installer's action and system's response</b>
13	<p>Remove the Application tape and insert the OS tape. Wait for the tape to rewind. The tape drive light turns off when the tape is rewind.</p> <p>If the OS tape is in the tape drive and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p>
14	<p>The system displays the hardware configuration.</p> <p>NAC has detected that you are running the following hardware configuration:</p> <pre> CPU                : 167 Card Memory             : 32 Mb Hard Disk          : 1.2 Gb (Seagate ST11200N) Tape Drive        : 600 Mb (Teac MT-2ST/F50B) </pre> <p>If this configuration does not match your configuration, please type "n" to the following question. The installation will abort. Please call your service representative for further assistance.</p> <p>—&gt;Do you wish to install the hardware configuration specified above (y/n) ?</p>
15	<p>If you want to abort the installation, enter <b>n</b>, followed by <b>{RETURN}</b>. If you want to install the hardware configuration, enter <b>y</b>, followed by <b>{RETURN}</b>. The system then displays a menu.</p> <pre> The NAC Software Installation Menu ----- 1  New Installation 2  Installation Upgrade 3  Application Upgrade 4  Platform Upgrade </pre> <p>—&gt; Enter a number to select the type of installation/upgrade desired, or enter q to quit :</p>
—continued—	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
<p>16</p> <p>17</p>	<p>Since this procedure is a new installation, enter <b>1</b>, followed by <b>{RETURN}</b>.</p> <p>Will perform a New Installation.</p> <p>—&gt; Do you wish to restart a previously-aborted installation (y/n) ?</p> <p>If you do not want to restart a previously aborted installation, enter <b>n</b>, followed by <b>{RETURN}</b>. Go to Step 19. If you want to restart a previously aborted installation, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; Determining whether the installation can be re-started...</p> <p>The system then displays the NAC Installation/Upgrade Restart menu.</p> <p><b>Note:</b> Only those reentry points that have been verified by your system are shown in the NAC Installation/Upgrade Restart Menu.</p> <p>The NAC Installation/Upgrade Restart Menu</p> <p>_____</p> <p>Restart NAC 2 installation from one of the following stages:</p> <ul style="list-style-type: none"> <li>1 From the Beginning</li> <li>2 Just Before Copying OS Files to Hard Disk</li> <li>3 Just Before Copying NAC Application Files to Hard Disk</li> <li>4 Just Before Booting From Hard Disk</li> </ul> <p>—&gt; Enter a number to select the stage from which to install, or enter q to quit:</p>
<p>—continued—</p>	

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

<b>Step</b>	<b>Installer's action and system's response</b>
<p><b>18</b></p> <p><b>19</b></p>	<p>If you want to quit, enter <b>q</b>, followed by <b>{RETURN}</b>. The system returns you to the NAC Software Installation Menu, from where you can restart the installation.</p> <p>If you want to restart the installation from the beginning, enter <b>1</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade from the beginning.</p> <p>If you want to restart the installation just before the OS files are copied to the hard disk, enter <b>2</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the OS files are about to be copied to the hard drive.</p> <p>If you want to restart the installation just before the NAC application files are copied to the hard disk, enter <b>3</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the application files are about to be copied to the hard drive.</p> <p>If you want to restart the installation just before the NAC system boots from the hard disk, enter <b>4</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the system is about to be booted from the hard disk for the first time.</p> <p>The system continues.</p> <p>WARNING: NAC 2 installation/upgrade requires overwriting the hard disk. This means that FILES AND DATA ON THE DISK WILL BE DESTROYED.</p> <p>—&gt; Do you wish to begin NAC 2 installation (y, n, q) ?:</p>
<p>—continued—</p>	

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
Step	Installer's action and system's response
<p><b>20</b></p>	<p>If you want to begin the installation, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; Beginning installation/upgrade (TIME)</p> <p>***&gt; Checking tape in drive (TIME)</p> <p>If you chose not to restart a previously aborted installation or you chose reentry point 1 in Step 18 (to restart the installation from the beginning), go to Step 21.</p> <p>If you chose reentry point 2 in Step 18 (to restart the installation just before copying the OS files to the hard disk), go to Step 22.</p> <p>If you chose reentry point 3 in Step 18 (to restart the installation just before copying the application files to the hard disk) the system displays the following messages.</p> <p>***&gt; Mounting root file system as /root (TIME)</p> <p>***&gt; Mounting usr file system as /root/usr (TIME)</p> <p>***&gt; Installing NAC-specific configuration files (TIME)</p> <p>***&gt; Setting permissions on installation disk's root directory (TIME)</p> <p>Go to Step 23.</p>
<p>—continued—</p>	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

<b>Step</b>	<b>Installer's action and system's response</b>
<b>21</b>	<p>If you chose reentry point 4 in Step 18 (to restart the installation just before booting from the hard disk for the first time), the system displays the following messages.</p> <pre>***&gt; Mounting root file system as /root (TIME) ***&gt; Mounting usr file system as /root/usr (TIME)</pre> <p>The system has been reset to perform the installation again, starting from the first boot from the hard disk. Please perform the following steps:</p> <ol style="list-style-type: none"><li>1. Remove the tape from the tape drive.</li><li>2. Turn off the power for the module.</li><li>3. Wait 20 seconds for the power to reset.</li><li>4. Turn on the power for the module.</li></ol> <pre>***** Please reboot the system now. ***** Go to Step 27. ***** *                                     * * Stage 1 — Formatting Hard Disk Drive and Creating Filesystems * *                                     * *****</pre>

—continued—

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
22	<pre> ***&gt; Formatting root file system's disk drive (TIME)       This will take about 30 minutes...  ***&gt; Writing slice table to /dev/rdisk/m167_00s7 (TIME)  ***&gt; Creating the root file system (TIME)  ***&gt; Labeling the root file system (TIME)  ***&gt; Creating the swap file system (TIME)  ***&gt; Labeling the swap file system (TIME)  ***&gt; Creating the usr file system (TIME)  ***&gt; Labeling the usr file system (TIME)  ***&gt; Installing boot-loader on root file system's disk drive (TIME) ***** *                               * * Stage 2 — Copying OS Files to Hard Disk           * *                               * *****  ***&gt; Mounting root file system as /root (TIME)  The following two messages only appear if no reentry point was used or if reentry point 1 was chosen.  ***&gt; Making the /tmp directory (TIME)  ***&gt; Making the /usr directory (TIME) </pre>
—continued—	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
23	<pre> ***&gt; Mounting usr file system as /root/usr (TIME)  ***&gt; Copying files; this will take from 5 to 15 minutes     depending upon your system configuration... (TIME)  ***&gt; Making the root file system lost+found directory (TIME)  Reserving 224 entries  ***&gt; Making the usr file system lost+found directory (TIME)  Reserving 1312 entries  The following message only appears if no reentry point was used or if reentry point 1 was chosen.  ***&gt; Installing /etc/badtracks/m167_00 bad spot list (TIME)  ***&gt; Creating sysadm(1M) package information file (TIME)  ***&gt; Setting up the new operating system (TIME)  ***&gt; Creating root and usr file system associated device nodes (TIME)  ***&gt; Installing NAC-specific configuration files (TIME)  ***&gt; Setting permissions on installation disk's root directory (TIME)  ***** * * * Stage 3 — Copying NAC Application Files to Hard Disk * * * *****  Please remove the OS tape from the tape drive and put in the NAC 2 Application tape. </pre>
<b>—continued—</b>	

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
Step	Installer's action and system's response
24	<p>Remove the OS tape from the tape drive and insert the application tape.</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>Did you insert the application tape in the tape drive (y/n) ?</p>
25	<p>Providing you followed the instructions given in Step 24 and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>The system continues.</p> <p>***&gt; Checking tape in drive (TIME)</p> <p>***&gt; Copying files; this will take from 5 to 10 minutes depending upon your system configuration... (TIME)</p>
26	<p>*****</p> <p>* * *</p> <p>* Stage 4 — Preparing to Reboot From Hard Disk *</p> <p>* * *</p> <p>*****</p> <p>***&gt; Unmounting all mounted file systems (TIME)</p> <p>***&gt; Synchronizing the installation disk (TIME)</p> <p>*****</p>
<p>—continued—</p>	

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>27</b>	<p>The NAC 2 product has been installed on the hard disk.</p> <p>You may now remove the tape from the tape drive.</p> <p>* * *</p> <p>* You must REBOOT the system and allow it to autoboot from the hard * * disk. Please power off the system now. * * * *</p> <p>* Please allow 20 seconds between turning the power off and on again* * to allow the power to reset. * * * *</p> <p>***** **** REBOOT THE SYSTEM **** *****</p> <p>After you turn off the power for the module, wait 20 seconds, and turn the power on again; the system automatically reboots. The messages below may differ from your system messages.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved</p> <p>MVME167 Debugger/Diagnostics Release Version 1.5 – 02/14/93</p> <p>COLD START</p> <p>Local Memory Found =02000000 (&amp;33554432)</p> <p>MPU Clock Speed =33Mhz</p>
—continued—	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response																								
	<p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Booting from: VME167, Controller 0, Drive 0</p> <p>Loading: Operating System</p> <p>Volume: \$00000000</p> <p>IPL loaded at: \$001F0000</p> <p>VME Disk IPL Version 52.2</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message indicates that the keys {CONTROL} {C} pressed simultaneously cause a system interruption which terminates the current process. The {DEL} key deletes and backspaces one character.</p> <p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC MT-2ST/F50B</td> </tr> </tbody> </table> <p>This configuration is an example. Your system messages may differ.</p> <p>Enter &lt;CR&gt; to pause in a single user shell before init.</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B
Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description																		
Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N																		
Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B																		
<p>—continued—</p>																									

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
	<p>Default boot sequencing continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00</p> <p>mount -f S51K /dev/usr /usr</p> <p>Checking for system dump...</p> <p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Disciplines</p> <p>Error logging started.</p> <p>OSM Logging Started.</p> <p>***&gt; Configuring port devices... (TIME)</p> <p>***&gt; Finished configuring port devices. (TIME)</p> <p>If you are completing reentry point 2, 3, or 4, the following message appears.</p> <p>port_hold started.</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started.</p> <p>Module ID = NAC00</p> <p>***&gt; Setting up directories and file permissions... (TIME)</p> <p>Creating SYSTEM database – please stand by</p> <p>SYSTEM database created</p> <p>Loading data files for training mode...</p> <p>Loading NAC 2 training data...</p> <p>Data files loaded</p>
—continued—	

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>28</b>	<p>If you selected reentry point 1, 2 or 3, the following prompt appears.</p> <p>Your current language options are:</p> <p>If you selected reentry point 4, the following prompt appears.</p> <p>Your language options are already selected:</p> <p>The system continues.</p> <p style="padding-left: 40px;">Default:       English</p> <p style="padding-left: 40px;">Secondary:     French</p> <p>This language selection is only an example. The languages installed in your system may differ.</p> <p>***&gt; Creating USER LANGUAGE database – please wait... (TIME)</p> <p style="padding-left: 40px;">USER LANGUAGE database created.</p> <p>The system displays the Configure NAC System screen.</p>
<b>—continued—</b>	

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

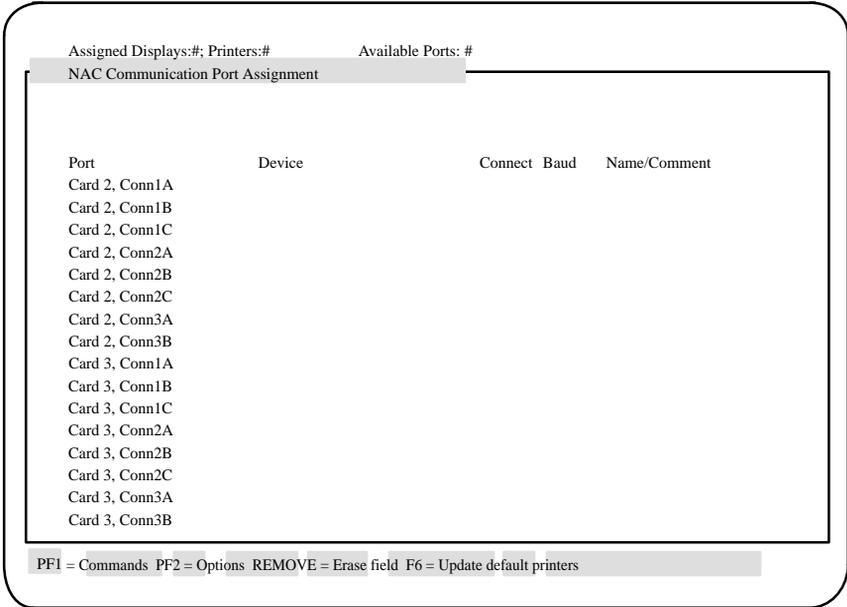
Step	Installer's action and system's response
	<div style="border: 1px solid black; border-radius: 15px; padding: 10px;"><p>Configure NAC System</p><div style="border: 1px solid black; padding: 10px;"><ol style="list-style-type: none"><li>1. Port Assignment</li><li>2. Network Definition</li><li>3. System Parameters</li><li>4. Exit</li></ol><p style="text-align: center;">Use up and down arrows to move among menu items and press ENTER to make a selection.</p></div></div>
<b>29</b>	You must enter your system's port assignments, define your network definitions, and verify the system parameters before exiting this screen. To enter your port assignments, enter <b>1</b> , followed by <b>{RETURN}</b> .
<b>—continued—</b>	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
------	--

**30** The NAC Communication Port Assignment screen appears.

This screen is only an example of a NAC 2 system with no ports assigned. A NAC 2 system can have 8, 16, 24, 32 or 40 ports.



—continued—

Procedure 6-1 (continued) New installation of the NAC 2 system: customer-installed software	
Step	Installer's action and system's response
31	<p><b>Fields</b></p> <p>The NAC Communication Port Assignment screen has seven fields: <i>Assigned Displays: #</i>; <i>Printers: #</i>, <i>Available Ports: #</i>, <i>Port</i>, <i>Device</i>, <i>Connect</i>, <i>Baud</i>, and <i>Name/Comment</i>.</p> <p><b>Assigned Displays: #; Printers: #</b> The <i>Assigned Displays: #</i>; <i>Printers: #</i> field indicates the number of printers and displays that have been assigned to available ports. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Available Ports: #</b> The <i>Available Ports</i> field lists the number of ports that have yet to be assigned to displays, printers, network links or remote logins. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Port</b> The <i>Port</i> field lists the ports.</p> <p>The ports are listed according to their card number, and connection number and letter. The card number refers to the card slot number in which the card is located. The card number begins at Card 2, Connection 1A because the CPU resides in the first card slot. The connection number refers to the port connection on the generic Input/Output panel. The connection letter refers to the specific port to which the devices are attached. A NAC 2 system can have 8, 16, 24, 32 or 40 ports. If your system has more than 16 ports, all of the ports cannot be viewed on a single screen. Use the up and down arrow keys to scroll the screen to view the rest of the ports.</p> <p>Not every port has to be assigned but you must assign at least one network link, one printer and one supervisor workstation.</p> <p><b>Device</b> To assign a device, move the cursor to an empty <i>Device</i> field and press {PF2} to view a pop-up menu of the devices available for your system.</p>
—continued—	

**Procedure 6-1 (continued)**

**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
------	--

Assigned Displays:#; Printers:#      Available Ports: #

NAC Communication Port Assignment

Port	Device	Conn	Device
Card 2, Conn1A			1.Network Link
Card 2, Conn1B			2.Remote Login
Card 2, Conn1C			
Card 2, Conn2A			<b>DISPLAYS</b>
Card 2, Conn2B			3.Reflection 4+ on PC
Card 2, Conn2C			4.VT420 or Compatible
Card 2, Conn3A			5.VT220 or Compatible
Card 2, Conn3B			6.Unknown Display
Card 2, Conn3C			
Card 3, Conn1A			<b>PRINTERS</b>
Card 3, Conn1B			7. HP DeskJet
Card 3, Conn1C			8. HP DeskJet 560C
Card 3, Conn2A			9. HP LaserJet
Card 3, Conn2B			10. HP PaintJet
Card 3, Conn2C			11. HP RuggedWriter-Epson
Card 3, Conn3A			12. HP RuggedWriter-PCL
Card 3, Conn3B			13. DEC LA195-Epson

PF1 = Options F6 = Update default printers

To delete an existing assignment, move the cursor to the line on which the device is located. Press **{REMOVE}** and the device is removed.

An arrow appears on the right-hand side of the pop-up menu if all of the devices could not fit on to the screen. Use the up and down arrow keys to move through the menu.

Select the desired device from the list presented. To enter a selection, either move the cursor to the selection and press **{RETURN}**, or enter the corresponding selection number and press **{RETURN}**.

If a device name is ghosted, it cannot be selected.

**Links**

The *Device* field can use two different links to connect NAC to a Meridian MAX node: Network Link and Remote Supervisor Login.

—continued—

Procedure 6-1 (continued) New installation of the NAC 2 system: customer-installed software	
Step	Installer's action and system's response
	<p>One Network Link must be assigned for each Meridian MAX node in the network. At least one Network Link must be assigned at all times. There are two ways to access a Meridian MAX node as a remote supervisor. A direct connection Remote Supervisor Login link can be assigned on the NAC for each Meridian MAX node. Alternatively, one or more modem connection Remote Supervisor Login links can be assigned on the NAC to access any of a group of Meridian MAX nodes. A combination of the two methods can be used.</p> <p><b>Printers and Displays</b></p> <p>You must assign at least one printer and one supervisor display.</p> <p>Each time a printer is selected, a message appears at the bottom of the screen asking the installer to enter a printer name for the assigned port in the <i>Name/Comment</i> field.</p> <p>Enter a unique name in the <i>Name/Comment</i> field that identifies the printer. For example, if a tabular printer is assigned, the name TabPrint could be used.</p> <p><b>Note:</b> The default printer must have a name defined in the <i>Name/Comment</i> field before you are allowed to exit this screen.</p> <p>Printer models are listed when you press <b>{PF2}</b> while in the <i>Device</i> field. Select the model appropriate to the printer connected to the assigned port.</p> <p>When all of the peripherals are assigned to ports, press <b>{F6}</b> to view or change the default printers. The system displays the Customer Default Printer Information pop-up menu which contains the Customer Default Tabular Printer name and the Customer Default Graphic Printer name.</p> <p>To modify the <i>Customer Default Tabular Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default tabular printer. This printer is now the destination for all tabular reports whenever the default output device is selected.</p> <p>To modify the <i>Customer Default Graphic Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default graphic printer. This printer is now the destination for all graphic reports whenever the default output device is selected.</p>
—continued—	

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
Step	Installer's action and system's response
32	<p><b>Connect</b></p> <p>A connection type for each device must be entered in the <i>Connect</i> field. This entry must be selected from one of the following choices that appear in a pop-up. Depending upon the device assigned, this field may be filled in automatically by the system. The choices for this field are:</p> <ul style="list-style-type: none"> <li>— Direct</li> <li>— Modem</li> </ul> <p><b>Baud</b></p> <p>Each time you select an Unknown Display, Remote Login, or a Network Link, you must also select a baud rate. For other devices, the baud rate is assigned automatically by the system. You must choose from one of the following choices:</p> <ul style="list-style-type: none"> <li>— 2400</li> <li>— 9600</li> </ul> <p><b>Name/Comment</b></p> <p>The <i>Name/Comment</i> field displays the name given to an assigned printer, or comments made on other devices configured on the system. Press <b>{PF3}</b> to edit the <i>Name/Comment</i> field for a specific device.</p> <p>When you have finished entering information on the NAC Communication Port Assignment screen, press <b>{PF1}</b> and select the "Save changes and exit" command.</p> <p>The communication port assignment information is saved and you are returned to the Configure NAC System screen.</p>
—continued—	

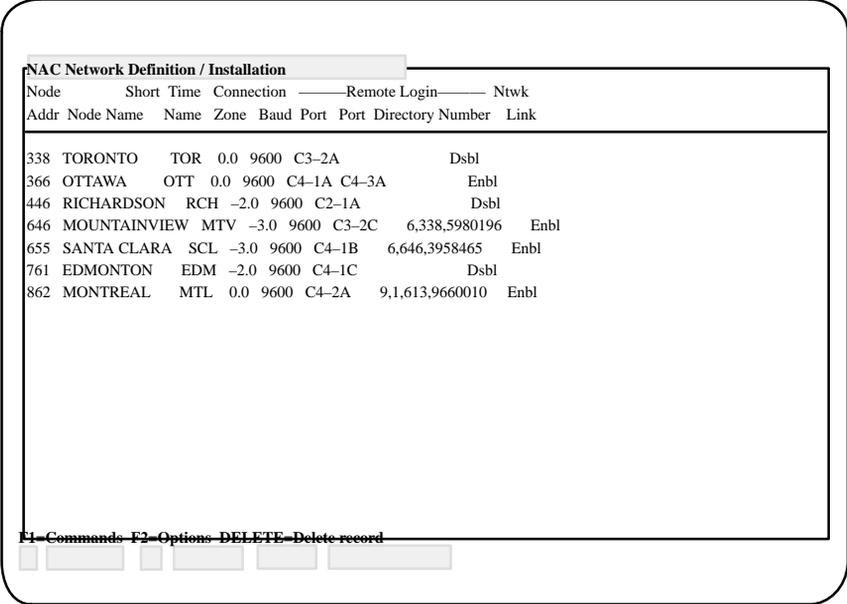
**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

**Step**      **Installer's action and system's response**

**33**      To define your Network Definition, enter **2**, followed by **{RETURN}**.

The NAC Network Definition/Installation screen contains all of the information the system needs to communicate with its Meridian MAX nodes. It is essential that the information entered here match the already set up hardware connections. For example, if the Network Link between the Toronto node and the NAC uses dial-up modems running at 9600 baud, then 9600 should be selected for the baud field for that specific link.

The system displays the NAC Network Definition/Installation screen:



**Note:** You cannot have both a remote login port and a remote login directory number for the same MAX node.

—continued—

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
34	<p><b>Fields</b></p> <p>The NAC Network Definition/Installation screen has nine fields: <i>Node Addr, Node Name, Short Name, Time Zone, Connection Baud, Connection Port, Remote Login Port, Remote Login Directory Number, and Ntwk Link.</i></p> <p><b>Node Addr</b></p> <p>The Node Address (location code) for each Meridian MAX site must be three-digits in length but 000 to 099 are not considered valid entries. To enter the Node Address, type in the three-digit address and press <b>{RETURN}</b>.</p> <p><b>Node Name</b></p> <p>This field indicates the Node Name for each Meridian MAX site. To enter the Node Name, press <b>{PF3}</b>, type the Node Name and press <b>{PF3}</b> again or type the Node Name and press <b>{RETURN}</b>.</p> <p><b>Short Name</b></p> <p>This field indicates the three character Short Name for each node. Each Short Name must be unique. To enter the Short Name, press <b>{PF3}</b>, type the Short Name and press <b>{PF3}</b> again or type the Short Name and press <b>{RETURN}</b>.</p> <p><b>Time Zone</b></p> <p>This field indicates the time difference between the NAC and the Meridian MAX node. For example, -2.0 would be the correct response if the NAC system was situated two time zones to the east of the Meridian MAX node in question, meaning the node is two hours behind the NAC. To enter the Time Zone, press <b>{PF3}</b>, type the Time Zone number and press <b>{PF3}</b> again or type the Time Zone number and press <b>{RETURN}</b>.</p> <p><b>Connection Baud</b></p> <p>This field indicates the specific baud rate that the Network Link uses to communicate with the Meridian MAX node. To enter the baud rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
—continued—	

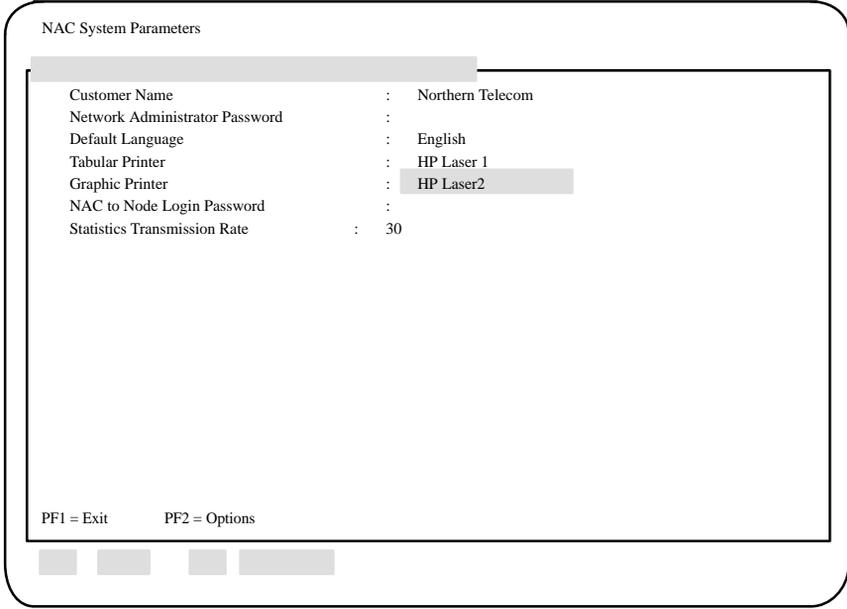
**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
	<p><b>Connection Port</b> This field indicates the specific port identifier to which a Meridian MAX node is connected through the Network Link. To enter the Connection Port, press <b>{PF3}</b>, type the Connection Port number and press <b>{PF3}</b> again or type the Connection Port number and press <b>{RETURN}</b>.</p> <p><b>Remote Login Port</b> This field indicates the specific port on the NAC system that is connected to a Meridian MAX node. This connection allows the user to log in to Meridian MAX from the NAC as a remote supervisor. To enter the Remote Login Port, press <b>{PF3}</b>, type the Remote Login Port and press <b>{PF3}</b> again or type the Remote Login Port and press <b>{RETURN}</b>.</p> <p><b>Remote Login Directory Number</b> This field indicates the telephone number used to connect the NAC system to a Meridian MAX node through a modem. This connection allows the user to log in to Meridian MAX from the NAC as a Remote Supervisor. To enter the Remote Login Directory Number, press <b>{PF3}</b>, type the Remote Login Directory Number and press <b>{PF3}</b> again or type the Remote Login Directory Number and press <b>{RETURN}</b>.</p> <p><b>Ntwk Link</b> This field controls the visibility of the node to the NAC system. When this field is set to Disabled, the node does not provide information to the NAC, supervisor messages cannot be transmitted to and from the Meridian MAX node, remote printing cannot occur, and remote supervisor logins to the Meridian MAX node are prohibited.  When this field is set to Enabled, then the node provides information to the NAC, supervisor messages are transmitted to and from the Meridian MAX node, remote printing can occur, and remote supervisor logins to the Meridian MAX node are permitted.  To select the Network Link, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.  When you are finished entering information on the NAC Network Definition/Installation screen, press <b>{F1}</b> and select the 'Save changes and exit' command.</p>
—continued—	

**Procedure 6-1 (continued)**  
**New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
------	--

**35** The Configure NAC System screen is returned. Enter **3**, followed by **{RETURN}** to view the NAC System Parameters screen.



**Fields**

The NAC System Parameters screen has nine fields: *Customer Name, Network Administrator Password, Default Language, Tabular Printer, Graphic Printer, NAC to Node Login Password, and Statistics Transmission Rate*

**Customer Name**

The *Customer Name* field allows you to record the NAC customer name. This name appears on the network reports and display screens. Typically the customer name is the same as your company's name. To enter the Customer Name, press **{PF3}**, type the Customer Name and press **{PF3}** again or type the Customer Name and press **{RETURN}**.

—continued—

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
	<p><b>Network Administrator Password</b></p> <p>The <i>Network Administration Password</i> field is optional. It defines the password to be used as a security precaution to ensure that only network administrators access the network administration features. To enter the Network Administrator Password, press <b>{PF3}</b>, type the Network Administrator Password and press <b>{PF3}</b> again or type the Network Administrator Password and press <b>{RETURN}</b>.</p> <p><b>Default Language</b></p> <p>The <i>Default Language</i> is the language most of the network supervisors use. To select the Default Language, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Note:</b> The default language can be changed once the NAC system is running by using the Language Options screen. Refer to the <i>NAC 2 Supervisor's User Guide</i> (P0724352), "Parameter administration" chapter, "Language options" section for more information.</p> <p><b>Tabular Printer</b></p> <p>The <i>Tabular Printer</i> field is used to name the default tabular printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default tabular printer that is specified here. To select the Tabular Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Graphic Printer</b></p> <p>The <i>Graphic Printer</i> field is used to name the default graphic printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default graphic printer that is specified here. To select the Graphic Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>

—continued—

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

Step	Installer's action and system's response
	<p><b>NAC to Node Login Password</b>  The <i>NAC to Node Login Password</i> field defines the password used by the system to bring up the Network Link between the NAC and its Meridian MAX nodes. If this field is changed then the Network Administrator Password field at each Meridian MAX node (not to be confused with the Network Administration Password in this feature) must be changed to match it. To enter the NAC to Node Login Password, press <b>{PF3}</b>, type the NAC to Node Login Password and press <b>{PF3}</b> again or type the NAC to Node Login Password and press <b>{RETURN}</b>.</p> <p><b>Statistics Transmission Rate</b>  The <i>Statistics Transmission Rate</i> field determines how often information from the nodes will be received. This information appears on the NAC displays. The number you enter represents the number of seconds between each node's update. You may select 10, 20, or 30 seconds from the menu. This field should not be confused with each network supervisor's Stats Update Rate field (found in the Supervisor Definition feature). The Statistics Transmission Rate determines how often a node's information is collected. The Stats Update Rate field determines how often the information displays are updated for the network supervisor. To select the Statistics Transmission Rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>36</b> After you have entered the information, press <b>{PF1}</b> and select the 'Save changes and exit' command. The system saves your entries.</p> <p><b>37</b> The Configure NAC System screen is returned. Enter <b>4</b>, followed by <b>{RETURN}</b> to exit.</p> <p><b>38</b> When you have completed the system configuration screens, the system continues with the installation.</p>
—continued—	

**Procedure 6-1 (continued)****New installation of the NAC 2 system: customer-installed software**

<b>Step</b>	<b>Installer's action and system's response</b>
	<p>Setting the time to Thu Jun 22 12:00 1989 for Training mode.</p> <p>Loading System Language Strings...</p> <p>Loading System Language Strings completed.</p> <p>    NAC release 02.xx</p> <p>    NAC Training Mode</p> <p>    Please login as precut for more details</p> <p>The system is ready.</p> <p>Console Login:</p>
—continued—	

<b>Procedure 6-1 (continued)</b> <b>New installation of the NAC 2 system: customer-installed software</b>	
Step	Installer's action and system's response
39	<p>Before logging in, ensure that the installation was successful. Review the NAC error log for any fatal messages.</p> <p>Log in as <b>maint</b> and refer to the <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and administration programs: System running" chapter, "Diagnostics" section, "View NAC error log" subsection for more information.</p>
40	<p>If the system was installed correctly, go to Step 41.</p> <p>If the system was not installed correctly, you must reinstall it. Ensure no errors occurred within the steps you want to skip. If you are unsure, restart the reinstallation from the beginning. If the errors persist, contact your Northern Telecom distributor.</p>
41	<p>Insert a new blank tape into the tape drive for daily backup. Ensure that the write-protect tab on the blank cartridge tape is set to write enabled to allow the system to write information on the tape (refer to Figure 5-1). The importance of backups is explained in the "Software installation overview" chapter, "Backups" section.</p>
42	<p>Login as <b>precut</b> to view the NAC Training Mode screen.</p> <p>Refer to the "Operating modes" chapter for the correct procedure to switch from Training mode to Precutover mode. Refer to the "Operating modes" chapter, "Switching from Training mode to Precutover mode" procedures for further instructions on how to transfer from Training mode to Precutover mode.</p>
<p>—end—</p>	

## Factory-installed software

To perform the following procedure, you need the NAC 2 application tape and the generic operating system tape.

<b>Procedure 6-2</b>	
<b>New installation of the NAC 2 system: factory-installed software</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>1</b>	Before beginning the software installation, ensure that the MVME167-34 card has been configured correctly. Refer to the "Hardware installation" chapter for more information on configuring the MVME167-34 card.
<b>2</b>	<p>Power up the module. The power switch is located on the left-hand side of the AEM module. The upper switch controls the power for the application module in the left side of the AEM, while the lower switch controls the power for the module in the right side.</p> <p>The system displays the copyright and hardware configuration information. The messages below may differ from your system messages.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved</p> <p>MVME167 Debugger/Diagnostic Release Version 1.5 – 02/14/93</p> <p>COLD START</p> <p>Local Memory Found =02000000 (&amp;33554432)</p>
—continued—	

**Procedure 6-2 (continued)**  
**New installation of the NAC 2 system: factory-installed software**

Step	Installer's action and system's response
	<pre> MPU Clock Speed =33Mhz  Autoboot in progress... To abort hit &lt;BREAK&gt; Booting from: VME167, Controller 0, Device 0 Loading: Operating System  Volume: \$00000000  IPL loaded at: \$001F0000 VME Disk IPL Version 52.2 *****                 System V/68 Release R3V7 M68040 Version 930402                 Real mem      = 31457280                 Avail mem= 29900800                 Buffers       = 60 *****  Copyright (c) 1984-1992 Motorola Inc. All rights reserved.  ***  erase = DEL  kill = ^u  intr = ^c  quit = ^x  ***  <b>Note:</b> The previous message tells you that the {CONTROL} {C} keys pressed simul- taneously cause a system interruption which terminates the current process. The {DEL} key deletes and backspaces one character. </pre>
	<p>—continued—</p>

**Procedure 6-2 (continued)****New installation of the NAC 2 system: factory-installed software**

Step	Installer's action and system's response																											
	<p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE</td> <td>ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC</td> <td>MT-2ST/F50B</td> </tr> </tbody> </table> <p>Enter &lt;CR&gt; to pause in a single user shell before init.</p> <p>Default boot sequence continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00.</p> <p>mount -f S51K /dev/usr /usr</p> <p>Checking for system dump...</p> <p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Disciplines.</p> <p>Error logging started.</p> <p>OSM Logging Started.</p> <p>port_hold started.</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started</p> <p>Loading System Language Strings ...</p> <p>Loading System Language Strings completed</p> <p>NAC Release 2.xx</p> <p>NAC Training Mode</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor	Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE	ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC	MT-2ST/F50B
Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor	Description																				
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Tape	40	0001	RV J...	.....	0000000	0000	TEAC	MT-2ST/F50B																				
	—continued—																											

**Procedure 6-2 (continued)**  
**New installation of the NAC 2 system: factory-installed software**

<b>Step</b>	<b>Installer's action and system's response</b>
<b>3</b>	Please login as precut for more details. The system is ready. Console login: Using the Maintenance console, login as <b>maint</b> .  The system will display the following: Password:
<b>4</b>	Enter the maintenance password.

—continued—

**Procedure 6-2 (continued)****New installation of the NAC 2 system: factory-installed software**

Step	Installer's action and system's response
	<p>The system displays the NAC Maintenance and Administration Menu that appears while the system is active.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 20px; margin: 10px auto; width: 80%;"> <p style="text-align: center; background-color: #e0e0e0; padding: 5px;">NAC Maintenance and Administration</p> <p style="text-align: center;">View NAC Options</p> <p style="text-align: center;">Shutdown the System</p> <p style="text-align: center;">Backup Customer Data to Tape</p> <p style="text-align: center;">Diagnostics</p> <p style="text-align: center;">Password Change</p> <p style="text-align: center;">Configuration of NAC System (View Only)</p> <p style="text-align: center;">Help</p> <p style="text-align: center;">Logout</p> <p style="text-align: center;">Press v,s,b,d,p,c,h,or l and ENTER:</p> </div>
5	<p>Enter <b>s</b>, followed by <b>{RETURN}</b>, to shut down the system.</p> <p>The screen goes blank for several seconds. Then the system asks you to confirm your choice:</p> <p>Press <b>y</b> and Enter to confirm system shutdown.</p> <p>(Just Enter to quit)</p>
6	<p>Enter <b>y</b>, followed by <b>{RETURN}</b>, to confirm the shutdown of the system.</p>

—continued—

**Procedure 6-2 (continued)**  
**New installation of the NAC 2 system: factory-installed software**

Step	Installer's action and system's response
	<p>The system displays the NAC Maintenance and Administration Menu that appears while the system is inactive.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 20px; margin: 10px auto; width: 80%;"><p style="background-color: #e0e0e0; padding: 5px; text-align: center;">NAC Maintenance and Administration</p><p style="text-align: center;">View NAC Options</p><p style="text-align: center;">Restart &amp; Power Down System Utilities</p><p style="text-align: center;">Backup and Restore Utilities</p><p style="text-align: center;">Diagnostics</p><p style="text-align: center;">Password Change</p><p style="text-align: center;">Configure NAC System</p><p style="text-align: center;">Help</p><p style="text-align: center;">Logout</p><p style="text-align: center;">Press v,r,b,d,p,c,h,or l and ENTER:</p></div>

—continued—

**Procedure 6-2 (continued)****New installation of the NAC 2 system: factory-installed software**

Step	Installer's action and system's response														
7	Enter <b>v</b> , followed by <b>{RETURN}</b> , for the View NAC Options screen. Then enter <b>c</b> , followed by <b>{RETURN}</b> , to view the NAC options already selected for your site.														
8	<p>The system displays the NAC Options screen. This screen is a sample.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 20px; margin: 10px auto; width: 80%;"> <div style="text-align: center; border: 1px solid gray; background-color: #f0f0f0; padding: 5px; margin-bottom: 10px;">NAC Options</div> <table style="margin-left: auto; margin-right: auto;"> <tr><td>Product Release</td><td>: 02.xx</td></tr> <tr><td>Software Version</td><td>: 02.xx</td></tr> <tr><td>Database Version</td><td>: 1.0</td></tr> <tr><td>Hardware Platform</td><td>: SNN</td></tr> <tr><td>Hard Drive Size</td><td>: 1.2 GB</td></tr> <tr><td>Tape Drive Size</td><td>: 600 MB</td></tr> <tr><td>Number of Ports Found</td><td>: 40</td></tr> </table> <p style="text-align: center; margin-top: 20px;">Press ENTER to return to menu.</p> </div>	Product Release	: 02.xx	Software Version	: 02.xx	Database Version	: 1.0	Hardware Platform	: SNN	Hard Drive Size	: 1.2 GB	Tape Drive Size	: 600 MB	Number of Ports Found	: 40
Product Release	: 02.xx														
Software Version	: 02.xx														
Database Version	: 1.0														
Hardware Platform	: SNN														
Hard Drive Size	: 1.2 GB														
Tape Drive Size	: 600 MB														
Number of Ports Found	: 40														
9	<p>Compare the system options with the software release and the number of ports you want your system to have.</p> <p>If the system options are incorrect, go to Step 15.</p> <p>Press <b>{ENTER}</b> to return to the View NAC Options menu.</p> <p>Press <b>{ENTER}</b> to return to the Maintenance and Administration menu.</p>														
10	The system then displays the Maintenance and Administration screen:														

—continued—

**Procedure 6-2 (continued)**  
**New installation of the NAC 2 system: factory-installed software**

Step	Installer's action and system's response
11	<p>Enter r and press <b>{RETURN}</b>.</p> <p>The system displays the Restart &amp; Power Down System Utilities submenu.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 20px; margin: 10px auto; width: 80%;"> <div style="text-align: center; background-color: #f0f0f0; padding: 5px; margin-bottom: 10px;">Restart and Power Down Utilities</div> <p style="text-align: center;">Restart the NAC System</p> <p style="text-align: center;">Secure the System for Power Down</p> <p style="text-align: center;">I/O Port Reconfiguration on System Restart</p> <p style="text-align: center;">Help</p> <p style="text-align: center;">Quit to the main menu</p> <p style="text-align: center; margin-top: 20px;">Press r,s,i,h,or q and ENTER:</p> </div>
12	<p>Enter r, followed by <b>{RETURN}</b>.</p> <p>The system begins the Restart the NAC System utility.</p> <p>Press y and Enter to confirm system restart. (Just Enter to quit)</p>

—continued—

<b>Procedure 6-2 (continued)</b> <b>New installation of the NAC 2 system: factory-installed software</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>13</b>	<p>Enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>The system displays the following message:</p> <p>The operating system will shut down and restart, and then NAC will restart.</p> <p>Please wait for system to reboot.</p> <p>The system displays a number of messages as it shuts down. After shutdown the system automatically reboots.</p> <p>Console Login:</p>
<b>14</b>	<p>Before logging in, ensure that the installation was successful. Review the NAC error log for any fatal messages.</p> <p>Login as <b>maint</b> and refer to the <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and administration programs: System running" chapter, "Diagnostics" section, "View NAC error log" subsection for more information.</p>
<b>15</b>	<p>If the system was installed correctly, go to Step 16.</p> <p>If the software release for your system is different than what you purchased, your system was not installed correctly. Contact your Northern Telecom distributor.</p> <p>If the number of ports enabled for your system is different than what you purchased, your MVME332XT boards could be inserted incorrectly or the board settings could be incorrect. Refer to the "MVME332XT eight-channel asynchronous board" section in the "Hardware installation" chapter for more information. Return to Step 1 and try this procedure again. If the installation fails, contact your Northern Telecom distributor.</p>
<b>16</b>	<p>Insert a new blank tape into the tape drive for daily backup. Ensure that the write-protect tab on the blank cartridge tape is set to write enabled to allow the system to write information on the tape. The importance of backups is explained in the "Software installation overview" chapter, "Backups" section.</p>
—continued—	

**Procedure 6-2 (continued)**  
**New installation of the NAC 2 system: factory-installed software**

<b>Step</b>	<b>Installer's action and system's response</b>
17	Log in as <b>precut</b> to view the NAC Training Mode screen.  Refer to the "Operating modes" chapter, "Training mode" section for further instructions on how to transfer from Training mode to Precutover mode.
—end—	

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## Loading a new software release

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As new issues of NAC 2 software are developed, you can purchase an updated version of the software and install it onto your NAC 2 system. You can also change your system's language options through a load new software release procedure.

Use Procedure 7-1 if you need to load a new NAC 2 software release onto an existing NAC 2 system.

**Note:** These procedures should not be used if the new software's options are different from the existing options, or if you are upgrading to a new release number, that is Release 1 to Release 2. For procedures to reinstall or upgrade your NAC 2 system, refer to the "Software reinstallations and upgrades" chapter of this document.

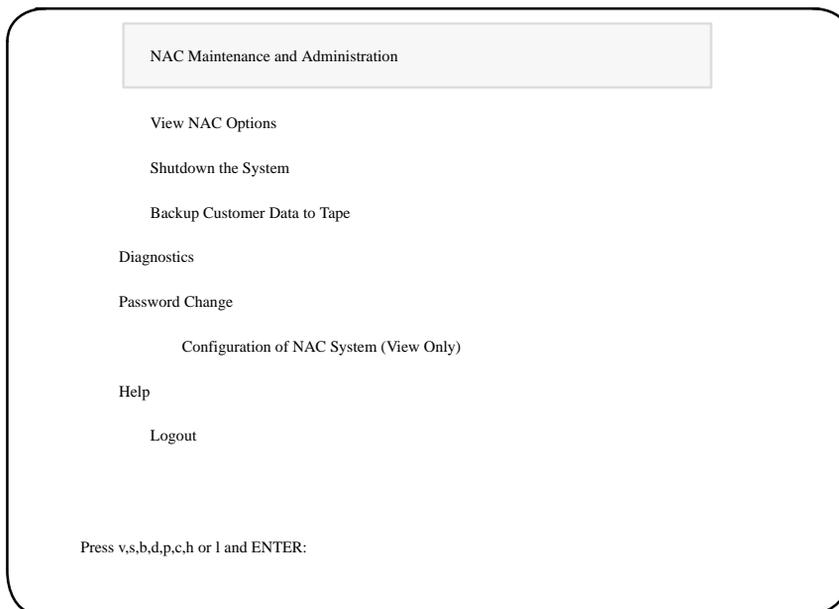
## Loading a new release of NAC 2 software

To load new software onto an existing NAC system, follow Procedure 7-1.

Procedure 7-1 Load New Software Release for a NAC 2 system	
Step	Installer's action and system's response
1	Using the maintenance console, login as <b>maint</b> . The system displays the following: Password:
2	Enter the maintenance password. Once you enter the password, the system displays copyright and hardware configuration information followed by prompts. *** erase = DEL kill = ^u intr = ^c quit = ^x *** <b>Note:</b> The previous message tells you that the <b>{CONTROL} {C}</b> keys pressed simultaneously cause a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and backspaces one character. The system shows the system-active Maintenance and Administration menu.
—continued—	

### Procedure 7-1 (continued) Load New Software Release for a NAC 2 system

Step	Installer's action and system's response
------	--



- 3** Enter **s**, followed by **{RETURN}**, to shut down the system.

The screen clears and then asks you to confirm your choice:

Press **y** and **ENTER** to confirm shutting down the system.  
(Just **ENTER** to quit)

- 4** Enter **y**, followed by **{RETURN}**, to confirm the shutdown of the system.

The system displays the following:

```

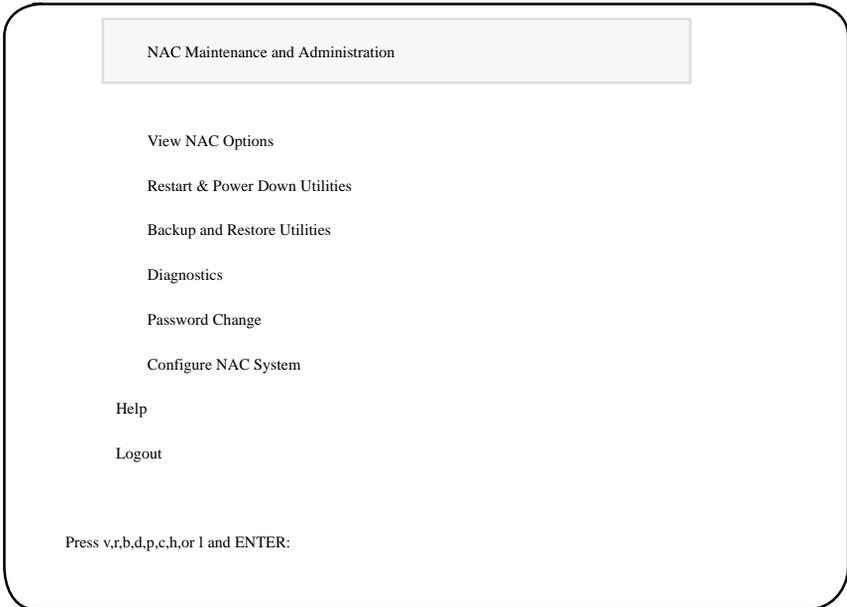
NAC terminating...
cron aborted: SIGTERM
Signal forces mapa_logger termination
  
```

The system shows the system-inactive NAC Maintenance and Administration menu.

—continued—

**Procedure 7-1 (continued)**  
**Load New Software Release for a NAC 2 system**

<b>Step</b>	<b>Installer's action and system's response</b>
-------------	---

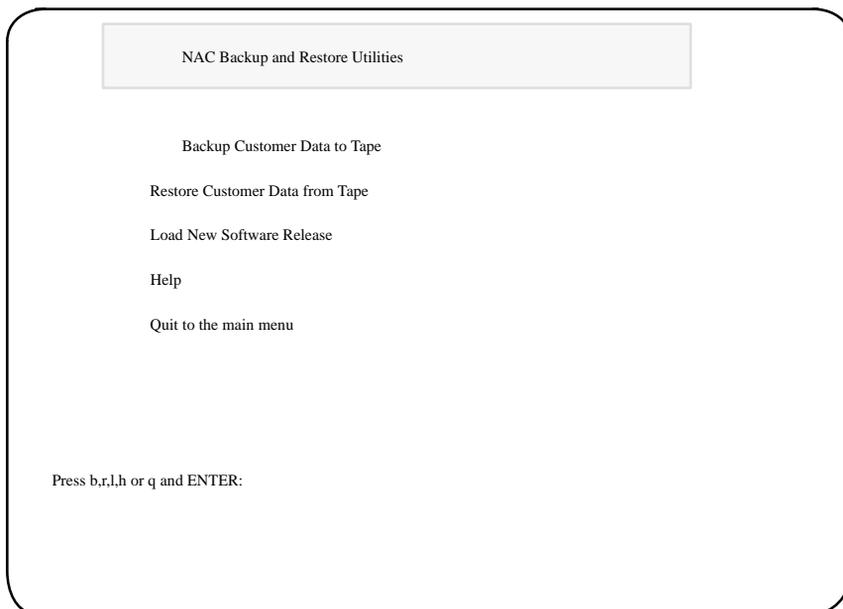


- |          |  |
|----------|--|
| <b>5</b> | Enter <b>b</b> , followed by <b>{RETURN}</b> , to go to the Backup and Restore Utilities menu.<br>The system displays the NAC Backup and Restore Utilities menu. |
|----------|--|

—continued—

**Procedure 7-1 (continued)**  
**Load New Software Release for a NAC 2 system**

Step	Installer's action and system's response
------	--



- 6** Enter **l**, followed by **{RETURN}**, to run the Load New Software Release utility.

The system displays the following messages.

Upgrade of NAC software requires that you save the current contents of the hard disk on a tape. Do you want to save the contents of the hard disk on a tape (y/n)?

- 7** If you have just made a backup of the hard disk, enter **n**, followed by **{RETURN}**, and go to Step 10.

If you have not made a current backup, or you are not sure whether the backup you have is current, then enter **y**, followed by **{RETURN}**, in response to this prompt.

—continued—

**Procedure 7-1 (continued)**

**Load New Software Release for a NAC 2 system**

<b>Step</b>	<b>Installer's action and system's response</b>
<p><b>8</b></p>	<p>The system then displays the following messages.</p> <p>Please insert a blank 600M tape into the tape drive.</p> <p>The small LED on the front of the tape drive will light up and can stay lit from 20 seconds to 3 minutes. This is to allow time for the tape to rewind.</p> <p>(If you have inserted the tape backwards in the drive, the tape will be ejected immediately. Please re-insert it correctly.)</p> <p>Press y and ENTER to begin the data backup procedure when the LED is no longer lit. (Just Enter to quit)</p> <p>If you have inserted the backup tape correctly and want to begin the data backup, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>The system continues.</p> <p>Checking for a blank 600M tape...</p> <p>Backup of customer data is starting.</p> <p>Estimated time for backup is xx minute(s).</p> <p>(where xx is the time the system estimates for the backup)</p> <p>Verifying backup.</p> <p>Backup of customer data is completed.</p> <p>Please remove the tape and save it.</p> <p>Press ENTER to continue.</p>
<p><b>9</b></p>	<p>Remove the tape from the tape drive and press <b>{RETURN}</b> to continue.</p>

—continued—

**Procedure 7-1 (continued)****Load New Software Release for a NAC 2 system**

Step	Installer's action and system's response
10	<p>The system continues.</p> <p>Upgrade of NAC 2 software begins.</p> <p>Do you wish to continue (y/n) ?</p>
11	<p>Enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Please insert the cassette tape containing NAC 2 Software which will be copied on the hard disk.</p> <p>Did you put in the cassette tape?</p> <p>Please enter yes/no/quit—to abort (y/n/q):</p>
12	<p>Insert the cassette tape which contains the new NAC application software into the module's tape drive.</p> <p>Enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>The system displays the following messages.</p> <p>The tape drive is now rewinding the tape. Please wait.</p> <p>This will take between 20 seconds to 2 minutes.</p> <p>The tape is finished rewinding.</p> <p>***&gt;Checking tape in drive</p> <p>***&gt; Copying files; to do this will take from 5 to 15 minutes, depending upon your system configuration... (TIME)</p> <p>***&gt; Creating the SYSTEM database – please wait... (TIME)</p> <p>SYSTEM database created.</p> <p>Loading NAC 2 system data files...</p> <p>Extracting old NAC 2 system data files...</p> <p>Loading more NAC 2 system data files...</p> <p>Data files loaded</p>
—continued—	

**Procedure 7-1 (continued)**  
**Load New Software Release for a NAC 2 system**

Step	Installer's action and system's response
13	<p>Your current language options are:</p> <p>Default: English</p> <p>Secondary: French</p> <p>If your tape has more than two languages installed on it, you can change the language options at this point.</p> <p>Upgrade of NAC 2 software has been completed.</p> <p>Press ENTER to return to menu.</p> <p>Press <b>{RETURN}</b>.</p> <p>The system returns the NAC Backup and Restore Utilities screen.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 20px;"><p style="text-align: center;">NAC Backup and Restore Utilities</p><p style="text-align: center;">Backup Customer Data to Tape</p><p style="text-align: center;">Restore Customer Data from Tape</p><p style="text-align: center;">Load New Software Release</p><p style="text-align: center;">Help</p><p style="text-align: center;">Quit to the main menu</p><p style="text-align: center;">Press b,r,l,h or q and ENTER:</p></div>
<b>—continued—</b>	

**Procedure 7-1 (continued)****Load New Software Release for a NAC 2 system**

Step	Installer's action and system's response
14	<p>Enter <b>q</b>, followed by <b>{RETURN}</b>, to quit the menu and return to the system-inactive Meridian MAX Maintenance and Administration screen.</p> <div style="border: 1px solid black; border-radius: 15px; padding: 20px; margin: 10px auto; width: 80%;"> <p style="background-color: #f0f0f0; padding: 5px; text-align: center;">NAC Maintenance and Administration</p> <p style="text-align: center;">View NAC Options</p> <p style="text-align: center;">Restart &amp; Power Down Utilities</p> <p style="text-align: center;">Backup and Restore Utilities</p> <p style="text-align: center;">Diagnostics</p> <p style="text-align: center;">Password Change</p> <p style="text-align: center;">Configure NAC System</p> <p style="text-align: center;">Help</p> <p style="text-align: center;">Logout</p> <p style="text-align: center;">Press v,r,b,d,p,c,h,or l and ENTER:</p> </div>
15	Enter <b>r</b> , followed by <b>{RETURN}</b> to select the Restart and Power Down System Utilities screen.

—continued—

**Procedure 7-1 (continued)**  
**Load New Software Release for a NAC 2 system**

<b>Step</b>	<b>Installer's action and system's response</b>
-------------	---

Restart and Power Down Utilities

Restart the NAC System

Secure the System for Power Down

I/O Port Reconfiguration on System Restart

Help

Quit to the Main Menu

Press r,s,i,h or q and ENTER:

- |           |  |
|-----------|--|
| <b>16</b> | Enter <b>r</b> , followed by <b>{RETURN}</b> , to restart the system.<br>The system clears the screen and displays the following prompt.<br>Press <b>y</b> and ENTER to confirm system restart. (Just ENTER to quit) |
|-----------|--|

—continued—

**Procedure 7-1 (continued)**  
**Load New Software Release for a NAC 2 system**

<b>Step</b>	<b>Installer's action and system's response</b>
17	<p>Enter <b>y</b>, followed by <b>{RETURN}</b>, to confirm that you want to restart the system.</p> <p>The system displays the following messages:</p> <p>The operating system will shut down and restart, and then NAC will restart. Please wait for the system to reboot.</p> <p>INIT: New run level: 6</p> <p>The system is coming down. Please wait.</p> <p>System services are now being stopped.</p> <p>The system is down.</p> <p>NOTICE: System Reboot Requested (0)</p>
—continued—	

<b>Procedure 7-1 (continued)</b> <b>Load New Software Release for a NAC 2 system</b>	
Step	Installer's action and system's response
18	<p>Copyright Motorola Inc. 1989 – 1993 All Rights Reserved</p> <p>VME167 Monitor/Debugger Release 1.5 – 02/14/93</p> <p>COLD START</p> <p>Local Memory Found =01000000 (&amp;33554432)</p> <p><b>MPU Clock Speed =33Mhz</b></p> <p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Booting from: VME167, Controller 0, Drive 0</p> <p><b>Loading: Operating System</b></p> <p>Volume: \$00000000</p> <p>IPL loaded at: \$001F0000</p> <p>VME Disk IPL Version 52.2</p>
19	<p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message tells you that the <b>{CONTROL} {C}</b> keys pressed simultaneously cause a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and backspaces one character.</p>
<p>—continued—</p>	

**Procedure 7-1 (continued)**  
**Load New Software Release for a NAC 2 system**

Step	Installer's action and system's response																											
	<p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE</td> <td>ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC</td> <td>MT-2ST/F50B</td> </tr> </tbody> </table> <p>Enter &lt;CR&gt; to pause in a single user shell before init.</p> <p>Default boot sequence continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00.</p> <p>mount -f S51K /dev/usr /usr</p> <p>Checking for system dump...</p> <p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Disciplines.</p> <p>Error logging started.</p> <p>OSM Logging Started.</p> <p>port_hold started</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started.</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor	Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE	ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC	MT-2ST/F50B
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	<p>—continued—</p>																											

<b>Procedure 7-1 (continued)</b> <b>Load New Software Release for a NAC 2 system</b>	
Step	Installer's action and system's response
20	<p>The system displays the following prompts.</p> <p>The current Date and Time are 'Mon Feb 14 12:42:00 STD 1994'</p> <p>Do you wish to change the current Date and Time (y/n) ?</p> <p>If you don't wish to change the current date and time, enter <b>n</b>, followed by <b>{RETURN}</b>. Go to Step 21.</p> <p>If you wish to change the current date and time, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p style="text-align: center;">Enter new Date and Time [mmddhhmmyy] :</p> <p>The system asks you to enter the correct date and time, where the first pair of numbers represent the month, the second pair of numbers represent the day, the third pair represent the hour in the 24-hour time cycle, the fourth pair of numbers represent the minutes, and the last pair of numbers represent the last two digits of the year. For example, if 0211152594 was entered, the system would ask you the following question.</p> <p>Are the new Date and Time 'Fri Feb 11 15:25:00 STD 1994', correct (y/n) ?</p> <p>If the date and/or time you entered is incorrect, enter <b>n</b>, followed by <b>{RETURN}</b>. The system then returns you to Step 20. If the date and time you entered are correct, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p>
21	<p>Loading System Language Strings...</p> <p>Loading System Language Strings completed.</p> <p>Starting NAC OSM logger, Please Wait...</p> <p>OSM logging Stopped.</p> <p>NAC OSM Logging Started.</p> <p>NAC release 02.xx</p> <p>The system is ready.</p> <p>Console login:</p>
—end—	

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## Software reinstallations and upgrades

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Before starting any upgrade, verify that the system is performing properly. Check the NAC error log and the UNIX system log (when appropriate) to verify that midnight backups are successfully completed. Schedule an upgrade to be completed before 11:30 p.m. or started after 1:00 a.m. so that the regular NAC midnight routines are executed properly.

Refer to the “Software installation overview” chapter, “Backups” section for information on performing backup tapes.

## Software reinstallation or upgrade for a NAC 2 system

Use Procedure 8-1 if you want to perform one of the following procedures.

- **Reinstallation:** You are currently running NAC 2 and want to install new NAC 2 system software to incorporate operating system and database changes.
- **Application upgrade:** You are currently running NAC 2 and want to install new NAC 2 software to change your NAC system's secondary language.

*Note:* To change your default language, refer to the "Operating modes" chapter, "Changing the default language" section.

After the system reboot following the operating system and application tape installation, you can follow one of two paths in this procedure.

Ensure that the proper hardware procedures have been completed before beginning this procedure.

If you do not have a backup tape or do not want to install your backup data onto the new system, you can switch the installation upgrade to a new installation. This alteration allows you to skip over the steps where the backup data tape is inserted and loaded onto the system.

If you want to load your backup data, continue the installation as an installation upgrade and follow the screen prompts and messages to load the backup tape.

To perform the following procedure, you need the NAC application tape and the generic operating system tape.

<b>Procedure 8-1</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>1</b>	Ensure that the MVME167-34 card has been configured correctly. Refer to the "Hardware installation" chapter.
<b>2</b>	Before starting this procedure, create a backup tape. Follow the instructions given in the <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and administration programs" chapter for backing up customer data to tape. Begin by first shutting down the software on your current NAC system.
<b>3</b>	At the NAC Maintenance and Administration screen, choose option <b>b</b> , Backup and Restore Utilities.
<b>4</b>	From the Backup and Restore Utilities submenu, choose option <b>b</b> again, <i>Backup Customer Data to Tape</i> to save the NAC 2 system data to the tape. This ensures that all current NAC data is backed up.  This procedure uses cassette tapes. Care must be taken to avoid damaging the tape, as its fragility can result in tape errors during the installation procedure. Keep tapes away from excessive heat or electromagnetic radiation.  Figure 5-1 shows the correct method for inserting and locking a tape cassette into the tape drive. Make sure the arrow on the label points towards the drive, and that the notch in the cassette tape is pointing down.
<b>5</b>	Follow the power-down procedure in the "NAC power-down procedure" chapter to power down the system. Perform any necessary hardware installation upgrades.
<b>6</b>	Make sure the AM is powered off.
<b>7</b>	Insert the NAC 2 operating system tape.
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
8	<p>Power up the module. The power switch is located on the left-hand side of the AEM module. The upper switch controls the power for the application module in the left side of the AEM, while the lower switch controls the power for the right side.</p> <p>The system displays the copyright and hardware configuration information. Your system messages may differ.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved            MVME167 Debugger/Diagnostics Release Version 1.5 – 02/14/93            COLD Start</p> <p>Local Memory Found =02000000 (&amp;33554432)            MPU Clock Speed = 33Mhz            Autoboot in progress... To abort hit &lt;BREAK&gt;</p>
9	<p>Press <b>{BREAK}</b> to stop the hard disk load and begin the tape load.</p> <p><b>Note:</b> {F5} on the VT420 is the {BREAK} key.</p> <p>—Break Detected—            167–Bug&gt;</p>
10	<p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>At the previous prompt, enter <b>bo 0,40</b> followed by <b>{RETURN}</b>.</p> <p>Booting from VME167, Controller 0, Drive 40            Loading: Operating System            Volume: V/68</p>
—continued—	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
	<pre> IPL Loaded at: \$001F0000  MVMETAPE IPL Version 1.0  There is a one to two minute delay before the system continues with the following.  *****                  System V/68 Release R3V7 M68040 Version 930402                  Real mem      = 31457280                  Avail mem= 29900800                  Buffers       = 60  *****  Copyright (c) 1984-1992 Motorola Inc. All rights reserved.  INIT: SINGLE USER MODE  ***  erase = #  kill = @  Intr = DEL  quit = ^\  ***  <b>Note:</b> The previous message indicates that pressing the backspace key causes a system interruption which terminates the current process. The {#} key backspaces and deletes one character. If you press the {DELETE/BACKSPACE} key accidental- ly, press {CONTROL}{D} to reset the system.  167 SCSI configuration  Device Addr  Vers  Revision  Serial#  Blocks  Size  Vendor Description ----- Disk  00    0002  8988...  .....  2054325  0512  SEAGATE ST11200N Tape  40    0001  RV J...  .....  0000000  0000  TEAC  MT-2ST/F50B  This configuration is only an example. Your system may differ.  Enter the correct data and time EST [mmdhmmmyy]: </pre>
	<p>—continued—</p>

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
11	<p>Enter the correct date and time, where the first pair of numbers represent the month, the second pair of numbers represent the day, the third pair represent the hour in the 24-hour time cycle, the fourth pair of numbers represent the minutes, and the last pair of numbers represent the last two digits of the year. For example, if 0211152594 was entered, the system would ask you the following question.</p> <p>Is the date Fri Feb 11 15:25:00 1994 EST correct? (y/n)</p>
12	<p>If the date and/or time you entered is incorrect, enter <b>n</b>, followed by <b>{RETURN}</b>. The system then returns you to Step 11. If the date and time you entered are correct, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; From this point on, many system messages will be timestamped. (TIME)</p> <p>The word TIME in parentheses indicates a time message displayed by your system.</p> <p>***</p> <p>New character settings: erase = DEL kill = ^u intr = ~ quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message indicates that pressing the <b>{~}</b> key causes a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and backspaces one character.</p> <p>—&gt; <b>Do you</b> wish to verify the identity of the NAC Application Tape (y/n) ?</p>
13	<p>If you do not wish to verify the options, enter <b>n</b>, followed by <b>{RETURN}</b>, and go to Step 18. If you want to verify the customer purchasable options on the application tape, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Please remove the OS tape from the tape drive and insert the NAC Application tape.</p>
<p>—continued—</p>	

Procedure 8-1 (continued) Software reinstallation or upgrade to a NAC 2 system	
Step	Installer's action and system's response
14	<p>Remove the OS tape and insert the application tape.</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>—&gt; Is the NAC Application tape in the tape drive (y/n/q) ?</p>
15	<p>If the application tape is in the tape drive and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Checking to see that tape is ready for reading...</p> <p>Extracting files...</p> <p>The system displays the Tape ID Display.</p> <p>NAC Tape ID</p> <p>_____</p> <p>Product Release : 02.xx</p> <p>Hardware Platform : SNN</p> <p><b>If this information does not match the options listed on the tape label, please type "n" to the following question. The installation will abort. Please call your service representative for further assistance.</b></p> <p>—&gt; <b>Do you wish to install the tape options specified above (y/n) ?</b></p>
16	<p>If you want to abort the installation, enter <b>n</b>, followed by <b>{RETURN}</b>. If you want to install the tape, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>Please remove the NAC Application tape from the tape drive and insert the OS tape.</p> <p>Is the OS tape in the tape drive (y/n/q)?</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p>
17	<p>If the OS tape is in the tape drive and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p>
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
18	<p>The system displays the hardware configuration.</p> <p>NAC has detected that you are running the following hardware configuration:</p> <p>CPU : 167 Card</p> <p>Memory : 32 Mb</p> <p>Hard Disk : 1.2 Gb (Seagate ST11200N)</p> <p>Tape Drive : 600 Mb (Teac MT-2ST/F50B)</p> <p>If this configuration does not match your configuration, please type "n" to the following question. The installation will abort. Please call your service representative for further assistance.</p> <p>—&gt; Do you wish to install the hardware configuration specified above (y/n) ?</p>
19	<p>If you want to abort the installation, enter <b>n</b>, followed by <b>{RETURN}</b>. If you want to install the hardware configuration, enter <b>y</b>, followed by <b>{RETURN}</b>. The system then displays a menu.</p> <p>The NAC Software Installation Menu</p> <p>_____</p> <p>1 New Installation</p> <p>2 Installation Upgrade</p> <p>3 Application Upgrade</p> <p>4 Platform Upgrade</p> <p>—&gt; Enter a number to select the type of installation/upgrade desired, or enter q to quit :</p>
<p>—continued—</p>	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>20</b>	<p>If you are performing a reinstallation or an installation upgrade, enter <b>2</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>Will perform an Installation Upgrade.</p> <p>If you are performing an application upgrade, enter <b>3</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>***&gt; Determining whether it is possible to perform an Application Upgrade...</p> <p>Will perform an Application Upgrade.</p>
<b>21</b>	<p>The system continues.</p> <p>—&gt; Do you wish to restart a previously-aborted installation (y/n)?</p>
<b>22</b>	<p>If you do not want to restart a previously aborted installation, enter <b>n</b>, followed by <b>{RETURN}</b>. Go to Step 24. If you want to restart a previously aborted installation, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; Determining whether the installation can be re-started...</p>
<b>—continued—</b>	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
<p><b>23</b></p>	<p>The system then displays a menu.</p> <p><b>Note:</b> Only those reentry points that have been verified by your system are shown in the NAC Installation/Upgrade Restart Menu.</p> <p style="text-align: center;">The NAC Installation/Upgrade Restart Menu</p> <hr style="width: 20%; margin: auto;"/> <p>Restart NAC 2 Installation/Upgrade from one of the following stages:</p> <ol style="list-style-type: none"> <li>1 From the Beginning</li> <li>2 Just Before Copying OS Files to Hard Disk</li> <li>3 Just Before Copying NAC Application Files to Hard Disk</li> <li>4 Just Before Booting From Hard Disk</li> </ol> <p>—&gt; Enter a number to select the stage from which to install, or enter q to quit:</p> <p>If you want to quit, enter <b>q</b>, followed by <b>{RETURN}</b>. The system returns you to the NAC Software Installation Menu, from where you can restart the installation.</p> <p>If you want to restart the installation from the beginning, enter <b>1</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade from the beginning.</p> <p>If you want to restart the installation just before the OS files are copied to the hard disk, enter <b>2</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the OS files are about to be copied to the hard drive.</p>
<p>—continued—</p>	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p>If you want to restart the installation just before the NAC application files are copied to the hard disk, enter <b>3</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the application files are about to be copied to the hard drive.</p> <p>If you want to restart the installation just before the NAC system boots from the hard disk, enter <b>4</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the system is about to be booted from the hard disk for the first time.</p>
<b>24</b>	<p>The system continues.</p> <p>WARNING: NAC 2 installation/upgrade requires overwriting the hard disk. This means that FILES AND DATA ON THE DISK WILL BE DESTROYED.</p> <p>—&gt; Do you wish to begin NAC 2 installation (y, n, q) ?:</p>
<b>25</b>	<p>If you want to begin the installation, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; Beginning installation/upgrade (TIME)</p> <p>***&gt; Checking tape in drive (TIME)</p> <p>If you chose not to restart a previously aborted installation or chose reentry point 1 in Step 23 (to restart the installation from the beginning), go to Step 26.</p> <p>If you chose reentry point 2 in Step 23 (to restart the installation just before copying the OS files to the hard disk), go to Step 27.</p>
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
	<p>If you are performing an application upgrade, or if you chose reentry point 3 in Step 23 (to restart the installation just before copying the application files to the hard disk) the system displays the following messages.</p> <pre> ***&gt; Mounting root file system as /root (TIME) ***&gt; Mounting usr file system as /root/usr (TIME) ***&gt; Installing NAC-specific configuration files (TIME) ***&gt; Setting permissions on installation disk's root directory (TIME) </pre> <p>Go to Step 28.</p> <p>If you chose reentry point 4 in Step 23 (to restart the installation just before booting from the hard disk for the first time), the system displays the following messages.</p> <pre> ***&gt; Mounting root file system as /root (TIME) ***&gt; Mounting usr file system as /root/usr (TIME) </pre> <p>The system has been reset to perform the installation again, starting from the first boot from the hard disk. Please perform the following steps:</p> <ol style="list-style-type: none"> <li>1. Remove the tape from the tape drive.</li> <li>2. Turn off the power for the module.</li> <li>3. Wait 20 seconds for the power to reset.</li> <li>4. Turn on the power for the module.</li> </ol> <pre> ***** </pre> <p>Please reboot the system now.</p> <pre> ***** </pre> <p>Go to Step 32.</p>
<p>—continued—</p>	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
26	<pre> ***** * * Stage 1 — Formatting Hard Disk Drive and Creating Filesystems * * *****  ***&gt; Formatting root file system's disk drive (TIME)       This will take about 30 minutes...  ***&gt; Writing slice table to /dev/rdisk/m167_00s7 (TIME)  ***&gt; Creating the root file system (TIME)  ***&gt; Labeling the root file system (TIME)  ***&gt; Creating the swap file system (TIME)  ***&gt; Labeling the swap file system (TIME)  ***&gt; Creating the usr file system (TIME)  ***&gt; Labeling the usr file system (TIME)  ***&gt; Installing boot-loader on root file system's disk drive (TIME) </pre>
27	<pre> ***** * * Stage 2 — Copying OS Files to Hard Disk * * *****  ***&gt; Mounting root file system as /root (TIME)  The following two messages only appear if no reentry point was used or if reentry point 1 was chosen.  ***&gt; Making the /tmp directory (TIME)  ***&gt; Making the /usr directory (TIME) </pre>
<p>—continued—</p>	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
28	<pre> ***&gt; Mounting usr file system as /root/usr (TIME)  ***&gt; Copying files; this will take from 5 to 15 minutes     depending upon your system configuration... (TIME)  ***&gt; Making the root file system lost+found directory (TIME)  Reserving 224 entries  ***&gt; Making the usr file system lost+found directory (TIME)  Reserving 1312 entries  The following message only appears if no reentry point was used or if reentry point 1 was chosen.  ***&gt; Installing /etc/badtracks/m167_00 bad spot list (TIME)  ***&gt; Creating sysadm(1M) package information file (TIME)  ***&gt; Setting up the new operating system (TIME)  ***&gt; Creating root and usr file system associated device nodes (TIME)  ***&gt; Installing NAC-specific configuration files (TIME)  ***&gt; Setting permissions on installation disk's root directory (TIME)  ***** *                                     * * Stage 3 — Copying NAC Application Files to Hard Disk      * *                                     * *****  Please remove the OS tape from the tape drive and put in the NAC 2 Application tape.                     </pre>
<p>—continued—</p>	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
<p><b>29</b></p> <p><b>30</b></p> <p><b>31</b></p>	<p>Remove the OS tape from the tape drive and insert the application tape.</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>Did you insert the application tape in the tape drive (y/n) ?</p> <p>Providing you followed the instructions given in Step 29 and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>The system continues.</p> <pre> ***&gt; Checking tape in drive (TIME) ***&gt; Copying files; this will take from 5 to 10 minutes     depending upon your system configuration... (TIME) ***** *                                     * * Stage 4 — Preparing to Reboot From Hard Disk           * *                                     * *****  ***&gt; Unmounting all mounted file systems (TIME) ***&gt; Synchronizing the installation disk (TIME) *****                     </pre>
<p>—continued—</p>	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
<p><b>32</b></p>	<p>The NAC 2 product has been installed on the hard disk.</p> <p>You may now remove the tape from the tape drive.</p> <p>* * * * *</p> <p>* You must REBOOT the system and allow it to autoboot from the hard * * disk. Please power off the system now. * * *</p> <p>* * * * *</p> <p>* Please allow 20 seconds between turning the power off and on again* to allow the power to reset. * * *</p> <p>* * * * *</p> <p>*****</p> <p>**** REBOOT THE SYSTEM ****</p> <p>*****</p> <p>After you turn off the power for the module, wait 20 seconds, and turn the power on again; the system automatically reboots. Your system messages may differ.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved</p> <p>MVME167 Debugger/Diagnostics Release Version 1.5 – 02/14/93</p> <p>COLD START</p> <p>Local Memory Found =02000000 (&amp;33554432)</p> <p>MPU Clock Speed =33Mhz</p>
<p>—continued—</p>	

Procedure 8-1 (continued) Software reinstallation or upgrade to a NAC 2 system	
Step	Installer's action and system's response
	<p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Booting from: VME167, Controller 0, Drive 0</p> <p><b>Loading: Operating System</b></p> <p>Volume: \$00000000</p> <p>IPL loaded at: \$001F0000</p> <p>VME Disk IPL Version 52.2</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message indicates that the keys <b>{CONTROL} {C}</b> pressed simultaneously cause a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and backspaces one character.</p> <p>If you are completing an installation upgrade, the following messages appear.</p> <p>—&gt; The INSTALLATION UPGRADE process requires you to obtain or create a Customer Data Backup Tape from your previous NAC 2 system.</p> <p>Please insert this backup tape into the internal cassette tape drive now.</p> <p>If you have no backup tape, or you wish to avoid installing the backup data, type "c" at the following prompt. This will change the INSTALLATION UPGRADE to a NEW INSTALLATION, and no data from your old system will be loaded onto the new system.</p>
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
33	<p>If you are completing an application upgrade, the following messages appear.</p> <p>—&gt; The APPLICATION UPGRADE process requires you to obtain or create a Customer Data Backup Tape from your previous NAC 2 system.</p> <p style="padding-left: 40px;">Please insert this backup tape into the internal cassette tape drive now.</p> <p style="padding-left: 40px;">If you have no backup tape, or you wish to avoid installing the type "c" at the following prompt. This will change APPLICATION UPGRADE to a NEW INSTALLATION, and no data from your old system will be loaded onto the new system.</p> <p style="text-align: right;">backup data, the</p> <p>The system continues.</p> <p>Is the backup tape inserted in the internal cassette tape drive (y/n/c/q) ?</p> <p>If you do not have a backup tape or you want to avoid installing your backup data, enter <b>c</b>, followed by <b>{RETURN}</b>. The following message appears.</p> <p>***&gt; Continuing as a NEW INSTALLATION...</p> <p>Go to Step 34.</p> <p>If you want to install your backup tape, insert the tape into the tape drive and enter <b>y</b>, followed by <b>{RETURN}</b>. The following messages appear.</p> <p>***&gt; Checking for NAC 2 Customer Backup Tape...</p> <p>***&gt; Customer Data Backup Tape is correctly inserted.</p> <p>The following message appears if you are completing an installation upgrade.</p> <p>***&gt; Continuing with the INSTALLATION UPGRADE...</p> <p>The following message appears if you are completing an application upgrade.</p> <p>***&gt; Continuing with the APPLICATION UPGRADE...</p>
—continued—	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response																								
<p><b>34</b></p>	<p>The system continues.</p> <p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC MT-2ST/F50B</td> </tr> </tbody> </table> <p>This configuration is only an example. Your system may differ.</p> <p>Enter &lt;CR&gt; to pause in a single user shell before init.</p> <p>Default boot sequencing continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00</p> <p>mount -f S51K /dev/usr /usr</p> <p>Checking for system dump...</p> <p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Disciplines.</p> <p>Error logging started.</p> <p>OSM Logging Started.</p> <p>***&gt; Configuring port devices... (TIME)</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B
Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description																		
Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N																		
Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B																		
<p>—continued—</p>																									

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
<p><b>35</b></p>	<p>***&gt; Finished configuring port devices. (TIME)</p> <p>The following message only appears if you are using reentry points 2, 3, or 4.</p> <p>port_hold started.</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started.</p> <p>Module ID = NAC00</p> <p>***&gt; Setting up directories and file permissions... (TIME)</p> <p>If you switched your installation upgrade to a new installation, go to Step 37.</p> <p>***&gt; Extracting the NAC release number from tape... (TIME)</p> <p>***&gt; Extracting Previous Database Backup from tape... (TIME)            The extraction process will take approximately XXXX minute(s).</p> <p>(where XXXX is the number of minutes determined by the system)</p> <p>***&gt; Finished extracting the backup data from tape. (TIME)</p> <p>***&gt; Checking the file delete chain and integrity of database... (TIME)</p> <p><b>36</b></p> <p>***&gt; Restoring the Release 2 database...(TIME)</p> <p>***&gt; Creating the SYSTEM database — please wait... (TIME)</p> <p>SYSTEM database created.</p> <p>Loading NAC 2 system data files...</p>
<p>—continued—</p>	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p>Extracting old NAC 2 system data files...</p> <p>Loading more NAC 2 system data files...</p> <p>Data files loaded</p> <p>Go to Step 38.</p>
<b>37</b>	<p>***&gt;Creating the SYSTEM database — please wait... (TIME)</p> <p>SYSTEM database created.</p> <p>Loading data files for training mode...</p> <p>Loading NAC 2 training data...</p> <p>Data files loaded</p>
<b>38</b>	<p>If you selected reentry point 1, 2 or 3, the following prompt appears.</p> <p>Your current language options are:</p> <p>If you selected reentry point 4, the following prompt appears.</p> <p>Your language options are already selected:</p> <p>Default:       English</p> <p>Secondary:     French</p> <p>This language selection is only an example. The languages installed in your system may differ.</p> <p>If your tape has more than two languages installed on it, you can change the language options at this point.</p> <p>The following two prompts only appear if you selected reentry point 4 and are not using a backup tape.</p> <p>***&gt;Creating USER LANGUAGE database — please wait... (TIME)</p> <p>USER LANGUAGE database created.</p>
<b>39</b>	<p>The system displays the Configure NAC System screen.</p>
—continued—	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
------	--

Configure NAC System

- 1. Port Assignment
- 2. Network Definition
- 3. System Parameters
- 4. Exit

Use up and down arrows to move among menu items and press  
ENTER to make a selection.

**40** You must enter your system's port assignments, define your network definitions, and verify the system parameters before exiting this screen. To enter your port assignments, enter **1**, followed by **{RETURN}**.

If you are upgrading your system within the same hardware platform and have an equal or greater number of ports available than you had assigned in your old system, your previous system's port assignments are retained. If your number of ports has decreased, only the common ports between the two systems are retained.

—continued—

**Procedure 8-1 (continued)****Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response																																																																																					
41	<p>The NAC Communication Port Assignment screen appears.</p> <p>This screen is only an example of a NAC 2 system with no ports assigned. A NAC 2 system can have 8, 16, 24, 32 or 40 ports.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: right;">Assigned Displays:#; Printers:#      Available Ports: #</p> <p>NAC Communication Port Assignment</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Port</th> <th style="text-align: left;">Device</th> <th style="text-align: left;">Connect</th> <th style="text-align: left;">Baud</th> <th style="text-align: left;">Name/Comment</th> </tr> </thead> <tbody> <tr><td>Card 2, Conn1A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn1B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn1C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn2A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn2B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn2C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn3A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn3B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn1A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn1B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn1C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn2A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn2B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn2C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn3A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn3B</td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p>PF1 = Commands PF2 = Options REMOVE = Erase field F6 = Update default printers</p> </div>	Port	Device	Connect	Baud	Name/Comment	Card 2, Conn1A					Card 2, Conn1B					Card 2, Conn1C					Card 2, Conn2A					Card 2, Conn2B					Card 2, Conn2C					Card 2, Conn3A					Card 2, Conn3B					Card 3, Conn1A					Card 3, Conn1B					Card 3, Conn1C					Card 3, Conn2A					Card 3, Conn2B					Card 3, Conn2C					Card 3, Conn3A					Card 3, Conn3B				
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—continued—

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
42	<p><b>Fields</b></p> <p>The NAC Communication Port Assignment screen has seven fields: <i>Assigned Displays: #</i>; <i>Printers: #</i>, <i>Available Ports: #</i>, <i>Port</i>, <i>Device</i>, <i>Connect</i>, <i>Baud</i>, and <i>Name/Comment</i>.</p> <p><b>Assigned Displays: #; Printers: #</b>                      The <i>Assigned Displays: #</i>; <i>Printers: #</i> field indicates the number of printers and displays that have been assigned to available ports. This number is represented by the number sign ( # ) in the screen examples. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Available Ports: #</b>                      The <i>Available Ports</i> field lists the number of ports that have yet to be assigned to displays, printers, network links or remote logins.</p> <p><b>Port</b>                      The <i>Port</i> field lists the ports.</p> <p>The ports are listed according to their card number, and connection number and letter. The card number refers to the card slot number in which the card is located. The card number begins at Card 2, Connection 1A because the CPU resides in the first card slot. The connection number refers to the port connection on the generic Input/Output panel. The connection letter refers to the specific port to which the devices are attached. A NAC 2 system can have 8, 16, 24, 32 or 40 ports. If your system has more than 16 ports, all of the ports cannot be viewed on a single screen. Use the up and down arrow keys to scroll the screen to view the rest of the ports.</p> <p>Not every port has to be assigned but you must assign at least one network link, one printer and one supervisor workstation.</p> <p><b>Device</b>                      To assign a device, move the cursor to an empty <i>Device</i> field and press <b>{PF2}</b> to view a pop-up menu of the devices available for your system.</p>
—continued—	

## Procedure 8-1 (continued)

### Software reinstallation or upgrade to a NAC 2 system

#### Step Installer's action and system's response

Assigned Displays:#; Printers:# Available Ports: #

NAC Communication Port Assignment

Port	Device	Conn
Card 2, Conn1A		
Card 2, Conn1B		
Card 2, Conn1C		
Card 2, Conn2A		
Card 2, Conn2B		
Card 2, Conn2C		
Card 2, Conn3A		
Card 2, Conn3B		
Card 3, Conn1A		
Card 3, Conn1B		
Card 3, Conn1C		
Card 3, Conn2A		
Card 3, Conn2B		
Card 3, Conn2C		
Card 3, Conn3A		
Card 3, Conn3B		

Device

1. Network Link
2. Remote Login

---

DISPLAYS

3. Reflection 4+ on PC
4. VT420 or Compatible
5. VT220 or Compatible
6. Unknown Display

---

PRINTERS

7. HP DeskJet
8. HP DeskJet 560C
9. HP LaserJet
10. HP PaintJet
11. HP RuggedWriter-Epson
12. HP RuggedWriter-PCL
13. DEC LA 195-Epson

PF1 = Options F6 = Update default printers

To delete an existing assignment, move the cursor to the line on which the device is located. Press **{REMOVE}** and the device is removed.

An arrow appears on the right-hand side of the pop-up menu if all of the devices could not fit on to the screen. Use the up and down arrow keys to move through the menu.

Select the desired device from the list presented. To enter a selection, either move the cursor to the selection and press **{RETURN}**, or enter the corresponding selection number and press **{RETURN}**.

If an device name is ghosted, it cannot be selected.

#### Links

The *Device* field can use two different links to connect NAC to a Meridian MAX node: Network Link and Remote Supervisor Login.

—continued—

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p>One Network Link must be assigned for each Meridian MAX node in the network. At least one Network Link must be assigned at all times. There are two ways to access a Meridian MAX node as a Remote Supervisor. A direct connection Remote Login link can be assigned on the NAC for each Meridian MAX node. Alternatively, one or more modem connection Remote Supervisor Login links can be assigned on the NAC to access any of a group of Meridian MAX nodes. A combination of the two methods can be used.</p> <p><b>Printers and Displays</b> You must assign at least one printer and one supervisor display.</p> <p>Each time a printer is selected, a message appears at the bottom of the screen asking the installer to enter a printer name for the assigned port in the <i>Name/Comment</i> field.</p> <p>Enter a unique name in the Name/Comment field that identifies the printer. For example, if a tabular printer is assigned, the name TabPrint could be used.</p> <p><b>Note:</b> The default printer must have a name defined in the <i>Name/Comment</i> field before you are allowed to exit this screen.</p> <p>Printer models are listed when you press <b>{PF2}</b> while in the <i>Device</i> field. Select the model appropriate to the printer connected to the assigned port.</p> <p>When all of the peripherals are assigned to ports, press <b>{F6}</b> to view or change the default printers. The system displays the Customer Default Printer Information pop-up menu which contains the Customer Default Tabular Printer name and the Customer Default Graphic Printer name.</p> <p>To modify the <i>Customer Default Tabular Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default tabular printer. This printer is now the destination for all tabular reports whenever the default output device is selected.</p> <p>To modify the <i>Customer Default Graphic Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default graphic printer. This printer is now the destination for all graphic reports whenever the default output device is selected.</p>
—continued—	

Procedure 8-1 (continued) Software reinstallation or upgrade to a NAC 2 system	
Step	Installer's action and system's response
	<p><b>Connect</b></p> <p>A connection type for each device must be entered in the <i>Connect</i> field. This entry must be selected from one of the following choices that appear in a pop-up. Depending upon the device assigned, this field may be filled in automatically by the system. The choices for this field are:</p> <ul style="list-style-type: none"> <li>— Direct</li> <li>— Modem</li> </ul> <p><b>Baud</b></p> <p>Each time you select an Unknown Display, Remote Login, or a Network Link, you must also select a baud rate. For other devices, the baud rate is assigned automatically by the system. You must choose from one of the following choices:</p> <ul style="list-style-type: none"> <li>— 2400</li> <li>— 9600</li> </ul> <p><b>Name/Comment</b></p> <p>The <i>Name/Comment</i> field displays the name given to an assigned printer, or comments made on other devices configured on the system. Press <b>{PF3}</b> to edit the <i>Name/Comment</i> field for a specific device.</p>
43	<p>When you have finished entering information on the NAC Communication Port Assignment screen, press <b>{PF1}</b> and select the "Save changes and exit" command.</p> <p>The communication port assignment information is saved and you are returned to the Configure NAC System screen.</p>
—continued—	

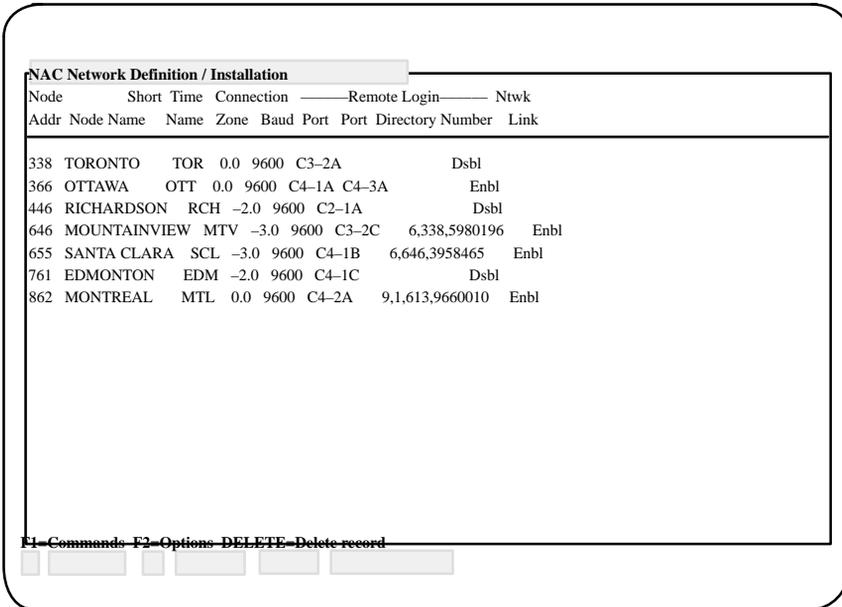
**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

**Step Installer's action and system's response**

**44** To define your Network Definition, enter **2**, followed by **{RETURN}**.

The NAC Network Definition/Installation screen contains all of the information the system needs to communicate with its Meridian MAX nodes. It is essential that the information entered here match the already set up hardware connections. For example, if the Network Link between the Toronto node and the NAC uses dial-up modems running at 9600 baud, then 9600 should be selected for the baud field for that specific link.

The system displays the NAC Network Definition/Installation screen:



**Note:** You cannot have both a remote login port and a remote login directory number for the same MAX node.

—continued—

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>45</b>	<p><b>Fields</b></p> <p>The NAC Network Definition/Installation screen has nine fields: <i>Node Addr, Node Name, Short Name, Time Zone, Connection Baud, Connection Port, Remote Login Port, Remote Login Directory Number, and Ntwk Link.</i></p> <p><b>Node Addr</b> The Node Address (location code) for each Meridian MAX site must be three-digits in length but 000 to 099 are not considered valid entries. To enter the Node Address, type in the three-digit address and press <b>{RETURN}</b>.</p> <p><b>Node Name</b> The Node Name for each Meridian MAX site. To enter the Node Name, press <b>{PF3}</b>, type the Node Name and press <b>{PF3}</b> again or type the Node Name and press <b>{RETURN}</b>.</p> <p><b>Short Name</b> This field indicates the three character Short Name for each node. Each Short Name must be unique. To enter the Short Name, press <b>{PF3}</b>, type the Short Name and press <b>{PF3}</b> again or type the Short Name and press <b>{RETURN}</b>.</p> <p><b>Time Zone</b> This field Indicates the time difference between the NAC and the Meridian MAX node. For example, -2.0 would be the correct response if the NAC system was situated two time zones to the east of the Meridian MAX node in question, meaning the node is two hours behind the NAC. To enter the Time Zone, press <b>{PF3}</b>, type the Time Zone number and press <b>{PF3}</b> again or type the Time Zone number and press <b>{RETURN}</b>.</p> <p><b>Connection Baud</b> This field indicates the specific baud rate that the Network Link uses to communicate with the Meridian MAX node. To enter the baud rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
	<p><b>Connection Port</b>                      This field indicates the specific port identifier to which a Meridian MAX node is connected through the Network Link. To enter the Connection Port, press <b>{PF3}</b>, type the Connection Port number and press <b>{PF3}</b> again or type the Connection Port number and press <b>{RETURN}</b>.</p> <p><b>Remote Login Port</b>                      This field indicates the specific port on the NAC system that is connected to a Meridian MAX node. This connection allows the user to log in to Meridian MAX from the NAC as a Remote Supervisor. To enter the Remote Login Port, press <b>{PF3}</b>, type the Remote Login Port and press <b>{PF3}</b> again or type the Remote Login Port and press <b>{RETURN}</b>.</p> <p><b>Remote Login Directory Number</b>                      This field indicates the telephone number used to connect the NAC system to a Meridian MAX node through a modem. This connection allows the user to log in to Meridian MAX from the NAC as a remote supervisor. To enter the Remote Login Directory Number, press <b>{PF3}</b>, type the Remote Login Directory Number and press <b>{PF3}</b> again or type the Remote Login Directory Number and press <b>{RETURN}</b>.</p> <p><b>Ntwk Link</b>                      This field controls the visibility of the node to the NAC system. When this field is set to Disabled, the node does not provide information to the NAC, supervisor messages cannot be transmitted to and from the Meridian MAX node, remote printing cannot occur, and remote supervisor logins to the Meridian MAX node are prohibited.</p> <p>When this field is set to Enabled, then the node provides information to the NAC, supervisor messages are transmitted to and from the Meridian MAX node, remote printing can occur, and remote supervisor logins to the Meridian MAX node are permitted.</p> <p>To select the Network Link, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p>When you are finished entering information on the NAC Network Definition/Installation screen, press <b>{F1}</b> and select the 'Save changes and exit' command.</p>
<p>—continued—</p>	

**Procedure 8-1 (continued)**  
**Software reinstallation or upgrade to a NAC 2 system**

Step	Installer's action and system's response
------	--

- |    |   |
|----|---|
| 46 | The Configure NAC System screen is returned. Enter <b>3</b> , followed by <b>{RETURN}</b> to view the NAC System Parameters screen. |
|----|---|

NAC System Parameters

Customer Name	:	Northern Telecom
Network Administrator Password	:	
Default Language	:	English
Tabular Printer	:	HP Laser 1
Graphic Printer	:	HP Laser2
NAC to Node Login Password	:	
Statistics Transmission Rate	:	30

PF1 = Exit      PF2 = Options

### Fields

The NAC System Parameters screen has nine fields: *Customer Name, Network Administrator Password, Default Language, Tabular Printer, Graphic Printer, NAC to Node Login Password, and Statistics Transmission Rate*

#### Customer Name

The *Customer Name* field allows you to record the NAC customer name. This name appears on the network reports and display screens. Typically the customer name is the same as your company's name. To enter the Customer Name, press **{PF3}**, type the Customer Name and press **{PF3}** again or type the Customer Name and press **{RETURN}**.

—continued—

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p><b>Network Administrator Password</b></p> <p>The <i>Network Administration Password</i> field is optional. It defines the password to be used as a security precaution to ensure that only network administrators access the network administration features. To enter the Network Administrator Password, press <b>{PF3}</b>, type the Network Administrator Password and press <b>{PF3}</b> again or type the Network Administrator Password and press <b>{RETURN}</b>.</p> <p><b>Default Language</b></p> <p>The <i>Default Language</i> is the language most of the network supervisors use. To select the Default Language, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Note:</b> The default language can be changed once the NAC system is running by using the Language Options screen. Refer to the <i>NAC 2 Supervisor's User Guide</i> (P0724352), "Parameter administration" chapter, "Language options" section for more information.</p> <p><b>Tabular Printer</b></p> <p>The <i>Tabular Printer</i> field is used to name the default tabular printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default tabular printer that is specified here. To select the Tabular Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Graphic Printer</b></p> <p>The <i>Graphic Printer</i> field is used to name the default graphic printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default graphic printer that is specified here. To select the Graphic Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p><b>NAC to Node Login Password</b> The <i>NAC to Node Login Password</i> field defines the password used by the system to bring up the Network Link between the NAC and its Meridian MAX nodes. If this field is changed then the Network Administrator Password field at each Meridian MAX node (not to be confused with the Network Administration Password in this feature) must be changed to match it. To enter the NAC to Node Login Password, press <b>{PF3}</b>, type the NAC to Node Login Password and press <b>{PF3}</b> again or type the NAC to Node Login Password and press <b>{RETURN}</b>.</p> <p><b>Statistics Transmission Rate</b> The <i>Statistics Transmission Rate</i> field determines how often information from the nodes will be received. This information appears on the NAC displays. The number you enter represents the number of seconds between each node's update. You may select 10, 20, or 30 seconds from the menu. This field should not be confused with each network supervisor's Stats Update Rate field (found in the Supervisor Definition feature). The Statistics Transmission Rate determines how often a node's information is collected. The Stats Update Rate field determines how often the information displays are updated for the network supervisor. To select the Statistics Transmission Rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
<b>47</b>	After you have entered the information, press <b>{PF1}</b> and select the "Save Changes and Exit" command. The system saves your entries.
<b>48</b>	The Configure NAC System screen is returned. Enter <b>4</b> , followed by <b>{RETURN}</b> to exit.
<b>49</b>	When you have completed the system configuration screens, the system continues with the installation.
—continued—	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
Step	Installer's action and system's response
<p><b>50</b></p>	<p>The following prompt appears only when you are using Reentry point 4 and switch to a new installation.</p> <p>Setting the time to Thu Jun 22 12:00 1989 for Training mode.</p> <p>Loading System Language Strings...</p> <p>Loading System Language Strings completed</p> <p>The following three prompts don't appear when you are using Reentry point 4 and switch to a new installation.</p> <p>Starting NAC OSM Logger, Please Wait...</p> <p>OSM Logging Stopped.</p> <p>NAC OSM Logging Started.</p> <p>NAC release 02.xx</p> <p>If you switched to a new installation, the following message appears.</p> <p>NAC Training Mode</p> <p>If you performed a reinstallation or an application upgrade, the following message appears.</p> <p>NAC Precut Mode</p> <p>The system continues.</p> <p>Please login as precut for more details.</p> <p>The system is ready.</p> <p>Console Login:</p>
<p>—continued—</p>	

<b>Procedure 8-1 (continued)</b> <b>Software reinstallation or upgrade to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>51</b>	<p>Before logging in, ensure that the installation was successful. Review the NAC error log for any fatal messages.</p> <p>Login as <b>maint</b> and refer to the <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and administration programs: System running" chapter, "Diagnostics" section, "View NAC error log" subsection for more information.</p>
<b>52</b>	<p>If the system was installed correctly, go to Step 53.</p> <p>If the system was not installed correctly, you must reinstall it. Ensure no errors occurred within the steps you want to skip. If you are unsure, restart the re-installation from the beginning. If the errors persist, contact your Northern Telecom distributor.</p>
<b>53</b>	<p>Insert a new blank tape into the tape drive for daily backup. Ensure that the write-protect tab on the blank cartridge tape is set to write enabled to allow the system to write information on the tape. The importance of backups is explained in the "Software installation overview" chapter, "Backups" section.</p>
<b>54</b>	<p>Login as <b>precut</b>.</p> <p>If you completed an installation or application upgrade, the NAC Precutover Mode screen appears.</p> <p>Refer to the "Operating modes" chapter, "Product mode" section for instructions on how to transfer your system from the Precutover mode to the Product mode.</p> <p>If you completed a new installation, the NAC Training Mode screen appears.</p> <p>Refer to "Operating modes" chapter, "Training mode" section for instructions on how to transfer your system from Training mode to Precutover mode.</p>
<b>-end-</b>	

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## Platform upgrades

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If you are currently running a NAC 1 system and want to upgrade your operation to a NAC 2 system, a platform upgrade is needed. Use Procedure 9-1 to complete a platform upgrade from NAC 1 to NAC 2.

Ensure that all of the hardware installation is complete before proceeding with the software installation.

Before starting any upgrade, verify that the system is performing properly. Check the NAC error log and the UNIX system log (when appropriate) to verify that midnight backups are successfully completed. Schedule an upgrade to be completed before 11:30 p.m. or started after 1:00 a.m. so that the regular NAC midnight routines are executed properly.

**Note:** Because you are performing a platform upgrade, no port assignments are retained from your NAC 1 system. Therefore, all system ports must be reassigned.

## Platform upgrade from a NAC 1 system to a NAC 2 system

Use Procedure 9-1 if you are upgrading your NAC 1 system to a NAC 2 system. After the system reboot following the operating system and application tape installation, you can follow one of two paths in this procedure.

*Note:* In all procedures, the keys {RETURN} and {ENTER} are interchangeable.

If you do not have a backup tape or do not want to install your backup data onto the new system, you can switch the installation upgrade to a new installation. This alteration allows you to skip over the steps where the backup data tape is inserted and loaded onto the system.

If you want to load your backup data, continue the installation as an installation upgrade and follow the screen prompts and messages to load the backup tape.

To perform the following procedure, you need the NAC 2 application tape and the generic operating system tape, as well as a backup tape from your NAC 1 system database if needed.

Procedure 9-1 Platform upgrade from a NAC 1 system to a NAC 2 system	
Step	Installer's action and system's response
1	Ensure that the MVME167-34 card has been configured correctly. Refer to the "Hardware installation" chapter, "Configuring the MVME167-34 card" section.
2	Before starting this procedure, follow the instructions for backing up your NAC 1 customer data to tape. Refer to <i>NAC 1 Operations</i> (NTP 553-4011-500), "Maintenance and administration programs" chapter.  Begin by first shutting down the software of the NAC 1 system.
3	Use the ACD-NAC Maintenance and Administration menu and choose option <b>b</b> , <i>Backup and Restore Utilities</i> .  <b>Note:</b> ACD-NAC backup should be made on a 150 Mbyte (megabyte) tape.
4	From the Backup and Restore Utilities submenu, choose option <b>b</b> again, " <i>Backup Customer Data to Tape</i> " to save the system's database. This ensures that all current data is backed up.  This procedure uses large cartridge tapes. Care must be taken to avoid damaging the tape, as its fragility can result in tape errors during the installation procedure. Keep tapes away from excessive heat or electromagnetic radiation.
5	Remove the front and rear panels of the Application Equipment Module (AEM).
6	Remove the AEM backplate to access the NAC application module transition cards.
7	Make sure the AM is powered off. The power switches for each module are located at the left side of the AEM.
8	Find the label "SCSI INTERFACE" at the lower right side of the MVME712M transition card located at the rear of the AM. Below the label "SCSI INTERFACE" is the external SCSI port with a SCSI terminator-connector attached to it.  If your NAC module is in the second module of the AEM, go to Step 11.  If your NAC module is in the first module of the AEM, go to Step 9.
9	Remove the power supply faceplate located at the back of the module on the right side.
10	Put the SCSI cable through the power supply hole and behind the backpanel.
—continued—	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
11	Remove the SCSI terminator-connector from the NAC external SCSI port. Grasp the connectors between your index finger and thumb. Simultaneously squeeze the two buttons at the top and bottom of the connector and slowly pull it straight out of the external port. Care must be taken when pulling off the connector. Do not try to force it out or move it from side to side.
12	Once the terminator-connector has been removed, take the matching end of the external SCSI cable and carefully plug it into the external SCSI port. The cable connector should fit very snugly. Be sure to secure the clips on either sides of the connector. To check if it is securely plugged in, tug on the cable a few times; it should not come out.
13	Connect the other end of the external SCSI cable (the Centronics standard end) to the back panel of the Archive 2150eS external SCSI tape drive. Either one of the two ports on the tape drive can be used. Be sure to secure the clips on both sides of the connector.
14	Plug in the power cord for the Archive tape drive.
15	Ensure that the SCSI address is set to five (5). On the back panel of the SCSI tape drive, a small window displays the SCSI address. On either side of this window is a button. One increases the number, while the other decreases it. Press these buttons until the number five (5) appears in the window.
16	Insert the NAC 1 customer data backup tape into the tape drive. Slide the tape drive latch shut.
17	Power up the Archive tape drive first, before the NAC module, otherwise the NAC module does not acknowledge the presence of the tape drive. The power switch for the Archive tape drive is located on the rear panel of the tape drive.  When the tape drive is powered on, an audible clicking sound is emitted from the drive. This sound is normal and caused by the drive resetting and recalibrating itself.
18	Insert the operating system tape into the NAC system's tape drive. Turn on the power. The power switch is located on the left side of the AEM.
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
19	<p>The system displays the copyright and hardware configuration information. Your system information may differ.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved  MVME167 Debugger/Diagnostics Release Version 1.5 – 02/14/93  COLD Start</p> <p>Local Memory Found =02000000 (&amp;33554432)  MPU Clock Speed =33MHz</p> <p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p>
20	<p>Press <b>{BREAK}</b> to stop the hard disk load and begin the tape load.</p> <p><b>Note:</b> {F5} on the VT420 is the {BREAK} key.</p> <p>—Break Detected—  167–Bug&gt;</p>
21	<p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>At the previous prompt, enter <b>bo 0,40</b> followed by <b>{RETURN}</b>.</p> <p>Booting from VME167, Controller 0, Drive 40  Loading: Operating System  Volume: V/68  IPL Loaded at: \$001F0000  MVMETAPE IPL Version 1.0</p> <p>There is a one to two minute delay before the system continues.</p>
<p>—continued—</p>	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
	<pre> *****                 System V/68 Release R3V7 M68040 Version 930402                  Real mem      = 31457280                  Avail mem    = 29900800                  Buffers= 60  *****  Copyright (c) 1984-1993 Motorola Inc. All rights reserved.  INIT: SINGLE USER MODE  ***  erase = #  kill = @  Intr = DEL  quit = ^\  ***  <b>Note:</b> The previous message indicates that pressing the backspace key causes a system interruption which terminates the current process. The {#} key backspaces and deletes one character. If you press the {DELETE/BACKSPACE} key accidental- ly, press {CONTROL}{D} to reset the system.  167 SCSI configuration  Device Addr  Vers  Revision  Serial#  Blocks  Size  VendorDescription ----- Disk  00    0002  8988...  .....  2054325 0512 SEAGATEST11200N Tape  40    0001  RV J...  .....  0000000 0000 TEAC  MT-2ST/F50B Tape  50    0001  -005...  .....  0000000 0000 ARCHIVEVIPER 150 2124  This configuration is only an example. Your system may differ.  Enter the correct date and time EST [mmddhhmmyy]: </pre>
<p>—continued—</p>	

Procedure 9-1 (continued) Platform upgrade from a NAC 1 system to a NAC 2 system	
Step	Installer's action and system's response
22	<p>Enter the correct date and time, where the first pair of numbers represent the month, the second pair of numbers represent the day, the third pair represent the hour in the 24-hour time cycle, the fourth pair of numbers represent the minutes, and the last pair of numbers represent the last two digits of the year. For example, if 0211152594 was entered, the system would ask you the following question.</p> <p>Is the date Fri Feb 11 15:25:00 1994 EST correct (y/n) ?</p>
23	<p>If the date and/or time you entered is incorrect, enter <b>n</b>, followed by <b>{RETURN}</b>. The system then returns you to Step 22. If the date and time you entered are correct, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; From this point on, many system messages will be timestamped. (TIME)</p> <p>The word TIME in parentheses indicates a time message displayed by your system.</p> <p>***</p> <p>New character settings: erase = DEL kill = ^u intr = ~ quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message indicates that pressing the <b>{~}</b> key causes a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and back-spaces one character.</p> <p>—&gt; <b>Do you</b> wish to verify the identity of the NAC Application Tape (y/n) ?</p>
24	<p>If you do not wish to verify the options, enter <b>n</b>, followed by <b>{RETURN}</b>, and skip to Step 29. If you want to verify the customer purchasable options on the application tape, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Please remove the OS tape from the tape drive and insert the NAC Application tape.</p>
—continued—	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
Step	Installer's action and system's response
25	<p>Remove the OS tape and insert the application tape.</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>—&gt; Is the NAC Application tape in the tape drive (y/n/q) ?</p>
26	<p>If the application tape is in the tape drive and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Checking to see that tape is ready for reading...</p> <p>Extracting files...</p> <p>The system displays the Tape ID Display.</p> <p>NAC Tape ID</p> <p>_____</p> <p>Product Release : 02.xx</p> <p>Hardware Platform : SNN</p> <p><b>If this information does not match the options listed on the tape label, please type "n" to the following question. The installation will abort. Please call your service representative for further assistance.</b></p> <p>—&gt; <b>Do you wish to install the tape options specified above (y/n) ?</b></p>
27	<p>If you want to abort the installation, enter <b>n</b>, followed by <b>{RETURN}</b>. If you want to install the tape, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>Please remove the NAC Application tape from the tape drive and insert the OS tape.</p> <p>Is the OS tape in the tape drive (y/n/q)?</p>
28	<p>Remove the application tape and insert the OS tape. Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>If the OS tape is in the tape drive and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p>
<p>—continued—</p>	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>29</b>	<p>The system displays the hardware configuration.</p> <p>NAC has detected that you are running the following hardware configuration:</p> <p>CPU : 167 Card</p> <p>Memory : 32 Mb</p> <p>Hard Disk : 1.2 Gb (Seagate ST11200N)</p> <p>Tape Drive : 600 Mb (Teac MT-2ST/F50B)</p> <p>If this configuration does not match your configuration, please type "n" to the following question. The installation will abort. Please call your service representative for further assistance.</p> <p>—&gt; Do you wish to install the hardware configuration specified above (y/n) ?</p>
<b>30</b>	<p>If you want to abort the installation, enter <b>n</b>, followed by <b>{RETURN}</b>. If you want to install the hardware configuration, enter <b>y</b>, followed by <b>{RETURN}</b>. The system then displays a menu.</p> <p>The NAC Software Installation Menu</p> <p>_____</p> <p>1 New Installation</p> <p>2 Installation Upgrade</p> <p>3 Application Upgrade</p> <p>4 Platform Upgrade</p> <p>—&gt; Enter a number to select the type of installation/upgrade desired, or enter q to quit :</p>
<b>31</b>	<p>Since this procedure is a platform upgrade, enter <b>4</b>, followed by <b>{RETURN}</b>.</p> <p>Will perform a Platform Upgrade.</p> <p>—&gt; Do you wish to restart a previously-aborted installation (y/n)?</p>
<b>—continued—</b>	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
Step	Installer's action and system's response
<b>32</b>	<p>If you do not want to restart a previously aborted installation, enter <b>n</b>, followed by <b>{RETURN}</b>. Go to Step 34. If you want to restart a previously aborted installation, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; Determining whether the installation can be re-started...</p> <p>The system then displays the NAC Installation/Upgrade Restart menu.</p> <p><b>Note:</b> Only those reentry points that have been verified by your system are shown in the NAC Installation/Upgrade Restart Menu.</p> <p style="text-align: center;">The NAC Installation/Upgrade Restart Menu</p> <p style="text-align: center;">_____</p> <p>Restart NAC 2 installation from one of the following stages:</p> <ol style="list-style-type: none"> <li>1 From the Beginning</li> <li>2 Just Before Copying OS Files to Hard Disk</li> <li>3 Just Before Copying NAC Application Files to Hard Disk</li> <li>4 Just Before Booting From Hard Disk</li> </ol> <p>—&gt; Enter a number to select the stage from which to install, or enter q to quit:</p>
<p>—continued—</p>	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>33</b>	<p>If you want to quit, enter <b>q</b>, followed by <b>{RETURN}</b>. The system returns you to the NAC Software Installation Menu, from where you can restart the installation.</p> <p>If you want to restart the installation from the beginning, enter <b>1</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade from the beginning.</p> <p>If you want to restart the installation just before the OS files are copied to the hard disk, enter <b>2</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the OS files are about to be copied to the hard drive.</p> <p>If you want to restart the installation just before the NAC application files are copied to the hard disk, enter <b>3</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the application files are about to be copied to the hard drive.</p> <p>If you want to restart the installation just before the NAC system boots from the hard disk, enter <b>4</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <p>You have chosen to start the NAC 2 install/upgrade at the point where the system is about to be booted from the hard disk for the first time.</p>
<b>34</b>	<p>The system continues.</p> <p>WARNING: NAC 2 installation/upgrade requires overwriting the hard disk. This means that FILES AND DATA ON THE DISK WILL BE DESTROYED.</p> <p>—&gt; Do you wish to begin NAC 2 installation (y, n, q) ?:</p>
<b>—continued—</b>	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
Step	Installer's action and system's response
<b>35</b>	<p>If you want to begin the installation, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <p>***&gt; Beginning installation/upgrade (TIME)</p> <p>***&gt; Checking tape in drive (TIME)</p> <p>If you chose not to restart a previously aborted installation or chose reentry point 1 in Step 33 (to restart the installation from the beginning), go to Step 36.</p> <p>If you chose reentry point 2 in Step 33 (to restart the installation just before copying the OS files to the hard disk), go to Step 37.</p> <p>If you chose reentry point 3 in Step 33 (to restart the installation just before copying the application files to the hard disk) the system displays the following messages.</p> <p>***&gt; Mounting root file system as /root (TIME)</p> <p>***&gt; Mounting usr file system as /root/usr (TIME)</p> <p>***&gt; Installing NAC-specific configuration files (TIME)</p> <p>***&gt; Setting permissions on installation disk's root directory (TIME)</p> <p>Go to Step 38.</p>
<p>—continued—</p>	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
36	<p>If you chose reentry point 4 in Step 33 (to restart the installation just before booting from the hard disk for the first time), the system displays the following messages.</p> <pre> ***&gt; Mounting root file system as /root (TIME)  ***&gt; Mounting usr file system as /root/usr (TIME)  The system has been reset to perform the installation again, starting from the first boot from the hard disk. Please perform the following steps:  1. Remove the tape from the tape drive. 2. Turn off the power for the module. 3. Wait 20 seconds for the power to reset. 4. Turn on the power for the module.  *****  Please reboot the system now.  *****  Go to Step 42.  *****  *                                     *  * Stage 1 — Formatting Hard Disk Drive and Creating Filesystems *  *                                     *  ***** </pre>
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
<p><b>37</b></p>	<pre> ***&gt; Formatting root file system's disk drive (TIME)       This will take about 30 to 60 minutes...  ***&gt; Writing slice table to /dev/rdisk/m167_00s7 (TIME)  ***&gt; Creating the root file system (TIME)  ***&gt; Labeling the root file system (TIME)  ***&gt; Creating the swap file system (TIME)  ***&gt; Labeling the swap file system (TIME)  ***&gt; Creating the usr file system (TIME)  ***&gt; Labeling the usr file system (TIME)  ***&gt; Installing boot-loader on root file system's disk drive (TIME)  ***** *                                     * *   Stage 2 — Copying OS Files to Hard Disk   * *                                     * *****  ***&gt; Mounting root file system as /root (TIME)  The following two messages only appear if no reentry point was used or if reentry point 1 was chosen.  ***&gt; Making the /tmp directory (TIME)  ***&gt; Making the /usr directory (TIME)           </pre>
<p>—continued—</p>	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
38	<pre> ***&gt; Mounting usr file system as /root/usr (TIME)  ***&gt; Copying files; this will take from 5 to 15 minutes     depending upon your system configuration... (TIME)  ***&gt; Making the root file system lost+found directory (TIME)  Reserving 224 entries  ***&gt; Making the usr file system lost+found directory (TIME)  Reserving 1312 entries  The following message only appears if no reentry point was used or if reentry point 1 was chosen.  ***&gt; Installing /etc/badtracks/m167_00 bad spot list (TIME) ***&gt; Creating sysadm(1M) package information file (TIME) ***&gt; Setting up the new operating system (TIME) ***&gt; Creating root and usr file system associated device nodes (TIME) ***&gt; Installing NAC-specific configuration files (TIME) ***&gt; Setting permissions on installation disk's root directory (TIME)  ***** *                                     * * Stage 3 — Copying NAC Application Files to Hard Disk      * *                                     * *****  Please remove the OS tape from the tape drive and put in the NAC 2 Application tape. </pre>
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
<p><b>39</b></p> <p><b>40</b></p> <p><b>41</b></p>	<p>Remove the OS tape from the tape drive and insert the application tape.</p> <p>Wait for the tape to rewind. The tape drive light turns off when the tape is rewound.</p> <p>Did you insert the application tape in the tape drive (y/n) ?</p> <p>Providing you followed the instructions given in Step 39 and the tape drive light is off, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>The system continues.</p> <pre> ***&gt; Checking tape in drive (TIME) ***&gt; Copying files; this will take from 5 to 10 minutes,     depending upon your system configuration... (TIME) ***** *                                     * * Stage 4 — Preparing to Reboot From Hard Disk           * *                                     * *****  ***&gt; Unmounting all mounted file systems (TIME) ***&gt; Synchronizing the installation disk (TIME)  *****  The NAC 2 product has been installed on the hard disk. You may now remove the tapes from the tape drive.                     </pre>
<p>—continued—</p>	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
<p><b>42</b></p>	<pre> *                               * * You must REBOOT the system and allow it to autoboot from the hard * * disk. Please power off the system now.                               * *                               * * Please allow 20 seconds between turning the power off and on again* * to allow the power to reset.           * *                               * *                               * ***** *** REBOOT THE SYSTEM *** ***** </pre> <p>After you turn off the power for the module, wait 20 seconds, and turn the power on again; the system automatically reboots. Your system information may differ.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved</p> <p>MVME167 Debugger/Diagnostics Release Version 1.5 – 02/14/93</p> <p>COLD START</p> <p>Local Memory Found =02000000 (&amp;33554432)</p> <p><b>MPU Clock Speed =33Mhz</b></p>

—continued—

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Booting from: VME167, Controller 0, Drive 0</p> <p><b>Loading: Operating System</b></p> <p>Volume: \$00000000</p> <p>IPL loaded at: \$001F0000</p> <p>VME Disk IPL Version 52.2</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message indicates that the keys <b>{CONTROL} {C}</b> pressed simultaneously cause a system interruption which terminates the current process. The <b>{DEL}</b> key deletes and backspaces one character.</p> <p>***&gt; Checking for external SCSI tape drive...</p> <p>***&gt; External SCSI tape drive is connected and powered up.</p> <p>—&gt; The PLATFORM UPGRADE process requires you to obtain or create a Customer Data Backup Tape from your previous ACD–NAC system.</p> <p>Please insert this backup tape into the external cartridge tape drive now.</p> <p>If you have no backup tape, or you wish to avoid installing the backup tape, type “c” at the following prompt. This will change the PLATFORM UPGRADE to a NEW INSTALLATION, and no data from your old system will be loaded onto the new system.</p> <p>Is the backup tape inserted in the external cartridge tape drive (y/n/c/q) ?</p>
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response																																
43	<p>If you do not have a backup tape or wish to avoid installing your backup data, enter <b>c</b>, followed by <b>{RETURN}</b>. The system displays the following message.</p> <pre>***&gt; Continuing as a NEW INSTALLATION...</pre> <p>Go to Step 44.</p> <p>If you have inserted the backup tape, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p> <pre>***&gt; Checking for ACD-NAC Customer Data Backup Tape... ***&gt; Customer Data Backup Tape is correctly inserted. ***&gt; Continuing with the PLATFORM UPGRADE...</pre>																																
44	<p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>VendorDescription</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATEST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC MT-2ST/F50B</td> </tr> <tr> <td>Tape</td> <td>50</td> <td>0001</td> <td>-005...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>ARCHIVEVIPER 150 2124</td> </tr> </tbody> </table> <p>This configuration is only an example. Your system may differ.</p> <p>Enter &lt;CR&gt; to pause in a single user shell before init.</p> <p>Default boot sequencing continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00</p> <pre>mount -f S51K /dev/usr /usr</pre> <p>Checking for system dump...</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	VendorDescription	Disk	00	0002	8988...	.....	2054325	0512	SEAGATEST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B	Tape	50	0001	-005...	.....	0000000	0000	ARCHIVEVIPER 150 2124
Device	Addr	Vers	Revision	Serial#	Blocks	Size	VendorDescription																										
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Tape	50	0001	-005...	.....	0000000	0000	ARCHIVEVIPER 150 2124																										

—continued—

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
Step	Installer's action and system's response
<b>45</b>	<p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Disciplines.</p> <p>Error logging started.</p> <p>OSM Logging Started.</p> <p>***&gt; Configuring port devices. (TIME)</p> <p>***&gt; Finished configuring port devices. (TIME)</p> <p>If you are completing reentry point 2, 3, or 4, the following message appears.</p> <p>port_hold started.</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started.</p> <p>Module ID = NAC00</p> <p>***&gt; Setting up directories and file permissions... (TIME)</p> <p>If you switched the platform upgrade to a new installation, go to Step 47.</p> <p>***&gt; Extracting the NAC release number from tape... (TIME)</p> <p>***&gt; Extracting Previous Database Backup from tape... (TIME)</p> <p style="padding-left: 40px;">The extraction process will take between 1 and 2 minutes, depending on the sizes of the databases.</p> <p>***&gt; Finished extracting the backup data from tape. (TIME)</p>
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
	<p>***&gt; Performing byte swapping on the databases... (TIME)</p> <p>Byte swapping can take from 1 to 2 minutes, depending on the sizes of the databases...</p> <p>***&gt; Successfully swapped the bytes on the databases. (TIME)</p> <p>***&gt; Checking the file delete chain and integrity of database... (TIME)</p> <p>&gt;&gt;&gt;&gt; Beginning Phase I of Database Conversion to NAC 2... (TIME)</p> <p>***&gt; Converting Release 1 database to Release 2 database</p> <p>***&gt; Creating the SYSTEM database — please wait... (TIME)</p> <p>SYSTEM database created.</p> <p>Loading NAC 2 system data files...</p> <p>Extracting NAC 1 system data files...</p> <p>Loading more NAC 2 system data files...</p> <p>Data files loaded</p>
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

<b>Step</b>	<b>Installer's action and system's response</b>
<p><b>46</b></p>	<p>This language selection is only an example. The languages installed in your system may differ.</p> <p>If you selected reentry point 1, 2 or 3, the following prompt appears.</p> <p>Your current language options are:</p> <p>If you selected reentry point 4, the following prompt appears.</p> <p>Your language options are already selected:</p> <p style="padding-left: 40px;">Default:       English</p> <p style="padding-left: 40px;">Secondary:     French</p> <p>If your tape has more than two languages installed on it, you can change the language options at this point.</p> <p>***&gt; Creating USER LANGUAGE database — please wait... (TIME)</p> <p style="padding-left: 40px;">USER LANGUAGE database created.</p> <p style="padding-left: 40px;">Converting previous release User Language Database...</p> <p style="padding-left: 40px;">Conversion complete.</p> <p>&lt;&lt;&lt;&lt; Finished Phase I of Database Conversion (TIME)</p> <p>&gt;&gt;&gt;&gt; Beginning Phase II of Database Conversion to NAC 2 (TIME)</p> <p>Go to Step 48.</p>
<p><b>47</b></p>	<p>***&gt; Creating the SYSTEM database — please wait... (TIME)</p> <p style="padding-left: 40px;">SYSTEM database created.</p> <p style="padding-left: 40px;">Loading data files for training mode...</p> <p style="padding-left: 40px;">Loading NAC 2 training data...</p> <p style="padding-left: 40px;">Data files loaded</p>

—continued—

**Procedure 9-1 (continued)****Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
48	<p>This language selection is only an example. The languages installed in your system may differ.</p> <p>Your language options are already selected:</p> <p>Default:       English</p> <p>Secondary:     French</p> <p>***&gt; Creating USER LANGUAGE database — please wait... (TIME)</p> <p>USER LANGUAGE database created.</p> <p>The system displays the Configure NAC System screen.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">Configure NAC System</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <ol style="list-style-type: none"> <li>1. Port Assignment</li> <li>2. Network Definition</li> <li style="background-color: #cccccc;">3. System Parameters</li> <li>4. Exit</li> </ol> <p style="text-align: center; margin-top: 20px;">Use up and down arrows to move among menu items and press ENTER to make a selection.</p> </div> </div>
49	<p>You must enter your system's port assignments, define your network definitions, and verify the system parameters before exiting this screen. To enter your port assignments, enter <b>1</b>, followed by <b>{RETURN}</b>.</p>

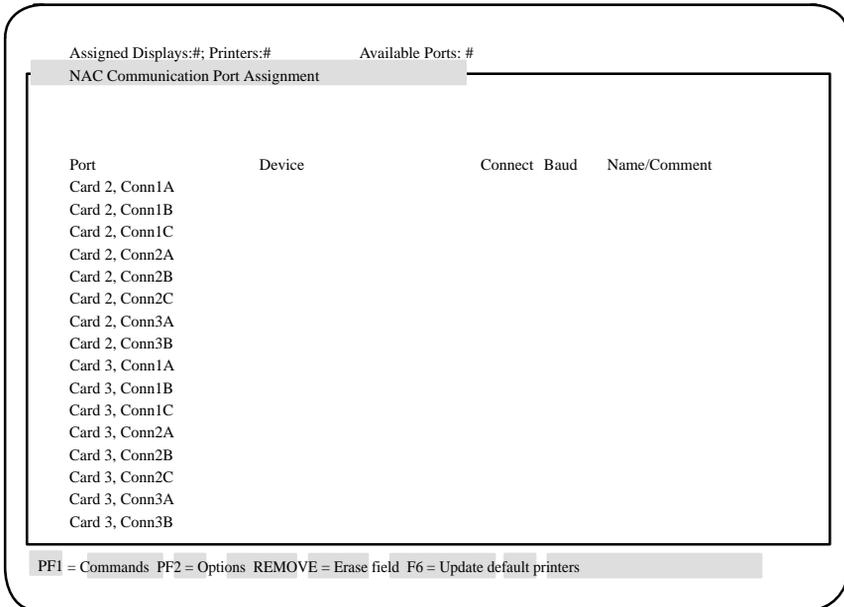
—continued—

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

**Step** | **Installer's action and system's response**

**50** | The NAC Communication Port Assignment screen appears.

This screen is only an example of a NAC 2 system with no ports assigned. A NAC 2 system can have 8, 16, 24, 32 or 40 ports.



—continued—

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
<b>51</b>	<p><b>Fields</b></p> <p>The NAC Communication Port Assignment screen has seven fields: <i>Assigned Displays: #</i>; <i>Printers: #</i>, <i>Available Ports: #</i>, <i>Port</i>, <i>Device</i>, <i>Connect</i>, <i>Baud</i>, and <i>Name/Comment</i>.</p> <p><b>Assigned Displays: #; Printers: #</b> The <i>Assigned Displays: #</i>; <i>Printers: #</i> field indicates the number of Printers and Displays that have been assigned to available ports. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Available Ports: #</b> The <i>Available Ports</i> field lists the number of ports that have yet to be assigned to displays, printers, network links or remote logins. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Port</b> The <i>Port</i> field lists the ports.</p> <p>The ports are listed according to their card number, and connection number and letter. The card number refers to the card slot number in which the card is located. The card number begins at Card 2, Connection 1A because the CPU resides in the first card slot. The connection number refers to the port connection on the generic Input/Output panel. The connection letter refers to the specific port to which the devices are attached. A NAC 2 system can have 8, 16, 24, 32 or 40 ports. If your system has more than 16 ports, all of the ports cannot be viewed on a single screen. Use the up and down arrow keys to scroll the screen to view the rest of the ports.</p> <p>Not every port has to be assigned but you must assign at least one network link, one printer and one supervisor workstation.</p> <p><b>Device</b> To assign a device, move the cursor to an empty <i>Device</i> field and press <b>{PF2}</b> to view a pop-up menu of the devices available for your system. The following screen is an example. Your system's menu may differ.</p>
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

**Step** | **Installer's action and system's response**

Assigned Displays:#; Printers:# Available Ports: #  
 NAC Communication Port Assignment

Port	Device	Conn	Device
Card 2, Conn1A			1.Network Link
Card 2, Conn1B			2.Remote Login
Card 2, Conn1C			
Card 2, Conn2A			<b>DISPLAYS</b>
Card 2, Conn2B			3.Reflection 4+ on PC
Card 2, Conn2C			4.VT420 or Compatible
Card 2, Conn3A			5.VT220 or Compatible
Card 2, Conn3B			6.Unknown Display
Card 3, Conn1A			<b>PRINTERS</b>
Card 3, Conn1B			7. HP DeskJet
Card 3, Conn1C			8. HP DeskJet 560C
Card 3, Conn2A			9. HP LaserJet
Card 3, Conn2B			10. HP PaintJet
Card 3, Conn2C			11. HP RuggedWriter-Epson
Card 3, Conn3A			12. HP RuggedWriter-PCL
Card 3, Conn3B			13. DEC LA195-Epson

PF1 = Options F6 = Update default printers

To delete an existing assignment, move the cursor to the line on which the device is located. Press **{REMOVE}** and the device is removed.

An arrow appears on the right-hand side of the pop-up menu if all of the devices could not fit on to the screen. Use the up and down arrow keys to move through the menu.

Select the desired device from the list presented. To enter a selection, either move the cursor to the selection and press **{RETURN}**, or enter the corresponding selection number and press **{RETURN}**.

If a device name is ghosted, it cannot be selected.

**Links**

The *Device* field can use two different links to connect NAC to a Meridian MAX node: Network Link and Remote Supervisor Login.

—continued—

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p>One Network Link must be assigned for each Meridian MAX node in the network. At least one Network Link must be assigned at all times. There are two ways to access a Meridian MAX node as a remote supervisor. A direct connection Remote Login link can be assigned on the NAC for each Meridian MAX node. Alternatively, one or more modem connection Remote Supervisor Login links can be assigned on the NAC to access any of a group of Meridian MAX nodes. A combination of the two methods can be used.</p> <p><b>Printers and Displays</b> You must assign at least one Printer and one Supervisor Display.</p> <p>Each time a printer is selected, a message appears at the bottom of the screen asking the installer to enter a printer name for the assigned port in the <i>Name/Comment</i> field.</p> <p>Enter a unique name in the Name/Comment field that identifies the printer. For example, if a tabular printer is assigned, the name TabPrint could be used.</p> <p><b>Note:</b> The default printer must have a name defined in the <i>Name/Comment</i> field before you are allowed to exit this screen.</p> <p>Printer models are listed when you press <b>{PF2}</b> while in the <i>Device</i> field. Select the model appropriate to the printer connected to the assigned port.</p> <p>When all of the peripherals are assigned to ports, press <b>{F6}</b> to view or change the default printers. The system displays the Customer Default Printer Information pop-up menu which contains the Customer Default Tabular Printer name and the Customer Default Graphic Printer name.</p> <p>To modify the <i>Customer Default Tabular Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default tabular printer. This printer is now the destination for all tabular reports whenever the default output device is selected.</p> <p>To modify the <i>Customer Default Graphic Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default graphic printer. This printer is now the destination for all graphic reports whenever the default output device is selected.</p>
—continued—	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
Step	Installer's action and system's response
	<p><b>Connect</b></p> <p>A connection type for each device must be entered in the <i>Connect</i> field. This entry must be selected from one of the following choices that appear in a pop-up. Depending upon the device assigned, this field may be filled in automatically by the system. The choices for this field are:</p> <ul style="list-style-type: none"> <li>— Direct</li> <li>— Modem</li> </ul> <p><b>Baud</b></p> <p>Each time you select an Unknown Display, Remote Login, or a Network Link, you must also select a baud rate. For other devices, the baud rate is assigned automatically by the system. You must choose from one of the following choices:</p> <ul style="list-style-type: none"> <li>— 2400</li> <li>— 9600</li> </ul> <p><b>Name/Comment</b></p> <p>The <i>Name/Comment</i> field displays the name given to an assigned printer, or comments made on other devices configured on the system. Press <b>{PF3}</b> to edit the <i>Name/Comment</i> field for a specific device.</p>
52	<p>When you have finished entering information on the NAC Communication Port Assignment screen, press <b>{PF1}</b> and select the "Save changes and exit" command.</p> <p>The communication port assignment information is saved and you are returned to the Configure NAC System screen.</p>
<p>—continued—</p>	

**Procedure 9-1 (continued)****Platform upgrade from a NAC 1 system to a NAC 2 system****Step Installer's action and system's response**

**53** To define your Network Definition, enter **2**, followed by **{RETURN}**.

Your Network node information should be retained after the platform upgrade, although new ports locations have to be assigned.

The NAC Network Definition/Installation screen contains all of the information the system needs to communicate with its Meridian MAX nodes. It is essential that the information entered here match the already set up hardware connections. For example, if the Network Link between the Toronto node and the NAC uses dial-up modems running at 9600 baud, then 9600 should be selected for the baud field for that specific link.

The system displays the NAC Network Definition/Installation screen:

NAC Network Definition / Installation										
Node	Short	Time	Connection	Remote	Login	Network				
Addr	Node	Name	Name	Zone	Baud	Port	Port	Directory	Number	Link
338	TORONTO	TOR	0.0	9600	C3-2A					Dsbl
366	OTTAWA	OTT	0.0	9600	C4-1A	C4-3A				Enbl
446	RICHARDSON	RCH	-2.0	9600	C2-1A					Dsbl
646	MOUNTAINVIEW	MTV	-3.0	9600	C3-2C		6,338,5980196			Enbl
655	SANTA CLARA	SCL	-3.0	9600	C4-1B		6,646,3958465			Enbl
761	EDMONTON	EDM	-2.0	9600	C4-1C					Dsbl
862	MONTREAL	MTL	0.0	9600	C4-2A		9,1,613,9660010			Enbl

**F1-Commands F2-Options DELETE-Delete record**

—continued—

**Procedure 9-1 (continued)****Platform upgrade from a NAC 1 system to a NAC 2 system**

Step	Installer's action and system's response
54	<p><i>Note:</i> You cannot have both a remote login port and a remote login directory number for the same MAX node.</p> <p><b>Fields</b></p> <p>The NAC Network Definition/Installation screen has nine fields:  <i>Node Addr, Node Name, Short Name, Time Zone, Connection Baud, Connection Port, Remote Login Port, Remote Login Directory Number, and Ntwk Link.</i></p> <p><b>Node Addr</b></p> <p>The Node Address (location code) for each Meridian MAX site must be three-digits in length but 000 to 099 are not considered valid entries. To enter the Node Address, type in the three-digit address and press <b>{RETURN}</b>.</p> <p><b>Node Name</b></p> <p>This field indicates the Node Name for each Meridian MAX site. To enter the Node Name, press <b>{PF3}</b>, type the Node Name and press <b>{PF3}</b> again or type the Node Name and press <b>{RETURN}</b>.</p> <p><b>Short Name</b></p> <p>This field indicates the three character Short Name for each node. Each Short Name must be unique. To enter the Short Name, press <b>{PF3}</b>, type the Short Name and press <b>{PF3}</b> again or type the Short Name and press <b>{RETURN}</b>.</p> <p><b>Time Zone</b></p> <p>This field indicates the time difference between the NAC and the Meridian MAX node. For example, -2.0 would be the correct response if the NAC system was situated two time zones to the east of the Meridian MAX node in question, meaning the node is two hours behind the NAC. To enter the Time Zone, press <b>{PF3}</b>, type the Time Zone number and press <b>{PF3}</b> again or type the Time Zone number and press <b>{RETURN}</b>.</p> <p><b>Connection Baud</b></p> <p>This field indicates the specific baud rate that the Network Link uses to communicate with the Meridian MAX node. To enter the baud rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
—continued—	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p><b>Connection Port</b> This field indicates the specific port identifier to which a Meridian MAX node is connected through the Network Link. To enter the Connection Port, press <b>{PF3}</b>, type the Connection Port number and press <b>{PF3}</b> again or type the Connection Port number and press <b>{RETURN}</b>.</p> <p><b>Remote Login Port</b> This field indicates the specific port on the NAC system that is connected to a Meridian MAX node. This connection allows the user to log in to Meridian MAX from the NAC as a Remote Supervisor. To enter the Remote Login Port, press <b>{PF3}</b>, type the Remote Login Port and press <b>{PF3}</b> again or type the Remote Login Port and press <b>{RETURN}</b>.</p> <p><b>Remote Login Directory Number</b> This field indicates the telephone number used to connect the NAC system to a Meridian MAX node through a modem. This connection allows the user to log in to Meridian MAX from the NAC as a Remote Supervisor. To enter the Remote Login Directory Number, press <b>{PF3}</b>, type the Remote Login Directory Number and press <b>{PF3}</b> again or type the Remote Login Directory Number and press <b>{RETURN}</b>.</p> <p><b>Ntwk Link</b> This field controls the visibility of the node to the NAC system. When this field is set to Disabled, the node does not provide information to the NAC, supervisor messages cannot be transmitted to and from the Meridian MAX node, remote printing cannot occur, and remote supervisor logins to the Meridian MAX node are prohibited.</p> <p>When this field is set to Enabled, then the node provides information to the NAC, supervisor messages are transmitted to and from the Meridian MAX node, remote printing can occur, and remote supervisor logins to the Meridian MAX node are permitted.</p> <p>To select the Network Link, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p>When you are finished entering information on the NAC Network Definition/Installation screen, press <b>{F1}</b> and select the 'Save changes and exit' command.</p>
—continued—	

### Procedure 9-1 (continued) Platform upgrade from a NAC 1 system to a NAC 2 system

Step	Installer's action and system's response
55	<p>The Configure NAC System screen is returned. Enter <b>3</b>, followed by <b>{RETURN}</b> to view the NAC System Parameters screen.</p> <div> </div>

NAC System Parameters

```

Customer Name           : Northern Telecom
Network Administrator Password :
Default Language       : English
Tabular Printer        : HP Laser 1
Graphic Printer        : HP Laser2
NAC to Node Login Password :
Statistics Transmission Rate : 30
  
```

PF1 = Exit      PF2 = Options

#### Fields

The NAC System Parameters screen has nine fields: *Customer Name, Network Administrator Password, Default Language, Tabular Printer, Graphic Printer, NAC to Node Login Password, and Statistics Transmission Rate*

#### Customer Name

The *Customer Name* field allows you to record the NAC customer name. This name appears on the network reports and display screens. Typically the customer name is the same as your company's name. To enter the Customer Name, press **{PF3}**, type the Customer Name and press **{PF3}** again or type the Customer Name and press **{RETURN}**.

—continued—

Procedure 9-1 (continued) Platform upgrade from a NAC 1 system to a NAC 2 system	
Step	Installer's action and system's response
	<p><b>Network Administrator Password</b></p> <p>The <i>Network Administration Password</i> field is optional. It defines the password to be used as a security precaution to ensure that only network administrators access the network administration features. To enter the Network Administrator Password, press <b>{PF3}</b>, type the Network Administrator Password and press <b>{PF3}</b> again or type the Network Administrator Password and press <b>{RETURN}</b>.</p> <p><b>Default Language</b></p> <p>The <i>Default Language</i> is the language most of the network supervisors use. To select the Default Language, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Note:</b> The default language can be changed once the NAC system is running by using the Language Options screen. Refer to the <i>NAC 2 Supervisor's User Guide</i> (P0724352), "Parameter administration" chapter, "Language options" section for more information.</p> <p><b>Tabular Printer</b></p> <p>The <i>Tabular Printer</i> field is used to name the default tabular printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default tabular printer that is specified here. To select the Tabular Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Graphic Printer</b></p> <p>The <i>Graphic Printer</i> field is used to name the default graphic printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default graphic printer that is specified here. To select the Graphic Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
—continued—	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p><b>NAC to Node Login Password</b> The <i>NAC to Node Login Password</i> field defines the password used by the system to bring up the Network Link between the NAC and its Meridian MAX nodes. If this field is changed then the Network Administrator Password field at each Meridian MAX node (not to be confused with the Network Administration Password in this feature) must be changed to match it. To enter the NAC to Node Login Password, press <b>{PF3}</b>, type the NAC to Node Login Password and press <b>{PF3}</b> again or type the NAC to Node Login Password and press <b>{RETURN}</b>.</p> <p><b>Statistics Transmission Rate</b> The <i>Statistics Transmission Rate</i> field determines how often information from the nodes will be received. This information appears on the NAC displays. The number you enter represents the number of seconds between each node's update. You may select 10, 20, or 30 seconds from the menu. This field should not be confused with each network supervisor's Stats Update Rate field (found in the Supervisor Definition feature). The Statistics Transmission Rate determines how often a node's information is collected. The Stats Update Rate field determines how often the information displays are updated for the network supervisor. To select the Statistics Transmission Rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p>After you have entered your information, press <b>{PF1}</b> and select the Save changes and exit command.</p>
<b>56</b>	After you have entered the information, press <b>{PF1}</b> and select the 'Save changes and exit' command. The system saves your entries.
<b>57</b>	The Configure NAC System screen is returned. Enter <b>4</b> , followed by <b>{RETURN}</b> to exit.
<b>58</b>	When you have completed the system configuration screens, the system continues with the installation.
	If you switched the platform upgrade to a new installation, go to Step 60.
<b>59</b>	Remove the tape from the tape drive.
	<<<< Finished Phase II of Database Conversion
<b>60</b>	The system continues with the installation.
—continued—	

**Procedure 9-1 (continued)**  
**Platform upgrade from a NAC 1 system to a NAC 2 system**

<b>Step</b>	<b>Installer's action and system's response</b>
	<p>Loading System Language Strings...</p> <p>Loading System Language Strings completed.</p> <p>The following three messages don't appear if you switched to a new installation and selected reentry point 4.</p> <p>Starting NAC OSM Logger, Please Wait...</p> <p>OSM Logging Stopped.</p> <p>NAC OSM Logging Started.</p> <p>NAC release 02.xx</p> <p>If you completed a platform upgrade, the following prompt appears.</p> <p>NAC Precut Mode</p> <p>If you completed a new installation, the following prompt appears.</p> <p>NAC Training Mode</p> <p>Please login as precut for more details.</p> <p>The system is ready.</p> <p><b>61</b> Console Login:</p> <p><b>62</b> Login as <b>maint</b>.</p> <p><b>63</b> Shut down and power down the system. Refer to the "NAC power-down procedure" chapter.</p> <p><b>64</b> Unhook the SCSI terminal cable from the NAC external SCSI port.</p> <p><b>65</b> Replace the terminator-connector on the NAC external SCSI port.</p> <p><b>66</b> Power up the NAC system. Wait until the console login prompt appears.</p>
—continued—	

<b>Procedure 9-1 (continued)</b> <b>Platform upgrade from a NAC 1 system to a NAC 2 system</b>	
Step	Installer's action and system's response
67	<p>Before logging in, ensure that the installation was successful. Review the NAC error log for any fatal messages.</p> <p>Login as <b>maint</b> and refer to the <i>NAC 2 System Administration and Maintenance Guide</i> (NTP 553-4011-510), "Maintenance and administration programs: System running" chapter, "Diagnostics" section, "View NAC error log" subsection for more information.</p>
68	<p>If the system was installed correctly, go to Step 69.</p> <p>If the system was not installed correctly, you must reinstall it. Ensure no errors occurred within the steps you want to skip. If you are unsure, restart the re-installation from the beginning. If the errors persist, contact your Northern Telecom distributor.</p>
69	<p>Insert a new blank tape into the tape drive for daily backup. Ensure that the write-protect tab on the blank cartridge tape is set to write enabled to allow the system to write information on the tape. The importance of backups is explained in the "Software installation overview" chapter, "Backups" section.</p>
70	<p>Login as <b>precut</b>.</p> <p>If you completed an installation upgrade, the NAC Precutover Mode screen appears.</p> <p>Refer to the "Operating modes" chapter, "Product mode" section for instructions to switch to product mode.</p> <p>If you completed a new installation, the NAC Training Mode screen appears.</p> <p>Refer to the "Operating modes" chapter, "Training mode" section for instructions to switch to precutover mode.</p>
<p>—end—</p>	

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## Operating modes

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NAC has three modes of operation: Training, Precutover, and Product (upgraded systems do not come in Training mode).

Training mode is the first mode entered when a new system is installed. This operating mode allows supervisors to train on the system.

Precutover mode is the second mode in which you setup your system.

Product mode is the actual running NAC system.

<b>Table 10-1 Operating modes procedures</b>	
<b>Description of software installation procedures</b>	<b>Procedure #</b>
Switching the default language	Procedure 10-1
Switching from Training mode to Precutover mode for NAC 2 systems	Procedure 10-2
Switching from Precutover mode to Product mode for NAC 2 systems	Procedure 10-3

## Changing the default language

NAC defaults to English. If you want to switch the default language from English to the other installed language on your system, follow the steps described in Procedure 10-1. This procedure can be performed any time you want to switch your default language from English to your system's secondary language. This procedure can also be used to change your default language back to English.

### Procedure 10-1 Switching the default language

Step	Action
1	Log into the NAC as Supervisor 0 (zero) in Precutover mode, Supervisor 11 or 22 in Training mode, or any supervisor with access to the Parameter Administration feature in Product mode.
2	Select the Parameter Administration feature from the main menu.
3	Select the Language Options feature from the Parameter Administration menu.
4	Select the Default Language field on the Language Options screen.
5	Press <b>{PF2}</b> to display the choices for the Default Language field. Use the up and down cursor keys to select the language you want as your default language, and press <b>{ENTER}</b> . This language appears in the Default Language field.
6	Press <b>{PF1}</b> to display the commands. Select the Save changes and exit command and press <b>{ENTER}</b> . The system saves your changes and returns you to the main menu.
7	Return to the main menu and log out of the NAC system. The next time you log into the system the new default language you chose is used by the system.

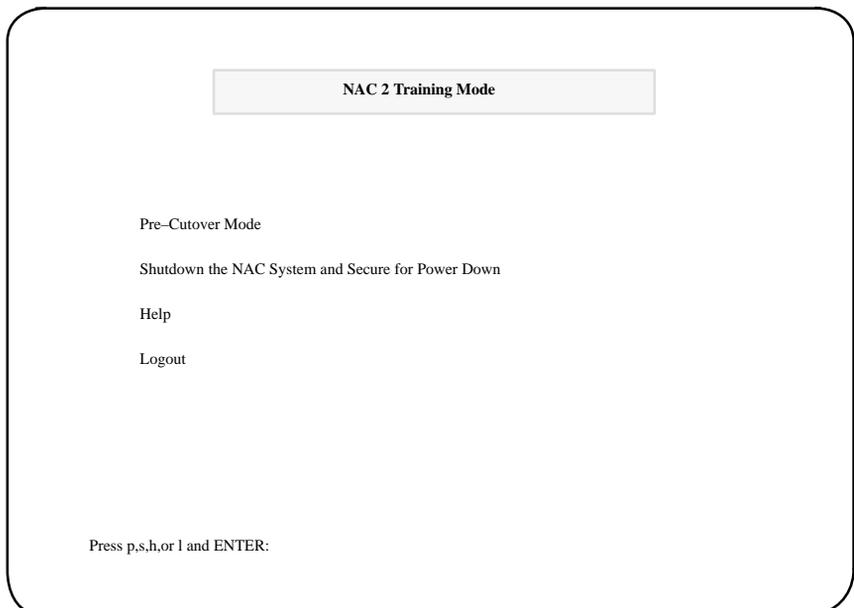
## Training mode

The Training mode allows supervisors and other users to be trained in a simulated NAC call-processing environment. Once training is completed, NAC can be converted into the Precutover mode.

When the system is booted up after the hardware installation (and software if your system has customer-installed software), a number of operational messages, the release number, and a NAC Training mode message is displayed. When training ends, enter **precut** at the maintenance terminal login prompt and the menu shown in Figure 10-1 is displayed.

**Note:** Data used in training mode is artificially generated. Because NAC and Meridian MAX are not communicating through the network link at this point in the installation, network dependent features cannot be accessed in training mode.

**Figure 10-1**  
**NAC Training mode menu**



A menu of choices is provided by the system. Detailed information on the menu items, as well as information regarding the default supervisor's ID in Training mode, is available from the help facility. To view the help text, press **{h}**, followed by **{RETURN}**.

The supervisor workstations can be used in the Training mode as soon as NAC starts up. You have to select and/or define the workstation type before using the workstation for the first time after a system restart. Workstations remain active until either the system is shut down or Precutover mode is selected from the system console.

## Precutover mode

Before switching to Precutover mode, ensure the following are ready:

- 1 Supervisors and agents are trained and ready to use the NAC system.
- 2 All workstations are logged out.

Switching to Precutover mode is an irreversible change (unless the software is reinstalled). To switch to the Precutover mode, follow the instructions given in the correct precutover to product procedure for your system.

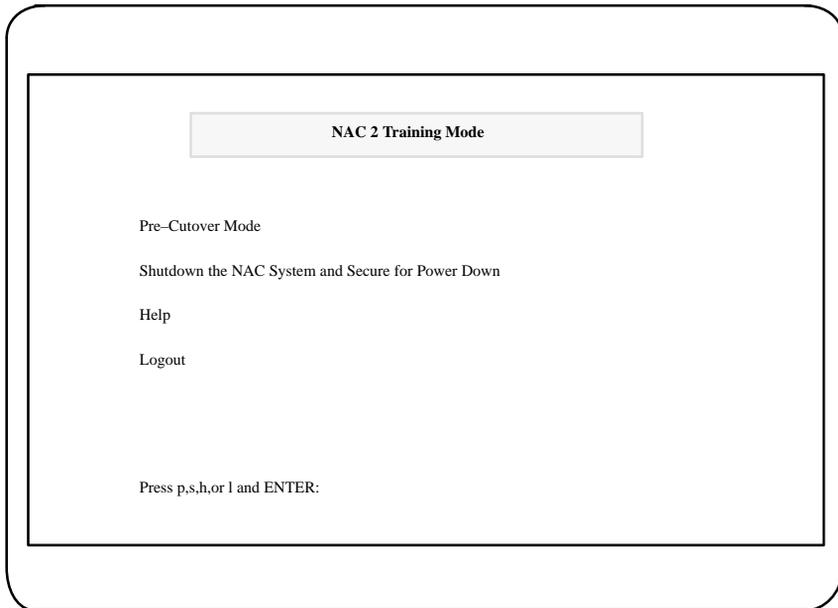
To switch from Training to Precutover mode in a NAC 2 system, follow Procedure 10-2.

In the Precutover mode, the database can be built in preparation for actual NAC operations. Once the system database is set up, you can convert to the Product mode. This is the operational mode where typical NAC operations occur.

## Training mode to Precutover mode

Follow Procedure 10-2 if you are switching from Training mode to Precutover mode on a NAC 2 system.

<b>Procedure 10-2</b> <b>Switching from Training mode to Precutover mode for NAC 2 systems</b>	
Step	Installer's action and system's response
1	<p>Enter precut as the login ID when you log into the maintenance terminal.</p> <p>Console login:</p> <p>Once you have entered <b>precut</b>, followed by <b>{RETURN}</b> response, the system displays:</p> <p>Password:</p>
2	<p>Enter the password to log on. This password is supplied by your Northern Telecom distributor.</p> <p>Once you have entered the password, the system displays copyright and hardware configuration information.</p> <p>SYSTEM V/68 Release R3V7 Version 940208 M68040</p> <p>Copyright (c) 1984 AT&amp;T</p> <p>Copyright (c) 1985-1992 Motorola, Inc.</p> <p>All Rights Reserved</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p>The system displays the NAC Training mode's menu.</p>
<p>—continued—</p>	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems****Step** | **Installer's action and system's response**

- 3** Enter **p** to select "*Pre-Cutover Mode*" from the menu.

The system continues.

**WARNING:** Going to Pre-Cutover mode is an irreversible process. You can only return to training mode by reloading the NAC software from the original tape. All supervisor activity should be halted before doing this transition.

Press 'y' and ENTER to confirm transition into Pre-Cutover mode.

Just press ENTER to remain in Training mode.

—continued—

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response
4	<p>Enter y, followed by {RETURN}.</p> <p>The system continues.</p> <p>NAC terminating...</p> <p>cron aborted: SIGTERM</p> <p>cron aborted: SIGTERM</p> <p>Signal forces mapa_logger termination</p> <p>***&gt;Creating the SYSTEM database – please wait... (TIME)</p> <p>SYSTEM database created.</p> <p>Loading data files for precut mode...</p> <p>Data files loaded</p>
5	The system displays the Configure NAC System screen.

—continued—

**Procedure 10-2 (continued)****Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response
6	<div style="border: 1px solid black; border-radius: 15px; padding: 10px;"><p>Configure NAC System</p><div style="border: 1px solid black; padding: 10px;"><ol style="list-style-type: none"><li>1. Port Assignment</li><li>2. Network Definition</li><li>3. System Parameters</li><li>4. Exit</li></ol><p style="text-align: center;">Use up and down arrows to move among menu items and press ENTER to make a selection.</p></div></div> <p>You must enter your system's port assignments, define your network definitions, and verify the system parameters before exiting this screen. To enter your port assignments, enter <b>1</b>, followed by <b>{RETURN}</b>.</p>
<b>—continued—</b>	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response																																																																																					
7	<p>The NAC Communication Port Assignment screen appears.</p> <p>This screen is only an example of a NAC 2 system with no ports assigned. A NAC 2 system can have 8, 16, 24, 32 or 40 ports.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: right;">Assigned Displays:#; Printers:#      Available Ports: #</p> <p style="text-align: center;">NAC Communication Port Assignment</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Port</th> <th style="text-align: left;">Device</th> <th style="text-align: left;">Connect</th> <th style="text-align: left;">Baud</th> <th style="text-align: left;">Name/Comment</th> </tr> </thead> <tbody> <tr><td>Card 2, Conn1A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn1B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn1C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn2A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn2B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn2C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn3A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 2, Conn3B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn1A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn1B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn1C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn2A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn2B</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn2C</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn3A</td><td></td><td></td><td></td><td></td></tr> <tr><td>Card 3, Conn3B</td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p style="font-size: small; margin-top: 10px;">PF1 = Commands PF2 = Options REMOVE = Erase field F6 = Update default printers</p> </div>	Port	Device	Connect	Baud	Name/Comment	Card 2, Conn1A					Card 2, Conn1B					Card 2, Conn1C					Card 2, Conn2A					Card 2, Conn2B					Card 2, Conn2C					Card 2, Conn3A					Card 2, Conn3B					Card 3, Conn1A					Card 3, Conn1B					Card 3, Conn1C					Card 3, Conn2A					Card 3, Conn2B					Card 3, Conn2C					Card 3, Conn3A					Card 3, Conn3B				
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—continued—

Procedure 10-2 (continued) Switching from Training mode to Precutover mode for NAC 2 systems	
Step	Installer's action and system's response
8	<p><b>Fields</b></p> <p>The NAC Communication Port Assignment screen has seven fields: <i>Assigned Displays: #</i>; <i>Printers: #</i>, <i>Available Ports: #</i>, <i>Port</i>, <i>Device</i>, <i>Connect</i>, <i>Baud</i>, and <i>Name/Comment</i>.</p> <p><b>Assigned Displays: #; Printers: #</b> The <i>Assigned Displays: #</i>; <i>Printers: #</i> field indicates the number of Printers and Displays that have been assigned to available ports. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Available Ports: #</b> The <i>Available Ports</i> field lists the number of ports that have yet to be assigned to displays, printers, network links or remote logins. This number is represented by the number sign ( # ) in the screen examples.</p> <p><b>Port</b> The <i>Port</i> field lists the ports.</p> <p>The ports are listed according to their card number, and connection number and letter. The card number refers to the card slot number in which the card is located. The card number begins at Card 2, Connection 1A because the CPU resides in the first card slot. The connection number refers to the port connection on the generic Input/Output panel. The connection letter refers to the specific port to which the devices are attached. A NAC 2 system can have 8, 16, 24, 32 or 40 ports. If your system has more than 16 ports, all of the ports cannot be viewed on a single screen. Use the up and down arrow keys to scroll the screen to view the rest of the ports.</p> <p>Not every port has to be assigned but you must assign at least one network link, one printer and one supervisor workstation.</p> <p><b>Device</b> To assign a device, move the cursor to an empty <i>Device</i> field and press <b>{PF2}</b> to view a pop-up menu of the devices available for your system. The following screen is an example. Your system's menu may differ.</p>
—continued—	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

**Step** | **Installer's action and system's response**

Assigned Displays:#; Printers:# Available Ports: #  
 NAC Communication Port Assignment

Port	Device	Conn	Device
Card 2, Conn1A			1.Network Link
Card 2, Conn1B			2.Remote Login
Card 2, Conn1C			
Card 2, Conn2A			
Card 2, Conn2B			
Card 2, Conn2C			
Card 2, Conn3A			
Card 2, Conn3B			
Card 3, Conn1A			
Card 3, Conn1B			
Card 3, Conn1C			
Card 3, Conn2A			
Card 3, Conn2B			
Card 3, Conn2C			
Card 3, Conn3A			
Card 3, Conn3B			

**DISPLAYS**

- 3.Reflection 4+ on PC
- 4.VT420 or Compatible
- 5.VT220 or Compatible
- 6.Unknown Display

**PRINTERS**

7. HP DeskJet
8. HP DeskJet 560C
9. HP LaserJet
10. HP PaintJet
11. HP RuggedWriter-Epson
12. HP RuggedWriter-PCL
13. DEC LA 195-Epson

PF1 = Options F6 = Update default printers

To delete an existing assignment, move the cursor to the line on which the device is located. Press **{REMOVE}** and the device is removed.

An arrow appears on the right-hand side of the pop-up menu if all of the devices could not fit on to the screen. Use the up and down arrow keys to move through the menu.

Select the desired device from the list presented. To enter a selection, either move the cursor to the selection and press **{RETURN}**, or enter the corresponding selection number and press **{RETURN}**.

If an device name is ghosted, it cannot be selected.

**Links**

The *Device* field can use two different links to connect NAC to a Meridian MAX node: Network Link and Remote Supervisor Login.

—continued—

Procedure 10-2 (continued) Switching from Training mode to Precutover mode for NAC 2 systems	
Step	Installer's action and system's response
	<p>One Network Link must be assigned for each Meridian MAX node in the network. At least one Network Link must be assigned at all times. There are two ways to access a Meridian MAX node as a Remote Supervisor. A direct connection Remote Login link can be assigned on the NAC for each Meridian MAX node. Alternatively, one or more modem connection Remote Supervisor Login links can be assigned on the NAC to access any of a group of Meridian MAX nodes. A combination of the two methods can be used.</p> <p><b>Printers and Displays</b> You must assign at least one Printer and one Supervisor Display.</p> <p>Each time a printer is selected, a message appears at the bottom of the screen asking the installer to enter a printer name for the assigned port in the <i>Name/Comment</i> field.</p> <p>Enter a unique name in the Name/Comment field that identifies the printer. For example, if a tabular printer is assigned, the name TabPrint could be used.</p> <p><b>Note:</b> The default printer must have a name defined in the <i>Name/Comment</i> field before you are allowed to exit this screen.</p> <p>Printer models are listed when you press <b>{PF2}</b> while in the <i>Device</i> field. Select the model appropriate to the printer connected to the assigned port.</p> <p>When all of the peripherals are assigned to ports, press <b>{F6}</b> to view or change the default printers. The system displays the Customer Default Printer Information pop-up menu which contains the Customer Default Tabular Printer name and the Customer Default Graphic Printer name.</p> <p>To modify the <i>Customer Default Tabular Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default tabular printer. This printer is now the destination for all tabular reports whenever the default output device is selected.</p> <p>To modify the <i>Customer Default Graphic Printer</i> field, press <b>{PF2}</b> and select the name of the printer you want to use as the default graphic printer. This printer is now the destination for all graphic reports whenever the default output device is selected.</p>
—continued—	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response
	<p><b>Connect</b>            A connection type for each device must be entered in the <i>Connect</i> field. This entry must be selected from one of the following choices that appear in a pop-up. Depending upon the device assigned, this field may be filled in automatically by the system. The choices for this field are:</p> <ul style="list-style-type: none"> <li>— Direct</li> <li>— Modem</li> </ul> <p><b>Baud</b>            Each time you select an Unknown Display, Remote Login, or a Network Link, you must also select a baud rate. For other devices, the baud rate is assigned automatically by the system. You must choose from one of the following choices:</p> <ul style="list-style-type: none"> <li>— 2400</li> <li>— 9600</li> </ul> <p><b>Name/Comment</b>            The <i>Name/Comment</i> field displays the name given to an assigned printer, or comments made on other devices configured on the system. Press <b>{PF3}</b> to edit the <i>Name/Comment</i> field for a specific device.</p> <p><b>9</b> When you have finished entering information on the NAC 2 Communication Port Assignment screen, press <b>{PF1}</b> and select the "Save changes and exit" command.</p> <p>The communication port assignment information is saved and you are returned to the Configure NAC System screen.</p>
<p>—continued—</p>	

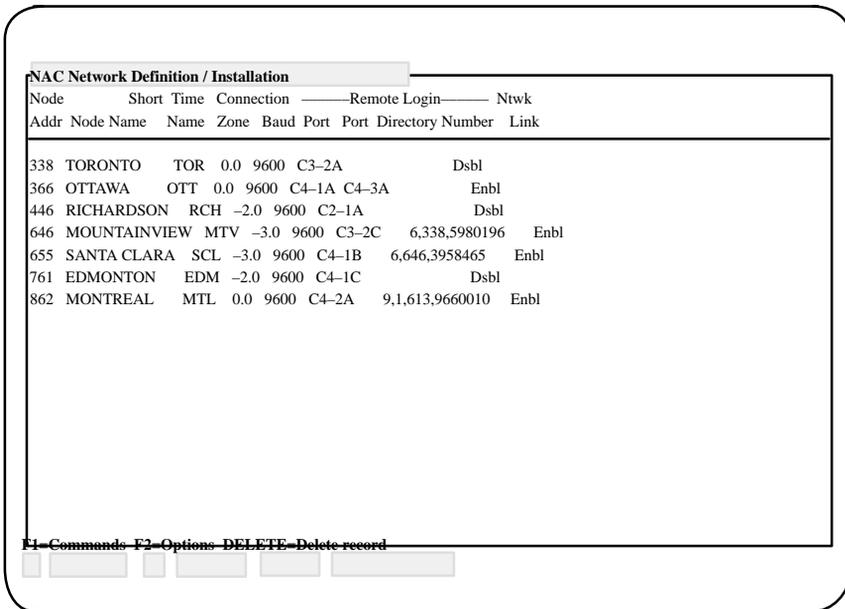
**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

**Step Installer's action and system's response**

**10** To define your Network Definition, enter **2**, followed by **{RETURN}**.

The NAC Network Definition/Installation screen contains all of the information the system needs to communicate with its Meridian MAX nodes. It is essential that the information entered here match the already set up hardware connections. For example, if the Network Link between the Toronto node and the NAC uses dial-up modems running at 9600 baud, then 9600 should be selected for the baud field for that specific Link.

The system displays the NAC Network Definition/Installation screen:



**Note:** You cannot have both a remote login port and a remote login directory number for the same MAX node.

—continued—

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

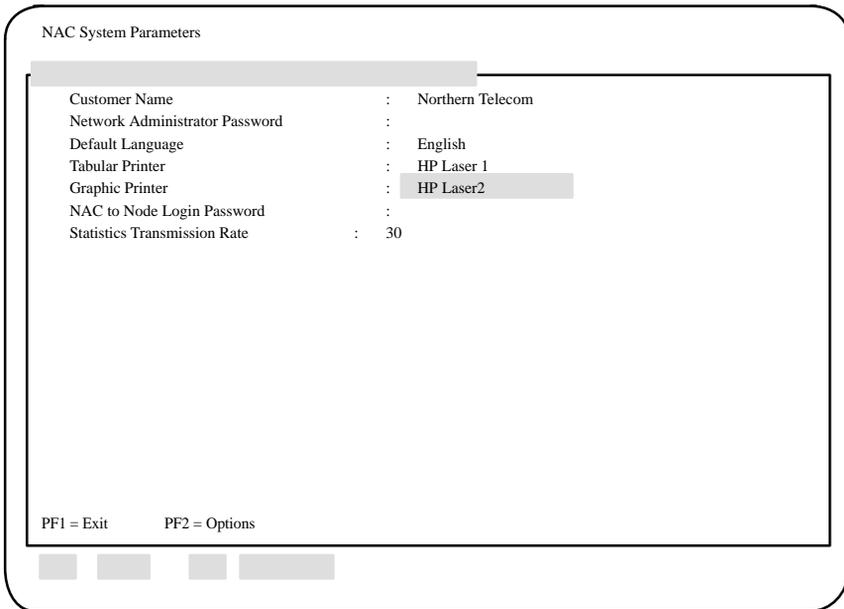
Step	Installer's action and system's response
11	<p><b>Fields</b></p> <p>The NAC Network Definition/Installation screen has nine fields: <i>Node Addr, Node Name, Short Name, Time Zone, Connection Baud, Connection Port, Remote Login Port, Remote Login Directory Number, and Ntwk Link.</i></p> <p><b>Node Addr</b>                      The Node Address (location code) for each Meridian MAX site must be three digits in length but 000 to 099 are not considered valid entries. To enter the Node Address, type in the three-digit address and press <b>{RETURN}</b>.</p> <p><b>Node Name</b>                      The Node Name for each Meridian MAX site. To enter the Node Name, press <b>{PF3}</b>, type the Node Name and press <b>{PF3}</b> again or type the Node Name and press <b>{RETURN}</b>.</p> <p><b>Short Name</b>                      The three character Short Name for each node. Each Short Name must be unique. To enter the Short Name, press <b>{PF3}</b>, type the Short Name and press <b>{PF3}</b> again or type the Short Name and press <b>{RETURN}</b>.</p> <p><b>Time Zone</b>                      Indicates the time difference between the NAC and the Meridian MAX node. For example, -2.0 would be the correct response if the NAC system was situated two time zones to the east of the Meridian MAX node in question, meaning the node is two hours behind the NAC. To enter the Time Zone, press <b>{PF3}</b>, type the Time Zone number and press <b>{PF3}</b> again or type the Time Zone number and press <b>{RETURN}</b>.</p> <p><b>Connection Baud</b>                      The specific baud rate that the Network Link uses to communicate with the Meridian MAX node. To enter the baud rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Connection Port</b>                      The specific port identifier to which a Meridian MAX node is connected through the Network Link. To enter the Connection Port, press <b>{PF3}</b>, type the Connection Port number and press <b>{PF3}</b> again or type the Connection Port number and press <b>{RETURN}</b>.</p>

—continued—

<b>Procedure 10-2 (continued)</b> <b>Switching from Training mode to Precutover mode for NAC 2 systems</b>	
<b>Step</b>	<b>Installer's action and system's response</b>
	<p><b>Remote Login Port</b> The specific port on the NAC system that is connected to a Meridian MAX node. This connection allows the user to log in to Meridian MAX from the NAC as a Remote Supervisor. To enter the Remote Login Port, press <b>{PF3}</b>, type the Remote Login Port and press <b>{PF3}</b> again or type the Remote Login Port and press <b>{RETURN}</b>.</p> <p><b>Remote Login Directory Number</b> The telephone number used to connect the NAC system to a Meridian MAX node through a modem. This connection allows the user to log in to Meridian MAX from the NAC as a Remote Supervisor. To enter the Remote Login Directory Number, press <b>{PF3}</b>, type the Remote Login Directory Number and press <b>{PF3}</b> again or type the Remote Login Directory Number and press <b>{RETURN}</b>.</p> <p><b>Ntwk Link</b> Controls the visibility of the node to the NAC system. When this field is set to Disabled, the node does not provide information to the NAC, supervisor messages cannot be transmitted to and from the Meridian MAX node, remote printing cannot occur, and remote supervisor logins to the Meridian MAX node are prohibited.</p> <p>When this field is set to Enabled, then the node provides information to the NAC, supervisor messages are transmitted to and from the Meridian MAX node, remote printing can occur, and remote supervisor logins to the Meridian MAX node are permitted.</p> <p>To select the Network Link, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p>When you are finished entering information on the NAC Network Definition/Installation screen, press <b>{F1}</b> and select the 'Save changes and exit' command.</p>
<b>12</b>	The Configure NAC System screen is returned. Enter <b>3</b> , followed by <b>{RETURN}</b> to view the NAC System Parameters screen.
—continued—	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

<b>Step</b>	<b>Installer's action and system's response</b>
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**Fields**

The NAC System Parameters screen has nine fields: *Customer Name, Network Administrator Password, Default Language, Tabular Printer, Graphic Printer, NAC to Node Login Password, and Statistics Transmission Rate*

**Customer Name**

The *Customer Name* field allows you to record the NAC customer name. This name appears on the network reports and display screens. Typically the customer name is the same as your company's name. To enter the Customer Name, press **{PF3}**, type the Customer Name and press **{PF3}** again or type the Customer Name and press **{RETURN}**.

—continued—

Procedure 10-2 (continued) Switching from Training mode to Precutover mode for NAC 2 systems	
Step	Installer's action and system's response
	<p><b>Network Administrator Password</b></p> <p>The <i>Network Administration Password</i> field is optional. It defines the password to be used as a security precaution to ensure that only network administrators access the network administration features. To enter the Network Administrator Password, press <b>{PF3}</b>, type the Network Administrator Password and press <b>{PF3}</b> again or type the Network Administrator Password and press <b>{RETURN}</b>.</p> <p><b>Default Language</b></p> <p>The <i>Default Language</i> is the language most of the network supervisors use. To select the Default Language, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Note:</b> The default language can be changed once the NAC system is running by using the Language Options screen. Refer to the <i>NAC 2 Supervisor's User Guide</i> (P0724352), "Parameter administration" chapter, "Language options" section for more information.</p> <p><b>Tabular Printer</b></p> <p>The <i>Tabular Printer</i> field is used to name the default tabular printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default tabular printer that is specified here. To select the Tabular Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p><b>Graphic Printer</b></p> <p>The <i>Graphic Printer</i> field is used to name the default graphic printer. The network supervisor may select another printer when a report is requested. However, the network supervisor can allow the report to be printed at the default graphic printer that is specified here. To select the Graphic Printer, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p>
—continued—	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response
	<p><b>NAC to Node Login Password</b>                      The <i>NAC to Node Login Password</i> field defines the password used by the system to bring up the Network Link between the NAC and its Meridian MAX nodes. If this field is changed then the Network Administrator Password field at each Meridian MAX node (not to be confused with the Network Administration Password in this feature) must be changed to match it. To enter the NAC to Node Login Password, press <b>{PF3}</b>, type the NAC to Node Login Password and press <b>{PF3}</b> again or type the NAC to Node Login Password and press <b>{RETURN}</b>.</p> <p><b>Statistics Transmission Rate</b>                      The <i>Statistics Transmission Rate</i> field determines how often information from the nodes will be received. This information appears on the NAC displays. The number you enter represents the number of seconds between each node's update. You may select 10, 20, or 30 seconds from the menu. This field should not be confused with each network supervisor's Stats Update Rate field (found in the Supervisor Definition feature). The Statistics Transmission Rate determines how often a node's information is collected. The Stats Update Rate field determines how often the information displays are updated for the network supervisor. To select the Statistics Transmission Rate, press <b>{PF2}</b>. Move the cursor to the selection and press <b>{RETURN}</b> or enter the selection number and press <b>{RETURN}</b>.</p> <p>After you have entered your information, press <b>{PF1}</b> and select the Save changes and exit command.</p> <p><b>13</b> After you have entered the information, press <b>{PF1}</b> and select the "Save Changes and Exit" command. The system saves your entries.</p> <p><b>14</b> The Configure NAC System screen is returned. Enter <b>4</b>, followed by <b>{RETURN}</b> to exit.</p> <p><b>15</b> When you have completed the system configuration screens, the system continues.</p>
<p>—continued—</p>	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

<b>Step</b>	<b>Installer's action and system's response</b>
<p><b>16</b></p>	<p>Loading data files for precut mode...</p> <p>Data files loaded</p> <p>***&gt; Creating USER LANGUAGE database – please wait (TIME)</p> <p>USER LANGUAGE database created.</p> <p>INIT: New run level: 6</p> <p>The system is coming down. Please wait.</p> <p>System services are now being stopped.</p> <p>The system is down.</p> <p>NOTICE: System Reboot Requested (0)</p> <p>The system reboots and displays the copyright and hardware configuration information.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved</p> <p>MVME167 Debugger/Diagnostic Release Version 1.5 – 02/14/93</p> <p>COLD START</p>
<p>—continued—</p>	

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response																								
17	<p>Local Memory Found =02000000 (&amp;33554432)</p> <p>MPU Clock Speed =33Mhz</p> <p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p> <p>Booting from: VME167, Controller 0, Device 0</p> <p>Loading: Operating System</p> <p>Volume: \$00000000</p> <p>IPL loaded at: \$001F0000</p> <p>VME Disk IPL Version 52.2</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message tells you that the <b>{CONTROL} {C}</b> keys pressed simultaneously cause a system interruption which terminates the current process. The <b>DEL</b> key deletes and backspaces one character.</p> <p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC MT-2ST/F50B</td> </tr> </tbody> </table> <p>This configuration is an example. Your system configuration may differ.</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B
Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description																		
Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N																		
Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B																		

—continued—

**Procedure 10-2 (continued)**  
**Switching from Training mode to Precutover mode for NAC 2 systems**

Step	Installer's action and system's response
	<p>Enter &lt;CR&gt; to pause in a single user shell before init.</p> <p>Default boot sequence continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00</p> <p>mount -f S51K /dev/usr /usr</p> <p>Checking for system dump...</p> <p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Disciplines.</p> <p>Error logging started.</p> <p>OSM logging started.</p> <p>port_hold started</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started.</p> <p>Loading System Language Strings...</p> <p>Loading System Language Strings completed.</p> <p>Starting NAC OSM Logger, Please Wait...</p> <p>OSM logging stopped.</p> <p>NAC OSM logging started.</p> <p>    NAC release 02.xx</p> <p>    NAC Precut Mode</p> <p>    Please login as precut for more details.</p> <p>The system is ready.</p> <p>Console Login:</p>

—continued—

**Procedure 10-2 (continued)**

**Switching from Training mode to Precutover mode for NAC 2 systems**

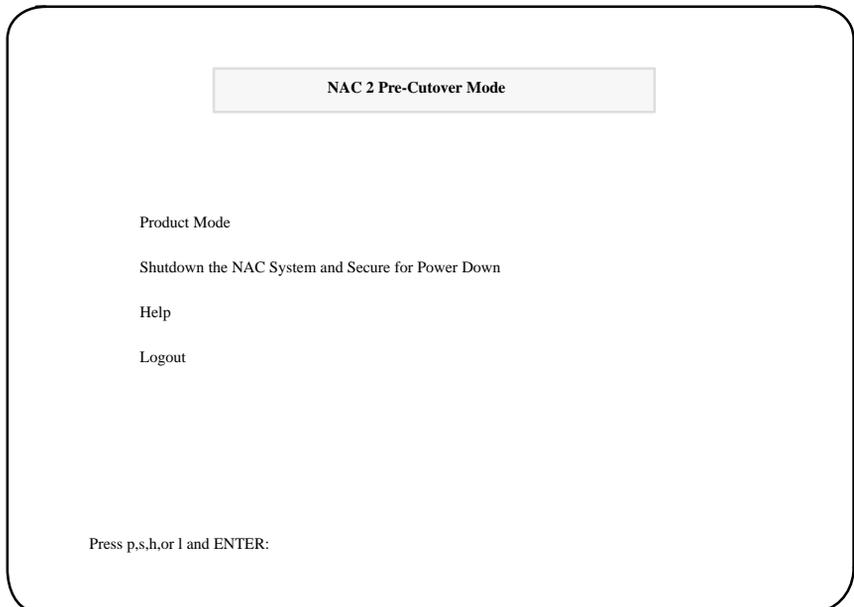
<b>Step</b>	<b>Installer's action and system's response</b>
<b>18</b>	<p>The system is now ready for Precutover mode.</p> <p>When you login as <b>precut</b>, the Precutover Mode menu screen is displayed (see Figure 10-2).</p> <p>Refer to Procedure 10-3, "Switching from Precutover mode to Product mode for NAC 2 systems" for instructions on how to transfer from the Precutover mode to the Product mode.</p>
—end—	

## Product mode

The database parameters are entered through the Parameter Administration option from the main menu. This is done by logging in at a supervisor's workstation, initially as Supervisor 0. Refer to the "Parameter Administration" chapter of the *NAC 2 Supervisor's User Guide* (P0724352) for further information.

When the system is booted up after the transition from Training mode to Precutover mode is completed, log into the maintenance terminal as "precut", enter the password provided by your NT representative or distributor. The Precutover mode menu is then shown (see Figure 10-2).

**Figure 10-2**  
**NAC Precutover mode menu**



A menu of choices is provided by the system. Press **h**, followed by **{ENTER}**, to obtain detailed information from the help facility on the items in the menu as well as the default supervisor's ID information.

Before switching to Product mode, ensure that the following are ready:

- 1 Supervisors and agents are trained and ready to use the NAC system.
- 2 All workstations are logged out.
- 3 NAC database is set up correctly.

The Product mode is the normal mode for operation. Once in Product mode, your NAC system is completely installed.

To switch from Precutover to Product mode follow Procedure 10-3.

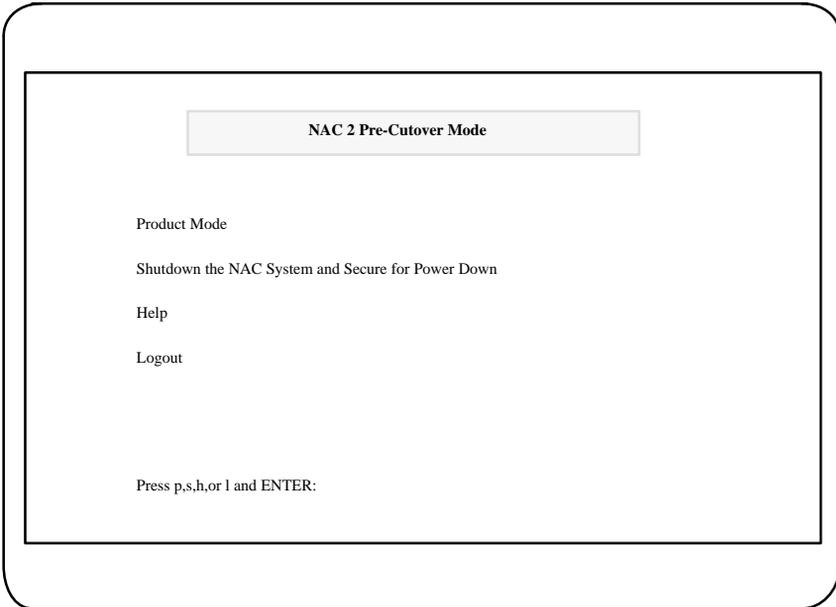
## Precutover mode to Product mode

Follow Procedure 10-3 if you are switching from Precutover mode to Product mode on a NAC 2 system.

Procedure 10-3 Switching from Precutover mode to Product mode for NAC 2 systems	
Step	Installer's action and system's response
1	<p>Enter <b>precut</b> as the login ID when you log into the maintenance terminal.</p> <p>Console login:</p> <p>Once you have entered your response, the system displays:</p> <p>Password:</p>
2	<p>Enter the password to log on. This password is supplied by your Northern Telecom distributor.</p> <p>Once you have entered the password, the system displays copyright and hardware configuration information.</p> <p>SYSTEM V/68 Release R3V7 Version 940208 M68040</p> <p>NAC00</p> <p>Copyright (c) 1984 AT&amp;T</p> <p>Copyright (c) 1985–1992 Motorola, Inc.</p> <p>All Rights Reserved</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message tells you that the <b>{CONTROL}{C}</b> keys pressed simultaneously cause a system interruption which terminates the current process. The DEL key deletes and backspaces one character.</p> <p>The system displays the NAC Precutover mode's menu.</p>
—continued—	

**Procedure 10-3 (continued)**  
**Switching from Precutover mode to Product mode for NAC 2 systems**

Step	Installer's action and system's response
------	--



**3** Enter **p** to select "*Product Mode*" from the menu.

The system continues.

**WARNING:** Cutting over to Product mode is an irreversible process. You can only return to training/pre-cutover mode by reloading the NAC software from the original tape. All supervisor activity should be halted before doing this transition.

Press 'y' and ENTER to confirm cutting over to Product mode.

Just press ENTER to remain in Pre-cutover mode.

—continued—

**Procedure 10-3 (continued)**  
**Switching from Precutover mode to Product mode for NAC 2 systems**

Step	Installer's action and system's response
4	<p>Enter <b>y</b>, followed by <b>{RETURN}</b>, to convert to Product mode.</p> <p>The system displays:</p> <p>NAC terminating...</p> <p>cron aborted: SIGTERM</p> <p>cron aborted: SIGTERM</p> <p>Signal forces mapa_logger termination</p> <p>INIT: New run level: 6</p> <p>The system is coming down. Please wait.</p> <p>System services are now being stopped.</p> <p>The system is down.</p> <p>NOTICE: System Reboot Requested (0)</p>
5	<p>The system reboots and displays the copyright and hardware configuration information.</p> <p>Copyright Motorola Inc. 1988 – 1993, All Rights Reserved</p> <p>MVME167 Debugger/Diagnostic Release Version 1.5 – 02/14/93</p> <p>COLD START</p> <p>Local Memory Found =02000000 (&amp;33554432)</p> <p>MPU Clock Speed =33Mhz</p> <p>Autoboot in progress... To abort hit &lt;BREAK&gt;</p>

—continued—

**Procedure 10-3 (continued)**  
**Switching from Precutover mode to Product mode for NAC 2 systems**

Step	Installer's action and system's response																								
<p><b>6</b></p>	<p>Booting from: VME167, Controller 0, Device 0</p> <p>Loading: Operating System</p> <p>Volume: \$00000000</p> <p>IPL loaded at: \$001F0000</p> <p>VME Disk IPL Version 52.2</p> <p>***</p> <p>erase = DEL kill = ^u intr = ^c quit = ^x</p> <p>***</p> <p><b>Note:</b> The previous message tells you that the <b>{CONTROL} {C}</b> keys pressed simultaneously cause a system interruption which terminates the current process. The <b>DEL</b> key deletes and backspaces one character.</p> <p>167 SCSI configuration</p> <table border="1"> <thead> <tr> <th>Device</th> <th>Addr</th> <th>Vers</th> <th>Revision</th> <th>Serial#</th> <th>Blocks</th> <th>Size</th> <th>Vendor Description</th> </tr> </thead> <tbody> <tr> <td>Disk</td> <td>00</td> <td>0002</td> <td>8988...</td> <td>.....</td> <td>2054325</td> <td>0512</td> <td>SEAGATE ST11200N</td> </tr> <tr> <td>Tape</td> <td>40</td> <td>0001</td> <td>RV J...</td> <td>.....</td> <td>0000000</td> <td>0000</td> <td>TEAC MT-2ST/F50B</td> </tr> </tbody> </table> <p>Enter &lt;CR&gt; to pause in a single user shell before init.</p> <p>Default boot sequence continuing...</p> <p>The system is coming up. Please wait.</p> <p>Node name set to NAC00.</p>	Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description	Disk	00	0002	8988...	.....	2054325	0512	SEAGATE ST11200N	Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B
Device	Addr	Vers	Revision	Serial#	Blocks	Size	Vendor Description																		
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Tape	40	0001	RV J...	.....	0000000	0000	TEAC MT-2ST/F50B																		
<p>—continued—</p>																									

Procedure 10-3 (continued) Switching from Precutover mode to Product mode for NAC 2 systems	
Step	Installer's action and system's response
7	<p>mount -f S51K /dev/usr /usr</p> <p>Checking for system dump...</p> <p>Expreserve notification performed.</p> <p>Downloading MVME332XT Line Discipline.</p> <p>Error logging started.</p> <p>OSM logging started.</p> <p>port_hold started</p> <p>Stream Error logging started.</p> <p>netspec "tcpip" not set up.</p> <p>Line printer scheduler started.</p> <p>The system displays the following prompts.</p> <p>The current Date and Time are 'Mon Feb 14 12:42:00 STD 1994'</p> <p>Do you wish to change the current Date and Time (y/n) ?</p> <p>If you don't wish to change the current date and time, enter <b>n</b>, followed by <b>{RETURN}</b>. Go to Step 8.</p> <p>If you wish to change the current date and time, enter <b>y</b>, followed by <b>{RETURN}</b>.</p> <p>Enter new Date and Time [mmddhhmmyy] :</p>
—continued—	
	<p>The system asks you to enter the correct date and time, where the first pair of numbers represent the month, the second pair of numbers represent the day, the third pair represent the hour in the 24-hour time cycle, the fourth pair of numbers represent the minutes, and the last pair of numbers represent the last two digits of the year. For example, if 0211152594 was entered, the system would ask you the following question.</p> <p>Are the new Date and Time 'Fri Feb 11 15:25:00 STD 1994', correct (y/n) ?</p> <p>If the date and/or time you entered is incorrect, enter <b>n</b>, followed by <b>{RETURN}</b>. The system then returns you to Step 20. If the date and time you entered are correct, enter <b>y</b>, followed by <b>{RETURN}</b>. The system continues.</p>

**Procedure 10-3 (continued)**  
**Switching from Precutover mode to Product mode for NAC 2 systems**

<b>Step</b>	<b>Installer's action and system's response</b>
<b>8</b>	Loading System Language Strings... Loading System Language Strings completed. Starting NAC OSM Logger, Please wait... OSM Logging stopped. NAC OSM logging started. NAC release 02.xx  The system is ready.  Console login:  The system is now in Product mode. You can log into the system.
—end—	

---

## NAC power-down procedure

---

The NAC system is designed to work most effectively when the system is left on at all times. If there is no overruling, site-specific reason for turning off the NAC system, it is recommended that the system be left on.

**WARNING**

**Do not power off a module without first performing the system shutdown procedure**

The NAC module must not be powered off without first shutting down the system. The shutdown process synchronizes the information currently in system memory with the information on the hard drive. Only in extenuating circumstances should the module be powered off without first shutting down.

If you must turn the system off, follow these steps:

- 1 Log on as “maint” and enter the maintenance password as required.
- 2 Select **s** to shut down the NAC software.
- 3 Select “*Restart & Power Down System Utilities*” option from the main maintenance menu
- 4 At the Restart and Power Down Utilities submenu, select “*Secure the System for Power Down*” option.
- 5 Once the system displays “NOTICE: System secured for powering down”, turn off the power to the NAC module.

---

# NAC installation checklist

---

This checklist provides you with a handy reference for installing your NAC system. All items on the checklist correspond to sections and chapters of this document. Be certain you read the document before proceeding with any installation procedure.

## Site preparation

Plan out the site for your system's hardware. Be sure to take into account the power and environmental requirements. For more information refer to the "Site preparation" chapter.

**Site preparation completed ?** \_\_\_\_\_

## Hardware installation

Read your peripheral equipment warranties and register them with the appropriate individual. For more information refer to the "Hardware installation" chapter, "A word about warranties" section.

**Peripheral equipment warranties registered ?** \_\_\_\_\_

Install the NAC module. For more information, refer to the "Hardware installation" chapter.

**NAC module installed ?** \_\_\_\_\_

Install the multiport cables. For more information, refer to the "Hardware installation" chapter, "Cables" section.

**Multiport cables installed ?** \_\_\_\_\_

Install the printers. Ensure that the settings are correct. For more information, refer to the “Printers” section of the “Peripheral devices” chapter.

**Printer(s) installed ?** \_\_\_\_\_

Install the workstations. Ensure that the PCs are configured and VDTs are set up. For more information, refer to the “Peripheral devices” chapter, “Workstations” section.

**Workstation(s) installed ?** \_\_\_\_\_

Connect the hardware to the power source(s) (do not power up the hardware).

**Power cable(s) installed ?** \_\_\_\_\_

Connect all Modems, if required. For more information, refer to the “Peripheral devices” chapter, “Modems overview” section.

**Network link modem(s) installed ?** \_\_\_\_\_

**Limited-distance modem(s) installed ?** \_\_\_\_\_

**Remote diagnostic modem installed ?** \_\_\_\_\_

**Supervisor dial-up modem(s) installed ?** \_\_\_\_\_

**Hardware installation completed ?** \_\_\_\_\_

## Software installation

Providing you have completed the hardware installation, proceed with the software installation. If you performed a new software installation, refer to the “New software installations” chapter. If you installed a more recent issue of your existing software, refer to the “Loading a new software release” chapter. If you performed a software re-installation or upgrade, refer to the “Software re-installations and upgrades” chapter.

**Software installed (if necessary) ?** \_\_\_\_\_

Ensure that the workstations are configured for the system. For more information, refer to the “Peripheral devices” chapter, “Workstations” section.

**Workstation configuration completed ?** \_\_\_\_\_

**Software installation completed ?** \_\_\_\_\_

## Operating modes

Make sure all supervisors and system administrators have had the opportunity to learn to use the system while in the Training mode. For more information, refer to the “Operating modes” chapter, “Training mode” section.

**Training completed ?** \_\_\_\_\_

Switch from Training Mode to Precutover Mode. For more information, refer to the “Operating modes” chapter, “Precutover mode” section .

**Precutover Mode started ?** \_\_\_\_\_

Make sure that the system database is established while in the Precutover Mode. For more information, refer to the “Operating modes” chapter, “Precutover mode” section .

**System database completed ?** \_\_\_\_\_

Switch from Precutover mode to Product mode. For more information, refer to the “Operating modes” chapter, “Product mode” section .

**Product Mode started ?** \_\_\_\_\_

Make sure that you insert a backup tape into the tape drive. For more information, refer to the “Software installation overview” chapter, “Backups” section .

**Backup tape inserted ?** \_\_\_\_\_

---

## Field replaceable parts

---

Field replaceable parts for a NAC 2 system are listed in Table 13-1.

<b>Table 13-1</b>	
<b>Recommended spare parts for NAC Application Module</b>	
<b>Name used in document</b>	<b>Part number</b>
MVME167-34 CPU	A0386049
MVME332-XT 8 Channel Asynchronous Board	A0376918
MVME712M Transition Card	A0601182
Transition Card for MVME332-XT Board	NT7D51AA (A0387982)
1.2 GB Disk Drive and 600 MB Tape Drive Unit	NT7D62CA (A0404821)
AC Power Supply	NT7D64AA (A0374109)
DC Power Supply	NT7D64DC (A0374110)

The part numbers for interconnect AM cables are listed in Table 13-2.

The part numbers for external AM cables are listed in Table 13-3.

<b>Table 13-2 Interconnect cables and part numbers for Application Module (AM)</b>			
<b>ENG Code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>Length</b>
NT7D47DA	Carries input/output between the MVME712M transition card and the Input/Output connector panel (Ethernet).	15-pin (male) Ethernet to 15-pin (female) Ethernet	35.5 cm (14 inches)
NT7D58CA	Carries input/output between the Input/Output connector panel (Card 1, Conn 4) and the MVME712M transition board (Serial Port 4).	15-pin (female) high density D-sub to 25-pin (male) round subminiature D-style	35.5 cm (14 inches)
NT7D79BA	Carries input/output between the Input/Output connector panel (Card 1, Conn 1-3, modem and SDI Link) and the MVME712M transition board (Serial Ports 1,2 and 3).	9-pin (male) to 25-pin (male) flat subminiature D-style	35.5 cm (14 inches)
NT7D95AA	Carries input/output between the Input/Output connector panel (Card 2-6, Conn 1-3) and the NT6D51AA transition board.	25-pin (male) flat subminiature D-style to 25-pin (male) flat subminiature D-style	35.5 cm (14 inches)

<b>Table 13-3 External cables and part numbers for Application Module (AM)</b>			
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>Length</b>
NT1R03DB NT1R03DC NT1R03DF NT1R03DP NT1R03DV	Connects as input/output between modems and peripheral devices.	DB-25 (male) connector to DB-25 (male) connector	61 cm (2 ft) 1.2 m (4 ft) 3 m (10 ft) 7.6 (25 ft) 13.7 m (45 ft)
NT1R03EB NT1R03EC NT1R03EF NT1R03EP NT1R03EV	Connects as input/output between modems and peripheral devices.	DB-25 (male) connector to DB-25 (female) connector	61 cm (2 ft) 1.2 m (4 ft) 3 m (10 ft) 7.6 (25 ft) 13.7 m (45 ft)
NT7D47EA	Carries input/output between the input/output connector panel (Ethernet) and the customer supplied transceiver.	15-pin (male) connector with thumb screws to 15-pin (female) connector with sliding latch	3 m (10 ft)
NT7D58AB NT7D58AD NT7D58AF NT7D58AL NT7D58AT NT7D58AV	Connects as input/output between terminals and printers (with A0351509 gender changer).	25-pin (male) subminiature D-style connector to 25-pin (male) subminiature D-style connector	61 cm (2 ft) 1.8 m (6 ft) 3 m (10 ft) 6.1 m (20 ft) 10.7 m (35 ft) 13.7 m (45 ft)
NT7D61AB NT7D61AD NT7D61AF NT7D61AL NT7D61AT NT7D61AV	Carries input/output between the input/output connector panel and the NAC 2 system console (with A0351509 gender changer)	25-pin (male) subminiature D-style connector to 9-pin (female) round subminiature D-style connector	61 cm (2 ft) 1.8 m (6 ft) 3 m (10 ft) 6.1 m (20 ft) 10.7 m (35 ft) 13.7 m (45 ft)
—continued—			

<b>Table 13-3 (continued)</b> <b>External cables and part numbers for Application Module (AM)</b>			
<b>ENG code</b>	<b>Application</b>	<b>Cable and connector style</b>	<b>Length</b>
NT8D96AE	Carries input/output between the input/output connector panel and the peripheral devices connected to the NAC 2	Single DB-25 (male) at the I/O panel's end to three DB-25 (female) connectors	2.4 m (8 ft)
NT7D99AA	Connects as input/output between NAC 2 and dial-up modem, as well as, NAC 2 and LDS modem	25-pin (male) subminiature D-style DB-25 connector to 25-pin (male) subminiature D-style DB-25 connector	3 m (10 ft)
—end—			

---

## NAC time change procedure

---

There are cases where the NAC system time must be changed, such as daylight savings time or the time being set incorrectly.

If you want to change the time on the NAC, follow these steps:

- 1 Display the NAC Maintenance and Administration main menu (system running mode).  
*This menu is described in the NAC 2 System Administration and Maintenance Guide (NTP 553-4001-510), "Maintenance and administration programs: system running" chapter.*
- 2 Press **s** to select the *Shutdown the System* option.  
*A prompt appears to confirm that the system is to be shut down.*
- 3 Press **y** to confirm that the system is to be shut down.  
*The NAC Maintenance and Administration main menu (system shutdown mode) appears. This menu is described in the NAC 2 System Administration and Maintenance Guide (NTP 553-4001-510), "Maintenance and administration programs: system shutdown" chapter.*
- 4 Press **r** to select the *Restart & Power Down Utilities* option.  
*The Restart and Power Down Utilities submenu appears.*
- 5 Press **r** to select the *Restart the NAC System* option.  
*A prompt appears to confirm that the system is to be restarted.*
- 6 Press **y** to confirm that the system is to be restarted.  
*A series of system messages are displayed. This takes a few minutes. The system stops at a prompt which asks if the time and date are to be changed. The current date and time appears above this prompt.*
- 7 Enter **y** at the prompt to indicate that the time and date are to be changed.  
*Another prompt appears to enter the new time and date.*

- 8** Enter the new time and date in the format mmddhhmmyy.  
*This represents the month, day, hour, minutes and year. For example, enter **0131153095**.*

*After the time and date are entered, they are displayed on the screen. Another prompt appears asking if the time and date have been entered correctly.*

- 9** Enter **y** if the entries are correct.  
*The system continues to reboot. When it is finished, the console login prompt appears.*

or

Enter **n** if the entry is incorrect.  
*The prompt to enter the new time and date reappears.*

Electronic Private Automatic Branch Exchange and  
Business Communication Systems

# Network Administration Center (NAC)

## Installation Guide

Documentation Systems,  
Northern Telecom  
522 University Avenue, 14th Floor  
Toronto, Ontario M5G 1W7

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